



## Stormwater Management Plan

### Kohler Farms

Prepared for: JD Ham Lake Holdings, LLC

July 10, 2025

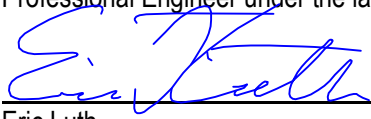
**Revised: September 25, 2025**

PREPARED FOR:  
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PREPARED BY:  
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I hereby certify that this plan was prepared by me, or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the state of MINNESOTA.



07-10-2024

Eric Luth

Date

License No. 50475

## Appendices:

### APPENDIX A: EXISTING SOIL SURVEY

- NRCS Soils Map

### APPENDIX B: PRE-DEVELOPMENT DRAINAGE MAP & HYDROCAD MODEL

- Pre-Development Drainage Map
- Pre-Development HydroCAD Model

### APPENDIX C: POST-DEVELOPMENT DRAINAGE MAP & HYDROCAD MODEL

- Post-Development Drainage Map
- Post-Development HydroCAD Model

### APPENDIX D: OTHER PROPOSED HYDROLOGY CALCULATIONS

- Infiltration Calculation

## INTRODUCTION

This report was written to explain the stormwater management methodology and analysis used for the proposed Kohler Farms residential project located southwest of the intersection of Constance Blvd NE and Lexington Ave NE in the City of Ham Lake, Minnesota. The project site is an approximately 112 acres subdivision consisting of 43 lots for single family homes. Construction for the project will consist of new roadways, storm sewer, single family homes, and stormwater ponds.

## STORMWATER AND DRAINAGE REQUIREMENTS:

The City of Ham Lake, Coon Creek Watershed District, and Minnesota Pollution Control Agency (MPCA) have review jurisdiction over storm water runoff for the proposed project site and the requirements as follows:

### City of Ham Lake/Coon Creek Watershed District:

The following is a summary of the City of Ham Lake and Coon Creek Watershed District stormwater code requirements project site:

- Type A soils shall be dropped one half classification in mass grading areas.
- Match or reduce the post-development discharge to the pre-development peak discharge rates for the 2-year, 10-year, and 100-yr 24-hr storm events.
- 80% total suspended solids (TSS) reduction prior to discharge from project site or to a wetland.
- Size stormwater practices required volume to treat and remove total phosphorus.
- BFE must be 2 ft minimum above 100-yr HWL and 1 ft minimum above EOF.
- Stormwater management practices shall capture 1.1 inches of runoff from new impervious surfaces.
- Discharge to wetlands shall meet requirements outlined in code section 3.3.5.

### Minnesota Pollution Control Agency:

The following is a summary of the MPCA NPDES stormwater requirements for the project site:

- Retain 1.1-inch runoff from all new impervious surfaces.
- Provide 80% removal of total suspended solids (TSS) for on-site storm runoff.
- Outlet structures discharge rates can be no greater than 5.66 cfs per acre of surface area of basin.

Additionally, Anoka County has jurisdiction over stormwater discharge to CTH 17 (Lexington Ave) right-of-way and stormwater requirements are as follows:

### Anoka County:

- Match or reduce the post developed peak discharge to the right-of -way for the 100-yr, 24 hour storm to the pre-developed conditions.



## EXISTING SITE CONDITIONS AND DRAINAGE:

Existing land use is cropland with the site draining predominantly from northwest to southwest discharging primarily from the site in three locations (Lexington Ave. ditch, SE Quarter of Section 13, and the wetland located just south of the project site). The site is predominantly flat with existing grades ranging from 1 to 10%. Existing on-site soil consists of Isanti fine sandy loam (Iw), Lino loamy fine sand (LnA), Markey muck (Ma), Rifle mucky peat (Rf), and Zimmerman fine sand (ZmB). All soils are classified as Type D soils with the exception of Zimmerman fine sand (ZmB) which is considered a Type A soil. The existing soil map can be found in **Appendix A**. There are multiple wetlands located throughout the site consisting of a combination of agricultural wetlands and protected wetlands. Two existing floodplains also impact the project site with the floodplain to the north and south having designated 100-yr HWE of 902.8 and 896.8, respectively. Total existing impervious surface area equals zero square feet.

## PROPOSED SITE CONDITIONS AND DRAINAGE:

The proposed project site will be subdivided into forty-three single family lots with each lot being served by a septic and well system. Right-of-way will be designated for construction of new streets having curb and gutter. The streets will connect into the existing 158<sup>th</sup> Avenue, 159<sup>th</sup> Avenue, and Hupp Street. The proposed project will also include a bike route connecting from the west side of the site to Lexington Ave. The proposed overland drainage will remain similar to the existing conditions with proposed storm sewer and storm ponds being utilized to handle stormwater management. Impacts to protected wetlands will be minimized as much as possible. Total new impervious surface area equals 478,520 square feet.

## METHODOLOGY AND ANALYSIS:

Stormwater analysis for the project site was completed using HydroCAD 10.20-6a software. Rainfall depths of 2.83, 4.21, and 7.06 inches from NOAA Atlas 14 were used for the 2, 10, and 100-yr events, respectively. Analysis for the site started by first determining the pre-development 2, 10, and 100-yr discharge rates from the project site. Existing curve numbers used for Type D soils and Type A soils were 80 and 39, respectively. Existing on-site ponding was also accounted for in the modeling in order to help gain a better understanding of existing drainage and discharge from the site and wetlands. Next, the post-developed conditions were modeled accounting for the new proposed surfaces, drainage routing, and storm ponds. This stormwater modeling was used for comparison of the pre-development and post-development conditions. Type A in areas of mass grading had the curve number adjusted to 50. Storm sewer, swales, five forebays, and five wet ponds were used to manage and control stormwater runoff.

## Rate Control

Table 1 below summarizes the pre-development rates and post-development runoff rates for the project site. Pre- and Post- discharge rates were analyzed at each other the five primary discharge site locations (West Property Boundary, North Property Boundary, Lexington Ave ditch, SE Sec 13 Quarter, and the south wetland). Pre-development and post-development basin maps and HydroCAD output can be found in **Appendix B & C**, respectively.

**Table 1 – On-Site Peak Discharge Rates Summary**

| Event                                          | Pre-Development Discharge Rate<br>(cfs) | Post-Development Discharge Rate<br>(cfs) | Change     |
|------------------------------------------------|-----------------------------------------|------------------------------------------|------------|
| <b>North Property Boundary</b>                 |                                         |                                          |            |
| 2-year                                         | 0.00 cfs                                | 0.00 cfs                                 | 0.00 cfs   |
| 10-year                                        | 0.00 cfs                                | 0.00 cfs                                 | 0.00 cfs   |
| 25-year                                        | 0.00 cfs                                | 0.00 cfs                                 | 0.00 cfs   |
| 100-year                                       | 0.00 cfs                                | 0.00 cfs                                 | 0.00 cfs   |
| <b>West Property Boundary</b>                  |                                         |                                          |            |
| 2-year                                         | 1.12 cfs                                | 1.12 cfs                                 | -0.00 cfs  |
| 10-year                                        | 5.10 cfs                                | 3.60 cfs                                 | -1.50 cfs  |
| 25-year                                        | 9.01 cfs                                | 5.96 cfs                                 | -3.05 cfs  |
| 100-year                                       | 26.67 cfs                               | 21.13 cfs                                | -5.54 cfs  |
| <b>Lexington Ave Ditch</b>                     |                                         |                                          |            |
| 2-year                                         | 1.47 cfs                                | 0.00 cfs                                 | -1.47 cfs  |
| 10-year                                        | 5.86 cfs                                | 0.00 cfs                                 | -5.86 cfs  |
| 25-year                                        | 10.31 cfs                               | 0.00 cfs                                 | -10.31 cfs |
| 100-year                                       | 19.77 cfs                               | 0.00 cfs                                 | -19.77 cfs |
| <b>Section 13 SE Quarter (Private Ditch A)</b> |                                         |                                          |            |
| 2-year                                         | 5.59 cfs                                | 2.88 cfs                                 | -2.77 cfs  |
| 10-year                                        | 12.86 cfs                               | 6.62 cfs                                 | -6.24 cfs  |
| 25-year                                        | 19.12 cfs                               | 8.24 cfs                                 | -10.88 cfs |
| 100-year                                       | 31.41 cfs                               | 10.24 cfs                                | -21.17 cfs |
| <b>Section 13 SE Quarter (Private Ditch B)</b> |                                         |                                          |            |
| 2-year                                         | 3.04 cfs                                | 2.93 cfs                                 | -0.11 cfs  |
| 10-year                                        | 12.36 cfs                               | 7.52 cfs                                 | -4.84 cfs  |
| 25-year                                        | 21.84 cfs                               | 11.22 cfs                                | -10.62 cfs |
| 100-year                                       | 41.90 cfs                               | 18.63 cfs                                | -23.27 cfs |
| <b>Southwest Discharge</b>                     |                                         |                                          |            |
| 2-year                                         | 0.48 cfs                                | 0.40 cfs                                 | -0.08 cfs  |
| 10-year                                        | 11.15 cfs                               | 4.80 cfs                                 | -6.35 cfs  |
| 25-year                                        | 25.66 cfs                               | 10.25 cfs                                | -15.41 cfs |
| 100-year                                       | 55.38 cfs                               | 20.85 cfs                                | -34.53 cfs |
| <b>Overall Project Site</b>                    |                                         |                                          |            |
| 2-year                                         | 10.25 cfs                               | 7.71 cfs                                 | -2.54 cfs  |
| 10-year                                        | 35.28 cfs                               | 17.07 cfs                                | -18.21 cfs |
| 25-year                                        | 65.19 cfs                               | 29.91 cfs                                | -35.28 cfs |
| 100-year                                       | 149.78 cfs                              | 62.08 cfs                                | -87.70 cfs |

Further analysis of the stormwater and indicates stormwater discharge rates from the wetlands will match existing while also meeting storm bounce, inundation period, and run out control requirements. Table 2 summaries the stormwater wetlands.

Table 2 – Wetland Discharge Rates & HW Elevations Summary

|      | 2-yr                |                     | 10-yr                |                     | 25-yr                |                     | 100-yr               |                      |
|------|---------------------|---------------------|----------------------|---------------------|----------------------|---------------------|----------------------|----------------------|
|      | Existing<br>(HWL)   | Existing<br>(HWL)   | Proposed<br>(HWL)    | Proposed<br>(HWL)   | Existing<br>(HWL)    | Proposed<br>(HWL)   | Existing<br>(HWL)    | Proposed<br>(HWL)    |
| PB1A | 0.00 cfs<br>(899.8) | 0.00 cfs<br>(899.6) | 0.00 cfs<br>(900.5)  | 0.00 cfs<br>(900.0) | 0.00 cfs<br>(900.8)  | 1.11 cfs<br>(900.0) | 0.00 cfs<br>(901.4)  | 11.01 cfs<br>(900.1) |
| PB1B | 1.05 CFS<br>(901.5) | 1.34 CFS<br>(901.5) | 4.71 CFS<br>(901.7)  | 3.11 CFS<br>(901.7) | 8.30 CFS<br>(901.8)  | 4.65 CFS<br>(901.8) | 12.62 CFS<br>(901.9) | 7.62 CFS<br>(901.9)  |
| PB1C | 0.00 cfs<br>(901.3) | 0.00 cfs<br>(901.4) | 0.69 cfs<br>(901.7)  | 0.67 cfs<br>(901.7) | 4.29 cfs<br>(901.8)  | 4.03 cfs<br>(901.8) | 21.60 cfs<br>(901.9) | 16.23 cfs<br>(901.9) |
| PB6  | 0.45 CFS<br>(896.1) | 1.40 CFS<br>(896.1) | 10.81 CFS<br>(896.2) | 4.64 CFS<br>(896.2) | 24.99 CFS<br>(896.3) | 9.94 CFS<br>(896.2) | 54.29 CFS<br>(896.4) | 19.62 CFS<br>(896.2) |
| PB7A | 0.00 CFS<br>(898.0) | 0.00 CFS<br>(898.1) | 1.07 CFS<br>(898.2)  | 0.57 CFS<br>(898.2) | 5.23 CFS<br>(898.3)  | 3.36 CFS<br>(898.3) | 16.93 CFS<br>(898.4) | 12.63 CFS<br>(898.3) |
| PB7B | 0.00 CFS<br>(898.3) | 0.00 CFS<br>(898.2) | 0.84 CFS<br>(898.3)  | 0.28 CFS<br>(898.4) | 3.67 CFS<br>(898.4)  | 1.48 CFS<br>(898.4) | 11.94 CFS<br>(898.5) | 6.35 CFS<br>(898.5)  |
| PB7C | 0.00 CFS<br>(898.3) | 0.00 CFS<br>(898.3) | 0.00 CFS<br>(898.7)  | 0.00 CFS<br>(898.7) | 0.00 CFS<br>(898.9)  | 0.00 CFS<br>(899.0) | 0.00 CFS<br>(899.3)  | 0.00 CFS<br>(899.3)  |

| Wetland ID                          | PB1A     | PB1B     | PB1C     | PB6      | PB7A     | PB7B     | PB7C   |
|-------------------------------------|----------|----------|----------|----------|----------|----------|--------|
| Wetland Type                        | Slightly | Slightly | Slightly | Slightly | Slightly | Slightly | Highly |
| Change of Bounce 2-yr (ft)          | -0.2     | 0.0      | 0.0      | 0.0      | +0.1     | -0.1     | 0.0    |
| Change of Bounce 10-yr (ft)         | -0.5     | 0.0      | 0.0      | 0.0      | 0.0      | +0.1     | 0.0    |
| Change of Bounce 100-yr (ft)        | -0.3     | 0.0      | 0.0      | -0.1     | -0.1     | 0.0      | 0.0    |
| Change of Inundation on 2-yr (hrs)  | 0        | +2.5     | 0        | +25      | 0        | 0        | 0      |
| Change of Inundation on 10-yr (hrs) | 0        | +2.5     | +2.5     | +25      | 0        | 0        | 0      |
| Change of Run out Control (ft)      | -1.4     | 0.0      | 0.0      | 0.0      | 0.0      | 0.0      | 0.0    |

## Water Quality

Water quality will be handled on-site by five forebays and five wet ponds. All wet ponds will provide permanent pools sized to meet all total suspended solids (TSS) and phosphorus requirements and will meet rate control requirements prior to discharge from the ponds. Forebays were sized to pre-treat all runoff from the roadways. Summary of the Forebay Sizing can be found in Table 3 below. Calculation for water treatment can be found in **Appendix D**. Additional P8 information for WQ analysis can be found as a supplement to this report provided by AE2S.

Table 3 – Forebay Sizing Calculation

|             | Volume Needed To Treat TSS (cf)<br><i>Area Draining To Pond (ac) x 1800 cf/ac</i> | Volume Needed To Treat Phosphorus (cf)<br><i>New Impervious Area Draining To Pond (sf)<br/>x 1.1 inch rainfall x TP Removal Factor x (1'/12")</i> | Forebay<br>Volume<br>Provided |
|-------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| Forebay F-1 | 3.18 ac x 1800 cf/ac = 5724 cf                                                    | 59,634 sf x 1.1 in x 0.5 x (1/12) = 10,933 cf                                                                                                     | 23,607 cf                     |
| Forebay F-2 | 1.30 ac x 1800 cf/ac = 2340 cf                                                    | 11,021 sf x 1.1 in x 0.5 x (1/12) = 2,020 cf                                                                                                      | 4,539 cf                      |
| Forebay F-3 | 1.91 ac x 1800 cf/ac = 3438 cf                                                    | 57,935 sf x 1.1 in x 0.5 x (1/12) = 10,621 cf                                                                                                     | 12,003 cf                     |
| Forebay F-4 | 9.13 ac x 1800 cf/ac = 16434 cf                                                   | 142,920 sf x 1.1 in x 0.5 x (1/12) = 26,202 cf                                                                                                    | 34,689 cf                     |
| Forebay F-5 | 0.70 ac x 1800 cf/ac = 1260 cf                                                    | 25,047 sf x 1.1 in x 0.5 x (1/12) = 4,592 cf                                                                                                      | 11,532 cf                     |

## TEMPORARY STORMWATER MANAGEMENT & EROSION CONTROL

Silt fence, inlet protection, street sweeping, and stabilized rock construction entrances will be implemented to minimize erosion and sedimentation runoff from the project site as part of the temporary erosion and sediment control plan.

## RESULTS AND CONCLUSIONS:

Design and analysis of the stormwater for Kohler Farms indicates the site will meet the City of Ham Lake, Coon Creek Watershed District, MPCA, and Anoka County stormwater requirements. The on-site wet ponds will match the pre-development discharge rates for the 2, 10, and 100-yr events. Additionally, the forebays and wet ponds will be designed meet the water quality requirements needed to treat storm runoff.

## CONTACT INFORMATION

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## **APPENDIX A: EXISTING SOIL SURVEY**

# Soil Map—Anoka County, Minnesota



**Natural Resources  
Conservation Service**

Web Soil Survey  
National Cooperative Soil Survey

4/11/2025  
Page 1 of 3



## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

### Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

### Water Features



Streams and Canals

### Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

### Background



Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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

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

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

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Anoka County, Minnesota

Survey Area Data: Version 22, Sep 7, 2024

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

Date(s) aerial images were photographed: Jun 29, 2023—Sep 13, 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 |
|------------------------------------|---------------------------------------------------------|--------------|----------------|
| lw                                 | Isanti fine sandy loam                                  | 26.2         | 22.1%          |
| LnA                                | Lino loamy fine sand, 0 to 4 percent slopes             | 47.2         | 39.9%          |
| Ma                                 | Markey muck, occasionally ponded, 0 to 1 percent slopes | 8.5          | 7.1%           |
| Rf                                 | Rifle mucky peat                                        | 0.2          | 0.2%           |
| ZmB                                | Zimmerman fine sand, 1 to 6 percent slopes              | 36.4         | 30.7%          |
| <b>Totals for Area of Interest</b> |                                                         | <b>118.5</b> | <b>100.0%</b>  |

Type D

Type A

Type D

Type D

Type A

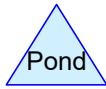
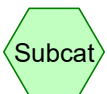
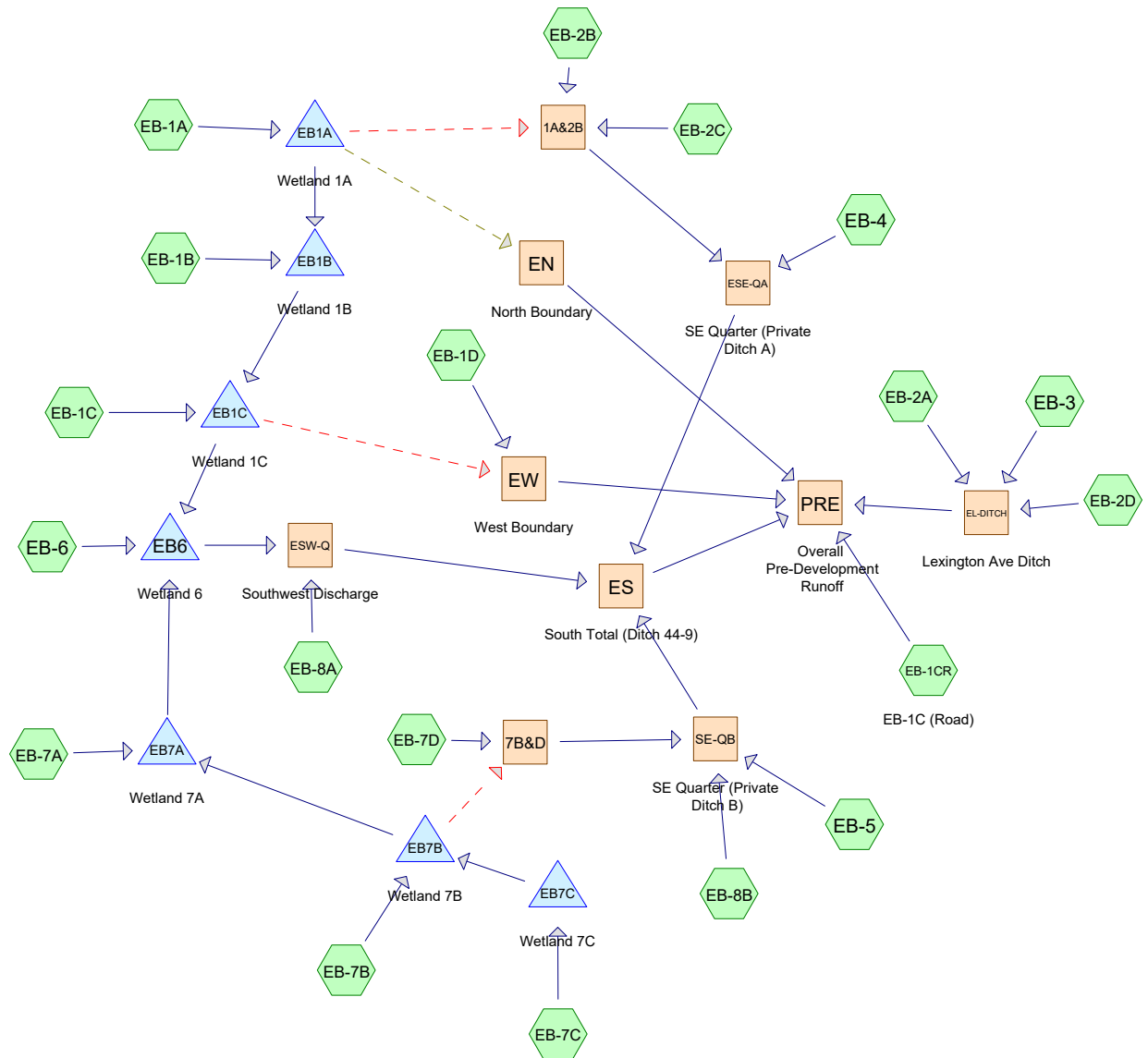
## **APPENDIX B: PRE-DEVELOPMENT DRAINAGE MAP & HYDROCAD MODEL**







# **Pre-Development**



## **LDP24010 Ham Lake**

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### **Project Notes**

Rainfall events imported from "NRCS2-Rain.txt" for 514 MN Anoka

Rainfall events imported from "NRCS2-Rain.txt" for 514 MN Anoka

## LDP24010 Ham Lake

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### Rainfall Events Listing (selected events)

| Event# | Event Name | Storm Type | Curve | Mode    | Duration (hours) | B/B | Depth (inches) | AMC |
|--------|------------|------------|-------|---------|------------------|-----|----------------|-----|
| 1      | 2-Year     | MSE 24-hr  | 3     | Default | 24.00            | 1   | 2.83           | 2   |
| 2      | 10-Year    | MSE 24-hr  | 3     | Default | 24.00            | 1   | 4.21           | 2   |
| 3      | 25-Year    | MSE 24-hr  | 3     | Default | 24.00            | 1   | 5.23           | 2   |
| 4      | 100-Year   | MSE 24-hr  | 3     | Default | 24.00            | 1   | 7.06           | 2   |



## LDP24010 Ham Lake

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### Area Listing (selected nodes)

| Area<br>(acres) | CN        | Description<br>(subcatchment-numbers)                                                                                                                    |
|-----------------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 110.234         | 61        | >75% Grass cover, Good, HSG B (EB-1A, EB-1B, EB-1C, EB-1D, EB-2A, EB-2B, EB-2C, EB-2D, EB-3, EB-4, EB-5, EB-6, EB-7A, EB-7B, EB-7C, EB-7D, EB-8A, EB-8B) |
| 7.968           | 80        | >75% Grass cover, Good, HSG D (EB-2B)                                                                                                                    |
| 0.387           | 98        | Paved parking, HSG A (EB-1CR, EB-2C, EB-2D)                                                                                                              |
| 0.186           | 98        | Roofs, HSG A (EB-1CR, EB-2C, EB-2D)                                                                                                                      |
| <b>118.776</b>  | <b>62</b> | <b>TOTAL AREA</b>                                                                                                                                        |

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**Soil Listing (selected nodes)**

| Area<br>(acres) | Soil<br>Group | Subcatchment<br>Numbers                                                                                                     |
|-----------------|---------------|-----------------------------------------------------------------------------------------------------------------------------|
| 0.573           | HSG A         | EB-1CR, EB-2C, EB-2D                                                                                                        |
| 110.234         | HSG B         | EB-1A, EB-1B, EB-1C, EB-1D, EB-2A, EB-2B, EB-2C, EB-2D, EB-3, EB-4,<br>EB-5, EB-6, EB-7A, EB-7B, EB-7C, EB-7D, EB-8A, EB-8B |
| 0.000           | HSG C         |                                                                                                                             |
| 7.968           | HSG D         | EB-2B                                                                                                                       |
| 0.000           | Other         |                                                                                                                             |
| <b>118.776</b>  |               | <b>TOTAL AREA</b>                                                                                                           |

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**Ground Covers (selected nodes)**

| HSG-A<br>(acres) | HSG-B<br>(acres) | HSG-C<br>(acres) | HSG-D<br>(acres) | Other<br>(acres) | Total<br>(acres) | Ground<br>Cover        | Subcatchment<br>Numbers                                                                                                                                                     |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0.000            | 110.234          | 0.000            | 7.968            | 0.000            | 118.202          | >75% Grass cover, Good | EB-1A,<br>EB-1B,<br>EB-1C,<br>EB-1D,<br>EB-2A,<br>EB-2B,<br>EB-2C,<br>EB-2D,<br>EB-3,<br>EB-4,<br>EB-5,<br>EB-6,<br>EB-7A,<br>EB-7B,<br>EB-7C,<br>EB-7D,<br>EB-8A,<br>EB-8B |
| 0.387            | 0.000            | 0.000            | 0.000            | 0.000            | 0.387            | Paved parking          | EB-1CR,<br>EB-2C,<br>EB-2D                                                                                                                                                  |
| 0.186            | 0.000            | 0.000            | 0.000            | 0.000            | 0.186            | Roofs                  | EB-1CR,<br>EB-2C,<br>EB-2D                                                                                                                                                  |
| <b>0.573</b>     | <b>110.234</b>   | <b>0.000</b>     | <b>7.968</b>     | <b>0.000</b>     | <b>118.776</b>   | <b>TOTAL AREA</b>      |                                                                                                                                                                             |

**LDP24010 Ham Lake****MSE 24-hr 3 2-Year Rainfall=2.83"**

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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

|                                         |                                                                                                                                              |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SubcatchmentEB-1A:</b>               | Runoff Area=1,147,516 sf 0.00% Impervious Runoff Depth=0.30"<br>Flow Length=474' Tc=25.5 min CN=61 Runoff=4.74 cfs 0.665 af                  |
| <b>SubcatchmentEB-1B:</b>               | Runoff Area=218,275 sf 0.00% Impervious Runoff Depth=0.30"<br>Flow Length=383' Tc=18.0 min CN=61 Runoff=1.05 cfs 0.126 af                    |
| <b>SubcatchmentEB-1C:</b>               | Runoff Area=386,594 sf 0.00% Impervious Runoff Depth=0.30"<br>Flow Length=207' Tc=10.0 min CN=61 Runoff=2.37 cfs 0.224 af                    |
| <b>SubcatchmentEB-1CR: EB-1C (Road)</b> | Runoff Area=17,279 sf 100.00% Impervious Runoff Depth=2.60"<br>Flow Length=207' Tc=10.0 min CN=WQ Runoff=1.38 cfs 0.086 af                   |
| <b>SubcatchmentEB-1D:</b>               | Runoff Area=170,630 sf 0.00% Impervious Runoff Depth=0.30"<br>Flow Length=207' Tc=9.0 min CN=61 Runoff=1.12 cfs 0.099 af                     |
| <b>SubcatchmentEB-2A:</b>               | Runoff Area=347,380 sf 0.00% Impervious Runoff Depth=0.30"<br>Flow Length=800' Tc=47.0 min CN=WQ Runoff=1.04 cfs 0.201 af                    |
| <b>SubcatchmentEB-2B:</b>               | Runoff Area=635,146 sf 0.00% Impervious Runoff Depth=0.75"<br>Flow Length=1,600' Tc=67.7 min CN=WQ Runoff=5.29 cfs 0.913 af                  |
| <b>SubcatchmentEB-2C:</b>               | Runoff Area=52,343 sf 9.46% Impervious Runoff Depth=0.52"<br>Flow Length=253' Tc=12.6 min CN=WQ Runoff=0.60 cfs 0.052 af                     |
| <b>SubcatchmentEB-2D:</b>               | Runoff Area=79,363 sf 3.45% Impervious Runoff Depth=0.38"<br>Flow Length=276' Tc=15.6 min CN=WQ Runoff=0.55 cfs 0.058 af                     |
| <b>SubcatchmentEB-3:</b>                | Runoff Area=88,397 sf 0.00% Impervious Runoff Depth=0.30"<br>Flow Length=294' Tc=22.7 min CN=WQ Runoff=0.38 cfs 0.051 af                     |
| <b>SubcatchmentEB-4:</b>                | Runoff Area=107,117 sf 0.00% Impervious Runoff Depth=0.30"<br>Flow Length=303' Tc=12.9 min CN=WQ Runoff=0.59 cfs 0.062 af                    |
| <b>SubcatchmentEB-5:</b>                | Runoff Area=833,088 sf 0.00% Impervious Runoff Depth=0.30"<br>Flow Length=1,137' Slope=0.0040 '/' Tc=42.8 min CN=WQ Runoff=2.64 cfs 0.483 af |
| <b>SubcatchmentEB-6:</b>                | Runoff Area=602,150 sf 0.00% Impervious Runoff Depth=0.30"<br>Flow Length=531' Slope=0.0500 '/' Tc=11.1 min CN=61 Runoff=3.56 cfs 0.349 af   |
| <b>SubcatchmentEB-7A:</b>               | Runoff Area=93,805 sf 0.00% Impervious Runoff Depth=0.30"<br>Flow Length=212' Tc=20.1 min CN=61 Runoff=0.43 cfs 0.054 af                     |
| <b>SubcatchmentEB-7B:</b>               | Runoff Area=177,383 sf 0.00% Impervious Runoff Depth=0.30"<br>Flow Length=181' Tc=9.5 min CN=61 Runoff=1.14 cfs 0.103 af                     |
| <b>SubcatchmentEB-7C:</b>               | Runoff Area=18,945 sf 0.00% Impervious Runoff Depth=0.30"<br>Tc=10.0 min CN=61 Runoff=0.12 cfs 0.011 af                                      |

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|                                                   |                                                                                                                                                                           |
|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SubcatchmentEB-7D:</b>                         | Runoff Area=92,630 sf 0.00% Impervious Runoff Depth=0.30"<br>Flow Length=632' Tc=22.2 min CN=61 Runoff=0.41 cfs 0.054 af                                                  |
| <b>SubcatchmentEB-8A:</b>                         | Runoff Area=37,143 sf 0.00% Impervious Runoff Depth=0.30"<br>Tc=0.0 min CN=61 Runoff=0.34 cfs 0.022 af                                                                    |
| <b>SubcatchmentEB-8B:</b>                         | Runoff Area=68,682 sf 0.00% Impervious Runoff Depth=0.30"<br>Flow Length=256' Tc=13.9 min CN=61 Runoff=0.37 cfs 0.040 af                                                  |
| <b>Reach 1A&amp;2B:</b>                           | Inflow=5.41 cfs 0.965 af<br>Outflow=5.41 cfs 0.965 af                                                                                                                     |
| <b>Reach 7B&amp;D:</b>                            | Inflow=0.41 cfs 0.054 af<br>Outflow=0.41 cfs 0.054 af                                                                                                                     |
| <b>Reach EL-DITCH: Lexington Ave Ditch</b>        | Inflow=1.47 cfs 0.311 af<br>Outflow=1.47 cfs 0.311 af                                                                                                                     |
| <b>Reach EN: North Boundary</b>                   | Inflow=0.00 cfs 0.000 af<br>Outflow=0.00 cfs 0.000 af                                                                                                                     |
| <b>Reach ES: South Total (Ditch 44-9)</b>         | Inflow=8.39 cfs 1.796 af<br>Outflow=8.39 cfs 1.796 af                                                                                                                     |
| <b>Reach ESE-QA: SE Quarter (Private Ditch A)</b> | Inflow=5.59 cfs 1.027 af<br>Outflow=5.59 cfs 1.027 af                                                                                                                     |
| <b>Reach ESW-Q: Southwest Discharge</b>           | Inflow=0.48 cfs 0.192 af<br>Outflow=0.48 cfs 0.192 af                                                                                                                     |
| <b>Reach EW: West Boundary</b>                    | Inflow=1.12 cfs 0.099 af<br>Outflow=1.12 cfs 0.099 af                                                                                                                     |
| <b>Reach PRE: Overall Pre-DevelopmentRunoff</b>   | Inflow=10.25 cfs 2.291 af<br>Outflow=10.25 cfs 2.291 af                                                                                                                   |
| <b>Reach SE-QB: SE Quarter (Private Ditch B)</b>  | Inflow=3.04 cfs 0.576 af<br>Outflow=3.04 cfs 0.576 af                                                                                                                     |
| <b>Pond EB1A: Wetland 1A</b>                      | Peak Elev=899.8' Storage=28,966 cf Inflow=4.74 cfs 0.665 af<br>Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af |
| <b>Pond EB1B: Wetland 1B</b>                      | Peak Elev=901.5' Storage=16 cf Inflow=1.05 cfs 0.126 af<br>Outflow=1.05 cfs 0.126 af                                                                                      |
| <b>Pond EB1C: Wetland 1C</b>                      | Peak Elev=901.3' Storage=15,269 cf Inflow=3.08 cfs 0.351 af<br>Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af                            |
| <b>Pond EB6: Wetland 6</b>                        | Peak Elev=896.1' Storage=8,047 cf Inflow=3.56 cfs 0.349 af<br>Outflow=0.45 cfs 0.170 af                                                                                   |



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**Pond EB7A: Wetland 7A**Peak Elev=898.0' Storage=2,368 cf Inflow=0.43 cfs 0.054 af  
Outflow=0.00 cfs 0.000 af**Pond EB7B: Wetland 7B**Peak Elev=898.3' Storage=4,478 cf Inflow=1.14 cfs 0.103 af  
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af**Pond EB7C: Wetland 7C**Peak Elev=898.3' Storage=478 cf Inflow=0.12 cfs 0.011 af  
Outflow=0.00 cfs 0.000 af**Total Runoff Area = 118.776 ac Runoff Volume = 3.653 af Average Runoff Depth = 0.37"**  
**99.52% Pervious = 118.202 ac 0.48% Impervious = 0.573 ac**

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**Summary for Subcatchment EB-1A:**

Runoff = 4.74 cfs @ 12.50 hrs, Volume= 0.665 af, Depth= 0.30"  
Routed to Pond EB1A : Wetland 1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

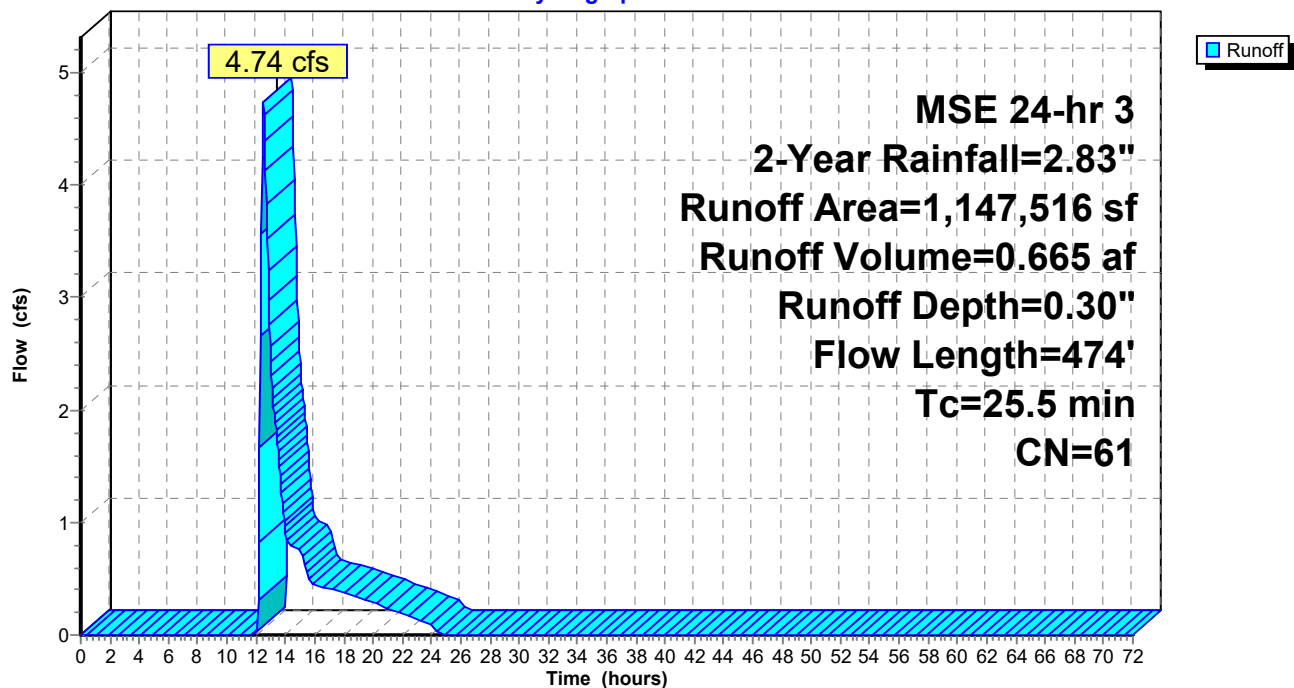
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 1,147,516 | 61 | >75% Grass cover, Good, HSG B |
| 1,147,516 |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 16.8     | 100           | 0.0154        | 0.10              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 2.83"                |
| 8.7      | 374           | 0.0105        | 0.72              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 25.5     | 474           | Total         |                   |                |                                                                      |

**Subcatchment EB-1A:**

Hydrograph



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**Summary for Subcatchment EB-1B:**

Runoff = 1.05 cfs @ 12.37 hrs, Volume= 0.126 af, Depth= 0.30"  
Routed to Pond EB1B : Wetland 1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

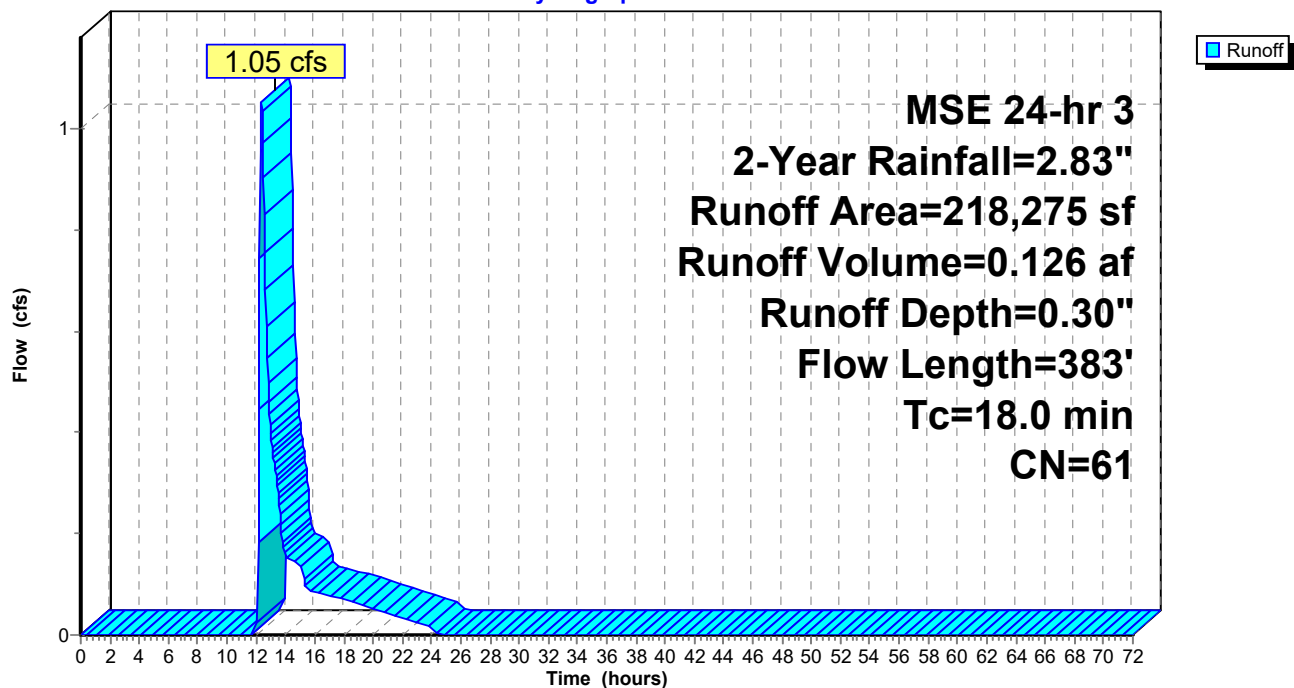
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 218,275   | 61 | >75% Grass cover, Good, HSG B |
| 218,275   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 12.3     | 100           | 0.0131        | 0.14              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 5.7      | 283           | 0.0141        | 0.83              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 18.0     | 383           | Total         |                   |                |                                                                      |

**Subcatchment EB-1B:**

Hydrograph



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**Summary for Subcatchment EB-1C:**

Runoff = 2.37 cfs @ 12.23 hrs, Volume= 0.224 af, Depth= 0.30"  
Routed to Pond EB1C : Wetland 1C

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

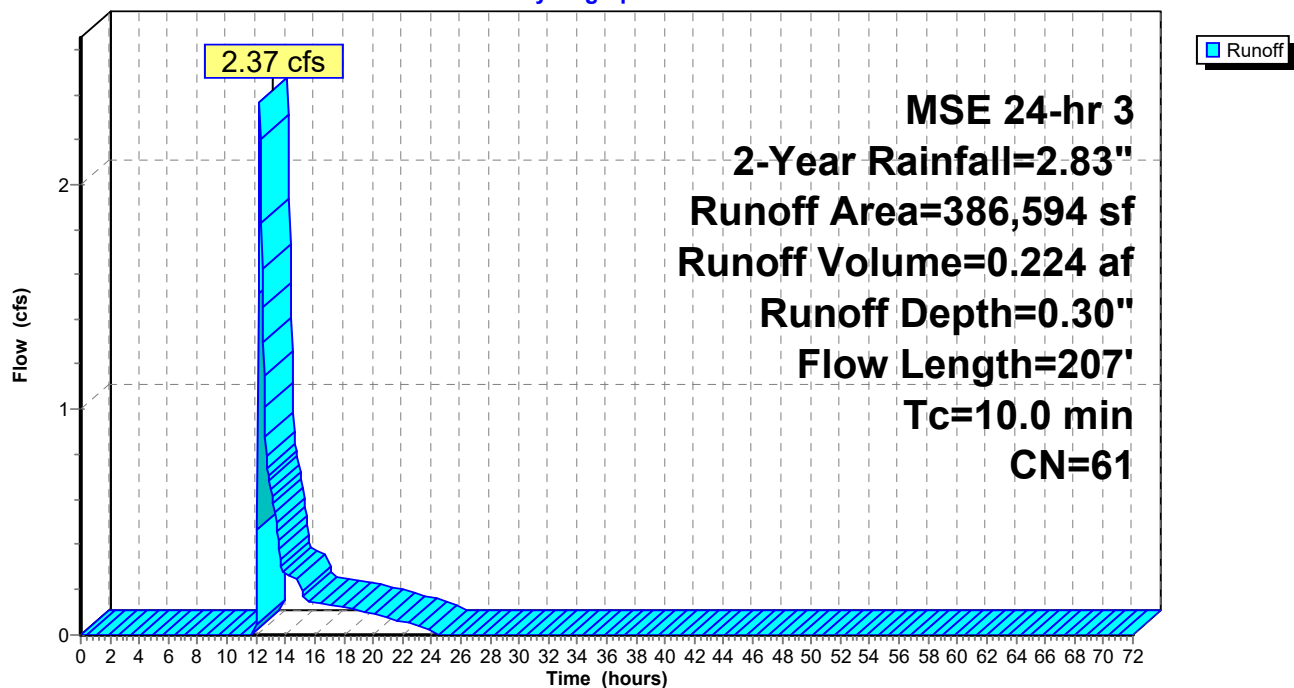
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 386,594   | 61 | >75% Grass cover, Good, HSG B |
| 386,594   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 8.9      | 100           | 0.0300        | 0.19              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.1      | 107           | 0.0556        | 1.65              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 10.0     | 207           | Total         |                   |                |                                                                      |

**Subcatchment EB-1C:**

Hydrograph



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**Summary for Subcatchment EB-1CR: EB-1C (Road)**

Runoff = 1.38 cfs @ 12.17 hrs, Volume= 0.086 af, Depth= 2.60"

Routed to Reach PRE : Overall Pre-Development Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

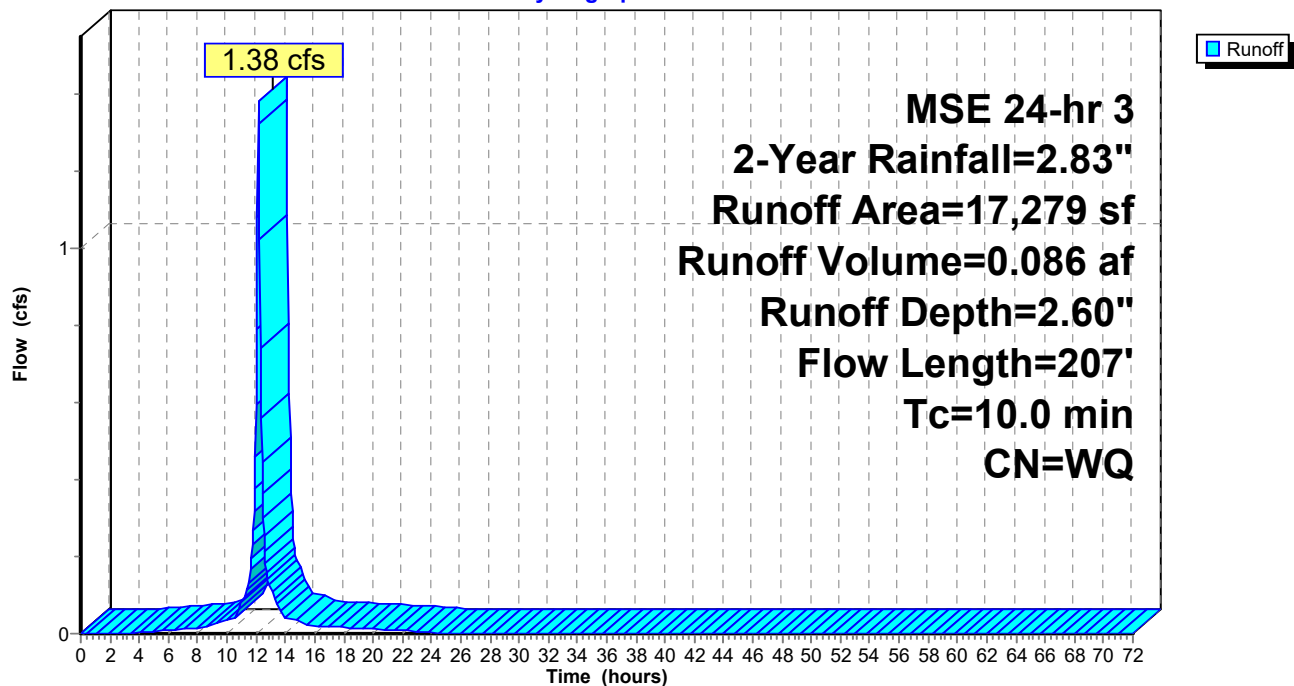
| Area (sf) | CN | Description             |
|-----------|----|-------------------------|
| 3,074     | 98 | Roofs, HSG A            |
| 14,205    | 98 | Paved parking, HSG A    |
| 17,279    |    | Weighted Average        |
| 17,279    |    | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 8.9      | 100           | 0.0300        | 0.19              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.1      | 107           | 0.0556        | 1.65              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 10.0     | 207           | Total         |                   |                |                                                                      |

**Subcatchment EB-1CR: EB-1C (Road)**

Hydrograph



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MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Subcatchment EB-1D:**

Runoff = 1.12 cfs @ 12.21 hrs, Volume= 0.099 af, Depth= 0.30"

Routed to Reach EW : West Boundary

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

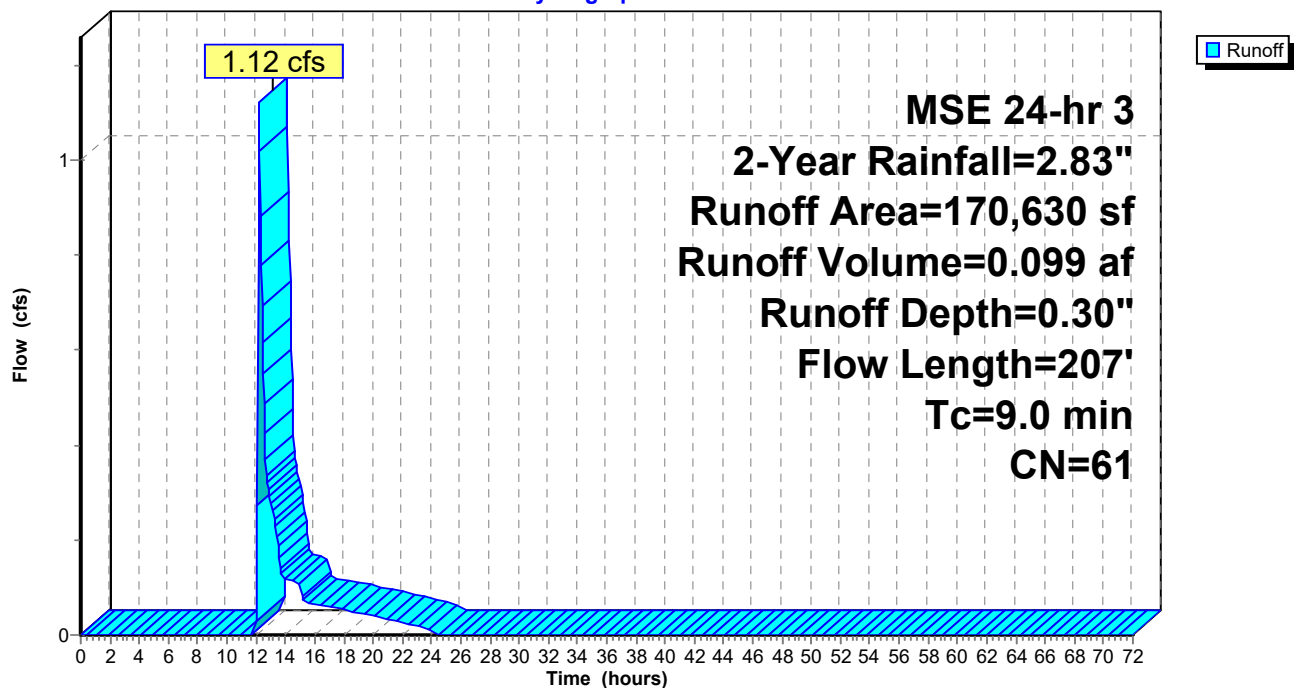
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 170,630   | 61 | >75% Grass cover, Good, HSG B |
| 170,630   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 7.9      | 100           | 0.0400        | 0.21              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.1      | 107           | 0.0556        | 1.65              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 9.0      | 207           | Total         |                   |                |                                                                      |

**Subcatchment EB-1D:**

Hydrograph





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MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Subcatchment EB-2A:**

Runoff = 1.04 cfs @ 12.85 hrs, Volume= 0.201 af, Depth= 0.30"

Routed to Reach EL-DITCH : Lexington Ave Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

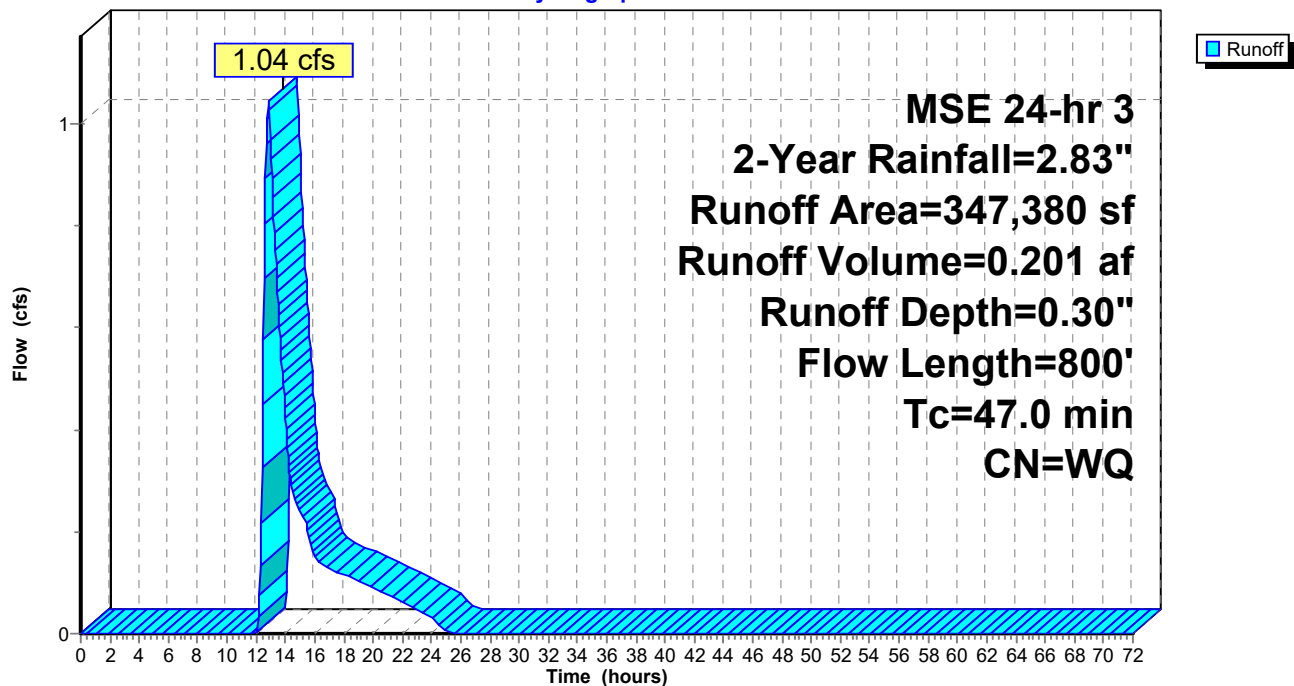
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 189,274   | 61 | >75% Grass cover, Good, HSG B |
| 158,106   | 61 | >75% Grass cover, Good, HSG B |
| 347,380   |    | Weighted Average              |
| 347,380   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 23.4     | 100           | 0.0068        | 0.07              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 2.83"                |
| 23.6     | 700           | 0.0050        | 0.49              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 47.0     | 800           | Total         |                   |                |                                                                      |

**Subcatchment EB-2A:**

Hydrograph



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MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Subcatchment EB-2B:**

Runoff = 5.29 cfs @ 13.00 hrs, Volume= 0.913 af, Depth= 0.75"  
Routed to Reach 1A&2B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

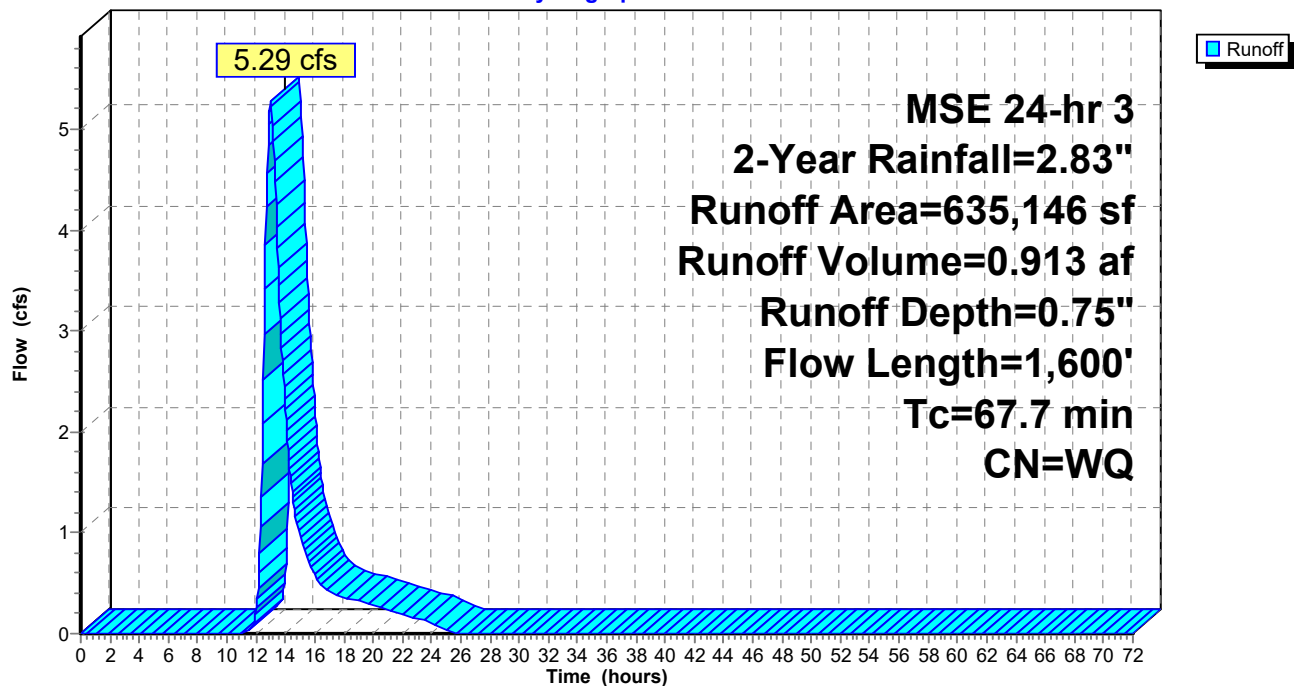
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 288,060   | 61 | >75% Grass cover, Good, HSG B |
| 347,086   | 80 | >75% Grass cover, Good, HSG D |
| 635,146   |    | Weighted Average              |
| 635,146   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 17.2     | 100           | 0.0147        | 0.10              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 2.83"                |
| 50.5     | 1,500         | 0.0050        | 0.49              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 67.7     | 1,600         | Total         |                   |                |                                                                      |

**Subcatchment EB-2B:**

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**Summary for Subcatchment EB-2C:**

Runoff = 0.60 cfs @ 12.23 hrs, Volume= 0.052 af, Depth= 0.52"  
Routed to Reach 1A&2B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

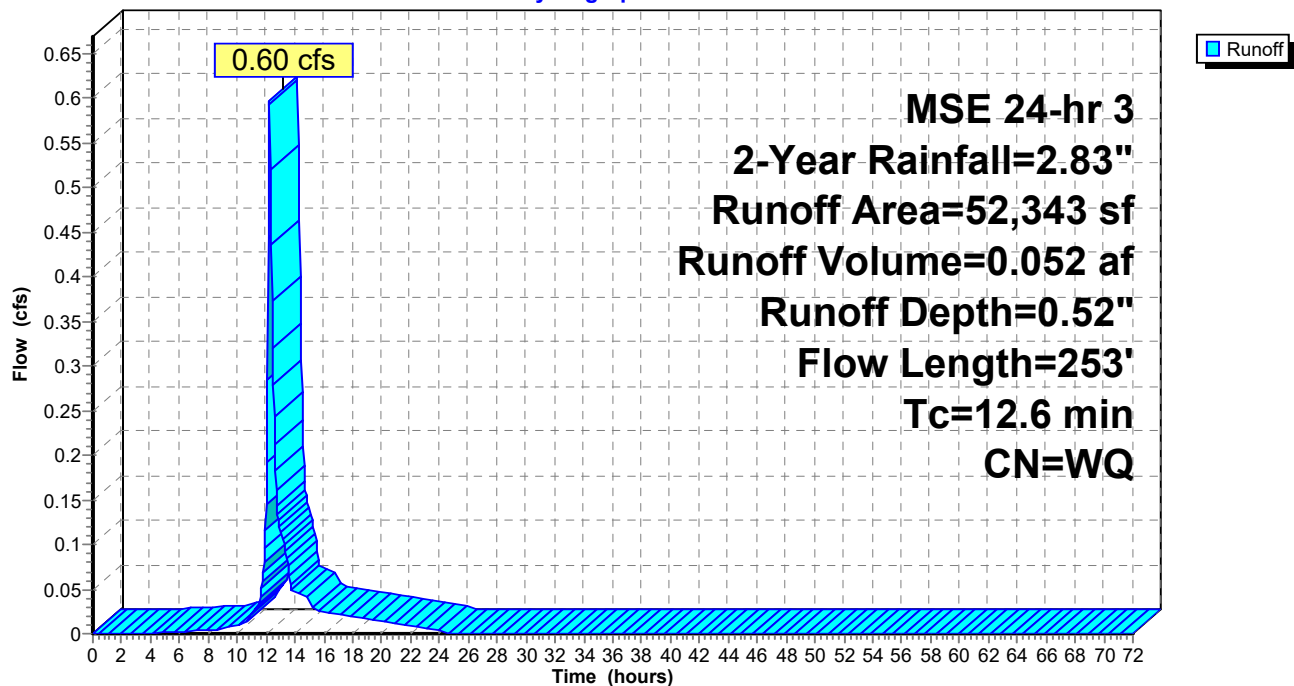
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 4,554     | 98 | Roofs, HSG A                  |
| 397       | 98 | Paved parking, HSG A          |
| 47,392    | 61 | >75% Grass cover, Good, HSG B |
| 52,343    |    | Weighted Average              |
| 47,392    |    | 90.54% Pervious Area          |
| 4,951     |    | 9.46% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.1     | 100           | 0.0214        | 0.16              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 2.5      | 153           | 0.0205        | 1.00              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 12.6     | 253           | Total         |                   |                |                                                                      |

**Subcatchment EB-2C:**

Hydrograph



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**Summary for Subcatchment EB-2D:**

Runoff = 0.55 cfs @ 12.30 hrs, Volume= 0.058 af, Depth= 0.38"

Routed to Reach EL-DITCH : Lexington Ave Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

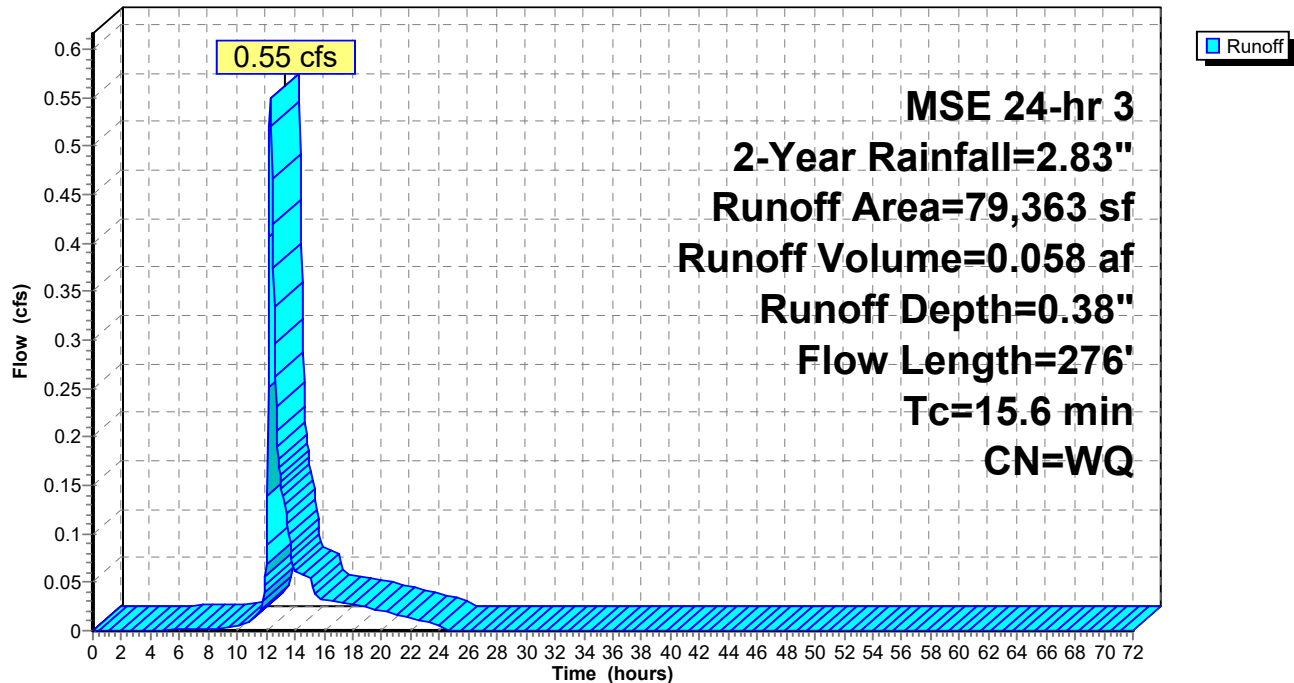
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 485       | 98 | Roofs, HSG A                  |
| 2,253     | 98 | Paved parking, HSG A          |
| 76,625    | 61 | >75% Grass cover, Good, HSG B |
| 79,363    |    | Weighted Average              |
| 76,625    |    | 96.55% Pervious Area          |
| 2,738     |    | 3.45% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.6     | 100           | 0.0191        | 0.16              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 5.0      | 176           | 0.0070        | 0.59              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 15.6     | 276           | Total         |                   |                |                                                                      |

**Subcatchment EB-2D:**

Hydrograph



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**Summary for Subcatchment EB-3:**

Runoff = 0.38 cfs @ 12.45 hrs, Volume= 0.051 af, Depth= 0.30"

Routed to Reach EL-DITCH : Lexington Ave Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

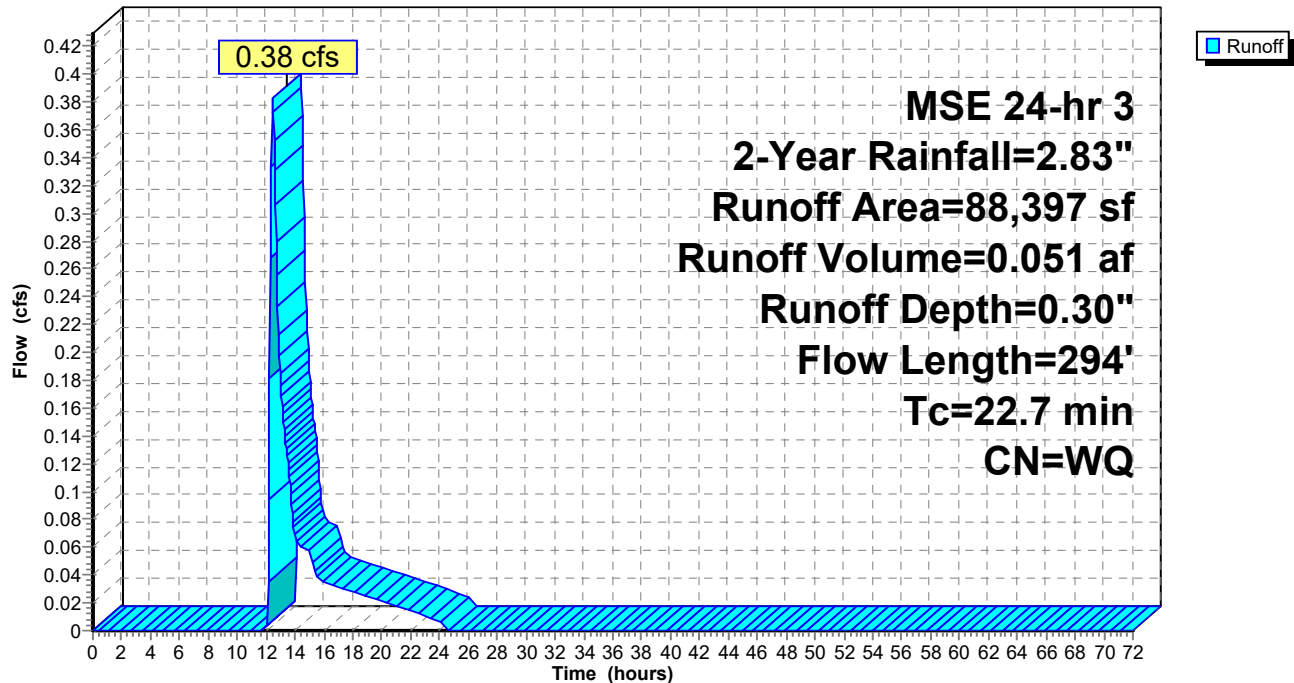
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 44,923    | 61 | >75% Grass cover, Good, HSG B |
| 43,474    | 61 | >75% Grass cover, Good, HSG B |
| 88,397    |    | Weighted Average              |
| 88,397    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 20.0     | 100           | 0.0100        | 0.08              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 2.83"                |
| 2.7      | 194           | 0.0289        | 1.19              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 22.7     | 294           | Total         |                   |                |                                                                      |

**Subcatchment EB-3:**

Hydrograph



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MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Subcatchment EB-4:**

Runoff = 0.59 cfs @ 12.28 hrs, Volume= 0.062 af, Depth= 0.30"

Routed to Reach ESE-QA : SE Quarter (Private Ditch A)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

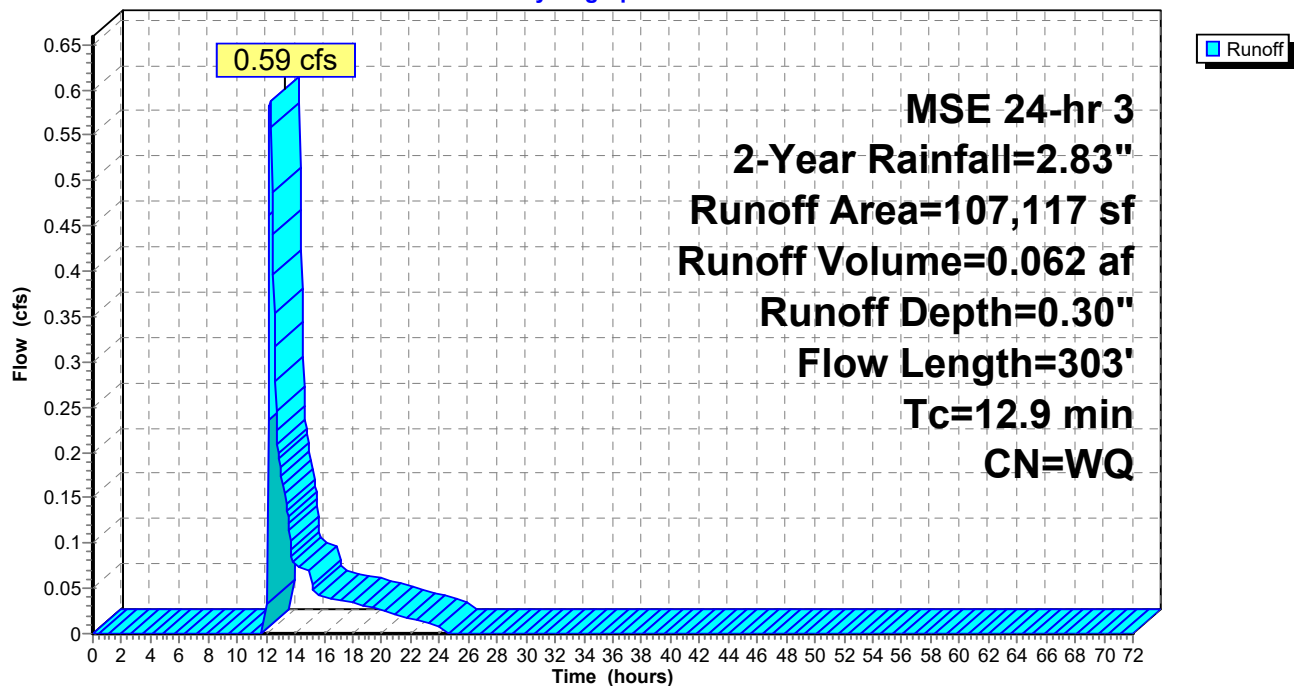
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 32,988    | 61 | >75% Grass cover, Good, HSG B |
| 74,129    | 61 | >75% Grass cover, Good, HSG B |
| 107,117   |    | Weighted Average              |
| 107,117   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 9.0      | 100           | 0.0285        | 0.18              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 3.9      | 203           | 0.0150        | 0.86              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 12.9     | 303           | Total         |                   |                |                                                                      |

**Subcatchment EB-4:**

Hydrograph



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**Summary for Subcatchment EB-5:**

Runoff = 2.64 cfs @ 12.78 hrs, Volume= 0.483 af, Depth= 0.30"

Routed to Reach SE-QB : SE Quarter (Private Ditch B)

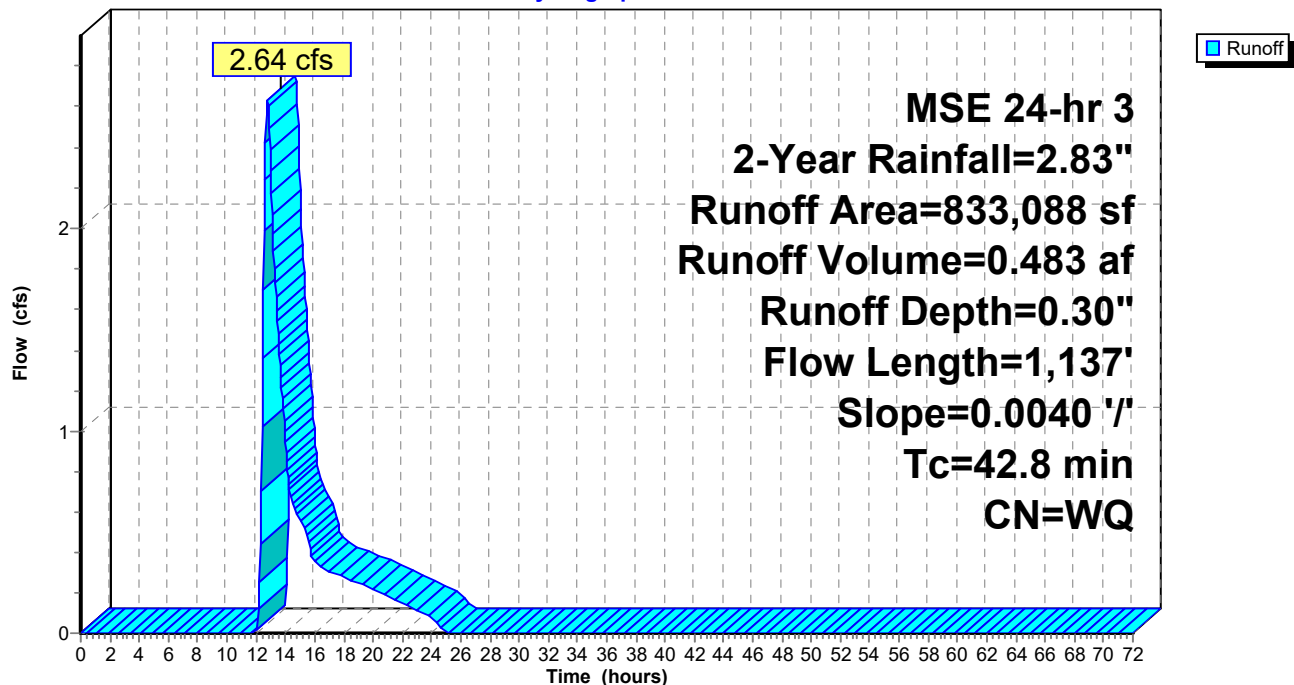
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 293,681   | 61 | >75% Grass cover, Good, HSG B |
| 539,407   | 61 | >75% Grass cover, Good, HSG B |
| 833,088   |    | Weighted Average              |
| 833,088   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                   |
|----------|---------------|---------------|-------------------|----------------|---------------------------------------------------------------|
| 42.8     | 1,137         | 0.0040        | 0.44              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps |

**Subcatchment EB-5:**

Hydrograph





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MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Subcatchment EB-6:**

Runoff = 3.56 cfs @ 12.25 hrs, Volume= 0.349 af, Depth= 0.30"  
Routed to Pond EB6 : Wetland 6

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

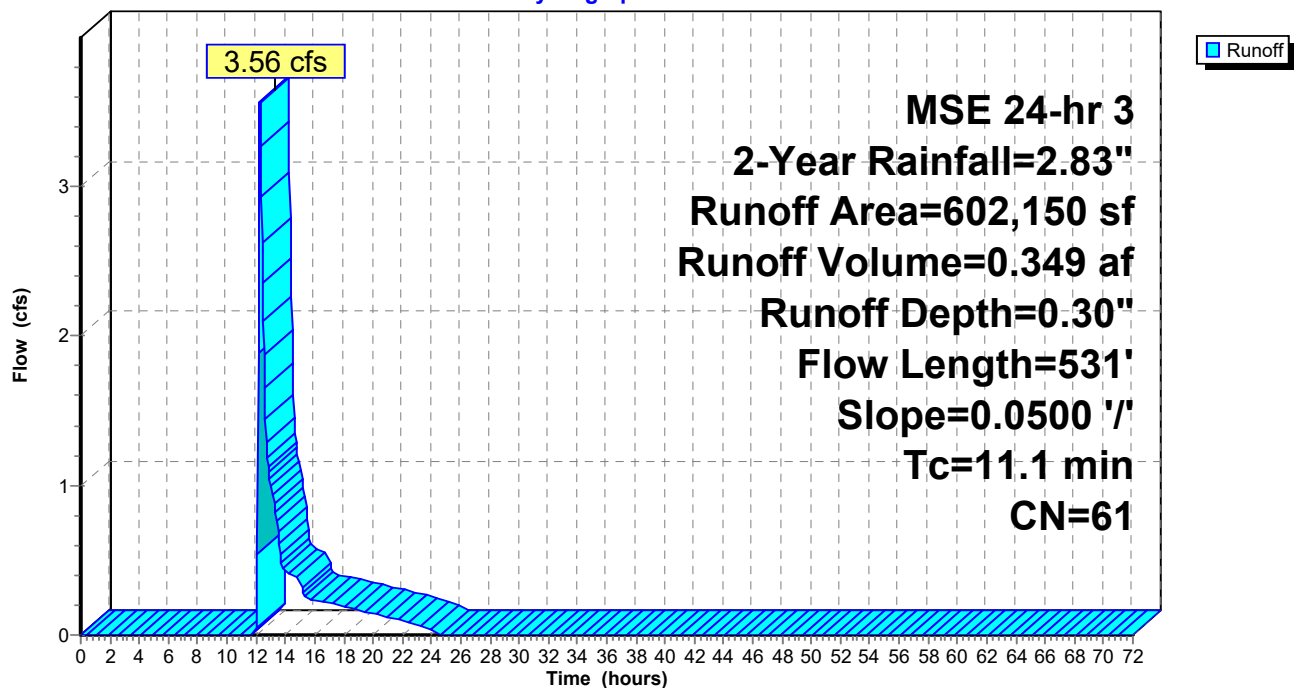
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 602,150   | 61 | >75% Grass cover, Good, HSG B |
| 602,150   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 6.0      | 50            | 0.0500        | 0.14              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 2.83"                |
| 5.1      | 481           | 0.0500        | 1.57              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 11.1     | 531           | Total         |                   |                |                                                                      |

**Subcatchment EB-6:**

Hydrograph



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MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Subcatchment EB-7A:**

Runoff = 0.43 cfs @ 12.41 hrs, Volume= 0.054 af, Depth= 0.30"  
Routed to Pond EB7A : Wetland 7A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

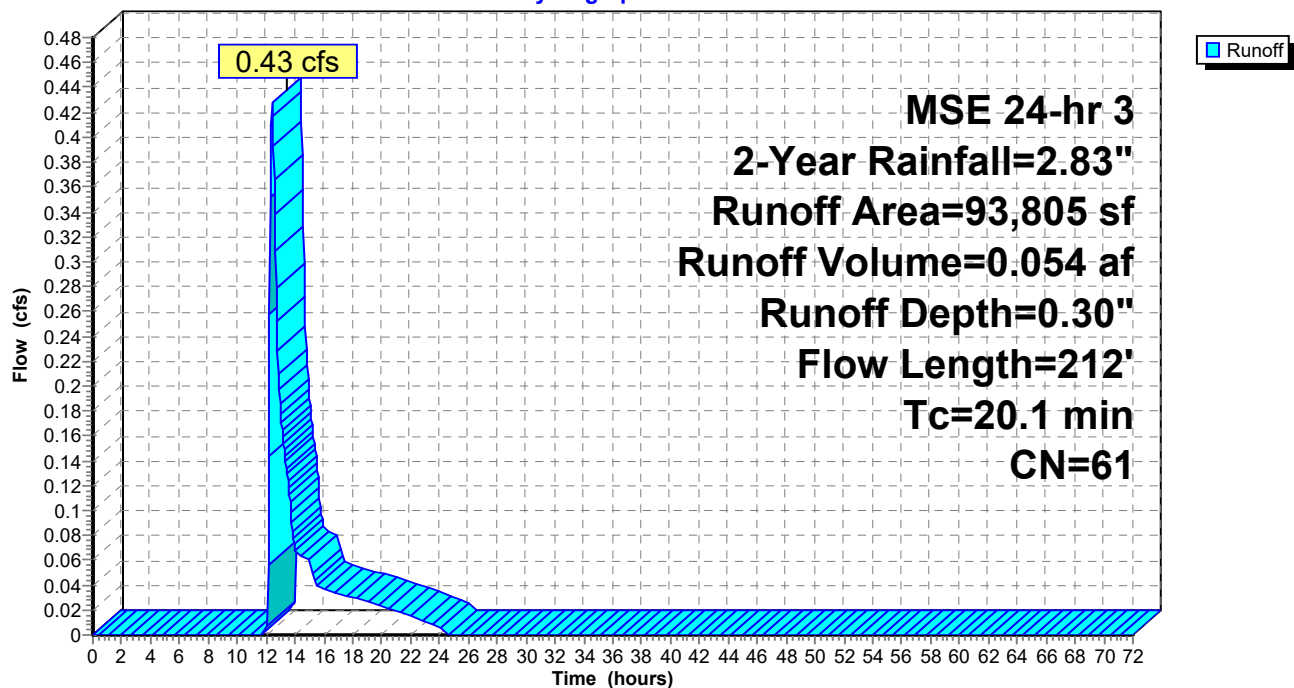
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 93,805    | 61 | >75% Grass cover, Good, HSG B |
| 93,805    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 18.8     | 100           | 0.0046        | 0.09              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.3      | 112           | 0.0425        | 1.44              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 20.1     | 212           | Total         |                   |                |                                                                      |

**Subcatchment EB-7A:**

Hydrograph



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MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Subcatchment EB-7B:**

Runoff = 1.14 cfs @ 12.22 hrs, Volume= 0.103 af, Depth= 0.30"  
Routed to Pond EB7B : Wetland 7B

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

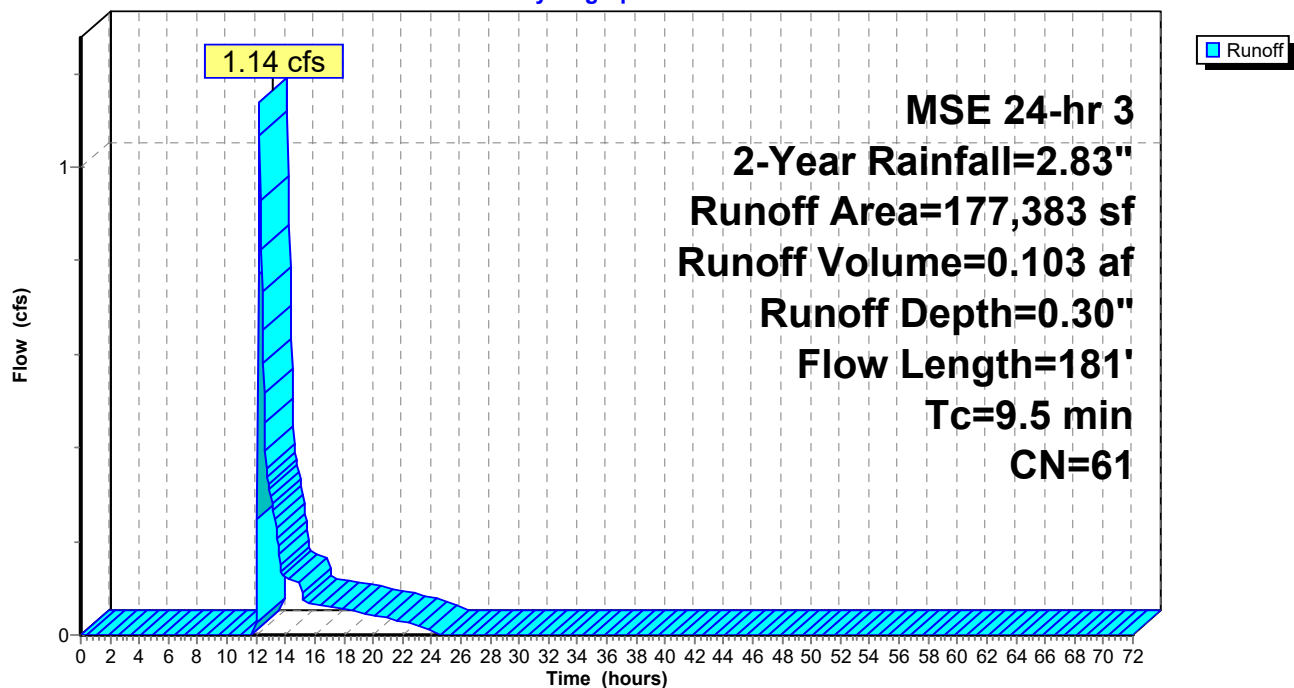
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 177,383   | 61 | >75% Grass cover, Good, HSG B |
| 177,383   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 8.4      | 100           | 0.0341        | 0.20              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.1      | 81            | 0.0288        | 1.19              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 9.5      | 181           | Total         |                   |                |                                                                      |

**Subcatchment EB-7B:**

Hydrograph



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**Summary for Subcatchment EB-7C:**

Runoff = 0.12 cfs @ 12.23 hrs, Volume= 0.011 af, Depth= 0.30"  
Routed to Pond EB7C : Wetland 7C

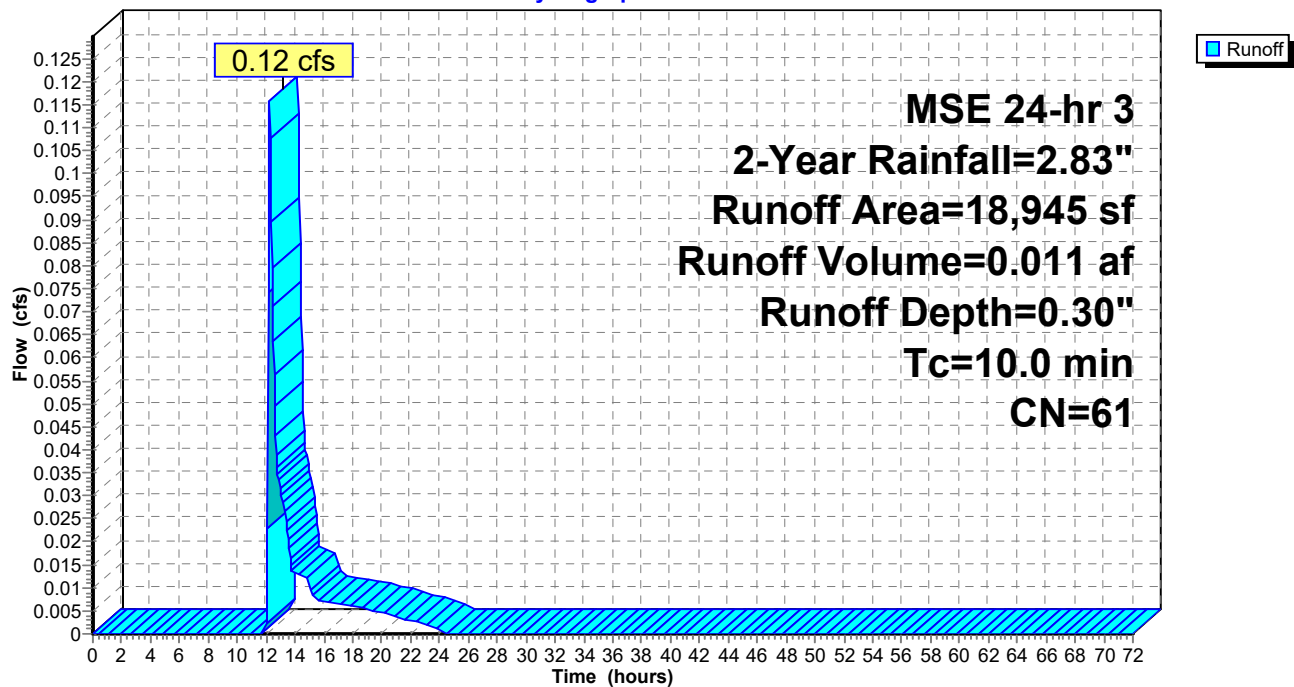
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 18,945    | 61 | >75% Grass cover, Good, HSG B |
| 18,945    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment EB-7C:**

Hydrograph



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MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Subcatchment EB-7D:**

Runoff = 0.41 cfs @ 12.45 hrs, Volume= 0.054 af, Depth= 0.30"  
Routed to Reach 7B&D :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

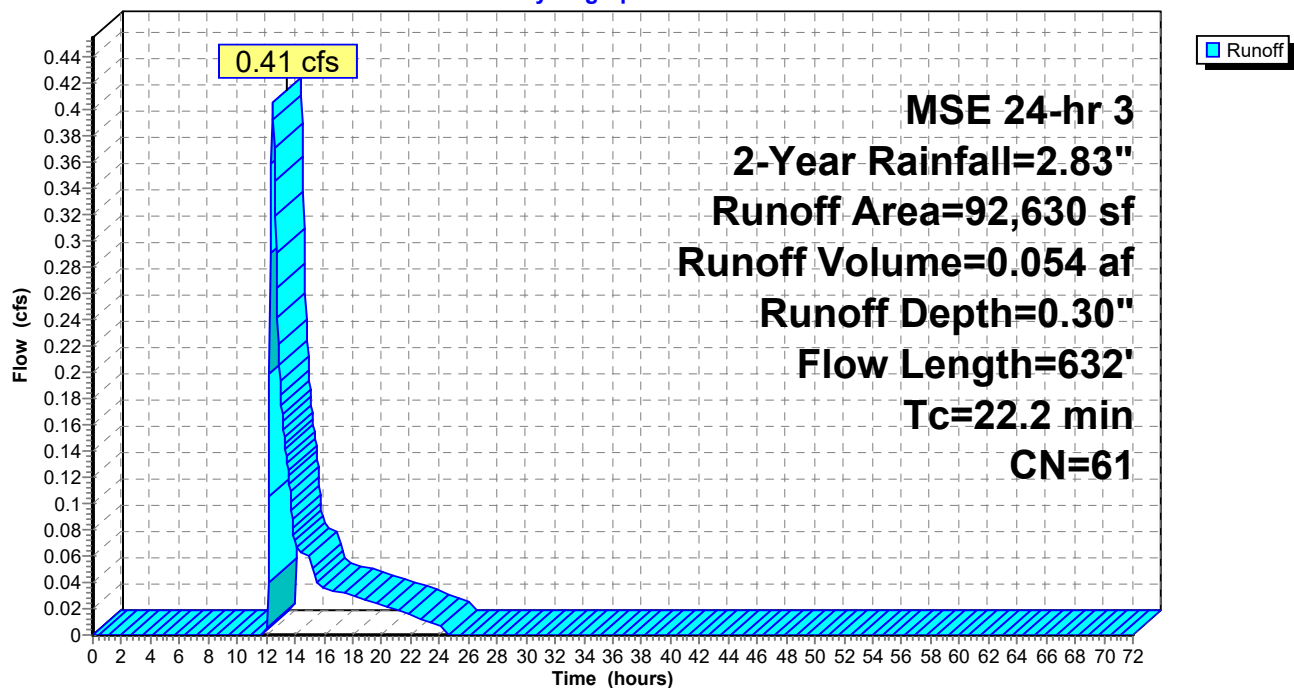
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 92,630    | 61 | >75% Grass cover, Good, HSG B |
| 92,630    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 9.5      | 100           | 0.0253        | 0.18              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 12.7     | 532           | 0.0100        | 0.70              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 22.2     | 632           | Total         |                   |                |                                                                      |

**Subcatchment EB-7D:**

Hydrograph



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**Summary for Subcatchment EB-8A:**

Runoff = 0.34 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 0.30"  
Routed to Reach ESW-Q : Southwest Discharge

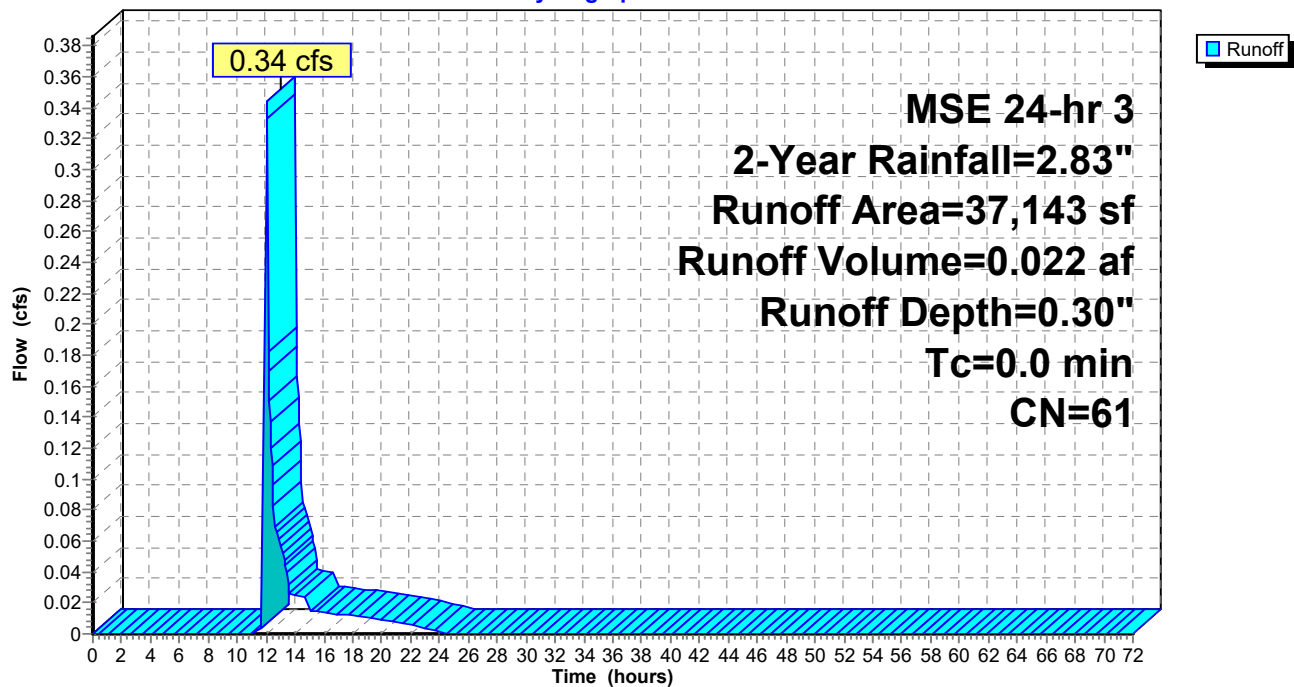
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 37,143    | 61 | >75% Grass cover, Good, HSG B |
| 37,143    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 0.0      |               |               |                   |                | Direct Entry, |

**Subcatchment EB-8A:**

Hydrograph



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MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Subcatchment EB-8B:**

Runoff = 0.37 cfs @ 12.30 hrs, Volume= 0.040 af, Depth= 0.30"

Routed to Reach SE-QB : SE Quarter (Private Ditch B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

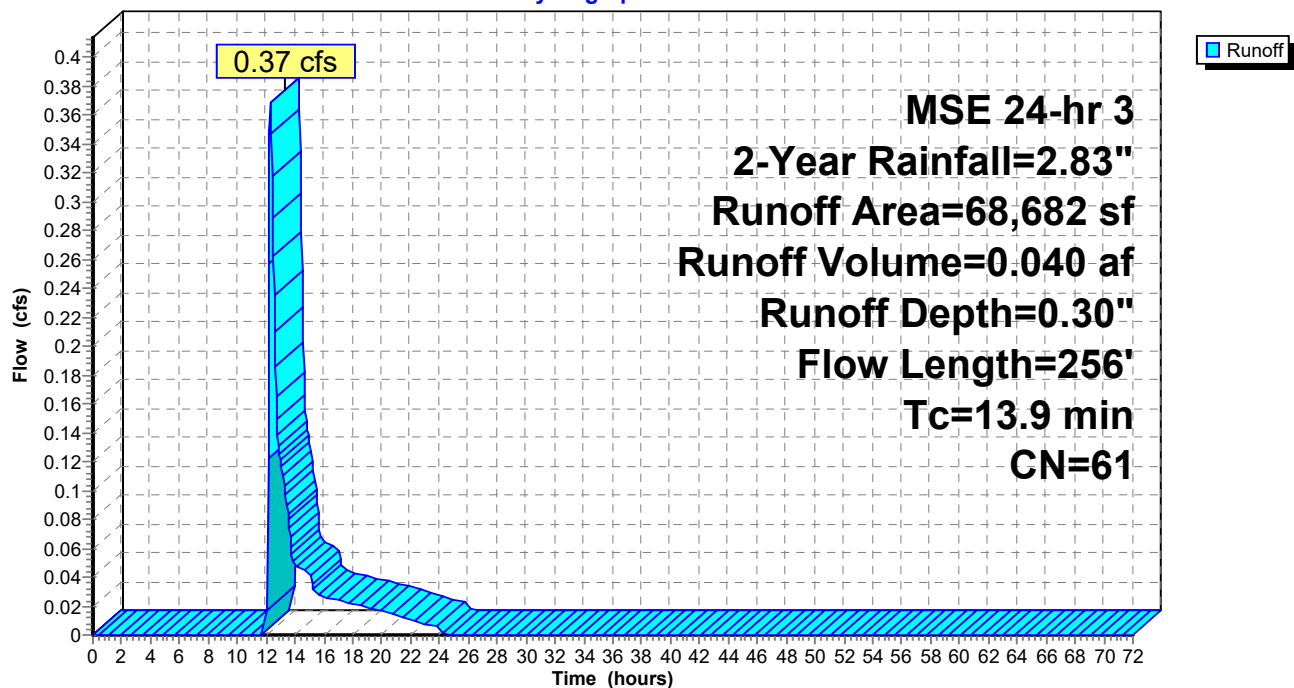
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 68,682    | 61 | >75% Grass cover, Good, HSG B |
| 68,682    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.9     | 100           | 0.0180        | 0.15              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 3.0      | 156           | 0.0154        | 0.87              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 13.9     | 256           | Total         |                   |                |                                                                      |

**Subcatchment EB-8B:**

Hydrograph

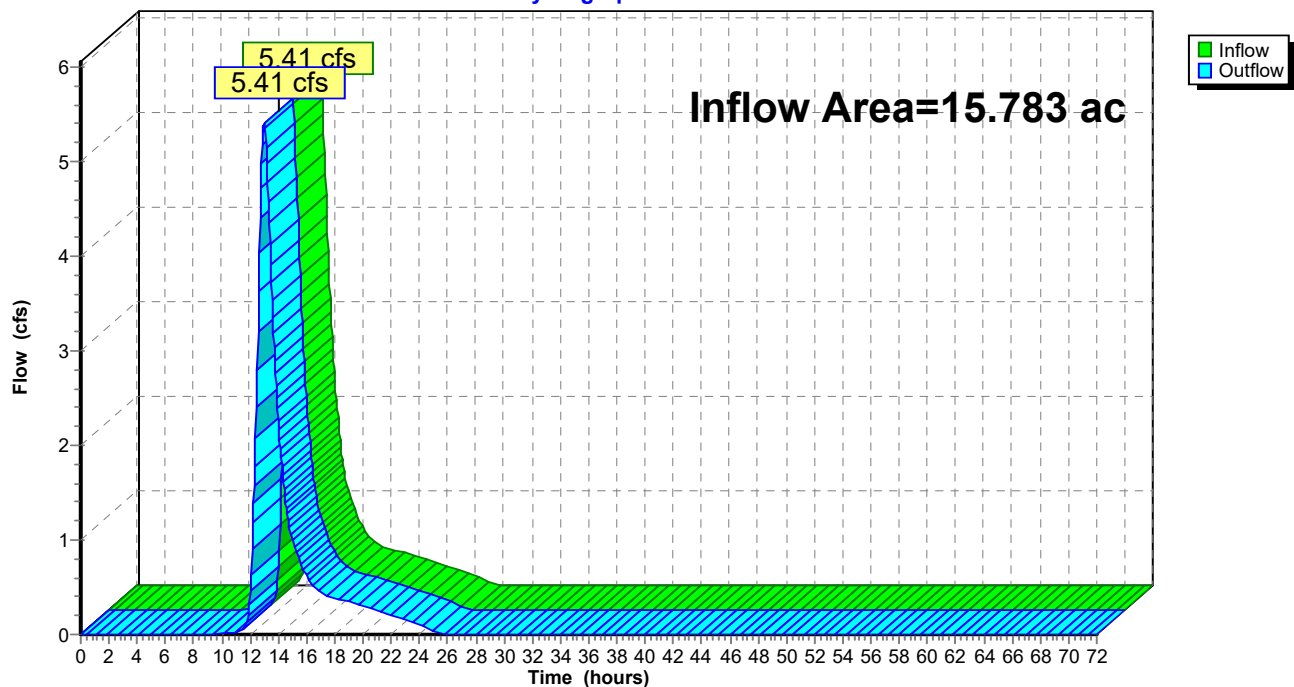




**Summary for Reach 1A&2B:**

Inflow Area = 15.783 ac, 0.72% Impervious, Inflow Depth = 0.73" for 2-Year event  
Inflow = 5.41 cfs @ 12.99 hrs, Volume= 0.965 af  
Outflow = 5.41 cfs @ 12.99 hrs, Volume= 0.965 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach ESE-QA : SE Quarter (Private Ditch A)

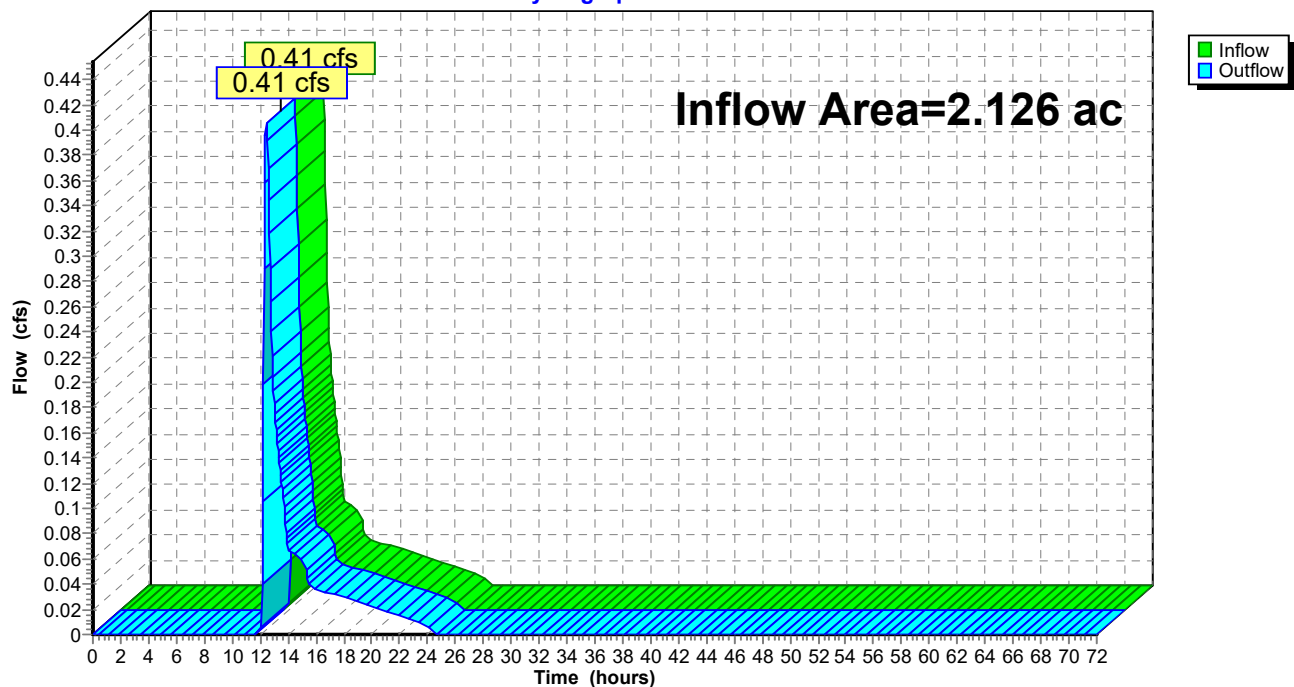
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach 1A&2B:****Hydrograph**

**Summary for Reach 7B&D:**

Inflow Area = 2.126 ac, 0.00% Impervious, Inflow Depth = 0.30" for 2-Year event  
Inflow = 0.41 cfs @ 12.45 hrs, Volume= 0.054 af  
Outflow = 0.41 cfs @ 12.45 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach SE-QB : SE Quarter (Private Ditch B)

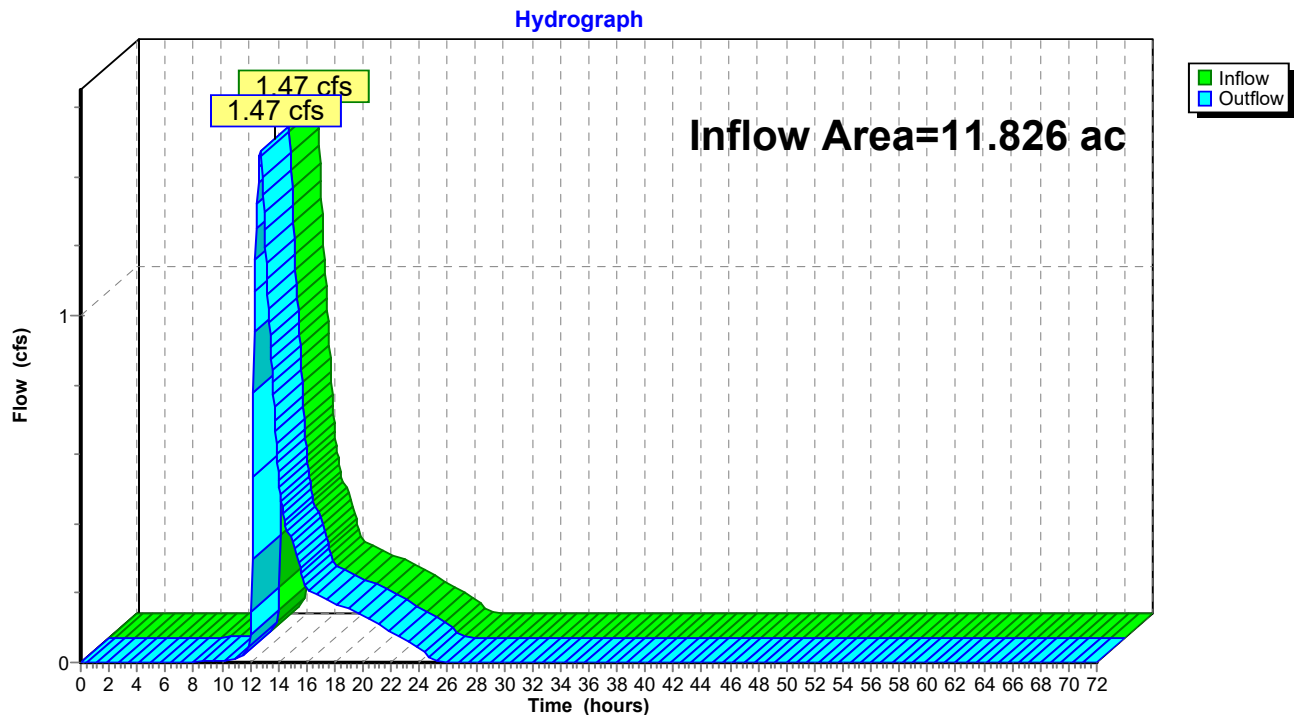
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach 7B&D:****Hydrograph**

**Summary for Reach EL-DITCH: Lexington Ave Ditch**

Inflow Area = 11.826 ac, 0.53% Impervious, Inflow Depth = 0.32" for 2-Year event  
Inflow = 1.47 cfs @ 12.71 hrs, Volume= 0.311 af  
Outflow = 1.47 cfs @ 12.71 hrs, Volume= 0.311 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PRE : Overall Pre-Development Runoff

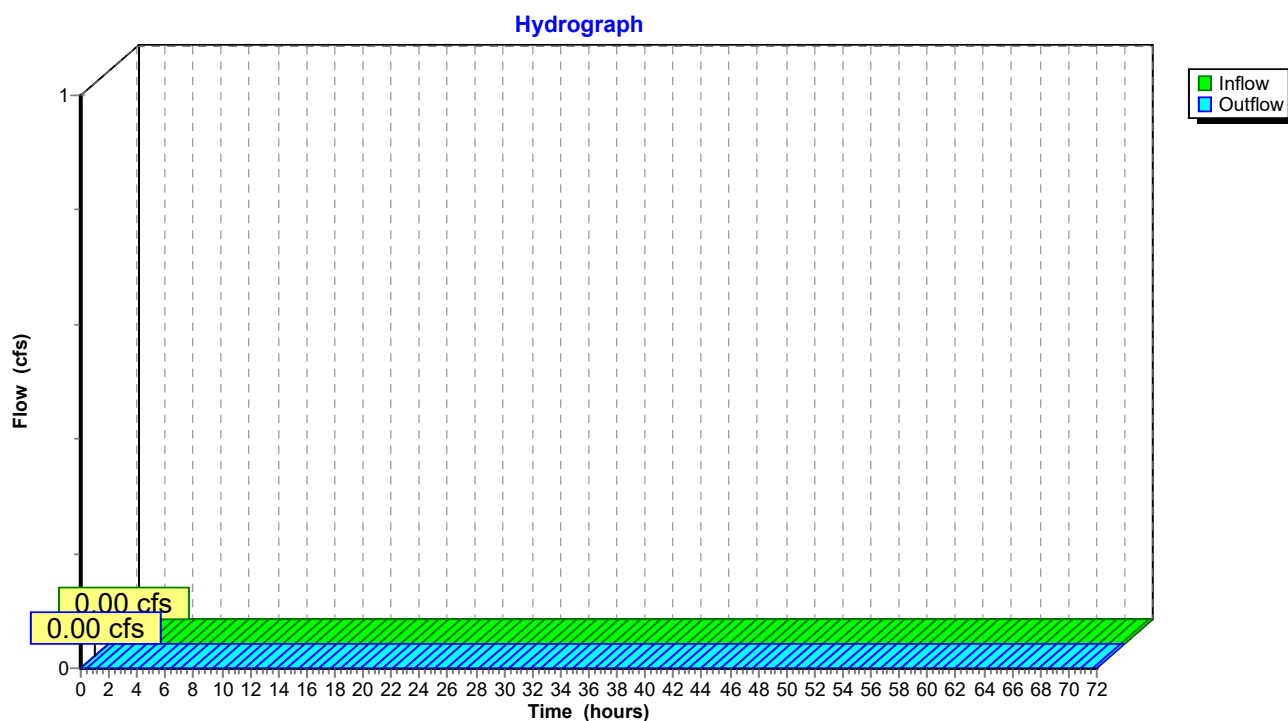
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach EL-DITCH: Lexington Ave Ditch**

**Summary for Reach EN: North Boundary**

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PRE : Overall Pre-Development Runoff

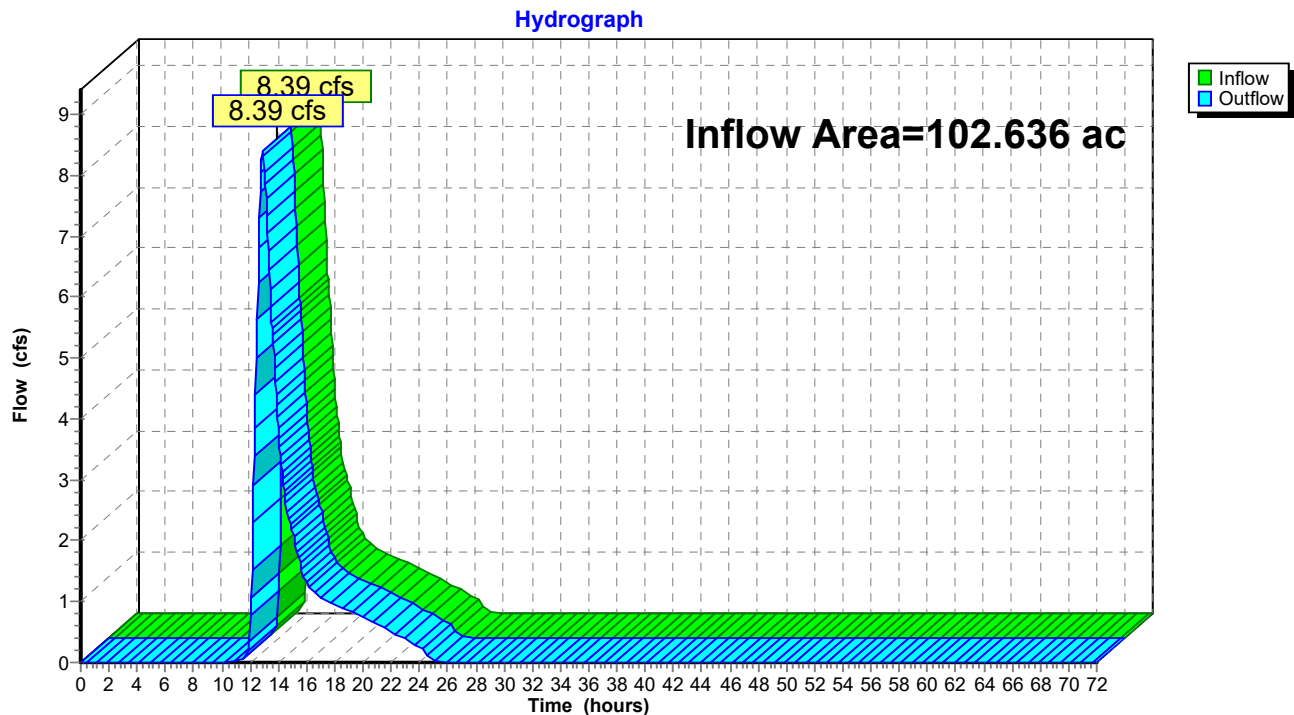
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach EN: North Boundary**

**Summary for Reach ES: South Total (Ditch 44-9)**

Inflow Area = 102.636 ac, 0.11% Impervious, Inflow Depth = 0.21" for 2-Year event  
Inflow = 8.39 cfs @ 12.88 hrs, Volume= 1.796 af  
Outflow = 8.39 cfs @ 12.88 hrs, Volume= 1.796 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PRE : Overall Pre-Development Runoff

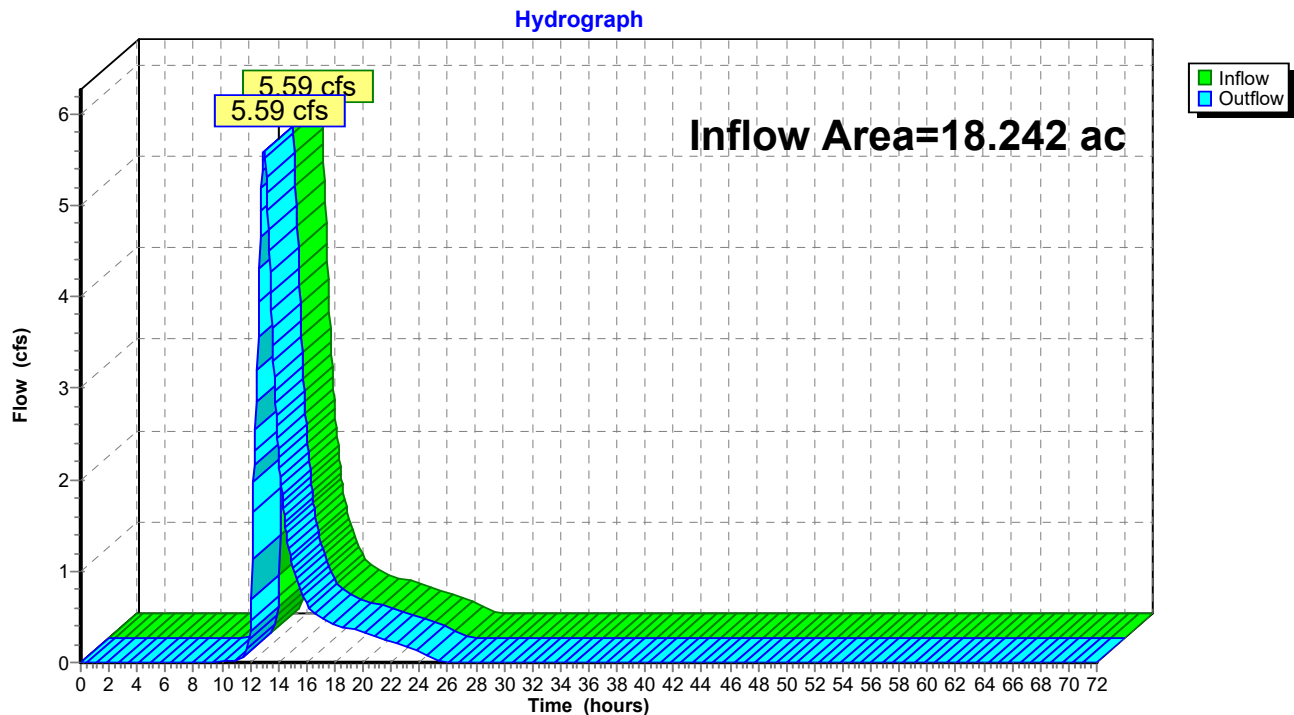
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach ES: South Total (Ditch 44-9)**

**Summary for Reach ESE-QA: SE Quarter (Private Ditch A)**

Inflow Area = 18.242 ac, 0.62% Impervious, Inflow Depth = 0.68" for 2-Year event  
Inflow = 5.59 cfs @ 12.99 hrs, Volume= 1.027 af  
Outflow = 5.59 cfs @ 12.99 hrs, Volume= 1.027 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach ES : South Total (Ditch 44-9)

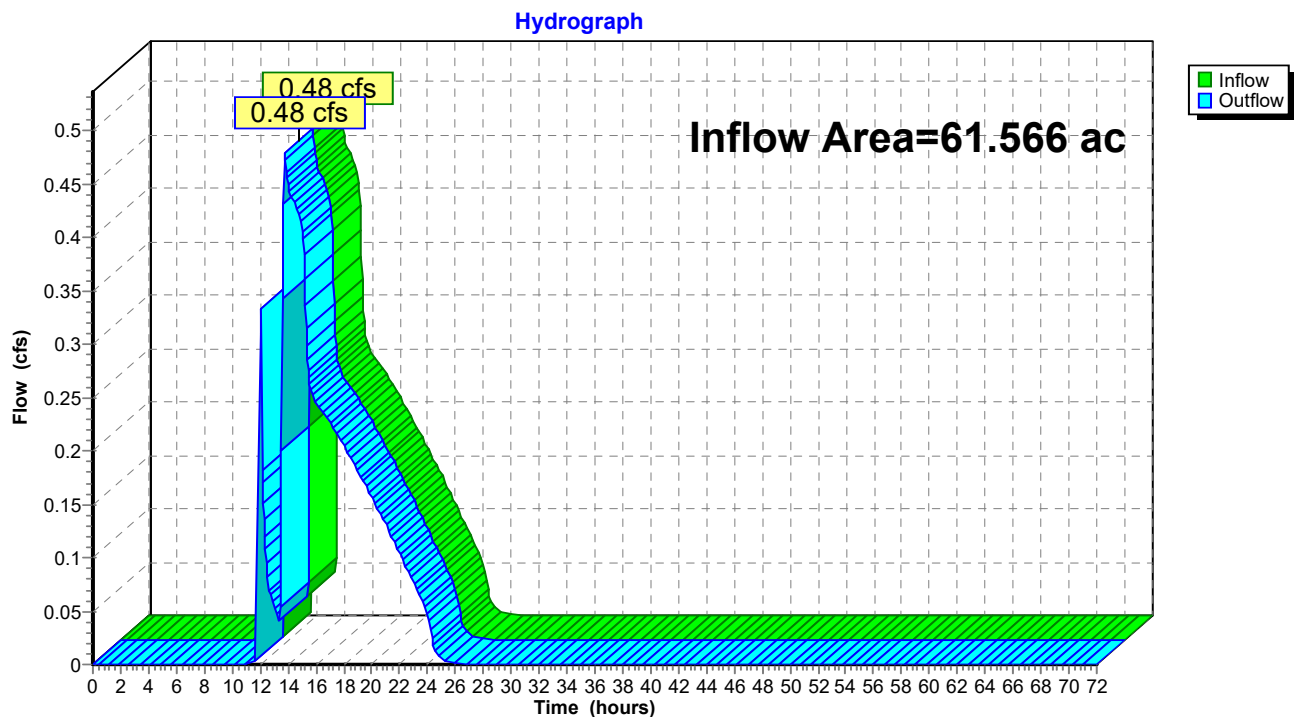
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach ESE-QA: SE Quarter (Private Ditch A)**

**Summary for Reach ESW-Q: Southwest Discharge**

Inflow Area = 61.566 ac, 0.00% Impervious, Inflow Depth = 0.04" for 2-Year event  
Inflow = 0.48 cfs @ 13.76 hrs, Volume= 0.192 af  
Outflow = 0.48 cfs @ 13.76 hrs, Volume= 0.192 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach ES : South Total (Ditch 44-9)

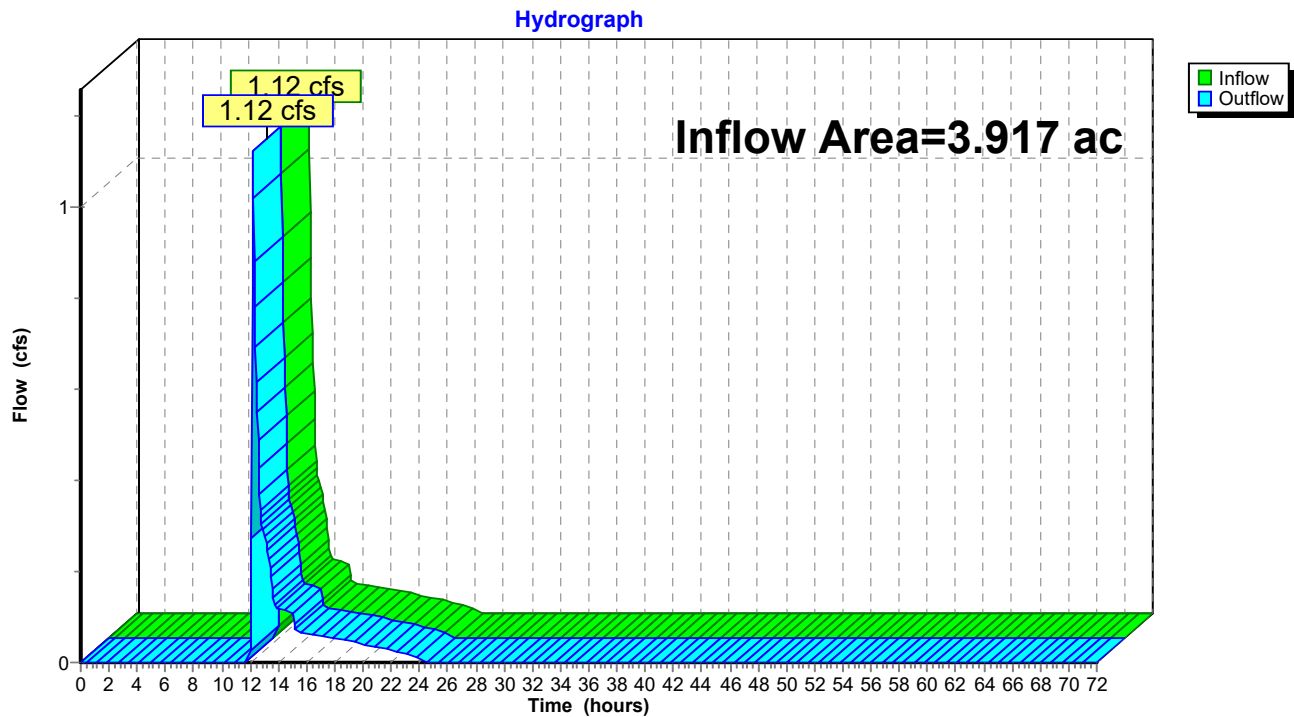
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach ESW-Q: Southwest Discharge**

**Summary for Reach EW: West Boundary**

Inflow Area = 3.917 ac, 0.00% Impervious, Inflow Depth = 0.30" for 2-Year event  
Inflow = 1.12 cfs @ 12.21 hrs, Volume= 0.099 af  
Outflow = 1.12 cfs @ 12.21 hrs, Volume= 0.099 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PRE : Overall Pre-Development Runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

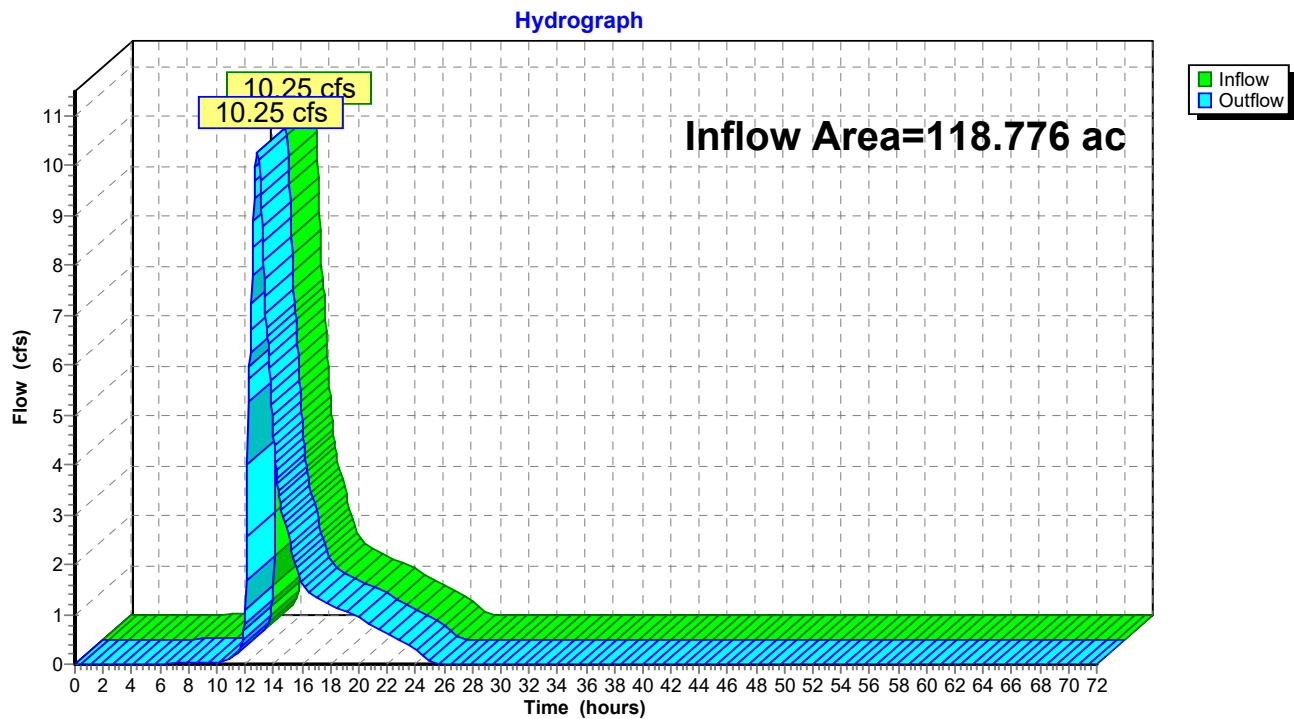
**Reach EW: West Boundary**



**Summary for Reach PRE: Overall Pre-Development Runoff**

Inflow Area = 118.776 ac, 0.48% Impervious, Inflow Depth = 0.23" for 2-Year event  
Inflow = 10.25 cfs @ 12.86 hrs, Volume= 2.291 af  
Outflow = 10.25 cfs @ 12.86 hrs, Volume= 2.291 af, Atten= 0%, Lag= 0.0 min

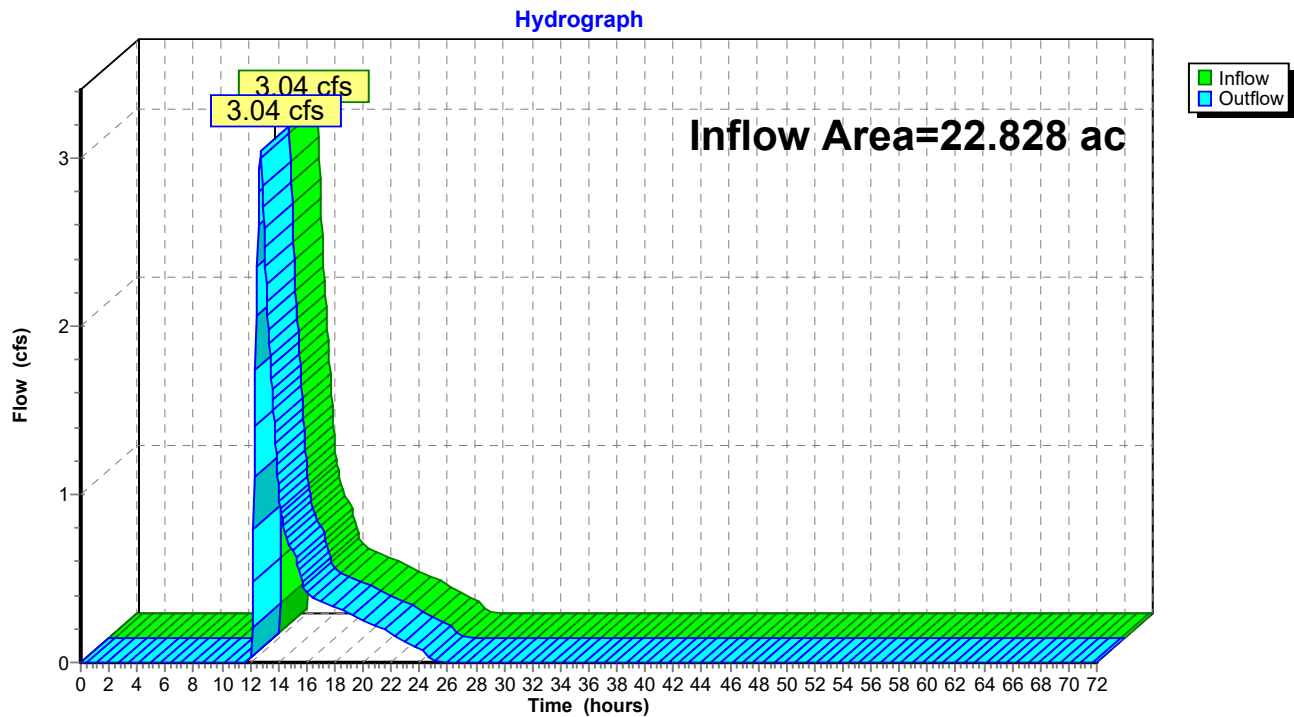
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PRE: Overall Pre-Development Runoff**

**Summary for Reach SE-QB: SE Quarter (Private Ditch B)**

Inflow Area = 22.828 ac, 0.00% Impervious, Inflow Depth = 0.30" for 2-Year event  
Inflow = 3.04 cfs @ 12.75 hrs, Volume= 0.576 af  
Outflow = 3.04 cfs @ 12.75 hrs, Volume= 0.576 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach ES : South Total (Ditch 44-9)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach SE-QB: SE Quarter (Private Ditch B)**

**Summary for Pond EB1A: Wetland 1A**

Inflow Area = 26.343 ac, 0.00% Impervious, Inflow Depth = 0.30" for 2-Year event  
 Inflow = 4.74 cfs @ 12.50 hrs, Volume= 0.665 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Pond EB1B : Wetland 1B  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Reach 1A&2B :  
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Reach EN : North Boundary

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 899.8' @ 25.50 hrs Surf.Area= 66,462 sf Storage= 28,966 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 899.0' | 2,338,451 cf  | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 899.0               | 1,799                | 0                         | 0                         |
| 900.0               | 77,989               | 39,894                    | 39,894                    |
| 901.0               | 193,333              | 135,661                   | 175,555                   |
| 902.0               | 368,575              | 280,954                   | 456,509                   |
| 903.0               | 576,105              | 472,340                   | 928,849                   |
| 904.0               | 715,414              | 645,760                   | 1,574,609                 |
| 905.0               | 812,270              | 763,842                   | 2,338,451                 |

| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                              |
|--------|-----------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 901.4' | <b>5.0' long x 10.0' breadth TO EB-1B</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                                                                                         |
| #2     | Secondary | 901.9' | <b>5.0' long x 10.0' breadth TO EB-2B</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                                                                                         |
| #3     | Tertiary  | 902.8' | <b>100.0' long x 5.0' breadth To North</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=899.0' TW=901.5' (Dynamic Tailwater)

↑1=TO EB-1B ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=899.0' TW=0.0' (Dynamic Tailwater)

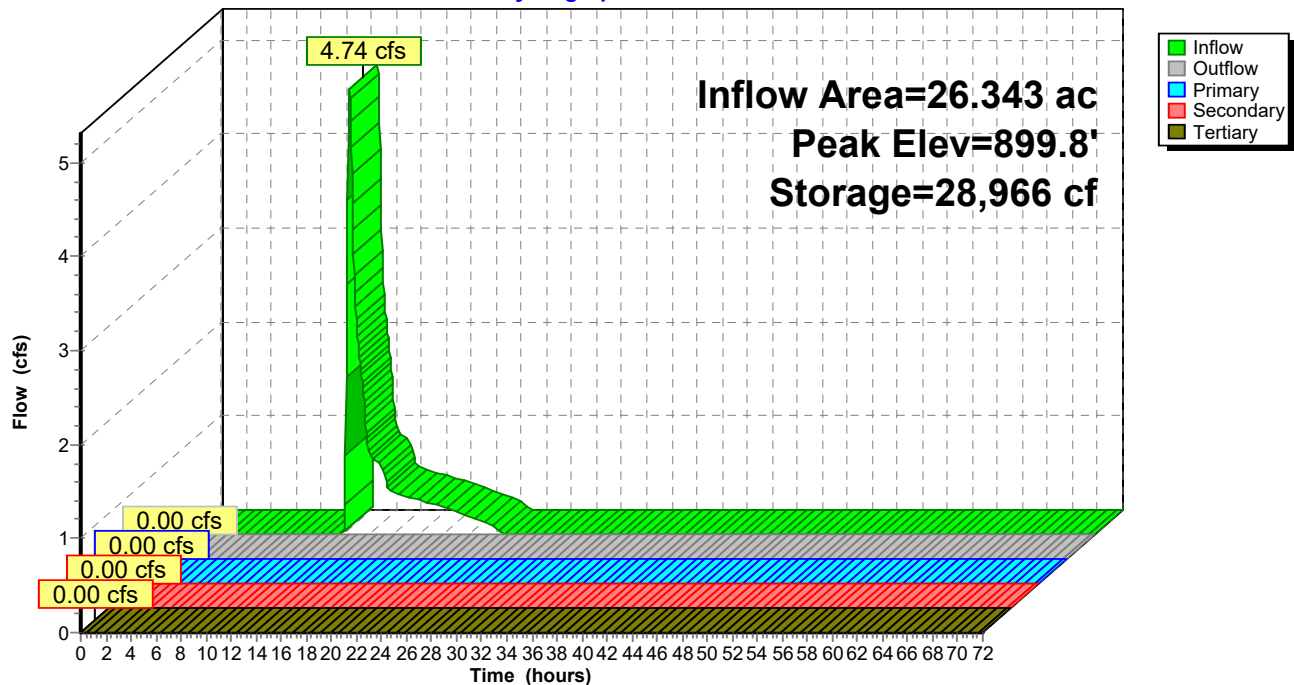
↑2=TO EB-2B ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=899.0' TW=0.0' (Dynamic Tailwater)

↑3=To North ( Controls 0.00 cfs)

**Pond EB1A: Wetland 1A**

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Pond EB1B: Wetland 1B**

Inflow Area = 31.354 ac, 0.00% Impervious, Inflow Depth = 0.05" for 2-Year event  
 Inflow = 1.05 cfs @ 12.37 hrs, Volume= 0.126 af  
 Outflow = 1.05 cfs @ 12.37 hrs, Volume= 0.126 af, Atten= 0%, Lag= 0.3 min  
 Primary = 1.05 cfs @ 12.37 hrs, Volume= 0.126 af  
 Routed to Pond EB1C : Wetland 1C

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 901.5' @ 12.37 hrs Surf.Area= 726 sf Storage= 16 cf

Plug-Flow detention time= 0.2 min calculated for 0.126 af (100% of inflow)  
 Center-of-Mass det. time= 0.2 min ( 894.1 - 893.9 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 901.5' | 194,422 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 901.5               | 55                   | 0                         | 0                         |
| 901.6               | 1,670                | 86                        | 86                        |
| 901.7               | 5,365                | 352                       | 438                       |
| 901.8               | 9,245                | 730                       | 1,168                     |
| 901.9               | 13,840               | 1,154                     | 2,323                     |
| 902.0               | 32,292               | 2,307                     | 4,629                     |
| 903.0               | 54,790               | 43,541                    | 48,170                    |
| 904.0               | 71,685               | 63,238                    | 111,408                   |
| 905.0               | 94,343               | 83,014                    | 194,422                   |

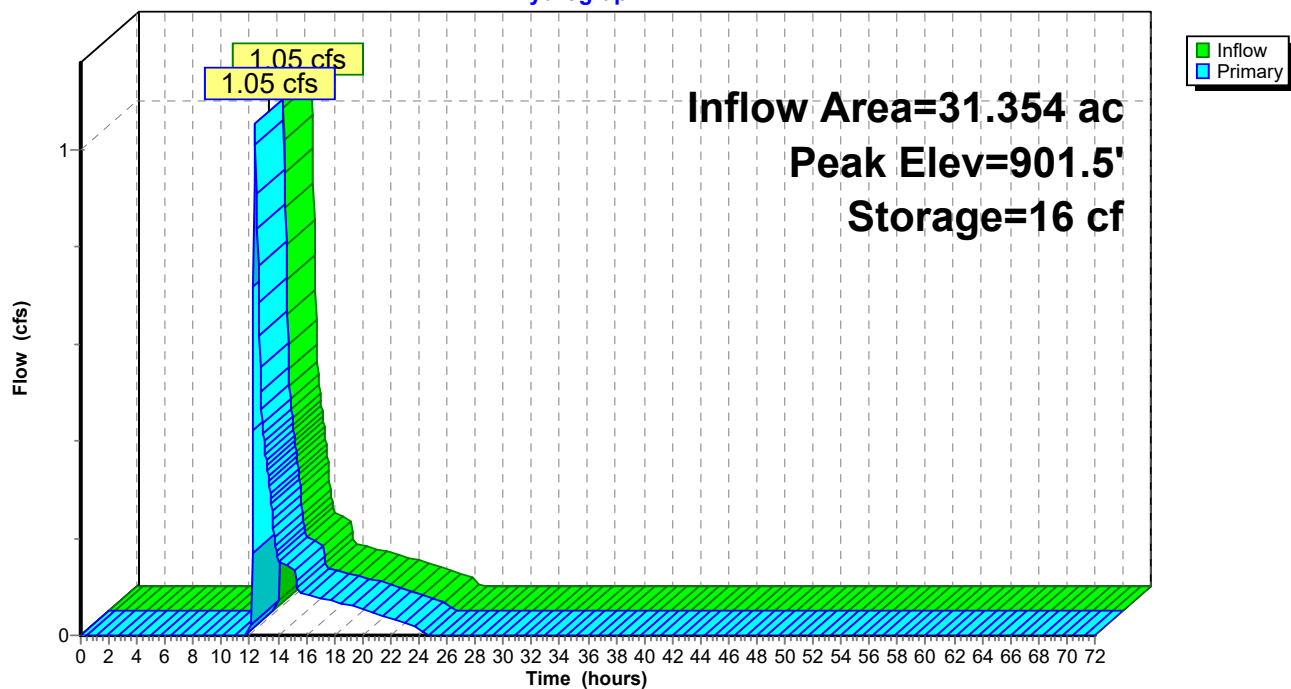
| Device | Routing | Invert | Outlet Devices                                                                                                                                       |
|--------|---------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 901.5' | <b>50.0' long x 10.0' breadth TO EB-1C</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=1.04 cfs @ 12.37 hrs HW=901.5' TW=900.7' (Dynamic Tailwater)

↑ **1=TO EB-1C** (Weir Controls 1.04 cfs @ 0.51 fps)

**Pond EB1B: Wetland 1B**

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Pond EB1C: Wetland 1C**

Inflow Area = 40.229 ac, 0.00% Impervious, Inflow Depth = 0.10" for 2-Year event  
 Inflow = 3.08 cfs @ 12.27 hrs, Volume= 0.351 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Pond EB6 : Wetland 6  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Reach EW : West Boundary

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 901.3' @ 25.35 hrs Surf.Area= 29,981 sf Storage= 15,269 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 900.1' | 577,352 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 900.1               | 174                  | 0                         | 0                         |
| 900.2               | 975                  | 57                        | 57                        |
| 900.5               | 5,734                | 1,006                     | 1,064                     |
| 901.0               | 20,570               | 6,576                     | 7,640                     |
| 901.5               | 36,160               | 14,183                    | 21,822                    |
| 901.8               | 83,591               | 17,963                    | 39,785                    |
| 902.0               | 90,000               | 17,359                    | 57,144                    |
| 903.0               | 100,000              | 95,000                    | 152,144                   |
| 904.0               | 233,558              | 166,779                   | 318,923                   |
| 905.0               | 283,299              | 258,429                   | 577,352                   |

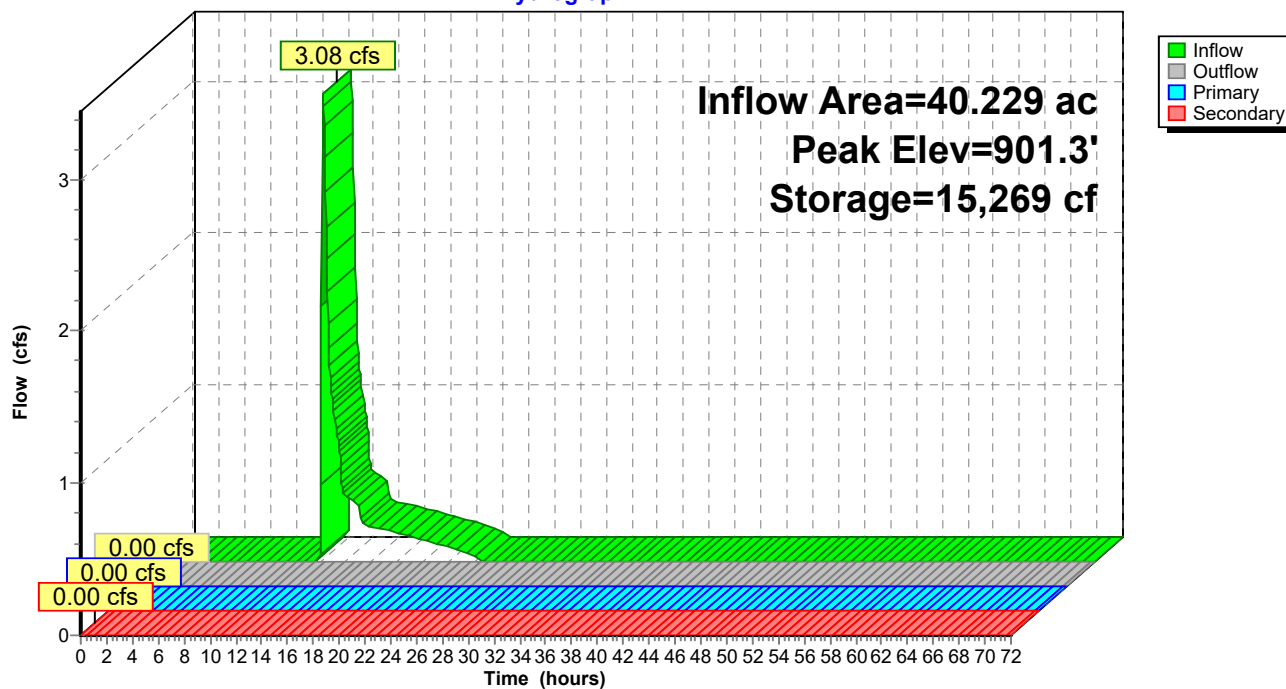
| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                             |
|--------|-----------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 902.3' | <b>5.0' long x 10.0' breadth To Wetland 6</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                                                                                    |
| #2     | Secondary | 901.7' | <b>100.0' long x 5.0' breadth To West</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=900.1' TW=895.0' (Dynamic Tailwater)  
 ↑1=To Wetland 6 ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=900.1' TW=0.0' (Dynamic Tailwater)  
 ↑2=To West ( Controls 0.00 cfs)

**Pond EB1C: Wetland 1C**

Hydrograph





**Summary for Pond EB6: Wetland 6**

Inflow Area = 60.713 ac, 0.00% Impervious, Inflow Depth = 0.07" for 2-Year event  
 Inflow = 3.56 cfs @ 12.25 hrs, Volume= 0.349 af  
 Outflow = 0.45 cfs @ 13.76 hrs, Volume= 0.170 af, Atten= 87%, Lag= 90.6 min  
 Primary = 0.45 cfs @ 13.76 hrs, Volume= 0.170 af  
 Routed to Reach ESW-Q : Southwest Discharge

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 896.1' @ 13.76 hrs Surf.Area= 23,485 sf Storage= 8,047 cf

Plug-Flow detention time= 282.6 min calculated for 0.170 af (49% of inflow)  
 Center-of-Mass det. time= 149.9 min ( 1,037.3 - 887.5 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 895.0' | 227,572 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

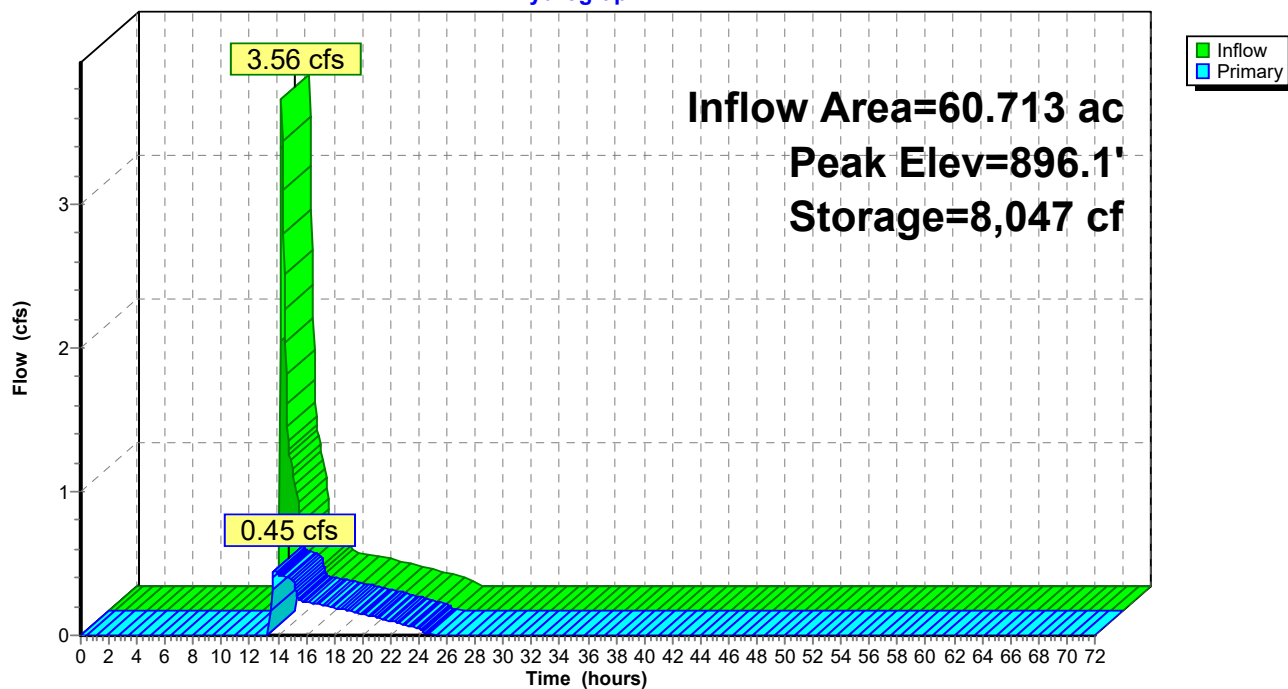
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 895.0               | 500                  | 0                         | 0                         |
| 896.0               | 11,662               | 6,081                     | 6,081                     |
| 897.0               | 117,362              | 64,512                    | 70,593                    |
| 898.0               | 196,595              | 156,979                   | 227,572                   |

| Device | Routing | Invert | Outlet Devices                                                                                                                                                                                                                                                    |
|--------|---------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 896.1' | <b>150.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=0.45 cfs @ 13.76 hrs HW=896.1' TW=0.0' (Dynamic Tailwater)  
 ↑1=**Broad-Crested Rectangular Weir**(Weir Controls 0.45 cfs @ 0.25 fps)

**Pond EB6: Wetland 6**

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Pond EB7A: Wetland 7A**

Inflow Area = 6.661 ac, 0.00% Impervious, Inflow Depth = 0.10" for 2-Year event  
 Inflow = 0.43 cfs @ 12.41 hrs, Volume= 0.054 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond EB6 : Wetland 6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 898.0' @ 25.20 hrs Surf.Area= 9,119 sf Storage= 2,368 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 897.5' | 24,008 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 897.5               | 1,042                | 0                         | 0                         |
| 898.0               | 9,707                | 2,687                     | 2,687                     |
| 899.0               | 32,934               | 21,321                    | 24,008                    |

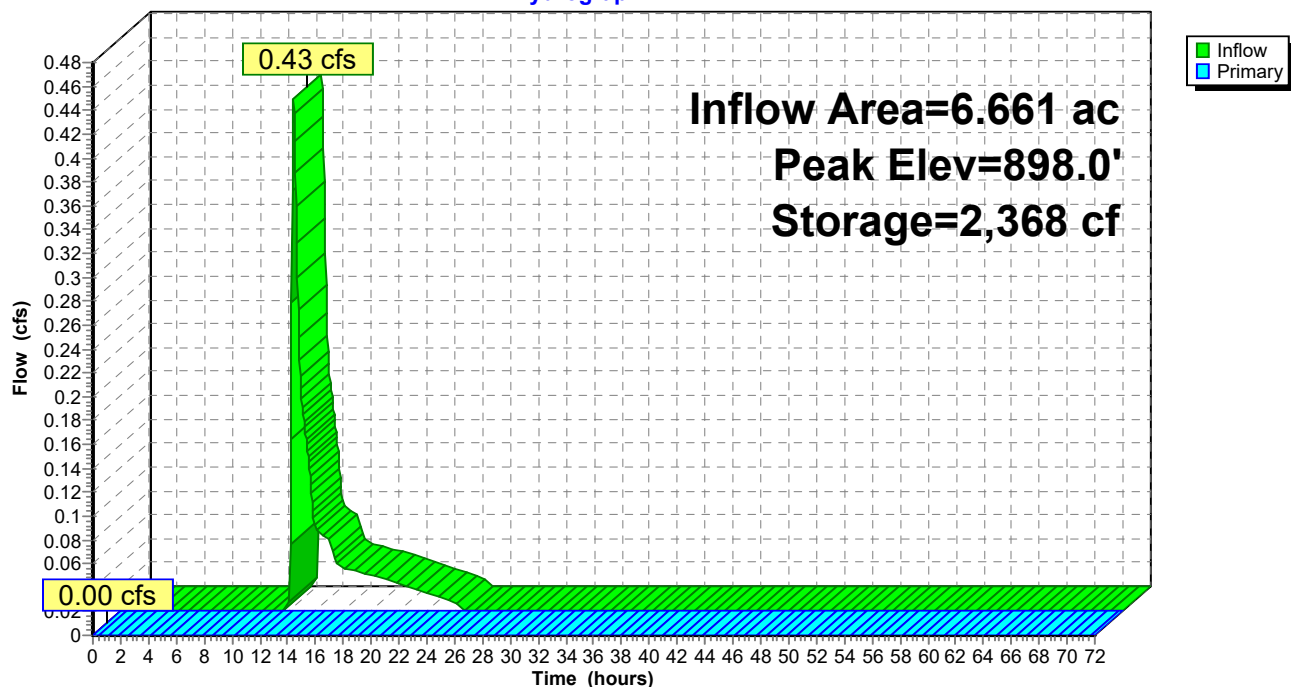
| Device | Routing | Invert | Outlet Devices                                                                                                                                      |
|--------|---------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 898.2' | <b>100.0' long x 10.0' breadth TO EB6</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=897.5' TW=895.0' (Dynamic Tailwater)

↑**1=TO EB6** ( Controls 0.00 cfs)

# Pond EB7A: Wetland 7A

Hydrograph



**Summary for Pond EB7B: Wetland 7B**

Inflow Area = 4.507 ac, 0.00% Impervious, Inflow Depth = 0.27" for 2-Year event  
 Inflow = 1.14 cfs @ 12.22 hrs, Volume= 0.103 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Pond EB7A : Wetland 7A  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Reach 7B&D :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 898.3' @ 24.60 hrs Surf.Area= 18,188 sf Storage= 4,478 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 897.7' | 32,037 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 897.7               | 330                  | 0                         | 0                         |
| 898.0               | 7,784                | 1,217                     | 1,217                     |
| 898.5               | 28,502               | 9,072                     | 10,289                    |
| 899.0               | 58,492               | 21,749                    | 32,037                    |

| Device | Routing   | Invert | Outlet Devices                                                                                                                                       |
|--------|-----------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 898.3' | <b>50.0' long x 10.0' breadth TO EB-7D</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |
| #2     | Secondary | 899.4' | <b>100.0' long x 10.0' breadth TO EB7A</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=897.7' TW=897.5' (Dynamic Tailwater)

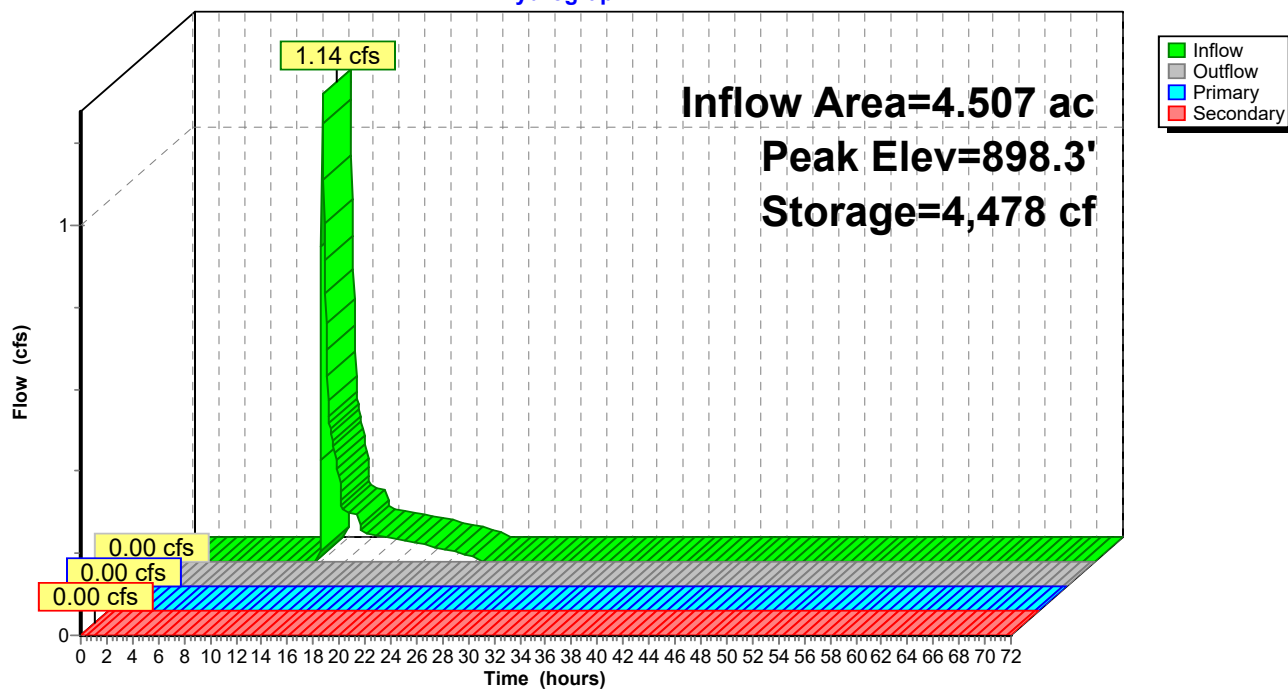
↑ **1=TO EB-7D** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=897.7' TW=0.0' (Dynamic Tailwater)

↑ **2=TO EB7A** ( Controls 0.00 cfs)

**Pond EB7B: Wetland 7B**

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Pond EB7C: Wetland 7C**

Inflow Area = 0.435 ac, 0.00% Impervious, Inflow Depth = 0.30" for 2-Year event  
 Inflow = 0.12 cfs @ 12.23 hrs, Volume= 0.011 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond EB7B : Wetland 7B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 898.3' @ 24.60 hrs Surf.Area= 1,665 sf Storage= 478 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 897.7' | 5,675 cf      | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

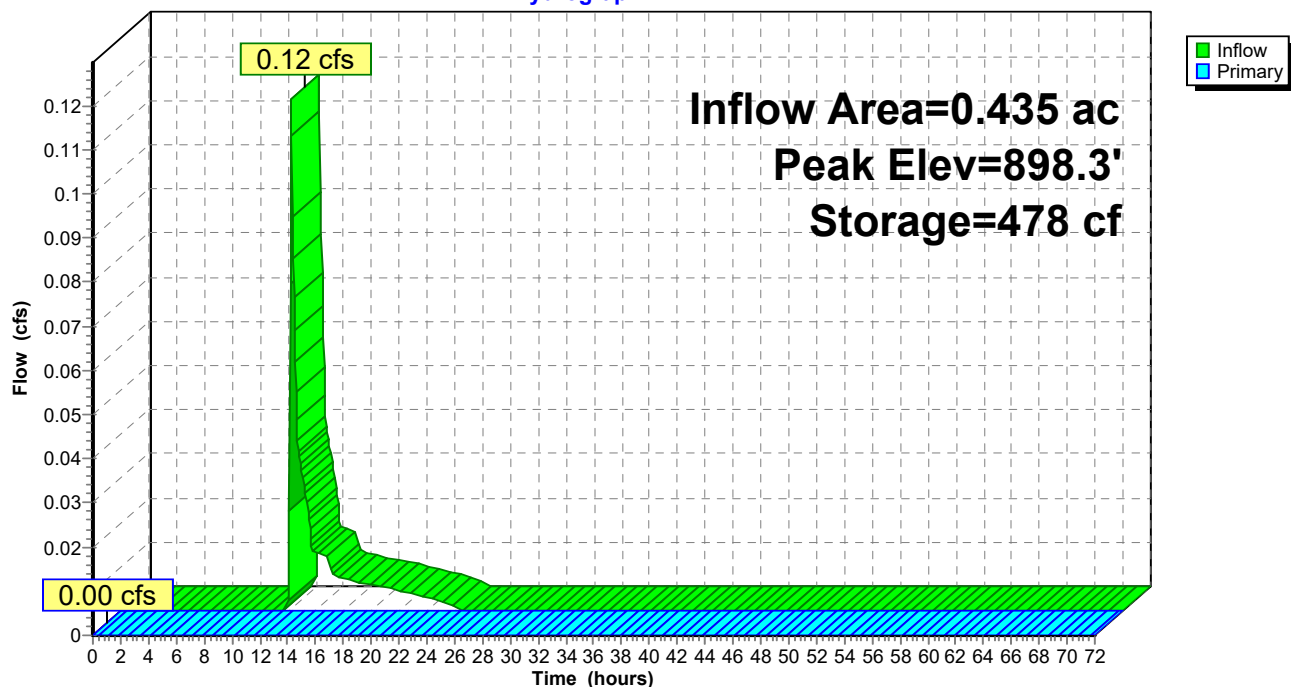
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 897.7               | 122                  | 0                         | 0                         |
| 898.0               | 753                  | 131                       | 131                       |
| 898.5               | 2,342                | 774                       | 905                       |
| 899.0               | 4,602                | 1,736                     | 2,641                     |
| 899.5               | 7,533                | 3,034                     | 5,675                     |

| Device | Routing | Invert | Outlet Devices                                                                                                                                      |
|--------|---------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 899.6' | <b>50.0' long x 10.0' breadth TO EB7B</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=897.7' TW=897.7' (Dynamic Tailwater)  
 ↑1=TO EB7B ( Controls 0.00 cfs)

**Pond EB7C: Wetland 7C**

Hydrograph





**LDP24010 Ham Lake****MSE 24-hr 3 10-Year Rainfall=4.21"**

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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

|                                         |                                                                                                                                               |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SubcatchmentEB-1A:</b>               | Runoff Area=1,147,516 sf 0.00% Impervious Runoff Depth=0.92"<br>Flow Length=474' Tc=25.5 min CN=61 Runoff=20.42 cfs 2.023 af                  |
| <b>SubcatchmentEB-1B:</b>               | Runoff Area=218,275 sf 0.00% Impervious Runoff Depth=0.92"<br>Flow Length=383' Tc=18.0 min CN=61 Runoff=4.71 cfs 0.385 af                     |
| <b>SubcatchmentEB-1C:</b>               | Runoff Area=386,594 sf 0.00% Impervious Runoff Depth=0.92"<br>Flow Length=207' Tc=10.0 min CN=61 Runoff=11.14 cfs 0.682 af                    |
| <b>SubcatchmentEB-1CR: EB-1C (Road)</b> | Runoff Area=17,279 sf 100.00% Impervious Runoff Depth=3.97"<br>Flow Length=207' Tc=10.0 min CN=WQ Runoff=2.08 cfs 0.131 af                    |
| <b>SubcatchmentEB-1D:</b>               | Runoff Area=170,630 sf 0.00% Impervious Runoff Depth=0.92"<br>Flow Length=207' Tc=9.0 min CN=61 Runoff=5.10 cfs 0.301 af                      |
| <b>SubcatchmentEB-2A:</b>               | Runoff Area=347,380 sf 0.00% Impervious Runoff Depth=0.92"<br>Flow Length=800' Tc=47.0 min CN=WQ Runoff=4.26 cfs 0.612 af                     |
| <b>SubcatchmentEB-2B:</b>               | Runoff Area=635,146 sf 0.00% Impervious Runoff Depth=1.63"<br>Flow Length=1,600' Tc=67.7 min CN=WQ Runoff=12.10 cfs 1.980 af                  |
| <b>SubcatchmentEB-2C:</b>               | Runoff Area=52,343 sf 9.46% Impervious Runoff Depth=1.21"<br>Flow Length=253' Tc=12.6 min CN=WQ Runoff=1.77 cfs 0.121 af                      |
| <b>SubcatchmentEB-2D:</b>               | Runoff Area=79,363 sf 3.45% Impervious Runoff Depth=1.03"<br>Flow Length=276' Tc=15.6 min CN=WQ Runoff=2.06 cfs 0.156 af                      |
| <b>SubcatchmentEB-3:</b>                | Runoff Area=88,397 sf 0.00% Impervious Runoff Depth=0.92"<br>Flow Length=294' Tc=22.7 min CN=WQ Runoff=1.68 cfs 0.156 af                      |
| <b>SubcatchmentEB-4:</b>                | Runoff Area=107,117 sf 0.00% Impervious Runoff Depth=0.92"<br>Flow Length=303' Tc=12.9 min CN=WQ Runoff=2.73 cfs 0.189 af                     |
| <b>SubcatchmentEB-5:</b>                | Runoff Area=833,088 sf 0.00% Impervious Runoff Depth=0.92"<br>Flow Length=1,137' Slope=0.0040 '/' Tc=42.8 min CN=WQ Runoff=10.83 cfs 1.469 af |
| <b>SubcatchmentEB-6:</b>                | Runoff Area=602,150 sf 0.00% Impervious Runoff Depth=0.92"<br>Flow Length=531' Slope=0.0500 '/' Tc=11.1 min CN=61 Runoff=16.62 cfs 1.062 af   |
| <b>SubcatchmentEB-7A:</b>               | Runoff Area=93,805 sf 0.00% Impervious Runoff Depth=0.92"<br>Flow Length=212' Tc=20.1 min CN=61 Runoff=1.90 cfs 0.165 af                      |
| <b>SubcatchmentEB-7B:</b>               | Runoff Area=177,383 sf 0.00% Impervious Runoff Depth=0.92"<br>Flow Length=181' Tc=9.5 min CN=61 Runoff=5.20 cfs 0.313 af                      |
| <b>SubcatchmentEB-7C:</b>               | Runoff Area=18,945 sf 0.00% Impervious Runoff Depth=0.92"<br>Tc=10.0 min CN=61 Runoff=0.55 cfs 0.033 af                                       |

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|                                                   |                                                                                                                                                                            |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SubcatchmentEB-7D:</b>                         | Runoff Area=92,630 sf 0.00% Impervious Runoff Depth=0.92"<br>Flow Length=632' Tc=22.2 min CN=61 Runoff=1.78 cfs 0.163 af                                                   |
| <b>SubcatchmentEB-8A:</b>                         | Runoff Area=37,143 sf 0.00% Impervious Runoff Depth=0.92"<br>Tc=0.0 min CN=61 Runoff=1.53 cfs 0.065 af                                                                     |
| <b>SubcatchmentEB-8B:</b>                         | Runoff Area=68,682 sf 0.00% Impervious Runoff Depth=0.92"<br>Flow Length=256' Tc=13.9 min CN=61 Runoff=1.69 cfs 0.121 af                                                   |
| <b>Reach 1A&amp;2B:</b>                           | Inflow=12.37 cfs 2.101 af<br>Outflow=12.37 cfs 2.101 af                                                                                                                    |
| <b>Reach 7B&amp;D:</b>                            | Inflow=1.78 cfs 0.163 af<br>Outflow=1.78 cfs 0.163 af                                                                                                                      |
| <b>Reach EL-DITCH: Lexington Ave Ditch</b>        | Inflow=5.86 cfs 0.924 af<br>Outflow=5.86 cfs 0.924 af                                                                                                                      |
| <b>Reach EN: North Boundary</b>                   | Inflow=0.00 cfs 0.000 af<br>Outflow=0.00 cfs 0.000 af                                                                                                                      |
| <b>Reach ES: South Total (Ditch 44-9)</b>         | Inflow=27.97 cfs 5.228 af<br>Outflow=27.97 cfs 5.228 af                                                                                                                    |
| <b>Reach ESE-QA: SE Quarter (Private Ditch A)</b> | Inflow=12.86 cfs 2.290 af<br>Outflow=12.86 cfs 2.290 af                                                                                                                    |
| <b>Reach ESW-Q: Southwest Discharge</b>           | Inflow=11.15 cfs 1.185 af<br>Outflow=11.15 cfs 1.185 af                                                                                                                    |
| <b>Reach EW: West Boundary</b>                    | Inflow=5.10 cfs 0.617 af<br>Outflow=5.10 cfs 0.617 af                                                                                                                      |
| <b>Reach PRE: Overall Pre-DevelopmentRunoff</b>   | Inflow=35.28 cfs 6.901 af<br>Outflow=35.28 cfs 6.901 af                                                                                                                    |
| <b>Reach SE-QB: SE Quarter (Private Ditch B)</b>  | Inflow=12.36 cfs 1.753 af<br>Outflow=12.36 cfs 1.753 af                                                                                                                    |
| <b>Pond EB1A: Wetland 1A</b>                      | Peak Elev=900.5' Storage=88,118 cf Inflow=20.42 cfs 2.023 af<br>Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af |
| <b>Pond EB1B: Wetland 1B</b>                      | Peak Elev=901.7' Storage=556 cf Inflow=4.71 cfs 0.385 af<br>Outflow=4.71 cfs 0.375 af                                                                                      |
| <b>Pond EB1C: Wetland 1C</b>                      | Peak Elev=901.7' Storage=33,640 cf Inflow=14.47 cfs 1.056 af<br>Primary=0.00 cfs 0.000 af Secondary=0.69 cfs 0.316 af Outflow=0.69 cfs 0.316 af                            |
| <b>Pond EB6: Wetland 6</b>                        | Peak Elev=896.2' Storage=10,471 cf Inflow=16.62 cfs 1.298 af<br>Outflow=10.81 cfs 1.120 af                                                                                 |

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**Pond EB7A: Wetland 7A**Peak Elev=898.2' Storage=5,481 cf Inflow=1.90 cfs 0.354 af  
Outflow=1.07 cfs 0.237 af**Pond EB7B: Wetland 7B**Peak Elev=898.3' Storage=6,165 cf Inflow=5.20 cfs 0.313 af  
Primary=0.84 cfs 0.188 af Secondary=0.00 cfs 0.000 af Outflow=0.84 cfs 0.188 af**Pond EB7C: Wetland 7C**Peak Elev=898.7' Storage=1,455 cf Inflow=0.55 cfs 0.033 af  
Outflow=0.00 cfs 0.000 af**Total Runoff Area = 118.776 ac Runoff Volume = 10.126 af Average Runoff Depth = 1.02"**  
**99.52% Pervious = 118.202 ac 0.48% Impervious = 0.573 ac**

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MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Subcatchment EB-1A:**

Runoff = 20.42 cfs @ 12.42 hrs, Volume= 2.023 af, Depth= 0.92"  
Routed to Pond EB1A : Wetland 1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

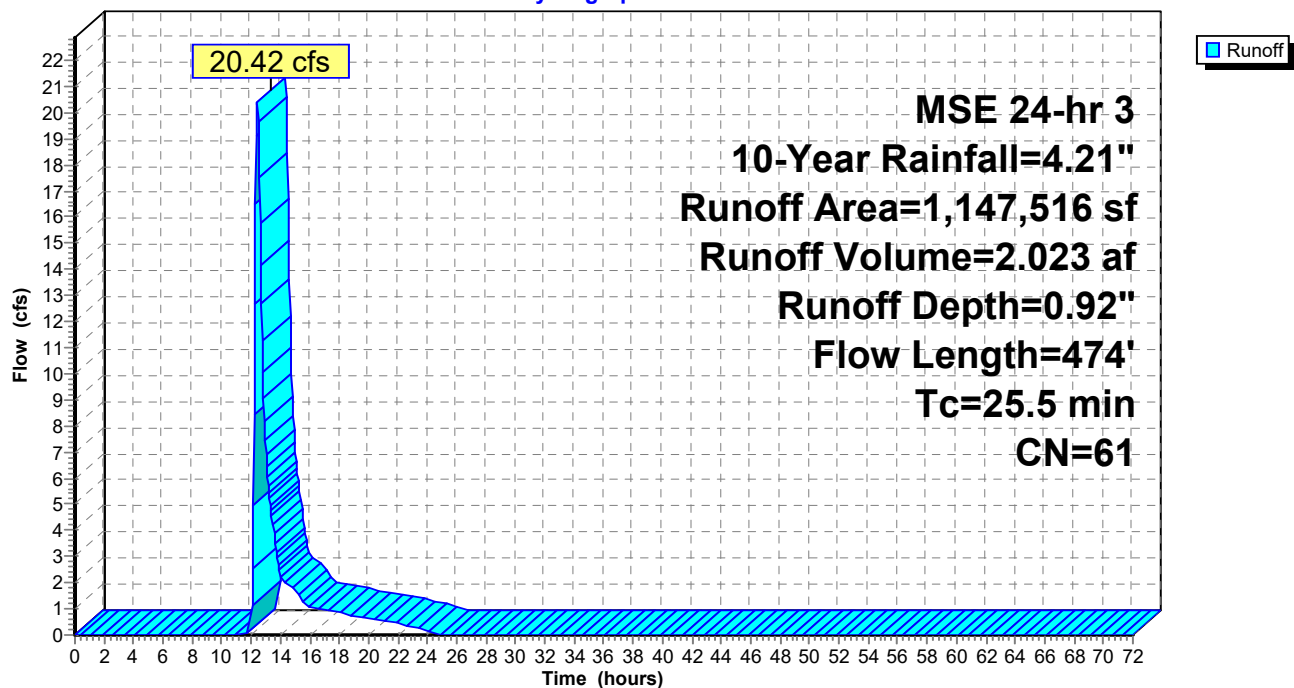
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 1,147,516 | 61 | >75% Grass cover, Good, HSG B |
| 1,147,516 |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 16.8     | 100           | 0.0154        | 0.10              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 2.83"                |
| 8.7      | 374           | 0.0105        | 0.72              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 25.5     | 474           | Total         |                   |                |                                                                      |

**Subcatchment EB-1A:**

Hydrograph



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**Summary for Subcatchment EB-1B:**

Runoff = 4.71 cfs @ 12.31 hrs, Volume= 0.385 af, Depth= 0.92"  
Routed to Pond EB1B : Wetland 1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

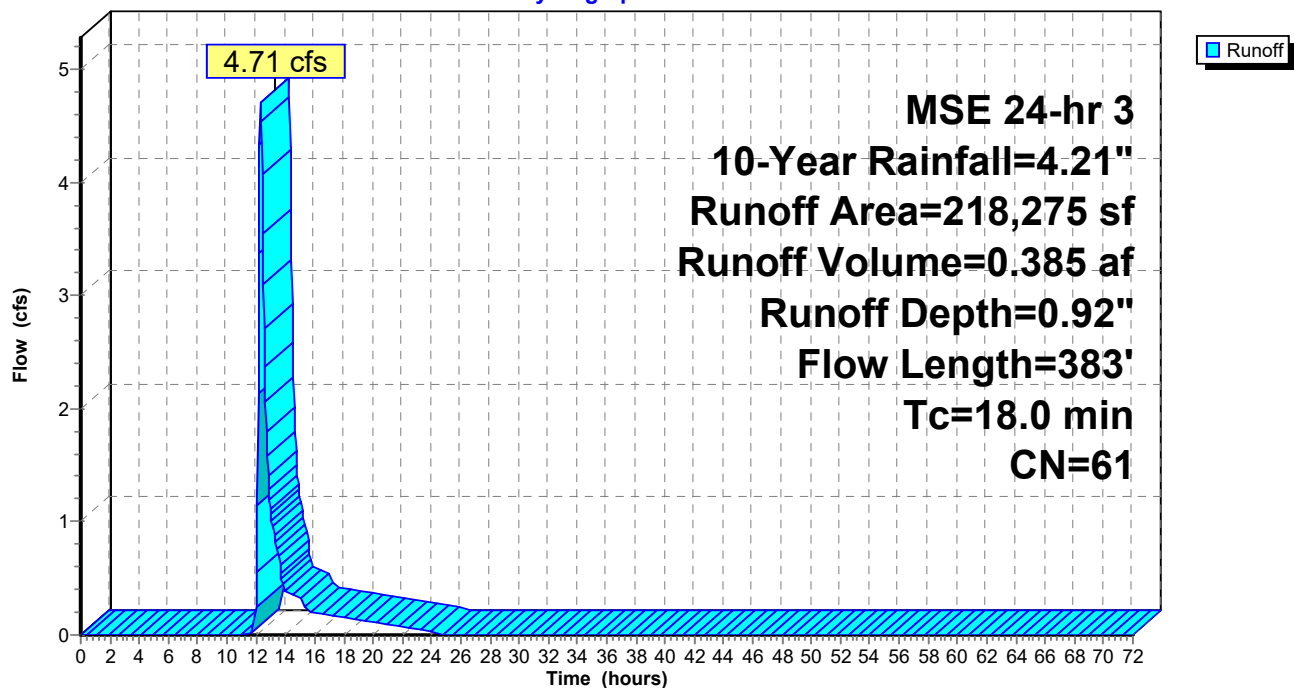
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 218,275   | 61 | >75% Grass cover, Good, HSG B |
| 218,275   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 12.3     | 100           | 0.0131        | 0.14              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 5.7      | 283           | 0.0141        | 0.83              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 18.0     | 383           | Total         |                   |                |                                                                      |

**Subcatchment EB-1B:**

Hydrograph



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**Summary for Subcatchment EB-1C:**

Runoff = 11.14 cfs @ 12.20 hrs, Volume= 0.682 af, Depth= 0.92"  
Routed to Pond EB1C : Wetland 1C

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

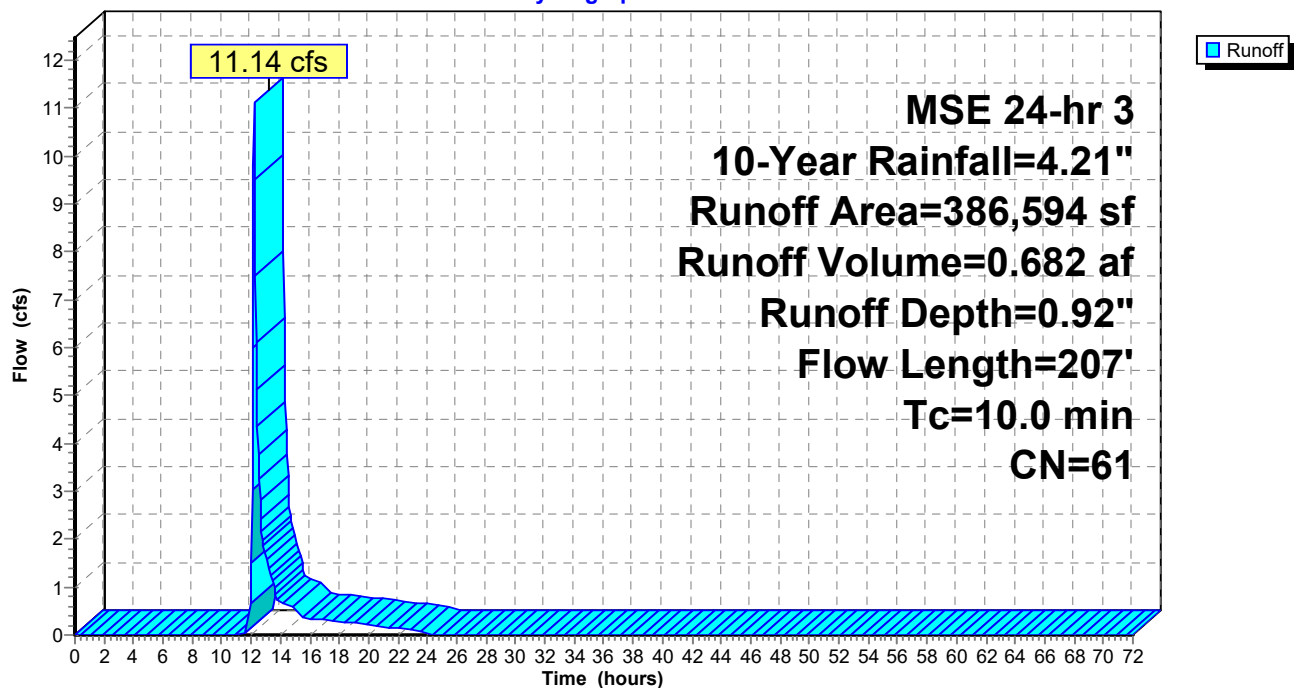
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 386,594   | 61 | >75% Grass cover, Good, HSG B |
| 386,594   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 8.9      | 100           | 0.0300        | 0.19              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.1      | 107           | 0.0556        | 1.65              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 10.0     | 207           | Total         |                   |                |                                                                      |

**Subcatchment EB-1C:**

Hydrograph



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**Summary for Subcatchment EB-1CR: EB-1C (Road)**

Runoff = 2.08 cfs @ 12.17 hrs, Volume= 0.131 af, Depth= 3.97"

Routed to Reach PRE : Overall Pre-Development Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

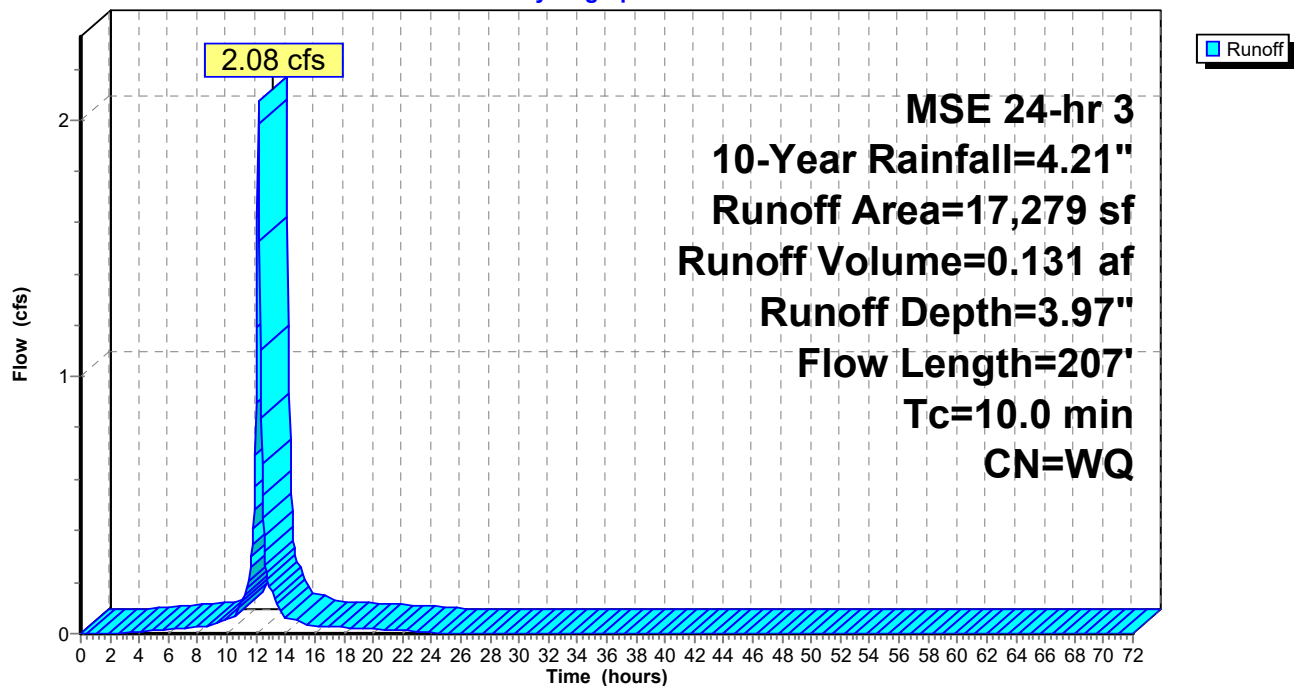
| Area (sf) | CN | Description             |
|-----------|----|-------------------------|
| 3,074     | 98 | Roofs, HSG A            |
| 14,205    | 98 | Paved parking, HSG A    |
| 17,279    |    | Weighted Average        |
| 17,279    |    | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 8.9      | 100           | 0.0300        | 0.19              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.1      | 107           | 0.0556        | 1.65              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 10.0     | 207           | Total         |                   |                |                                                                      |

**Subcatchment EB-1CR: EB-1C (Road)**

Hydrograph



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MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Subcatchment EB-1D:**

Runoff = 5.10 cfs @ 12.18 hrs, Volume= 0.301 af, Depth= 0.92"

Routed to Reach EW : West Boundary

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

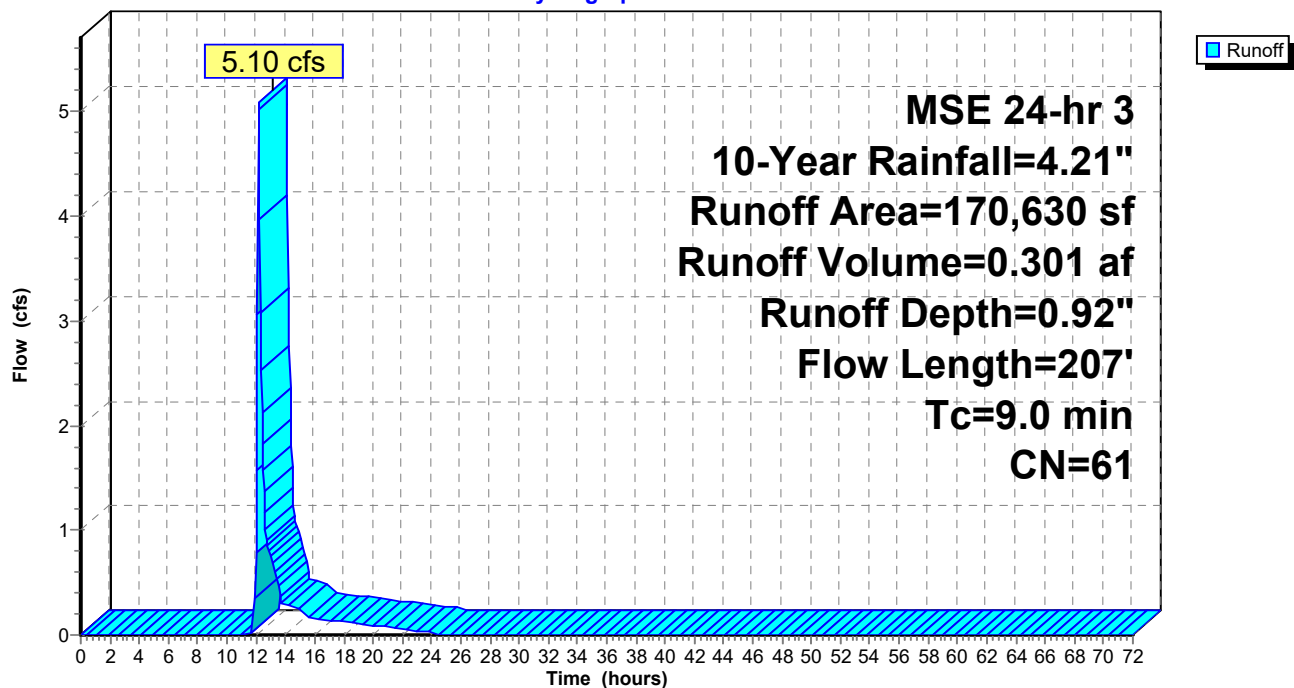
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 170,630   | 61 | >75% Grass cover, Good, HSG B |
| 170,630   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 7.9      | 100           | 0.0400        | 0.21              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.1      | 107           | 0.0556        | 1.65              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 9.0      | 207           | Total         |                   |                |                                                                      |

**Subcatchment EB-1D:**

Hydrograph





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MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Subcatchment EB-2A:**

Runoff = 4.26 cfs @ 12.73 hrs, Volume= 0.612 af, Depth= 0.92"

Routed to Reach EL-DITCH : Lexington Ave Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

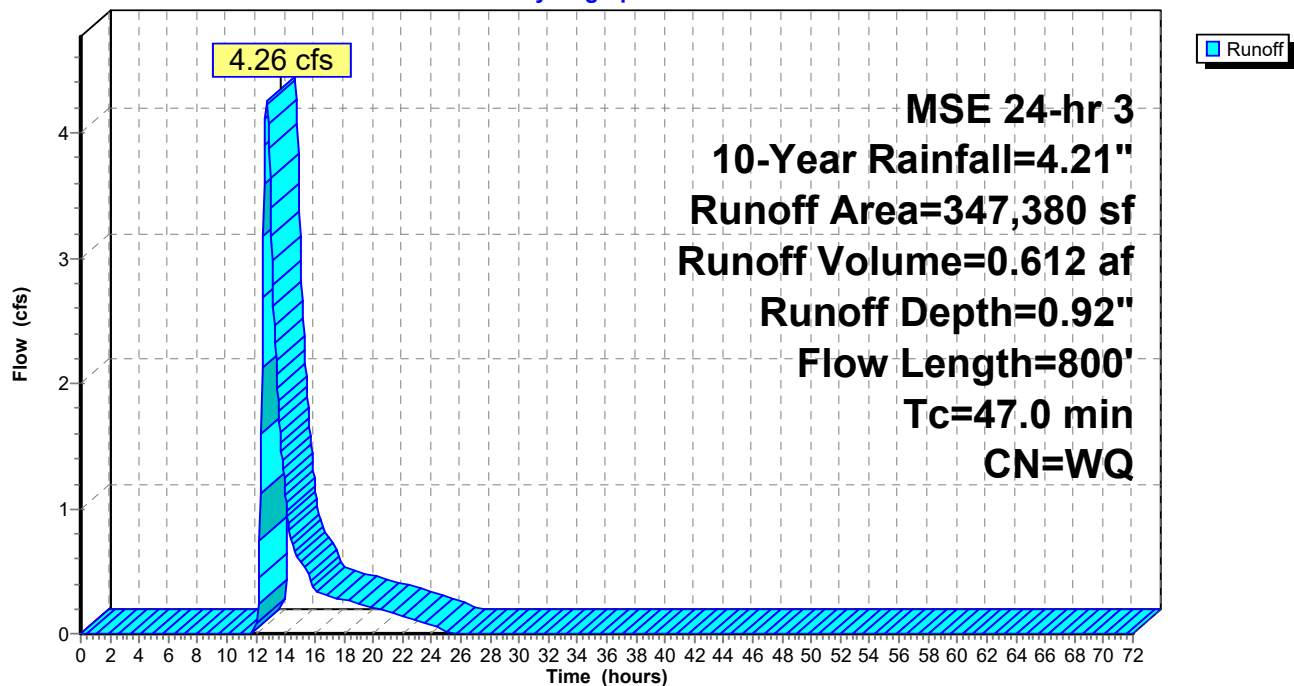
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 189,274   | 61 | >75% Grass cover, Good, HSG B |
| 158,106   | 61 | >75% Grass cover, Good, HSG B |
| 347,380   |    | Weighted Average              |
| 347,380   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 23.4     | 100           | 0.0068        | 0.07              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 2.83"                |
| 23.6     | 700           | 0.0050        | 0.49              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 47.0     | 800           | Total         |                   |                |                                                                      |

**Subcatchment EB-2A:**

Hydrograph



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MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Subcatchment EB-2B:**

Runoff = 12.10 cfs @ 12.97 hrs, Volume= 1.980 af, Depth= 1.63"  
Routed to Reach 1A&2B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

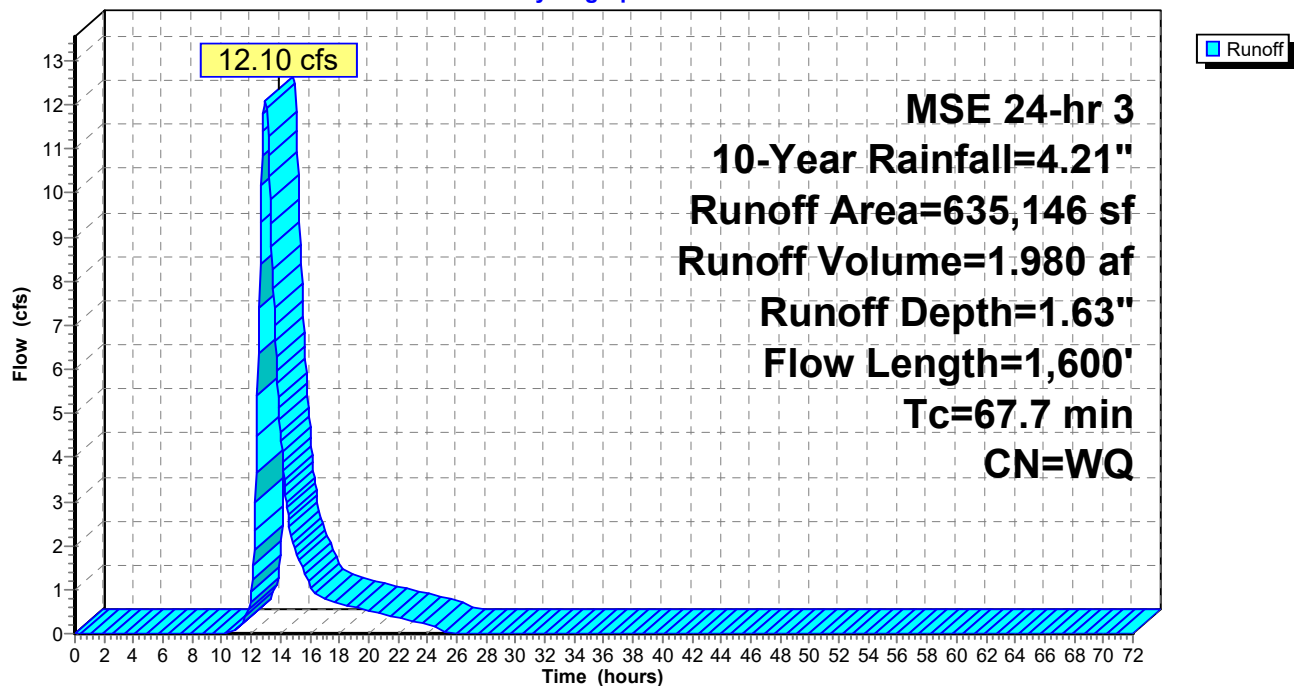
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 288,060   | 61 | >75% Grass cover, Good, HSG B |
| 347,086   | 80 | >75% Grass cover, Good, HSG D |
| 635,146   |    | Weighted Average              |
| 635,146   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 17.2     | 100           | 0.0147        | 0.10              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 2.83"                |
| 50.5     | 1,500         | 0.0050        | 0.49              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 67.7     | 1,600         | Total         |                   |                |                                                                      |

**Subcatchment EB-2B:**

Hydrograph



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MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Subcatchment EB-2C:**

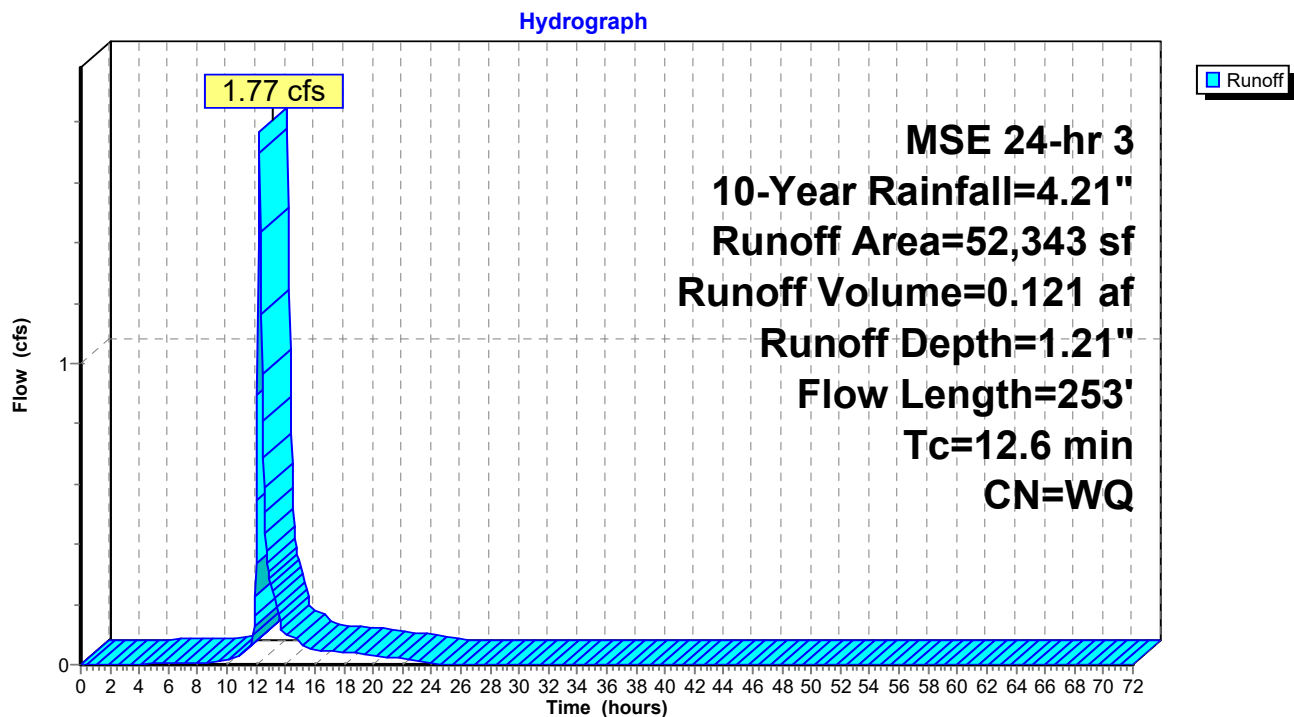
Runoff = 1.77 cfs @ 12.22 hrs, Volume= 0.121 af, Depth= 1.21"  
Routed to Reach 1A&2B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 4,554     | 98 | Roofs, HSG A                  |
| 397       | 98 | Paved parking, HSG A          |
| 47,392    | 61 | >75% Grass cover, Good, HSG B |
| 52,343    |    | Weighted Average              |
| 47,392    |    | 90.54% Pervious Area          |
| 4,951     |    | 9.46% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.1     | 100           | 0.0214        | 0.16              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 2.5      | 153           | 0.0205        | 1.00              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 12.6     | 253           | Total         |                   |                |                                                                      |

**Subcatchment EB-2C:**

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**Summary for Subcatchment EB-2D:**

Runoff = 2.06 cfs @ 12.27 hrs, Volume= 0.156 af, Depth= 1.03"

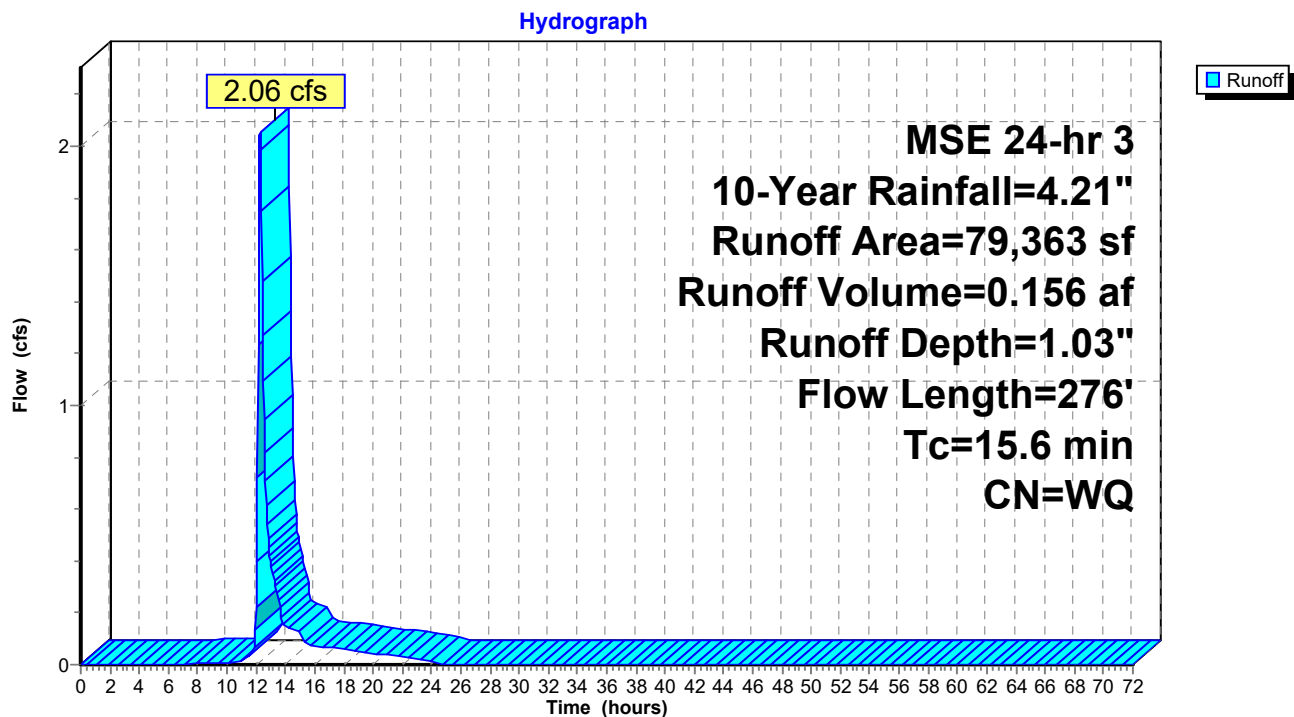
Routed to Reach EL-DITCH : Lexington Ave Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 485       | 98 | Roofs, HSG A                  |
| 2,253     | 98 | Paved parking, HSG A          |
| 76,625    | 61 | >75% Grass cover, Good, HSG B |
| 79,363    |    | Weighted Average              |
| 76,625    |    | 96.55% Pervious Area          |
| 2,738     |    | 3.45% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.6     | 100           | 0.0191        | 0.16              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 5.0      | 176           | 0.0070        | 0.59              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 15.6     | 276           | Total         |                   |                |                                                                      |

**Subcatchment EB-2D:**

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**Summary for Subcatchment EB-3:**

Runoff = 1.68 cfs @ 12.38 hrs, Volume= 0.156 af, Depth= 0.92"

Routed to Reach EL-DITCH : Lexington Ave Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

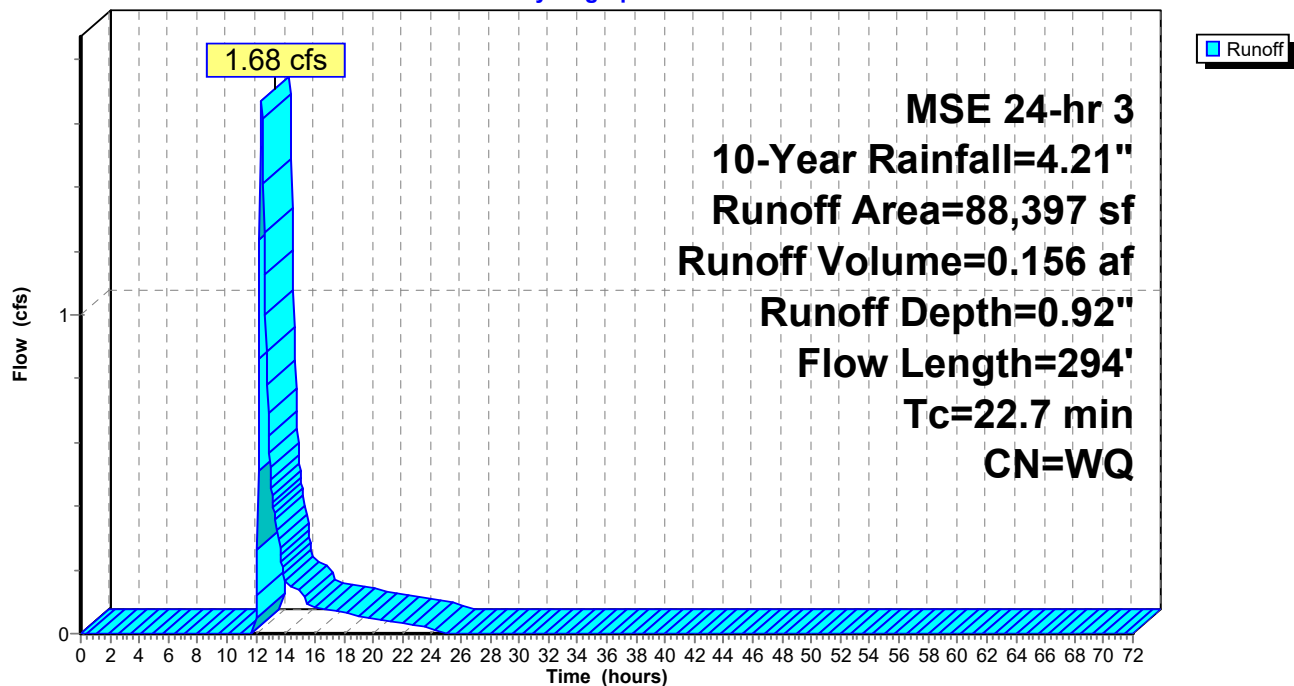
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 44,923    | 61 | >75% Grass cover, Good, HSG B |
| 43,474    | 61 | >75% Grass cover, Good, HSG B |
| 88,397    |    | Weighted Average              |
| 88,397    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 20.0     | 100           | 0.0100        | 0.08              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 2.83"                |
| 2.7      | 194           | 0.0289        | 1.19              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 22.7     | 294           | Total         |                   |                |                                                                      |

**Subcatchment EB-3:**

Hydrograph



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MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Subcatchment EB-4:**

Runoff = 2.73 cfs @ 12.23 hrs, Volume= 0.189 af, Depth= 0.92"

Routed to Reach ESE-QA : SE Quarter (Private Ditch A)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

MSE 24-hr 3 10-Year Rainfall=4.21"

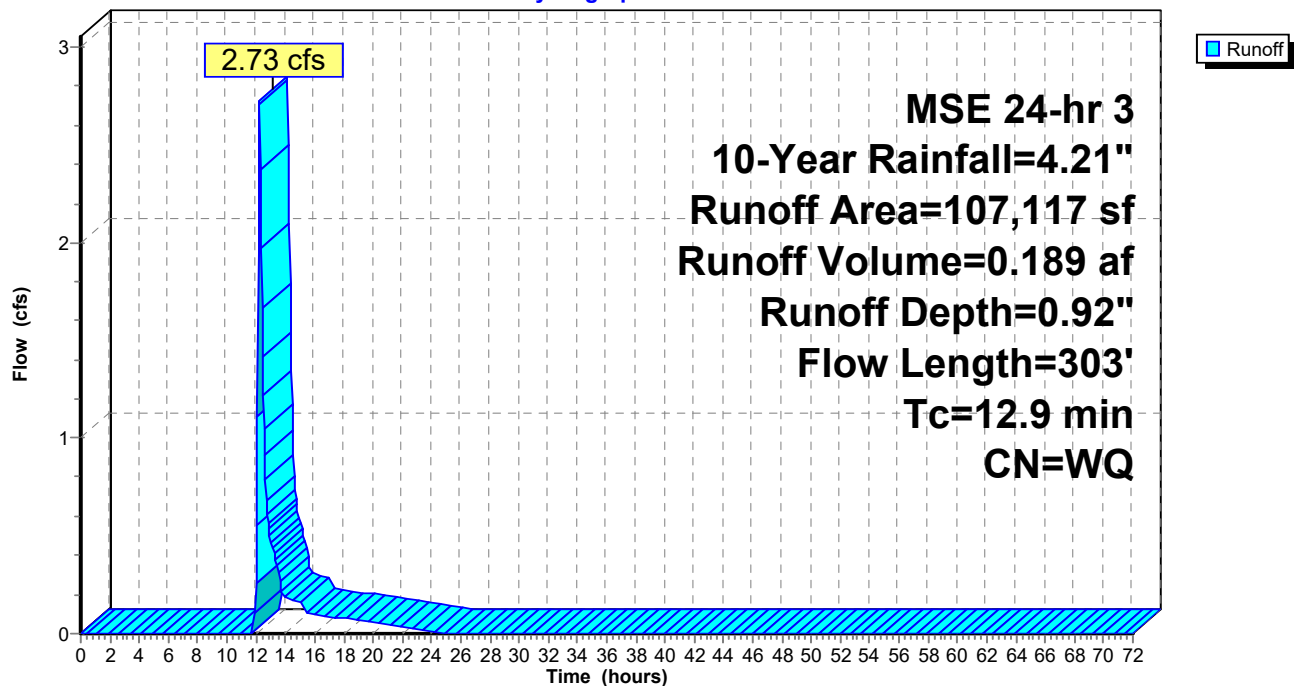
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 32,988    | 61 | >75% Grass cover, Good, HSG B |
| 74,129    | 61 | >75% Grass cover, Good, HSG B |
| 107,117   |    | Weighted Average              |
| 107,117   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 9.0      | 100           | 0.0285        | 0.18              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 3.9      | 203           | 0.0150        | 0.86              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 12.9     | 303           | Total         |                   |                |                                                                      |

**Subcatchment EB-4:**

Hydrograph



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MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Subcatchment EB-5:**

Runoff = 10.83 cfs @ 12.68 hrs, Volume= 1.469 af, Depth= 0.92"

Routed to Reach SE-QB : SE Quarter (Private Ditch B)

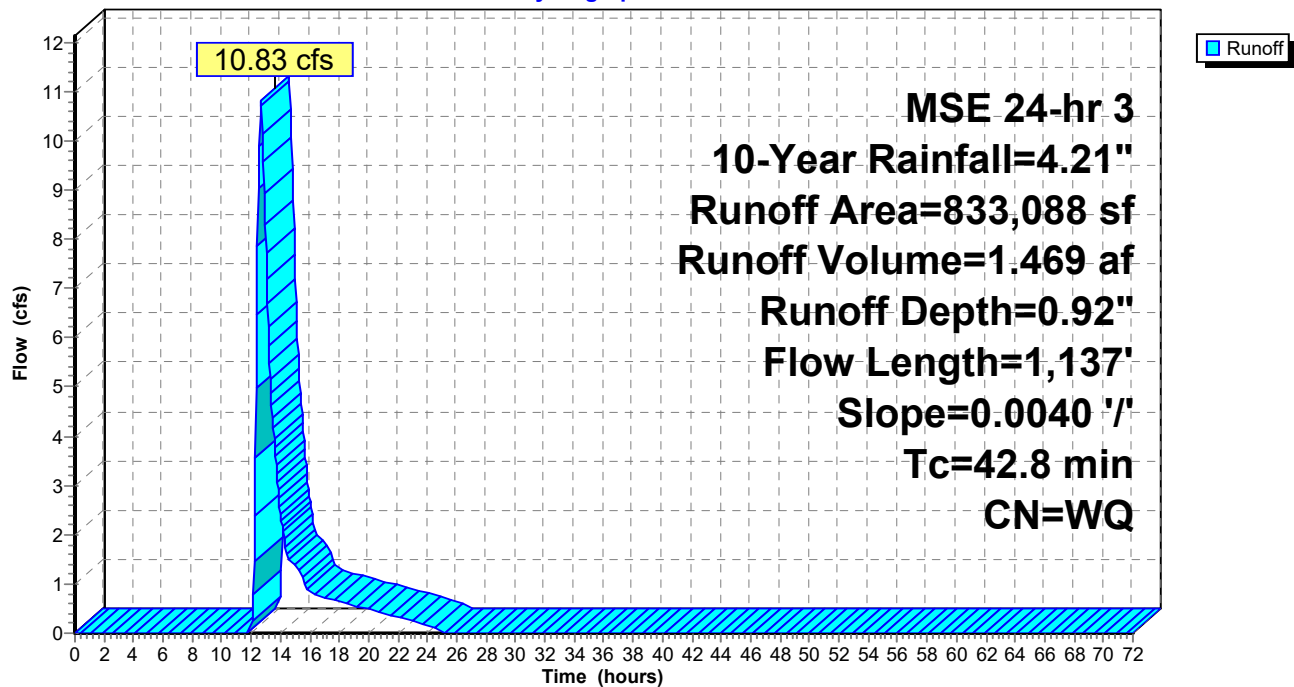
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 293,681   | 61 | >75% Grass cover, Good, HSG B |
| 539,407   | 61 | >75% Grass cover, Good, HSG B |
| 833,088   |    | Weighted Average              |
| 833,088   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                   |
|----------|---------------|---------------|-------------------|----------------|---------------------------------------------------------------|
| 42.8     | 1,137         | 0.0040        | 0.44              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps |

**Subcatchment EB-5:**

Hydrograph



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**Summary for Subcatchment EB-6:**

Runoff = 16.62 cfs @ 12.21 hrs, Volume= 1.062 af, Depth= 0.92"  
Routed to Pond EB6 : Wetland 6

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

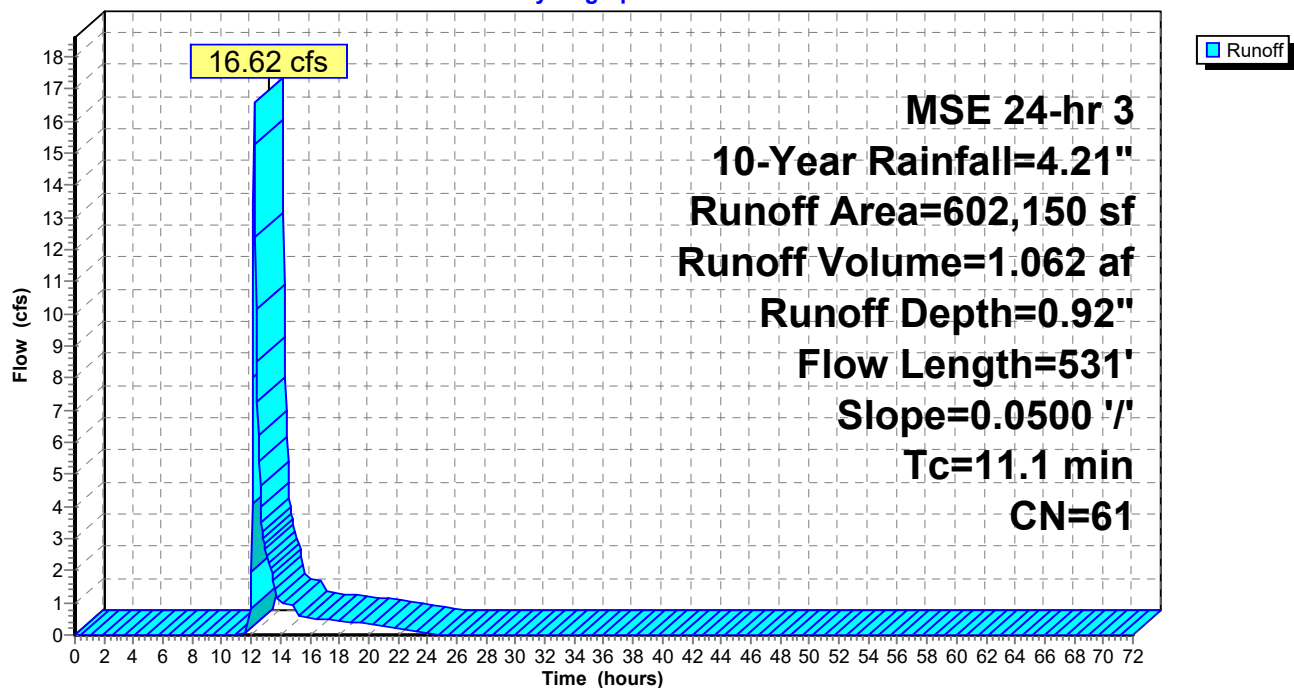
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 602,150   | 61 | >75% Grass cover, Good, HSG B |
| 602,150   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 6.0      | 50            | 0.0500        | 0.14              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 2.83"                |
| 5.1      | 481           | 0.0500        | 1.57              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 11.1     | 531           | Total         |                   |                |                                                                      |

**Subcatchment EB-6:**

Hydrograph





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MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Subcatchment EB-7A:**

Runoff = 1.90 cfs @ 12.34 hrs, Volume= 0.165 af, Depth= 0.92"  
Routed to Pond EB7A : Wetland 7A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

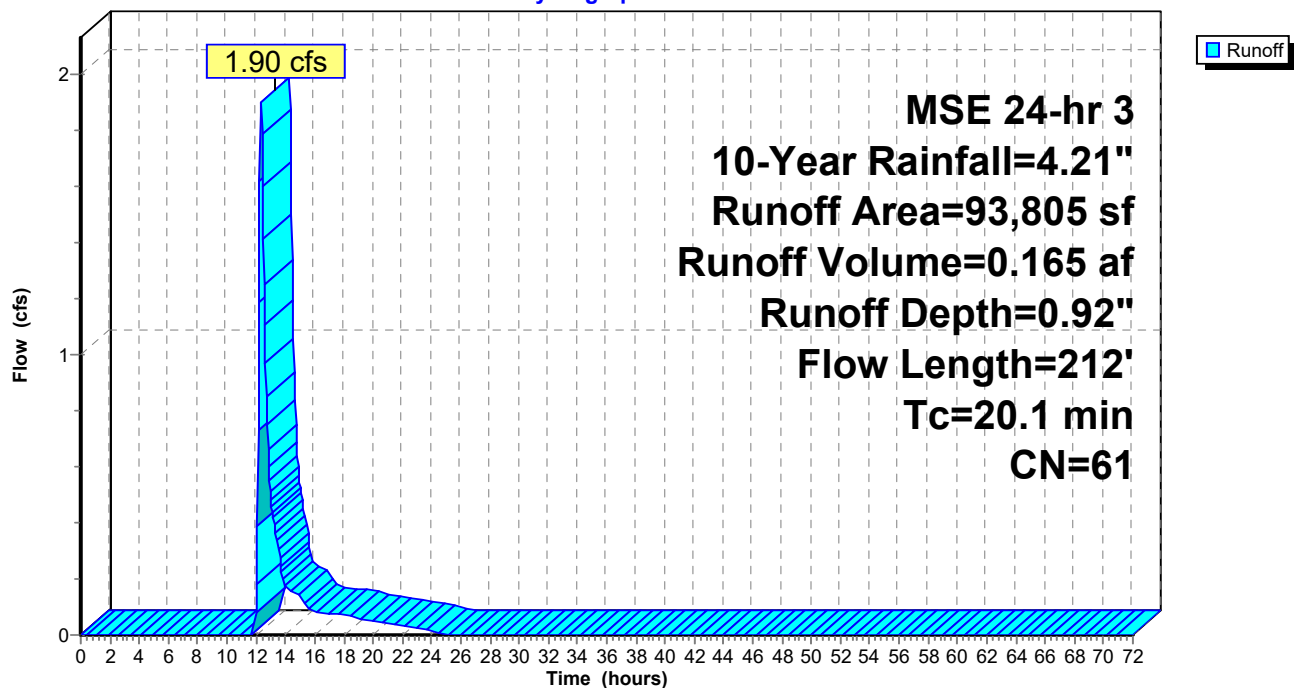
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 93,805    | 61 | >75% Grass cover, Good, HSG B |
| 93,805    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 18.8     | 100           | 0.0046        | 0.09              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.3      | 112           | 0.0425        | 1.44              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 20.1     | 212           | Total         |                   |                |                                                                      |

**Subcatchment EB-7A:**

Hydrograph



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MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Subcatchment EB-7B:**

Runoff = 5.20 cfs @ 12.19 hrs, Volume= 0.313 af, Depth= 0.92"  
Routed to Pond EB7B : Wetland 7B

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

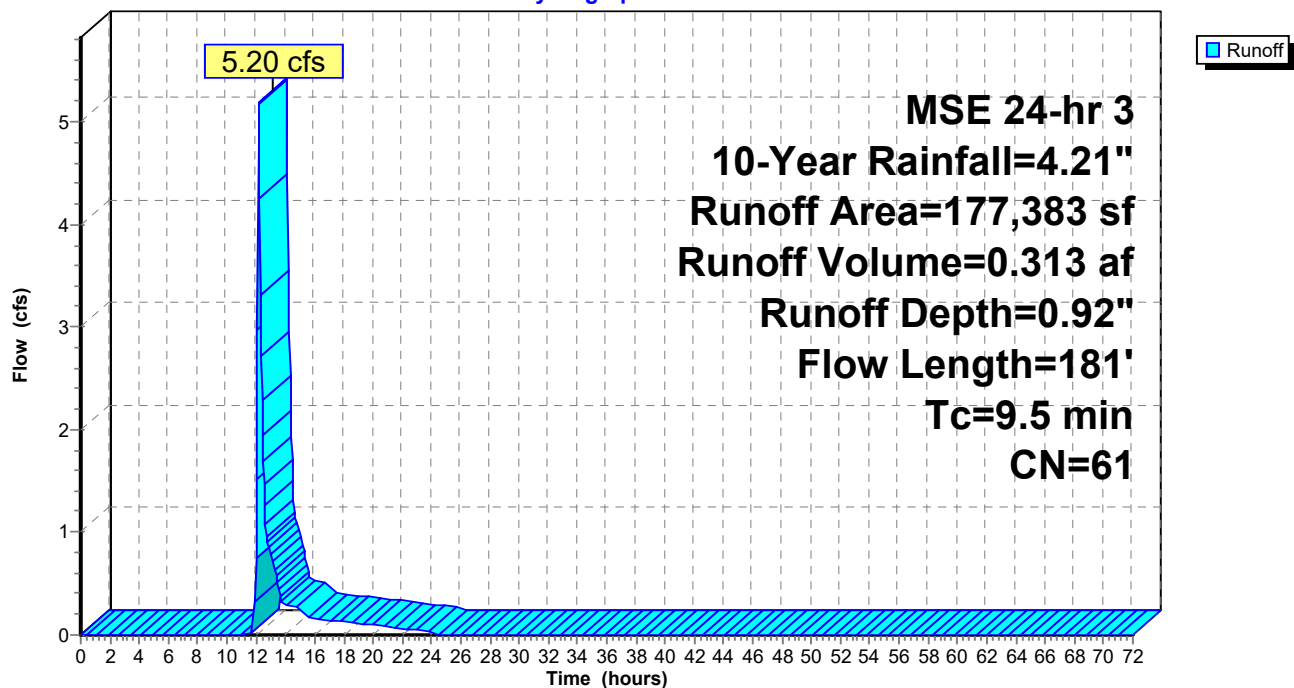
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 177,383   | 61 | >75% Grass cover, Good, HSG B |
| 177,383   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 8.4      | 100           | 0.0341        | 0.20              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.1      | 81            | 0.0288        | 1.19              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 9.5      | 181           | Total         |                   |                |                                                                      |

**Subcatchment EB-7B:**

Hydrograph



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MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Subcatchment EB-7C:**

Runoff = 0.55 cfs @ 12.20 hrs, Volume= 0.033 af, Depth= 0.92"  
Routed to Pond EB7C : Wetland 7C

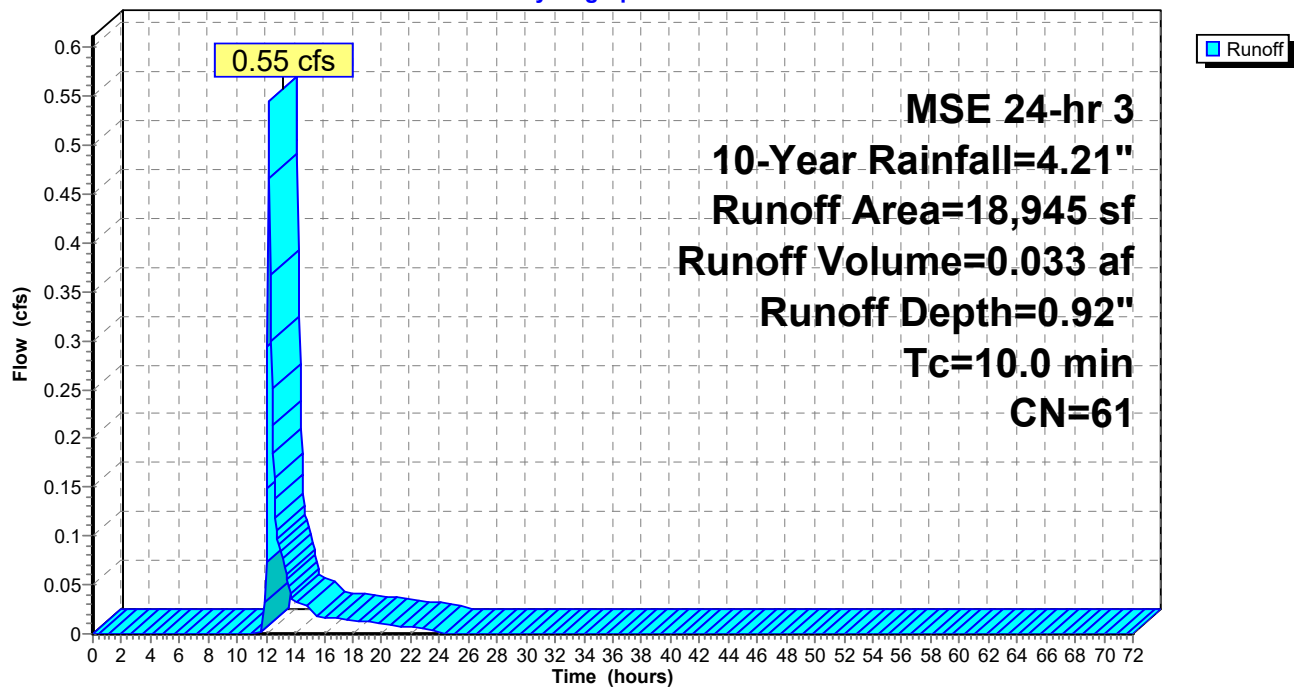
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 18,945    | 61 | >75% Grass cover, Good, HSG B |
| 18,945    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment EB-7C:**

Hydrograph



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MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Subcatchment EB-7D:**

Runoff = 1.78 cfs @ 12.37 hrs, Volume= 0.163 af, Depth= 0.92"  
Routed to Reach 7B&D :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

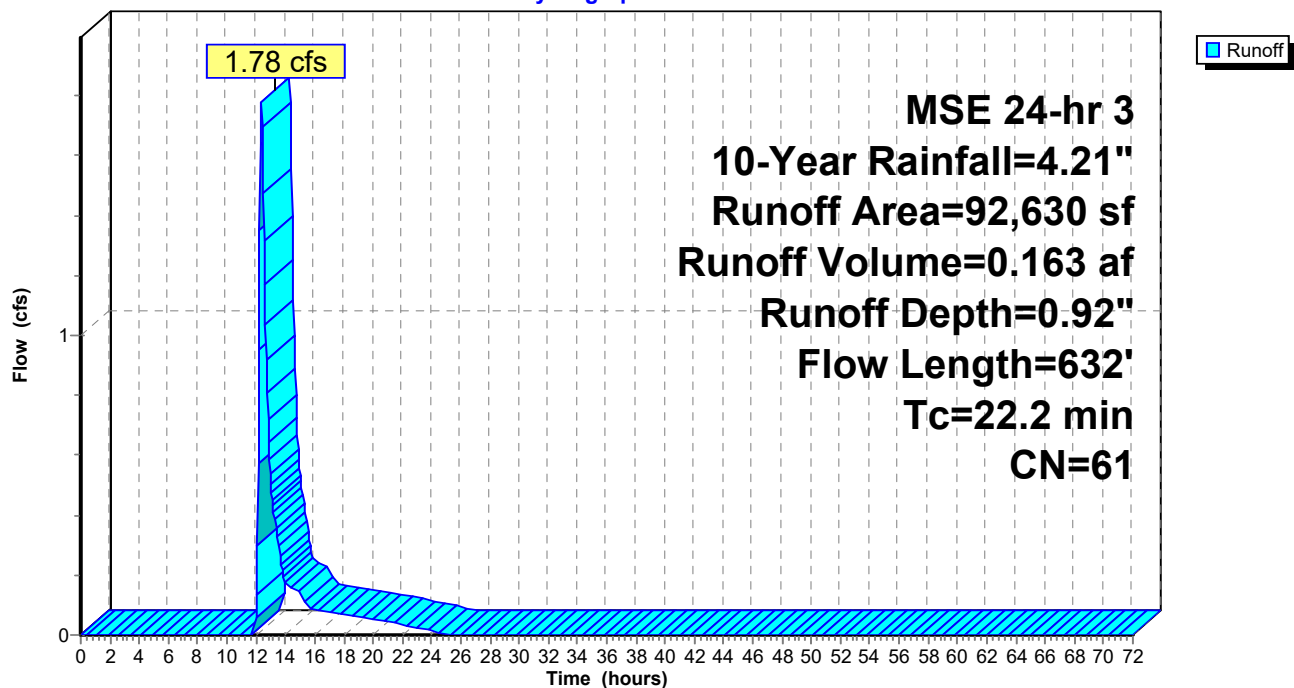
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 92,630    | 61 | >75% Grass cover, Good, HSG B |
| 92,630    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 9.5      | 100           | 0.0253        | 0.18              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 12.7     | 532           | 0.0100        | 0.70              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 22.2     | 632           | Total         |                   |                |                                                                      |

**Subcatchment EB-7D:**

Hydrograph



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**Summary for Subcatchment EB-8A:**

Runoff = 1.53 cfs @ 12.06 hrs, Volume= 0.065 af, Depth= 0.92"  
Routed to Reach ESW-Q : Southwest Discharge

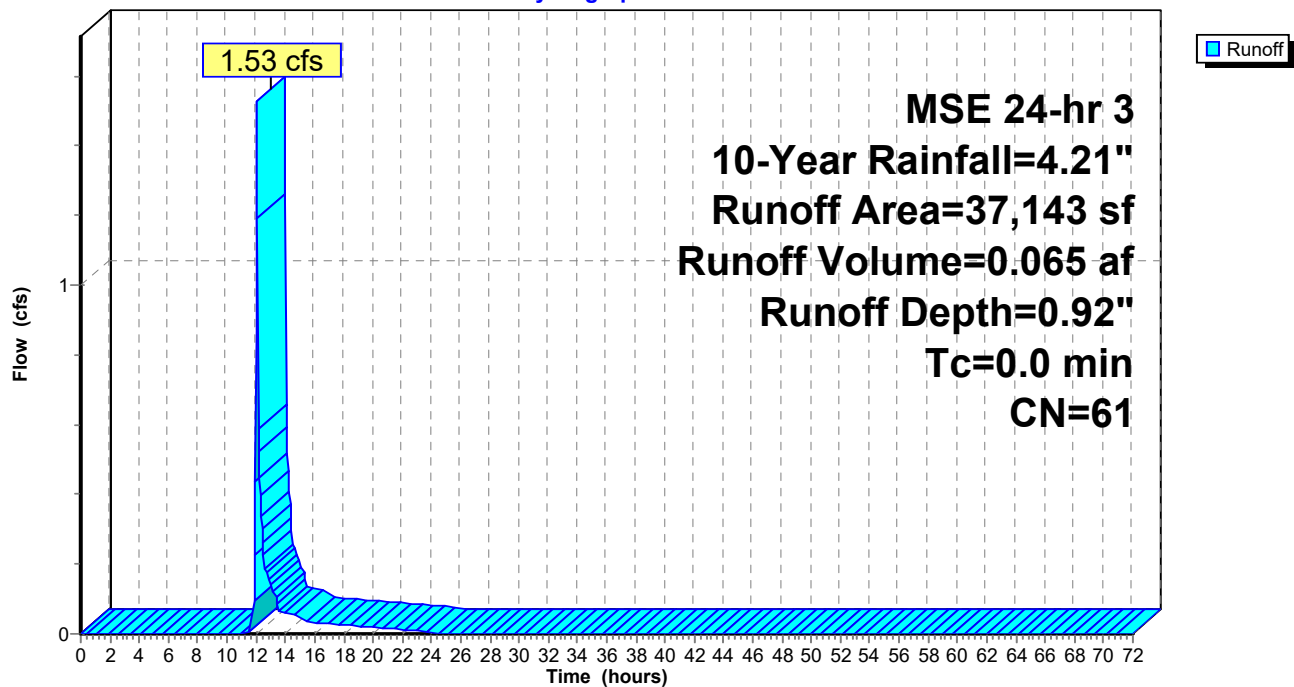
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 37,143    | 61 | >75% Grass cover, Good, HSG B |
| 37,143    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 0.0      |               |               |                   |                | Direct Entry, |

**Subcatchment EB-8A:**

Hydrograph



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MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Subcatchment EB-8B:**

Runoff = 1.69 cfs @ 12.25 hrs, Volume= 0.121 af, Depth= 0.92"

Routed to Reach SE-QB : SE Quarter (Private Ditch B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

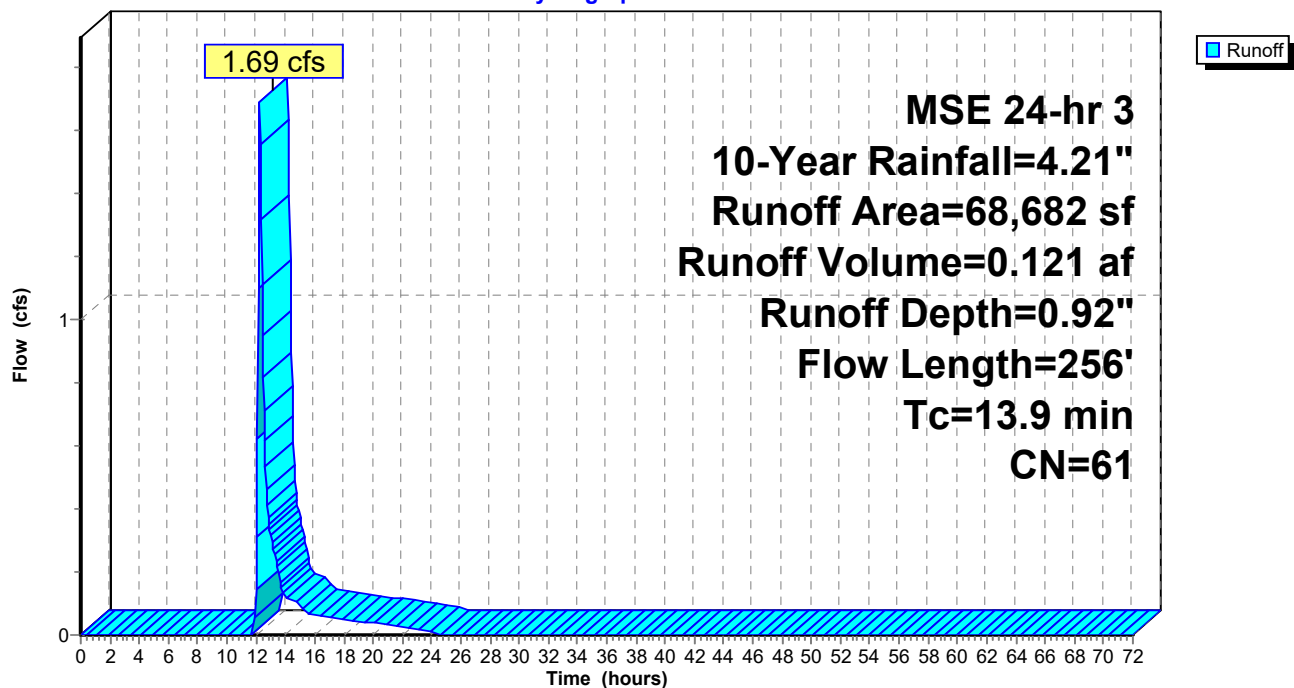
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 68,682    | 61 | >75% Grass cover, Good, HSG B |
| 68,682    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.9     | 100           | 0.0180        | 0.15              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 3.0      | 156           | 0.0154        | 0.87              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 13.9     | 256           | Total         |                   |                |                                                                      |

**Subcatchment EB-8B:**

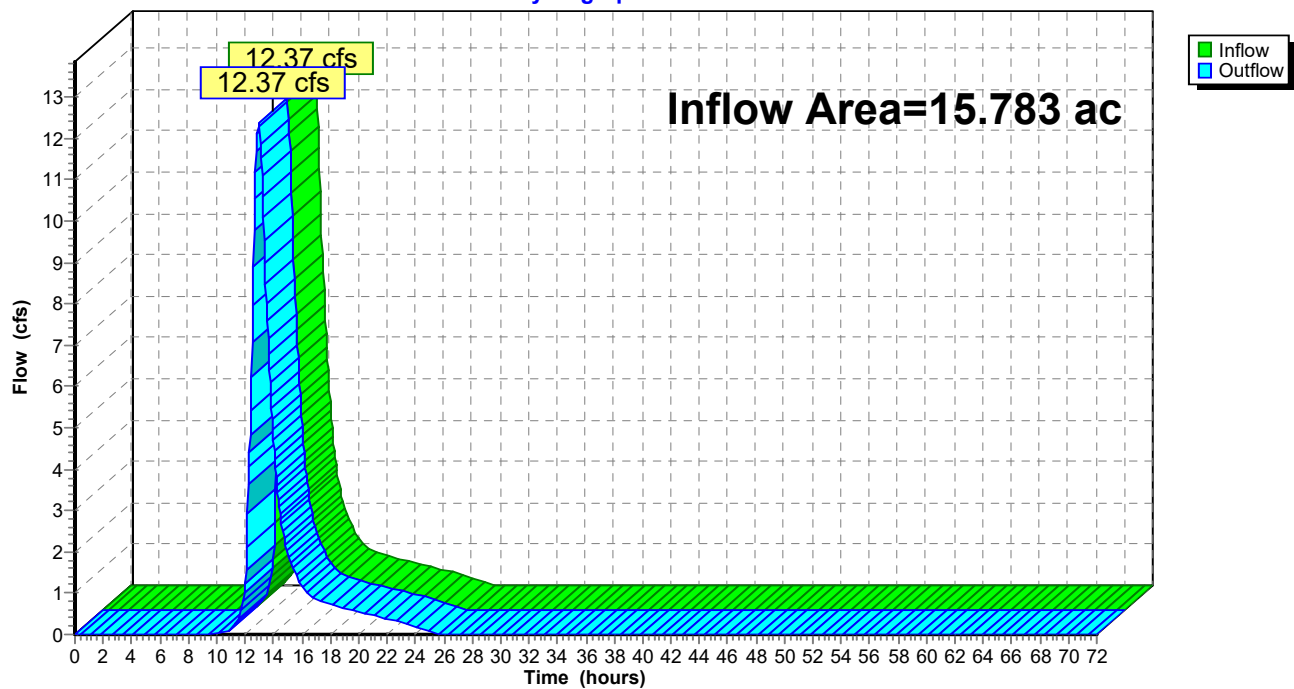
Hydrograph



**Summary for Reach 1A&2B:**

Inflow Area = 15.783 ac, 0.72% Impervious, Inflow Depth = 1.60" for 10-Year event  
Inflow = 12.37 cfs @ 12.96 hrs, Volume= 2.101 af  
Outflow = 12.37 cfs @ 12.96 hrs, Volume= 2.101 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach ESE-QA : SE Quarter (Private Ditch A)

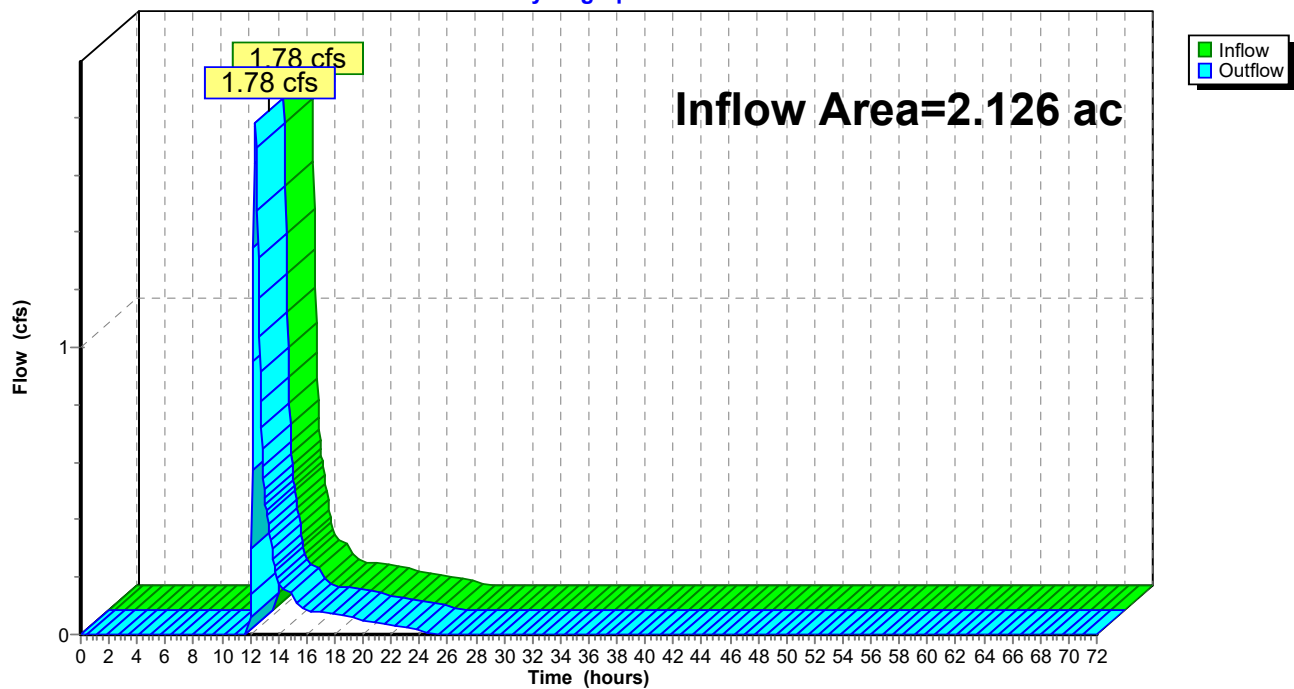
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach 1A&2B:****Hydrograph**

**Summary for Reach 7B&D:**

Inflow Area = 2.126 ac, 0.00% Impervious, Inflow Depth = 0.92" for 10-Year event  
Inflow = 1.78 cfs @ 12.37 hrs, Volume= 0.163 af  
Outflow = 1.78 cfs @ 12.37 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach SE-QB : SE Quarter (Private Ditch B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

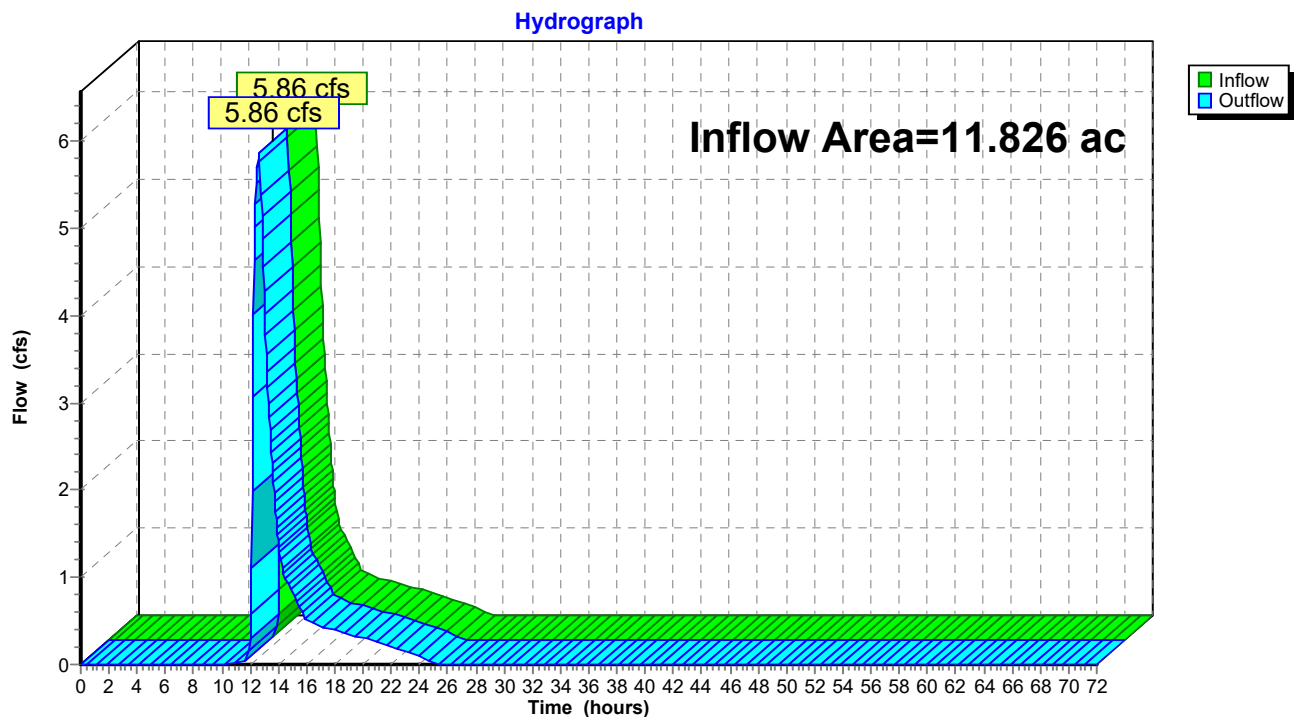
**Reach 7B&D:****Hydrograph**



**Summary for Reach EL-DITCH: Lexington Ave Ditch**

Inflow Area = 11.826 ac, 0.53% Impervious, Inflow Depth = 0.94" for 10-Year event  
Inflow = 5.86 cfs @ 12.61 hrs, Volume= 0.924 af  
Outflow = 5.86 cfs @ 12.61 hrs, Volume= 0.924 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PRE : Overall Pre-Development Runoff

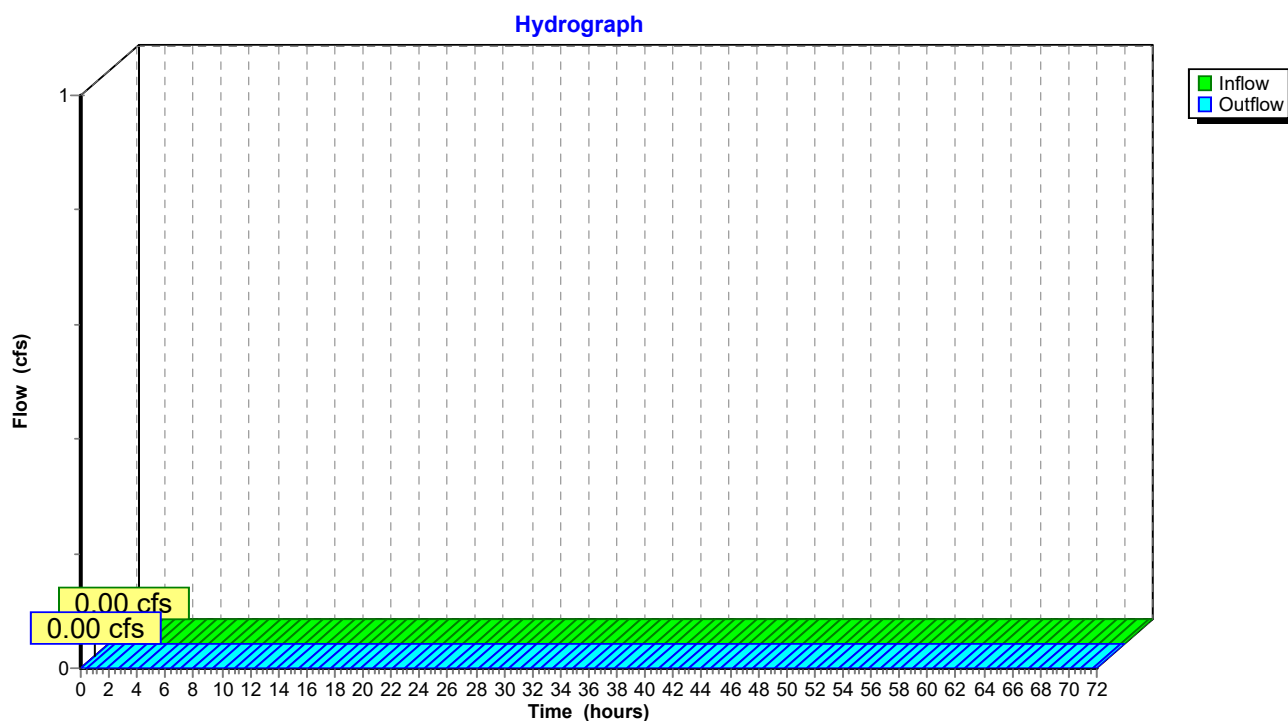
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach EL-DITCH: Lexington Ave Ditch**

**Summary for Reach EN: North Boundary**

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PRE : Overall Pre-Development Runoff

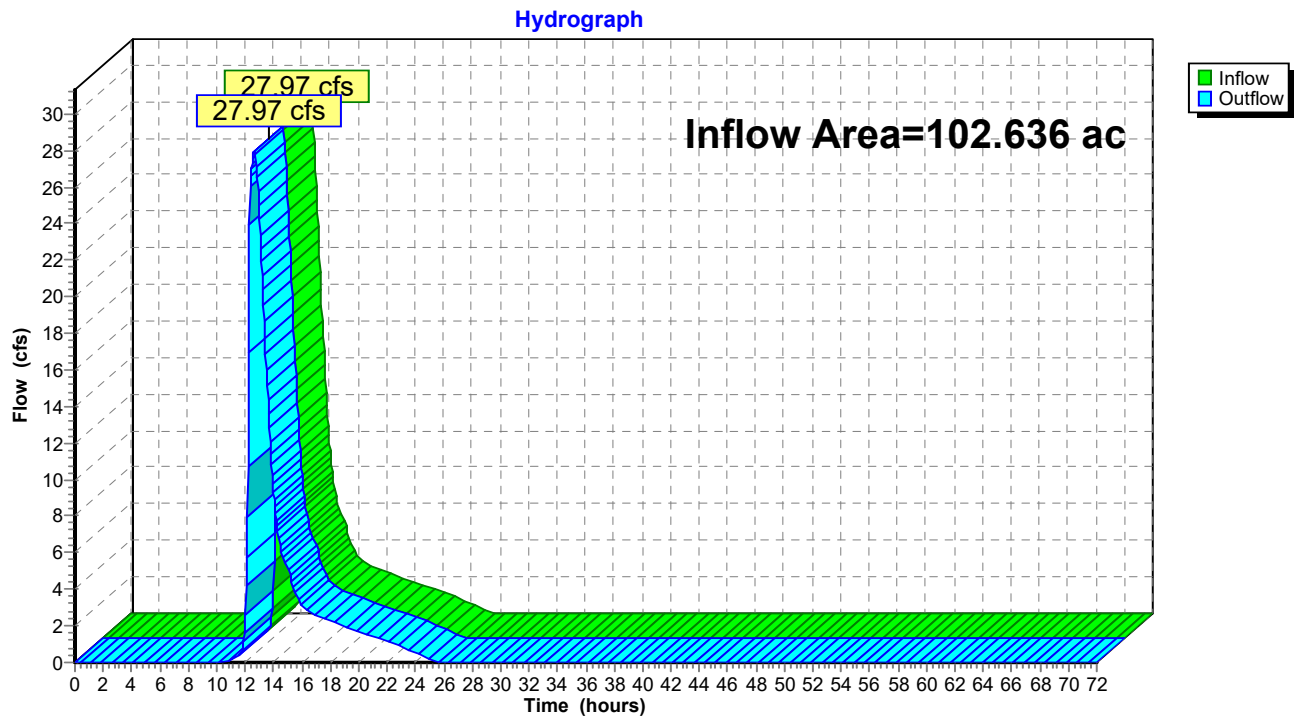
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach EN: North Boundary**

**Summary for Reach ES: South Total (Ditch 44-9)**

Inflow Area = 102.636 ac, 0.11% Impervious, Inflow Depth = 0.61" for 10-Year event  
Inflow = 27.97 cfs @ 12.64 hrs, Volume= 5.228 af  
Outflow = 27.97 cfs @ 12.64 hrs, Volume= 5.228 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PRE : Overall Pre-Development Runoff

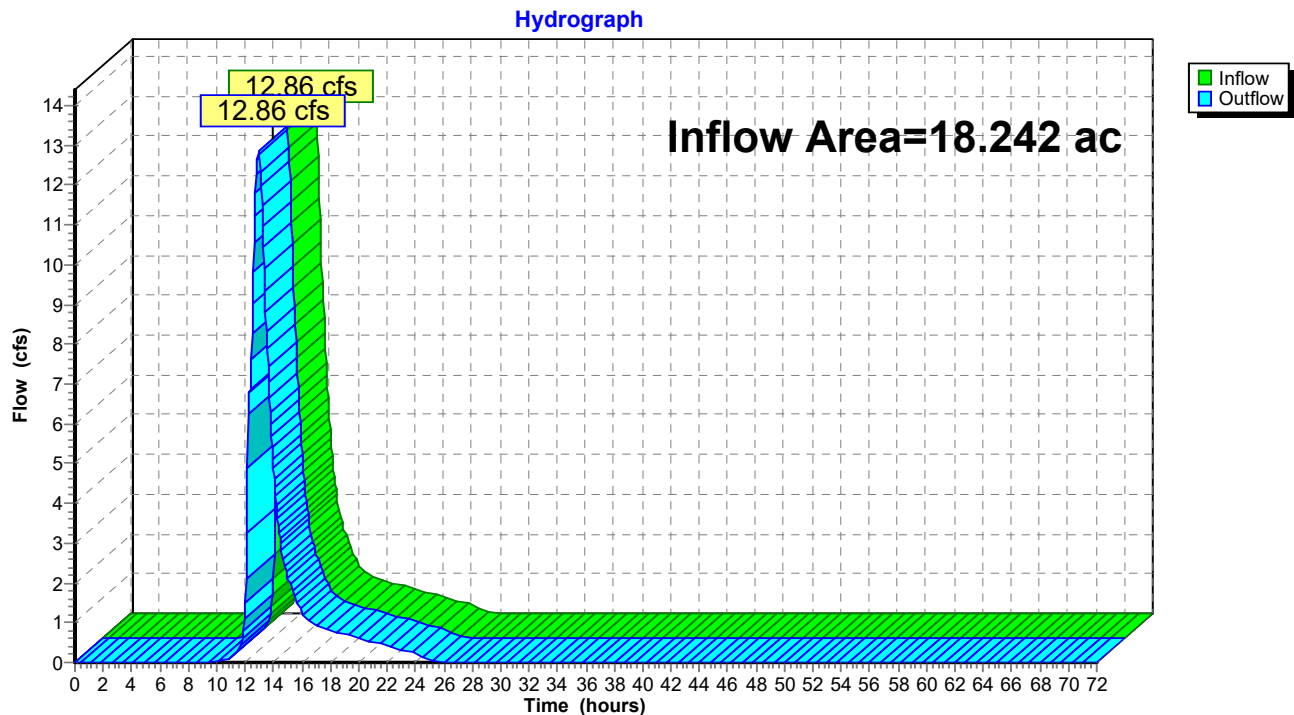
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach ES: South Total (Ditch 44-9)**

**Summary for Reach ESE-QA: SE Quarter (Private Ditch A)**

Inflow Area = 18.242 ac, 0.62% Impervious, Inflow Depth = 1.51" for 10-Year event  
Inflow = 12.86 cfs @ 12.95 hrs, Volume= 2.290 af  
Outflow = 12.86 cfs @ 12.95 hrs, Volume= 2.290 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach ES : South Total (Ditch 44-9)

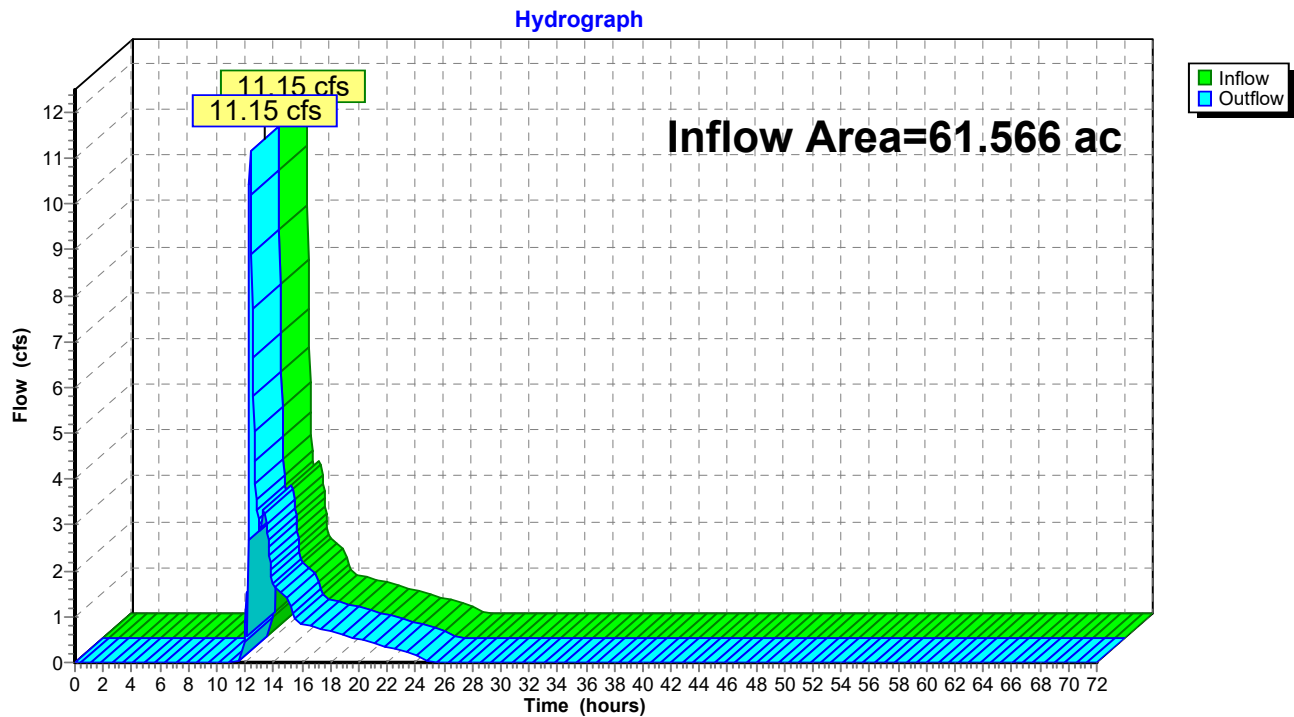
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach ESE-QA: SE Quarter (Private Ditch A)**

**Summary for Reach ESW-Q: Southwest Discharge**

Inflow Area = 61.566 ac, 0.00% Impervious, Inflow Depth = 0.23" for 10-Year event  
Inflow = 11.15 cfs @ 12.35 hrs, Volume= 1.185 af  
Outflow = 11.15 cfs @ 12.35 hrs, Volume= 1.185 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach ES : South Total (Ditch 44-9)

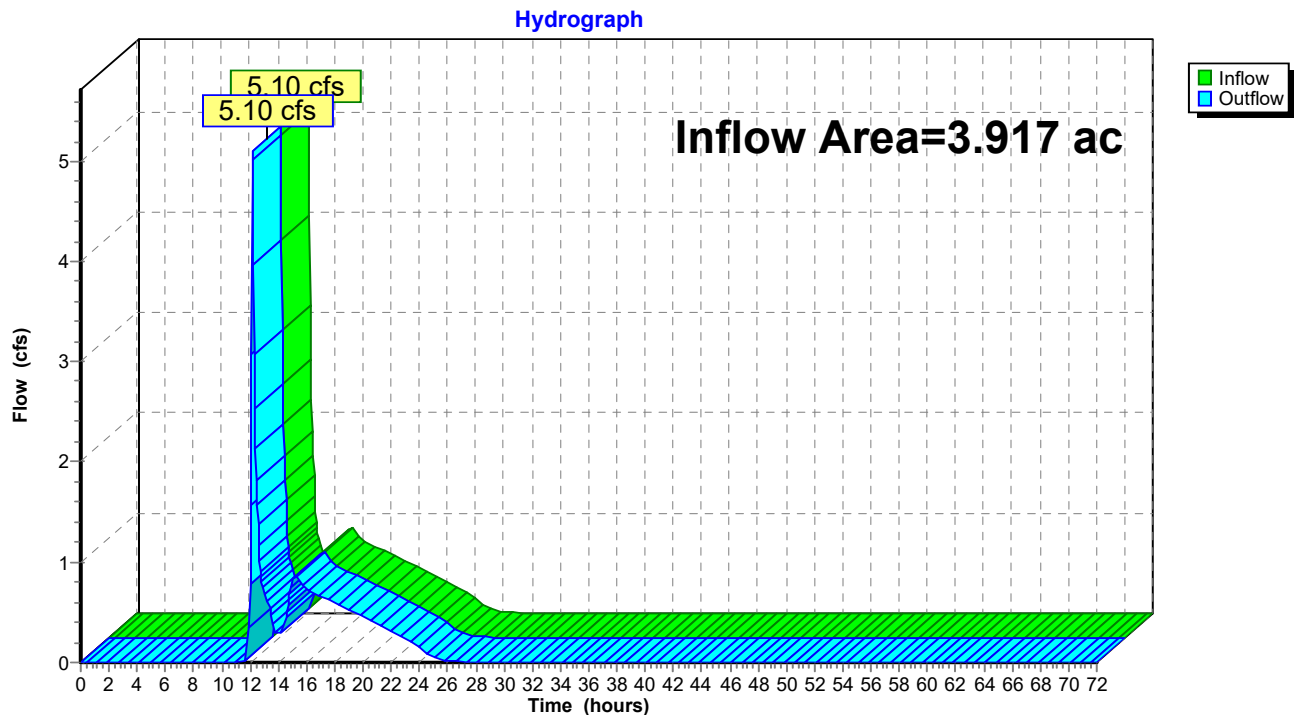
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach ESW-Q: Southwest Discharge**

**Summary for Reach EW: West Boundary**

Inflow Area = 3.917 ac, 0.00% Impervious, Inflow Depth = 1.89" for 10-Year event  
Inflow = 5.10 cfs @ 12.18 hrs, Volume= 0.617 af  
Outflow = 5.10 cfs @ 12.18 hrs, Volume= 0.617 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PRE : Overall Pre-Development Runoff

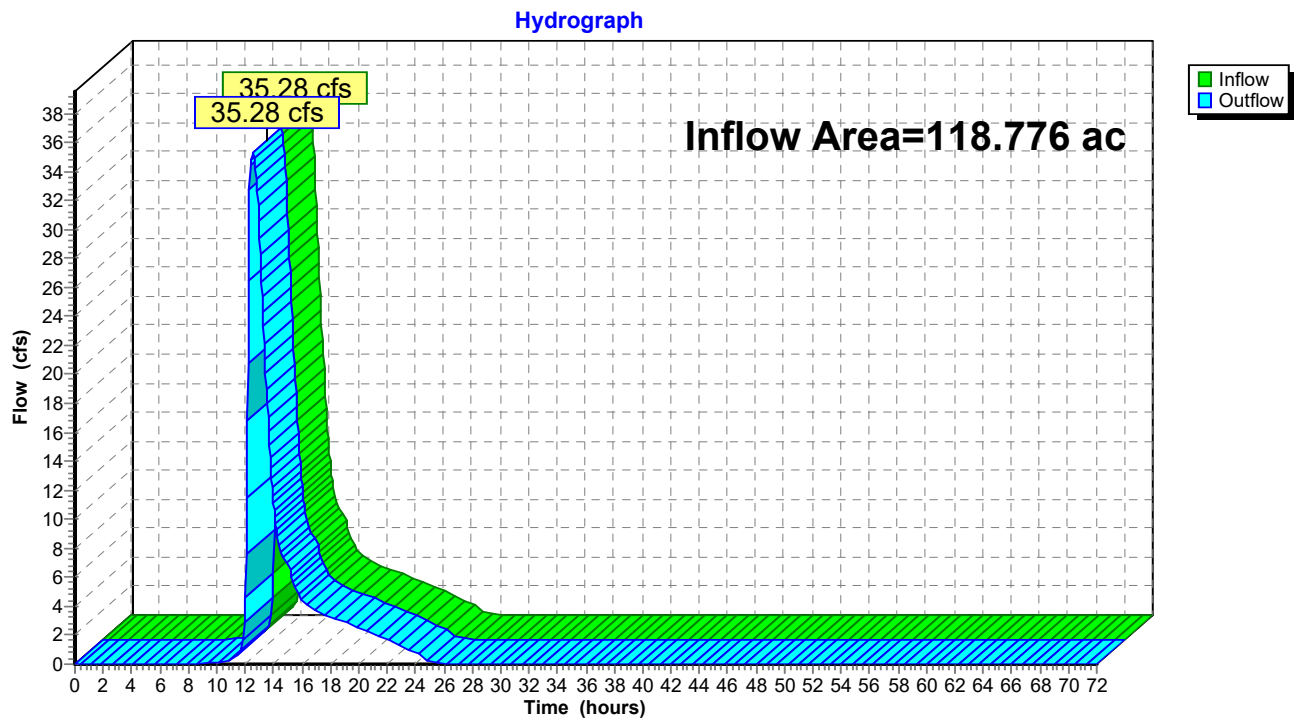
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach EW: West Boundary**

**Summary for Reach PRE: Overall Pre-Development Runoff**

Inflow Area = 118.776 ac, 0.48% Impervious, Inflow Depth = 0.70" for 10-Year event  
Inflow = 35.28 cfs @ 12.59 hrs, Volume= 6.901 af  
Outflow = 35.28 cfs @ 12.59 hrs, Volume= 6.901 af, Atten= 0%, Lag= 0.0 min

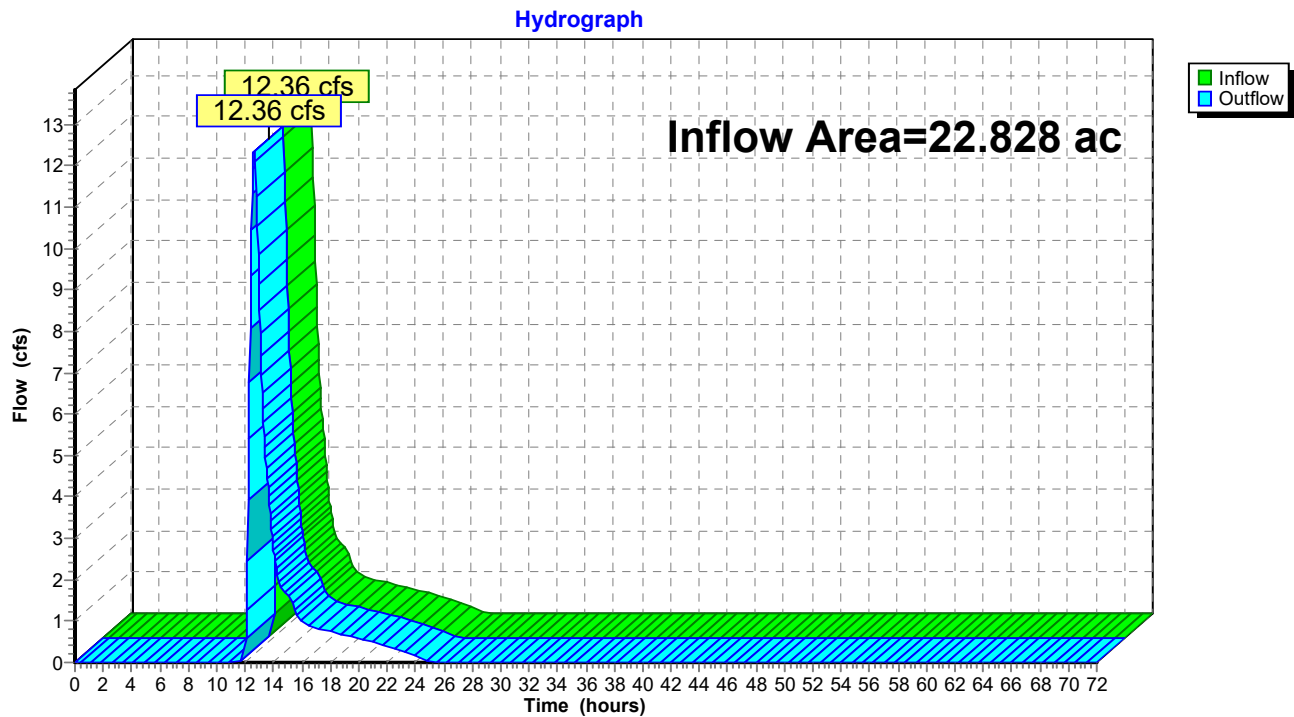
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PRE: Overall Pre-Development Runoff**

**Summary for Reach SE-QB: SE Quarter (Private Ditch B)**

Inflow Area = 22.828 ac, 0.00% Impervious, Inflow Depth = 0.92" for 10-Year event  
Inflow = 12.36 cfs @ 12.64 hrs, Volume= 1.753 af  
Outflow = 12.36 cfs @ 12.64 hrs, Volume= 1.753 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach ES : South Total (Ditch 44-9)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach SE-QB: SE Quarter (Private Ditch B)**



**Summary for Pond EB1A: Wetland 1A**

Inflow Area = 26.343 ac, 0.00% Impervious, Inflow Depth = 0.92" for 10-Year event  
 Inflow = 20.42 cfs @ 12.42 hrs, Volume= 2.023 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Pond EB1B : Wetland 1B  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Reach 1A&2B :  
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Reach EN : North Boundary

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 900.5' @ 25.50 hrs Surf.Area= 131,175 sf Storage= 88,118 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 899.0' | 2,338,451 cf  | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 899.0               | 1,799                | 0                         | 0                         |
| 900.0               | 77,989               | 39,894                    | 39,894                    |
| 901.0               | 193,333              | 135,661                   | 175,555                   |
| 902.0               | 368,575              | 280,954                   | 456,509                   |
| 903.0               | 576,105              | 472,340                   | 928,849                   |
| 904.0               | 715,414              | 645,760                   | 1,574,609                 |
| 905.0               | 812,270              | 763,842                   | 2,338,451                 |

| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                              |
|--------|-----------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 901.4' | <b>5.0' long x 10.0' breadth TO EB-1B</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                                                                                         |
| #2     | Secondary | 901.9' | <b>5.0' long x 10.0' breadth TO EB-2B</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                                                                                         |
| #3     | Tertiary  | 902.8' | <b>100.0' long x 5.0' breadth To North</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=899.0' TW=901.5' (Dynamic Tailwater)

↑1=TO EB-1B ( Controls 0.00 cfs)

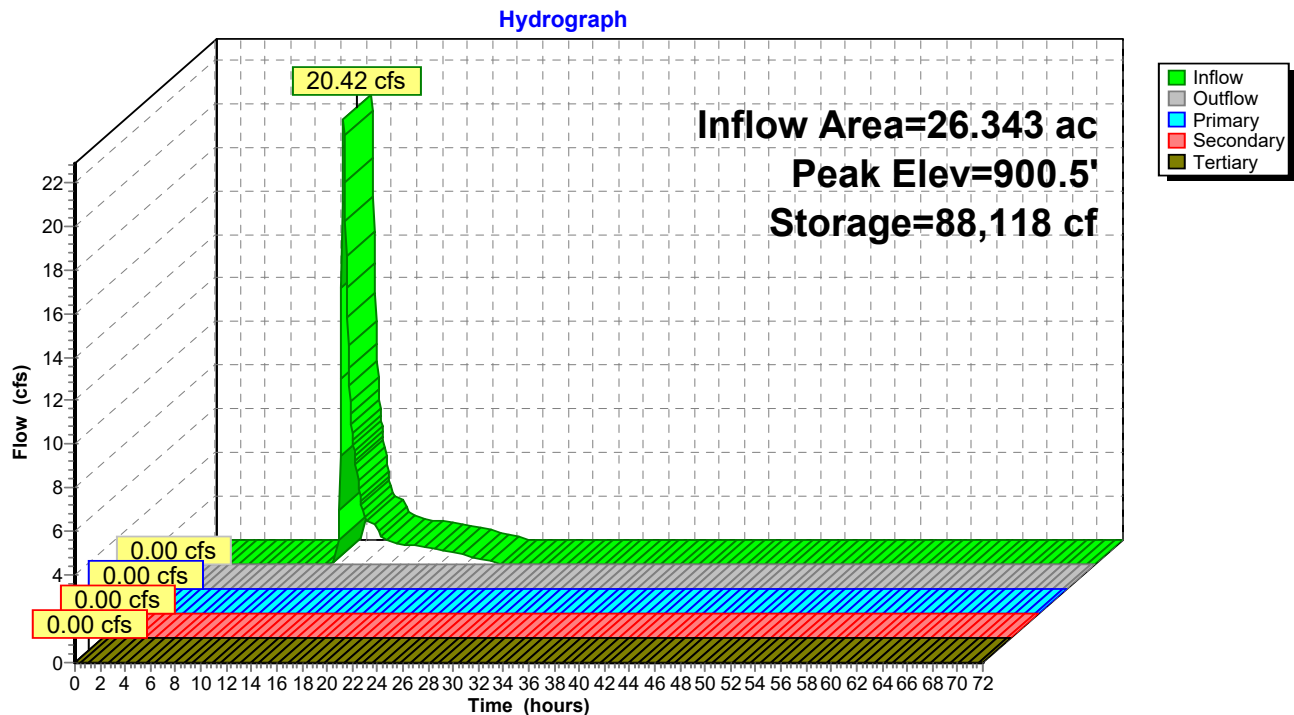
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=899.0' TW=0.0' (Dynamic Tailwater)

↑2=TO EB-2B ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=899.0' TW=0.0' (Dynamic Tailwater)

↑3=To North ( Controls 0.00 cfs)

**Pond EB1A: Wetland 1A**



**LDP24010 Ham Lake**

MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Pond EB1B: Wetland 1B**

Inflow Area = 31.354 ac, 0.00% Impervious, Inflow Depth = 0.15" for 10-Year event  
 Inflow = 4.71 cfs @ 12.31 hrs, Volume= 0.385 af  
 Outflow = 4.71 cfs @ 12.32 hrs, Volume= 0.375 af, Atten= 0%, Lag= 0.5 min  
 Primary = 4.71 cfs @ 12.32 hrs, Volume= 0.375 af  
 Routed to Pond EB1C : Wetland 1C

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 901.7' @ 15.27 hrs Surf.Area= 6,161 sf Storage= 556 cf

Plug-Flow detention time= 17.9 min calculated for 0.374 af (97% of inflow)  
 Center-of-Mass det. time= 3.8 min ( 861.3 - 857.5 )

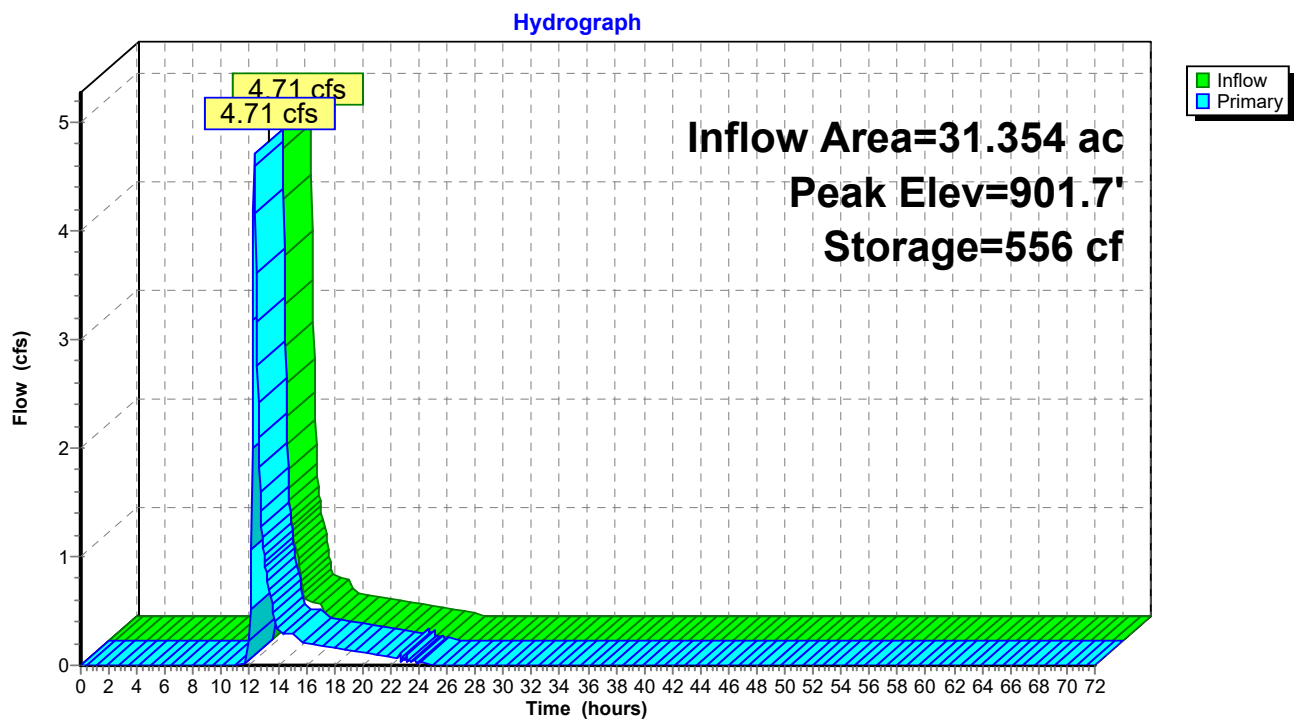
| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 901.5' | 194,422 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 901.5               | 55                   | 0                         | 0                         |
| 901.6               | 1,670                | 86                        | 86                        |
| 901.7               | 5,365                | 352                       | 438                       |
| 901.8               | 9,245                | 730                       | 1,168                     |
| 901.9               | 13,840               | 1,154                     | 2,323                     |
| 902.0               | 32,292               | 2,307                     | 4,629                     |
| 903.0               | 54,790               | 43,541                    | 48,170                    |
| 904.0               | 71,685               | 63,238                    | 111,408                   |
| 905.0               | 94,343               | 83,014                    | 194,422                   |

| Device | Routing | Invert | Outlet Devices                                                                                                                                       |
|--------|---------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 901.5' | <b>50.0' long x 10.0' breadth TO EB-1C</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=4.64 cfs @ 12.32 hrs HW=901.6' TW=901.2' (Dynamic Tailwater)  
 ↑ **1=TO EB-1C** (Weir Controls 4.64 cfs @ 0.83 fps)

**Pond EB1B: Wetland 1B**



**LDP24010 Ham Lake**

MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Pond EB1C: Wetland 1C**

Inflow Area = 40.229 ac, 0.00% Impervious, Inflow Depth = 0.32" for 10-Year event  
 Inflow = 14.47 cfs @ 12.22 hrs, Volume= 1.056 af  
 Outflow = 0.69 cfs @ 15.22 hrs, Volume= 0.316 af, Atten= 95%, Lag= 180.3 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Pond EB6 : Wetland 6  
 Secondary = 0.69 cfs @ 15.22 hrs, Volume= 0.316 af  
     Routed to Reach EW : West Boundary

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 901.7' @ 15.22 hrs Surf.Area= 71,023 sf Storage= 33,640 cf

Plug-Flow detention time= 385.4 min calculated for 0.316 af (30% of inflow)  
 Center-of-Mass det. time= 263.8 min ( 1,117.9 - 854.1 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 900.1' | 577,352 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 900.1               | 174                  | 0                         | 0                         |
| 900.2               | 975                  | 57                        | 57                        |
| 900.5               | 5,734                | 1,006                     | 1,064                     |
| 901.0               | 20,570               | 6,576                     | 7,640                     |
| 901.5               | 36,160               | 14,183                    | 21,822                    |
| 901.8               | 83,591               | 17,963                    | 39,785                    |
| 902.0               | 90,000               | 17,359                    | 57,144                    |
| 903.0               | 100,000              | 95,000                    | 152,144                   |
| 904.0               | 233,558              | 166,779                   | 318,923                   |
| 905.0               | 283,299              | 258,429                   | 577,352                   |

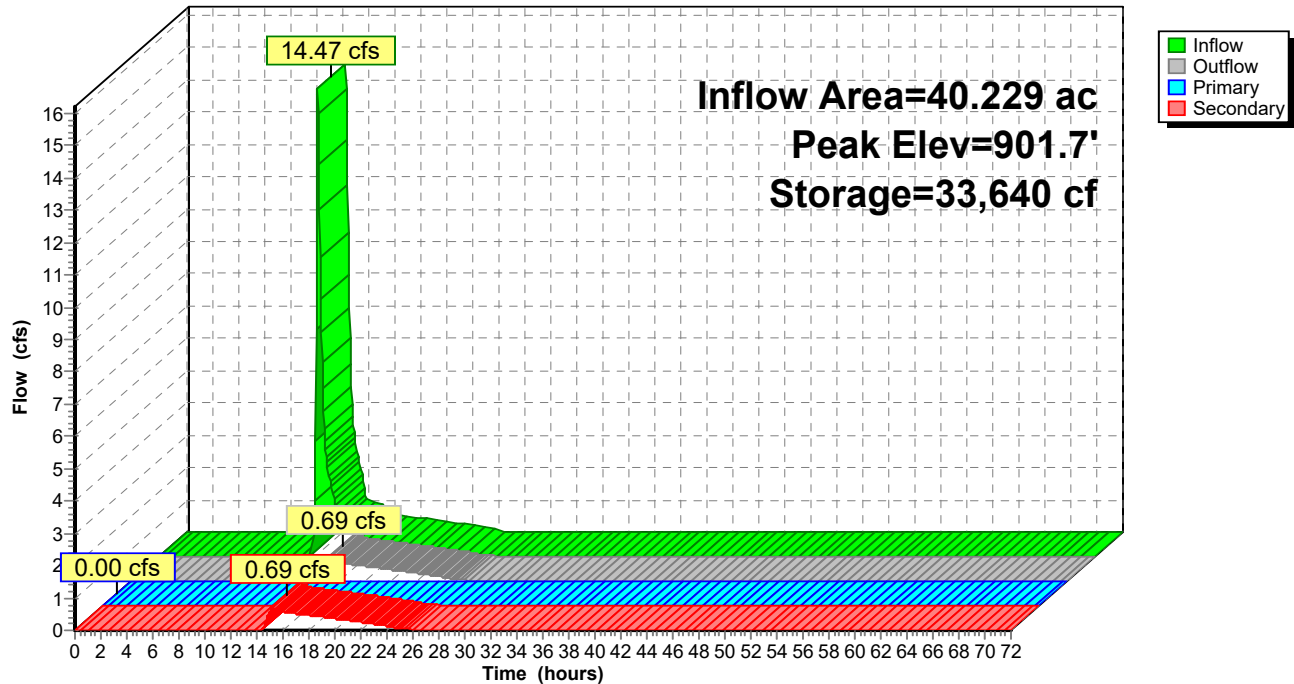
| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                             |
|--------|-----------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 902.3' | <b>5.0' long x 10.0' breadth To Wetland 6</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                                                                                    |
| #2     | Secondary | 901.7' | <b>100.0' long x 5.0' breadth To West</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=900.1' TW=895.0' (Dynamic Tailwater)  
 ↑1=To Wetland 6 ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.69 cfs @ 15.22 hrs HW=901.7' TW=0.0' (Dynamic Tailwater)  
 ↑2=To West (Weir Controls 0.69 cfs @ 0.33 fps)

# Pond EB1C: Wetland 1C

Hydrograph



**Summary for Pond EB6: Wetland 6**

Inflow Area = 60.713 ac, 0.00% Impervious, Inflow Depth = 0.26" for 10-Year event  
 Inflow = 16.62 cfs @ 12.21 hrs, Volume= 1.298 af  
 Outflow = 10.81 cfs @ 12.35 hrs, Volume= 1.120 af, Atten= 35%, Lag= 8.2 min  
 Primary = 10.81 cfs @ 12.35 hrs, Volume= 1.120 af  
 Routed to Reach ESW-Q : Southwest Discharge

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 896.2' @ 12.35 hrs Surf.Area= 32,618 sf Storage= 10,471 cf

Plug-Flow detention time= 89.4 min calculated for 1.119 af (86% of inflow)  
 Center-of-Mass det. time= 30.7 min ( 907.4 - 876.8 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 895.0' | 227,572 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

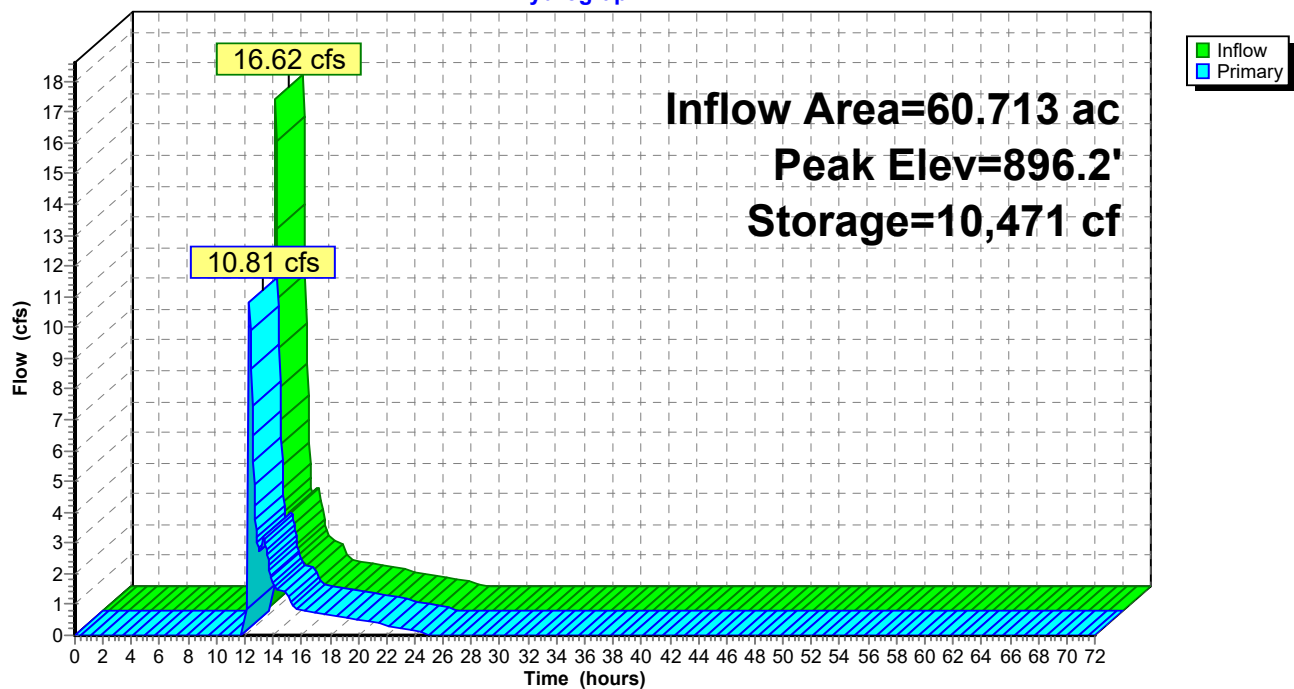
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 895.0               | 500                  | 0                         | 0                         |
| 896.0               | 11,662               | 6,081                     | 6,081                     |
| 897.0               | 117,362              | 64,512                    | 70,593                    |
| 898.0               | 196,595              | 156,979                   | 227,572                   |

| Device | Routing | Invert | Outlet Devices                                                                                                                                                                                                                                                    |
|--------|---------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 896.1' | <b>150.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=10.78 cfs @ 12.35 hrs HW=896.2' TW=0.0' (Dynamic Tailwater)  
 ↑1=**Broad-Crested Rectangular Weir**(Weir Controls 10.78 cfs @ 0.73 fps)

**Pond EB6: Wetland 6**

Hydrograph





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**Summary for Pond EB7A: Wetland 7A**

Inflow Area = 6.661 ac, 0.00% Impervious, Inflow Depth = 0.64" for 10-Year event  
 Inflow = 1.90 cfs @ 12.34 hrs, Volume= 0.354 af  
 Outflow = 1.07 cfs @ 13.30 hrs, Volume= 0.237 af, Atten= 44%, Lag= 57.7 min  
 Primary = 1.07 cfs @ 13.30 hrs, Volume= 0.237 af  
 Routed to Pond EB6 : Wetland 6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 898.2' @ 13.30 hrs Surf.Area= 14,967 sf Storage= 5,481 cf

Plug-Flow detention time= 196.3 min calculated for 0.237 af (67% of inflow)  
 Center-of-Mass det. time= 84.9 min ( 991.8 - 907.0 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 897.5' | 24,008 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 897.5               | 1,042                | 0                         | 0                         |
| 898.0               | 9,707                | 2,687                     | 2,687                     |
| 899.0               | 32,934               | 21,321                    | 24,008                    |

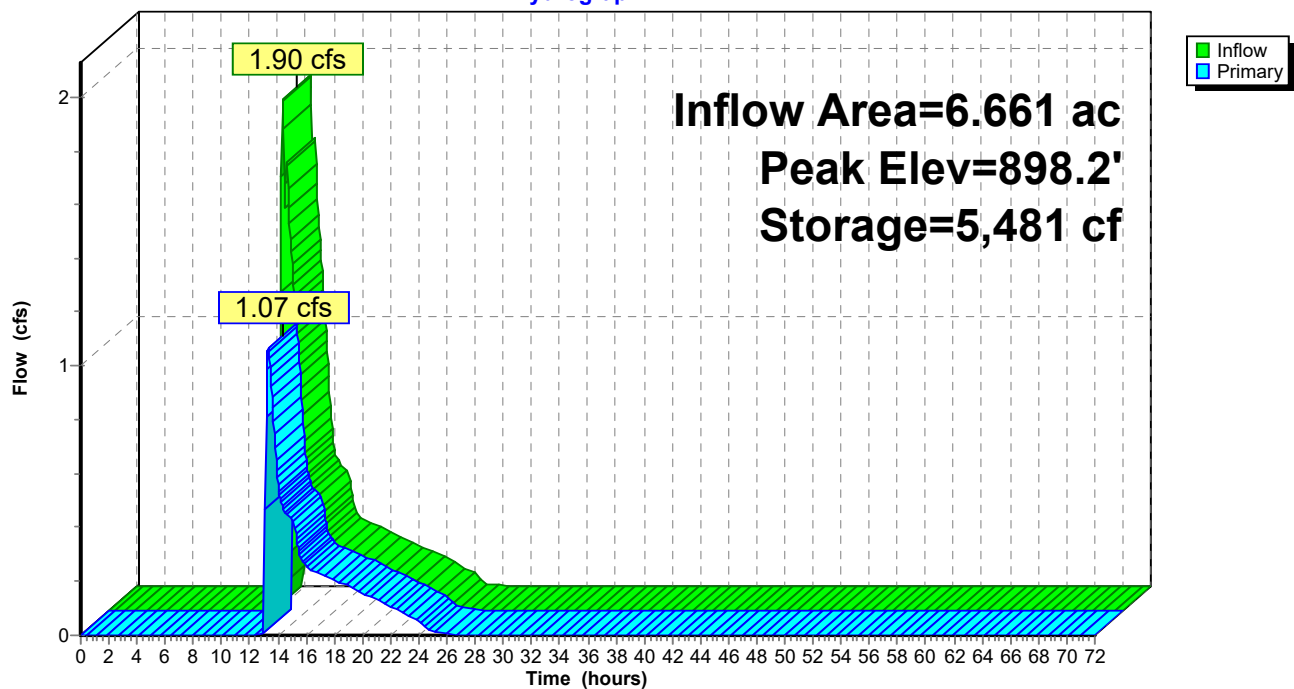
| Device | Routing | Invert | Outlet Devices                                                                                                                                      |
|--------|---------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 898.2' | <b>100.0' long x 10.0' breadth TO EB6</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=1.07 cfs @ 13.30 hrs HW=898.2' TW=896.1' (Dynamic Tailwater)

↑ **1=TO EB6** (Weir Controls 1.07 cfs @ 0.40 fps)

**Pond EB7A: Wetland 7A**

Hydrograph



**LDP24010 Ham Lake**

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**Summary for Pond EB7B: Wetland 7B**

Inflow Area = 4.507 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year event  
 Inflow = 5.20 cfs @ 12.19 hrs, Volume= 0.313 af  
 Outflow = 0.84 cfs @ 12.84 hrs, Volume= 0.188 af, Atten= 84%, Lag= 39.1 min  
 Primary = 0.84 cfs @ 12.84 hrs, Volume= 0.188 af  
 Routed to Pond EB7A : Wetland 7A  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 7B&D :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 898.3' @ 12.84 hrs Surf.Area= 21,693 sf Storage= 6,165 cf

Plug-Flow detention time= 203.5 min calculated for 0.188 af (60% of inflow)  
 Center-of-Mass det. time= 99.1 min ( 948.7 - 849.6 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 897.7' | 32,037 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 897.7               | 330                  | 0                         | 0                         |
| 898.0               | 7,784                | 1,217                     | 1,217                     |
| 898.5               | 28,502               | 9,072                     | 10,289                    |
| 899.0               | 58,492               | 21,749                    | 32,037                    |

| Device | Routing   | Invert | Outlet Devices                                                                                                                                       |
|--------|-----------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 898.3' | <b>50.0' long x 10.0' breadth TO EB-7D</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |
| #2     | Secondary | 899.4' | <b>100.0' long x 10.0' breadth TO EB7A</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=0.84 cfs @ 12.84 hrs HW=898.3' TW=898.1' (Dynamic Tailwater)

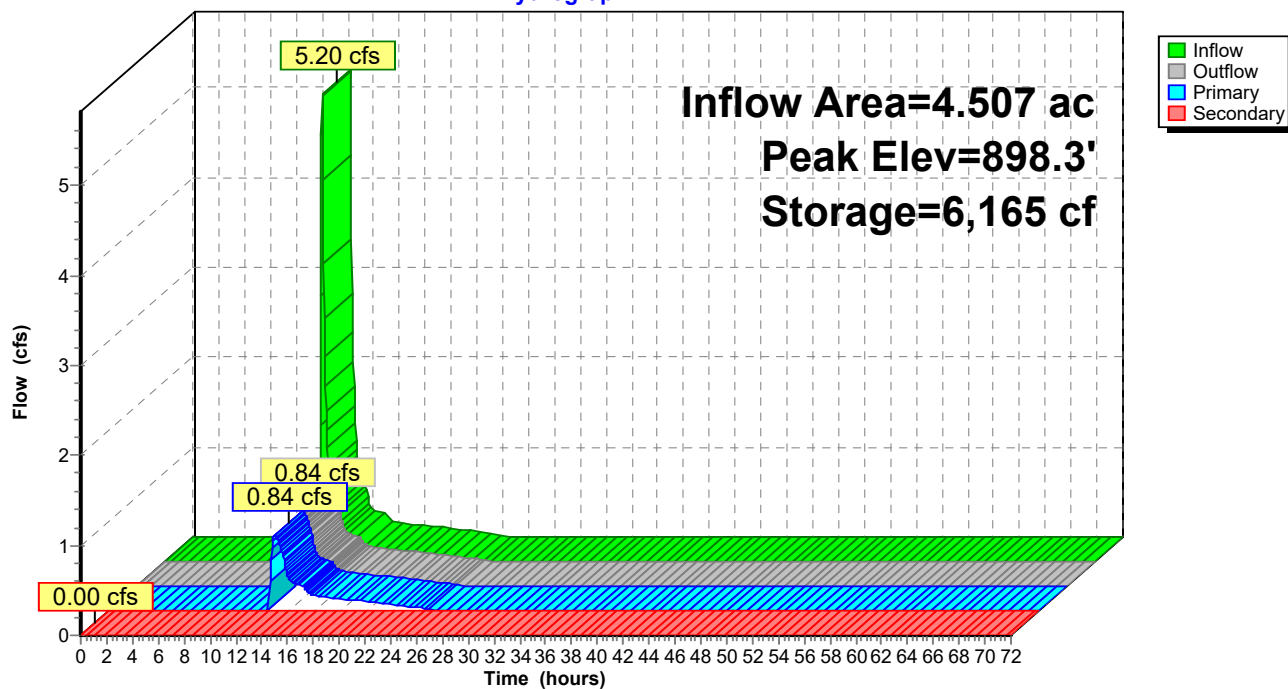
↑ **1=TO EB-7D** (Weir Controls 0.84 cfs @ 0.47 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=897.7' TW=0.0' (Dynamic Tailwater)

↑ **2=TO EB7A** ( Controls 0.00 cfs)

# Pond EB7B: Wetland 7B

Hydrograph



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**Summary for Pond EB7C: Wetland 7C**

Inflow Area = 0.435 ac, 0.00% Impervious, Inflow Depth = 0.92" for 10-Year event  
 Inflow = 0.55 cfs @ 12.20 hrs, Volume= 0.033 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond EB7B : Wetland 7B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 898.7' @ 24.60 hrs Surf.Area= 3,233 sf Storage= 1,455 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 897.7' | 5,675 cf      | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

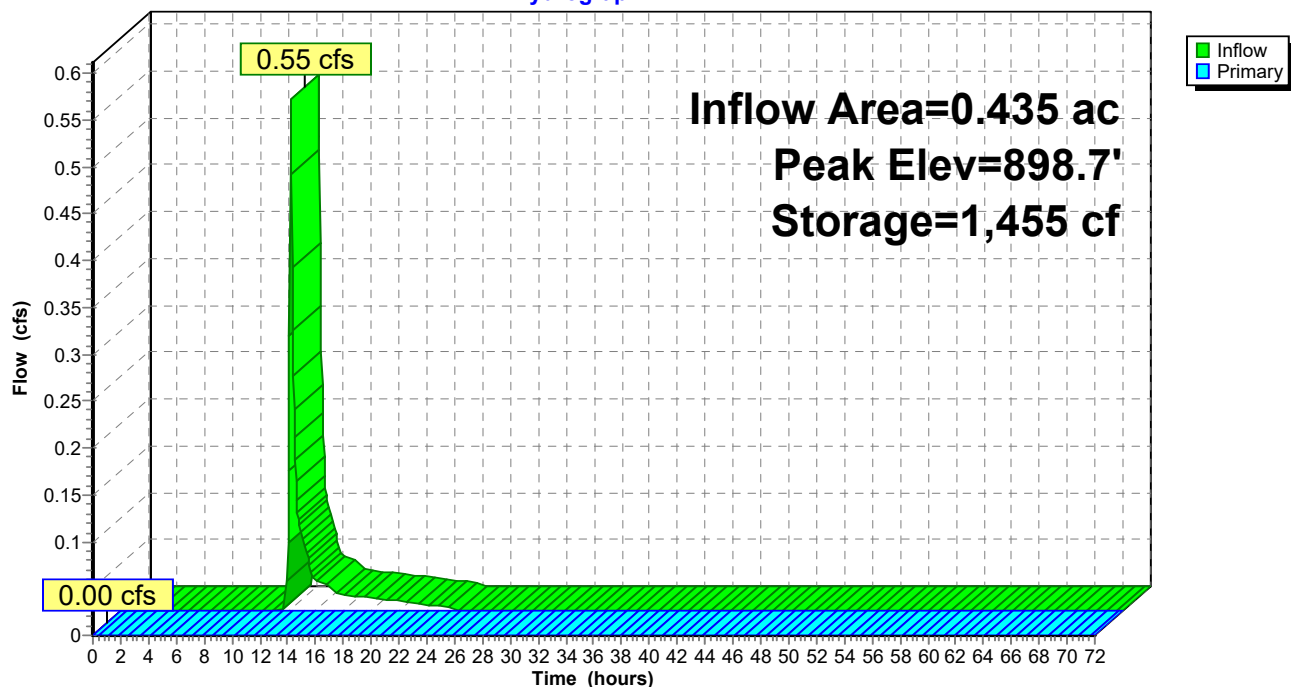
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 897.7               | 122                  | 0                         | 0                         |
| 898.0               | 753                  | 131                       | 131                       |
| 898.5               | 2,342                | 774                       | 905                       |
| 899.0               | 4,602                | 1,736                     | 2,641                     |
| 899.5               | 7,533                | 3,034                     | 5,675                     |

| Device | Routing | Invert | Outlet Devices                                                                                                                                      |
|--------|---------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 899.6' | <b>50.0' long x 10.0' breadth TO EB7B</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=897.7' TW=897.7' (Dynamic Tailwater)  
 ↑1=TO EB7B ( Controls 0.00 cfs)

**Pond EB7C: Wetland 7C**

Hydrograph



**LDP24010 Ham Lake****MSE 24-hr 3 25-Year Rainfall=5.23"**

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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

|                                         |                                                                                                                                               |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SubcatchmentEB-1A:</b>               | Runoff Area=1,147,516 sf 0.00% Impervious Runoff Depth=1.51"<br>Flow Length=474' Tc=25.5 min CN=61 Runoff=36.14 cfs 3.313 af                  |
| <b>SubcatchmentEB-1B:</b>               | Runoff Area=218,275 sf 0.00% Impervious Runoff Depth=1.51"<br>Flow Length=383' Tc=18.0 min CN=61 Runoff=8.32 cfs 0.630 af                     |
| <b>SubcatchmentEB-1C:</b>               | Runoff Area=386,594 sf 0.00% Impervious Runoff Depth=1.51"<br>Flow Length=207' Tc=10.0 min CN=61 Runoff=19.46 cfs 1.116 af                    |
| <b>SubcatchmentEB-1CR: EB-1C (Road)</b> | Runoff Area=17,279 sf 100.00% Impervious Runoff Depth=4.99"<br>Flow Length=207' Tc=10.0 min CN=WQ Runoff=2.59 cfs 0.165 af                    |
| <b>SubcatchmentEB-1D:</b>               | Runoff Area=170,630 sf 0.00% Impervious Runoff Depth=1.51"<br>Flow Length=207' Tc=9.0 min CN=61 Runoff=9.01 cfs 0.493 af                      |
| <b>SubcatchmentEB-2A:</b>               | Runoff Area=347,380 sf 0.00% Impervious Runoff Depth=1.51"<br>Flow Length=800' Tc=47.0 min CN=WQ Runoff=7.55 cfs 1.003 af                     |
| <b>SubcatchmentEB-2B:</b>               | Runoff Area=635,146 sf 0.00% Impervious Runoff Depth=2.38"<br>Flow Length=1,600' Tc=67.7 min CN=WQ Runoff=17.97 cfs 2.886 af                  |
| <b>SubcatchmentEB-2C:</b>               | Runoff Area=52,343 sf 9.46% Impervious Runoff Depth=1.84"<br>Flow Length=253' Tc=12.6 min CN=WQ Runoff=2.84 cfs 0.184 af                      |
| <b>SubcatchmentEB-2D:</b>               | Runoff Area=79,363 sf 3.45% Impervious Runoff Depth=1.63"<br>Flow Length=276' Tc=15.6 min CN=WQ Runoff=3.50 cfs 0.247 af                      |
| <b>SubcatchmentEB-3:</b>                | Runoff Area=88,397 sf 0.00% Impervious Runoff Depth=1.51"<br>Flow Length=294' Tc=22.7 min CN=WQ Runoff=2.98 cfs 0.255 af                      |
| <b>SubcatchmentEB-4:</b>                | Runoff Area=107,117 sf 0.00% Impervious Runoff Depth=1.51"<br>Flow Length=303' Tc=12.9 min CN=WQ Runoff=4.85 cfs 0.309 af                     |
| <b>SubcatchmentEB-5:</b>                | Runoff Area=833,088 sf 0.00% Impervious Runoff Depth=1.51"<br>Flow Length=1,137' Slope=0.0040 '/' Tc=42.8 min CN=WQ Runoff=19.14 cfs 2.405 af |
| <b>SubcatchmentEB-6:</b>                | Runoff Area=602,150 sf 0.00% Impervious Runoff Depth=1.51"<br>Flow Length=531' Slope=0.0500 '/' Tc=11.1 min CN=61 Runoff=29.14 cfs 1.739 af   |
| <b>SubcatchmentEB-7A:</b>               | Runoff Area=93,805 sf 0.00% Impervious Runoff Depth=1.51"<br>Flow Length=212' Tc=20.1 min CN=61 Runoff=3.38 cfs 0.271 af                      |
| <b>SubcatchmentEB-7B:</b>               | Runoff Area=177,383 sf 0.00% Impervious Runoff Depth=1.51"<br>Flow Length=181' Tc=9.5 min CN=61 Runoff=9.07 cfs 0.512 af                      |
| <b>SubcatchmentEB-7C:</b>               | Runoff Area=18,945 sf 0.00% Impervious Runoff Depth=1.51"<br>Tc=10.0 min CN=61 Runoff=0.95 cfs 0.055 af                                       |

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|                                                   |                                                                                                                                                                             |
|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SubcatchmentEB-7D:</b>                         | Runoff Area=92,630 sf 0.00% Impervious Runoff Depth=1.51"<br>Flow Length=632' Tc=22.2 min CN=61 Runoff=3.15 cfs 0.267 af                                                    |
| <b>SubcatchmentEB-8A:</b>                         | Runoff Area=37,143 sf 0.00% Impervious Runoff Depth=1.51"<br>Tc=0.0 min CN=61 Runoff=2.64 cfs 0.107 af                                                                      |
| <b>SubcatchmentEB-8B:</b>                         | Runoff Area=68,682 sf 0.00% Impervious Runoff Depth=1.51"<br>Flow Length=256' Tc=13.9 min CN=61 Runoff=2.98 cfs 0.198 af                                                    |
| <b>Reach 1A&amp;2B:</b>                           | Inflow=18.37 cfs 3.071 af<br>Outflow=18.37 cfs 3.071 af                                                                                                                     |
| <b>Reach 7B&amp;D:</b>                            | Inflow=3.15 cfs 0.267 af<br>Outflow=3.15 cfs 0.267 af                                                                                                                       |
| <b>Reach EL-DITCH: Lexington Ave Ditch</b>        | Inflow=10.31 cfs 1.506 af<br>Outflow=10.31 cfs 1.506 af                                                                                                                     |
| <b>Reach EN: North Boundary</b>                   | Inflow=0.00 cfs 0.000 af<br>Outflow=0.00 cfs 0.000 af                                                                                                                       |
| <b>Reach ES: South Total (Ditch 44-9)</b>         | Inflow=50.60 cfs 8.460 af<br>Outflow=50.60 cfs 8.460 af                                                                                                                     |
| <b>Reach ESE-QA: SE Quarter (Private Ditch A)</b> | Inflow=19.12 cfs 3.380 af<br>Outflow=19.12 cfs 3.380 af                                                                                                                     |
| <b>Reach ESW-Q: Southwest Discharge</b>           | Inflow=25.66 cfs 2.209 af<br>Outflow=25.66 cfs 2.209 af                                                                                                                     |
| <b>Reach EW: West Boundary</b>                    | Inflow=9.01 cfs 1.489 af<br>Outflow=9.01 cfs 1.489 af                                                                                                                       |
| <b>Reach PRE: Overall Pre-DevelopmentRunoff</b>   | Inflow=65.19 cfs 11.620 af<br>Outflow=65.19 cfs 11.620 af                                                                                                                   |
| <b>Reach SE-QB: SE Quarter (Private Ditch B)</b>  | Inflow=21.84 cfs 2.871 af<br>Outflow=21.84 cfs 2.871 af                                                                                                                     |
| <b>Pond EB1A: Wetland 1A</b>                      | Peak Elev=900.8' Storage=144,324 cf Inflow=36.14 cfs 3.313 af<br>Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af |
| <b>Pond EB1B: Wetland 1B</b>                      | Peak Elev=901.8' Storage=908 cf Inflow=8.32 cfs 0.630 af<br>Outflow=8.30 cfs 0.620 af                                                                                       |
| <b>Pond EB1C: Wetland 1C</b>                      | Peak Elev=901.8' Storage=37,313 cf Inflow=25.49 cfs 1.736 af<br>Primary=0.00 cfs 0.000 af Secondary=4.29 cfs 0.997 af Outflow=4.29 cfs 0.997 af                             |
| <b>Pond EB6: Wetland 6</b>                        | Peak Elev=896.3' Storage=13,160 cf Inflow=29.14 cfs 2.280 af<br>Outflow=24.99 cfs 2.102 af                                                                                  |



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**Pond EB7A: Wetland 7A**Peak Elev=898.3' Storage=6,253 cf Inflow=6.88 cfs 0.659 af  
Outflow=5.23 cfs 0.542 af**Pond EB7B: Wetland 7B**Peak Elev=898.4' Storage=7,535 cf Inflow=9.07 cfs 0.512 af  
Primary=3.67 cfs 0.388 af Secondary=0.00 cfs 0.000 af Outflow=3.67 cfs 0.388 af**Pond EB7C: Wetland 7C**Peak Elev=898.9' Storage=2,383 cf Inflow=0.95 cfs 0.055 af  
Outflow=0.00 cfs 0.000 af**Total Runoff Area = 118.776 ac Runoff Volume = 16.158 af Average Runoff Depth = 1.63"**  
**99.52% Pervious = 118.202 ac 0.48% Impervious = 0.573 ac**

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**Summary for Subcatchment EB-1A:**

Runoff = 36.14 cfs @ 12.40 hrs, Volume= 3.313 af, Depth= 1.51"  
Routed to Pond EB1A : Wetland 1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

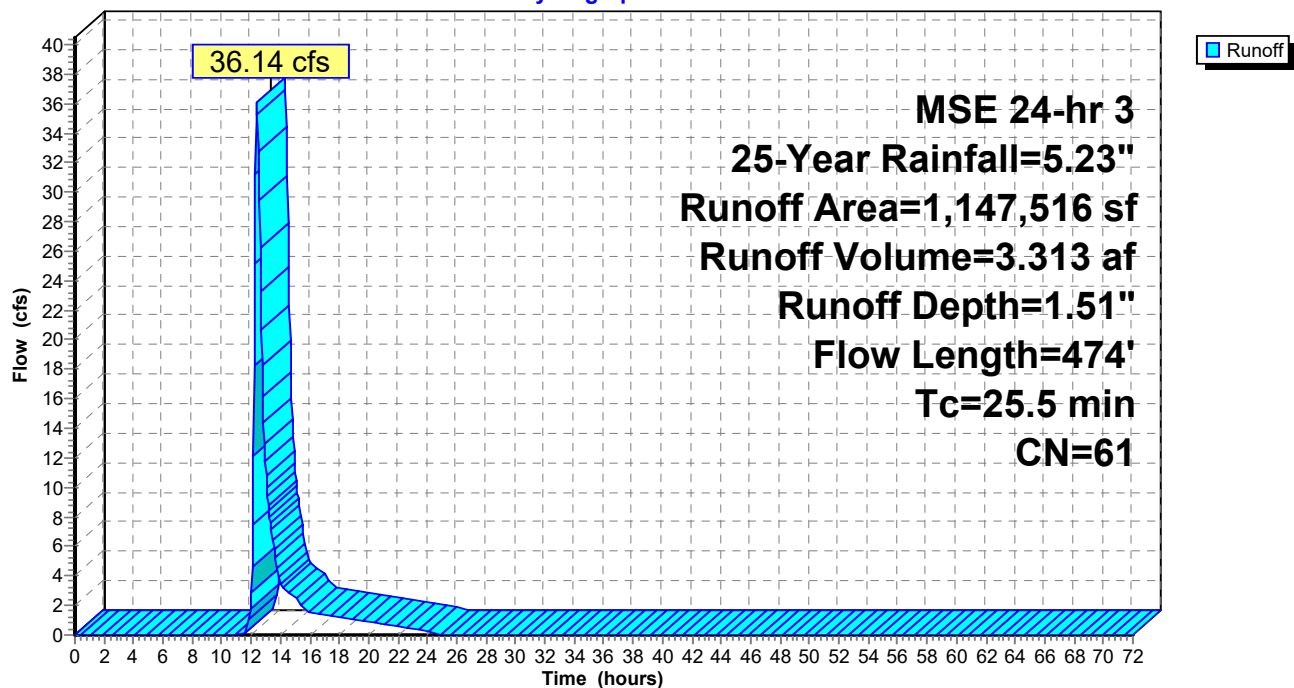
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 1,147,516 | 61 | >75% Grass cover, Good, HSG B |
| 1,147,516 |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 16.8     | 100           | 0.0154        | 0.10              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 2.83"                |
| 8.7      | 374           | 0.0105        | 0.72              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 25.5     | 474           | Total         |                   |                |                                                                      |

**Subcatchment EB-1A:**

Hydrograph



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MSE 24-hr 3 25-Year Rainfall=5.23"

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**Summary for Subcatchment EB-1B:**

Runoff = 8.32 cfs @ 12.30 hrs, Volume= 0.630 af, Depth= 1.51"  
Routed to Pond EB1B : Wetland 1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

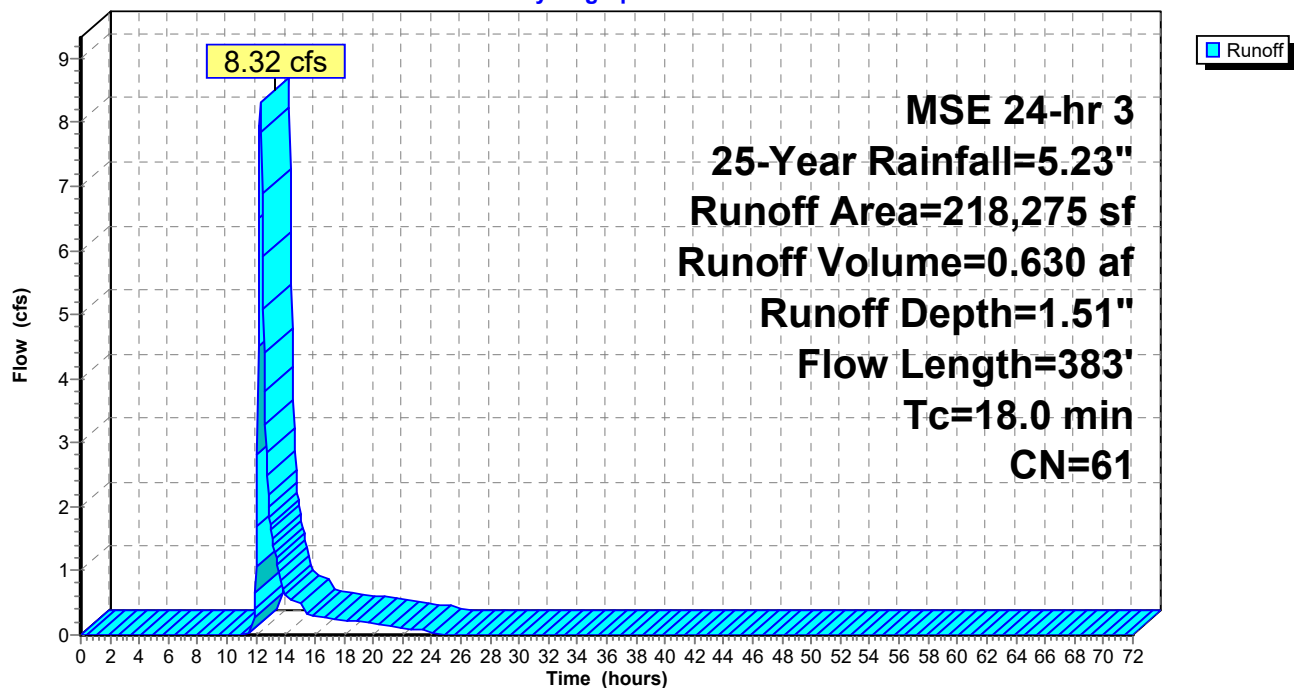
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 218,275   | 61 | >75% Grass cover, Good, HSG B |
| 218,275   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 12.3     | 100           | 0.0131        | 0.14              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 5.7      | 283           | 0.0141        | 0.83              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 18.0     | 383           | Total         |                   |                |                                                                      |

**Subcatchment EB-1B:**

Hydrograph



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**Summary for Subcatchment EB-1C:**

Runoff = 19.46 cfs @ 12.19 hrs, Volume= 1.116 af, Depth= 1.51"  
Routed to Pond EB1C : Wetland 1C

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

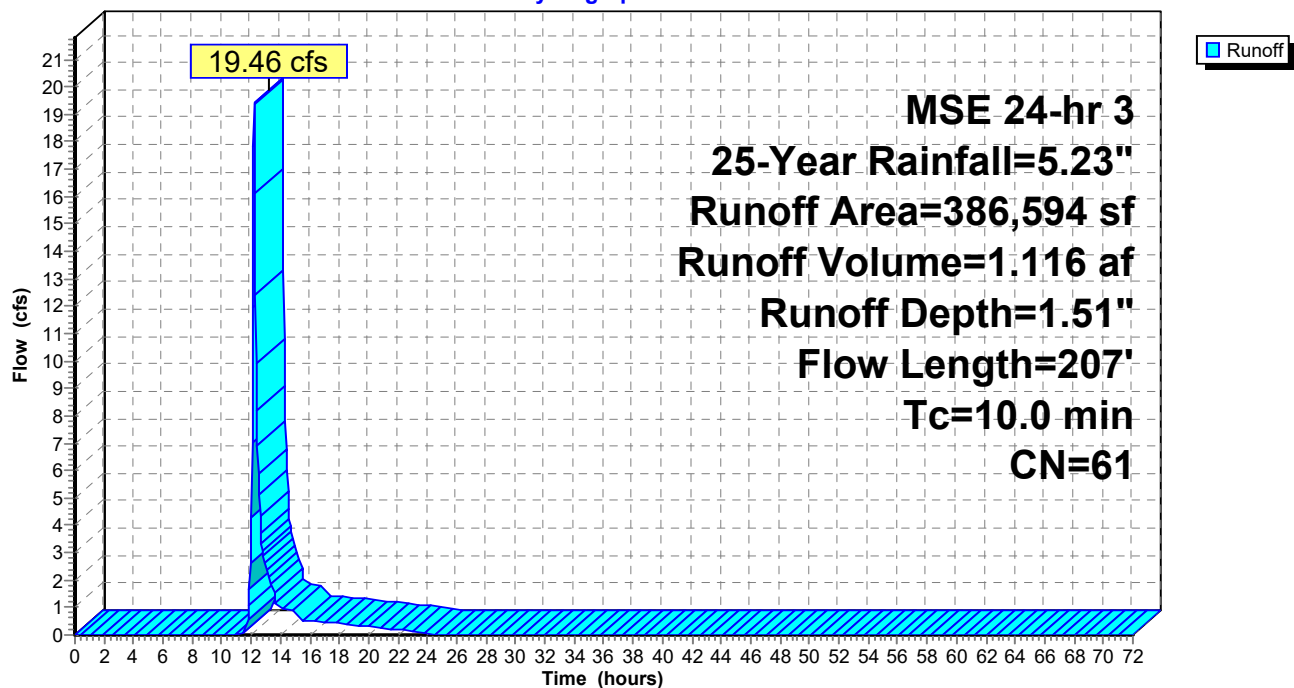
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 386,594   | 61 | >75% Grass cover, Good, HSG B |
| 386,594   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 8.9      | 100           | 0.0300        | 0.19              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.1      | 107           | 0.0556        | 1.65              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 10.0     | 207           | Total         |                   |                |                                                                      |

**Subcatchment EB-1C:**

Hydrograph



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**Summary for Subcatchment EB-1CR: EB-1C (Road)**

Runoff = 2.59 cfs @ 12.17 hrs, Volume= 0.165 af, Depth= 4.99"

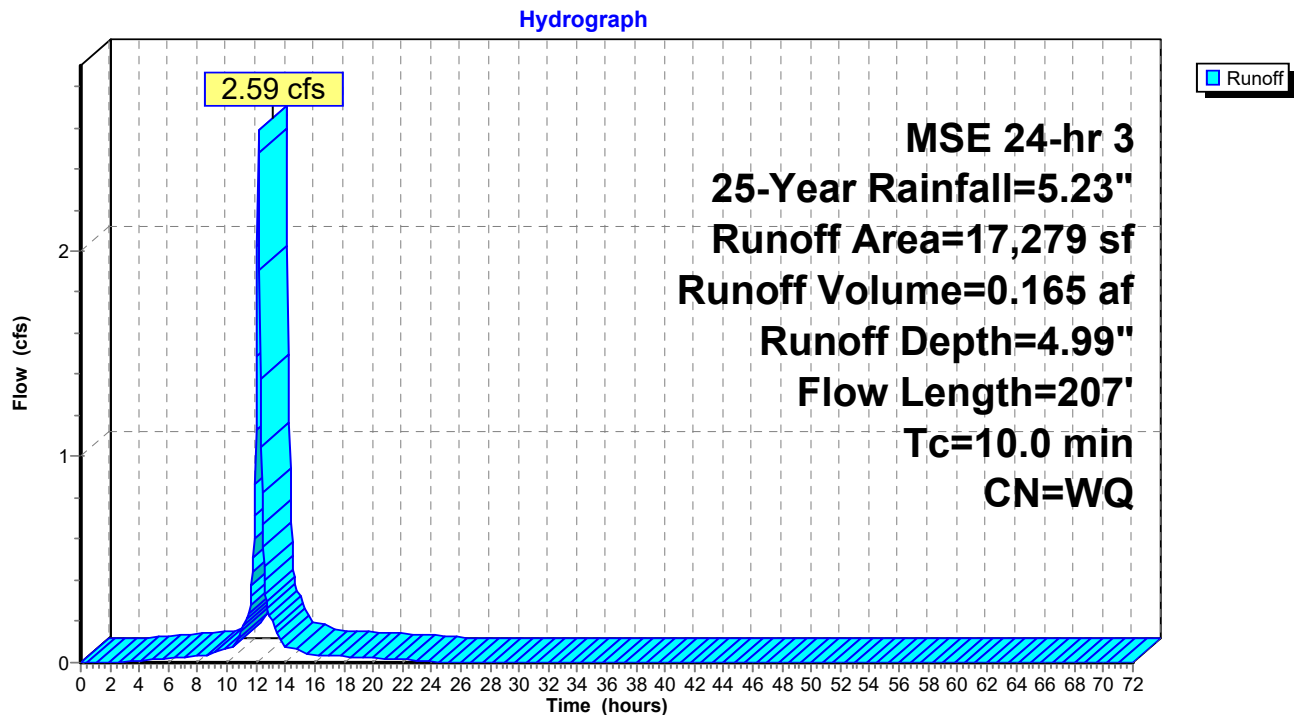
Routed to Reach PRE : Overall Pre-Development Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description             |
|-----------|----|-------------------------|
| 3,074     | 98 | Roofs, HSG A            |
| 14,205    | 98 | Paved parking, HSG A    |
| 17,279    |    | Weighted Average        |
| 17,279    |    | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 8.9      | 100           | 0.0300        | 0.19              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.1      | 107           | 0.0556        | 1.65              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 10.0     | 207           | Total         |                   |                |                                                                      |

**Subcatchment EB-1CR: EB-1C (Road)**

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**Summary for Subcatchment EB-1D:**

Runoff = 9.01 cfs @ 12.17 hrs, Volume= 0.493 af, Depth= 1.51"  
Routed to Reach EW : West Boundary

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

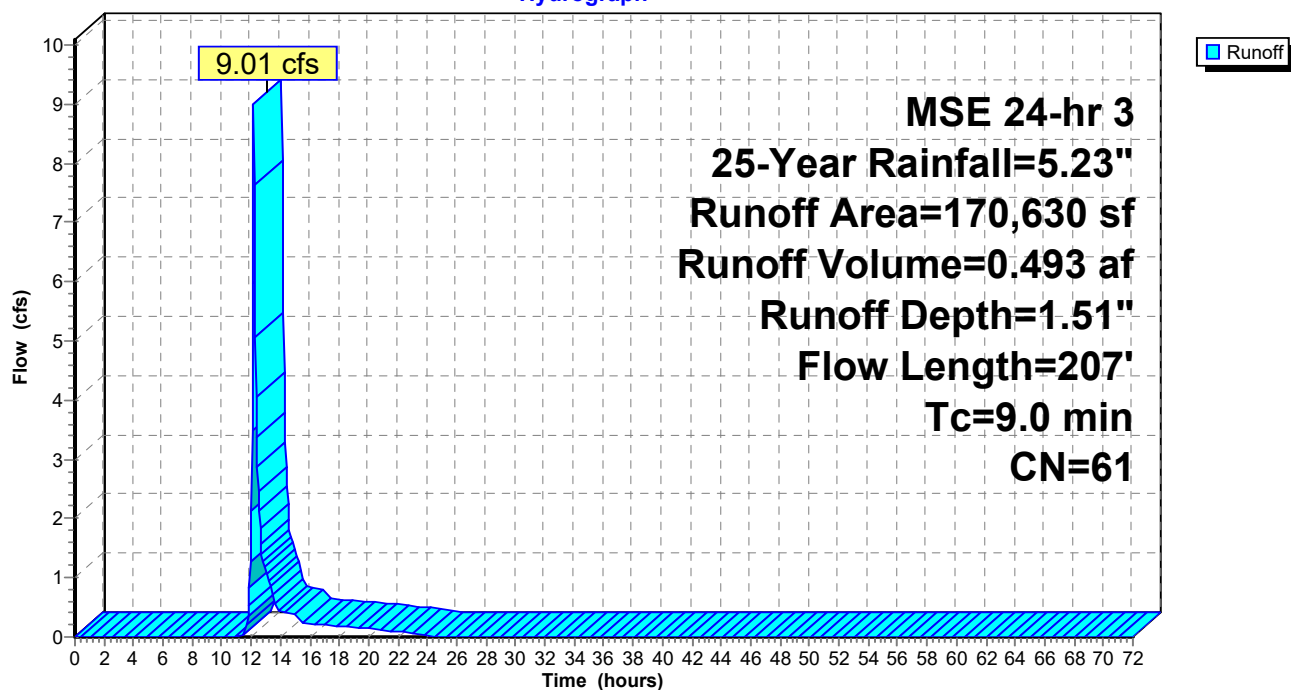
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 170,630   | 61 | >75% Grass cover, Good, HSG B |
| 170,630   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 7.9      | 100           | 0.0400        | 0.21              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.1      | 107           | 0.0556        | 1.65              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 9.0      | 207           | Total         |                   |                |                                                                      |

**Subcatchment EB-1D:**

Hydrograph



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MSE 24-hr 3 25-Year Rainfall=5.23"

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**Summary for Subcatchment EB-2A:**

Runoff = 7.55 cfs @ 12.71 hrs, Volume= 1.003 af, Depth= 1.51"

Routed to Reach EL-DITCH : Lexington Ave Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

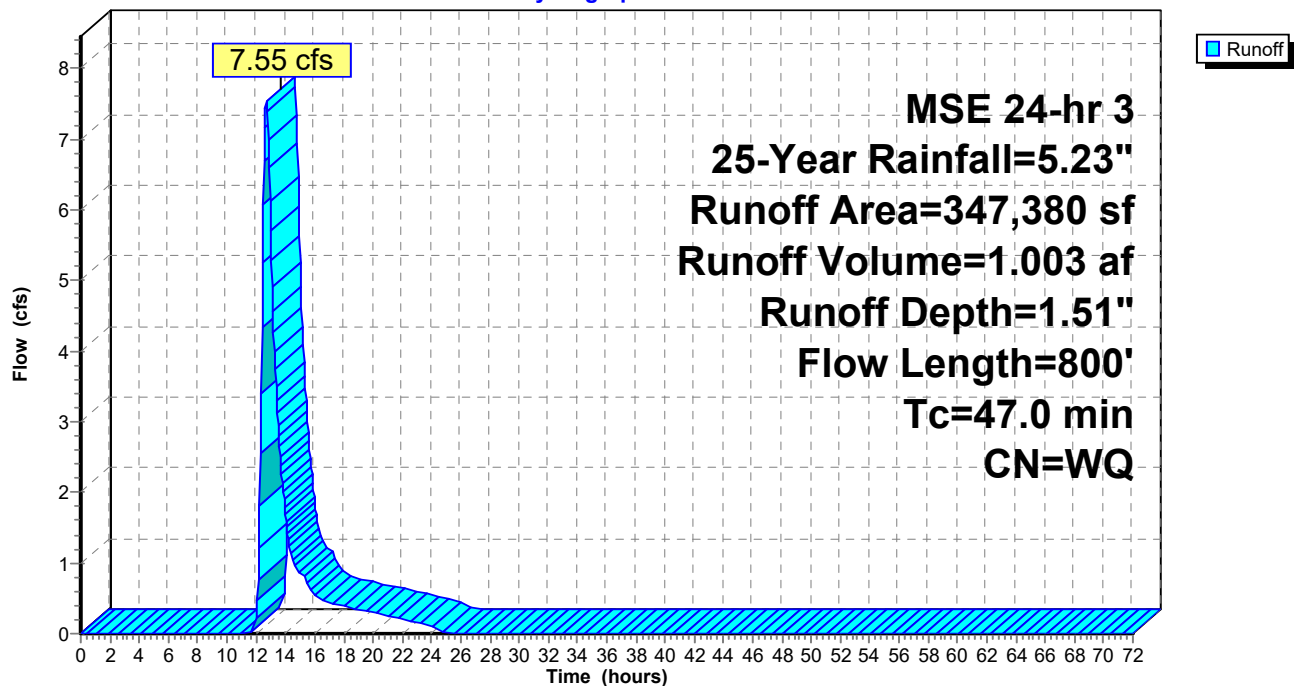
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 189,274   | 61 | >75% Grass cover, Good, HSG B |
| 158,106   | 61 | >75% Grass cover, Good, HSG B |
| 347,380   |    | Weighted Average              |
| 347,380   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 23.4     | 100           | 0.0068        | 0.07              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 2.83"                |
| 23.6     | 700           | 0.0050        | 0.49              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 47.0     | 800           | Total         |                   |                |                                                                      |

**Subcatchment EB-2A:**

Hydrograph



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MSE 24-hr 3 25-Year Rainfall=5.23"

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**Summary for Subcatchment EB-2B:**

Runoff = 17.97 cfs @ 12.95 hrs, Volume= 2.886 af, Depth= 2.38"  
Routed to Reach 1A&2B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

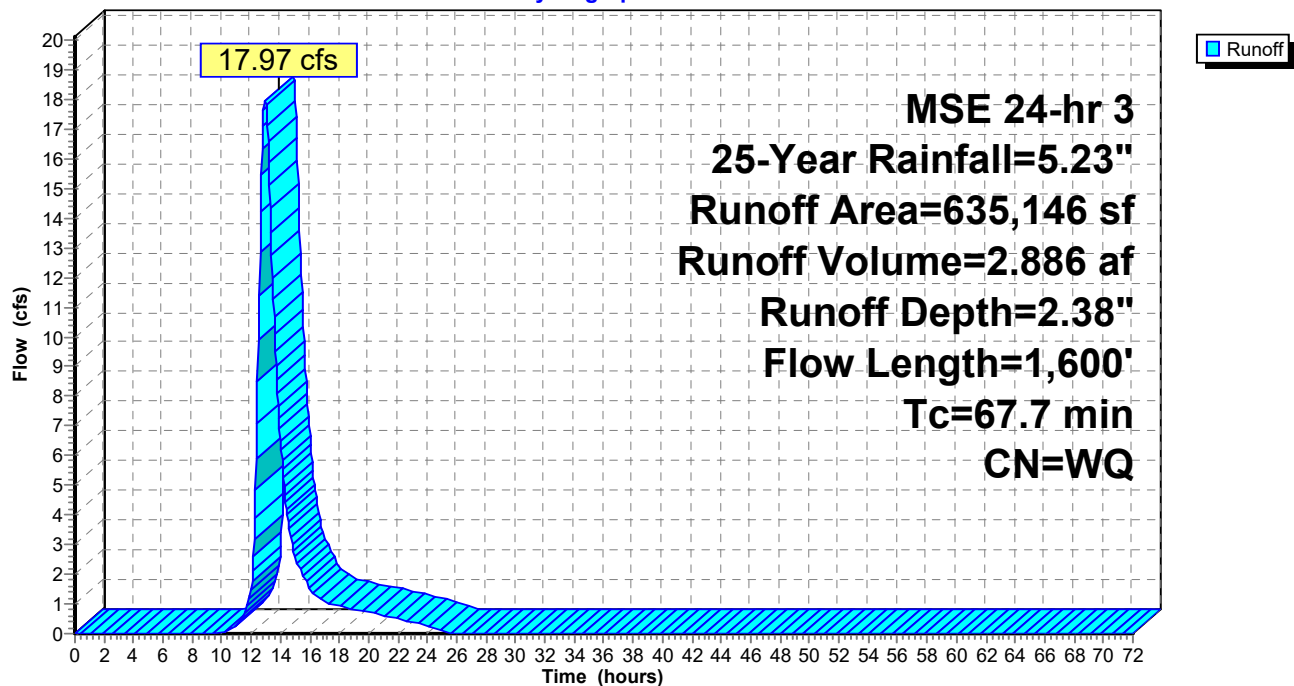
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 288,060   | 61 | >75% Grass cover, Good, HSG B |
| 347,086   | 80 | >75% Grass cover, Good, HSG D |
| 635,146   |    | Weighted Average              |
| 635,146   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 17.2     | 100           | 0.0147        | 0.10              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 2.83"                |
| 50.5     | 1,500         | 0.0050        | 0.49              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 67.7     | 1,600         | Total         |                   |                |                                                                      |

**Subcatchment EB-2B:**

Hydrograph





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**Summary for Subcatchment EB-2C:**

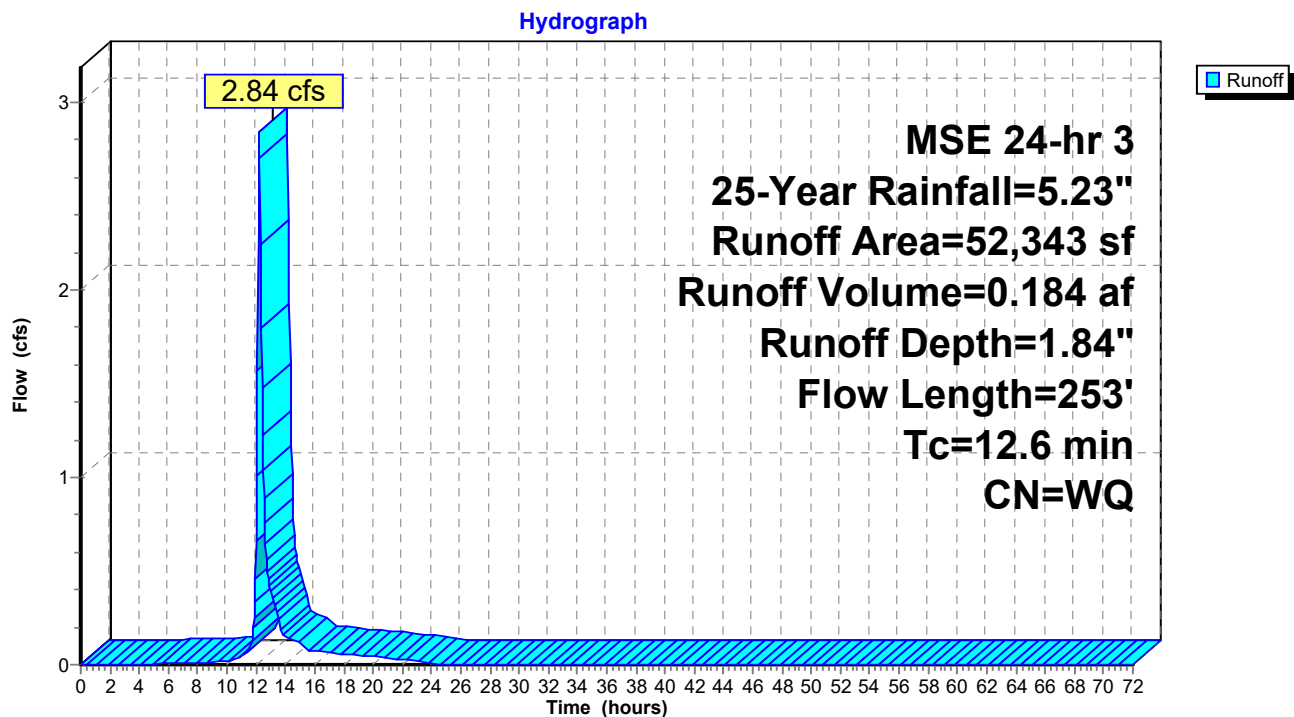
Runoff = 2.84 cfs @ 12.22 hrs, Volume= 0.184 af, Depth= 1.84"  
Routed to Reach 1A&2B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 4,554     | 98 | Roofs, HSG A                  |
| 397       | 98 | Paved parking, HSG A          |
| 47,392    | 61 | >75% Grass cover, Good, HSG B |
| 52,343    |    | Weighted Average              |
| 47,392    |    | 90.54% Pervious Area          |
| 4,951     |    | 9.46% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.1     | 100           | 0.0214        | 0.16              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 2.5      | 153           | 0.0205        | 1.00              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 12.6     | 253           | Total         |                   |                |                                                                      |

**Subcatchment EB-2C:**

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**Summary for Subcatchment EB-2D:**

Runoff = 3.50 cfs @ 12.26 hrs, Volume= 0.247 af, Depth= 1.63"

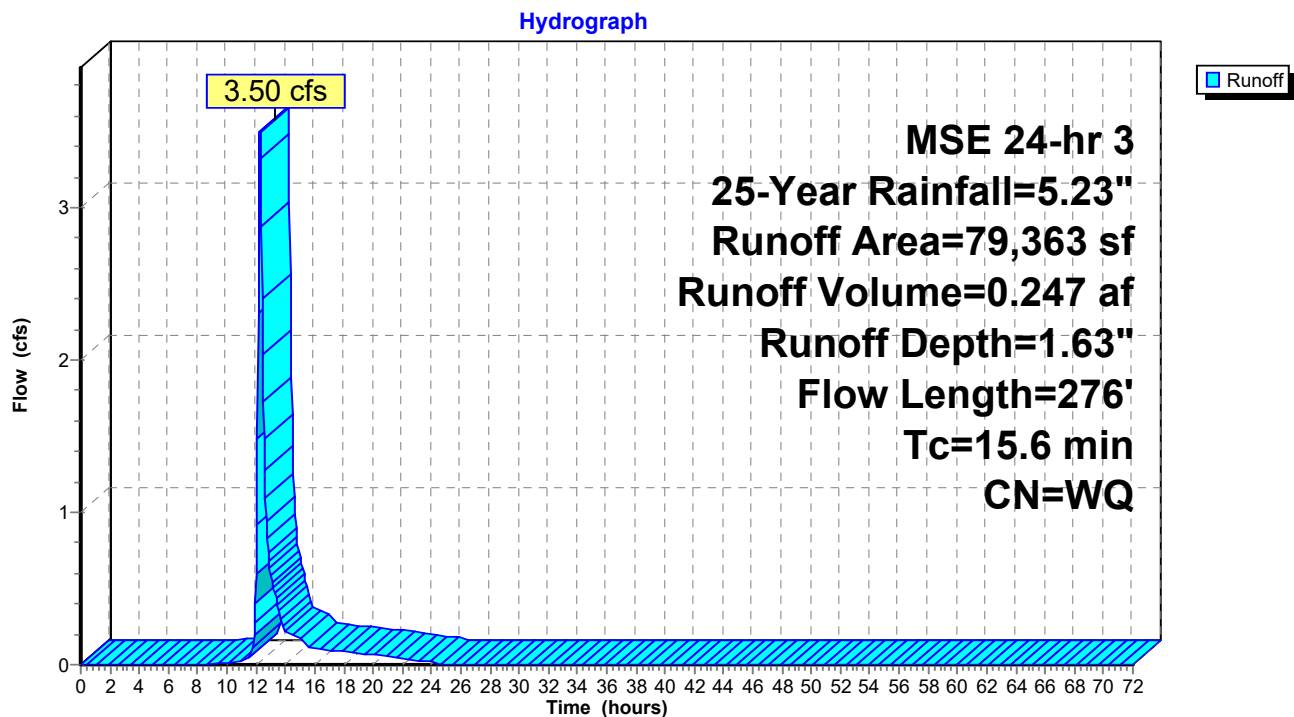
Routed to Reach EL-DITCH : Lexington Ave Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 485       | 98 | Roofs, HSG A                  |
| 2,253     | 98 | Paved parking, HSG A          |
| 76,625    | 61 | >75% Grass cover, Good, HSG B |
| 79,363    |    | Weighted Average              |
| 76,625    |    | 96.55% Pervious Area          |
| 2,738     |    | 3.45% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.6     | 100           | 0.0191        | 0.16              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 5.0      | 176           | 0.0070        | 0.59              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 15.6     | 276           | Total         |                   |                |                                                                      |

**Subcatchment EB-2D:**

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**Summary for Subcatchment EB-3:**

Runoff = 2.98 cfs @ 12.36 hrs, Volume= 0.255 af, Depth= 1.51"

Routed to Reach EL-DITCH : Lexington Ave Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

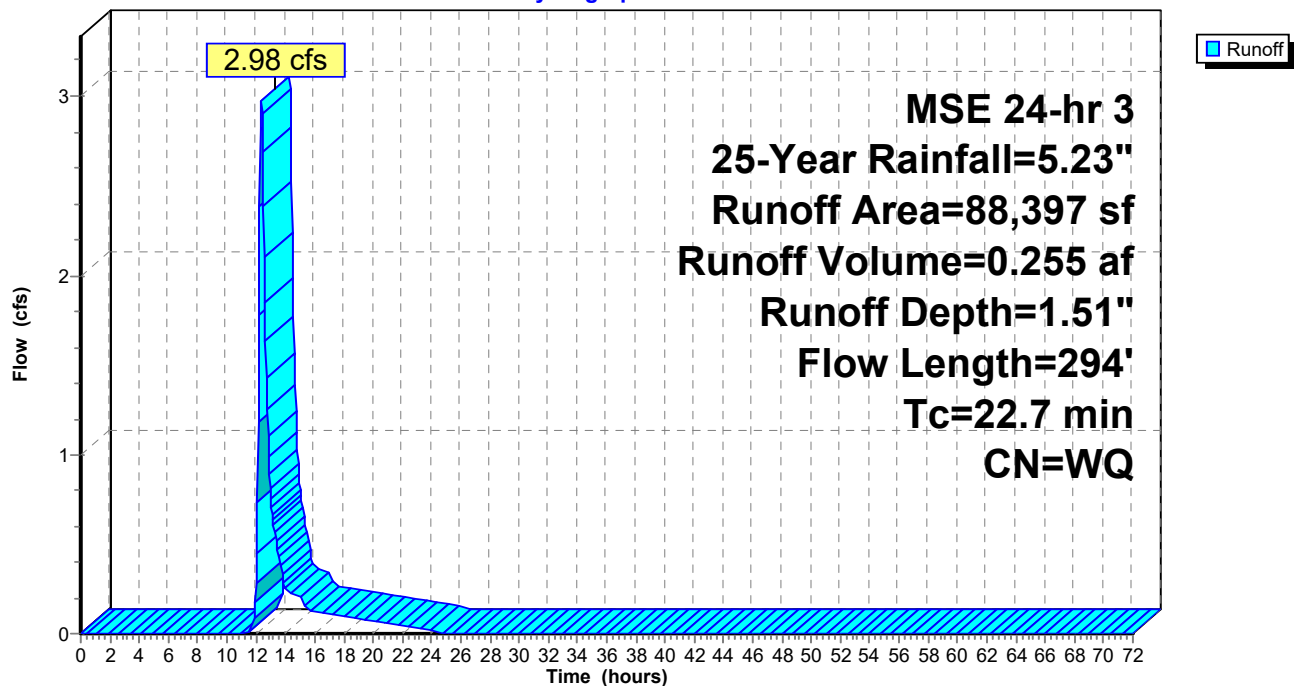
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 44,923    | 61 | >75% Grass cover, Good, HSG B |
| 43,474    | 61 | >75% Grass cover, Good, HSG B |
| 88,397    |    | Weighted Average              |
| 88,397    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 20.0     | 100           | 0.0100        | 0.08              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 2.83"                |
| 2.7      | 194           | 0.0289        | 1.19              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 22.7     | 294           | Total         |                   |                |                                                                      |

**Subcatchment EB-3:**

Hydrograph



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**Summary for Subcatchment EB-4:**

Runoff = 4.85 cfs @ 12.22 hrs, Volume= 0.309 af, Depth= 1.51"

Routed to Reach ESE-QA : SE Quarter (Private Ditch A)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

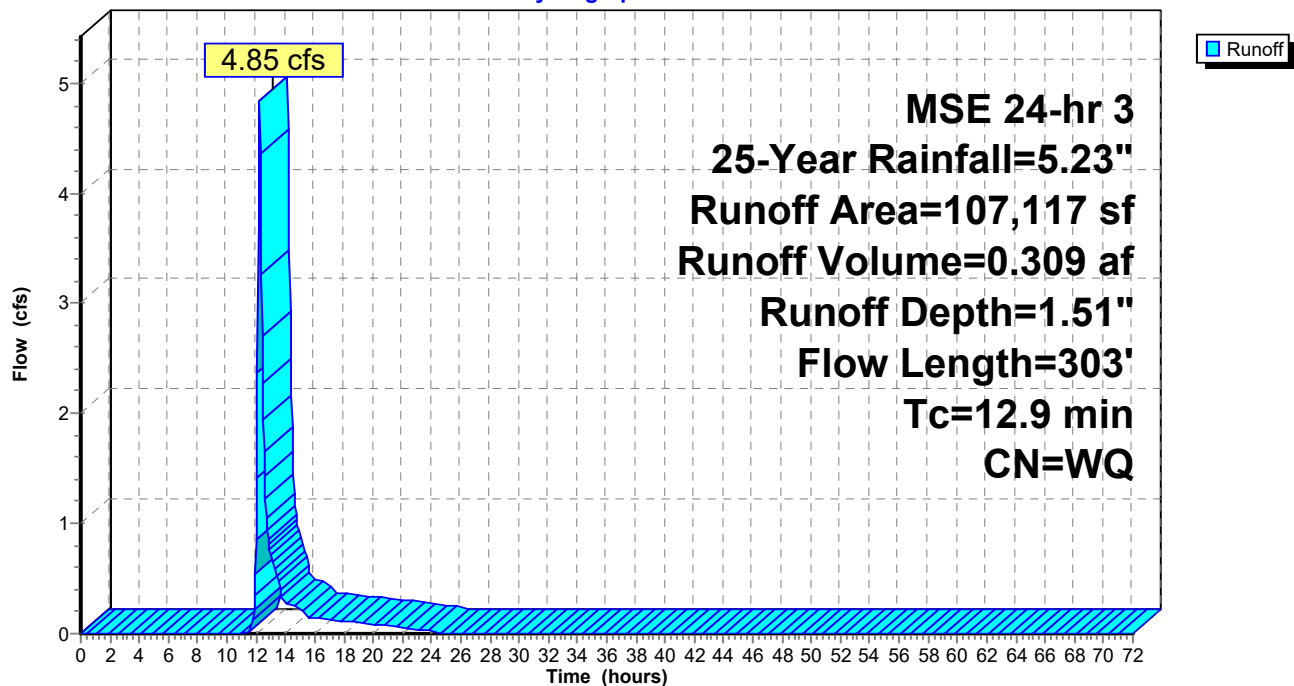
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 32,988    | 61 | >75% Grass cover, Good, HSG B |
| 74,129    | 61 | >75% Grass cover, Good, HSG B |
| 107,117   |    | Weighted Average              |
| 107,117   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 9.0      | 100           | 0.0285        | 0.18              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 3.9      | 203           | 0.0150        | 0.86              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 12.9     | 303           | Total         |                   |                |                                                                      |

**Subcatchment EB-4:**

Hydrograph



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**Summary for Subcatchment EB-5:**

Runoff = 19.14 cfs @ 12.65 hrs, Volume= 2.405 af, Depth= 1.51"

Routed to Reach SE-QB : SE Quarter (Private Ditch B)

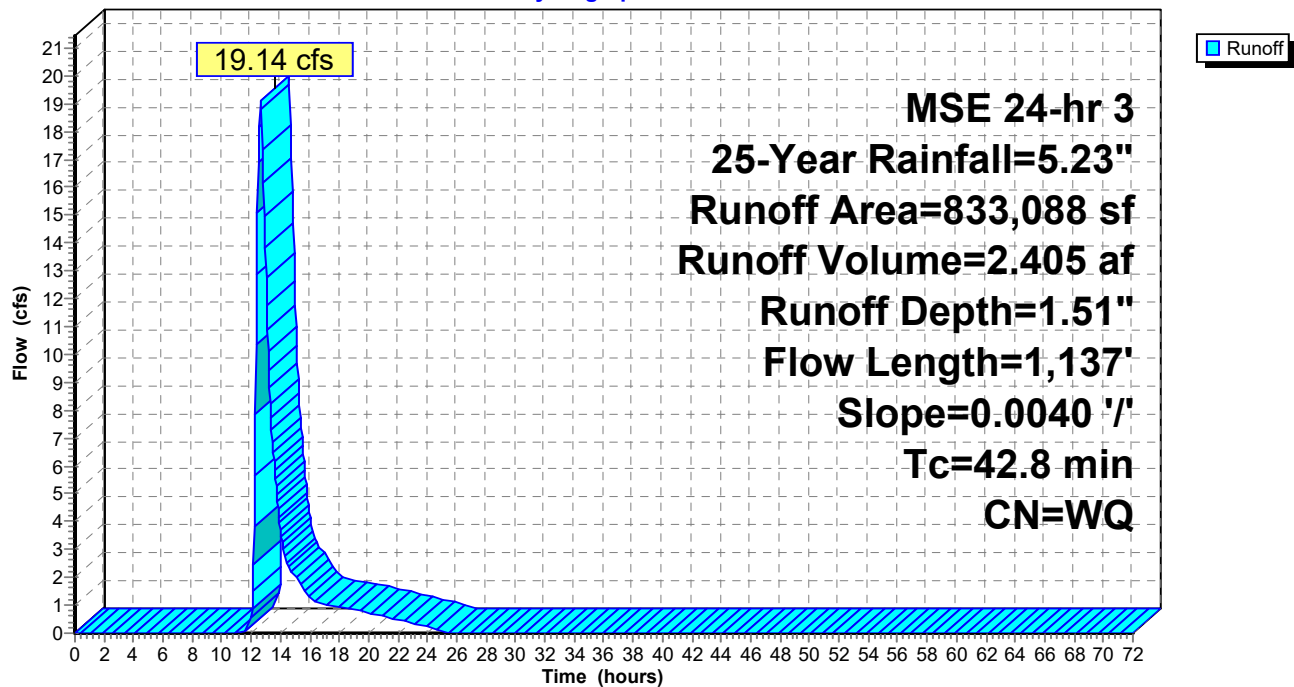
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 293,681   | 61 | >75% Grass cover, Good, HSG B |
| 539,407   | 61 | >75% Grass cover, Good, HSG B |
| 833,088   |    | Weighted Average              |
| 833,088   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                   |
|----------|---------------|---------------|-------------------|----------------|---------------------------------------------------------------|
| 42.8     | 1,137         | 0.0040        | 0.44              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps |

**Subcatchment EB-5:**

Hydrograph



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**Summary for Subcatchment EB-6:**

Runoff = 29.14 cfs @ 12.20 hrs, Volume= 1.739 af, Depth= 1.51"  
Routed to Pond EB6 : Wetland 6

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

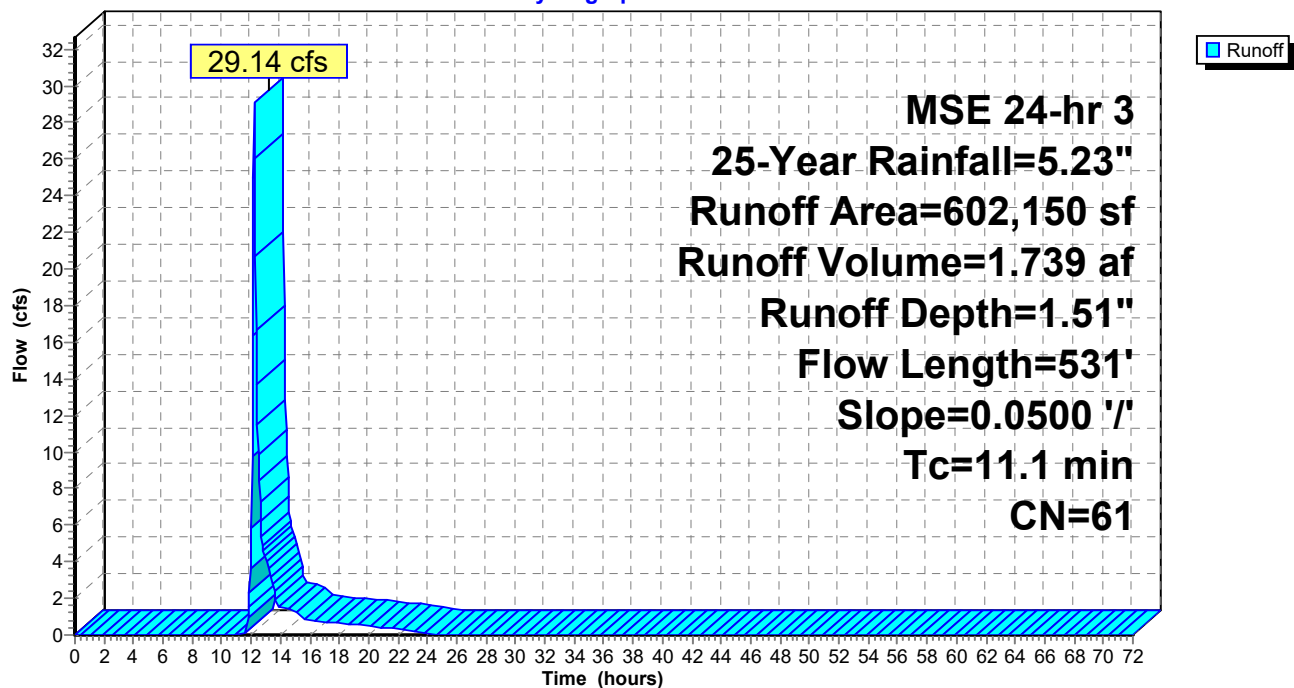
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 602,150   | 61 | >75% Grass cover, Good, HSG B |
| 602,150   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 6.0      | 50            | 0.0500        | 0.14              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 2.83"                |
| 5.1      | 481           | 0.0500        | 1.57              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 11.1     | 531           | Total         |                   |                |                                                                      |

**Subcatchment EB-6:**

Hydrograph



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**Summary for Subcatchment EB-7A:**

Runoff = 3.38 cfs @ 12.32 hrs, Volume= 0.271 af, Depth= 1.51"  
Routed to Pond EB7A : Wetland 7A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

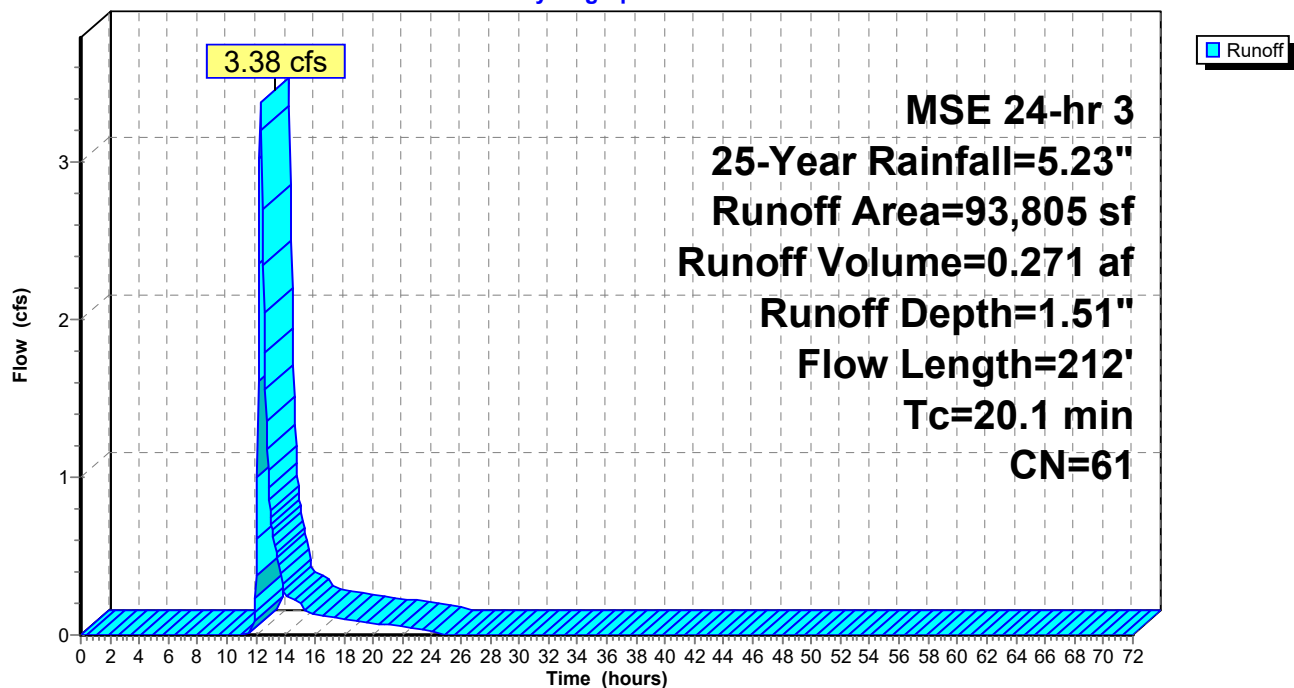
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 93,805    | 61 | >75% Grass cover, Good, HSG B |
| 93,805    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 18.8     | 100           | 0.0046        | 0.09              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.3      | 112           | 0.0425        | 1.44              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 20.1     | 212           | Total         |                   |                |                                                                      |

**Subcatchment EB-7A:**

Hydrograph



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**Summary for Subcatchment EB-7B:**

Runoff = 9.07 cfs @ 12.18 hrs, Volume= 0.512 af, Depth= 1.51"  
Routed to Pond EB7B : Wetland 7B

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

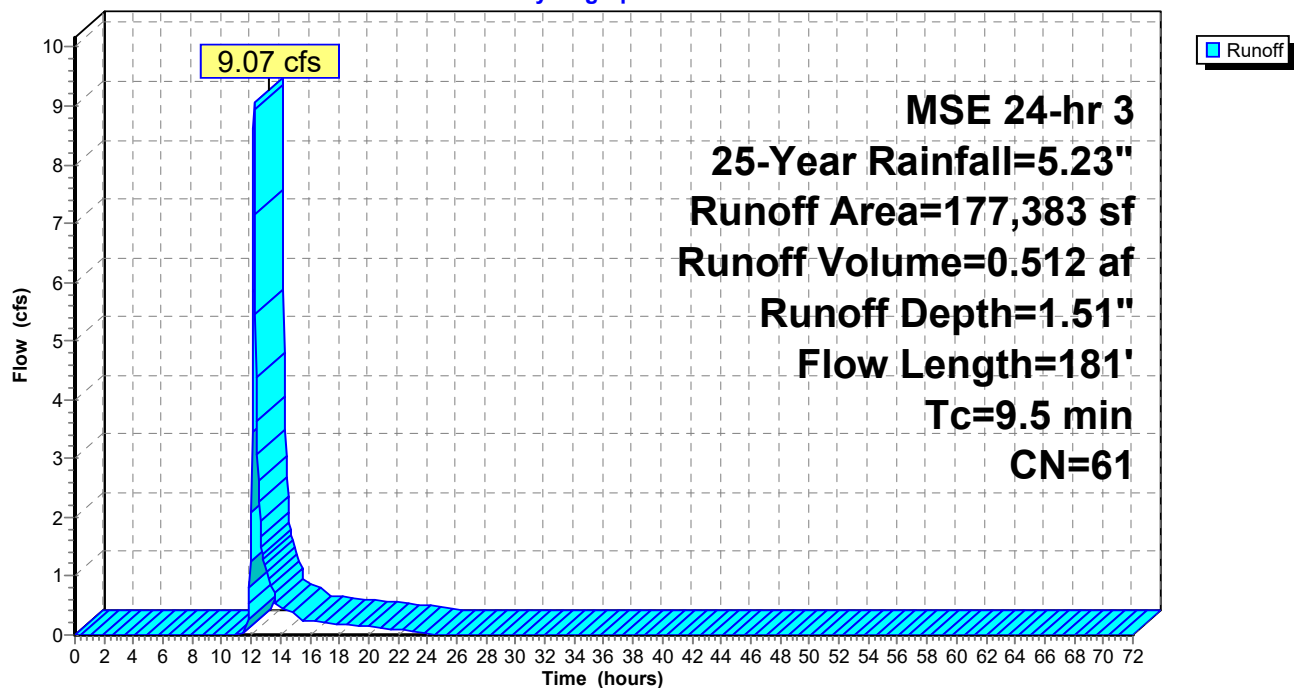
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 177,383   | 61 | >75% Grass cover, Good, HSG B |
| 177,383   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 8.4      | 100           | 0.0341        | 0.20              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.1      | 81            | 0.0288        | 1.19              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 9.5      | 181           | Total         |                   |                |                                                                      |

**Subcatchment EB-7B:**

Hydrograph





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**Summary for Subcatchment EB-7C:**

Runoff = 0.95 cfs @ 12.19 hrs, Volume= 0.055 af, Depth= 1.51"  
Routed to Pond EB7C : Wetland 7C

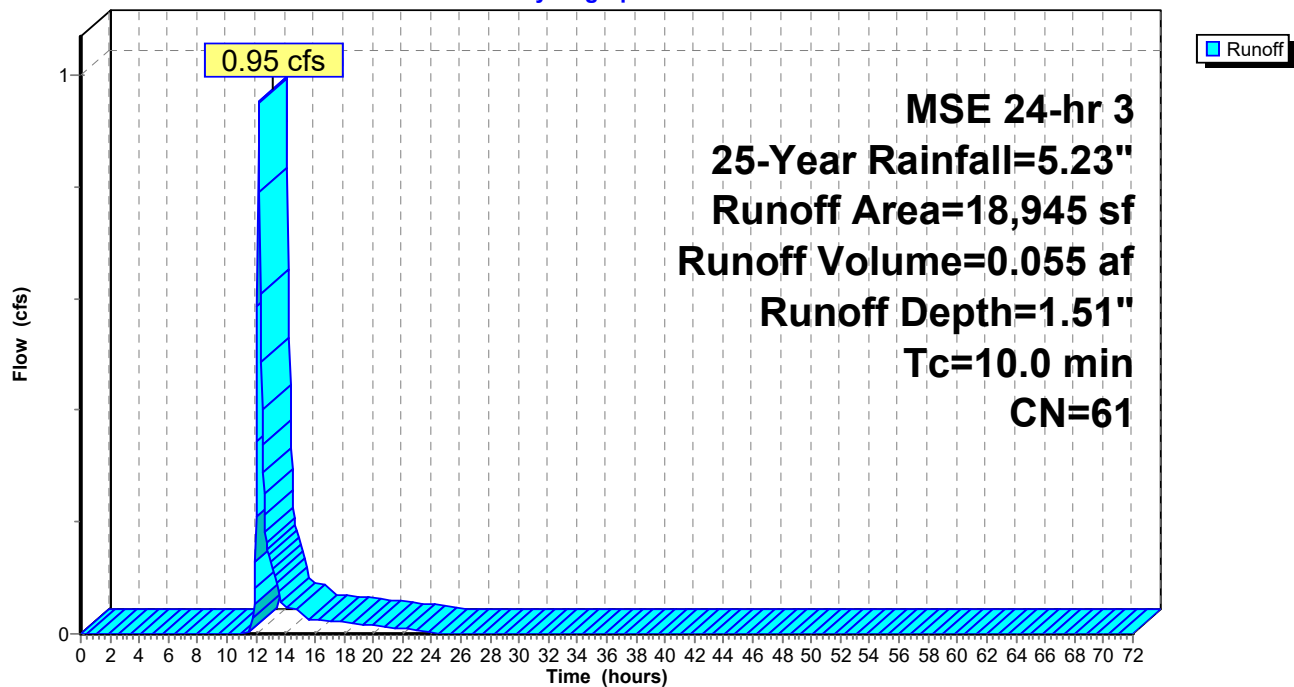
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 18,945    | 61 | >75% Grass cover, Good, HSG B |
| 18,945    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment EB-7C:**

Hydrograph



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MSE 24-hr 3 25-Year Rainfall=5.23"

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**Summary for Subcatchment EB-7D:**

Runoff = 3.15 cfs @ 12.35 hrs, Volume= 0.267 af, Depth= 1.51"  
Routed to Reach 7B&D :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

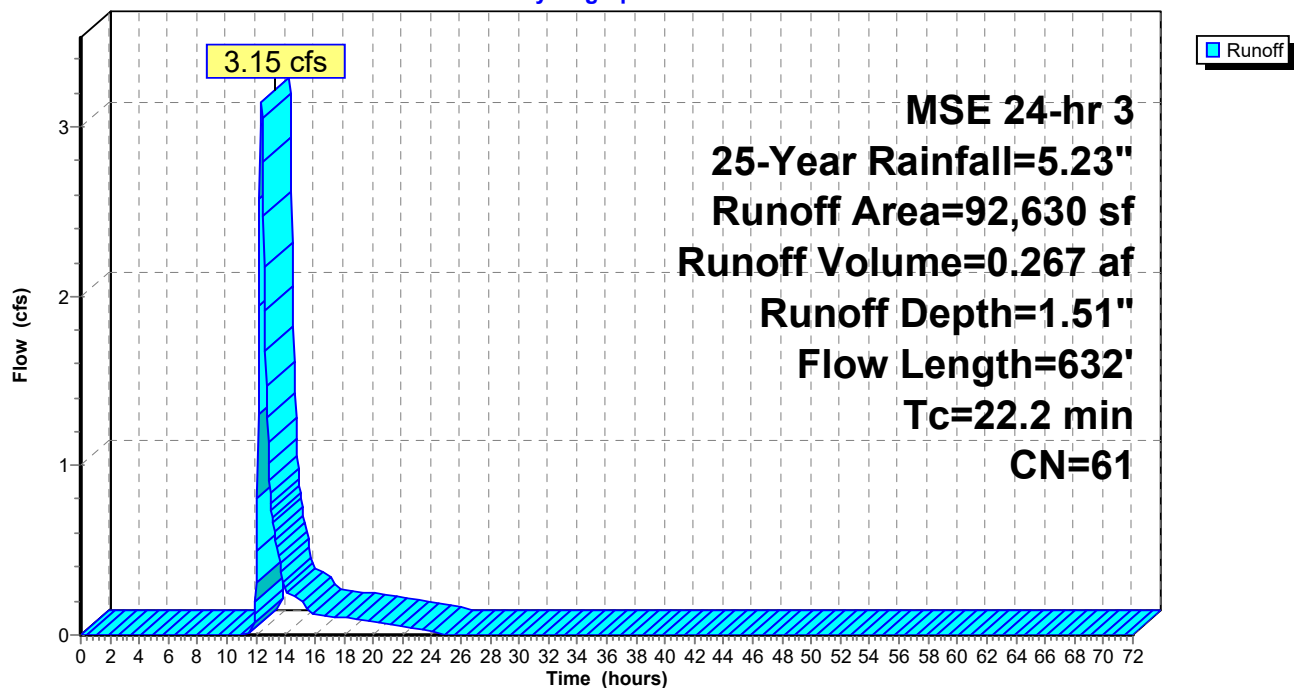
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 92,630    | 61 | >75% Grass cover, Good, HSG B |
| 92,630    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 9.5      | 100           | 0.0253        | 0.18              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 12.7     | 532           | 0.0100        | 0.70              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 22.2     | 632           | Total         |                   |                |                                                                      |

**Subcatchment EB-7D:**

Hydrograph



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**Summary for Subcatchment EB-8A:**

Runoff = 2.64 cfs @ 12.05 hrs, Volume= 0.107 af, Depth= 1.51"

Routed to Reach ESW-Q : Southwest Discharge

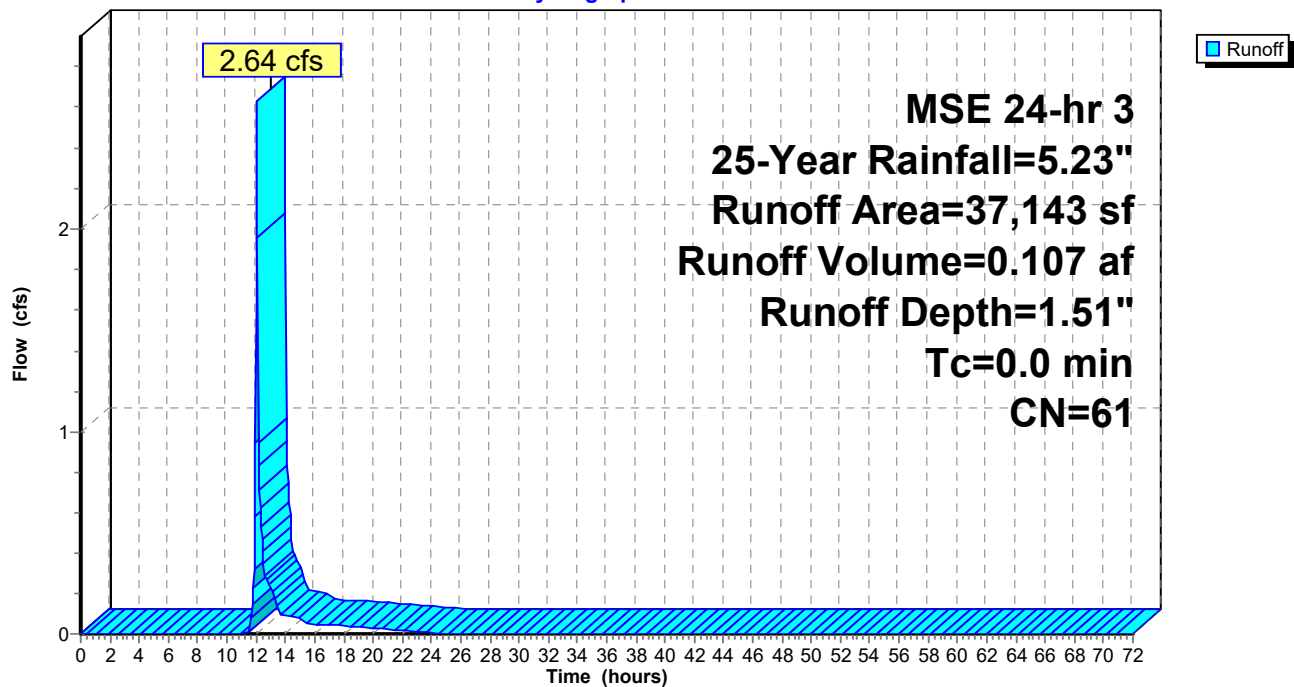
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 37,143    | 61 | >75% Grass cover, Good, HSG B |
| 37,143    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 0.0      |               |               |                   |                | Direct Entry, |

**Subcatchment EB-8A:**

Hydrograph



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MSE 24-hr 3 25-Year Rainfall=5.23"

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**Summary for Subcatchment EB-8B:**

Runoff = 2.98 cfs @ 12.24 hrs, Volume= 0.198 af, Depth= 1.51"

Routed to Reach SE-QB : SE Quarter (Private Ditch B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

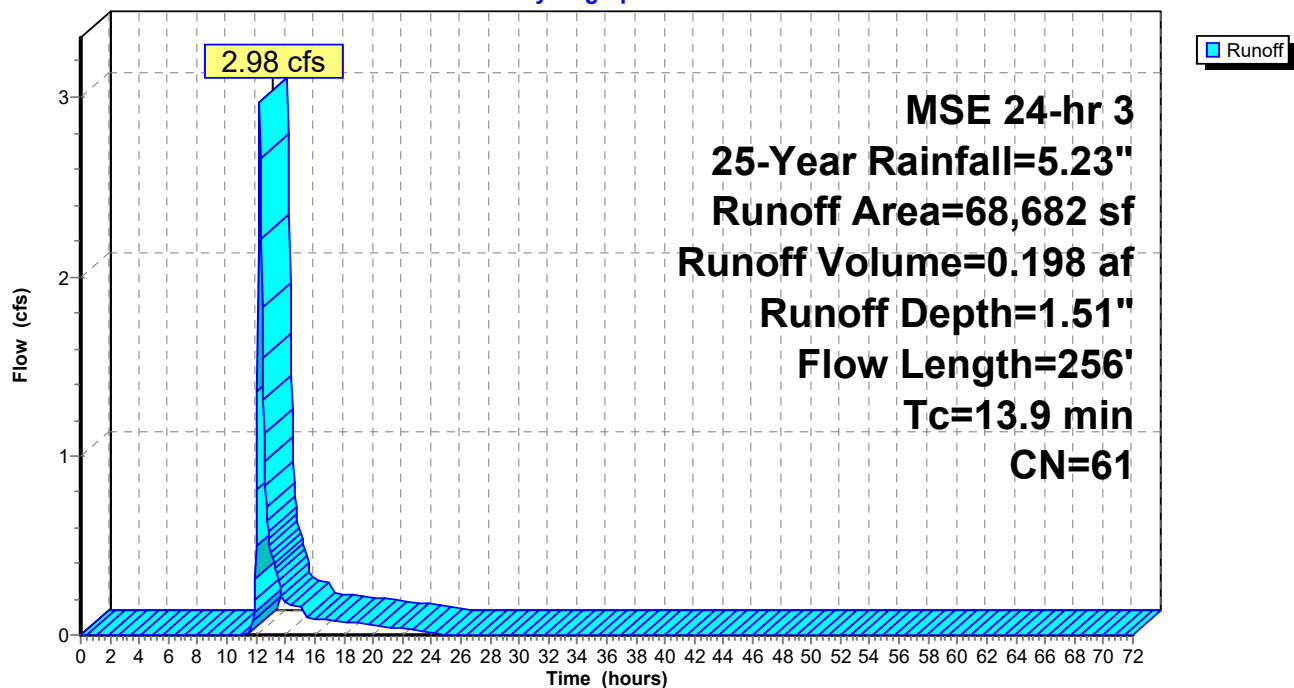
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 68,682    | 61 | >75% Grass cover, Good, HSG B |
| 68,682    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.9     | 100           | 0.0180        | 0.15              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 3.0      | 156           | 0.0154        | 0.87              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 13.9     | 256           | Total         |                   |                |                                                                      |

**Subcatchment EB-8B:**

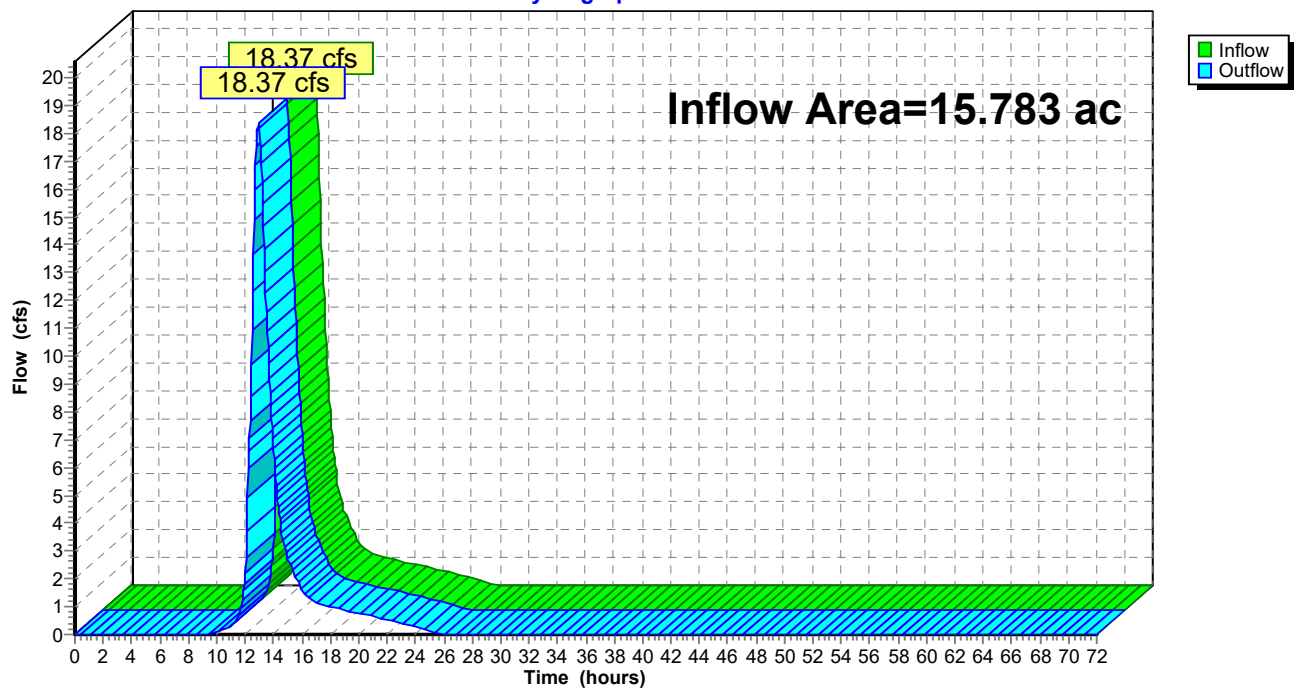
Hydrograph



**Summary for Reach 1A&2B:**

Inflow Area = 15.783 ac, 0.72% Impervious, Inflow Depth = 2.33" for 25-Year event  
Inflow = 18.37 cfs @ 12.94 hrs, Volume= 3.071 af  
Outflow = 18.37 cfs @ 12.94 hrs, Volume= 3.071 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach ESE-QA : SE Quarter (Private Ditch A)

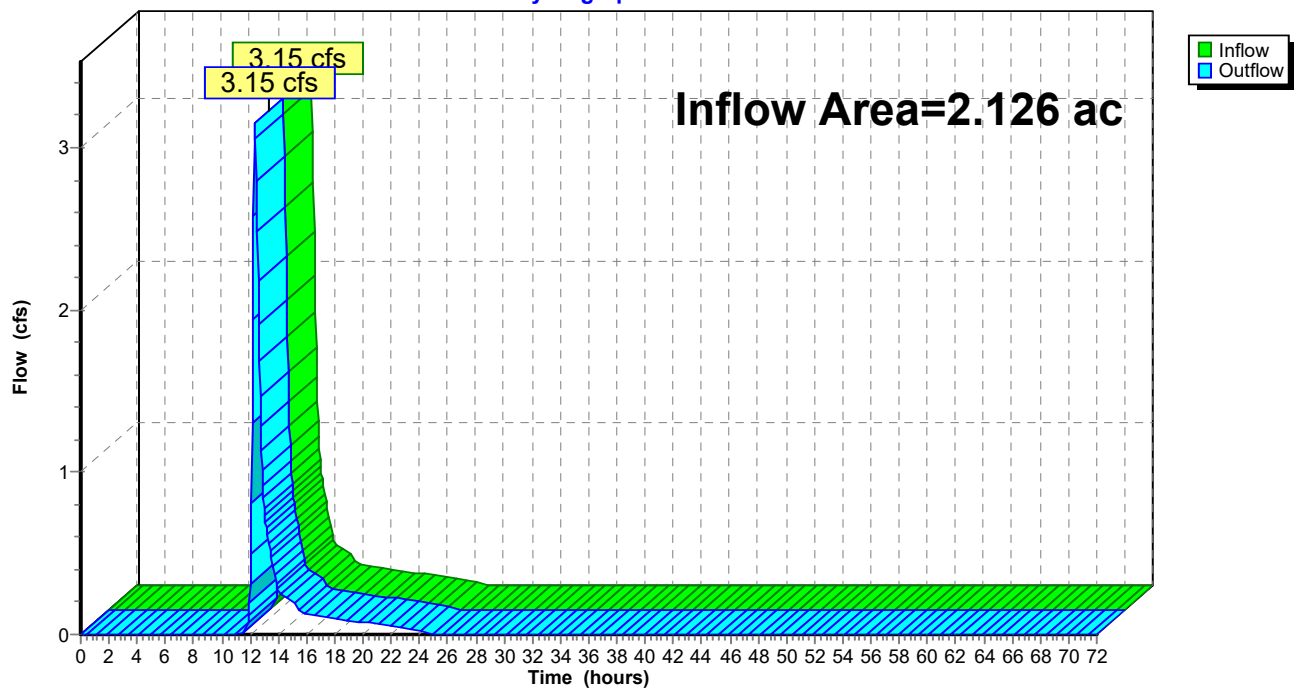
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach 1A&2B:****Hydrograph**

**Summary for Reach 7B&D:**

Inflow Area = 2.126 ac, 0.00% Impervious, Inflow Depth = 1.51" for 25-Year event  
Inflow = 3.15 cfs @ 12.35 hrs, Volume= 0.267 af  
Outflow = 3.15 cfs @ 12.35 hrs, Volume= 0.267 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach SE-QB : SE Quarter (Private Ditch B)

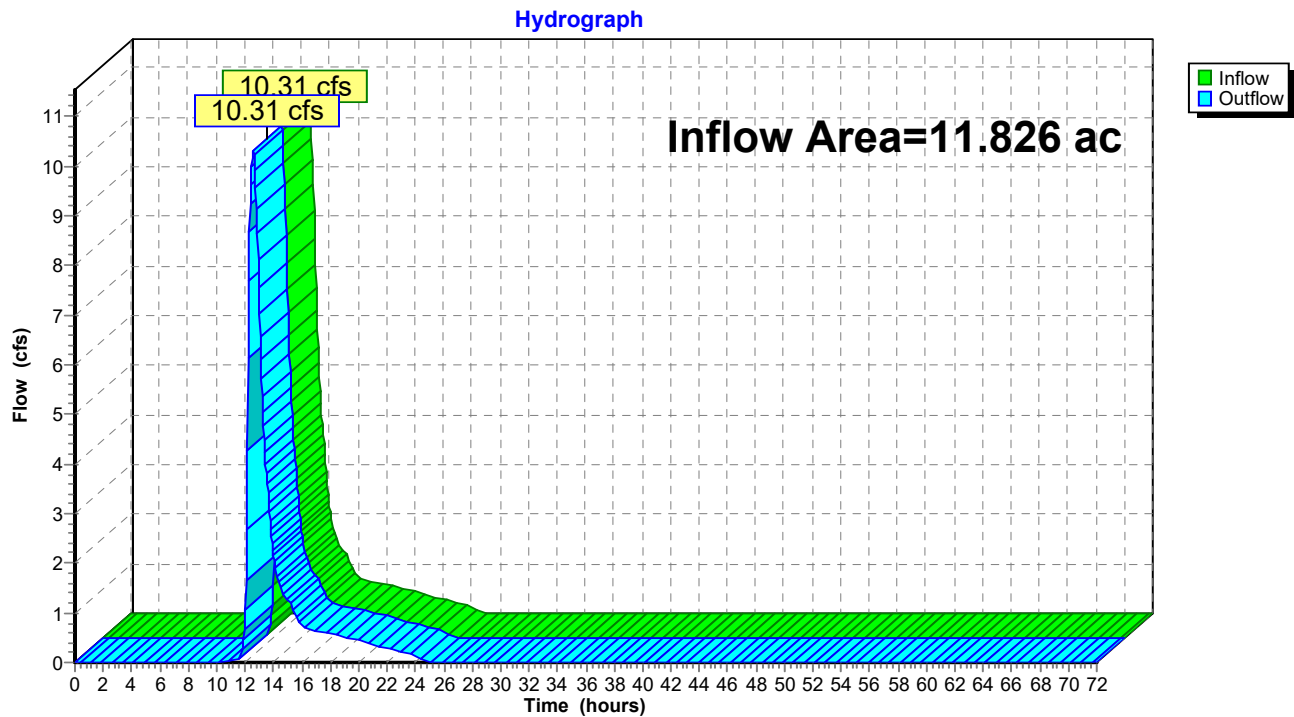
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach 7B&D:****Hydrograph**

**Summary for Reach EL-DITCH: Lexington Ave Ditch**

Inflow Area = 11.826 ac, 0.53% Impervious, Inflow Depth = 1.53" for 25-Year event  
Inflow = 10.31 cfs @ 12.58 hrs, Volume= 1.506 af  
Outflow = 10.31 cfs @ 12.58 hrs, Volume= 1.506 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PRE : Overall Pre-Development Runoff

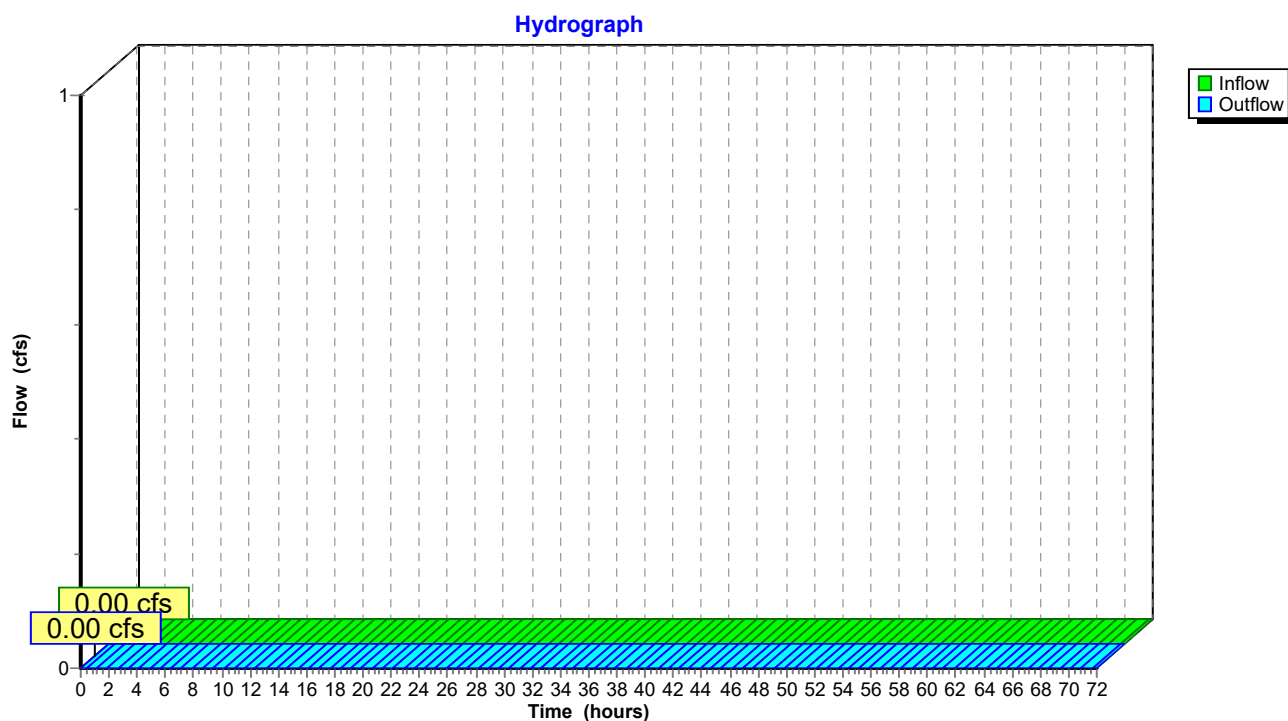
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach EL-DITCH: Lexington Ave Ditch**

**Summary for Reach EN: North Boundary**

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PRE : Overall Pre-Development Runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

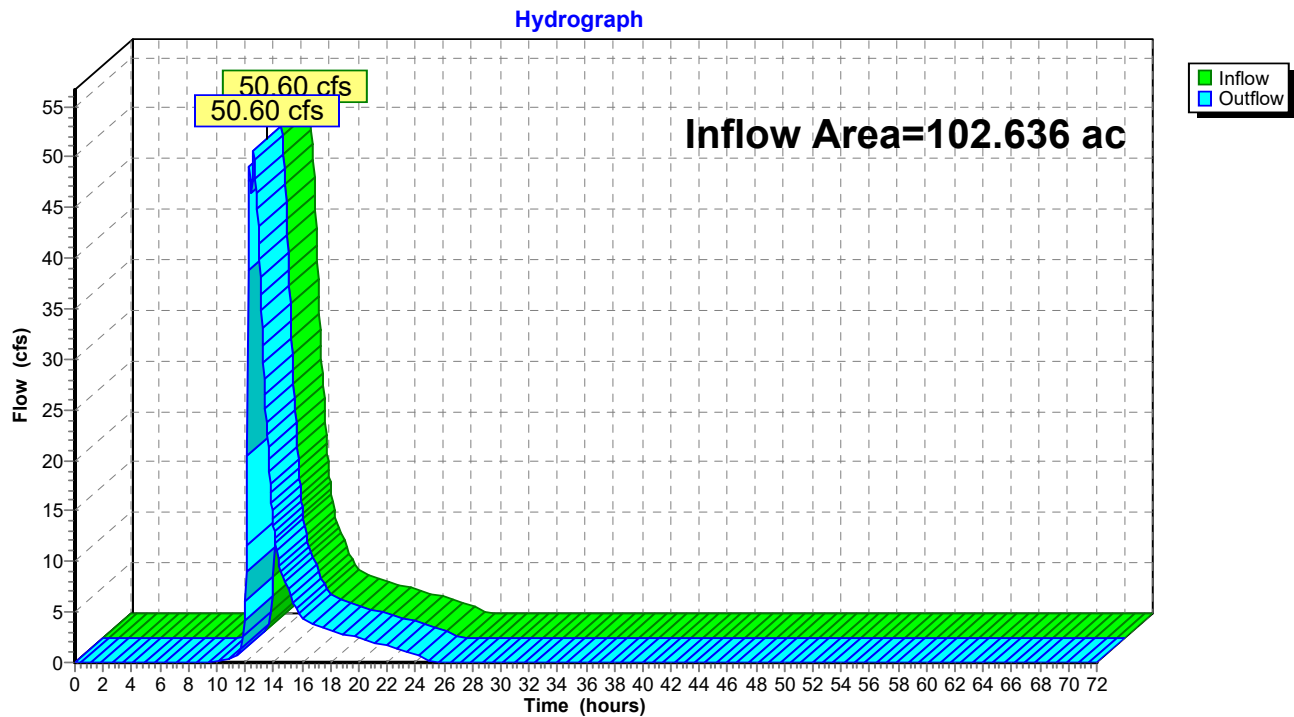
**Reach EN: North Boundary**



**Summary for Reach ES: South Total (Ditch 44-9)**

Inflow Area = 102.636 ac, 0.11% Impervious, Inflow Depth = 0.99" for 25-Year event  
Inflow = 50.60 cfs @ 12.60 hrs, Volume= 8.460 af  
Outflow = 50.60 cfs @ 12.60 hrs, Volume= 8.460 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PRE : Overall Pre-Development Runoff

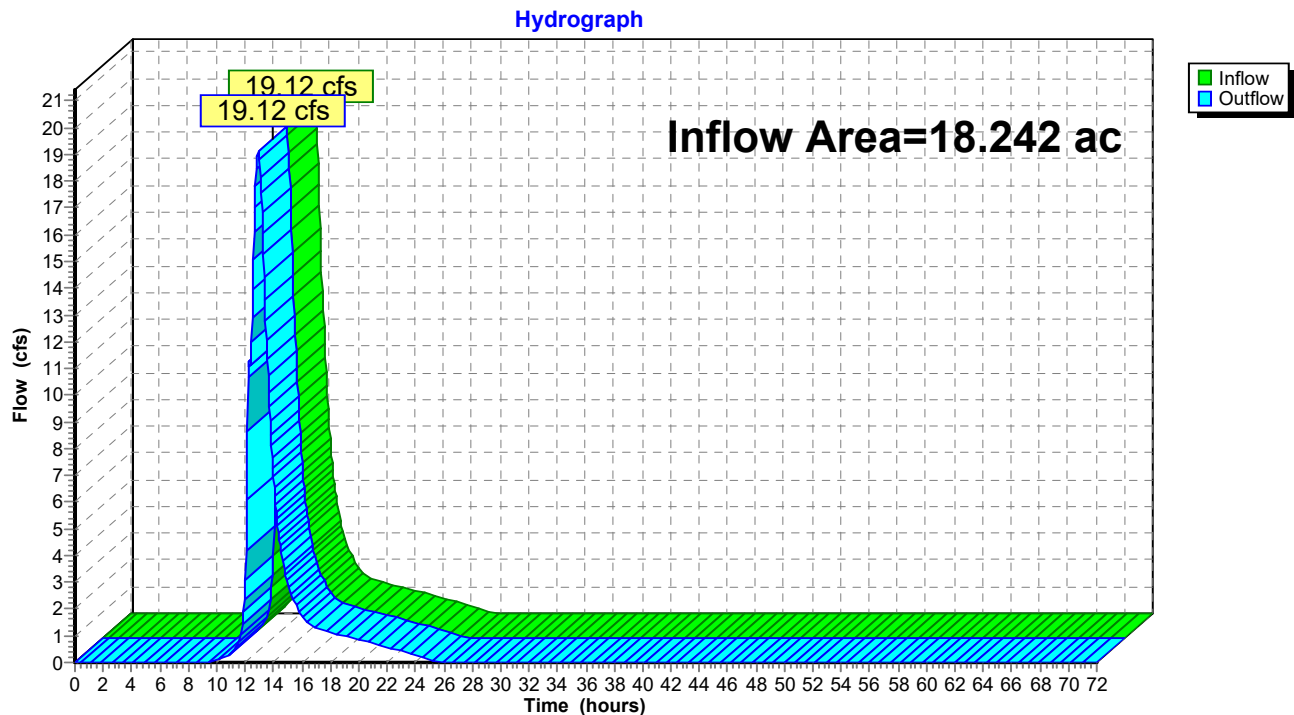
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach ES: South Total (Ditch 44-9)**

**Summary for Reach ESE-QA: SE Quarter (Private Ditch A)**

Inflow Area = 18.242 ac, 0.62% Impervious, Inflow Depth = 2.22" for 25-Year event  
Inflow = 19.12 cfs @ 12.93 hrs, Volume= 3.380 af  
Outflow = 19.12 cfs @ 12.93 hrs, Volume= 3.380 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach ES : South Total (Ditch 44-9)

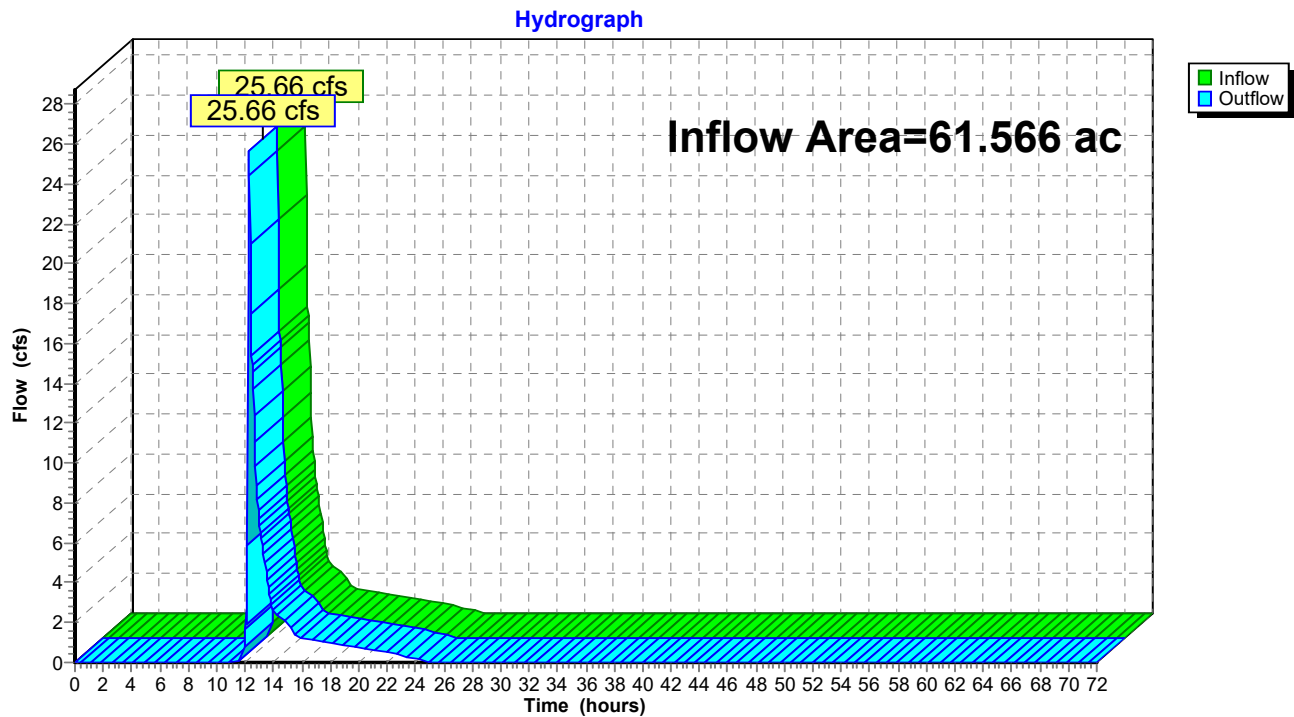
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach ESE-QA: SE Quarter (Private Ditch A)**

**Summary for Reach ESW-Q: Southwest Discharge**

Inflow Area = 61.566 ac, 0.00% Impervious, Inflow Depth = 0.43" for 25-Year event  
Inflow = 25.66 cfs @ 12.27 hrs, Volume= 2.209 af  
Outflow = 25.66 cfs @ 12.27 hrs, Volume= 2.209 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach ES : South Total (Ditch 44-9)

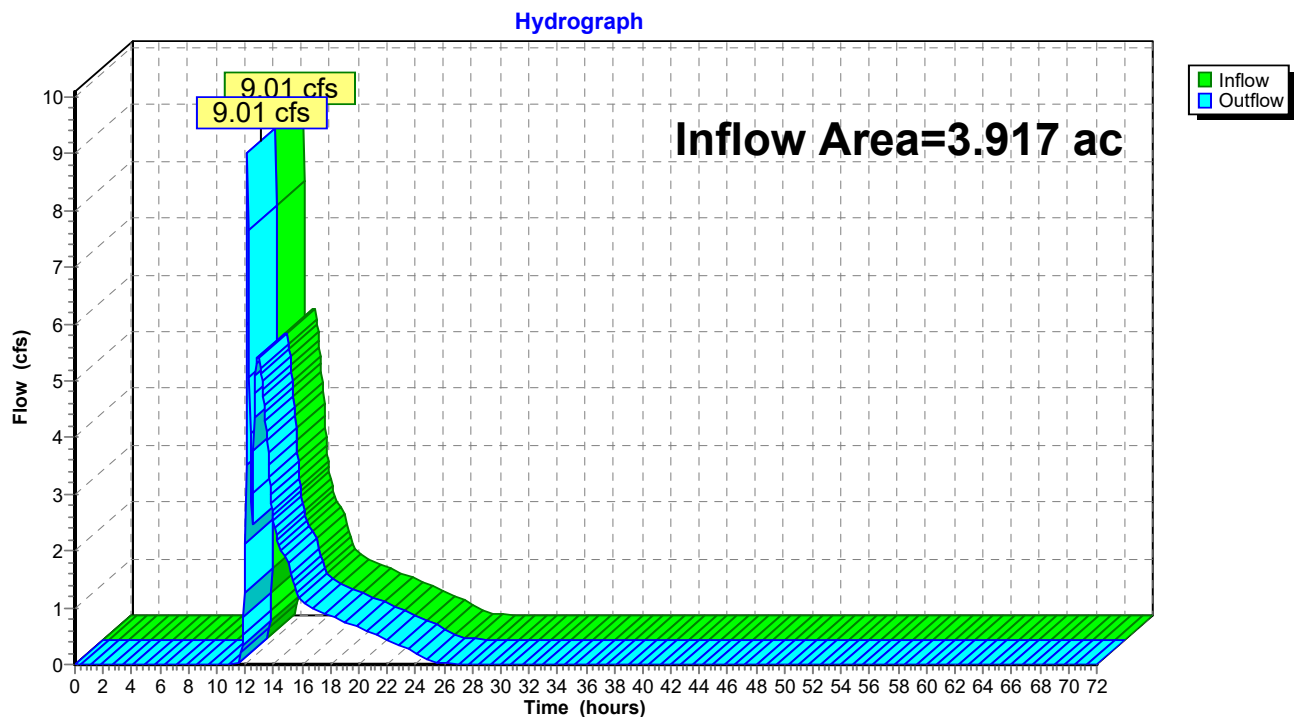
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach ESW-Q: Southwest Discharge**

**Summary for Reach EW: West Boundary**

Inflow Area = 3.917 ac, 0.00% Impervious, Inflow Depth = 4.56" for 25-Year event  
Inflow = 9.01 cfs @ 12.17 hrs, Volume= 1.489 af  
Outflow = 9.01 cfs @ 12.17 hrs, Volume= 1.489 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PRE : Overall Pre-Development Runoff

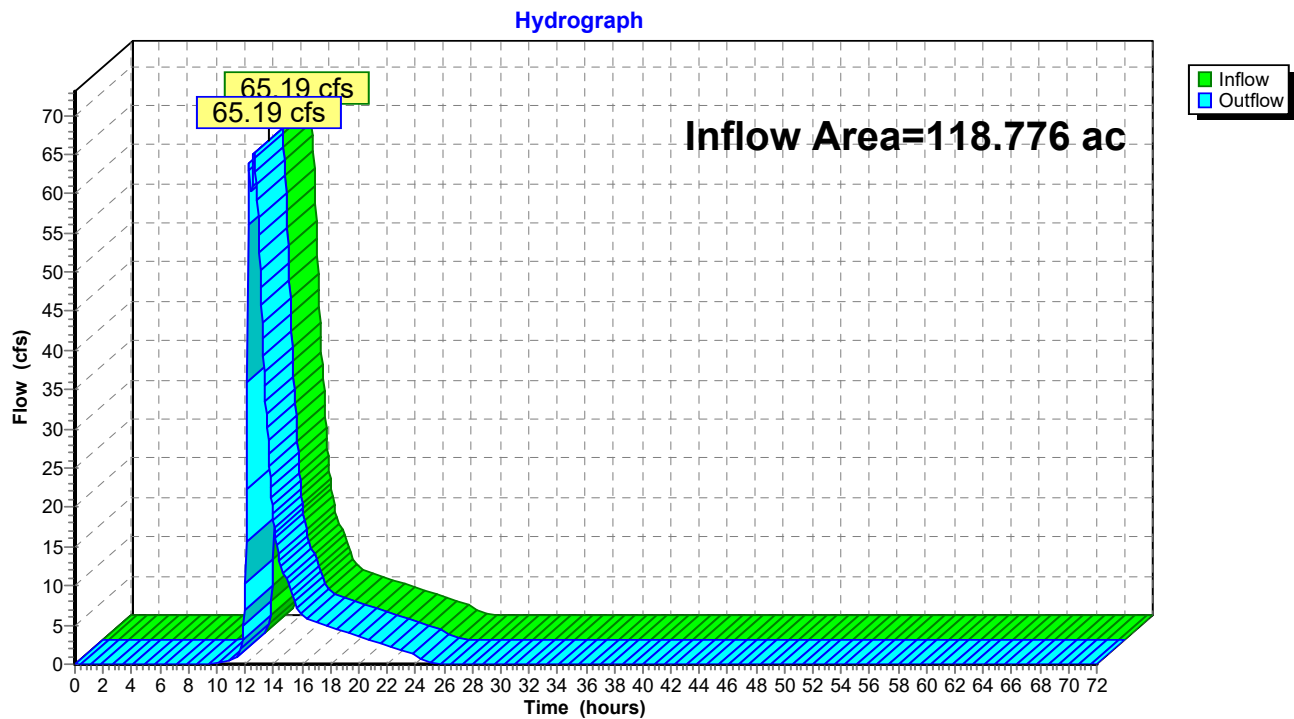
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach EW: West Boundary**

**Summary for Reach PRE: Overall Pre-Development Runoff**

Inflow Area = 118.776 ac, 0.48% Impervious, Inflow Depth = 1.17" for 25-Year event  
Inflow = 65.19 cfs @ 12.62 hrs, Volume= 11.620 af  
Outflow = 65.19 cfs @ 12.62 hrs, Volume= 11.620 af, Atten= 0%, Lag= 0.0 min

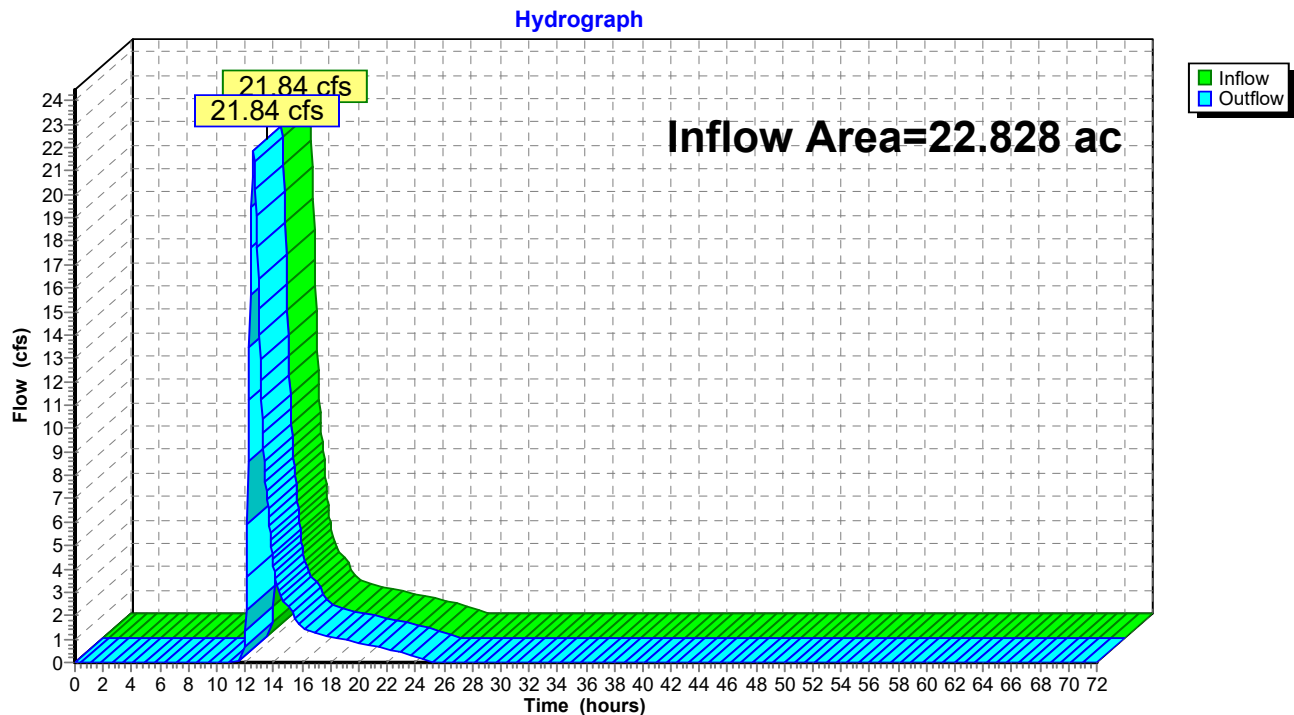
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PRE: Overall Pre-Development Runoff**

**Summary for Reach SE-QB: SE Quarter (Private Ditch B)**

Inflow Area = 22.828 ac, 0.00% Impervious, Inflow Depth = 1.51" for 25-Year event  
Inflow = 21.84 cfs @ 12.61 hrs, Volume= 2.871 af  
Outflow = 21.84 cfs @ 12.61 hrs, Volume= 2.871 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach ES : South Total (Ditch 44-9)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach SE-QB: SE Quarter (Private Ditch B)**

**Summary for Pond EB1A: Wetland 1A**

Inflow Area = 26.343 ac, 0.00% Impervious, Inflow Depth = 1.51" for 25-Year event  
 Inflow = 36.14 cfs @ 12.40 hrs, Volume= 3.313 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Pond EB1B : Wetland 1B  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Reach 1A&2B :  
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Reach EN : North Boundary

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 900.8' @ 25.50 hrs Surf.Area= 173,704 sf Storage= 144,324 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 899.0' | 2,338,451 cf  | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 899.0               | 1,799                | 0                         | 0                         |
| 900.0               | 77,989               | 39,894                    | 39,894                    |
| 901.0               | 193,333              | 135,661                   | 175,555                   |
| 902.0               | 368,575              | 280,954                   | 456,509                   |
| 903.0               | 576,105              | 472,340                   | 928,849                   |
| 904.0               | 715,414              | 645,760                   | 1,574,609                 |
| 905.0               | 812,270              | 763,842                   | 2,338,451                 |

| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                              |
|--------|-----------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 901.4' | <b>5.0' long x 10.0' breadth TO EB-1B</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                                                                                         |
| #2     | Secondary | 901.9' | <b>5.0' long x 10.0' breadth TO EB-2B</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                                                                                         |
| #3     | Tertiary  | 902.8' | <b>100.0' long x 5.0' breadth To North</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

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MSE 24-hr 3 25-Year Rainfall=5.23"

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**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=899.0' TW=901.5' (Dynamic Tailwater)

↑1=TO EB-1B ( Controls 0.00 cfs)

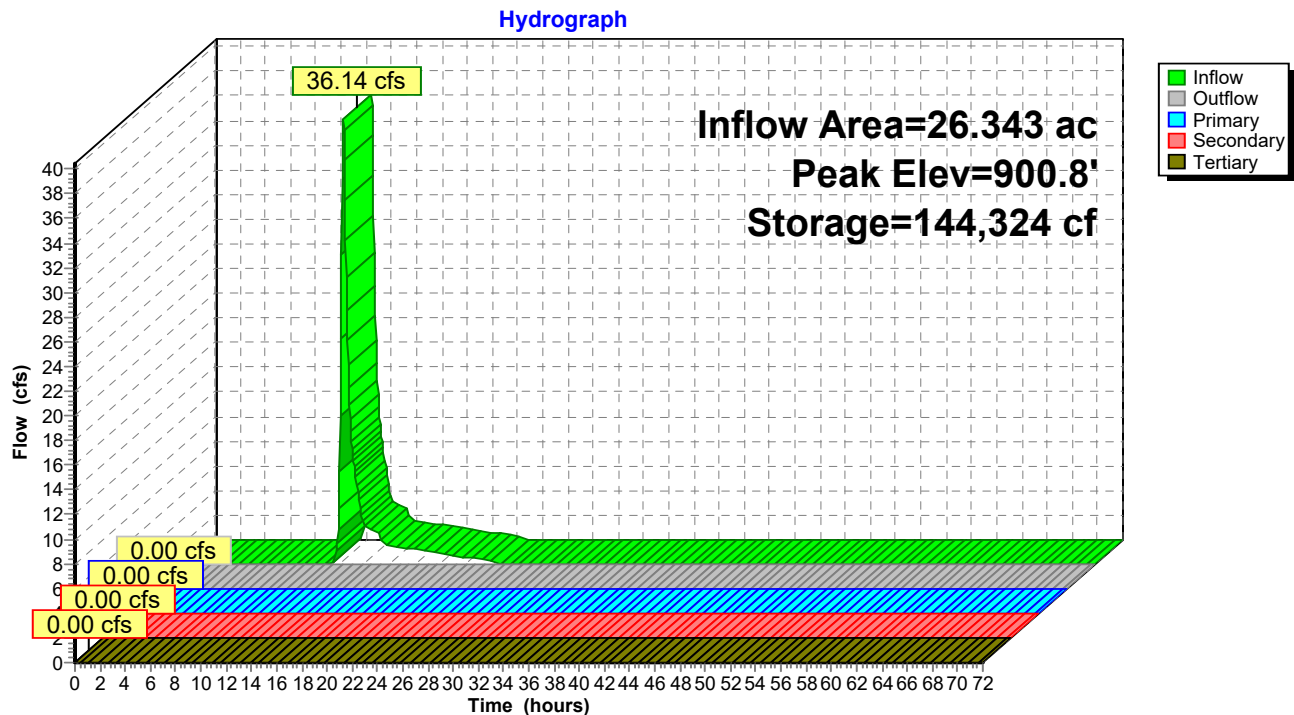
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=899.0' TW=0.0' (Dynamic Tailwater)

↑2=TO EB-2B ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=899.0' TW=0.0' (Dynamic Tailwater)

↑3=To North ( Controls 0.00 cfs)

### Pond EB1A: Wetland 1A





**LDP24010 Ham Lake**

MSE 24-hr 3 25-Year Rainfall=5.23"

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**Summary for Pond EB1B: Wetland 1B**

Inflow Area = 31.354 ac, 0.00% Impervious, Inflow Depth = 0.24" for 25-Year event  
 Inflow = 8.32 cfs @ 12.30 hrs, Volume= 0.630 af  
 Outflow = 8.30 cfs @ 12.31 hrs, Volume= 0.620 af, Atten= 0%, Lag= 0.9 min  
 Primary = 8.30 cfs @ 12.31 hrs, Volume= 0.620 af  
 Routed to Pond EB1C : Wetland 1C

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 901.8' @ 13.00 hrs Surf.Area= 8,078 sf Storage= 908 cf

Plug-Flow detention time= 14.9 min calculated for 0.620 af (98% of inflow)  
 Center-of-Mass det. time= 5.7 min ( 850.5 - 844.8 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 901.5' | 194,422 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 901.5               | 55                   | 0                         | 0                         |
| 901.6               | 1,670                | 86                        | 86                        |
| 901.7               | 5,365                | 352                       | 438                       |
| 901.8               | 9,245                | 730                       | 1,168                     |
| 901.9               | 13,840               | 1,154                     | 2,323                     |
| 902.0               | 32,292               | 2,307                     | 4,629                     |
| 903.0               | 54,790               | 43,541                    | 48,170                    |
| 904.0               | 71,685               | 63,238                    | 111,408                   |
| 905.0               | 94,343               | 83,014                    | 194,422                   |

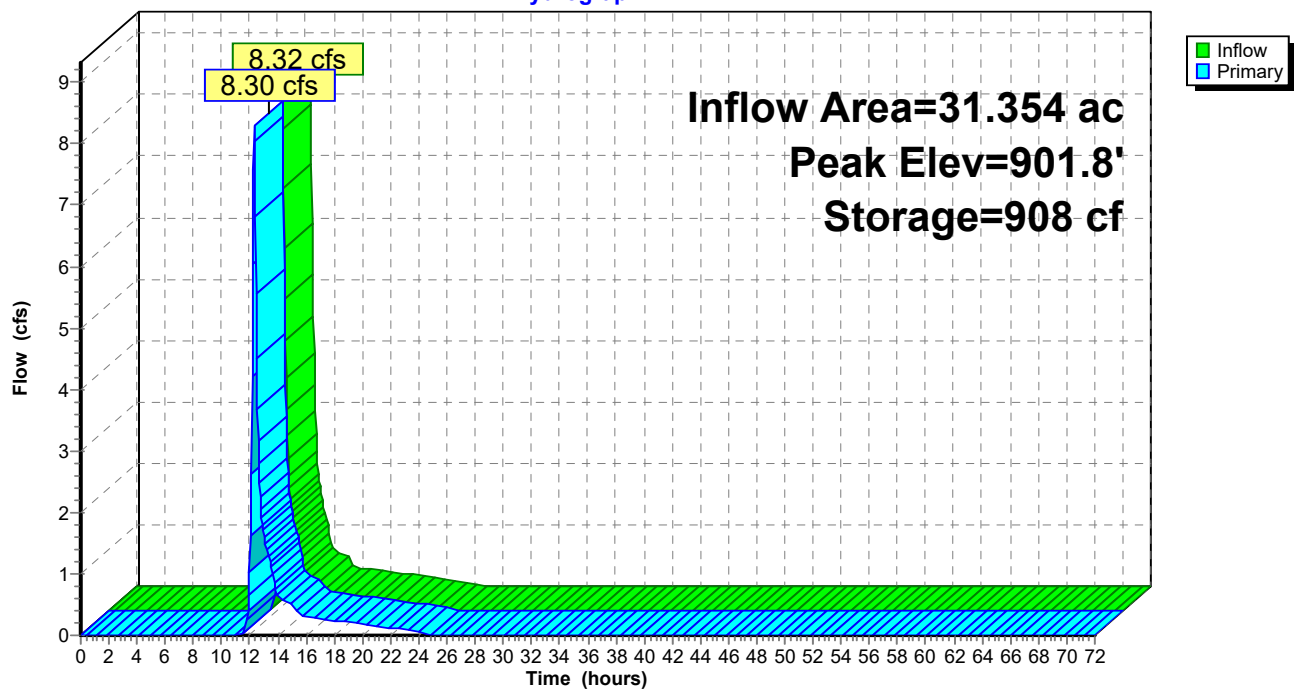
| Device | Routing | Invert | Outlet Devices                                                                                                                                       |
|--------|---------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 901.5' | <b>50.0' long x 10.0' breadth TO EB-1C</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=8.19 cfs @ 12.31 hrs HW=901.7' TW=901.5' (Dynamic Tailwater)

↑ **1=TO EB-1C** (Weir Controls 8.19 cfs @ 1.00 fps)

**Pond EB1B: Wetland 1B**

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 25-Year Rainfall=5.23"

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**Summary for Pond EB1C: Wetland 1C**

Inflow Area = 40.229 ac, 0.00% Impervious, Inflow Depth = 0.52" for 25-Year event  
 Inflow = 25.49 cfs @ 12.21 hrs, Volume= 1.736 af  
 Outflow = 4.29 cfs @ 12.96 hrs, Volume= 0.997 af, Atten= 83%, Lag= 45.1 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Pond EB6 : Wetland 6  
 Secondary = 4.29 cfs @ 12.96 hrs, Volume= 0.997 af  
     Routed to Reach EW : West Boundary

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 901.8' @ 12.96 hrs Surf.Area= 78,777 sf Storage= 37,313 cf

Plug-Flow detention time= 210.7 min calculated for 0.997 af (57% of inflow)  
 Center-of-Mass det. time= 109.6 min ( 951.6 - 842.1 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 900.1' | 577,352 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 900.1               | 174                  | 0                         | 0                         |
| 900.2               | 975                  | 57                        | 57                        |
| 900.5               | 5,734                | 1,006                     | 1,064                     |
| 901.0               | 20,570               | 6,576                     | 7,640                     |
| 901.5               | 36,160               | 14,183                    | 21,822                    |
| 901.8               | 83,591               | 17,963                    | 39,785                    |
| 902.0               | 90,000               | 17,359                    | 57,144                    |
| 903.0               | 100,000              | 95,000                    | 152,144                   |
| 904.0               | 233,558              | 166,779                   | 318,923                   |
| 905.0               | 283,299              | 258,429                   | 577,352                   |

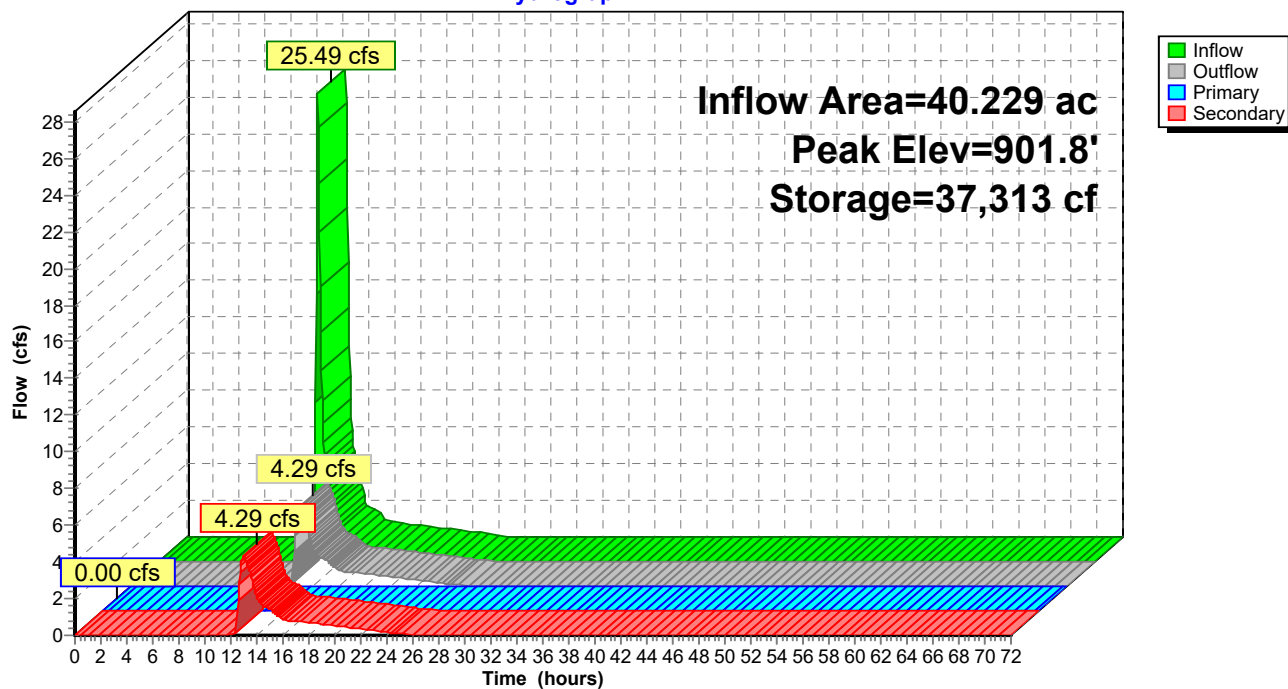
| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                             |
|--------|-----------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 902.3' | <b>5.0' long x 10.0' breadth To Wetland 6</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                                                                                    |
| #2     | Secondary | 901.7' | <b>100.0' long x 5.0' breadth To West</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=900.1' TW=895.0' (Dynamic Tailwater)  
 ↑1=To Wetland 6 ( Controls 0.00 cfs)

**Secondary OutFlow** Max=4.29 cfs @ 12.96 hrs HW=901.8' TW=0.0' (Dynamic Tailwater)  
 ↑2=To West (Weir Controls 4.29 cfs @ 0.62 fps)

# Pond EB1C: Wetland 1C

Hydrograph



**Summary for Pond EB6: Wetland 6**

Inflow Area = 60.713 ac, 0.00% Impervious, Inflow Depth = 0.45" for 25-Year event  
 Inflow = 29.14 cfs @ 12.20 hrs, Volume= 2.280 af  
 Outflow = 24.99 cfs @ 12.27 hrs, Volume= 2.102 af, Atten= 14%, Lag= 3.9 min  
 Primary = 24.99 cfs @ 12.27 hrs, Volume= 2.102 af  
 Routed to Reach ESW-Q : Southwest Discharge

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 896.3' @ 12.27 hrs Surf.Area= 40,404 sf Storage= 13,160 cf

Plug-Flow detention time= 55.0 min calculated for 2.102 af (92% of inflow)  
 Center-of-Mass det. time= 16.9 min ( 871.8 - 854.9 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 895.0' | 227,572 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

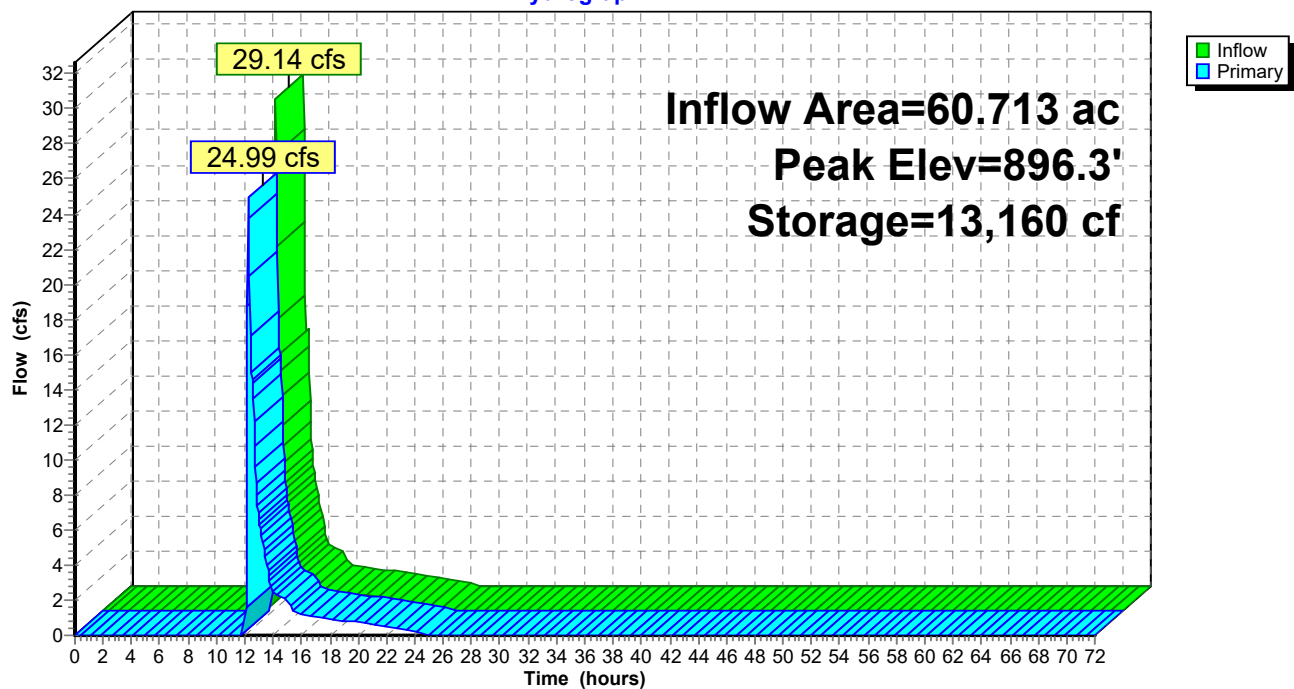
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 895.0               | 500                  | 0                         | 0                         |
| 896.0               | 11,662               | 6,081                     | 6,081                     |
| 897.0               | 117,362              | 64,512                    | 70,593                    |
| 898.0               | 196,595              | 156,979                   | 227,572                   |

| Device | Routing | Invert | Outlet Devices                                                                                                                                                                                                                                                    |
|--------|---------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 896.1' | <b>150.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=24.22 cfs @ 12.27 hrs HW=896.3' TW=0.0' (Dynamic Tailwater)  
 ↑1=**Broad-Crested Rectangular Weir**(Weir Controls 24.22 cfs @ 0.96 fps)

**Pond EB6: Wetland 6**

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 25-Year Rainfall=5.23"

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**Summary for Pond EB7A: Wetland 7A**

Inflow Area = 6.661 ac, 0.00% Impervious, Inflow Depth = 1.19" for 25-Year event  
 Inflow = 6.88 cfs @ 12.37 hrs, Volume= 0.659 af  
 Outflow = 5.23 cfs @ 12.55 hrs, Volume= 0.542 af, Atten= 24%, Lag= 10.8 min  
 Primary = 5.23 cfs @ 12.55 hrs, Volume= 0.542 af  
 Routed to Pond EB6 : Wetland 6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 898.3' @ 12.55 hrs Surf.Area= 16,120 sf Storage= 6,253 cf

Plug-Flow detention time= 106.3 min calculated for 0.541 af (82% of inflow)  
 Center-of-Mass det. time= 35.9 min ( 907.7 - 871.8 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 897.5' | 24,008 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

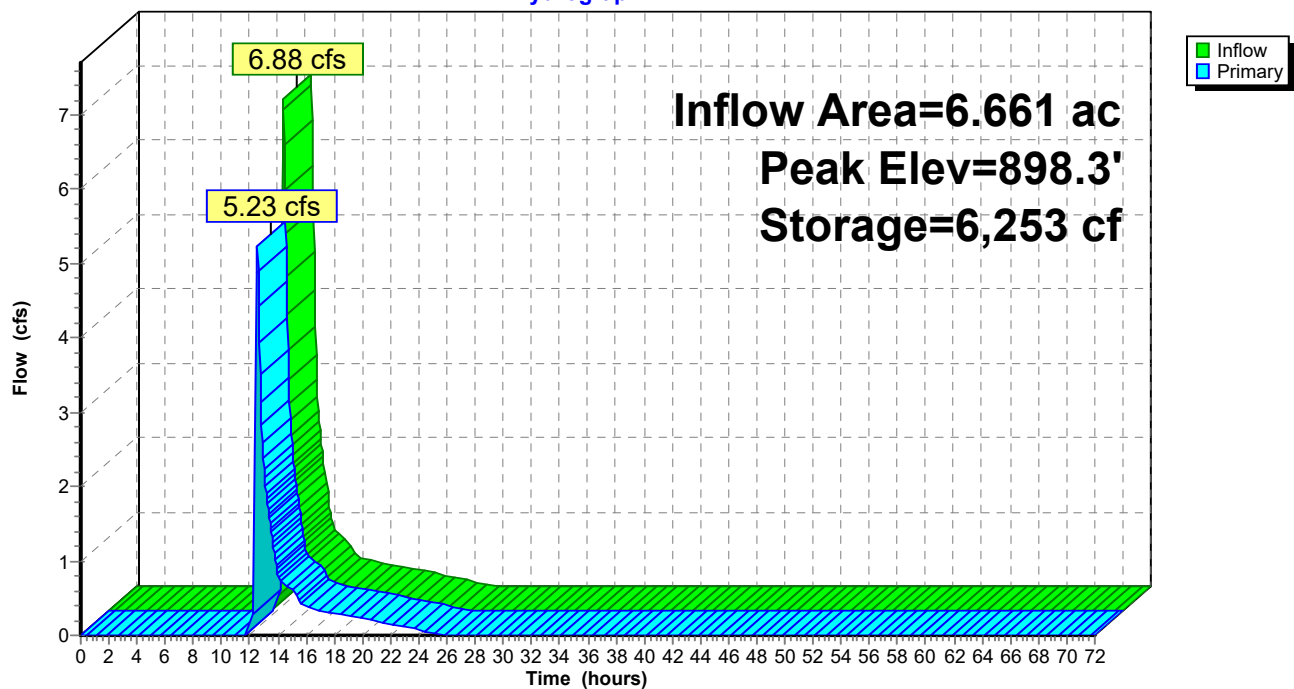
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 897.5               | 1,042                | 0                         | 0                         |
| 898.0               | 9,707                | 2,687                     | 2,687                     |
| 899.0               | 32,934               | 21,321                    | 24,008                    |

| Device | Routing | Invert | Outlet Devices                                                                                                                                      |
|--------|---------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 898.2' | <b>100.0' long x 10.0' breadth TO EB6</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=5.22 cfs @ 12.55 hrs HW=898.3' TW=896.2' (Dynamic Tailwater)  
 ↑**1=TO EB6** (Weir Controls 5.22 cfs @ 0.69 fps)

**Pond EB7A: Wetland 7A**

Hydrograph





**LDP24010 Ham Lake**

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**Summary for Pond EB7B: Wetland 7B**

Inflow Area = 4.507 ac, 0.00% Impervious, Inflow Depth = 1.36" for 25-Year event  
 Inflow = 9.07 cfs @ 12.18 hrs, Volume= 0.512 af  
 Outflow = 3.67 cfs @ 12.41 hrs, Volume= 0.388 af, Atten= 60%, Lag= 13.4 min  
 Primary = 3.67 cfs @ 12.41 hrs, Volume= 0.388 af  
 Routed to Pond EB7A : Wetland 7A  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 7B&D :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 898.4' @ 12.41 hrs Surf.Area= 24,169 sf Storage= 7,535 cf

Plug-Flow detention time= 132.9 min calculated for 0.388 af (76% of inflow)  
 Center-of-Mass det. time= 52.5 min ( 889.4 - 836.9 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 897.7' | 32,037 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 897.7               | 330                  | 0                         | 0                         |
| 898.0               | 7,784                | 1,217                     | 1,217                     |
| 898.5               | 28,502               | 9,072                     | 10,289                    |
| 899.0               | 58,492               | 21,749                    | 32,037                    |

| Device | Routing   | Invert | Outlet Devices                                                                                                                                       |
|--------|-----------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 898.3' | <b>50.0' long x 10.0' breadth TO EB-7D</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |
| #2     | Secondary | 899.4' | <b>100.0' long x 10.0' breadth TO EB7A</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=3.65 cfs @ 12.41 hrs HW=898.4' TW=898.2' (Dynamic Tailwater)

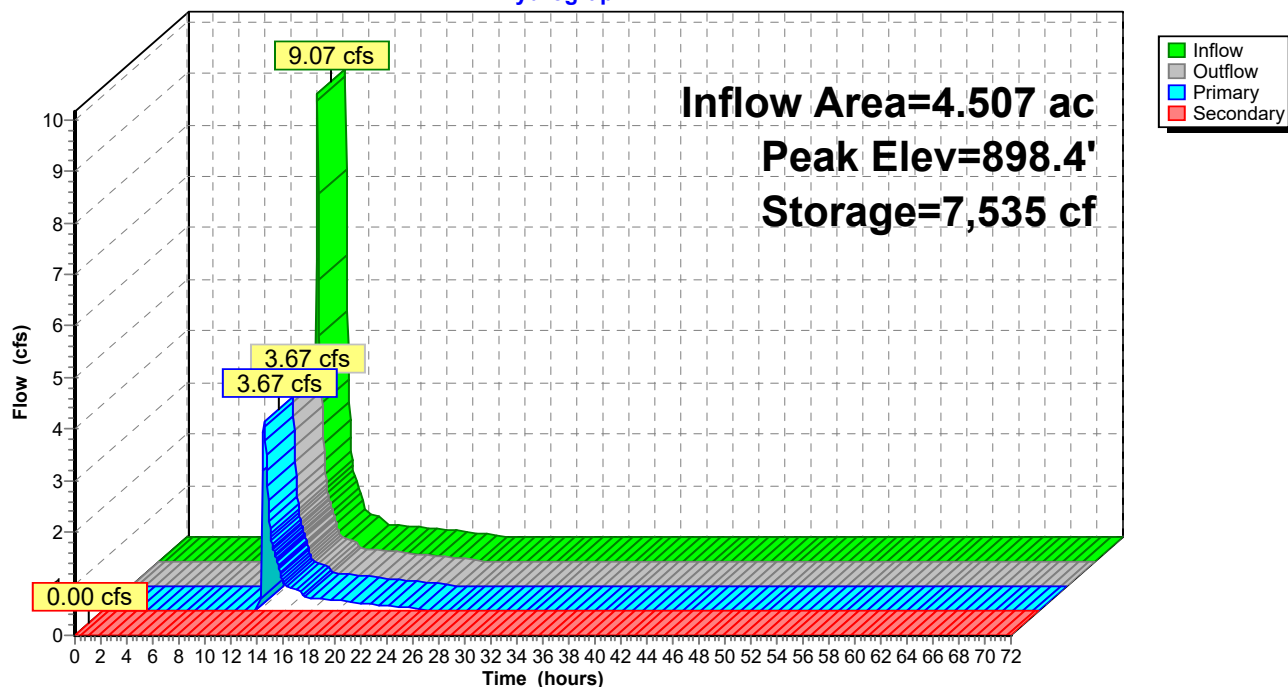
↑ **1=TO EB-7D** (Weir Controls 3.65 cfs @ 0.77 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=897.7' TW=0.0' (Dynamic Tailwater)

↑ **2=TO EB7A** ( Controls 0.00 cfs)

**Pond EB7B: Wetland 7B**

Hydrograph



**LDP24010 Ham Lake**

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**Summary for Pond EB7C: Wetland 7C**

Inflow Area = 0.435 ac, 0.00% Impervious, Inflow Depth = 1.51" for 25-Year event  
 Inflow = 0.95 cfs @ 12.19 hrs, Volume= 0.055 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond EB7B : Wetland 7B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 898.9' @ 24.60 hrs Surf.Area= 4,341 sf Storage= 2,383 cf

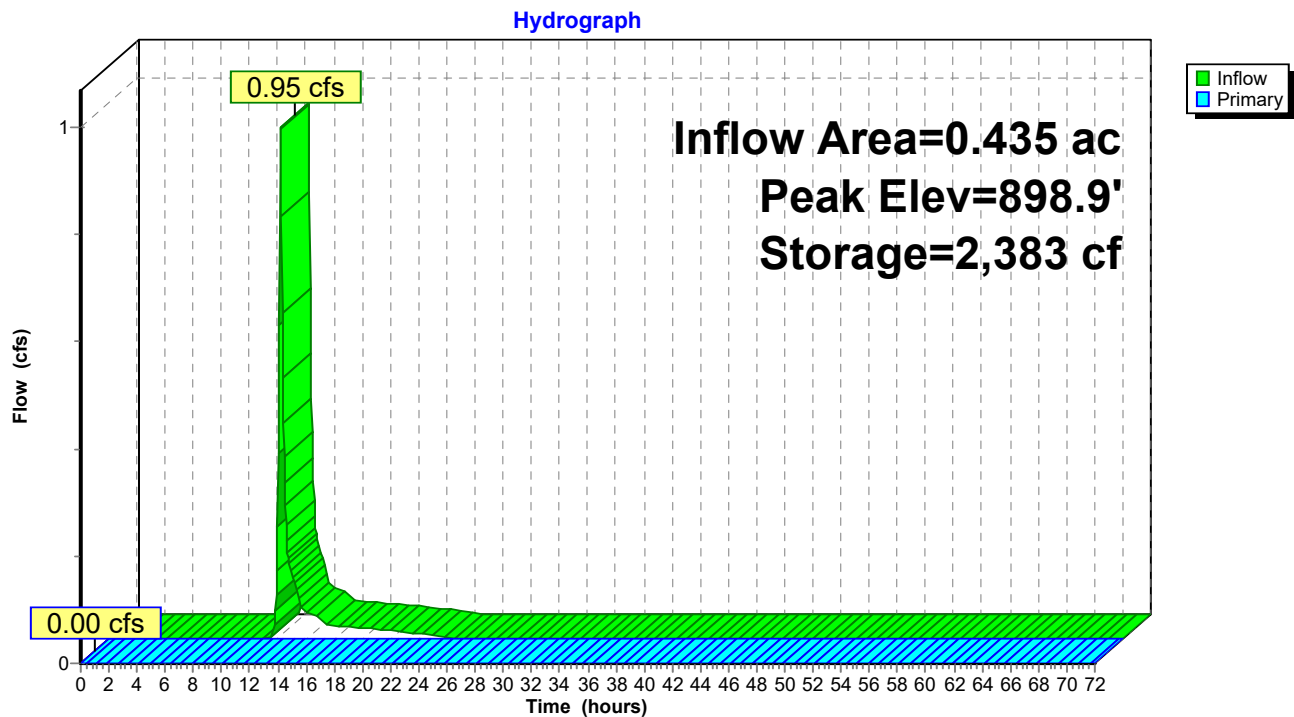
Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

| Volume              | Invert               | Avail.Storage             | Storage Description                                        |
|---------------------|----------------------|---------------------------|------------------------------------------------------------|
| #1                  | 897.7'               | 5,675 cf                  | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet)                                  |
| 897.7               | 122                  | 0                         | 0                                                          |
| 898.0               | 753                  | 131                       | 131                                                        |
| 898.5               | 2,342                | 774                       | 905                                                        |
| 899.0               | 4,602                | 1,736                     | 2,641                                                      |
| 899.5               | 7,533                | 3,034                     | 5,675                                                      |

| Device | Routing | Invert | Outlet Devices                                                                                                                                      |
|--------|---------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 899.6' | <b>50.0' long x 10.0' breadth TO EB7B</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=897.7' TW=897.7' (Dynamic Tailwater)  
 ↑1=TO EB7B ( Controls 0.00 cfs)

**Pond EB7C: Wetland 7C**



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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

|                                         |                                                                                                                                               |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SubcatchmentEB-1A:</b>               | Runoff Area=1,147,516 sf 0.00% Impervious Runoff Depth=2.75"<br>Flow Length=474' Tc=25.5 min CN=61 Runoff=69.17 cfs 6.027 af                  |
| <b>SubcatchmentEB-1B:</b>               | Runoff Area=218,275 sf 0.00% Impervious Runoff Depth=2.75"<br>Flow Length=383' Tc=18.0 min CN=61 Runoff=15.87 cfs 1.146 af                    |
| <b>SubcatchmentEB-1C:</b>               | Runoff Area=386,594 sf 0.00% Impervious Runoff Depth=2.75"<br>Flow Length=207' Tc=10.0 min CN=61 Runoff=36.70 cfs 2.030 af                    |
| <b>SubcatchmentEB-1CR: EB-1C (Road)</b> | Runoff Area=17,279 sf 100.00% Impervious Runoff Depth=6.82"<br>Flow Length=207' Tc=10.0 min CN=WQ Runoff=3.50 cfs 0.225 af                    |
| <b>SubcatchmentEB-1D:</b>               | Runoff Area=170,630 sf 0.00% Impervious Runoff Depth=2.75"<br>Flow Length=207' Tc=9.0 min CN=61 Runoff=17.02 cfs 0.896 af                     |
| <b>SubcatchmentEB-2A:</b>               | Runoff Area=347,380 sf 0.00% Impervious Runoff Depth=2.75"<br>Flow Length=800' Tc=47.0 min CN=WQ Runoff=14.51 cfs 1.824 af                    |
| <b>SubcatchmentEB-2B:</b>               | Runoff Area=635,146 sf 0.00% Impervious Runoff Depth=3.84"<br>Flow Length=1,600' Tc=67.7 min CN=WQ Runoff=29.46 cfs 4.667 af                  |
| <b>SubcatchmentEB-2C:</b>               | Runoff Area=52,343 sf 9.46% Impervious Runoff Depth=3.13"<br>Flow Length=253' Tc=12.6 min CN=WQ Runoff=5.04 cfs 0.314 af                      |
| <b>SubcatchmentEB-2D:</b>               | Runoff Area=79,363 sf 3.45% Impervious Runoff Depth=2.89"<br>Flow Length=276' Tc=15.6 min CN=WQ Runoff=6.48 cfs 0.438 af                      |
| <b>SubcatchmentEB-3:</b>                | Runoff Area=88,397 sf 0.00% Impervious Runoff Depth=2.75"<br>Flow Length=294' Tc=22.7 min CN=WQ Runoff=5.70 cfs 0.464 af                      |
| <b>SubcatchmentEB-4:</b>                | Runoff Area=107,117 sf 0.00% Impervious Runoff Depth=2.75"<br>Flow Length=303' Tc=12.9 min CN=WQ Runoff=9.21 cfs 0.563 af                     |
| <b>SubcatchmentEB-5:</b>                | Runoff Area=833,088 sf 0.00% Impervious Runoff Depth=2.75"<br>Flow Length=1,137' Slope=0.0040 '/' Tc=42.8 min CN=WQ Runoff=36.86 cfs 4.375 af |
| <b>SubcatchmentEB-6:</b>                | Runoff Area=602,150 sf 0.00% Impervious Runoff Depth=2.75"<br>Flow Length=531' Slope=0.0500 '/' Tc=11.1 min CN=61 Runoff=55.09 cfs 3.162 af   |
| <b>SubcatchmentEB-7A:</b>               | Runoff Area=93,805 sf 0.00% Impervious Runoff Depth=2.75"<br>Flow Length=212' Tc=20.1 min CN=61 Runoff=6.46 cfs 0.493 af                      |
| <b>SubcatchmentEB-7B:</b>               | Runoff Area=177,383 sf 0.00% Impervious Runoff Depth=2.75"<br>Flow Length=181' Tc=9.5 min CN=61 Runoff=17.10 cfs 0.932 af                     |
| <b>SubcatchmentEB-7C:</b>               | Runoff Area=18,945 sf 0.00% Impervious Runoff Depth=2.75"<br>Tc=10.0 min CN=61 Runoff=1.80 cfs 0.099 af                                       |

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|                                                   |                                                                                                                                                                             |
|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SubcatchmentEB-7D:</b>                         | Runoff Area=92,630 sf 0.00% Impervious Runoff Depth=2.75"<br>Flow Length=632' Tc=22.2 min CN=61 Runoff=6.02 cfs 0.486 af                                                    |
| <b>SubcatchmentEB-8A:</b>                         | Runoff Area=37,143 sf 0.00% Impervious Runoff Depth=2.75"<br>Tc=0.0 min CN=61 Runoff=4.91 cfs 0.195 af                                                                      |
| <b>SubcatchmentEB-8B:</b>                         | Runoff Area=68,682 sf 0.00% Impervious Runoff Depth=2.75"<br>Flow Length=256' Tc=13.9 min CN=61 Runoff=5.65 cfs 0.361 af                                                    |
| <b>Reach 1A&amp;2B:</b>                           | Inflow=30.12 cfs 4.980 af<br>Outflow=30.12 cfs 4.980 af                                                                                                                     |
| <b>Reach 7B&amp;D:</b>                            | Inflow=6.02 cfs 0.486 af<br>Outflow=6.02 cfs 0.486 af                                                                                                                       |
| <b>Reach EL-DITCH: Lexington Ave Ditch</b>        | Inflow=19.77 cfs 2.727 af<br>Outflow=19.77 cfs 2.727 af                                                                                                                     |
| <b>Reach EN: North Boundary</b>                   | Inflow=0.00 cfs 0.000 af<br>Outflow=0.00 cfs 0.000 af                                                                                                                       |
| <b>Reach ES: South Total (Ditch 44-9)</b>         | Inflow=104.54 cfs 15.127 af<br>Outflow=104.54 cfs 15.127 af                                                                                                                 |
| <b>Reach ESE-QA: SE Quarter (Private Ditch A)</b> | Inflow=31.41 cfs 5.543 af<br>Outflow=31.41 cfs 5.543 af                                                                                                                     |
| <b>Reach ESW-Q: Southwest Discharge</b>           | Inflow=55.38 cfs 4.362 af<br>Outflow=55.38 cfs 4.362 af                                                                                                                     |
| <b>Reach EW: West Boundary</b>                    | Inflow=26.67 cfs 3.323 af<br>Outflow=26.67 cfs 3.323 af                                                                                                                     |
| <b>Reach PRE: Overall Pre-DevelopmentRunoff</b>   | Inflow=149.78 cfs 21.403 af<br>Outflow=149.78 cfs 21.403 af                                                                                                                 |
| <b>Reach SE-QB: SE Quarter (Private Ditch B)</b>  | Inflow=41.90 cfs 5.223 af<br>Outflow=41.90 cfs 5.223 af                                                                                                                     |
| <b>Pond EB1A: Wetland 1A</b>                      | Peak Elev=901.4' Storage=262,525 cf Inflow=69.17 cfs 6.027 af<br>Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af |
| <b>Pond EB1B: Wetland 1B</b>                      | Peak Elev=901.9' Storage=2,517 cf Inflow=15.87 cfs 1.146 af<br>Outflow=12.62 cfs 1.136 af                                                                                   |
| <b>Pond EB1C: Wetland 1C</b>                      | Peak Elev=901.9' Storage=48,658 cf Inflow=48.18 cfs 3.167 af<br>Primary=0.00 cfs 0.000 af Secondary=21.60 cfs 2.427 af Outflow=21.60 cfs 2.427 af                           |
| <b>Pond EB6: Wetland 6</b>                        | Peak Elev=896.4' Storage=18,291 cf Inflow=56.17 cfs 4.345 af<br>Outflow=54.29 cfs 4.167 af                                                                                  |

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**Pond EB7A: Wetland 7A**Peak Elev=898.4' Storage=7,806 cf Inflow=18.16 cfs 1.300 af  
Outflow=16.93 cfs 1.183 af**Pond EB7B: Wetland 7B**Peak Elev=898.5' Storage=10,562 cf Inflow=17.10 cfs 0.932 af  
Primary=11.94 cfs 0.807 af Secondary=0.00 cfs 0.000 af Outflow=11.94 cfs 0.807 af**Pond EB7C: Wetland 7C**Peak Elev=899.3' Storage=4,334 cf Inflow=1.80 cfs 0.099 af  
Outflow=0.00 cfs 0.000 af**Total Runoff Area = 118.776 ac Runoff Volume = 28.699 af Average Runoff Depth = 2.90"**  
**99.52% Pervious = 118.202 ac 0.48% Impervious = 0.573 ac**

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**Summary for Subcatchment EB-1A:**

Runoff = 69.17 cfs @ 12.39 hrs, Volume= 6.027 af, Depth= 2.75"  
Routed to Pond EB1A : Wetland 1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

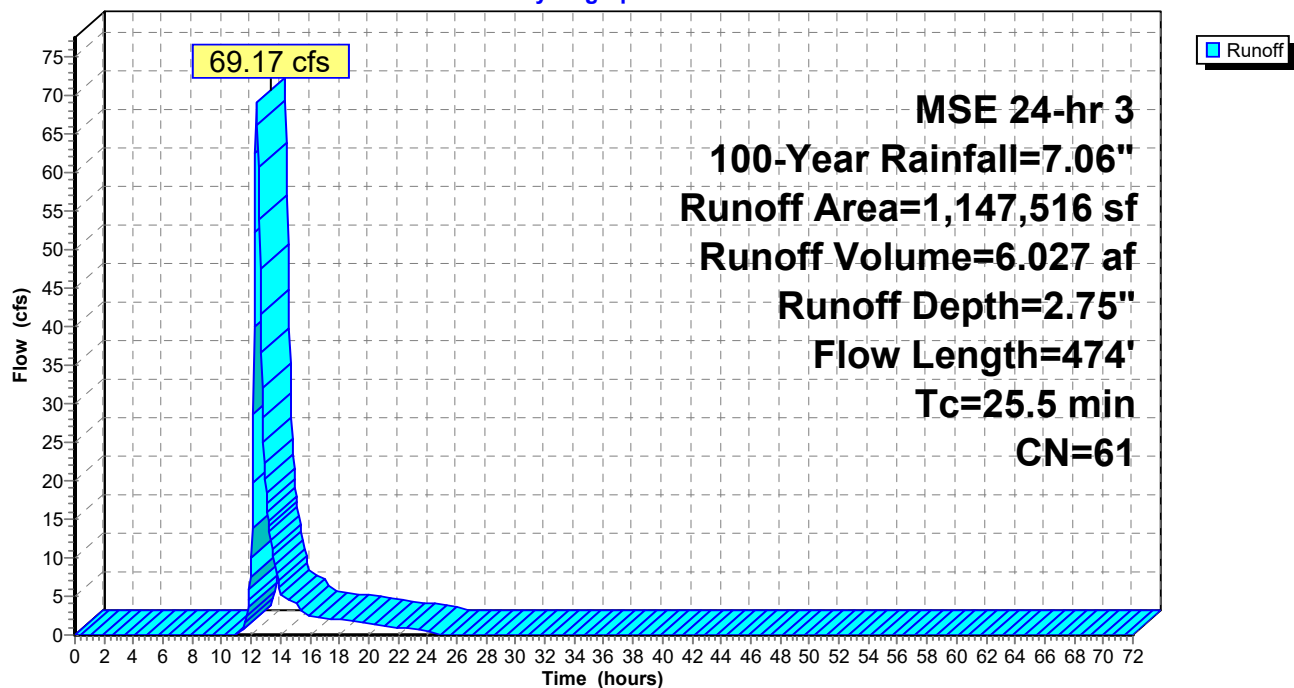
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 1,147,516 | 61 | >75% Grass cover, Good, HSG B |
| 1,147,516 |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 16.8     | 100           | 0.0154        | 0.10              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 2.83"                |
| 8.7      | 374           | 0.0105        | 0.72              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 25.5     | 474           | Total         |                   |                |                                                                      |

**Subcatchment EB-1A:**

Hydrograph





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**Summary for Subcatchment EB-1B:**

Runoff = 15.87 cfs @ 12.29 hrs, Volume= 1.146 af, Depth= 2.75"  
Routed to Pond EB1B : Wetland 1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

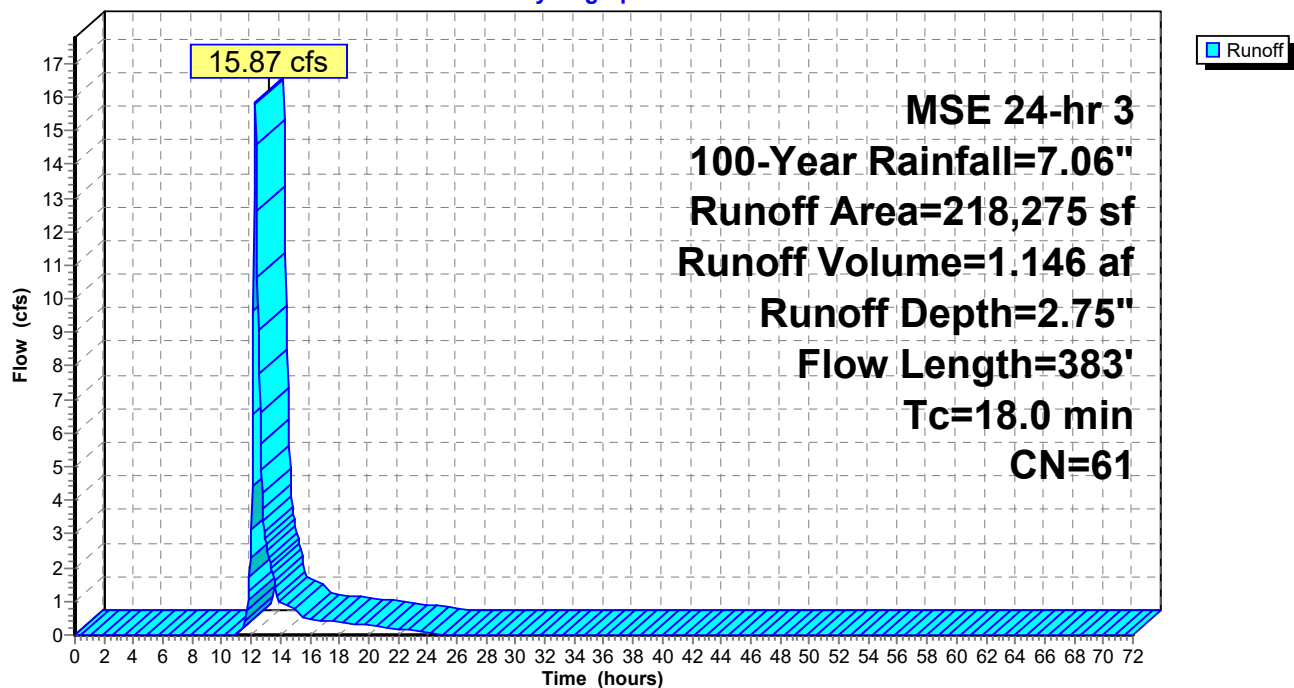
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 218,275   | 61 | >75% Grass cover, Good, HSG B |
| 218,275   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 12.3     | 100           | 0.0131        | 0.14              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 5.7      | 283           | 0.0141        | 0.83              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 18.0     | 383           | Total         |                   |                |                                                                      |

**Subcatchment EB-1B:**

Hydrograph



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**Summary for Subcatchment EB-1C:**

Runoff = 36.70 cfs @ 12.18 hrs, Volume= 2.030 af, Depth= 2.75"  
Routed to Pond EB1C : Wetland 1C

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

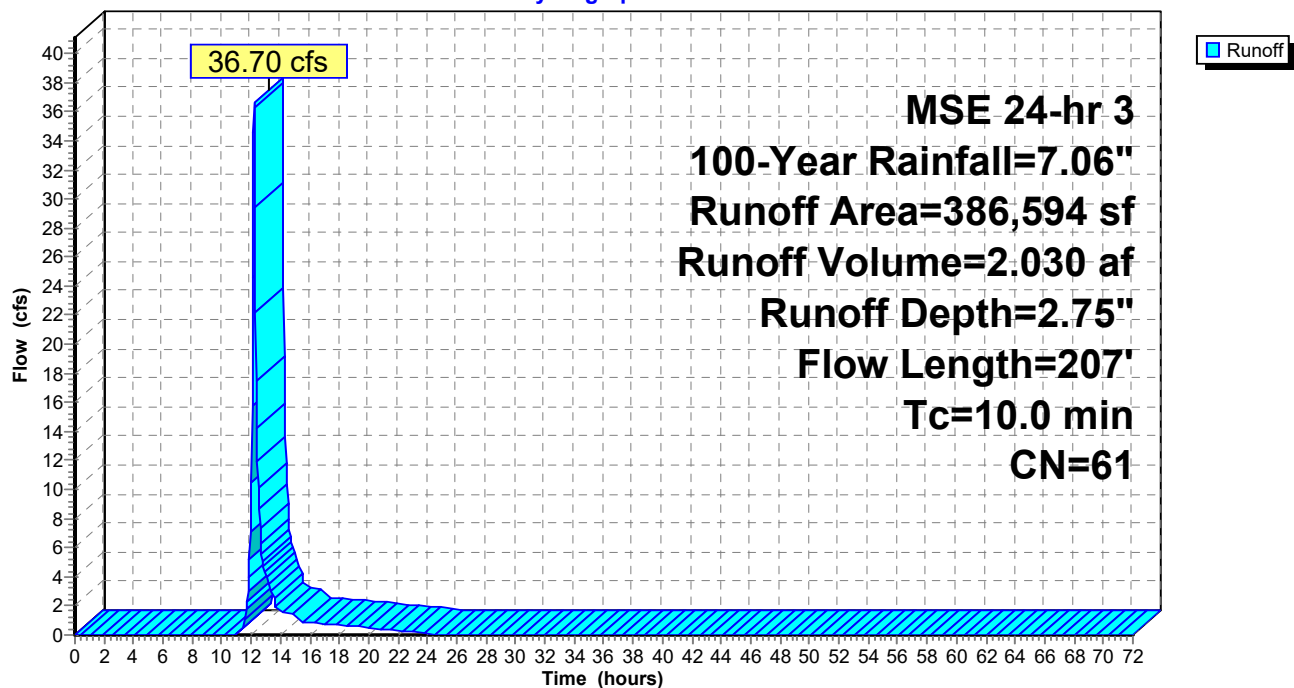
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 386,594   | 61 | >75% Grass cover, Good, HSG B |
| 386,594   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 8.9      | 100           | 0.0300        | 0.19              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.1      | 107           | 0.0556        | 1.65              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 10.0     | 207           | Total         |                   |                |                                                                      |

**Subcatchment EB-1C:**

Hydrograph



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**Summary for Subcatchment EB-1CR: EB-1C (Road)**

Runoff = 3.50 cfs @ 12.17 hrs, Volume= 0.225 af, Depth= 6.82"

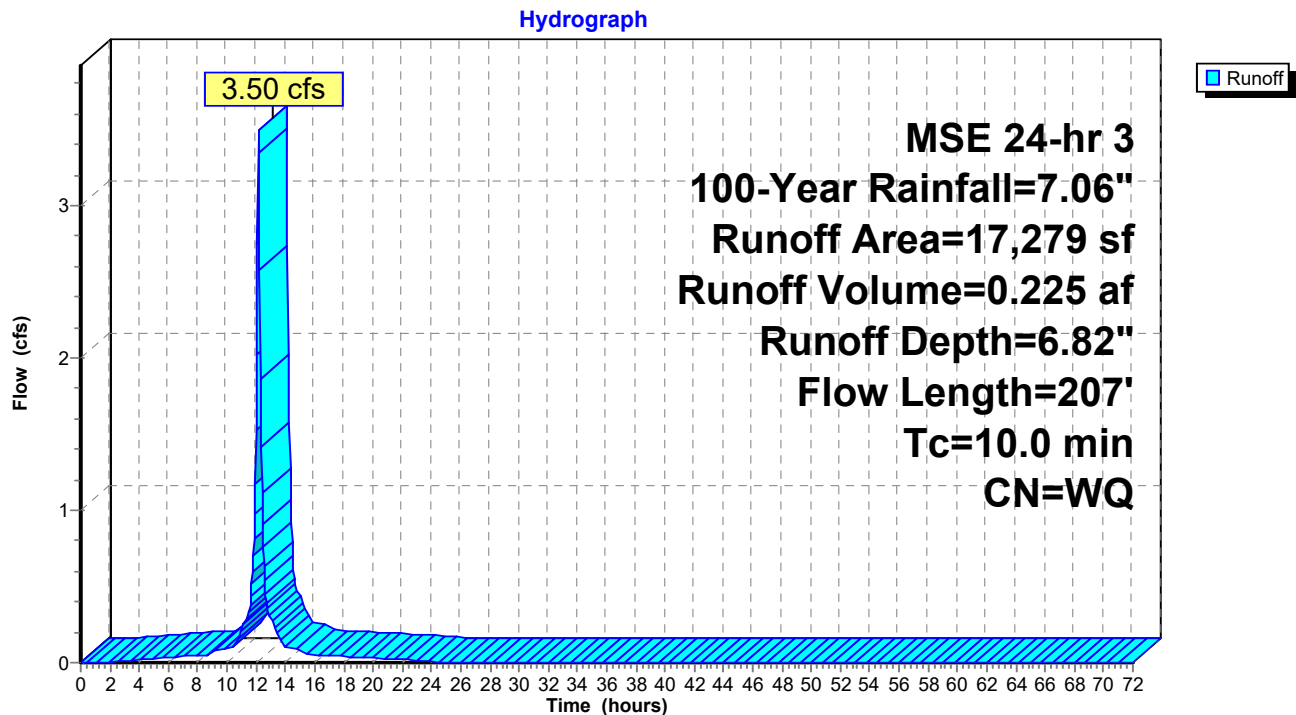
Routed to Reach PRE : Overall Pre-Development Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description             |
|-----------|----|-------------------------|
| 3,074     | 98 | Roofs, HSG A            |
| 14,205    | 98 | Paved parking, HSG A    |
| 17,279    |    | Weighted Average        |
| 17,279    |    | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 8.9      | 100           | 0.0300        | 0.19              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.1      | 107           | 0.0556        | 1.65              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 10.0     | 207           | Total         |                   |                |                                                                      |

**Subcatchment EB-1CR: EB-1C (Road)**

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MSE 24-hr 3 100-Year Rainfall=7.06"

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**Summary for Subcatchment EB-1D:**

Runoff = 17.02 cfs @ 12.17 hrs, Volume= 0.896 af, Depth= 2.75"  
Routed to Reach EW : West Boundary

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

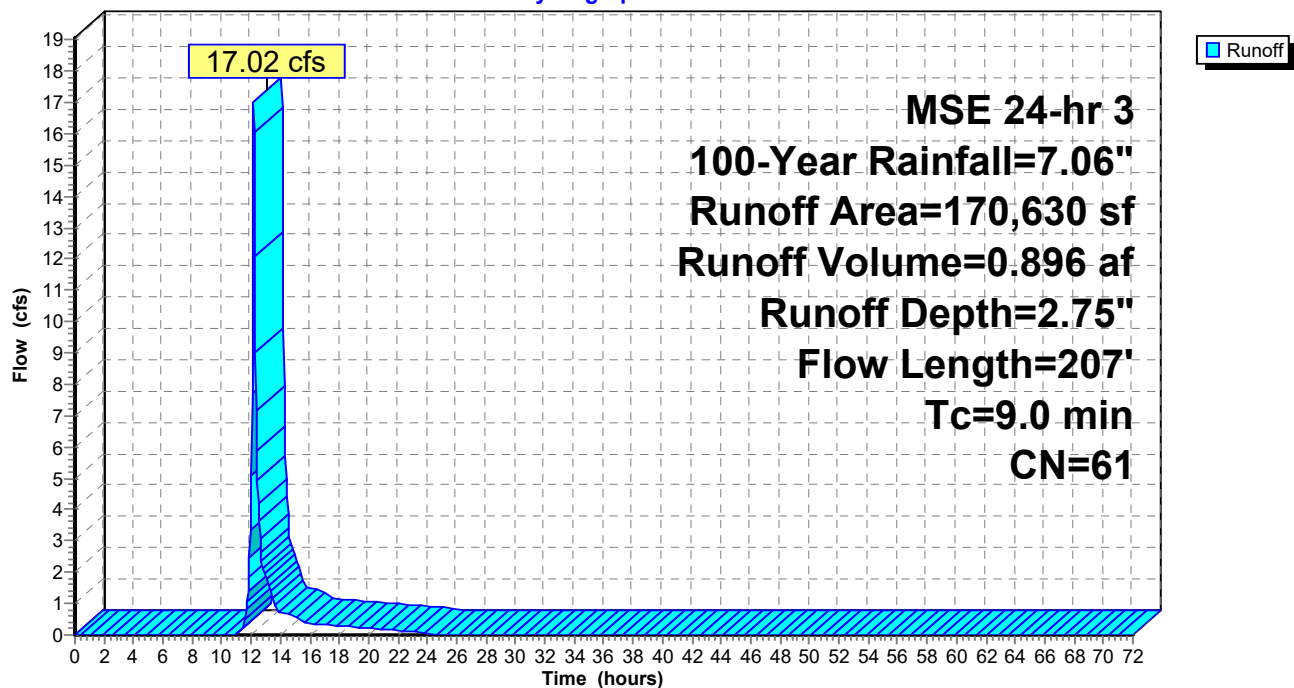
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 170,630   | 61 | >75% Grass cover, Good, HSG B |
| 170,630   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 7.9      | 100           | 0.0400        | 0.21              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.1      | 107           | 0.0556        | 1.65              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 9.0      | 207           | Total         |                   |                |                                                                      |

**Subcatchment EB-1D:**

Hydrograph



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**Summary for Subcatchment EB-2A:**

Runoff = 14.51 cfs @ 12.68 hrs, Volume= 1.824 af, Depth= 2.75"  
Routed to Reach EL-DITCH : Lexington Ave Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

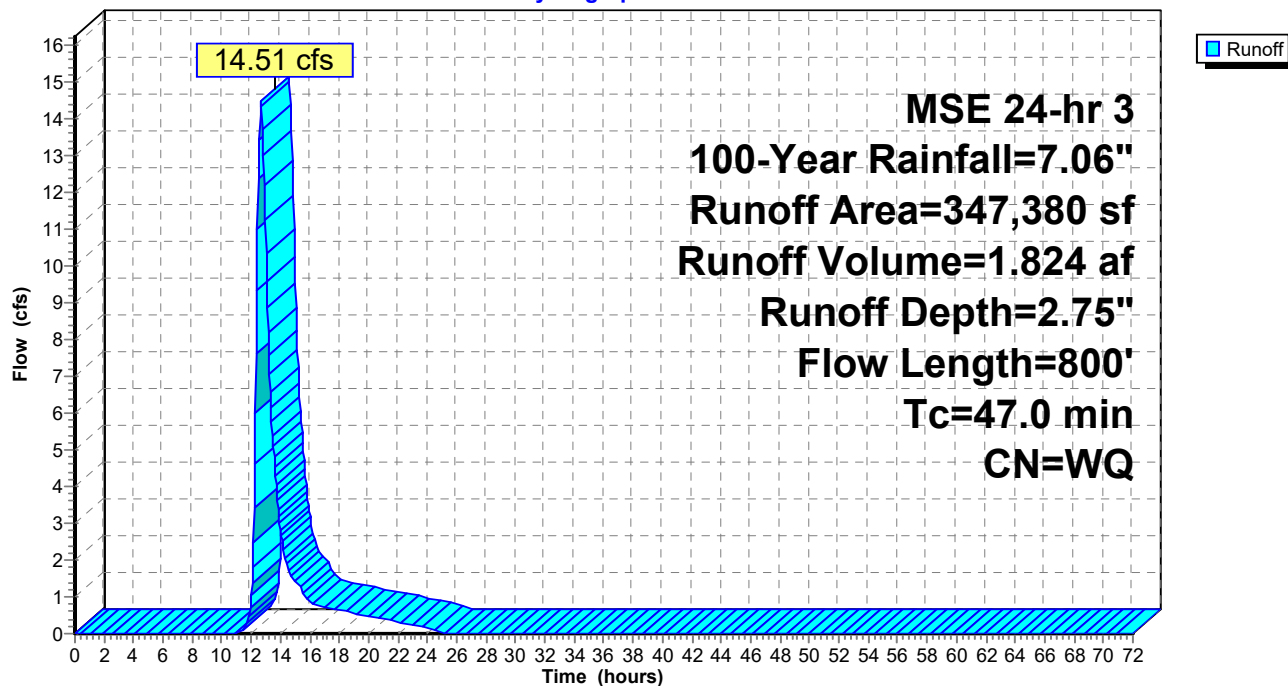
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 189,274   | 61 | >75% Grass cover, Good, HSG B |
| 158,106   | 61 | >75% Grass cover, Good, HSG B |
| 347,380   |    | Weighted Average              |
| 347,380   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 23.4     | 100           | 0.0068        | 0.07              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 2.83"                |
| 23.6     | 700           | 0.0050        | 0.49              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 47.0     | 800           | Total         |                   |                |                                                                      |

**Subcatchment EB-2A:**

Hydrograph



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**Summary for Subcatchment EB-2B:**

Runoff = 29.46 cfs @ 12.92 hrs, Volume= 4.667 af, Depth= 3.84"  
Routed to Reach 1A&2B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

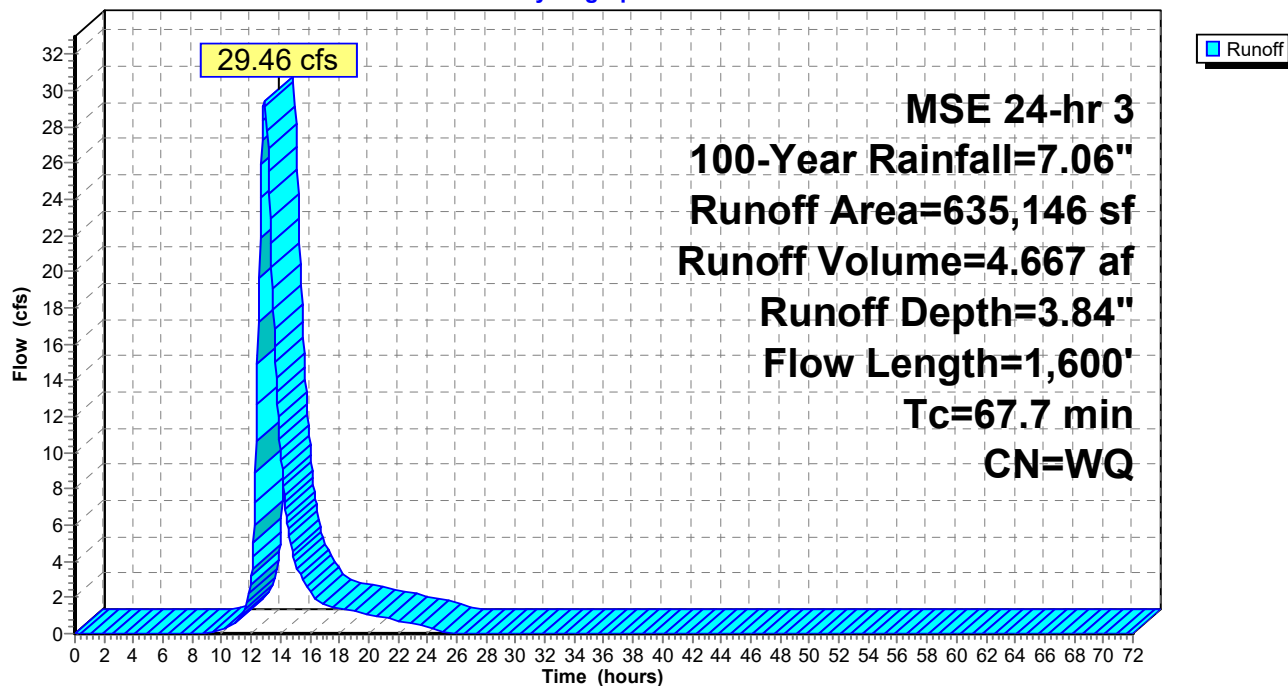
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 288,060   | 61 | >75% Grass cover, Good, HSG B |
| 347,086   | 80 | >75% Grass cover, Good, HSG D |
| 635,146   |    | Weighted Average              |
| 635,146   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 17.2     | 100           | 0.0147        | 0.10              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 2.83"                |
| 50.5     | 1,500         | 0.0050        | 0.49              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 67.7     | 1,600         | Total         |                   |                |                                                                      |

**Subcatchment EB-2B:**

Hydrograph



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**Summary for Subcatchment EB-2C:**

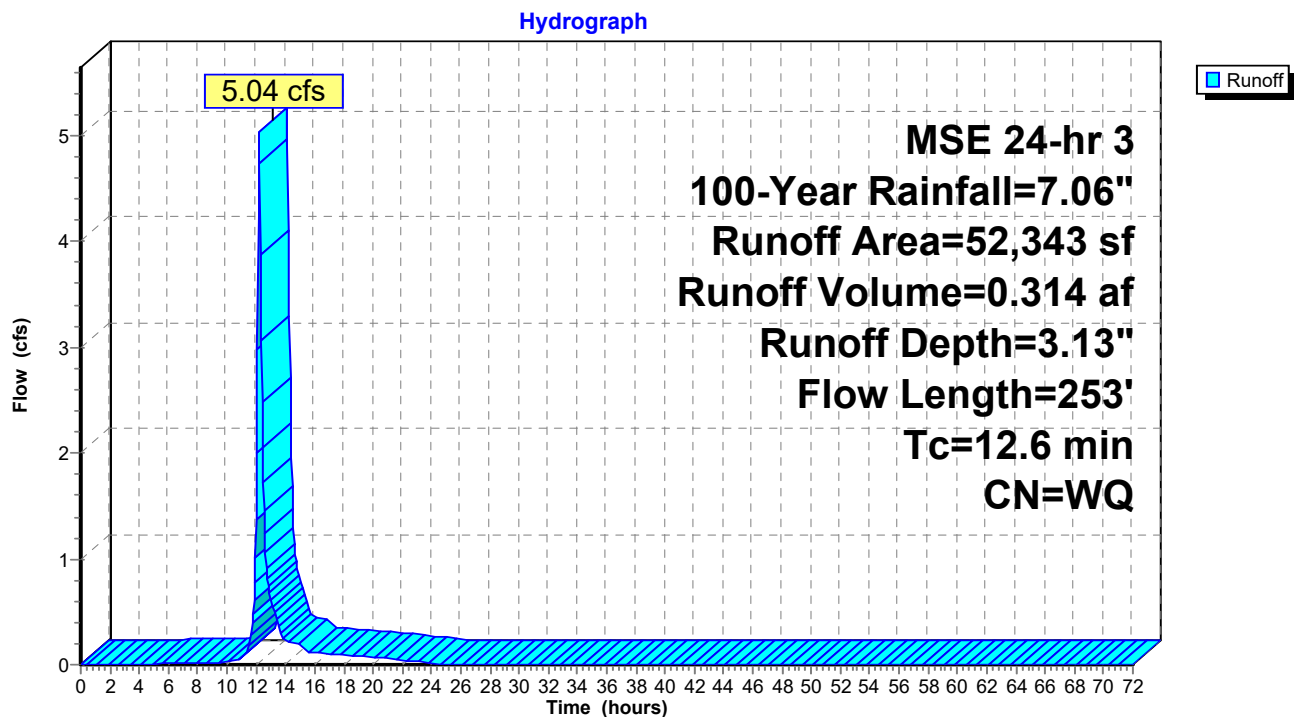
Runoff = 5.04 cfs @ 12.21 hrs, Volume= 0.314 af, Depth= 3.13"  
Routed to Reach 1A&2B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 4,554     | 98 | Roofs, HSG A                  |
| 397       | 98 | Paved parking, HSG A          |
| 47,392    | 61 | >75% Grass cover, Good, HSG B |
| 52,343    |    | Weighted Average              |
| 47,392    |    | 90.54% Pervious Area          |
| 4,951     |    | 9.46% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.1     | 100           | 0.0214        | 0.16              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 2.5      | 153           | 0.0205        | 1.00              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 12.6     | 253           | Total         |                   |                |                                                                      |

**Subcatchment EB-2C:**

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**Summary for Subcatchment EB-2D:**

Runoff = 6.48 cfs @ 12.25 hrs, Volume= 0.438 af, Depth= 2.89"

Routed to Reach EL-DITCH : Lexington Ave Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

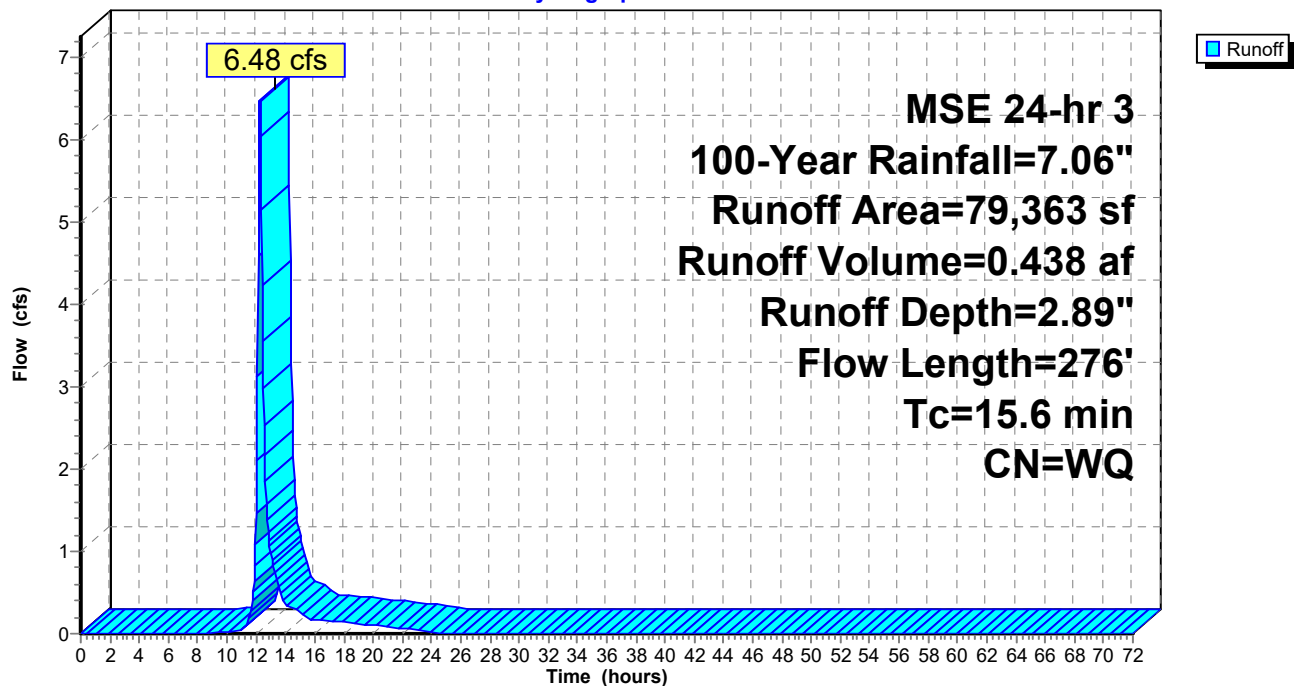
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 485       | 98 | Roofs, HSG A                  |
| 2,253     | 98 | Paved parking, HSG A          |
| 76,625    | 61 | >75% Grass cover, Good, HSG B |
| 79,363    |    | Weighted Average              |
| 76,625    |    | 96.55% Pervious Area          |
| 2,738     |    | 3.45% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.6     | 100           | 0.0191        | 0.16              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 5.0      | 176           | 0.0070        | 0.59              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 15.6     | 276           | Total         |                   |                |                                                                      |

**Subcatchment EB-2D:**

Hydrograph





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**Summary for Subcatchment EB-3:**

Runoff = 5.70 cfs @ 12.35 hrs, Volume= 0.464 af, Depth= 2.75"

Routed to Reach EL-DITCH : Lexington Ave Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

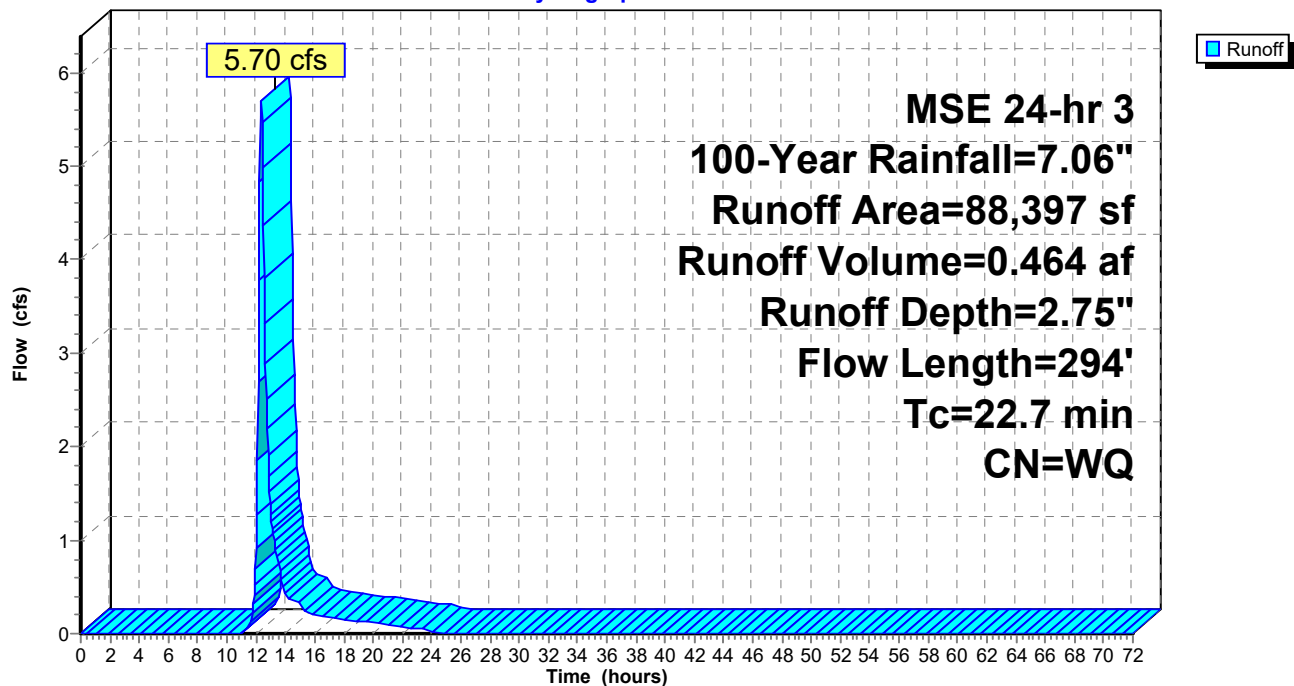
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 44,923    | 61 | >75% Grass cover, Good, HSG B |
| 43,474    | 61 | >75% Grass cover, Good, HSG B |
| 88,397    |    | Weighted Average              |
| 88,397    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 20.0     | 100           | 0.0100        | 0.08              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 2.83"                |
| 2.7      | 194           | 0.0289        | 1.19              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 22.7     | 294           | Total         |                   |                |                                                                      |

**Subcatchment EB-3:**

Hydrograph



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**Summary for Subcatchment EB-4:**

Runoff = 9.21 cfs @ 12.22 hrs, Volume= 0.563 af, Depth= 2.75"

Routed to Reach ESE-QA : SE Quarter (Private Ditch A)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

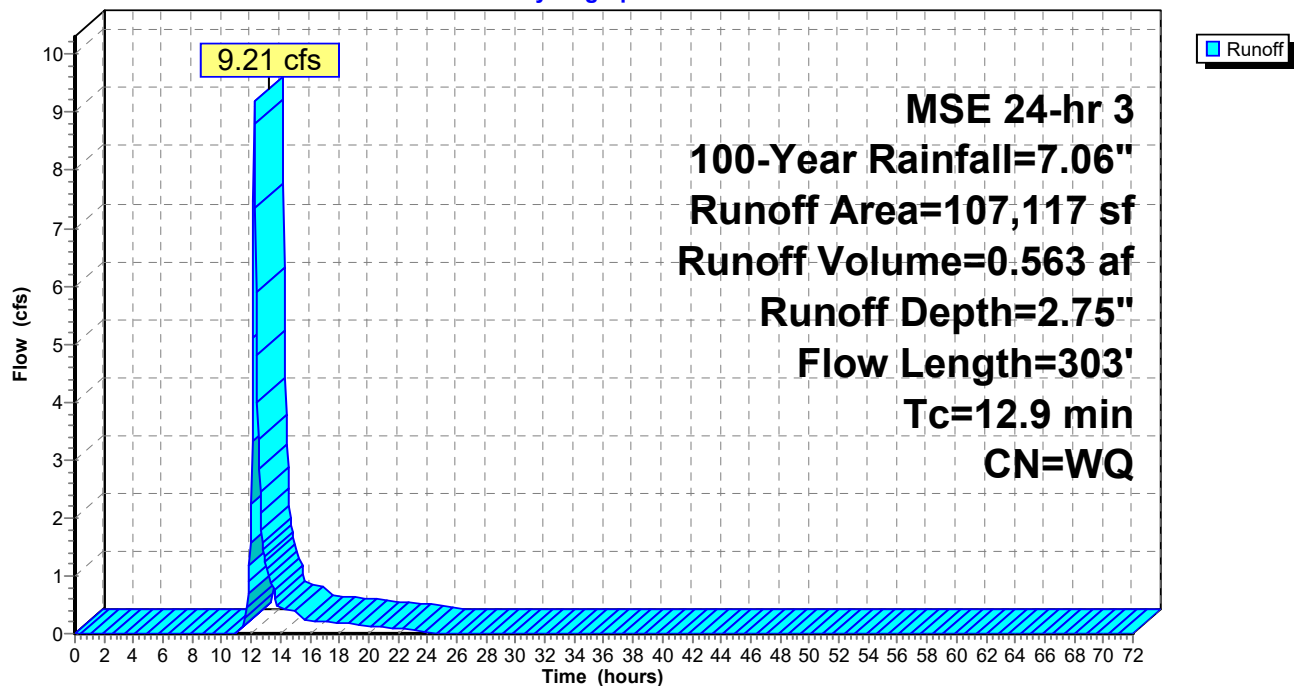
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 32,988    | 61 | >75% Grass cover, Good, HSG B |
| 74,129    | 61 | >75% Grass cover, Good, HSG B |
| 107,117   |    | Weighted Average              |
| 107,117   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 9.0      | 100           | 0.0285        | 0.18              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 3.9      | 203           | 0.0150        | 0.86              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 12.9     | 303           | Total         |                   |                |                                                                      |

**Subcatchment EB-4:**

Hydrograph



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**Summary for Subcatchment EB-5:**

Runoff = 36.86 cfs @ 12.62 hrs, Volume= 4.375 af, Depth= 2.75"

Routed to Reach SE-QB : SE Quarter (Private Ditch B)

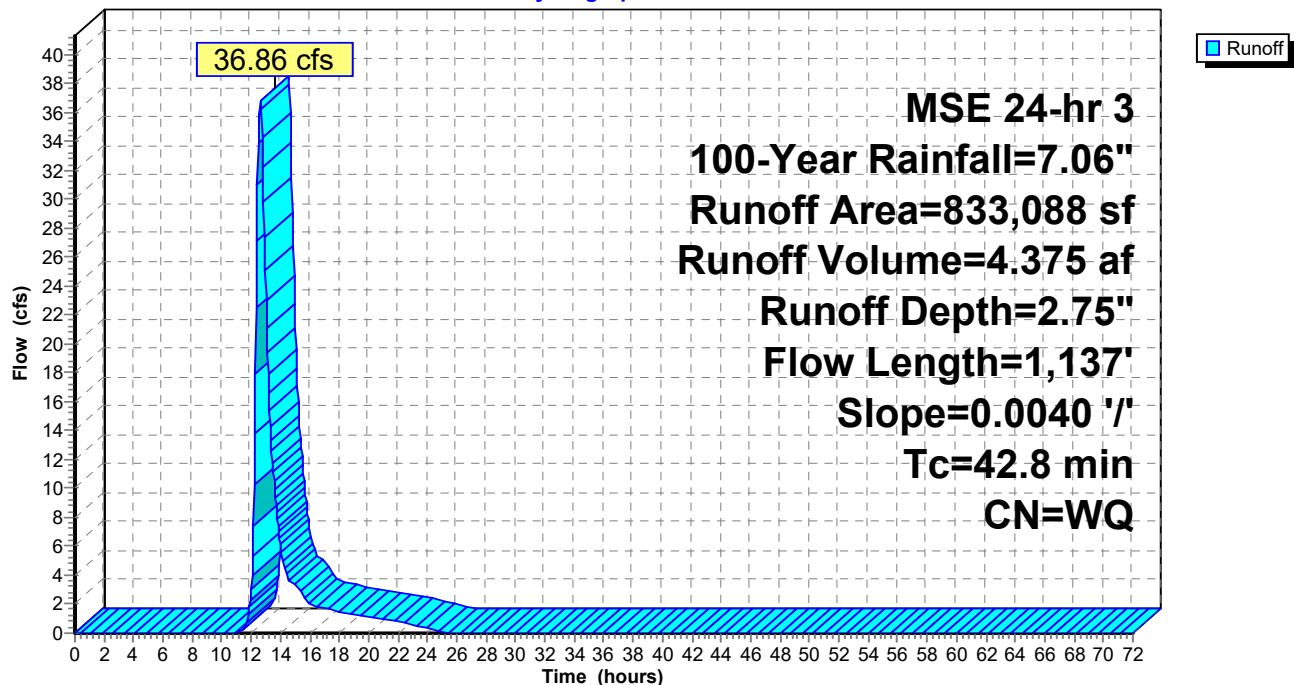
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 293,681   | 61 | >75% Grass cover, Good, HSG B |
| 539,407   | 61 | >75% Grass cover, Good, HSG B |
| 833,088   |    | Weighted Average              |
| 833,088   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                   |
|----------|---------------|---------------|-------------------|----------------|---------------------------------------------------------------|
| 42.8     | 1,137         | 0.0040        | 0.44              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps |

**Subcatchment EB-5:**

Hydrograph



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MSE 24-hr 3 100-Year Rainfall=7.06"

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**Summary for Subcatchment EB-6:**

Runoff = 55.09 cfs @ 12.20 hrs, Volume= 3.162 af, Depth= 2.75"  
Routed to Pond EB6 : Wetland 6

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

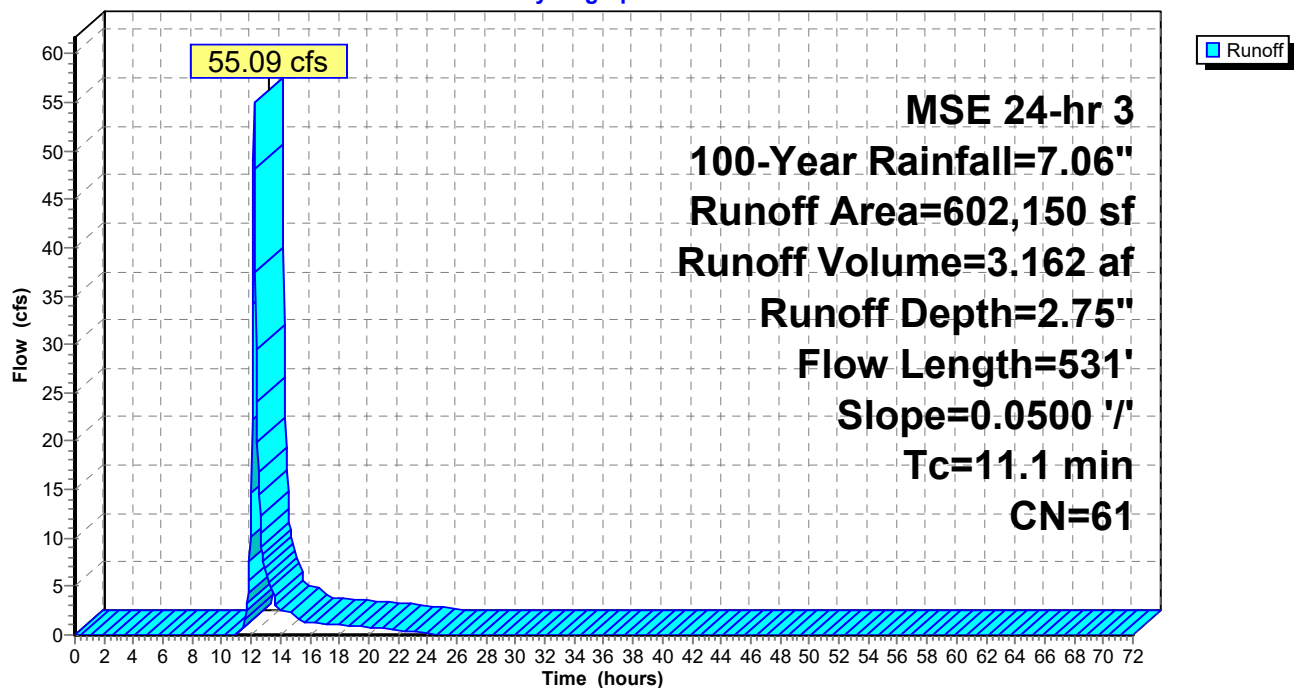
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 602,150   | 61 | >75% Grass cover, Good, HSG B |
| 602,150   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 6.0      | 50            | 0.0500        | 0.14              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 2.83"                |
| 5.1      | 481           | 0.0500        | 1.57              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 11.1     | 531           | Total         |                   |                |                                                                      |

**Subcatchment EB-6:**

Hydrograph



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**Summary for Subcatchment EB-7A:**

Runoff = 6.46 cfs @ 12.31 hrs, Volume= 0.493 af, Depth= 2.75"  
Routed to Pond EB7A : Wetland 7A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

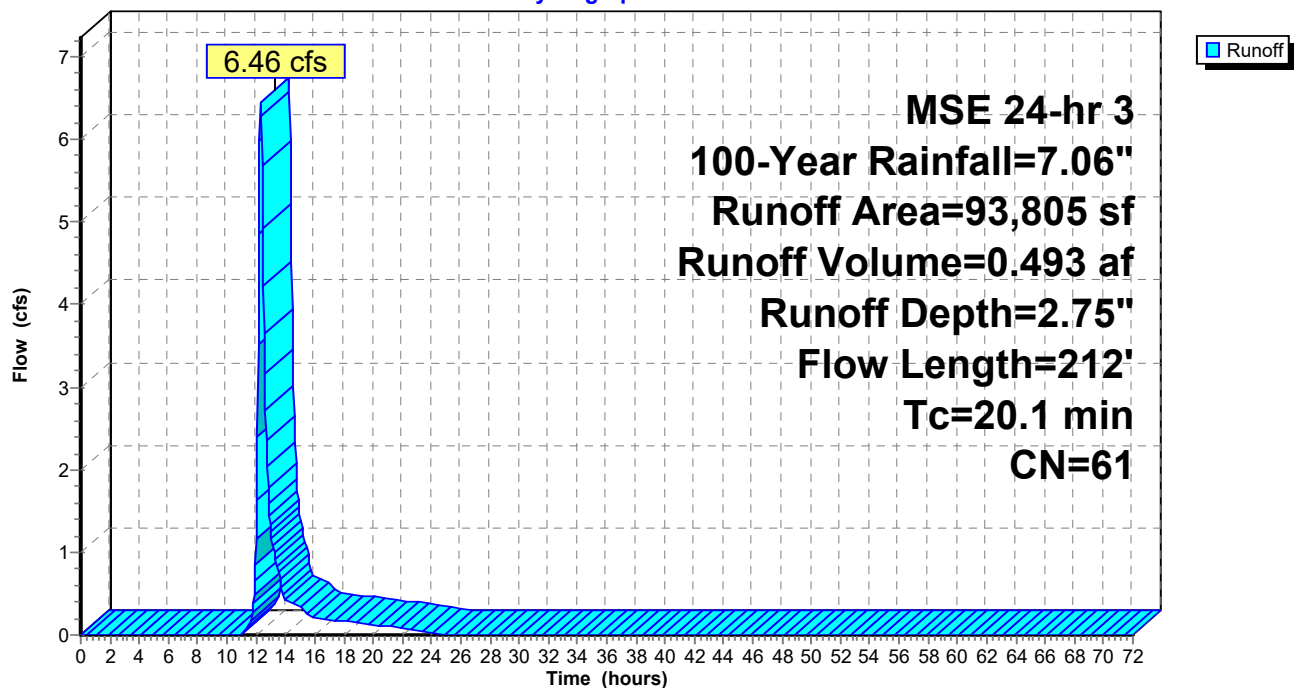
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 93,805    | 61 | >75% Grass cover, Good, HSG B |
| 93,805    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 18.8     | 100           | 0.0046        | 0.09              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.3      | 112           | 0.0425        | 1.44              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 20.1     | 212           | Total         |                   |                |                                                                      |

**Subcatchment EB-7A:**

Hydrograph



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**Summary for Subcatchment EB-7B:**

Runoff = 17.10 cfs @ 12.18 hrs, Volume= 0.932 af, Depth= 2.75"  
Routed to Pond EB7B : Wetland 7B

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

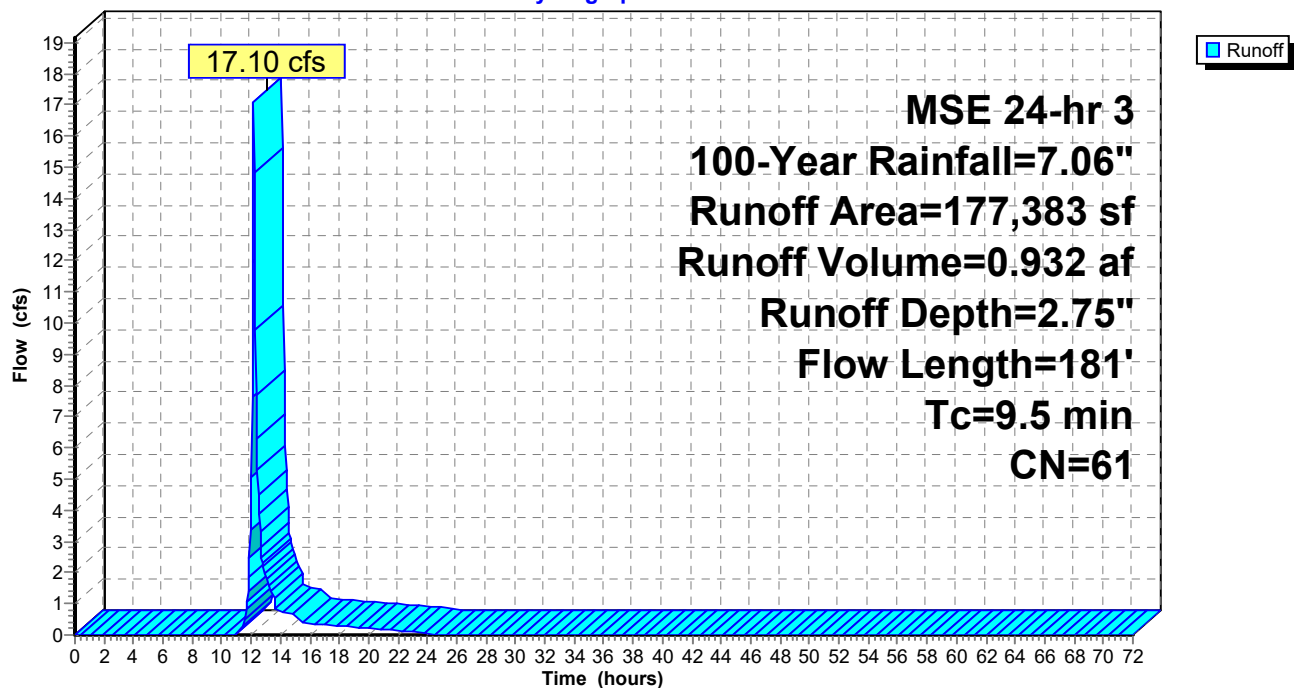
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 177,383   | 61 | >75% Grass cover, Good, HSG B |
| 177,383   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 8.4      | 100           | 0.0341        | 0.20              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.1      | 81            | 0.0288        | 1.19              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 9.5      | 181           | Total         |                   |                |                                                                      |

**Subcatchment EB-7B:**

Hydrograph



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**Summary for Subcatchment EB-7C:**

Runoff = 1.80 cfs @ 12.18 hrs, Volume= 0.099 af, Depth= 2.75"  
Routed to Pond EB7C : Wetland 7C

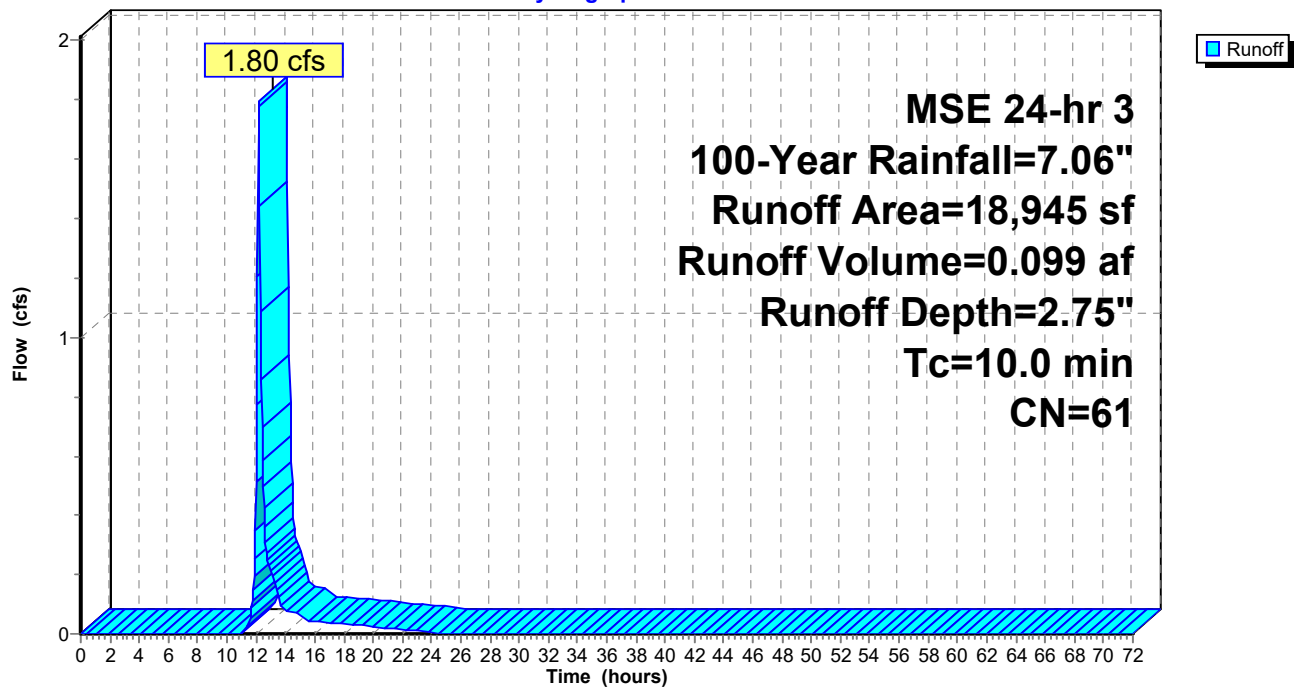
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 18,945    | 61 | >75% Grass cover, Good, HSG B |
| 18,945    |    | 100.00% Pervious Area         |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 10.0        |                  |                  |                      |                   | Direct Entry, |

**Subcatchment EB-7C:**

Hydrograph



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**Summary for Subcatchment EB-7D:**

Runoff = 6.02 cfs @ 12.34 hrs, Volume= 0.486 af, Depth= 2.75"  
Routed to Reach 7B&D :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

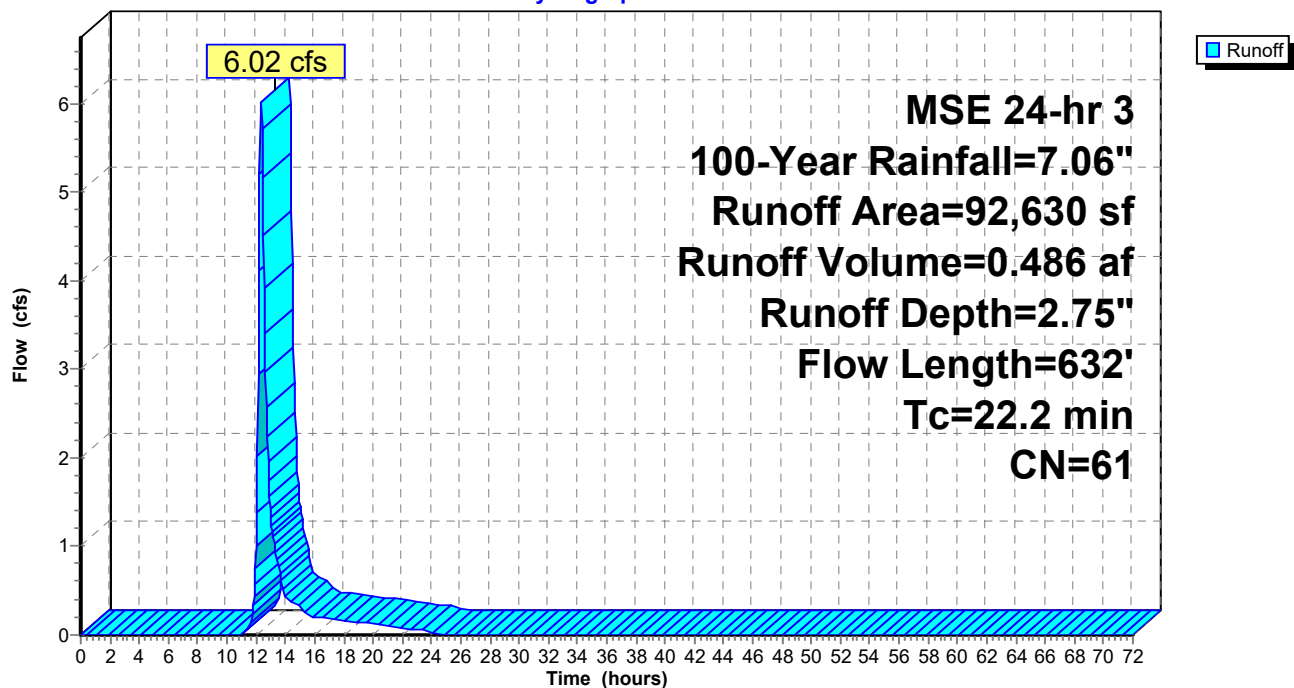
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 92,630    | 61 | >75% Grass cover, Good, HSG B |
| 92,630    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 9.5      | 100           | 0.0253        | 0.18              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 12.7     | 532           | 0.0100        | 0.70              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 22.2     | 632           | Total         |                   |                |                                                                      |

**Subcatchment EB-7D:**

Hydrograph





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**Summary for Subcatchment EB-8A:**

Runoff = 4.91 cfs @ 12.05 hrs, Volume= 0.195 af, Depth= 2.75"  
Routed to Reach ESW-Q : Southwest Discharge

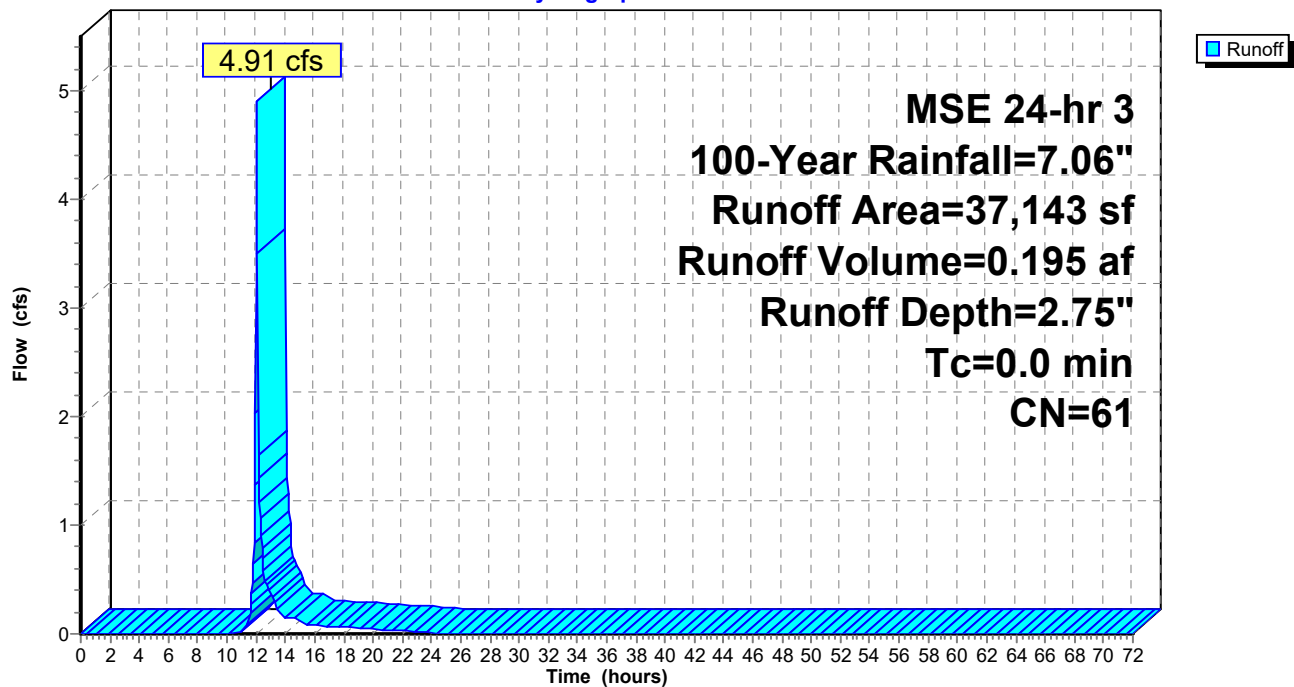
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 37,143    | 61 | >75% Grass cover, Good, HSG B |
| 37,143    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 0.0      |               |               |                   |                | Direct Entry, |

**Subcatchment EB-8A:**

Hydrograph



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MSE 24-hr 3 100-Year Rainfall=7.06"

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**Summary for Subcatchment EB-8B:**

Runoff = 5.65 cfs @ 12.23 hrs, Volume= 0.361 af, Depth= 2.75"

Routed to Reach SE-QB : SE Quarter (Private Ditch B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

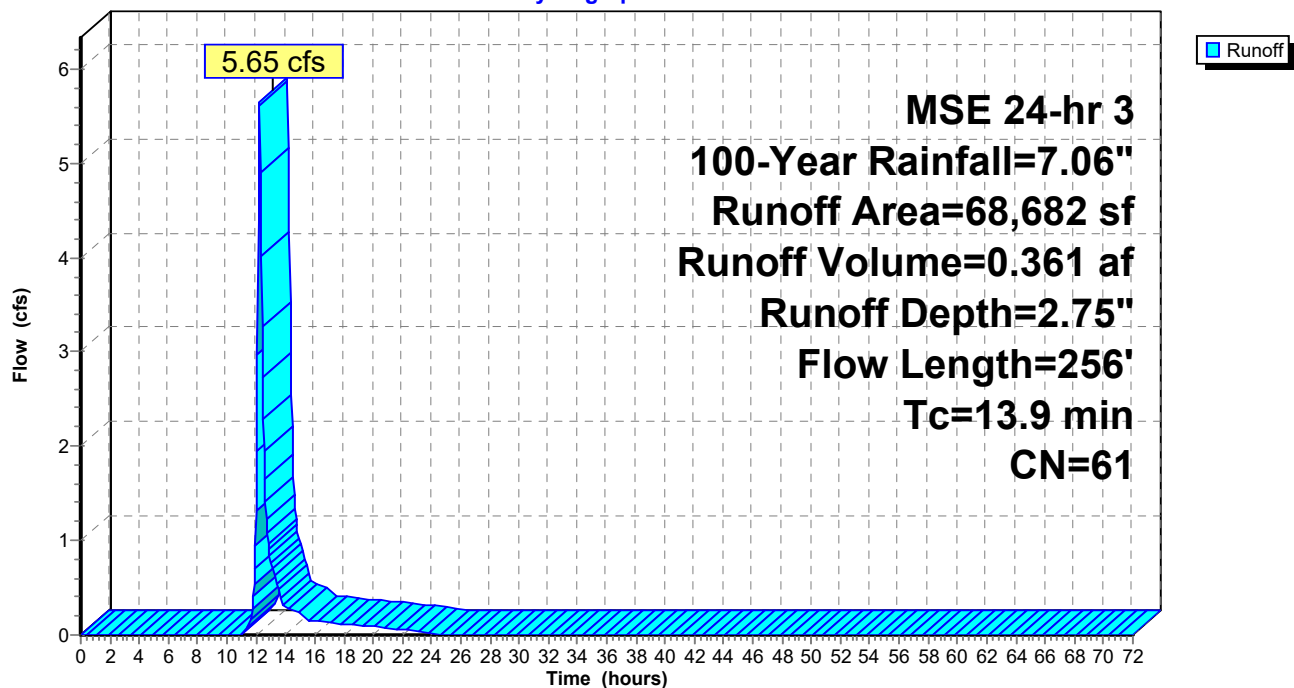
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 68,682    | 61 | >75% Grass cover, Good, HSG B |
| 68,682    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.9     | 100           | 0.0180        | 0.15              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 3.0      | 156           | 0.0154        | 0.87              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 13.9     | 256           | Total         |                   |                |                                                                      |

**Subcatchment EB-8B:**

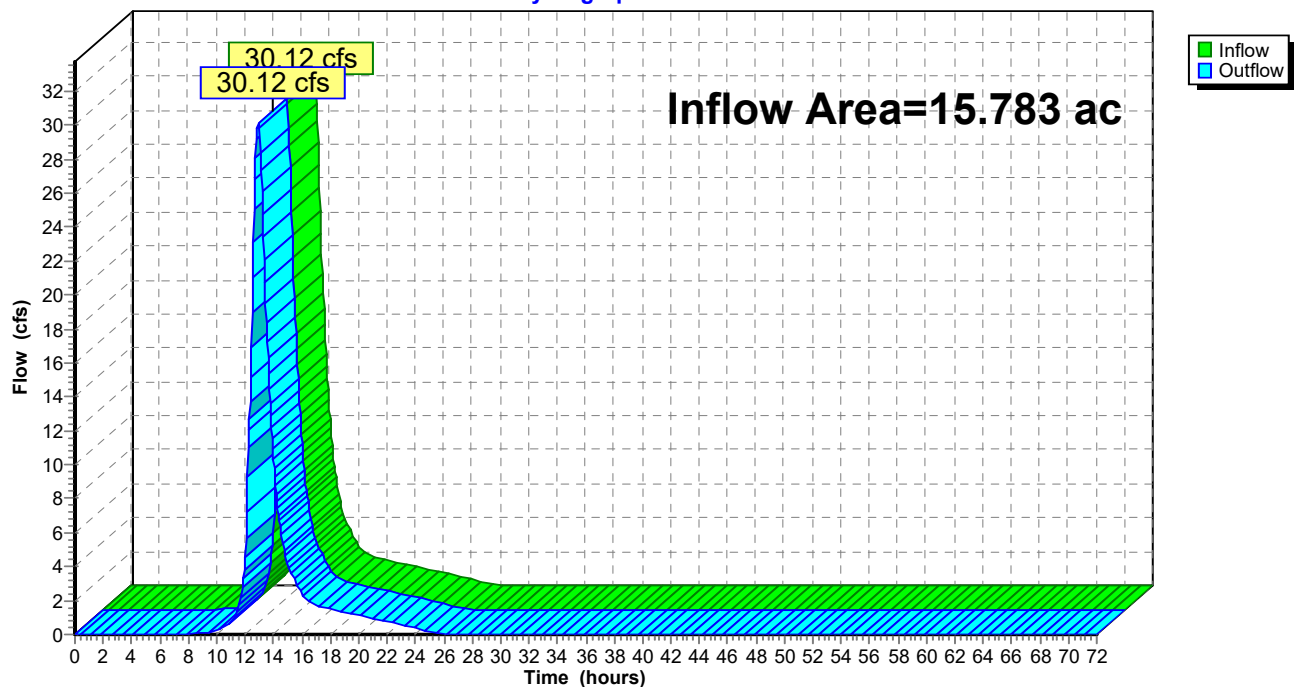
Hydrograph



**Summary for Reach 1A&2B:**

Inflow Area = 15.783 ac, 0.72% Impervious, Inflow Depth = 3.79" for 100-Year event  
Inflow = 30.12 cfs @ 12.92 hrs, Volume= 4.980 af  
Outflow = 30.12 cfs @ 12.92 hrs, Volume= 4.980 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach ESE-QA : SE Quarter (Private Ditch A)

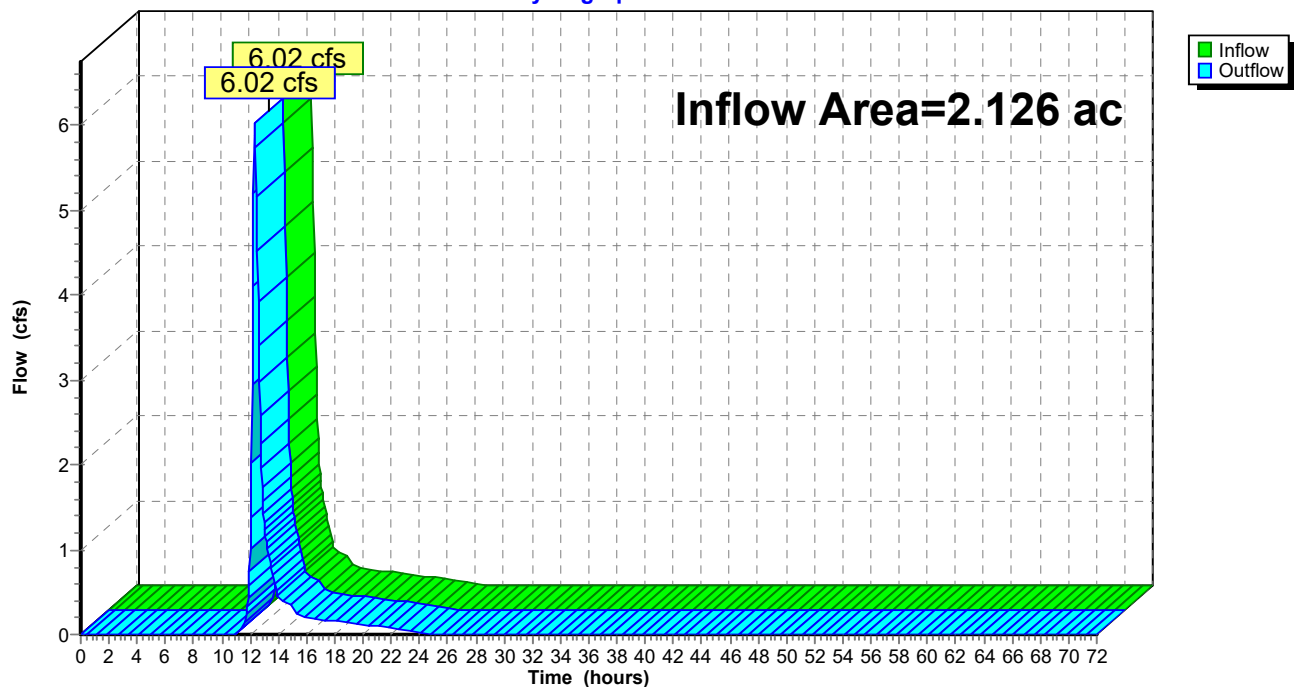
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach 1A&2B:****Hydrograph**

**Summary for Reach 7B&D:**

Inflow Area = 2.126 ac, 0.00% Impervious, Inflow Depth = 2.75" for 100-Year event  
Inflow = 6.02 cfs @ 12.34 hrs, Volume= 0.486 af  
Outflow = 6.02 cfs @ 12.34 hrs, Volume= 0.486 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach SE-QB : SE Quarter (Private Ditch B)

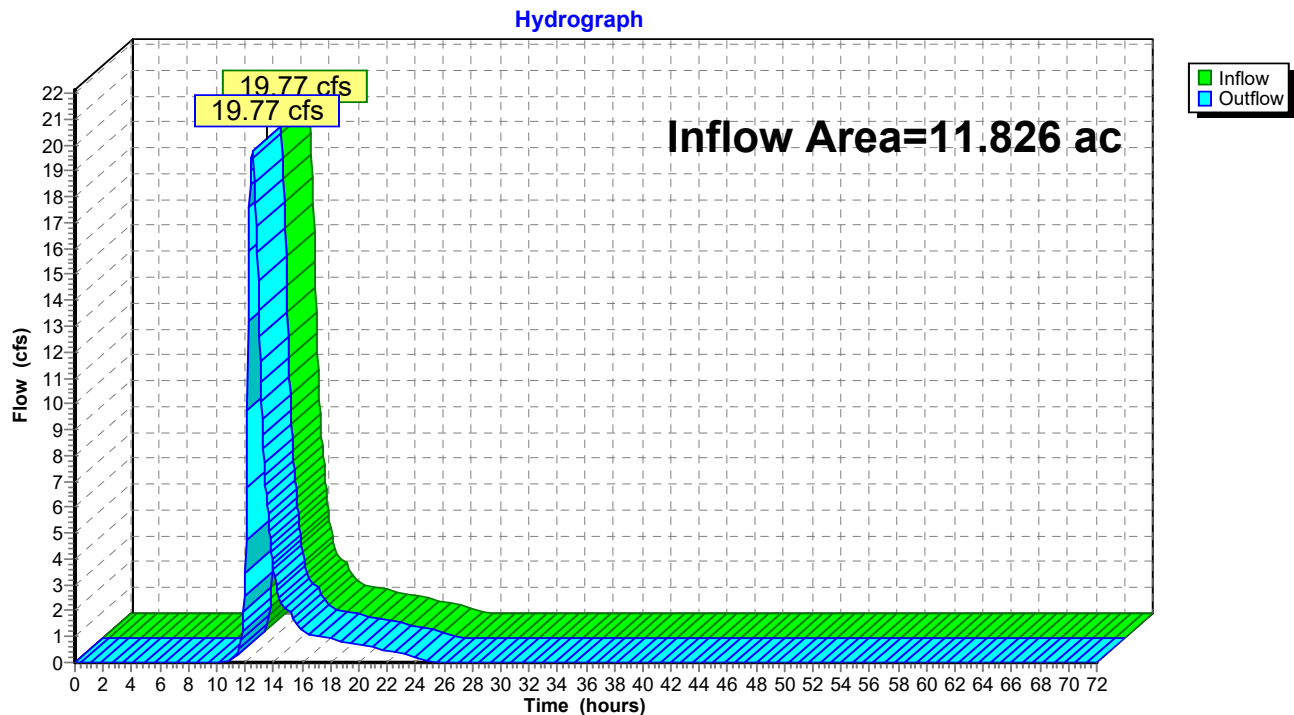
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach 7B&D:****Hydrograph**

**Summary for Reach EL-DITCH: Lexington Ave Ditch**

Inflow Area = 11.826 ac, 0.53% Impervious, Inflow Depth = 2.77" for 100-Year event  
Inflow = 19.77 cfs @ 12.53 hrs, Volume= 2.727 af  
Outflow = 19.77 cfs @ 12.53 hrs, Volume= 2.727 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PRE : Overall Pre-Development Runoff

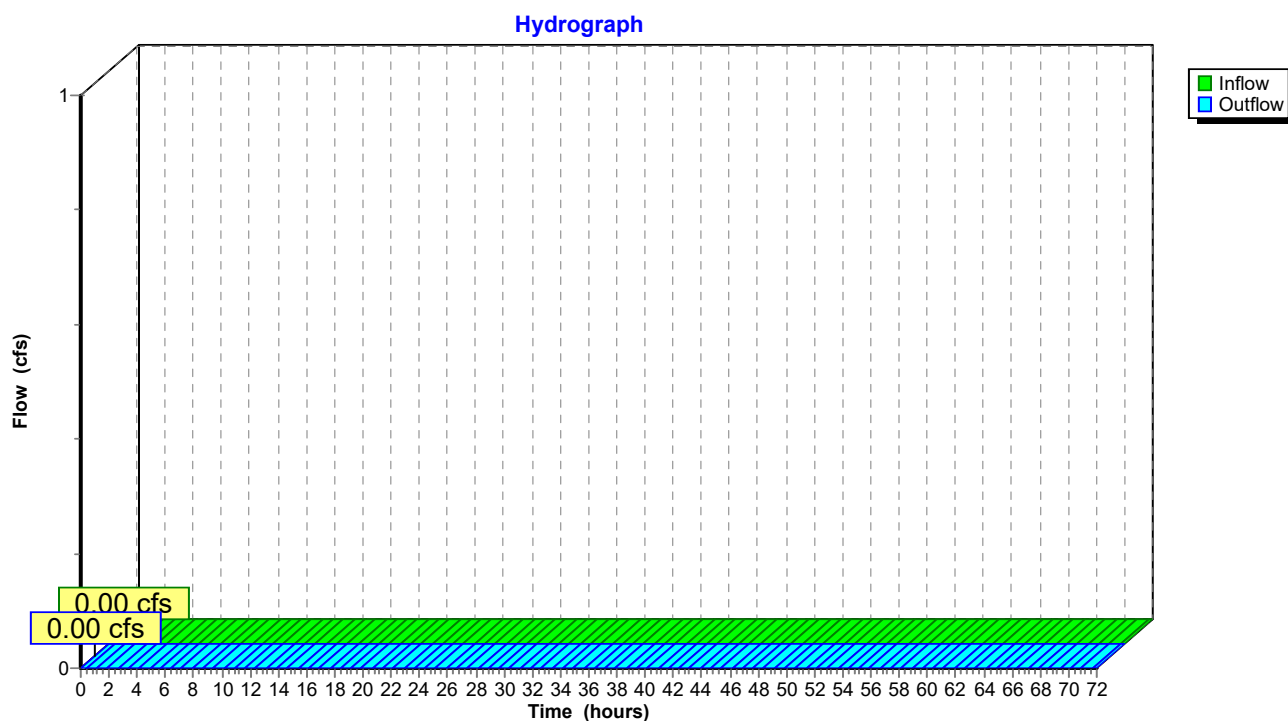
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach EL-DITCH: Lexington Ave Ditch**

**Summary for Reach EN: North Boundary**

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PRE : Overall Pre-Development Runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach EN: North Boundary**

**Summary for Reach ES: South Total (Ditch 44-9)**

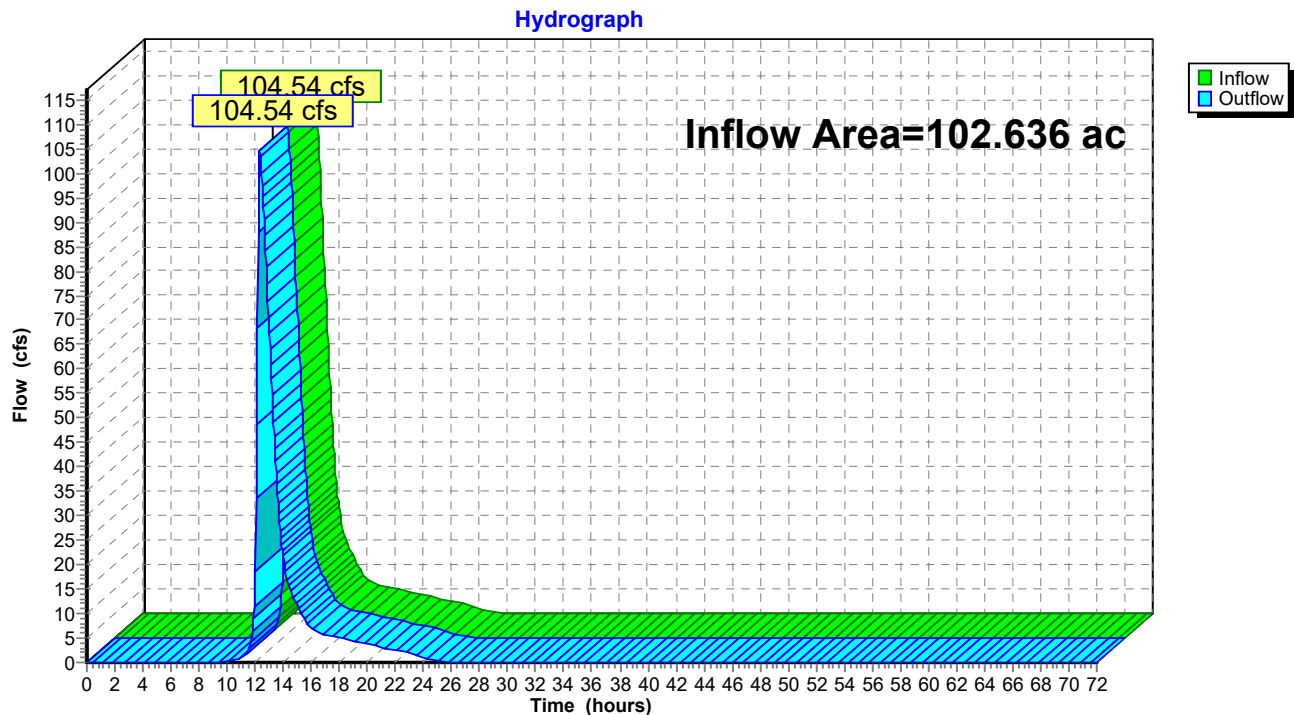
Inflow Area = 102.636 ac, 0.11% Impervious, Inflow Depth = 1.77" for 100-Year event

Inflow = 104.54 cfs @ 12.33 hrs, Volume= 15.127 af

Outflow = 104.54 cfs @ 12.33 hrs, Volume= 15.127 af, Atten= 0%, Lag= 0.0 min

Routed to Reach PRE : Overall Pre-Development Runoff

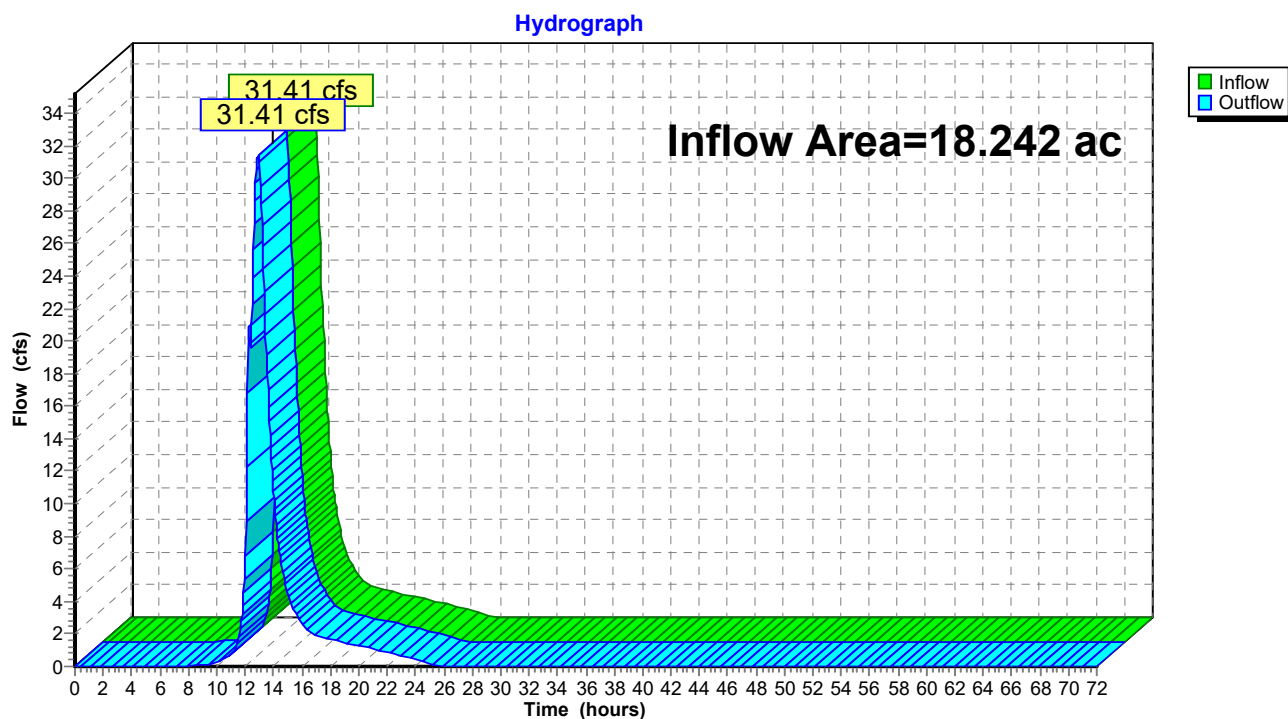
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach ES: South Total (Ditch 44-9)**

**Summary for Reach ESE-QA: SE Quarter (Private Ditch A)**

Inflow Area = 18.242 ac, 0.62% Impervious, Inflow Depth = 3.65" for 100-Year event  
Inflow = 31.41 cfs @ 12.91 hrs, Volume= 5.543 af  
Outflow = 31.41 cfs @ 12.91 hrs, Volume= 5.543 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach ES : South Total (Ditch 44-9)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

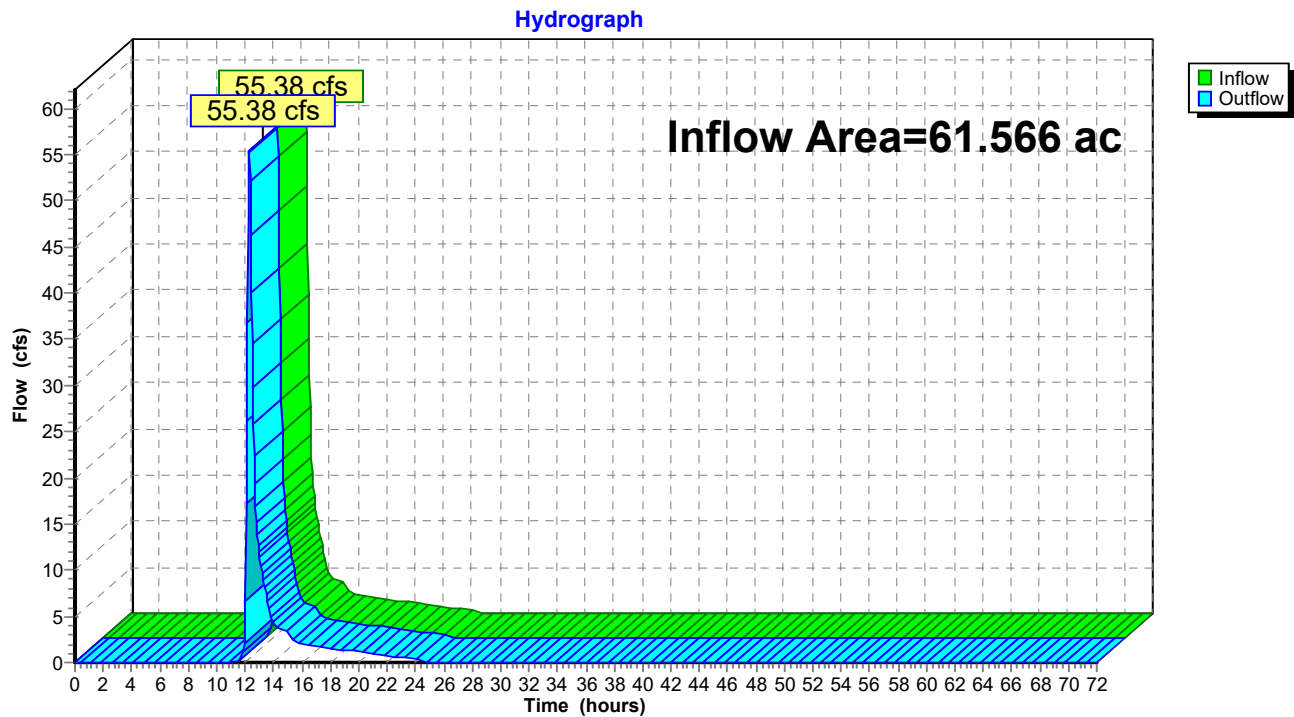
**Reach ESE-QA: SE Quarter (Private Ditch A)**



**Summary for Reach ESW-Q: Southwest Discharge**

Inflow Area = 61.566 ac, 0.00% Impervious, Inflow Depth = 0.85" for 100-Year event  
Inflow = 55.38 cfs @ 12.29 hrs, Volume= 4.362 af  
Outflow = 55.38 cfs @ 12.29 hrs, Volume= 4.362 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach ES : South Total (Ditch 44-9)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach ESW-Q: Southwest Discharge**

**Summary for Reach EW: West Boundary**

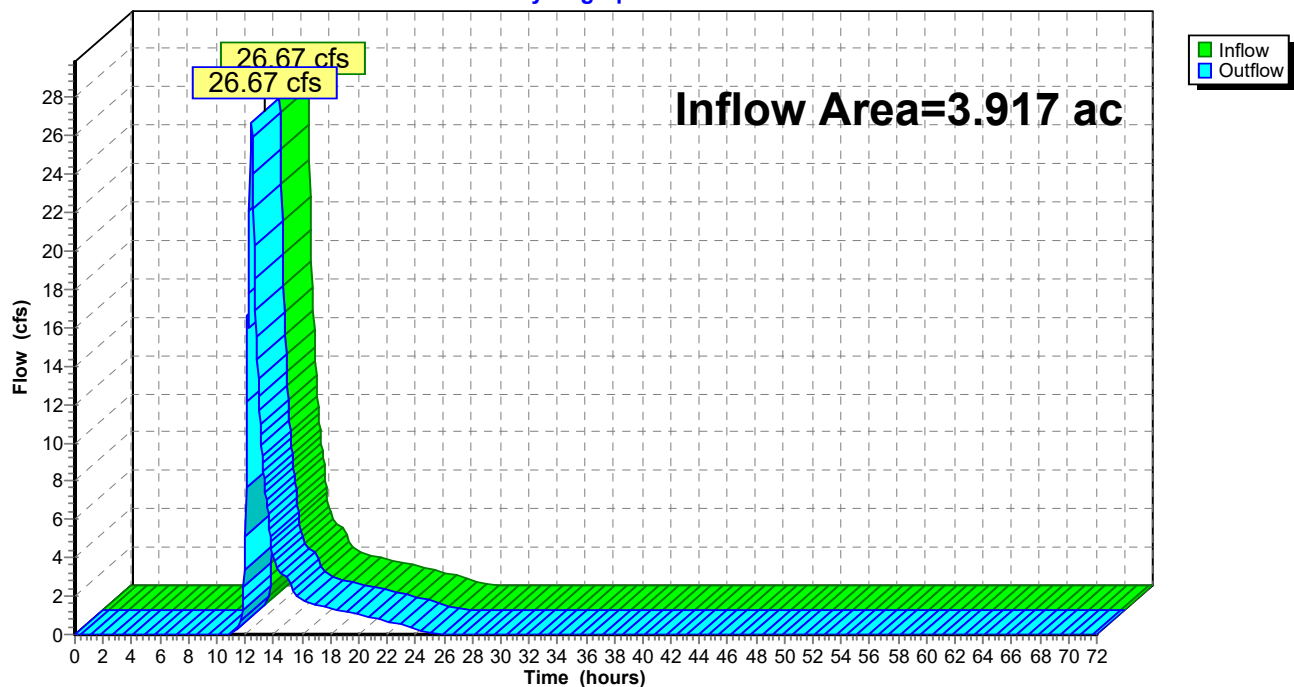
Inflow Area = 3.917 ac, 0.00% Impervious, Inflow Depth = 10.18" for 100-Year event

Inflow = 26.67 cfs @ 12.42 hrs, Volume= 3.323 af

Outflow = 26.67 cfs @ 12.42 hrs, Volume= 3.323 af, Atten= 0%, Lag= 0.0 min

Routed to Reach PRE : Overall Pre-Development Runoff

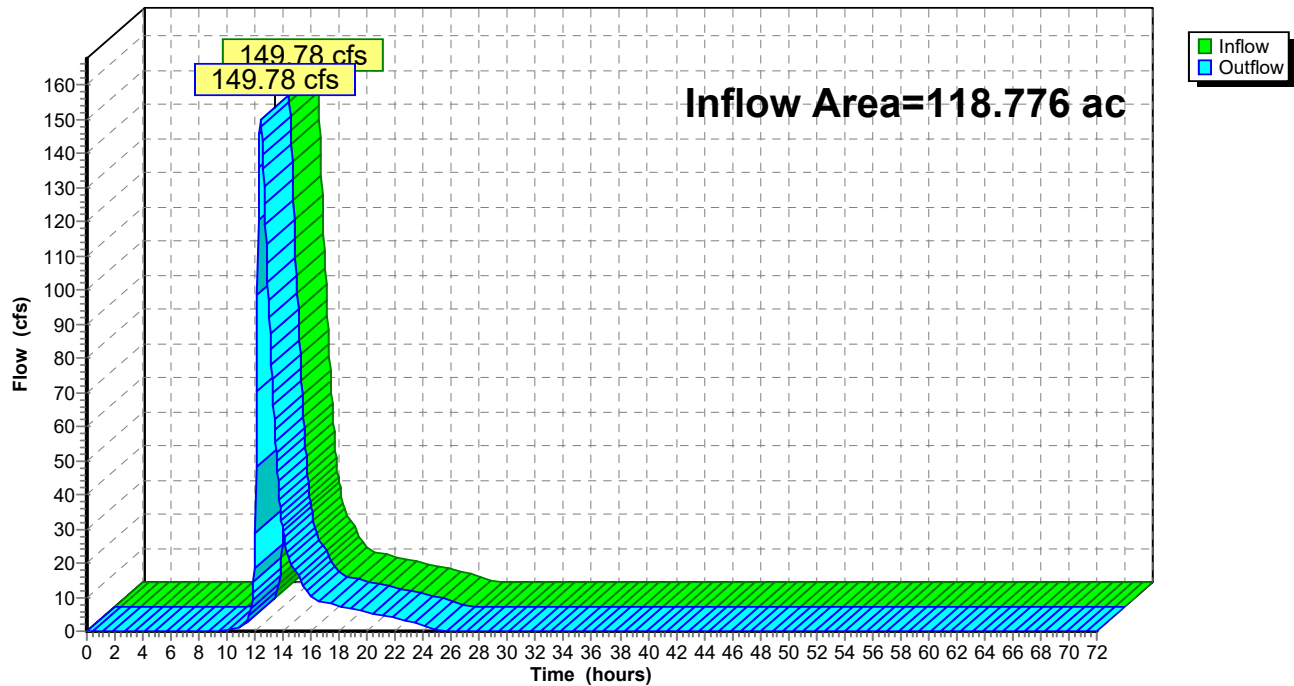
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach EW: West Boundary****Hydrograph**

**Summary for Reach PRE: Overall Pre-Development Runoff**

Inflow Area = 118.776 ac, 0.48% Impervious, Inflow Depth = 2.16" for 100-Year event  
Inflow = 149.78 cfs @ 12.37 hrs, Volume= 21.403 af  
Outflow = 149.78 cfs @ 12.37 hrs, Volume= 21.403 af, Atten= 0%, Lag= 0.0 min

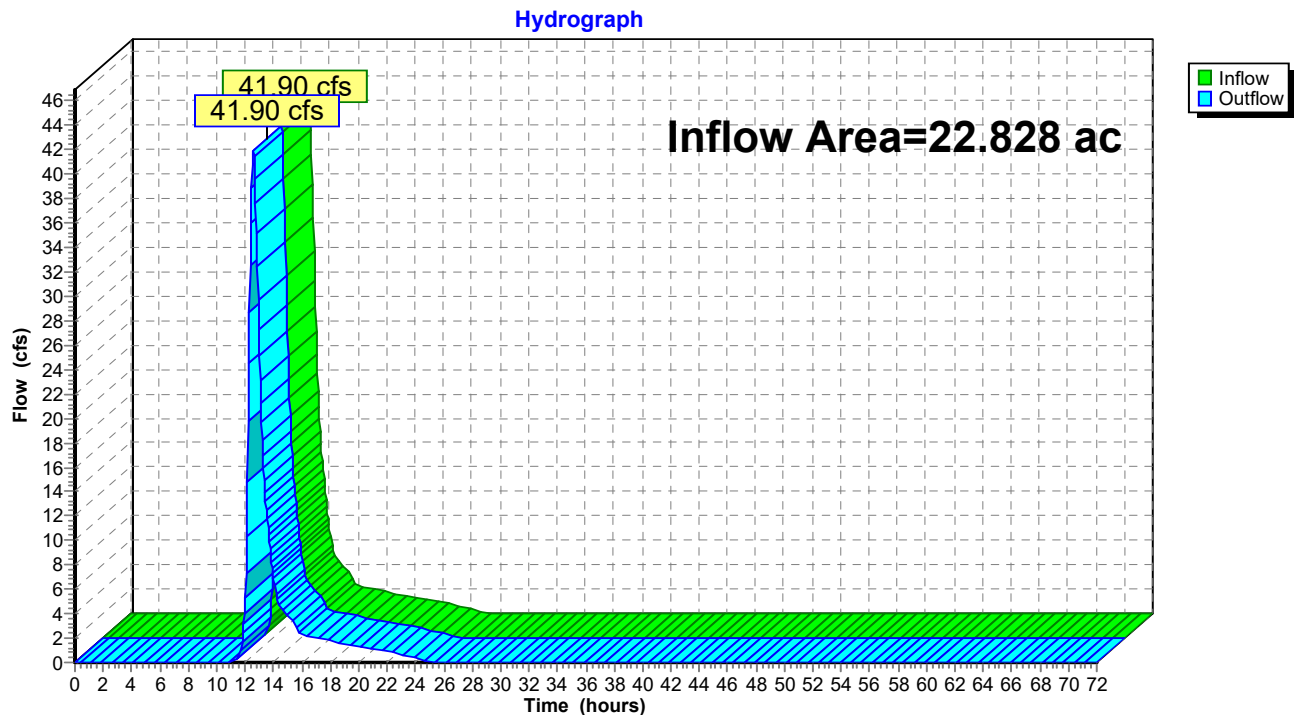
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PRE: Overall Pre-Development Runoff****Hydrograph**

**Summary for Reach SE-QB: SE Quarter (Private Ditch B)**

Inflow Area = 22.828 ac, 0.00% Impervious, Inflow Depth = 2.75" for 100-Year event  
Inflow = 41.90 cfs @ 12.58 hrs, Volume= 5.223 af  
Outflow = 41.90 cfs @ 12.58 hrs, Volume= 5.223 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach ES : South Total (Ditch 44-9)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach SE-QB: SE Quarter (Private Ditch B)**

**Summary for Pond EB1A: Wetland 1A**

Inflow Area = 26.343 ac, 0.00% Impervious, Inflow Depth = 2.75" for 100-Year event  
 Inflow = 69.17 cfs @ 12.39 hrs, Volume= 6.027 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Pond EB1B : Wetland 1B  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Reach 1A&2B :  
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Reach EN : North Boundary

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 901.4' @ 25.50 hrs Surf.Area= 260,498 sf Storage= 262,525 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 899.0' | 2,338,451 cf  | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 899.0               | 1,799                | 0                         | 0                         |
| 900.0               | 77,989               | 39,894                    | 39,894                    |
| 901.0               | 193,333              | 135,661                   | 175,555                   |
| 902.0               | 368,575              | 280,954                   | 456,509                   |
| 903.0               | 576,105              | 472,340                   | 928,849                   |
| 904.0               | 715,414              | 645,760                   | 1,574,609                 |
| 905.0               | 812,270              | 763,842                   | 2,338,451                 |

| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                              |
|--------|-----------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 901.4' | <b>5.0' long x 10.0' breadth TO EB-1B</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                                                                                         |
| #2     | Secondary | 901.9' | <b>5.0' long x 10.0' breadth TO EB-2B</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                                                                                         |
| #3     | Tertiary  | 902.8' | <b>100.0' long x 5.0' breadth To North</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

## LDP24010 Ham Lake

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MSE 24-hr 3 100-Year Rainfall=7.06"

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**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=899.0' TW=901.5' (Dynamic Tailwater)

↑1=TO EB-1B ( Controls 0.00 cfs)

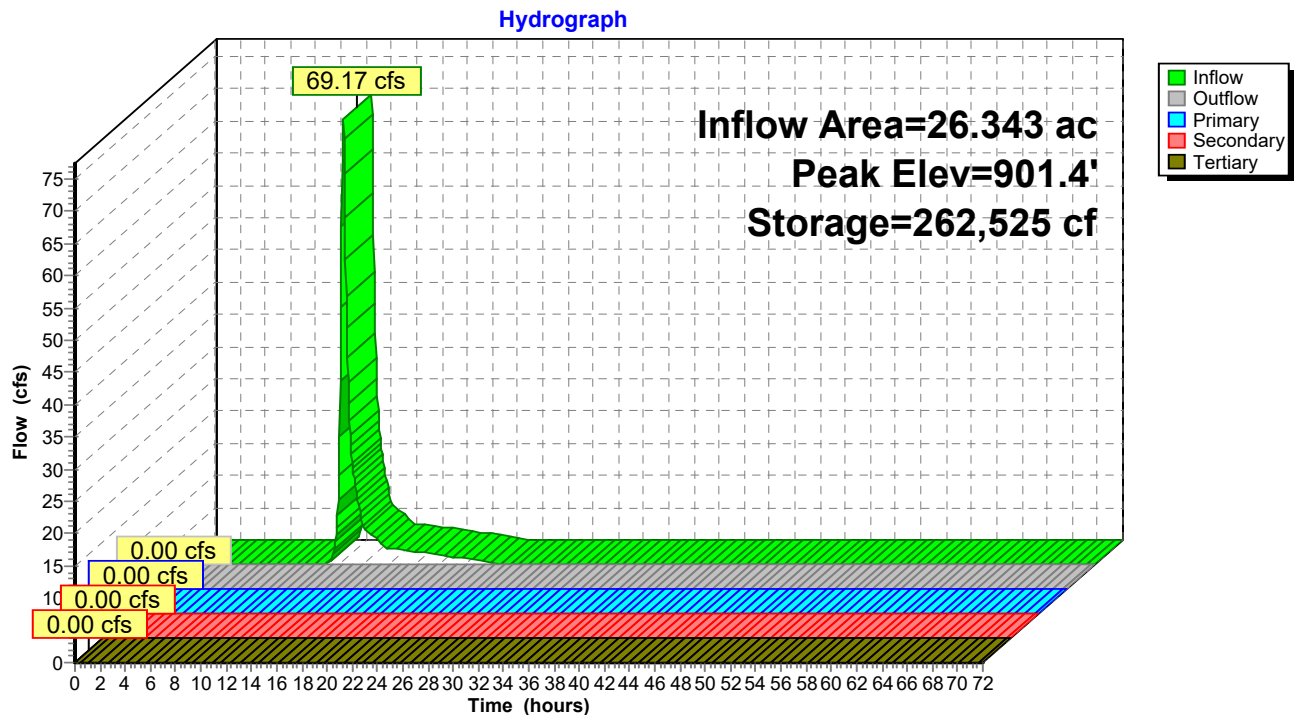
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=899.0' TW=0.0' (Dynamic Tailwater)

↑2=TO EB-2B ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=899.0' TW=0.0' (Dynamic Tailwater)

↑3=To North ( Controls 0.00 cfs)

### Pond EB1A: Wetland 1A



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**Summary for Pond EB1B: Wetland 1B**

Inflow Area = 31.354 ac, 0.00% Impervious, Inflow Depth = 0.44" for 100-Year event  
 Inflow = 15.87 cfs @ 12.29 hrs, Volume= 1.146 af  
 Outflow = 12.62 cfs @ 12.27 hrs, Volume= 1.136 af, Atten= 20%, Lag= 0.0 min  
 Primary = 12.62 cfs @ 12.27 hrs, Volume= 1.136 af  
 Routed to Pond EB1C : Wetland 1C

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 901.9' @ 12.50 hrs Surf.Area= 16,225 sf Storage= 2,517 cf

Plug-Flow detention time= 10.3 min calculated for 1.136 af (99% of inflow)  
 Center-of-Mass det. time= 5.2 min ( 836.4 - 831.1 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 901.5' | 194,422 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 901.5               | 55                   | 0                         | 0                         |
| 901.6               | 1,670                | 86                        | 86                        |
| 901.7               | 5,365                | 352                       | 438                       |
| 901.8               | 9,245                | 730                       | 1,168                     |
| 901.9               | 13,840               | 1,154                     | 2,323                     |
| 902.0               | 32,292               | 2,307                     | 4,629                     |
| 903.0               | 54,790               | 43,541                    | 48,170                    |
| 904.0               | 71,685               | 63,238                    | 111,408                   |
| 905.0               | 94,343               | 83,014                    | 194,422                   |

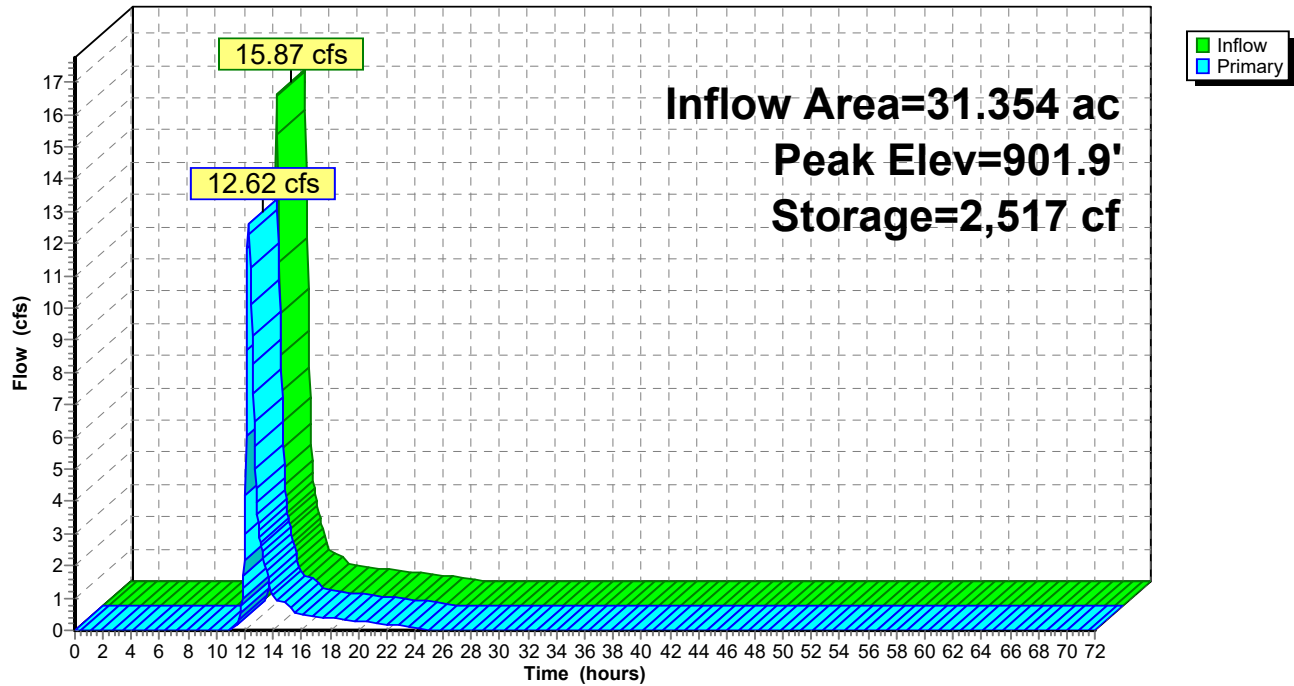
| Device | Routing | Invert | Outlet Devices                                                                                                                                       |
|--------|---------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 901.5' | <b>50.0' long x 10.0' breadth TO EB-1C</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=0.00 cfs @ 12.27 hrs HW=901.8' TW=901.8' (Dynamic Tailwater)

↑ **1=TO EB-1C** ( Controls 0.00 cfs)

**Pond EB1B: Wetland 1B**

Hydrograph





**LDP24010 Ham Lake**

MSE 24-hr 3 100-Year Rainfall=7.06"

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**Summary for Pond EB1C: Wetland 1C**

Inflow Area = 40.229 ac, 0.00% Impervious, Inflow Depth = 0.94" for 100-Year event  
 Inflow = 48.18 cfs @ 12.20 hrs, Volume= 3.167 af  
 Outflow = 21.60 cfs @ 12.46 hrs, Volume= 2.427 af, Atten= 55%, Lag= 16.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond EB6 : Wetland 6  
 Secondary = 21.60 cfs @ 12.46 hrs, Volume= 2.427 af  
 Routed to Reach EW : West Boundary

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 901.9' @ 12.46 hrs Surf.Area= 86,926 sf Storage= 48,658 cf

Plug-Flow detention time= 127.1 min calculated for 2.426 af (77% of inflow)  
 Center-of-Mass det. time= 53.1 min ( 881.3 - 828.3 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 900.1' | 577,352 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 900.1               | 174                  | 0                         | 0                         |
| 900.2               | 975                  | 57                        | 57                        |
| 900.5               | 5,734                | 1,006                     | 1,064                     |
| 901.0               | 20,570               | 6,576                     | 7,640                     |
| 901.5               | 36,160               | 14,183                    | 21,822                    |
| 901.8               | 83,591               | 17,963                    | 39,785                    |
| 902.0               | 90,000               | 17,359                    | 57,144                    |
| 903.0               | 100,000              | 95,000                    | 152,144                   |
| 904.0               | 233,558              | 166,779                   | 318,923                   |
| 905.0               | 283,299              | 258,429                   | 577,352                   |

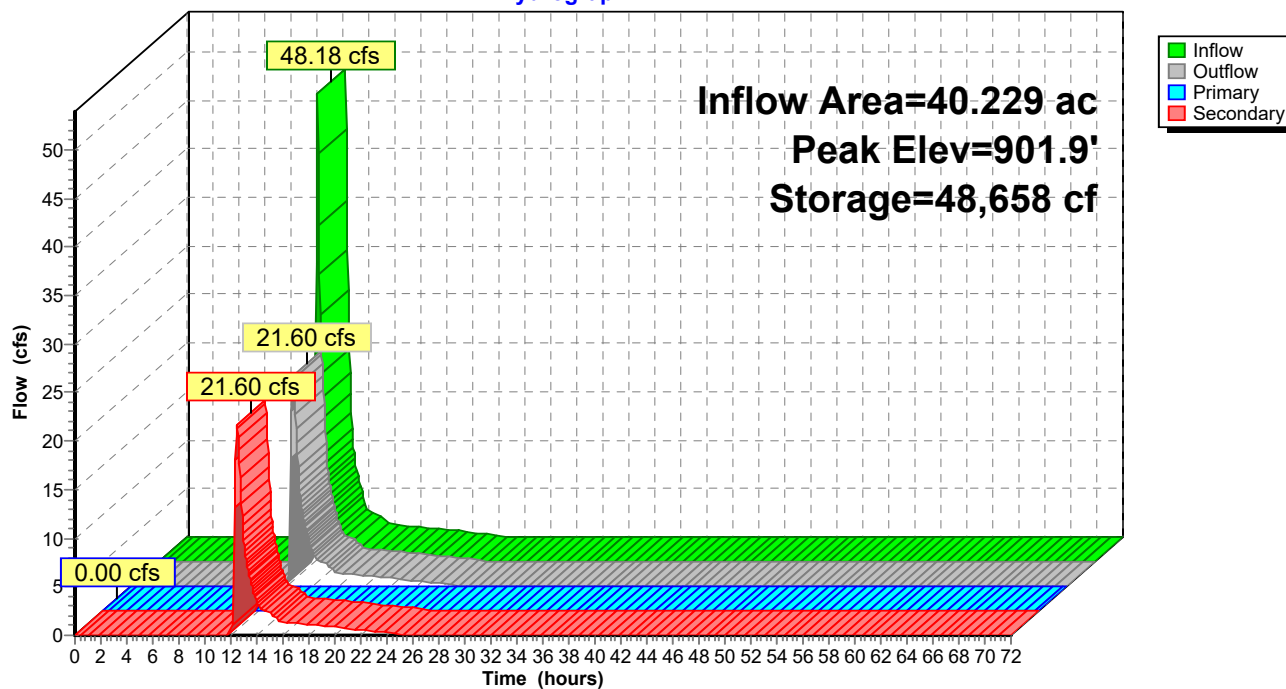
| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                             |
|--------|-----------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 902.3' | <b>5.0' long x 10.0' breadth To Wetland 6</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                                                                                    |
| #2     | Secondary | 901.7' | <b>100.0' long x 5.0' breadth To West</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=900.1' TW=895.0' (Dynamic Tailwater)  
 ↑1=To Wetland 6 ( Controls 0.00 cfs)

**Secondary OutFlow** Max=21.48 cfs @ 12.46 hrs HW=901.9' TW=0.0' (Dynamic Tailwater)  
 ↑2=To West (Weir Controls 21.48 cfs @ 1.06 fps)

# Pond EB1C: Wetland 1C

Hydrograph



**Summary for Pond EB6: Wetland 6**

Inflow Area = 60.713 ac, 0.00% Impervious, Inflow Depth = 0.86" for 100-Year event  
 Inflow = 56.17 cfs @ 12.24 hrs, Volume= 4.345 af  
 Outflow = 54.29 cfs @ 12.29 hrs, Volume= 4.167 af, Atten= 3%, Lag= 3.1 min  
 Primary = 54.29 cfs @ 12.29 hrs, Volume= 4.167 af  
 Routed to Reach ESW-Q : Southwest Discharge

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 896.4' @ 12.29 hrs Surf.Area= 52,127 sf Storage= 18,291 cf

Plug-Flow detention time= 31.4 min calculated for 4.164 af (96% of inflow)  
 Center-of-Mass det. time= 10.1 min ( 845.0 - 834.9 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 895.0' | 227,572 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

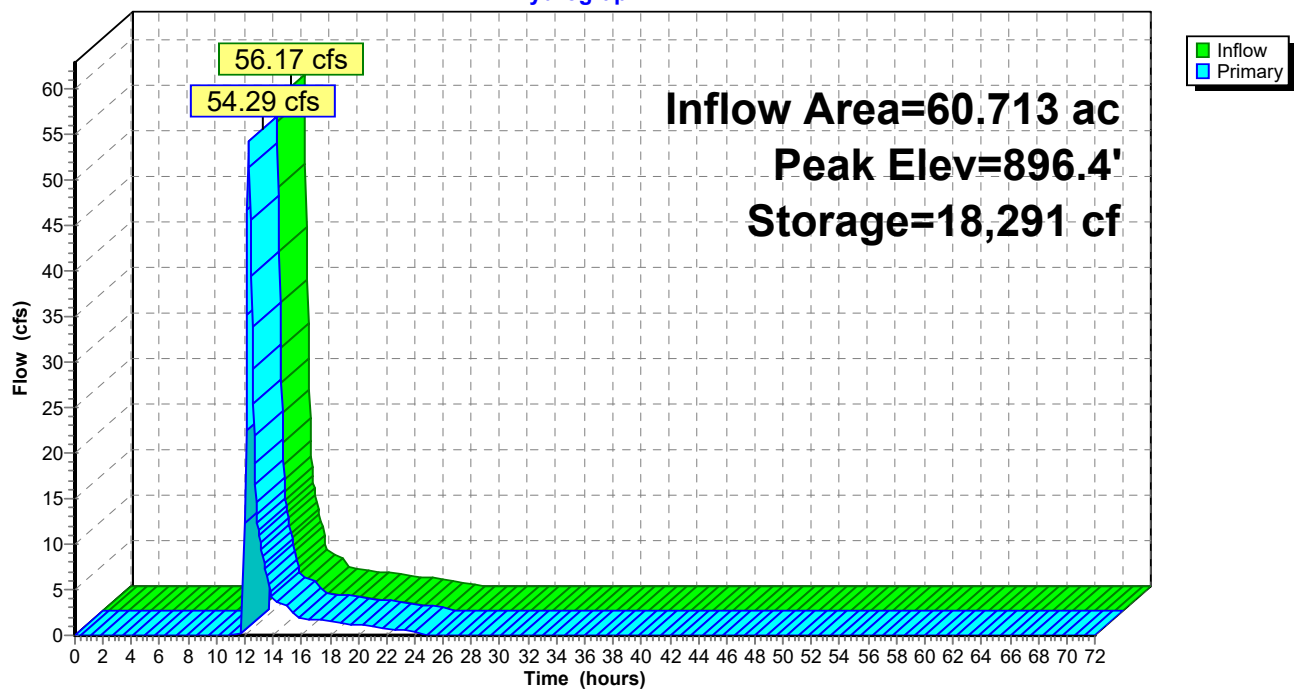
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 895.0               | 500                  | 0                         | 0                         |
| 896.0               | 11,662               | 6,081                     | 6,081                     |
| 897.0               | 117,362              | 64,512                    | 70,593                    |
| 898.0               | 196,595              | 156,979                   | 227,572                   |

| Device | Routing | Invert | Outlet Devices                                                                                                                                                                                                                                                    |
|--------|---------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 896.1' | <b>150.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=53.97 cfs @ 12.29 hrs HW=896.4' TW=0.0' (Dynamic Tailwater)  
 ↑1=**Broad-Crested Rectangular Weir**(Weir Controls 53.97 cfs @ 1.28 fps)

**Pond EB6: Wetland 6**

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 100-Year Rainfall=7.06"

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**Summary for Pond EB7A: Wetland 7A**

Inflow Area = 6.661 ac, 0.00% Impervious, Inflow Depth = 2.34" for 100-Year event  
 Inflow = 18.16 cfs @ 12.28 hrs, Volume= 1.300 af  
 Outflow = 16.93 cfs @ 12.34 hrs, Volume= 1.183 af, Atten= 7%, Lag= 3.6 min  
 Primary = 16.93 cfs @ 12.34 hrs, Volume= 1.183 af  
 Routed to Pond EB6 : Wetland 6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 898.4' @ 12.34 hrs Surf.Area= 18,221 sf Storage= 7,806 cf

Plug-Flow detention time= 58.0 min calculated for 1.182 af (91% of inflow)  
 Center-of-Mass det. time= 16.7 min ( 862.1 - 845.3 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 897.5' | 24,008 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

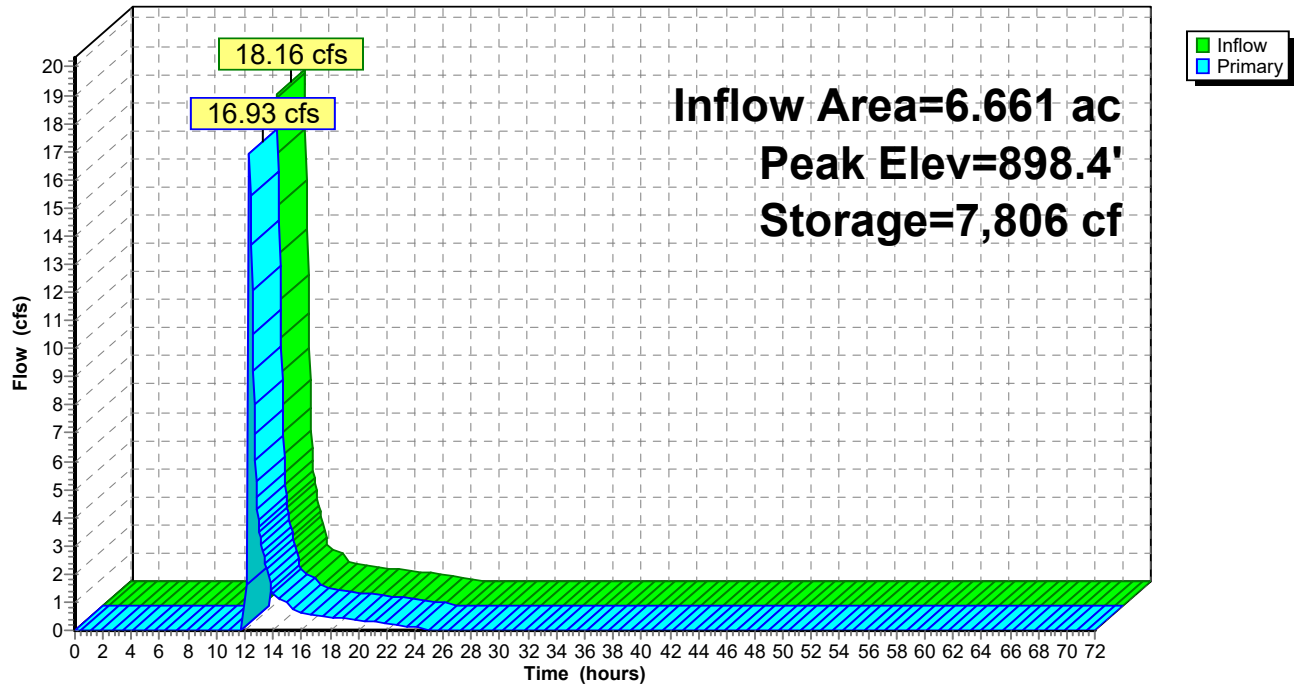
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 897.5               | 1,042                | 0                         | 0                         |
| 898.0               | 9,707                | 2,687                     | 2,687                     |
| 899.0               | 32,934               | 21,321                    | 24,008                    |

| Device | Routing | Invert | Outlet Devices                                                                                                                                      |
|--------|---------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 898.2' | <b>100.0' long x 10.0' breadth TO EB6</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=16.78 cfs @ 12.34 hrs HW=898.4' TW=896.4' (Dynamic Tailwater)  
 ↑ **1=TO EB6** (Weir Controls 16.78 cfs @ 1.01 fps)

**Pond EB7A: Wetland 7A**

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 100-Year Rainfall=7.06"

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**Summary for Pond EB7B: Wetland 7B**

Inflow Area = 4.507 ac, 0.00% Impervious, Inflow Depth = 2.48" for 100-Year event  
 Inflow = 17.10 cfs @ 12.18 hrs, Volume= 0.932 af  
 Outflow = 11.94 cfs @ 12.27 hrs, Volume= 0.807 af, Atten= 30%, Lag= 5.8 min  
 Primary = 11.94 cfs @ 12.27 hrs, Volume= 0.807 af  
 Routed to Pond EB7A : Wetland 7A  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 7B&D :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 898.5' @ 12.27 hrs Surf.Area= 29,071 sf Storage= 10,562 cf

Plug-Flow detention time= 84.3 min calculated for 0.807 af (87% of inflow)  
 Center-of-Mass det. time= 29.6 min ( 852.8 - 823.2 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 897.7' | 32,037 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 897.7               | 330                  | 0                         | 0                         |
| 898.0               | 7,784                | 1,217                     | 1,217                     |
| 898.5               | 28,502               | 9,072                     | 10,289                    |
| 899.0               | 58,492               | 21,749                    | 32,037                    |

| Device | Routing   | Invert | Outlet Devices                                                                                                                                       |
|--------|-----------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 898.3' | <b>50.0' long x 10.0' breadth TO EB-7D</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |
| #2     | Secondary | 899.4' | <b>100.0' long x 10.0' breadth TO EB7A</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=11.42 cfs @ 12.27 hrs HW=898.5' TW=898.3' (Dynamic Tailwater)

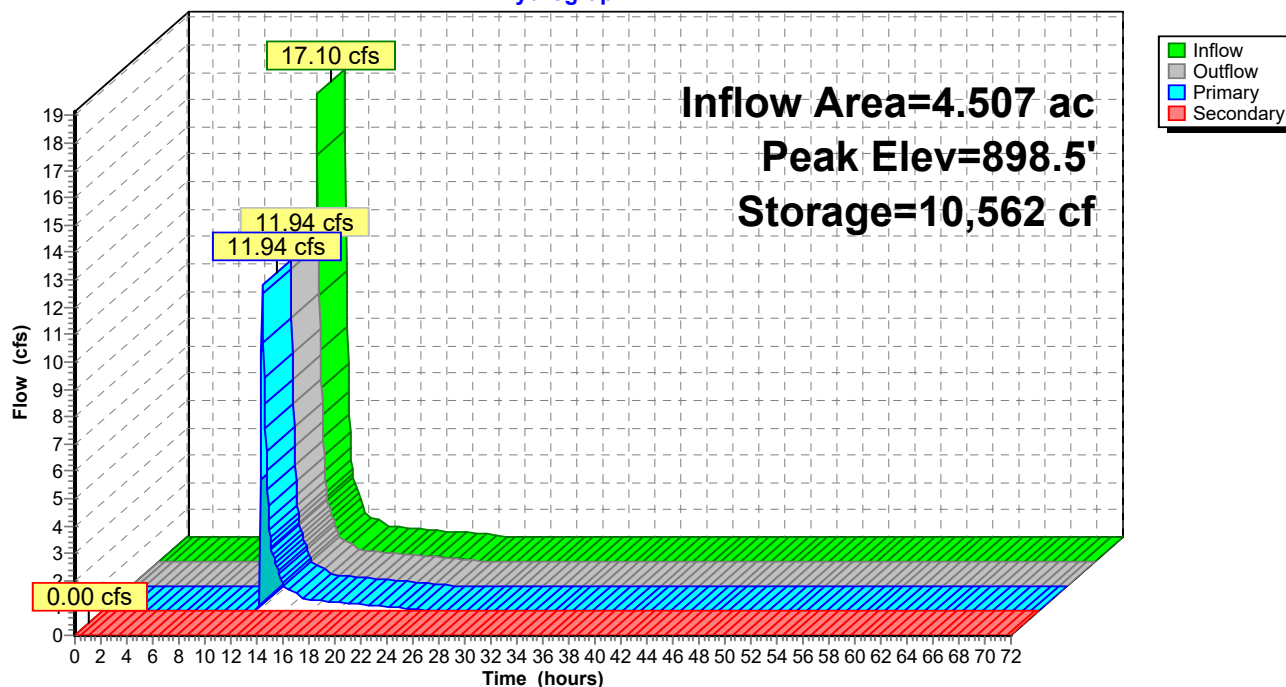
↑ **1=TO EB-7D** (Weir Controls 11.42 cfs @ 1.11 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=897.7' TW=0.0' (Dynamic Tailwater)

↑ **2=TO EB7A** ( Controls 0.00 cfs)

**Pond EB7B: Wetland 7B**

Hydrograph





**Summary for Pond EB7C: Wetland 7C**

Inflow Area = 0.435 ac, 0.00% Impervious, Inflow Depth = 2.75" for 100-Year event  
 Inflow = 1.80 cfs @ 12.18 hrs, Volume= 0.099 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond EB7B : Wetland 7B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 899.3' @ 24.60 hrs Surf.Area= 6,405 sf Storage= 4,334 cf

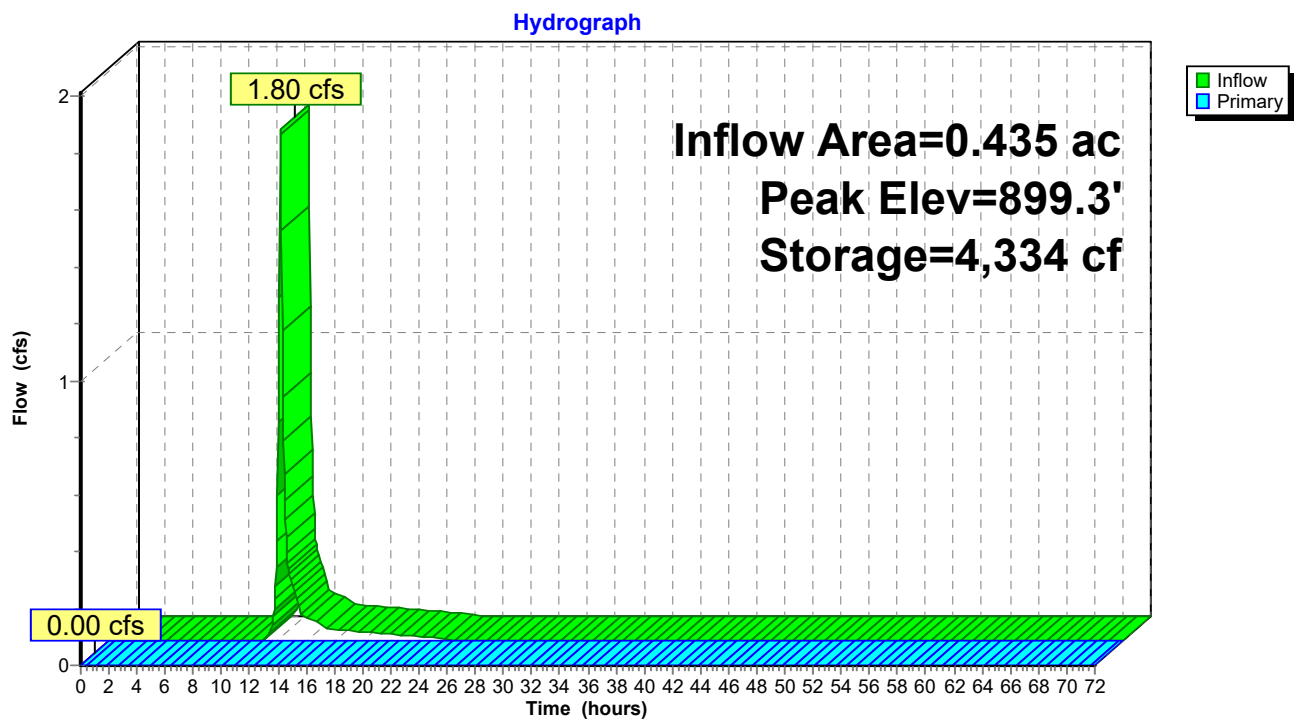
Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

| Volume              | Invert               | Avail.Storage             | Storage Description                                        |
|---------------------|----------------------|---------------------------|------------------------------------------------------------|
| #1                  | 897.7'               | 5,675 cf                  | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet)                                  |
| 897.7               | 122                  | 0                         | 0                                                          |
| 898.0               | 753                  | 131                       | 131                                                        |
| 898.5               | 2,342                | 774                       | 905                                                        |
| 899.0               | 4,602                | 1,736                     | 2,641                                                      |
| 899.5               | 7,533                | 3,034                     | 5,675                                                      |

| Device | Routing | Invert | Outlet Devices                                                                                                                                      |
|--------|---------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 899.6' | <b>50.0' long x 10.0' breadth TO EB7B</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

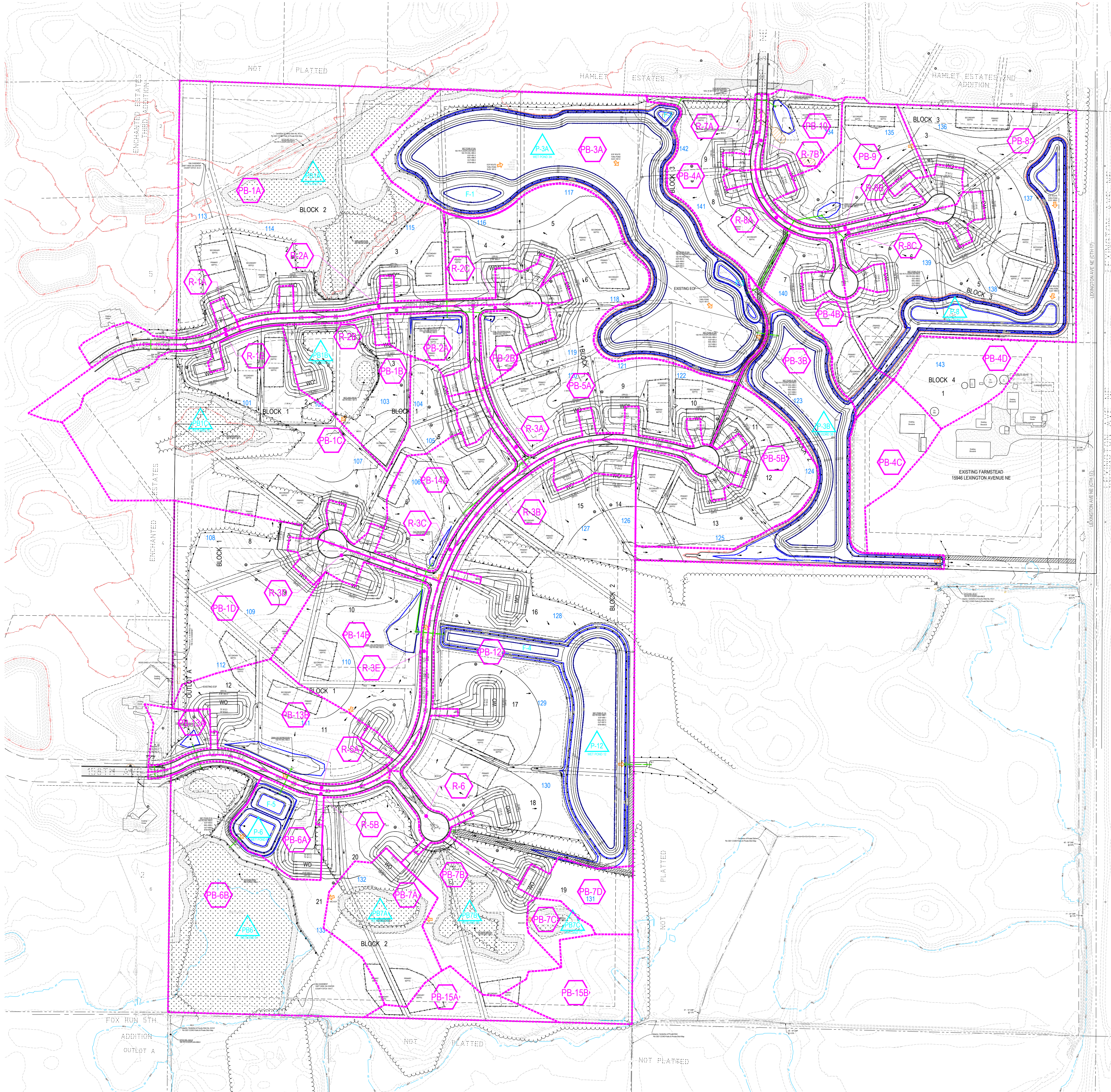
**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=897.7' TW=897.7' (Dynamic Tailwater)  
 ↑1=TO EB7B ( Controls 0.00 cfs)

**Pond EB7C: Wetland 7C**



## **APPENDIX C: POST-DEVELOPMENT DRAINAGE MAP & HYDROCAD MODEL**





LEGEND

PB-X

PROPOSED BASIN AREA

PBA

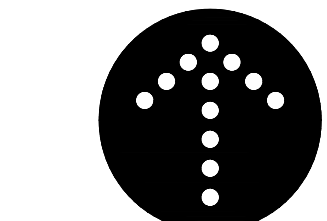
PROPOSED PONDING

PROPOSED BASIN BOUNDARY

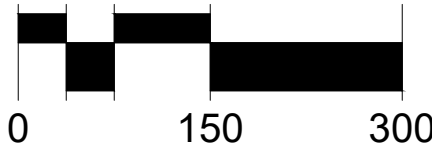
proposed drainage map



Know what's Below.  
Call before you dig.



NORTH



DEVELOPER

JD ANDOVER  
HOLDINGS, LLS  
105 5TH AVE. S.  
SUITE 513  
MINNEAPOLIS, MN 55401  
TEL: (612)-252-9070

CITY



PROJECT

HAM LAKE  
RESIDENTIAL  
HAM LAKE, MINNESOTA

| ISSUE / REVISION HISTORY               |                          |        |
|----------------------------------------|--------------------------|--------|
| CONTACT ENGINEER FOR ANY PRIOR HISTORY |                          |        |
| DATE                                   | ISSUE / REVISION         | REVIEW |
| 10 JUL 2025                            | PRE-PLAT SUBMITTAL       | ETL    |
| 22 JUL 2025                            | SKETCH PLAN RE-SUBMITTAL | ETL    |
| 23 JUL 2025                            | WATERSHED SUBMITTAL      | ETL    |
| 29 JUL 2025                            | PRE-PLAT RESUBMITTAL     | ETL    |
| 18 AUG 2025                            | PRE-PLAT RESUBMITTAL     | ETL    |
| 29 AUG 2025                            | PRE-PLAT RESUBMITTAL     | ETL    |
| 04 SEP 2025                            | PRE-PLAT RESUBMITTAL     | ETL    |
| 10 SEP 2025                            | CONV RESUBMITTAL         | ETL    |
| 25 SEP 2025                            | CONSTRUCTION DOCUMENTS   | ETL    |

CERTIFICATION

I hereby certify that this plan was prepared by me, or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the state of MINNESOTA.

Eric T. Luth, PE  
License No: 50475  
Date: 09/25/2025

Signature shown is a digital reproduction of original. Wet signed copy of this plan on file at Landform Professional Services, LLC Office and is available upon request.

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POST-DEVELOPMENT BASIN MAP  
9/25/2025



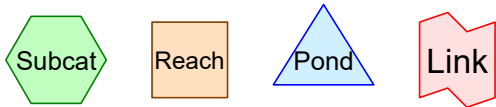
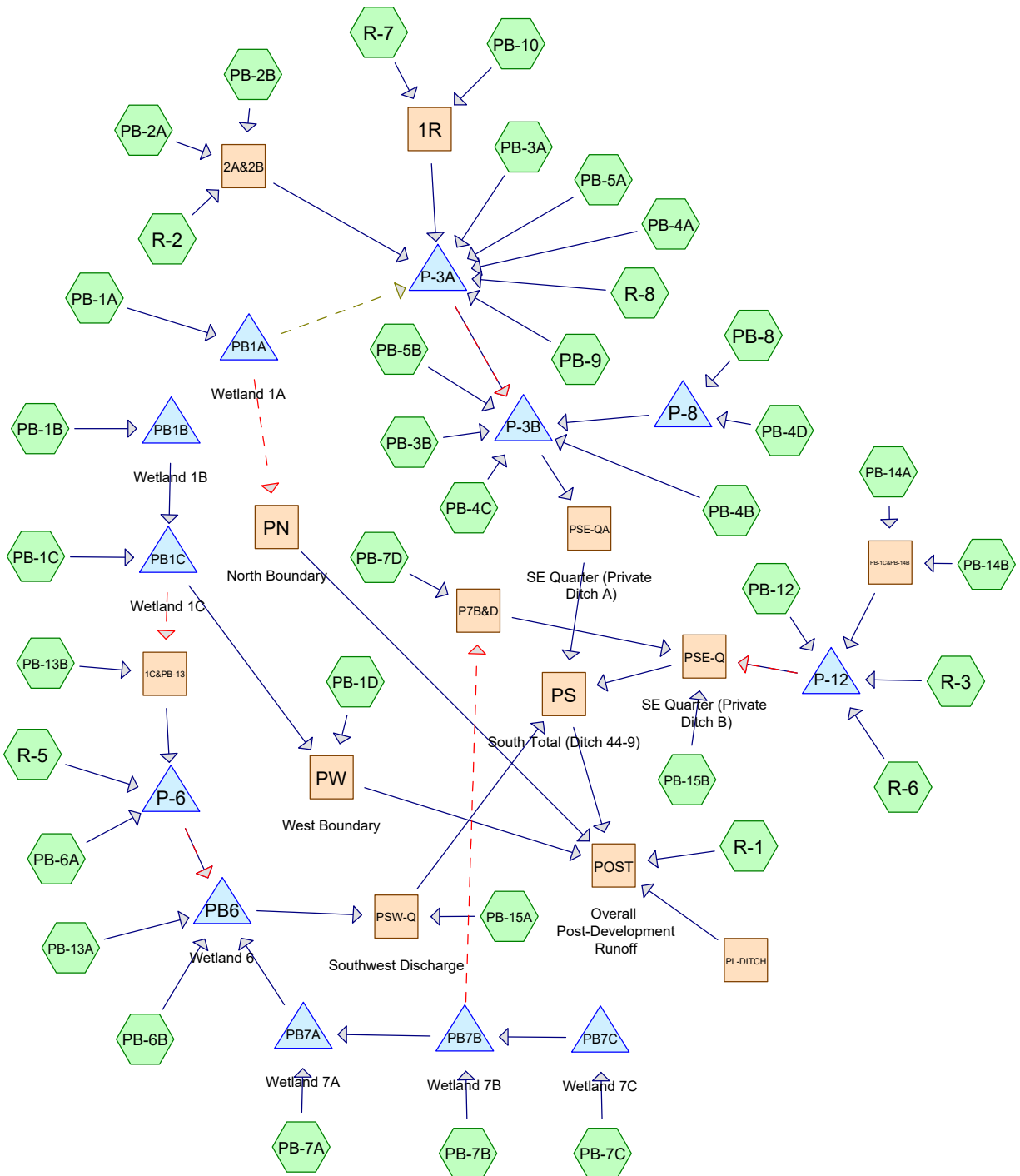
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Web: landform.net  
FILE NAME LDP24010 POST-DEVELOPMENT DRAINAGE MAP.DWG  
PROJECT NO. LDP24010

POST-DEVELOPMENT BASIN MAP

EX-1



# **Post-Development**



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### **Project Notes**

Rainfall events imported from "NRCS2-Rain.txt" for 514 MN Anoka

Rainfall events imported from "NRCS2-Rain.txt" for 514 MN Anoka

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### Rainfall Events Listing (selected events)

| Event# | Event<br>Name | Storm Type | Curve | Mode    | Duration<br>(hours) | B/B | Depth<br>(inches) | AMC |
|--------|---------------|------------|-------|---------|---------------------|-----|-------------------|-----|
| 1      | 2-Year        | MSE 24-hr  | 3     | Default | 24.00               | 1   | 2.83              | 2   |
| 2      | 10-Year       | MSE 24-hr  | 3     | Default | 24.00               | 1   | 4.21              | 2   |
| 3      | 25-Year       | MSE 24-hr  | 3     | Default | 24.00               | 1   | 5.23              | 2   |
| 4      | 100-Year      | MSE 24-hr  | 3     | Default | 24.00               | 1   | 7.06              | 2   |

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**Area Listing (selected nodes)**

| Area<br>(acres) | CN        | Description<br>(subcatchment-numbers)                                                                                                                                                                            |
|-----------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 39.603          | 61        | >75% Grass cover, Good, HSG B (PB-13A, PB-15A, PB-1A, PB-1B, PB-1C, PB-1D, PB-4C, PB-4D, PB-6B, PB-7A, PB-7B, PB-7C)                                                                                             |
| 50.587          | 74        | >75% Grass cover, Good, HSG C (PB-10, PB-12, PB-13A, PB-13B, PB-14A, PB-14B, PB-15B, PB-1B, PB-1D, PB-2A, PB-2B, PB-3A, PB-4A, PB-4B, PB-5A, PB-5B, PB-6A, PB-7D, PB-8, PB-9, R-1, R-2, R-3, R-5, R-6, R-7, R-8) |
| 0.288           | 98        | Concrete (PB-10, R-7, R-8)                                                                                                                                                                                       |
| 0.242           | 98        | Driveway (PB-13B, PB-1B, PB-6A)                                                                                                                                                                                  |
| 0.436           | 98        | Driveways (PB-12, PB-4C, PB-4D, PB-7B, R-5, R-6)                                                                                                                                                                 |
| 3.974           | 98        | Paved parking, HSG A (PB-2A, PB-2B, R-1, R-2, R-3)                                                                                                                                                               |
| 1.636           | 98        | Paved roads w/curbs & sewers, HSG A (R-5, R-6, R-7, R-8)                                                                                                                                                         |
| 4.982           | 98        | Roofs, HSG A (PB-12, PB-13A, PB-13B, PB-14A, PB-14B, PB-1A, PB-1B, PB-1C, PB-1D, PB-4A, PB-4B, PB-4C, PB-4D, PB-5A, PB-5B, PB-6A, PB-7A, PB-7D, PB-8, PB-9, R-1, R-2, R-3, R-7, R-8)                             |
| 17.290          | 98        | Water Surface, HSG A (PB-12, PB-3A, PB-3B, PB-6A, PB-8)                                                                                                                                                          |
| <b>119.038</b>  | <b>75</b> | <b>TOTAL AREA</b>                                                                                                                                                                                                |



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**Soil Listing (selected nodes)**

| Area<br>(acres) | Soil<br>Group | Subcatchment<br>Numbers                                                                                                                                                                                           |
|-----------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 27.882          | HSG A         | PB-12, PB-13A, PB-13B, PB-14A, PB-14B, PB-1A, PB-1B, PB-1C, PB-1D,<br>PB-2A, PB-2B, PB-3A, PB-3B, PB-4A, PB-4B, PB-4C, PB-4D, PB-5A, PB-5B,<br>PB-6A, PB-7A, PB-7D, PB-8, PB-9, R-1, R-2, R-3, R-5, R-6, R-7, R-8 |
| 39.603          | HSG B         | PB-13A, PB-15A, PB-1A, PB-1B, PB-1C, PB-1D, PB-4C, PB-4D, PB-6B, PB-7A,<br>PB-7B, PB-7C                                                                                                                           |
| 50.587          | HSG C         | PB-10, PB-12, PB-13A, PB-13B, PB-14A, PB-14B, PB-15B, PB-1B, PB-1D,<br>PB-2A, PB-2B, PB-3A, PB-4A, PB-4B, PB-5A, PB-5B, PB-6A, PB-7D, PB-8,<br>PB-9, R-1, R-2, R-3, R-5, R-6, R-7, R-8                            |
| 0.000           | HSG D         |                                                                                                                                                                                                                   |
| 0.966           | Other         | PB-10, PB-12, PB-13B, PB-1B, PB-4C, PB-4D, PB-6A, PB-7B, R-5, R-6, R-7,<br>R-8                                                                                                                                    |
| <b>119.038</b>  |               | <b>TOTAL AREA</b>                                                                                                                                                                                                 |

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### Ground Covers (selected nodes)

| HSG-A<br>(acres) | HSG-B<br>(acres) | HSG-C<br>(acres) | HSG-D<br>(acres) | Other<br>(acres) | Total<br>(acres) | Ground<br>Cover        | Subcatchment<br>Numbers                                                                                                                                                                                                                                                                |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0.000            | 39.603           | 50.587           | 0.000            | 0.000            | 90.189           | >75% Grass cover, Good | PB<br>-10<br>,<br>PB<br>-12<br>,<br>PB<br>-13<br>A,<br>PB<br>-13<br>B,<br>PB<br>-14<br>A,<br>PB<br>-14<br>B,<br>PB<br>-15<br>A,<br>PB<br>-15<br>B,<br>PB<br>-1A<br>,<br>PB<br>-1B<br>,<br>PB<br>-1C<br>,<br>PB<br>-1D<br>,<br>PB<br>-2A<br>,<br>PB<br>-2B<br>,<br>PB<br>-3A<br>,<br>PB |

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**Ground Covers (selected nodes) (continued)**

| HSG-A<br>(acres) | HSG-B<br>(acres) | HSG-C<br>(acres) | HSG-D<br>(acres) | Other<br>(acres) | Total<br>(acres) | Ground<br>Cover              | Subcatchment<br>Numbers                                                                 |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------------------|-----------------------------------------------------------------------------------------|
| 0.000            | 0.000            | 0.000            | 0.000            | 0.288            | 0.288            | Concrete                     | PB<br>-10<br>,<br>R-7<br>,<br>R-8                                                       |
| 0.000            | 0.000            | 0.000            | 0.000            | 0.242            | 0.242            | Driveway                     | PB<br>-13<br>B,<br>PB<br>-1B<br>,<br>PB<br>-6A                                          |
| 0.000            | 0.000            | 0.000            | 0.000            | 0.436            | 0.436            | Driveways                    | PB<br>-12<br>,<br>PB<br>-4C<br>,<br>PB<br>-4D<br>,<br>PB<br>-7B<br>,<br>R-5<br>,<br>R-6 |
| 3.974            | 0.000            | 0.000            | 0.000            | 0.000            | 3.974            | Paved parking                | PB<br>-2A<br>,<br>PB<br>-2B<br>,<br>R-1<br>,<br>R-2<br>,<br>R-3                         |
| 1.636            | 0.000            | 0.000            | 0.000            | 0.000            | 1.636            | Paved roads w/curbs & sewers | R-5<br>,<br>R-6<br>,<br>R-7<br>,                                                        |

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**Ground Covers (selected nodes) (continued)**

| HSG-A<br>(acres) | HSG-B<br>(acres) | HSG-C<br>(acres) | HSG-D<br>(acres) | Other<br>(acres) | Total<br>(acres) | Ground<br>Cover | Subcatchment<br>Numbers                                                                                                                                                                                                                                                              |
|------------------|------------------|------------------|------------------|------------------|------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.982            | 0.000            | 0.000            | 0.000            | 0.000            | 4.982            | Roofs           | PB<br>-12<br>,<br>PB<br>-13<br>A,<br>PB<br>-13<br>B,<br>PB<br>-14<br>A,<br>PB<br>-14<br>B,<br>PB<br>-1A<br>,<br>PB<br>-1B<br>,<br>PB<br>-1C<br>,<br>PB<br>-1D<br>,<br>PB<br>-4A<br>,<br>PB<br>-4B<br>,<br>PB<br>-4C<br>,<br>PB<br>-4D<br>,<br>PB<br>-5A<br>,<br>PB<br>-5B<br>,<br>PB |

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**Ground Covers (selected nodes) (continued)**

| HSG-A<br>(acres) | HSG-B<br>(acres) | HSG-C<br>(acres) | HSG-D<br>(acres) | Other<br>(acres) | Total<br>(acres) | Ground<br>Cover   | Subcatchment<br>Numbers |
|------------------|------------------|------------------|------------------|------------------|------------------|-------------------|-------------------------|
| 17.290           | 0.000            | 0.000            | 0.000            | 0.000            | 17.290           | Water Surface     | PB<br>-12               |
|                  |                  |                  |                  |                  |                  |                   | ,                       |
|                  |                  |                  |                  |                  |                  |                   | PB<br>-3A               |
|                  |                  |                  |                  |                  |                  |                   | ,                       |
|                  |                  |                  |                  |                  |                  |                   | PB<br>-3B               |
|                  |                  |                  |                  |                  |                  |                   | ,                       |
|                  |                  |                  |                  |                  |                  |                   | PB<br>-6A               |
|                  |                  |                  |                  |                  |                  |                   | ,                       |
|                  |                  |                  |                  |                  |                  |                   | PB<br>-8                |
| <b>27.882</b>    | <b>39.603</b>    | <b>50.587</b>    | <b>0.000</b>     | <b>0.966</b>     | <b>119.038</b>   | <b>TOTAL AREA</b> |                         |

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### Pipe Listing (selected nodes)

| Line# | Node<br>Number | In-Invert<br>(feet) | Out-Invert<br>(feet) | Length<br>(feet) | Slope<br>(ft/ft) | n     | Width<br>(inches) | Diam/Height<br>(inches) | Inside-Fill<br>(inches) | Node<br>Name |
|-------|----------------|---------------------|----------------------|------------------|------------------|-------|-------------------|-------------------------|-------------------------|--------------|
| 1     | 1C&PB-13       | 898.3               | 897.8                | 88.0             | 0.0057           | 0.013 | 0.0               | 18.0                    | 0.0                     |              |
| 2     | P-12           | 897.0               | 896.7                | 76.0             | 0.0039           | 0.013 | 0.0               | 18.0                    | 0.0                     |              |
| 3     | P-3A           | 895.0               | 895.0                | 20.0             | 0.0000           | 0.012 | 0.0               | 24.0                    | 0.0                     |              |
| 4     | P-6            | 898.0               | 897.7                | 40.0             | 0.0075           | 0.013 | 0.0               | 15.0                    | 0.0                     |              |

**LDP24010 Ham Lake****MSE 24-hr 3 2-Year Rainfall=2.83"**

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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

|                            |                                                                                                                                            |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SubcatchmentPB-10:</b>  | Runoff Area=44,749 sf 5.36% Impervious Runoff Depth=0.90"<br>Flow Length=394' Tc=18.2 min CN=WQ Runoff=1.00 cfs 0.077 af                   |
| <b>SubcatchmentPB-12:</b>  | Runoff Area=612,303 sf 24.33% Impervious Runoff Depth=1.24"<br>Flow Length=540' Tc=19.1 min CN=WQ Runoff=18.09 cfs 1.452 af                |
| <b>SubcatchmentPB-13A:</b> | Runoff Area=24,410 sf 15.54% Impervious Runoff Depth=0.87"<br>Tc=15.0 min CN=WQ Runoff=0.53 cfs 0.041 af                                   |
| <b>SubcatchmentPB-13B:</b> | Runoff Area=122,759 sf 9.61% Impervious Runoff Depth=0.97"<br>Flow Length=430' Tc=16.8 min CN=WQ Runoff=3.09 cfs 0.229 af                  |
| <b>SubcatchmentPB-14A:</b> | Runoff Area=89,189 sf 8.07% Impervious Runoff Depth=0.95"<br>Flow Length=430' Tc=19.4 min CN=WQ Runoff=2.02 cfs 0.162 af                   |
| <b>SubcatchmentPB-14B:</b> | Runoff Area=152,501 sf 7.87% Impervious Runoff Depth=0.94"<br>Flow Length=447' Tc=39.3 min CN=WQ Runoff=2.30 cfs 0.275 af                  |
| <b>SubcatchmentPB-15A:</b> | Runoff Area=37,143 sf 0.00% Impervious Runoff Depth=0.30"<br>Flow Length=256' Tc=13.9 min CN=61 Runoff=0.20 cfs 0.022 af                   |
| <b>SubcatchmentPB-15B:</b> | Runoff Area=68,682 sf 0.00% Impervious Runoff Depth=0.80"<br>Flow Length=256' Tc=13.9 min CN=74 Runoff=1.58 cfs 0.105 af                   |
| <b>SubcatchmentPB-1A:</b>  | Runoff Area=455,779 sf 2.37% Impervious Runoff Depth=0.36"<br>Flow Length=470' Tc=17.8 min CN=WQ Runoff=2.72 cfs 0.312 af                  |
| <b>SubcatchmentPB-1B:</b>  | Runoff Area=98,423 sf 9.77% Impervious Runoff Depth=0.75"<br>Flow Length=240' Tc=27.7 min CN=WQ Runoff=1.34 cfs 0.142 af                   |
| <b>SubcatchmentPB-1C:</b>  | Runoff Area=382,215 sf 3.14% Impervious Runoff Depth=0.38"<br>Flow Length=616' Slope=0.0080 '/' Tc=31.2 min CN=WQ Runoff=1.87 cfs 0.274 af |
| <b>SubcatchmentPB-1D:</b>  | Runoff Area=162,084 sf 3.70% Impervious Runoff Depth=0.44"<br>Tc=25.0 min CN=WQ Runoff=1.12 cfs 0.135 af                                   |
| <b>SubcatchmentPB-2A:</b>  | Runoff Area=32,450 sf 11.09% Impervious Runoff Depth=1.00"<br>Tc=10.0 min CN=WQ Runoff=1.05 cfs 0.062 af                                   |
| <b>SubcatchmentPB-2B:</b>  | Runoff Area=21,744 sf 2.30% Impervious Runoff Depth=0.84"<br>Tc=10.0 min CN=WQ Runoff=0.61 cfs 0.035 af                                    |
| <b>SubcatchmentPB-3A:</b>  | Runoff Area=412,473 sf 83.93% Impervious Runoff Depth=2.31"<br>Tc=0.0 min CN=WQ Runoff=39.39 cfs 1.823 af                                  |
| <b>SubcatchmentPB-3B:</b>  | Runoff Area=166,565 sf 100.00% Impervious Runoff Depth=2.60"<br>Tc=0.0 min CN=98 Runoff=17.77 cfs 0.828 af                                 |

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|                           |                                                                                                                             |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>SubcatchmentPB-4A:</b> | Runoff Area=103,255 sf 6.97% Impervious Runoff Depth=0.93"<br>Tc=10.0 min CN=WQ Runoff=3.13 cfs 0.183 af                    |
| <b>SubcatchmentPB-4B:</b> | Runoff Area=63,386 sf 3.79% Impervious Runoff Depth=0.87"<br>Tc=10.0 min CN=WQ Runoff=1.82 cfs 0.106 af                     |
| <b>SubcatchmentPB-4C:</b> | Runoff Area=64,398 sf 7.69% Impervious Runoff Depth=0.48"<br>Flow Length=200' Tc=15.8 min CN=WQ Runoff=0.60 cfs 0.059 af    |
| <b>SubcatchmentPB-4D:</b> | Runoff Area=66,433 sf 4.12% Impervious Runoff Depth=0.40"<br>Flow Length=266' Tc=15.5 min CN=WQ Runoff=0.49 cfs 0.051 af    |
| <b>SubcatchmentPB-5A:</b> | Runoff Area=301,807 sf 7.55% Impervious Runoff Depth=0.94"<br>Tc=10.0 min CN=WQ Runoff=9.23 cfs 0.542 af                    |
| <b>SubcatchmentPB-5B:</b> | Runoff Area=141,059 sf 6.81% Impervious Runoff Depth=0.92"<br>Tc=10.0 min CN=WQ Runoff=4.26 cfs 0.249 af                    |
| <b>SubcatchmentPB-6A:</b> | Runoff Area=53,054 sf 58.33% Impervious Runoff Depth=1.85"<br>Tc=15.0 min CN=WQ Runoff=2.61 cfs 0.188 af                    |
| <b>SubcatchmentPB-6B:</b> | Runoff Area=339,893 sf 0.00% Impervious Runoff Depth=0.30"<br>Flow Length=513' Tc=61.2 min CN=61 Runoff=0.87 cfs 0.197 af   |
| <b>SubcatchmentPB-7A:</b> | Runoff Area=93,846 sf 5.11% Impervious Runoff Depth=0.42"<br>Flow Length=212' Tc=20.1 min CN=WQ Runoff=0.66 cfs 0.075 af    |
| <b>SubcatchmentPB-7B:</b> | Runoff Area=112,159 sf 5.54% Impervious Runoff Depth=0.43"<br>Tc=10.0 min CN=WQ Runoff=1.12 cfs 0.092 af                    |
| <b>SubcatchmentPB-7C:</b> | Runoff Area=19,541 sf 0.00% Impervious Runoff Depth=0.30"<br>Tc=5.0 min CN=61 Runoff=0.16 cfs 0.011 af                      |
| <b>SubcatchmentPB-7D:</b> | Runoff Area=46,128 sf 10.41% Impervious Runoff Depth=0.99"<br>Tc=10.0 min CN=WQ Runoff=1.48 cfs 0.087 af                    |
| <b>SubcatchmentPB-8:</b>  | Runoff Area=350,677 sf 29.04% Impervious Runoff Depth=1.32"<br>Flow Length=418' Tc=16.1 min CN=WQ Runoff=12.03 cfs 0.888 af |
| <b>SubcatchmentPB-9:</b>  | Runoff Area=93,910 sf 7.67% Impervious Runoff Depth=0.94"<br>Flow Length=490' Tc=29.6 min CN=WQ Runoff=1.67 cfs 0.169 af    |
| <b>SubcatchmentR-1:</b>   | Runoff Area=55,096 sf 46.72% Impervious Runoff Depth=1.64"<br>Tc=5.0 min CN=WQ Runoff=3.41 cfs 0.173 af                     |
| <b>SubcatchmentR-2:</b>   | Runoff Area=84,323 sf 65.88% Impervious Runoff Depth=1.99"<br>Tc=5.0 min CN=WQ Runoff=6.23 cfs 0.320 af                     |
| <b>SubcatchmentR-3:</b>   | Runoff Area=172,153 sf 71.85% Impervious Runoff Depth=2.09"<br>Tc=5.0 min CN=WQ Runoff=13.37 cfs 0.689 af                   |



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|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SubcatchmentR-5:</b>                           | Runoff Area=30,604 sf 81.78% Impervious Runoff Depth=2.27"<br>Tc=10.0 min CN=WQ Runoff=2.15 cfs 0.133 af                                                   |
| <b>SubcatchmentR-6:</b>                           | Runoff Area=15,143 sf 87.18% Impervious Runoff Depth=2.37"<br>Tc=5.0 min CN=WQ Runoff=1.32 cfs 0.069 af                                                    |
| <b>SubcatchmentR-7:</b>                           | Runoff Area=11,881 sf 72.35% Impervious Runoff Depth=2.10"<br>Tc=5.0 min CN=WQ Runoff=0.93 cfs 0.048 af                                                    |
| <b>SubcatchmentR-8:</b>                           | Runoff Area=83,061 sf 69.74% Impervious Runoff Depth=2.06"<br>Tc=5.0 min CN=WQ Runoff=6.34 cfs 0.327 af                                                    |
| <b>Reach 1C&amp;PB-13:</b>                        | Avg. Flow Depth=0.65' Max Vel=4.18 fps Inflow=3.09 cfs 0.229 af<br>18.0" Round Pipe n=0.013 L=88.0' S=0.0057 ' Capacity=7.92 cfs Outflow=3.09 cfs 0.229 af |
| <b>Reach 1R:</b>                                  | Inflow=1.40 cfs 0.125 af<br>Outflow=1.40 cfs 0.125 af                                                                                                      |
| <b>Reach 2A&amp;2B:</b>                           | Inflow=7.48 cfs 0.418 af<br>Outflow=7.48 cfs 0.418 af                                                                                                      |
| <b>Reach P7B&amp;D:</b>                           | Inflow=1.48 cfs 0.087 af<br>Outflow=1.48 cfs 0.087 af                                                                                                      |
| <b>Reach PB-1C&amp;PB-14B:</b>                    | Inflow=3.57 cfs 0.437 af<br>Outflow=3.57 cfs 0.437 af                                                                                                      |
| <b>Reach PL-DITCH:</b>                            | Outflow=0.00 cfs 0.000 af                                                                                                                                  |
| <b>Reach PN: North Boundary</b>                   | Inflow=0.00 cfs 0.000 af<br>Outflow=0.00 cfs 0.000 af                                                                                                      |
| <b>Reach POST: Overall Post-DevelopmentRunoff</b> | Inflow=7.71 cfs 8.418 af<br>Outflow=7.71 cfs 8.418 af                                                                                                      |
| <b>Reach PS: South Total (Ditch 44-9)</b>         | Inflow=5.92 cfs 8.110 af<br>Outflow=5.92 cfs 8.110 af                                                                                                      |
| <b>Reach PSE-Q: SE Quarter (Private Ditch B)</b>  | Inflow=3.28 cfs 2.427 af<br>Outflow=3.28 cfs 2.427 af                                                                                                      |
| <b>Reach PSE-QA: SE Quarter (Private Ditch A)</b> | Inflow=2.88 cfs 5.064 af<br>Outflow=2.88 cfs 5.064 af                                                                                                      |
| <b>Reach PSW-Q: Southwest Discharge</b>           | Inflow=1.43 cfs 0.619 af<br>Outflow=1.43 cfs 0.619 af                                                                                                      |
| <b>Reach PW: West Boundary</b>                    | Inflow=1.12 cfs 0.135 af<br>Outflow=1.12 cfs 0.135 af                                                                                                      |

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**Pond P-12:** Peak Elev=897.7' Storage=643,032 cf Inflow=26.00 cfs 2.647 af  
Outflow=1.51 cfs 2.234 af

**Pond P-3A:** Peak Elev=898.4' Storage=2,032,645 cf Inflow=55.18 cfs 3.586 af  
Primary=1.81 cfs 3.124 af Secondary=0.00 cfs 0.000 af Outflow=1.81 cfs 3.124 af

**Pond P-3B:** Peak Elev=898.4' Storage=632,945 cf Inflow=22.06 cfs 5.219 af  
Outflow=2.88 cfs 5.064 af

**Pond P-6:** Peak Elev=898.7' Storage=49,944 cf Inflow=7.32 cfs 0.550 af  
Outflow=0.79 cfs 0.538 af

**Pond P-8:** Peak Elev=898.4' Storage=206,595 cf Inflow=12.50 cfs 0.939 af  
Outflow=2.54 cfs 0.853 af

**Pond PB1A: Wetland 1A** Peak Elev=899.6' Storage=13,572 cf Inflow=2.72 cfs 0.312 af  
Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

**Pond PB1B: Wetland 1B** Peak Elev=901.5' Storage=22 cf Inflow=1.34 cfs 0.142 af  
Outflow=1.34 cfs 0.142 af

**Pond PB1C: Wetland 1C** Peak Elev=901.4' Storage=18,117 cf Inflow=3.12 cfs 0.416 af  
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

**Pond PB6: Wetland 6** Peak Elev=896.1' Storage=8,370 cf Inflow=1.74 cfs 0.776 af  
Outflow=1.40 cfs 0.597 af

**Pond PB7A: Wetland 7A** Peak Elev=898.1' Storage=3,287 cf Inflow=0.66 cfs 0.075 af  
Outflow=0.00 cfs 0.000 af

**Pond PB7B: Wetland 7B** Peak Elev=898.2' Storage=4,019 cf Inflow=1.12 cfs 0.092 af  
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

**Pond PB7C: Wetland 7C** Peak Elev=898.3' Storage=493 cf Inflow=0.16 cfs 0.011 af  
Outflow=0.00 cfs 0.000 af

**Total Runoff Area = 119.038 ac Runoff Volume = 10.630 af Average Runoff Depth = 1.07"**  
**75.77% Pervious = 90.189 ac 24.23% Impervious = 28.848 ac**

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**Summary for Subcatchment PB-10:**

Runoff = 1.00 cfs @ 12.29 hrs, Volume= 0.077 af, Depth= 0.90"  
Routed to Reach 1R :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

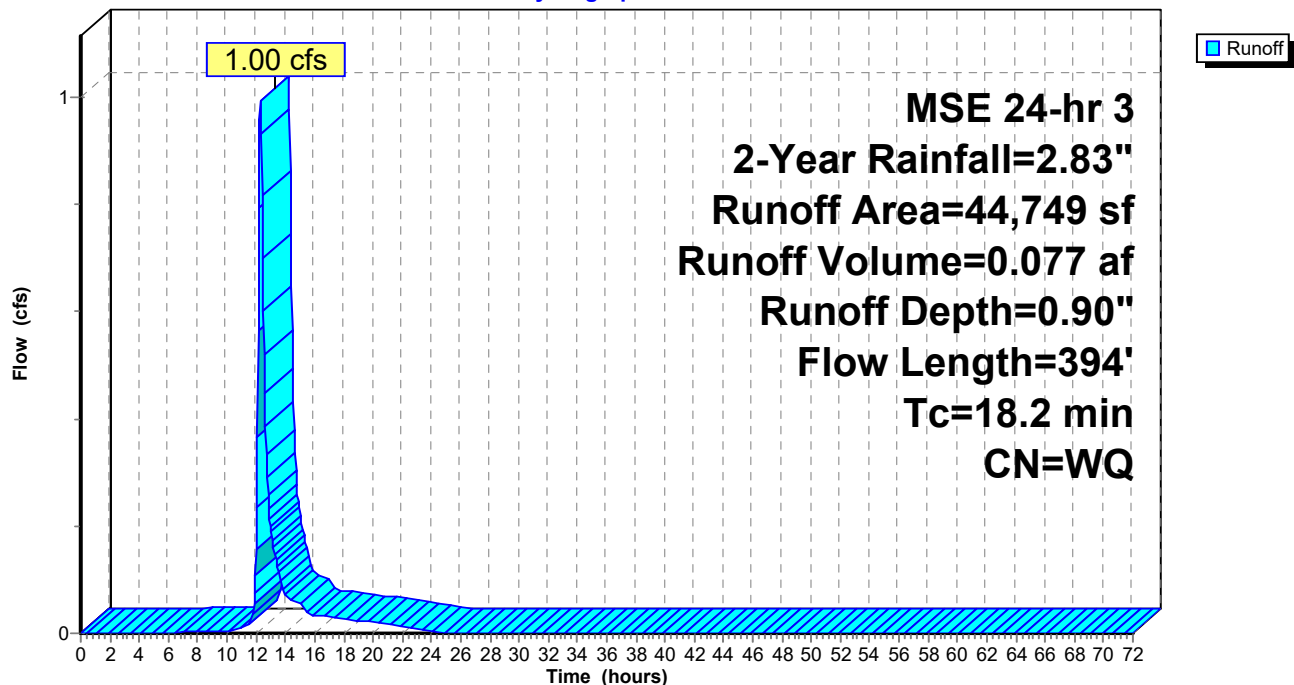
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 42,349    | 74 | >75% Grass cover, Good, HSG C |
| * 2,400   | 98 | Concrete                      |
| 44,749    |    | Weighted Average              |
| 42,349    |    | 94.64% Pervious Area          |
| 2,400     |    | 5.36% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 12.3     | 100           | 0.0133        | 0.14              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 5.9      | 294           | 0.0143        | 0.84              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 18.2     | 394           | Total         |                   |                |                                                                      |

**Subcatchment PB-10:**

Hydrograph



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**Summary for Subcatchment PB-12:**

Runoff = 18.09 cfs @ 12.29 hrs, Volume= 1.452 af, Depth= 1.24"  
Routed to Pond P-12 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

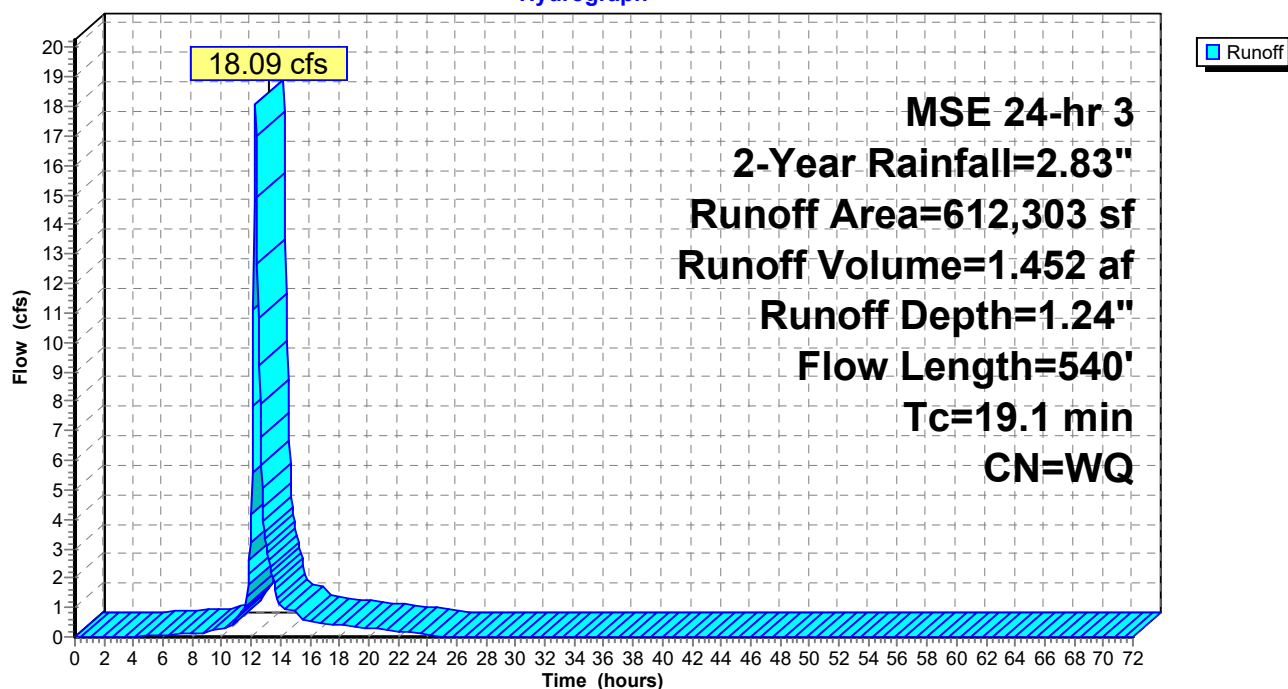
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 19,200    | 98 | Roofs, HSG A                  |
| 463,357   | 74 | >75% Grass cover, Good, HSG C |
| 124,927   | 98 | Water Surface, HSG A          |
| * 4,819   | 98 | Driveways                     |
| 612,303   |    | Weighted Average              |
| 463,357   |    | 75.67% Pervious Area          |
| 148,946   |    | 24.33% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 7.4      | 100           | 0.0474        | 0.23              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 11.7     | 440           | 0.0080        | 0.63              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 19.1     | 540           | Total         |                   |                |                                                                      |

**Subcatchment PB-12:**

Hydrograph



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**Summary for Subcatchment PB-13A:**

Runoff = 0.53 cfs @ 12.25 hrs, Volume= 0.041 af, Depth= 0.87"  
Routed to Pond PB6 : Wetland 6

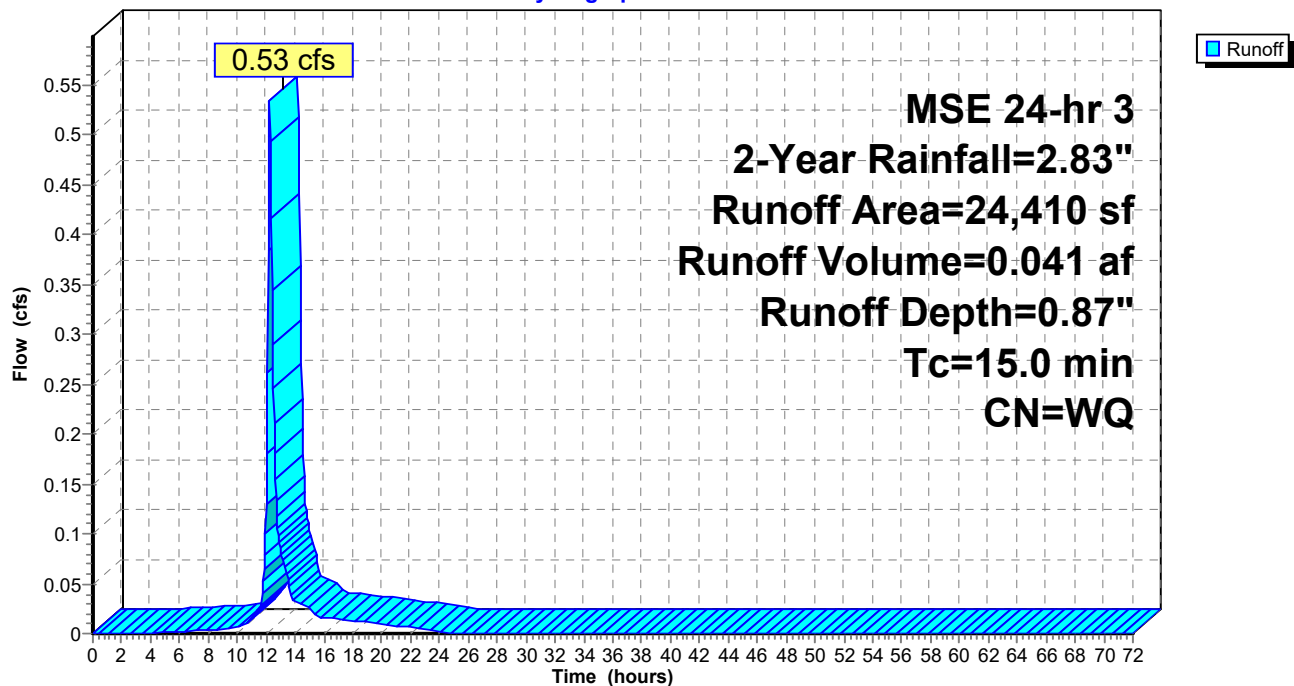
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 10,308    | 61 | >75% Grass cover, Good, HSG B |
| 10,308    | 74 | >75% Grass cover, Good, HSG C |
| 3,794     | 98 | Roofs, HSG A                  |
| 24,410    |    | Weighted Average              |
| 20,616    |    | 84.46% Pervious Area          |
| 3,794     |    | 15.54% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 15.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-13A:**

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**Summary for Subcatchment PB-13B:**

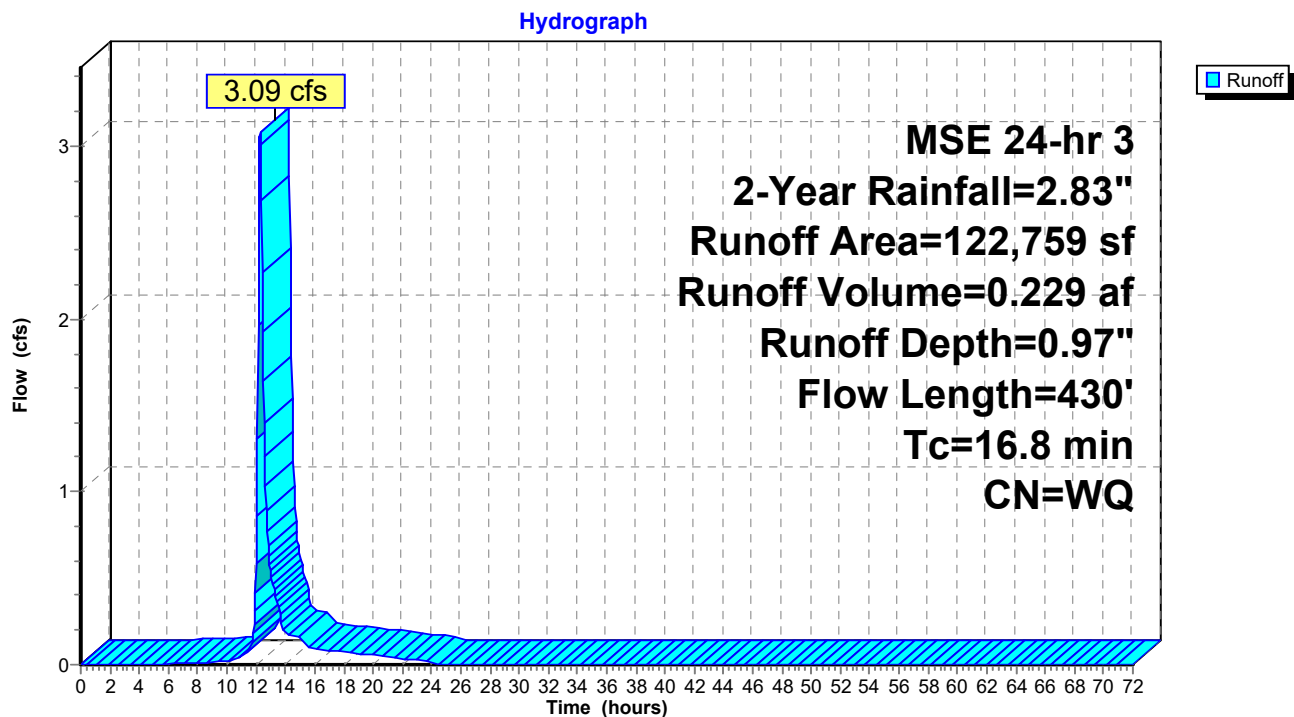
Runoff = 3.09 cfs @ 12.27 hrs, Volume= 0.229 af, Depth= 0.97"  
Routed to Reach 1C&PB-13 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 6,000     | 98 | Roofs, HSG A                  |
| 110,959   | 74 | >75% Grass cover, Good, HSG C |
| * 5,800   | 98 | Driveway                      |
| 122,759   |    | Weighted Average              |
| 110,959   |    | 90.39% Pervious Area          |
| 11,800    |    | 9.61% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 12.3     | 100           | 0.0132        | 0.14              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 4.5      | 330           | 0.0300        | 1.21              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 16.8     | 430           | Total         |                   |                |                                                                      |

**Subcatchment PB-13B:**

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**Summary for Subcatchment PB-14A:**

Runoff = 2.02 cfs @ 12.31 hrs, Volume= 0.162 af, Depth= 0.95"  
Routed to Reach PB-1C&PB-14B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

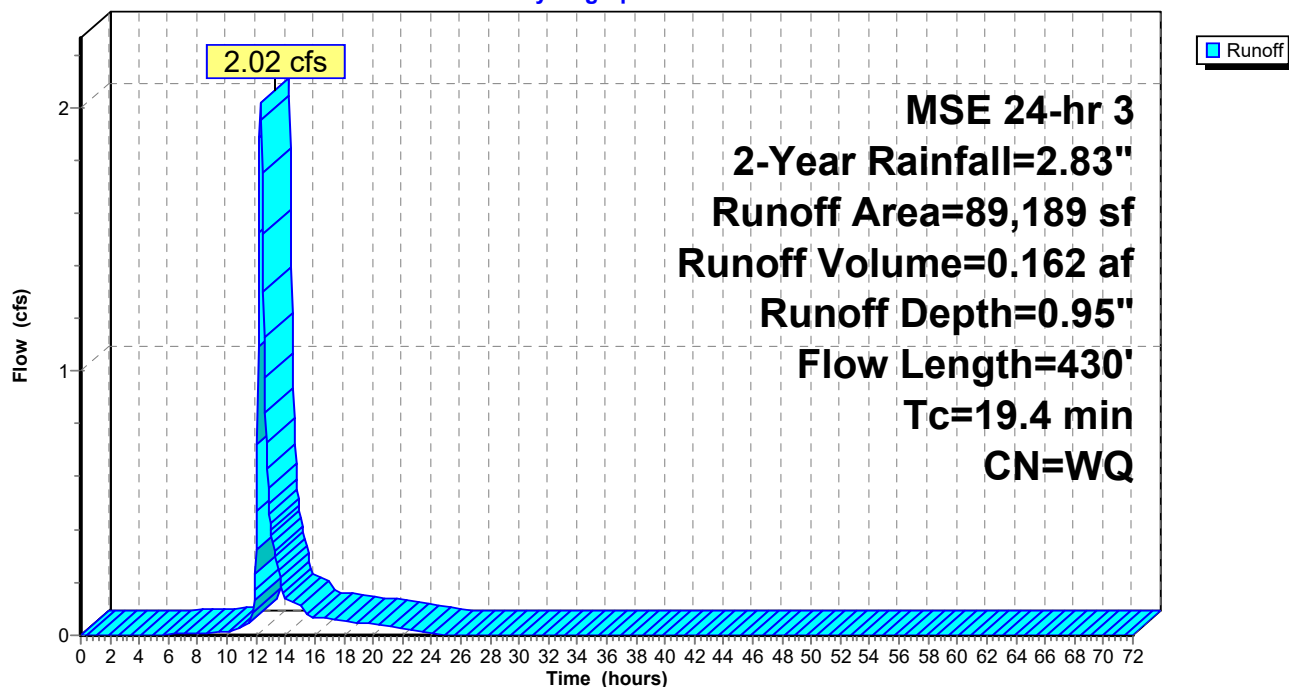
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 7,200     | 98 | Roofs, HSG A                  |
| 81,989    | 74 | >75% Grass cover, Good, HSG C |
| 89,189    |    | Weighted Average              |
| 81,989    |    | 91.93% Pervious Area          |
| 7,200     |    | 8.07% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 11.9     | 100           | 0.0143        | 0.14              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 7.5      | 330           | 0.0110        | 0.73              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 19.4     | 430           | Total         |                   |                |                                                                      |

**Subcatchment PB-14A:**

Hydrograph



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**Summary for Subcatchment PB-14B:**

Runoff = 2.30 cfs @ 12.59 hrs, Volume= 0.275 af, Depth= 0.94"  
Routed to Reach PB-1C&PB-14B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

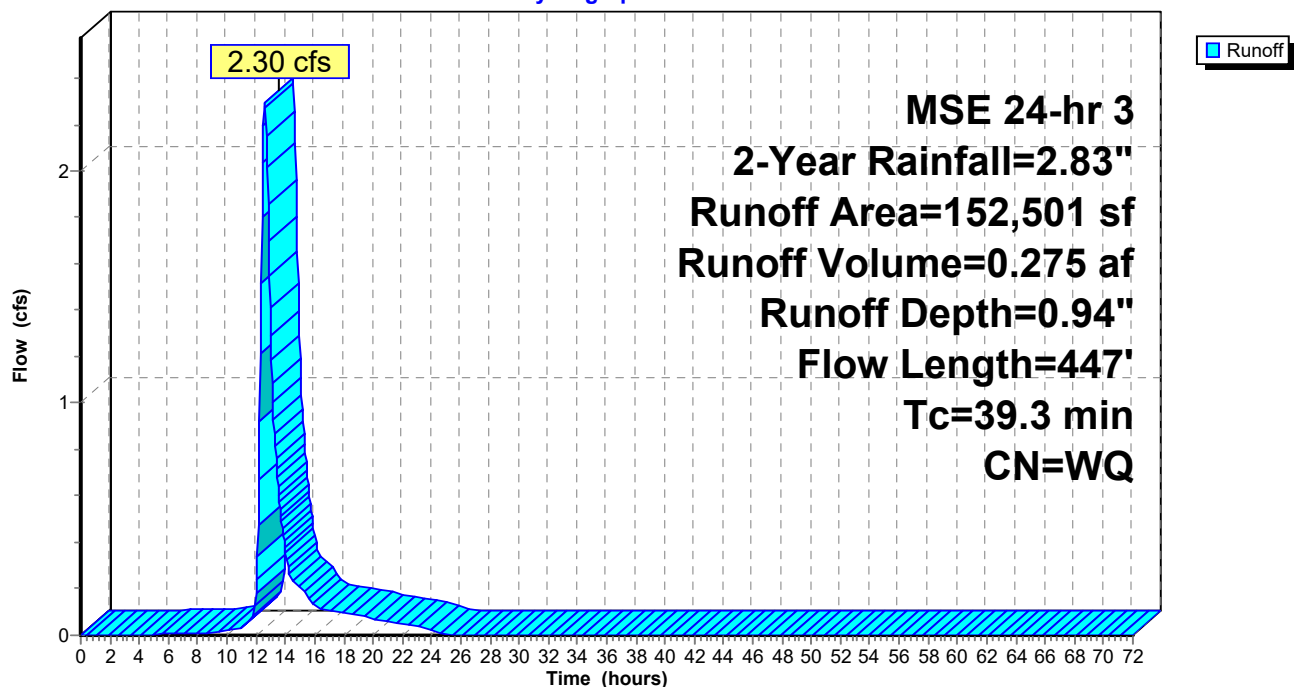
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 12,000    | 98 | Roofs, HSG A                  |
| 140,501   | 74 | >75% Grass cover, Good, HSG C |
| 152,501   |    | Weighted Average              |
| 140,501   |    | 92.13% Pervious Area          |
| 12,000    |    | 7.87% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 18.6     | 100           | 0.0047        | 0.09              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 20.7     | 347           | 0.0016        | 0.28              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 39.3     | 447           | Total         |                   |                |                                                                      |

**Subcatchment PB-14B:**

Hydrograph





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**Summary for Subcatchment PB-15A:**

Runoff = 0.20 cfs @ 12.30 hrs, Volume= 0.022 af, Depth= 0.30"  
Routed to Reach PSW-Q : Southwest Discharge

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

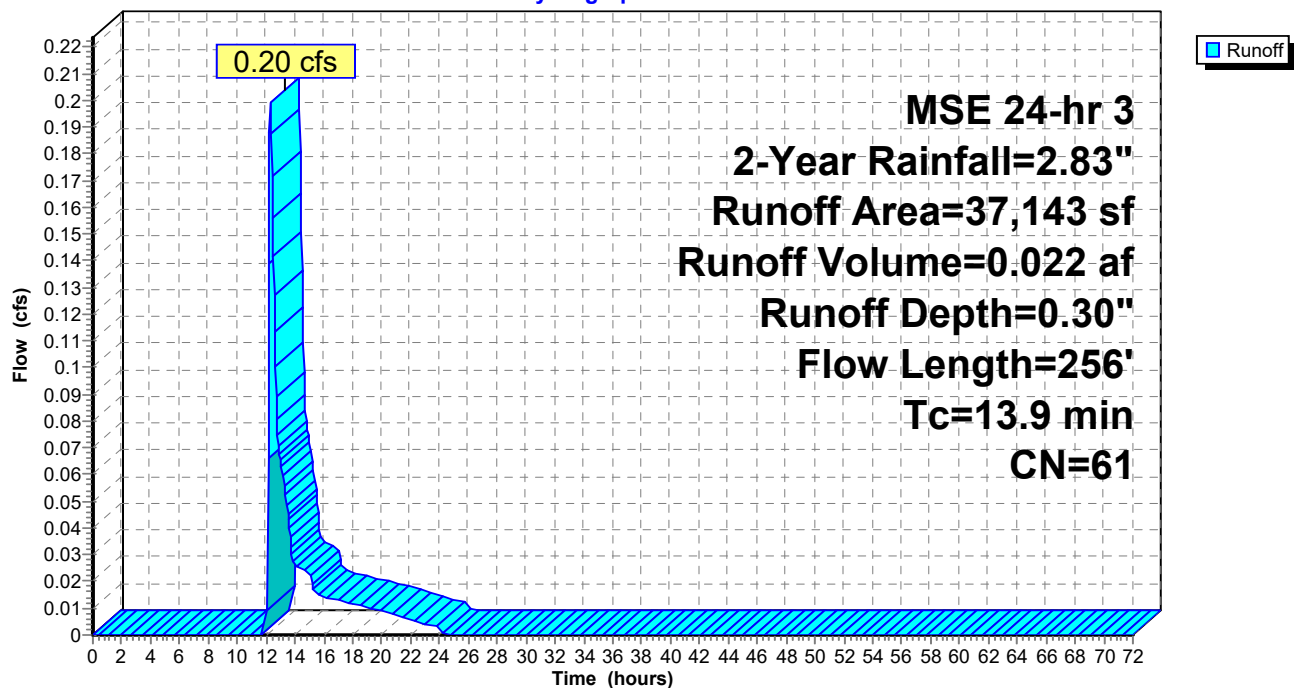
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 37,143    | 61 | >75% Grass cover, Good, HSG B |
| 37,143    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.9     | 100           | 0.0180        | 0.15              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 3.0      | 156           | 0.0154        | 0.87              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 13.9     | 256           | Total         |                   |                |                                                                      |

**Subcatchment PB-15A:**

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**Summary for Subcatchment PB-15B:**

Runoff = 1.58 cfs @ 12.24 hrs, Volume= 0.105 af, Depth= 0.80"

Routed to Reach PSE-Q : SE Quarter (Private Ditch B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

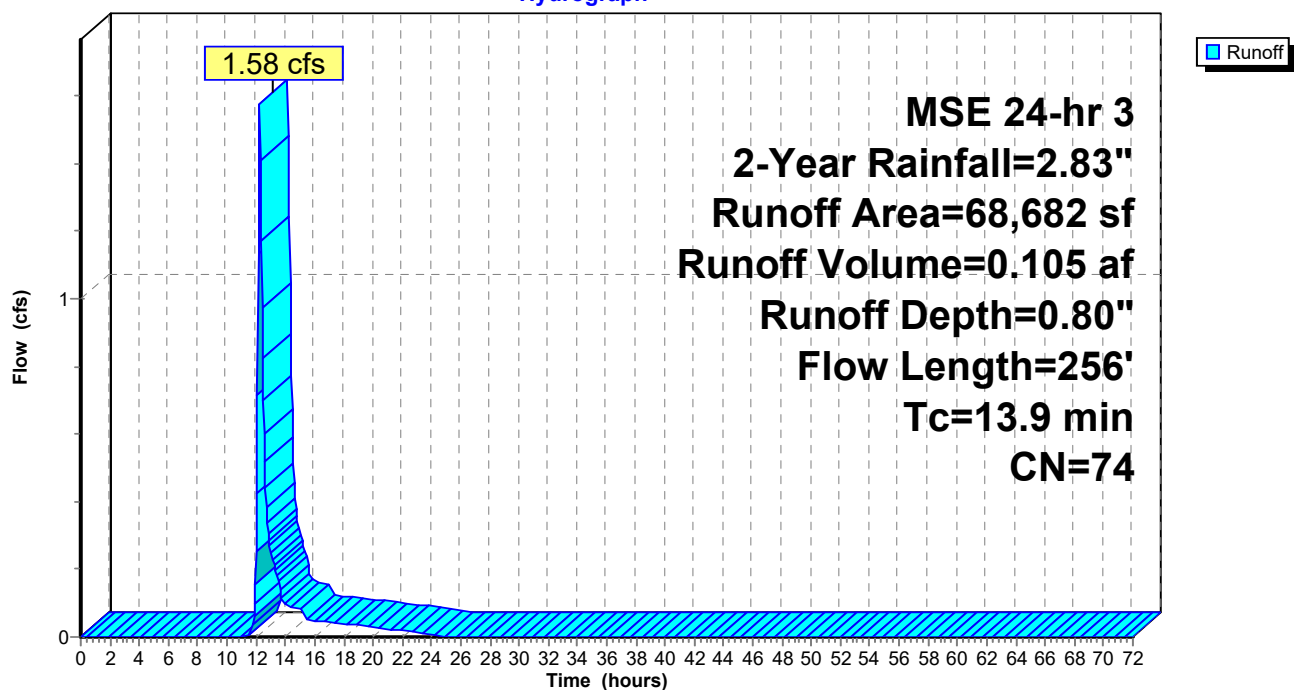
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 68,682    | 74 | >75% Grass cover, Good, HSG C |
| 68,682    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.9     | 100           | 0.0180        | 0.15              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 3.0      | 156           | 0.0154        | 0.87              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 13.9     | 256           | Total         |                   |                |                                                                      |

**Subcatchment PB-15B:**

Hydrograph



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MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Subcatchment PB-1A:**

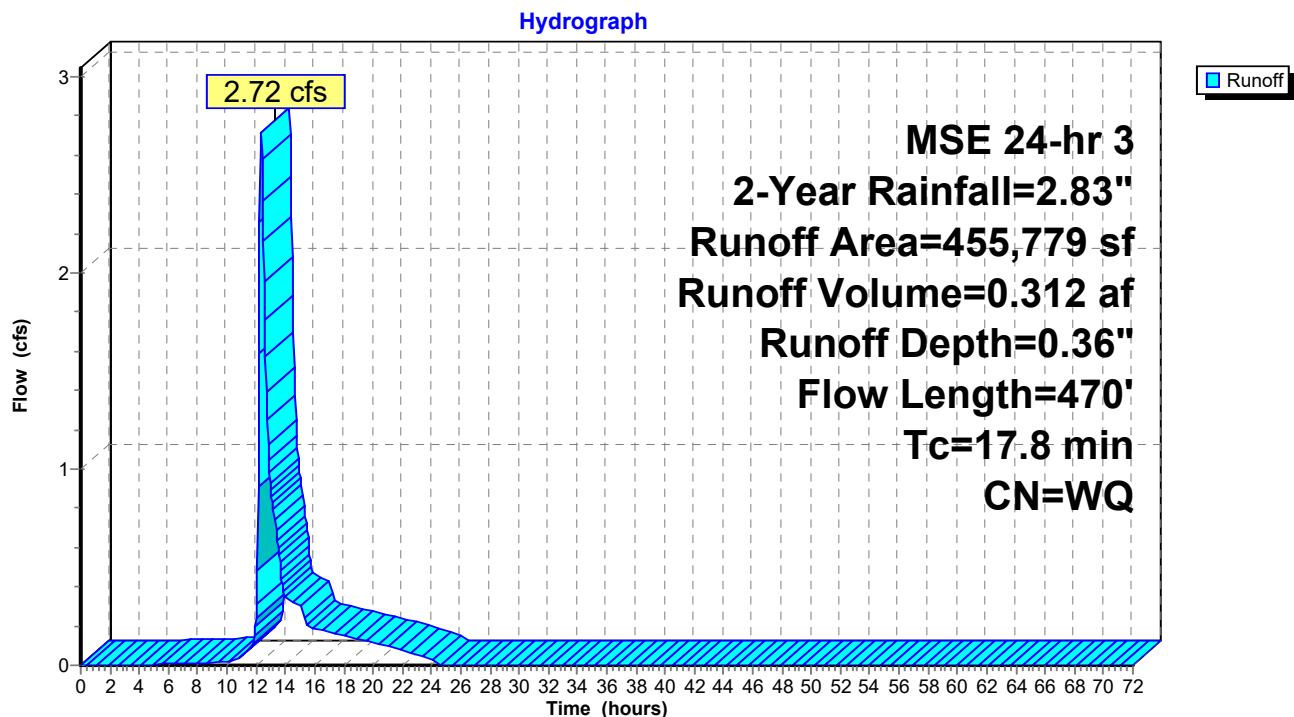
Runoff = 2.72 cfs @ 12.34 hrs, Volume= 0.312 af, Depth= 0.36"  
Routed to Pond PB1A : Wetland 1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 444,979   | 61 | >75% Grass cover, Good, HSG B |
| 10,800    | 98 | Roofs, HSG A                  |
| 455,779   |    | Weighted Average              |
| 444,979   |    | 97.63% Pervious Area          |
| 10,800    |    | 2.37% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.4     | 100           | 0.0200        | 0.16              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 7.4      | 370           | 0.0140        | 0.83              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 17.8     | 470           | Total         |                   |                |                                                                      |

**Subcatchment PB-1A:**

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**Summary for Subcatchment PB-1B:**

Runoff = 1.34 cfs @ 12.43 hrs, Volume= 0.142 af, Depth= 0.75"  
Routed to Pond PB1B : Wetland 1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

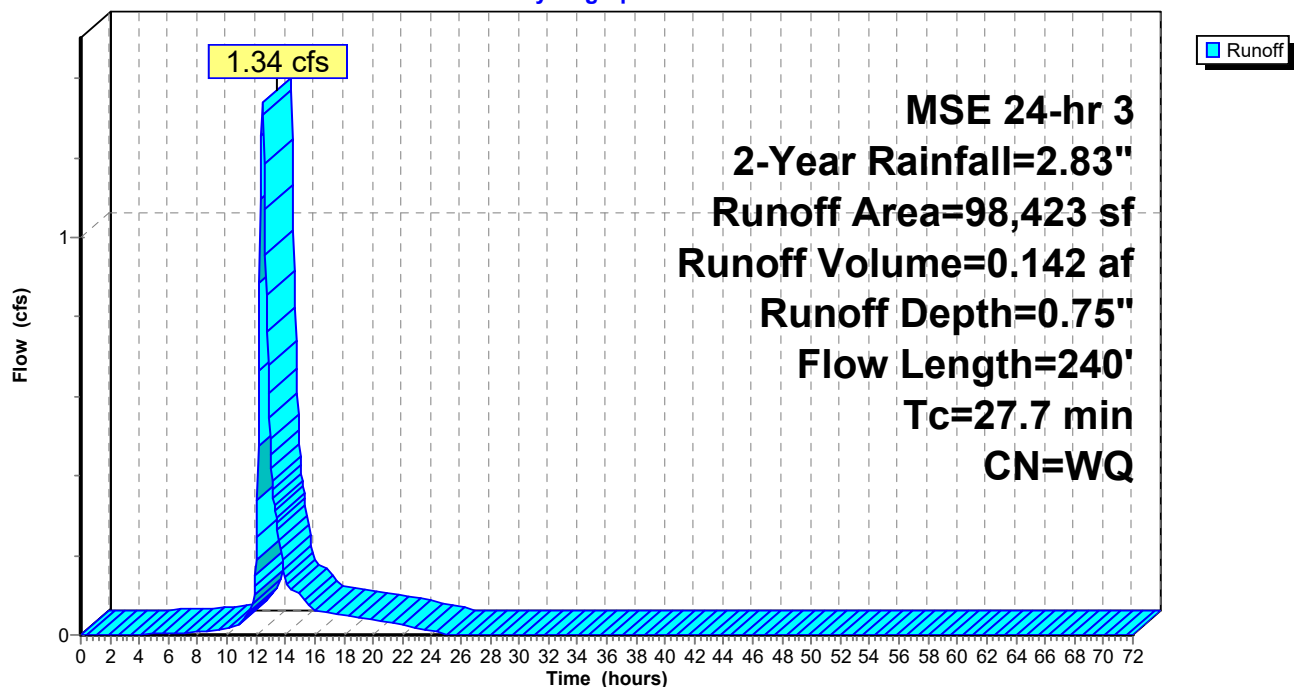
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 44,402    | 61 | >75% Grass cover, Good, HSG B |
| 44,402    | 74 | >75% Grass cover, Good, HSG C |
| 6,600     | 98 | Roofs, HSG A                  |
| * 3,019   | 98 | Driveway                      |
| 98,423    |    | Weighted Average              |
| 88,804    |    | 90.23% Pervious Area          |
| 9,619     |    | 9.77% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 18.5     | 118           | 0.0170        | 0.11              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 2.83"                |
| 9.2      | 122           | 0.0010        | 0.22              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 27.7     | 240           | Total         |                   |                |                                                                      |

**Subcatchment PB-1B:**

Hydrograph



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MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Subcatchment PB-1C:**

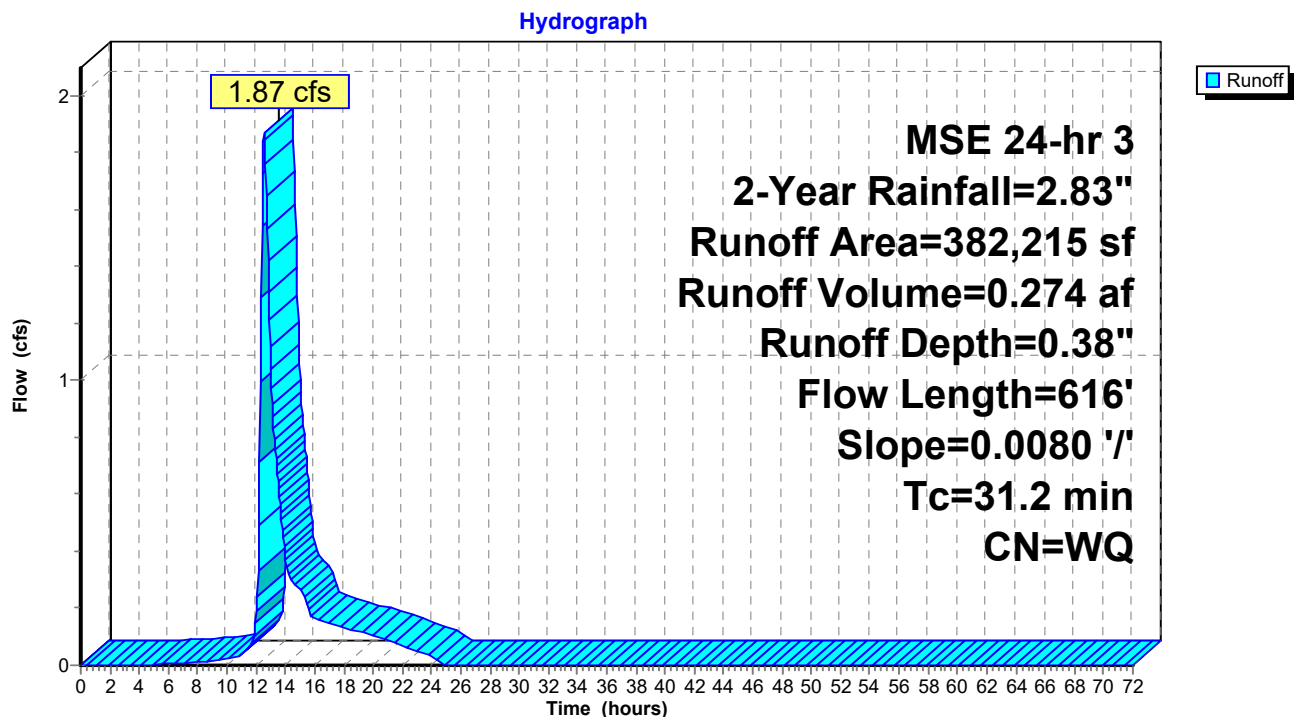
Runoff = 1.87 cfs @ 12.55 hrs, Volume= 0.274 af, Depth= 0.38"  
Routed to Pond PB1C : Wetland 1C

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 370,215   | 61 | >75% Grass cover, Good, HSG B |
| 12,000    | 98 | Roofs, HSG A                  |
| 382,215   |    | Weighted Average              |
| 370,215   |    | 96.86% Pervious Area          |
| 12,000    |    | 3.14% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 18.2     | 127           | 0.0080        | 0.12              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 13.0     | 489           | 0.0080        | 0.63              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 31.2     | 616           | Total         |                   |                |                                                                      |

**Subcatchment PB-1C:**

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**Summary for Subcatchment PB-1D:**

Runoff = 1.12 cfs @ 12.43 hrs, Volume= 0.135 af, Depth= 0.44"

Routed to Reach PW : West Boundary

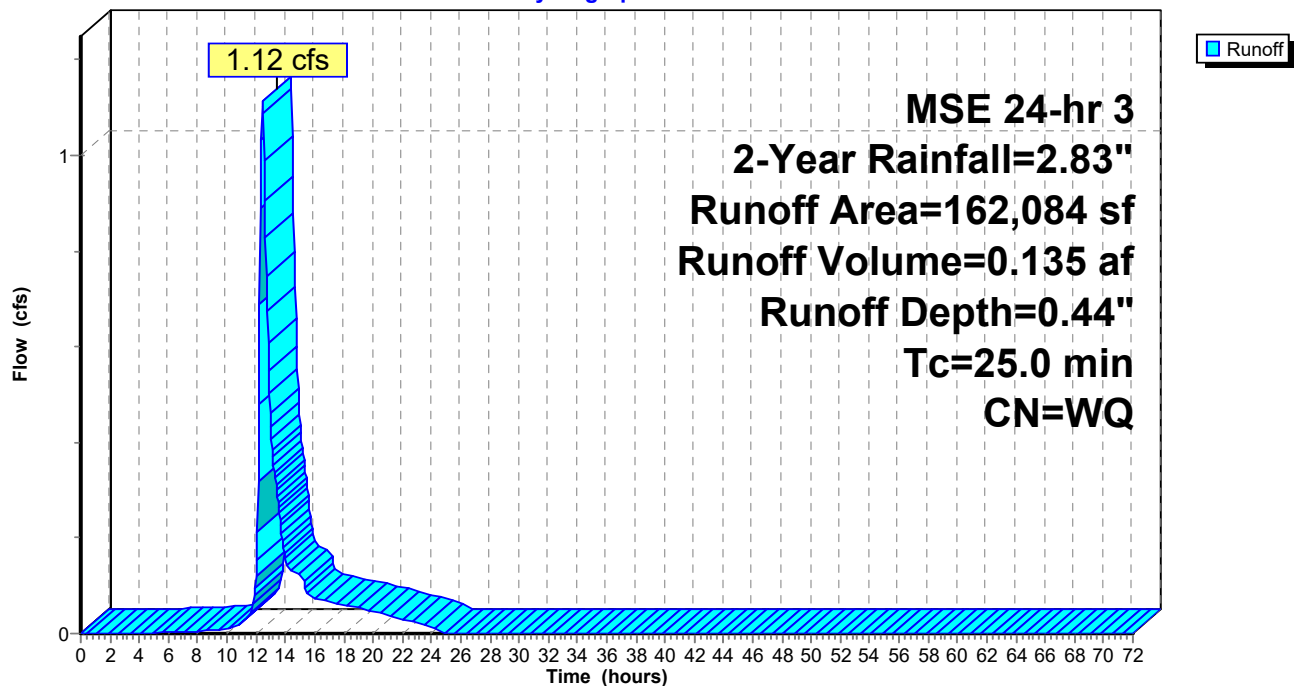
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 140,476   | 61 | >75% Grass cover, Good, HSG B |
| 15,608    | 74 | >75% Grass cover, Good, HSG C |
| 6,000     | 98 | Roofs, HSG A                  |
| 162,084   |    | Weighted Average              |
| 156,084   |    | 96.30% Pervious Area          |
| 6,000     |    | 3.70% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 25.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-1D:**

Hydrograph



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**Summary for Subcatchment PB-2A:**

Runoff = 1.05 cfs @ 12.19 hrs, Volume= 0.062 af, Depth= 1.00"  
Routed to Reach 2A&2B :

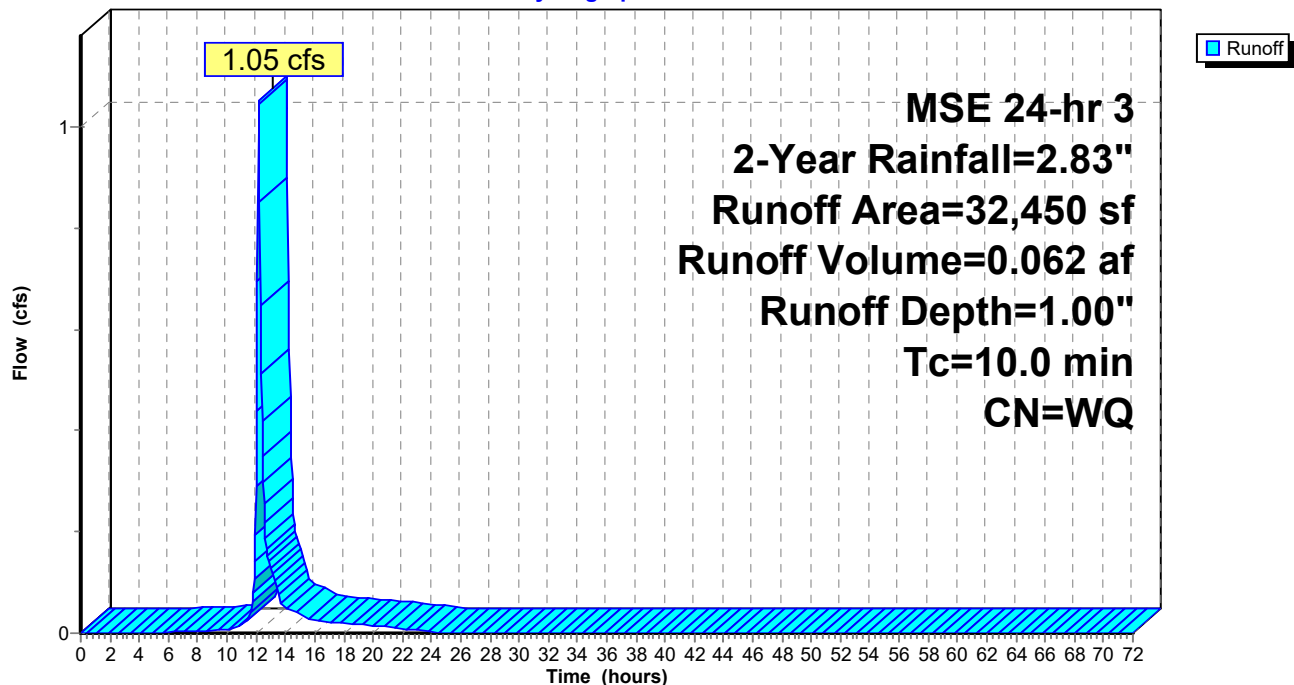
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 28,850    | 74 | >75% Grass cover, Good, HSG C |
| 3,600     | 98 | Paved parking, HSG A          |
| 32,450    |    | Weighted Average              |
| 28,850    |    | 88.91% Pervious Area          |
| 3,600     |    | 11.09% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-2A:**

Hydrograph



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**Summary for Subcatchment PB-2B:**

Runoff = 0.61 cfs @ 12.19 hrs, Volume= 0.035 af, Depth= 0.84"  
Routed to Reach 2A&2B :

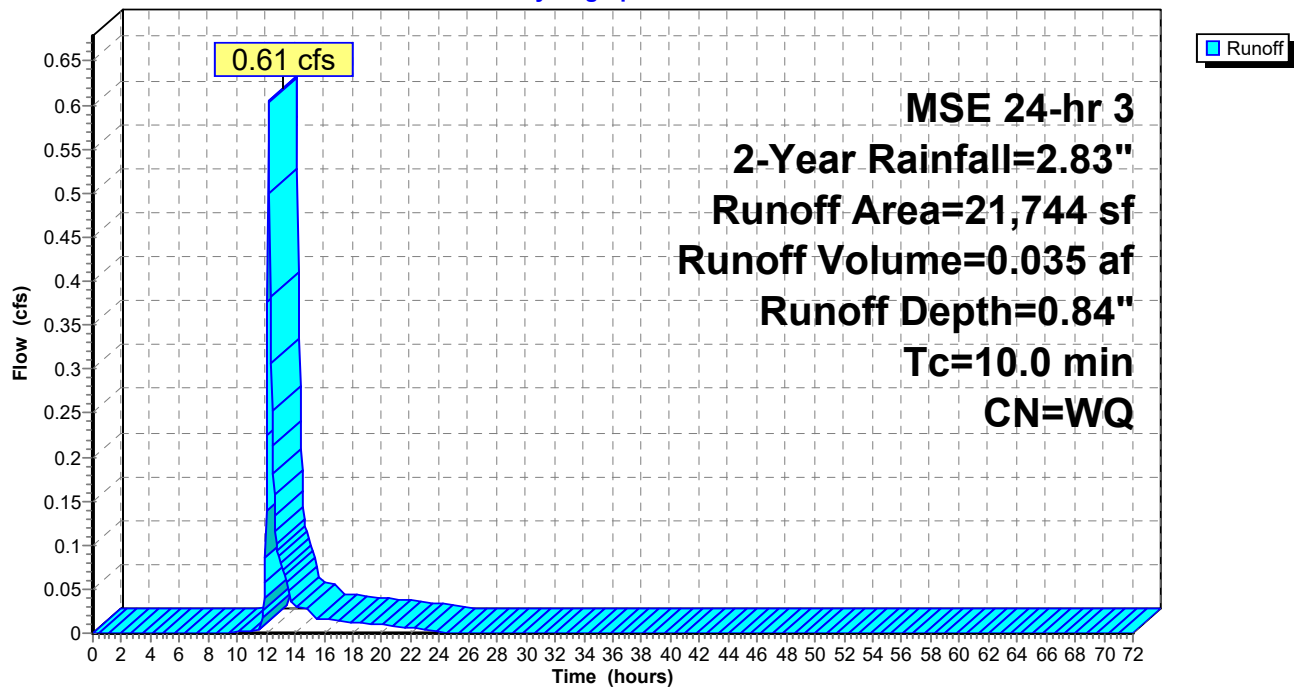
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 21,244    | 74 | >75% Grass cover, Good, HSG C |
| 500       | 98 | Paved parking, HSG A          |
| 21,744    |    | Weighted Average              |
| 21,244    |    | 97.70% Pervious Area          |
| 500       |    | 2.30% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-2B:**

Hydrograph





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**Summary for Subcatchment PB-3A:**

Runoff = 39.39 cfs @ 12.05 hrs, Volume= 1.823 af, Depth= 2.31"  
Routed to Pond P-3A :

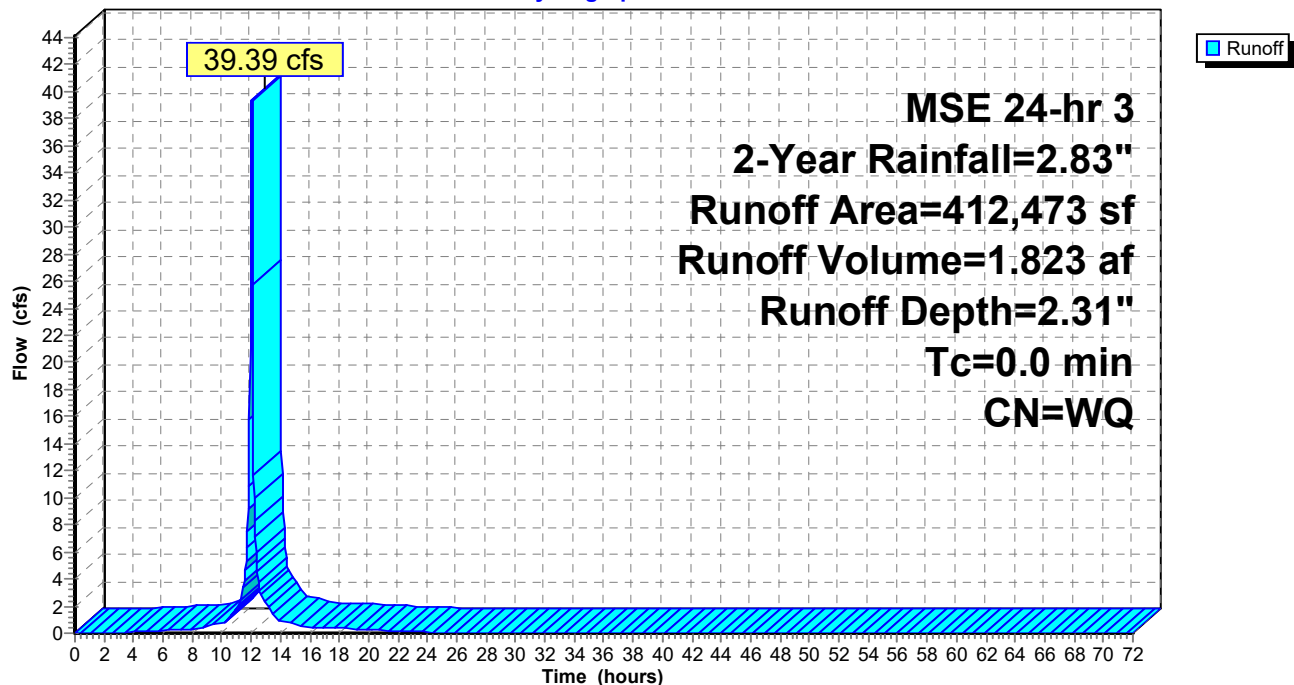
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 346,189   | 98 | Water Surface, HSG A          |
| 66,284    | 74 | >75% Grass cover, Good, HSG C |
| 412,473   |    | Weighted Average              |
| 66,284    |    | 16.07% Pervious Area          |
| 346,189   |    | 83.93% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 0.0      |               |               |                   |                | Direct Entry, |

**Subcatchment PB-3A:**

Hydrograph



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## Summary for Subcatchment PB-3B:

Runoff = 17.77 cfs @ 12.04 hrs, Volume= 0.828 af, Depth= 2.60"  
Routed to Pond P-3B :

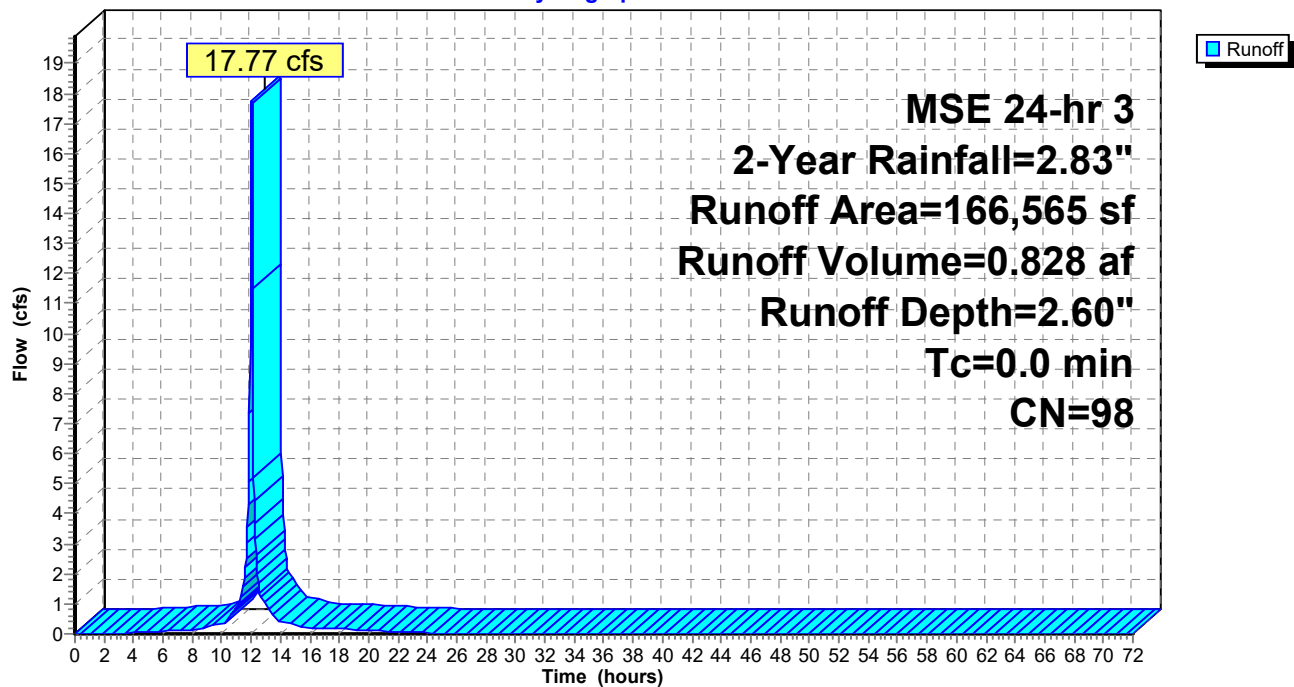
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description             |
|-----------|----|-------------------------|
| 166,565   | 98 | Water Surface, HSG A    |
| 166,565   |    | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 0.0      |               |               |                   |                | Direct Entry, |

## Subcatchment PB-3B:

Hydrograph



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**Summary for Subcatchment PB-4A:**

Runoff = 3.13 cfs @ 12.19 hrs, Volume= 0.183 af, Depth= 0.93"  
Routed to Pond P-3A :

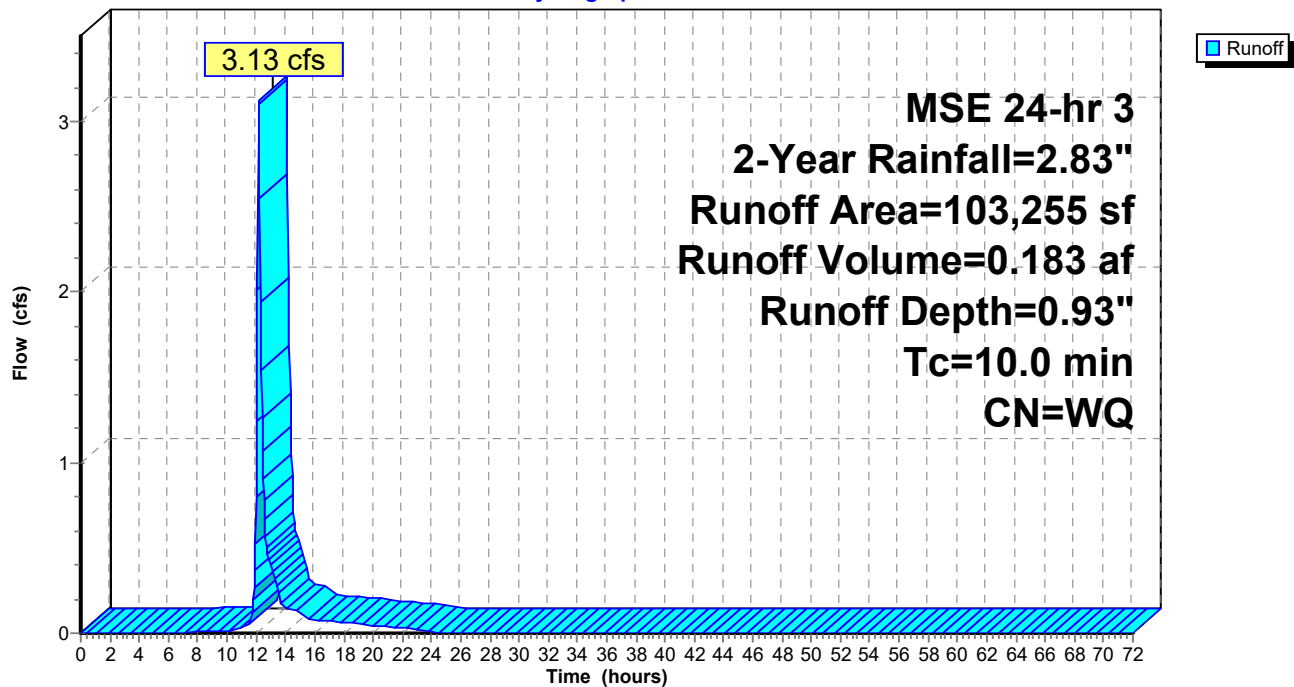
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 96,055    | 74 | >75% Grass cover, Good, HSG C |
| 7,200     | 98 | Roofs, HSG A                  |
| 103,255   |    | Weighted Average              |
| 96,055    |    | 93.03% Pervious Area          |
| 7,200     |    | 6.97% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-4A:**

Hydrograph



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**Summary for Subcatchment PB-4B:**

Runoff = 1.82 cfs @ 12.19 hrs, Volume= 0.106 af, Depth= 0.87"  
Routed to Pond P-3B :

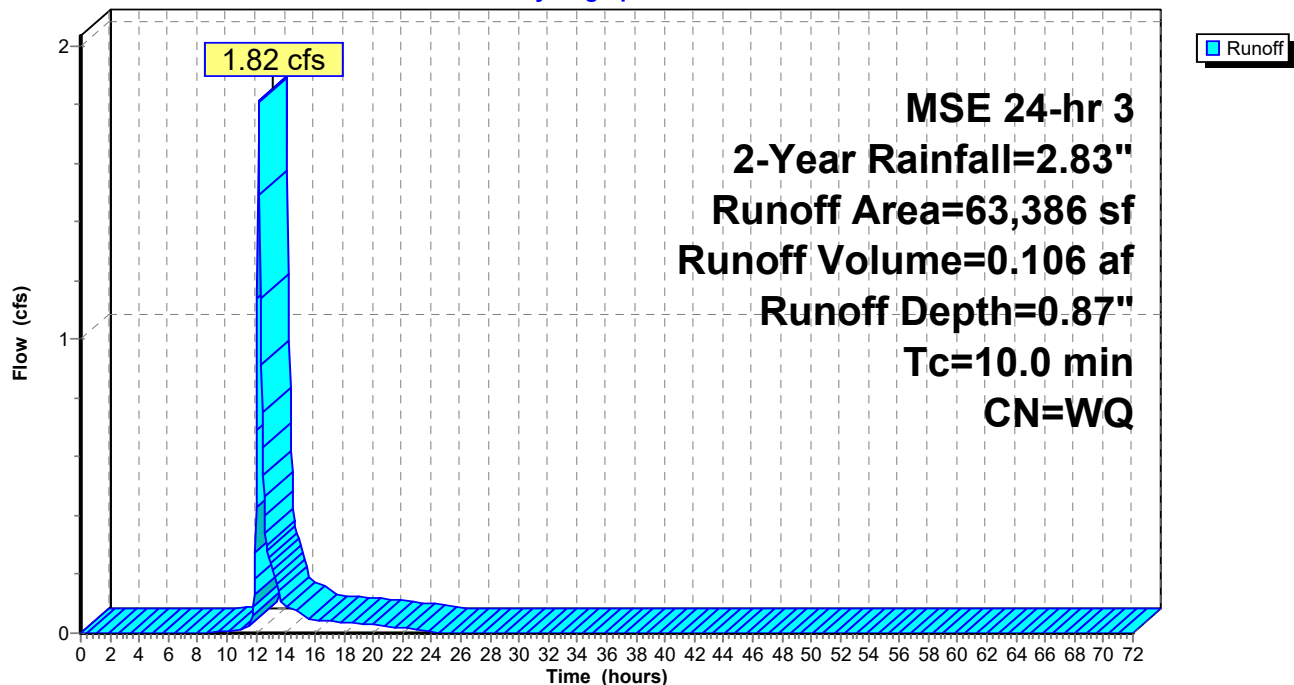
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 60,986    | 74 | >75% Grass cover, Good, HSG C |
| 2,400     | 98 | Roofs, HSG A                  |
| 63,386    |    | Weighted Average              |
| 60,986    |    | 96.21% Pervious Area          |
| 2,400     |    | 3.79% Impervious Area         |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 10.0        |                  |                  |                      |                   | Direct Entry, |

**Subcatchment PB-4B:**

Hydrograph



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**Summary for Subcatchment PB-4C:**

Runoff = 0.60 cfs @ 12.28 hrs, Volume= 0.059 af, Depth= 0.48"  
Routed to Pond P-3B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

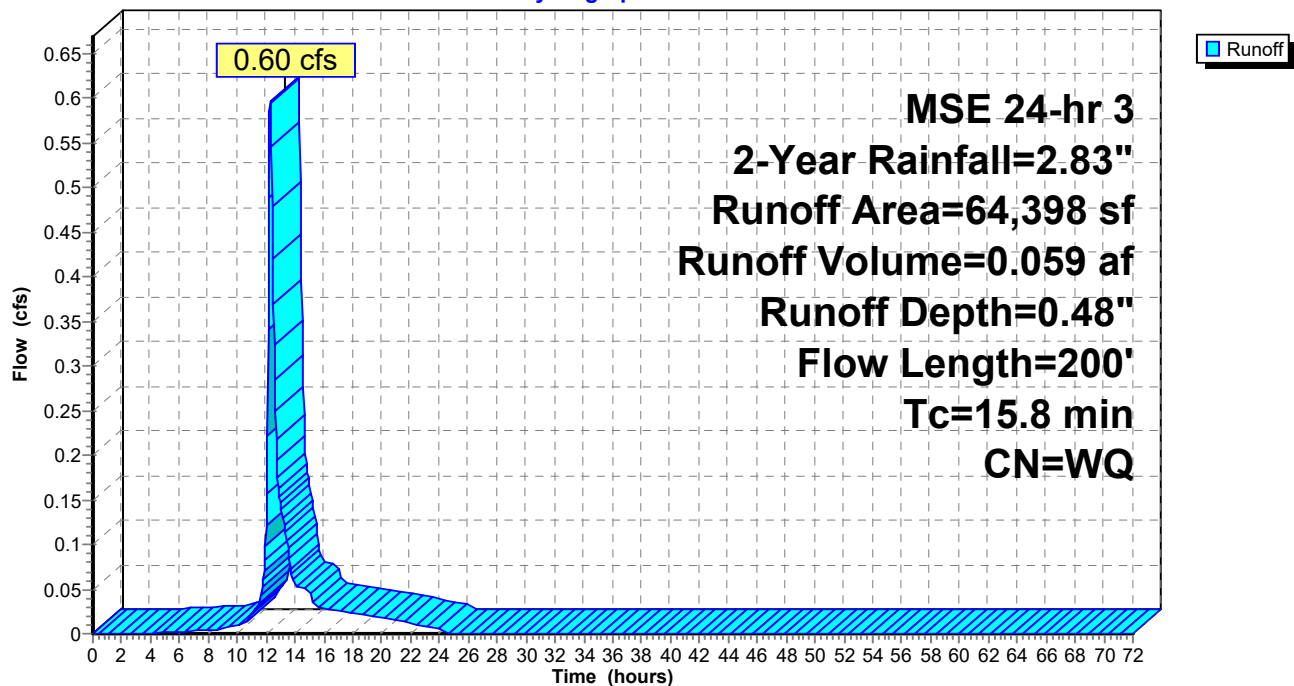
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 59,448    | 61 | >75% Grass cover, Good, HSG B |
| 4,554     | 98 | Roofs, HSG A                  |
| * 396     | 98 | Driveways                     |
| 64,398    |    | Weighted Average              |
| 59,448    |    | 92.31% Pervious Area          |
| 4,950     |    | 7.69% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 14.5     | 100           | 0.0088        | 0.12              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.3      | 100           | 0.0330        | 1.27              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 15.8     | 200           | Total         |                   |                |                                                                      |

**Subcatchment PB-4C:**

Hydrograph



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**Summary for Subcatchment PB-4D:**

Runoff = 0.49 cfs @ 12.30 hrs, Volume= 0.051 af, Depth= 0.40"  
Routed to Pond P-8 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

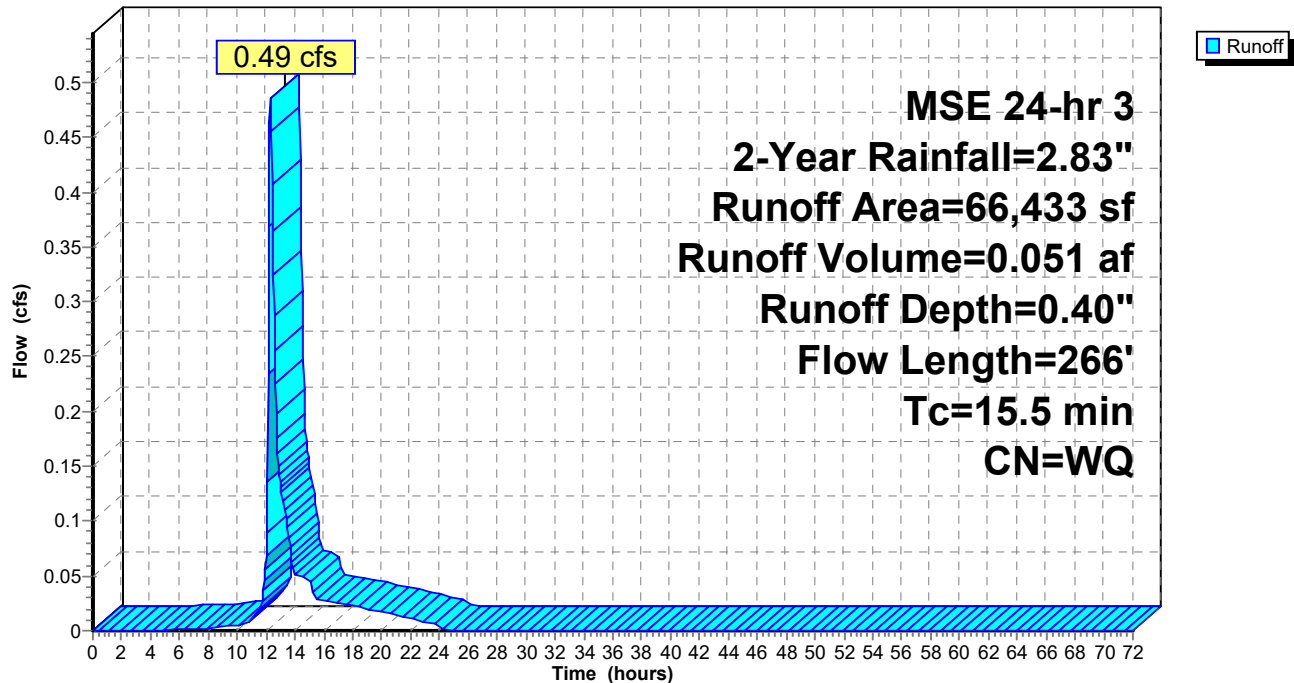
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 63,695    | 61 | >75% Grass cover, Good, HSG B |
| 485       | 98 | Roofs, HSG A                  |
| * 2,253   | 98 | Driveways                     |
| 66,433    |    | Weighted Average              |
| 63,695    |    | 95.88% Pervious Area          |
| 2,738     |    | 4.12% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.6     | 100           | 0.0190        | 0.16              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 4.9      | 166           | 0.0066        | 0.57              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 15.5     | 266           | Total         |                   |                |                                                                      |

**Subcatchment PB-4D:**

Hydrograph



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**Summary for Subcatchment PB-5A:**

Runoff = 9.23 cfs @ 12.19 hrs, Volume= 0.542 af, Depth= 0.94"  
Routed to Pond P-3A :

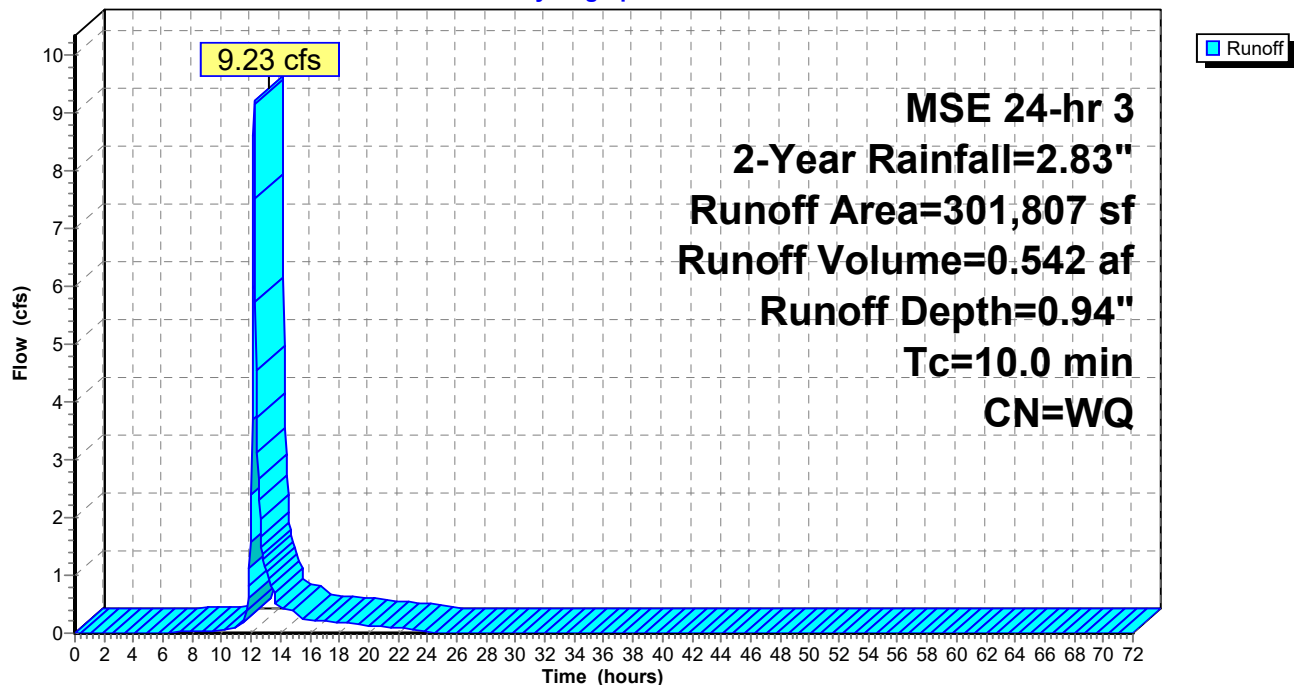
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 279,007   | 74 | >75% Grass cover, Good, HSG C |
| 22,800    | 98 | Roofs, HSG A                  |
| 301,807   |    | Weighted Average              |
| 279,007   |    | 92.45% Pervious Area          |
| 22,800    |    | 7.55% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-5A:**

Hydrograph



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**Summary for Subcatchment PB-5B:**

Runoff = 4.26 cfs @ 12.19 hrs, Volume= 0.249 af, Depth= 0.92"  
Routed to Pond P-3B :

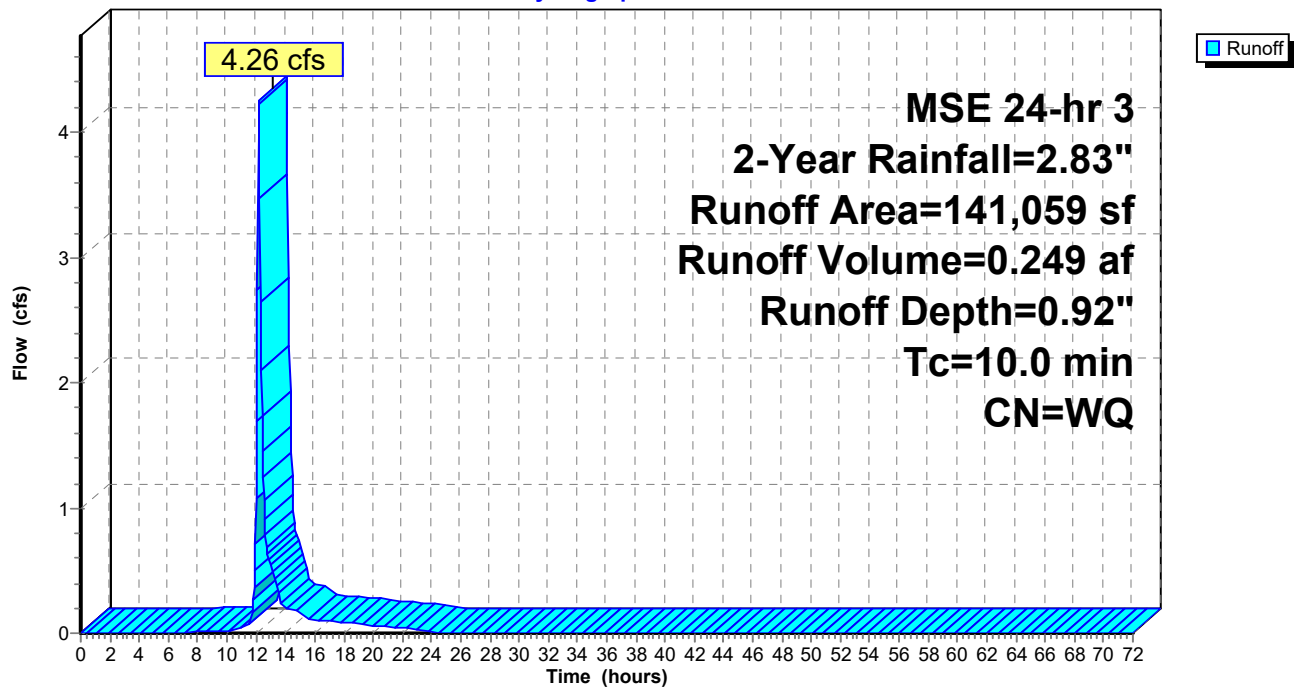
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 131,459   | 74 | >75% Grass cover, Good, HSG C |
| 9,600     | 98 | Roofs, HSG A                  |
| 141,059   |    | Weighted Average              |
| 131,459   |    | 93.19% Pervious Area          |
| 9,600     |    | 6.81% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-5B:**

Hydrograph





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**Summary for Subcatchment PB-6A:**

Runoff = 2.61 cfs @ 12.23 hrs, Volume= 0.188 af, Depth= 1.85"  
Routed to Pond P-6 :

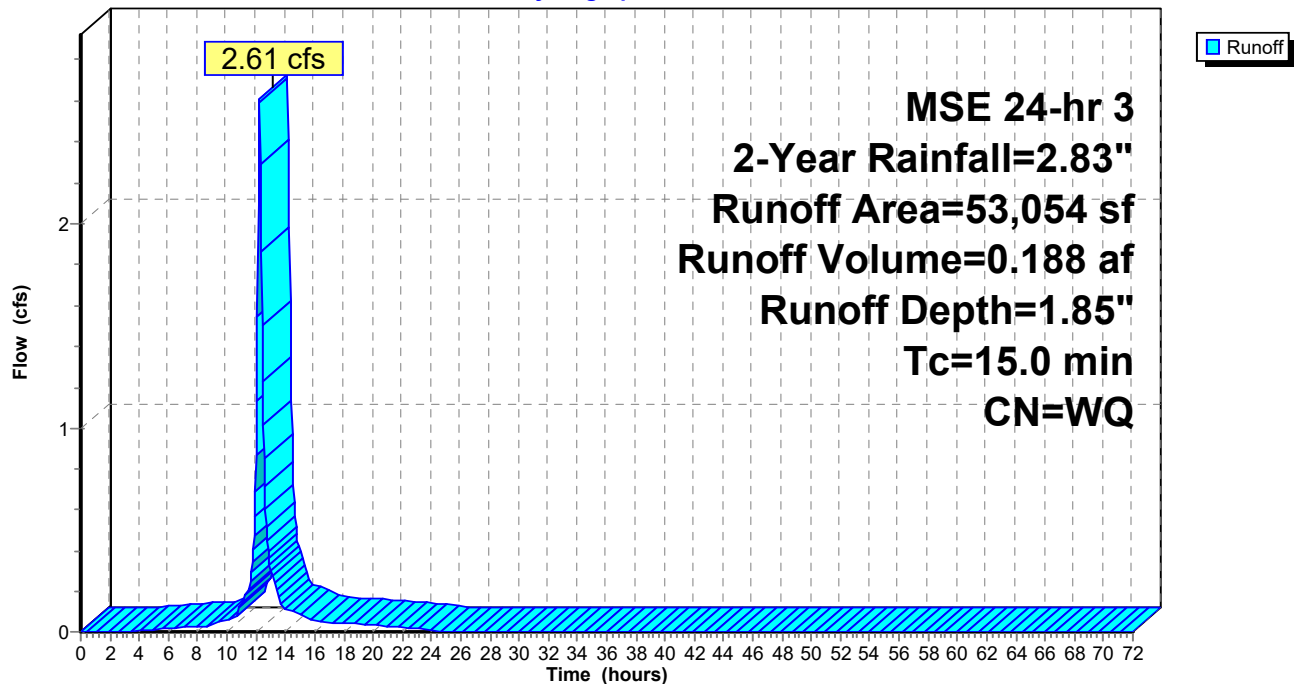
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 22,107    | 74 | >75% Grass cover, Good, HSG C |
| 4,800     | 98 | Roofs, HSG A                  |
| * 1,707   | 98 | Driveway                      |
| 24,440    | 98 | Water Surface, HSG A          |
| 53,054    |    | Weighted Average              |
| 22,107    |    | 41.67% Pervious Area          |
| 30,947    |    | 58.33% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 15.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-6A:**

Hydrograph



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**Summary for Subcatchment PB-6B:**

Runoff = 0.87 cfs @ 13.07 hrs, Volume= 0.197 af, Depth= 0.30"  
Routed to Pond PB6 : Wetland 6

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

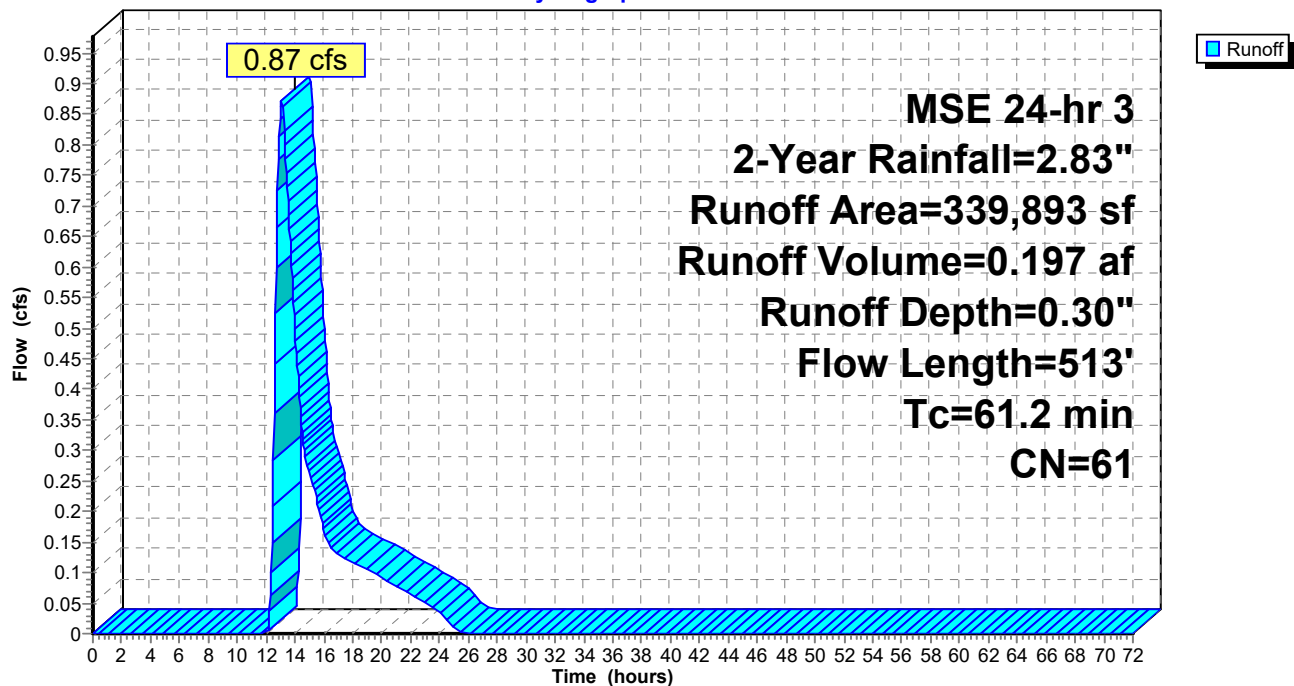
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 339,893   | 61 | >75% Grass cover, Good, HSG B |
| 339,893   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 55.9     | 300           | 0.0027        | 0.09              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 2.1      | 106           | 0.0140        | 0.83              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 3.2      | 107           | 0.0063        | 0.56              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 61.2     | 513           | Total         |                   |                |                                                                      |

**Subcatchment PB-6B:**

Hydrograph



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**Summary for Subcatchment PB-7A:**

Runoff = 0.66 cfs @ 12.36 hrs, Volume= 0.075 af, Depth= 0.42"  
Routed to Pond PB7A : Wetland 7A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

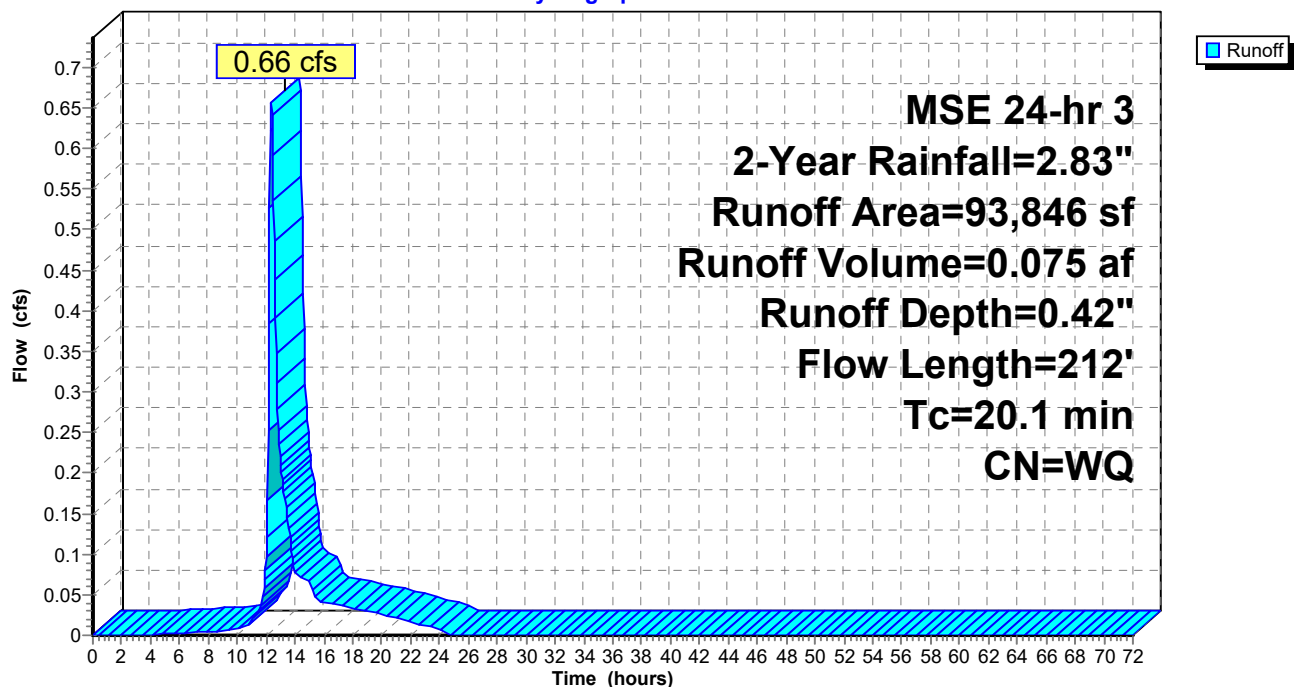
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 89,046    | 61 | >75% Grass cover, Good, HSG B |
| 4,800     | 98 | Roofs, HSG A                  |
| 93,846    |    | Weighted Average              |
| 89,046    |    | 94.89% Pervious Area          |
| 4,800     |    | 5.11% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 18.8     | 100           | 0.0046        | 0.09              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.3      | 112           | 0.0425        | 1.44              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 20.1     | 212           | Total         |                   |                |                                                                      |

**Subcatchment PB-7A:**

Hydrograph



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**Summary for Subcatchment PB-7B:**

Runoff = 1.12 cfs @ 12.21 hrs, Volume= 0.092 af, Depth= 0.43"  
Routed to Pond PB7B : Wetland 7B

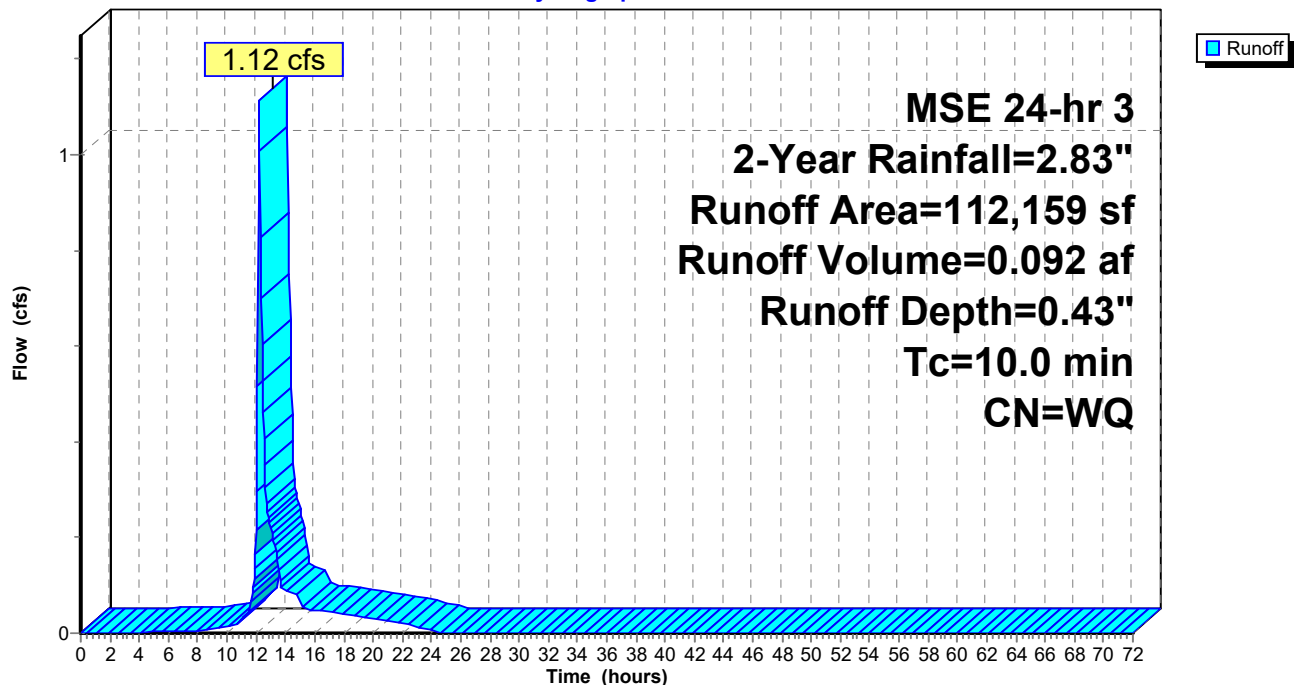
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 105,949   | 61 | >75% Grass cover, Good, HSG B |
| * 6,210   | 98 | Driveways                     |
| 112,159   |    | Weighted Average              |
| 105,949   |    | 94.46% Pervious Area          |
| 6,210     |    | 5.54% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-7B:**

Hydrograph



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**Summary for Subcatchment PB-7C:**

Runoff = 0.16 cfs @ 12.15 hrs, Volume= 0.011 af, Depth= 0.30"  
Routed to Pond PB7C : Wetland 7C

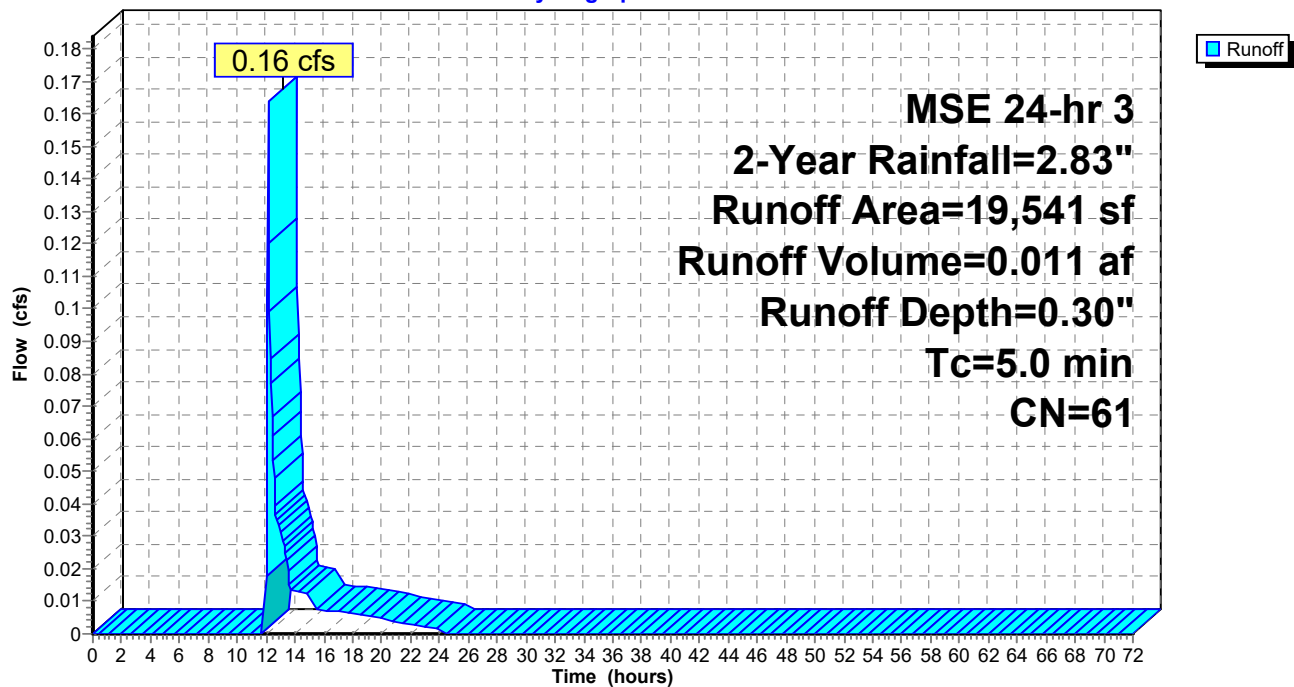
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 19,541    | 61 | >75% Grass cover, Good, HSG B |
| 19,541    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment PB-7C:**

Hydrograph



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**Summary for Subcatchment PB-7D:**

Runoff = 1.48 cfs @ 12.19 hrs, Volume= 0.087 af, Depth= 0.99"  
Routed to Reach P7B&D :

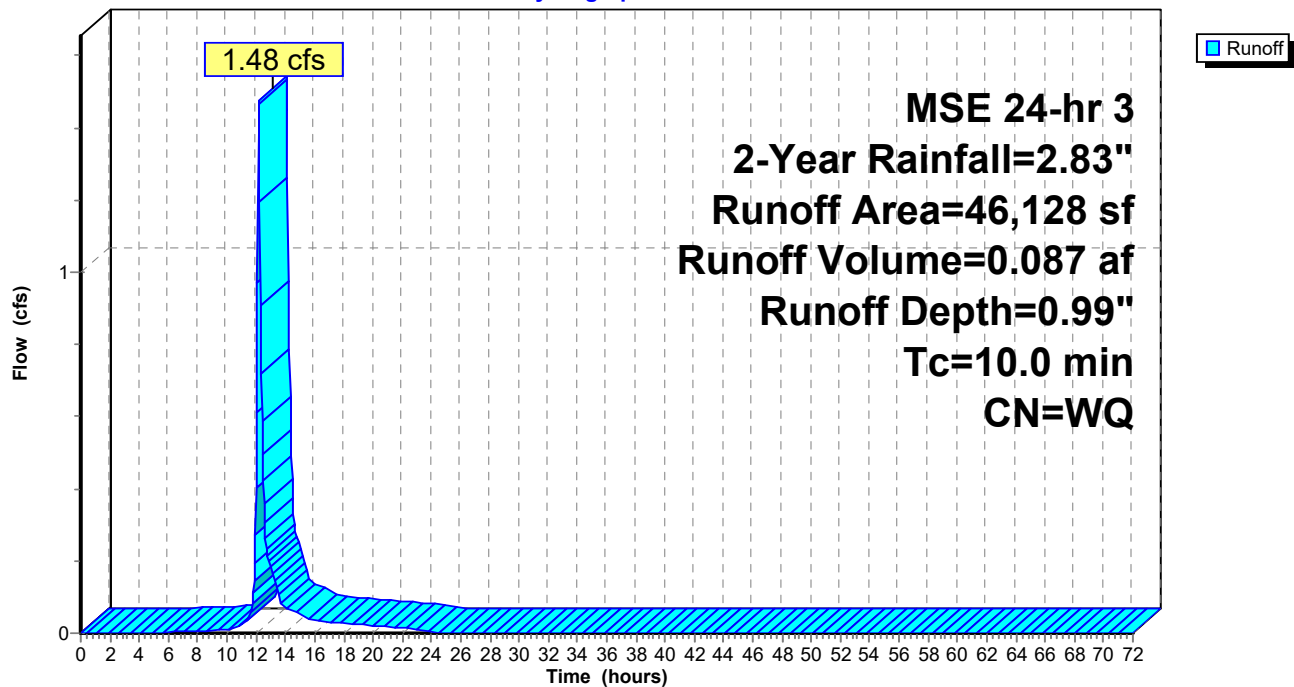
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 4,800     | 98 | Roofs, HSG A                  |
| 41,328    | 74 | >75% Grass cover, Good, HSG C |
| 46,128    |    | Weighted Average              |
| 41,328    |    | 89.59% Pervious Area          |
| 4,800     |    | 10.41% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-7D:**

Hydrograph



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MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Subcatchment PB-8:**

Runoff = 12.03 cfs @ 12.25 hrs, Volume= 0.888 af, Depth= 1.32"  
Routed to Pond P-8 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

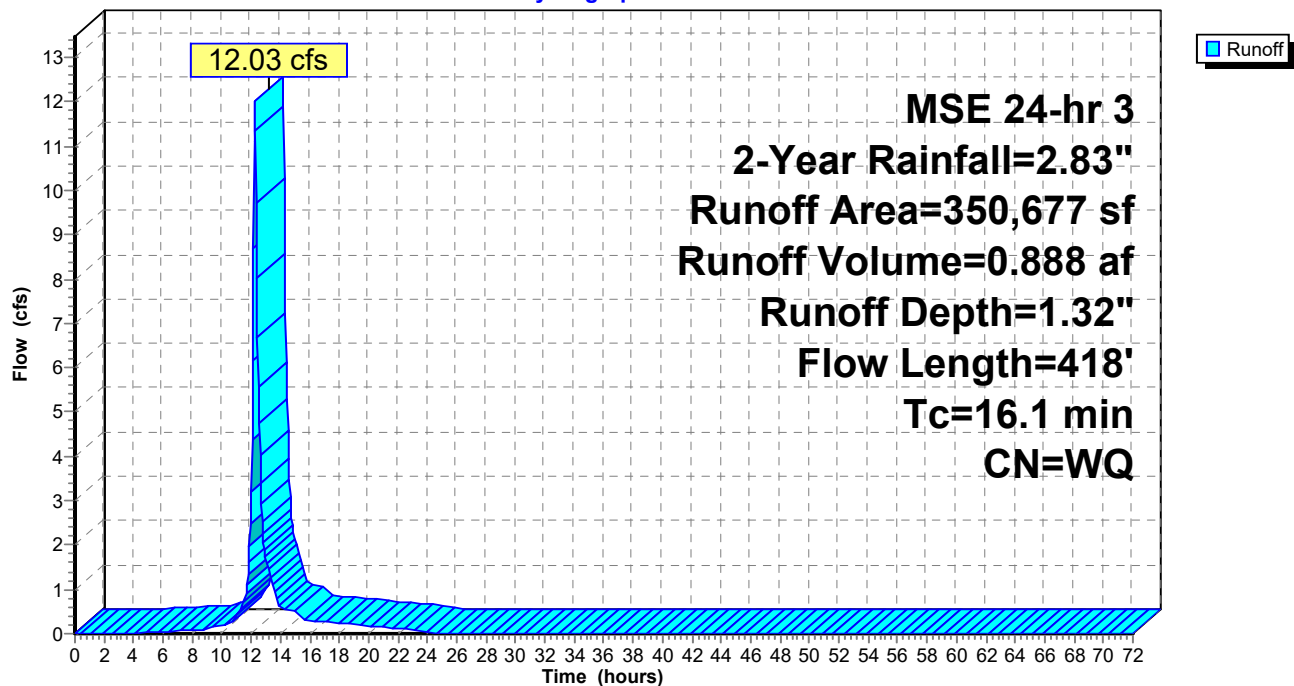
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 248,853   | 74 | >75% Grass cover, Good, HSG C |
| 10,800    | 98 | Roofs, HSG A                  |
| 91,024    | 98 | Water Surface, HSG A          |
| 350,677   |    | Weighted Average              |
| 248,853   |    | 70.96% Pervious Area          |
| 101,824   |    | 29.04% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 8.7      | 100           | 0.0313        | 0.19              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 7.4      | 318           | 0.0104        | 0.71              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 16.1     | 418           | Total         |                   |                |                                                                      |

**Subcatchment PB-8:**

Hydrograph



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MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Subcatchment PB-9:**

Runoff = 1.67 cfs @ 12.45 hrs, Volume= 0.169 af, Depth= 0.94"  
Routed to Pond P-3A :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

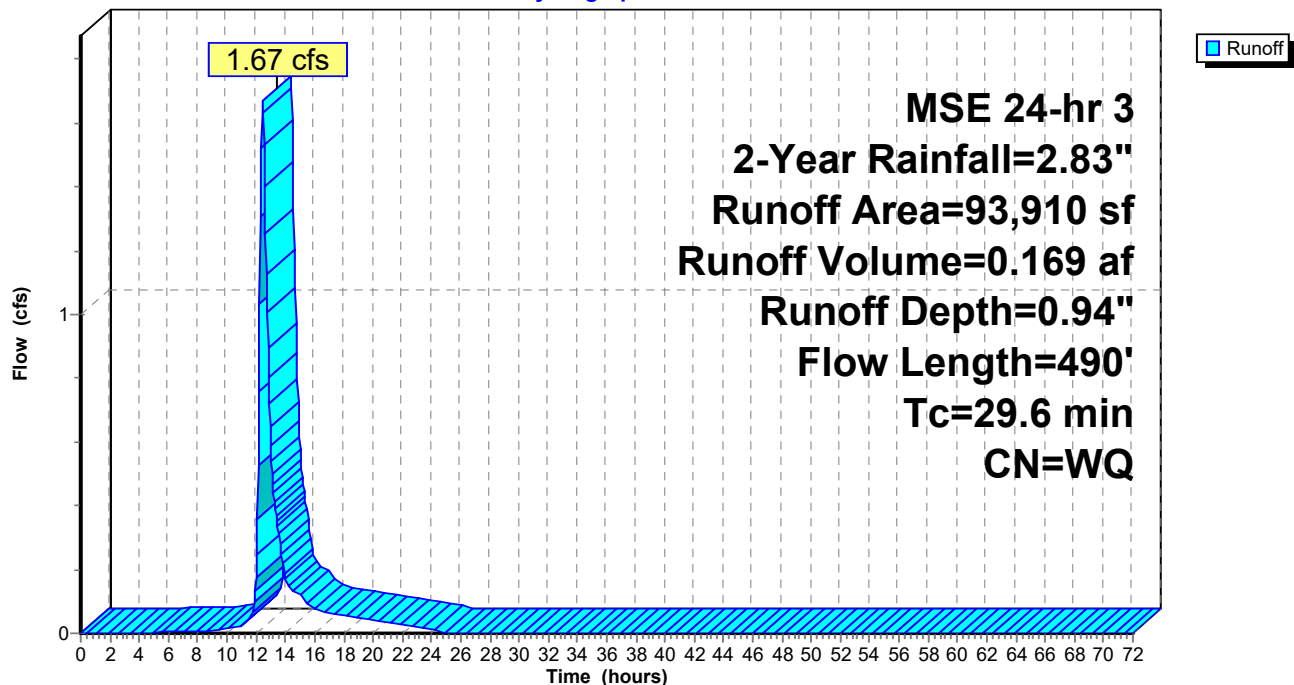
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 7,200     | 98 | Roofs, HSG A                  |
| 86,710    | 74 | >75% Grass cover, Good, HSG C |
| 93,910    |    | Weighted Average              |
| 86,710    |    | 92.33% Pervious Area          |
| 7,200     |    | 7.67% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 13.9     | 100           | 0.0098        | 0.12              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 15.7     | 390           | 0.0035        | 0.41              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 29.6     | 490           | Total         |                   |                |                                                                      |

**Subcatchment PB-9:**

Hydrograph





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**Summary for Subcatchment R-1:**

Runoff = 3.41 cfs @ 12.12 hrs, Volume= 0.173 af, Depth= 1.64"

Routed to Reach POST : Overall Post-Development Runoff

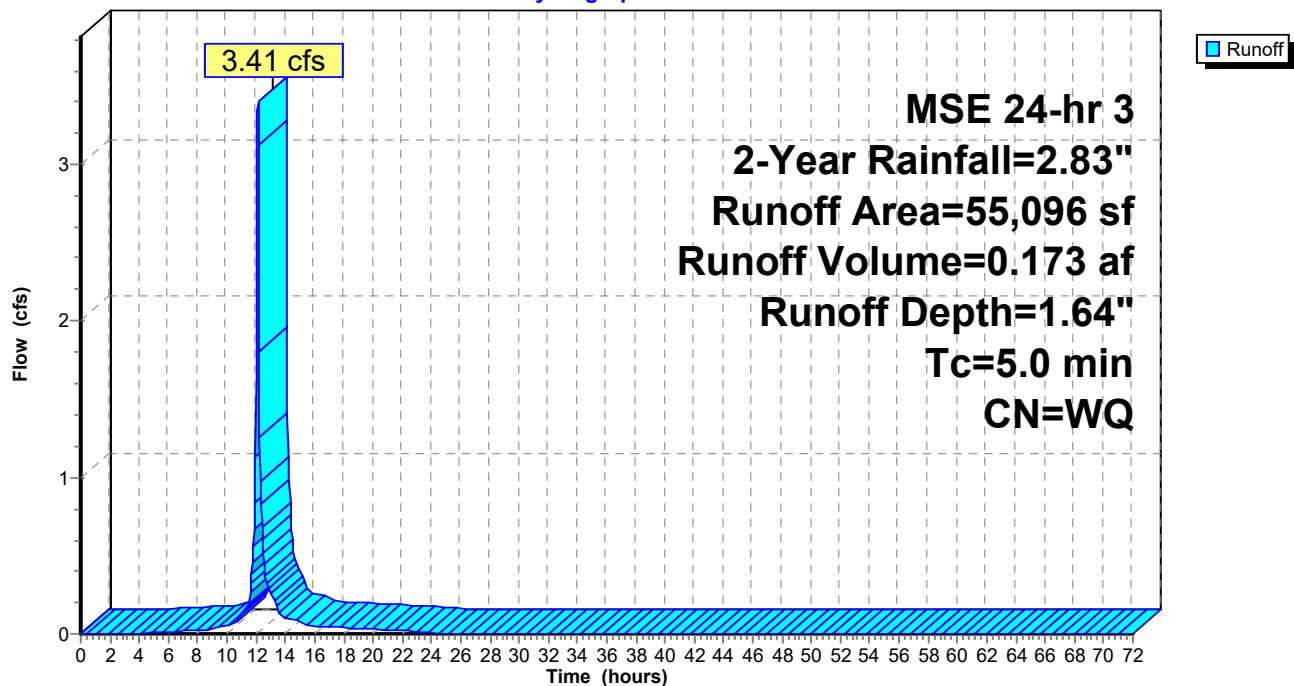
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 21,324    | 98 | Paved parking, HSG A          |
| 2,400     | 98 | Roofs, HSG A                  |
| 2,018     | 98 | Paved parking, HSG A          |
| 29,354    | 74 | >75% Grass cover, Good, HSG C |
| 55,096    |    | Weighted Average              |
| 29,354    |    | 53.28% Pervious Area          |
| 25,742    |    | 46.72% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment R-1:**

Hydrograph



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MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Subcatchment R-2:**

Runoff = 6.23 cfs @ 12.11 hrs, Volume= 0.320 af, Depth= 1.99"  
Routed to Reach 2A&2B :

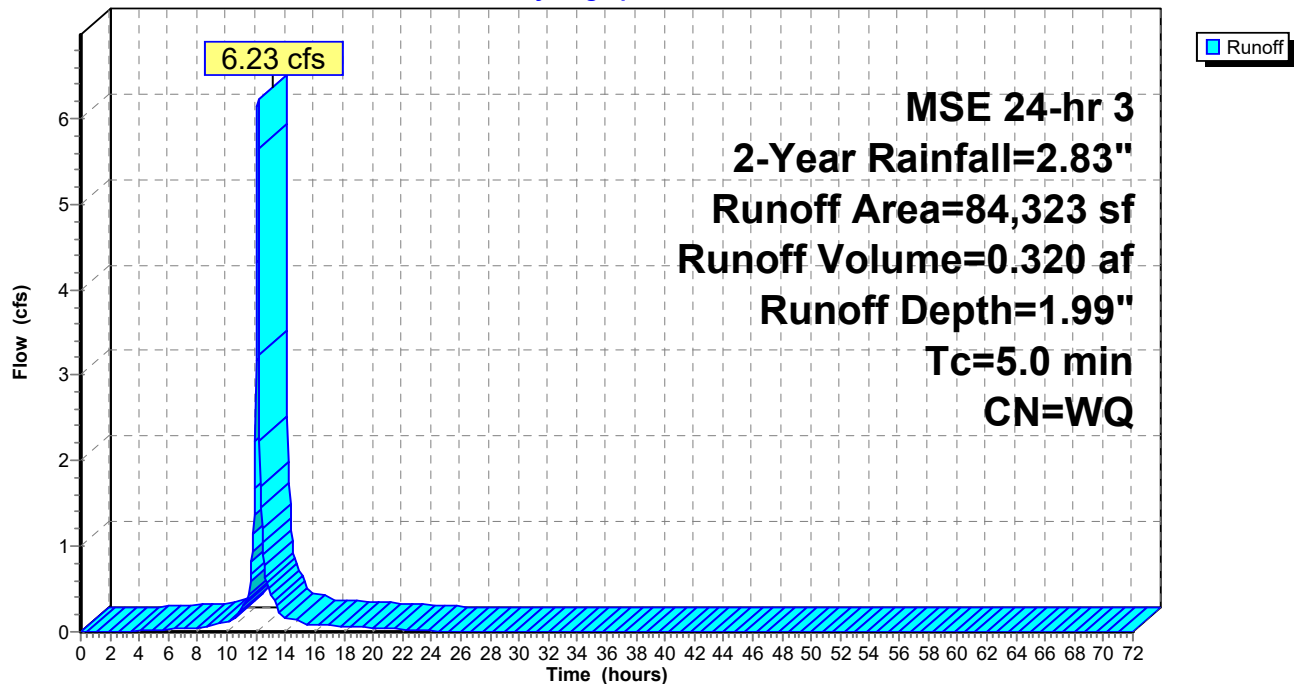
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 37,745    | 98 | Paved parking, HSG A          |
| 9,600     | 98 | Roofs, HSG A                  |
| 8,203     | 98 | Paved parking, HSG A          |
| 28,775    | 74 | >75% Grass cover, Good, HSG C |
| 84,323    |    | Weighted Average              |
| 28,775    |    | 34.12% Pervious Area          |
| 55,548    |    | 65.88% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment R-2:**

Hydrograph



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MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Subcatchment R-3:**

Runoff = 13.37 cfs @ 12.11 hrs, Volume= 0.689 af, Depth= 2.09"  
Routed to Pond P-12 :

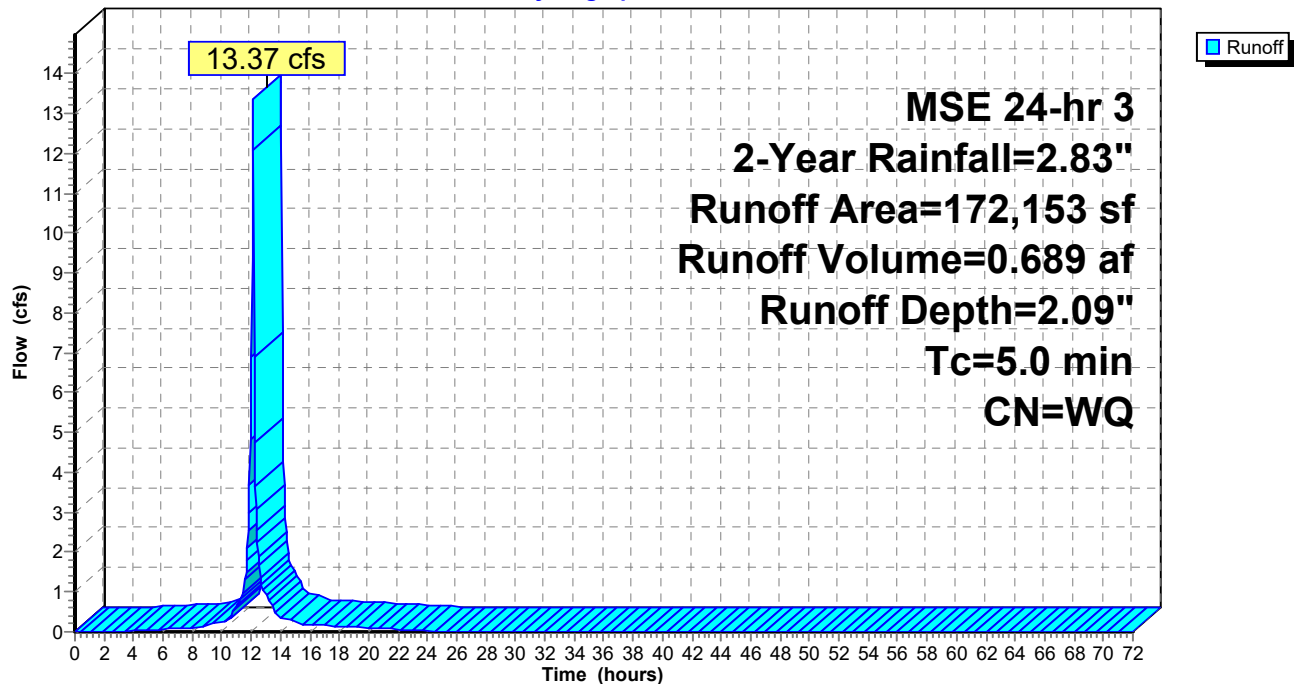
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 78,388    | 98 | Paved parking, HSG A          |
| 24,000    | 98 | Roofs, HSG A                  |
| 21,308    | 98 | Paved parking, HSG A          |
| 48,457    | 74 | >75% Grass cover, Good, HSG C |
| 172,153   |    | Weighted Average              |
| 48,457    |    | 28.15% Pervious Area          |
| 123,696   |    | 71.85% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment R-3:**

Hydrograph



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**Summary for Subcatchment R-5:**

Runoff = 2.15 cfs @ 12.17 hrs, Volume= 0.133 af, Depth= 2.27"  
Routed to Pond P-6 :

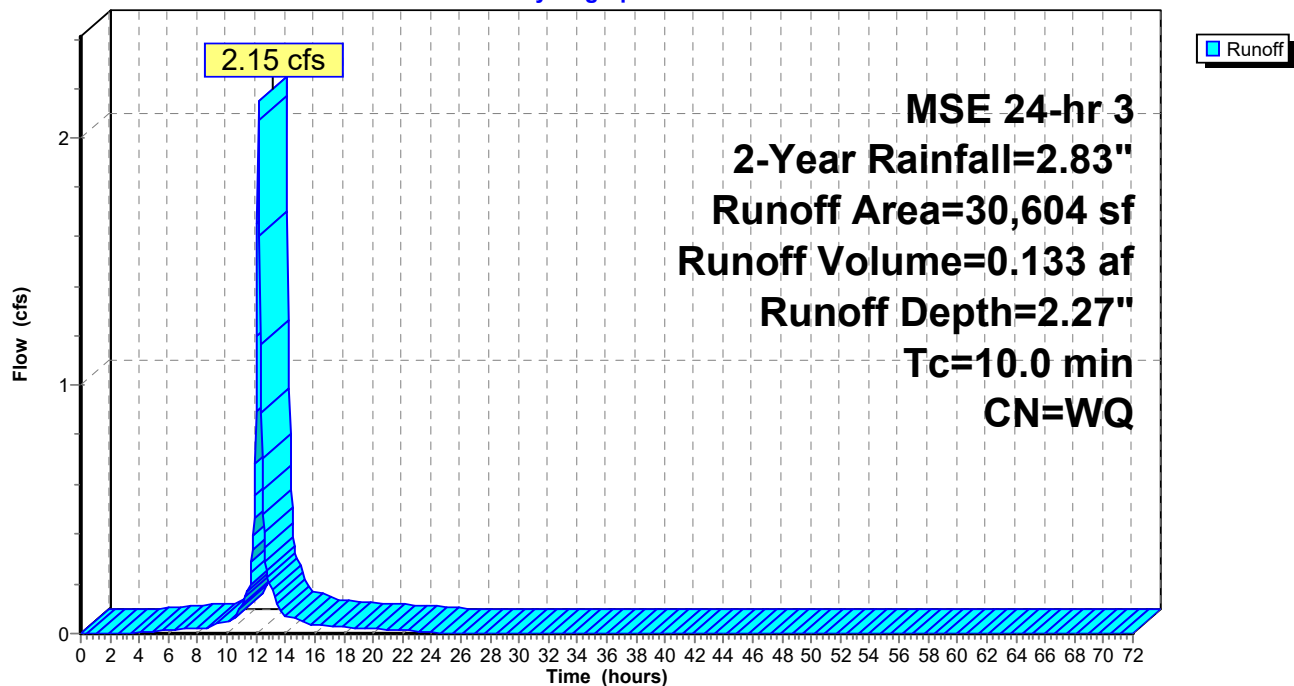
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 22,262    | 98 | Paved roads w/curbs & sewers, HSG A |
| * 2,767   | 98 | Driveways                           |
| 5,575     | 74 | >75% Grass cover, Good, HSG C       |
| 30,604    |    | Weighted Average                    |
| 5,575     |    | 18.22% Pervious Area                |
| 25,029    |    | 81.78% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment R-5:**

Hydrograph



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**Summary for Subcatchment R-6:**

Runoff = 1.32 cfs @ 12.11 hrs, Volume= 0.069 af, Depth= 2.37"  
Routed to Pond P-12 :

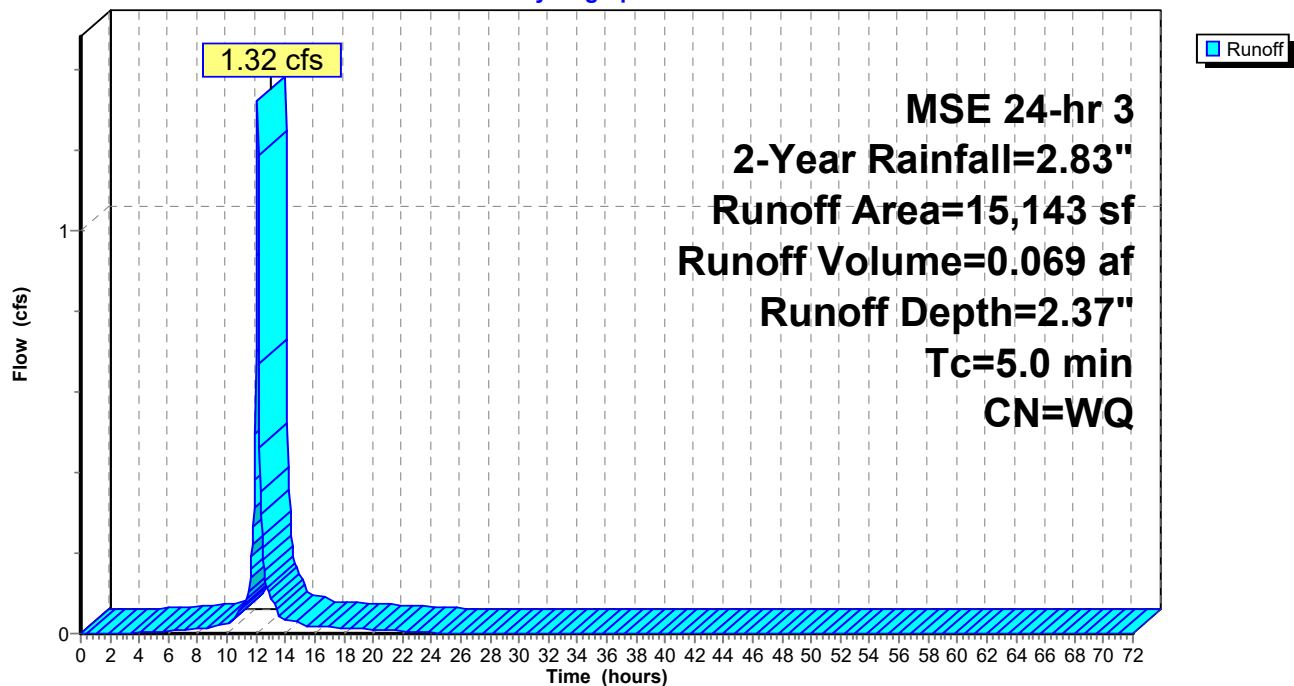
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 10,647    | 98 | Paved roads w/curbs & sewers, HSG A |
| * 2,554   | 98 | Driveways                           |
| 1,942     | 74 | >75% Grass cover, Good, HSG C       |
| 15,143    |    | Weighted Average                    |
| 1,942     |    | 12.82% Pervious Area                |
| 13,201    |    | 87.18% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment R-6:**

Hydrograph



**Summary for Subcatchment R-7:**

Runoff = 0.93 cfs @ 12.11 hrs, Volume= 0.048 af, Depth= 2.10"  
 Routed to Reach 1R :

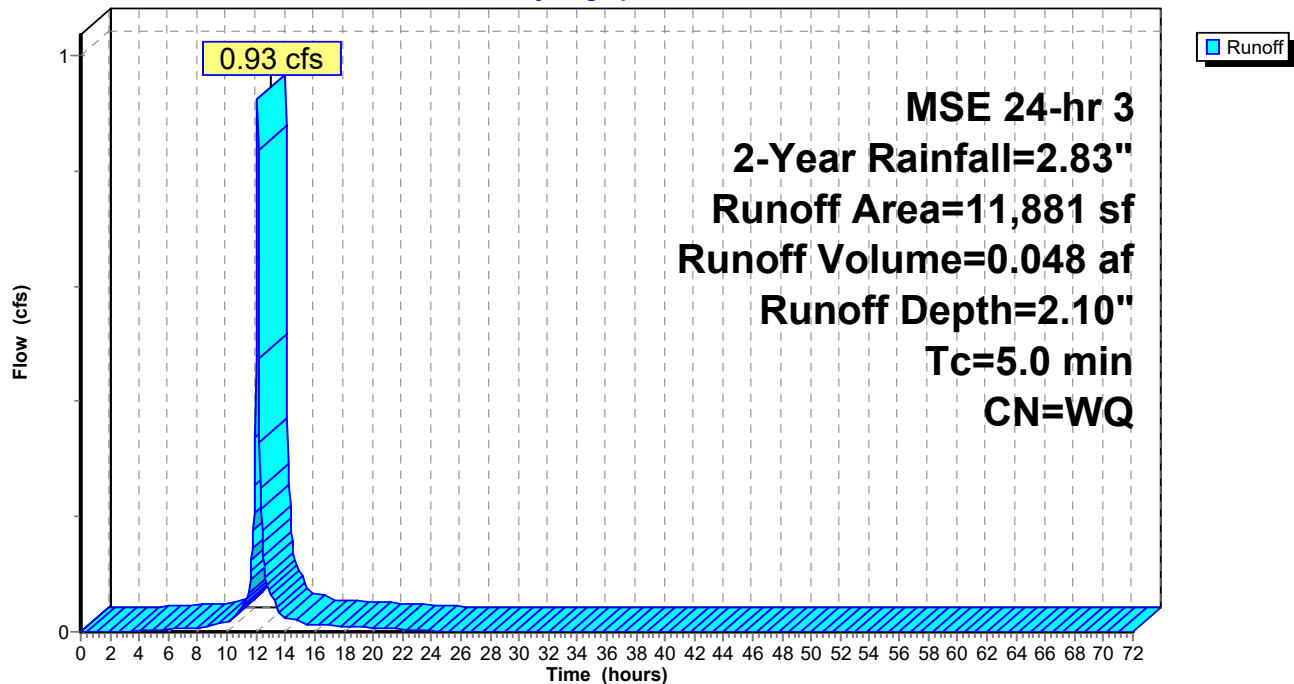
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 6,407     | 98 | Paved roads w/curbs & sewers, HSG A |
| 1,200     | 98 | Roofs, HSG A                        |
| * 989     | 98 | Concrete                            |
| 3,285     | 74 | >75% Grass cover, Good, HSG C       |
| 11,881    |    | Weighted Average                    |
| 3,285     |    | 27.65% Pervious Area                |
| 8,596     |    | 72.35% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment R-7:**

Hydrograph



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**Summary for Subcatchment R-8:**

Runoff = 6.34 cfs @ 12.11 hrs, Volume= 0.327 af, Depth= 2.06"  
Routed to Pond P-3A :

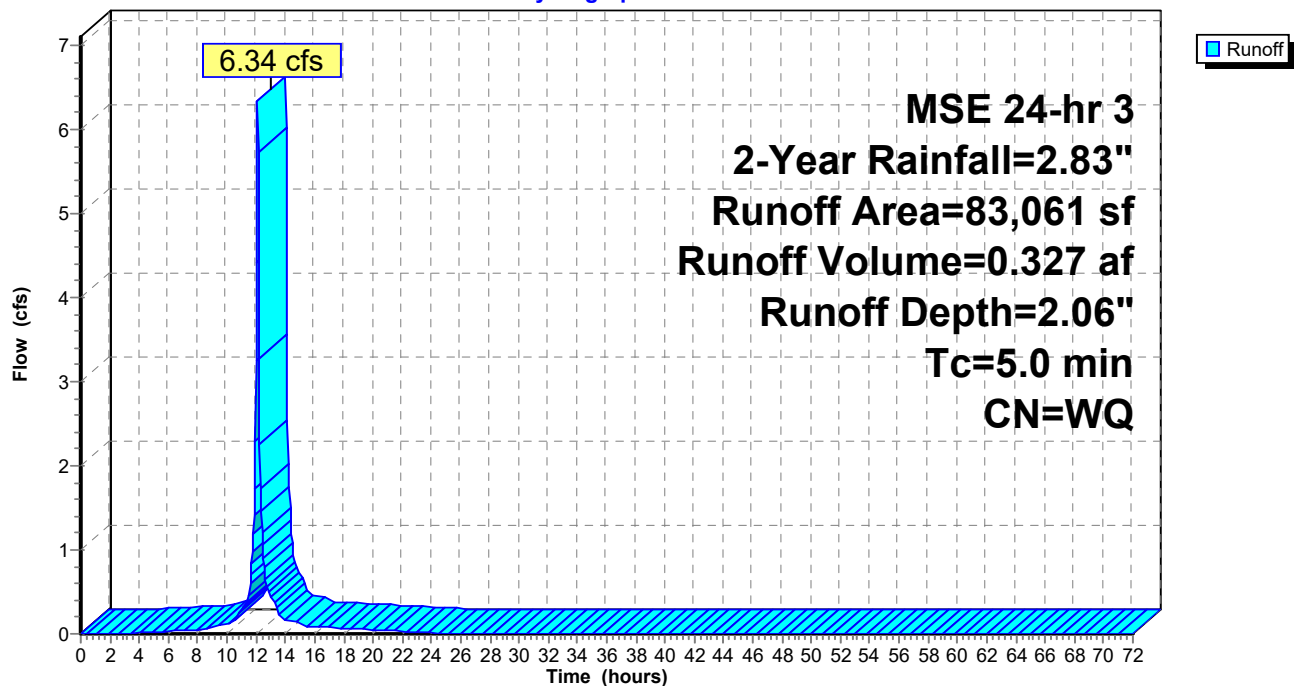
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 2-Year Rainfall=2.83"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 31,957    | 98 | Paved roads w/curbs & sewers, HSG A |
| 16,800    | 98 | Roofs, HSG A                        |
| * 9,173   | 98 | Concrete                            |
| 25,131    | 74 | >75% Grass cover, Good, HSG C       |
| <hr/>     |    |                                     |
| 83,061    |    | Weighted Average                    |
| 25,131    |    | 30.26% Pervious Area                |
| 57,930    |    | 69.74% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment R-8:**

Hydrograph



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MSE 24-hr 3 2-Year Rainfall=2.83"

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### Summary for Reach 1C&PB-13:

Inflow Area = 2.818 ac, 9.61% Impervious, Inflow Depth = 0.97" for 2-Year event  
Inflow = 3.09 cfs @ 12.27 hrs, Volume= 0.229 af  
Outflow = 3.09 cfs @ 12.27 hrs, Volume= 0.229 af, Atten= 0%, Lag= 0.2 min  
Routed to Pond P-6 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.18 fps, Min. Travel Time= 0.4 min

Avg. Velocity= 1.23 fps, Avg. Travel Time= 1.2 min

Peak Storage= 65 cf @ 12.27 hrs

Average Depth at Peak Storage= 0.65' , Surface Width= 1.49'

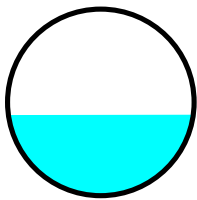
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 7.92 cfs

18.0" Round Pipe

n= 0.013

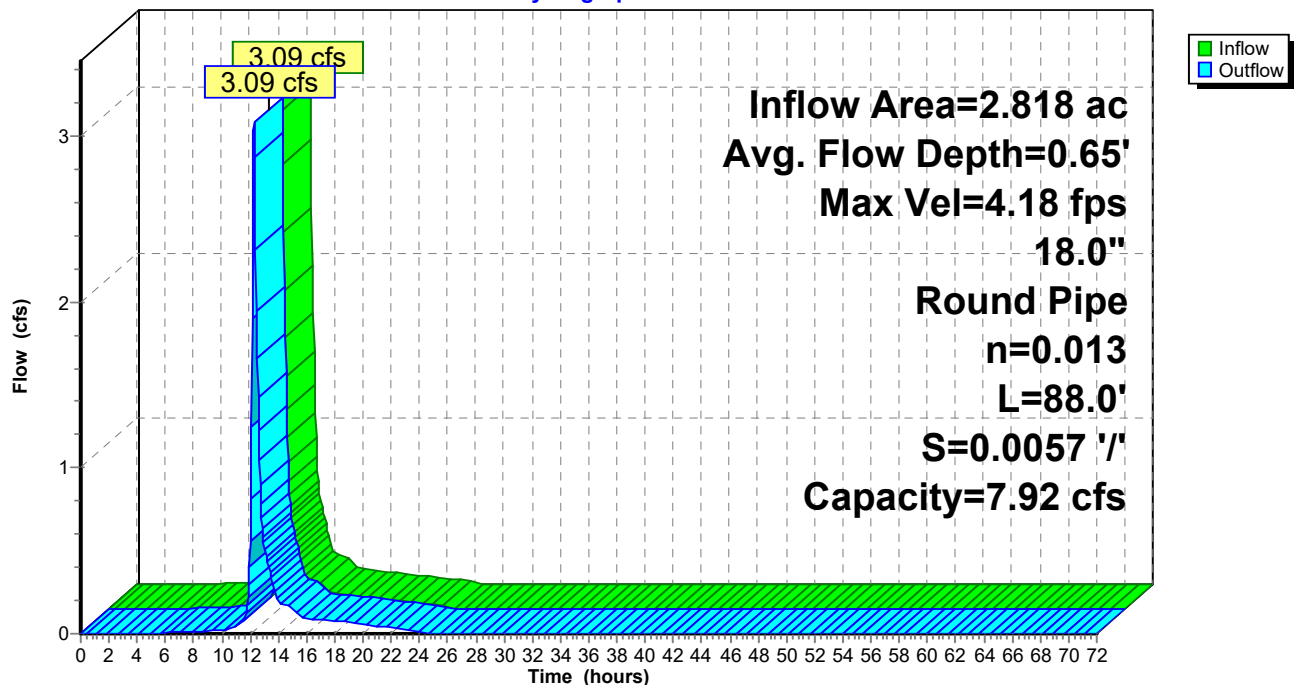
Length= 88.0' Slope= 0.0057 '/'

Inlet Invert= 898.3', Outlet Invert= 897.8'



### Reach 1C&PB-13:

Hydrograph

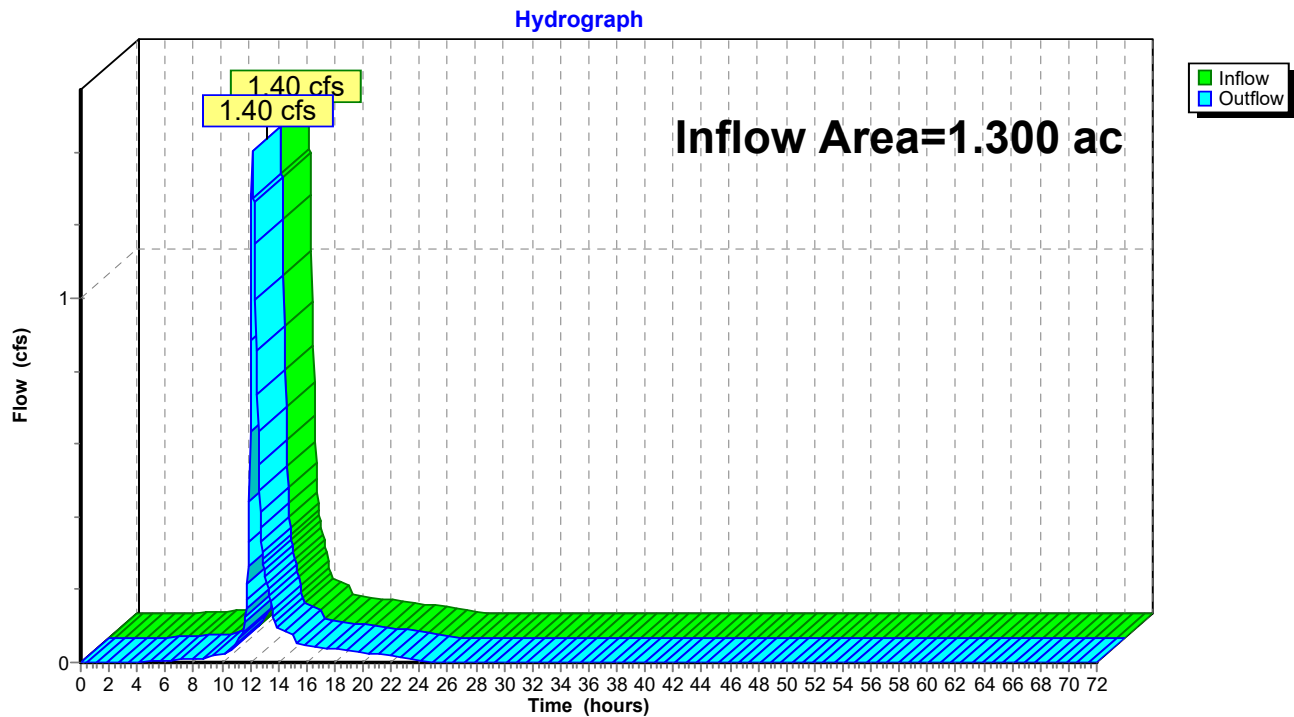




**Summary for Reach 1R:**

Inflow Area = 1.300 ac, 19.42% Impervious, Inflow Depth = 1.15" for 2-Year event  
Inflow = 1.40 cfs @ 12.15 hrs, Volume= 0.125 af  
Outflow = 1.40 cfs @ 12.15 hrs, Volume= 0.125 af, Atten= 0%, Lag= 0.0 min  
Routed to Pond P-3A :

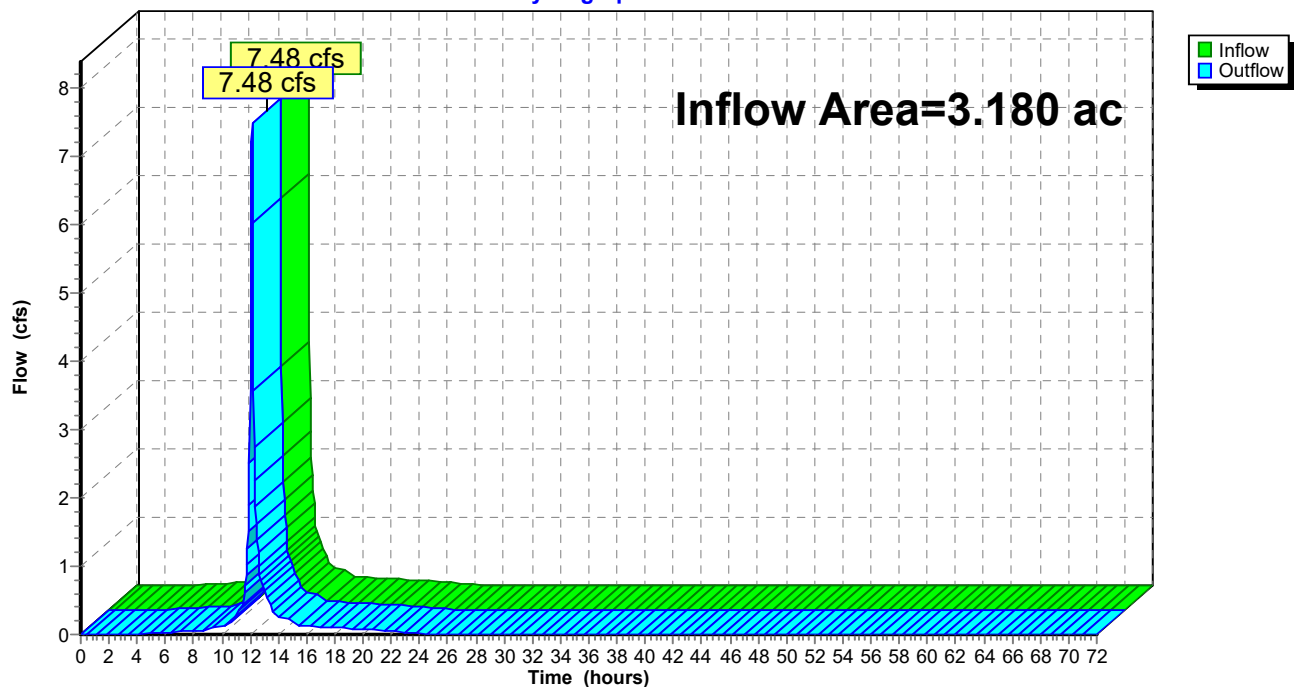
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach 1R:**

**Summary for Reach 2A&2B:**

Inflow Area = 3.180 ac, 43.06% Impervious, Inflow Depth = 1.58" for 2-Year event  
Inflow = 7.48 cfs @ 12.12 hrs, Volume= 0.418 af  
Outflow = 7.48 cfs @ 12.12 hrs, Volume= 0.418 af, Atten= 0%, Lag= 0.0 min  
Routed to Pond P-3A :

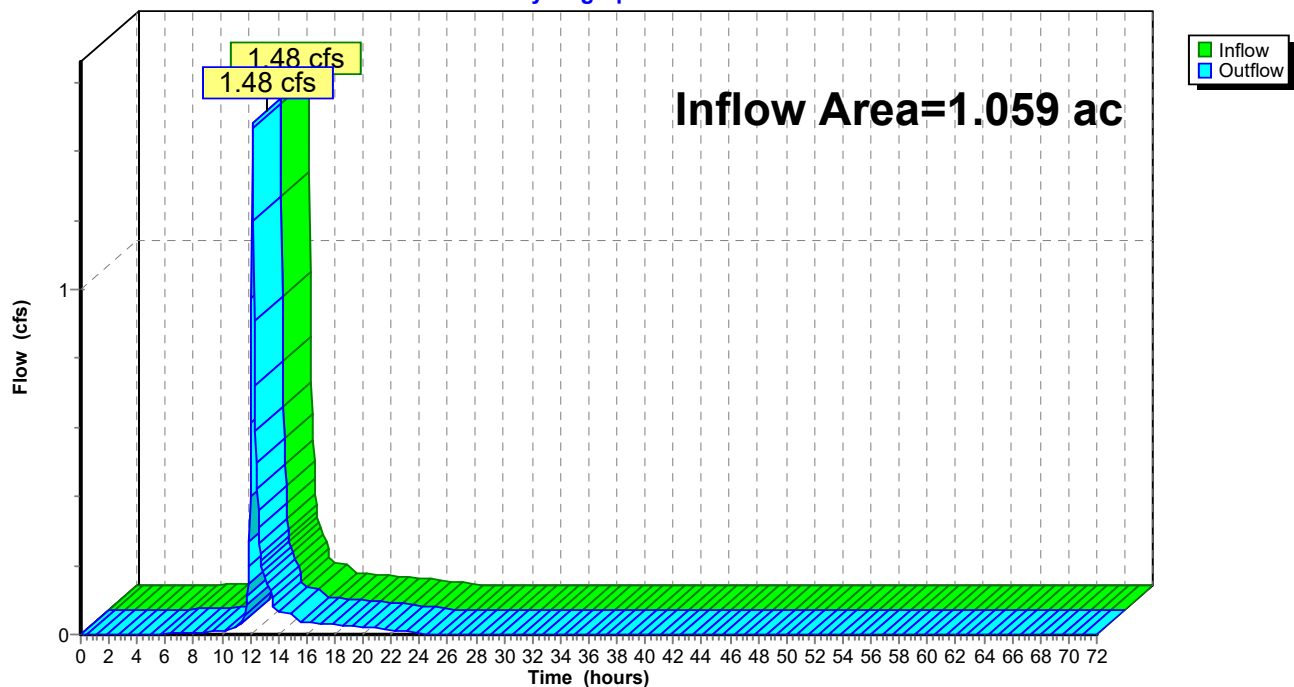
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach 2A&2B:****Hydrograph**

**Summary for Reach P7B&D:**

Inflow Area = 1.059 ac, 10.41% Impervious, Inflow Depth = 0.99" for 2-Year event  
Inflow = 1.48 cfs @ 12.19 hrs, Volume= 0.087 af  
Outflow = 1.48 cfs @ 12.19 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PSE-Q : SE Quarter (Private Ditch B)

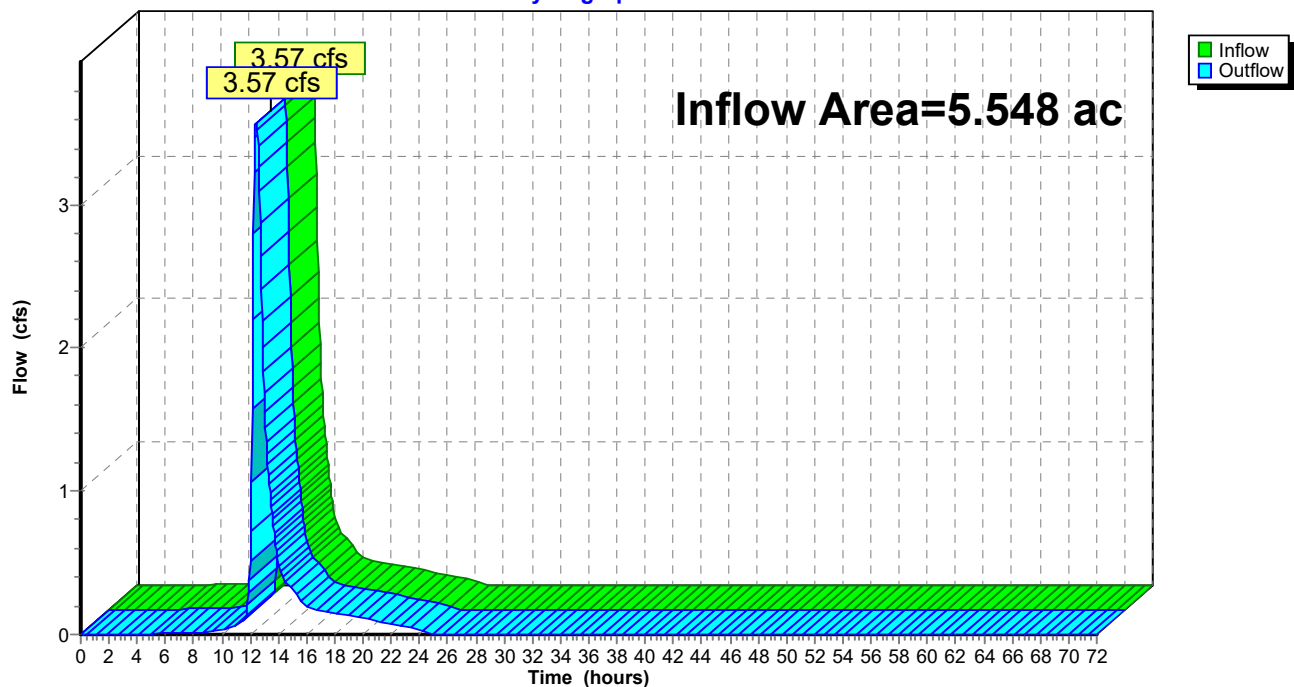
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach P7B&D:****Hydrograph**

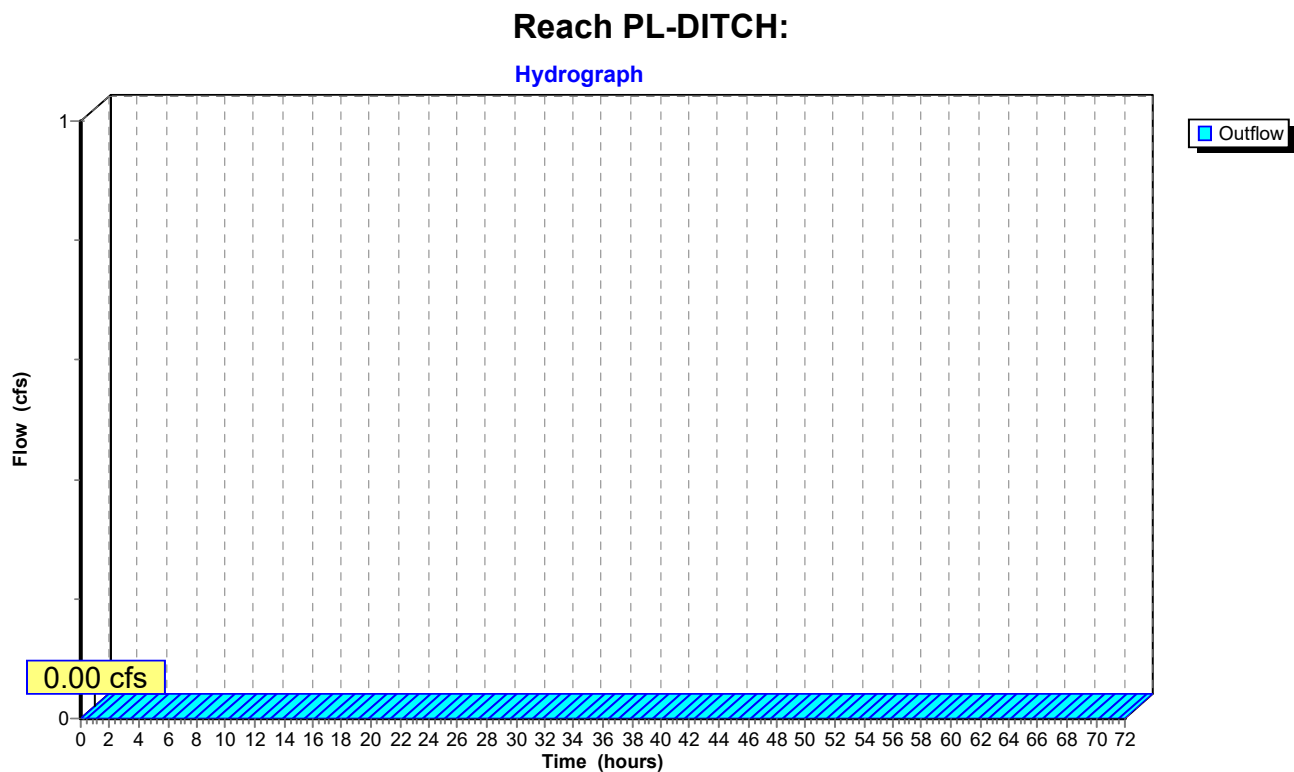
**Summary for Reach PB-1C&PB-14B:**

Inflow Area = 5.548 ac, 7.94% Impervious, Inflow Depth = 0.94" for 2-Year event  
Inflow = 3.57 cfs @ 12.42 hrs, Volume= 0.437 af  
Outflow = 3.57 cfs @ 12.42 hrs, Volume= 0.437 af, Atten= 0%, Lag= 0.0 min  
Routed to Pond P-12 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PB-1C&PB-14B:****Hydrograph**

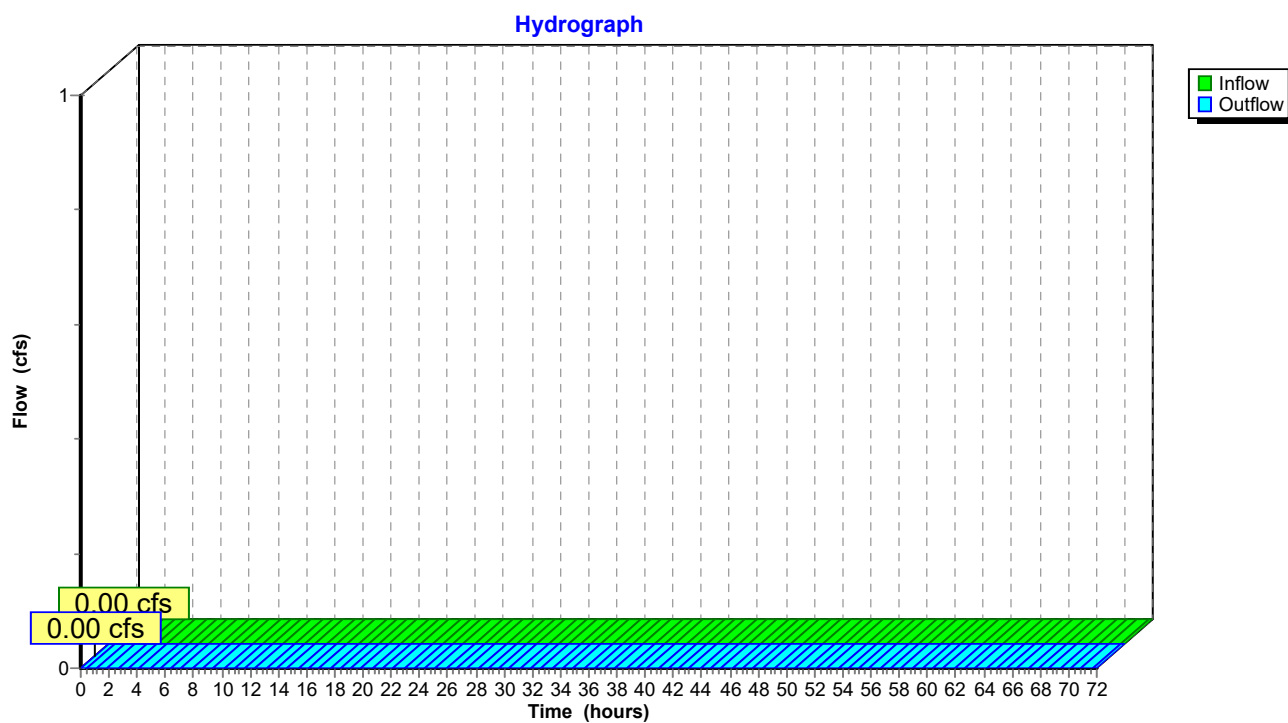
## Summary for Reach PL-DITCH:



**Summary for Reach PN: North Boundary**

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach POST : Overall Post-Development Runoff

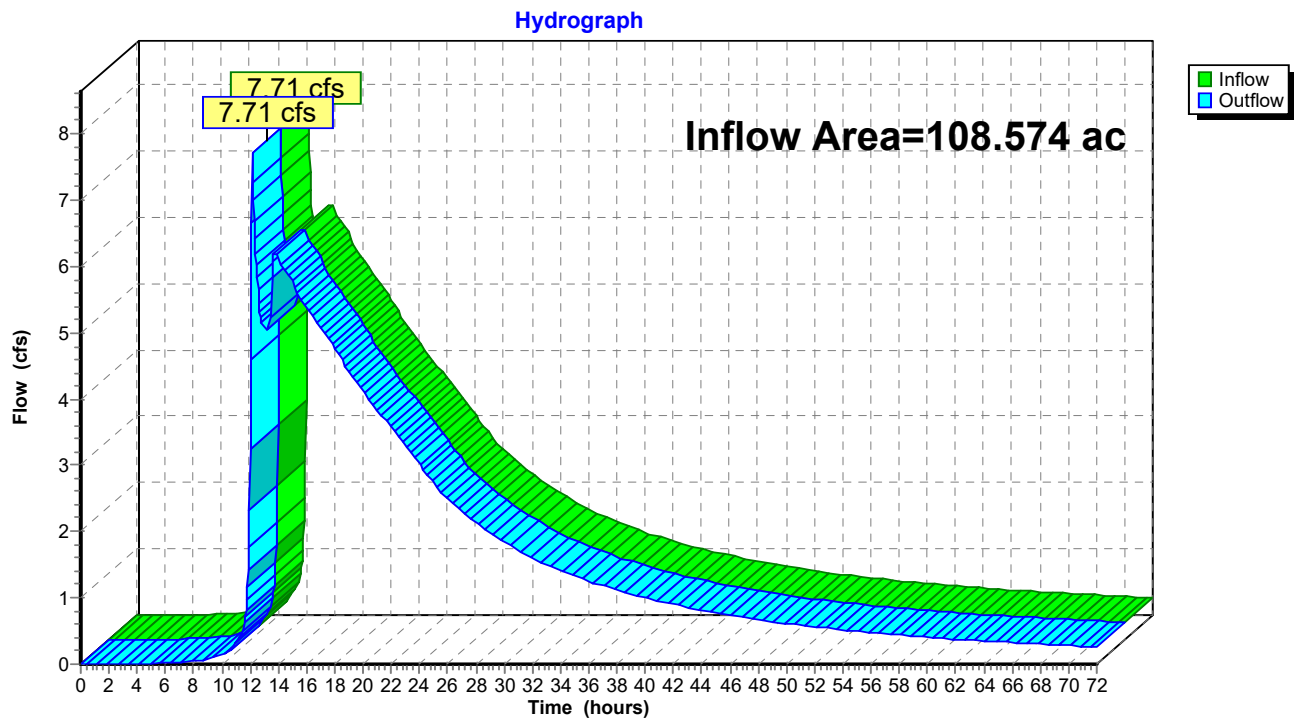
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PN: North Boundary**

**Summary for Reach POST: Overall Post-Development Runoff**

Inflow Area = 108.574 ac, 26.34% Impervious, Inflow Depth > 0.93" for 2-Year event  
Inflow = 7.71 cfs @ 12.16 hrs, Volume= 8.418 af  
Outflow = 7.71 cfs @ 12.16 hrs, Volume= 8.418 af, Atten= 0%, Lag= 0.0 min

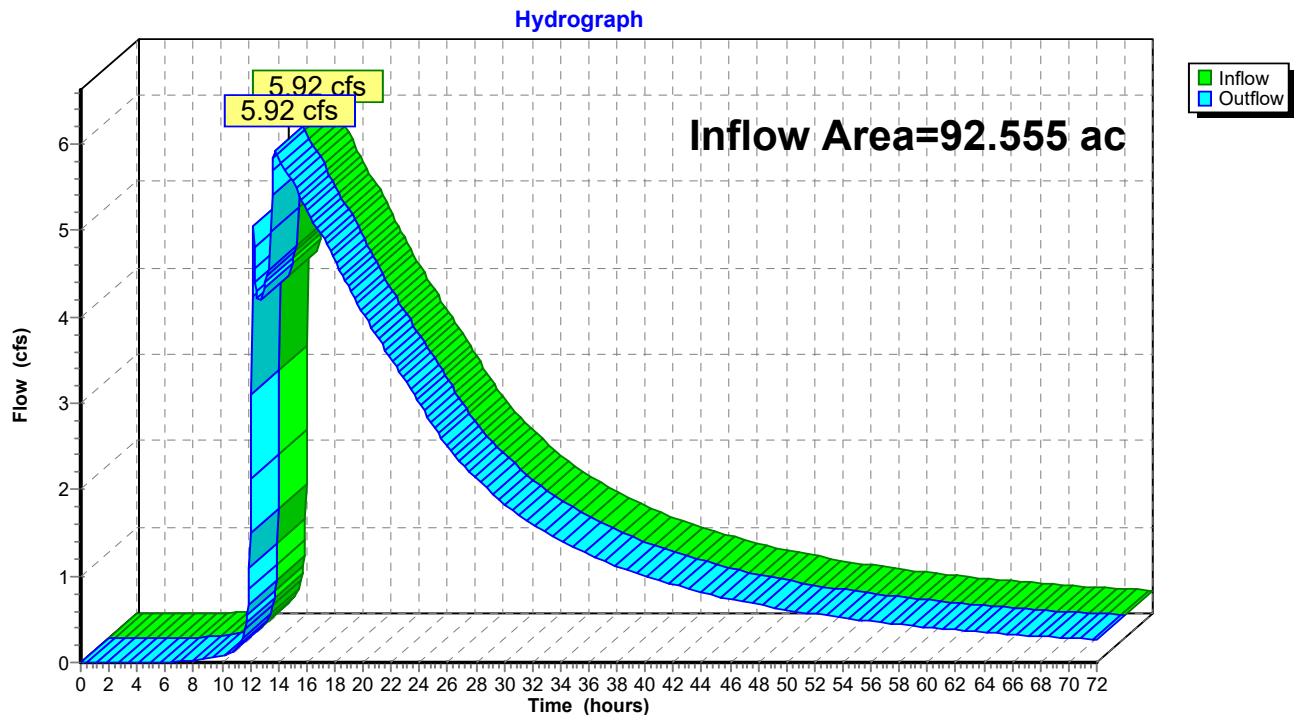
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach POST: Overall Post-Development Runoff**

**Summary for Reach PS: South Total (Ditch 44-9)**

Inflow Area = 92.555 ac, 29.58% Impervious, Inflow Depth > 1.05" for 2-Year event  
Inflow = 5.92 cfs @ 13.78 hrs, Volume= 8.110 af  
Outflow = 5.92 cfs @ 13.78 hrs, Volume= 8.110 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach POST : Overall Post-Development Runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

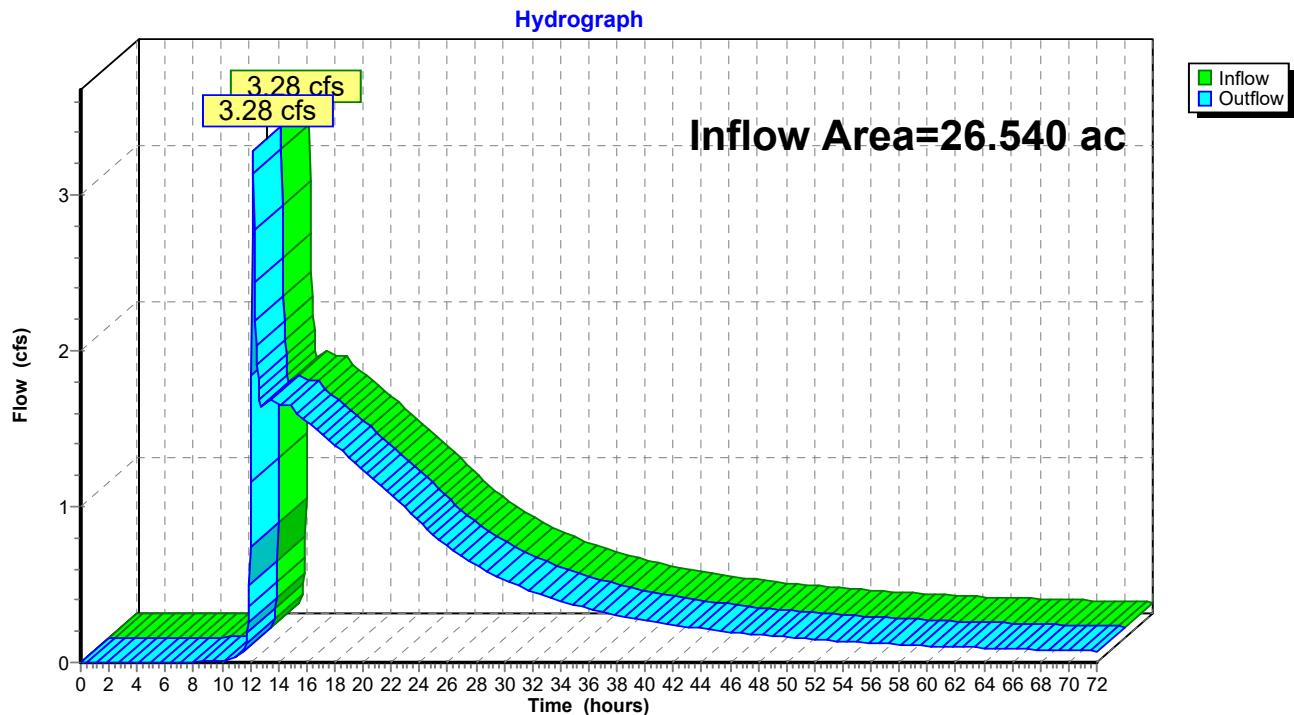
**Reach PS: South Total (Ditch 44-9)**



**Summary for Reach PSE-Q: SE Quarter (Private Ditch B)**

Inflow Area = 26.540 ac, 26.80% Impervious, Inflow Depth > 1.10" for 2-Year event  
Inflow = 3.28 cfs @ 12.22 hrs, Volume= 2.427 af  
Outflow = 3.28 cfs @ 12.22 hrs, Volume= 2.427 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PS : South Total (Ditch 44-9)

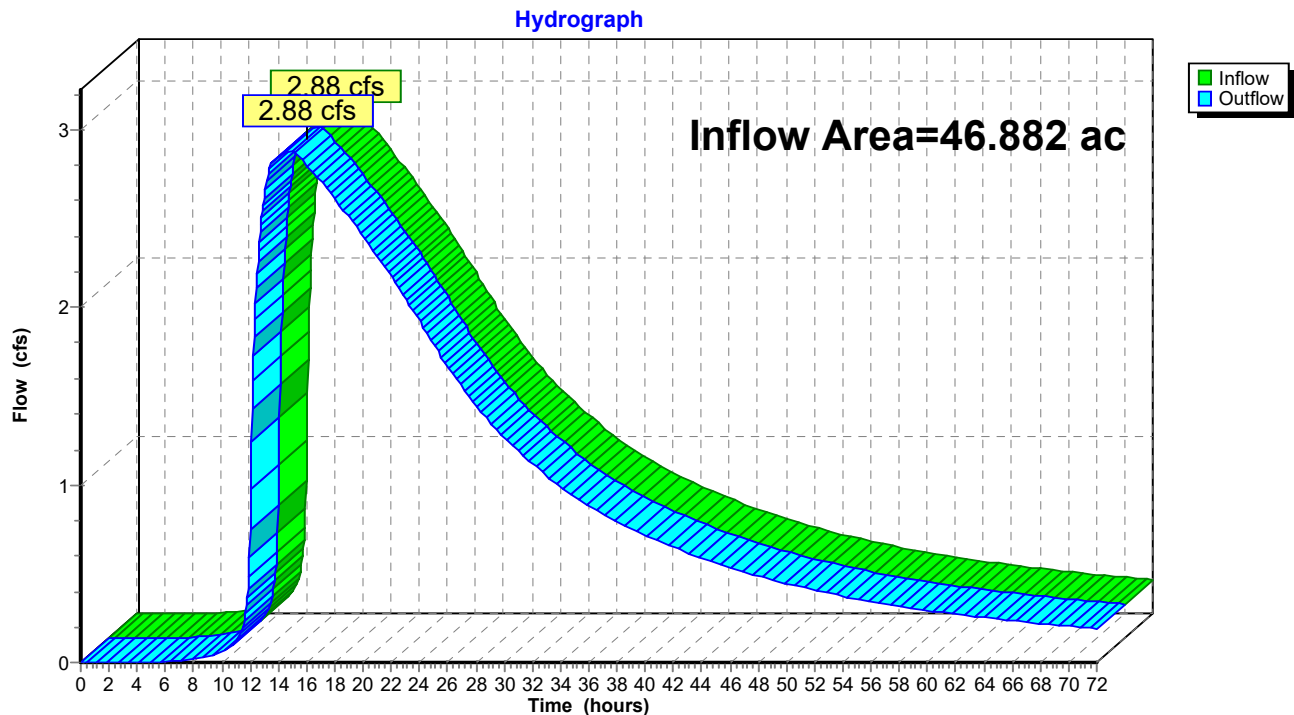
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PSE-Q: SE Quarter (Private Ditch B)**

**Summary for Reach PSE-QA: SE Quarter (Private Ditch A)**

Inflow Area = 46.882 ac, 39.18% Impervious, Inflow Depth > 1.30" for 2-Year event  
Inflow = 2.88 cfs @ 14.98 hrs, Volume= 5.064 af  
Outflow = 2.88 cfs @ 14.98 hrs, Volume= 5.064 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PS : South Total (Ditch 44-9)

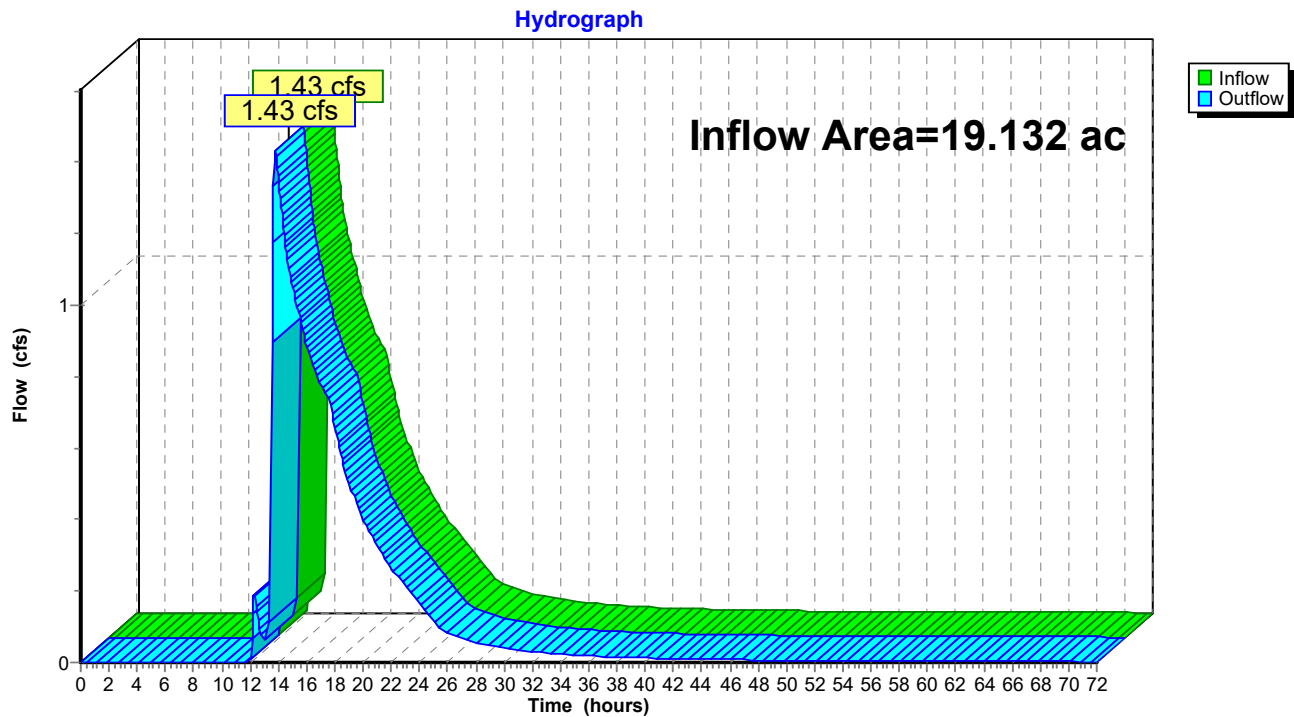
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PSE-QA: SE Quarter (Private Ditch A)**

**Summary for Reach PSW-Q: Southwest Discharge**

Inflow Area = 19.132 ac, 9.91% Impervious, Inflow Depth > 0.39" for 2-Year event  
Inflow = 1.43 cfs @ 13.78 hrs, Volume= 0.619 af  
Outflow = 1.43 cfs @ 13.78 hrs, Volume= 0.619 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PS : South Total (Ditch 44-9)

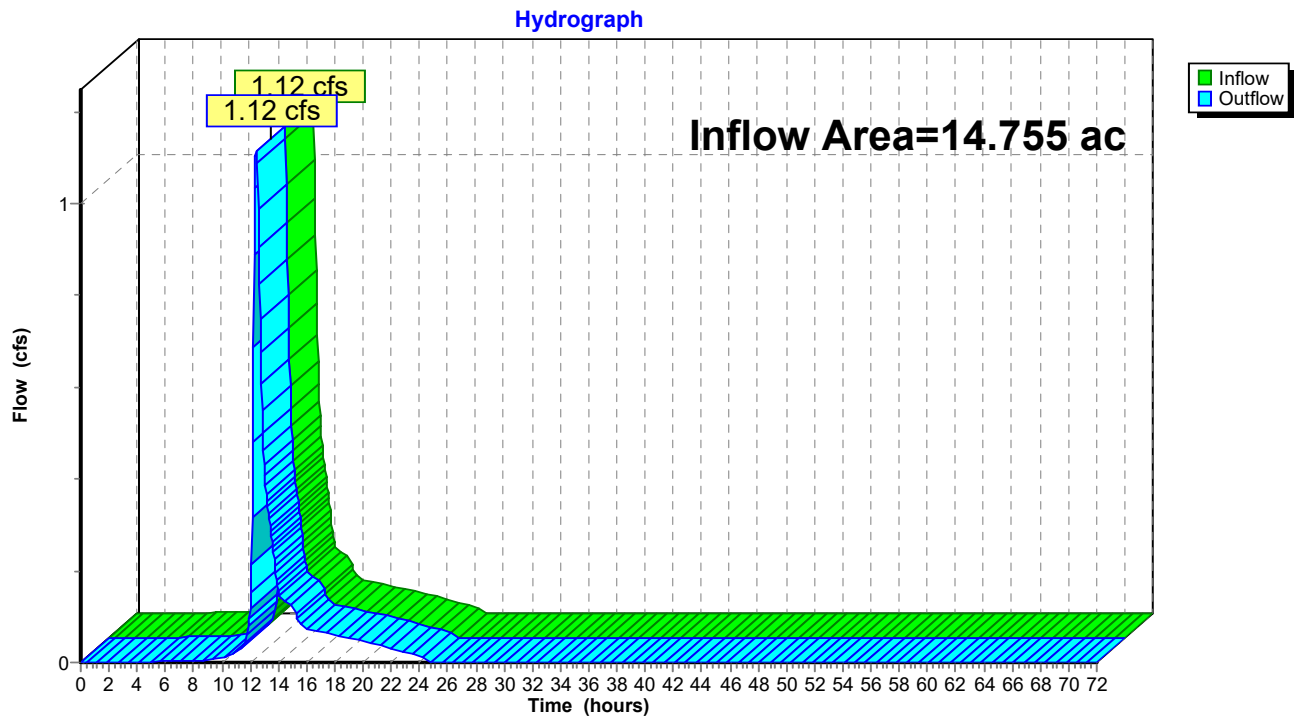
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PSW-Q: Southwest Discharge**

**Summary for Reach PW: West Boundary**

Inflow Area = 14.755 ac, 4.30% Impervious, Inflow Depth = 0.11" for 2-Year event  
Inflow = 1.12 cfs @ 12.43 hrs, Volume= 0.135 af  
Outflow = 1.12 cfs @ 12.43 hrs, Volume= 0.135 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach POST : Overall Post-Development Runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PW: West Boundary**

**LDP24010 Ham Lake**

MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Pond P-12:**

Inflow Area = 23.905 ac, 29.29% Impervious, Inflow Depth = 1.33" for 2-Year event  
 Inflow = 26.00 cfs @ 12.16 hrs, Volume= 2.647 af  
 Outflow = 1.51 cfs @ 15.06 hrs, Volume= 2.234 af, Atten= 94%, Lag= 174.3 min  
 Primary = 1.51 cfs @ 15.06 hrs, Volume= 2.234 af  
 Routed to Reach PSE-Q : SE Quarter (Private Ditch B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Starting Elev= 897.0' Surf.Area= 121,800 sf Storage= 560,450 cf  
 Peak Elev= 897.7' @ 15.06 hrs Surf.Area= 131,201 sf Storage= 643,032 cf (82,582 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 835.7 min ( 1,634.4 - 798.7 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 890.0' | 990,650 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 890.0               | 52,200               | 0                         | 0                         |
| 894.0               | 78,100               | 260,600                   | 260,600                   |
| 897.0               | 121,800              | 299,850                   | 560,450                   |
| 900.0               | 165,000              | 430,200                   | 990,650                   |

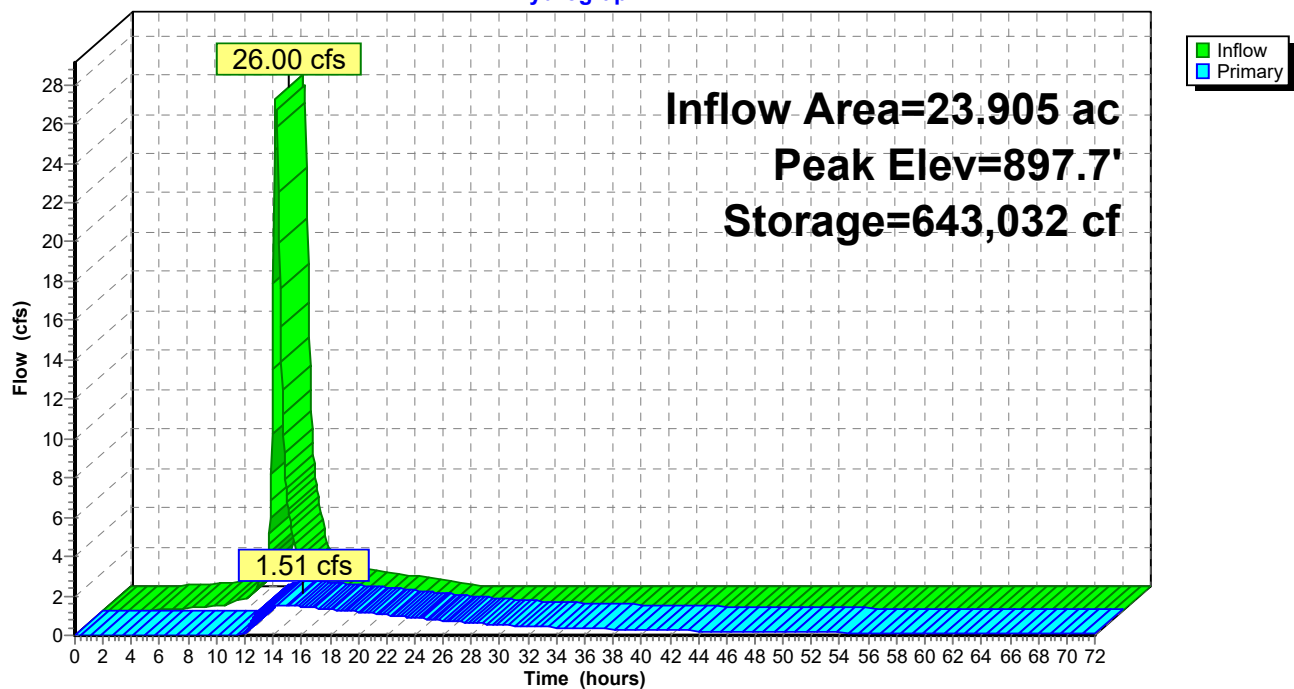
| Device | Routing  | Invert | Outlet Devices                                                                                                                                                                 |
|--------|----------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary  | 897.0' | <b>18.0" Round Culvert</b><br>L= 76.0' RCP, groove end projecting, Ke= 0.200<br>Inlet / Outlet Invert= 897.0' / 896.7' S= 0.0039 '/' Cc= 0.900<br>n= 0.013, Flow Area= 1.77 sf |
| #2     | Device 1 | 896.0' | <b>45.0" W x 6.0" H Vert. Orifice/Grate X 2.00</b> C= 0.600<br>Limited to weir flow at low heads                                                                               |
| #3     | Device 1 | 899.1' | <b>51.0" x 96.0" Horiz. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads                                                                                        |

**Primary OutFlow** Max=1.50 cfs @ 15.06 hrs HW=897.7' TW=0.0' (Dynamic Tailwater)

1=Culvert (Barrel Controls 1.50 cfs @ 3.00 fps)  
 2=Orifice/Grate (Passes 1.50 cfs of 14.59 cfs potential flow)  
 3=Orifice/Grate ( Controls 0.00 cfs)

**Pond P-12:**

**Hydrograph**



**LDP24010 Ham Lake**

MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Pond P-3A:**

Inflow Area = 27.311 ac, 43.03% Impervious, Inflow Depth = 1.58" for 2-Year event  
 Inflow = 55.18 cfs @ 12.06 hrs, Volume= 3.586 af  
 Outflow = 1.81 cfs @ 12.05 hrs, Volume= 3.124 af, Atten= 97%, Lag= 0.0 min  
 Primary = 1.81 cfs @ 12.05 hrs, Volume= 3.124 af  
 Routed to Pond P-3B :  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond P-3B :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Starting Elev= 898.0' Surf.Area= 311,600 sf Storage= 1,911,300 cf

Peak Elev= 898.4' @ 15.01 hrs Surf.Area= 316,980 sf Storage= 2,032,645 cf (121,345 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 999.2 min ( 1,775.6 - 776.4 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 890.0' | 2,908,800 cf  | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

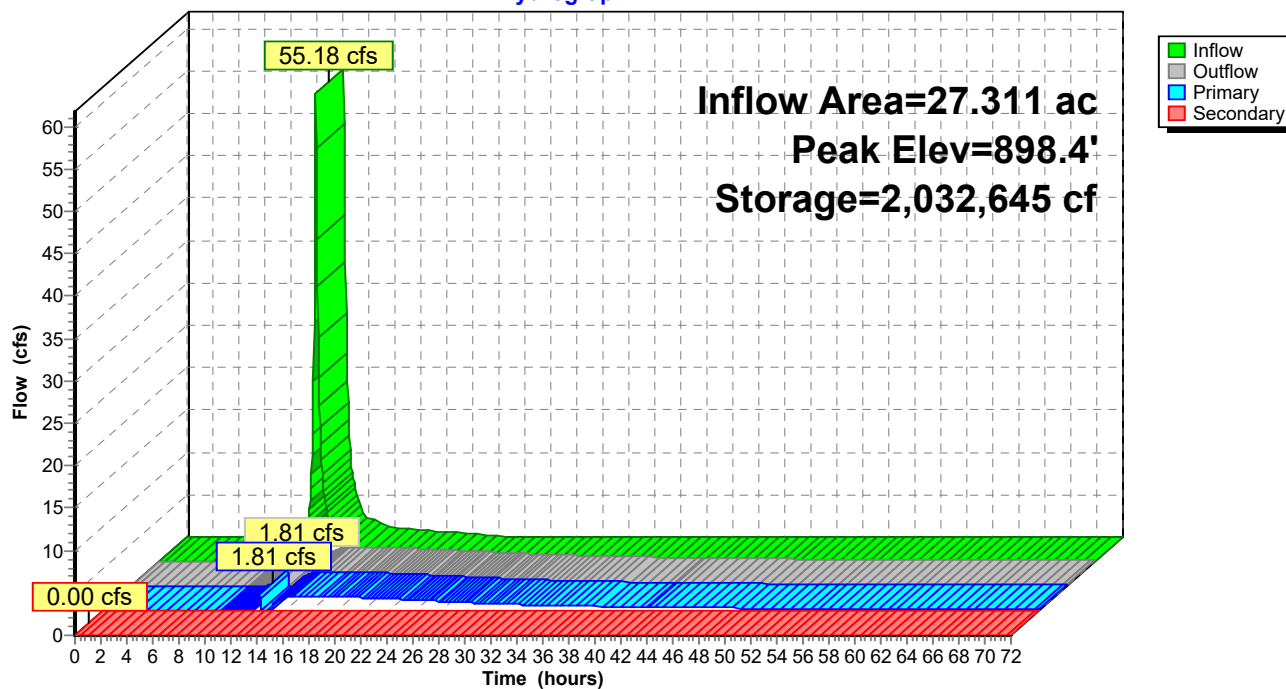
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 890.0               | 187,800              | 0                         | 0                         |
| 895.0               | 243,600              | 1,078,500                 | 1,078,500                 |
| 898.0               | 311,600              | 832,800                   | 1,911,300                 |
| 901.0               | 353,400              | 997,500                   | 2,908,800                 |

| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                                                   |
|--------|-----------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 895.0' | <b>24.0" Round Culvert</b><br>L= 20.0' RCP, groove end w/headwall, Ke= 0.200<br>Inlet / Outlet Invert= 895.0' / 895.0' S= 0.0000 ' S= 0.0000 ' Cc= 0.900<br>n= 0.012, Flow Area= 3.14 sf                                                                         |
| #2     | Secondary | 901.0' | <b>10.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=0.00 cfs @ 12.05 hrs HW=898.2' TW=898.2' (Dynamic Tailwater)↑ **1=Culvert** ( Controls 0.00 cfs)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=898.0' TW=898.0' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Pond P-3A:**

**Hydrograph**





**Summary for Pond P-3B:**

Inflow Area = 46.882 ac, 39.18% Impervious, Inflow Depth > 1.34" for 2-Year event  
 Inflow = 22.06 cfs @ 12.05 hrs, Volume= 5.219 af  
 Outflow = 2.88 cfs @ 14.98 hrs, Volume= 5.064 af, Atten= 87%, Lag= 176.0 min  
 Primary = 2.88 cfs @ 14.98 hrs, Volume= 5.064 af  
 Routed to Reach PSE-QA : SE Quarter (Private Ditch A)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Starting Elev= 898.0' Surf.Area= 104,200 sf Storage= 592,800 cf  
 Peak Elev= 898.4' @ 14.98 hrs Surf.Area= 108,281 sf Storage= 632,945 cf (40,145 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= 227.0 min ( 1,717.1 - 1,490.1 )

| Volume              | Invert               | Avail.Storage             | Storage Description                                        |
|---------------------|----------------------|---------------------------|------------------------------------------------------------|
| #1                  | 890.0'               | 954,000 cf                | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet)                                  |
| 890.0               | 44,000               | 0                         | 0                                                          |
| 898.0               | 104,200              | 592,800                   | 592,800                                                    |
| 901.0               | 136,600              | 361,200                   | 954,000                                                    |

| Device | Routing  | Invert | Outlet Devices                                                                                                                                                                                                                                                  |
|--------|----------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary  | 898.0' | <b>5.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |
| #2     | Device 1 | 897.0' | <b>45.0" W x 6.0" H Vert. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads                                                                                                                                                                       |
| #3     | Device 1 | 899.3' | <b>5.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=2.88 cfs @ 14.98 hrs HW=898.4' TW=0.0' (Dynamic Tailwater)

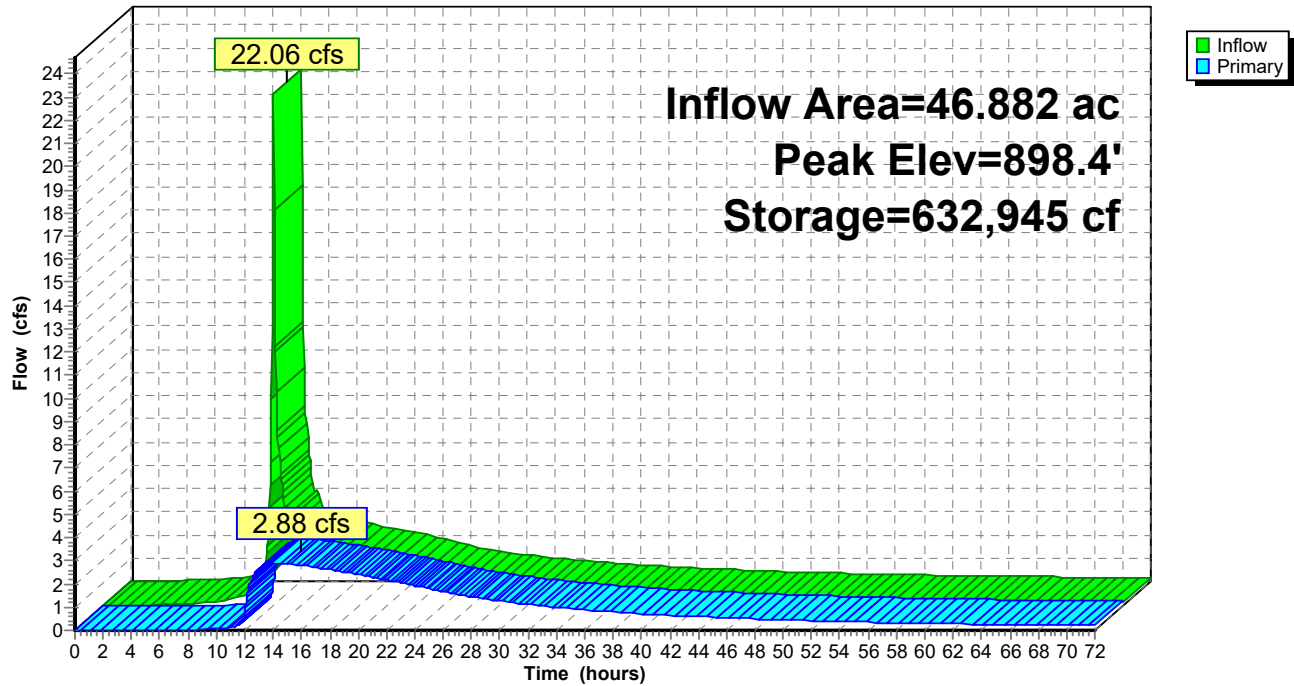
1=Broad-Crested Rectangular Weir (Weir Controls 2.88 cfs @ 1.53 fps)

2=Orifice/Grate (Passes 2.88 cfs of 5.55 cfs potential flow)

3=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Pond P-3B:**

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Pond P-6:**

Inflow Area = 4.739 ac, 32.83% Impervious, Inflow Depth = 1.39" for 2-Year event  
 Inflow = 7.32 cfs @ 12.23 hrs, Volume= 0.550 af  
 Outflow = 0.79 cfs @ 13.31 hrs, Volume= 0.538 af, Atten= 89%, Lag= 65.1 min  
 Primary = 0.79 cfs @ 13.31 hrs, Volume= 0.538 af  
 Routed to Pond PB6 : Wetland 6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Starting Elev= 898.0' Surf.Area= 19,200 sf Storage= 36,008 cf  
 Peak Elev= 898.7' @ 13.31 hrs Surf.Area= 20,780 sf Storage= 49,944 cf (13,936 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 312.7 min ( 1,106.0 - 793.3 )

| Volume              | Invert               | Avail.Storage             | Storage Description                                        |
|---------------------|----------------------|---------------------------|------------------------------------------------------------|
| #1                  | 895.0'               | 103,808 cf                | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet)                                  |
| 895.0               | 7,961                | 0                         | 0                                                          |
| 897.0               | 12,298               | 20,259                    | 20,259                                                     |
| 898.0               | 19,200               | 15,749                    | 36,008                                                     |
| 901.0               | 26,000               | 67,800                    | 103,808                                                    |

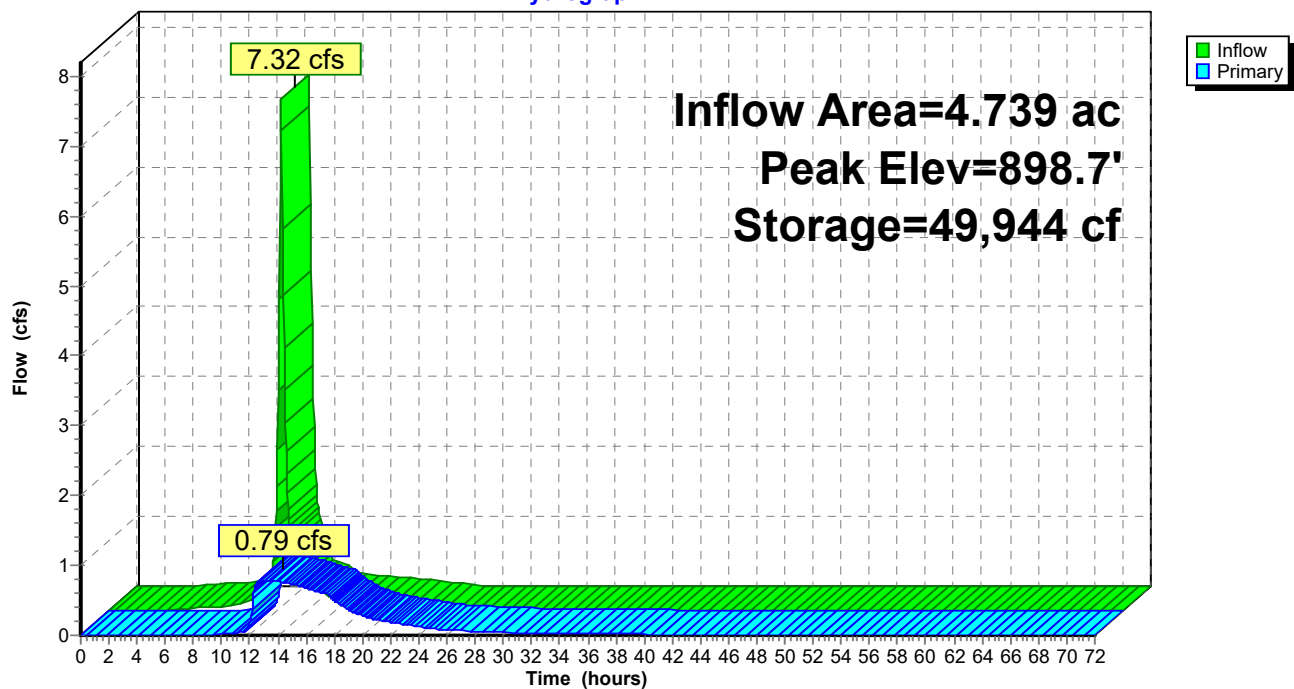
| Device | Routing  | Invert | Outlet Devices                                                                                                                                                                           |
|--------|----------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary  | 898.0' | <b>15.0" Round Culvert</b><br>L= 40.0' RCP, groove end projecting, Ke= 0.200<br>Inlet / Outlet Invert= 898.0' / 897.7' S= 0.0075 ' S= 0.0075 ' Cc= 0.900<br>n= 0.013, Flow Area= 1.23 sf |
| #2     | Device 1 | 897.0' | <b>6.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads                                                                                                               |
| #3     | Device 1 | 900.6' | <b>51.0" x 96.0" Horiz. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads                                                                                                  |

**Primary OutFlow** Max=0.79 cfs @ 13.31 hrs HW=898.7' TW=896.1' (Dynamic Tailwater)

- 1=Culvert (Passes 0.79 cfs of 1.77 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.79 cfs @ 4.02 fps)
- 3=Orifice/Grate ( Controls 0.00 cfs)

**Pond P-6:**

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Pond P-8:**

Inflow Area = 9.576 ac, 25.07% Impervious, Inflow Depth = 1.18" for 2-Year event  
 Inflow = 12.50 cfs @ 12.26 hrs, Volume= 0.939 af  
 Outflow = 2.54 cfs @ 12.63 hrs, Volume= 0.853 af, Atten= 80%, Lag= 22.3 min  
 Primary = 2.54 cfs @ 12.63 hrs, Volume= 0.853 af  
 Routed to Pond P-3B :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Starting Elev= 898.0' Surf.Area= 57,900 sf Storage= 184,000 cf  
 Peak Elev= 898.4' @ 15.06 hrs Surf.Area= 61,508 sf Storage= 206,595 cf (22,595 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 686.0 min ( 1,487.1 - 801.1 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 893.0' | 400,600 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 893.0               | 15,700               | 0                         | 0                         |
| 898.0               | 57,900               | 184,000                   | 184,000                   |
| 901.0               | 86,500               | 216,600                   | 400,600                   |

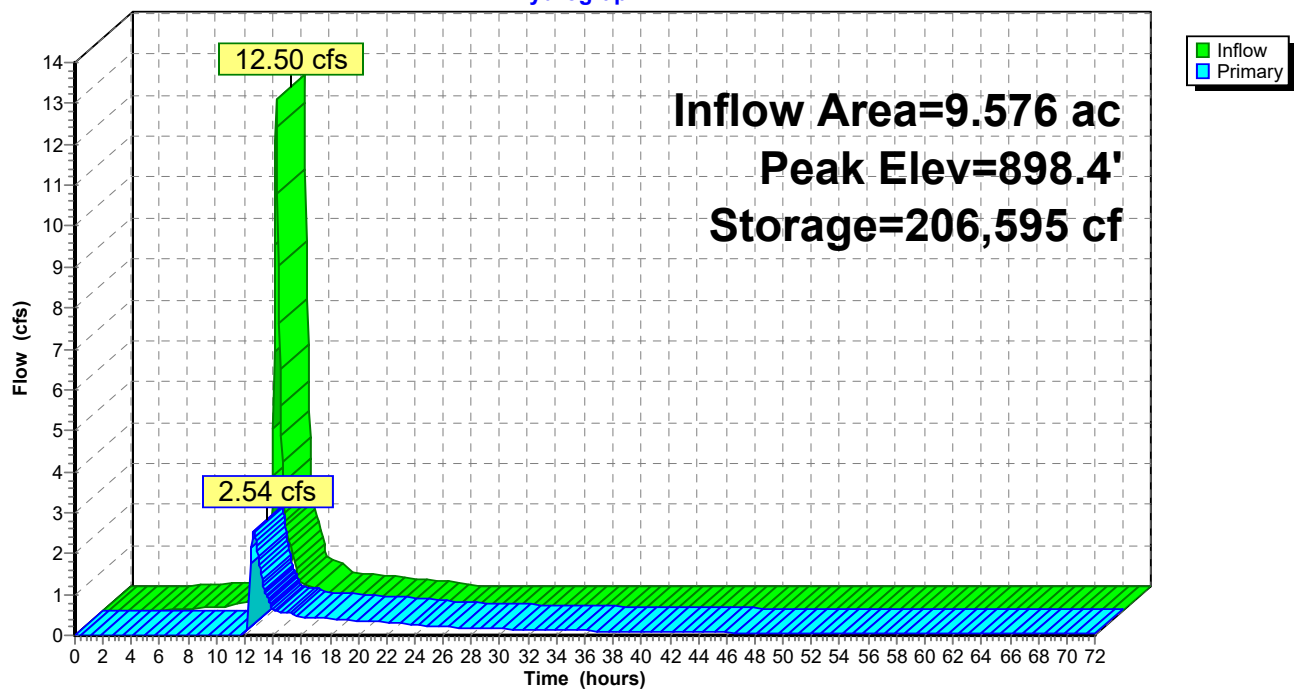
| Device | Routing | Invert | Outlet Devices                                                                                                                                                                                                                                                   |
|--------|---------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 898.0' | <b>10.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=2.39 cfs @ 12.63 hrs HW=898.4' TW=898.3' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir**(Weir Controls 2.39 cfs @ 0.66 fps)

**Pond P-8:**

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Pond PB1A: Wetland 1A**

Inflow Area = 10.463 ac, 2.37% Impervious, Inflow Depth = 0.36" for 2-Year event  
 Inflow = 2.72 cfs @ 12.34 hrs, Volume= 0.312 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach PN : North Boundary  
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond P-3A :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 899.6' @ 25.05 hrs Surf.Area= 45,511 sf Storage= 13,572 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 899.0' | 2,338,451 cf  | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

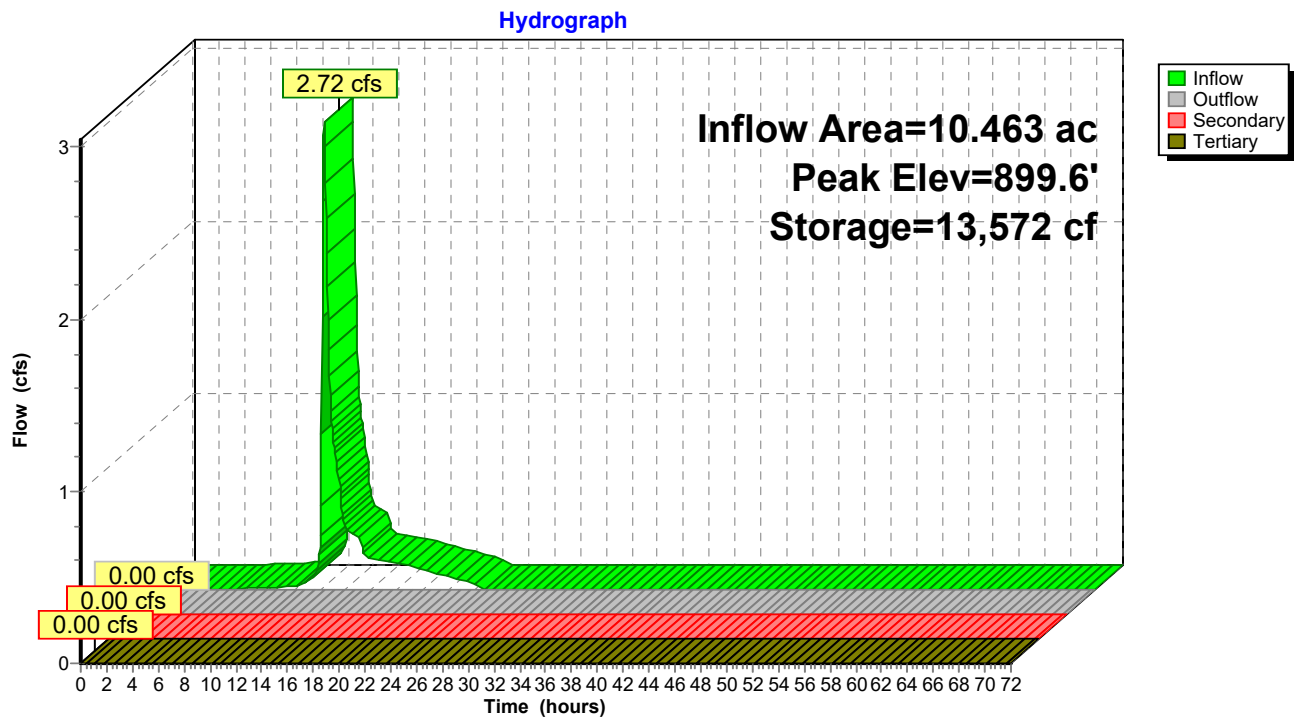
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 899.0               | 1,799                | 0                         | 0                         |
| 900.0               | 77,989               | 39,894                    | 39,894                    |
| 901.0               | 193,333              | 135,661                   | 175,555                   |
| 902.0               | 368,575              | 280,954                   | 456,509                   |
| 903.0               | 576,105              | 472,340                   | 928,849                   |
| 904.0               | 715,414              | 645,760                   | 1,574,609                 |
| 905.0               | 812,270              | 763,842                   | 2,338,451                 |

| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                              |
|--------|-----------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Secondary | 902.8' | <b>100.0' long x 5.0' breadth To North</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |
| #2     | Tertiary  | 900.0' | <b>100.0' long x 10.0' breadth TO P-3A</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                                                                                        |

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=899.0' TW=0.0' (Dynamic Tailwater)  
 ↑1=To North ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=899.0' TW=898.0' (Dynamic Tailwater)  
 ↑2=TO P-3A ( Controls 0.00 cfs)

**Pond PB1A: Wetland 1A**





**LDP24010 Ham Lake**

MSE 24-hr 3 2-Year Rainfall=2.83"

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**Summary for Pond PB1B: Wetland 1B**

Inflow Area = 2.259 ac, 9.77% Impervious, Inflow Depth = 0.75" for 2-Year event  
 Inflow = 1.34 cfs @ 12.43 hrs, Volume= 0.142 af  
 Outflow = 1.34 cfs @ 12.43 hrs, Volume= 0.142 af, Atten= 0%, Lag= 0.4 min  
 Primary = 1.34 cfs @ 12.43 hrs, Volume= 0.142 af  
 Routed to Pond PB1C : Wetland 1C

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 901.5' @ 12.43 hrs Surf.Area= 842 sf Storage= 22 cf

Plug-Flow detention time= 0.2 min calculated for 0.142 af (100% of inflow)  
 Center-of-Mass det. time= 0.2 min ( 836.4 - 836.2 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 901.5' | 194,422 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

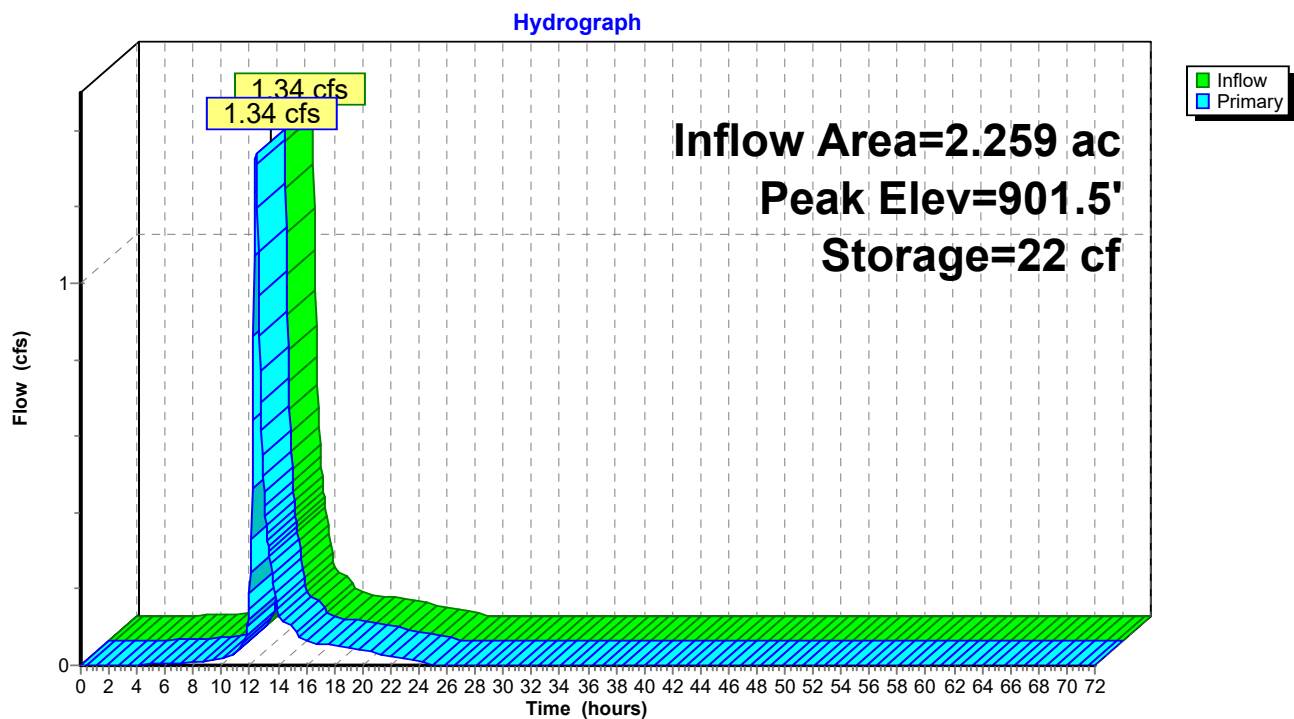
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 901.5               | 55                   | 0                         | 0                         |
| 901.6               | 1,670                | 86                        | 86                        |
| 901.7               | 5,365                | 352                       | 438                       |
| 901.8               | 9,245                | 730                       | 1,168                     |
| 901.9               | 13,840               | 1,154                     | 2,323                     |
| 902.0               | 32,292               | 2,307                     | 4,629                     |
| 903.0               | 54,790               | 43,541                    | 48,170                    |
| 904.0               | 71,685               | 63,238                    | 111,408                   |
| 905.0               | 94,343               | 83,014                    | 194,422                   |

| Device | Routing | Invert | Outlet Devices                                                                                                                                                             |
|--------|---------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 901.5' | <b>50.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=1.33 cfs @ 12.43 hrs HW=901.5' TW=900.7' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 1.33 cfs @ 0.55 fps)

**Pond PB1B: Wetland 1B**



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**Summary for Pond PB1C: Wetland 1C**

Inflow Area = 11.034 ac, 4.50% Impervious, Inflow Depth = 0.45" for 2-Year event  
 Inflow = 3.12 cfs @ 12.50 hrs, Volume= 0.416 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach PW : West Boundary  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 1C&PB-13 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 901.4' @ 25.85 hrs Surf.Area= 32,810 sf Storage= 18,117 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 900.1' | 577,352 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 900.1               | 174                  | 0                         | 0                         |
| 900.2               | 975                  | 57                        | 57                        |
| 900.5               | 5,734                | 1,006                     | 1,064                     |
| 901.0               | 20,570               | 6,576                     | 7,640                     |
| 901.5               | 36,160               | 14,183                    | 21,822                    |
| 901.8               | 83,591               | 17,963                    | 39,785                    |
| 902.0               | 90,000               | 17,359                    | 57,144                    |
| 903.0               | 100,000              | 95,000                    | 152,144                   |
| 904.0               | 233,558              | 166,779                   | 318,923                   |
| 905.0               | 283,299              | 258,429                   | 577,352                   |

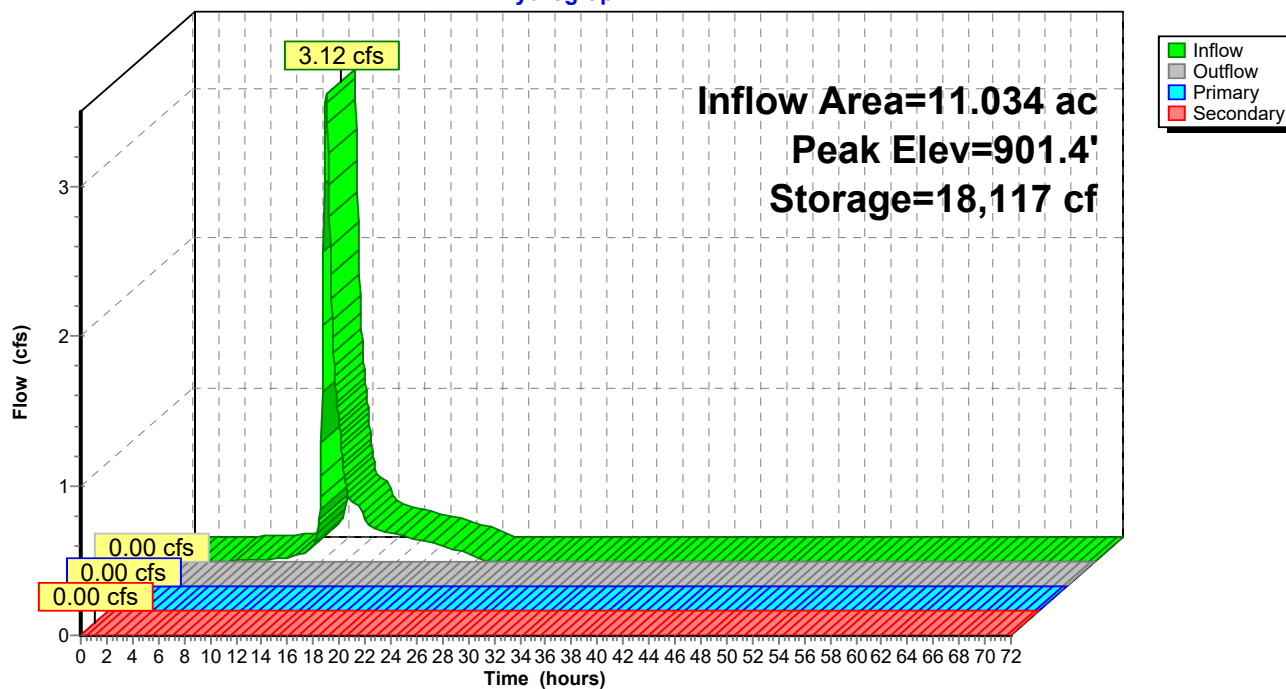
| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                             |
|--------|-----------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 901.7' | <b>100.0' long x 5.0' breadth To West</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |
| #2     | Secondary | 902.1' | <b>10.0' long x 5.0' breadth TO PB-13</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=900.1' TW=0.0' (Dynamic Tailwater)  
 ↑1=To West ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=900.1' TW=898.3' (Dynamic Tailwater)  
 ↑2=TO PB-13 ( Controls 0.00 cfs)

# Pond PB1C: Wetland 1C

Hydrograph



**Summary for Pond PB6: Wetland 6**

Inflow Area = 18.280 ac, 10.37% Impervious, Inflow Depth > 0.51" for 2-Year event  
 Inflow = 1.74 cfs @ 13.06 hrs, Volume= 0.776 af  
 Outflow = 1.40 cfs @ 13.79 hrs, Volume= 0.597 af, Atten= 19%, Lag= 43.7 min  
 Primary = 1.40 cfs @ 13.79 hrs, Volume= 0.597 af  
 Routed to Reach PSW-Q : Southwest Discharge

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 896.1' @ 13.79 hrs Surf.Area= 24,897 sf Storage= 8,370 cf

Plug-Flow detention time= 248.1 min calculated for 0.597 af (77% of inflow)  
 Center-of-Mass det. time= 95.3 min ( 1,142.2 - 1,046.9 )

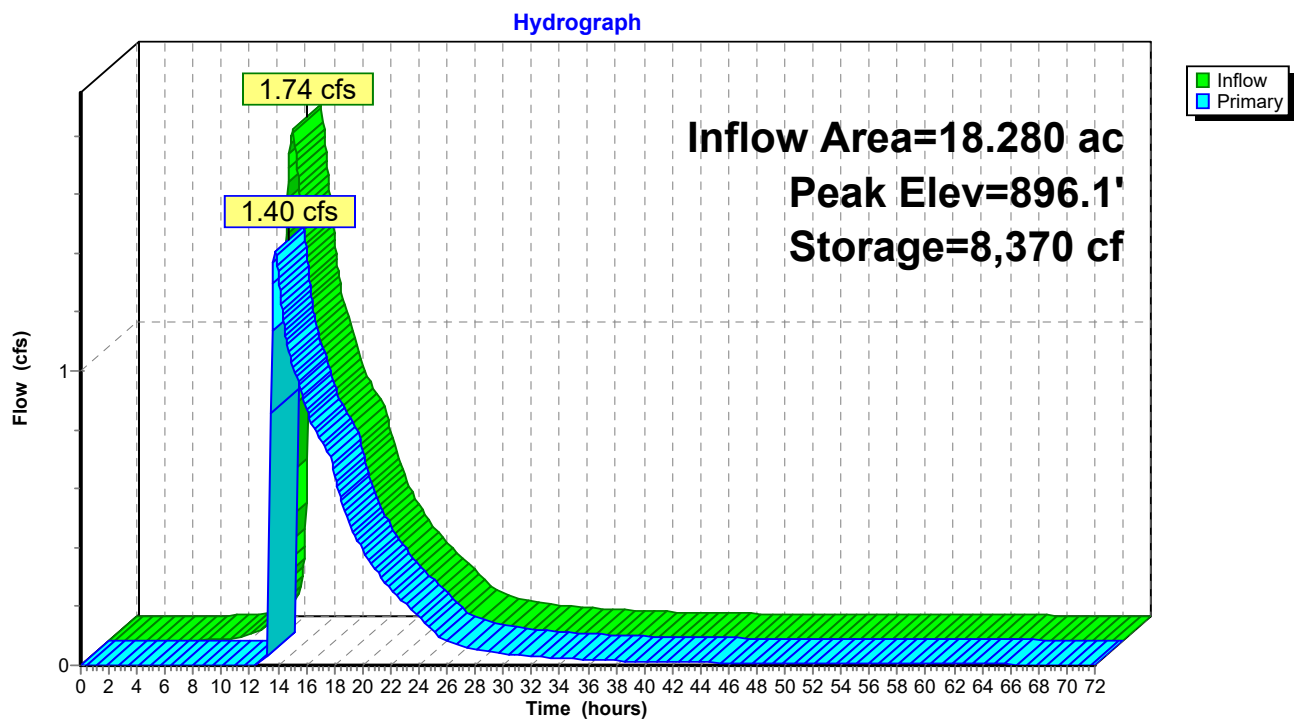
| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 895.0' | 227,572 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 895.0               | 500                  | 0                         | 0                         |
| 896.0               | 11,662               | 6,081                     | 6,081                     |
| 897.0               | 117,362              | 64,512                    | 70,593                    |
| 898.0               | 196,595              | 156,979                   | 227,572                   |

| Device | Routing | Invert | Outlet Devices                                                                                                                                                                                                                                                    |
|--------|---------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 896.1' | <b>150.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=1.40 cfs @ 13.79 hrs HW=896.1' TW=0.0' (Dynamic Tailwater)  
 ↑1=**Broad-Crested Rectangular Weir**(Weir Controls 1.40 cfs @ 0.37 fps)

**Pond PB6: Wetland 6**



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**Summary for Pond PB7A: Wetland 7A**

Inflow Area = 5.178 ac, 4.88% Impervious, Inflow Depth = 0.17" for 2-Year event  
 Inflow = 0.66 cfs @ 12.36 hrs, Volume= 0.075 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond PB6 : Wetland 6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 898.1' @ 25.20 hrs Surf.Area= 11,050 sf Storage= 3,287 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 897.5' | 24,008 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 897.5               | 1,042                | 0                         | 0                         |
| 898.0               | 9,707                | 2,687                     | 2,687                     |
| 899.0               | 32,934               | 21,321                    | 24,008                    |

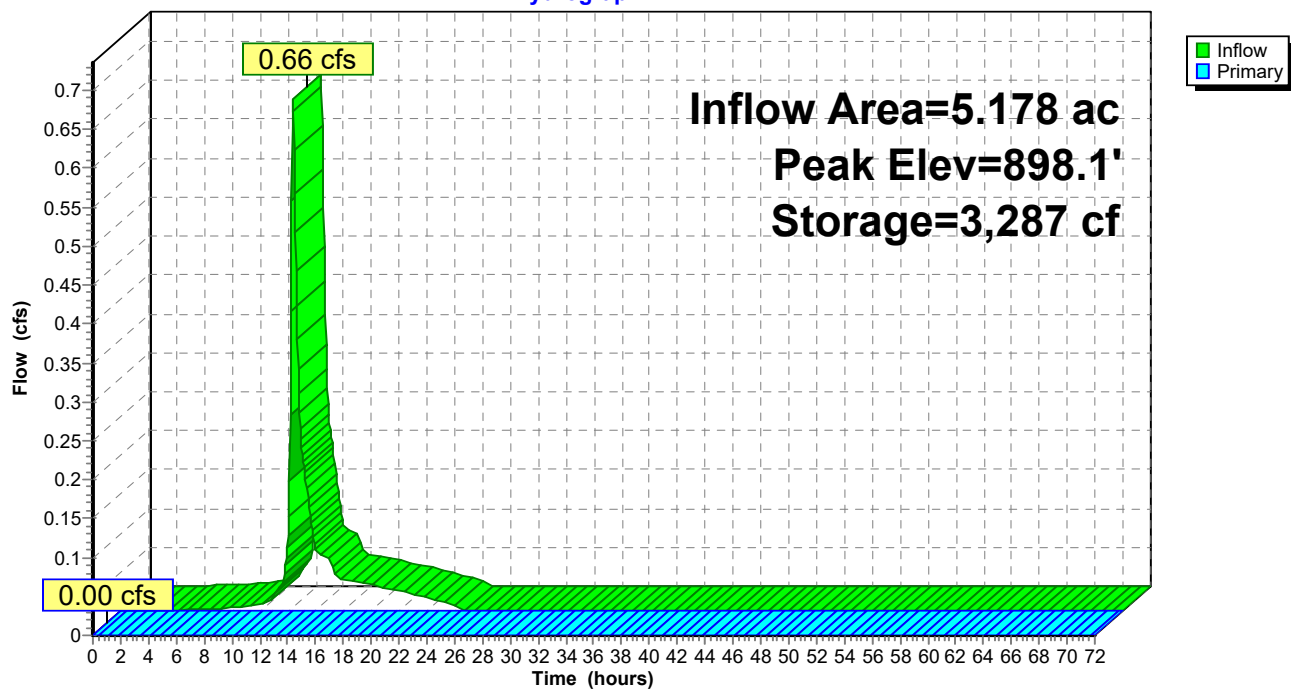
| Device | Routing | Invert | Outlet Devices                                                                                                                                      |
|--------|---------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 898.2' | <b>100.0' long x 10.0' breadth To PB6</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=897.5' TW=895.0' (Dynamic Tailwater)

↑ **1=To PB6** ( Controls 0.00 cfs)

**Pond PB7A: Wetland 7A**

Hydrograph





**Summary for Pond PB7B: Wetland 7B**

Inflow Area = 3.023 ac, 4.72% Impervious, Inflow Depth = 0.37" for 2-Year event  
 Inflow = 1.12 cfs @ 12.21 hrs, Volume= 0.092 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Pond PB7A : Wetland 7A  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Reach P7B&D :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 898.2' @ 24.60 hrs Surf.Area= 17,112 sf Storage= 4,019 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 897.7' | 32,037 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 897.7               | 330                  | 0                         | 0                         |
| 898.0               | 7,784                | 1,217                     | 1,217                     |
| 898.5               | 28,502               | 9,072                     | 10,289                    |
| 899.0               | 58,492               | 21,749                    | 32,037                    |

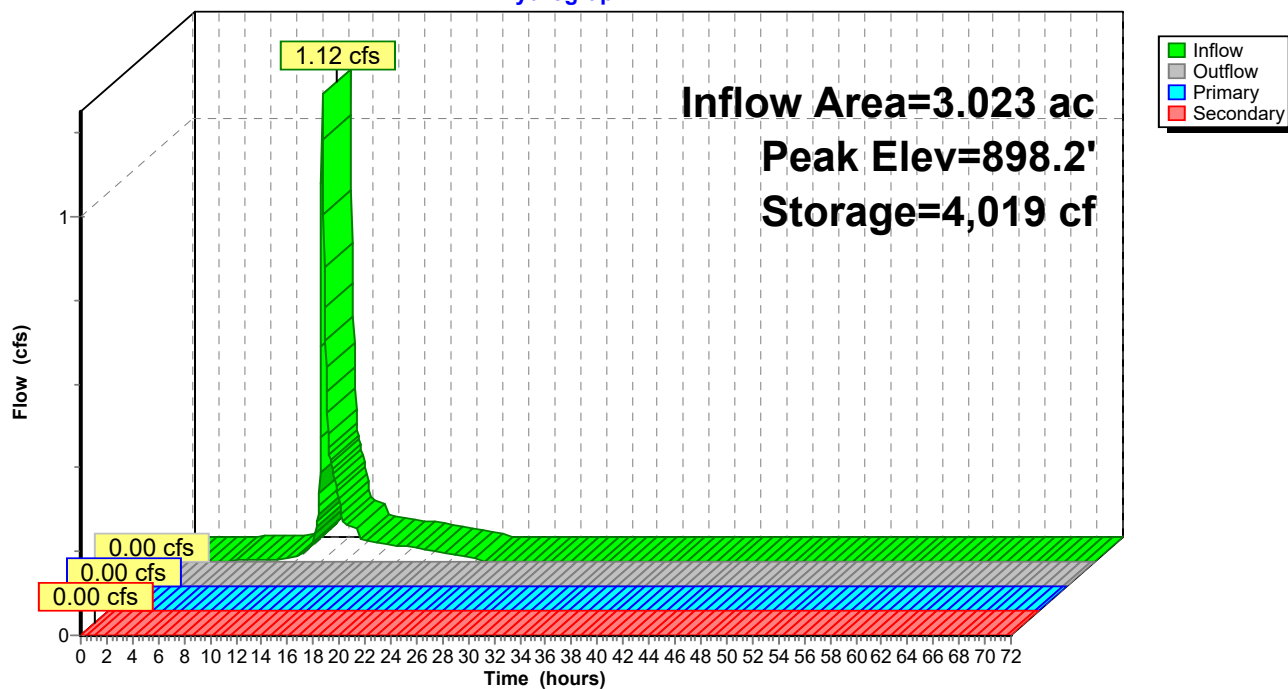
| Device | Routing   | Invert | Outlet Devices                                                                                                                                                              |
|--------|-----------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 898.3' | <b>50.0' long x 10.0' breadth TO EB-7A</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                        |
| #2     | Secondary | 899.7' | <b>100.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=897.7' TW=897.5' (Dynamic Tailwater)  
 ↑ **1=TO EB-7A** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=897.7' TW=0.0' (Dynamic Tailwater)  
 ↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Pond PB7B: Wetland 7B**

Hydrograph



**Summary for Pond PB7C: Wetland 7C**

Inflow Area = 0.449 ac, 0.00% Impervious, Inflow Depth = 0.30" for 2-Year event  
 Inflow = 0.16 cfs @ 12.15 hrs, Volume= 0.011 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond PB7B : Wetland 7B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 898.3' @ 24.35 hrs Surf.Area= 1,694 sf Storage= 493 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

| Volume              | Invert               | Avail.Storage             | Storage Description                                        |
|---------------------|----------------------|---------------------------|------------------------------------------------------------|
| #1                  | 897.7'               | 5,675 cf                  | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet)                                  |
| 897.7               | 122                  | 0                         | 0                                                          |
| 898.0               | 753                  | 131                       | 131                                                        |
| 898.5               | 2,342                | 774                       | 905                                                        |
| 899.0               | 4,602                | 1,736                     | 2,641                                                      |
| 899.5               | 7,533                | 3,034                     | 5,675                                                      |

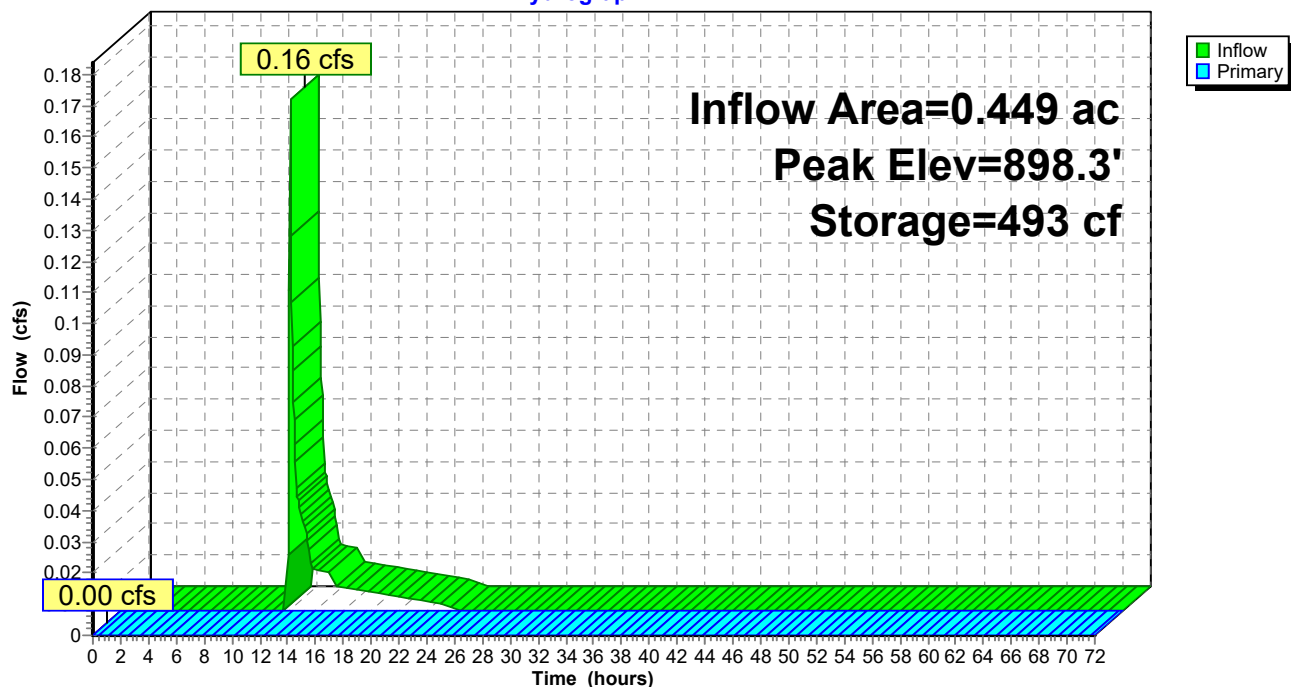
| Device | Routing | Invert | Outlet Devices                                                                                                                                                             |
|--------|---------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 899.6' | <b>50.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=897.7' TW=897.7' (Dynamic Tailwater)

↑1=**Broad-Crested Rectangular Weir**( Controls 0.00 cfs)

**Pond PB7C: Wetland 7C**

Hydrograph



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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

|                            |                                                                                                                                            |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SubcatchmentPB-10:</b>  | Runoff Area=44,749 sf 5.36% Impervious Runoff Depth=1.87"<br>Flow Length=394' Tc=18.2 min CN=WQ Runoff=2.19 cfs 0.160 af                   |
| <b>SubcatchmentPB-12:</b>  | Runoff Area=612,303 sf 24.33% Impervious Runoff Depth=2.29"<br>Flow Length=540' Tc=19.1 min CN=WQ Runoff=34.67 cfs 2.686 af                |
| <b>SubcatchmentPB-13A:</b> | Runoff Area=24,410 sf 15.54% Impervious Runoff Depth=1.75"<br>Tc=15.0 min CN=WQ Runoff=1.16 cfs 0.082 af                                   |
| <b>SubcatchmentPB-13B:</b> | Runoff Area=122,759 sf 9.61% Impervious Runoff Depth=1.97"<br>Flow Length=430' Tc=16.8 min CN=WQ Runoff=6.54 cfs 0.462 af                  |
| <b>SubcatchmentPB-14A:</b> | Runoff Area=89,189 sf 8.07% Impervious Runoff Depth=1.93"<br>Flow Length=430' Tc=19.4 min CN=WQ Runoff=4.34 cfs 0.330 af                   |
| <b>SubcatchmentPB-14B:</b> | Runoff Area=152,501 sf 7.87% Impervious Runoff Depth=1.93"<br>Flow Length=447' Tc=39.3 min CN=WQ Runoff=4.97 cfs 0.562 af                  |
| <b>SubcatchmentPB-15A:</b> | Runoff Area=37,143 sf 0.00% Impervious Runoff Depth=0.92"<br>Flow Length=256' Tc=13.9 min CN=61 Runoff=0.92 cfs 0.065 af                   |
| <b>SubcatchmentPB-15B:</b> | Runoff Area=68,682 sf 0.00% Impervious Runoff Depth=1.75"<br>Flow Length=256' Tc=13.9 min CN=74 Runoff=3.63 cfs 0.230 af                   |
| <b>SubcatchmentPB-1A:</b>  | Runoff Area=455,779 sf 2.37% Impervious Runoff Depth=0.99"<br>Flow Length=470' Tc=17.8 min CN=WQ Runoff=10.64 cfs 0.867 af                 |
| <b>SubcatchmentPB-1B:</b>  | Runoff Area=98,423 sf 9.77% Impervious Runoff Depth=1.59"<br>Flow Length=240' Tc=27.7 min CN=WQ Runoff=3.11 cfs 0.300 af                   |
| <b>SubcatchmentPB-1C:</b>  | Runoff Area=382,215 sf 3.14% Impervious Runoff Depth=1.02"<br>Flow Length=616' Slope=0.0080 '/' Tc=31.2 min CN=WQ Runoff=6.68 cfs 0.744 af |
| <b>SubcatchmentPB-1D:</b>  | Runoff Area=162,084 sf 3.70% Impervious Runoff Depth=1.11"<br>Tc=25.0 min CN=WQ Runoff=3.60 cfs 0.346 af                                   |
| <b>SubcatchmentPB-2A:</b>  | Runoff Area=32,450 sf 11.09% Impervious Runoff Depth=2.00"<br>Tc=10.0 min CN=WQ Runoff=2.18 cfs 0.124 af                                   |
| <b>SubcatchmentPB-2B:</b>  | Runoff Area=21,744 sf 2.30% Impervious Runoff Depth=1.80"<br>Tc=10.0 min CN=WQ Runoff=1.35 cfs 0.075 af                                    |
| <b>SubcatchmentPB-3A:</b>  | Runoff Area=412,473 sf 83.93% Impervious Runoff Depth=3.62"<br>Tc=0.0 min CN=WQ Runoff=60.93 cfs 2.855 af                                  |
| <b>SubcatchmentPB-3B:</b>  | Runoff Area=166,565 sf 100.00% Impervious Runoff Depth=3.97"<br>Tc=0.0 min CN=98 Runoff=26.63 cfs 1.267 af                                 |

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|                           |                                                                                                                             |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>SubcatchmentPB-4A:</b> | Runoff Area=103,255 sf 6.97% Impervious Runoff Depth=1.91"<br>Tc=10.0 min CN=WQ Runoff=6.70 cfs 0.377 af                    |
| <b>SubcatchmentPB-4B:</b> | Runoff Area=63,386 sf 3.79% Impervious Runoff Depth=1.84"<br>Tc=10.0 min CN=WQ Runoff=4.00 cfs 0.223 af                     |
| <b>SubcatchmentPB-4C:</b> | Runoff Area=64,398 sf 7.69% Impervious Runoff Depth=1.16"<br>Flow Length=200' Tc=15.8 min CN=WQ Runoff=1.86 cfs 0.142 af    |
| <b>SubcatchmentPB-4D:</b> | Runoff Area=66,433 sf 4.12% Impervious Runoff Depth=1.05"<br>Flow Length=266' Tc=15.5 min CN=WQ Runoff=1.75 cfs 0.133 af    |
| <b>SubcatchmentPB-5A:</b> | Runoff Area=301,807 sf 7.55% Impervious Runoff Depth=1.92"<br>Tc=10.0 min CN=WQ Runoff=19.68 cfs 1.109 af                   |
| <b>SubcatchmentPB-5B:</b> | Runoff Area=141,059 sf 6.81% Impervious Runoff Depth=1.90"<br>Tc=10.0 min CN=WQ Runoff=9.14 cfs 0.514 af                    |
| <b>SubcatchmentPB-6A:</b> | Runoff Area=53,054 sf 58.33% Impervious Runoff Depth=3.05"<br>Tc=15.0 min CN=WQ Runoff=4.33 cfs 0.309 af                    |
| <b>SubcatchmentPB-6B:</b> | Runoff Area=339,893 sf 0.00% Impervious Runoff Depth=0.92"<br>Flow Length=513' Tc=61.2 min CN=61 Runoff=3.48 cfs 0.599 af   |
| <b>SubcatchmentPB-7A:</b> | Runoff Area=93,846 sf 5.11% Impervious Runoff Depth=1.08"<br>Flow Length=212' Tc=20.1 min CN=WQ Runoff=2.22 cfs 0.193 af    |
| <b>SubcatchmentPB-7B:</b> | Runoff Area=112,159 sf 5.54% Impervious Runoff Depth=1.09"<br>Tc=10.0 min CN=WQ Runoff=3.78 cfs 0.234 af                    |
| <b>SubcatchmentPB-7C:</b> | Runoff Area=19,541 sf 0.00% Impervious Runoff Depth=0.92"<br>Tc=5.0 min CN=61 Runoff=0.71 cfs 0.034 af                      |
| <b>SubcatchmentPB-7D:</b> | Runoff Area=46,128 sf 10.41% Impervious Runoff Depth=1.98"<br>Tc=10.0 min CN=WQ Runoff=3.08 cfs 0.175 af                    |
| <b>SubcatchmentPB-8:</b>  | Runoff Area=350,677 sf 29.04% Impervious Runoff Depth=2.40"<br>Flow Length=418' Tc=16.1 min CN=WQ Runoff=22.43 cfs 1.608 af |
| <b>SubcatchmentPB-9:</b>  | Runoff Area=93,910 sf 7.67% Impervious Runoff Depth=1.92"<br>Flow Length=490' Tc=29.6 min CN=WQ Runoff=3.62 cfs 0.345 af    |
| <b>SubcatchmentR-1:</b>   | Runoff Area=55,096 sf 46.72% Impervious Runoff Depth=2.79"<br>Tc=5.0 min CN=WQ Runoff=5.85 cfs 0.294 af                     |
| <b>SubcatchmentR-2:</b>   | Runoff Area=84,323 sf 65.88% Impervious Runoff Depth=3.22"<br>Tc=5.0 min CN=WQ Runoff=10.08 cfs 0.519 af                    |
| <b>SubcatchmentR-3:</b>   | Runoff Area=172,153 sf 71.85% Impervious Runoff Depth=3.35"<br>Tc=5.0 min CN=WQ Runoff=21.29 cfs 1.103 af                   |

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|                                                   |                                                                                                                                                            |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SubcatchmentR-5:</b>                           | Runoff Area=30,604 sf 81.78% Impervious Runoff Depth=3.57"<br>Tc=10.0 min CN=WQ Runoff=3.35 cfs 0.209 af                                                   |
| <b>SubcatchmentR-6:</b>                           | Runoff Area=15,143 sf 87.18% Impervious Runoff Depth=3.69"<br>Tc=5.0 min CN=WQ Runoff=2.03 cfs 0.107 af                                                    |
| <b>SubcatchmentR-7:</b>                           | Runoff Area=11,881 sf 72.35% Impervious Runoff Depth=3.36"<br>Tc=5.0 min CN=WQ Runoff=1.47 cfs 0.076 af                                                    |
| <b>SubcatchmentR-8:</b>                           | Runoff Area=83,061 sf 69.74% Impervious Runoff Depth=3.30"<br>Tc=5.0 min CN=WQ Runoff=10.15 cfs 0.525 af                                                   |
| <b>Reach 1C&amp;PB-13:</b>                        | Avg. Flow Depth=1.04' Max Vel=5.00 fps Inflow=6.54 cfs 0.462 af<br>18.0" Round Pipe n=0.013 L=88.0' S=0.0057 ' Capacity=7.92 cfs Outflow=6.54 cfs 0.462 af |
| <b>Reach 1R:</b>                                  | Inflow=2.72 cfs 0.237 af<br>Outflow=2.72 cfs 0.237 af                                                                                                      |
| <b>Reach 2A&amp;2B:</b>                           | Inflow=12.92 cfs 0.718 af<br>Outflow=12.92 cfs 0.718 af                                                                                                    |
| <b>Reach P7B&amp;D:</b>                           | Inflow=3.08 cfs 0.175 af<br>Outflow=3.08 cfs 0.175 af                                                                                                      |
| <b>Reach PB-1C&amp;PB-14B:</b>                    | Inflow=7.78 cfs 0.892 af<br>Outflow=7.78 cfs 0.892 af                                                                                                      |
| <b>Reach PL-DITCH:</b>                            | Outflow=0.00 cfs 0.000 af                                                                                                                                  |
| <b>Reach PN: North Boundary</b>                   | Inflow=0.00 cfs 0.000 af<br>Outflow=0.00 cfs 0.000 af                                                                                                      |
| <b>Reach POST: Overall Post-DevelopmentRunoff</b> | Inflow=17.07 cfs 16.598 af<br>Outflow=17.07 cfs 16.598 af                                                                                                  |
| <b>Reach PS: South Total (Ditch 44-9)</b>         | Inflow=15.59 cfs 15.665 af<br>Outflow=15.59 cfs 15.665 af                                                                                                  |
| <b>Reach PSE-Q: SE Quarter (Private Ditch B)</b>  | Inflow=7.52 cfs 4.743 af<br>Outflow=7.52 cfs 4.743 af                                                                                                      |
| <b>Reach PSE-QA: SE Quarter (Private Ditch A)</b> | Inflow=6.62 cfs 9.219 af<br>Outflow=6.62 cfs 9.219 af                                                                                                      |
| <b>Reach PSW-Q: Southwest Discharge</b>           | Inflow=4.80 cfs 1.702 af<br>Outflow=4.80 cfs 1.702 af                                                                                                      |
| <b>Reach PW: West Boundary</b>                    | Inflow=3.60 cfs 0.640 af<br>Outflow=3.60 cfs 0.640 af                                                                                                      |

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|                              |                                                                                                                                                    |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Pond P-12:</b>            | Peak Elev=898.1' Storage=703,480 cf Inflow=48.62 cfs 4.787 af<br>Outflow=3.86 cfs 4.338 af                                                         |
| <b>Pond P-3A:</b>            | Peak Elev=898.6' Storage=2,116,368 cf Inflow=92.20 cfs 6.164 af<br>Primary=3.81 cfs 5.618 af Secondary=0.00 cfs 0.000 af Outflow=3.81 cfs 5.618 af |
| <b>Pond P-3B:</b>            | Peak Elev=898.6' Storage=659,745 cf Inflow=35.82 cfs 9.402 af<br>Outflow=6.62 cfs 9.219 af                                                         |
| <b>Pond P-6:</b>             | Peak Elev=899.3' Storage=62,394 cf Inflow=13.40 cfs 0.980 af<br>Outflow=1.07 cfs 0.968 af                                                          |
| <b>Pond P-8:</b>             | Peak Elev=898.6' Storage=222,588 cf Inflow=24.17 cfs 1.741 af<br>Outflow=6.50 cfs 1.639 af                                                         |
| <b>Pond PB1A: Wetland 1A</b> | Peak Elev=900.0' Storage=37,747 cf Inflow=10.64 cfs 0.867 af<br>Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af   |
| <b>Pond PB1B: Wetland 1B</b> | Peak Elev=901.7' Storage=554 cf Inflow=3.11 cfs 0.300 af<br>Outflow=3.11 cfs 0.290 af                                                              |
| <b>Pond PB1C: Wetland 1C</b> | Peak Elev=901.7' Storage=33,620 cf Inflow=9.69 cfs 1.034 af<br>Primary=0.67 cfs 0.294 af Secondary=0.00 cfs 0.000 af Outflow=0.67 cfs 0.294 af     |
| <b>Pond PB6: Wetland 6</b>   | Peak Elev=896.2' Storage=9,183 cf Inflow=4.70 cfs 1.815 af<br>Outflow=4.64 cfs 1.637 af                                                            |
| <b>Pond PB7A: Wetland 7A</b> | Peak Elev=898.2' Storage=5,345 cf Inflow=2.22 cfs 0.284 af<br>Outflow=0.57 cfs 0.167 af                                                            |
| <b>Pond PB7B: Wetland 7B</b> | Peak Elev=898.4' Storage=6,637 cf Inflow=3.78 cfs 0.234 af<br>Primary=0.28 cfs 0.090 af Secondary=0.00 cfs 0.000 af Outflow=0.28 cfs 0.090 af      |
| <b>Pond PB7C: Wetland 7C</b> | Peak Elev=898.7' Storage=1,501 cf Inflow=0.71 cfs 0.034 af<br>Outflow=0.00 cfs 0.000 af                                                            |

**Total Runoff Area = 119.038 ac Runoff Volume = 19.982 af Average Runoff Depth = 2.01"**  
**75.77% Pervious = 90.189 ac 24.23% Impervious = 28.848 ac**



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**Summary for Subcatchment PB-10:**

Runoff = 2.19 cfs @ 12.28 hrs, Volume= 0.160 af, Depth= 1.87"  
Routed to Reach 1R :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

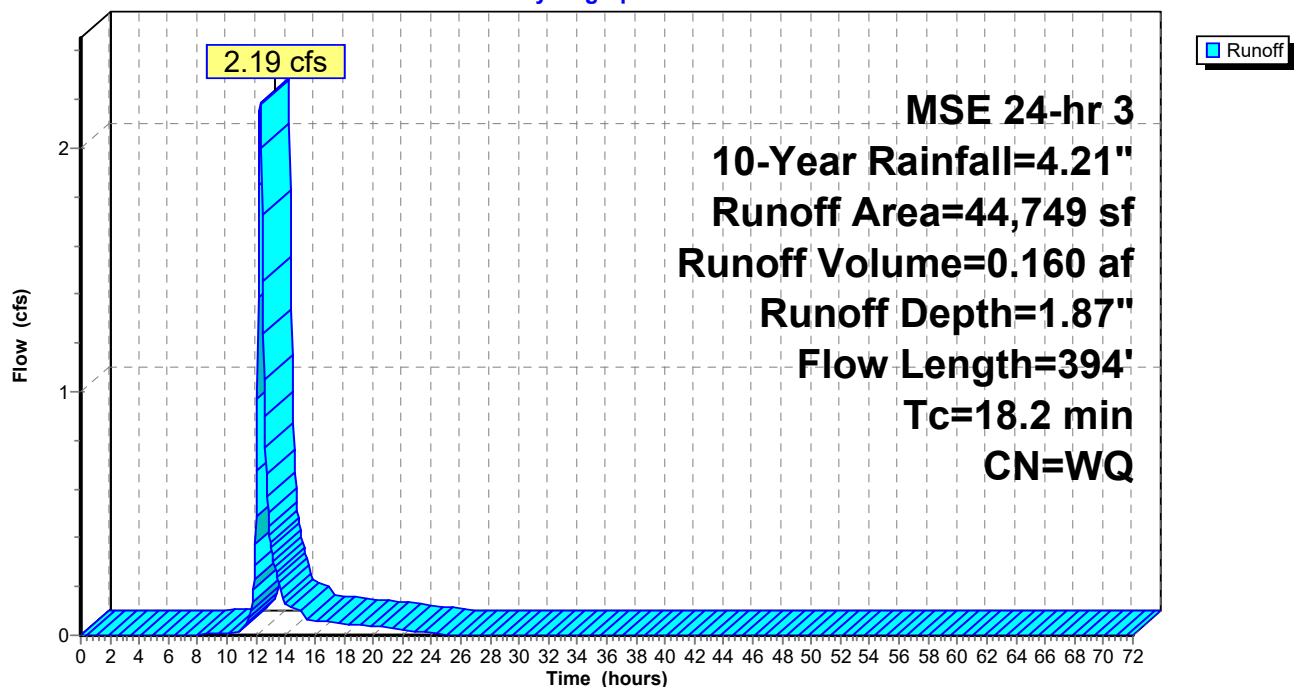
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 42,349    | 74 | >75% Grass cover, Good, HSG C |
| * 2,400   | 98 | Concrete                      |
| 44,749    |    | Weighted Average              |
| 42,349    |    | 94.64% Pervious Area          |
| 2,400     |    | 5.36% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 12.3     | 100           | 0.0133        | 0.14              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 5.9      | 294           | 0.0143        | 0.84              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 18.2     | 394           | Total         |                   |                |                                                                      |

**Subcatchment PB-10:**

Hydrograph



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**Summary for Subcatchment PB-12:**

Runoff = 34.67 cfs @ 12.29 hrs, Volume= 2.686 af, Depth= 2.29"  
Routed to Pond P-12 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

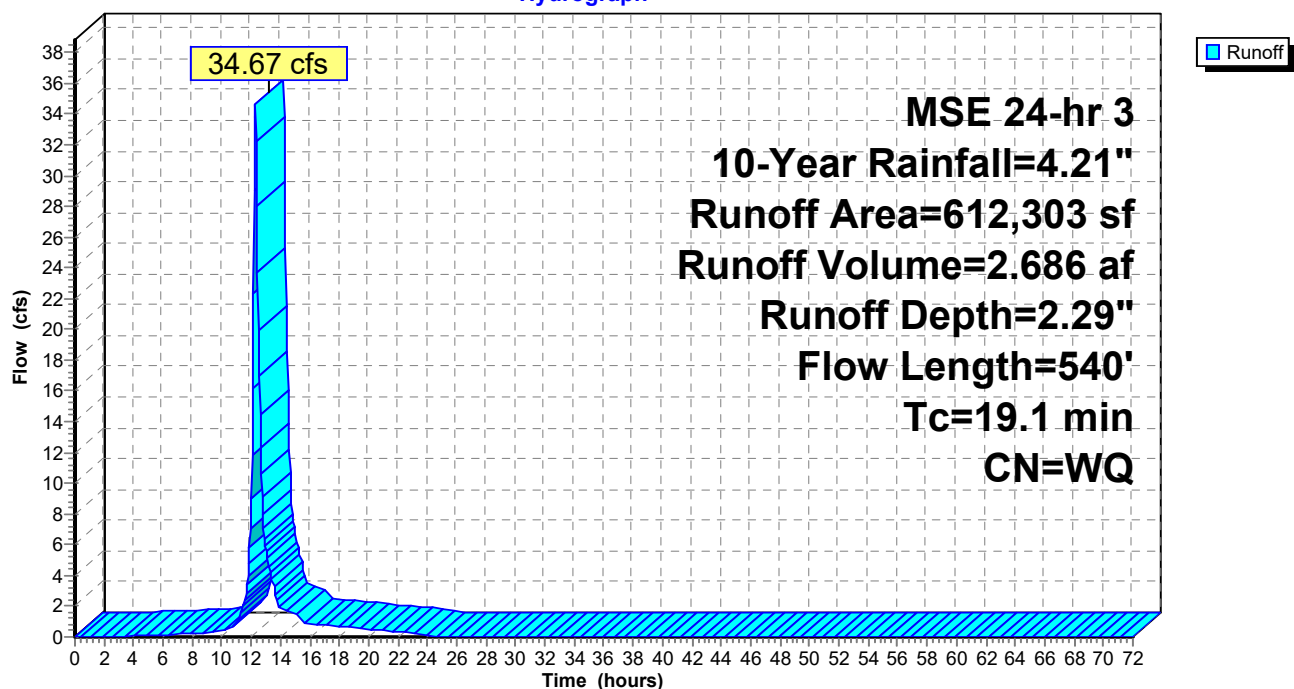
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 19,200    | 98 | Roofs, HSG A                  |
| 463,357   | 74 | >75% Grass cover, Good, HSG C |
| 124,927   | 98 | Water Surface, HSG A          |
| * 4,819   | 98 | Driveways                     |
| 612,303   |    | Weighted Average              |
| 463,357   |    | 75.67% Pervious Area          |
| 148,946   |    | 24.33% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 7.4      | 100           | 0.0474        | 0.23              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 11.7     | 440           | 0.0080        | 0.63              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 19.1     | 540           | Total         |                   |                |                                                                      |

**Subcatchment PB-12:**

Hydrograph



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**Summary for Subcatchment PB-13A:**

Runoff = 1.16 cfs @ 12.24 hrs, Volume= 0.082 af, Depth= 1.75"  
Routed to Pond PB6 : Wetland 6

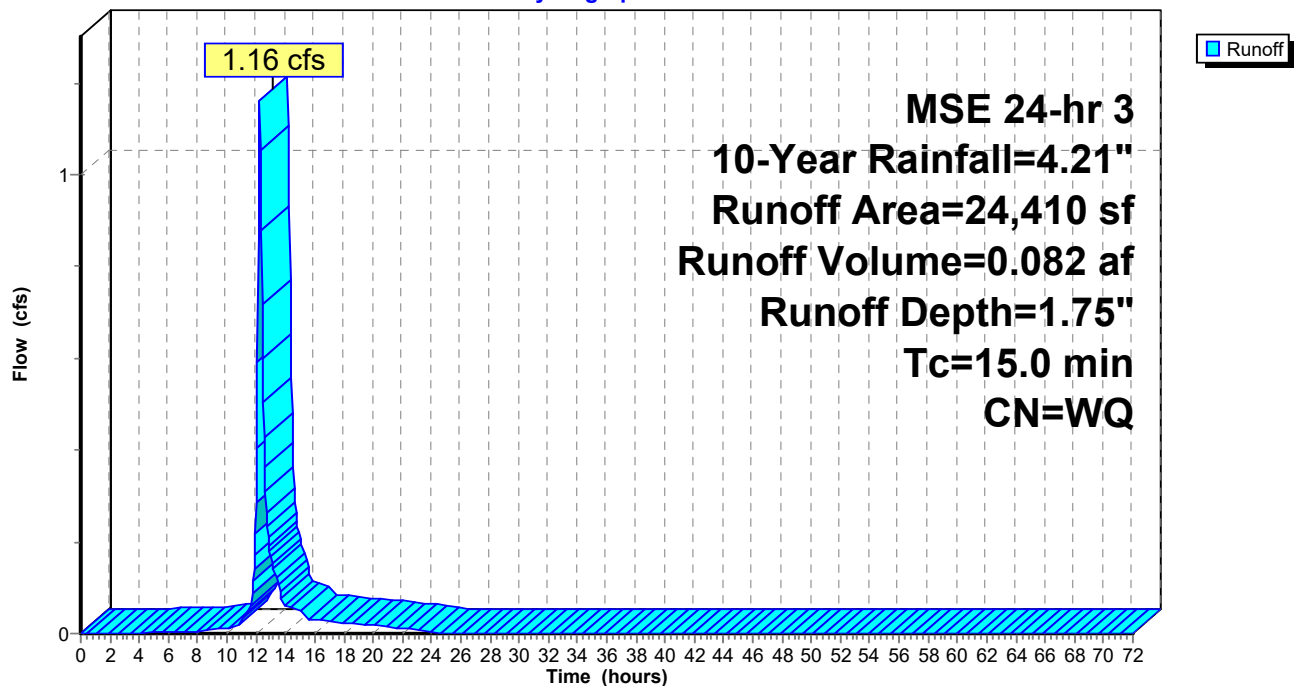
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 10,308    | 61 | >75% Grass cover, Good, HSG B |
| 10,308    | 74 | >75% Grass cover, Good, HSG C |
| 3,794     | 98 | Roofs, HSG A                  |
| 24,410    |    | Weighted Average              |
| 20,616    |    | 84.46% Pervious Area          |
| 3,794     |    | 15.54% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 15.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-13A:**

Hydrograph



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**Summary for Subcatchment PB-13B:**

Runoff = 6.54 cfs @ 12.26 hrs, Volume= 0.462 af, Depth= 1.97"  
Routed to Reach 1C&PB-13 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

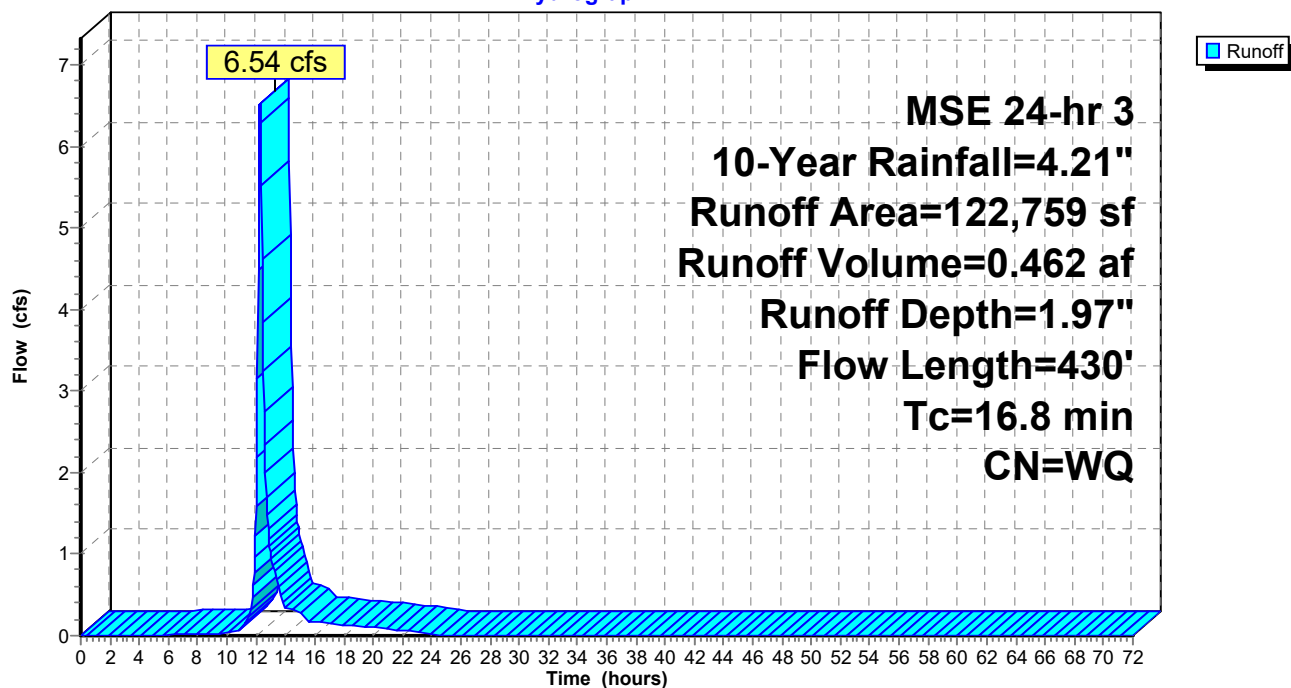
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 6,000     | 98 | Roofs, HSG A                  |
| 110,959   | 74 | >75% Grass cover, Good, HSG C |
| * 5,800   | 98 | Driveway                      |
| 122,759   |    | Weighted Average              |
| 110,959   |    | 90.39% Pervious Area          |
| 11,800    |    | 9.61% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 12.3     | 100           | 0.0132        | 0.14              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 4.5      | 330           | 0.0300        | 1.21              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 16.8     | 430           | Total         |                   |                |                                                                      |

**Subcatchment PB-13B:**

Hydrograph



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**Summary for Subcatchment PB-14A:**

Runoff = 4.34 cfs @ 12.30 hrs, Volume= 0.330 af, Depth= 1.93"  
Routed to Reach PB-1C&PB-14B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

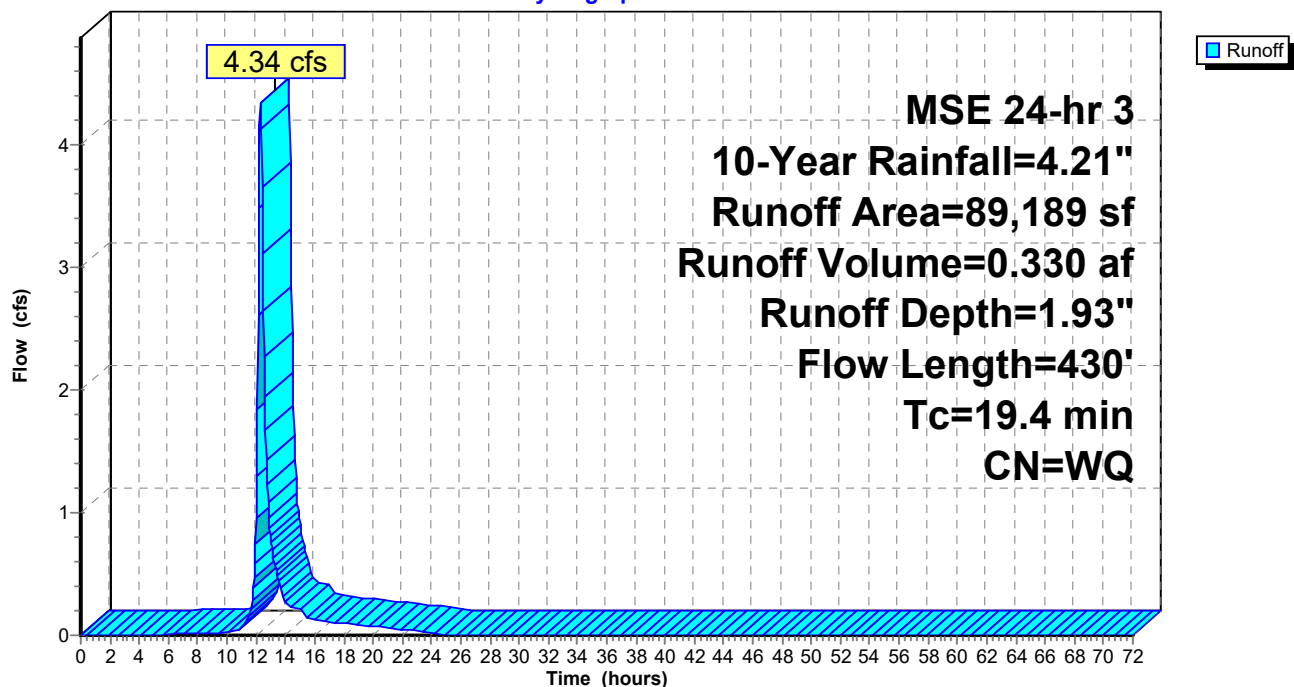
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 7,200     | 98 | Roofs, HSG A                  |
| 81,989    | 74 | >75% Grass cover, Good, HSG C |
| 89,189    |    | Weighted Average              |
| 81,989    |    | 91.93% Pervious Area          |
| 7,200     |    | 8.07% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 11.9     | 100           | 0.0143        | 0.14              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 7.5      | 330           | 0.0110        | 0.73              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 19.4     | 430           | Total         |                   |                |                                                                      |

**Subcatchment PB-14A:**

Hydrograph



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**Summary for Subcatchment PB-14B:**

Runoff = 4.97 cfs @ 12.56 hrs, Volume= 0.562 af, Depth= 1.93"  
Routed to Reach PB-1C&PB-14B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

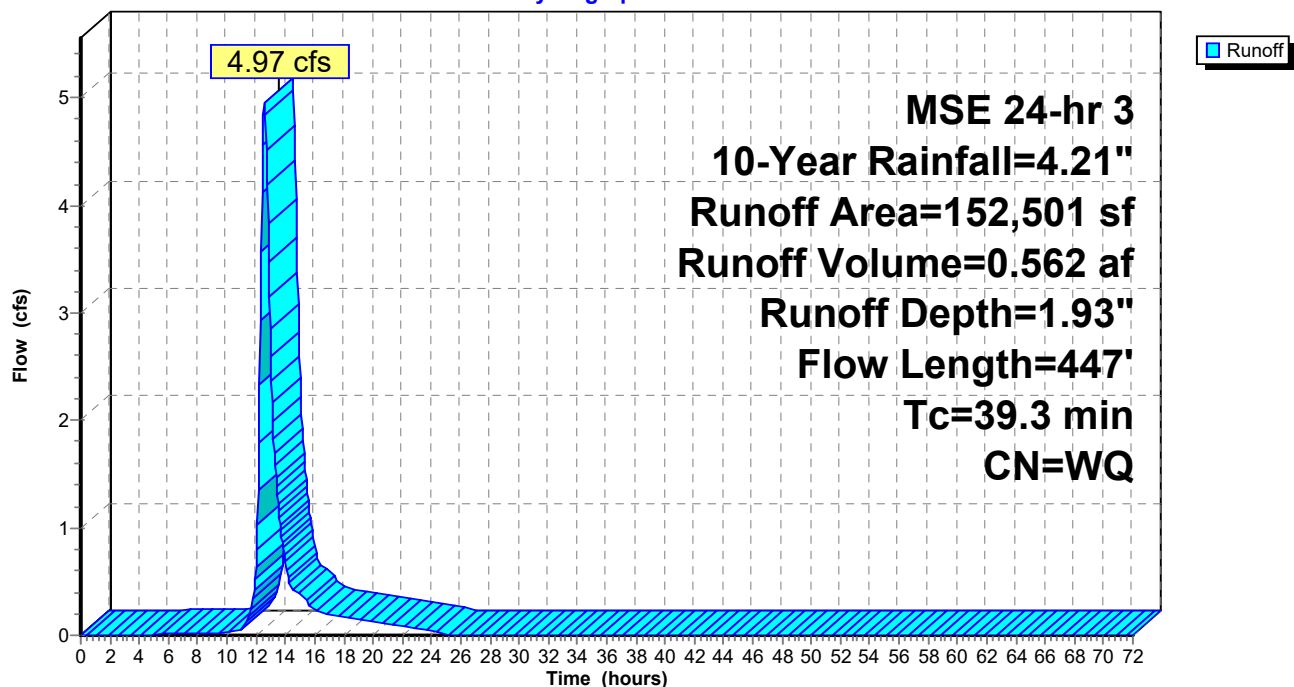
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 12,000    | 98 | Roofs, HSG A                  |
| 140,501   | 74 | >75% Grass cover, Good, HSG C |
| 152,501   |    | Weighted Average              |
| 140,501   |    | 92.13% Pervious Area          |
| 12,000    |    | 7.87% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 18.6     | 100           | 0.0047        | 0.09              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 20.7     | 347           | 0.0016        | 0.28              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 39.3     | 447           | Total         |                   |                |                                                                      |

**Subcatchment PB-14B:**

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**Summary for Subcatchment PB-15A:**

Runoff = 0.92 cfs @ 12.25 hrs, Volume= 0.065 af, Depth= 0.92"  
Routed to Reach PSW-Q : Southwest Discharge

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

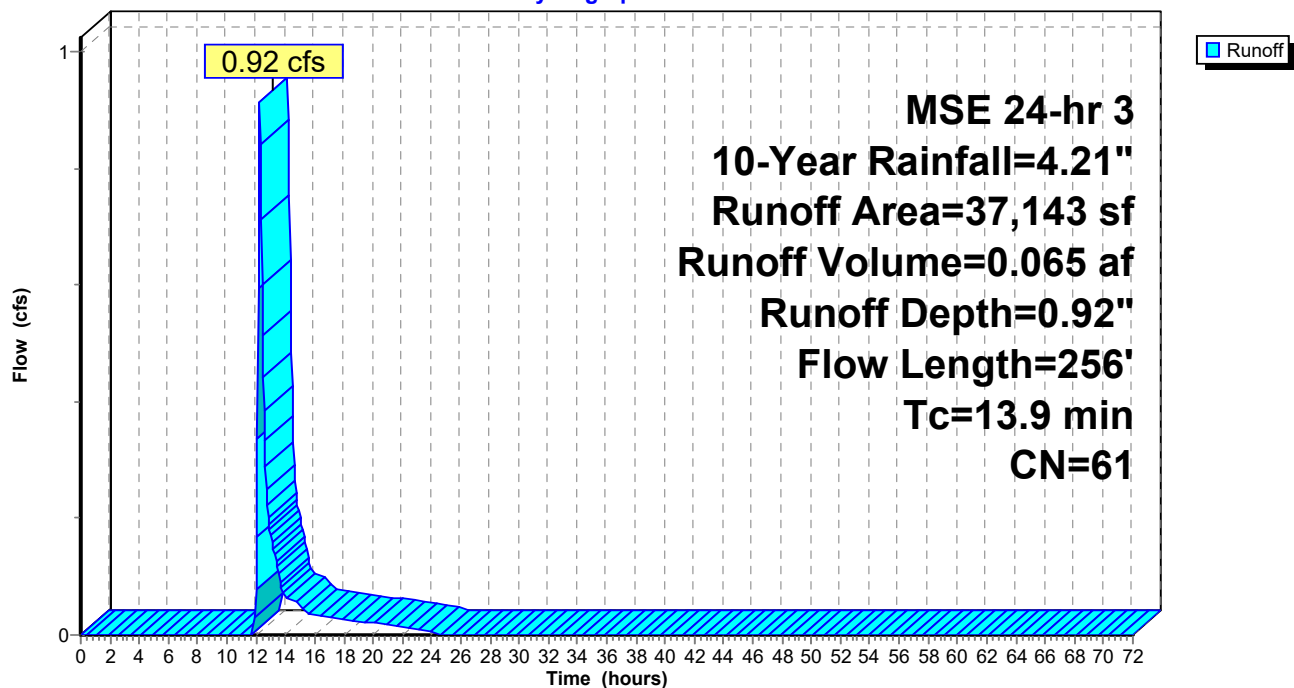
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 37,143    | 61 | >75% Grass cover, Good, HSG B |
| 37,143    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.9     | 100           | 0.0180        | 0.15              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 3.0      | 156           | 0.0154        | 0.87              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 13.9     | 256           | Total         |                   |                |                                                                      |

**Subcatchment PB-15A:**

Hydrograph



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**Summary for Subcatchment PB-15B:**

Runoff = 3.63 cfs @ 12.23 hrs, Volume= 0.230 af, Depth= 1.75"

Routed to Reach PSE-Q : SE Quarter (Private Ditch B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

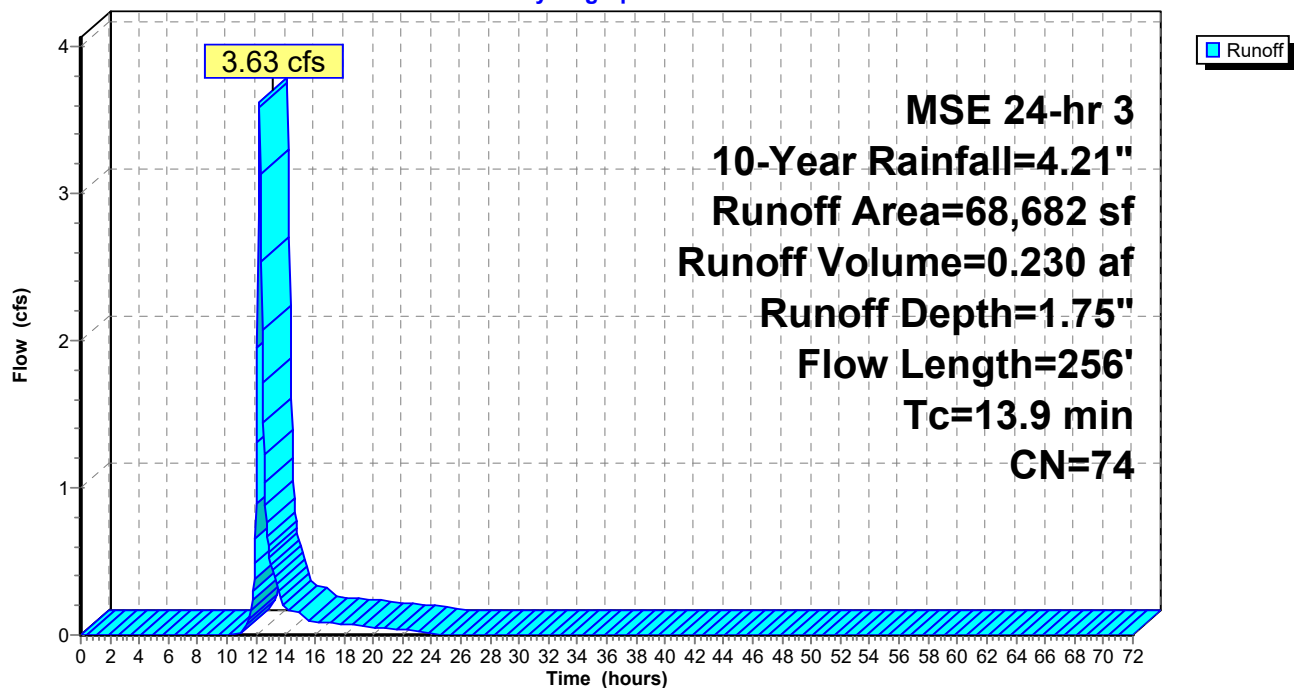
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 68,682    | 74 | >75% Grass cover, Good, HSG C |
| 68,682    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.9     | 100           | 0.0180        | 0.15              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 3.0      | 156           | 0.0154        | 0.87              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 13.9     | 256           | Total         |                   |                |                                                                      |

**Subcatchment PB-15B:**

Hydrograph





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**Summary for Subcatchment PB-1A:**

Runoff = 10.64 cfs @ 12.30 hrs, Volume= 0.867 af, Depth= 0.99"  
Routed to Pond PB1A : Wetland 1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

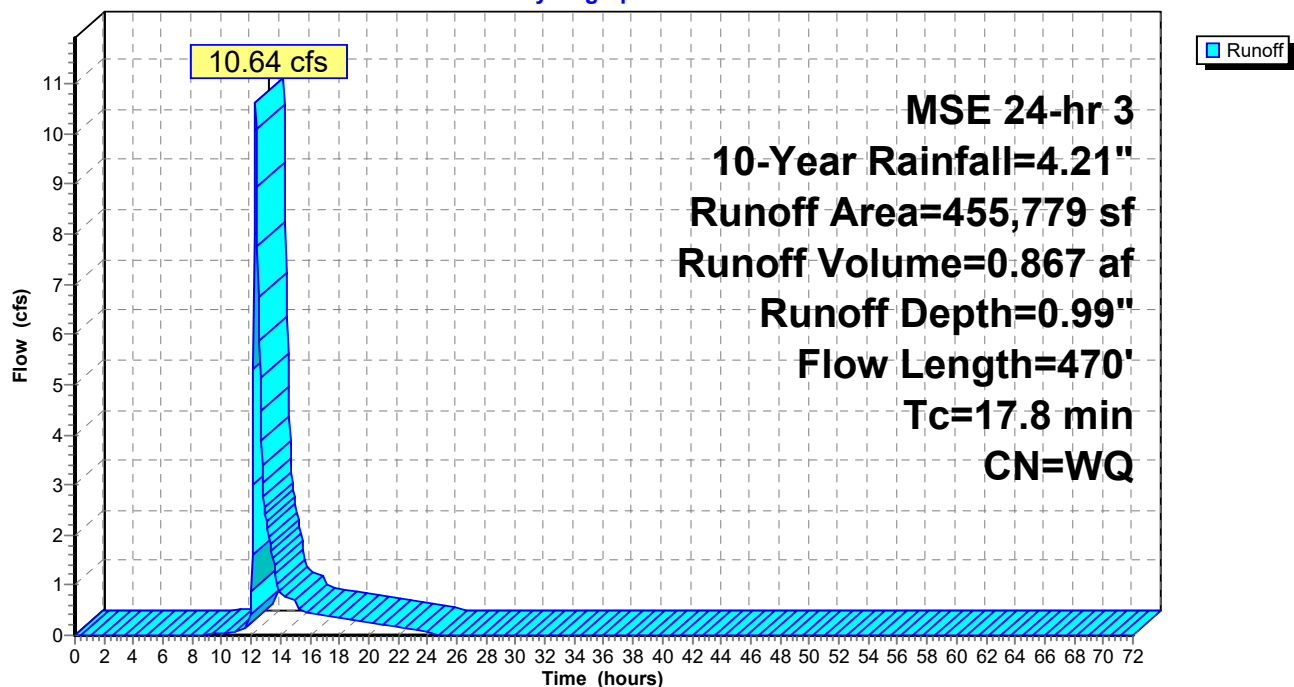
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 444,979   | 61 | >75% Grass cover, Good, HSG B |
| 10,800    | 98 | Roofs, HSG A                  |
| 455,779   |    | Weighted Average              |
| 444,979   |    | 97.63% Pervious Area          |
| 10,800    |    | 2.37% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.4     | 100           | 0.0200        | 0.16              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 7.4      | 370           | 0.0140        | 0.83              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 17.8     | 470           | Total         |                   |                |                                                                      |

**Subcatchment PB-1A:**

Hydrograph



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MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Subcatchment PB-1B:**

Runoff = 3.11 cfs @ 12.42 hrs, Volume= 0.300 af, Depth= 1.59"  
Routed to Pond PB1B : Wetland 1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

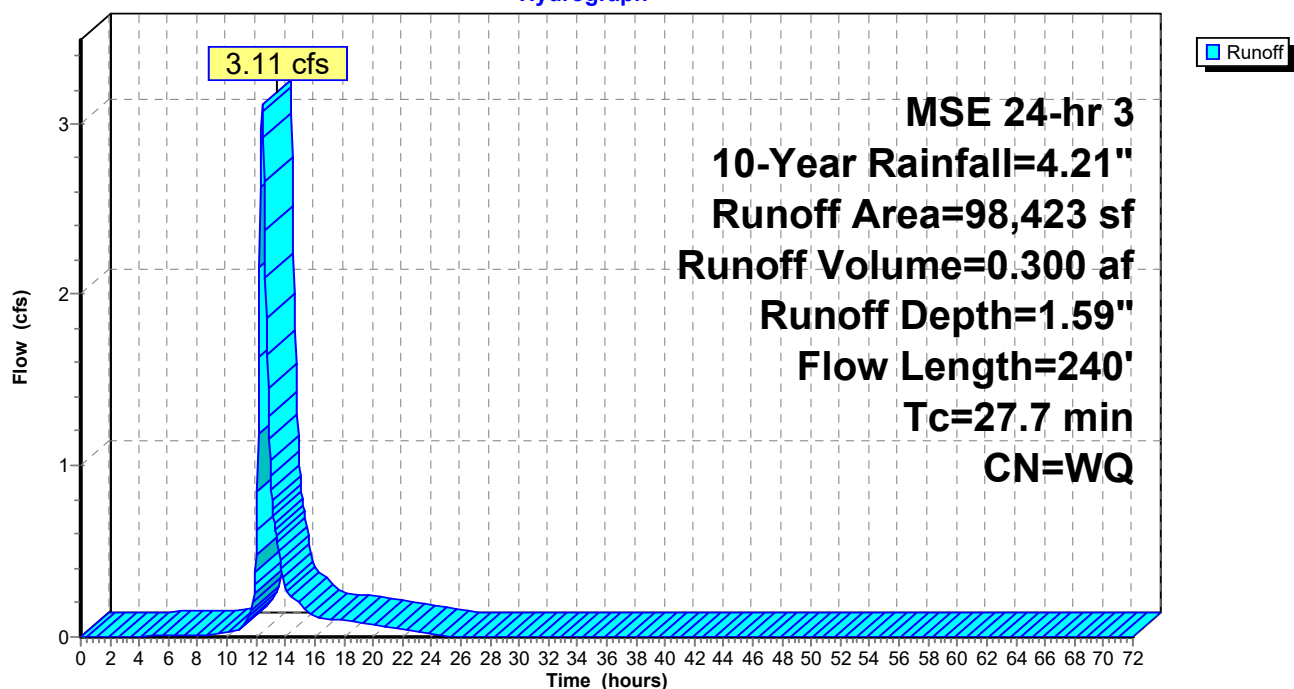
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 44,402    | 61 | >75% Grass cover, Good, HSG B |
| 44,402    | 74 | >75% Grass cover, Good, HSG C |
| 6,600     | 98 | Roofs, HSG A                  |
| * 3,019   | 98 | Driveway                      |
| 98,423    |    | Weighted Average              |
| 88,804    |    | 90.23% Pervious Area          |
| 9,619     |    | 9.77% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 18.5     | 118           | 0.0170        | 0.11              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 2.83"                |
| 9.2      | 122           | 0.0010        | 0.22              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 27.7     | 240           | Total         |                   |                |                                                                      |

**Subcatchment PB-1B:**

Hydrograph



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**Summary for Subcatchment PB-1C:**

Runoff = 6.68 cfs @ 12.50 hrs, Volume= 0.744 af, Depth= 1.02"  
Routed to Pond PB1C : Wetland 1C

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

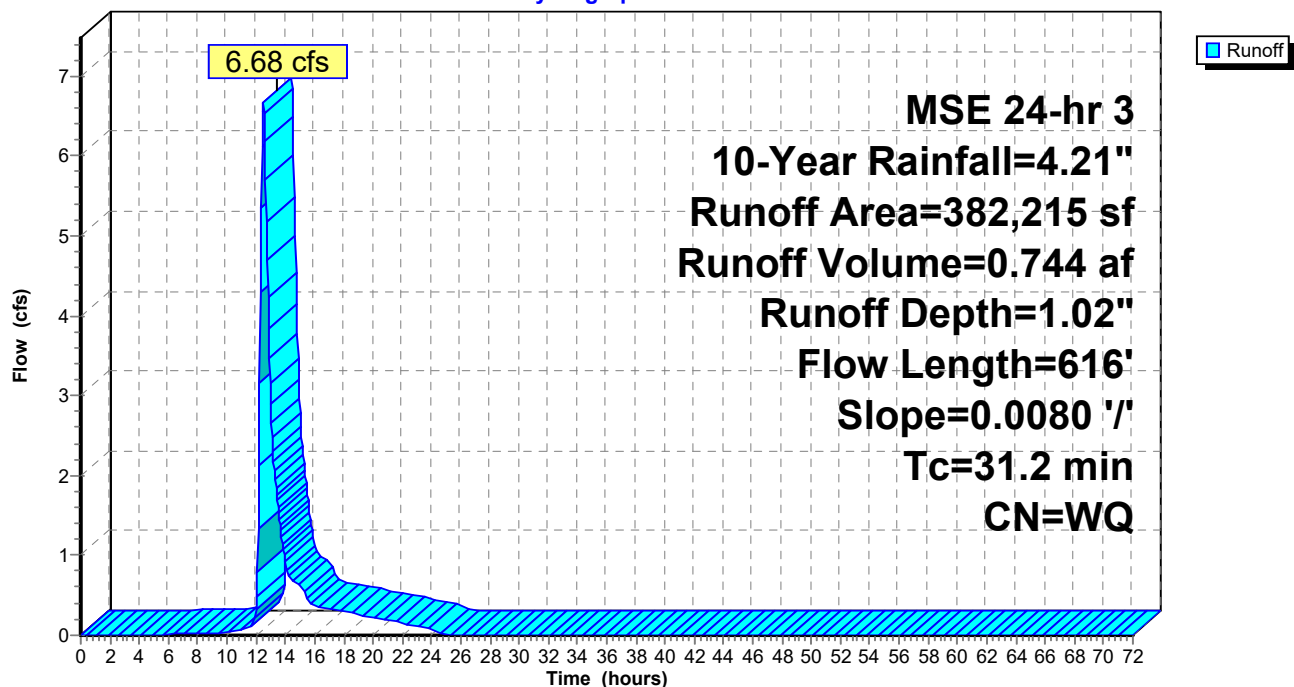
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 370,215   | 61 | >75% Grass cover, Good, HSG B |
| 12,000    | 98 | Roofs, HSG A                  |
| 382,215   |    | Weighted Average              |
| 370,215   |    | 96.86% Pervious Area          |
| 12,000    |    | 3.14% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 18.2     | 127           | 0.0080        | 0.12              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 13.0     | 489           | 0.0080        | 0.63              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 31.2     | 616           | Total         |                   |                |                                                                      |

**Subcatchment PB-1C:**

Hydrograph



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**Summary for Subcatchment PB-1D:**

Runoff = 3.60 cfs @ 12.40 hrs, Volume= 0.346 af, Depth= 1.11"  
Routed to Reach PW : West Boundary

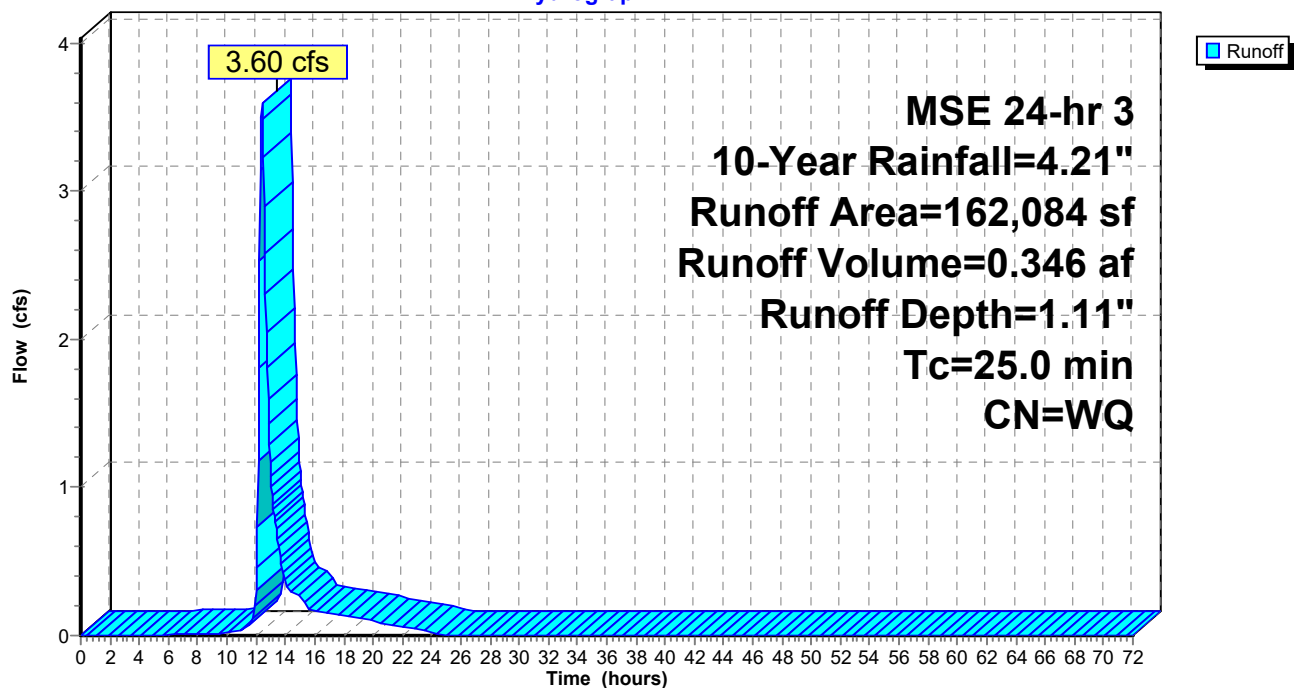
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 140,476   | 61 | >75% Grass cover, Good, HSG B |
| 15,608    | 74 | >75% Grass cover, Good, HSG C |
| 6,000     | 98 | Roofs, HSG A                  |
| 162,084   |    | Weighted Average              |
| 156,084   |    | 96.30% Pervious Area          |
| 6,000     |    | 3.70% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 25.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-1D:**

Hydrograph



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**Summary for Subcatchment PB-2A:**

Runoff = 2.18 cfs @ 12.18 hrs, Volume= 0.124 af, Depth= 2.00"  
Routed to Reach 2A&2B :

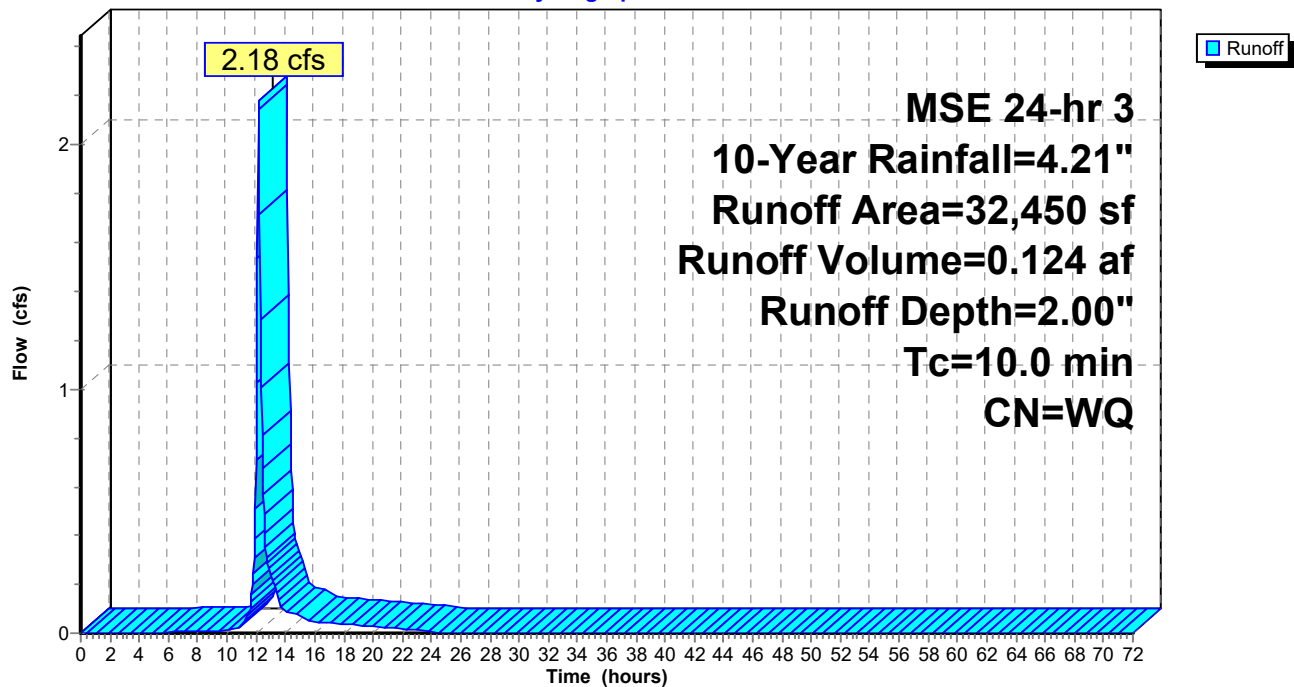
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 28,850    | 74 | >75% Grass cover, Good, HSG C |
| 3,600     | 98 | Paved parking, HSG A          |
| 32,450    |    | Weighted Average              |
| 28,850    |    | 88.91% Pervious Area          |
| 3,600     |    | 11.09% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-2A:**

Hydrograph



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**Summary for Subcatchment PB-2B:**

Runoff = 1.35 cfs @ 12.18 hrs, Volume= 0.075 af, Depth= 1.80"  
Routed to Reach 2A&2B :

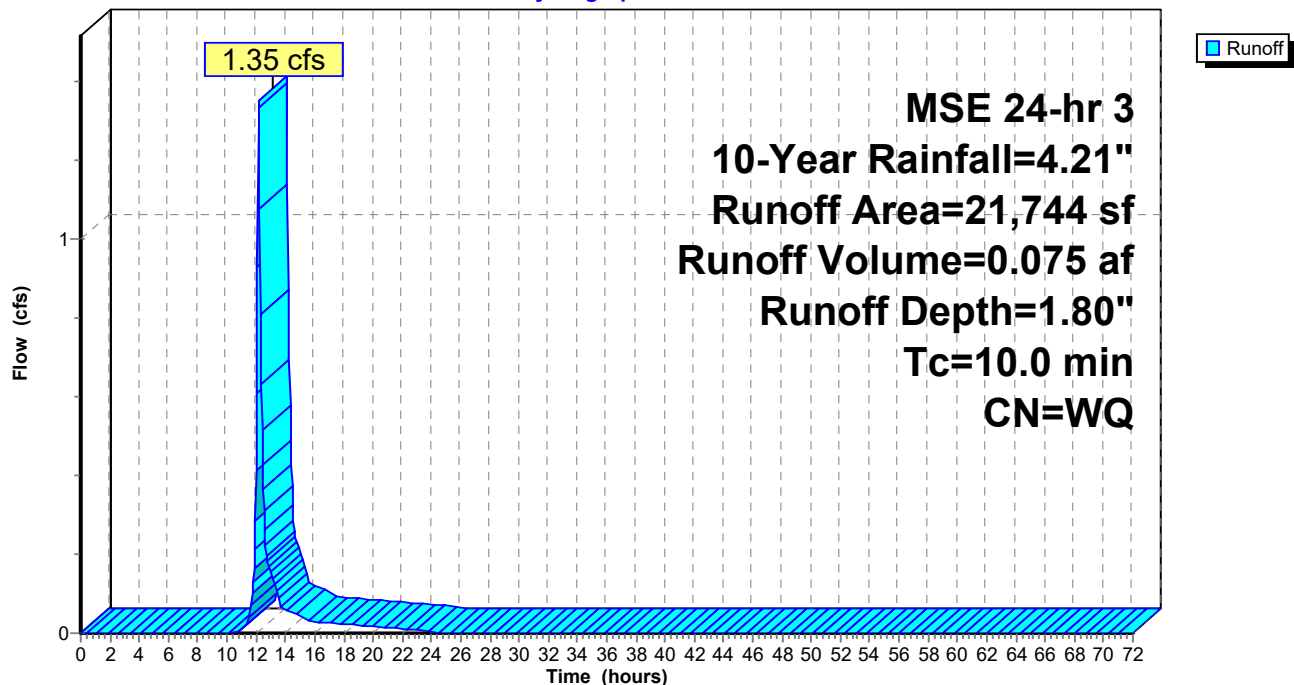
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 21,244    | 74 | >75% Grass cover, Good, HSG C |
| 500       | 98 | Paved parking, HSG A          |
| 21,744    |    | Weighted Average              |
| 21,244    |    | 97.70% Pervious Area          |
| 500       |    | 2.30% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-2B:**

Hydrograph



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**Summary for Subcatchment PB-3A:**

Runoff = 60.93 cfs @ 12.05 hrs, Volume= 2.855 af, Depth= 3.62"  
Routed to Pond P-3A :

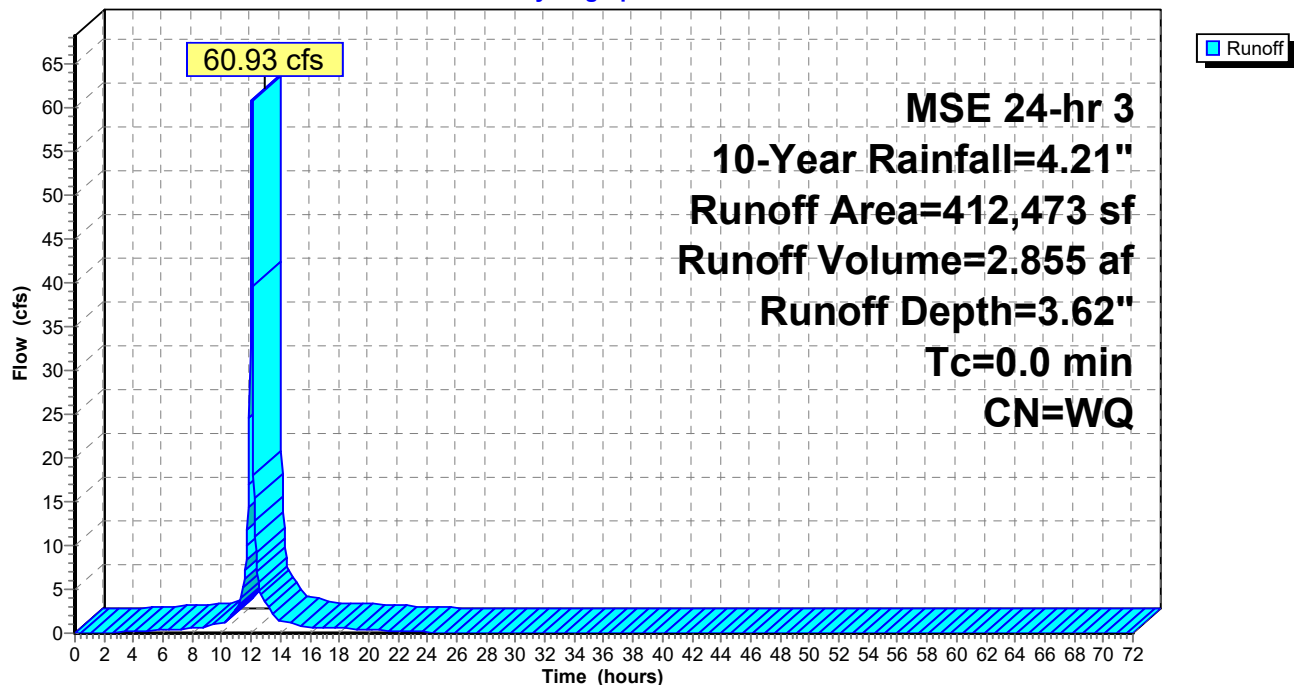
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 346,189   | 98 | Water Surface, HSG A          |
| 66,284    | 74 | >75% Grass cover, Good, HSG C |
| 412,473   |    | Weighted Average              |
| 66,284    |    | 16.07% Pervious Area          |
| 346,189   |    | 83.93% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 0.0      |               |               |                   |                | Direct Entry, |

**Subcatchment PB-3A:**

Hydrograph



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**Summary for Subcatchment PB-3B:**

Runoff = 26.63 cfs @ 12.04 hrs, Volume= 1.267 af, Depth= 3.97"  
Routed to Pond P-3B :

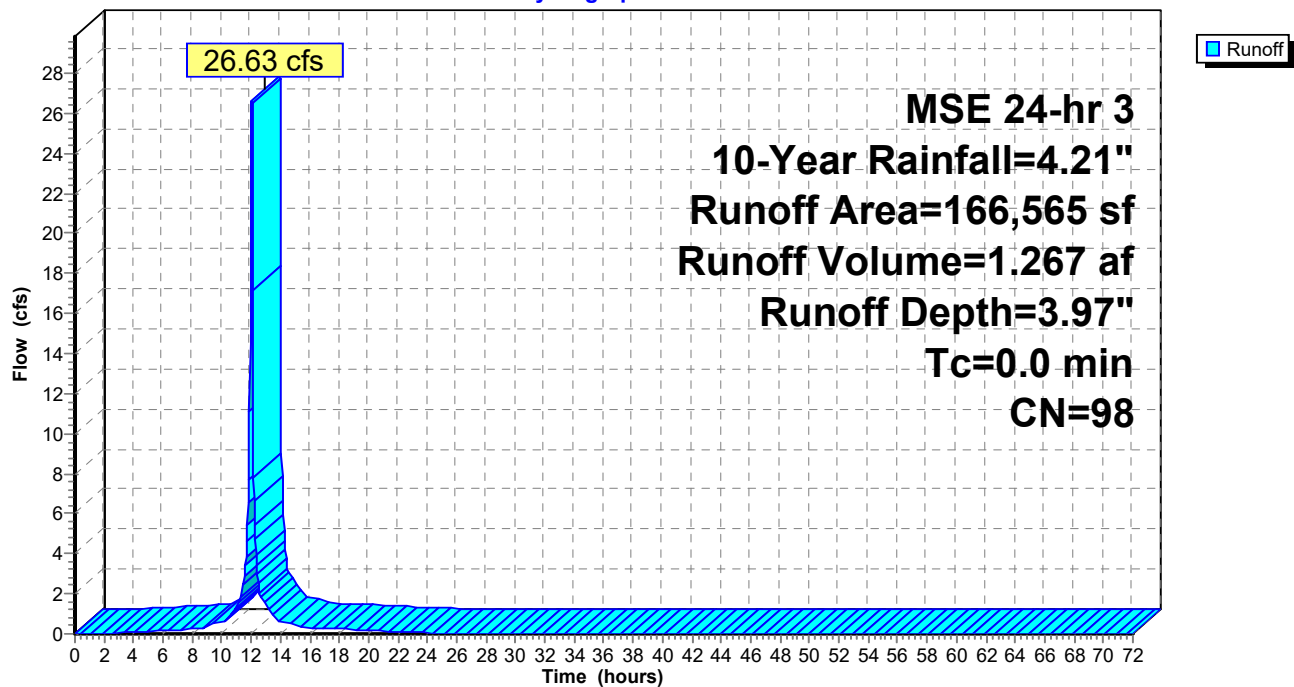
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description             |
|-----------|----|-------------------------|
| 166,565   | 98 | Water Surface, HSG A    |
| 166,565   |    | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 0.0      |               |               |                   |                | Direct Entry, |

**Subcatchment PB-3B:**

Hydrograph





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**Summary for Subcatchment PB-4A:**

Runoff = 6.70 cfs @ 12.18 hrs, Volume= 0.377 af, Depth= 1.91"  
Routed to Pond P-3A :

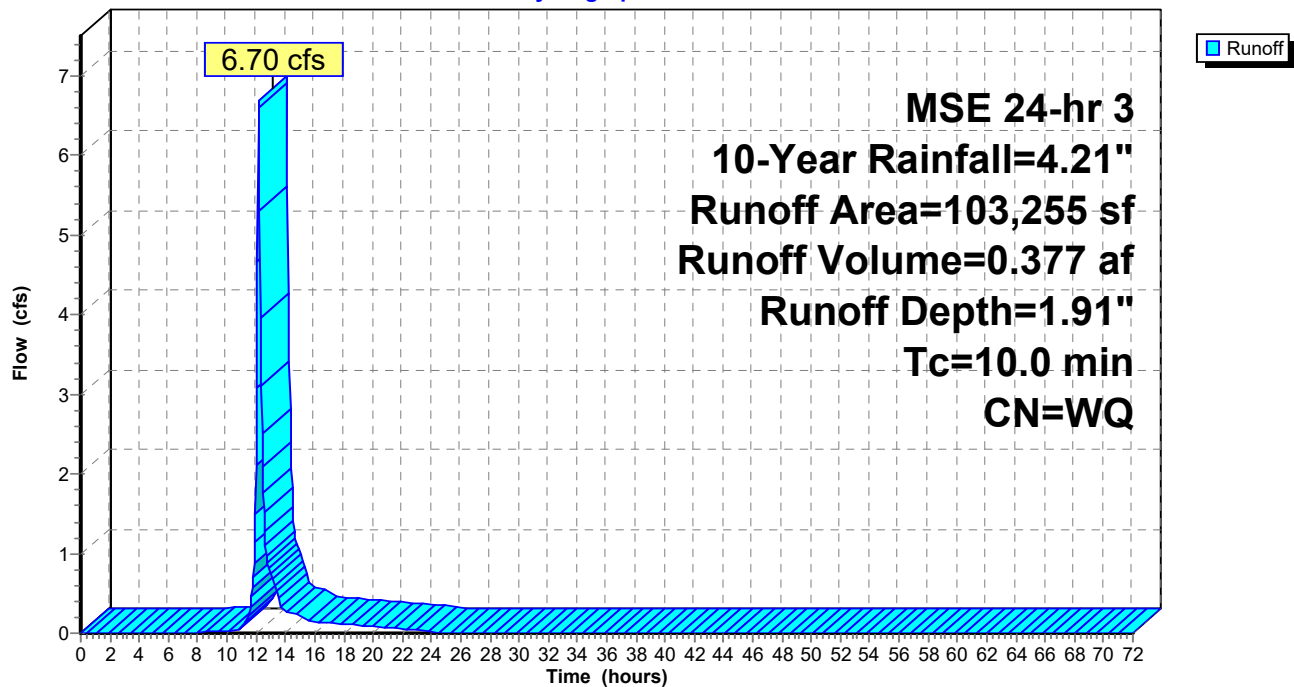
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 96,055    | 74 | >75% Grass cover, Good, HSG C |
| 7,200     | 98 | Roofs, HSG A                  |
| 103,255   |    | Weighted Average              |
| 96,055    |    | 93.03% Pervious Area          |
| 7,200     |    | 6.97% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-4A:**

Hydrograph



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**Summary for Subcatchment PB-4B:**

Runoff = 4.00 cfs @ 12.18 hrs, Volume= 0.223 af, Depth= 1.84"  
Routed to Pond P-3B :

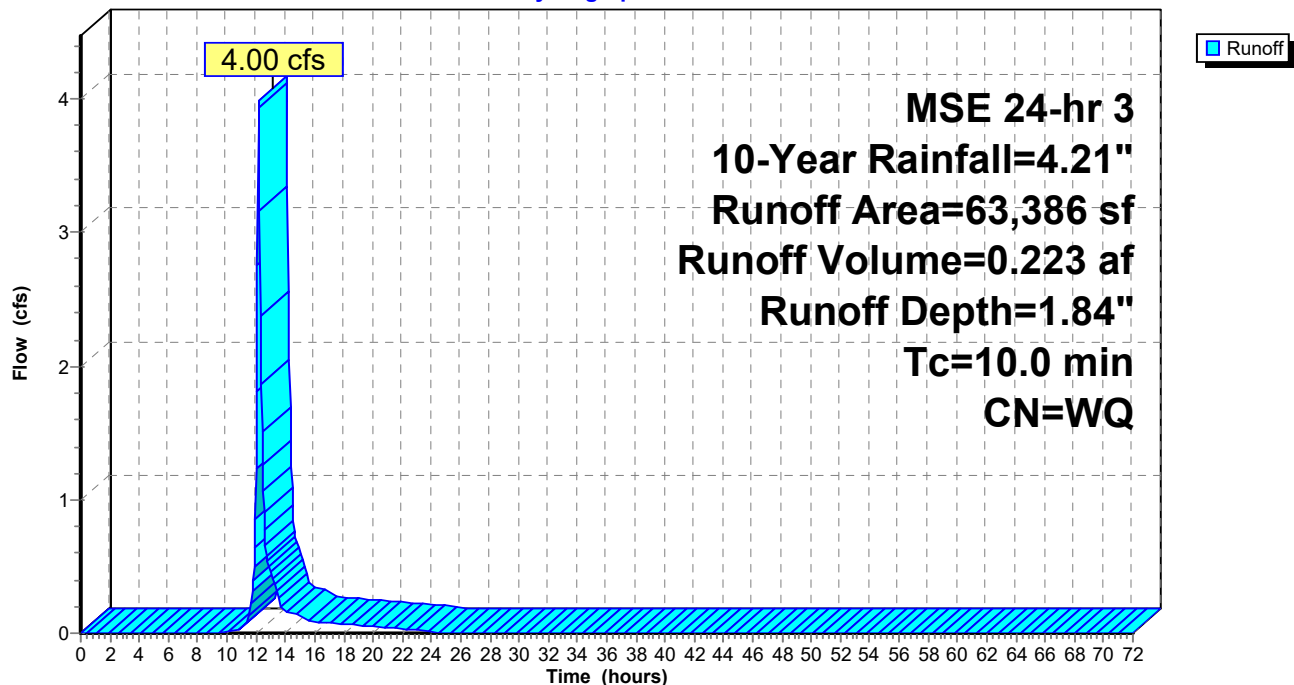
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 60,986    | 74 | >75% Grass cover, Good, HSG C |
| 2,400     | 98 | Roofs, HSG A                  |
| 63,386    |    | Weighted Average              |
| 60,986    |    | 96.21% Pervious Area          |
| 2,400     |    | 3.79% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-4B:**

Hydrograph



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MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Subcatchment PB-4C:**

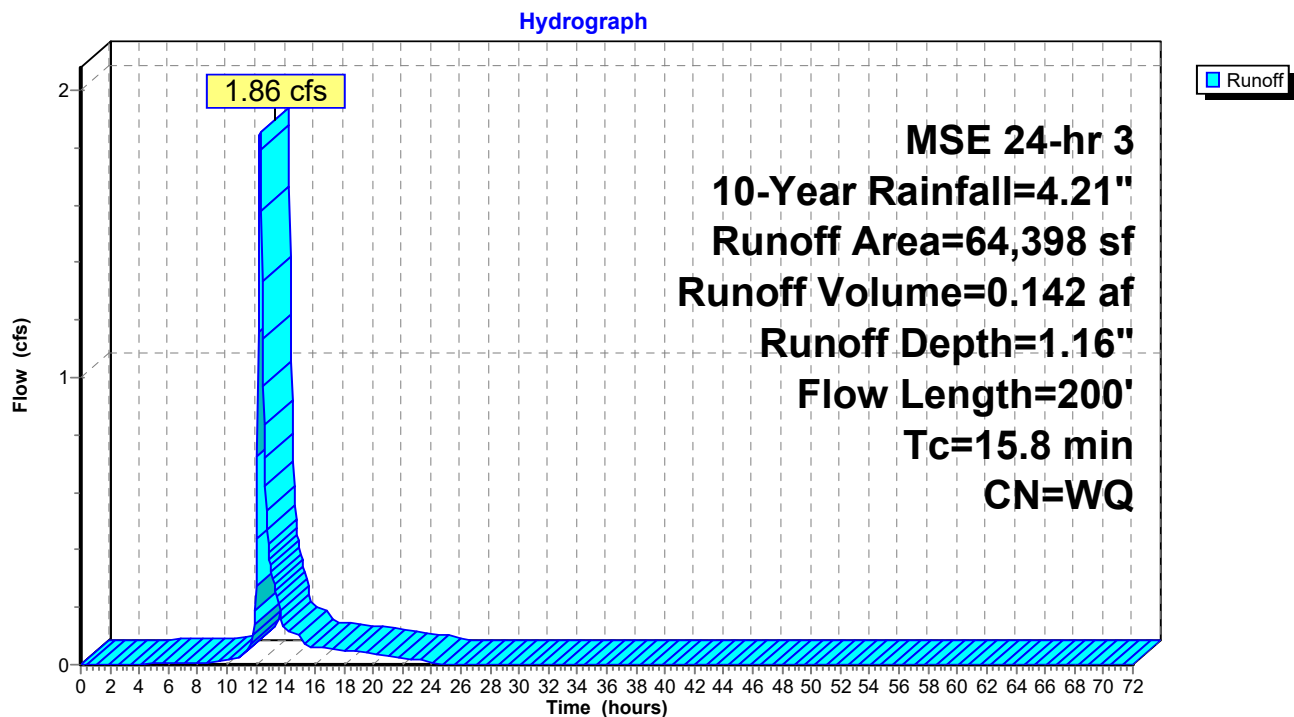
Runoff = 1.86 cfs @ 12.27 hrs, Volume= 0.142 af, Depth= 1.16"  
Routed to Pond P-3B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 59,448    | 61 | >75% Grass cover, Good, HSG B |
| 4,554     | 98 | Roofs, HSG A                  |
| * 396     | 98 | Driveways                     |
| 64,398    |    | Weighted Average              |
| 59,448    |    | 92.31% Pervious Area          |
| 4,950     |    | 7.69% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 14.5     | 100           | 0.0088        | 0.12              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.3      | 100           | 0.0330        | 1.27              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 15.8     | 200           | Total         |                   |                |                                                                      |

**Subcatchment PB-4C:**

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**Summary for Subcatchment PB-4D:**

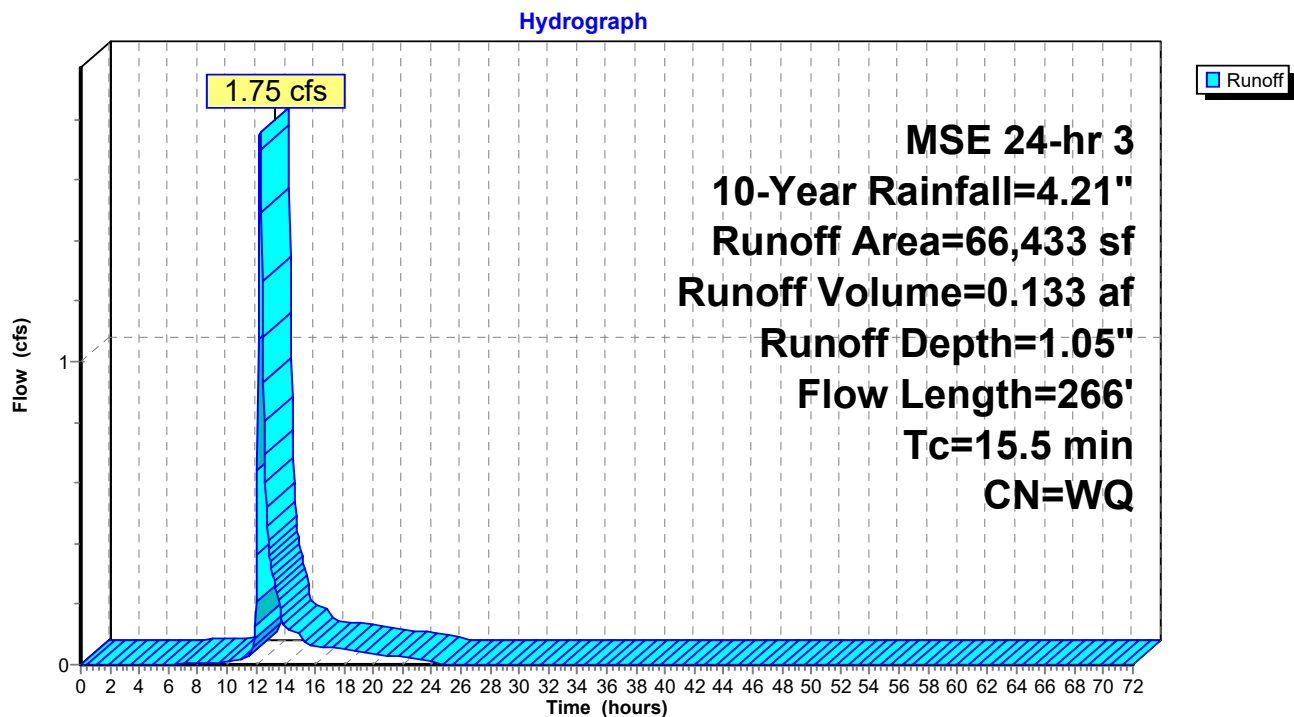
Runoff = 1.75 cfs @ 12.27 hrs, Volume= 0.133 af, Depth= 1.05"  
Routed to Pond P-8 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 63,695    | 61 | >75% Grass cover, Good, HSG B |
| 485       | 98 | Roofs, HSG A                  |
| * 2,253   | 98 | Driveways                     |
| 66,433    |    | Weighted Average              |
| 63,695    |    | 95.88% Pervious Area          |
| 2,738     |    | 4.12% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.6     | 100           | 0.0190        | 0.16              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 4.9      | 166           | 0.0066        | 0.57              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 15.5     | 266           | Total         |                   |                |                                                                      |

**Subcatchment PB-4D:**

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**Summary for Subcatchment PB-5A:**

Runoff = 19.68 cfs @ 12.18 hrs, Volume= 1.109 af, Depth= 1.92"  
Routed to Pond P-3A :

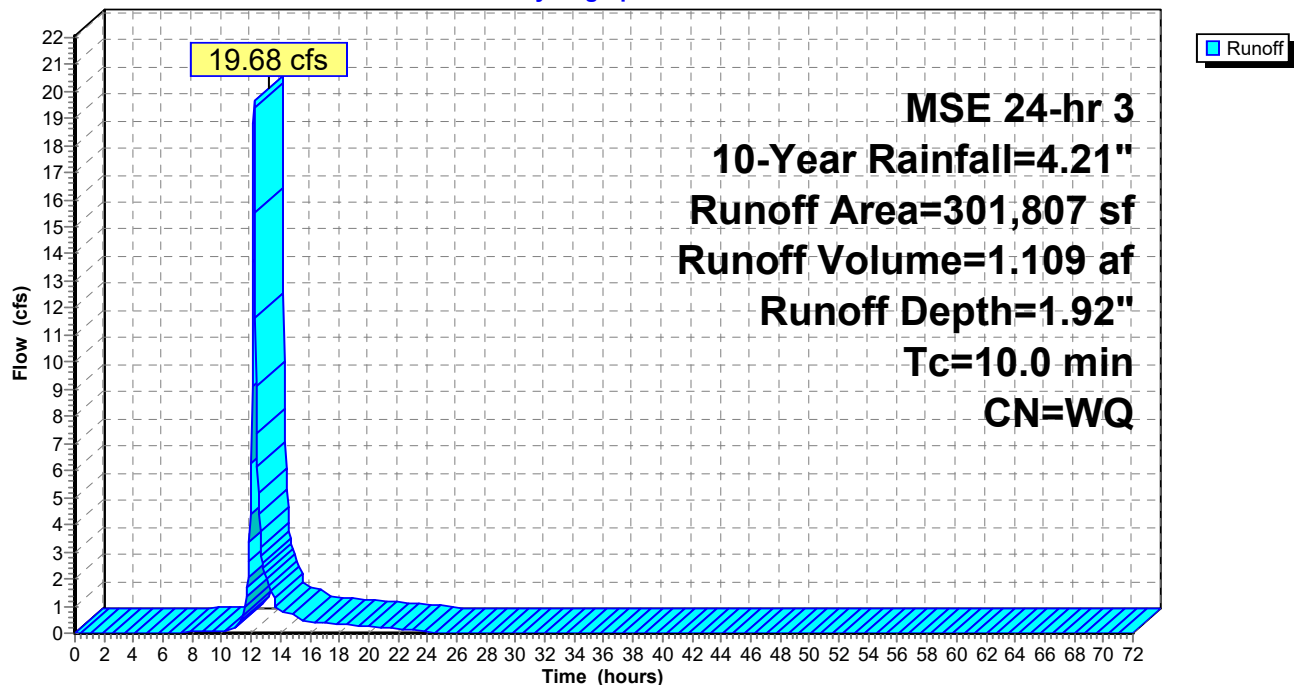
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 279,007   | 74 | >75% Grass cover, Good, HSG C |
| 22,800    | 98 | Roofs, HSG A                  |
| 301,807   |    | Weighted Average              |
| 279,007   |    | 92.45% Pervious Area          |
| 22,800    |    | 7.55% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-5A:**

Hydrograph



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**Summary for Subcatchment PB-5B:**

Runoff = 9.14 cfs @ 12.18 hrs, Volume= 0.514 af, Depth= 1.90"  
Routed to Pond P-3B :

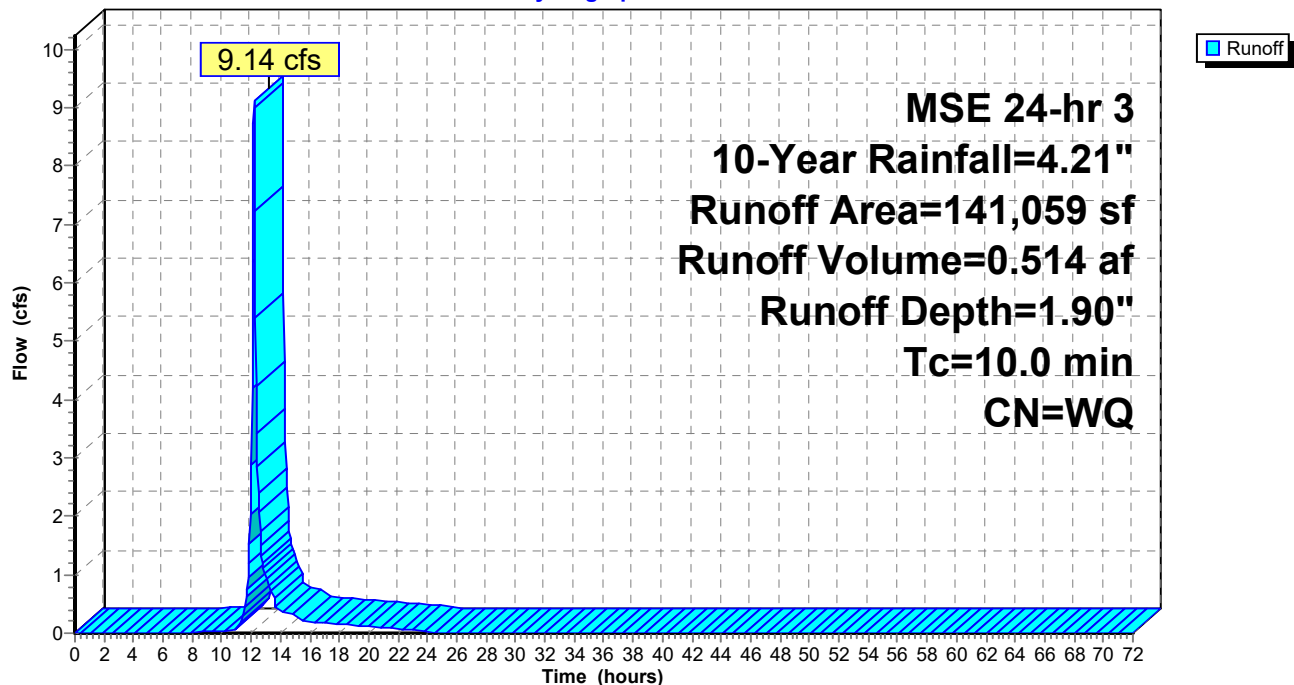
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 131,459   | 74 | >75% Grass cover, Good, HSG C |
| 9,600     | 98 | Roofs, HSG A                  |
| 141,059   |    | Weighted Average              |
| 131,459   |    | 93.19% Pervious Area          |
| 9,600     |    | 6.81% Impervious Area         |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 10.0        |                  |                  |                      |                   | Direct Entry, |

**Subcatchment PB-5B:**

Hydrograph



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**Summary for Subcatchment PB-6A:**

Runoff = 4.33 cfs @ 12.23 hrs, Volume= 0.309 af, Depth= 3.05"  
Routed to Pond P-6 :

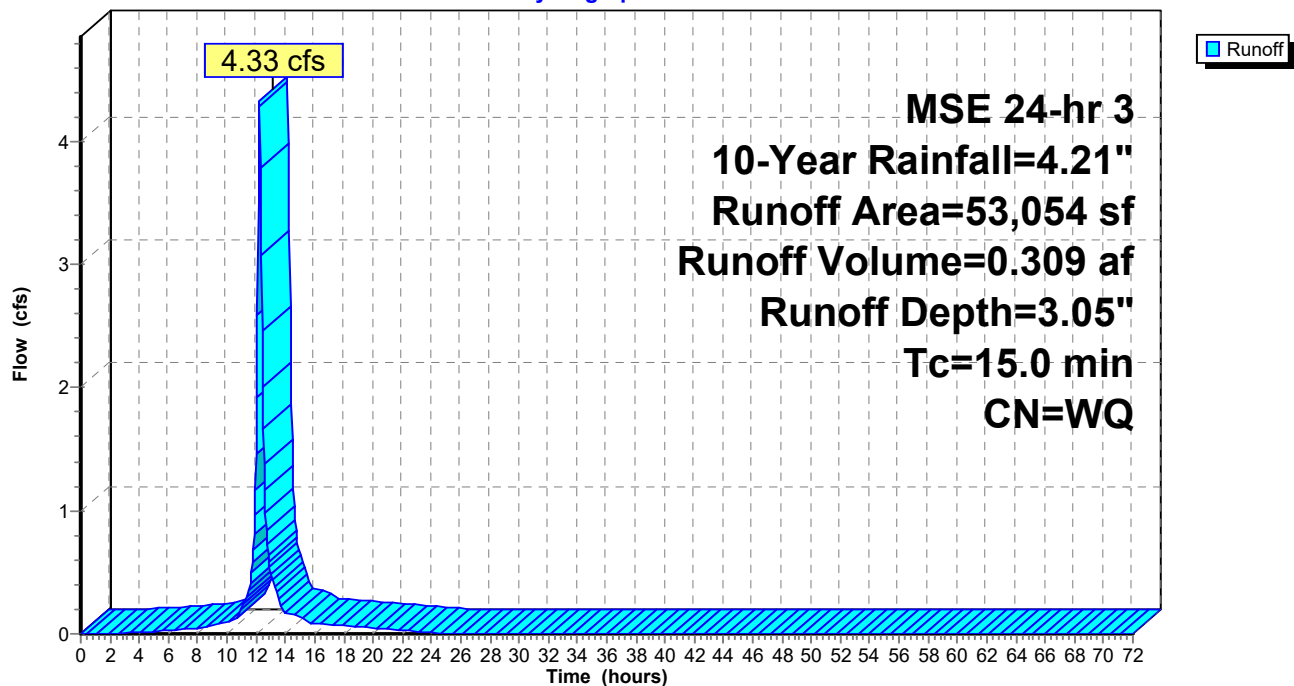
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 22,107    | 74 | >75% Grass cover, Good, HSG C |
| 4,800     | 98 | Roofs, HSG A                  |
| * 1,707   | 98 | Driveway                      |
| 24,440    | 98 | Water Surface, HSG A          |
| 53,054    |    | Weighted Average              |
| 22,107    |    | 41.67% Pervious Area          |
| 30,947    |    | 58.33% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 15.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-6A:**

Hydrograph



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**Summary for Subcatchment PB-6B:**

Runoff = 3.48 cfs @ 12.94 hrs, Volume= 0.599 af, Depth= 0.92"  
Routed to Pond PB6 : Wetland 6

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

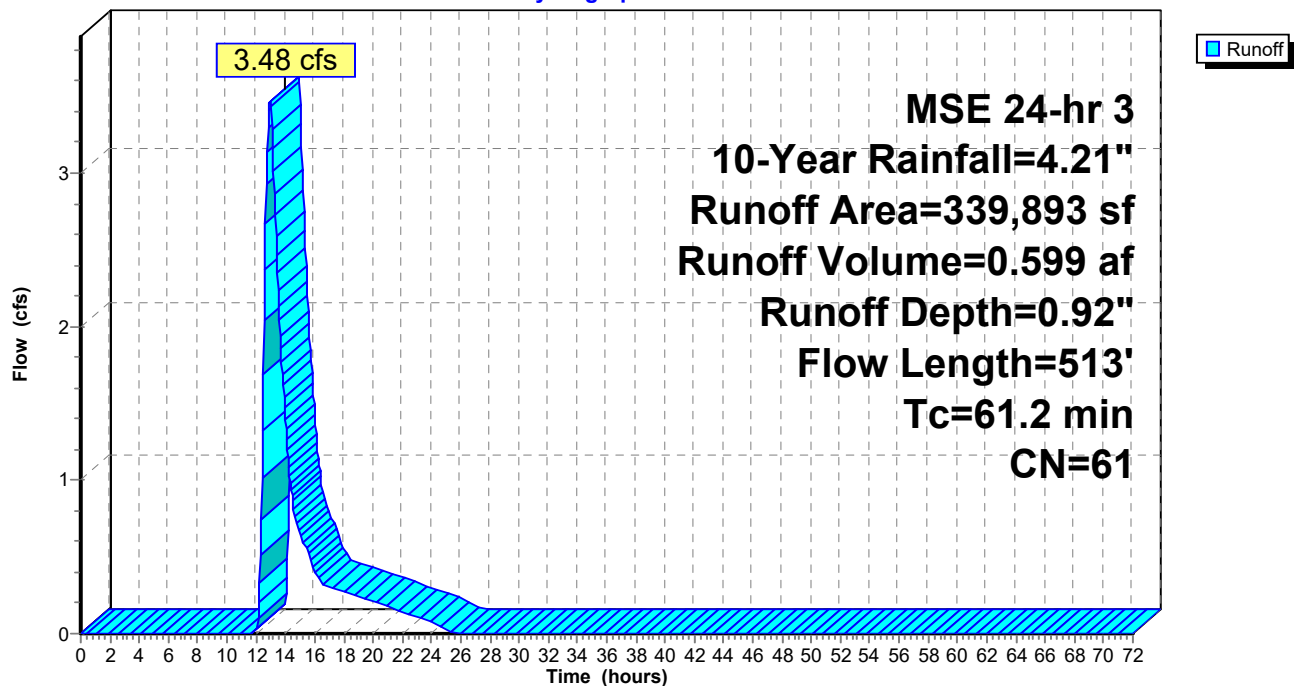
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 339,893   | 61 | >75% Grass cover, Good, HSG B |
| 339,893   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 55.9     | 300           | 0.0027        | 0.09              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 2.1      | 106           | 0.0140        | 0.83              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 3.2      | 107           | 0.0063        | 0.56              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 61.2     | 513           | Total         |                   |                |                                                                      |

**Subcatchment PB-6B:**

Hydrograph





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MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Subcatchment PB-7A:**

Runoff = 2.22 cfs @ 12.33 hrs, Volume= 0.193 af, Depth= 1.08"  
Routed to Pond PB7A : Wetland 7A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

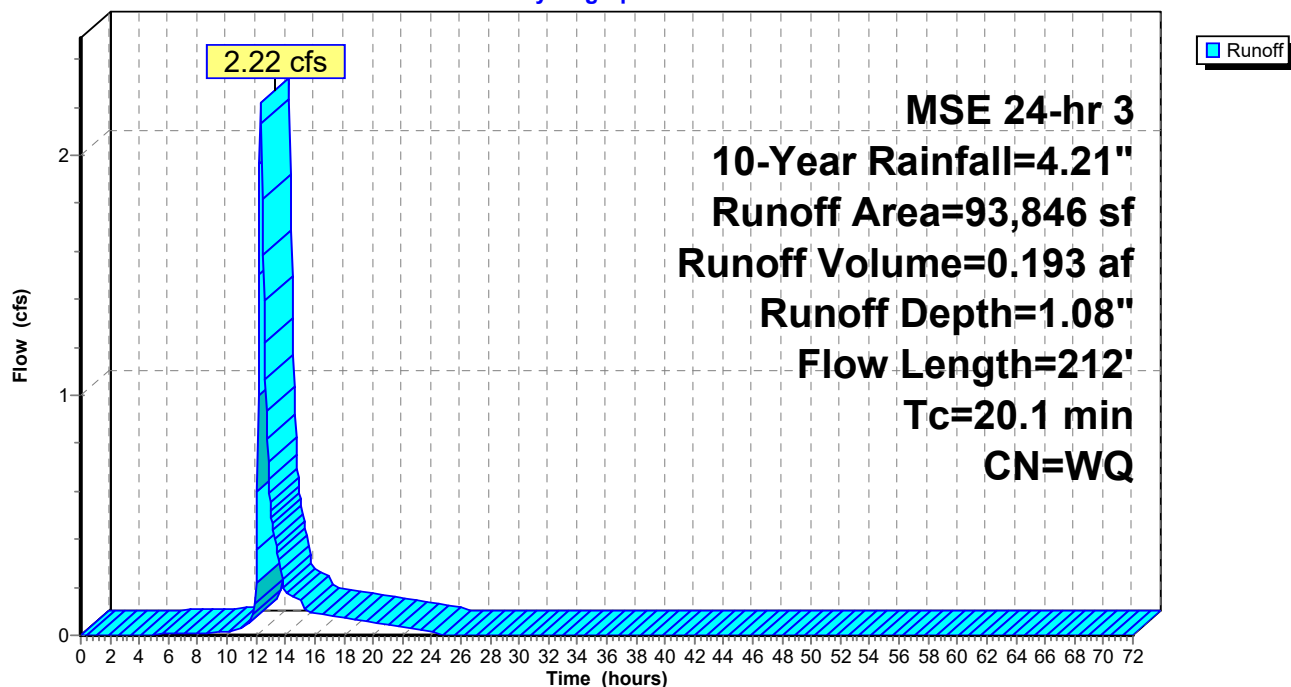
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 89,046    | 61 | >75% Grass cover, Good, HSG B |
| 4,800     | 98 | Roofs, HSG A                  |
| 93,846    |    | Weighted Average              |
| 89,046    |    | 94.89% Pervious Area          |
| 4,800     |    | 5.11% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 18.8     | 100           | 0.0046        | 0.09              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.3      | 112           | 0.0425        | 1.44              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 20.1     | 212           | Total         |                   |                |                                                                      |

**Subcatchment PB-7A:**

Hydrograph



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**Summary for Subcatchment PB-7B:**

Runoff = 3.78 cfs @ 12.19 hrs, Volume= 0.234 af, Depth= 1.09"  
Routed to Pond PB7B : Wetland 7B

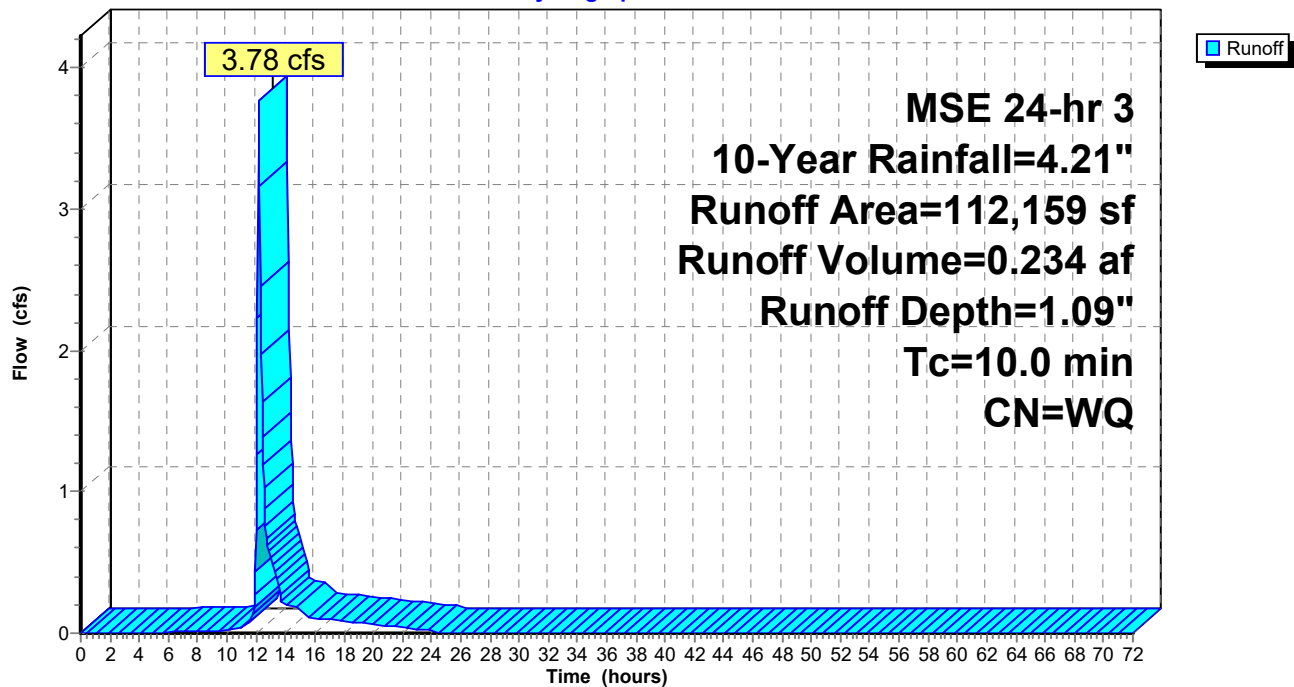
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 105,949   | 61 | >75% Grass cover, Good, HSG B |
| * 6,210   | 98 | Driveways                     |
| 112,159   |    | Weighted Average              |
| 105,949   |    | 94.46% Pervious Area          |
| 6,210     |    | 5.54% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-7B:**

Hydrograph



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**Summary for Subcatchment PB-7C:**

Runoff = 0.71 cfs @ 12.13 hrs, Volume= 0.034 af, Depth= 0.92"  
Routed to Pond PB7C : Wetland 7C

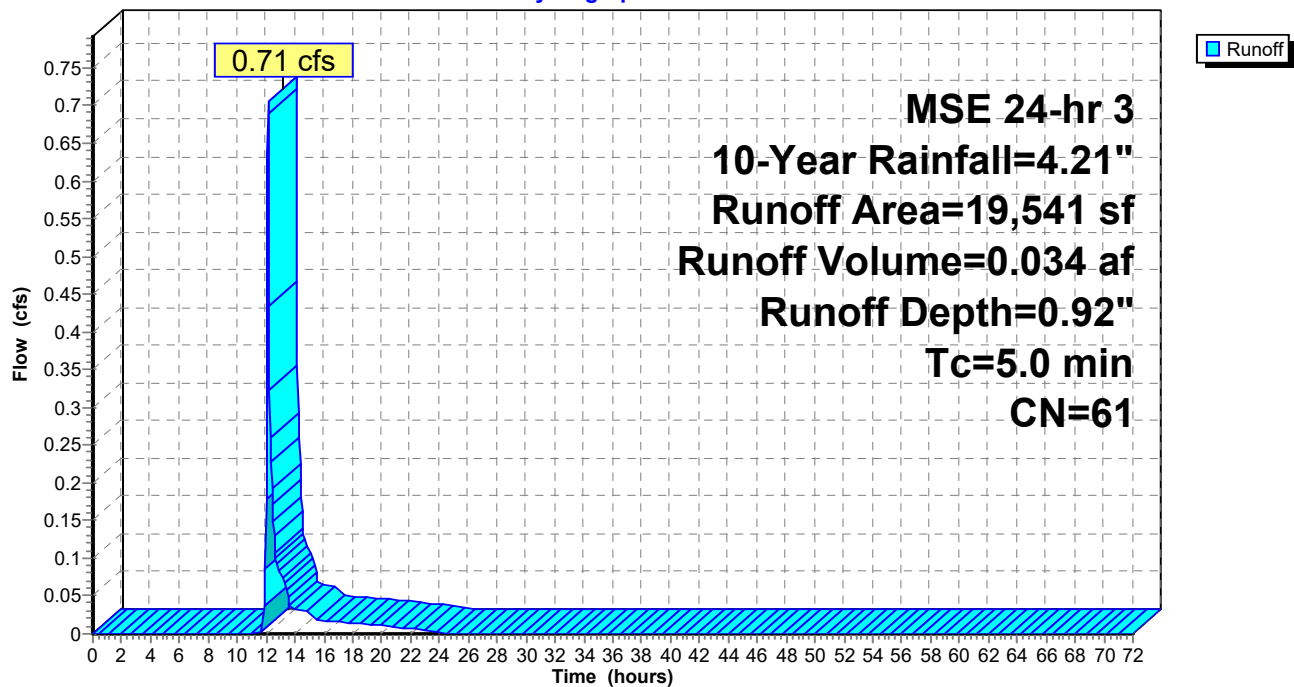
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 19,541    | 61 | >75% Grass cover, Good, HSG B |
| 19,541    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment PB-7C:**

Hydrograph



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**Summary for Subcatchment PB-7D:**

Runoff = 3.08 cfs @ 12.18 hrs, Volume= 0.175 af, Depth= 1.98"  
Routed to Reach P7B&D :

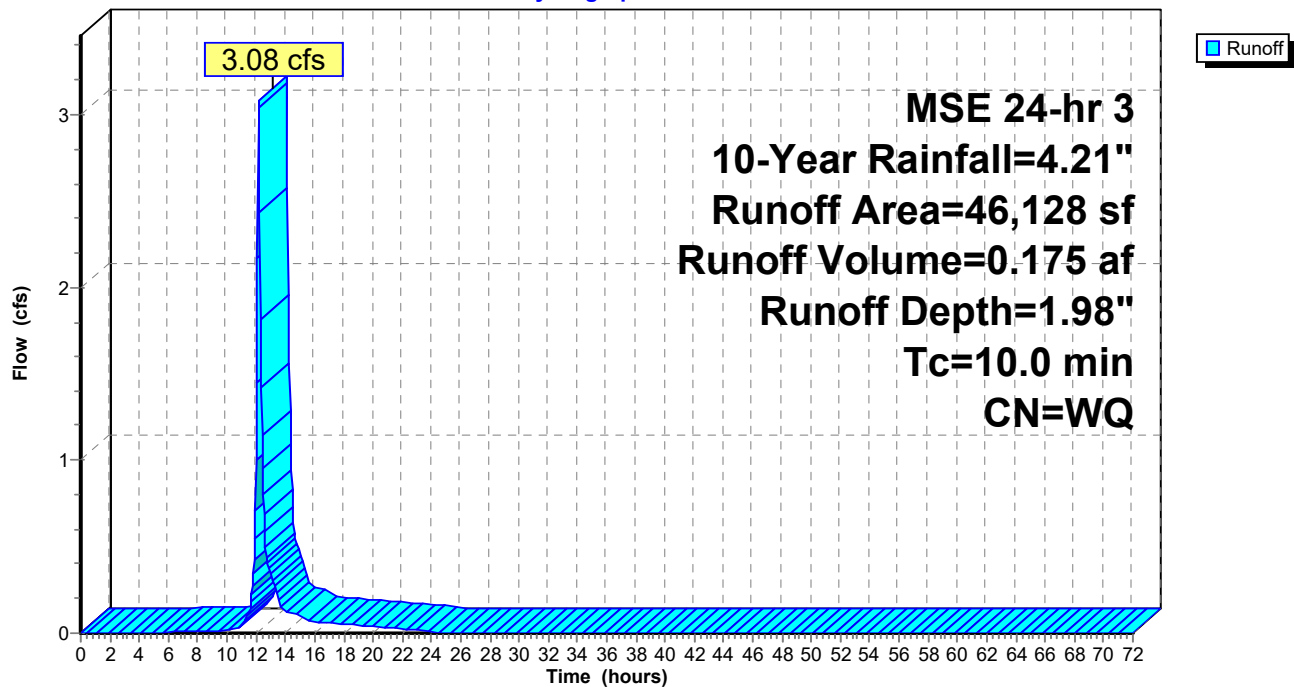
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 4,800     | 98 | Roofs, HSG A                  |
| 41,328    | 74 | >75% Grass cover, Good, HSG C |
| 46,128    |    | Weighted Average              |
| 41,328    |    | 89.59% Pervious Area          |
| 4,800     |    | 10.41% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-7D:**

Hydrograph



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**Summary for Subcatchment PB-8:**

Runoff = 22.43 cfs @ 12.25 hrs, Volume= 1.608 af, Depth= 2.40"  
Routed to Pond P-8 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

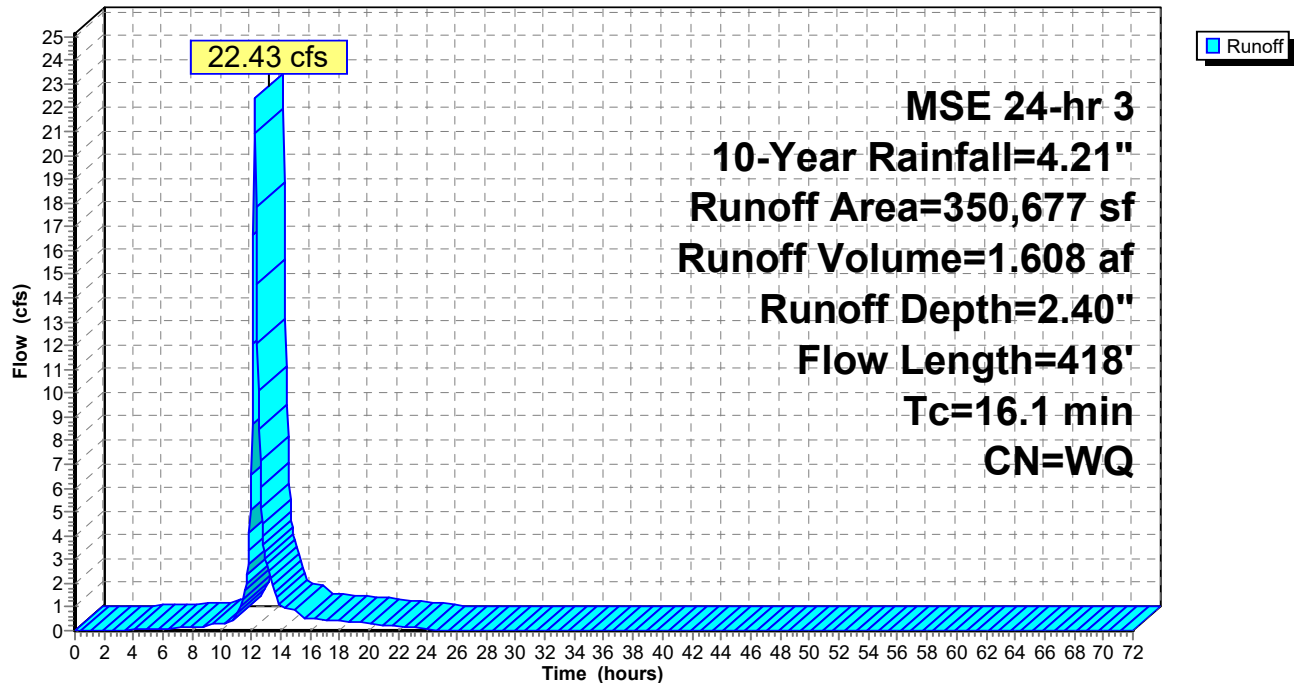
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 248,853   | 74 | >75% Grass cover, Good, HSG C |
| 10,800    | 98 | Roofs, HSG A                  |
| 91,024    | 98 | Water Surface, HSG A          |
| 350,677   |    | Weighted Average              |
| 248,853   |    | 70.96% Pervious Area          |
| 101,824   |    | 29.04% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 8.7      | 100           | 0.0313        | 0.19              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 7.4      | 318           | 0.0104        | 0.71              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 16.1     | 418           | Total         |                   |                |                                                                      |

**Subcatchment PB-8:**

Hydrograph



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MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Subcatchment PB-9:**

Runoff = 3.62 cfs @ 12.43 hrs, Volume= 0.345 af, Depth= 1.92"  
Routed to Pond P-3A :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

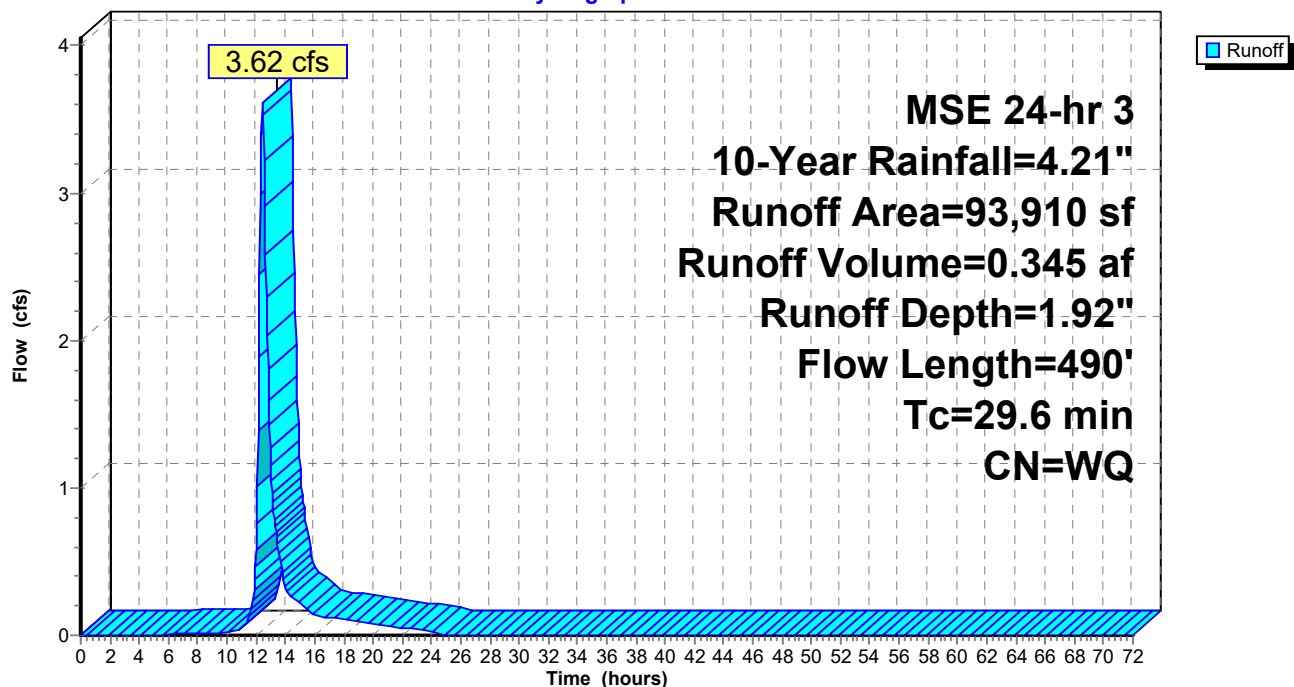
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 7,200     | 98 | Roofs, HSG A                  |
| 86,710    | 74 | >75% Grass cover, Good, HSG C |
| 93,910    |    | Weighted Average              |
| 86,710    |    | 92.33% Pervious Area          |
| 7,200     |    | 7.67% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 13.9     | 100           | 0.0098        | 0.12              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 15.7     | 390           | 0.0035        | 0.41              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 29.6     | 490           | Total         |                   |                |                                                                      |

**Subcatchment PB-9:**

Hydrograph



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MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Subcatchment R-1:**

Runoff = 5.85 cfs @ 12.12 hrs, Volume= 0.294 af, Depth= 2.79"

Routed to Reach POST : Overall Post-Development Runoff

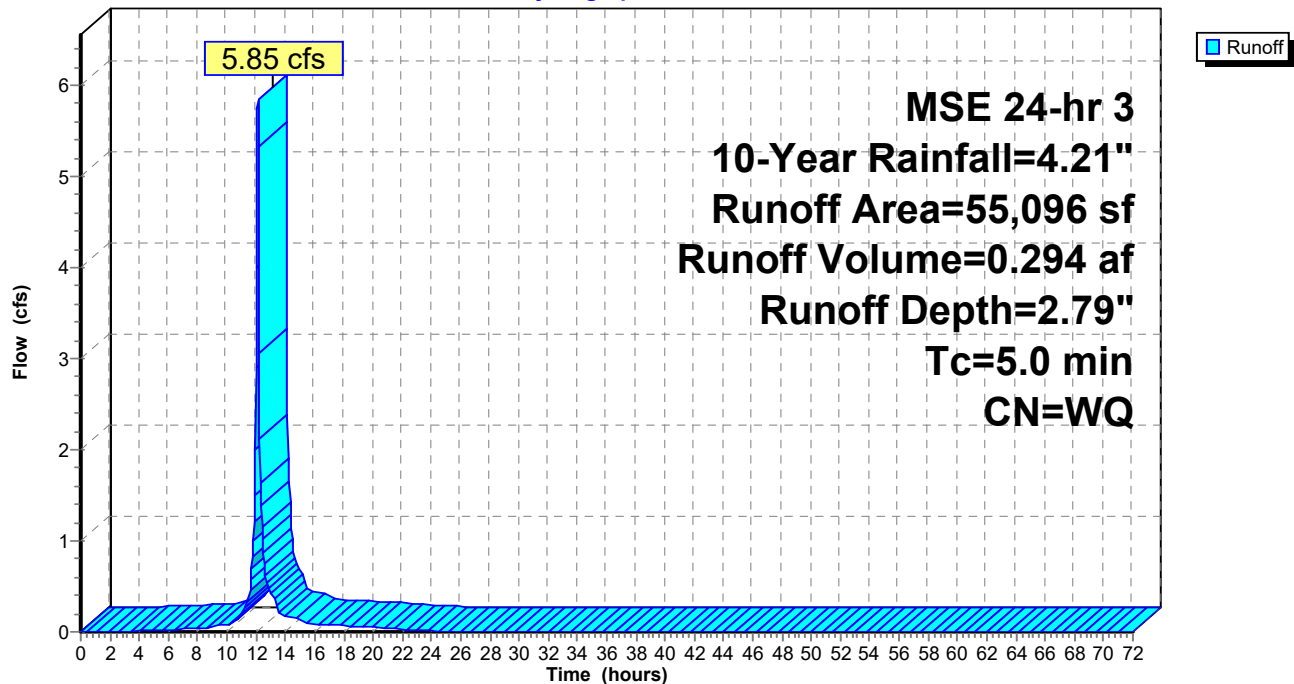
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 21,324    | 98 | Paved parking, HSG A          |
| 2,400     | 98 | Roofs, HSG A                  |
| 2,018     | 98 | Paved parking, HSG A          |
| 29,354    | 74 | >75% Grass cover, Good, HSG C |
| 55,096    |    | Weighted Average              |
| 29,354    |    | 53.28% Pervious Area          |
| 25,742    |    | 46.72% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment R-1:**

Hydrograph



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MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Subcatchment R-2:**

Runoff = 10.08 cfs @ 12.11 hrs, Volume= 0.519 af, Depth= 3.22"  
Routed to Reach 2A&2B :

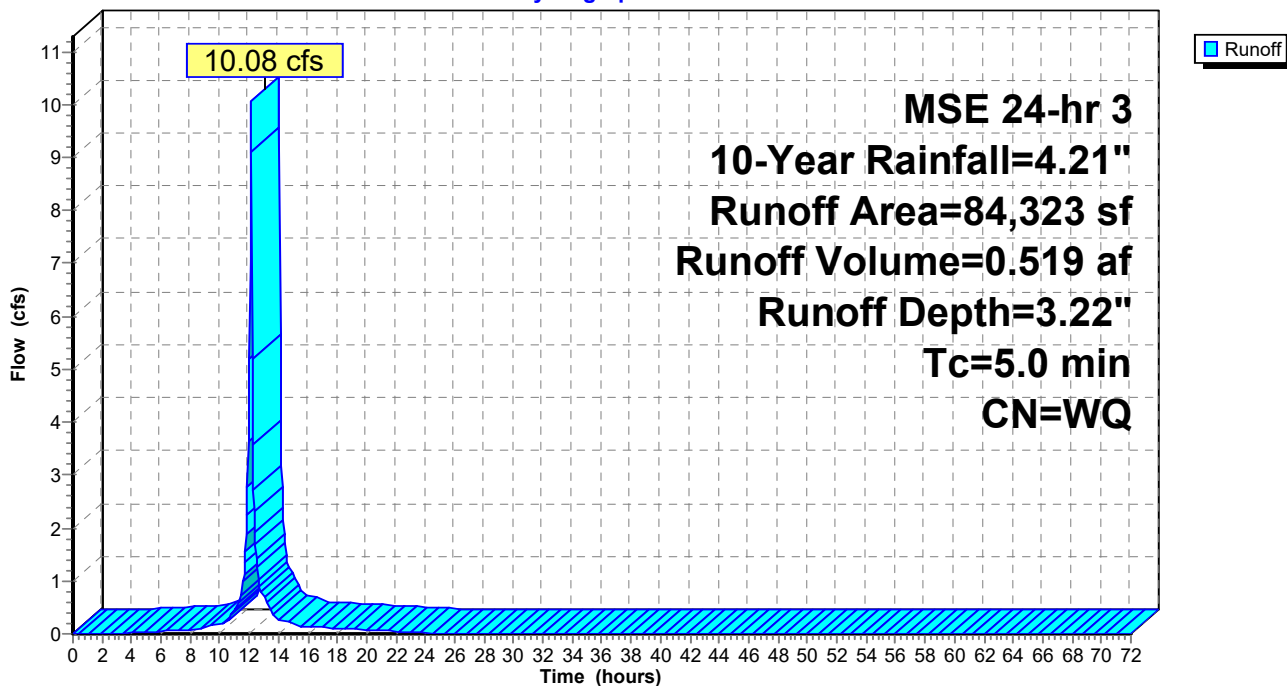
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 37,745    | 98 | Paved parking, HSG A          |
| 9,600     | 98 | Roofs, HSG A                  |
| 8,203     | 98 | Paved parking, HSG A          |
| 28,775    | 74 | >75% Grass cover, Good, HSG C |
| 84,323    |    | Weighted Average              |
| 28,775    |    | 34.12% Pervious Area          |
| 55,548    |    | 65.88% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment R-2:**

Hydrograph





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**Summary for Subcatchment R-3:**

Runoff = 21.29 cfs @ 12.11 hrs, Volume= 1.103 af, Depth= 3.35"  
Routed to Pond P-12 :

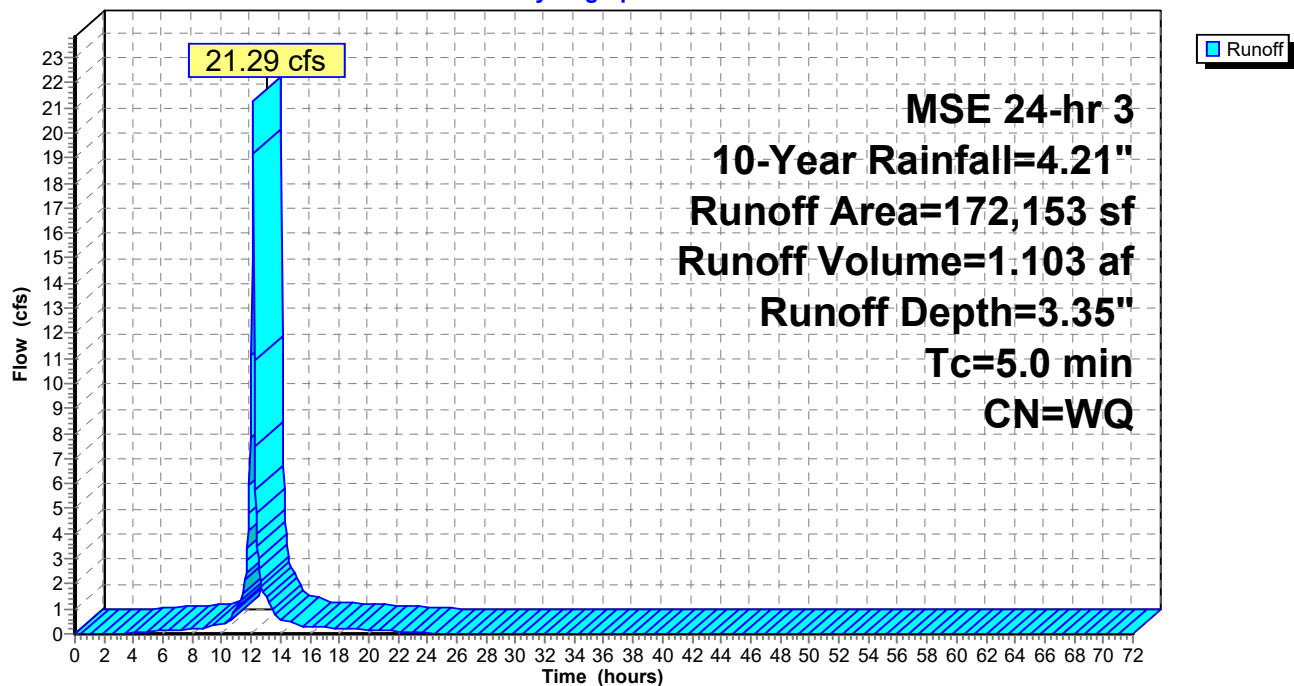
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 78,388    | 98 | Paved parking, HSG A          |
| 24,000    | 98 | Roofs, HSG A                  |
| 21,308    | 98 | Paved parking, HSG A          |
| 48,457    | 74 | >75% Grass cover, Good, HSG C |
| 172,153   |    | Weighted Average              |
| 48,457    |    | 28.15% Pervious Area          |
| 123,696   |    | 71.85% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment R-3:**

Hydrograph



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**Summary for Subcatchment R-5:**

Runoff = 3.35 cfs @ 12.17 hrs, Volume= 0.209 af, Depth= 3.57"  
Routed to Pond P-6 :

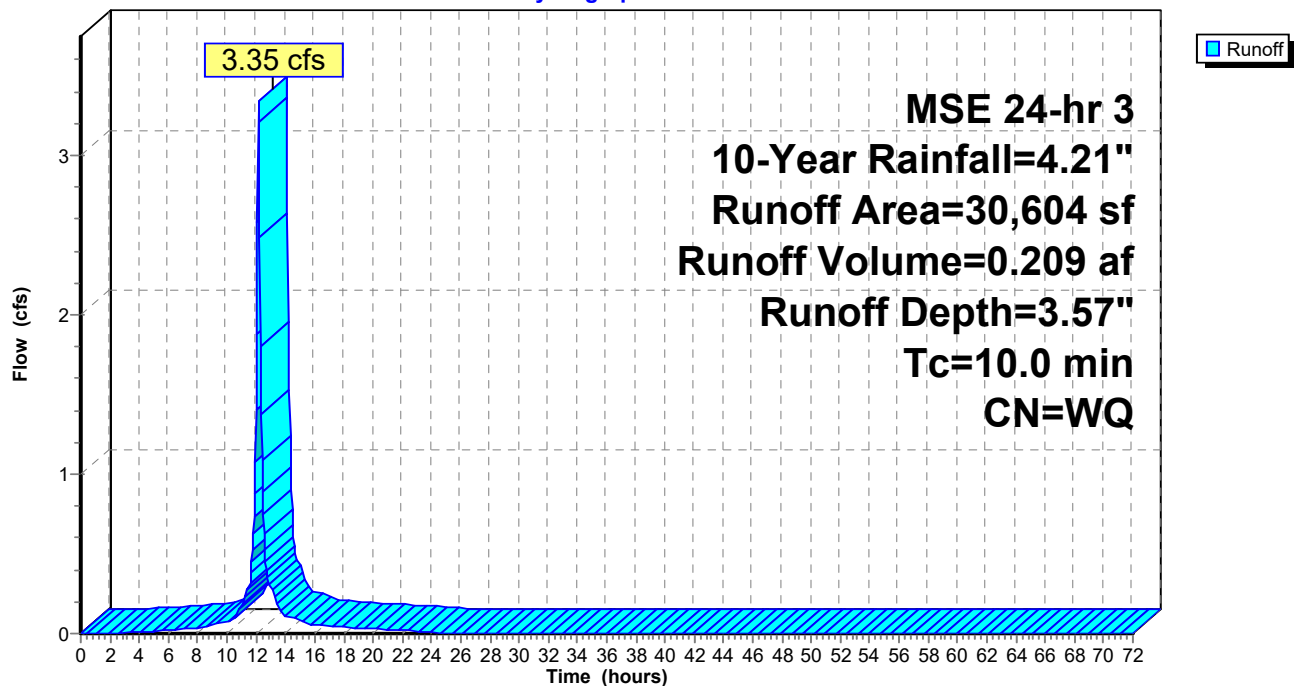
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 22,262    | 98 | Paved roads w/curbs & sewers, HSG A |
| * 2,767   | 98 | Driveways                           |
| 5,575     | 74 | >75% Grass cover, Good, HSG C       |
| 30,604    |    | Weighted Average                    |
| 5,575     |    | 18.22% Pervious Area                |
| 25,029    |    | 81.78% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment R-5:**

Hydrograph



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**Summary for Subcatchment R-6:**

Runoff = 2.03 cfs @ 12.11 hrs, Volume= 0.107 af, Depth= 3.69"  
Routed to Pond P-12 :

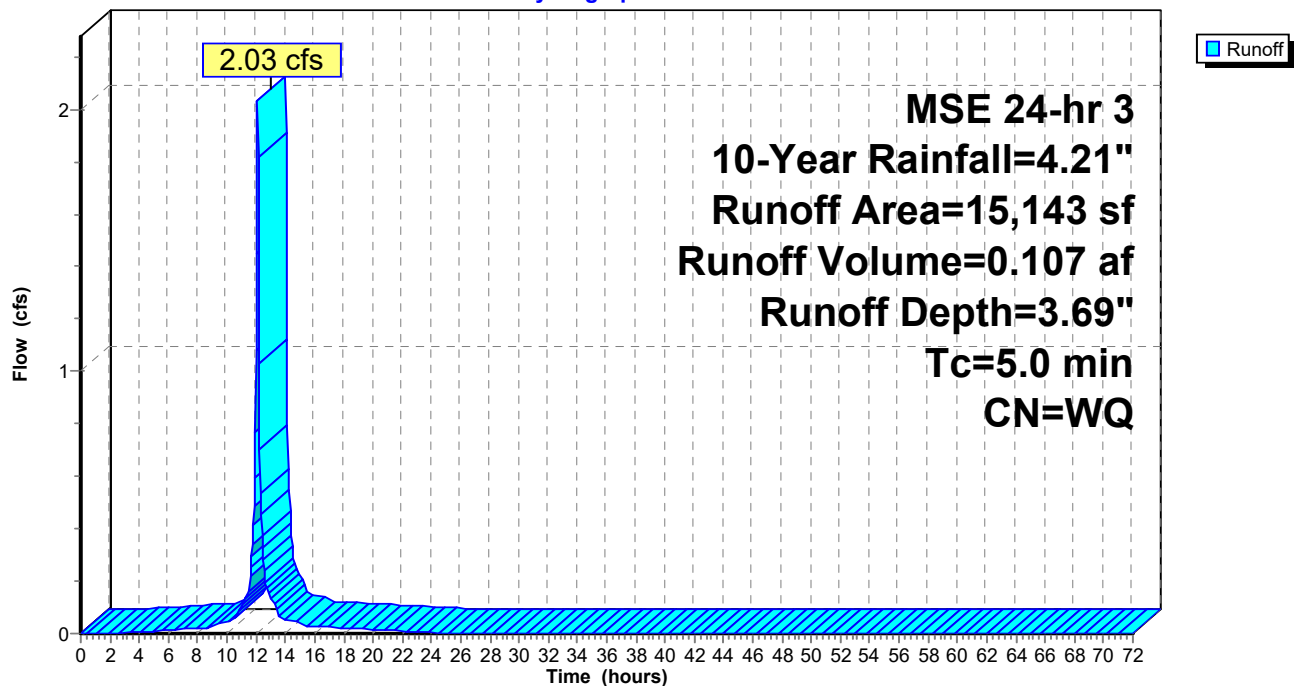
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 10,647    | 98 | Paved roads w/curbs & sewers, HSG A |
| * 2,554   | 98 | Driveways                           |
| 1,942     | 74 | >75% Grass cover, Good, HSG C       |
| 15,143    |    | Weighted Average                    |
| 1,942     |    | 12.82% Pervious Area                |
| 13,201    |    | 87.18% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment R-6:**

Hydrograph



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**Summary for Subcatchment R-7:**

Runoff = 1.47 cfs @ 12.11 hrs, Volume= 0.076 af, Depth= 3.36"  
Routed to Reach 1R :

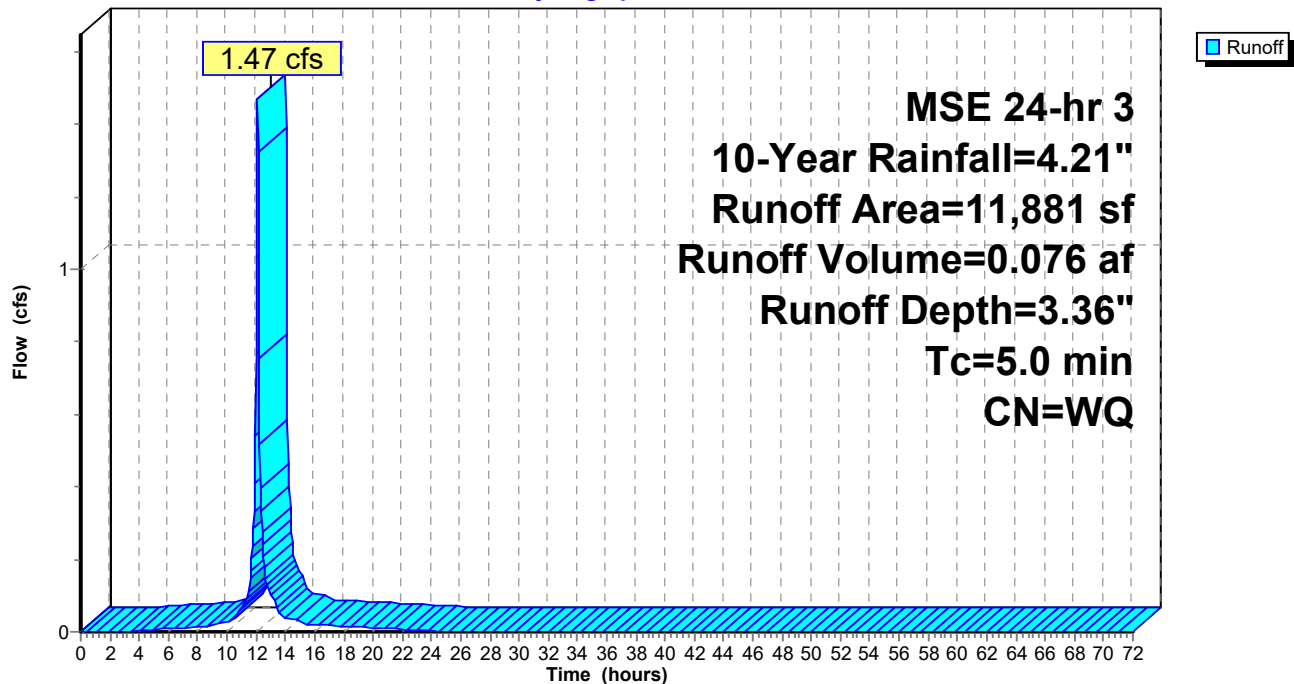
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 6,407     | 98 | Paved roads w/curbs & sewers, HSG A |
| 1,200     | 98 | Roofs, HSG A                        |
| * 989     | 98 | Concrete                            |
| 3,285     | 74 | >75% Grass cover, Good, HSG C       |
| 11,881    |    | Weighted Average                    |
| 3,285     |    | 27.65% Pervious Area                |
| 8,596     |    | 72.35% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment R-7:**

Hydrograph



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**Summary for Subcatchment R-8:**

Runoff = 10.15 cfs @ 12.11 hrs, Volume= 0.525 af, Depth= 3.30"  
Routed to Pond P-3A :

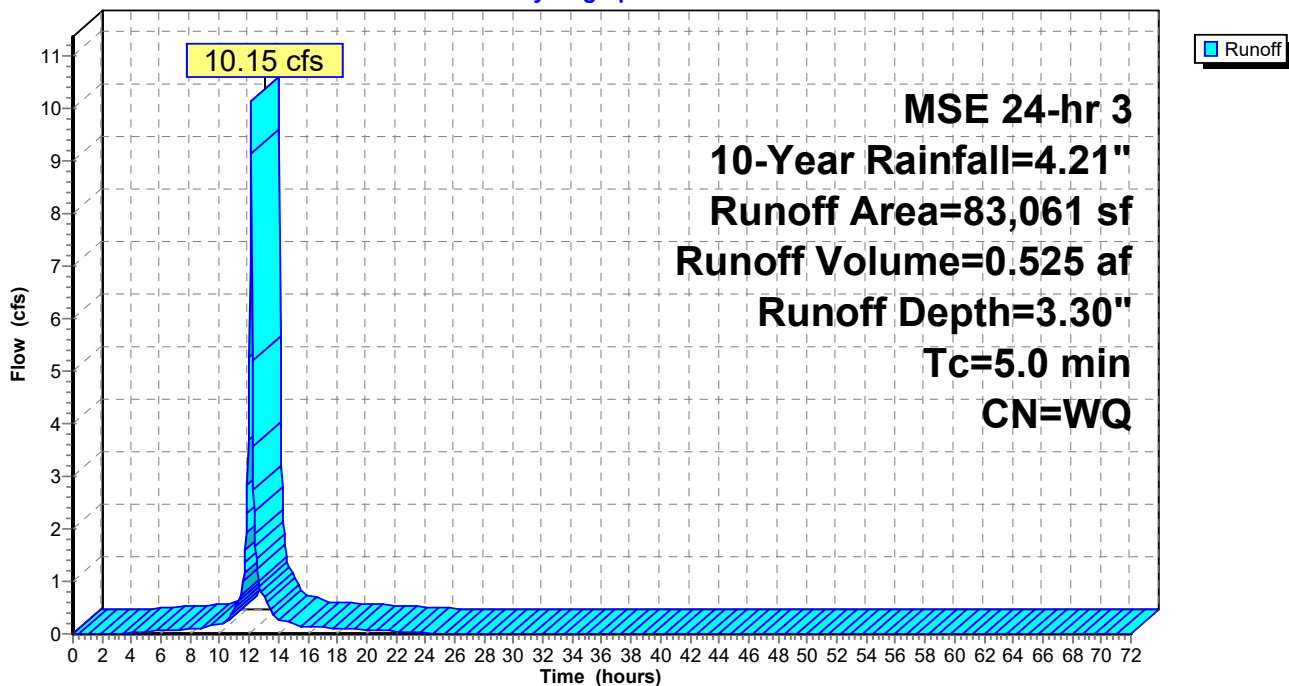
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 10-Year Rainfall=4.21"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 31,957    | 98 | Paved roads w/curbs & sewers, HSG A |
| 16,800    | 98 | Roofs, HSG A                        |
| * 9,173   | 98 | Concrete                            |
| 25,131    | 74 | >75% Grass cover, Good, HSG C       |
| <hr/>     |    |                                     |
| 83,061    |    | Weighted Average                    |
| 25,131    |    | 30.26% Pervious Area                |
| 57,930    |    | 69.74% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment R-8:**

Hydrograph



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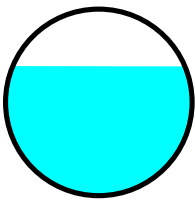
### Summary for Reach 1C&PB-13:

Inflow Area = 2.818 ac, 9.61% Impervious, Inflow Depth = 1.97" for 10-Year event  
Inflow = 6.54 cfs @ 12.26 hrs, Volume= 0.462 af  
Outflow = 6.54 cfs @ 12.27 hrs, Volume= 0.462 af, Atten= 0%, Lag= 0.2 min  
Routed to Pond P-6 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
Max. Velocity= 5.00 fps, Min. Travel Time= 0.3 min  
Avg. Velocity= 1.45 fps, Avg. Travel Time= 1.0 min

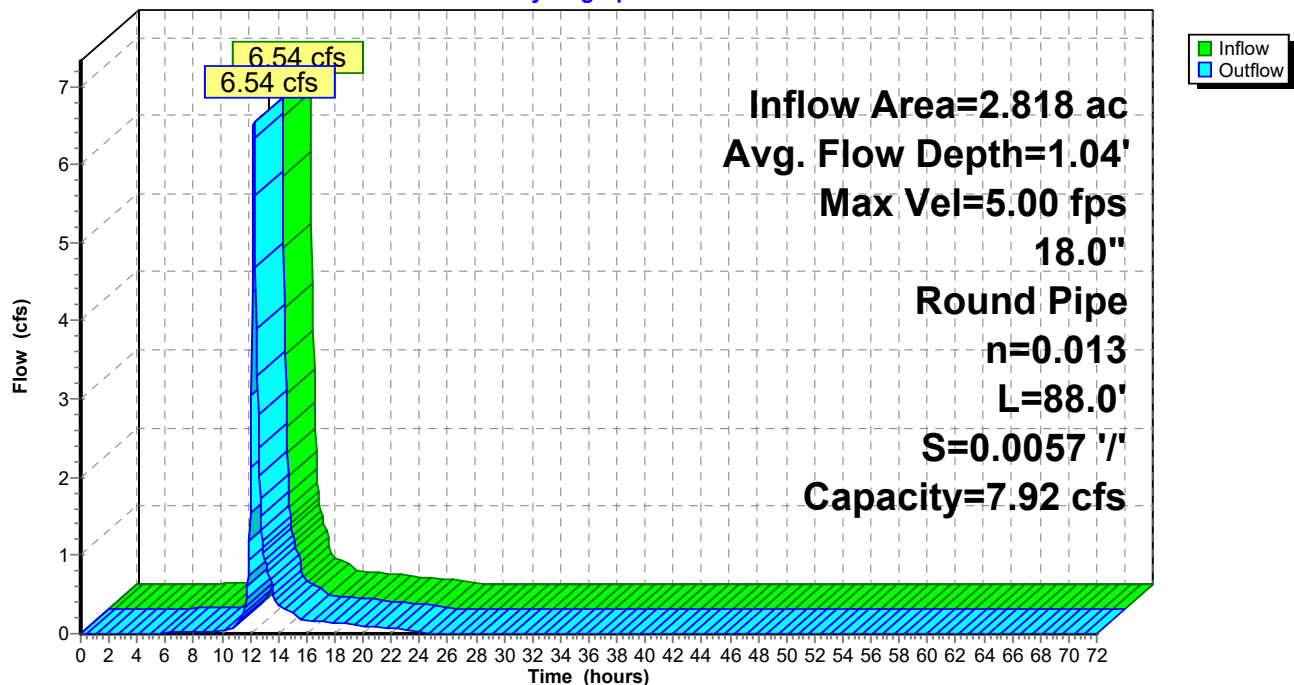
Peak Storage= 115 cf @ 12.27 hrs  
Average Depth at Peak Storage= 1.04' , Surface Width= 1.38'  
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 7.92 cfs

18.0" Round Pipe  
n= 0.013  
Length= 88.0' Slope= 0.0057 '/'  
Inlet Invert= 898.3', Outlet Invert= 897.8'



### Reach 1C&PB-13:

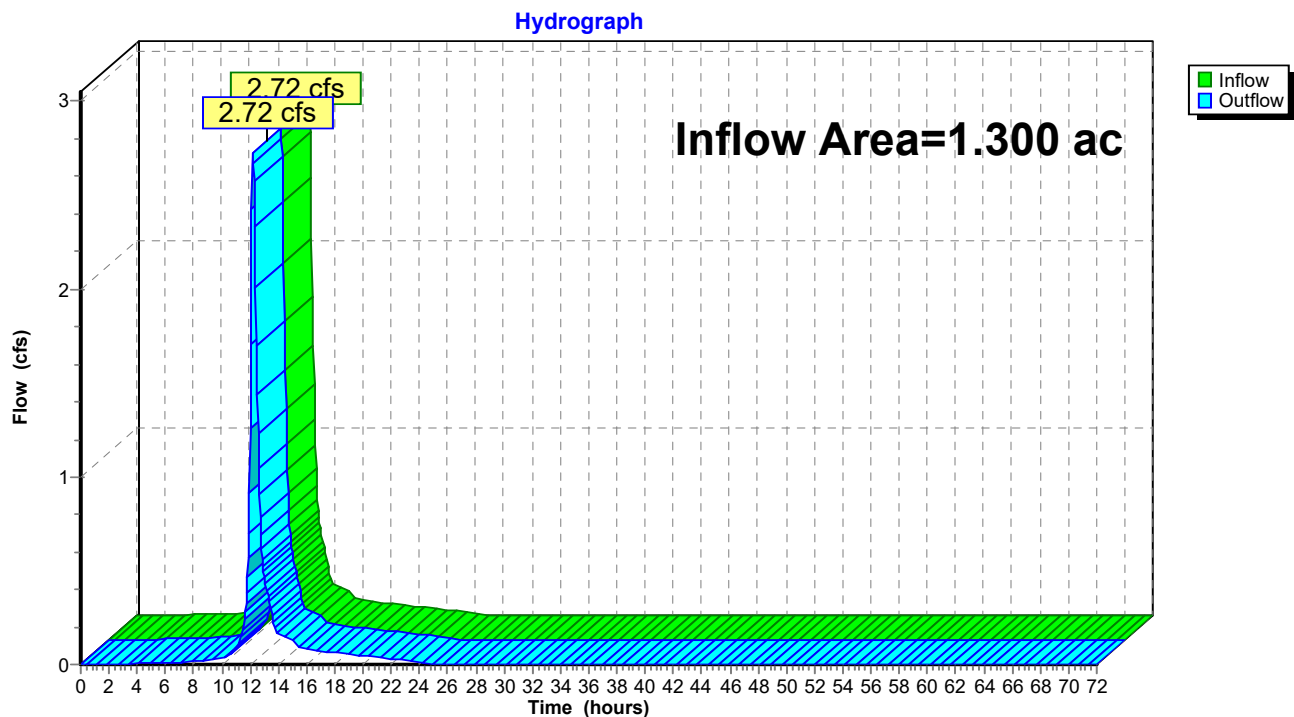
Hydrograph



**Summary for Reach 1R:**

Inflow Area = 1.300 ac, 19.42% Impervious, Inflow Depth = 2.18" for 10-Year event  
Inflow = 2.72 cfs @ 12.16 hrs, Volume= 0.237 af  
Outflow = 2.72 cfs @ 12.16 hrs, Volume= 0.237 af, Atten= 0%, Lag= 0.0 min  
Routed to Pond P-3A :

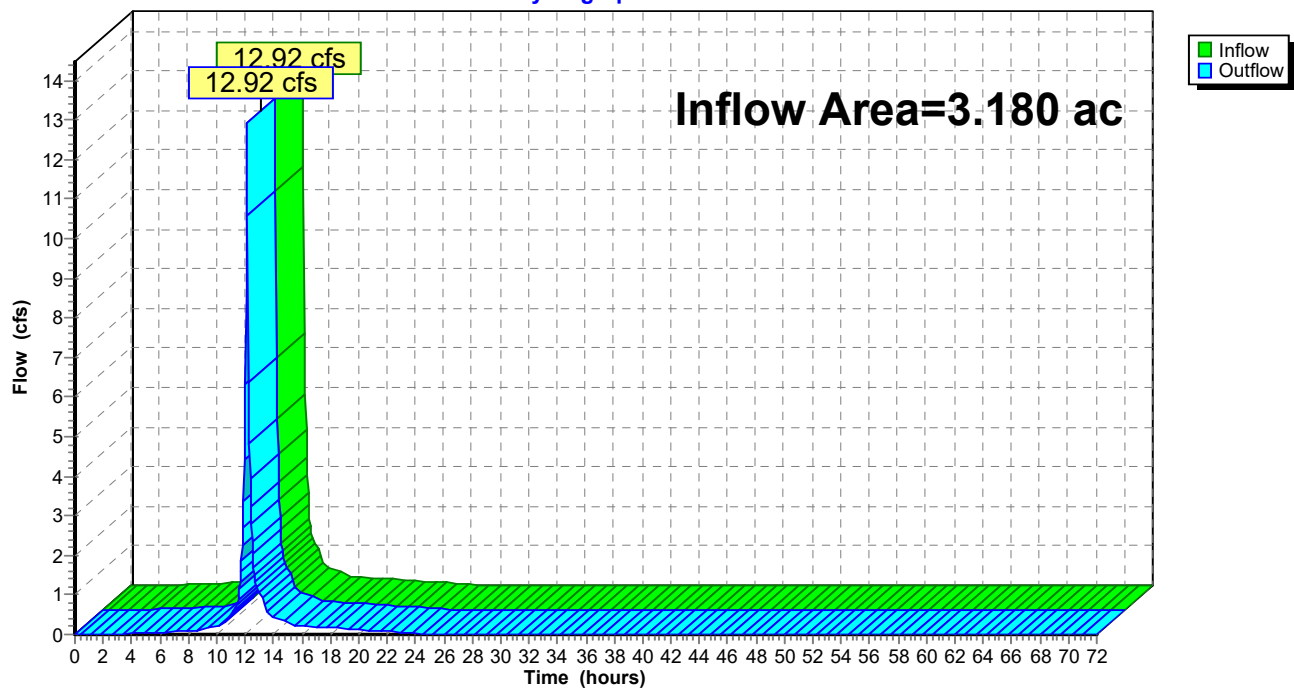
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach 1R:**

**Summary for Reach 2A&2B:**

Inflow Area = 3.180 ac, 43.06% Impervious, Inflow Depth = 2.71" for 10-Year event  
Inflow = 12.92 cfs @ 12.13 hrs, Volume= 0.718 af  
Outflow = 12.92 cfs @ 12.13 hrs, Volume= 0.718 af, Atten= 0%, Lag= 0.0 min  
Routed to Pond P-3A :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

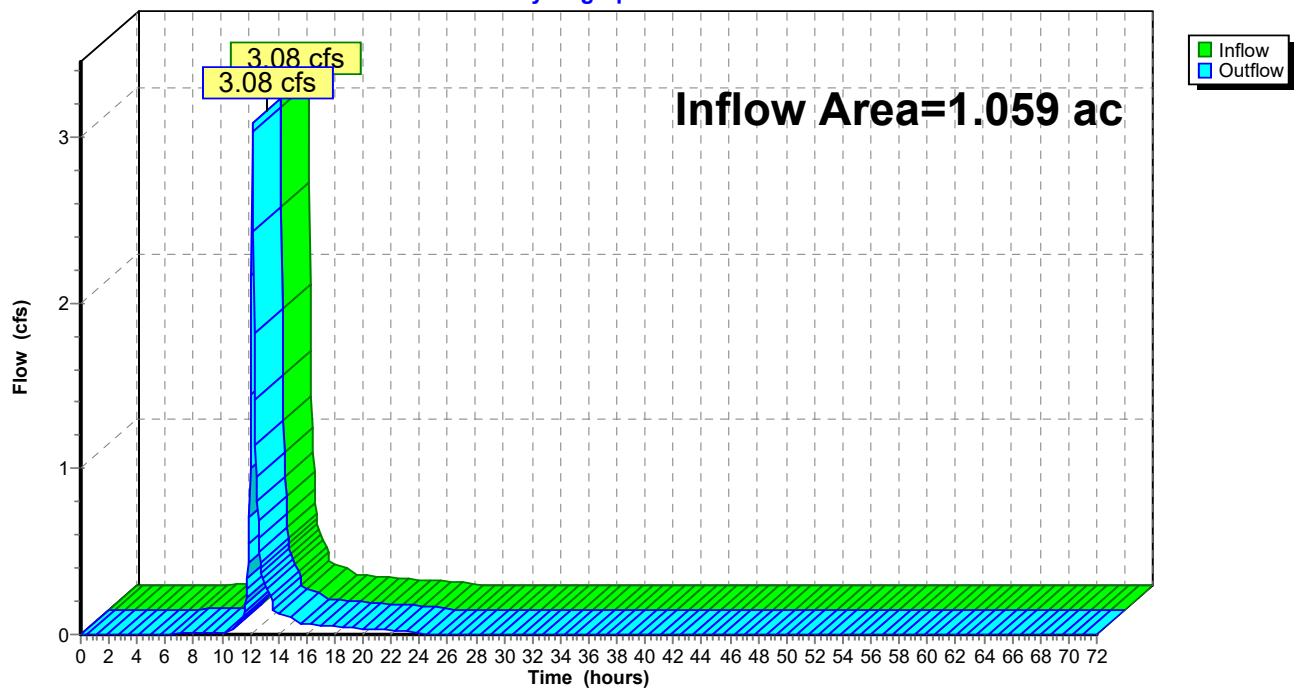
**Reach 2A&2B:****Hydrograph**



**Summary for Reach P7B&D:**

Inflow Area = 1.059 ac, 10.41% Impervious, Inflow Depth = 1.98" for 10-Year event  
Inflow = 3.08 cfs @ 12.18 hrs, Volume= 0.175 af  
Outflow = 3.08 cfs @ 12.18 hrs, Volume= 0.175 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PSE-Q : SE Quarter (Private Ditch B)

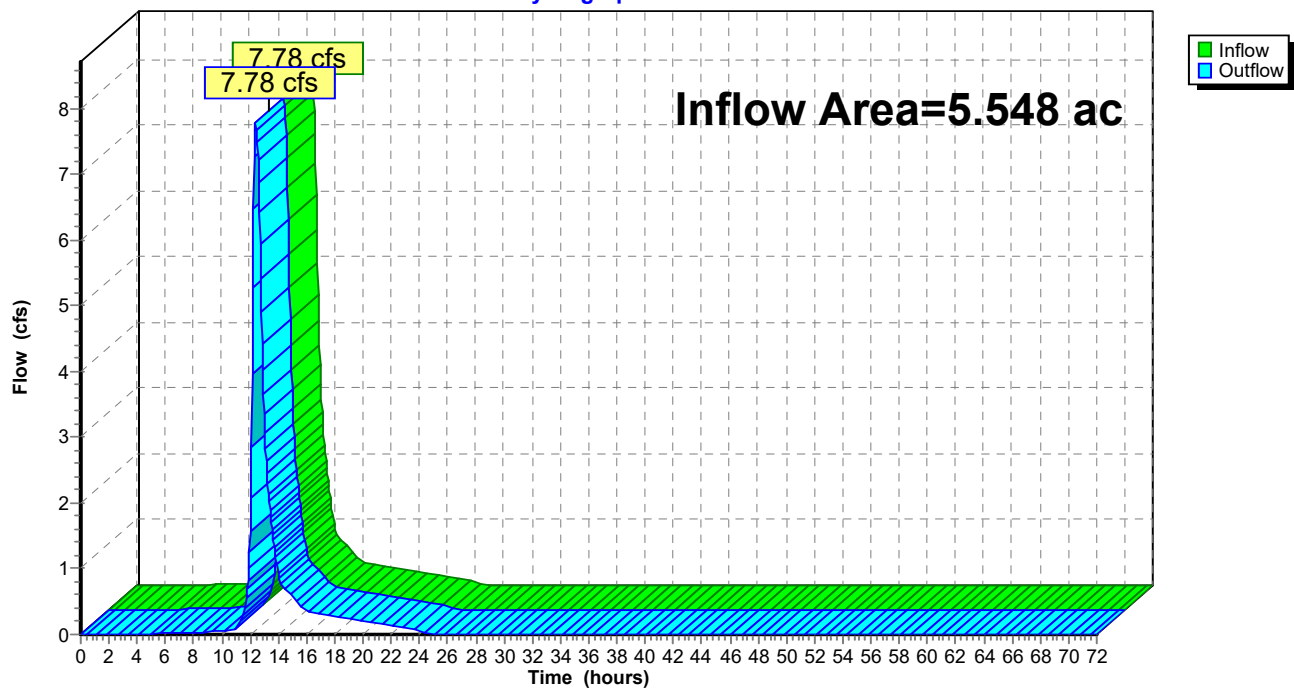
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach P7B&D:****Hydrograph**

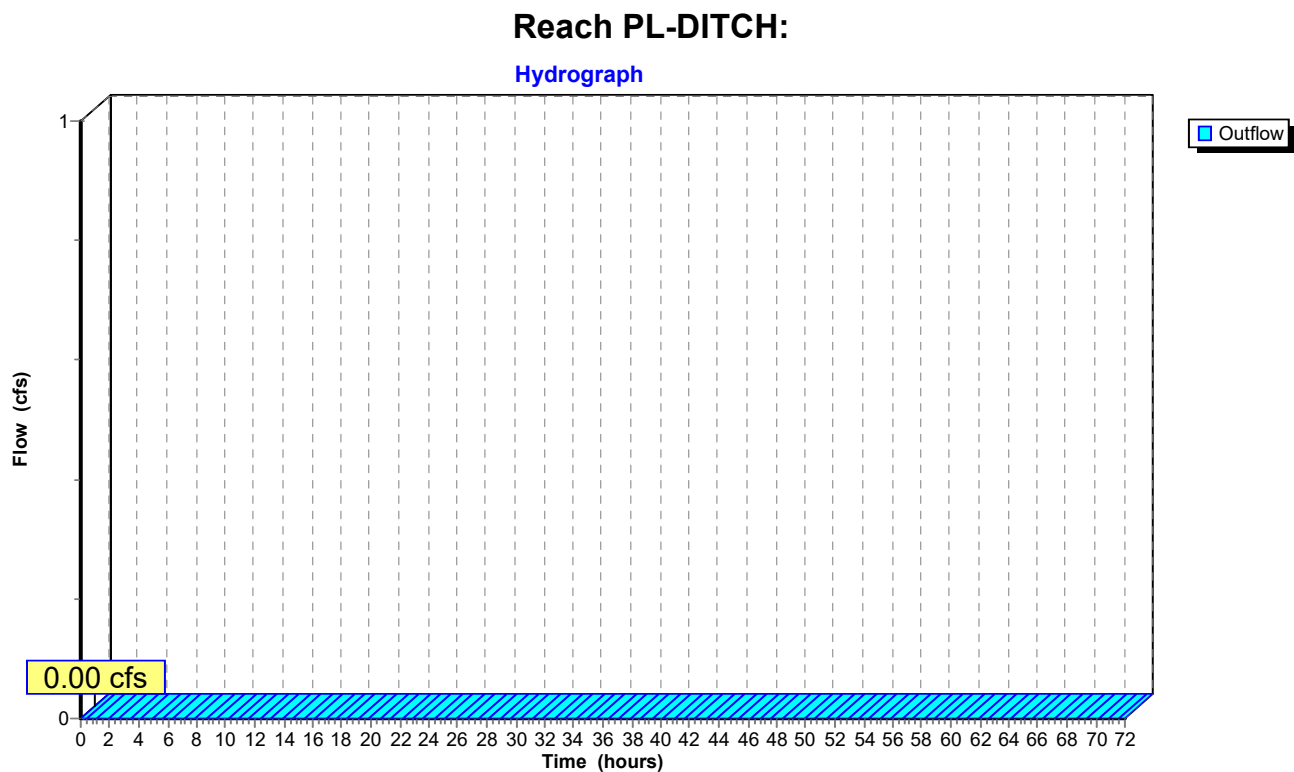
**Summary for Reach PB-1C&PB-14B:**

Inflow Area = 5.548 ac, 7.94% Impervious, Inflow Depth = 1.93" for 10-Year event  
Inflow = 7.78 cfs @ 12.40 hrs, Volume= 0.892 af  
Outflow = 7.78 cfs @ 12.40 hrs, Volume= 0.892 af, Atten= 0%, Lag= 0.0 min  
Routed to Pond P-12 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PB-1C&PB-14B:****Hydrograph**

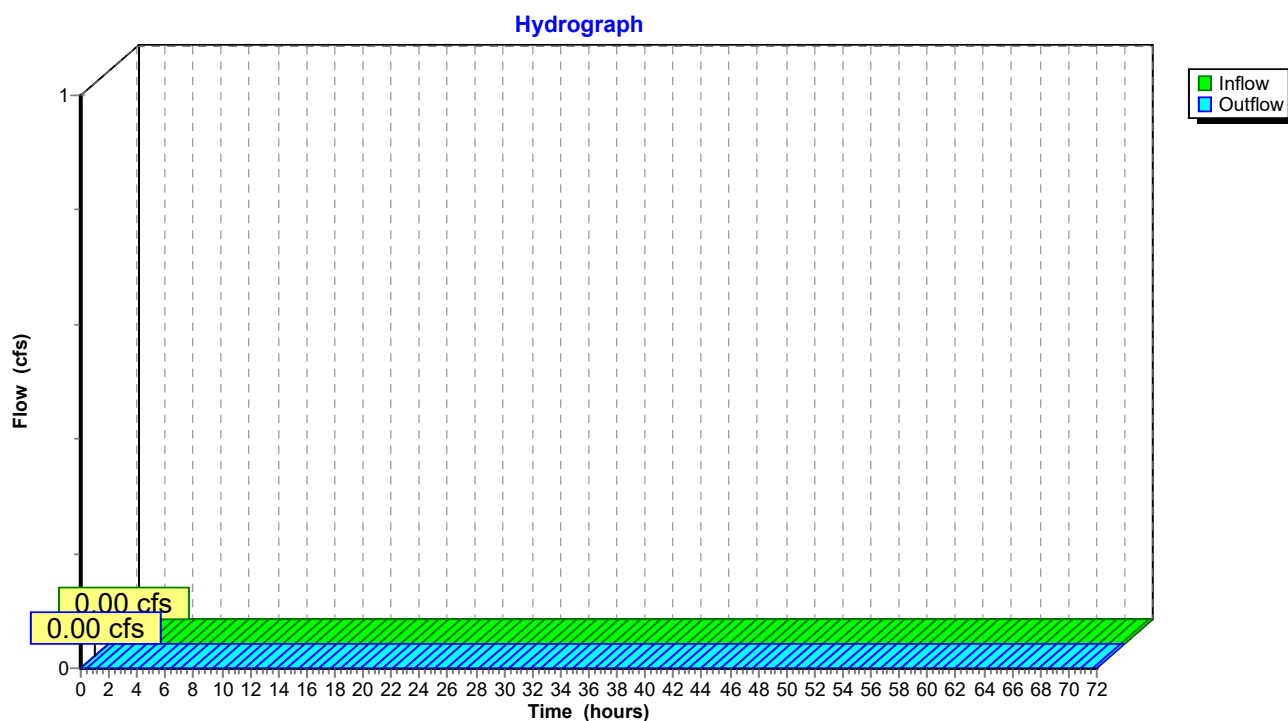
## Summary for Reach PL-DITCH:



**Summary for Reach PN: North Boundary**

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach POST : Overall Post-Development Runoff

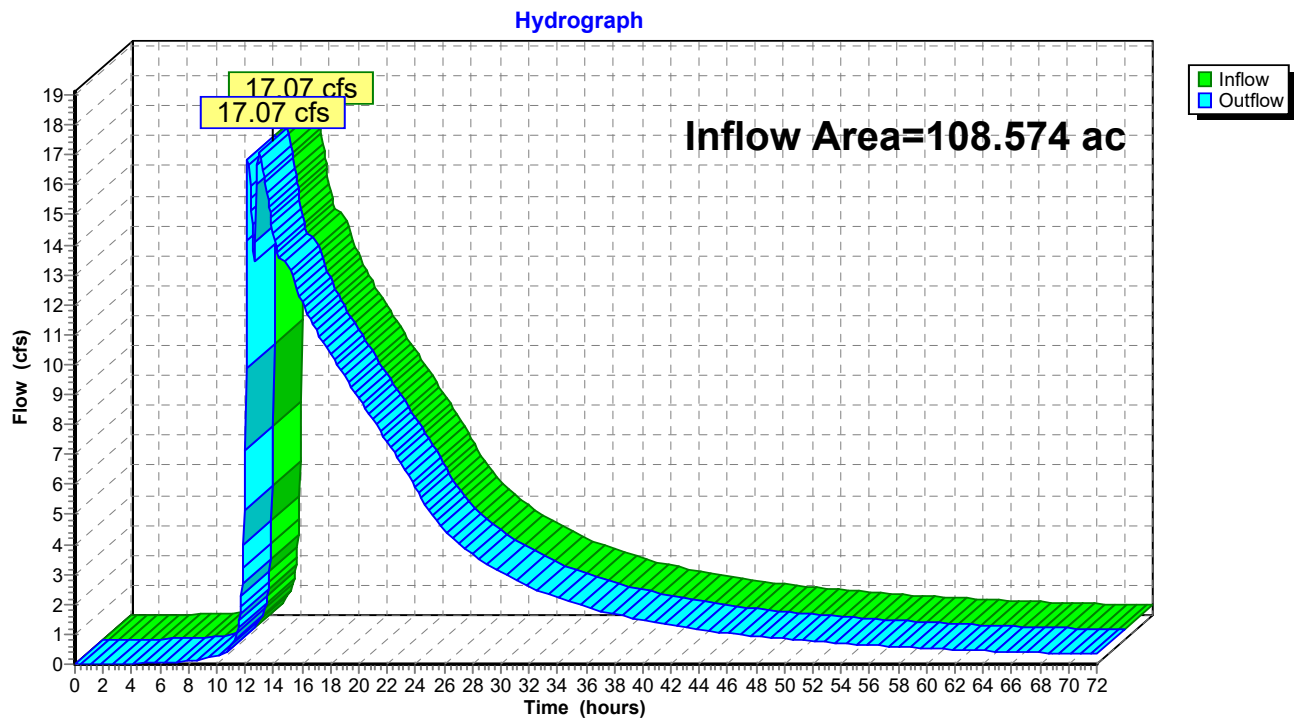
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PN: North Boundary**

**Summary for Reach POST: Overall Post-Development Runoff**

Inflow Area = 108.574 ac, 26.34% Impervious, Inflow Depth > 1.83" for 10-Year event  
Inflow = 17.07 cfs @ 12.98 hrs, Volume= 16.598 af  
Outflow = 17.07 cfs @ 12.98 hrs, Volume= 16.598 af, Atten= 0%, Lag= 0.0 min

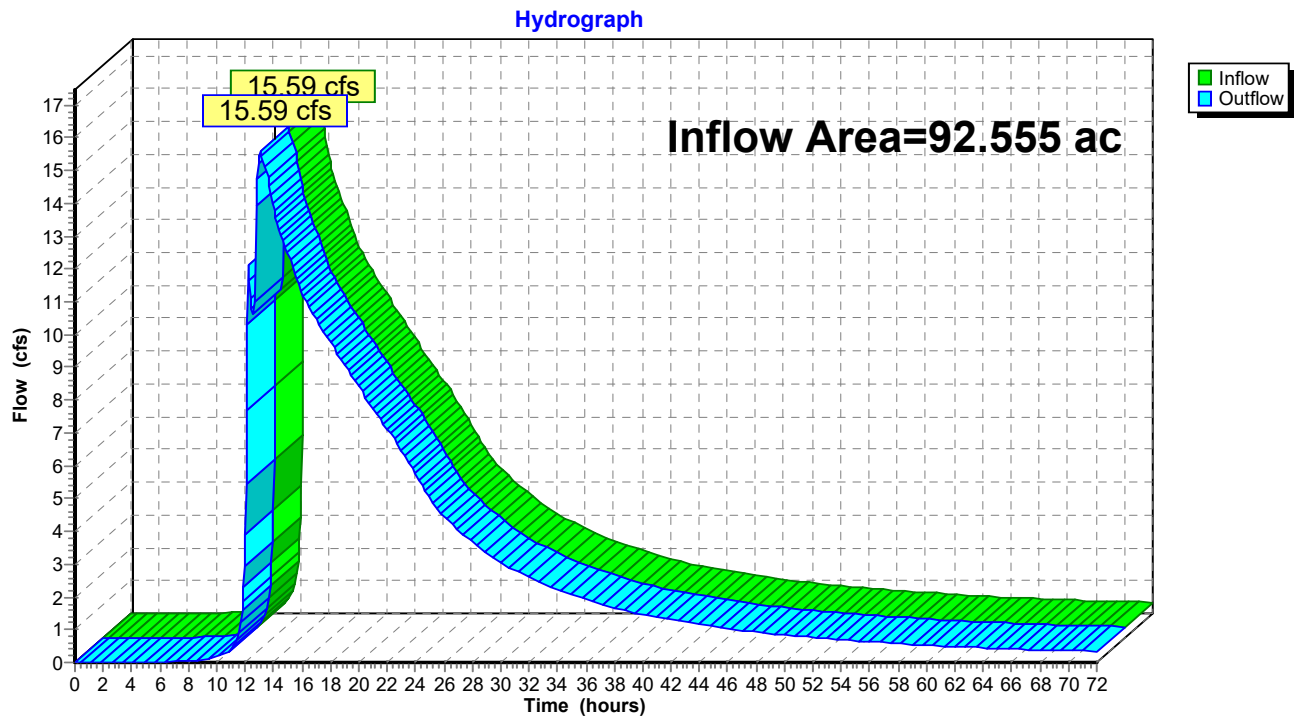
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach POST: Overall Post-Development Runoff**

**Summary for Reach PS: South Total (Ditch 44-9)**

Inflow Area = 92.555 ac, 29.58% Impervious, Inflow Depth > 2.03" for 10-Year event  
Inflow = 15.59 cfs @ 13.06 hrs, Volume= 15.665 af  
Outflow = 15.59 cfs @ 13.06 hrs, Volume= 15.665 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach POST : Overall Post-Development Runoff

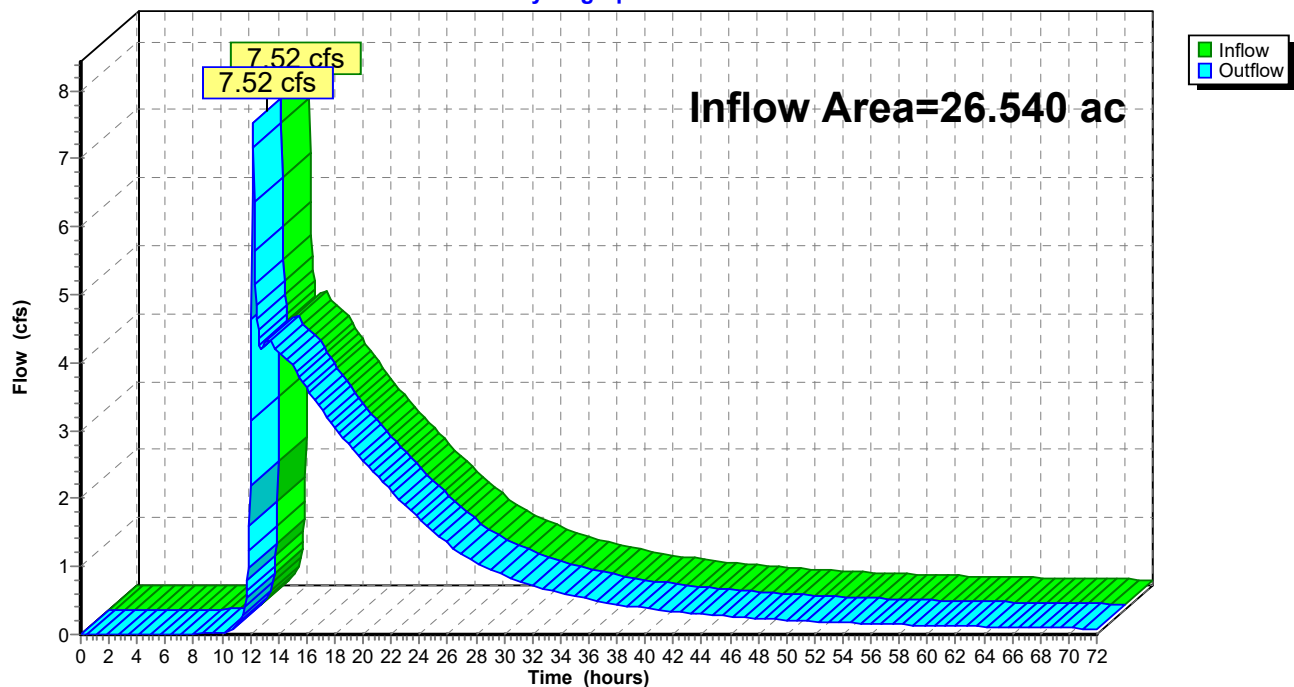
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PS: South Total (Ditch 44-9)**

**Summary for Reach PSE-Q: SE Quarter (Private Ditch B)**

Inflow Area = 26.540 ac, 26.80% Impervious, Inflow Depth > 2.14" for 10-Year event  
Inflow = 7.52 cfs @ 12.21 hrs, Volume= 4.743 af  
Outflow = 7.52 cfs @ 12.21 hrs, Volume= 4.743 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PS : South Total (Ditch 44-9)

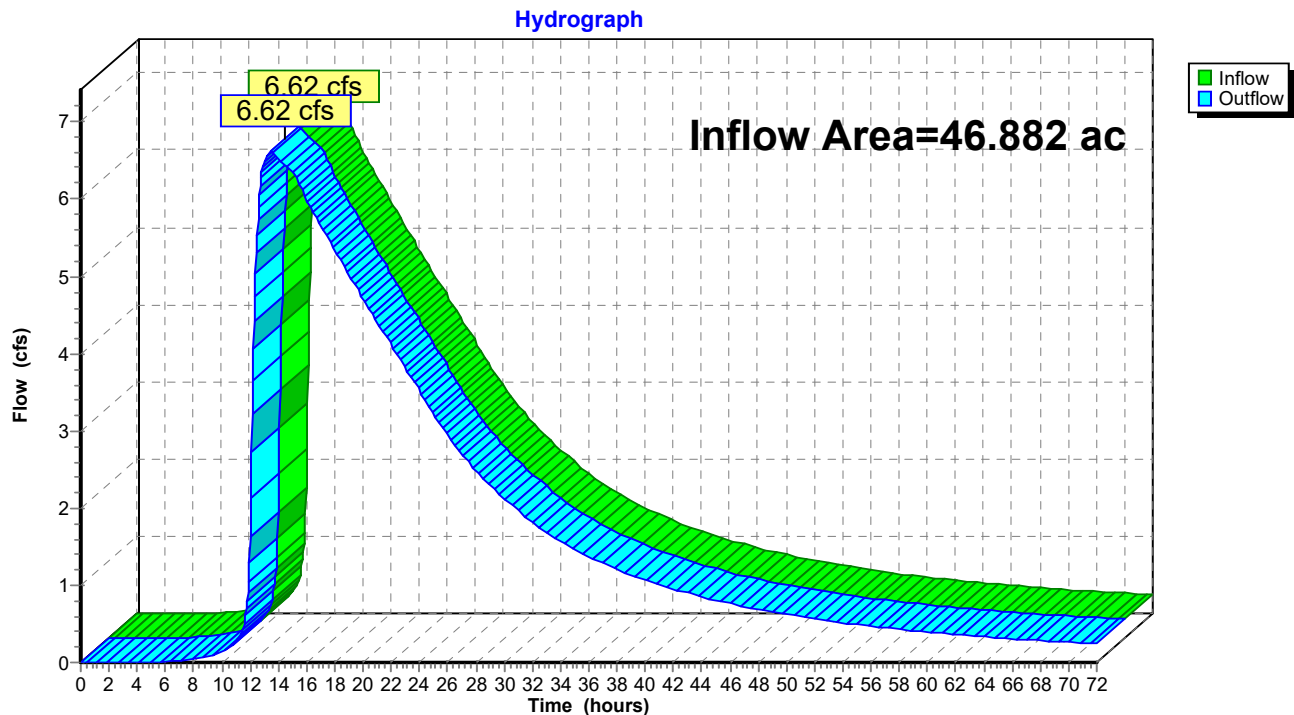
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PSE-Q: SE Quarter (Private Ditch B)****Hydrograph**

**Summary for Reach PSE-QA: SE Quarter (Private Ditch A)**

Inflow Area = 46.882 ac, 39.18% Impervious, Inflow Depth > 2.36" for 10-Year event  
Inflow = 6.62 cfs @ 13.52 hrs, Volume= 9.219 af  
Outflow = 6.62 cfs @ 13.52 hrs, Volume= 9.219 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PS : South Total (Ditch 44-9)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

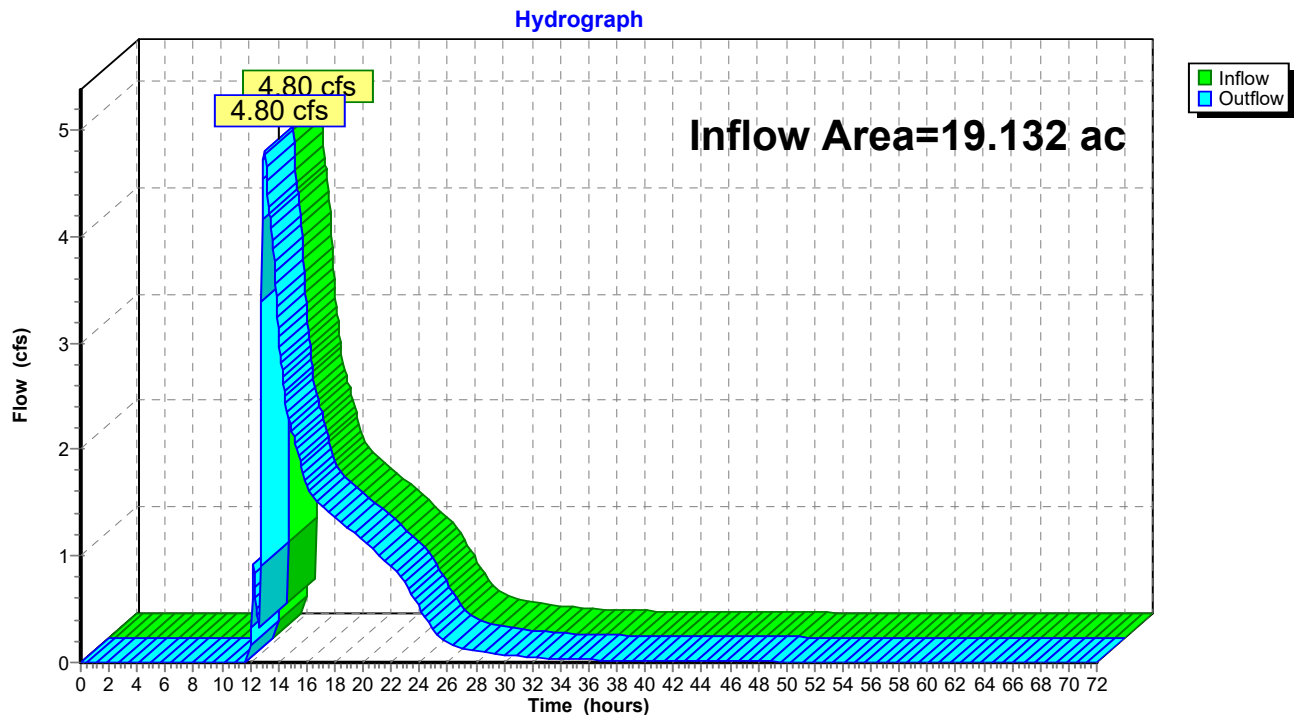
**Reach PSE-QA: SE Quarter (Private Ditch A)**



**Summary for Reach PSW-Q: Southwest Discharge**

Inflow Area = 19.132 ac, 9.91% Impervious, Inflow Depth > 1.07" for 10-Year event  
Inflow = 4.80 cfs @ 13.03 hrs, Volume= 1.702 af  
Outflow = 4.80 cfs @ 13.03 hrs, Volume= 1.702 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PS : South Total (Ditch 44-9)

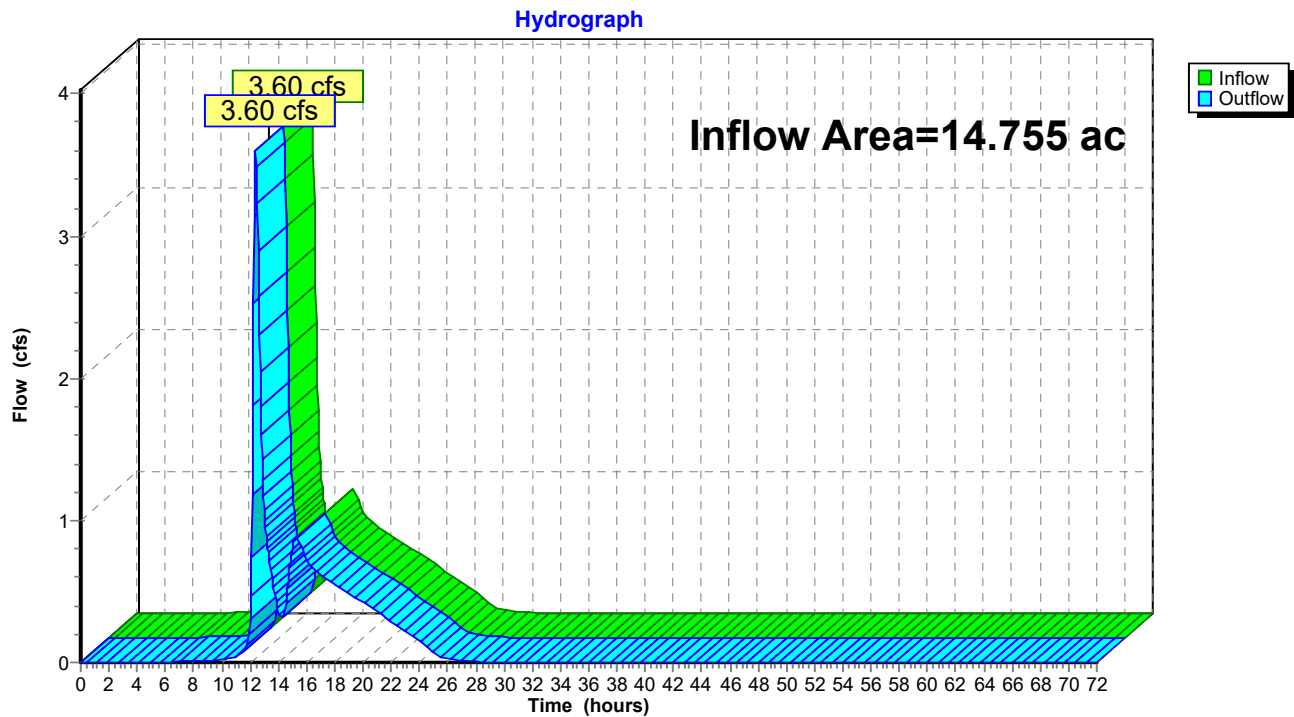
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PSW-Q: Southwest Discharge**

**Summary for Reach PW: West Boundary**

Inflow Area = 14.755 ac, 4.30% Impervious, Inflow Depth = 0.52" for 10-Year event  
Inflow = 3.60 cfs @ 12.40 hrs, Volume= 0.640 af  
Outflow = 3.60 cfs @ 12.40 hrs, Volume= 0.640 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach POST : Overall Post-Development Runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PW: West Boundary**

**LDP24010 Ham Lake**

MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Pond P-12:**

Inflow Area = 23.905 ac, 29.29% Impervious, Inflow Depth = 2.40" for 10-Year event  
 Inflow = 48.62 cfs @ 12.27 hrs, Volume= 4.787 af  
 Outflow = 3.86 cfs @ 13.84 hrs, Volume= 4.338 af, Atten= 92%, Lag= 94.4 min  
 Primary = 3.86 cfs @ 13.84 hrs, Volume= 4.338 af  
 Routed to Reach PSE-Q : SE Quarter (Private Ditch B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Starting Elev= 897.0' Surf.Area= 121,800 sf Storage= 560,450 cf

Peak Elev= 898.1' @ 13.84 hrs Surf.Area= 137,675 sf Storage= 703,480 cf (143,030 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 672.1 min ( 1,466.4 - 794.3 )

| Volume              | Invert               | Avail.Storage             | Storage Description                                        |
|---------------------|----------------------|---------------------------|------------------------------------------------------------|
| #1                  | 890.0'               | 990,650 cf                | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet)                                  |
| 890.0               | 52,200               | 0                         | 0                                                          |
| 894.0               | 78,100               | 260,600                   | 260,600                                                    |
| 897.0               | 121,800              | 299,850                   | 560,450                                                    |
| 900.0               | 165,000              | 430,200                   | 990,650                                                    |

| Device | Routing  | Invert | Outlet Devices                                                                                                                                                                 |
|--------|----------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary  | 897.0' | <b>18.0" Round Culvert</b><br>L= 76.0' RCP, groove end projecting, Ke= 0.200<br>Inlet / Outlet Invert= 897.0' / 896.7' S= 0.0039 '/' Cc= 0.900<br>n= 0.013, Flow Area= 1.77 sf |
| #2     | Device 1 | 896.0' | <b>45.0" W x 6.0" H Vert. Orifice/Grate X 2.00</b> C= 0.600<br>Limited to weir flow at low heads                                                                               |
| #3     | Device 1 | 899.1' | <b>51.0" x 96.0" Horiz. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads                                                                                        |

**Primary OutFlow** Max=3.86 cfs @ 13.84 hrs HW=898.1' TW=0.0' (Dynamic Tailwater)

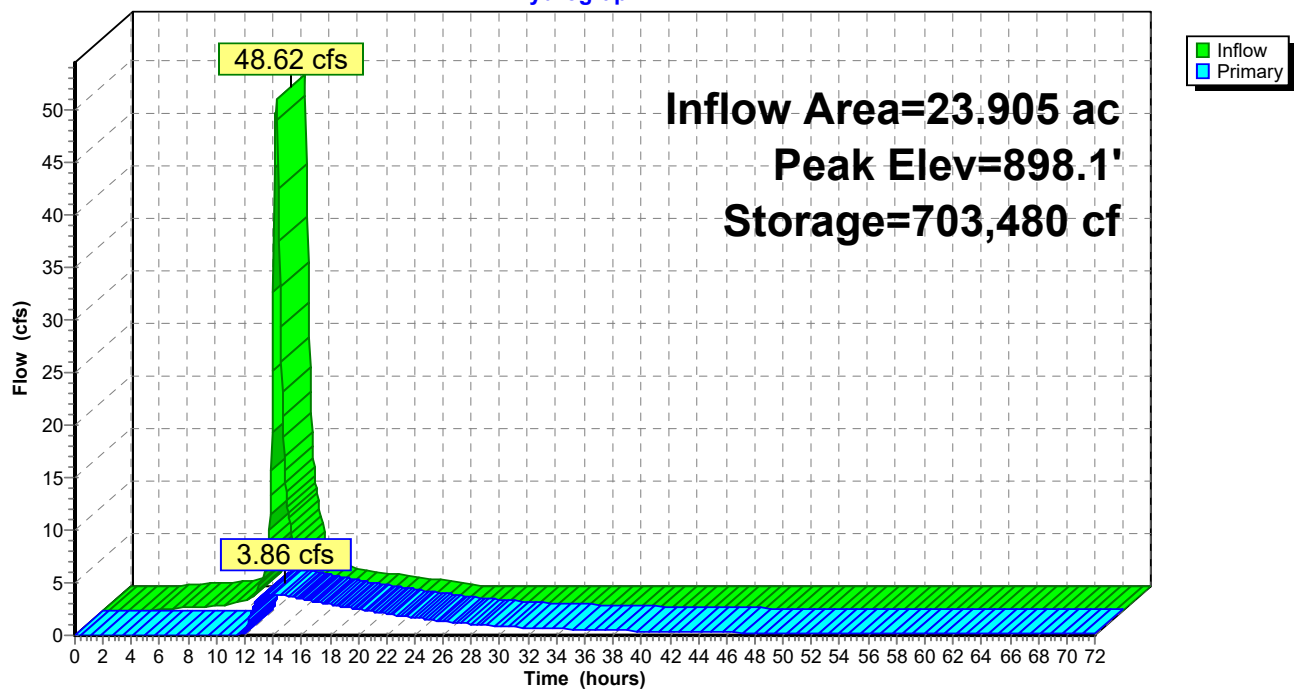
1=Culvert (Barrel Controls 3.86 cfs @ 3.86 fps)

2=Orifice/Grate (Passes 3.86 cfs of 18.96 cfs potential flow)

3=Orifice/Grate ( Controls 0.00 cfs)

**Pond P-12:**

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Pond P-3A:**

Inflow Area = 27.311 ac, 43.03% Impervious, Inflow Depth = 2.71" for 10-Year event  
 Inflow = 92.20 cfs @ 12.06 hrs, Volume= 6.164 af  
 Outflow = 3.81 cfs @ 15.77 hrs, Volume= 5.618 af, Atten= 96%, Lag= 222.3 min  
 Primary = 3.81 cfs @ 15.77 hrs, Volume= 5.618 af  
     Routed to Pond P-3B :  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Pond P-3B :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Starting Elev= 898.0' Surf.Area= 311,600 sf Storage= 1,911,300 cf

Peak Elev= 898.6' @ 14.20 hrs Surf.Area= 320,639 sf Storage= 2,116,368 cf (205,068 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 872.5 min ( 1,645.4 - 772.9 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 890.0' | 2,908,800 cf  | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

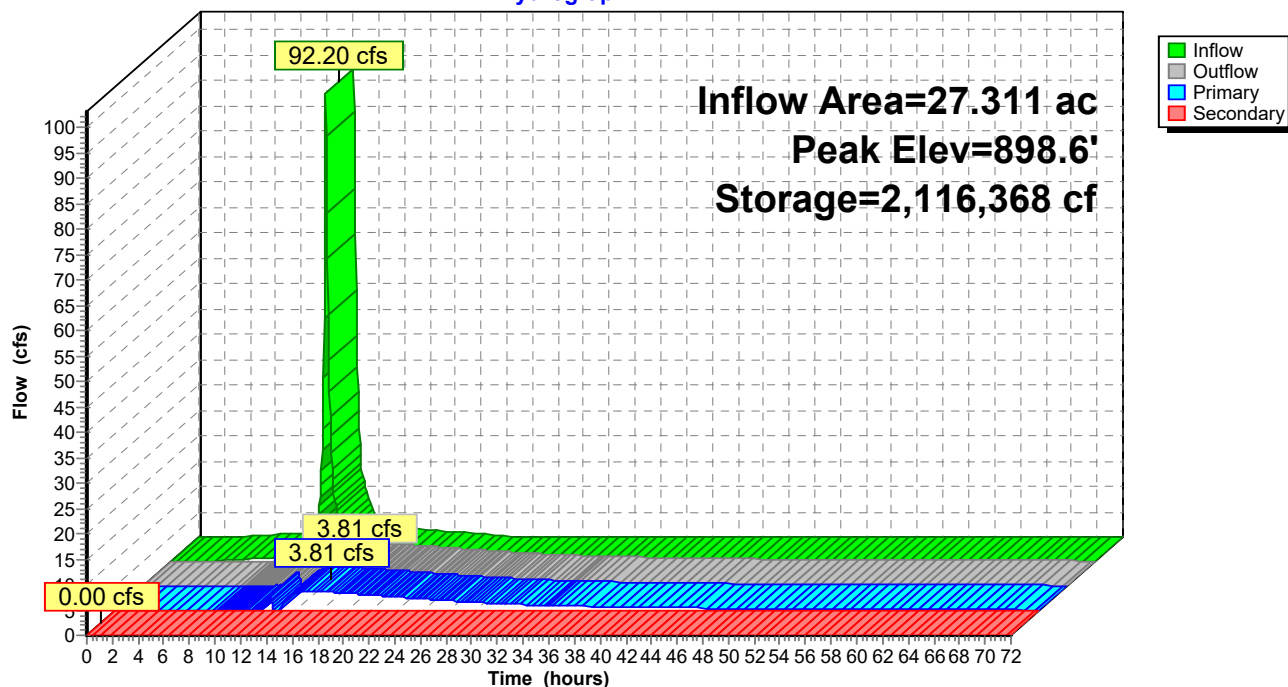
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 890.0               | 187,800              | 0                         | 0                         |
| 895.0               | 243,600              | 1,078,500                 | 1,078,500                 |
| 898.0               | 311,600              | 832,800                   | 1,911,300                 |
| 901.0               | 353,400              | 997,500                   | 2,908,800                 |

| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                                                   |
|--------|-----------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 895.0' | <b>24.0" Round Culvert</b><br>L= 20.0' RCP, groove end w/headwall, Ke= 0.200<br>Inlet / Outlet Invert= 895.0' / 895.0' S= 0.0000 ' S= 0.0000 ' Cc= 0.900<br>n= 0.012, Flow Area= 3.14 sf                                                                         |
| #2     | Secondary | 901.0' | <b>10.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=3.85 cfs @ 15.77 hrs HW=898.6' TW=898.6' (Dynamic Tailwater)↑ **1=Culvert** (Inlet Controls 3.85 cfs @ 1.23 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=898.0' TW=898.0' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Pond P-3A:**

**Hydrograph**



**Summary for Pond P-3B:**

Inflow Area = 46.882 ac, 39.18% Impervious, Inflow Depth > 2.41" for 10-Year event  
 Inflow = 35.82 cfs @ 12.05 hrs, Volume= 9.402 af  
 Outflow = 6.62 cfs @ 13.52 hrs, Volume= 9.219 af, Atten= 82%, Lag= 87.7 min  
 Primary = 6.62 cfs @ 13.52 hrs, Volume= 9.219 af  
 Routed to Reach PSE-QA : SE Quarter (Private Ditch A)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Starting Elev= 898.0' Surf.Area= 104,200 sf Storage= 592,800 cf  
 Peak Elev= 898.6' @ 13.52 hrs Surf.Area= 110,922 sf Storage= 659,745 cf (66,945 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= 186.2 min ( 1,580.7 - 1,394.5 )

| Volume              | Invert               | Avail.Storage             | Storage Description                                        |
|---------------------|----------------------|---------------------------|------------------------------------------------------------|
| #1                  | 890.0'               | 954,000 cf                | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet)                                  |
| 890.0               | 44,000               | 0                         | 0                                                          |
| 898.0               | 104,200              | 592,800                   | 592,800                                                    |
| 901.0               | 136,600              | 361,200                   | 954,000                                                    |

| Device | Routing  | Invert | Outlet Devices                                                                                                                                                                                                                                                  |
|--------|----------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary  | 898.0' | <b>5.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |
| #2     | Device 1 | 897.0' | <b>45.0" W x 6.0" H Vert. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads                                                                                                                                                                       |
| #3     | Device 1 | 899.3' | <b>5.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=6.62 cfs @ 13.52 hrs HW=898.6' TW=0.0' (Dynamic Tailwater)

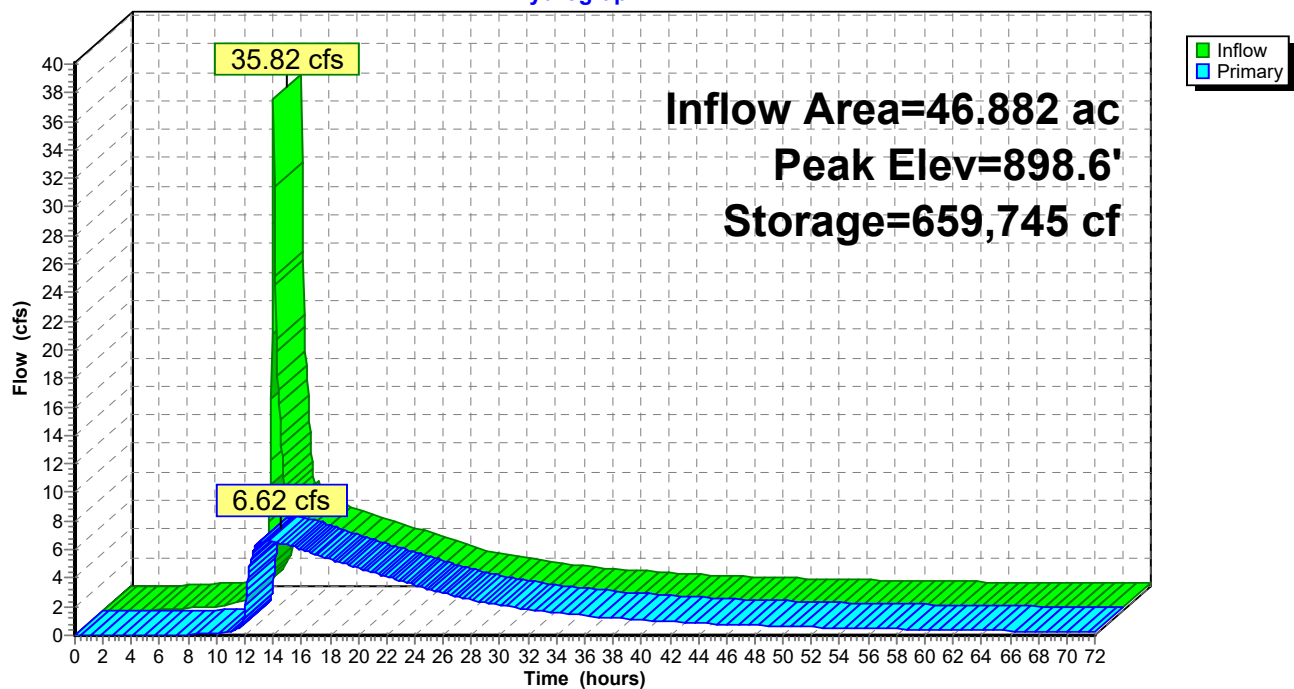
1=Broad-Crested Rectangular Weir (Weir Controls 6.62 cfs @ 2.13 fps)

2=Orifice/Grate (Passes 6.62 cfs of 7.12 cfs potential flow)

3=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Pond P-3B:**

Hydrograph





**LDP24010 Ham Lake**

MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Pond P-6:**

Inflow Area = 4.739 ac, 32.83% Impervious, Inflow Depth = 2.48" for 10-Year event  
 Inflow = 13.40 cfs @ 12.23 hrs, Volume= 0.980 af  
 Outflow = 1.07 cfs @ 13.55 hrs, Volume= 0.968 af, Atten= 92%, Lag= 79.6 min  
 Primary = 1.07 cfs @ 13.55 hrs, Volume= 0.968 af  
 Routed to Pond PB6 : Wetland 6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Starting Elev= 898.0' Surf.Area= 19,200 sf Storage= 36,008 cf  
 Peak Elev= 899.3' @ 13.55 hrs Surf.Area= 22,096 sf Storage= 62,394 cf (26,386 cf above start)

Plug-Flow detention time= 1,212.8 min calculated for 0.141 af (14% of inflow)  
 Center-of-Mass det. time= 346.5 min ( 1,135.3 - 788.8 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 895.0' | 103,808 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 895.0               | 7,961                | 0                         | 0                         |
| 897.0               | 12,298               | 20,259                    | 20,259                    |
| 898.0               | 19,200               | 15,749                    | 36,008                    |
| 901.0               | 26,000               | 67,800                    | 103,808                   |

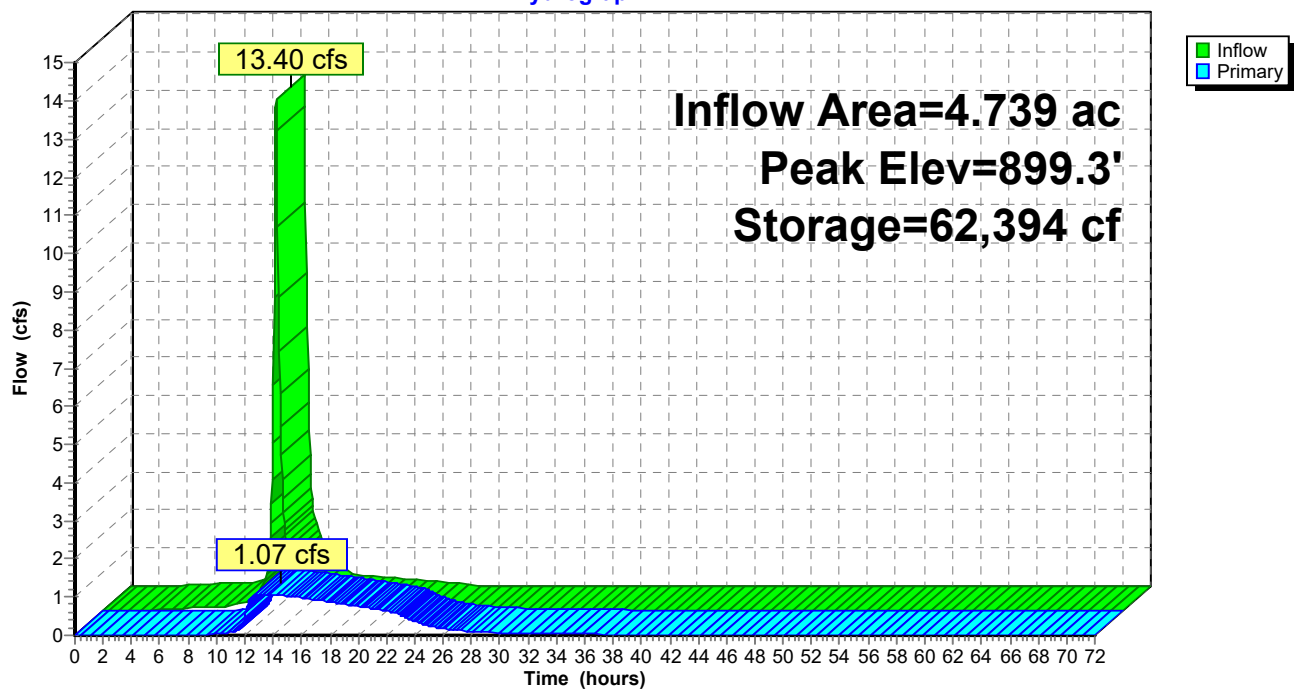
| Device | Routing  | Invert | Outlet Devices                                                                                                                                                                 |
|--------|----------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary  | 898.0' | <b>15.0" Round Culvert</b><br>L= 40.0' RCP, groove end projecting, Ke= 0.200<br>Inlet / Outlet Invert= 898.0' / 897.7' S= 0.0075 ' / Cc= 0.900<br>n= 0.013, Flow Area= 1.23 sf |
| #2     | Device 1 | 897.0' | <b>6.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads                                                                                                     |
| #3     | Device 1 | 900.6' | <b>51.0" x 96.0" Horiz. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads                                                                                        |

**Primary OutFlow** Max=1.07 cfs @ 13.55 hrs HW=899.3' TW=896.2' (Dynamic Tailwater)

1=Culvert (Passes 1.07 cfs of 4.60 cfs potential flow)  
 2=Orifice/Grate (Orifice Controls 1.07 cfs @ 5.44 fps)  
 3=Orifice/Grate ( Controls 0.00 cfs)

**Pond P-6:**

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Pond P-8:**

Inflow Area = 9.576 ac, 25.07% Impervious, Inflow Depth = 2.18" for 10-Year event  
 Inflow = 24.17 cfs @ 12.25 hrs, Volume= 1.741 af  
 Outflow = 6.50 cfs @ 12.52 hrs, Volume= 1.639 af, Atten= 73%, Lag= 16.2 min  
 Primary = 6.50 cfs @ 12.52 hrs, Volume= 1.639 af  
 Routed to Pond P-3B :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Starting Elev= 898.0' Surf.Area= 57,900 sf Storage= 184,000 cf  
 Peak Elev= 898.6' @ 12.70 hrs Surf.Area= 63,939 sf Storage= 222,588 cf (38,588 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 553.2 min ( 1,349.6 - 796.4 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 893.0' | 400,600 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 893.0               | 15,700               | 0                         | 0                         |
| 898.0               | 57,900               | 184,000                   | 184,000                   |
| 901.0               | 86,500               | 216,600                   | 400,600                   |

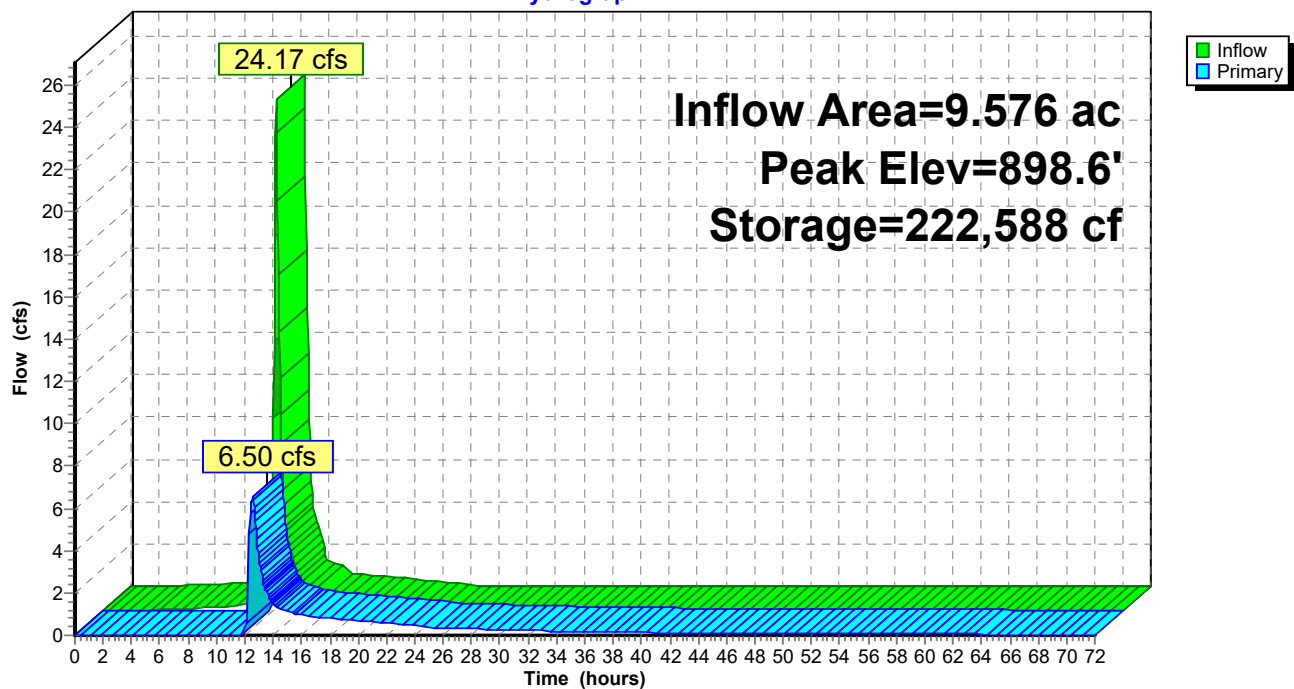
| Device | Routing | Invert | Outlet Devices                                                                                                                                                                                                                                                   |
|--------|---------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 898.0' | <b>10.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=5.98 cfs @ 12.52 hrs HW=898.6' TW=898.6' (Dynamic Tailwater)

↑**1=Broad-Crested Rectangular Weir**(Weir Controls 5.98 cfs @ 0.97 fps)

**Pond P-8:**

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Pond PB1A: Wetland 1A**

Inflow Area = 10.463 ac, 2.37% Impervious, Inflow Depth = 0.99" for 10-Year event  
 Inflow = 10.64 cfs @ 12.30 hrs, Volume= 0.867 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach PN : North Boundary  
 Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond P-3A :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 900.0' @ 25.05 hrs Surf.Area= 75,863 sf Storage= 37,747 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 899.0' | 2,338,451 cf  | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 899.0               | 1,799                | 0                         | 0                         |
| 900.0               | 77,989               | 39,894                    | 39,894                    |
| 901.0               | 193,333              | 135,661                   | 175,555                   |
| 902.0               | 368,575              | 280,954                   | 456,509                   |
| 903.0               | 576,105              | 472,340                   | 928,849                   |
| 904.0               | 715,414              | 645,760                   | 1,574,609                 |
| 905.0               | 812,270              | 763,842                   | 2,338,451                 |

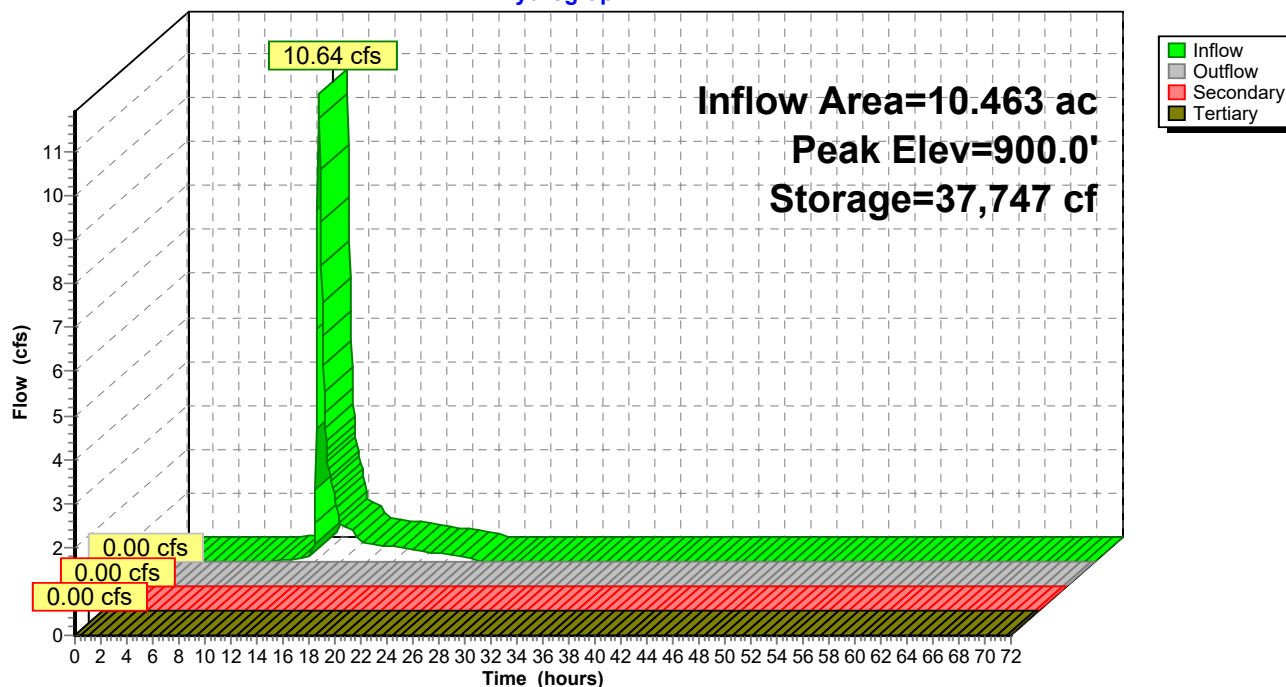
| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                              |
|--------|-----------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Secondary | 902.8' | <b>100.0' long x 5.0' breadth To North</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |
| #2     | Tertiary  | 900.0' | <b>100.0' long x 10.0' breadth TO P-3A</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                                                                                        |

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=899.0' TW=0.0' (Dynamic Tailwater)  
 ↑1=To North ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=899.0' TW=898.0' (Dynamic Tailwater)  
 ↑2=TO P-3A ( Controls 0.00 cfs)

Pond PB1A: Wetland 1A

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Pond PB1B: Wetland 1B**

Inflow Area = 2.259 ac, 9.77% Impervious, Inflow Depth = 1.59" for 10-Year event  
 Inflow = 3.11 cfs @ 12.42 hrs, Volume= 0.300 af  
 Outflow = 3.11 cfs @ 12.42 hrs, Volume= 0.290 af, Atten= 0%, Lag= 0.4 min  
 Primary = 3.11 cfs @ 12.42 hrs, Volume= 0.290 af  
 Routed to Pond PB1C : Wetland 1C

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 901.7' @ 15.45 hrs Surf.Area= 6,150 sf Storage= 554 cf

Plug-Flow detention time= 21.7 min calculated for 0.290 af (96% of inflow)  
 Center-of-Mass det. time= 3.4 min ( 831.2 - 827.8 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 901.5' | 194,422 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 901.5               | 55                   | 0                         | 0                         |
| 901.6               | 1,670                | 86                        | 86                        |
| 901.7               | 5,365                | 352                       | 438                       |
| 901.8               | 9,245                | 730                       | 1,168                     |
| 901.9               | 13,840               | 1,154                     | 2,323                     |
| 902.0               | 32,292               | 2,307                     | 4,629                     |
| 903.0               | 54,790               | 43,541                    | 48,170                    |
| 904.0               | 71,685               | 63,238                    | 111,408                   |
| 905.0               | 94,343               | 83,014                    | 194,422                   |

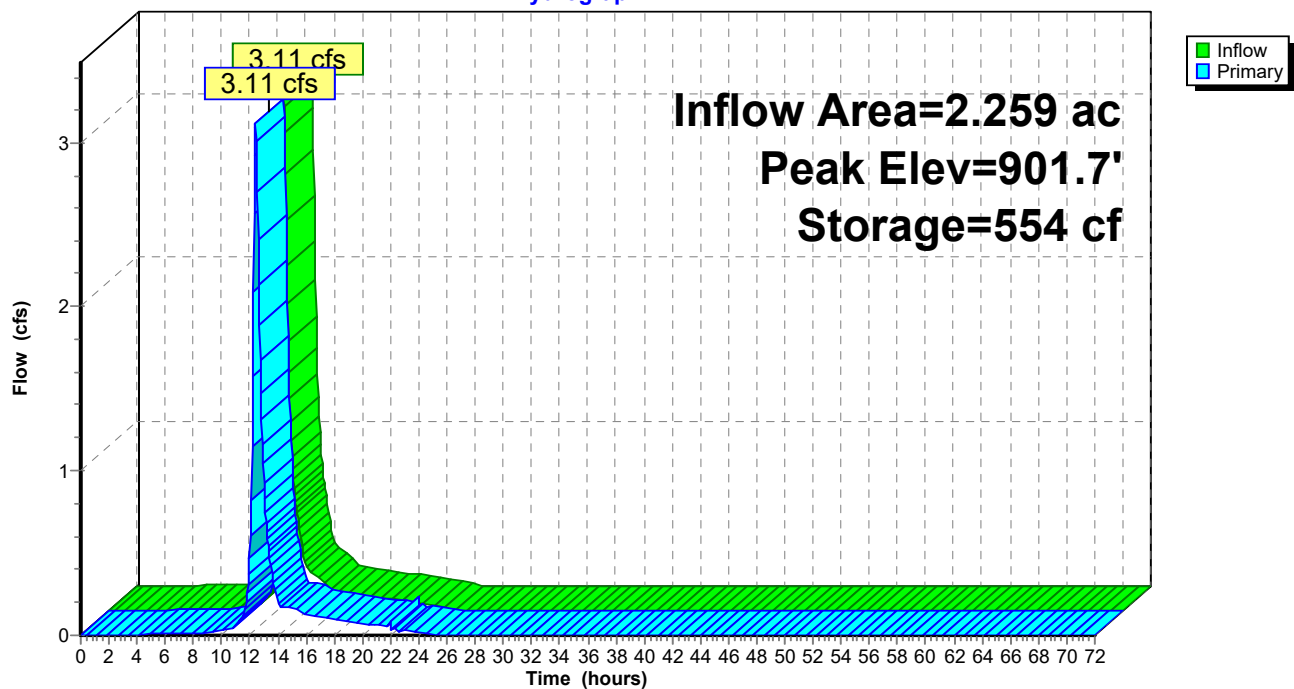
| Device | Routing | Invert | Outlet Devices                                                                                                                                                             |
|--------|---------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 901.5' | <b>50.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=3.09 cfs @ 12.42 hrs HW=901.6' TW=901.1' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 3.09 cfs @ 0.73 fps)

**Pond PB1B: Wetland 1B**

Hydrograph





**LDP24010 Ham Lake**

MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Pond PB1C: Wetland 1C**

Inflow Area = 11.034 ac, 4.50% Impervious, Inflow Depth = 1.12" for 10-Year event  
 Inflow = 9.69 cfs @ 12.47 hrs, Volume= 1.034 af  
 Outflow = 0.67 cfs @ 15.40 hrs, Volume= 0.294 af, Atten= 93%, Lag= 175.6 min  
 Primary = 0.67 cfs @ 15.40 hrs, Volume= 0.294 af  
 Routed to Reach PW : West Boundary  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 1C&PB-13 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 901.7' @ 15.40 hrs Surf.Area= 70,979 sf Storage= 33,620 cf

Plug-Flow detention time= 396.6 min calculated for 0.294 af (28% of inflow)  
 Center-of-Mass det. time= 269.3 min ( 1,119.6 - 850.2 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 900.1' | 577,352 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 900.1               | 174                  | 0                         | 0                         |
| 900.2               | 975                  | 57                        | 57                        |
| 900.5               | 5,734                | 1,006                     | 1,064                     |
| 901.0               | 20,570               | 6,576                     | 7,640                     |
| 901.5               | 36,160               | 14,183                    | 21,822                    |
| 901.8               | 83,591               | 17,963                    | 39,785                    |
| 902.0               | 90,000               | 17,359                    | 57,144                    |
| 903.0               | 100,000              | 95,000                    | 152,144                   |
| 904.0               | 233,558              | 166,779                   | 318,923                   |
| 905.0               | 283,299              | 258,429                   | 577,352                   |

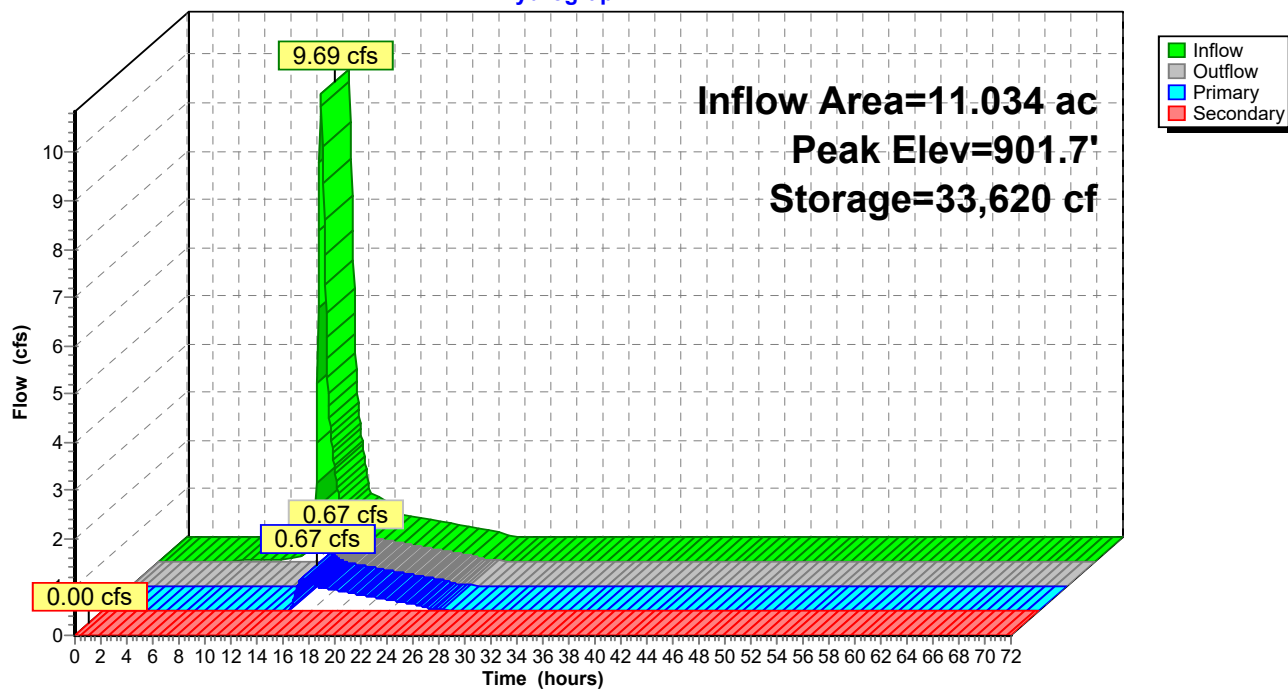
| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                             |
|--------|-----------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 901.7' | <b>100.0' long x 5.0' breadth To West</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |
| #2     | Secondary | 902.1' | <b>10.0' long x 5.0' breadth TO PB-13</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=0.67 cfs @ 15.40 hrs HW=901.7' TW=0.0' (Dynamic Tailwater)  
 ↑1=To West (Weir Controls 0.67 cfs @ 0.33 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=900.1' TW=898.3' (Dynamic Tailwater)  
 ↑2=TO PB-13 ( Controls 0.00 cfs)

**Pond PB1C: Wetland 1C**

Hydrograph



**Summary for Pond PB6: Wetland 6**

Inflow Area = 18.280 ac, 10.37% Impervious, Inflow Depth > 1.19" for 10-Year event  
 Inflow = 4.70 cfs @ 12.93 hrs, Volume= 1.815 af  
 Outflow = 4.64 cfs @ 13.03 hrs, Volume= 1.637 af, Atten= 1%, Lag= 5.8 min  
 Primary = 4.64 cfs @ 13.03 hrs, Volume= 1.637 af  
 Routed to Reach PSW-Q : Southwest Discharge

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 896.2' @ 13.03 hrs Surf.Area= 28,139 sf Storage= 9,183 cf

Plug-Flow detention time= 115.3 min calculated for 1.636 af (90% of inflow)  
 Center-of-Mass det. time= 40.4 min ( 1,071.8 - 1,031.5 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 895.0' | 227,572 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

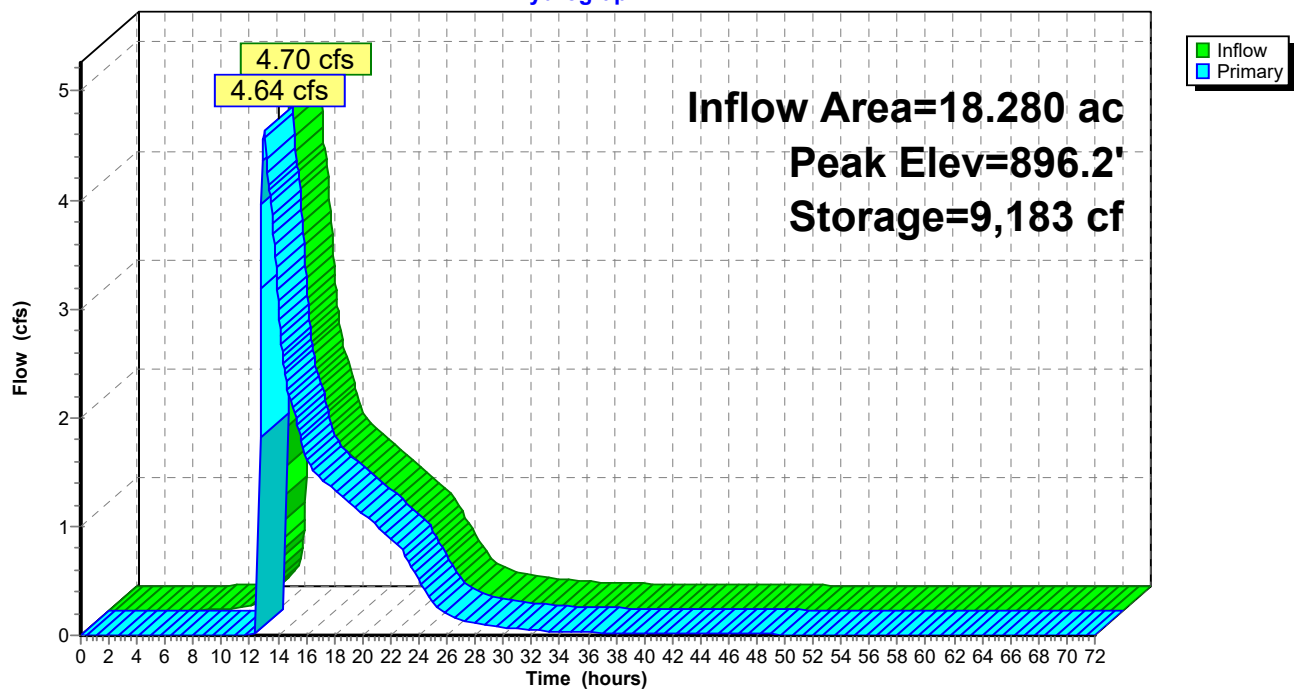
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 895.0               | 500                  | 0                         | 0                         |
| 896.0               | 11,662               | 6,081                     | 6,081                     |
| 897.0               | 117,362              | 64,512                    | 70,593                    |
| 898.0               | 196,595              | 156,979                   | 227,572                   |

| Device | Routing | Invert | Outlet Devices                                                                                                                                                                                                                                                    |
|--------|---------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 896.1' | <b>150.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=4.63 cfs @ 13.03 hrs HW=896.2' TW=0.0' (Dynamic Tailwater)  
 ↑1=**Broad-Crested Rectangular Weir**(Weir Controls 4.63 cfs @ 0.55 fps)

**Pond PB6: Wetland 6**

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 10-Year Rainfall=4.21"

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**Summary for Pond PB7A: Wetland 7A**

Inflow Area = 5.178 ac, 4.88% Impervious, Inflow Depth = 0.66" for 10-Year event  
 Inflow = 2.22 cfs @ 12.33 hrs, Volume= 0.284 af  
 Outflow = 0.57 cfs @ 13.63 hrs, Volume= 0.167 af, Atten= 74%, Lag= 78.1 min  
 Primary = 0.57 cfs @ 13.63 hrs, Volume= 0.167 af  
 Routed to Pond PB6 : Wetland 6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 898.2' @ 13.63 hrs Surf.Area= 14,755 sf Storage= 5,345 cf

Plug-Flow detention time= 252.8 min calculated for 0.167 af (59% of inflow)  
 Center-of-Mass det. time= 122.0 min ( 1,020.3 - 898.3 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 897.5' | 24,008 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 897.5               | 1,042                | 0                         | 0                         |
| 898.0               | 9,707                | 2,687                     | 2,687                     |
| 899.0               | 32,934               | 21,321                    | 24,008                    |

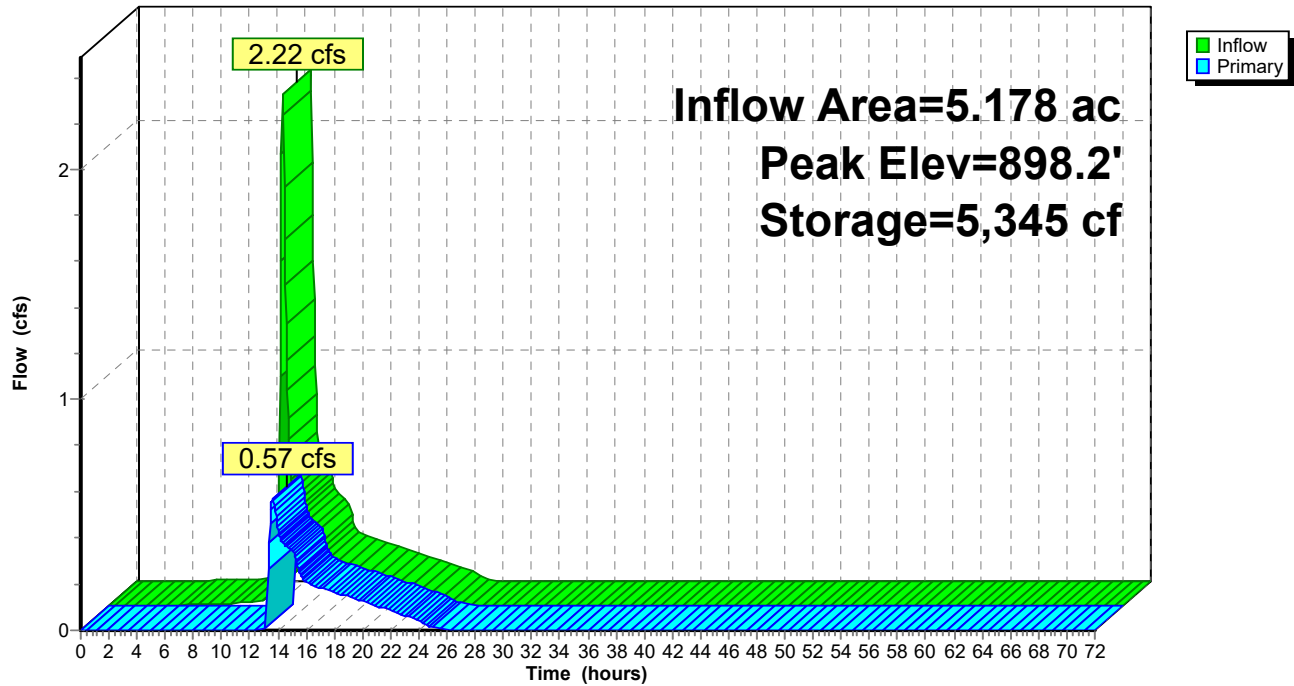
| Device | Routing | Invert | Outlet Devices                                                                                                                                      |
|--------|---------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 898.2' | <b>100.0' long x 10.0' breadth To PB6</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=0.57 cfs @ 13.63 hrs HW=898.2' TW=896.1' (Dynamic Tailwater)

↑ **1=To PB6** (Weir Controls 0.57 cfs @ 0.33 fps)

**Pond PB7A: Wetland 7A**

Hydrograph



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**Summary for Pond PB7B: Wetland 7B**

Inflow Area = 3.023 ac, 4.72% Impervious, Inflow Depth = 0.93" for 10-Year event  
 Inflow = 3.78 cfs @ 12.19 hrs, Volume= 0.234 af  
 Outflow = 0.28 cfs @ 13.62 hrs, Volume= 0.090 af, Atten= 93%, Lag= 85.7 min  
 Primary = 0.28 cfs @ 13.62 hrs, Volume= 0.090 af  
 Routed to Pond PB7A : Wetland 7A  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach P7B&D :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 898.4' @ 13.62 hrs Surf.Area= 22,578 sf Storage= 6,637 cf

Plug-Flow detention time= 307.5 min calculated for 0.090 af (39% of inflow)  
 Center-of-Mass det. time= 191.3 min ( 1,021.4 - 830.2 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 897.7' | 32,037 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 897.7               | 330                  | 0                         | 0                         |
| 898.0               | 7,784                | 1,217                     | 1,217                     |
| 898.5               | 28,502               | 9,072                     | 10,289                    |
| 899.0               | 58,492               | 21,749                    | 32,037                    |

| Device | Routing   | Invert | Outlet Devices                                                                                                                                                              |
|--------|-----------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 898.3' | <b>50.0' long x 10.0' breadth TO EB-7A</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                        |
| #2     | Secondary | 899.7' | <b>100.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=0.28 cfs @ 13.62 hrs HW=898.4' TW=898.2' (Dynamic Tailwater)

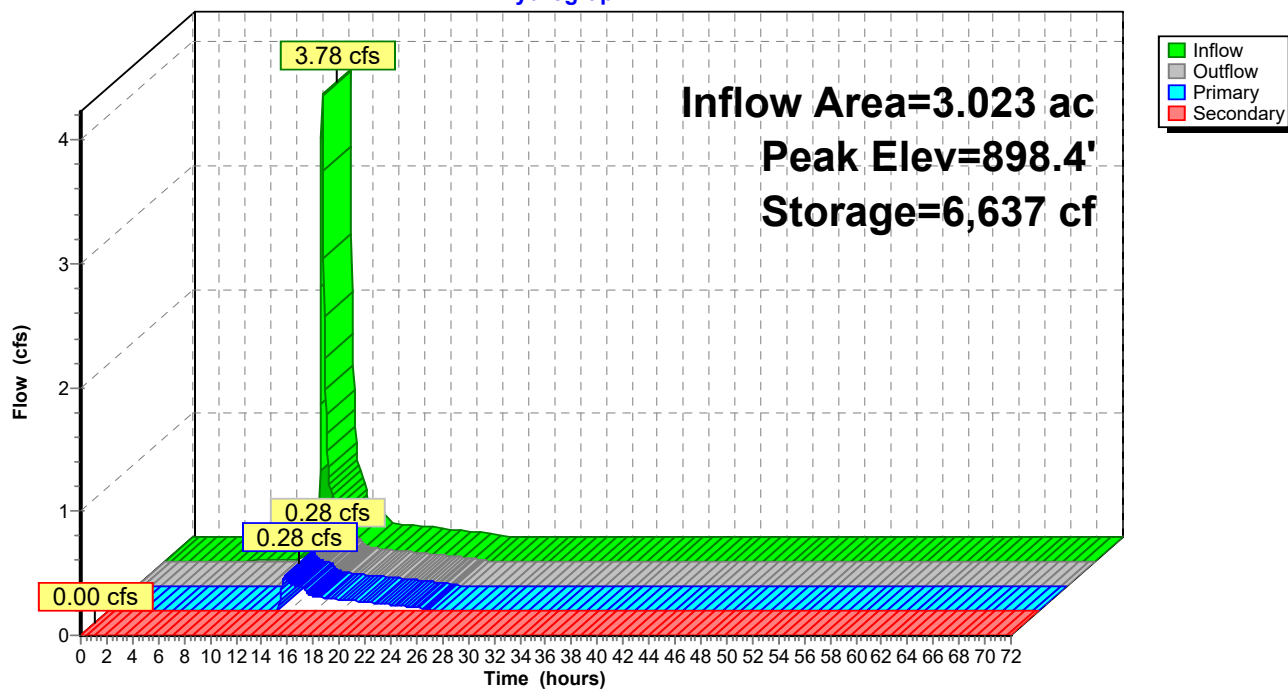
↑**1=TO EB-7A** (Weir Controls 0.28 cfs @ 0.32 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=897.7' TW=0.0' (Dynamic Tailwater)

↑**2=Broad-Crested Rectangular Weir**( Controls 0.00 cfs)

# Pond PB7B: Wetland 7B

Hydrograph





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**Summary for Pond PB7C: Wetland 7C**

Inflow Area = 0.449 ac, 0.00% Impervious, Inflow Depth = 0.92" for 10-Year event  
 Inflow = 0.71 cfs @ 12.13 hrs, Volume= 0.034 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond PB7B : Wetland 7B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 898.7' @ 24.35 hrs Surf.Area= 3,297 sf Storage= 1,501 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 897.7' | 5,675 cf      | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 897.7               | 122                  | 0                         | 0                         |
| 898.0               | 753                  | 131                       | 131                       |
| 898.5               | 2,342                | 774                       | 905                       |
| 899.0               | 4,602                | 1,736                     | 2,641                     |
| 899.5               | 7,533                | 3,034                     | 5,675                     |

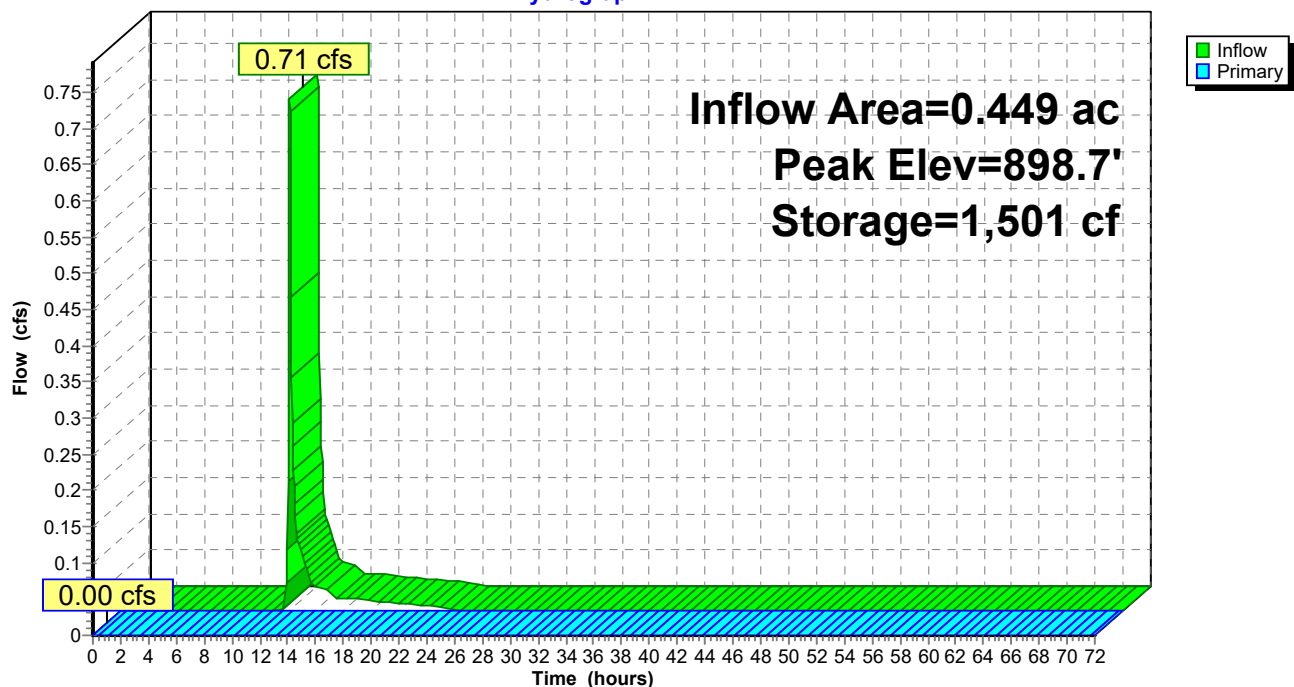
| Device | Routing | Invert | Outlet Devices                                                                                                                                                             |
|--------|---------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 899.6' | <b>50.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=897.7' TW=897.7' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Pond PB7C: Wetland 7C**

Hydrograph



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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

|                            |                                                                                                                                             |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SubcatchmentPB-10:</b>  | Runoff Area=44,749 sf 5.36% Impervious Runoff Depth=2.68"<br>Flow Length=394' Tc=18.2 min CN=WQ Runoff=3.17 cfs 0.229 af                    |
| <b>SubcatchmentPB-12:</b>  | Runoff Area=612,303 sf 24.33% Impervious Runoff Depth=3.14"<br>Flow Length=540' Tc=19.1 min CN=WQ Runoff=47.94 cfs 3.682 af                 |
| <b>SubcatchmentPB-13A:</b> | Runoff Area=24,410 sf 15.54% Impervious Runoff Depth=2.49"<br>Tc=15.0 min CN=WQ Runoff=1.70 cfs 0.116 af                                    |
| <b>SubcatchmentPB-13B:</b> | Runoff Area=122,759 sf 9.61% Impervious Runoff Depth=2.78"<br>Flow Length=430' Tc=16.8 min CN=WQ Runoff=9.35 cfs 0.654 af                   |
| <b>SubcatchmentPB-14A:</b> | Runoff Area=89,189 sf 8.07% Impervious Runoff Depth=2.75"<br>Flow Length=430' Tc=19.4 min CN=WQ Runoff=6.24 cfs 0.469 af                    |
| <b>SubcatchmentPB-14B:</b> | Runoff Area=152,501 sf 7.87% Impervious Runoff Depth=2.74"<br>Flow Length=447' Tc=39.3 min CN=WQ Runoff=7.16 cfs 0.800 af                   |
| <b>SubcatchmentPB-15A:</b> | Runoff Area=37,143 sf 0.00% Impervious Runoff Depth=1.51"<br>Flow Length=256' Tc=13.9 min CN=61 Runoff=1.61 cfs 0.107 af                    |
| <b>SubcatchmentPB-15B:</b> | Runoff Area=68,682 sf 0.00% Impervious Runoff Depth=2.55"<br>Flow Length=256' Tc=13.9 min CN=74 Runoff=5.32 cfs 0.335 af                    |
| <b>SubcatchmentPB-1A:</b>  | Runoff Area=455,779 sf 2.37% Impervious Runoff Depth=1.59"<br>Flow Length=470' Tc=17.8 min CN=WQ Runoff=18.31 cfs 1.388 af                  |
| <b>SubcatchmentPB-1B:</b>  | Runoff Area=98,423 sf 9.77% Impervious Runoff Depth=2.32"<br>Flow Length=240' Tc=27.7 min CN=WQ Runoff=4.66 cfs 0.437 af                    |
| <b>SubcatchmentPB-1C:</b>  | Runoff Area=382,215 sf 3.14% Impervious Runoff Depth=1.62"<br>Flow Length=616' Slope=0.0080 '/' Tc=31.2 min CN=WQ Runoff=11.41 cfs 1.184 af |
| <b>SubcatchmentPB-1D:</b>  | Runoff Area=162,084 sf 3.70% Impervious Runoff Depth=1.74"<br>Tc=25.0 min CN=WQ Runoff=5.96 cfs 0.539 af                                    |
| <b>SubcatchmentPB-2A:</b>  | Runoff Area=32,450 sf 11.09% Impervious Runoff Depth=2.82"<br>Tc=10.0 min CN=WQ Runoff=3.10 cfs 0.175 af                                    |
| <b>SubcatchmentPB-2B:</b>  | Runoff Area=21,744 sf 2.30% Impervious Runoff Depth=2.61"<br>Tc=10.0 min CN=WQ Runoff=1.96 cfs 0.108 af                                     |
| <b>SubcatchmentPB-3A:</b>  | Runoff Area=412,473 sf 83.93% Impervious Runoff Depth=4.60"<br>Tc=0.0 min CN=WQ Runoff=77.03 cfs 3.630 af                                   |
| <b>SubcatchmentPB-3B:</b>  | Runoff Area=166,565 sf 100.00% Impervious Runoff Depth=4.99"<br>Tc=0.0 min CN=98 Runoff=33.17 cfs 1.591 af                                  |

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|                           |                                                                                                                             |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>SubcatchmentPB-4A:</b> | Runoff Area=103,255 sf 6.97% Impervious Runoff Depth=2.72"<br>Tc=10.0 min CN=WQ Runoff=9.61 cfs 0.537 af                    |
| <b>SubcatchmentPB-4B:</b> | Runoff Area=63,386 sf 3.79% Impervious Runoff Depth=2.64"<br>Tc=10.0 min CN=WQ Runoff=5.78 cfs 0.320 af                     |
| <b>SubcatchmentPB-4C:</b> | Runoff Area=64,398 sf 7.69% Impervious Runoff Depth=1.78"<br>Flow Length=200' Tc=15.8 min CN=WQ Runoff=3.04 cfs 0.219 af    |
| <b>SubcatchmentPB-4D:</b> | Runoff Area=66,433 sf 4.12% Impervious Runoff Depth=1.65"<br>Flow Length=266' Tc=15.5 min CN=WQ Runoff=2.96 cfs 0.210 af    |
| <b>SubcatchmentPB-5A:</b> | Runoff Area=301,807 sf 7.55% Impervious Runoff Depth=2.73"<br>Tc=10.0 min CN=WQ Runoff=28.18 cfs 1.578 af                   |
| <b>SubcatchmentPB-5B:</b> | Runoff Area=141,059 sf 6.81% Impervious Runoff Depth=2.72"<br>Tc=10.0 min CN=WQ Runoff=13.11 cfs 0.733 af                   |
| <b>SubcatchmentPB-6A:</b> | Runoff Area=53,054 sf 58.33% Impervious Runoff Depth=3.97"<br>Tc=15.0 min CN=WQ Runoff=5.65 cfs 0.403 af                    |
| <b>SubcatchmentPB-6B:</b> | Runoff Area=339,893 sf 0.00% Impervious Runoff Depth=1.51"<br>Flow Length=513' Tc=61.2 min CN=61 Runoff=6.14 cfs 0.981 af   |
| <b>SubcatchmentPB-7A:</b> | Runoff Area=93,846 sf 5.11% Impervious Runoff Depth=1.69"<br>Flow Length=212' Tc=20.1 min CN=WQ Runoff=3.74 cfs 0.303 af    |
| <b>SubcatchmentPB-7B:</b> | Runoff Area=112,159 sf 5.54% Impervious Runoff Depth=1.70"<br>Tc=10.0 min CN=WQ Runoff=6.24 cfs 0.365 af                    |
| <b>SubcatchmentPB-7C:</b> | Runoff Area=19,541 sf 0.00% Impervious Runoff Depth=1.51"<br>Tc=5.0 min CN=61 Runoff=1.21 cfs 0.056 af                      |
| <b>SubcatchmentPB-7D:</b> | Runoff Area=46,128 sf 10.41% Impervious Runoff Depth=2.80"<br>Tc=10.0 min CN=WQ Runoff=4.39 cfs 0.247 af                    |
| <b>SubcatchmentPB-8:</b>  | Runoff Area=350,677 sf 29.04% Impervious Runoff Depth=3.26"<br>Flow Length=418' Tc=16.1 min CN=WQ Runoff=30.70 cfs 2.186 af |
| <b>SubcatchmentPB-9:</b>  | Runoff Area=93,910 sf 7.67% Impervious Runoff Depth=2.74"<br>Flow Length=490' Tc=29.6 min CN=WQ Runoff=5.22 cfs 0.492 af    |
| <b>SubcatchmentR-1:</b>   | Runoff Area=55,096 sf 46.72% Impervious Runoff Depth=3.69"<br>Tc=5.0 min CN=WQ Runoff=7.75 cfs 0.389 af                     |
| <b>SubcatchmentR-2:</b>   | Runoff Area=84,323 sf 65.88% Impervious Runoff Depth=4.16"<br>Tc=5.0 min CN=WQ Runoff=13.00 cfs 0.671 af                    |
| <b>SubcatchmentR-3:</b>   | Runoff Area=172,153 sf 71.85% Impervious Runoff Depth=4.30"<br>Tc=5.0 min CN=WQ Runoff=27.28 cfs 1.418 af                   |

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|                                                   |                                                                                                                                                            |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SubcatchmentR-5:</b>                           | Runoff Area=30,604 sf 81.78% Impervious Runoff Depth=4.55"<br>Tc=10.0 min CN=WQ Runoff=4.24 cfs 0.266 af                                                   |
| <b>SubcatchmentR-6:</b>                           | Runoff Area=15,143 sf 87.18% Impervious Runoff Depth=4.68"<br>Tc=5.0 min CN=WQ Runoff=2.56 cfs 0.136 af                                                    |
| <b>SubcatchmentR-7:</b>                           | Runoff Area=11,881 sf 72.35% Impervious Runoff Depth=4.32"<br>Tc=5.0 min CN=WQ Runoff=1.89 cfs 0.098 af                                                    |
| <b>SubcatchmentR-8:</b>                           | Runoff Area=83,061 sf 69.74% Impervious Runoff Depth=4.25"<br>Tc=5.0 min CN=WQ Runoff=13.04 cfs 0.676 af                                                   |
| <b>Reach 1C&amp;PB-13:</b>                        | Avg. Flow Depth=1.50' Max Vel=5.08 fps Inflow=9.35 cfs 0.654 af<br>18.0" Round Pipe n=0.013 L=88.0' S=0.0057 ' Capacity=7.92 cfs Outflow=8.42 cfs 0.654 af |
| <b>Reach 1R:</b>                                  | Inflow=3.78 cfs 0.328 af<br>Outflow=3.78 cfs 0.328 af                                                                                                      |
| <b>Reach 2A&amp;2B:</b>                           | Inflow=17.16 cfs 0.954 af<br>Outflow=17.16 cfs 0.954 af                                                                                                    |
| <b>Reach P7B&amp;D:</b>                           | Inflow=4.39 cfs 0.247 af<br>Outflow=4.39 cfs 0.247 af                                                                                                      |
| <b>Reach PB-1C&amp;PB-14B:</b>                    | Inflow=11.26 cfs 1.268 af<br>Outflow=11.26 cfs 1.268 af                                                                                                    |
| <b>Reach PL-DITCH:</b>                            | Outflow=0.00 cfs 0.000 af                                                                                                                                  |
| <b>Reach PN: North Boundary</b>                   | Inflow=0.00 cfs 0.000 af<br>Outflow=0.00 cfs 0.000 af                                                                                                      |
| <b>Reach POST: Overall Post-DevelopmentRunoff</b> | Inflow=29.91 cfs 24.156 af<br>Outflow=29.91 cfs 24.156 af                                                                                                  |
| <b>Reach PS: South Total (Ditch 44-9)</b>         | Inflow=24.93 cfs 22.358 af<br>Outflow=24.93 cfs 22.358 af                                                                                                  |
| <b>Reach PSE-Q: SE Quarter (Private Ditch B)</b>  | Inflow=11.22 cfs 6.619 af<br>Outflow=11.22 cfs 6.619 af                                                                                                    |
| <b>Reach PSE-QA: SE Quarter (Private Ditch A)</b> | Inflow=8.24 cfs 12.994 af<br>Outflow=8.24 cfs 12.994 af                                                                                                    |
| <b>Reach PSW-Q: Southwest Discharge</b>           | Inflow=10.25 cfs 2.744 af<br>Outflow=10.25 cfs 2.744 af                                                                                                    |
| <b>Reach PW: West Boundary</b>                    | Inflow=5.96 cfs 1.410 af<br>Outflow=5.96 cfs 1.410 af                                                                                                      |

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**Pond P-12:** Peak Elev=898.4' Storage=752,155 cf Inflow=67.13 cfs 6.504 af  
Outflow=5.92 cfs 6.037 af

**Pond P-3A:** Peak Elev=898.9' Storage=2,191,269 cf Inflow=121.02 cfs 8.667 af  
Primary=5.17 cfs 8.054 af Secondary=0.00 cfs 0.000 af Outflow=5.17 cfs 8.054 af

**Pond P-3B:** Peak Elev=898.8' Storage=683,329 cf Inflow=46.58 cfs 13.199 af  
Outflow=8.24 cfs 12.994 af

**Pond P-6:** Peak Elev=899.7' Storage=72,707 cf Inflow=17.95 cfs 1.323 af  
Outflow=1.24 cfs 1.311 af

**Pond P-8:** Peak Elev=898.8' Storage=235,912 cf Inflow=33.66 cfs 2.396 af  
Outflow=9.82 cfs 2.282 af

**Pond PB1A: Wetland 1A** Peak Elev=900.0' Storage=42,051 cf Inflow=18.31 cfs 1.388 af  
Secondary=0.00 cfs 0.000 af Tertiary=1.11 cfs 0.472 af Outflow=1.11 cfs 0.472 af

**Pond PB1B: Wetland 1B** Peak Elev=901.8' Storage=883 cf Inflow=4.66 cfs 0.437 af  
Outflow=4.65 cfs 0.427 af

**Pond PB1C: Wetland 1C** Peak Elev=901.8' Storage=37,091 cf Inflow=15.96 cfs 1.610 af  
Primary=4.03 cfs 0.871 af Secondary=0.00 cfs 0.000 af Outflow=4.03 cfs 0.871 af

**Pond PB6: Wetland 6** Peak Elev=896.2' Storage=10,298 cf Inflow=10.05 cfs 2.816 af  
Outflow=9.94 cfs 2.637 af

**Pond PB7A: Wetland 7A** Peak Elev=898.3' Storage=5,944 cf Inflow=4.15 cfs 0.524 af  
Outflow=3.36 cfs 0.408 af

**Pond PB7B: Wetland 7B** Peak Elev=898.4' Storage=7,454 cf Inflow=6.24 cfs 0.365 af  
Primary=1.48 cfs 0.222 af Secondary=0.00 cfs 0.000 af Outflow=1.48 cfs 0.222 af

**Pond PB7C: Wetland 7C** Peak Elev=899.0' Storage=2,458 cf Inflow=1.21 cfs 0.056 af  
Outflow=0.00 cfs 0.000 af

**Total Runoff Area = 119.038 ac Runoff Volume = 27.729 af Average Runoff Depth = 2.80"**  
**75.77% Pervious = 90.189 ac 24.23% Impervious = 28.848 ac**

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**Summary for Subcatchment PB-10:**

Runoff = 3.17 cfs @ 12.28 hrs, Volume= 0.229 af, Depth= 2.68"  
Routed to Reach 1R :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

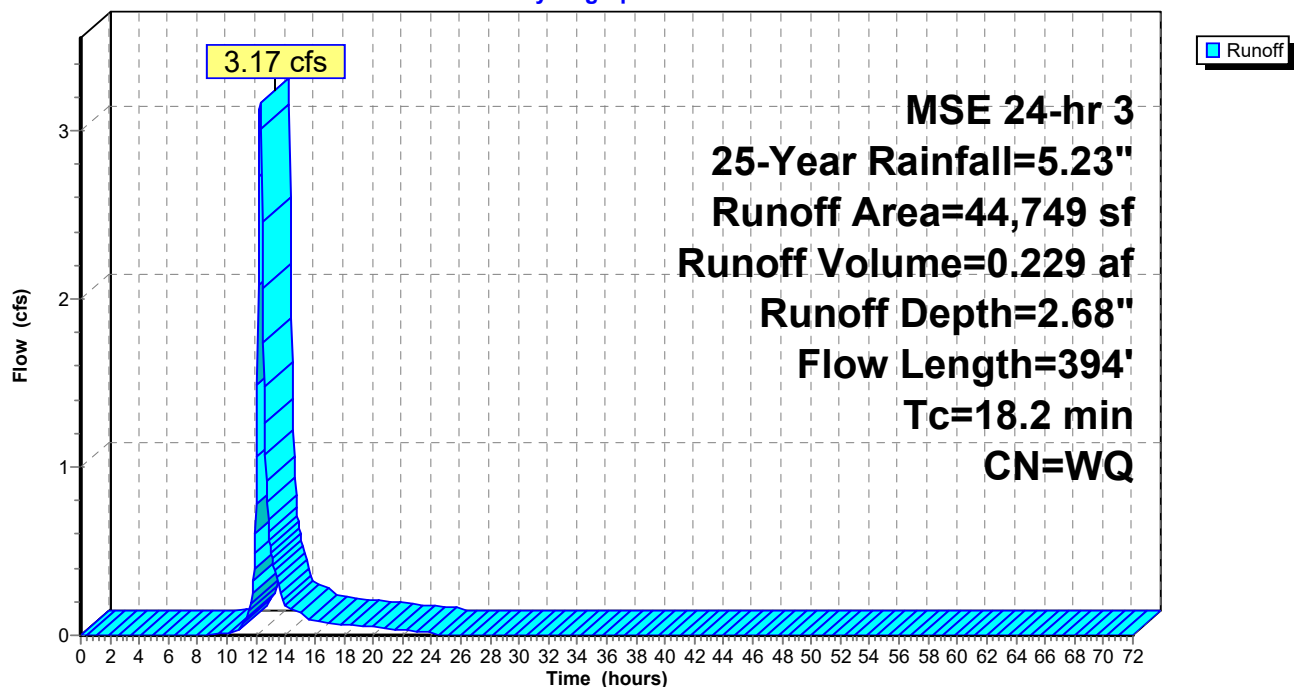
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 42,349    | 74 | >75% Grass cover, Good, HSG C |
| * 2,400   | 98 | Concrete                      |
| 44,749    |    | Weighted Average              |
| 42,349    |    | 94.64% Pervious Area          |
| 2,400     |    | 5.36% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 12.3     | 100           | 0.0133        | 0.14              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 5.9      | 294           | 0.0143        | 0.84              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 18.2     | 394           | Total         |                   |                |                                                                      |

**Subcatchment PB-10:**

Hydrograph



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**Summary for Subcatchment PB-12:**

Runoff = 47.94 cfs @ 12.28 hrs, Volume= 3.682 af, Depth= 3.14"  
Routed to Pond P-12 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

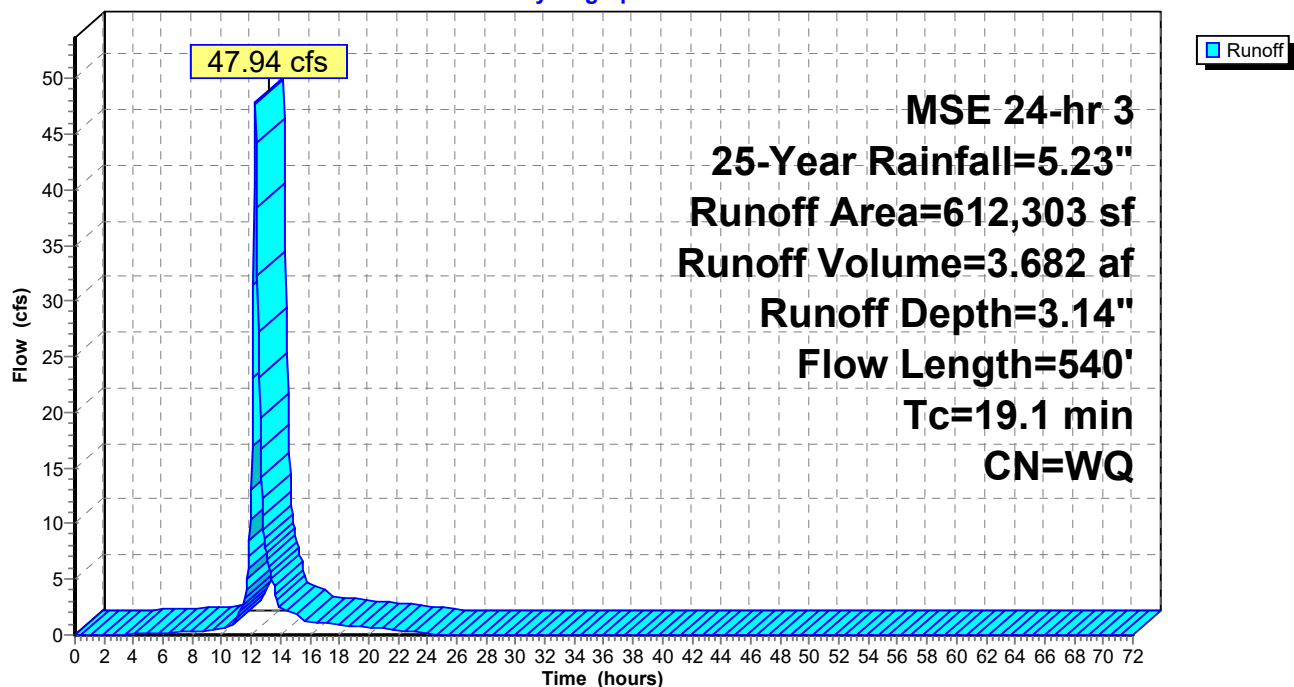
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 19,200    | 98 | Roofs, HSG A                  |
| 463,357   | 74 | >75% Grass cover, Good, HSG C |
| 124,927   | 98 | Water Surface, HSG A          |
| * 4,819   | 98 | Driveways                     |
| 612,303   |    | Weighted Average              |
| 463,357   |    | 75.67% Pervious Area          |
| 148,946   |    | 24.33% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 7.4      | 100           | 0.0474        | 0.23              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 11.7     | 440           | 0.0080        | 0.63              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 19.1     | 540           | Total         |                   |                |                                                                      |

**Subcatchment PB-12:**

Hydrograph





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**Summary for Subcatchment PB-13A:**

Runoff = 1.70 cfs @ 12.24 hrs, Volume= 0.116 af, Depth= 2.49"  
Routed to Pond PB6 : Wetland 6

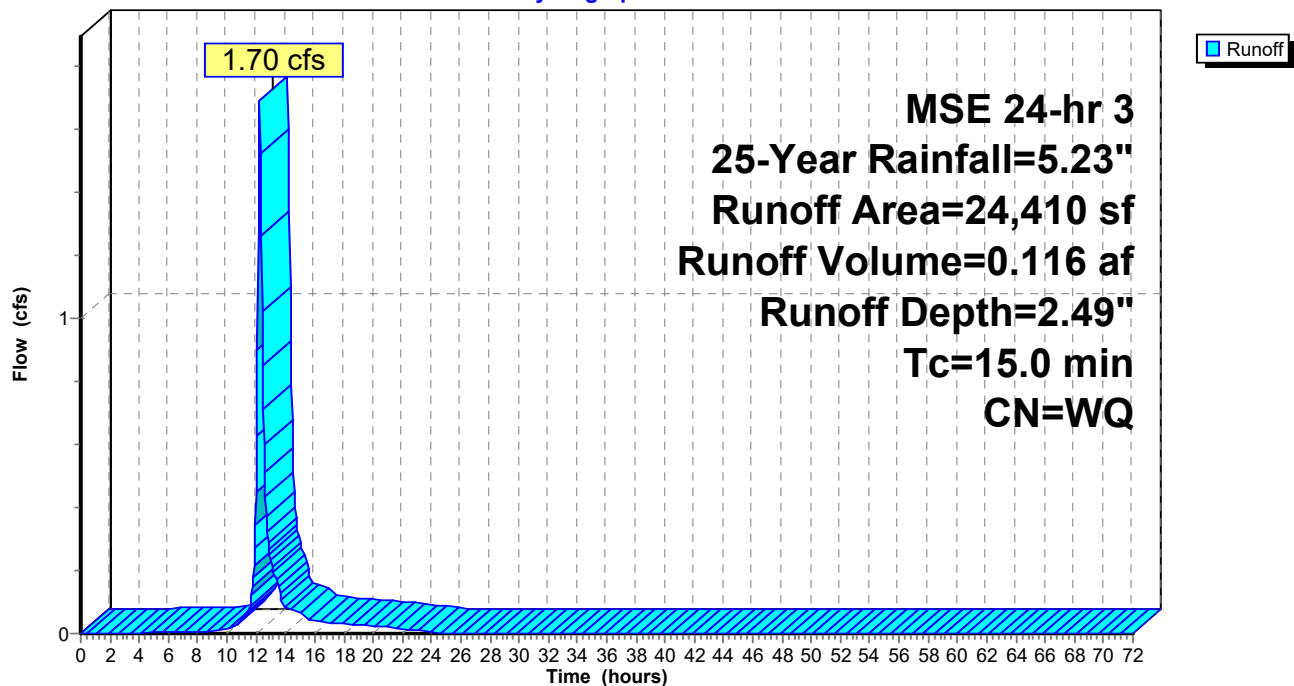
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 10,308    | 61 | >75% Grass cover, Good, HSG B |
| 10,308    | 74 | >75% Grass cover, Good, HSG C |
| 3,794     | 98 | Roofs, HSG A                  |
| 24,410    |    | Weighted Average              |
| 20,616    |    | 84.46% Pervious Area          |
| 3,794     |    | 15.54% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 15.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-13A:**

Hydrograph



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**Summary for Subcatchment PB-13B:**

Runoff = 9.35 cfs @ 12.26 hrs, Volume= 0.654 af, Depth= 2.78"  
Routed to Reach 1C&PB-13 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

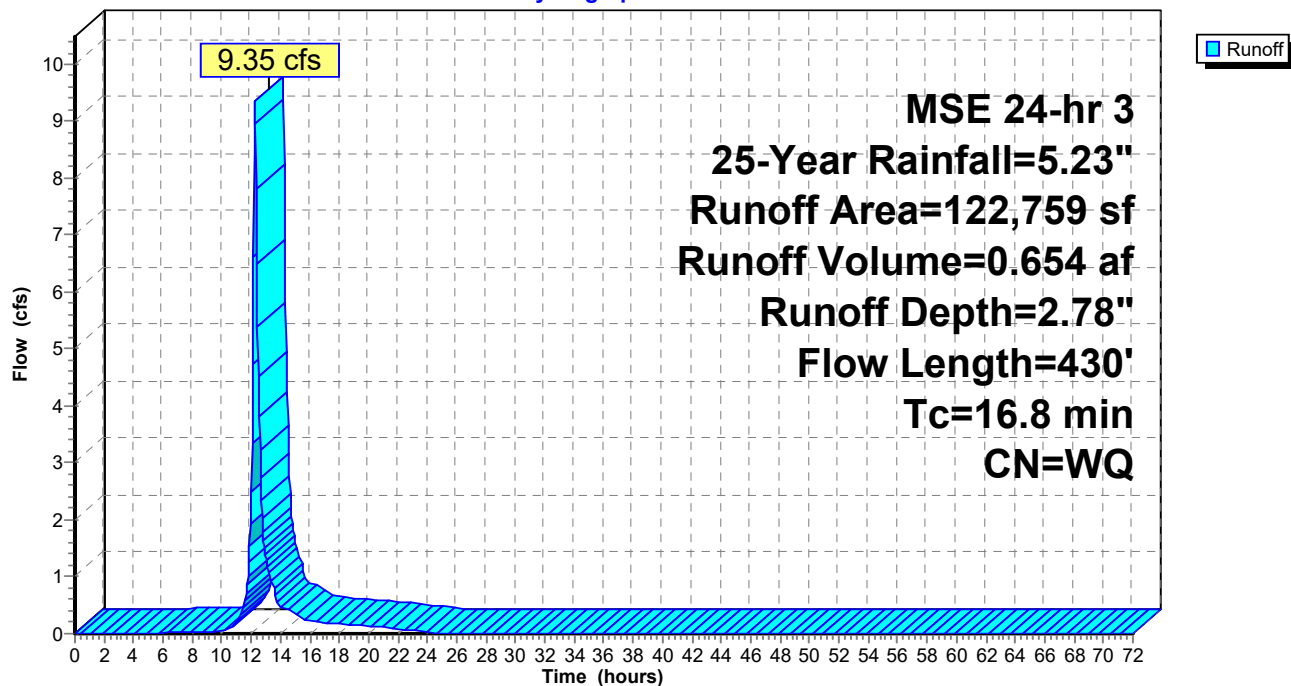
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 6,000     | 98 | Roofs, HSG A                  |
| 110,959   | 74 | >75% Grass cover, Good, HSG C |
| * 5,800   | 98 | Driveway                      |
| 122,759   |    | Weighted Average              |
| 110,959   |    | 90.39% Pervious Area          |
| 11,800    |    | 9.61% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 12.3     | 100           | 0.0132        | 0.14              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 4.5      | 330           | 0.0300        | 1.21              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 16.8     | 430           | Total         |                   |                |                                                                      |

**Subcatchment PB-13B:**

Hydrograph



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**Summary for Subcatchment PB-14A:**

Runoff = 6.24 cfs @ 12.29 hrs, Volume= 0.469 af, Depth= 2.75"  
Routed to Reach PB-1C&PB-14B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

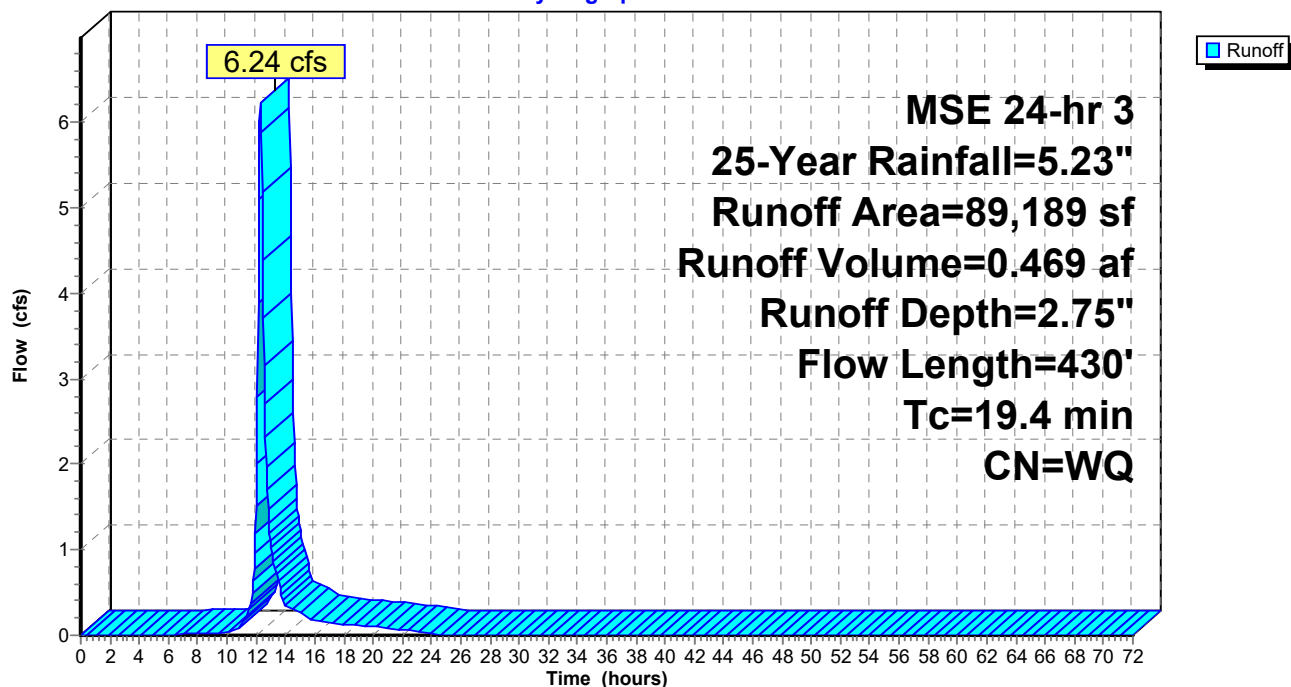
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 7,200     | 98 | Roofs, HSG A                  |
| 81,989    | 74 | >75% Grass cover, Good, HSG C |
| 89,189    |    | Weighted Average              |
| 81,989    |    | 91.93% Pervious Area          |
| 7,200     |    | 8.07% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 11.9     | 100           | 0.0143        | 0.14              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 7.5      | 330           | 0.0110        | 0.73              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 19.4     | 430           | Total         |                   |                |                                                                      |

**Subcatchment PB-14A:**

Hydrograph



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**Summary for Subcatchment PB-14B:**

Runoff = 7.16 cfs @ 12.56 hrs, Volume= 0.800 af, Depth= 2.74"  
Routed to Reach PB-1C&PB-14B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

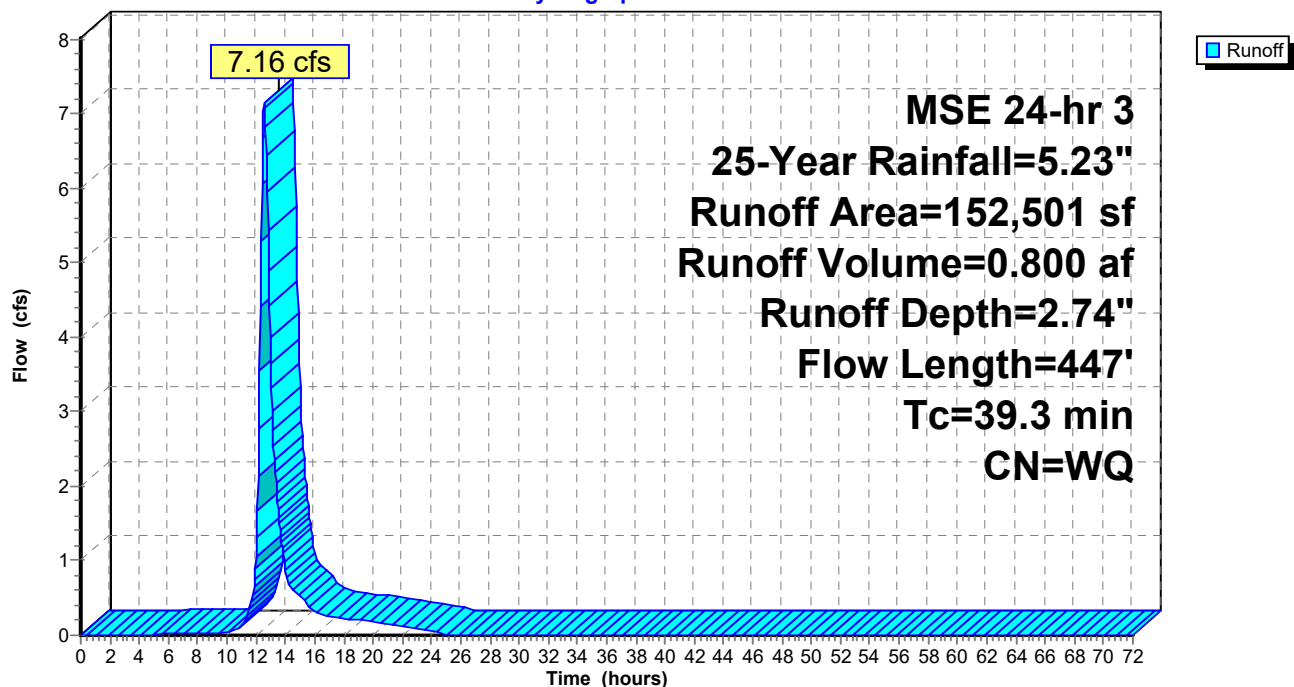
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 12,000    | 98 | Roofs, HSG A                  |
| 140,501   | 74 | >75% Grass cover, Good, HSG C |
| 152,501   |    | Weighted Average              |
| 140,501   |    | 92.13% Pervious Area          |
| 12,000    |    | 7.87% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 18.6     | 100           | 0.0047        | 0.09              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 20.7     | 347           | 0.0016        | 0.28              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 39.3     | 447           | Total         |                   |                |                                                                      |

**Subcatchment PB-14B:**

Hydrograph



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**Summary for Subcatchment PB-15A:**

Runoff = 1.61 cfs @ 12.24 hrs, Volume= 0.107 af, Depth= 1.51"  
Routed to Reach PSW-Q : Southwest Discharge

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

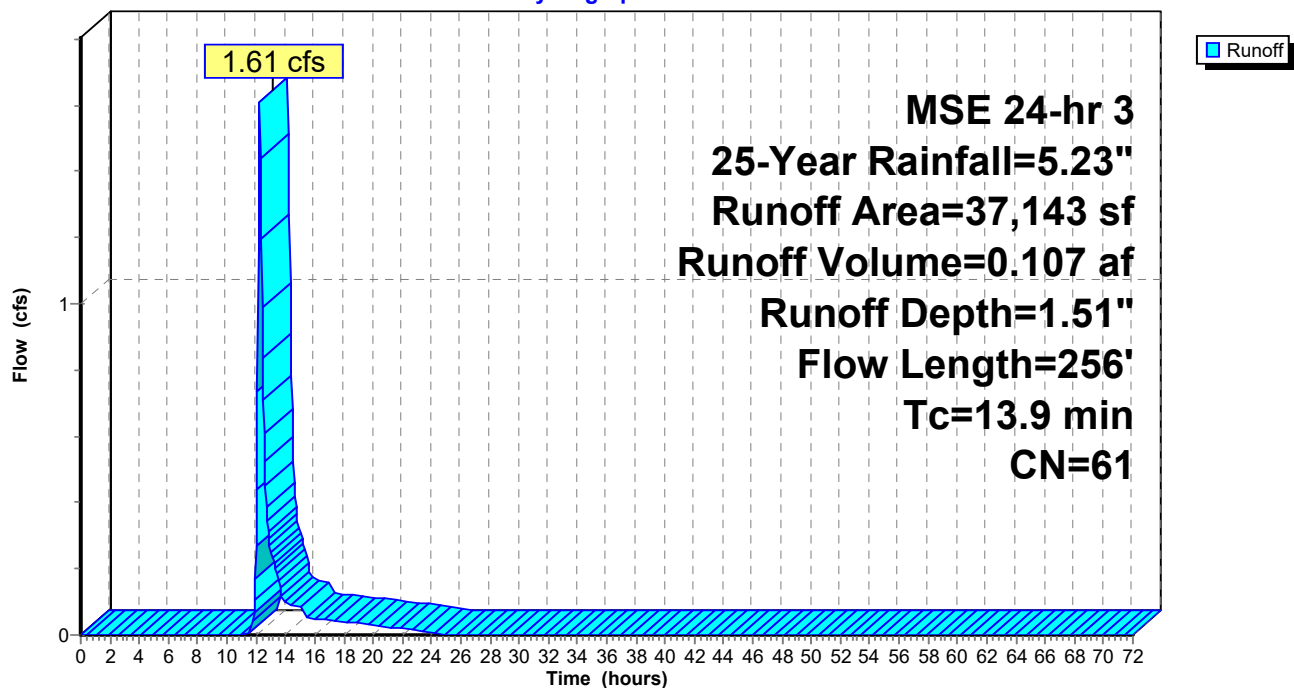
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 37,143    | 61 | >75% Grass cover, Good, HSG B |
| 37,143    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.9     | 100           | 0.0180        | 0.15              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 3.0      | 156           | 0.0154        | 0.87              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 13.9     | 256           | Total         |                   |                |                                                                      |

**Subcatchment PB-15A:**

Hydrograph



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**Summary for Subcatchment PB-15B:**

Runoff = 5.32 cfs @ 12.23 hrs, Volume= 0.335 af, Depth= 2.55"

Routed to Reach PSE-Q : SE Quarter (Private Ditch B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

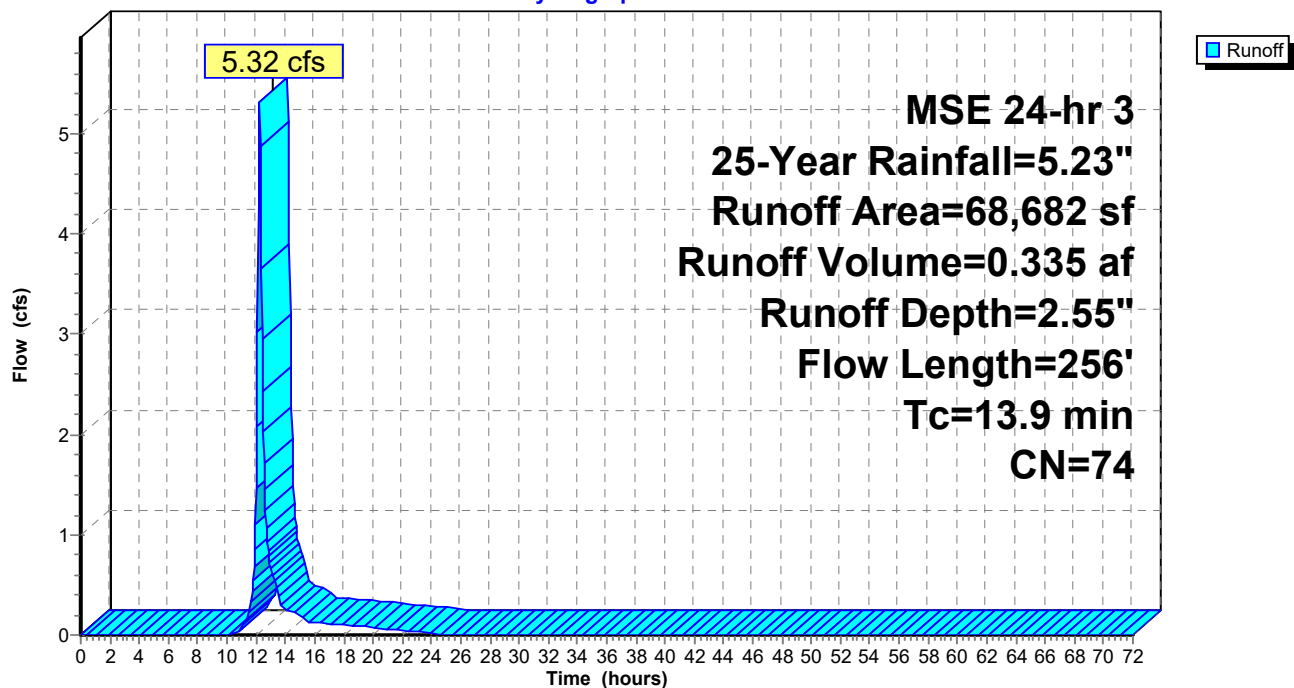
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 68,682    | 74 | >75% Grass cover, Good, HSG C |
| 68,682    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.9     | 100           | 0.0180        | 0.15              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 3.0      | 156           | 0.0154        | 0.87              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 13.9     | 256           | Total         |                   |                |                                                                      |

**Subcatchment PB-15B:**

Hydrograph



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**Summary for Subcatchment PB-1A:**

Runoff = 18.31 cfs @ 12.29 hrs, Volume= 1.388 af, Depth= 1.59"  
Routed to Pond PB1A : Wetland 1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

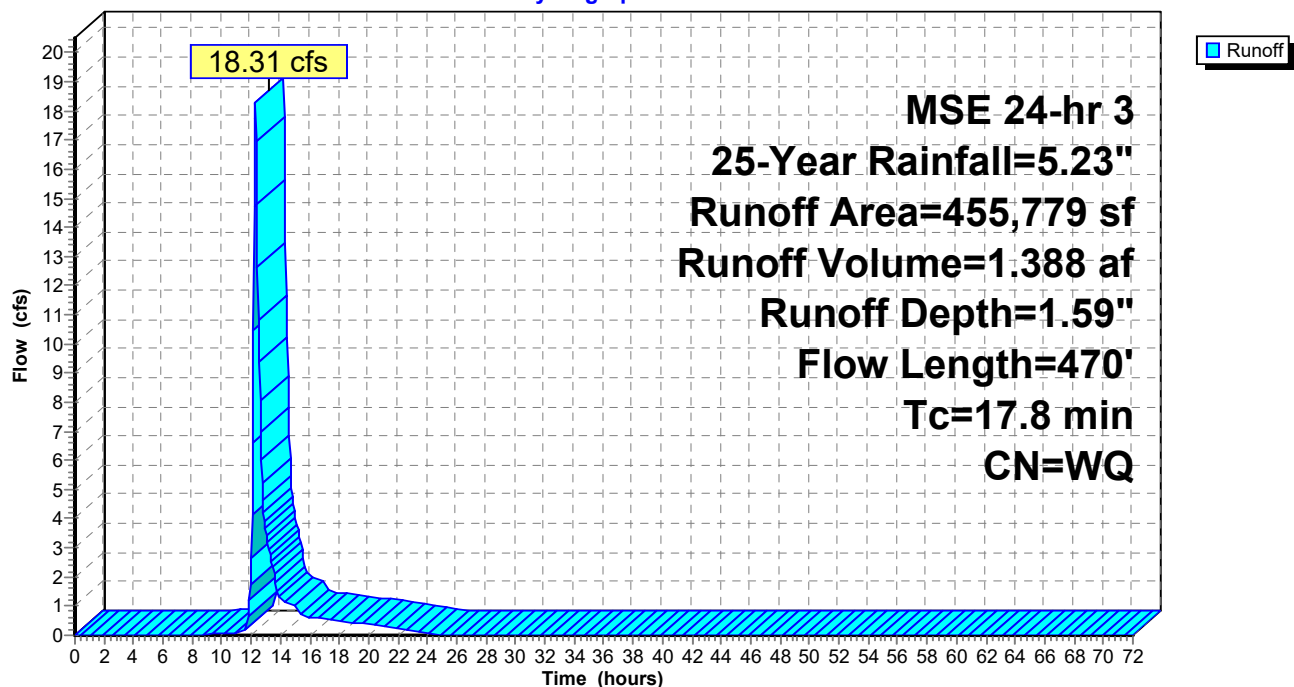
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 444,979   | 61 | >75% Grass cover, Good, HSG B |
| 10,800    | 98 | Roofs, HSG A                  |
| 455,779   |    | Weighted Average              |
| 444,979   |    | 97.63% Pervious Area          |
| 10,800    |    | 2.37% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.4     | 100           | 0.0200        | 0.16              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 7.4      | 370           | 0.0140        | 0.83              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 17.8     | 470           | Total         |                   |                |                                                                      |

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**Summary for Subcatchment PB-1B:**

Runoff = 4.66 cfs @ 12.41 hrs, Volume= 0.437 af, Depth= 2.32"  
Routed to Pond PB1B : Wetland 1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

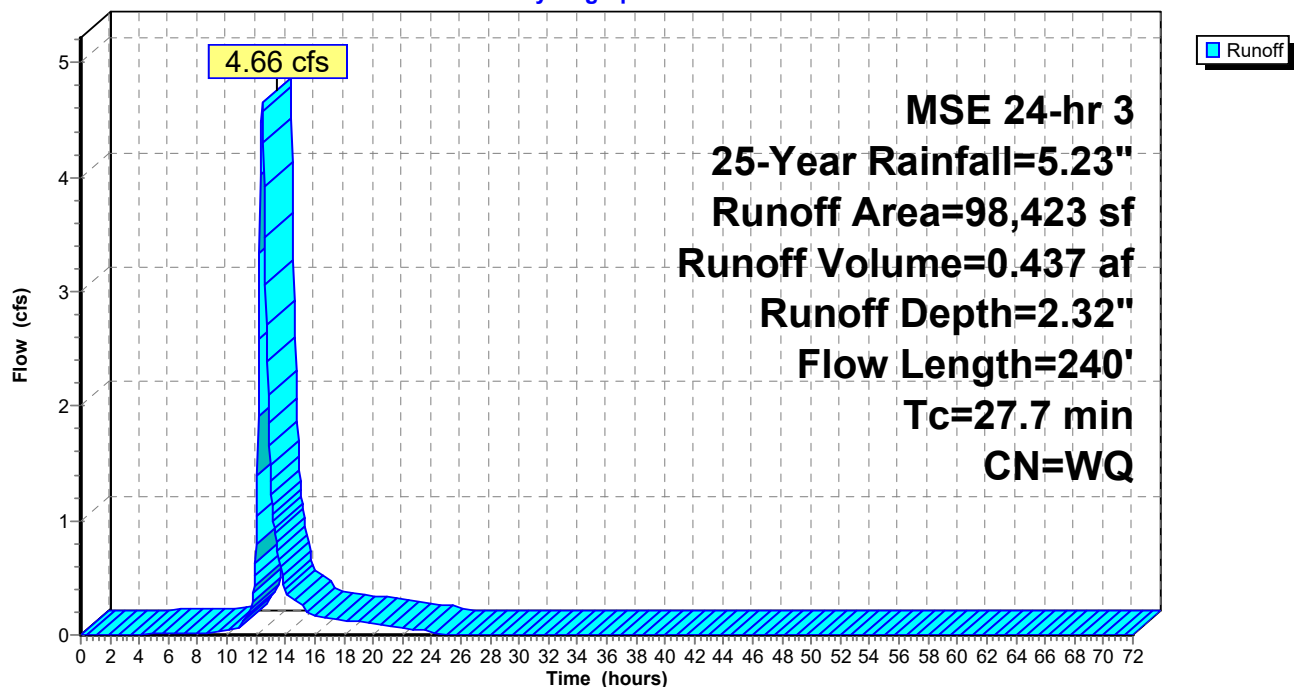
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 44,402    | 61 | >75% Grass cover, Good, HSG B |
| 44,402    | 74 | >75% Grass cover, Good, HSG C |
| 6,600     | 98 | Roofs, HSG A                  |
| * 3,019   | 98 | Driveway                      |
| 98,423    |    | Weighted Average              |
| 88,804    |    | 90.23% Pervious Area          |
| 9,619     |    | 9.77% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 18.5     | 118           | 0.0170        | 0.11              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 2.83"                |
| 9.2      | 122           | 0.0010        | 0.22              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 27.7     | 240           | Total         |                   |                |                                                                      |

**Subcatchment PB-1B:**

Hydrograph





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**Summary for Subcatchment PB-1C:**

Runoff = 11.41 cfs @ 12.48 hrs, Volume= 1.184 af, Depth= 1.62"  
Routed to Pond PB1C : Wetland 1C

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

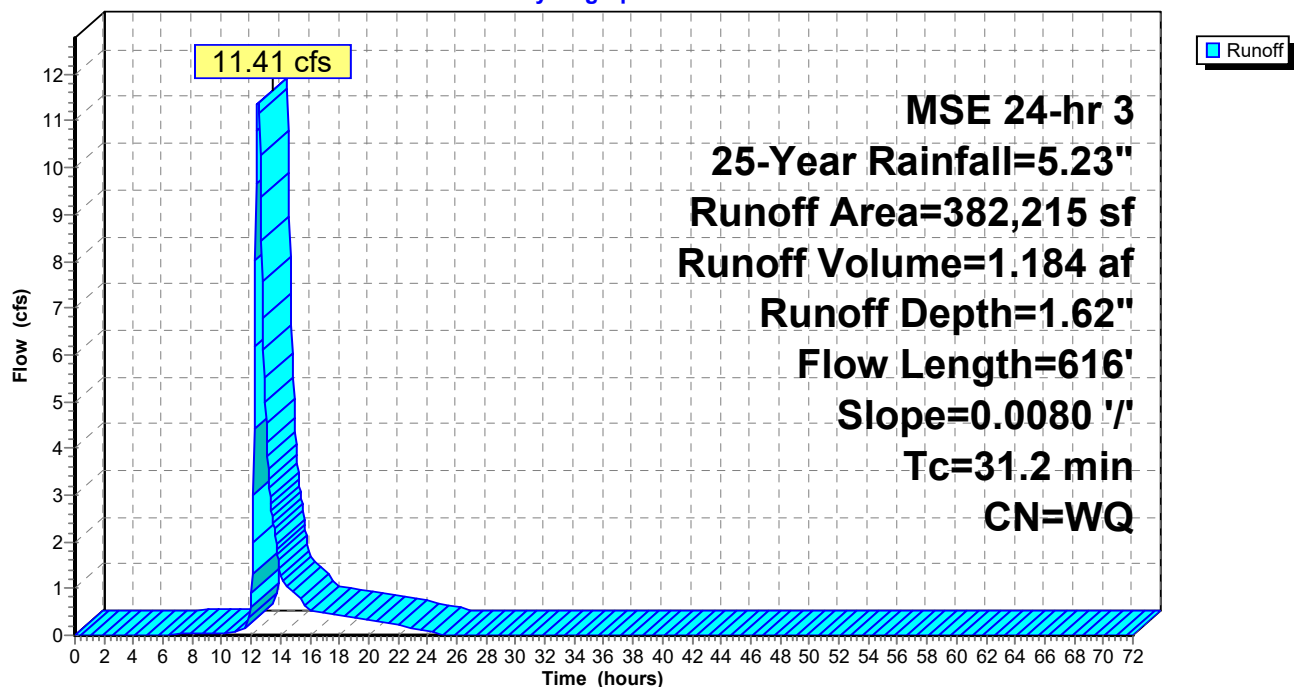
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 370,215   | 61 | >75% Grass cover, Good, HSG B |
| 12,000    | 98 | Roofs, HSG A                  |
| 382,215   |    | Weighted Average              |
| 370,215   |    | 96.86% Pervious Area          |
| 12,000    |    | 3.14% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 18.2     | 127           | 0.0080        | 0.12              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 13.0     | 489           | 0.0080        | 0.63              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 31.2     | 616           | Total         |                   |                |                                                                      |

**Subcatchment PB-1C:**

Hydrograph



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**Summary for Subcatchment PB-1D:**

Runoff = 5.96 cfs @ 12.38 hrs, Volume= 0.539 af, Depth= 1.74"  
Routed to Reach PW : West Boundary

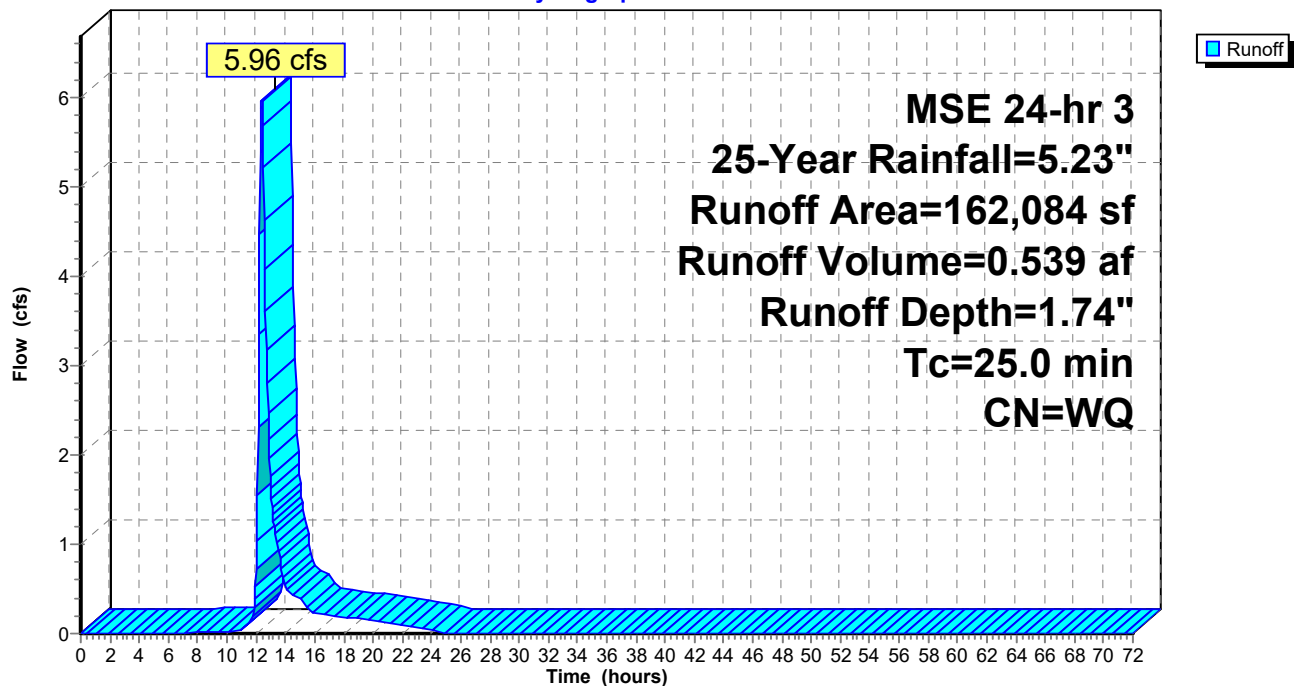
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 140,476   | 61 | >75% Grass cover, Good, HSG B |
| 15,608    | 74 | >75% Grass cover, Good, HSG C |
| 6,000     | 98 | Roofs, HSG A                  |
| 162,084   |    | Weighted Average              |
| 156,084   |    | 96.30% Pervious Area          |
| 6,000     |    | 3.70% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 25.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-1D:**

Hydrograph



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**Summary for Subcatchment PB-2A:**

Runoff = 3.10 cfs @ 12.18 hrs, Volume= 0.175 af, Depth= 2.82"  
Routed to Reach 2A&2B :

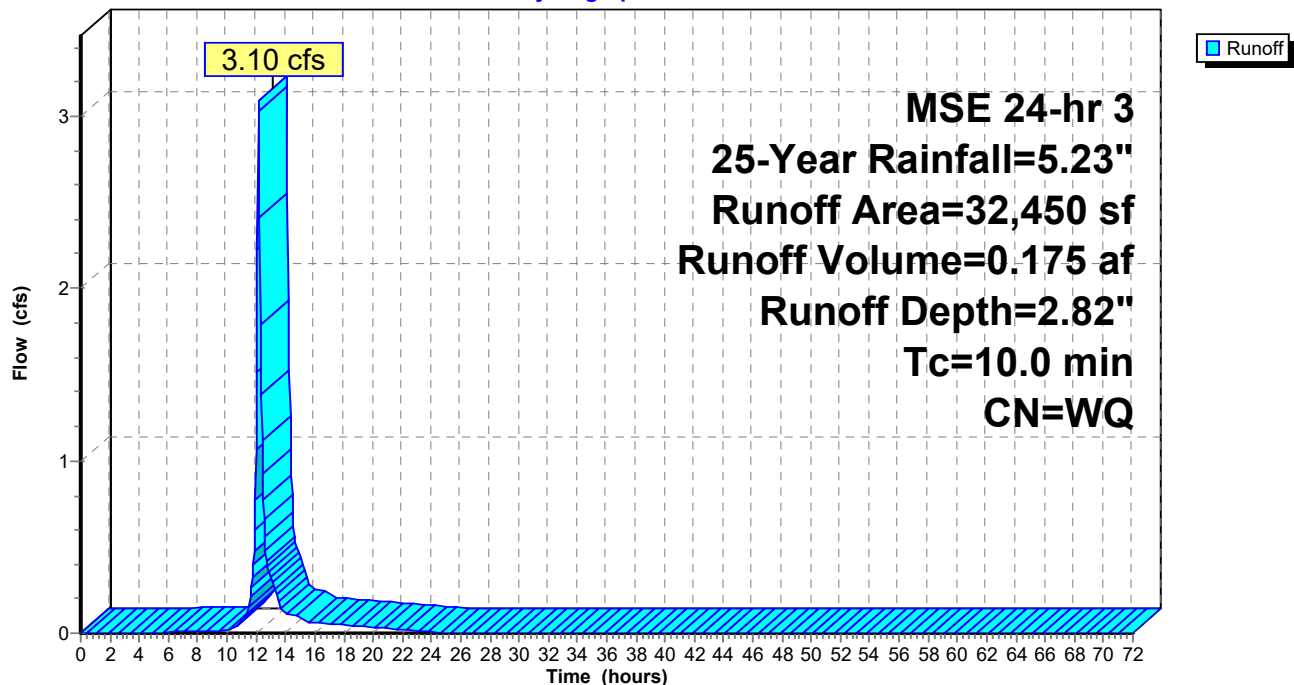
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 28,850    | 74 | >75% Grass cover, Good, HSG C |
| 3,600     | 98 | Paved parking, HSG A          |
| 32,450    |    | Weighted Average              |
| 28,850    |    | 88.91% Pervious Area          |
| 3,600     |    | 11.09% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 10.0        |                  |                  |                      |                   | Direct Entry, |

**Subcatchment PB-2A:**

Hydrograph



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**Summary for Subcatchment PB-2B:**

Runoff = 1.96 cfs @ 12.18 hrs, Volume= 0.108 af, Depth= 2.61"  
Routed to Reach 2A&2B :

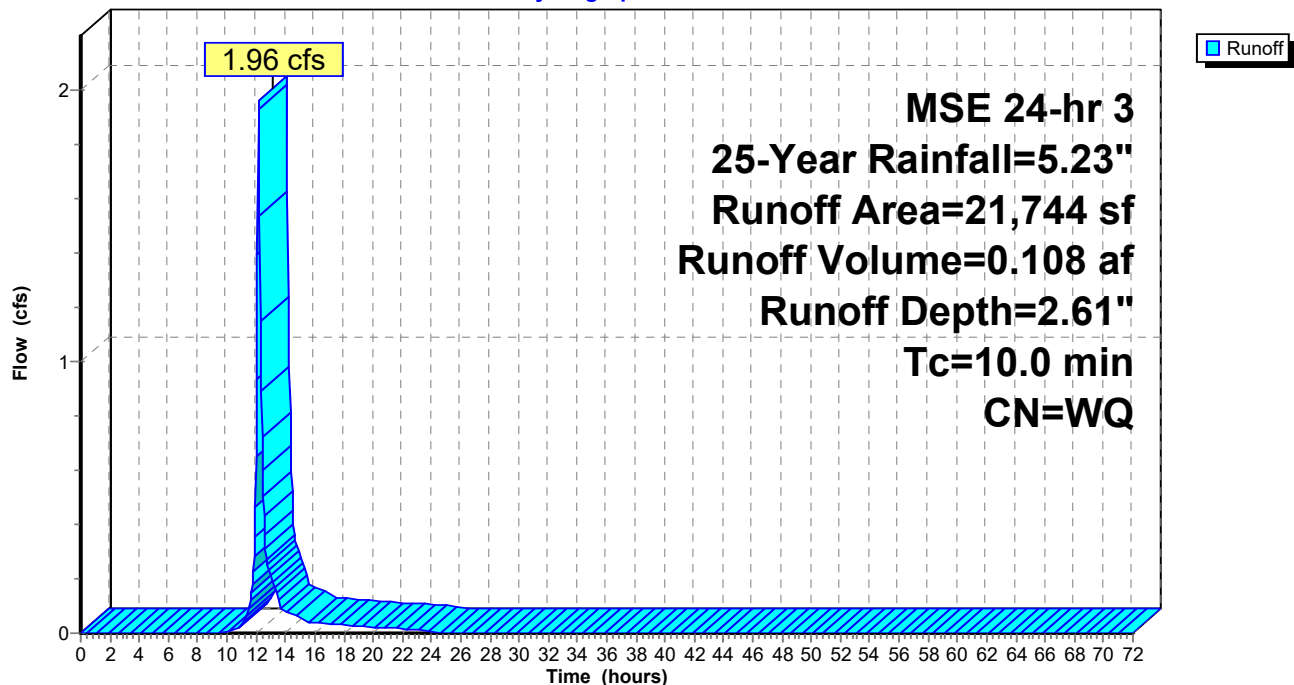
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 21,244    | 74 | >75% Grass cover, Good, HSG C |
| 500       | 98 | Paved parking, HSG A          |
| 21,744    |    | Weighted Average              |
| 21,244    |    | 97.70% Pervious Area          |
| 500       |    | 2.30% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-2B:**

Hydrograph



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MSE 24-hr 3 25-Year Rainfall=5.23"

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**Summary for Subcatchment PB-3A:**

Runoff = 77.03 cfs @ 12.05 hrs, Volume= 3.630 af, Depth= 4.60"  
Routed to Pond P-3A :

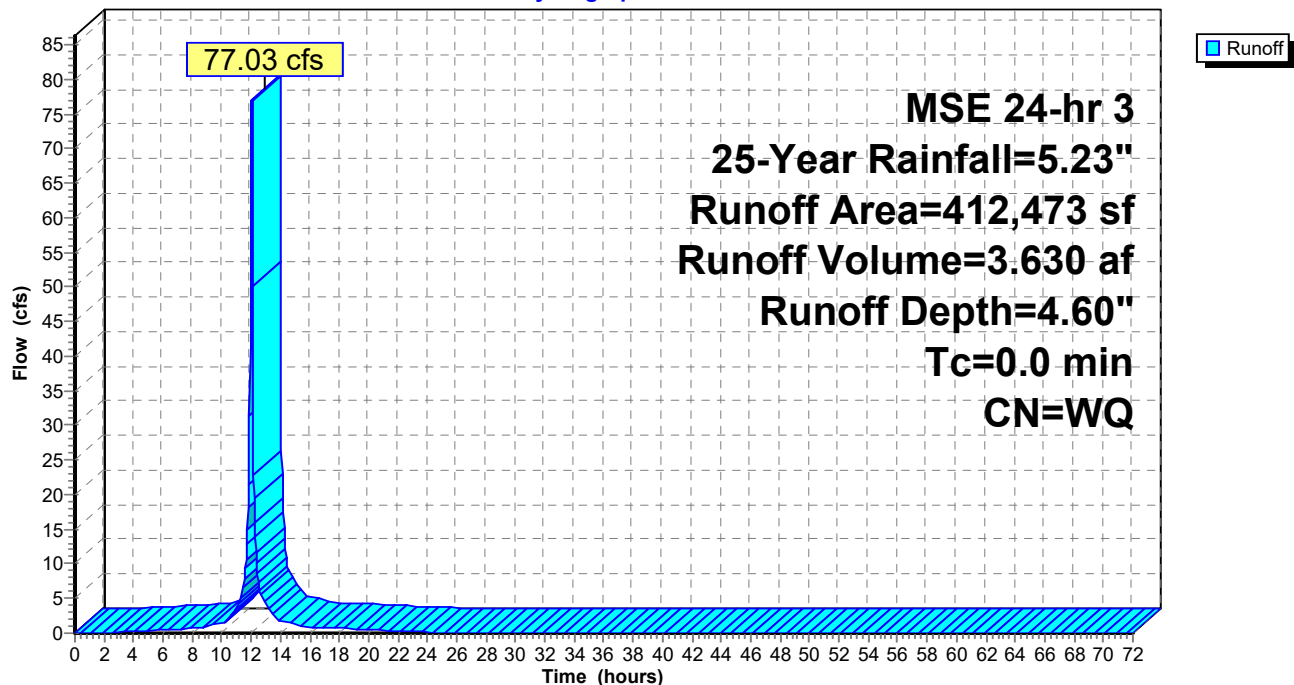
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 346,189   | 98 | Water Surface, HSG A          |
| 66,284    | 74 | >75% Grass cover, Good, HSG C |
| 412,473   |    | Weighted Average              |
| 66,284    |    | 16.07% Pervious Area          |
| 346,189   |    | 83.93% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 0.0      |               |               |                   |                | Direct Entry, |

**Subcatchment PB-3A:**

Hydrograph



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**Summary for Subcatchment PB-3B:**

Runoff = 33.17 cfs @ 12.04 hrs, Volume= 1.591 af, Depth= 4.99"  
Routed to Pond P-3B :

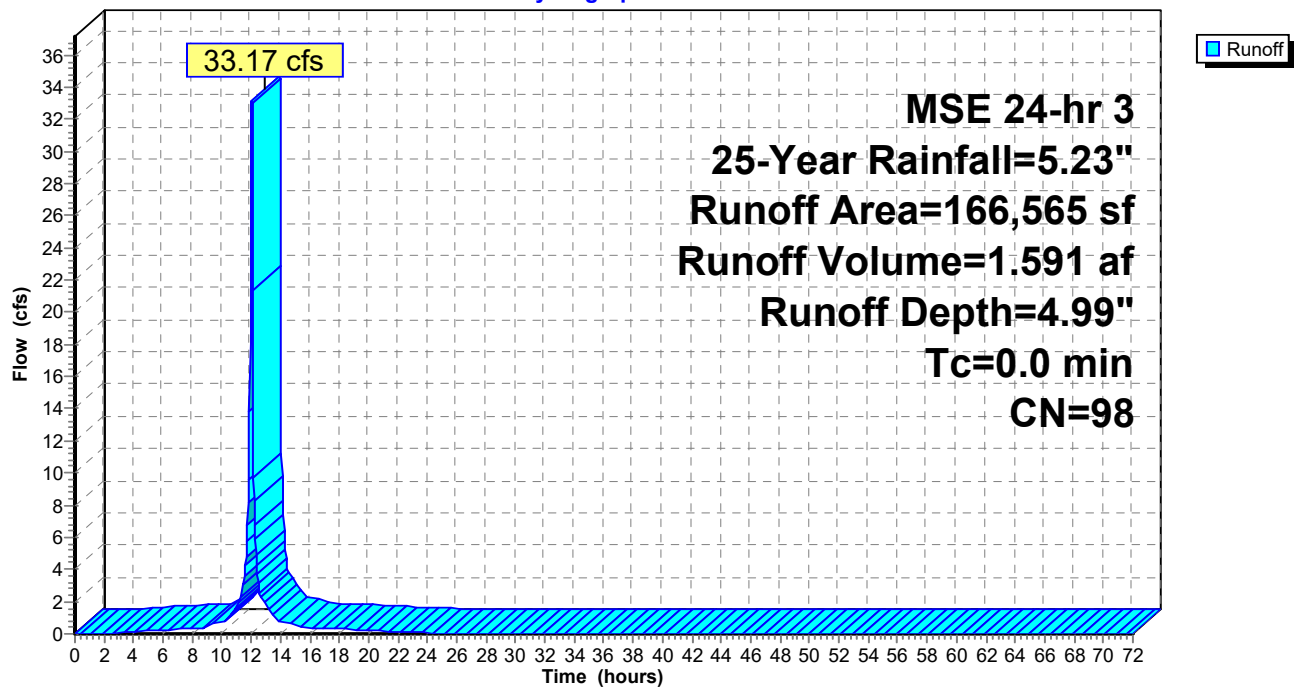
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description             |
|-----------|----|-------------------------|
| 166,565   | 98 | Water Surface, HSG A    |
| 166,565   |    | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 0.0      |               |               |                   |                | Direct Entry, |

**Subcatchment PB-3B:**

Hydrograph



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**Summary for Subcatchment PB-4A:**

Runoff = 9.61 cfs @ 12.18 hrs, Volume= 0.537 af, Depth= 2.72"  
Routed to Pond P-3A :

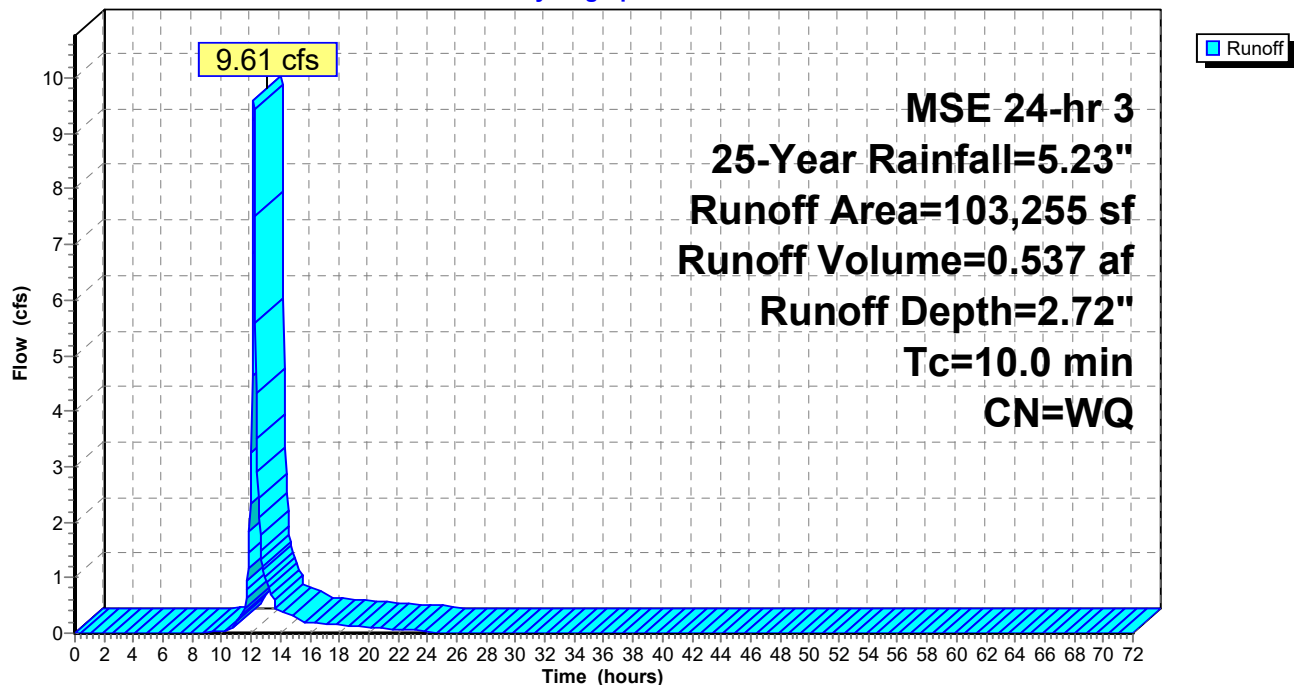
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 96,055    | 74 | >75% Grass cover, Good, HSG C |
| 7,200     | 98 | Roofs, HSG A                  |
| 103,255   |    | Weighted Average              |
| 96,055    |    | 93.03% Pervious Area          |
| 7,200     |    | 6.97% Impervious Area         |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 10.0        |                  |                  |                      |                   | Direct Entry, |

**Subcatchment PB-4A:**

Hydrograph



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**Summary for Subcatchment PB-4B:**

Runoff = 5.78 cfs @ 12.18 hrs, Volume= 0.320 af, Depth= 2.64"  
Routed to Pond P-3B :

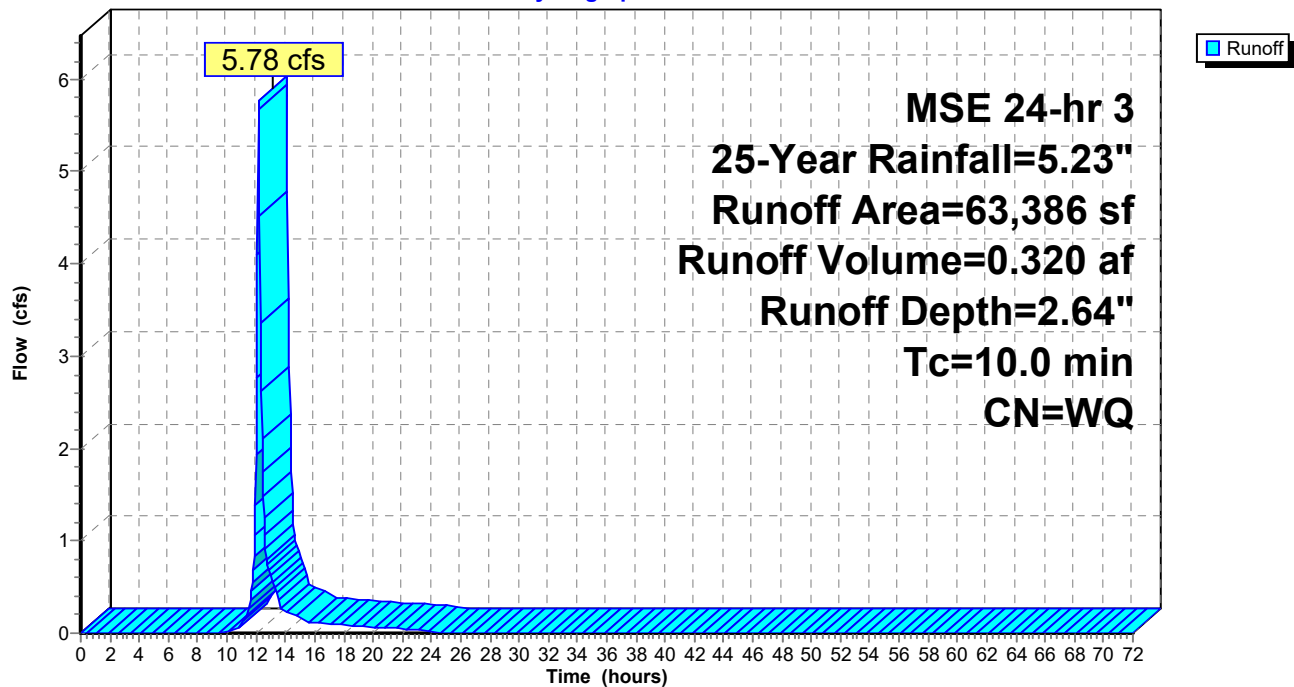
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 60,986    | 74 | >75% Grass cover, Good, HSG C |
| 2,400     | 98 | Roofs, HSG A                  |
| 63,386    |    | Weighted Average              |
| 60,986    |    | 96.21% Pervious Area          |
| 2,400     |    | 3.79% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-4B:**

Hydrograph





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**Summary for Subcatchment PB-4C:**

Runoff = 3.04 cfs @ 12.26 hrs, Volume= 0.219 af, Depth= 1.78"  
Routed to Pond P-3B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

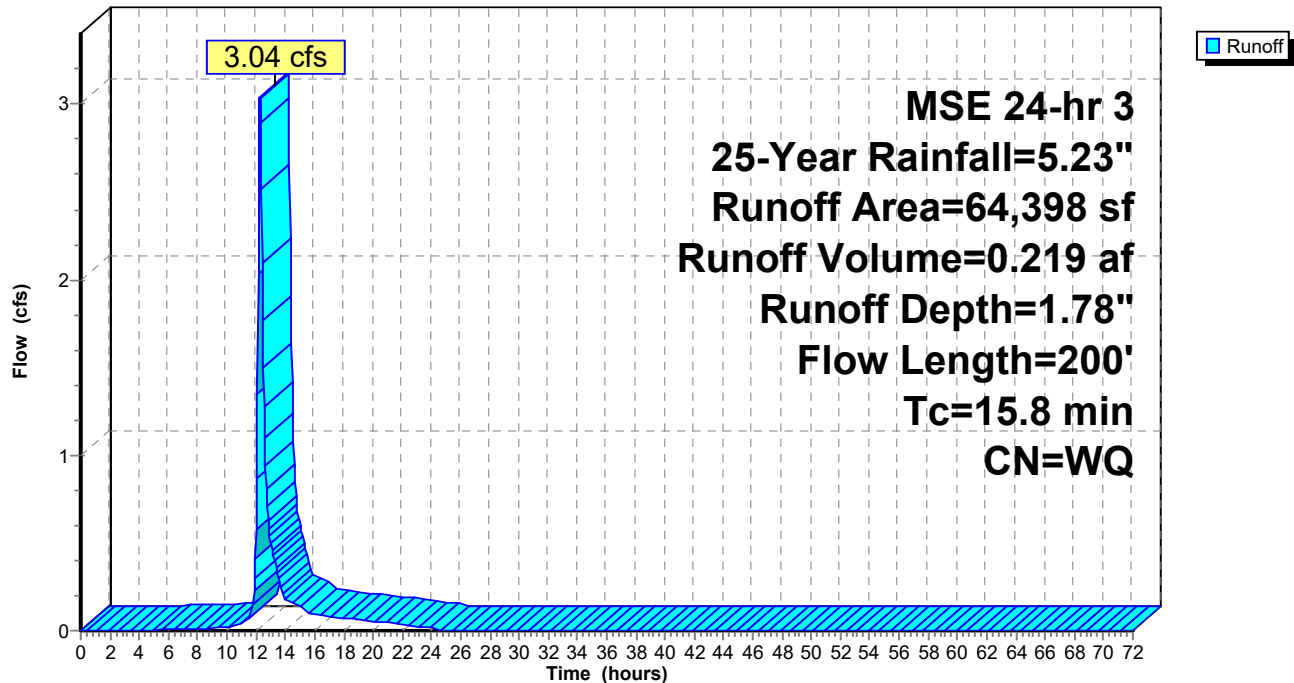
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 59,448    | 61 | >75% Grass cover, Good, HSG B |
| 4,554     | 98 | Roofs, HSG A                  |
| * 396     | 98 | Driveways                     |
| 64,398    |    | Weighted Average              |
| 59,448    |    | 92.31% Pervious Area          |
| 4,950     |    | 7.69% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 14.5     | 100           | 0.0088        | 0.12              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.3      | 100           | 0.0330        | 1.27              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 15.8     | 200           | Total         |                   |                |                                                                      |

**Subcatchment PB-4C:**

Hydrograph



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**Summary for Subcatchment PB-4D:**

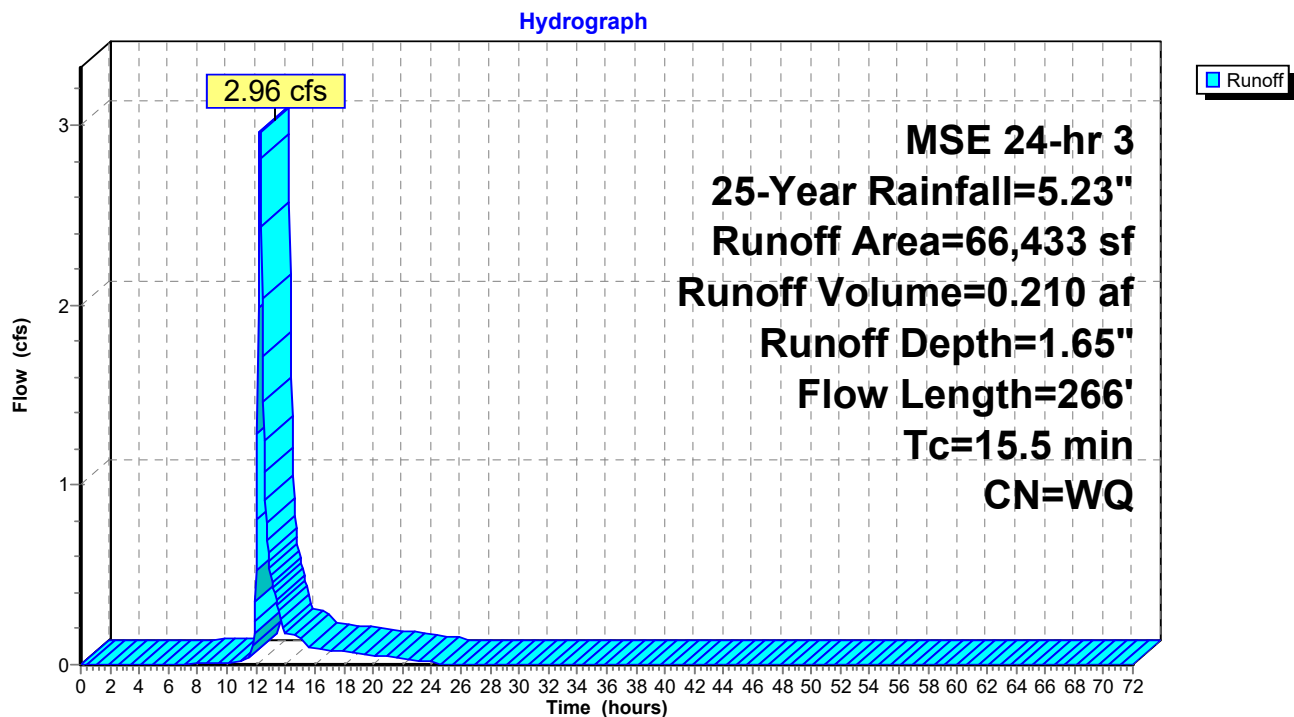
Runoff = 2.96 cfs @ 12.26 hrs, Volume= 0.210 af, Depth= 1.65"  
Routed to Pond P-8 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 63,695    | 61 | >75% Grass cover, Good, HSG B |
| 485       | 98 | Roofs, HSG A                  |
| * 2,253   | 98 | Driveways                     |
| 66,433    |    | Weighted Average              |
| 63,695    |    | 95.88% Pervious Area          |
| 2,738     |    | 4.12% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.6     | 100           | 0.0190        | 0.16              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 4.9      | 166           | 0.0066        | 0.57              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 15.5     | 266           | Total         |                   |                |                                                                      |

**Subcatchment PB-4D:**

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**Summary for Subcatchment PB-5A:**

Runoff = 28.18 cfs @ 12.18 hrs, Volume= 1.578 af, Depth= 2.73"  
Routed to Pond P-3A :

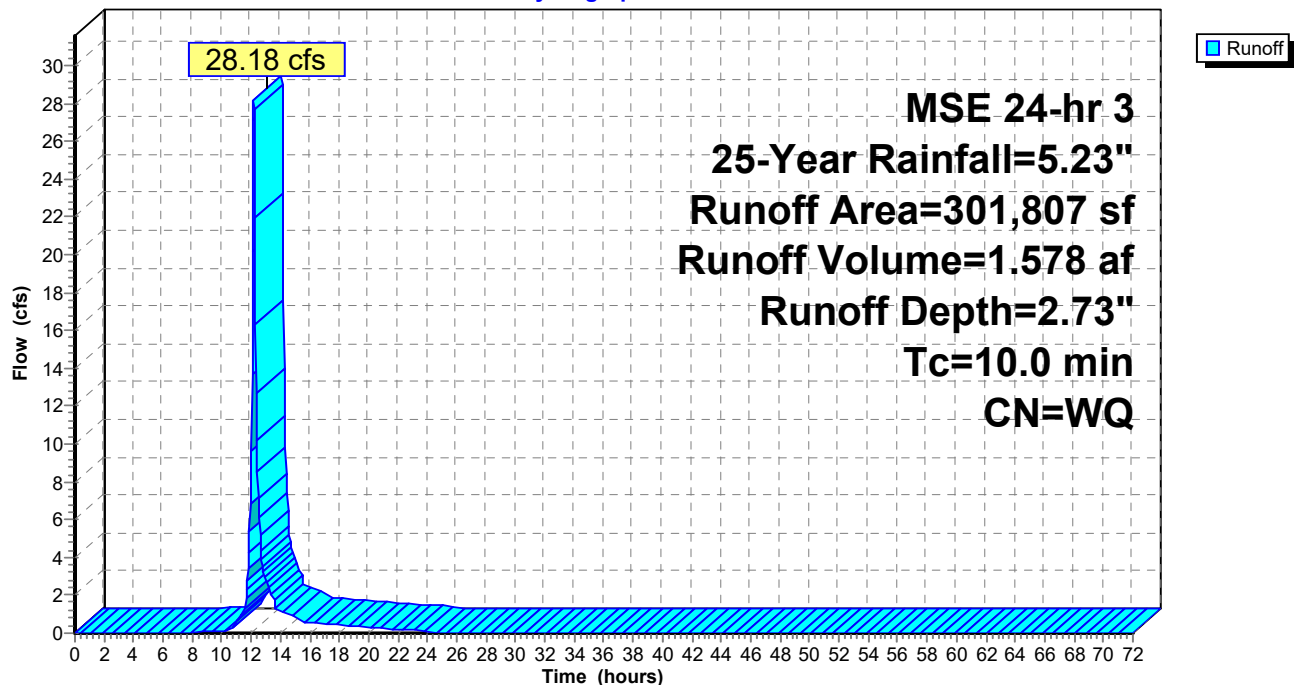
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 279,007   | 74 | >75% Grass cover, Good, HSG C |
| 22,800    | 98 | Roofs, HSG A                  |
| 301,807   |    | Weighted Average              |
| 279,007   |    | 92.45% Pervious Area          |
| 22,800    |    | 7.55% Impervious Area         |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 10.0        |                  |                  |                      |                   | Direct Entry, |

**Subcatchment PB-5A:**

Hydrograph



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**Summary for Subcatchment PB-5B:**

Runoff = 13.11 cfs @ 12.18 hrs, Volume= 0.733 af, Depth= 2.72"  
Routed to Pond P-3B :

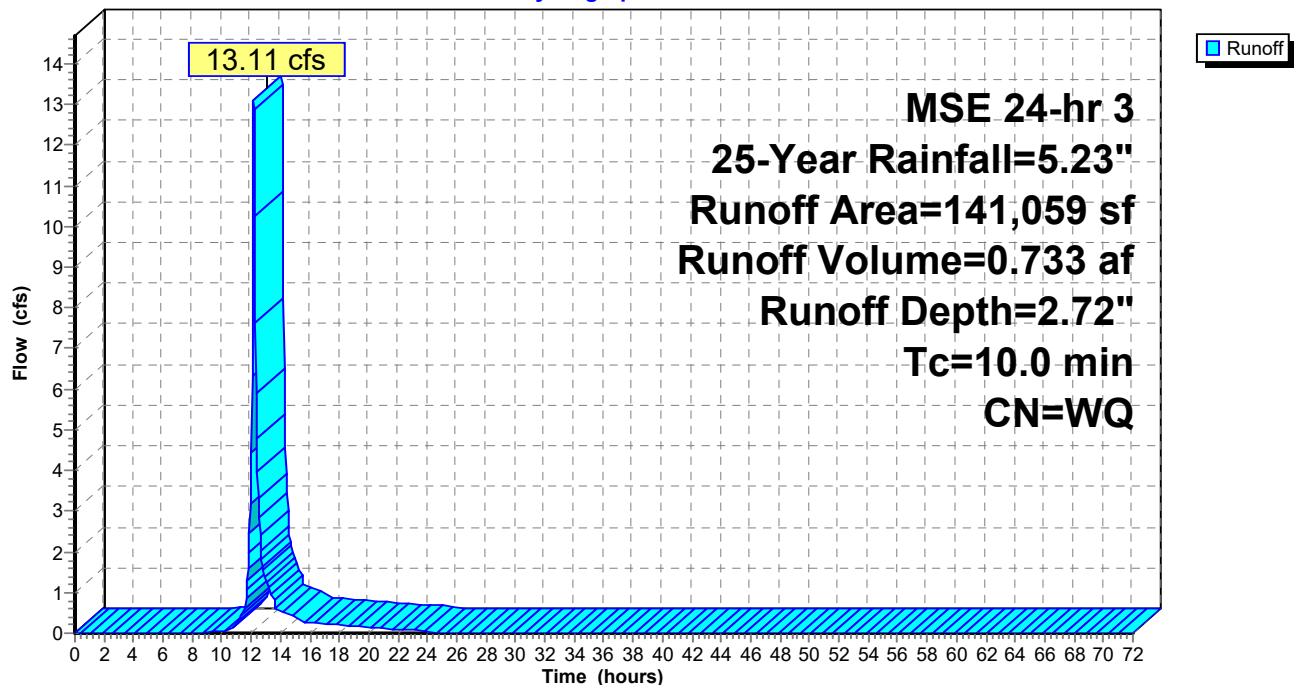
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 131,459   | 74 | >75% Grass cover, Good, HSG C |
| 9,600     | 98 | Roofs, HSG A                  |
| 141,059   |    | Weighted Average              |
| 131,459   |    | 93.19% Pervious Area          |
| 9,600     |    | 6.81% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-5B:**

Hydrograph



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**Summary for Subcatchment PB-6A:**

Runoff = 5.65 cfs @ 12.23 hrs, Volume= 0.403 af, Depth= 3.97"  
Routed to Pond P-6 :

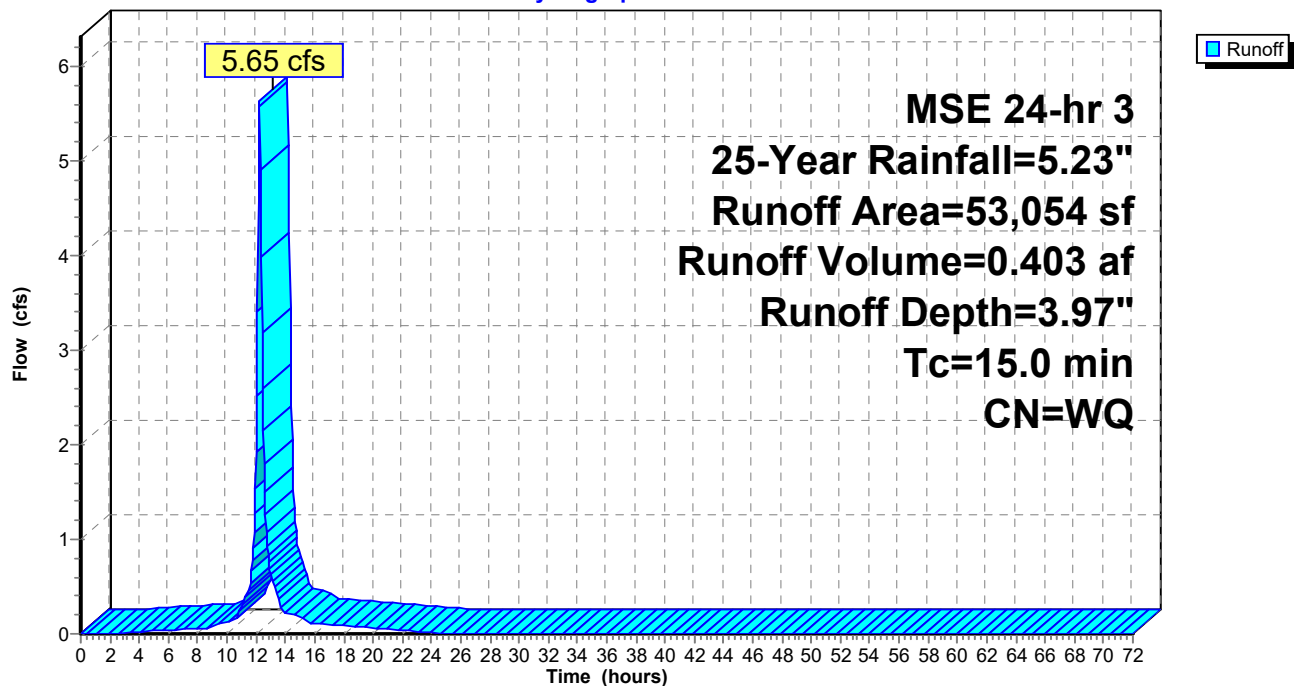
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 22,107    | 74 | >75% Grass cover, Good, HSG C |
| 4,800     | 98 | Roofs, HSG A                  |
| * 1,707   | 98 | Driveway                      |
| 24,440    | 98 | Water Surface, HSG A          |
| 53,054    |    | Weighted Average              |
| 22,107    |    | 41.67% Pervious Area          |
| 30,947    |    | 58.33% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 15.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-6A:**

Hydrograph



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**Summary for Subcatchment PB-6B:**

Runoff = 6.14 cfs @ 12.89 hrs, Volume= 0.981 af, Depth= 1.51"  
Routed to Pond PB6 : Wetland 6

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

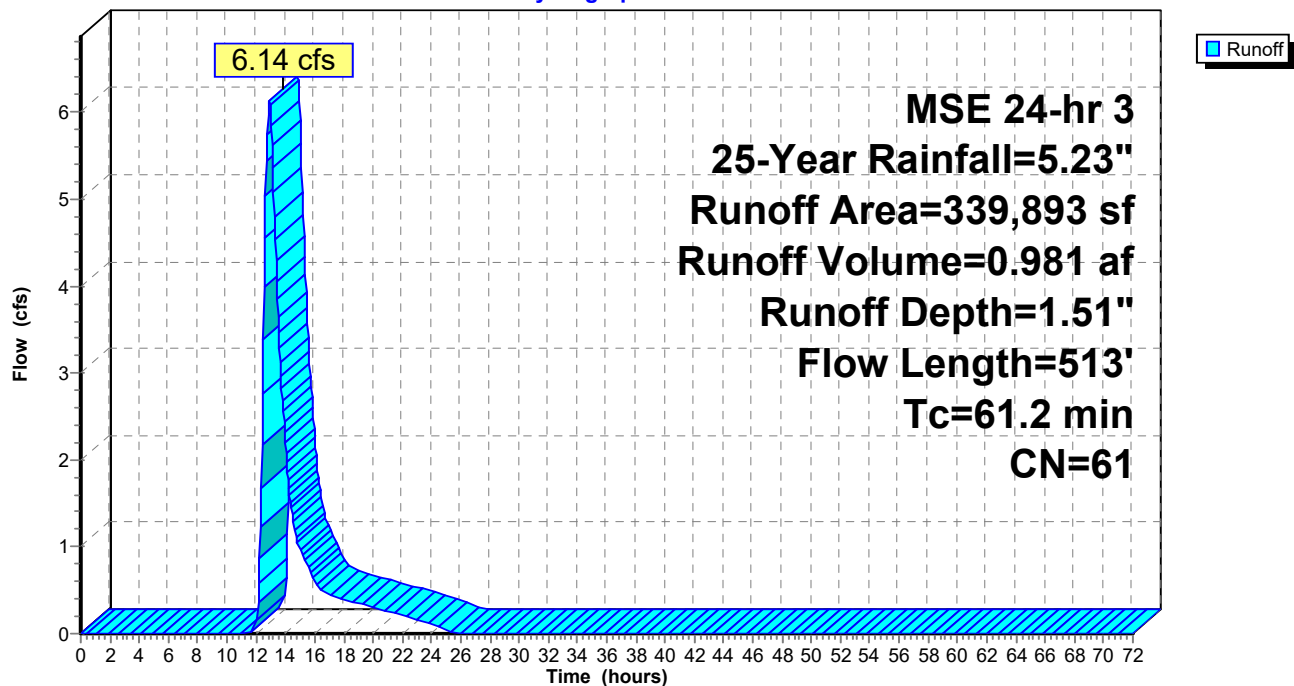
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 339,893   | 61 | >75% Grass cover, Good, HSG B |
| 339,893   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 55.9     | 300           | 0.0027        | 0.09              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 2.1      | 106           | 0.0140        | 0.83              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 3.2      | 107           | 0.0063        | 0.56              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 61.2     | 513           | Total         |                   |                |                                                                      |

**Subcatchment PB-6B:**

Hydrograph



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**Summary for Subcatchment PB-7A:**

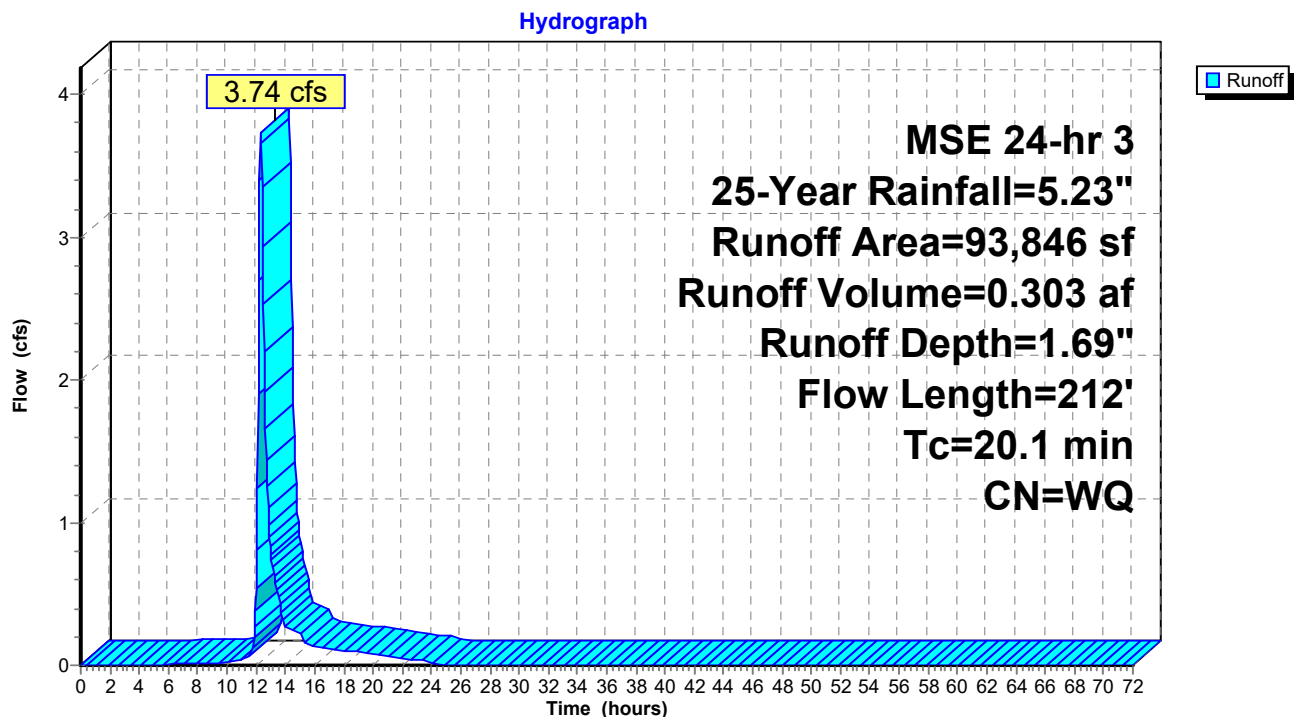
Runoff = 3.74 cfs @ 12.32 hrs, Volume= 0.303 af, Depth= 1.69"  
Routed to Pond PB7A : Wetland 7A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 89,046    | 61 | >75% Grass cover, Good, HSG B |
| 4,800     | 98 | Roofs, HSG A                  |
| 93,846    |    | Weighted Average              |
| 89,046    |    | 94.89% Pervious Area          |
| 4,800     |    | 5.11% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 18.8     | 100           | 0.0046        | 0.09              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.3      | 112           | 0.0425        | 1.44              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 20.1     | 212           | Total         |                   |                |                                                                      |

**Subcatchment PB-7A:**

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MSE 24-hr 3 25-Year Rainfall=5.23"

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**Summary for Subcatchment PB-7B:**

Runoff = 6.24 cfs @ 12.19 hrs, Volume= 0.365 af, Depth= 1.70"  
Routed to Pond PB7B : Wetland 7B

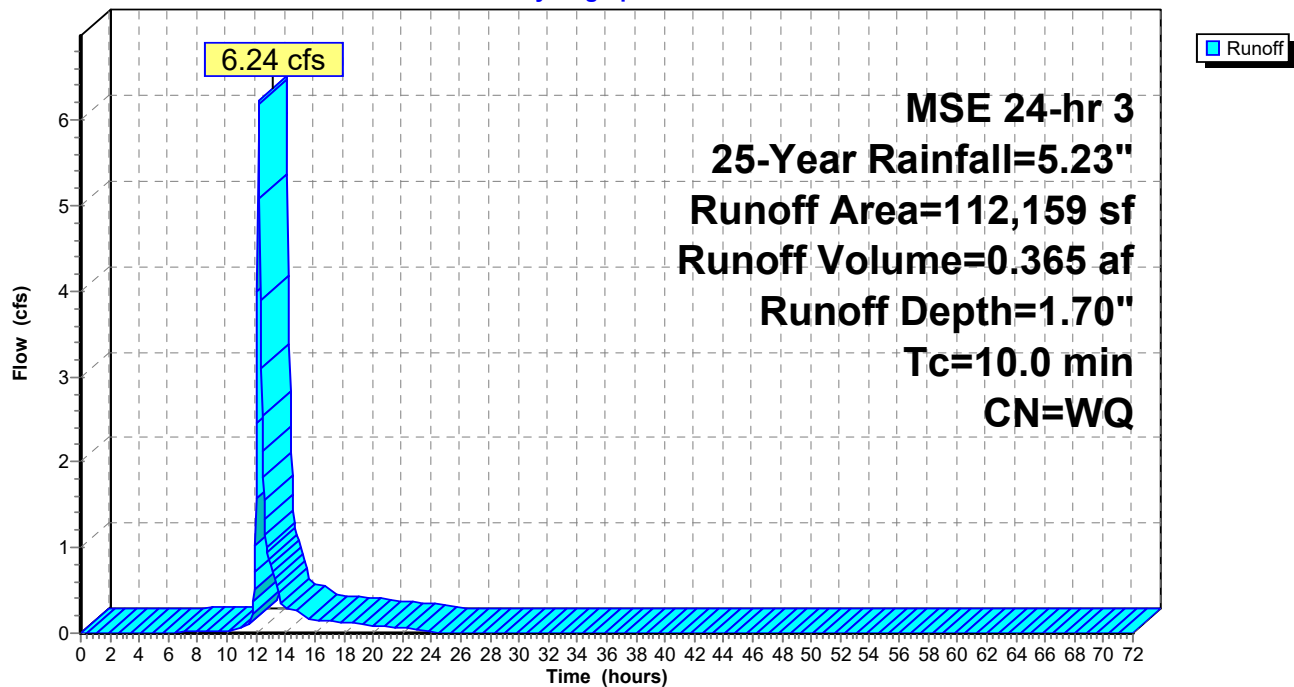
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 105,949   | 61 | >75% Grass cover, Good, HSG B |
| * 6,210   | 98 | Driveways                     |
| 112,159   |    | Weighted Average              |
| 105,949   |    | 94.46% Pervious Area          |
| 6,210     |    | 5.54% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-7B:**

Hydrograph





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**Summary for Subcatchment PB-7C:**

Runoff = 1.21 cfs @ 12.13 hrs, Volume= 0.056 af, Depth= 1.51"  
Routed to Pond PB7C : Wetland 7C

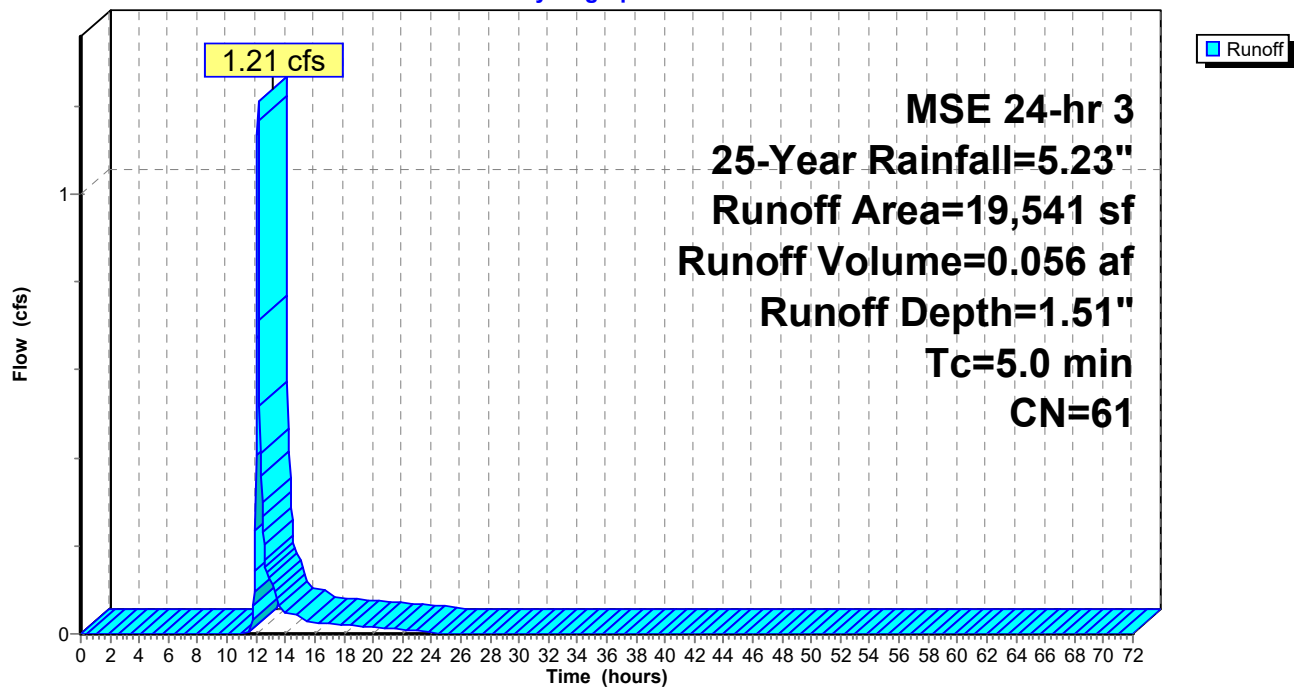
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 19,541    | 61 | >75% Grass cover, Good, HSG B |
| 19,541    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment PB-7C:**

Hydrograph



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**MSE 24-hr 3 25-Year Rainfall=5.23"**

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**Summary for Subcatchment PB-7D:**

Runoff = 4.39 cfs @ 12.18 hrs, Volume= 0.247 af, Depth= 2.80"  
Routed to Reach P7B&D :

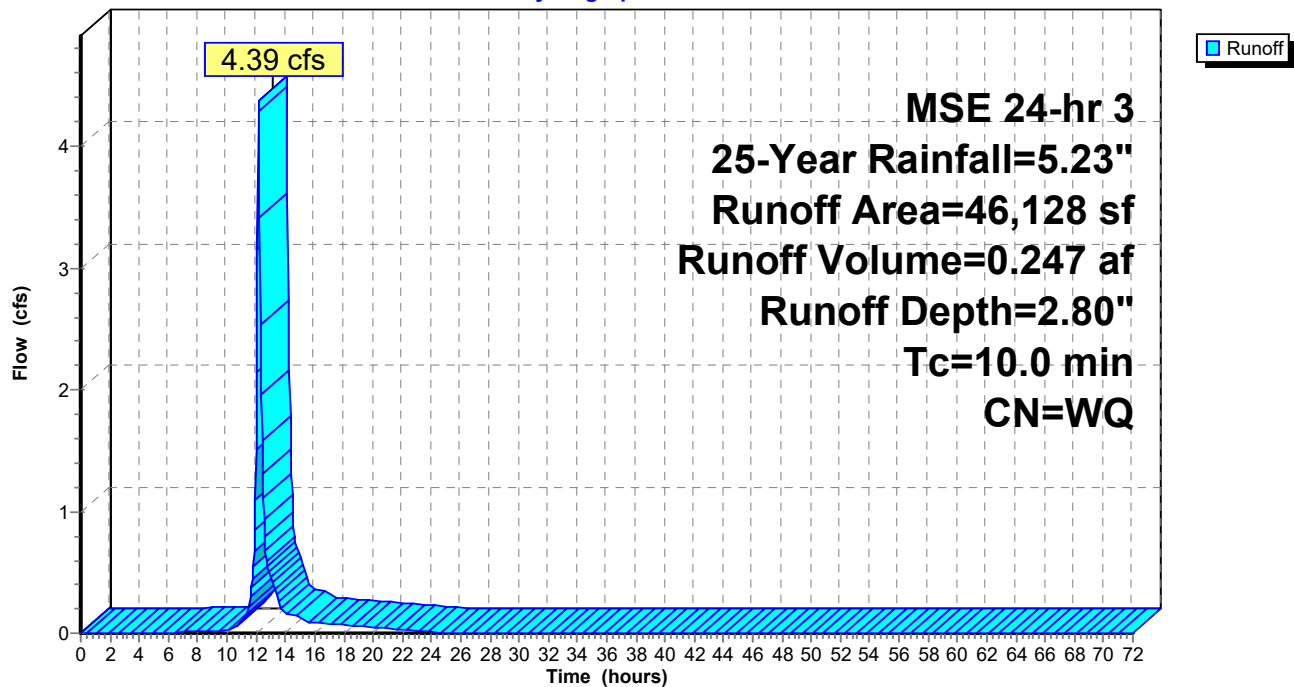
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 4,800     | 98 | Roofs, HSG A                  |
| 41,328    | 74 | >75% Grass cover, Good, HSG C |
| 46,128    |    | Weighted Average              |
| 41,328    |    | 89.59% Pervious Area          |
| 4,800     |    | 10.41% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-7D:**

Hydrograph



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MSE 24-hr 3 25-Year Rainfall=5.23"

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**Summary for Subcatchment PB-8:**

Runoff = 30.70 cfs @ 12.25 hrs, Volume= 2.186 af, Depth= 3.26"  
 Routed to Pond P-8 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 3 25-Year Rainfall=5.23"

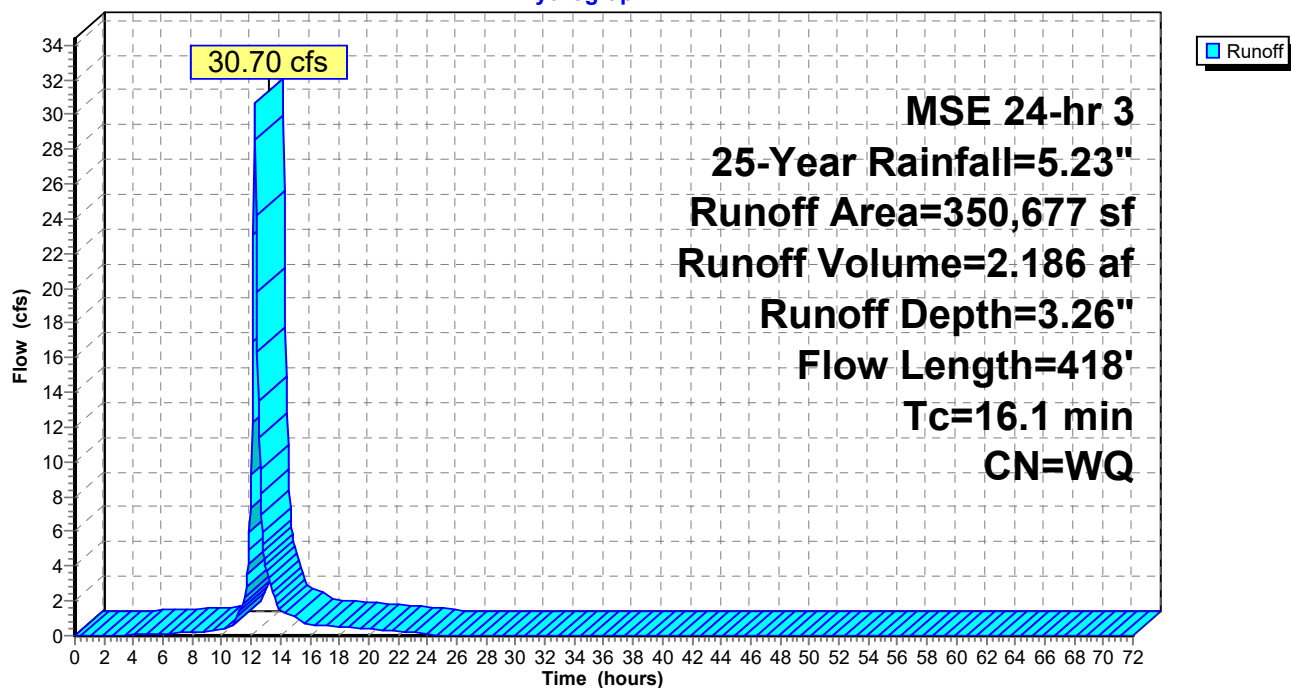
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 248,853   | 74 | >75% Grass cover, Good, HSG C |
| 10,800    | 98 | Roofs, HSG A                  |
| 91,024    | 98 | Water Surface, HSG A          |
| 350,677   |    | Weighted Average              |
| 248,853   |    | 70.96% Pervious Area          |
| 101,824   |    | 29.04% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 8.7      | 100           | 0.0313        | 0.19              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 7.4      | 318           | 0.0104        | 0.71              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 16.1     | 418           | Total         |                   |                |                                                                      |

**Subcatchment PB-8:**

Hydrograph



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MSE 24-hr 3 25-Year Rainfall=5.23"

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**Summary for Subcatchment PB-9:**

Runoff = 5.22 cfs @ 12.42 hrs, Volume= 0.492 af, Depth= 2.74"  
Routed to Pond P-3A :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

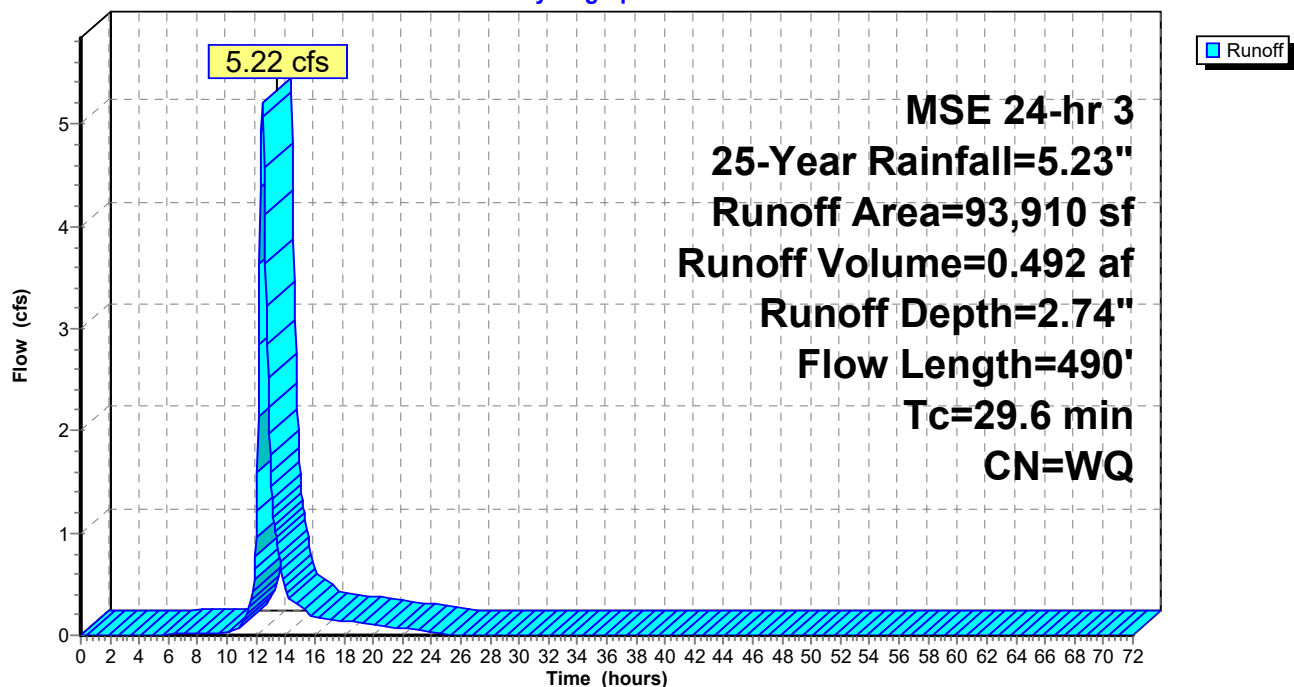
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 7,200     | 98 | Roofs, HSG A                  |
| 86,710    | 74 | >75% Grass cover, Good, HSG C |
| 93,910    |    | Weighted Average              |
| 86,710    |    | 92.33% Pervious Area          |
| 7,200     |    | 7.67% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 13.9     | 100           | 0.0098        | 0.12              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 15.7     | 390           | 0.0035        | 0.41              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 29.6     | 490           | Total         |                   |                |                                                                      |

**Subcatchment PB-9:**

Hydrograph



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MSE 24-hr 3 25-Year Rainfall=5.23"

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**Summary for Subcatchment R-1:**

Runoff = 7.75 cfs @ 12.11 hrs, Volume= 0.389 af, Depth= 3.69"

Routed to Reach POST : Overall Post-Development Runoff

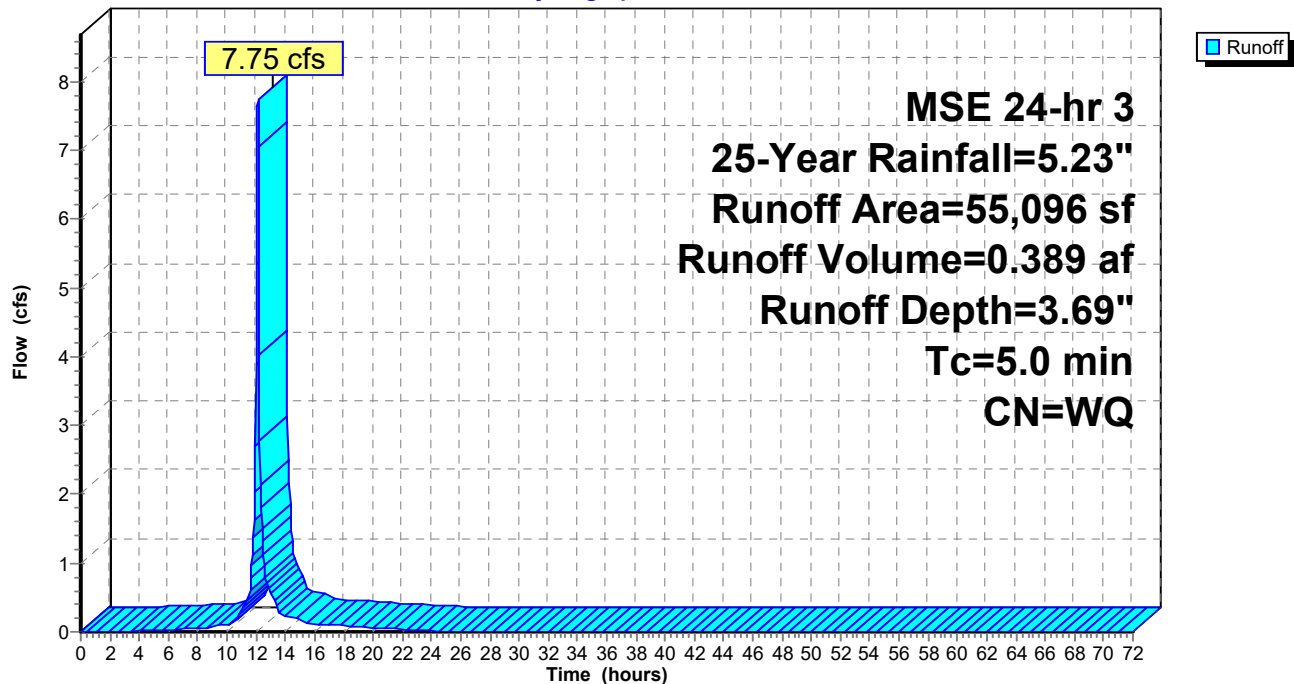
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 21,324    | 98 | Paved parking, HSG A          |
| 2,400     | 98 | Roofs, HSG A                  |
| 2,018     | 98 | Paved parking, HSG A          |
| 29,354    | 74 | >75% Grass cover, Good, HSG C |
| 55,096    |    | Weighted Average              |
| 29,354    |    | 53.28% Pervious Area          |
| 25,742    |    | 46.72% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment R-1:**

Hydrograph



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MSE 24-hr 3 25-Year Rainfall=5.23"

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**Summary for Subcatchment R-2:**

Runoff = 13.00 cfs @ 12.11 hrs, Volume= 0.671 af, Depth= 4.16"  
Routed to Reach 2A&2B :

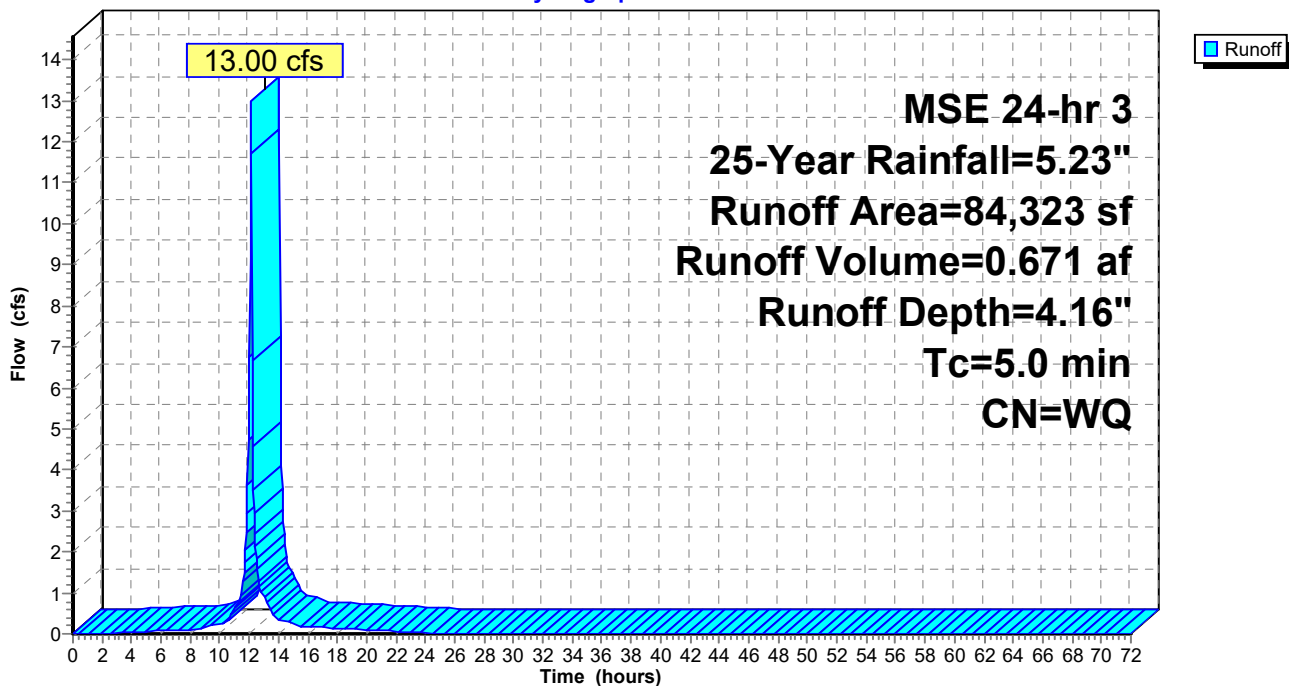
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 37,745    | 98 | Paved parking, HSG A          |
| 9,600     | 98 | Roofs, HSG A                  |
| 8,203     | 98 | Paved parking, HSG A          |
| 28,775    | 74 | >75% Grass cover, Good, HSG C |
| 84,323    |    | Weighted Average              |
| 28,775    |    | 34.12% Pervious Area          |
| 55,548    |    | 65.88% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment R-2:**

Hydrograph



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**Summary for Subcatchment R-3:**

Runoff = 27.28 cfs @ 12.11 hrs, Volume= 1.418 af, Depth= 4.30"  
Routed to Pond P-12 :

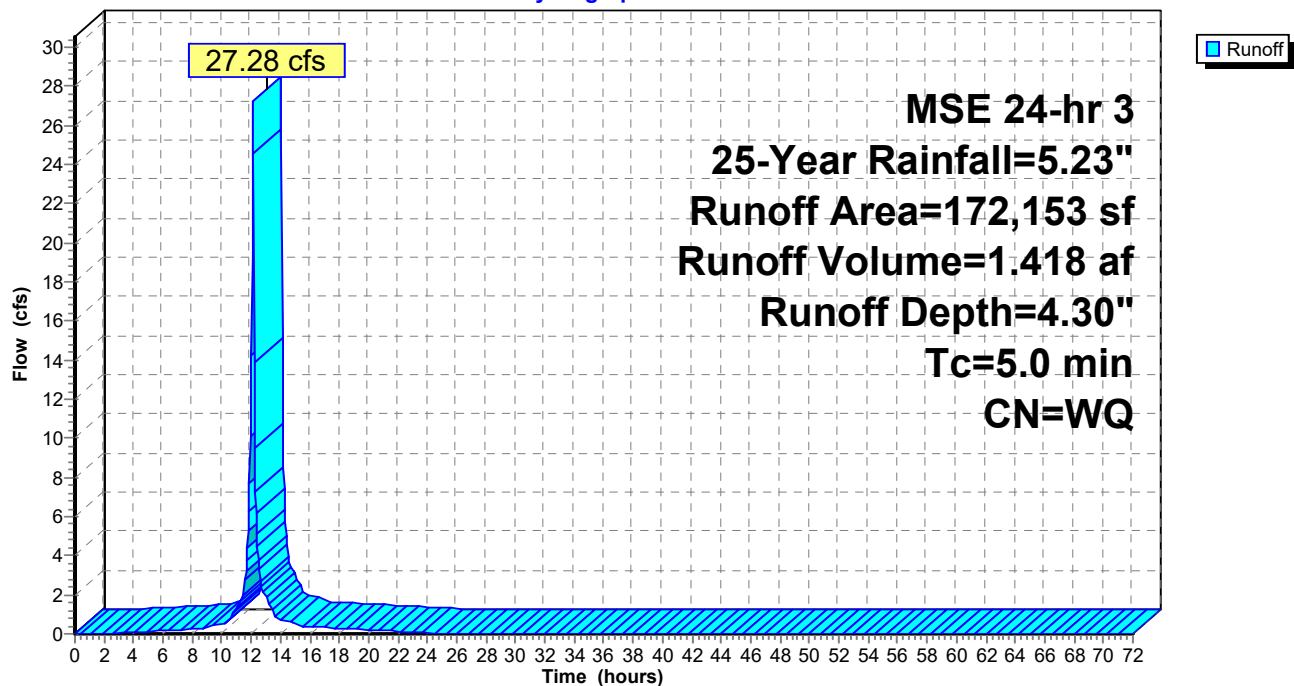
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 78,388    | 98 | Paved parking, HSG A          |
| 24,000    | 98 | Roofs, HSG A                  |
| 21,308    | 98 | Paved parking, HSG A          |
| 48,457    | 74 | >75% Grass cover, Good, HSG C |
| 172,153   |    | Weighted Average              |
| 48,457    |    | 28.15% Pervious Area          |
| 123,696   |    | 71.85% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment R-3:**

Hydrograph



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**Summary for Subcatchment R-5:**

Runoff = 4.24 cfs @ 12.17 hrs, Volume= 0.266 af, Depth= 4.55"  
Routed to Pond P-6 :

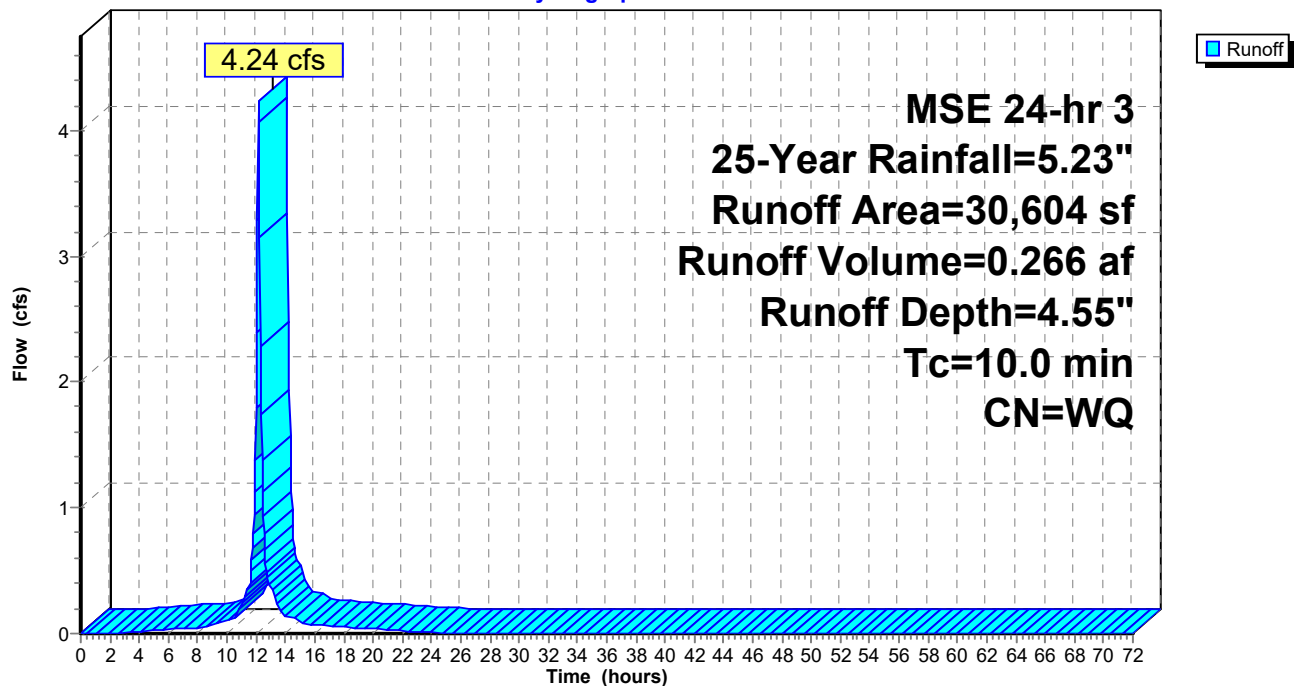
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 22,262    | 98 | Paved roads w/curbs & sewers, HSG A |
| * 2,767   | 98 | Driveways                           |
| 5,575     | 74 | >75% Grass cover, Good, HSG C       |
| 30,604    |    | Weighted Average                    |
| 5,575     |    | 18.22% Pervious Area                |
| 25,029    |    | 81.78% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment R-5:**

Hydrograph





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**Summary for Subcatchment R-6:**

Runoff = 2.56 cfs @ 12.11 hrs, Volume= 0.136 af, Depth= 4.68"  
Routed to Pond P-12 :

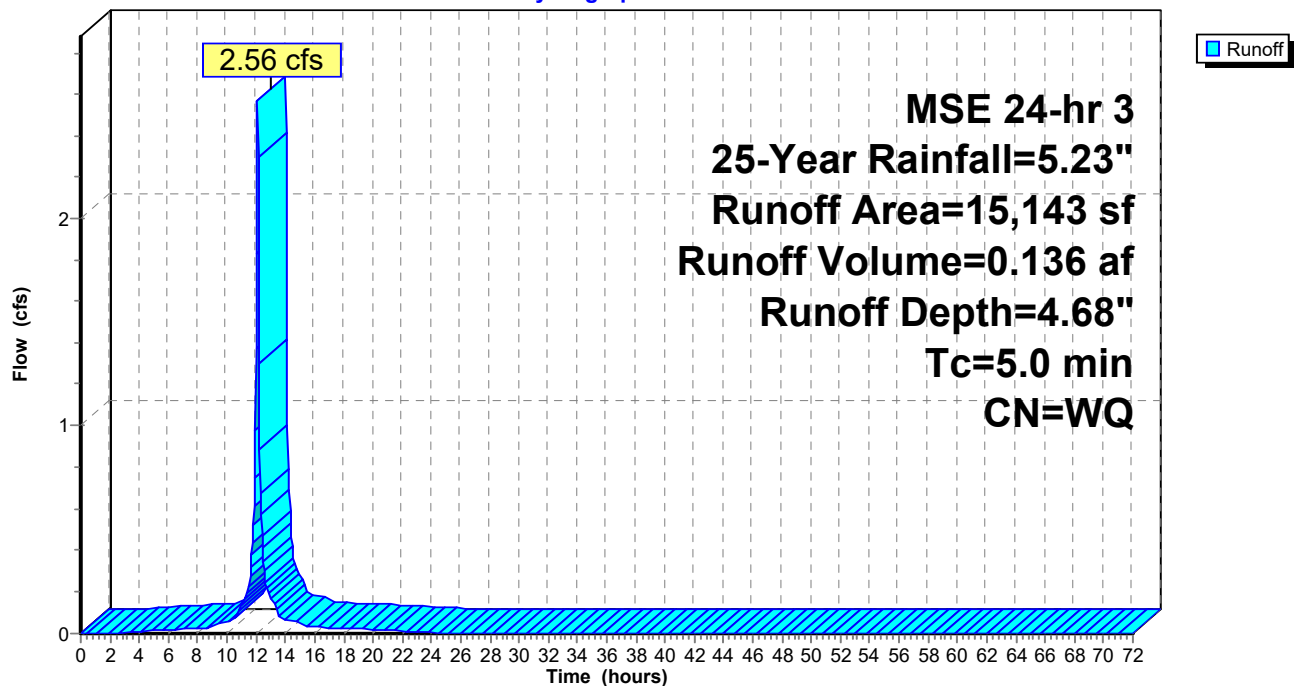
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 10,647    | 98 | Paved roads w/curbs & sewers, HSG A |
| * 2,554   | 98 | Driveways                           |
| 1,942     | 74 | >75% Grass cover, Good, HSG C       |
| 15,143    |    | Weighted Average                    |
| 1,942     |    | 12.82% Pervious Area                |
| 13,201    |    | 87.18% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment R-6:**

Hydrograph



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**Summary for Subcatchment R-7:**

Runoff = 1.89 cfs @ 12.11 hrs, Volume= 0.098 af, Depth= 4.32"  
Routed to Reach 1R :

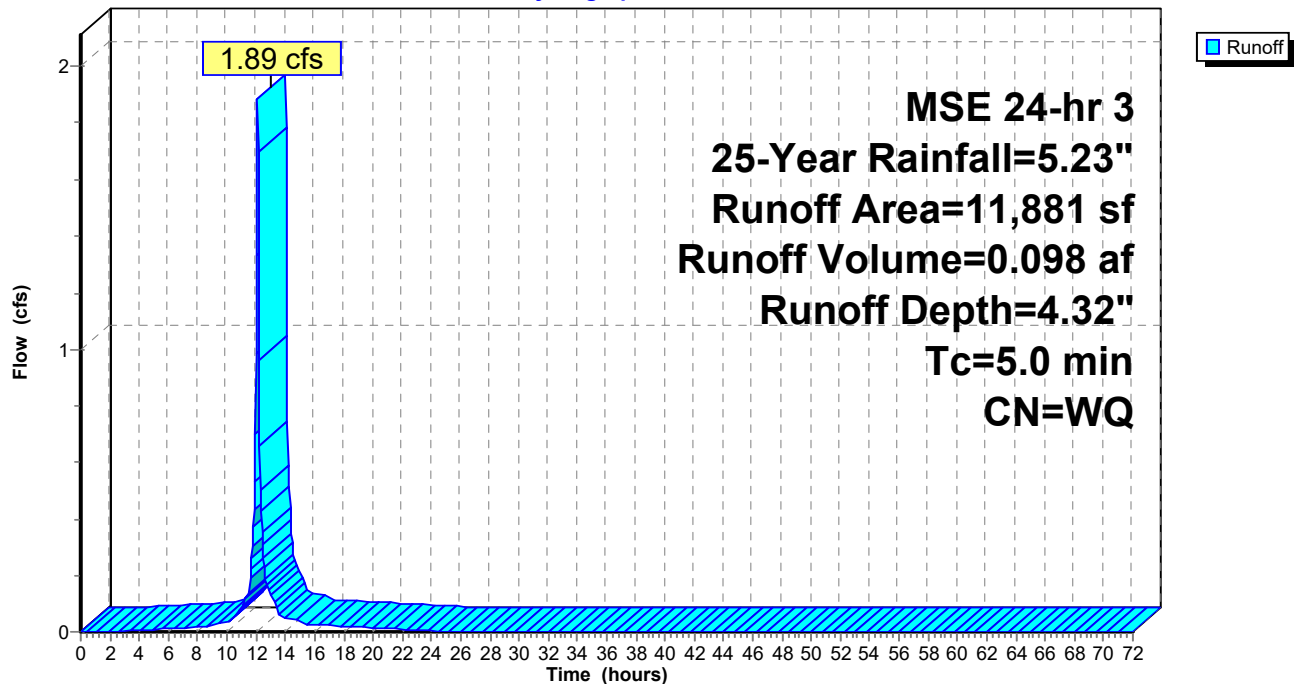
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 6,407     | 98 | Paved roads w/curbs & sewers, HSG A |
| 1,200     | 98 | Roofs, HSG A                        |
| * 989     | 98 | Concrete                            |
| 3,285     | 74 | >75% Grass cover, Good, HSG C       |
| 11,881    |    | Weighted Average                    |
| 3,285     |    | 27.65% Pervious Area                |
| 8,596     |    | 72.35% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment R-7:**

Hydrograph



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**Summary for Subcatchment R-8:**

Runoff = 13.04 cfs @ 12.11 hrs, Volume= 0.676 af, Depth= 4.25"  
Routed to Pond P-3A :

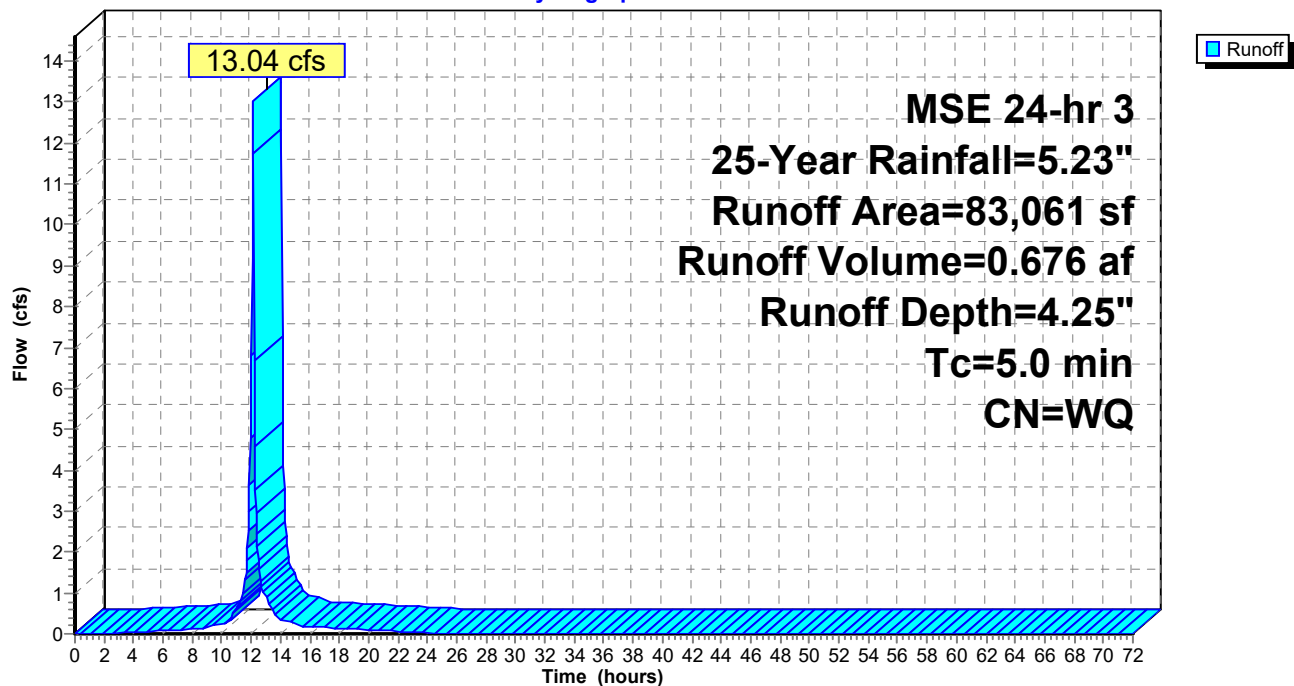
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 25-Year Rainfall=5.23"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 31,957    | 98 | Paved roads w/curbs & sewers, HSG A |
| 16,800    | 98 | Roofs, HSG A                        |
| * 9,173   | 98 | Concrete                            |
| 25,131    | 74 | >75% Grass cover, Good, HSG C       |
| <hr/>     |    |                                     |
| 83,061    |    | Weighted Average                    |
| 25,131    |    | 30.26% Pervious Area                |
| 57,930    |    | 69.74% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment R-8:**

Hydrograph



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MSE 24-hr 3 25-Year Rainfall=5.23"

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### Summary for Reach 1C&PB-13:

Inflow Area = 2.818 ac, 9.61% Impervious, Inflow Depth = 2.78" for 25-Year event  
Inflow = 9.35 cfs @ 12.26 hrs, Volume= 0.654 af  
Outflow = 8.42 cfs @ 12.22 hrs, Volume= 0.654 af, Atten= 10%, Lag= 0.0 min  
Routed to Pond P-6 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Max. Velocity= 5.08 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 1.58 fps, Avg. Travel Time= 0.9 min

Peak Storage= 156 cf @ 12.25 hrs

Average Depth at Peak Storage= 1.50'

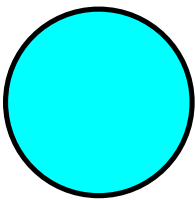
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 7.92 cfs

18.0" Round Pipe

n= 0.013

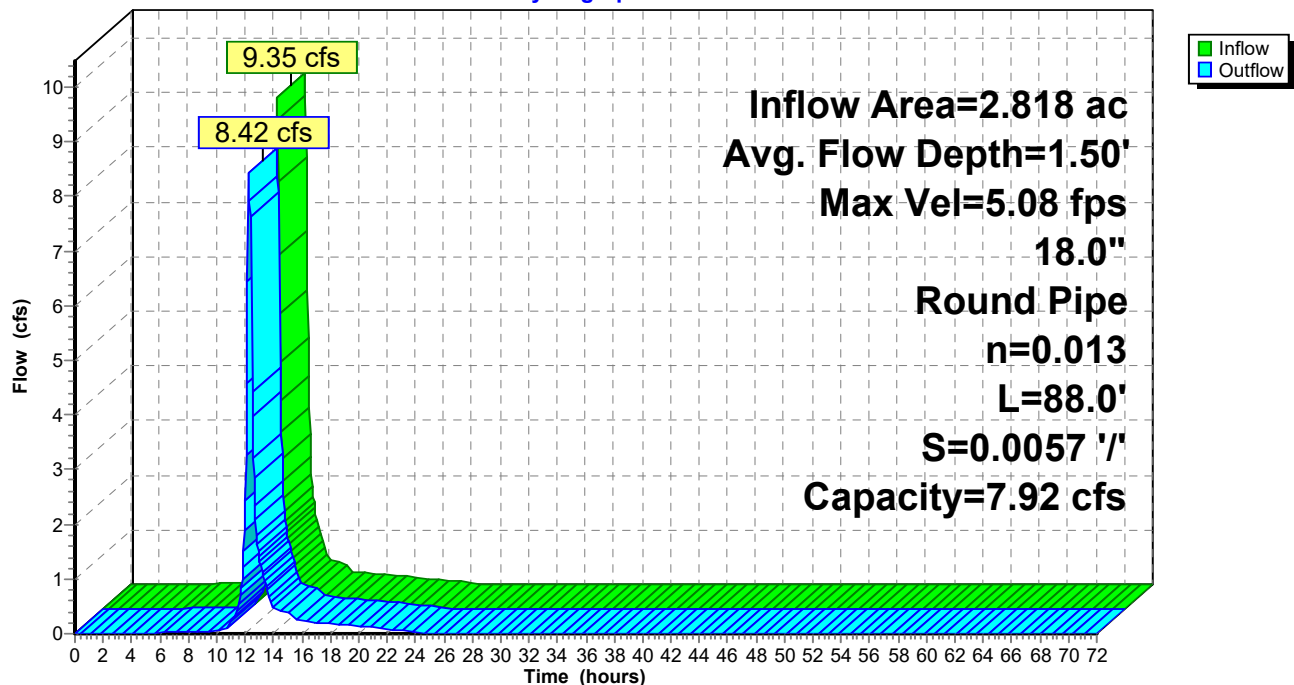
Length= 88.0' Slope= 0.0057 '/

Inlet Invert= 898.3', Outlet Invert= 897.8'



### Reach 1C&PB-13:

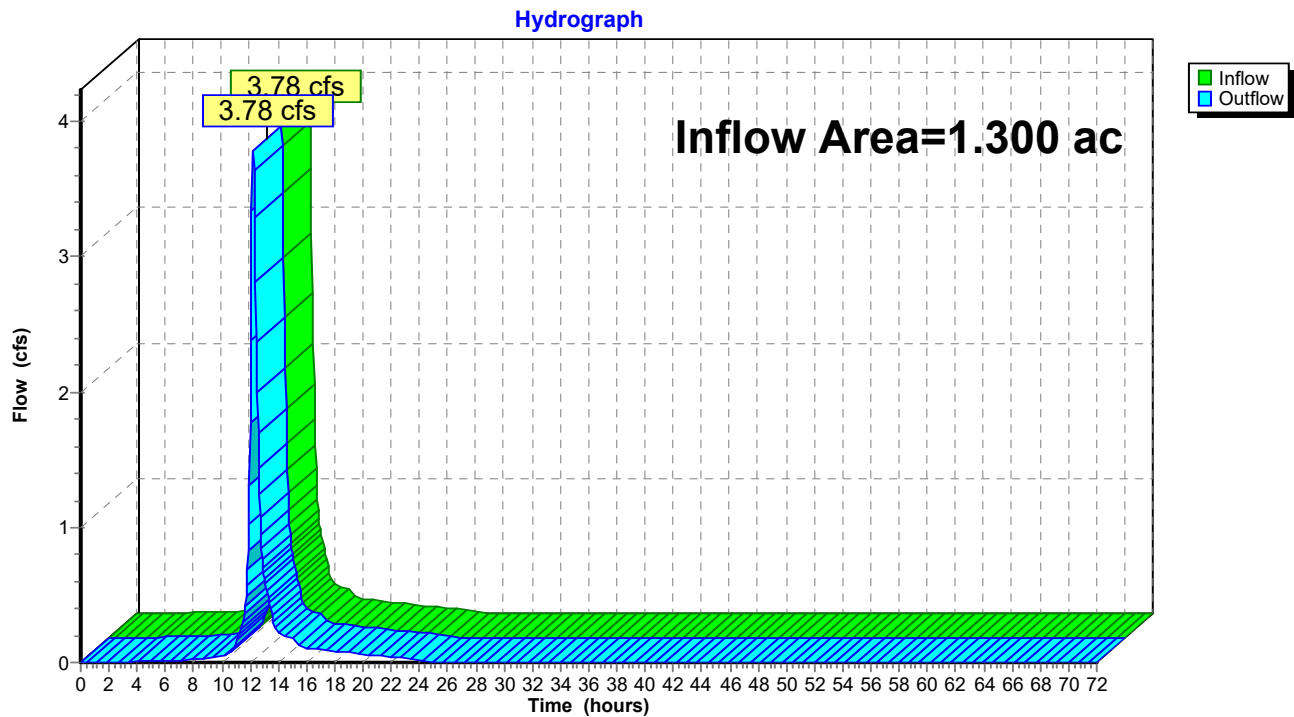
#### Hydrograph



**Summary for Reach 1R:**

Inflow Area = 1.300 ac, 19.42% Impervious, Inflow Depth = 3.02" for 25-Year event  
Inflow = 3.78 cfs @ 12.25 hrs, Volume= 0.328 af  
Outflow = 3.78 cfs @ 12.25 hrs, Volume= 0.328 af, Atten= 0%, Lag= 0.0 min  
Routed to Pond P-3A :

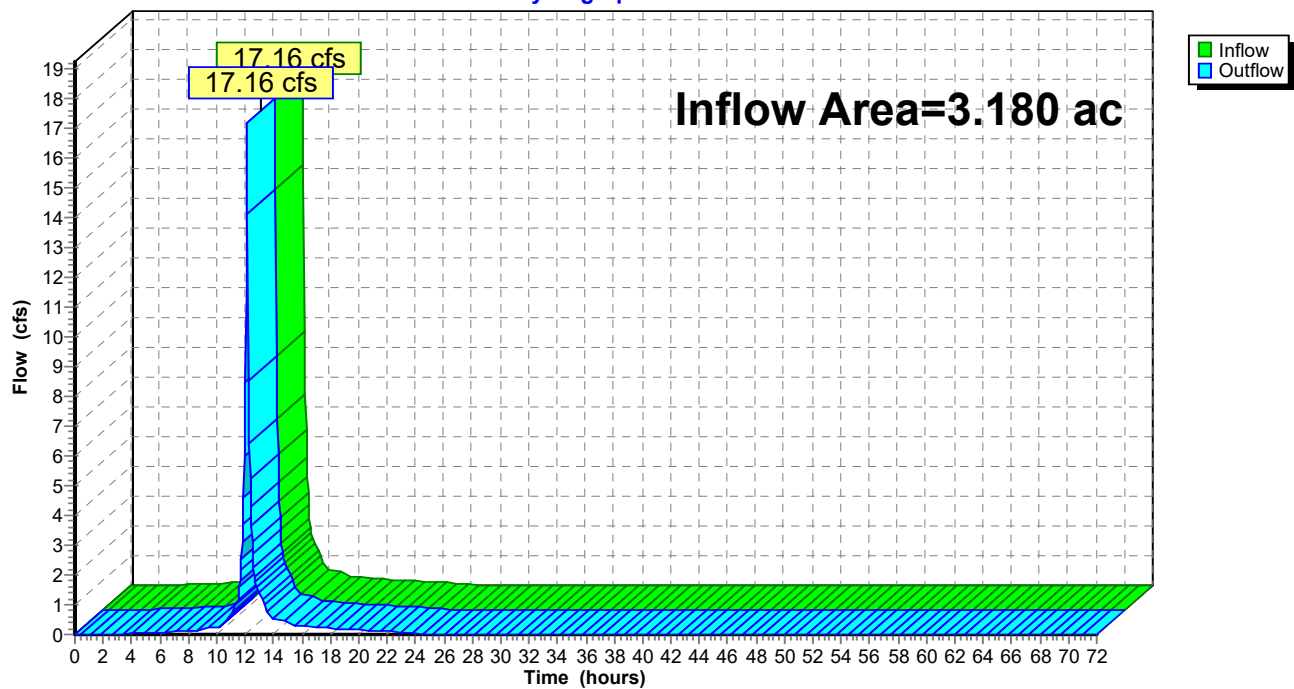
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach 1R:**

**Summary for Reach 2A&2B:**

Inflow Area = 3.180 ac, 43.06% Impervious, Inflow Depth = 3.60" for 25-Year event  
Inflow = 17.16 cfs @ 12.13 hrs, Volume= 0.954 af  
Outflow = 17.16 cfs @ 12.13 hrs, Volume= 0.954 af, Atten= 0%, Lag= 0.0 min  
Routed to Pond P-3A :

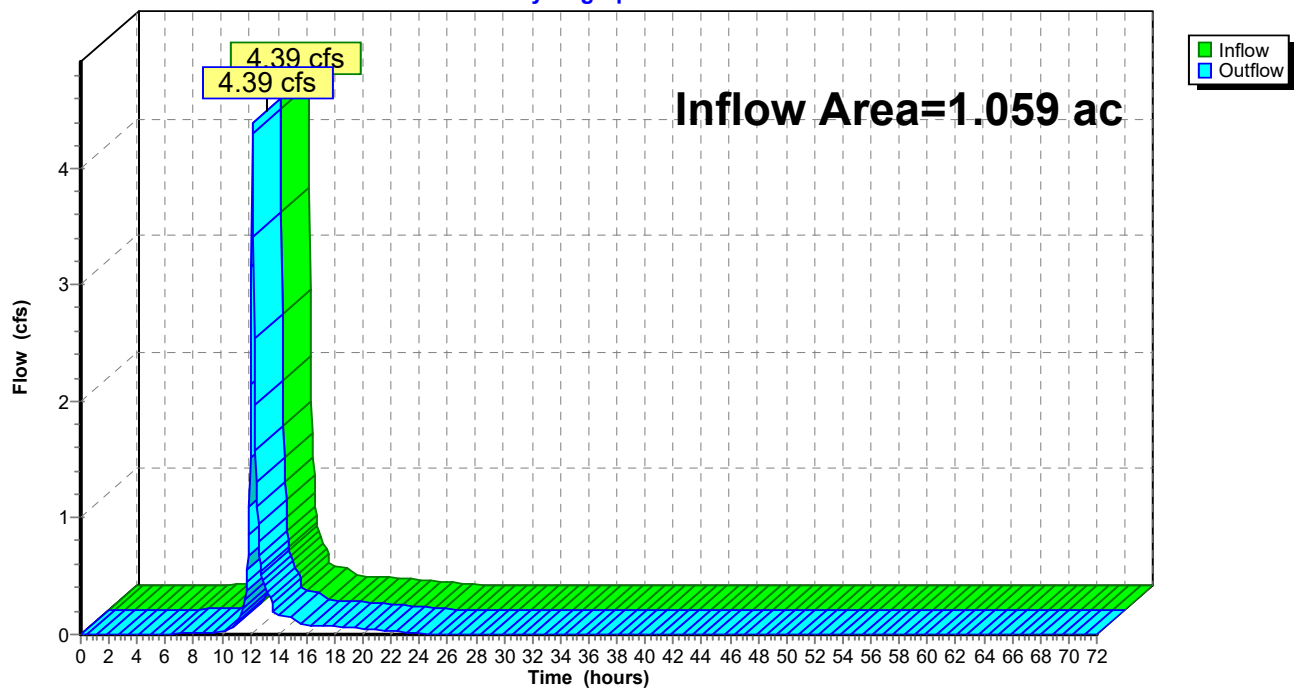
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach 2A&2B:****Hydrograph**

**Summary for Reach P7B&D:**

Inflow Area = 1.059 ac, 10.41% Impervious, Inflow Depth = 2.80" for 25-Year event  
Inflow = 4.39 cfs @ 12.18 hrs, Volume= 0.247 af  
Outflow = 4.39 cfs @ 12.18 hrs, Volume= 0.247 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PSE-Q : SE Quarter (Private Ditch B)

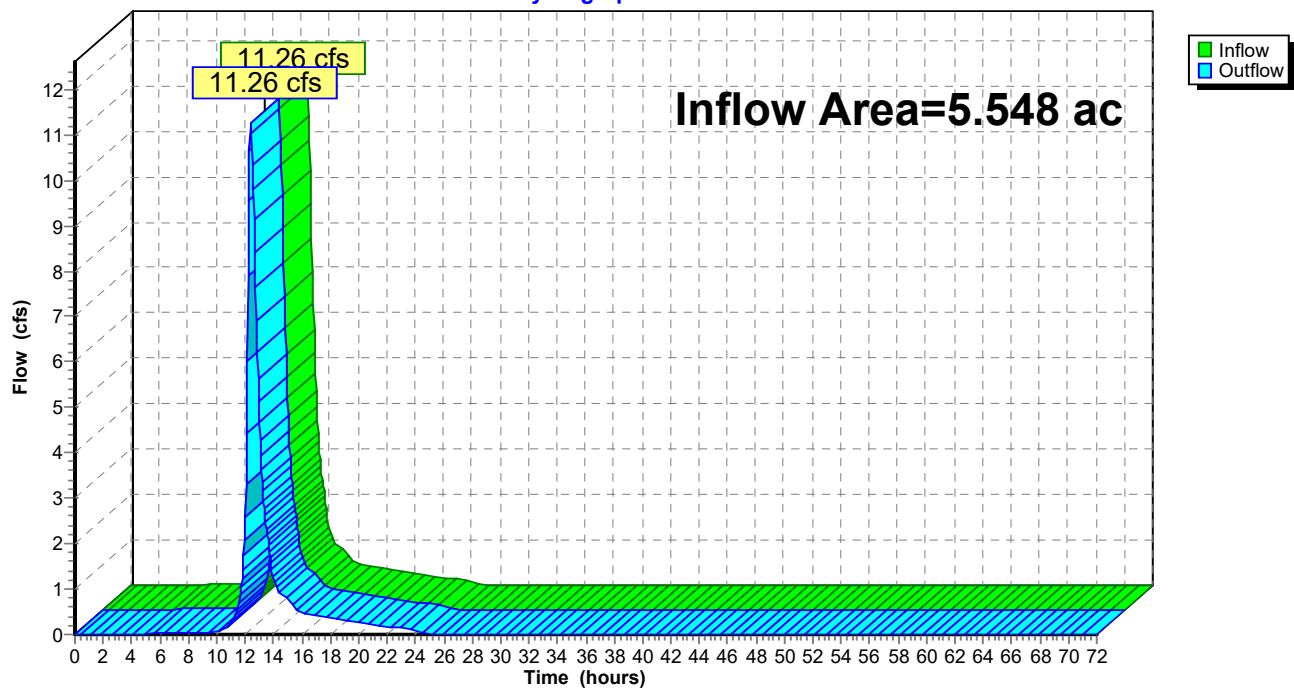
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach P7B&D:****Hydrograph**

**Summary for Reach PB-1C&PB-14B:**

Inflow Area = 5.548 ac, 7.94% Impervious, Inflow Depth = 2.74" for 25-Year event  
Inflow = 11.26 cfs @ 12.39 hrs, Volume= 1.268 af  
Outflow = 11.26 cfs @ 12.39 hrs, Volume= 1.268 af, Atten= 0%, Lag= 0.0 min  
Routed to Pond P-12 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

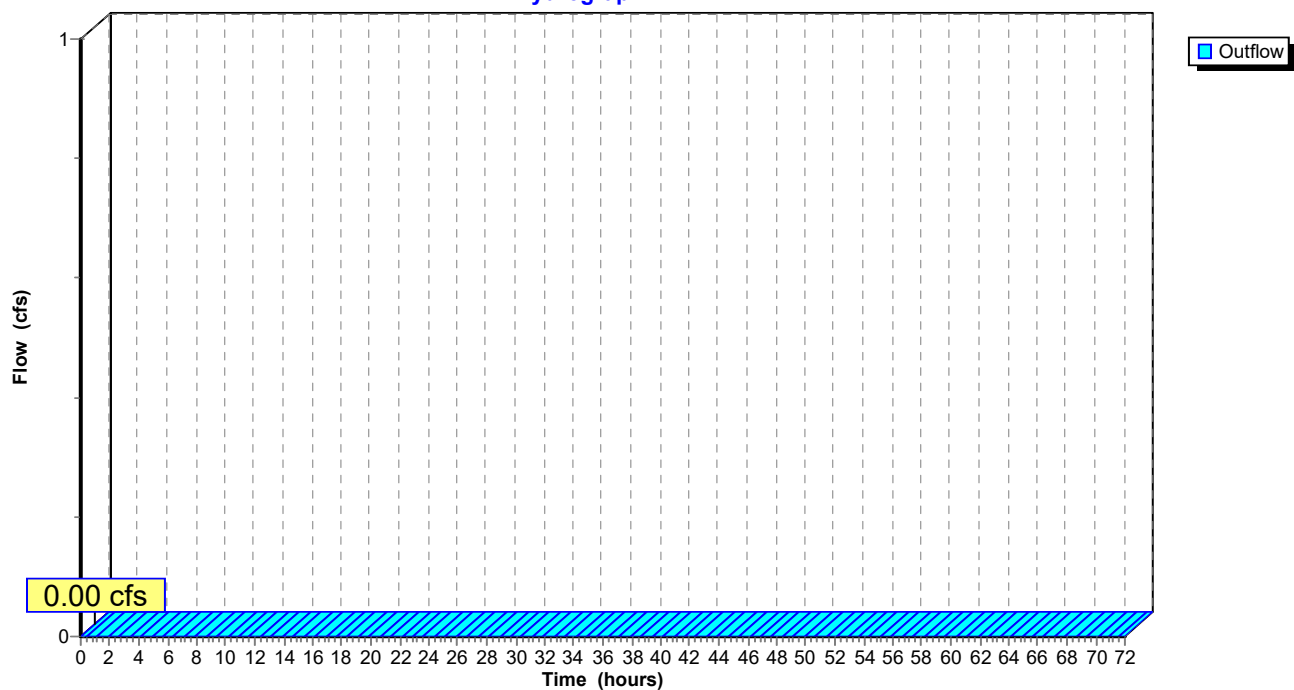
**Reach PB-1C&PB-14B:****Hydrograph**



## Summary for Reach PL-DITCH:

### Reach PL-DITCH:

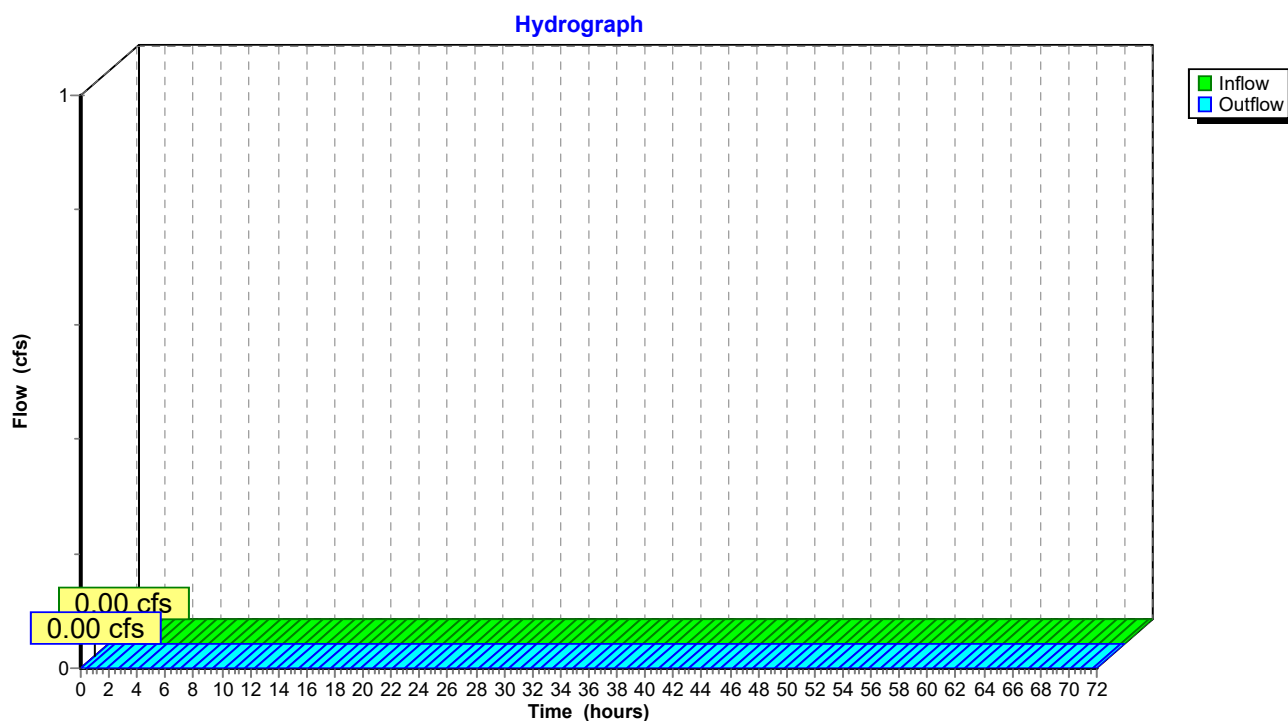
#### Hydrograph



**Summary for Reach PN: North Boundary**

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach POST : Overall Post-Development Runoff

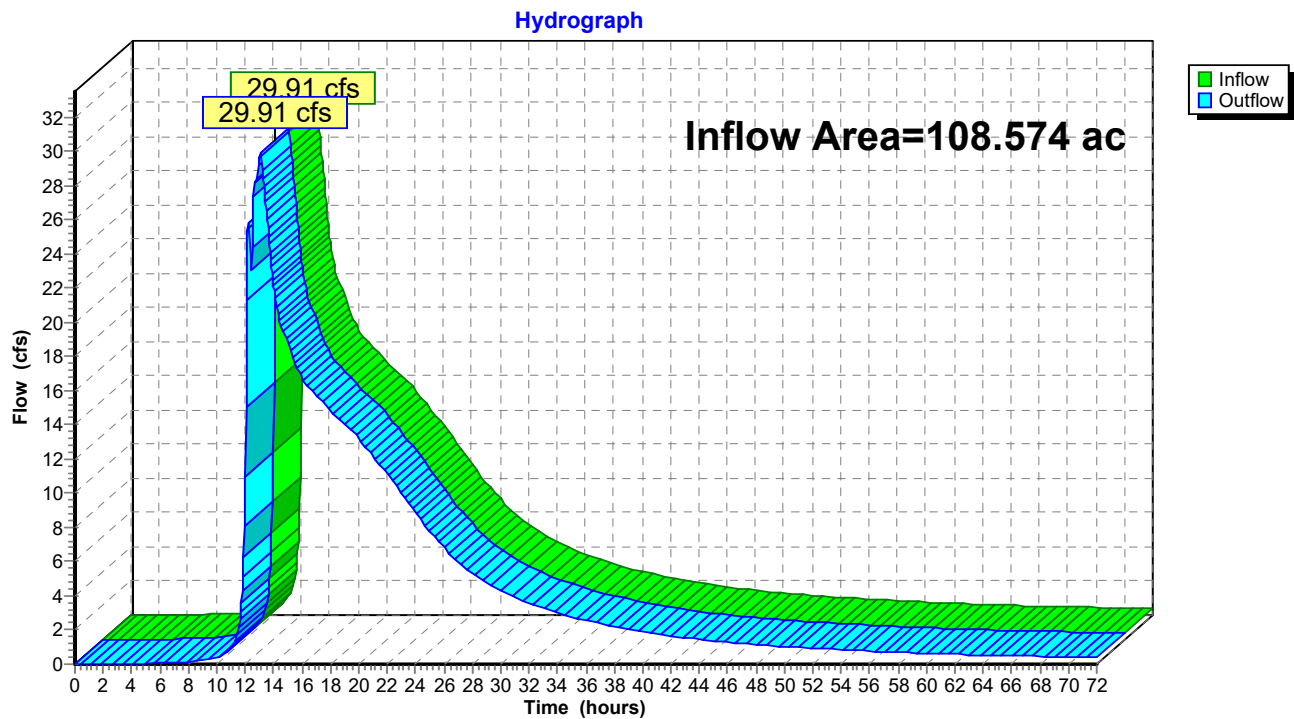
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PN: North Boundary**

**Summary for Reach POST: Overall Post-Development Runoff**

Inflow Area = 108.574 ac, 26.34% Impervious, Inflow Depth > 2.67" for 25-Year event  
Inflow = 29.91 cfs @ 13.04 hrs, Volume= 24.156 af  
Outflow = 29.91 cfs @ 13.04 hrs, Volume= 24.156 af, Atten= 0%, Lag= 0.0 min

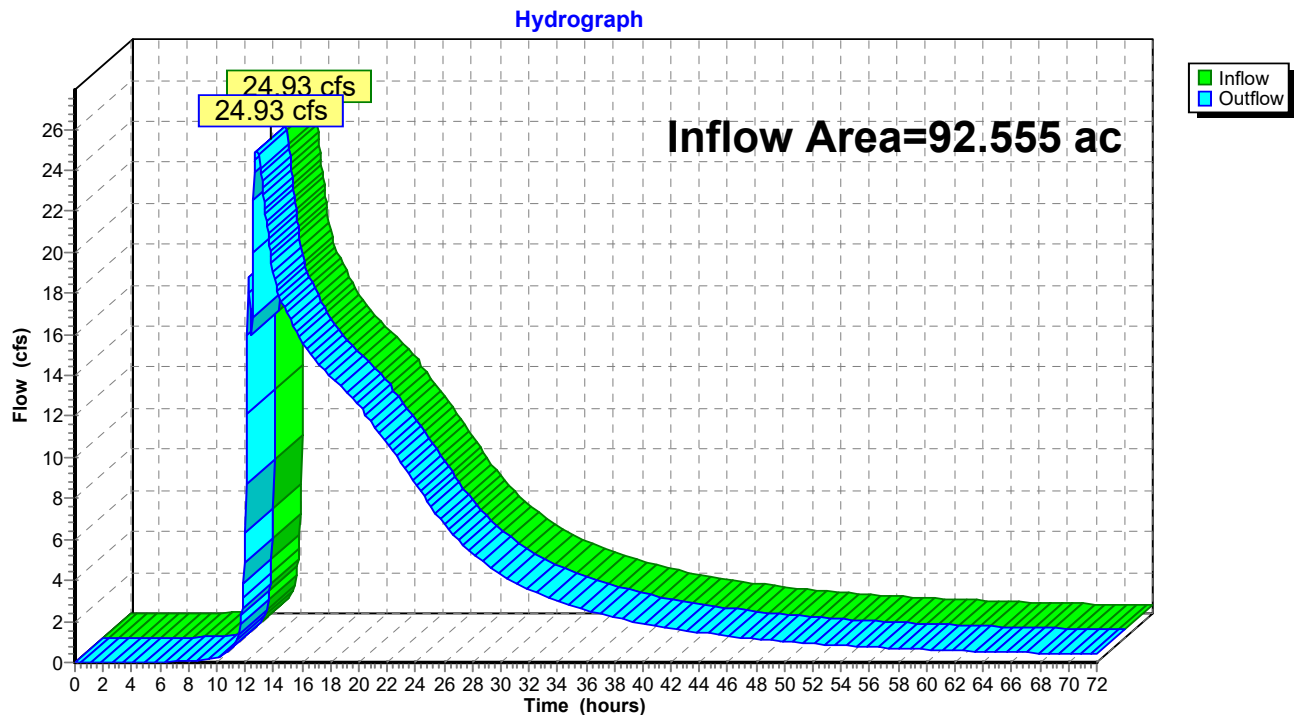
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach POST: Overall Post-Development Runoff**

**Summary for Reach PS: South Total (Ditch 44-9)**

Inflow Area = 92.555 ac, 29.58% Impervious, Inflow Depth > 2.90" for 25-Year event  
Inflow = 24.93 cfs @ 12.83 hrs, Volume= 22.358 af  
Outflow = 24.93 cfs @ 12.83 hrs, Volume= 22.358 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach POST : Overall Post-Development Runoff

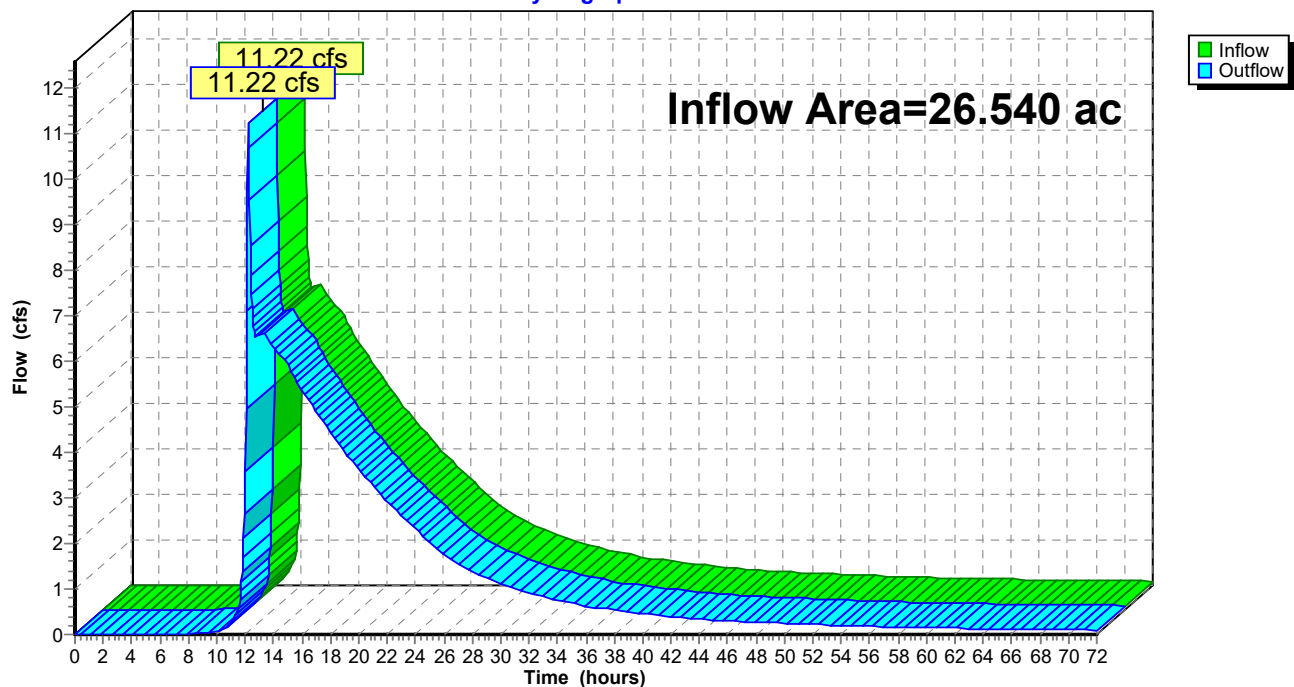
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PS: South Total (Ditch 44-9)**

**Summary for Reach PSE-Q: SE Quarter (Private Ditch B)**

Inflow Area = 26.540 ac, 26.80% Impervious, Inflow Depth > 2.99" for 25-Year event  
Inflow = 11.22 cfs @ 12.21 hrs, Volume= 6.619 af  
Outflow = 11.22 cfs @ 12.21 hrs, Volume= 6.619 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PS : South Total (Ditch 44-9)

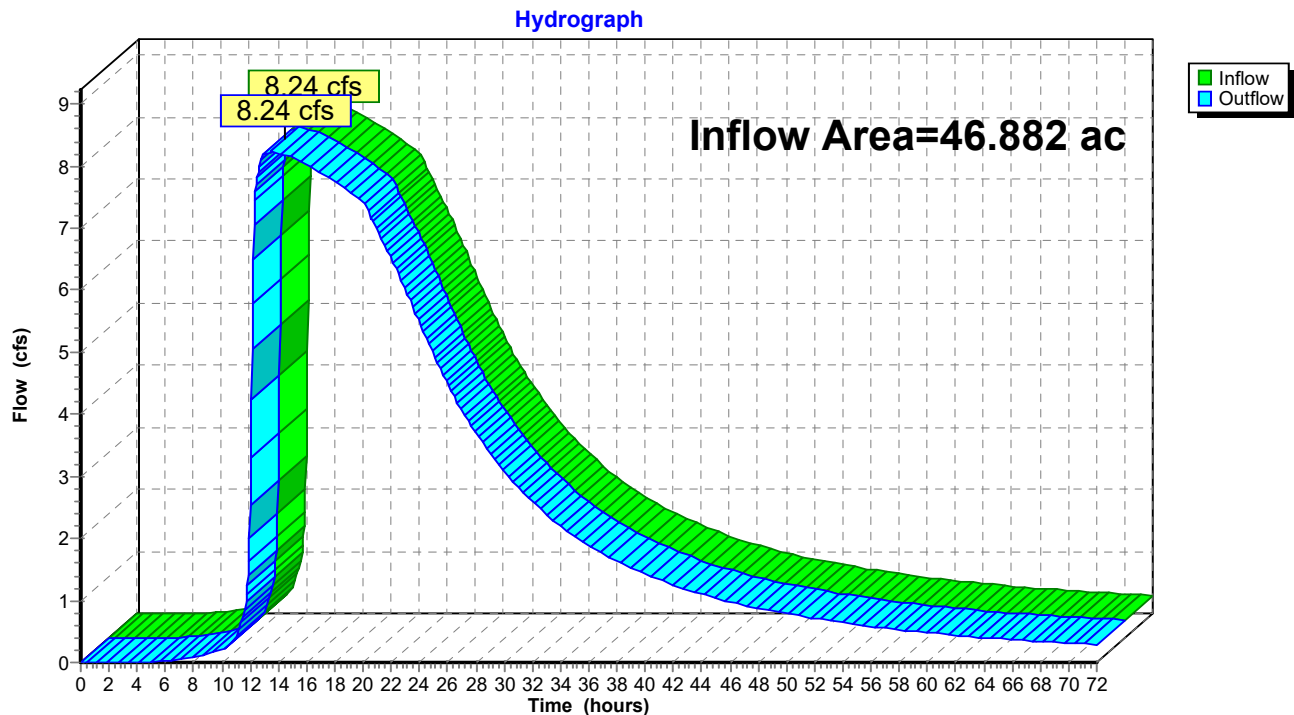
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PSE-Q: SE Quarter (Private Ditch B)****Hydrograph**

**Summary for Reach PSE-QA: SE Quarter (Private Ditch A)**

Inflow Area = 46.882 ac, 39.18% Impervious, Inflow Depth > 3.33" for 25-Year event  
Inflow = 8.24 cfs @ 13.51 hrs, Volume= 12.994 af  
Outflow = 8.24 cfs @ 13.51 hrs, Volume= 12.994 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PS : South Total (Ditch 44-9)

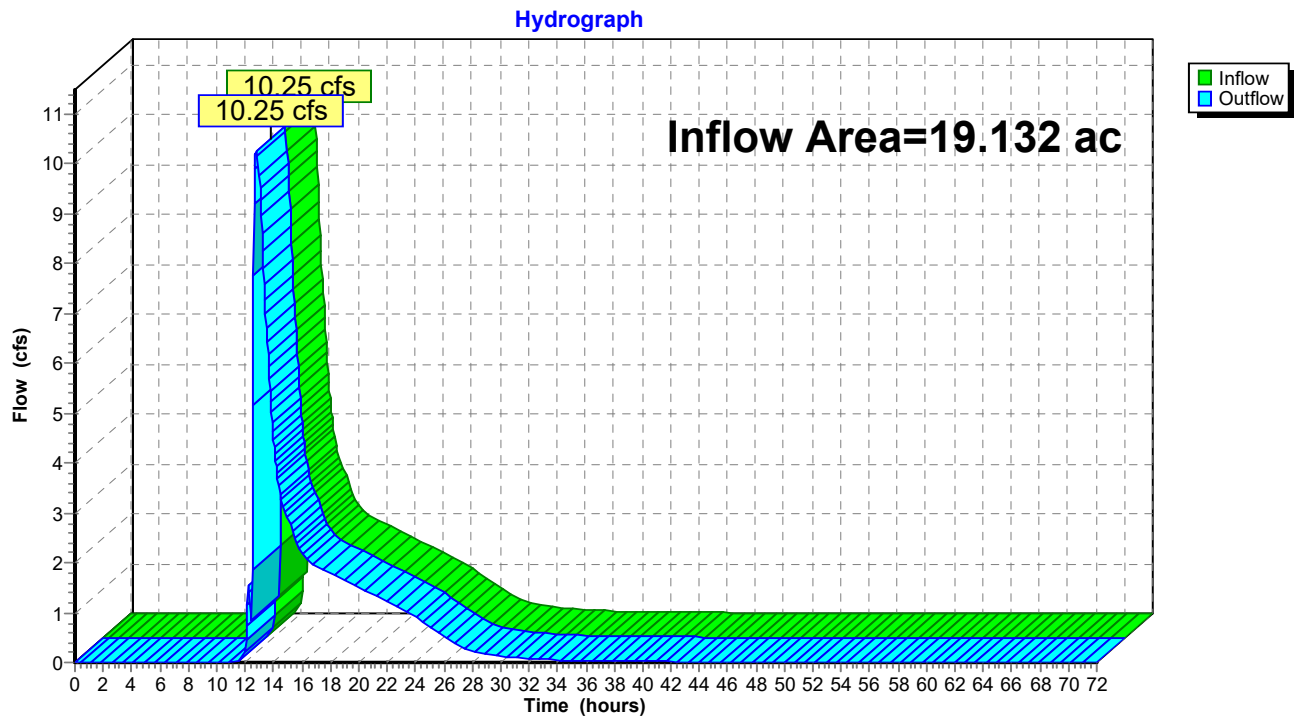
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PSE-QA: SE Quarter (Private Ditch A)**

**Summary for Reach PSW-Q: Southwest Discharge**

Inflow Area = 19.132 ac, 9.91% Impervious, Inflow Depth > 1.72" for 25-Year event  
Inflow = 10.25 cfs @ 12.81 hrs, Volume= 2.744 af  
Outflow = 10.25 cfs @ 12.81 hrs, Volume= 2.744 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PS : South Total (Ditch 44-9)

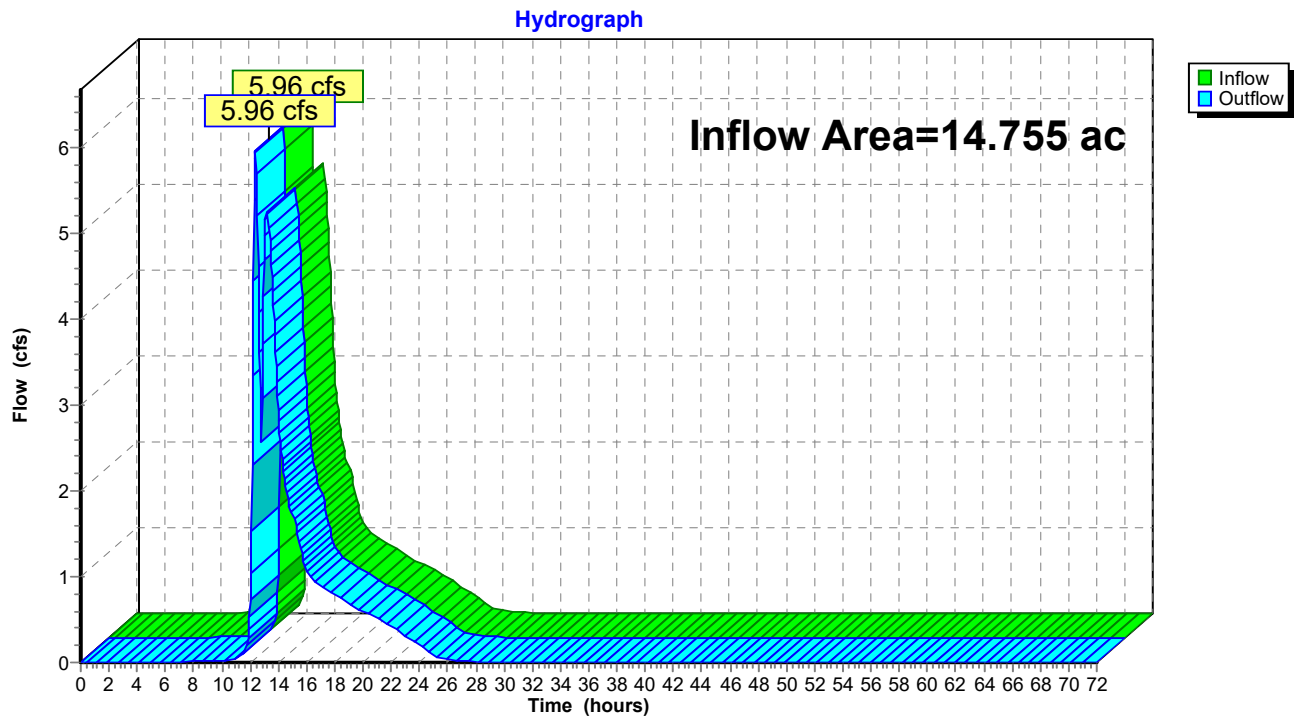
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PSW-Q: Southwest Discharge**

**Summary for Reach PW: West Boundary**

Inflow Area = 14.755 ac, 4.30% Impervious, Inflow Depth = 1.15" for 25-Year event  
Inflow = 5.96 cfs @ 12.38 hrs, Volume= 1.410 af  
Outflow = 5.96 cfs @ 12.38 hrs, Volume= 1.410 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach POST : Overall Post-Development Runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PW: West Boundary**



**LDP24010 Ham Lake**

MSE 24-hr 3 25-Year Rainfall=5.23"

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**Summary for Pond P-12:**

Inflow Area = 23.905 ac, 29.29% Impervious, Inflow Depth = 3.26" for 25-Year event  
 Inflow = 67.13 cfs @ 12.27 hrs, Volume= 6.504 af  
 Outflow = 5.92 cfs @ 13.73 hrs, Volume= 6.037 af, Atten= 91%, Lag= 87.8 min  
 Primary = 5.92 cfs @ 13.73 hrs, Volume= 6.037 af  
 Routed to Reach PSE-Q : SE Quarter (Private Ditch B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Starting Elev= 897.0' Surf.Area= 121,800 sf Storage= 560,450 cf  
 Peak Elev= 898.4' @ 13.73 hrs Surf.Area= 142,676 sf Storage= 752,155 cf (191,705 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= 606.5 min ( 1,398.0 - 791.5 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 890.0' | 990,650 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 890.0               | 52,200               | 0                         | 0                         |
| 894.0               | 78,100               | 260,600                   | 260,600                   |
| 897.0               | 121,800              | 299,850                   | 560,450                   |
| 900.0               | 165,000              | 430,200                   | 990,650                   |

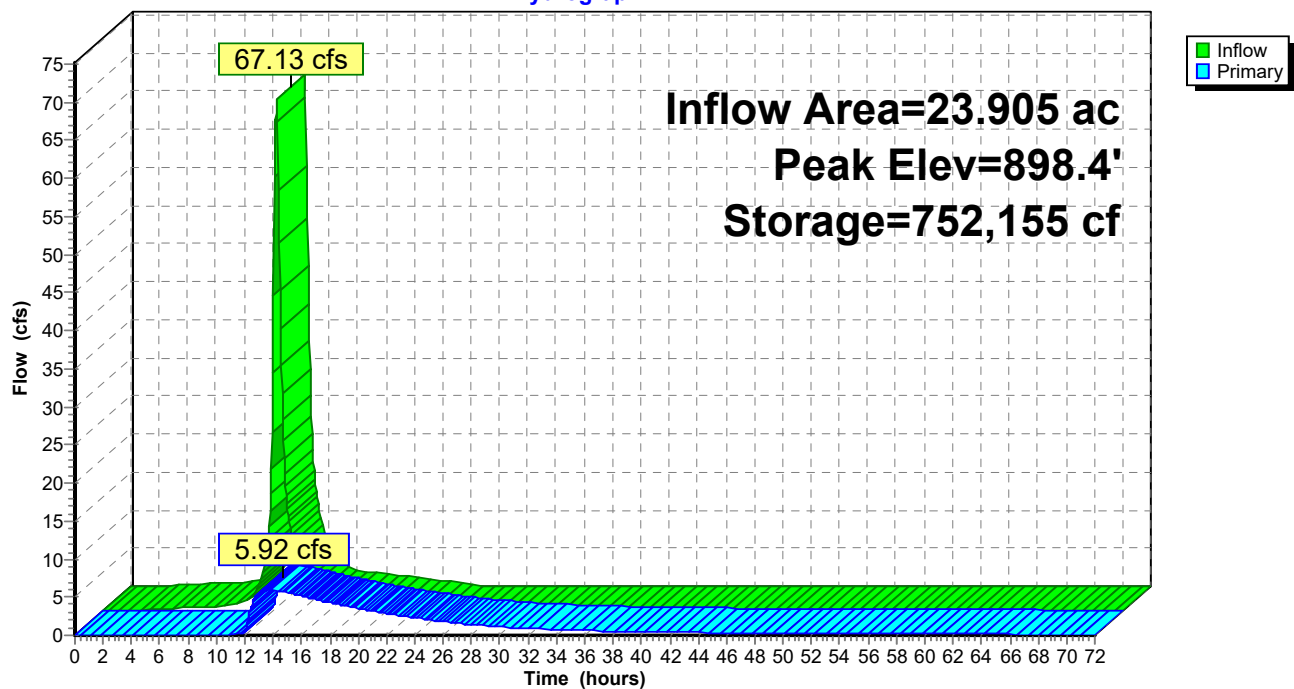
| Device | Routing  | Invert | Outlet Devices                                                                                                                                                                 |
|--------|----------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary  | 897.0' | <b>18.0" Round Culvert</b><br>L= 76.0' RCP, groove end projecting, Ke= 0.200<br>Inlet / Outlet Invert= 897.0' / 896.7' S= 0.0039 ' / Cc= 0.900<br>n= 0.013, Flow Area= 1.77 sf |
| #2     | Device 1 | 896.0' | <b>45.0" W x 6.0" H Vert. Orifice/Grate X 2.00</b> C= 0.600<br>Limited to weir flow at low heads                                                                               |
| #3     | Device 1 | 899.1' | <b>51.0" x 96.0" Horiz. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads                                                                                        |

**Primary OutFlow** Max=5.92 cfs @ 13.73 hrs HW=898.4' TW=0.0' (Dynamic Tailwater)

1=Culvert (Barrel Controls 5.92 cfs @ 4.31 fps)  
 2=Orifice/Grate (Passes 5.92 cfs of 21.74 cfs potential flow)  
 3=Orifice/Grate ( Controls 0.00 cfs)

**Pond P-12:**

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 25-Year Rainfall=5.23"

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**Summary for Pond P-3A:**

Inflow Area = 27.311 ac, 43.03% Impervious, Inflow Depth = 3.81" for 25-Year event  
 Inflow = 121.02 cfs @ 12.06 hrs, Volume= 8.667 af  
 Outflow = 5.17 cfs @ 16.49 hrs, Volume= 8.054 af, Atten= 96%, Lag= 265.7 min  
 Primary = 5.17 cfs @ 16.49 hrs, Volume= 8.054 af  
     Routed to Pond P-3B :  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Pond P-3B :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Starting Elev= 898.0' Surf.Area= 311,600 sf Storage= 1,911,300 cf

Peak Elev= 898.9' @ 15.00 hrs Surf.Area= 323,877 sf Storage= 2,191,269 cf (279,969 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 829.2 min ( 1,615.5 - 786.3 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 890.0' | 2,908,800 cf  | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

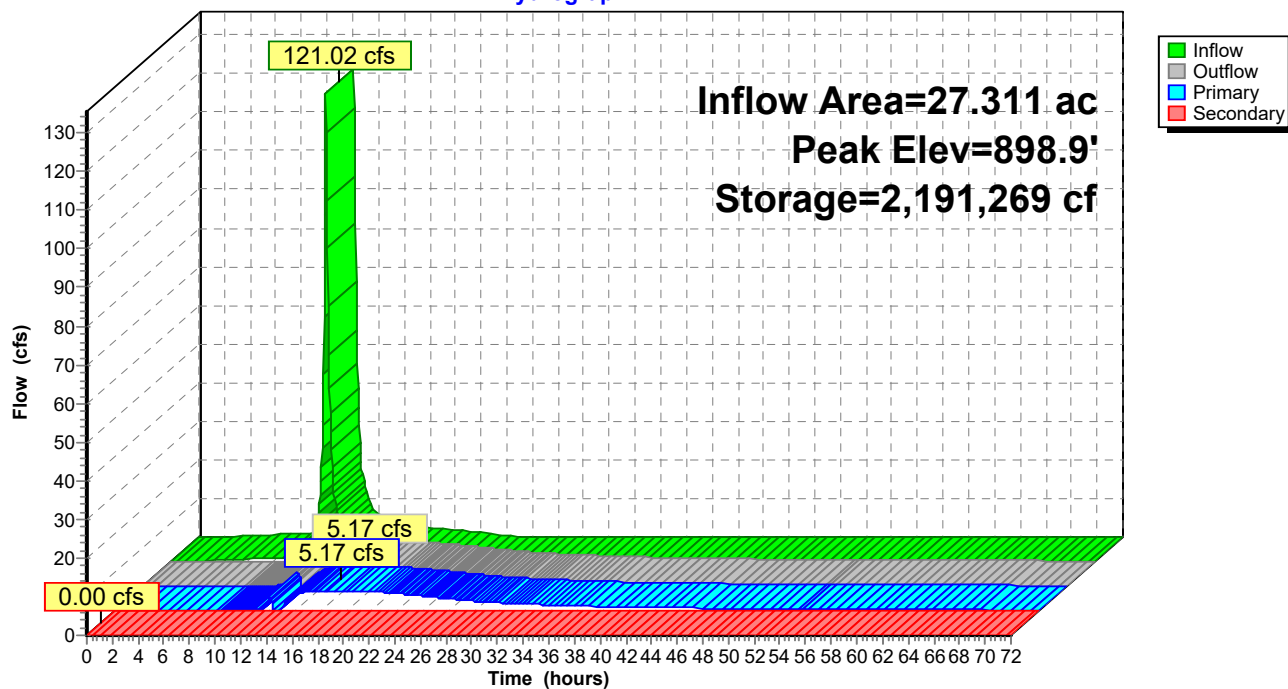
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 890.0               | 187,800              | 0                         | 0                         |
| 895.0               | 243,600              | 1,078,500                 | 1,078,500                 |
| 898.0               | 311,600              | 832,800                   | 1,911,300                 |
| 901.0               | 353,400              | 997,500                   | 2,908,800                 |

| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                                                   |
|--------|-----------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 895.0' | <b>24.0" Round Culvert</b><br>L= 20.0' RCP, groove end w/headwall, Ke= 0.200<br>Inlet / Outlet Invert= 895.0' / 895.0' S= 0.0000 ' S= 0.0000 ' Cc= 0.900<br>n= 0.012, Flow Area= 3.14 sf                                                                         |
| #2     | Secondary | 901.0' | <b>10.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=5.21 cfs @ 16.49 hrs HW=898.9' TW=898.8' (Dynamic Tailwater)↑ **1=Culvert** (Inlet Controls 5.21 cfs @ 1.66 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=898.0' TW=898.0' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Pond P-3A:**

**Hydrograph**



**Summary for Pond P-3B:**

Inflow Area = 46.882 ac, 39.18% Impervious, Inflow Depth > 3.38" for 25-Year event  
 Inflow = 46.58 cfs @ 12.06 hrs, Volume= 13.199 af  
 Outflow = 8.24 cfs @ 13.51 hrs, Volume= 12.994 af, Atten= 82%, Lag= 87.5 min  
 Primary = 8.24 cfs @ 13.51 hrs, Volume= 12.994 af  
 Routed to Reach PSE-QA : SE Quarter (Private Ditch A)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Starting Elev= 898.0' Surf.Area= 104,200 sf Storage= 592,800 cf  
 Peak Elev= 898.8' @ 13.51 hrs Surf.Area= 113,195 sf Storage= 683,329 cf (90,529 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 174.4 min ( 1,556.5 - 1,382.1 )

| Volume              | Invert               | Avail.Storage             | Storage Description                                        |
|---------------------|----------------------|---------------------------|------------------------------------------------------------|
| #1                  | 890.0'               | 954,000 cf                | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet)                                  |
| 890.0               | 44,000               | 0                         | 0                                                          |
| 898.0               | 104,200              | 592,800                   | 592,800                                                    |
| 901.0               | 136,600              | 361,200                   | 954,000                                                    |

| Device | Routing  | Invert | Outlet Devices                                                                                                                                                                                                                                                  |
|--------|----------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary  | 898.0' | <b>5.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |
| #2     | Device 1 | 897.0' | <b>45.0" W x 6.0" H Vert. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads                                                                                                                                                                       |
| #3     | Device 1 | 899.3' | <b>5.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=8.24 cfs @ 13.51 hrs HW=898.8' TW=0.0' (Dynamic Tailwater)

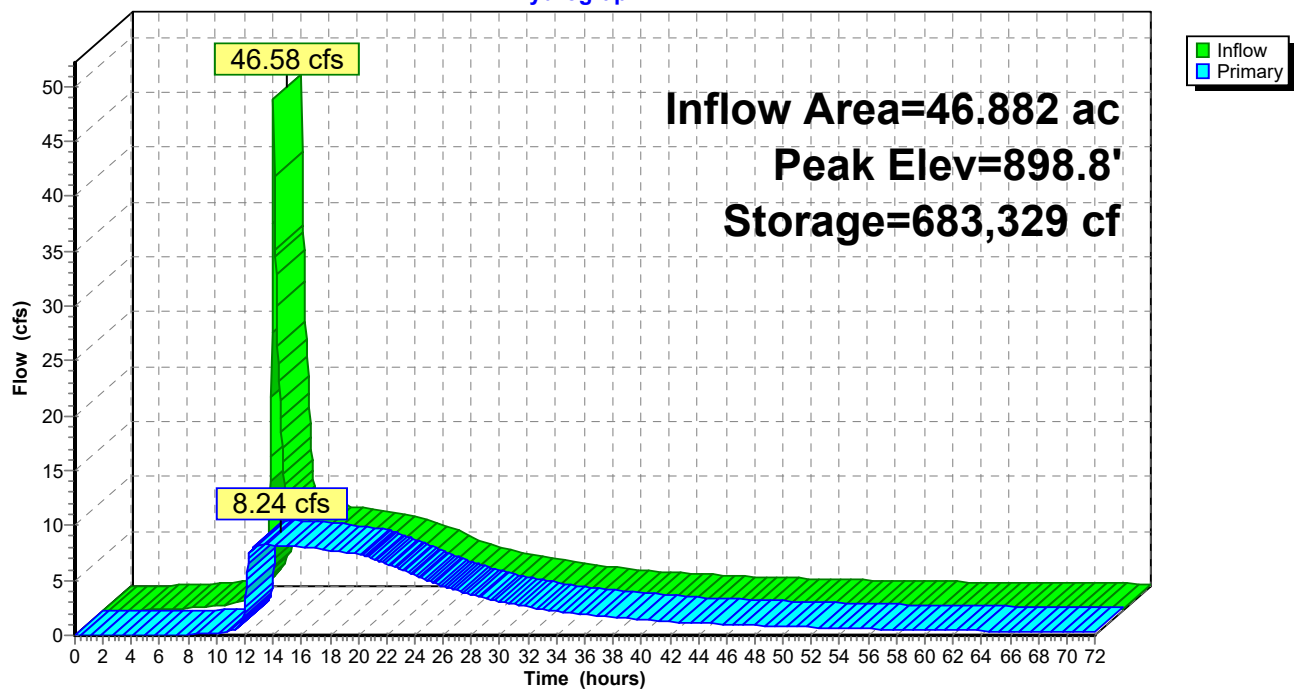
1=Broad-Crested Rectangular Weir(Passes 8.24 cfs of 10.18 cfs potential flow)

2=Orifice/Grate (Orifice Controls 8.24 cfs @ 4.39 fps)

3=Broad-Crested Rectangular Weir( Controls 0.00 cfs)

**Pond P-3B:**

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 25-Year Rainfall=5.23"

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**Summary for Pond P-6:**

Inflow Area = 4.739 ac, 32.83% Impervious, Inflow Depth = 3.35" for 25-Year event  
 Inflow = 17.95 cfs @ 12.21 hrs, Volume= 1.323 af  
 Outflow = 1.24 cfs @ 13.64 hrs, Volume= 1.311 af, Atten= 93%, Lag= 85.5 min  
 Primary = 1.24 cfs @ 13.64 hrs, Volume= 1.311 af  
 Routed to Pond PB6 : Wetland 6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Starting Elev= 898.0' Surf.Area= 19,200 sf Storage= 36,008 cf  
 Peak Elev= 899.7' @ 13.64 hrs Surf.Area= 23,130 sf Storage= 72,707 cf (36,699 cf above start)

Plug-Flow detention time= 874.2 min calculated for 0.484 af (37% of inflow)  
 Center-of-Mass det. time= 388.7 min ( 1,174.7 - 786.0 )

| Volume              | Invert               | Avail.Storage             | Storage Description                                        |
|---------------------|----------------------|---------------------------|------------------------------------------------------------|
| #1                  | 895.0'               | 103,808 cf                | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet)                                  |
| 895.0               | 7,961                | 0                         | 0                                                          |
| 897.0               | 12,298               | 20,259                    | 20,259                                                     |
| 898.0               | 19,200               | 15,749                    | 36,008                                                     |
| 901.0               | 26,000               | 67,800                    | 103,808                                                    |

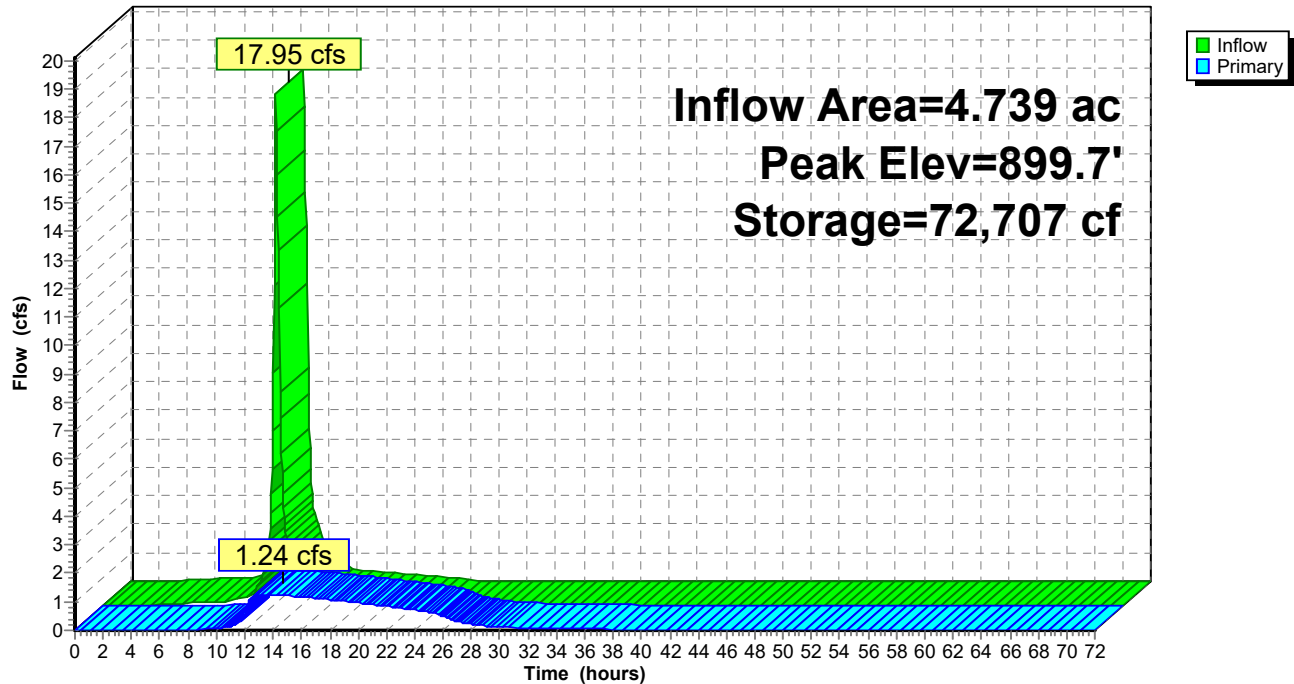
| Device | Routing  | Invert | Outlet Devices                                                                                                                                                                 |
|--------|----------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary  | 898.0' | <b>15.0" Round Culvert</b><br>L= 40.0' RCP, groove end projecting, Ke= 0.200<br>Inlet / Outlet Invert= 898.0' / 897.7' S= 0.0075 '/' Cc= 0.900<br>n= 0.013, Flow Area= 1.23 sf |
| #2     | Device 1 | 897.0' | <b>6.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads                                                                                                     |
| #3     | Device 1 | 900.6' | <b>51.0" x 96.0" Horiz. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads                                                                                        |

**Primary OutFlow** Max=1.24 cfs @ 13.64 hrs HW=899.7' TW=896.2' (Dynamic Tailwater)

1=Culvert (Passes 1.24 cfs of 5.97 cfs potential flow)  
 2=Orifice/Grate (Orifice Controls 1.24 cfs @ 6.34 fps)  
 3=Orifice/Grate ( Controls 0.00 cfs)

**Pond P-6:**

Hydrograph





**LDP24010 Ham Lake**

MSE 24-hr 3 25-Year Rainfall=5.23"

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**Summary for Pond P-8:**

Inflow Area = 9.576 ac, 25.07% Impervious, Inflow Depth = 3.00" for 25-Year event  
 Inflow = 33.66 cfs @ 12.25 hrs, Volume= 2.396 af  
 Outflow = 9.82 cfs @ 12.49 hrs, Volume= 2.282 af, Atten= 71%, Lag= 14.4 min  
 Primary = 9.82 cfs @ 12.49 hrs, Volume= 2.282 af  
 Routed to Pond P-3B :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Starting Elev= 898.0' Surf.Area= 57,900 sf Storage= 184,000 cf  
 Peak Elev= 898.8' @ 12.69 hrs Surf.Area= 65,895 sf Storage= 235,912 cf (51,912 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 532.9 min ( 1,326.2 - 793.3 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 893.0' | 400,600 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 893.0               | 15,700               | 0                         | 0                         |
| 898.0               | 57,900               | 184,000                   | 184,000                   |
| 901.0               | 86,500               | 216,600                   | 400,600                   |

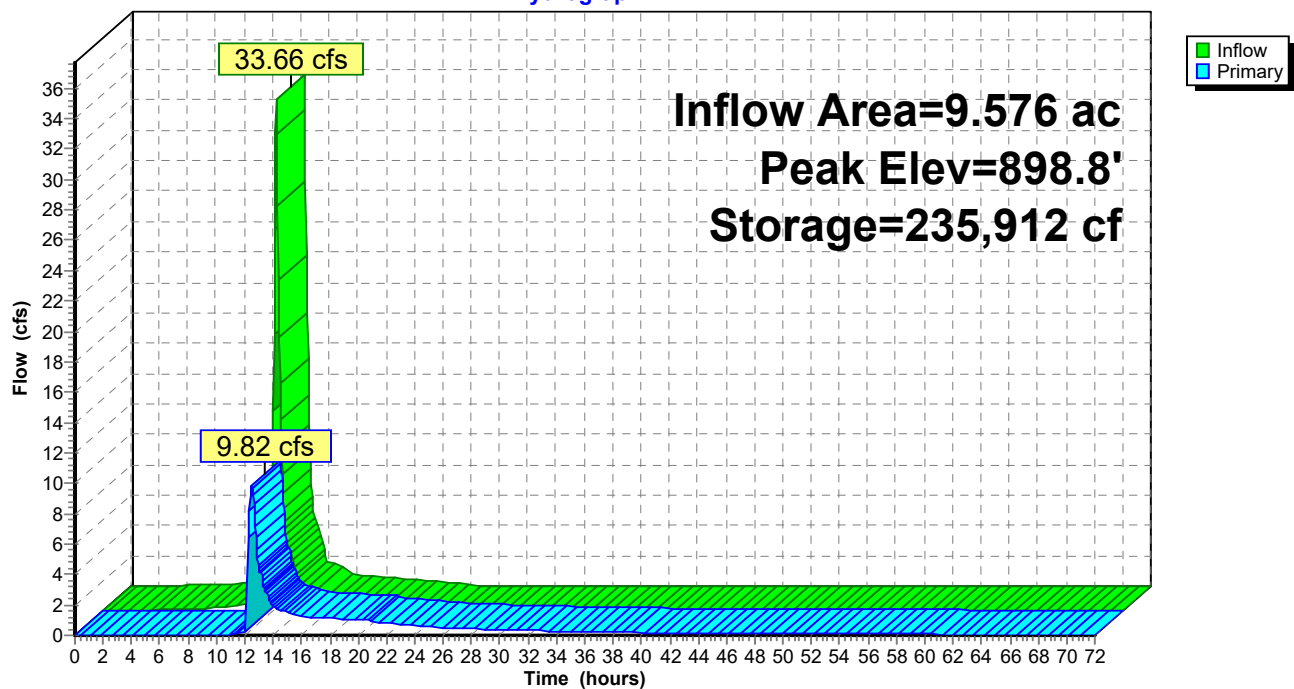
| Device | Routing | Invert | Outlet Devices                                                                                                                                                                                                                                                   |
|--------|---------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 898.0' | <b>10.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=8.91 cfs @ 12.49 hrs HW=898.8' TW=898.7' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 8.91 cfs @ 1.09 fps)

**Pond P-8:**

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 25-Year Rainfall=5.23"

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**Summary for Pond PB1A: Wetland 1A**

Inflow Area = 10.463 ac, 2.37% Impervious, Inflow Depth = 1.59" for 25-Year event  
 Inflow = 18.31 cfs @ 12.29 hrs, Volume= 1.388 af  
 Outflow = 1.11 cfs @ 14.64 hrs, Volume= 0.472 af, Atten= 94%, Lag= 141.0 min  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach PN : North Boundary  
 Tertiary = 1.11 cfs @ 14.64 hrs, Volume= 0.472 af  
 Routed to Pond P-3A :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 900.0' @ 14.64 hrs Surf.Area= 81,116 sf Storage= 42,051 cf

Plug-Flow detention time= 329.9 min calculated for 0.472 af (34% of inflow)  
 Center-of-Mass det. time= 219.8 min ( 1,057.8 - 838.0 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 899.0' | 2,338,451 cf  | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 899.0               | 1,799                | 0                         | 0                         |
| 900.0               | 77,989               | 39,894                    | 39,894                    |
| 901.0               | 193,333              | 135,661                   | 175,555                   |
| 902.0               | 368,575              | 280,954                   | 456,509                   |
| 903.0               | 576,105              | 472,340                   | 928,849                   |
| 904.0               | 715,414              | 645,760                   | 1,574,609                 |
| 905.0               | 812,270              | 763,842                   | 2,338,451                 |

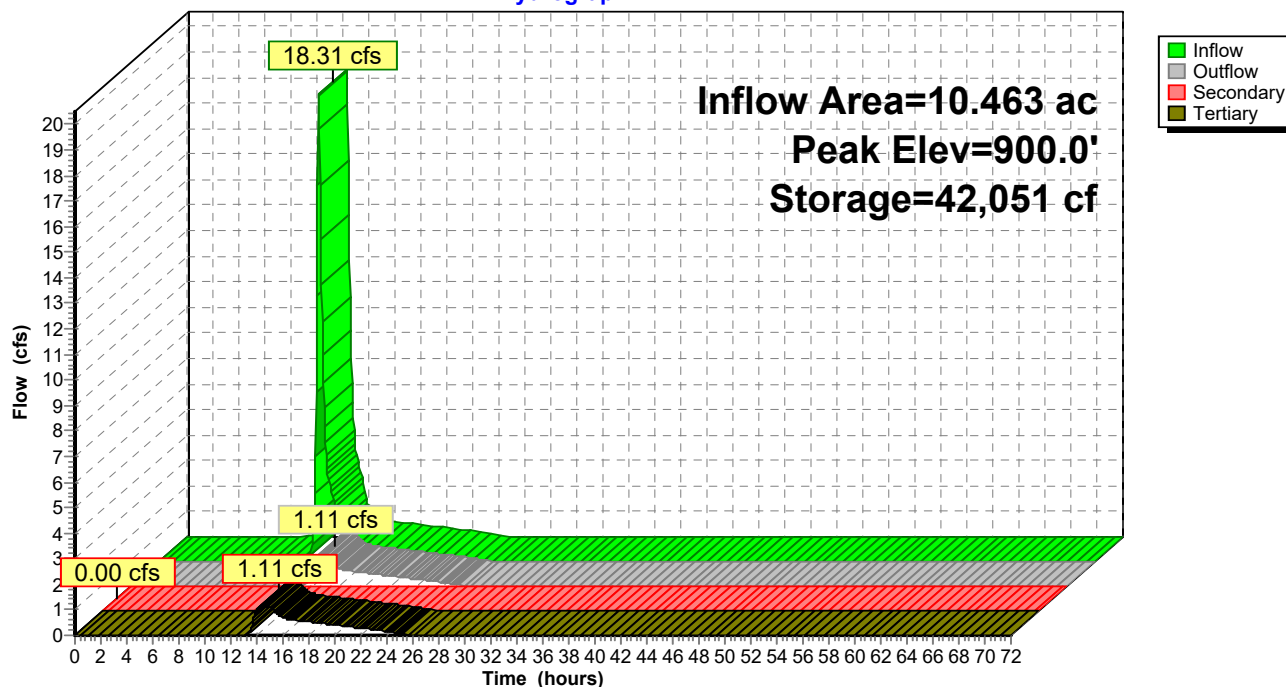
| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                              |
|--------|-----------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Secondary | 902.8' | <b>100.0' long x 5.0' breadth To North</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |
| #2     | Tertiary  | 900.0' | <b>100.0' long x 10.0' breadth TO P-3A</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                                                                                        |

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=899.0' TW=0.0' (Dynamic Tailwater)  
 ↑1=To North ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=1.11 cfs @ 14.64 hrs HW=900.0' TW=898.9' (Dynamic Tailwater)  
 ↑2=TO P-3A (Weir Controls 1.11 cfs @ 0.41 fps)

**Pond PB1A: Wetland 1A**

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 25-Year Rainfall=5.23"

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**Summary for Pond PB1B: Wetland 1B**

Inflow Area = 2.259 ac, 9.77% Impervious, Inflow Depth = 2.32" for 25-Year event  
 Inflow = 4.66 cfs @ 12.41 hrs, Volume= 0.437 af  
 Outflow = 4.65 cfs @ 12.42 hrs, Volume= 0.427 af, Atten= 0%, Lag= 0.5 min  
 Primary = 4.65 cfs @ 12.42 hrs, Volume= 0.427 af  
 Routed to Pond PB1C : Wetland 1C

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 901.8' @ 13.31 hrs Surf.Area= 7,957 sf Storage= 883 cf

Plug-Flow detention time= 20.0 min calculated for 0.427 af (98% of inflow)  
 Center-of-Mass det. time= 6.8 min ( 829.6 - 822.8 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 901.5' | 194,422 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

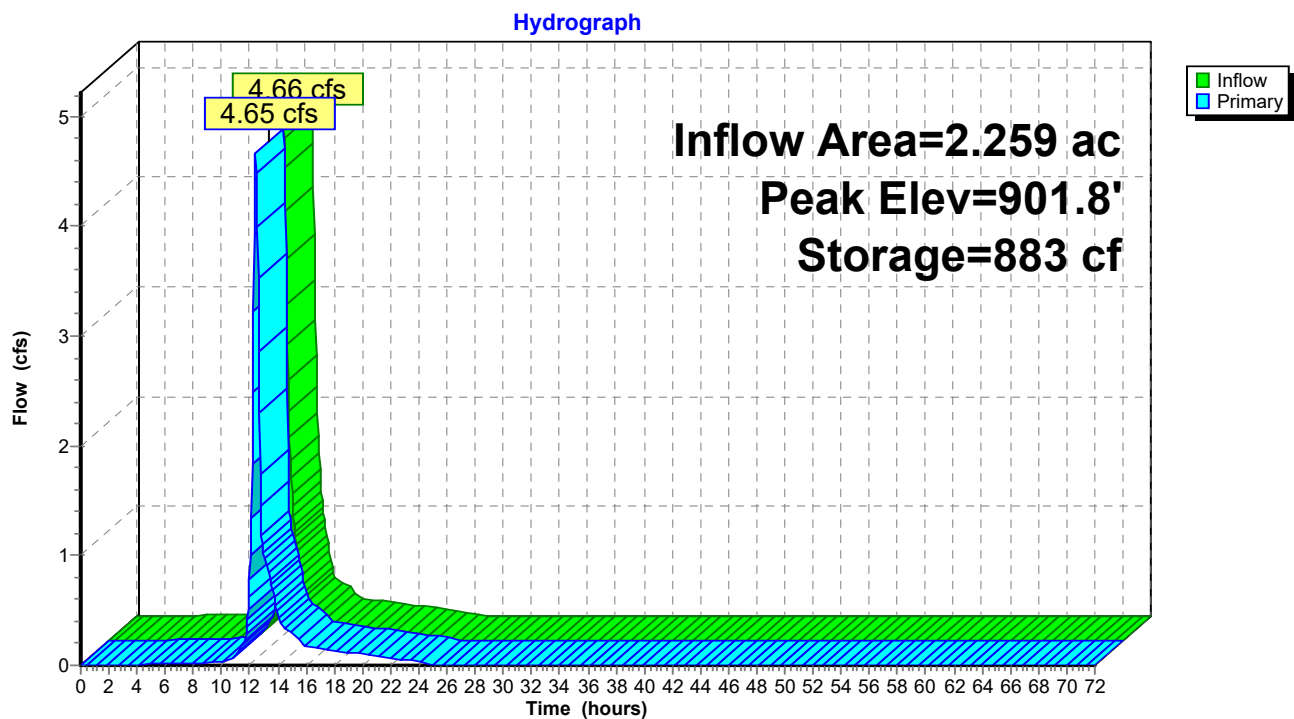
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 901.5               | 55                   | 0                         | 0                         |
| 901.6               | 1,670                | 86                        | 86                        |
| 901.7               | 5,365                | 352                       | 438                       |
| 901.8               | 9,245                | 730                       | 1,168                     |
| 901.9               | 13,840               | 1,154                     | 2,323                     |
| 902.0               | 32,292               | 2,307                     | 4,629                     |
| 903.0               | 54,790               | 43,541                    | 48,170                    |
| 904.0               | 71,685               | 63,238                    | 111,408                   |
| 905.0               | 94,343               | 83,014                    | 194,422                   |

| Device | Routing | Invert | Outlet Devices                                                                                                                                                             |
|--------|---------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 901.5' | <b>50.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=4.62 cfs @ 12.42 hrs HW=901.6' TW=901.3' (Dynamic Tailwater)

↑1=**Broad-Crested Rectangular Weir**(Weir Controls 4.62 cfs @ 0.83 fps)

**Pond PB1B: Wetland 1B**



**LDP24010 Ham Lake**

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**Summary for Pond PB1C: Wetland 1C**

Inflow Area = 11.034 ac, 4.50% Impervious, Inflow Depth = 1.75" for 25-Year event  
 Inflow = 15.96 cfs @ 12.46 hrs, Volume= 1.610 af  
 Outflow = 4.03 cfs @ 13.26 hrs, Volume= 0.871 af, Atten= 75%, Lag= 47.7 min  
 Primary = 4.03 cfs @ 13.26 hrs, Volume= 0.871 af  
 Routed to Reach PW : West Boundary  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 1C&PB-13 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 901.8' @ 13.26 hrs Surf.Area= 78,331 sf Storage= 37,091 cf

Plug-Flow detention time= 222.9 min calculated for 0.871 af (54% of inflow)  
 Center-of-Mass det. time= 121.3 min ( 964.7 - 843.4 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 900.1' | 577,352 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 900.1               | 174                  | 0                         | 0                         |
| 900.2               | 975                  | 57                        | 57                        |
| 900.5               | 5,734                | 1,006                     | 1,064                     |
| 901.0               | 20,570               | 6,576                     | 7,640                     |
| 901.5               | 36,160               | 14,183                    | 21,822                    |
| 901.8               | 83,591               | 17,963                    | 39,785                    |
| 902.0               | 90,000               | 17,359                    | 57,144                    |
| 903.0               | 100,000              | 95,000                    | 152,144                   |
| 904.0               | 233,558              | 166,779                   | 318,923                   |
| 905.0               | 283,299              | 258,429                   | 577,352                   |

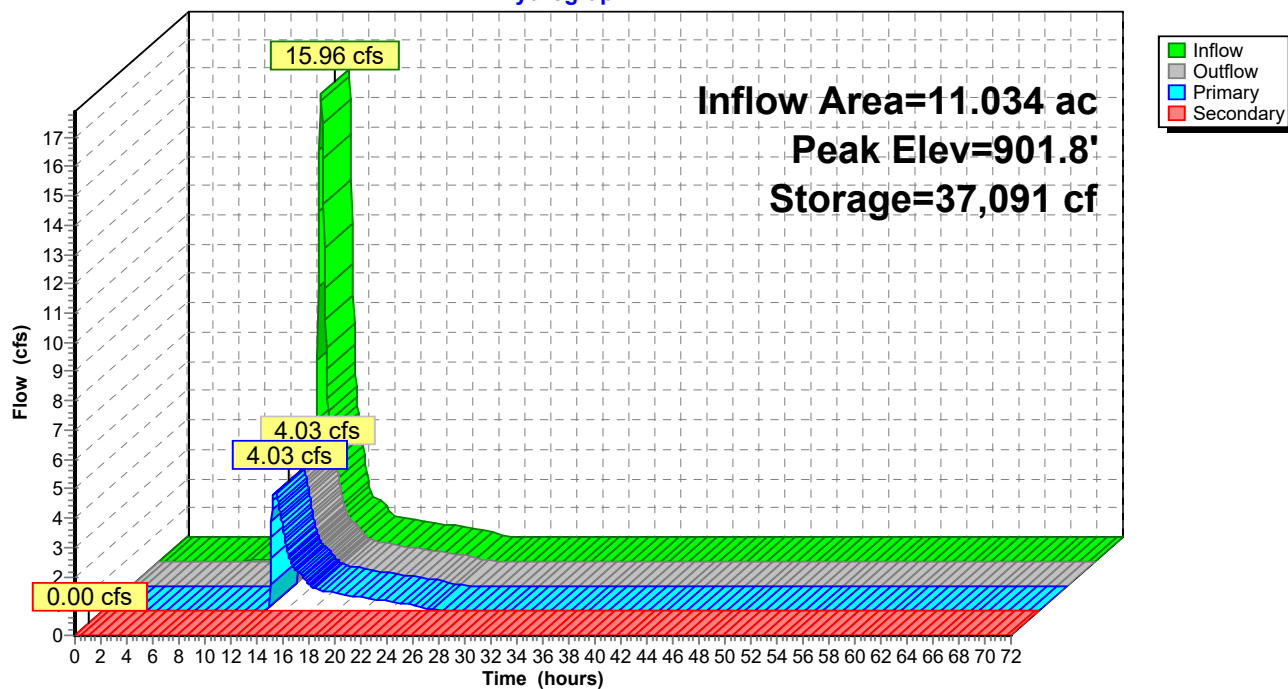
| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                             |
|--------|-----------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 901.7' | <b>100.0' long x 5.0' breadth To West</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |
| #2     | Secondary | 902.1' | <b>10.0' long x 5.0' breadth TO PB-13</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=4.03 cfs @ 13.26 hrs HW=901.8' TW=0.0' (Dynamic Tailwater)  
 ↑1=To West (Weir Controls 4.03 cfs @ 0.60 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=900.1' TW=898.3' (Dynamic Tailwater)  
 ↑2=TO PB-13 ( Controls 0.00 cfs)

# Pond PB1C: Wetland 1C

Hydrograph





**Summary for Pond PB6: Wetland 6**

Inflow Area = 18.280 ac, 10.37% Impervious, Inflow Depth > 1.85" for 25-Year event  
 Inflow = 10.05 cfs @ 12.72 hrs, Volume= 2.816 af  
 Outflow = 9.94 cfs @ 12.82 hrs, Volume= 2.637 af, Atten= 1%, Lag= 6.0 min  
 Primary = 9.94 cfs @ 12.82 hrs, Volume= 2.637 af  
 Routed to Reach PSW-Q : Southwest Discharge

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 896.2' @ 12.82 hrs Surf.Area= 32,055 sf Storage= 10,298 cf

Plug-Flow detention time= 83.5 min calculated for 2.635 af (94% of inflow)  
 Center-of-Mass det. time= 27.3 min ( 1,048.4 - 1,021.1 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 895.0' | 227,572 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

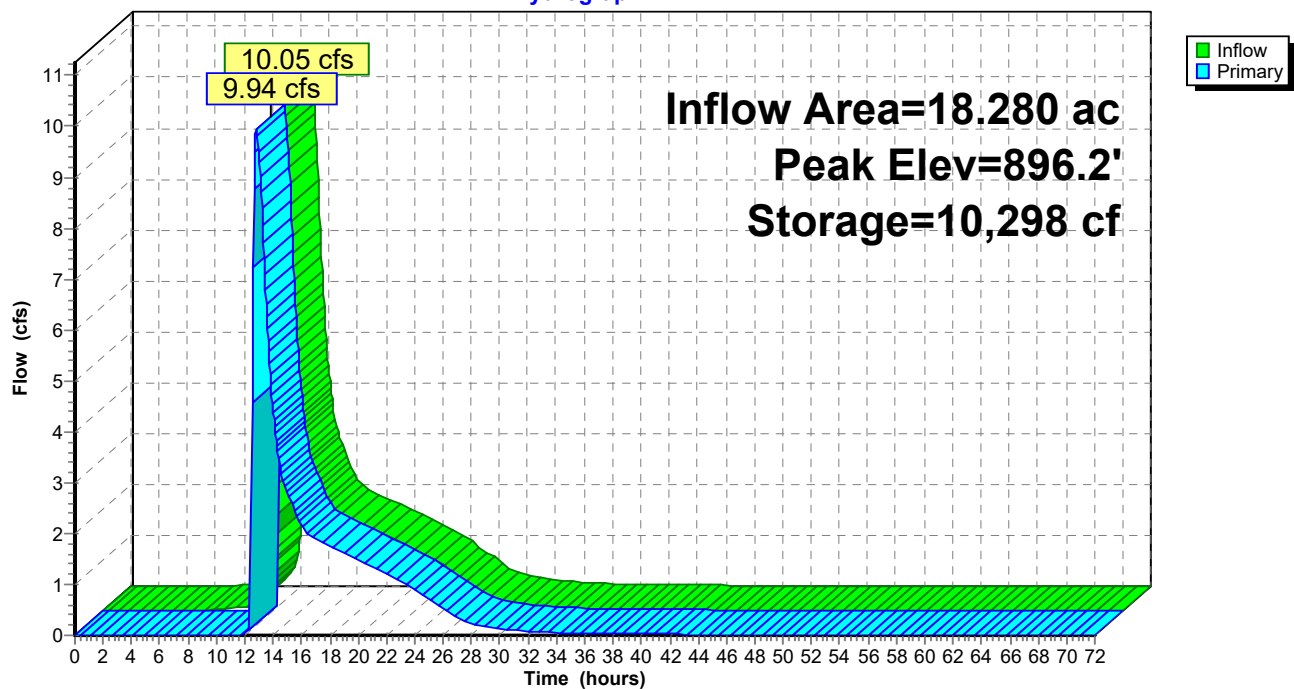
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 895.0               | 500                  | 0                         | 0                         |
| 896.0               | 11,662               | 6,081                     | 6,081                     |
| 897.0               | 117,362              | 64,512                    | 70,593                    |
| 898.0               | 196,595              | 156,979                   | 227,572                   |

| Device | Routing | Invert | Outlet Devices                                                                                                                                                                                                                                                    |
|--------|---------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 896.1' | <b>150.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=9.93 cfs @ 12.82 hrs HW=896.2' TW=0.0' (Dynamic Tailwater)  
 ↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 9.93 cfs @ 0.71 fps)

**Pond PB6: Wetland 6**

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 25-Year Rainfall=5.23"

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**Summary for Pond PB7A: Wetland 7A**

Inflow Area = 5.178 ac, 4.88% Impervious, Inflow Depth = 1.22" for 25-Year event  
 Inflow = 4.15 cfs @ 12.42 hrs, Volume= 0.524 af  
 Outflow = 3.36 cfs @ 12.62 hrs, Volume= 0.408 af, Atten= 19%, Lag= 11.9 min  
 Primary = 3.36 cfs @ 12.62 hrs, Volume= 0.408 af  
 Routed to Pond PB6 : Wetland 6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 898.3' @ 12.62 hrs Surf.Area= 15,668 sf Storage= 5,944 cf

Plug-Flow detention time= 133.1 min calculated for 0.408 af (78% of inflow)  
 Center-of-Mass det. time= 49.3 min ( 917.5 - 868.2 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 897.5' | 24,008 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 897.5               | 1,042                | 0                         | 0                         |
| 898.0               | 9,707                | 2,687                     | 2,687                     |
| 899.0               | 32,934               | 21,321                    | 24,008                    |

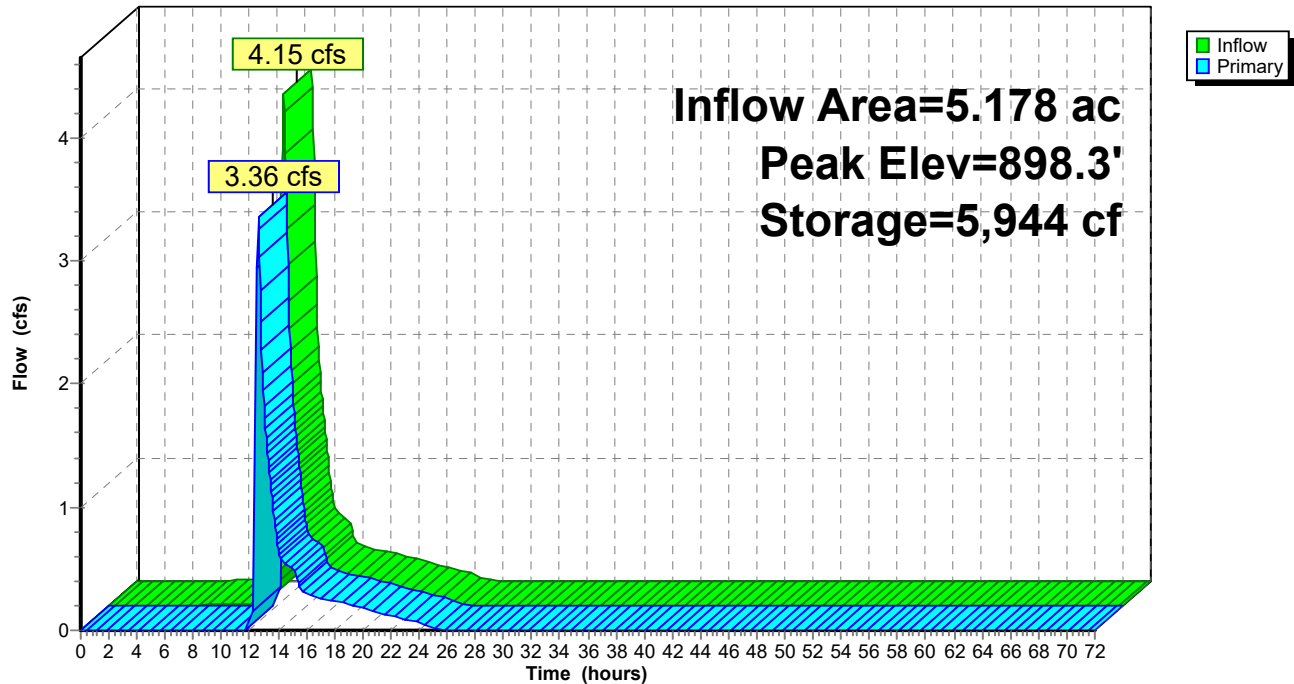
| Device | Routing | Invert | Outlet Devices                                                                                                                                      |
|--------|---------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 898.2' | <b>100.0' long x 10.0' breadth To PB6</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=3.31 cfs @ 12.62 hrs HW=898.3' TW=896.2' (Dynamic Tailwater)

↑1=To PB6 (Weir Controls 3.31 cfs @ 0.59 fps)

**Pond PB7A: Wetland 7A**

Hydrograph



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**Summary for Pond PB7B: Wetland 7B**

Inflow Area = 3.023 ac, 4.72% Impervious, Inflow Depth = 1.45" for 25-Year event  
 Inflow = 6.24 cfs @ 12.19 hrs, Volume= 0.365 af  
 Outflow = 1.48 cfs @ 12.57 hrs, Volume= 0.222 af, Atten= 76%, Lag= 23.0 min  
 Primary = 1.48 cfs @ 12.57 hrs, Volume= 0.222 af  
 Routed to Pond PB7A : Wetland 7A  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach P7B&D :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 898.4' @ 12.57 hrs Surf.Area= 24,030 sf Storage= 7,454 cf

Plug-Flow detention time= 187.6 min calculated for 0.221 af (61% of inflow)  
 Center-of-Mass det. time= 93.1 min ( 916.0 - 822.9 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 897.7' | 32,037 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 897.7               | 330                  | 0                         | 0                         |
| 898.0               | 7,784                | 1,217                     | 1,217                     |
| 898.5               | 28,502               | 9,072                     | 10,289                    |
| 899.0               | 58,492               | 21,749                    | 32,037                    |

| Device | Routing   | Invert | Outlet Devices                                                                                                                                                              |
|--------|-----------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 898.3' | <b>50.0' long x 10.0' breadth TO EB-7A</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                        |
| #2     | Secondary | 899.7' | <b>100.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=1.47 cfs @ 12.57 hrs HW=898.4' TW=898.3' (Dynamic Tailwater)

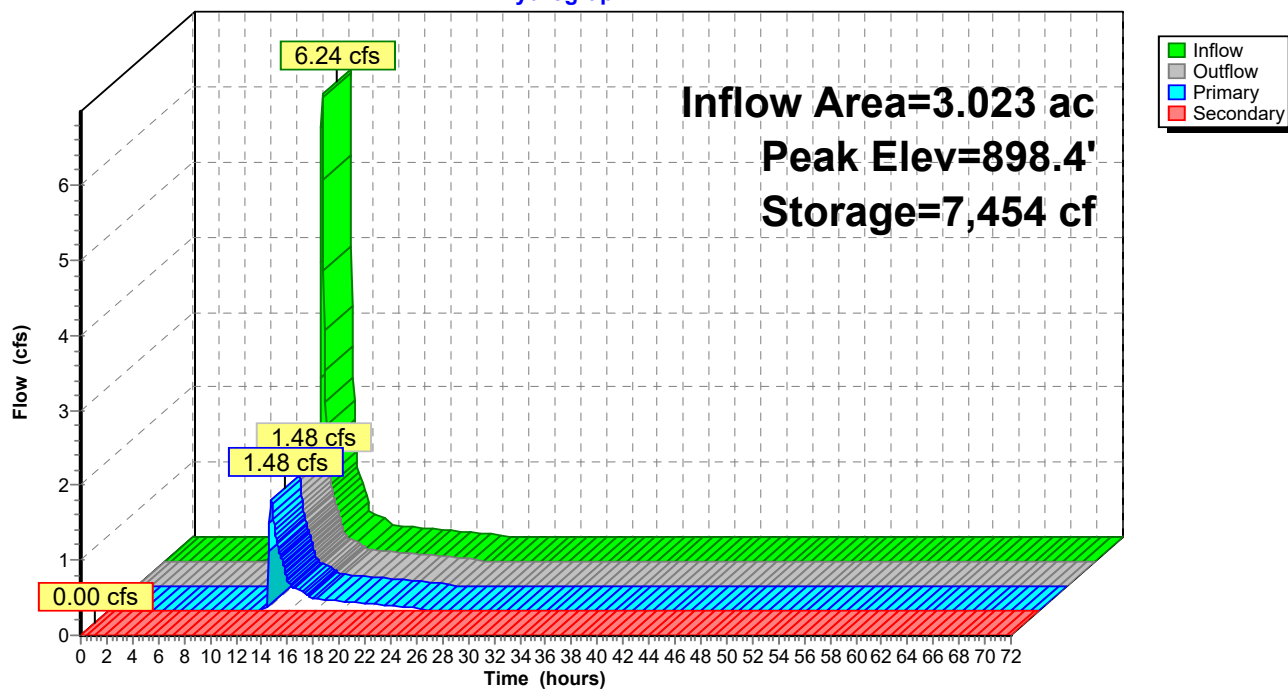
↑ **1=TO EB-7A** (Weir Controls 1.47 cfs @ 0.57 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=897.7' TW=0.0' (Dynamic Tailwater)

↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Pond PB7B: Wetland 7B**

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 25-Year Rainfall=5.23"

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**Summary for Pond PB7C: Wetland 7C**

Inflow Area = 0.449 ac, 0.00% Impervious, Inflow Depth = 1.51" for 25-Year event  
 Inflow = 1.21 cfs @ 12.13 hrs, Volume= 0.056 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond PB7B : Wetland 7B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 899.0' @ 24.35 hrs Surf.Area= 4,418 sf Storage= 2,458 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

| Volume              | Invert               | Avail.Storage             | Storage Description                                        |
|---------------------|----------------------|---------------------------|------------------------------------------------------------|
| #1                  | 897.7'               | 5,675 cf                  | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet)                                  |
| 897.7               | 122                  | 0                         | 0                                                          |
| 898.0               | 753                  | 131                       | 131                                                        |
| 898.5               | 2,342                | 774                       | 905                                                        |
| 899.0               | 4,602                | 1,736                     | 2,641                                                      |
| 899.5               | 7,533                | 3,034                     | 5,675                                                      |

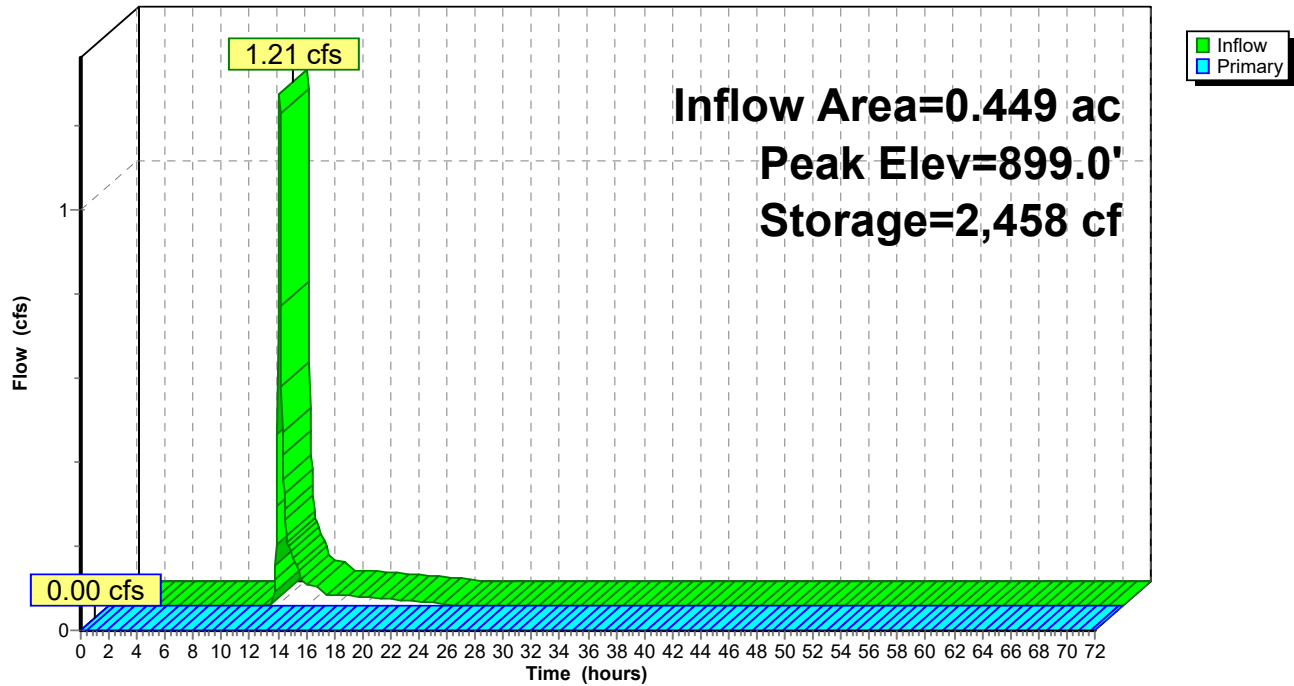
| Device | Routing | Invert | Outlet Devices                                                                                                                                                             |
|--------|---------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 899.6' | <b>50.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=897.7' TW=897.7' (Dynamic Tailwater)

↑1=**Broad-Crested Rectangular Weir**( Controls 0.00 cfs)

**Pond PB7C: Wetland 7C**

Hydrograph





**LDP24010 Ham Lake****MSE 24-hr 3 100-Year Rainfall=7.06"**

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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

|                            |                                                                                                                                             |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SubcatchmentPB-10:</b>  | Runoff Area=44,749 sf 5.36% Impervious Runoff Depth=4.24"<br>Flow Length=394' Tc=18.2 min CN=WQ Runoff=5.04 cfs 0.363 af                    |
| <b>SubcatchmentPB-12:</b>  | Runoff Area=612,303 sf 24.33% Impervious Runoff Depth=4.76"<br>Flow Length=540' Tc=19.1 min CN=WQ Runoff=72.80 cfs 5.573 af                 |
| <b>SubcatchmentPB-13A:</b> | Runoff Area=24,410 sf 15.54% Impervious Runoff Depth=3.95"<br>Tc=15.0 min CN=WQ Runoff=2.73 cfs 0.184 af                                    |
| <b>SubcatchmentPB-13B:</b> | Runoff Area=122,759 sf 9.61% Impervious Runoff Depth=4.36"<br>Flow Length=430' Tc=16.8 min CN=WQ Runoff=14.67 cfs 1.023 af                  |
| <b>SubcatchmentPB-14A:</b> | Runoff Area=89,189 sf 8.07% Impervious Runoff Depth=4.31"<br>Flow Length=430' Tc=19.4 min CN=WQ Runoff=9.83 cfs 0.736 af                    |
| <b>SubcatchmentPB-14B:</b> | Runoff Area=152,501 sf 7.87% Impervious Runoff Depth=4.31"<br>Flow Length=447' Tc=39.3 min CN=WQ Runoff=11.33 cfs 1.257 af                  |
| <b>SubcatchmentPB-15A:</b> | Runoff Area=37,143 sf 0.00% Impervious Runoff Depth=2.75"<br>Flow Length=256' Tc=13.9 min CN=61 Runoff=3.06 cfs 0.195 af                    |
| <b>SubcatchmentPB-15B:</b> | Runoff Area=68,682 sf 0.00% Impervious Runoff Depth=4.09"<br>Flow Length=256' Tc=13.9 min CN=74 Runoff=8.58 cfs 0.538 af                    |
| <b>SubcatchmentPB-1A:</b>  | Runoff Area=455,779 sf 2.37% Impervious Runoff Depth=2.84"<br>Flow Length=470' Tc=17.8 min CN=WQ Runoff=34.26 cfs 2.478 af                  |
| <b>SubcatchmentPB-1B:</b>  | Runoff Area=98,423 sf 9.77% Impervious Runoff Depth=3.75"<br>Flow Length=240' Tc=27.7 min CN=WQ Runoff=7.69 cfs 0.707 af                    |
| <b>SubcatchmentPB-1C:</b>  | Runoff Area=382,215 sf 3.14% Impervious Runoff Depth=2.87"<br>Flow Length=616' Slope=0.0080 '/' Tc=31.2 min CN=WQ Runoff=21.34 cfs 2.101 af |
| <b>SubcatchmentPB-1D:</b>  | Runoff Area=162,084 sf 3.70% Impervious Runoff Depth=3.03"<br>Tc=25.0 min CN=WQ Runoff=10.86 cfs 0.938 af                                   |
| <b>SubcatchmentPB-2A:</b>  | Runoff Area=32,450 sf 11.09% Impervious Runoff Depth=4.40"<br>Tc=10.0 min CN=WQ Runoff=4.82 cfs 0.273 af                                    |
| <b>SubcatchmentPB-2B:</b>  | Runoff Area=21,744 sf 2.30% Impervious Runoff Depth=4.16"<br>Tc=10.0 min CN=WQ Runoff=3.12 cfs 0.173 af                                     |
| <b>SubcatchmentPB-3A:</b>  | Runoff Area=412,473 sf 83.93% Impervious Runoff Depth=6.38"<br>Tc=0.0 min CN=WQ Runoff=106.09 cfs 5.037 af                                  |
| <b>SubcatchmentPB-3B:</b>  | Runoff Area=166,565 sf 100.00% Impervious Runoff Depth=6.82"<br>Tc=0.0 min CN=98 Runoff=44.86 cfs 2.173 af                                  |

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|                           |                                                                                                                             |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>SubcatchmentPB-4A:</b> | Runoff Area=103,255 sf 6.97% Impervious Runoff Depth=4.28"<br>Tc=10.0 min CN=WQ Runoff=15.09 cfs 0.846 af                   |
| <b>SubcatchmentPB-4B:</b> | Runoff Area=63,386 sf 3.79% Impervious Runoff Depth=4.20"<br>Tc=10.0 min CN=WQ Runoff=9.14 cfs 0.509 af                     |
| <b>SubcatchmentPB-4C:</b> | Runoff Area=64,398 sf 7.69% Impervious Runoff Depth=3.06"<br>Flow Length=200' Tc=15.8 min CN=WQ Runoff=5.46 cfs 0.377 af    |
| <b>SubcatchmentPB-4D:</b> | Runoff Area=66,433 sf 4.12% Impervious Runoff Depth=2.91"<br>Flow Length=266' Tc=15.5 min CN=WQ Runoff=5.46 cfs 0.370 af    |
| <b>SubcatchmentPB-5A:</b> | Runoff Area=301,807 sf 7.55% Impervious Runoff Depth=4.30"<br>Tc=10.0 min CN=WQ Runoff=44.21 cfs 2.483 af                   |
| <b>SubcatchmentPB-5B:</b> | Runoff Area=141,059 sf 6.81% Impervious Runoff Depth=4.28"<br>Tc=10.0 min CN=WQ Runoff=20.60 cfs 1.155 af                   |
| <b>SubcatchmentPB-6A:</b> | Runoff Area=53,054 sf 58.33% Impervious Runoff Depth=5.68"<br>Tc=15.0 min CN=WQ Runoff=8.06 cfs 0.577 af                    |
| <b>SubcatchmentPB-6B:</b> | Runoff Area=339,893 sf 0.00% Impervious Runoff Depth=2.75"<br>Flow Length=513' Tc=61.2 min CN=61 Runoff=11.86 cfs 1.785 af  |
| <b>SubcatchmentPB-7A:</b> | Runoff Area=93,846 sf 5.11% Impervious Runoff Depth=2.95"<br>Flow Length=212' Tc=20.1 min CN=WQ Runoff=6.85 cfs 0.530 af    |
| <b>SubcatchmentPB-7B:</b> | Runoff Area=112,159 sf 5.54% Impervious Runoff Depth=2.97"<br>Tc=10.0 min CN=WQ Runoff=11.30 cfs 0.637 af                   |
| <b>SubcatchmentPB-7C:</b> | Runoff Area=19,541 sf 0.00% Impervious Runoff Depth=2.75"<br>Tc=5.0 min CN=61 Runoff=2.26 cfs 0.103 af                      |
| <b>SubcatchmentPB-7D:</b> | Runoff Area=46,128 sf 10.41% Impervious Runoff Depth=4.38"<br>Tc=10.0 min CN=WQ Runoff=6.83 cfs 0.386 af                    |
| <b>SubcatchmentPB-8:</b>  | Runoff Area=350,677 sf 29.04% Impervious Runoff Depth=4.89"<br>Flow Length=418' Tc=16.1 min CN=WQ Runoff=46.14 cfs 3.278 af |
| <b>SubcatchmentPB-9:</b>  | Runoff Area=93,910 sf 7.67% Impervious Runoff Depth=4.30"<br>Flow Length=490' Tc=29.6 min CN=WQ Runoff=8.26 cfs 0.773 af    |
| <b>SubcatchmentR-1:</b>   | Runoff Area=55,096 sf 46.72% Impervious Runoff Depth=5.37"<br>Tc=5.0 min CN=WQ Runoff=11.25 cfs 0.566 af                    |
| <b>SubcatchmentR-2:</b>   | Runoff Area=84,323 sf 65.88% Impervious Runoff Depth=5.89"<br>Tc=5.0 min CN=WQ Runoff=18.34 cfs 0.950 af                    |
| <b>SubcatchmentR-3:</b>   | Runoff Area=172,153 sf 71.85% Impervious Runoff Depth=6.05"<br>Tc=5.0 min CN=WQ Runoff=38.17 cfs 1.994 af                   |

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|                                                   |                                                                                                                                                             |
|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SubcatchmentR-5:</b>                           | Runoff Area=30,604 sf 81.78% Impervious Runoff Depth=6.32"<br>Tc=10.0 min CN=WQ Runoff=5.86 cfs 0.370 af                                                    |
| <b>SubcatchmentR-6:</b>                           | Runoff Area=15,143 sf 87.18% Impervious Runoff Depth=6.47"<br>Tc=5.0 min CN=WQ Runoff=3.52 cfs 0.187 af                                                     |
| <b>SubcatchmentR-7:</b>                           | Runoff Area=11,881 sf 72.35% Impervious Runoff Depth=6.07"<br>Tc=5.0 min CN=WQ Runoff=2.64 cfs 0.138 af                                                     |
| <b>SubcatchmentR-8:</b>                           | Runoff Area=83,061 sf 69.74% Impervious Runoff Depth=6.00"<br>Tc=5.0 min CN=WQ Runoff=18.29 cfs 0.953 af                                                    |
| <b>Reach 1C&amp;PB-13:</b>                        | Avg. Flow Depth=1.50' Max Vel=5.10 fps Inflow=14.67 cfs 1.023 af<br>18.0" Round Pipe n=0.013 L=88.0' S=0.0057 ' Capacity=7.92 cfs Outflow=7.92 cfs 1.023 af |
| <b>Reach 1R:</b>                                  | Inflow=5.90 cfs 0.501 af<br>Outflow=5.90 cfs 0.501 af                                                                                                       |
| <b>Reach 2A&amp;2B:</b>                           | Inflow=24.98 cfs 1.396 af<br>Outflow=24.98 cfs 1.396 af                                                                                                     |
| <b>Reach P7B&amp;D:</b>                           | Inflow=6.83 cfs 0.386 af<br>Outflow=6.83 cfs 0.386 af                                                                                                       |
| <b>Reach PB-1C&amp;PB-14B:</b>                    | Inflow=17.88 cfs 1.993 af<br>Outflow=17.88 cfs 1.993 af                                                                                                     |
| <b>Reach PL-DITCH:</b>                            | Outflow=0.00 cfs 0.000 af                                                                                                                                   |
| <b>Reach PN: North Boundary</b>                   | Inflow=0.00 cfs 0.000 af<br>Outflow=0.00 cfs 0.000 af                                                                                                       |
| <b>Reach POST: Overall Post-DevelopmentRunoff</b> | Inflow=62.08 cfs 38.839 af<br>Outflow=62.08 cfs 38.839 af                                                                                                   |
| <b>Reach PS: South Total (Ditch 44-9)</b>         | Inflow=42.61 cfs 35.277 af<br>Outflow=42.61 cfs 35.277 af                                                                                                   |
| <b>Reach PSE-Q: SE Quarter (Private Ditch B)</b>  | Inflow=18.63 cfs 10.178 af<br>Outflow=18.63 cfs 10.178 af                                                                                                   |
| <b>Reach PSE-QA: SE Quarter (Private Ditch A)</b> | Inflow=10.24 cfs 20.250 af<br>Outflow=10.24 cfs 20.250 af                                                                                                   |
| <b>Reach PSW-Q: Southwest Discharge</b>           | Inflow=20.85 cfs 4.849 af<br>Outflow=20.85 cfs 4.849 af                                                                                                     |
| <b>Reach PW: West Boundary</b>                    | Inflow=21.13 cfs 2.996 af<br>Outflow=21.13 cfs 2.996 af                                                                                                     |

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**Pond P-12:** Peak Elev=899.1' Storage=849,530 cf Inflow=101.84 cfs 9.747 af  
Outflow=8.41 cfs 9.253 af

**Pond P-3A:** Peak Elev=899.4' Storage=2,360,421 cf Inflow=174.35 cfs 13.551 af  
Primary=6.53 cfs 12.786 af Secondary=0.00 cfs 0.000 af Outflow=6.53 cfs 12.786 af

**Pond P-3B:** Peak Elev=899.3' Storage=735,801 cf Inflow=66.51 cfs 20.506 af  
Outflow=10.24 cfs 20.250 af

**Pond P-6:** Peak Elev=900.6' Storage=92,729 cf Inflow=21.43 cfs 1.970 af  
Outflow=1.51 cfs 1.956 af

**Pond P-8:** Peak Elev=899.3' Storage=266,408 cf Inflow=51.59 cfs 3.648 af  
Outflow=15.90 cfs 3.505 af

**Pond PB1A: Wetland 1A** Peak Elev=900.1' Storage=50,548 cf Inflow=34.26 cfs 2.478 af  
Secondary=0.00 cfs 0.000 af Tertiary=11.01 cfs 1.562 af Outflow=11.01 cfs 1.562 af

**Pond PB1B: Wetland 1B** Peak Elev=901.9' Storage=1,924 cf Inflow=7.69 cfs 0.707 af  
Outflow=7.62 cfs 0.697 af

**Pond PB1C: Wetland 1C** Peak Elev=901.9' Storage=45,616 cf Inflow=28.33 cfs 2.797 af  
Primary=16.23 cfs 2.058 af Secondary=0.00 cfs 0.000 af Outflow=16.23 cfs 2.058 af

**Pond PB6: Wetland 6** Peak Elev=896.2' Storage=12,156 cf Inflow=20.21 cfs 4.833 af  
Outflow=19.62 cfs 4.654 af

**Pond PB7A: Wetland 7A** Peak Elev=898.3' Storage=7,280 cf Inflow=13.19 cfs 1.024 af  
Outflow=12.63 cfs 0.907 af

**Pond PB7B: Wetland 7B** Peak Elev=898.5' Storage=9,658 cf Inflow=11.30 cfs 0.637 af  
Primary=6.35 cfs 0.494 af Secondary=0.00 cfs 0.000 af Outflow=6.35 cfs 0.494 af

**Pond PB7C: Wetland 7C** Peak Elev=899.3' Storage=4,471 cf Inflow=2.26 cfs 0.103 af  
Outflow=0.00 cfs 0.000 af

**Total Runoff Area = 119.038 ac Runoff Volume = 42.718 af Average Runoff Depth = 4.31"**  
**75.77% Pervious = 90.189 ac 24.23% Impervious = 28.848 ac**

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**Summary for Subcatchment PB-10:**

Runoff = 5.04 cfs @ 12.27 hrs, Volume= 0.363 af, Depth= 4.24"  
Routed to Reach 1R :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

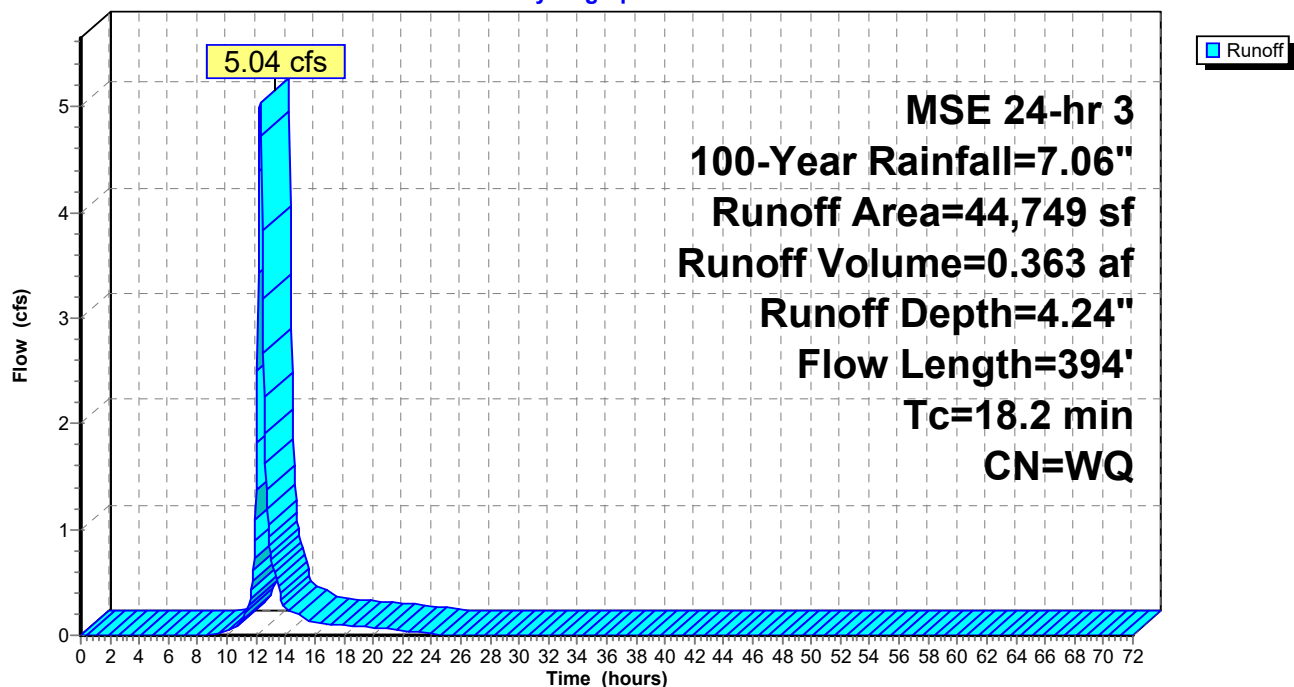
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 42,349    | 74 | >75% Grass cover, Good, HSG C |
| * 2,400   | 98 | Concrete                      |
| 44,749    |    | Weighted Average              |
| 42,349    |    | 94.64% Pervious Area          |
| 2,400     |    | 5.36% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 12.3     | 100           | 0.0133        | 0.14              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 5.9      | 294           | 0.0143        | 0.84              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 18.2     | 394           | Total         |                   |                |                                                                      |

**Subcatchment PB-10:**

Hydrograph



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**Summary for Subcatchment PB-12:**

Runoff = 72.80 cfs @ 12.28 hrs, Volume= 5.573 af, Depth= 4.76"  
 Routed to Pond P-12 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 MSE 24-hr 3 100-Year Rainfall=7.06"

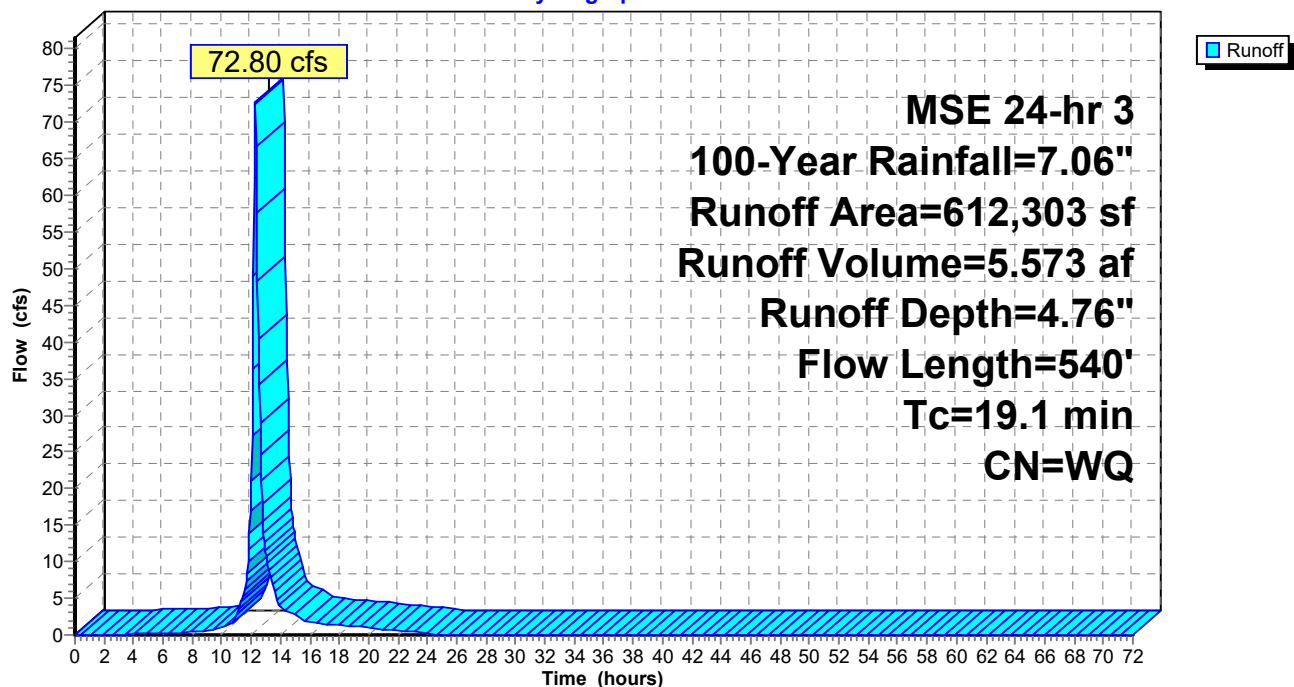
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 19,200    | 98 | Roofs, HSG A                  |
| 463,357   | 74 | >75% Grass cover, Good, HSG C |
| 124,927   | 98 | Water Surface, HSG A          |
| * 4,819   | 98 | Driveways                     |
| 612,303   |    | Weighted Average              |
| 463,357   |    | 75.67% Pervious Area          |
| 148,946   |    | 24.33% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 7.4      | 100           | 0.0474        | 0.23              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 11.7     | 440           | 0.0080        | 0.63              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 19.1     | 540           | Total         |                   |                |                                                                      |

**Subcatchment PB-12:**

Hydrograph



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**Summary for Subcatchment PB-13A:**

Runoff = 2.73 cfs @ 12.24 hrs, Volume= 0.184 af, Depth= 3.95"  
Routed to Pond PB6 : Wetland 6

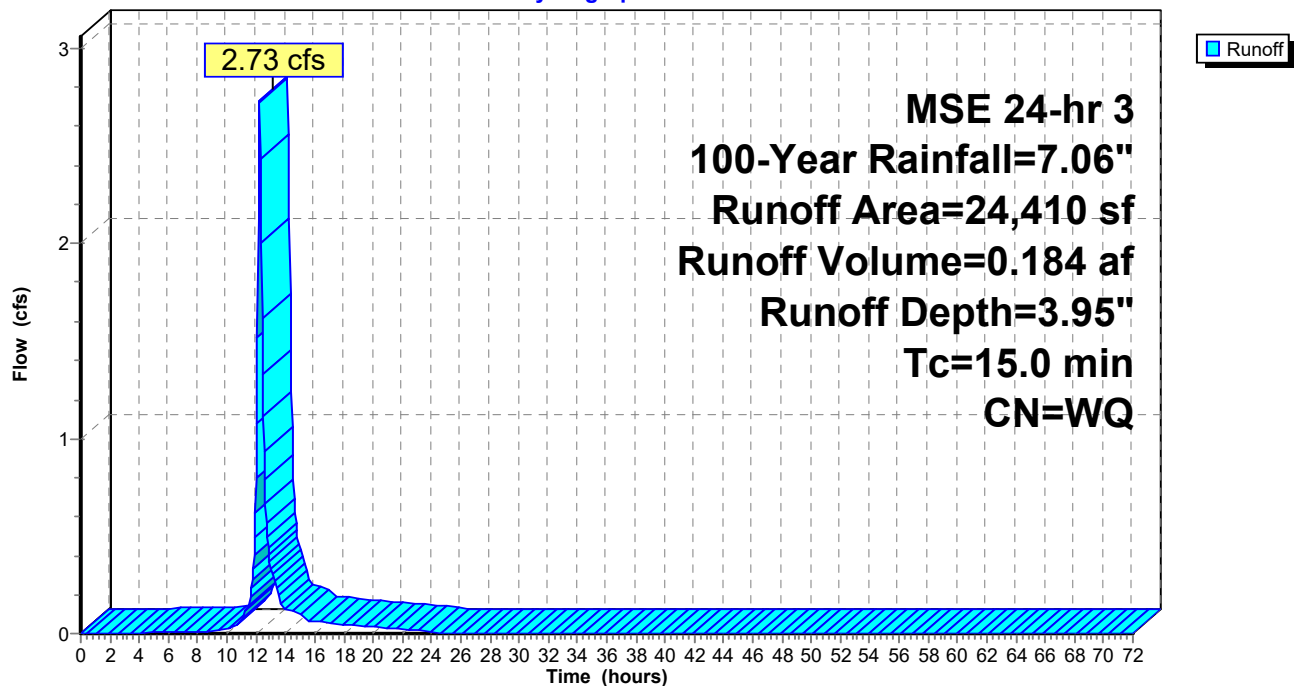
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 10,308    | 61 | >75% Grass cover, Good, HSG B |
| 10,308    | 74 | >75% Grass cover, Good, HSG C |
| 3,794     | 98 | Roofs, HSG A                  |
| 24,410    |    | Weighted Average              |
| 20,616    |    | 84.46% Pervious Area          |
| 3,794     |    | 15.54% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 15.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-13A:**

Hydrograph



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**Summary for Subcatchment PB-13B:**

Runoff = 14.67 cfs @ 12.26 hrs, Volume= 1.023 af, Depth= 4.36"  
Routed to Reach 1C&PB-13 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

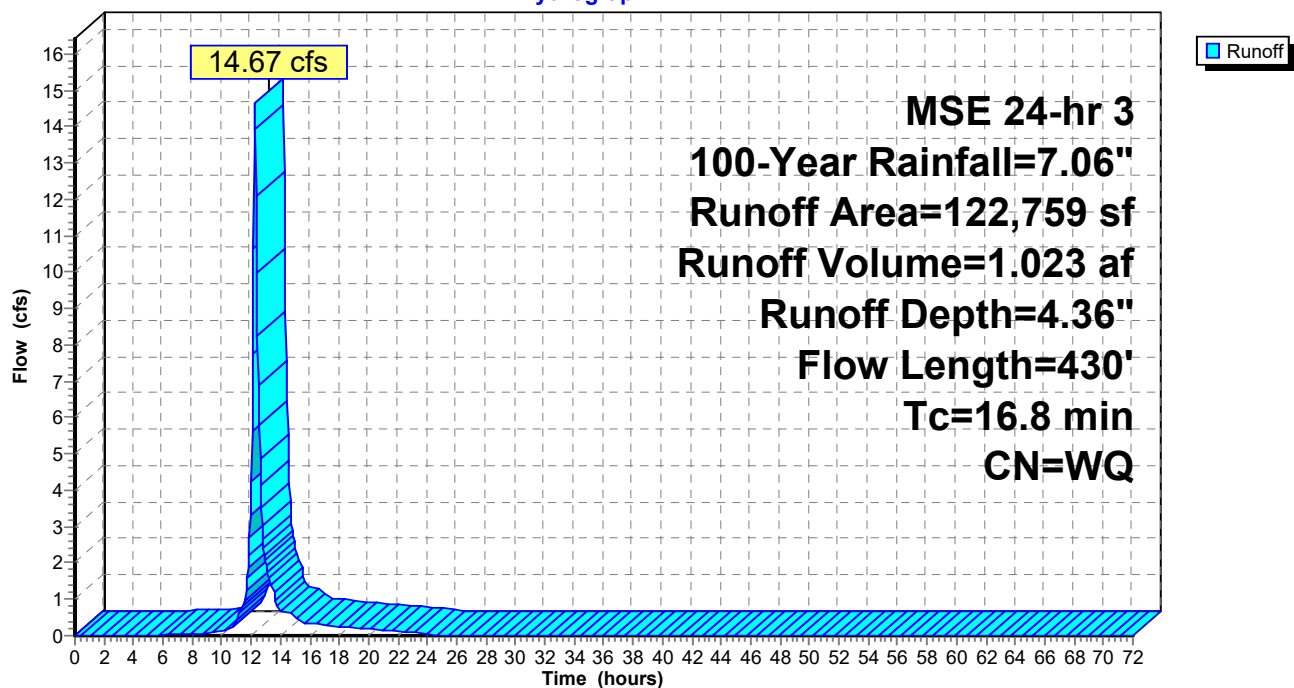
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 6,000     | 98 | Roofs, HSG A                  |
| 110,959   | 74 | >75% Grass cover, Good, HSG C |
| * 5,800   | 98 | Driveway                      |
| 122,759   |    | Weighted Average              |
| 110,959   |    | 90.39% Pervious Area          |
| 11,800    |    | 9.61% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 12.3     | 100           | 0.0132        | 0.14              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 4.5      | 330           | 0.0300        | 1.21              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 16.8     | 430           | Total         |                   |                |                                                                      |

**Subcatchment PB-13B:**

Hydrograph





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**Summary for Subcatchment PB-14A:**

Runoff = 9.83 cfs @ 12.29 hrs, Volume= 0.736 af, Depth= 4.31"  
Routed to Reach PB-1C&PB-14B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

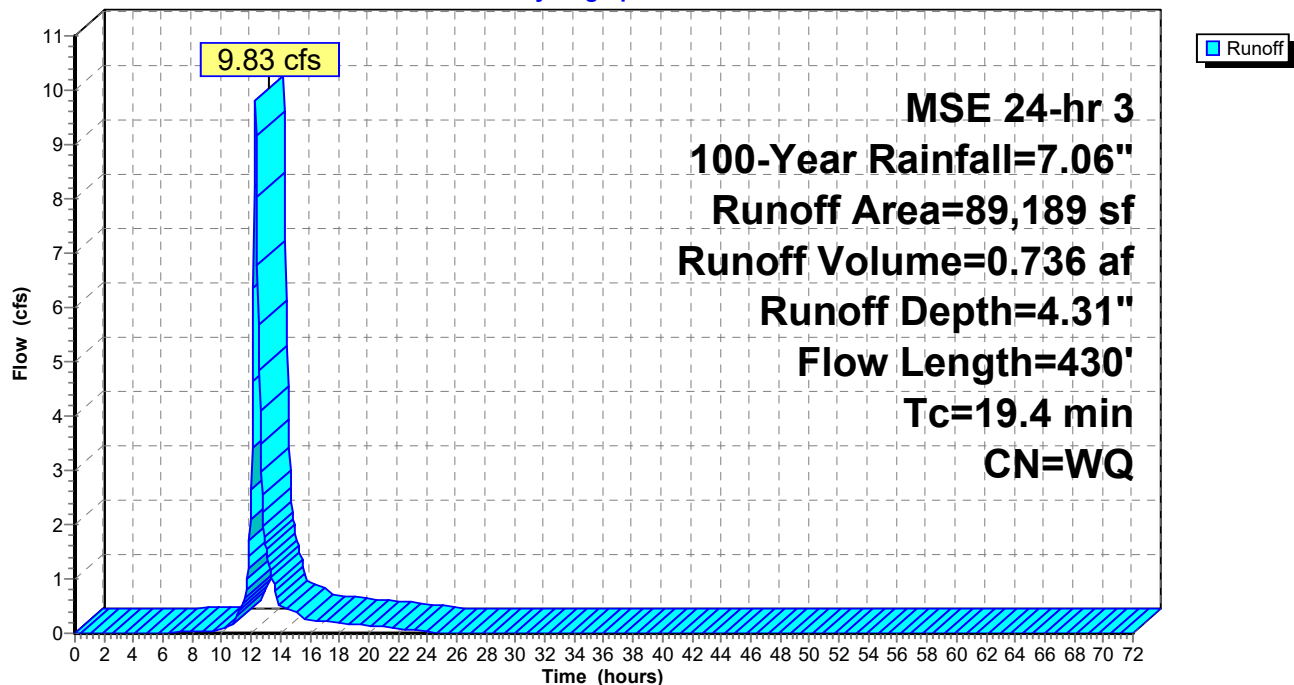
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 7,200     | 98 | Roofs, HSG A                  |
| 81,989    | 74 | >75% Grass cover, Good, HSG C |
| 89,189    |    | Weighted Average              |
| 81,989    |    | 91.93% Pervious Area          |
| 7,200     |    | 8.07% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 11.9     | 100           | 0.0143        | 0.14              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 7.5      | 330           | 0.0110        | 0.73              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 19.4     | 430           | Total         |                   |                |                                                                      |

**Subcatchment PB-14A:**

Hydrograph



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**Summary for Subcatchment PB-14B:**

Runoff = 11.33 cfs @ 12.55 hrs, Volume= 1.257 af, Depth= 4.31"  
Routed to Reach PB-1C&PB-14B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

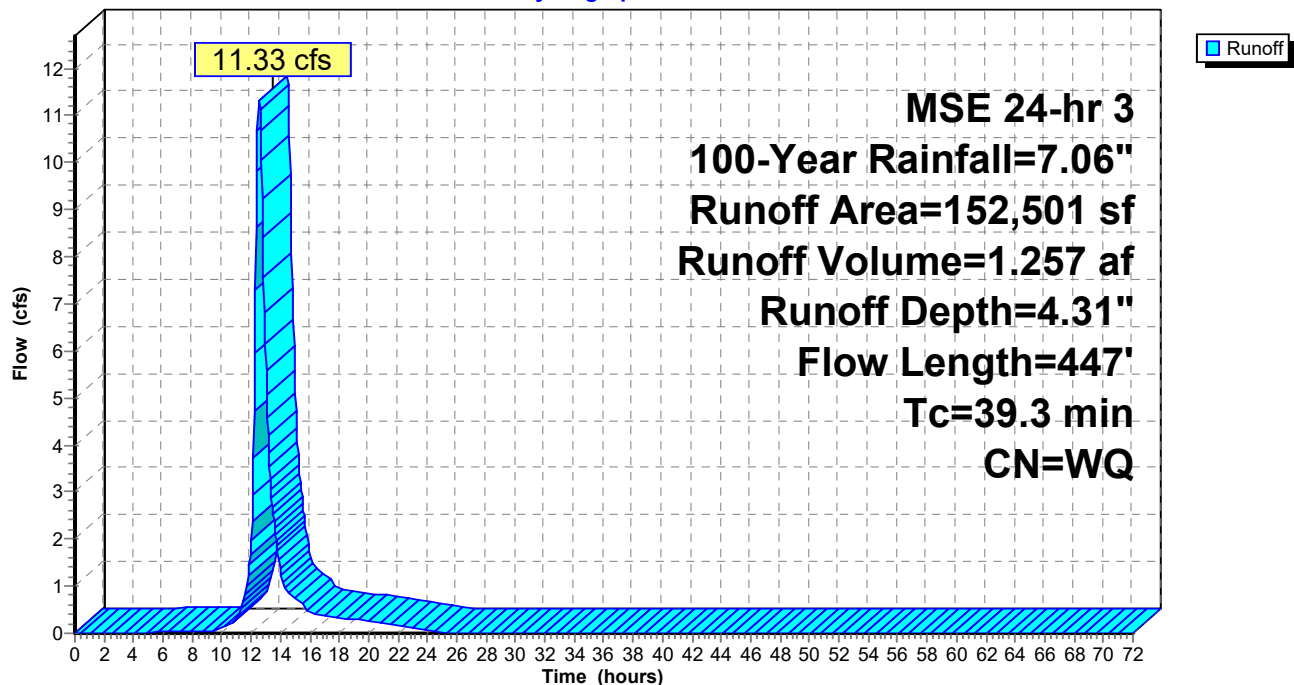
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 12,000    | 98 | Roofs, HSG A                  |
| 140,501   | 74 | >75% Grass cover, Good, HSG C |
| 152,501   |    | Weighted Average              |
| 140,501   |    | 92.13% Pervious Area          |
| 12,000    |    | 7.87% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 18.6     | 100           | 0.0047        | 0.09              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 20.7     | 347           | 0.0016        | 0.28              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 39.3     | 447           | Total         |                   |                |                                                                      |

**Subcatchment PB-14B:**

Hydrograph



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**Summary for Subcatchment PB-15A:**

Runoff = 3.06 cfs @ 12.23 hrs, Volume= 0.195 af, Depth= 2.75"  
Routed to Reach PSW-Q : Southwest Discharge

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

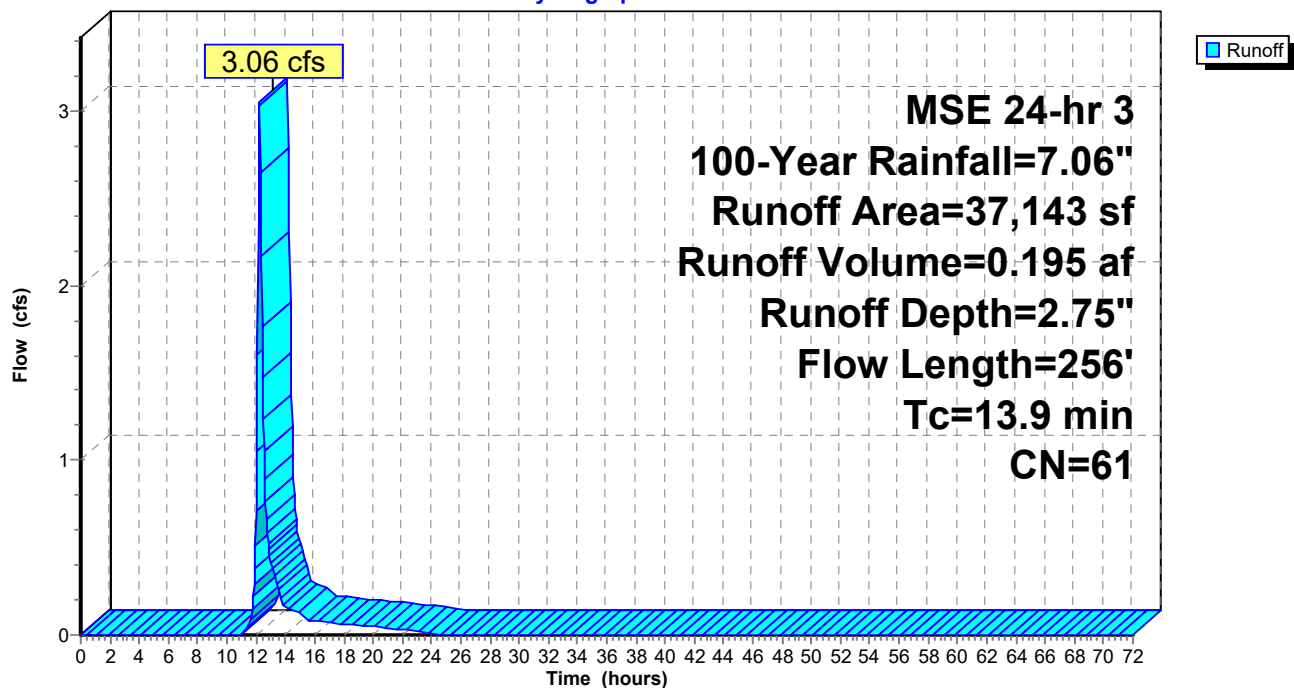
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 37,143    | 61 | >75% Grass cover, Good, HSG B |
| 37,143    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.9     | 100           | 0.0180        | 0.15              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 3.0      | 156           | 0.0154        | 0.87              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 13.9     | 256           | Total         |                   |                |                                                                      |

**Subcatchment PB-15A:**

Hydrograph



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**Summary for Subcatchment PB-15B:**

Runoff = 8.58 cfs @ 12.22 hrs, Volume= 0.538 af, Depth= 4.09"

Routed to Reach PSE-Q : SE Quarter (Private Ditch B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

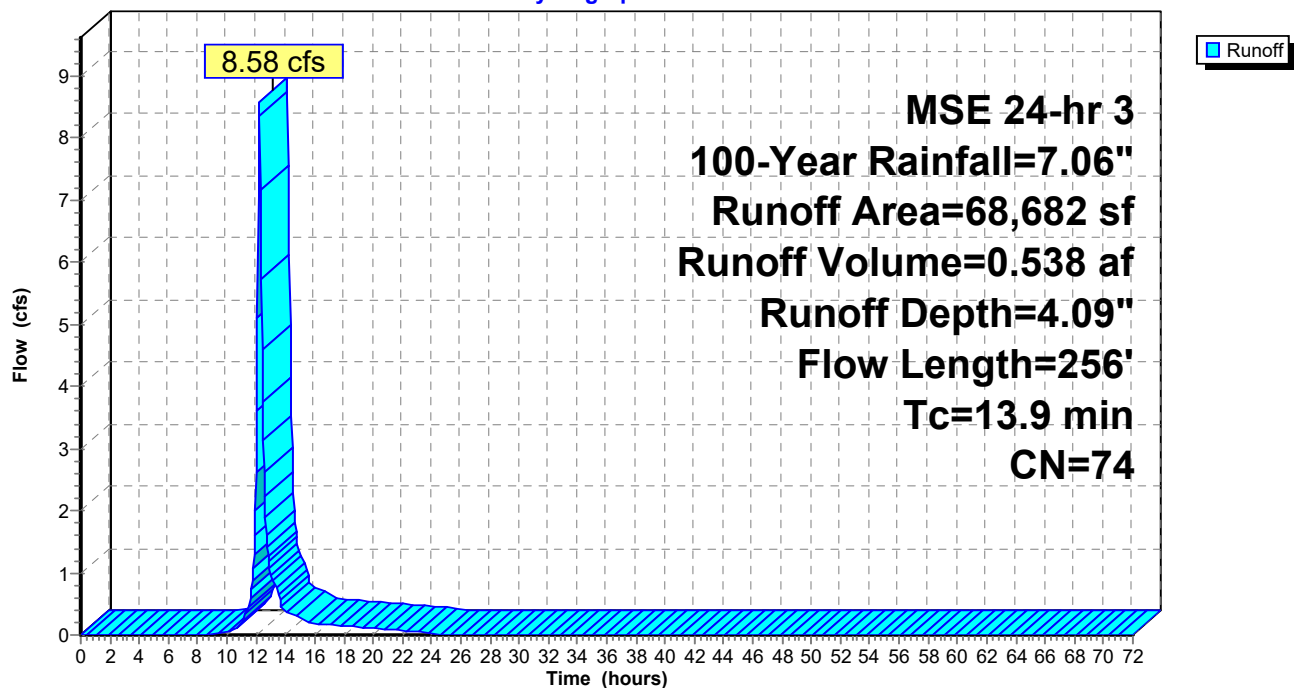
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 68,682    | 74 | >75% Grass cover, Good, HSG C |
| 68,682    |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.9     | 100           | 0.0180        | 0.15              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 3.0      | 156           | 0.0154        | 0.87              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 13.9     | 256           | Total         |                   |                |                                                                      |

**Subcatchment PB-15B:**

Hydrograph



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**Summary for Subcatchment PB-1A:**

Runoff = 34.26 cfs @ 12.28 hrs, Volume= 2.478 af, Depth= 2.84"  
Routed to Pond PB1A : Wetland 1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

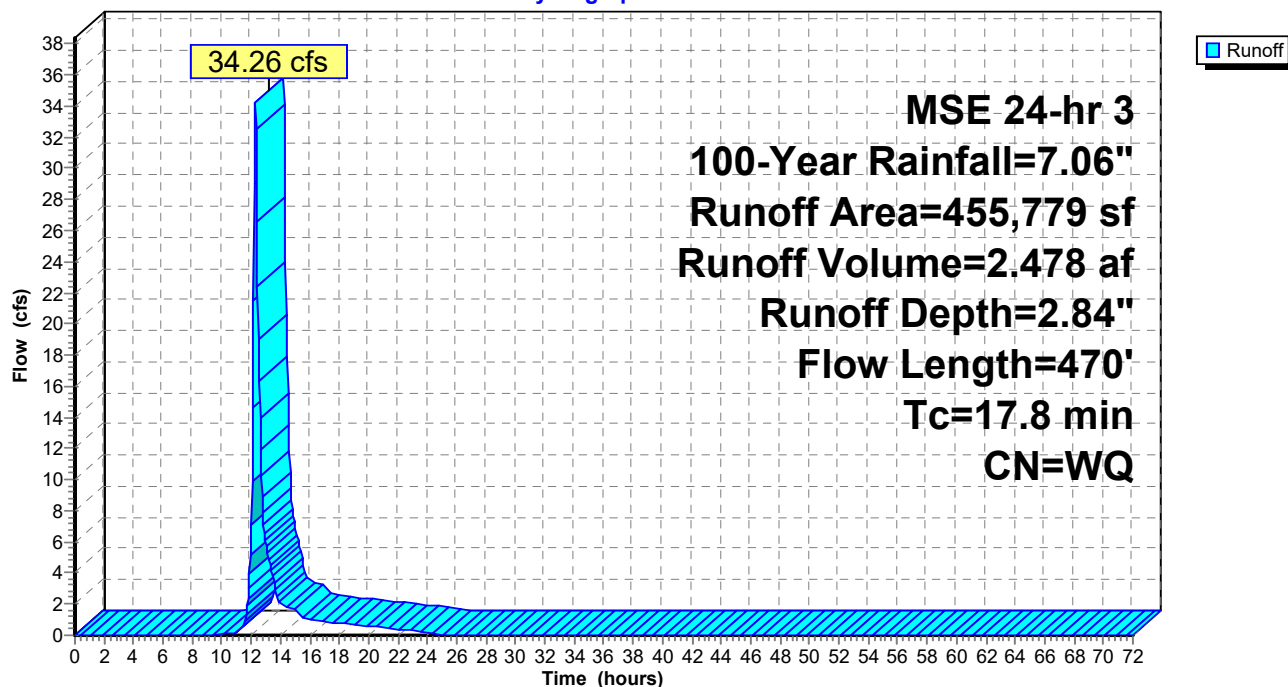
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 444,979   | 61 | >75% Grass cover, Good, HSG B |
| 10,800    | 98 | Roofs, HSG A                  |
| 455,779   |    | Weighted Average              |
| 444,979   |    | 97.63% Pervious Area          |
| 10,800    |    | 2.37% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.4     | 100           | 0.0200        | 0.16              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 7.4      | 370           | 0.0140        | 0.83              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 17.8     | 470           | Total         |                   |                |                                                                      |

**Subcatchment PB-1A:**

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**Summary for Subcatchment PB-1B:**

Runoff = 7.69 cfs @ 12.40 hrs, Volume= 0.707 af, Depth= 3.75"  
Routed to Pond PB1B : Wetland 1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

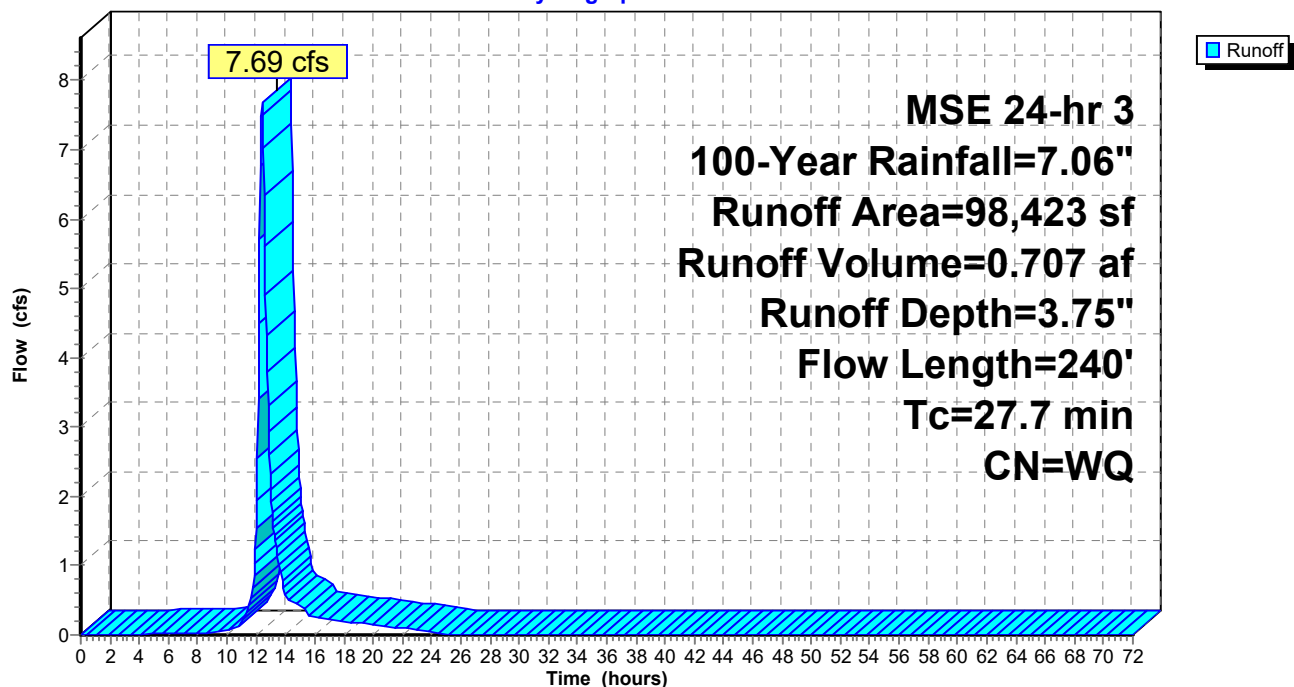
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 44,402    | 61 | >75% Grass cover, Good, HSG B |
| 44,402    | 74 | >75% Grass cover, Good, HSG C |
| 6,600     | 98 | Roofs, HSG A                  |
| * 3,019   | 98 | Driveway                      |
| 98,423    |    | Weighted Average              |
| 88,804    |    | 90.23% Pervious Area          |
| 9,619     |    | 9.77% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 18.5     | 118           | 0.0170        | 0.11              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 2.83"                |
| 9.2      | 122           | 0.0010        | 0.22              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 27.7     | 240           | Total         |                   |                |                                                                      |

**Subcatchment PB-1B:**

Hydrograph



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MSE 24-hr 3 100-Year Rainfall=7.06"

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**Summary for Subcatchment PB-1C:**

Runoff = 21.34 cfs @ 12.46 hrs, Volume= 2.101 af, Depth= 2.87"  
Routed to Pond PB1C : Wetland 1C

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

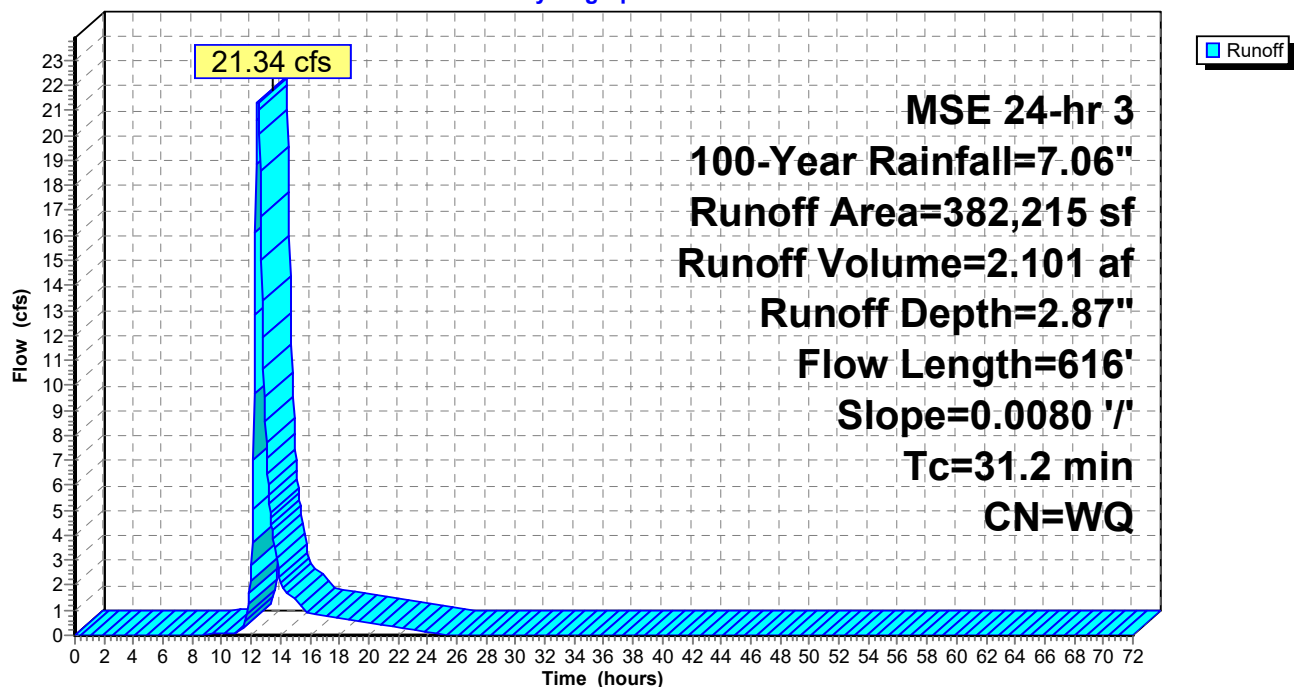
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 370,215   | 61 | >75% Grass cover, Good, HSG B |
| 12,000    | 98 | Roofs, HSG A                  |
| 382,215   |    | Weighted Average              |
| 370,215   |    | 96.86% Pervious Area          |
| 12,000    |    | 3.14% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 18.2     | 127           | 0.0080        | 0.12              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 13.0     | 489           | 0.0080        | 0.63              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 31.2     | 616           | Total         |                   |                |                                                                      |

**Subcatchment PB-1C:**

Hydrograph



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**Summary for Subcatchment PB-1D:**

Runoff = 10.86 cfs @ 12.37 hrs, Volume= 0.938 af, Depth= 3.03"  
Routed to Reach PW : West Boundary

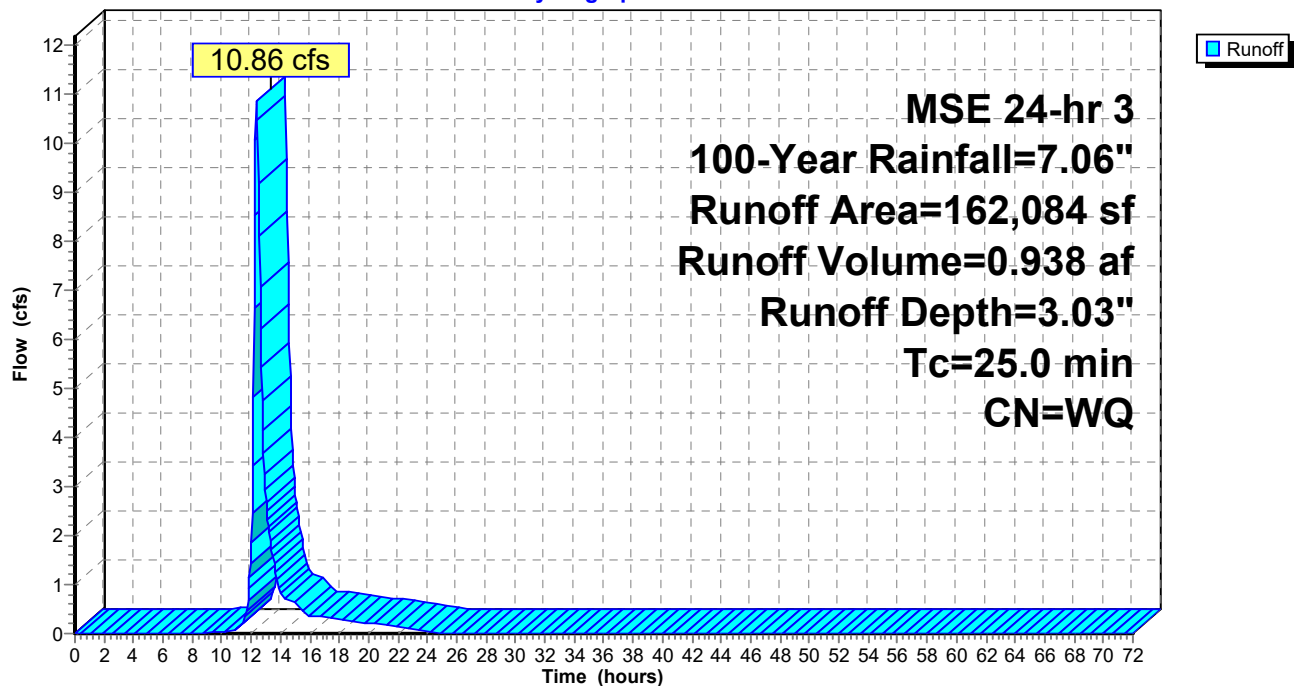
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 140,476   | 61 | >75% Grass cover, Good, HSG B |
| 15,608    | 74 | >75% Grass cover, Good, HSG C |
| 6,000     | 98 | Roofs, HSG A                  |
| 162,084   |    | Weighted Average              |
| 156,084   |    | 96.30% Pervious Area          |
| 6,000     |    | 3.70% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 25.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-1D:**

Hydrograph





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**Summary for Subcatchment PB-2A:**

Runoff = 4.82 cfs @ 12.18 hrs, Volume= 0.273 af, Depth= 4.40"  
Routed to Reach 2A&2B :

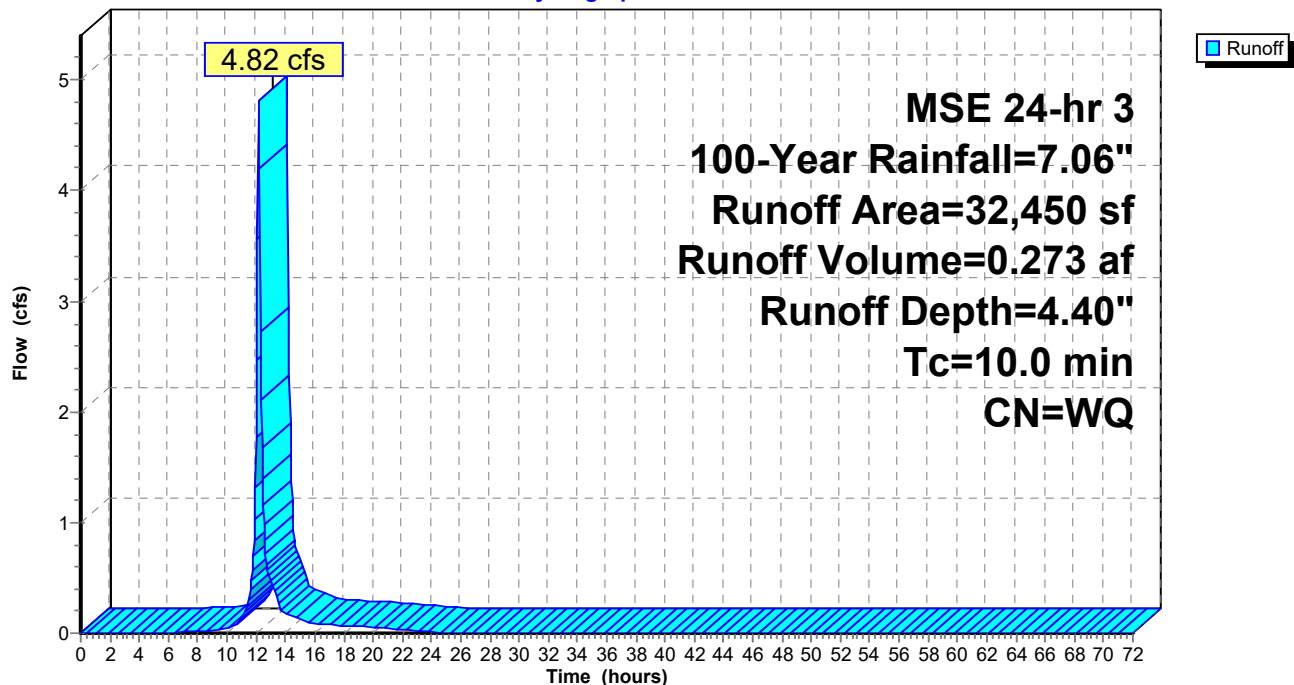
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 28,850    | 74 | >75% Grass cover, Good, HSG C |
| 3,600     | 98 | Paved parking, HSG A          |
| 32,450    |    | Weighted Average              |
| 28,850    |    | 88.91% Pervious Area          |
| 3,600     |    | 11.09% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 10.0        |                  |                  |                      |                   | Direct Entry, |

**Subcatchment PB-2A:**

Hydrograph



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**Summary for Subcatchment PB-2B:**

Runoff = 3.12 cfs @ 12.18 hrs, Volume= 0.173 af, Depth= 4.16"  
Routed to Reach 2A&2B :

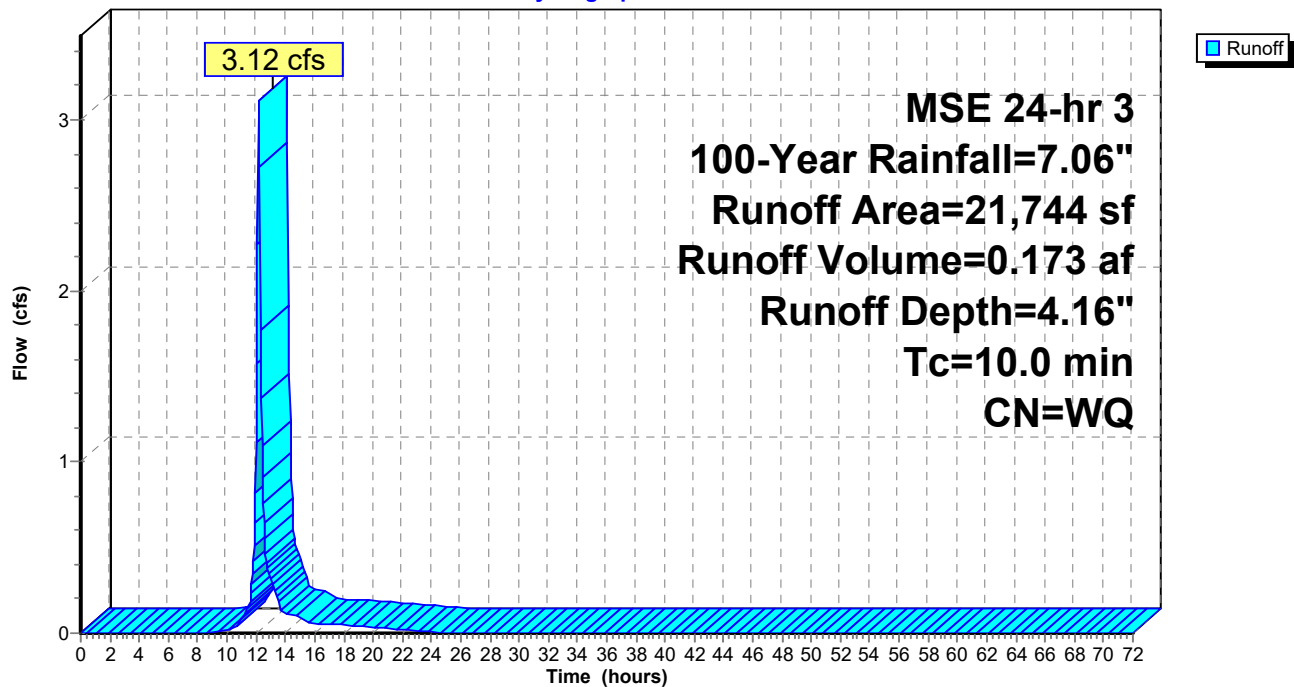
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 21,244    | 74 | >75% Grass cover, Good, HSG C |
| 500       | 98 | Paved parking, HSG A          |
| 21,744    |    | Weighted Average              |
| 21,244    |    | 97.70% Pervious Area          |
| 500       |    | 2.30% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-2B:**

Hydrograph



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**Summary for Subcatchment PB-3A:**

Runoff = 106.09 cfs @ 12.04 hrs, Volume= 5.037 af, Depth= 6.38"  
Routed to Pond P-3A :

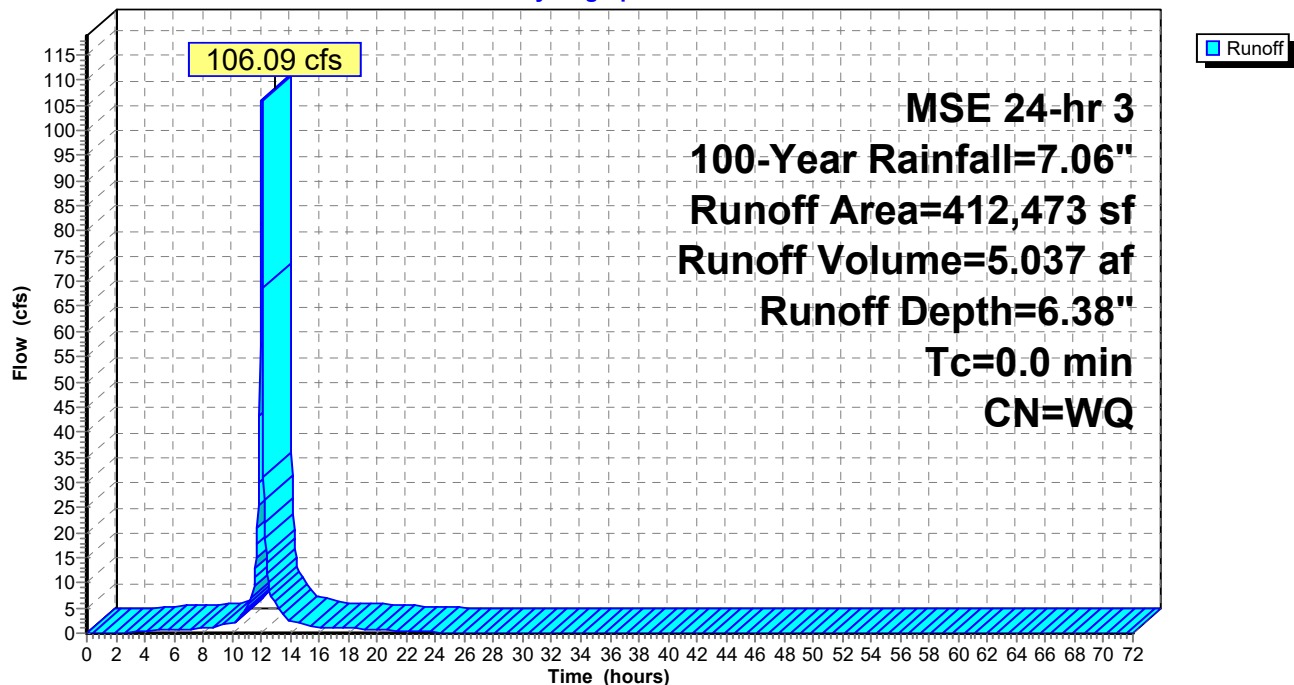
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 346,189   | 98 | Water Surface, HSG A          |
| 66,284    | 74 | >75% Grass cover, Good, HSG C |
| 412,473   |    | Weighted Average              |
| 66,284    |    | 16.07% Pervious Area          |
| 346,189   |    | 83.93% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 0.0      |               |               |                   |                | Direct Entry, |

**Subcatchment PB-3A:**

Hydrograph



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### Summary for Subcatchment PB-3B:

Runoff = 44.86 cfs @ 12.04 hrs, Volume= 2.173 af, Depth= 6.82"  
Routed to Pond P-3B :

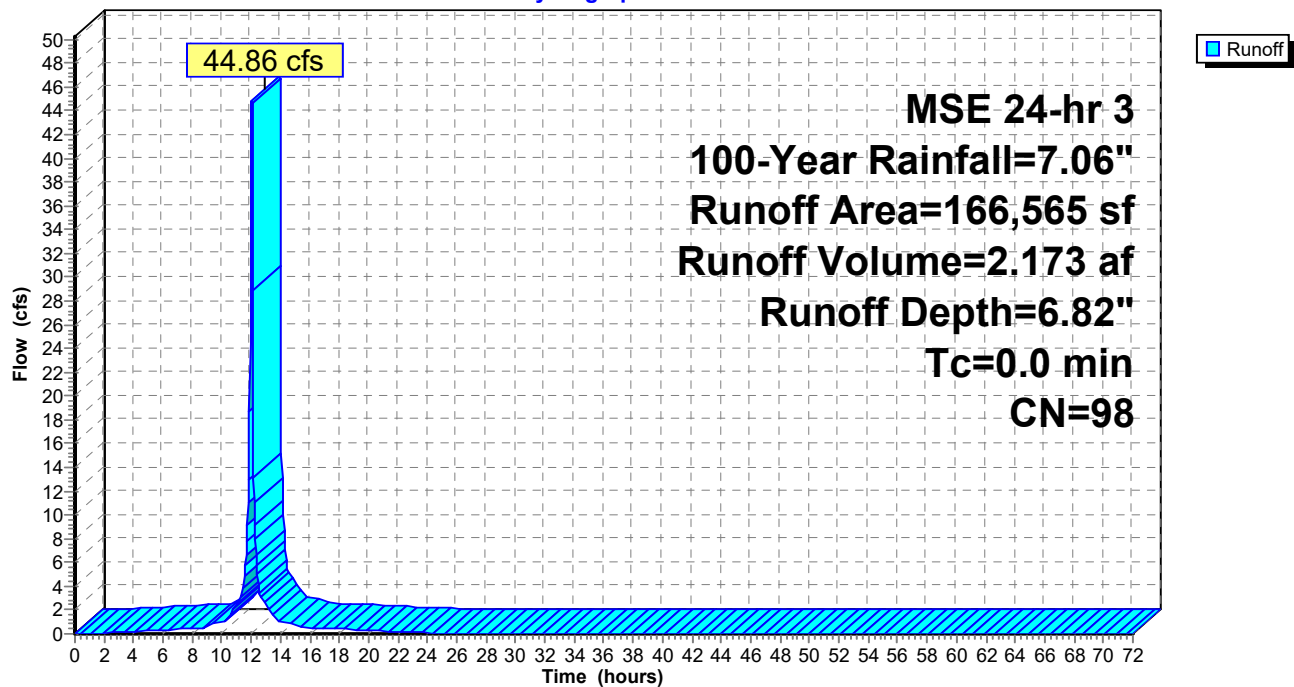
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description             |
|-----------|----|-------------------------|
| 166,565   | 98 | Water Surface, HSG A    |
| 166,565   |    | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 0.0      |               |               |                   |                | Direct Entry, |

### Subcatchment PB-3B:

Hydrograph



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**Summary for Subcatchment PB-4A:**

Runoff = 15.09 cfs @ 12.18 hrs, Volume= 0.846 af, Depth= 4.28"  
Routed to Pond P-3A :

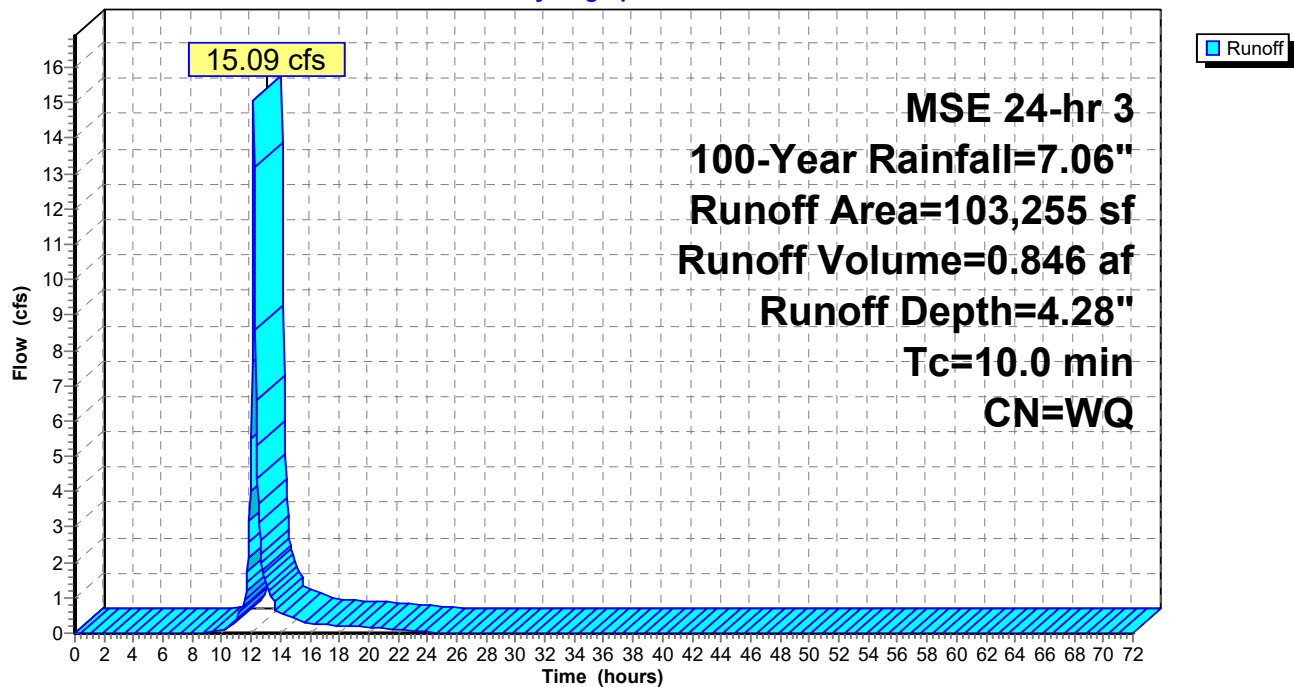
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 96,055    | 74 | >75% Grass cover, Good, HSG C |
| 7,200     | 98 | Roofs, HSG A                  |
| 103,255   |    | Weighted Average              |
| 96,055    |    | 93.03% Pervious Area          |
| 7,200     |    | 6.97% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-4A:**

Hydrograph



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**Summary for Subcatchment PB-4B:**

Runoff = 9.14 cfs @ 12.18 hrs, Volume= 0.509 af, Depth= 4.20"  
Routed to Pond P-3B :

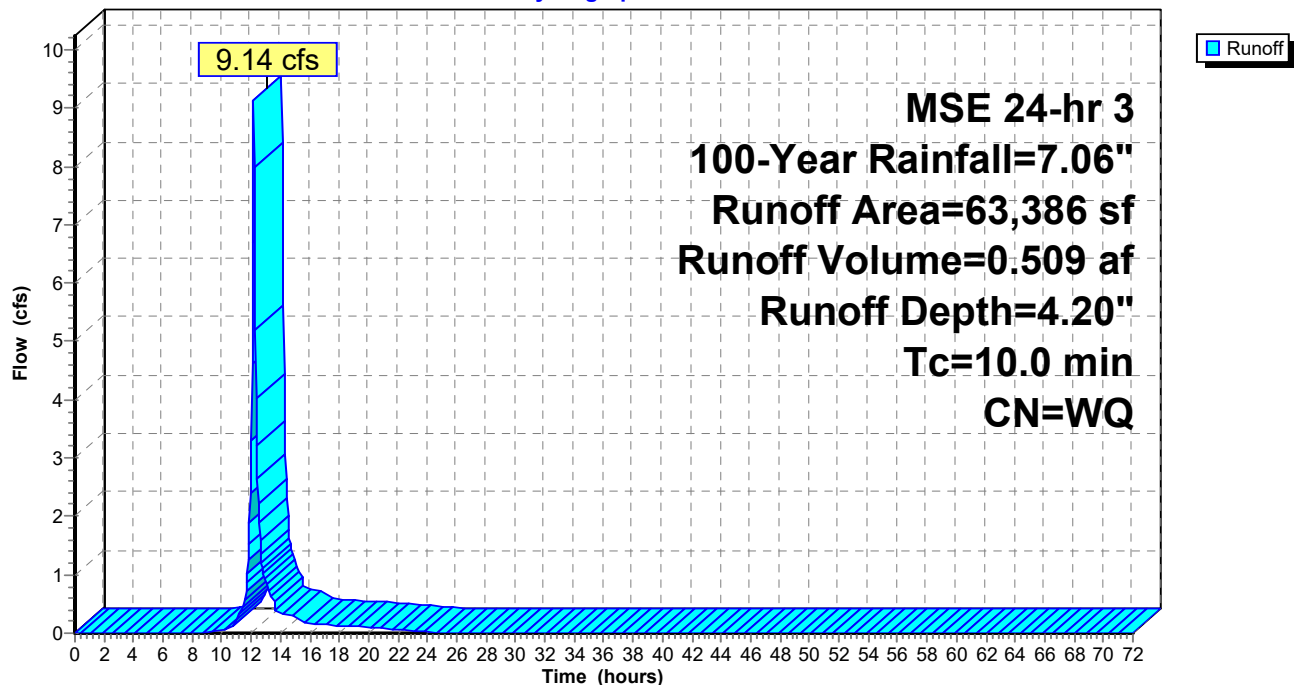
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 60,986    | 74 | >75% Grass cover, Good, HSG C |
| 2,400     | 98 | Roofs, HSG A                  |
| 63,386    |    | Weighted Average              |
| 60,986    |    | 96.21% Pervious Area          |
| 2,400     |    | 3.79% Impervious Area         |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 10.0        |                  |                  |                      |                   | Direct Entry, |

**Subcatchment PB-4B:**

Hydrograph



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**Summary for Subcatchment PB-4C:**

Runoff = 5.46 cfs @ 12.25 hrs, Volume= 0.377 af, Depth= 3.06"  
Routed to Pond P-3B :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

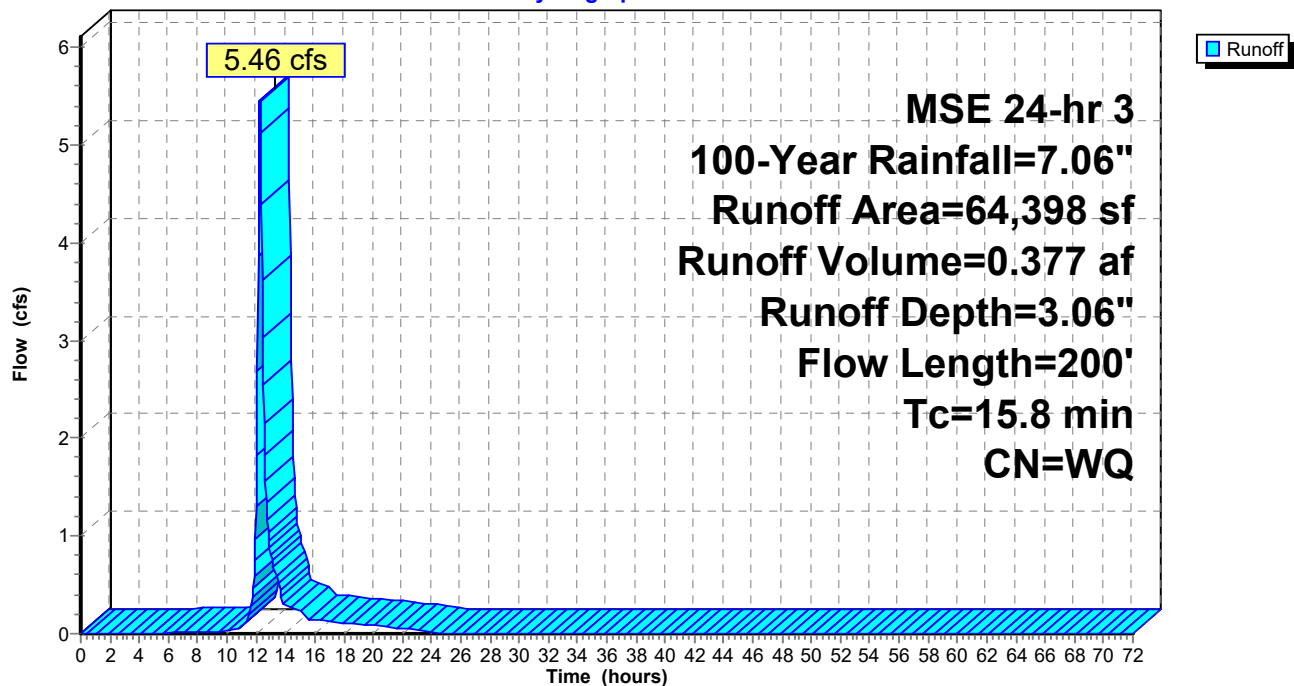
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 59,448    | 61 | >75% Grass cover, Good, HSG B |
| 4,554     | 98 | Roofs, HSG A                  |
| * 396     | 98 | Driveways                     |
| 64,398    |    | Weighted Average              |
| 59,448    |    | 92.31% Pervious Area          |
| 4,950     |    | 7.69% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 14.5     | 100           | 0.0088        | 0.12              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.3      | 100           | 0.0330        | 1.27              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 15.8     | 200           | Total         |                   |                |                                                                      |

**Subcatchment PB-4C:**

Hydrograph



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MSE 24-hr 3 100-Year Rainfall=7.06"

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**Summary for Subcatchment PB-4D:**

Runoff = 5.46 cfs @ 12.25 hrs, Volume= 0.370 af, Depth= 2.91"  
Routed to Pond P-8 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

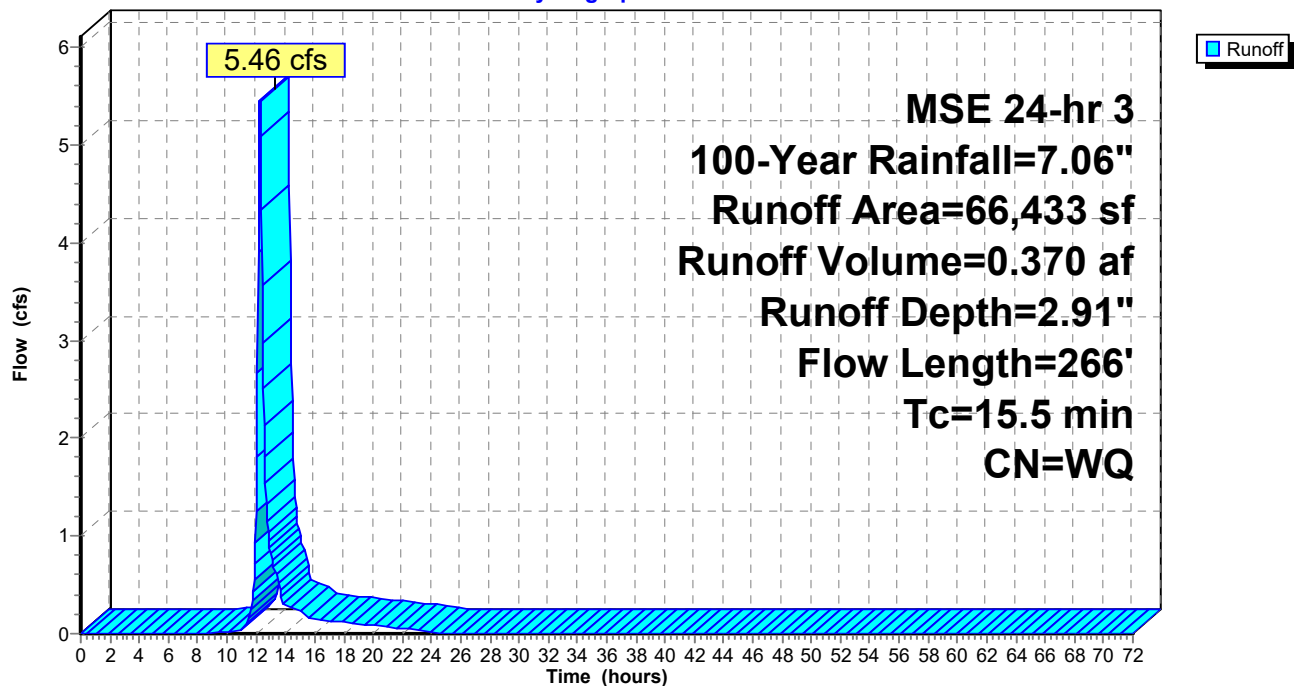
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 63,695    | 61 | >75% Grass cover, Good, HSG B |
| 485       | 98 | Roofs, HSG A                  |
| * 2,253   | 98 | Driveways                     |
| 66,433    |    | Weighted Average              |
| 63,695    |    | 95.88% Pervious Area          |
| 2,738     |    | 4.12% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 10.6     | 100           | 0.0190        | 0.16              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 4.9      | 166           | 0.0066        | 0.57              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 15.5     | 266           | Total         |                   |                |                                                                      |

**Subcatchment PB-4D:**

Hydrograph





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**Summary for Subcatchment PB-5A:**

Runoff = 44.21 cfs @ 12.18 hrs, Volume= 2.483 af, Depth= 4.30"  
Routed to Pond P-3A :

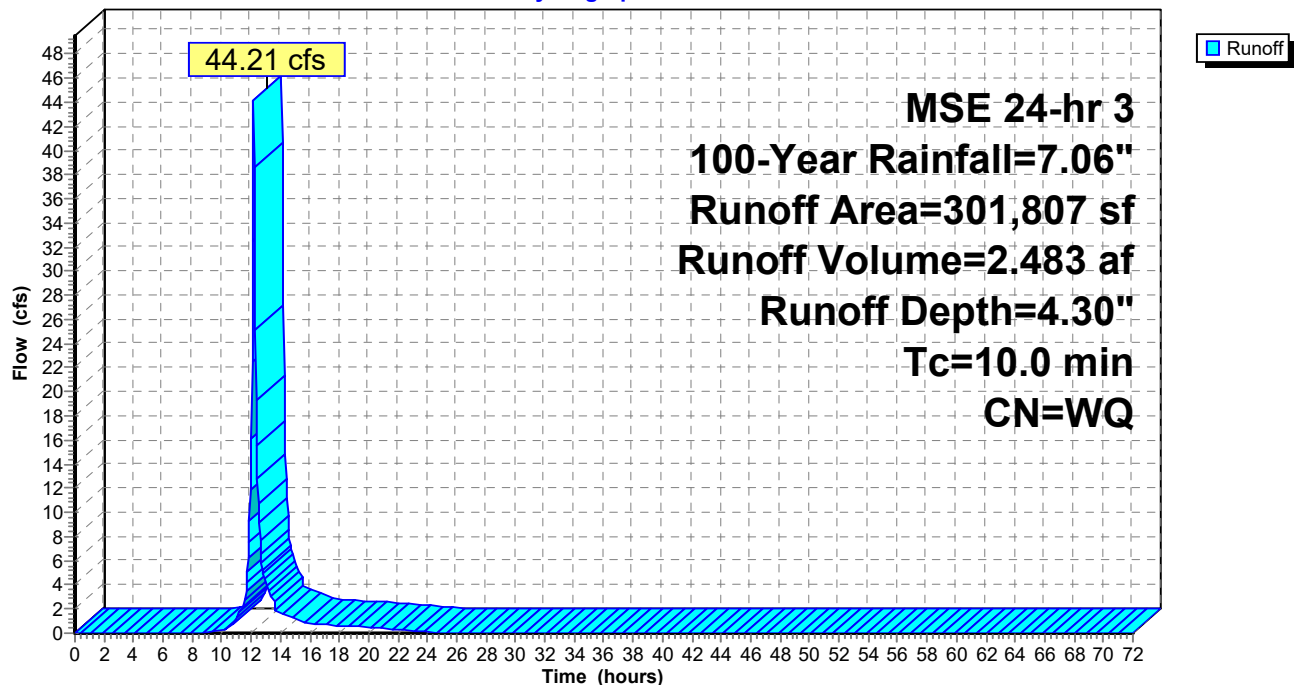
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 279,007   | 74 | >75% Grass cover, Good, HSG C |
| 22,800    | 98 | Roofs, HSG A                  |
| 301,807   |    | Weighted Average              |
| 279,007   |    | 92.45% Pervious Area          |
| 22,800    |    | 7.55% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-5A:**

Hydrograph



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**Summary for Subcatchment PB-5B:**

Runoff = 20.60 cfs @ 12.18 hrs, Volume= 1.155 af, Depth= 4.28"  
Routed to Pond P-3B :

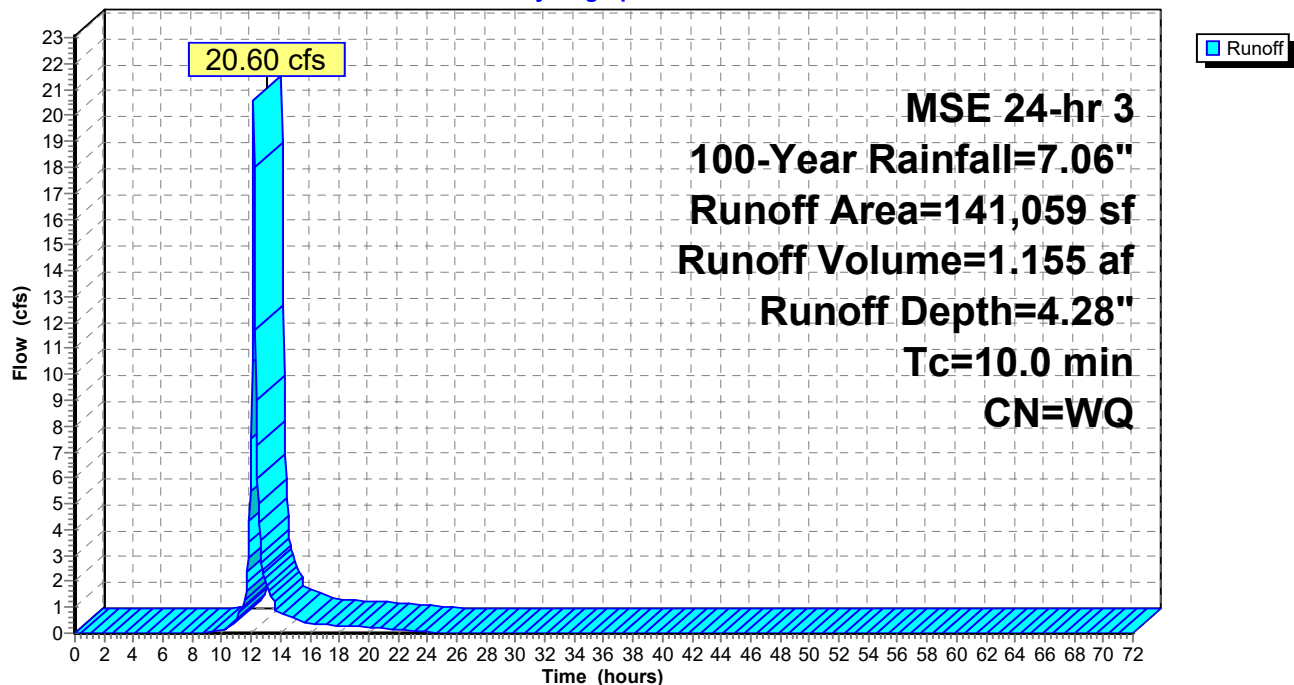
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 131,459   | 74 | >75% Grass cover, Good, HSG C |
| 9,600     | 98 | Roofs, HSG A                  |
| 141,059   |    | Weighted Average              |
| 131,459   |    | 93.19% Pervious Area          |
| 9,600     |    | 6.81% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-5B:**

Hydrograph



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**Summary for Subcatchment PB-6A:**

Runoff = 8.06 cfs @ 12.23 hrs, Volume= 0.577 af, Depth= 5.68"  
Routed to Pond P-6 :

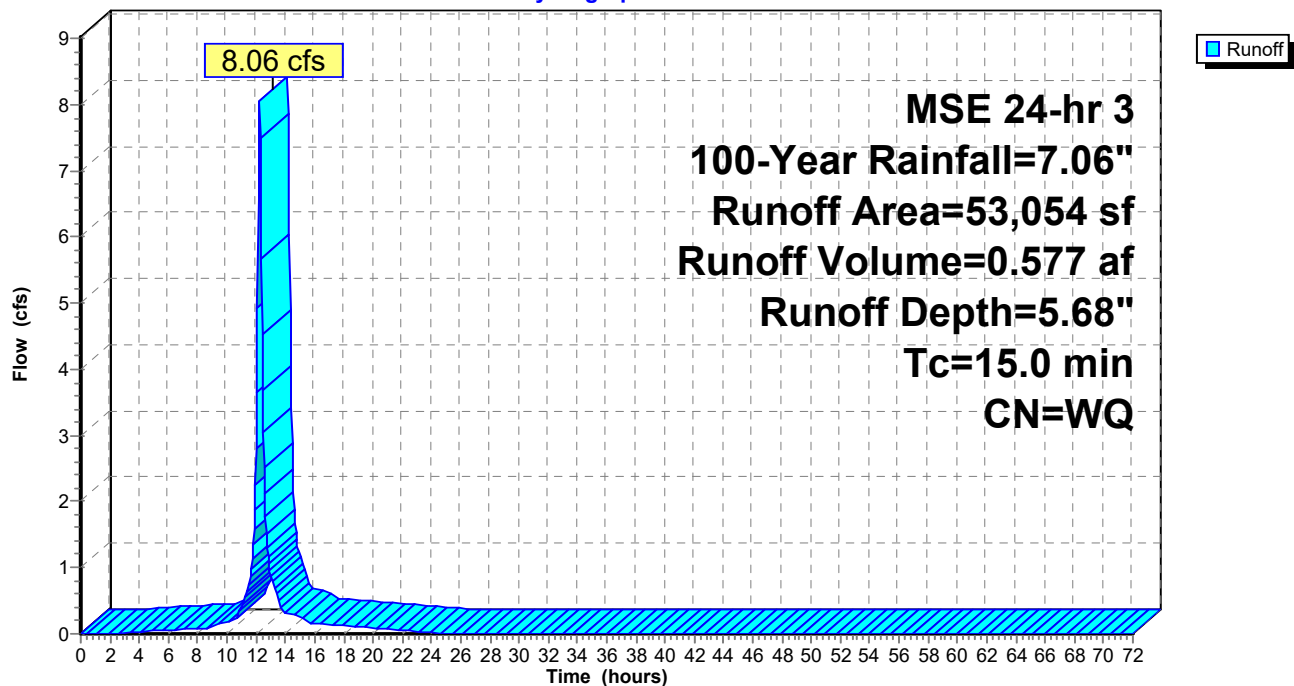
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 22,107    | 74 | >75% Grass cover, Good, HSG C |
| 4,800     | 98 | Roofs, HSG A                  |
| * 1,707   | 98 | Driveway                      |
| 24,440    | 98 | Water Surface, HSG A          |
| 53,054    |    | Weighted Average              |
| 22,107    |    | 41.67% Pervious Area          |
| 30,947    |    | 58.33% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 15.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-6A:**

Hydrograph



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**Summary for Subcatchment PB-6B:**

Runoff = 11.86 cfs @ 12.86 hrs, Volume= 1.785 af, Depth= 2.75"  
Routed to Pond PB6 : Wetland 6

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

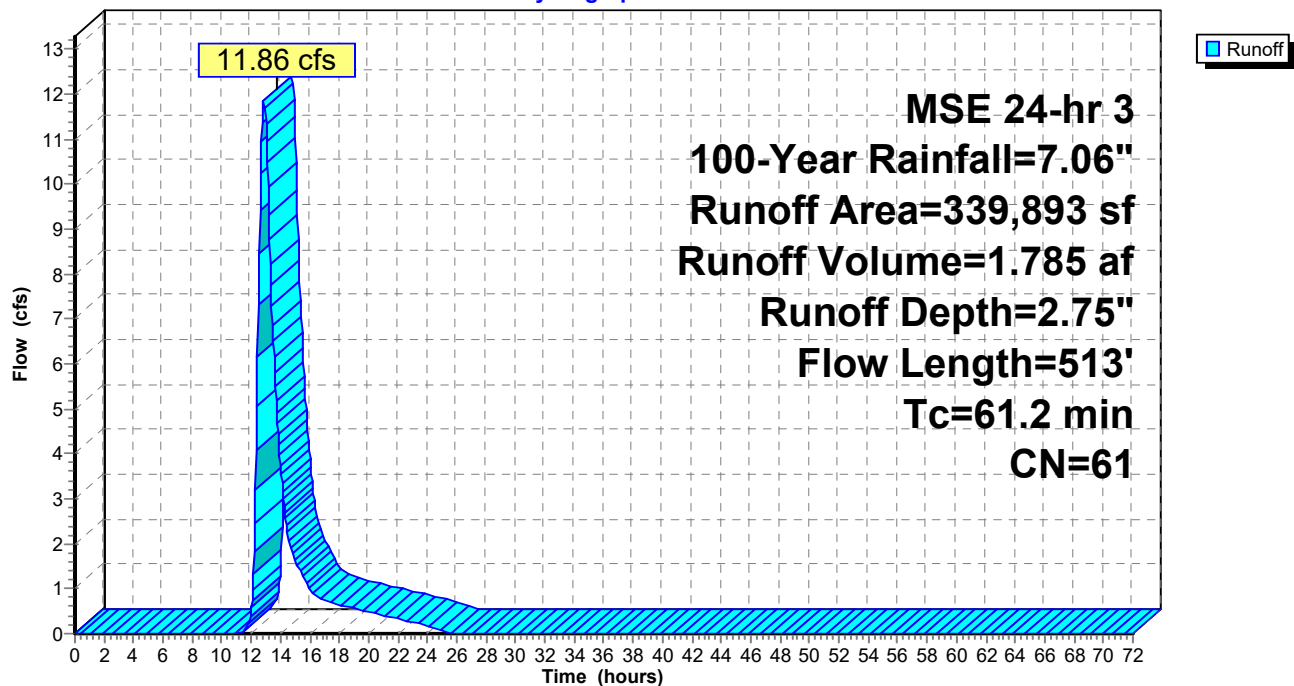
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 339,893   | 61 | >75% Grass cover, Good, HSG B |
| 339,893   |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 55.9     | 300           | 0.0027        | 0.09              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 2.1      | 106           | 0.0140        | 0.83              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 3.2      | 107           | 0.0063        | 0.56              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 61.2     | 513           | Total         |                   |                |                                                                      |

**Subcatchment PB-6B:**

Hydrograph



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**Summary for Subcatchment PB-7A:**

Runoff = 6.85 cfs @ 12.31 hrs, Volume= 0.530 af, Depth= 2.95"  
Routed to Pond PB7A : Wetland 7A

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

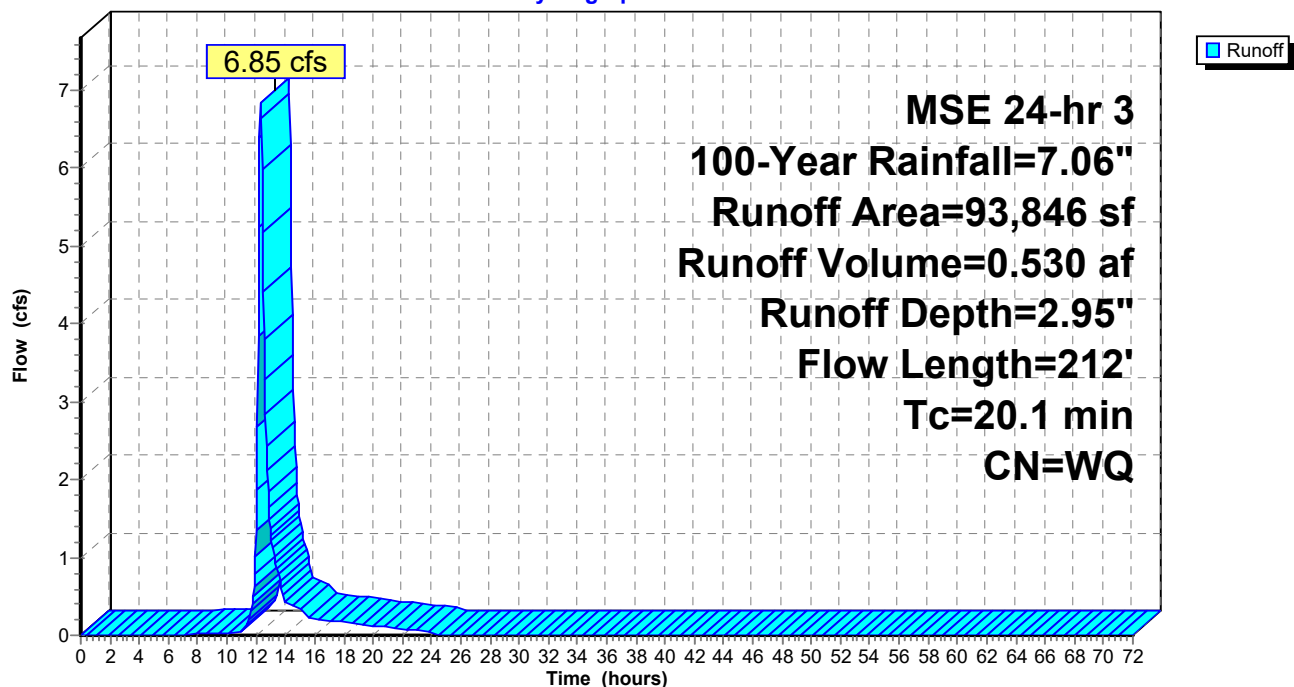
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 89,046    | 61 | >75% Grass cover, Good, HSG B |
| 4,800     | 98 | Roofs, HSG A                  |
| 93,846    |    | Weighted Average              |
| 89,046    |    | 94.89% Pervious Area          |
| 4,800     |    | 5.11% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 18.8     | 100           | 0.0046        | 0.09              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 1.3      | 112           | 0.0425        | 1.44              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 20.1     | 212           | Total         |                   |                |                                                                      |

**Subcatchment PB-7A:**

Hydrograph



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MSE 24-hr 3 100-Year Rainfall=7.06"

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**Summary for Subcatchment PB-7B:**

Runoff = 11.30 cfs @ 12.18 hrs, Volume= 0.637 af, Depth= 2.97"  
Routed to Pond PB7B : Wetland 7B

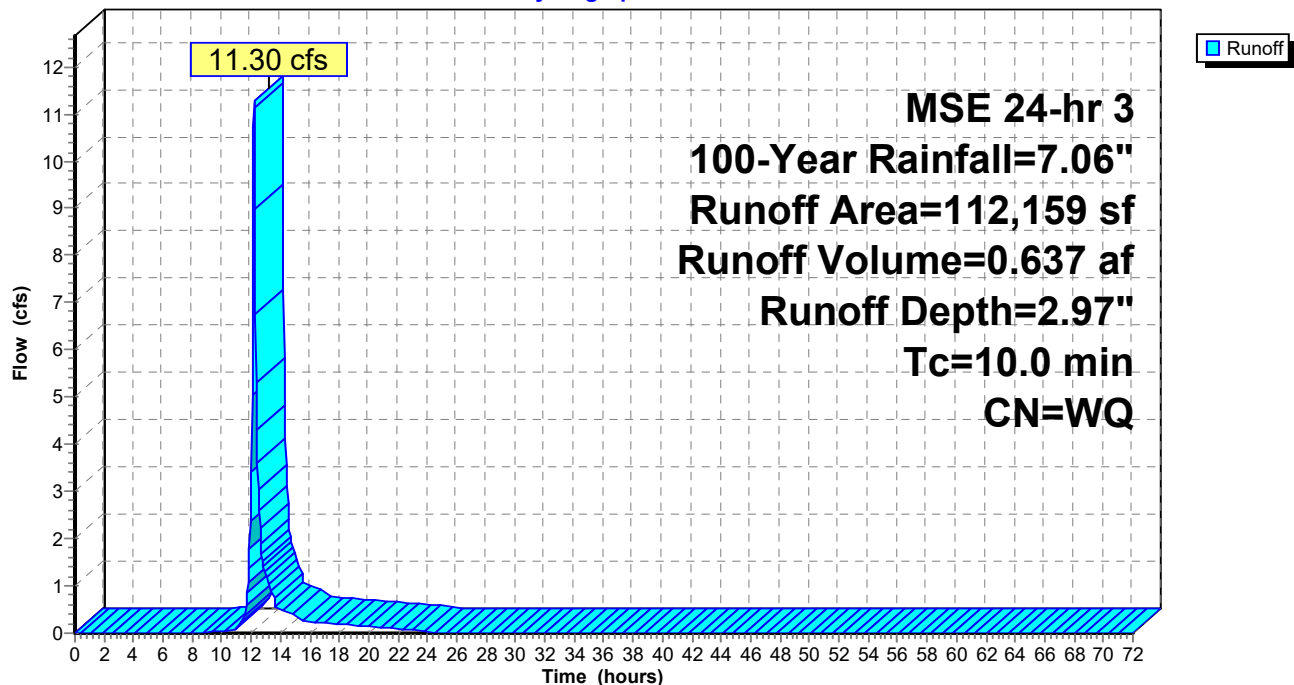
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 105,949   | 61 | >75% Grass cover, Good, HSG B |
| * 6,210   | 98 | Driveways                     |
| 112,159   |    | Weighted Average              |
| 105,949   |    | 94.46% Pervious Area          |
| 6,210     |    | 5.54% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment PB-7B:**

Hydrograph



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**MSE 24-hr 3 100-Year Rainfall=7.06"**

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**Summary for Subcatchment PB-7C:**

Runoff = 2.26 cfs @ 12.12 hrs, Volume= 0.103 af, Depth= 2.75"  
Routed to Pond PB7C : Wetland 7C

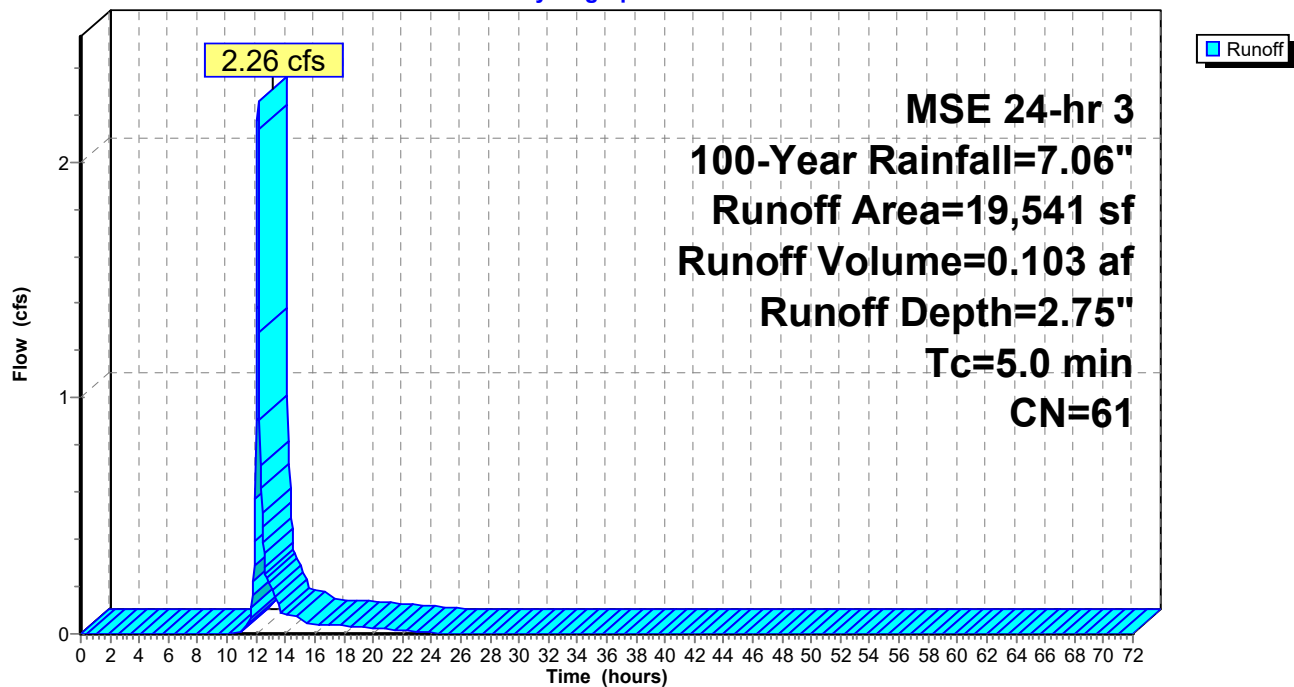
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 19,541    | 61 | >75% Grass cover, Good, HSG B |
| 19,541    |    | 100.00% Pervious Area         |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 5.0         |                  |                  |                      |                   | Direct Entry, |

**Subcatchment PB-7C:**

Hydrograph



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**Summary for Subcatchment PB-7D:**

Runoff = 6.83 cfs @ 12.18 hrs, Volume= 0.386 af, Depth= 4.38"  
Routed to Reach P7B&D :

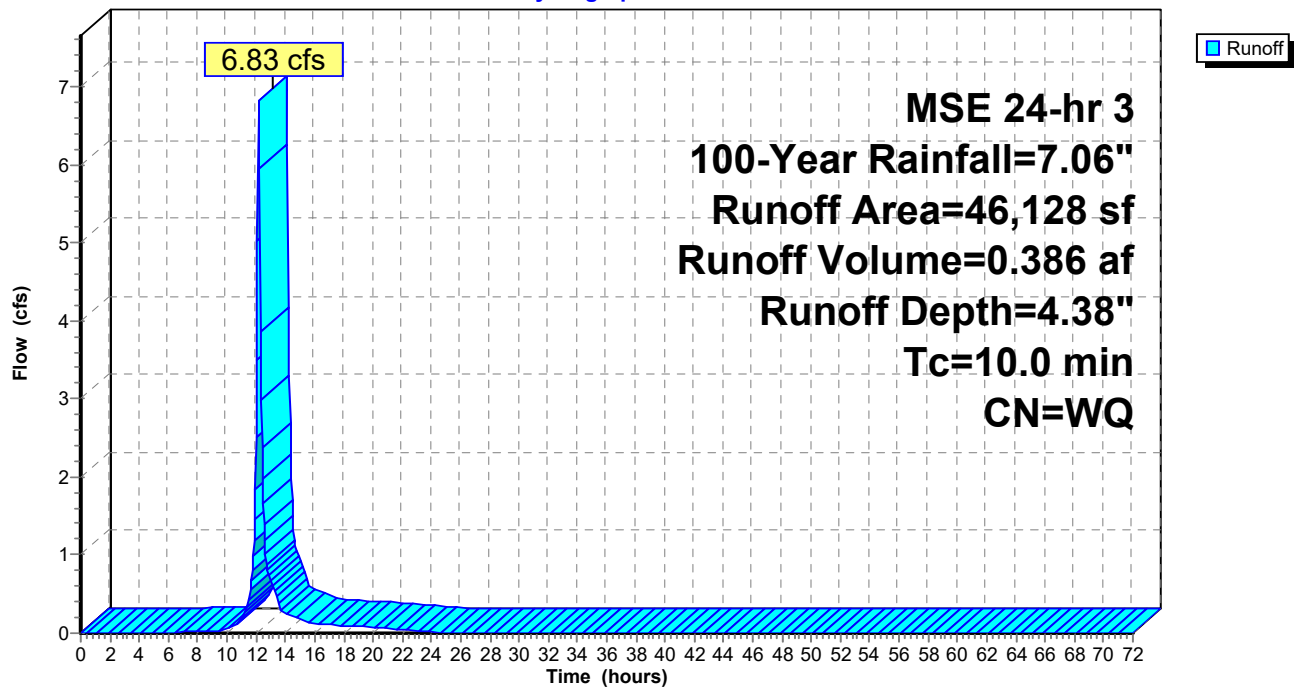
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 4,800     | 98 | Roofs, HSG A                  |
| 41,328    | 74 | >75% Grass cover, Good, HSG C |
| 46,128    |    | Weighted Average              |
| 41,328    |    | 89.59% Pervious Area          |
| 4,800     |    | 10.41% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---------------|
| 10.0        |                  |                  |                      |                   | Direct Entry, |

**Subcatchment PB-7D:**

Hydrograph





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MSE 24-hr 3 100-Year Rainfall=7.06"

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**Summary for Subcatchment PB-8:**

Runoff = 46.14 cfs @ 12.25 hrs, Volume= 3.278 af, Depth= 4.89"  
Routed to Pond P-8 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

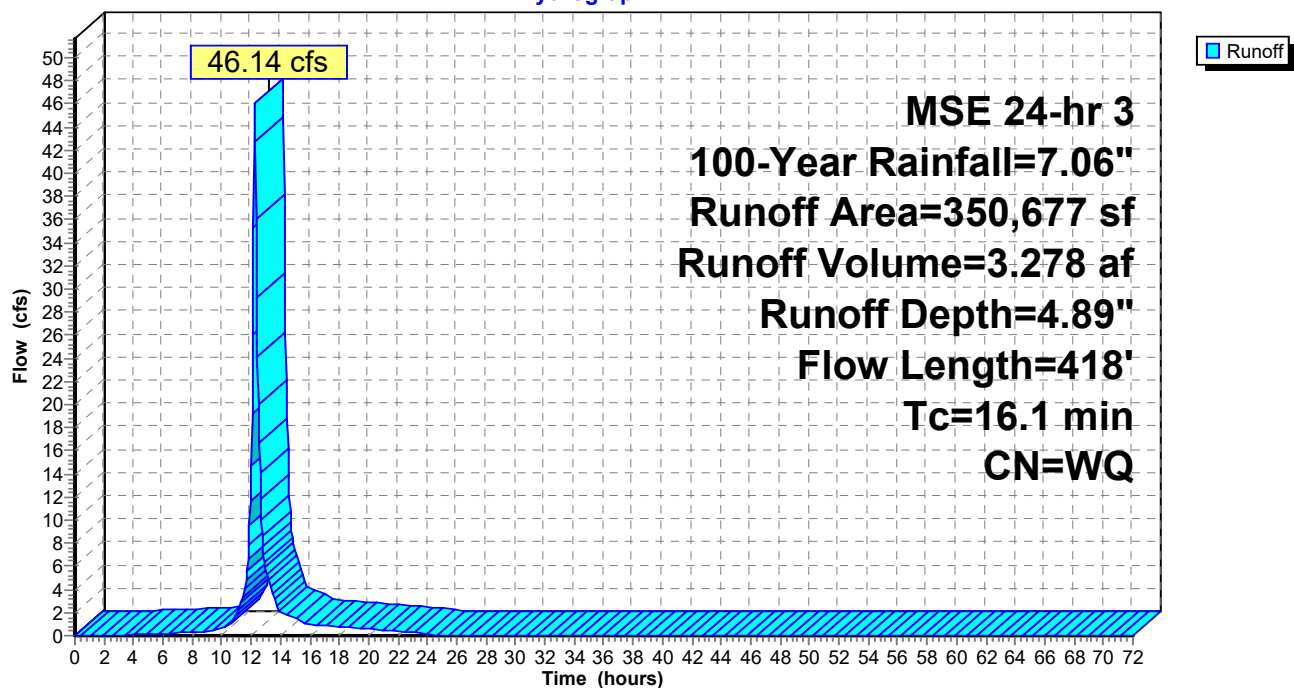
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 248,853   | 74 | >75% Grass cover, Good, HSG C |
| 10,800    | 98 | Roofs, HSG A                  |
| 91,024    | 98 | Water Surface, HSG A          |
| 350,677   |    | Weighted Average              |
| 248,853   |    | 70.96% Pervious Area          |
| 101,824   |    | 29.04% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 8.7      | 100           | 0.0313        | 0.19              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 7.4      | 318           | 0.0104        | 0.71              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 16.1     | 418           | Total         |                   |                |                                                                      |

**Subcatchment PB-8:**

Hydrograph



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MSE 24-hr 3 100-Year Rainfall=7.06"

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**Summary for Subcatchment PB-9:**

Runoff = 8.26 cfs @ 12.42 hrs, Volume= 0.773 af, Depth= 4.30"  
Routed to Pond P-3A :

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

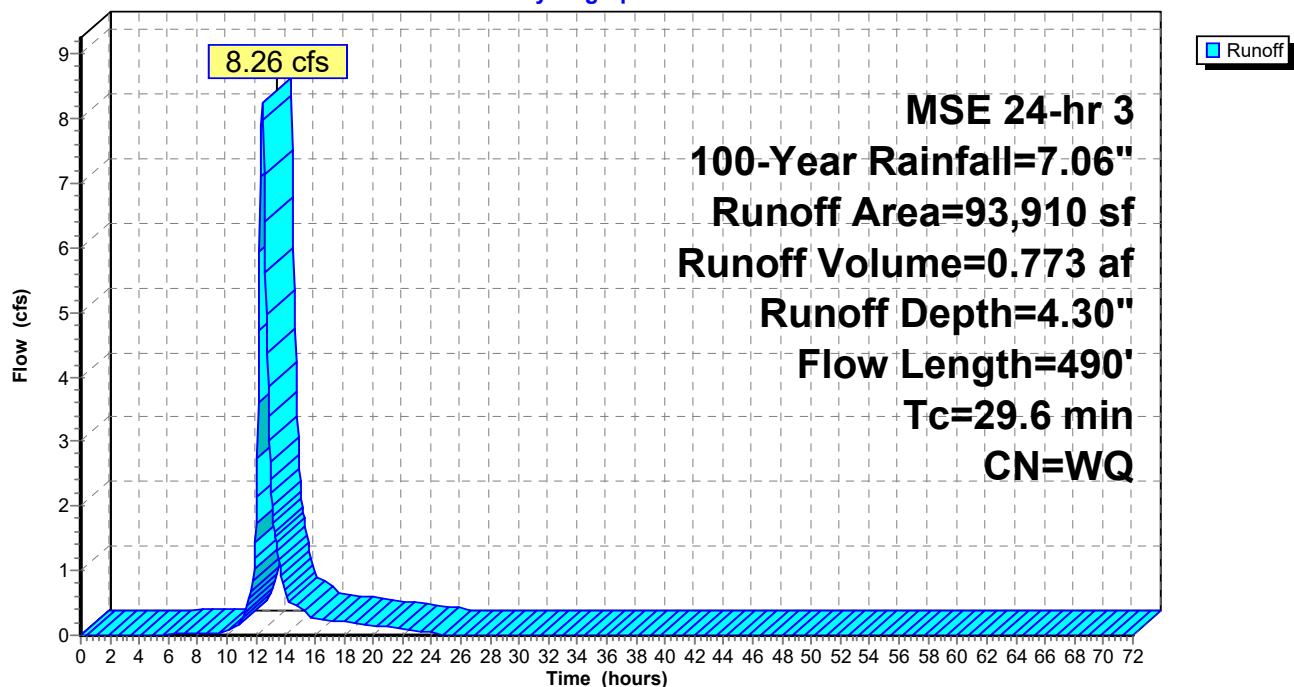
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 7,200     | 98 | Roofs, HSG A                  |
| 86,710    | 74 | >75% Grass cover, Good, HSG C |
| 93,910    |    | Weighted Average              |
| 86,710    |    | 92.33% Pervious Area          |
| 7,200     |    | 7.67% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 13.9     | 100           | 0.0098        | 0.12              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 2.83"                |
| 15.7     | 390           | 0.0035        | 0.41              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 29.6     | 490           | Total         |                   |                |                                                                      |

**Subcatchment PB-9:**

Hydrograph



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MSE 24-hr 3 100-Year Rainfall=7.06"

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**Summary for Subcatchment R-1:**

Runoff = 11.25 cfs @ 12.11 hrs, Volume= 0.566 af, Depth= 5.37"

Routed to Reach POST : Overall Post-Development Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

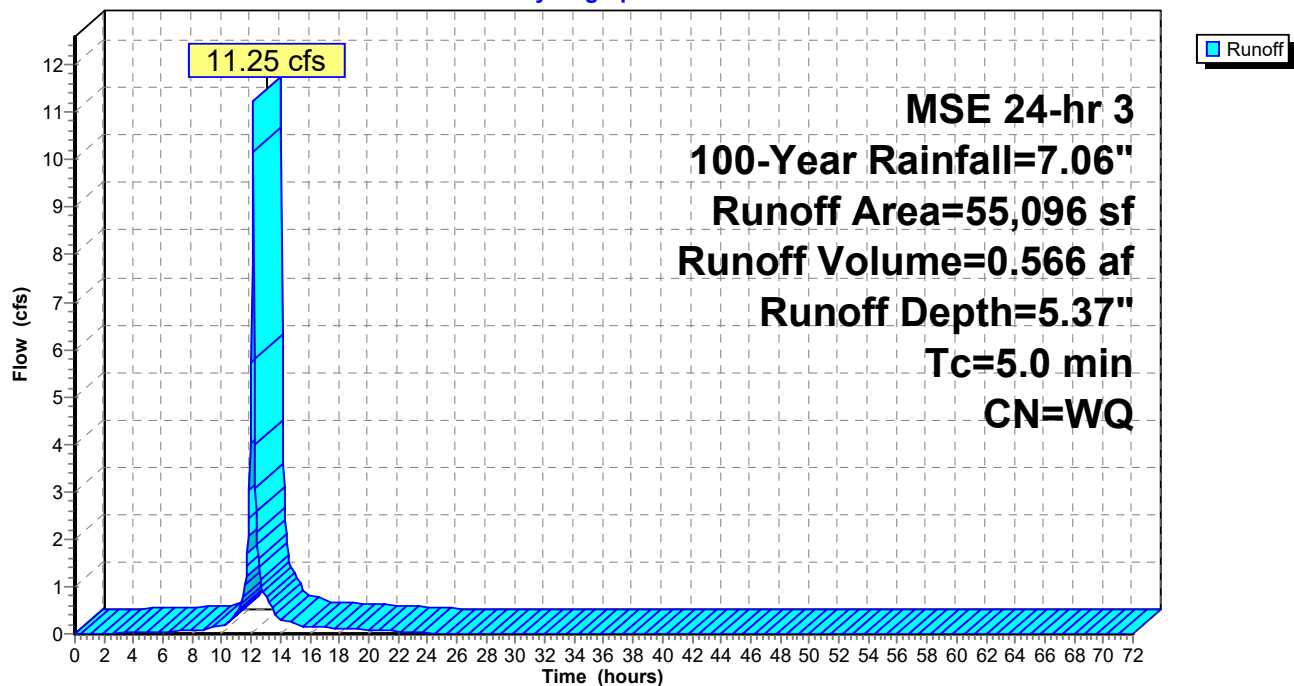
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 21,324    | 98 | Paved parking, HSG A          |
| 2,400     | 98 | Roofs, HSG A                  |
| 2,018     | 98 | Paved parking, HSG A          |
| 29,354    | 74 | >75% Grass cover, Good, HSG C |
| 55,096    |    | Weighted Average              |
| 29,354    |    | 53.28% Pervious Area          |
| 25,742    |    | 46.72% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment R-1:**

Hydrograph



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MSE 24-hr 3 100-Year Rainfall=7.06"

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**Summary for Subcatchment R-2:**

Runoff = 18.34 cfs @ 12.11 hrs, Volume= 0.950 af, Depth= 5.89"  
Routed to Reach 2A&2B :

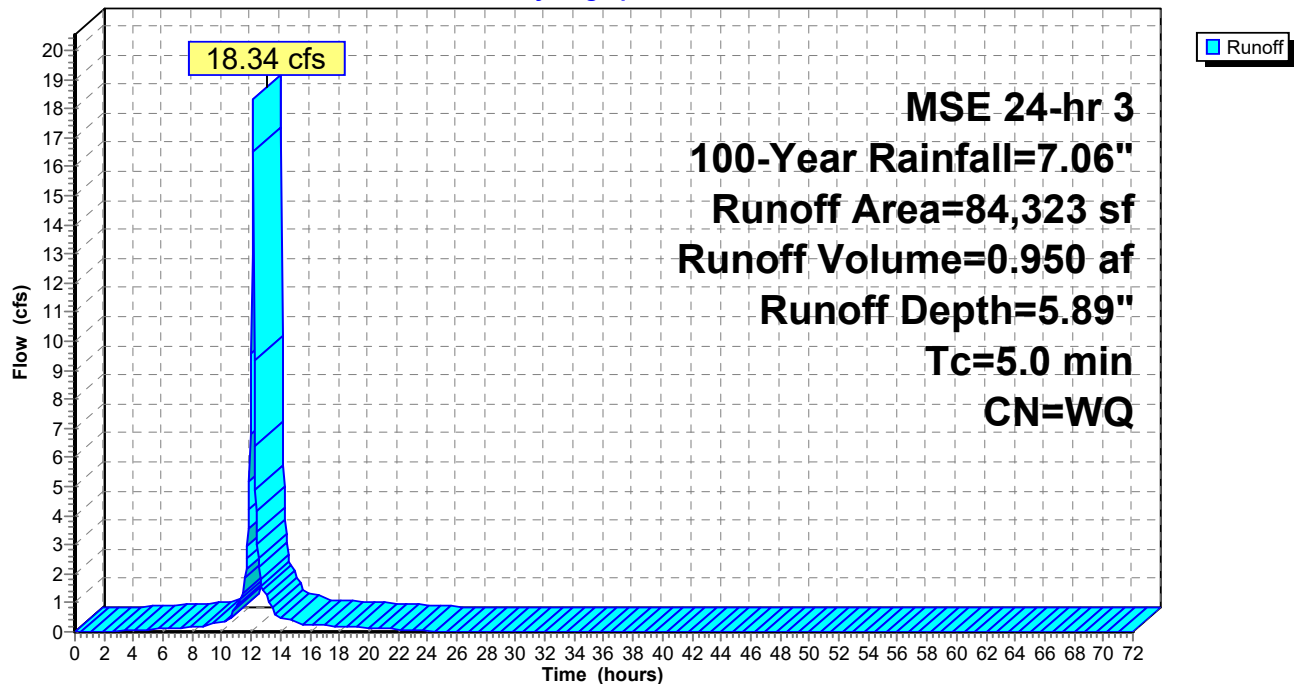
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 37,745    | 98 | Paved parking, HSG A          |
| 9,600     | 98 | Roofs, HSG A                  |
| 8,203     | 98 | Paved parking, HSG A          |
| 28,775    | 74 | >75% Grass cover, Good, HSG C |
| 84,323    |    | Weighted Average              |
| 28,775    |    | 34.12% Pervious Area          |
| 55,548    |    | 65.88% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment R-2:**

Hydrograph



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MSE 24-hr 3 100-Year Rainfall=7.06"

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**Summary for Subcatchment R-3:**

Runoff = 38.17 cfs @ 12.11 hrs, Volume= 1.994 af, Depth= 6.05"  
Routed to Pond P-12 :

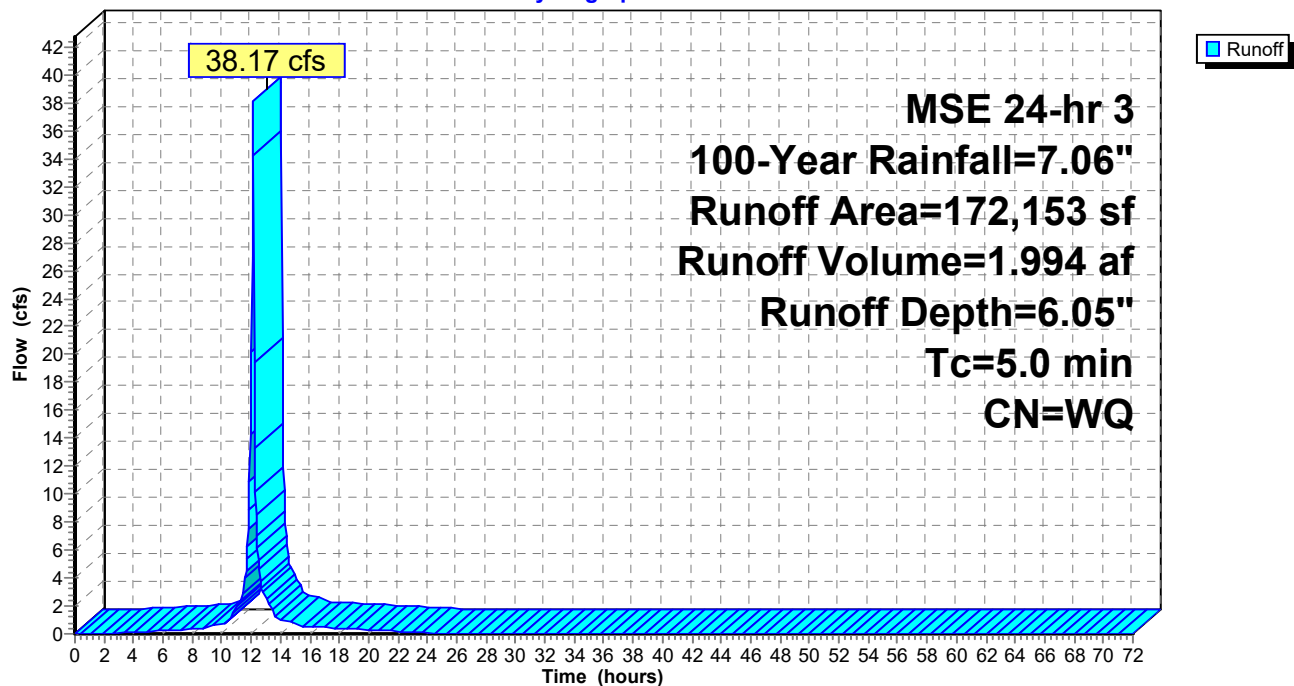
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 78,388    | 98 | Paved parking, HSG A          |
| 24,000    | 98 | Roofs, HSG A                  |
| 21,308    | 98 | Paved parking, HSG A          |
| 48,457    | 74 | >75% Grass cover, Good, HSG C |
| 172,153   |    | Weighted Average              |
| 48,457    |    | 28.15% Pervious Area          |
| 123,696   |    | 71.85% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment R-3:**

Hydrograph



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MSE 24-hr 3 100-Year Rainfall=7.06"

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**Summary for Subcatchment R-5:**

Runoff = 5.86 cfs @ 12.17 hrs, Volume= 0.370 af, Depth= 6.32"  
Routed to Pond P-6 :

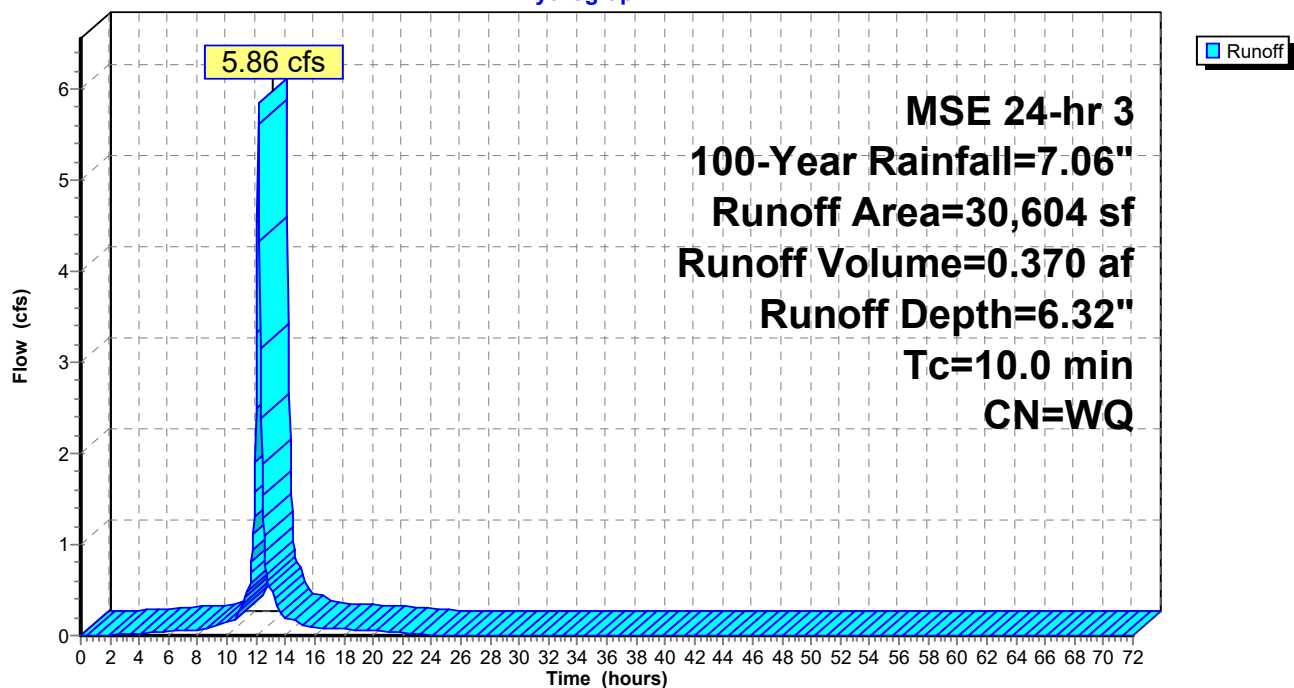
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 22,262    | 98 | Paved roads w/curbs & sewers, HSG A |
| * 2,767   | 98 | Driveways                           |
| 5,575     | 74 | >75% Grass cover, Good, HSG C       |
| 30,604    |    | Weighted Average                    |
| 5,575     |    | 18.22% Pervious Area                |
| 25,029    |    | 81.78% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 10.0     |               |               |                   |                | Direct Entry, |

**Subcatchment R-5:**

Hydrograph



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MSE 24-hr 3 100-Year Rainfall=7.06"

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**Summary for Subcatchment R-6:**

Runoff = 3.52 cfs @ 12.11 hrs, Volume= 0.187 af, Depth= 6.47"  
Routed to Pond P-12 :

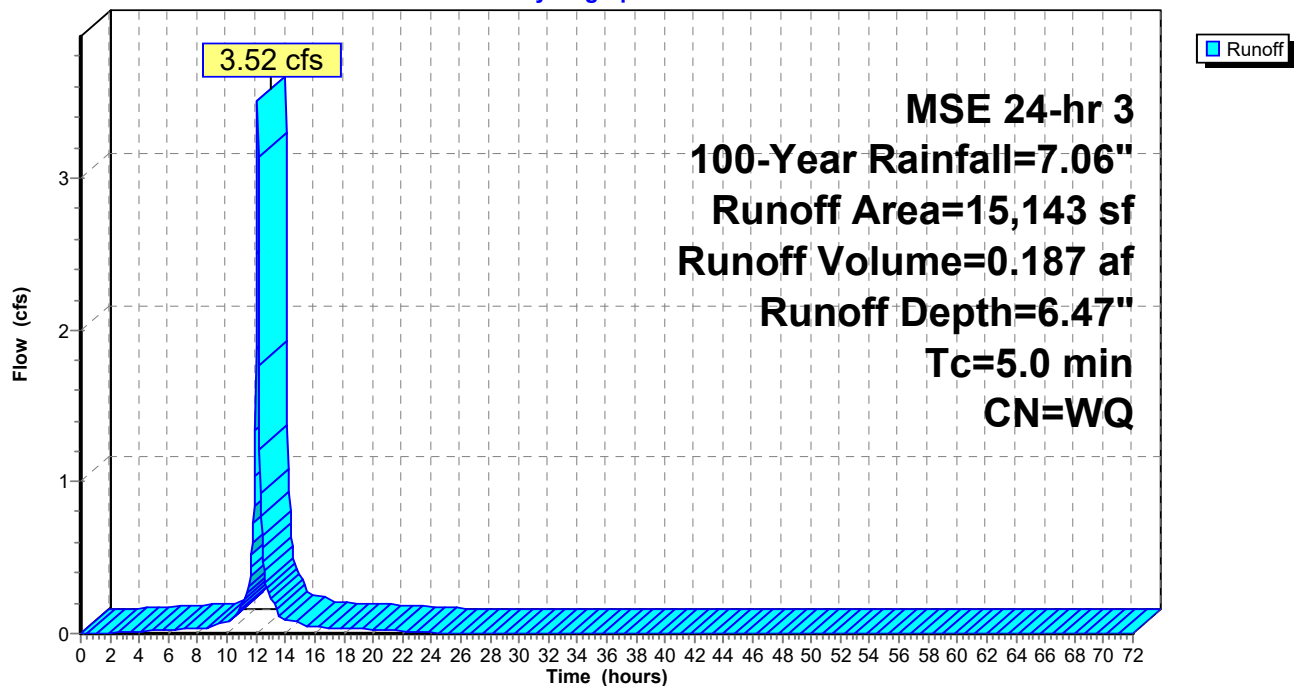
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 10,647    | 98 | Paved roads w/curbs & sewers, HSG A |
| * 2,554   | 98 | Driveways                           |
| 1,942     | 74 | >75% Grass cover, Good, HSG C       |
| 15,143    |    | Weighted Average                    |
| 1,942     |    | 12.82% Pervious Area                |
| 13,201    |    | 87.18% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment R-6:**

Hydrograph



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**Summary for Subcatchment R-7:**

Runoff = 2.64 cfs @ 12.11 hrs, Volume= 0.138 af, Depth= 6.07"  
Routed to Reach 1R :

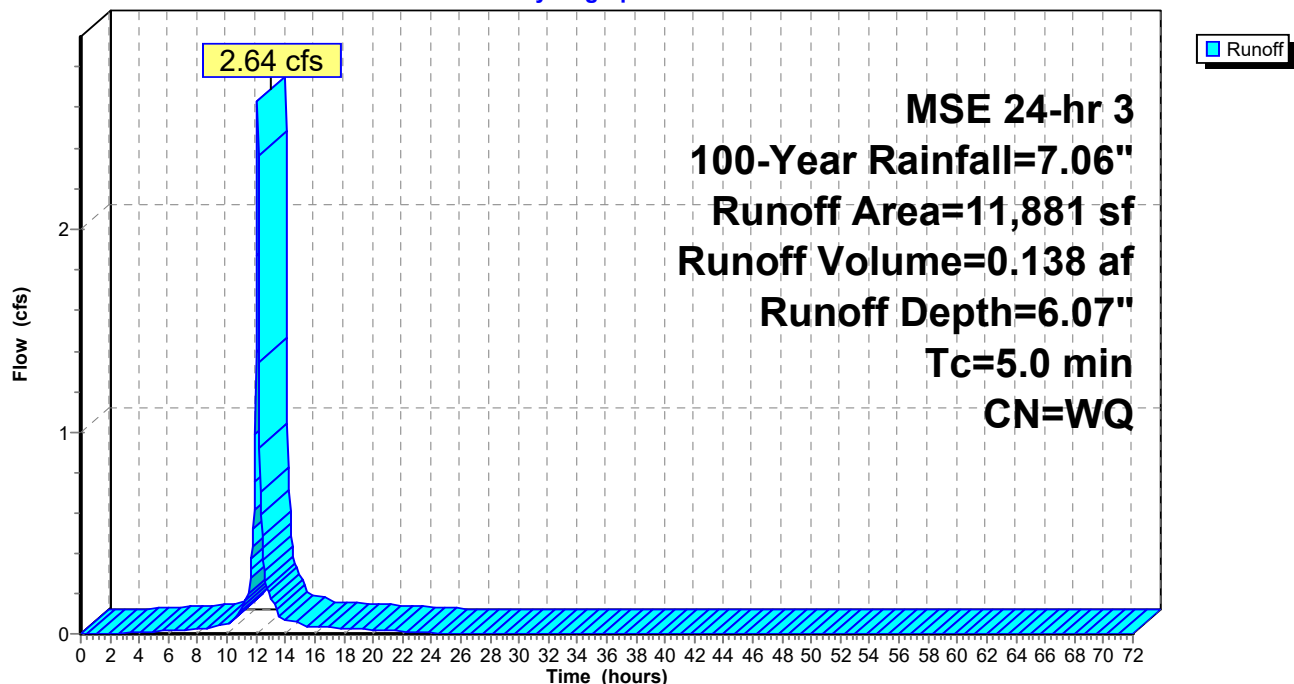
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 6,407     | 98 | Paved roads w/curbs & sewers, HSG A |
| 1,200     | 98 | Roofs, HSG A                        |
| * 989     | 98 | Concrete                            |
| 3,285     | 74 | >75% Grass cover, Good, HSG C       |
| 11,881    |    | Weighted Average                    |
| 3,285     |    | 27.65% Pervious Area                |
| 8,596     |    | 72.35% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment R-7:**

Hydrograph





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MSE 24-hr 3 100-Year Rainfall=7.06"

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**Summary for Subcatchment R-8:**

Runoff = 18.29 cfs @ 12.11 hrs, Volume= 0.953 af, Depth= 6.00"  
Routed to Pond P-3A :

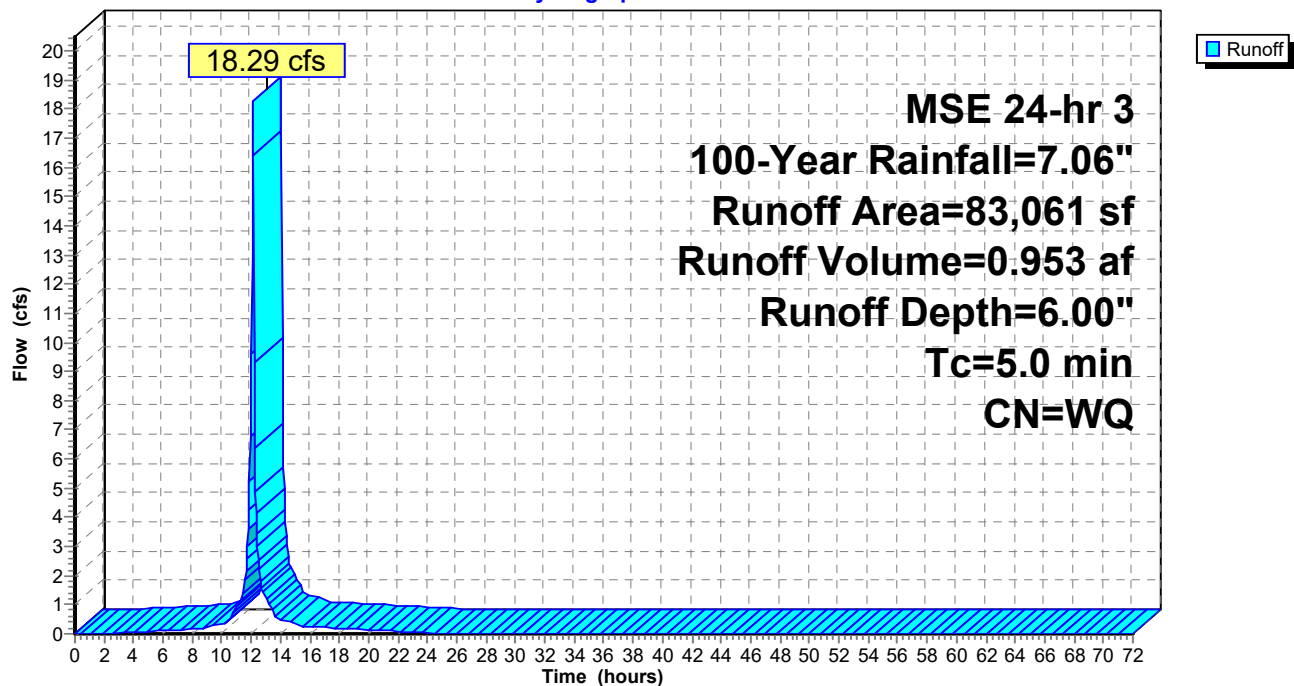
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
MSE 24-hr 3 100-Year Rainfall=7.06"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 31,957    | 98 | Paved roads w/curbs & sewers, HSG A |
| 16,800    | 98 | Roofs, HSG A                        |
| * 9,173   | 98 | Concrete                            |
| 25,131    | 74 | >75% Grass cover, Good, HSG C       |
| <hr/>     |    |                                     |
| 83,061    |    | Weighted Average                    |
| 25,131    |    | 30.26% Pervious Area                |
| 57,930    |    | 69.74% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment R-8:**

Hydrograph



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MSE 24-hr 3 100-Year Rainfall=7.06"

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### Summary for Reach 1C&PB-13:

Inflow Area = 2.818 ac, 9.61% Impervious, Inflow Depth = 4.36" for 100-Year event  
Inflow = 14.67 cfs @ 12.26 hrs, Volume= 1.023 af  
Outflow = 7.92 cfs @ 12.15 hrs, Volume= 1.023 af, Atten= 46%, Lag= 0.0 min  
Routed to Pond P-6 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Max. Velocity= 5.10 fps, Min. Travel Time= 0.3 min

Avg. Velocity = 1.76 fps, Avg. Travel Time= 0.8 min

Peak Storage= 156 cf @ 12.15 hrs

Average Depth at Peak Storage= 1.50'

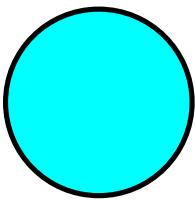
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 7.92 cfs

18.0" Round Pipe

n= 0.013

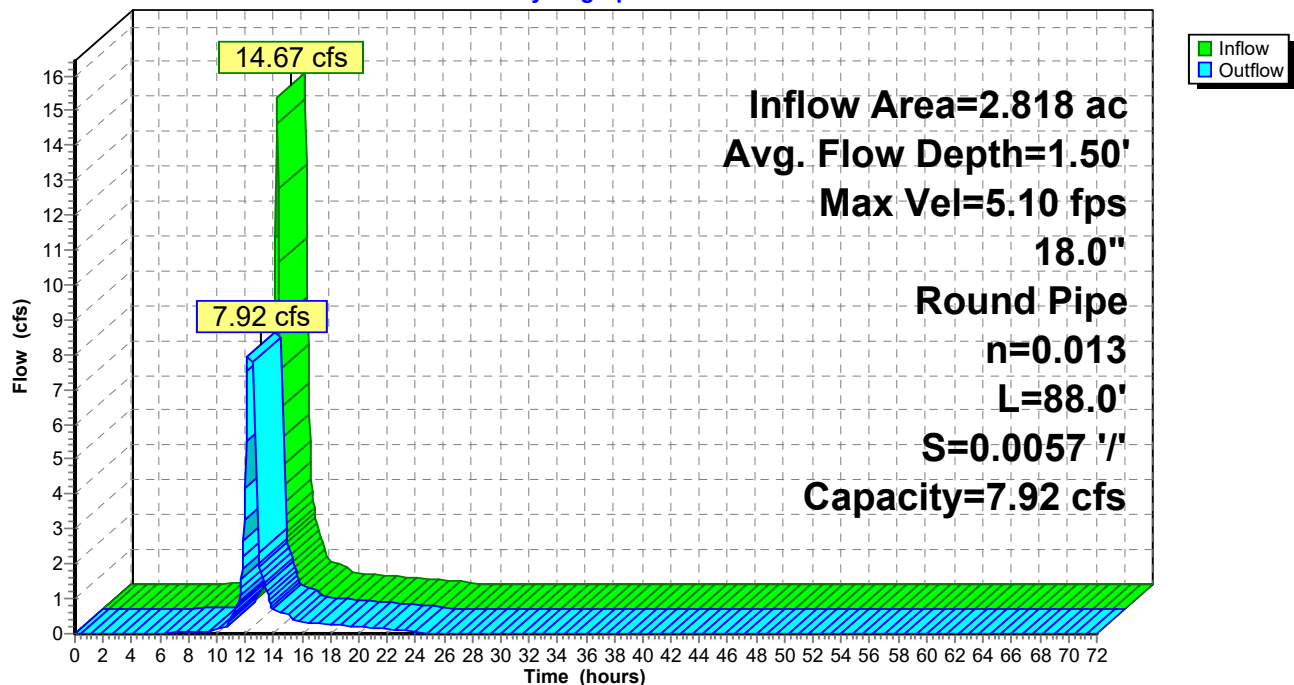
Length= 88.0' Slope= 0.0057 '/'

Inlet Invert= 898.3', Outlet Invert= 897.8'



### Reach 1C&PB-13:

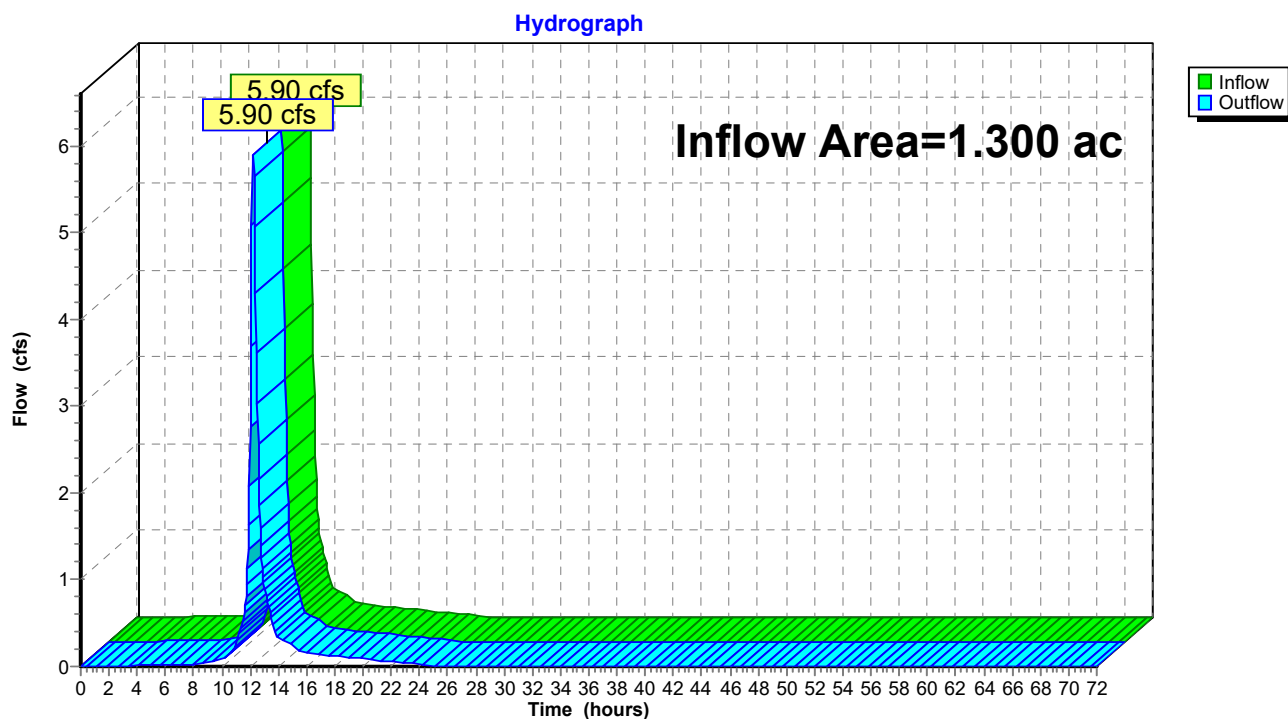
Hydrograph



**Summary for Reach 1R:**

Inflow Area = 1.300 ac, 19.42% Impervious, Inflow Depth = 4.62" for 100-Year event  
Inflow = 5.90 cfs @ 12.24 hrs, Volume= 0.501 af  
Outflow = 5.90 cfs @ 12.24 hrs, Volume= 0.501 af, Atten= 0%, Lag= 0.0 min  
Routed to Pond P-3A :

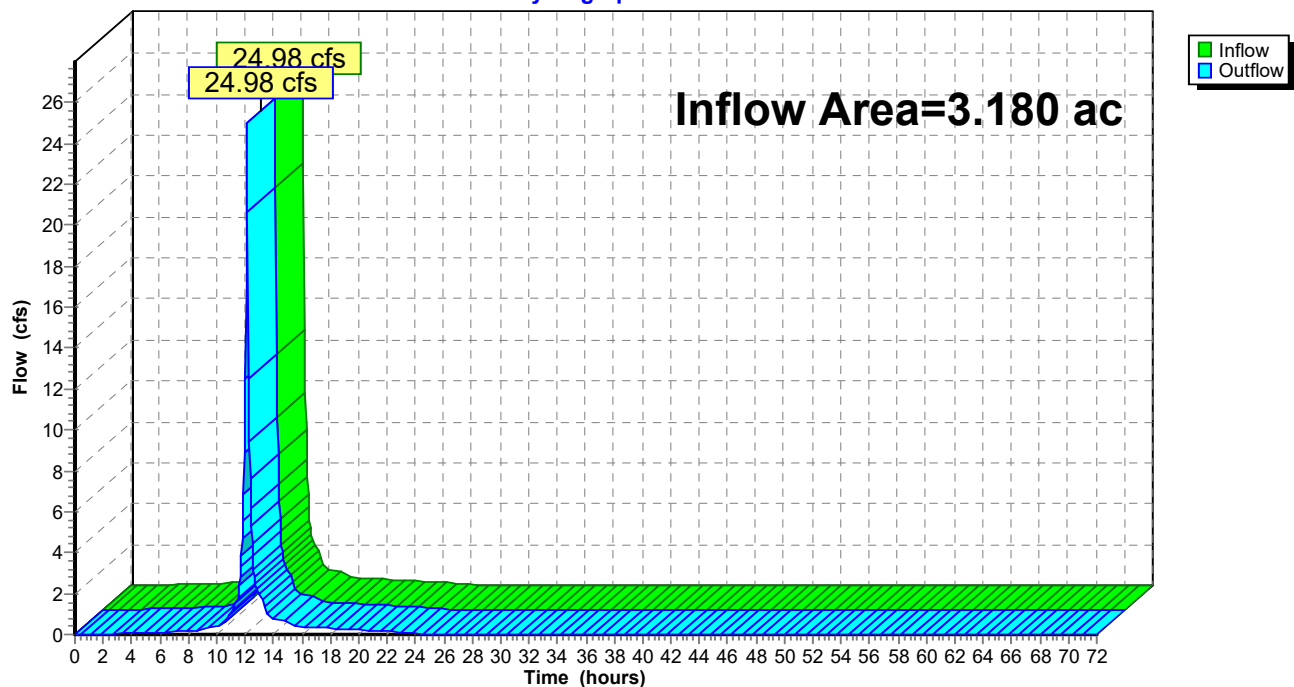
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach 1R:**

**Summary for Reach 2A&2B:**

Inflow Area = 3.180 ac, 43.06% Impervious, Inflow Depth = 5.27" for 100-Year event  
Inflow = 24.98 cfs @ 12.13 hrs, Volume= 1.396 af  
Outflow = 24.98 cfs @ 12.13 hrs, Volume= 1.396 af, Atten= 0%, Lag= 0.0 min  
Routed to Pond P-3A :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach 2A&2B:****Hydrograph**

**Summary for Reach P7B&D:**

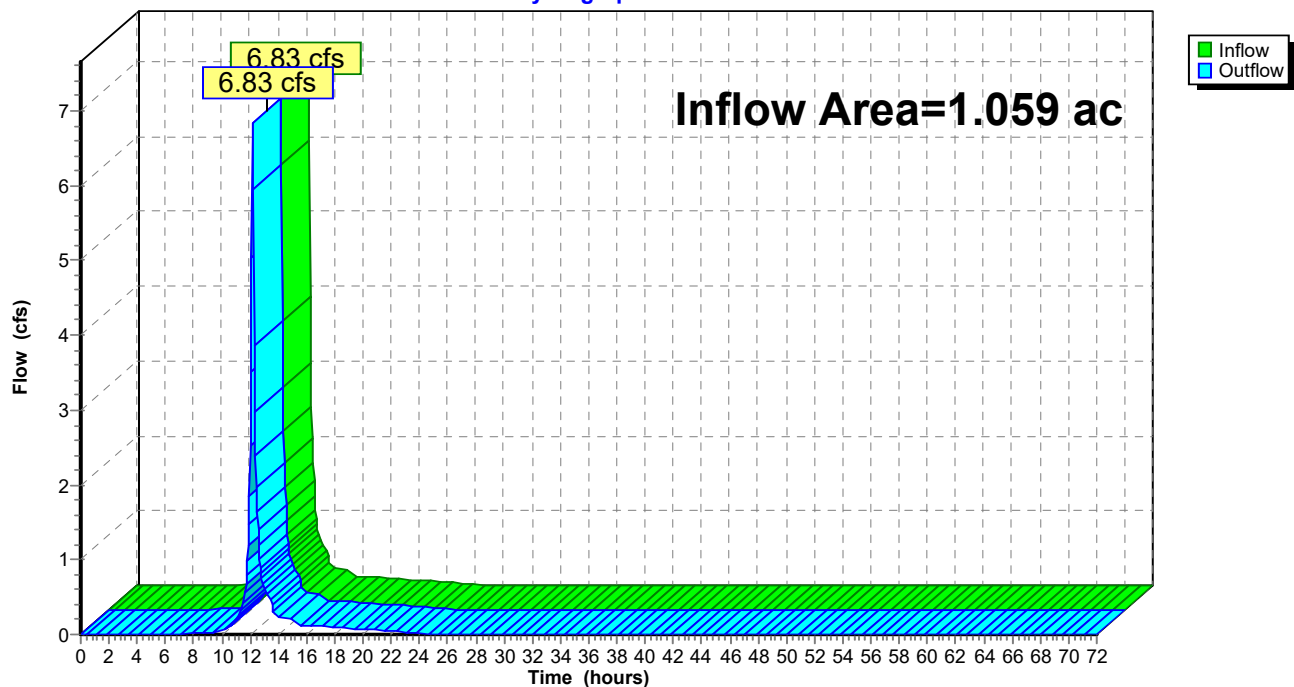
Inflow Area = 1.059 ac, 10.41% Impervious, Inflow Depth = 4.38" for 100-Year event

Inflow = 6.83 cfs @ 12.18 hrs, Volume= 0.386 af

Outflow = 6.83 cfs @ 12.18 hrs, Volume= 0.386 af, Atten= 0%, Lag= 0.0 min

Routed to Reach PSE-Q : SE Quarter (Private Ditch B)

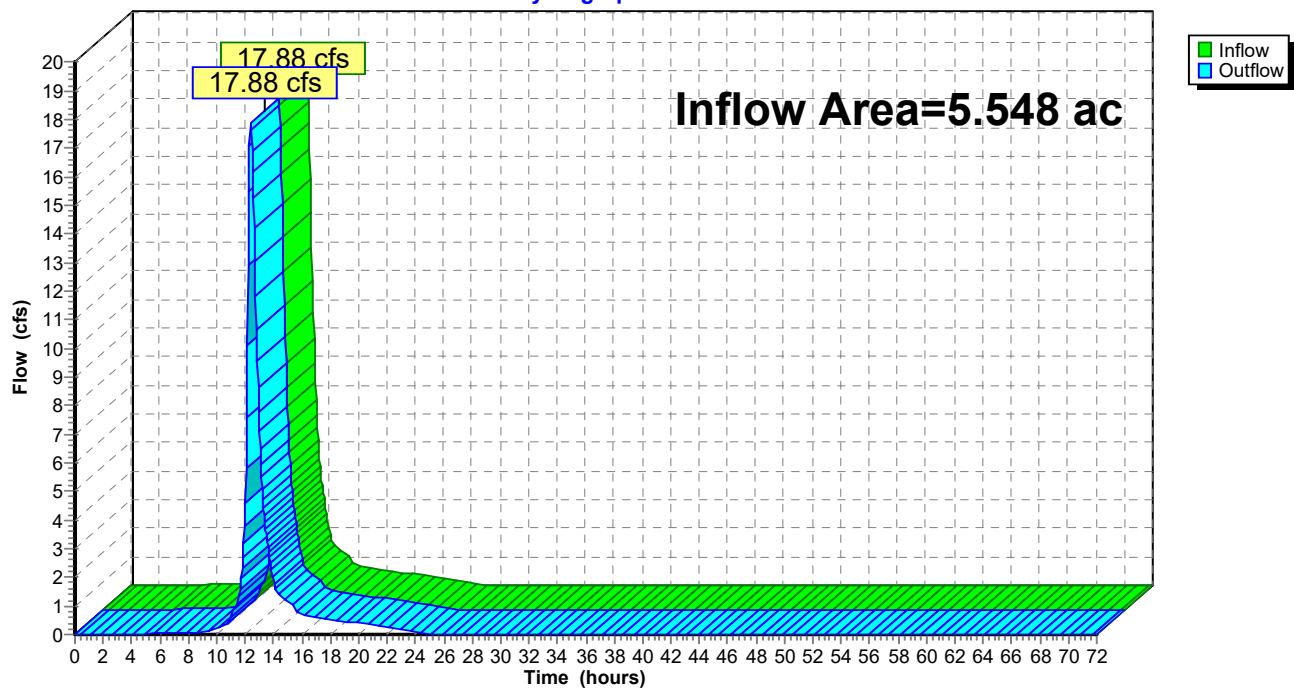
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach P7B&D:****Hydrograph**

**Summary for Reach PB-1C&PB-14B:**

Inflow Area = 5.548 ac, 7.94% Impervious, Inflow Depth = 4.31" for 100-Year event  
Inflow = 17.88 cfs @ 12.38 hrs, Volume= 1.993 af  
Outflow = 17.88 cfs @ 12.38 hrs, Volume= 1.993 af, Atten= 0%, Lag= 0.0 min  
Routed to Pond P-12 :

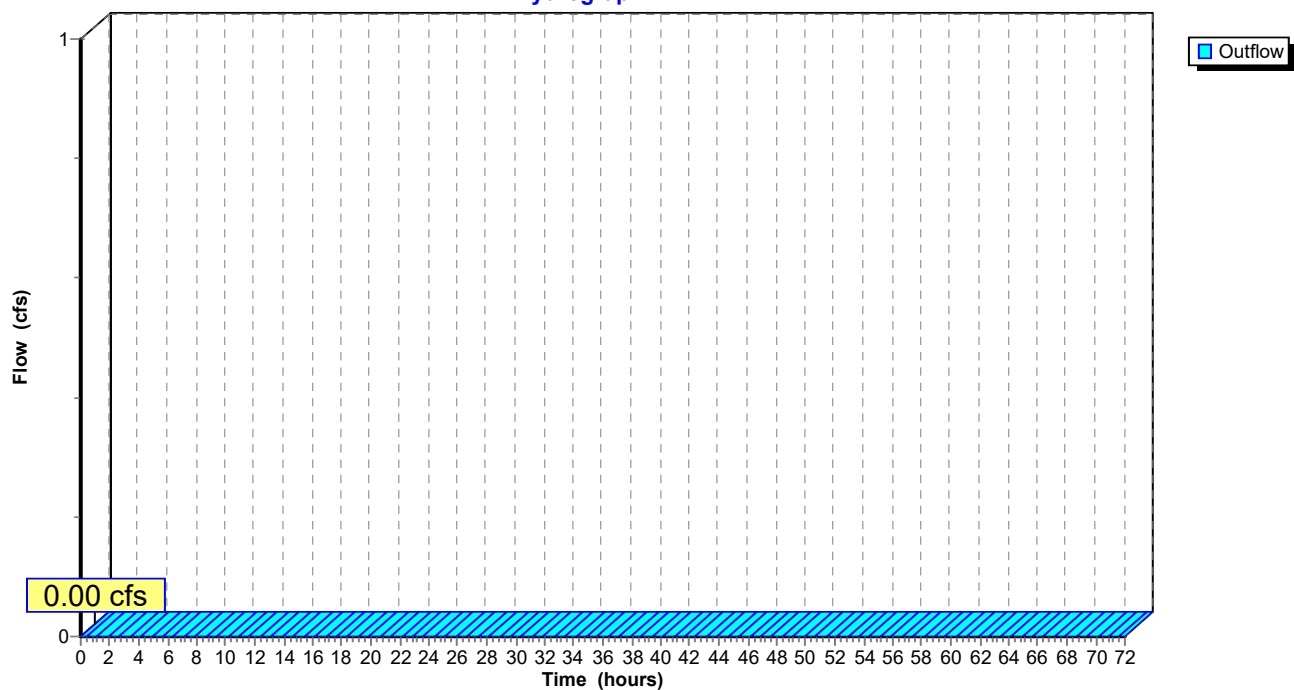
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PB-1C&PB-14B:****Hydrograph**

## Summary for Reach PL-DITCH:

### Reach PL-DITCH:

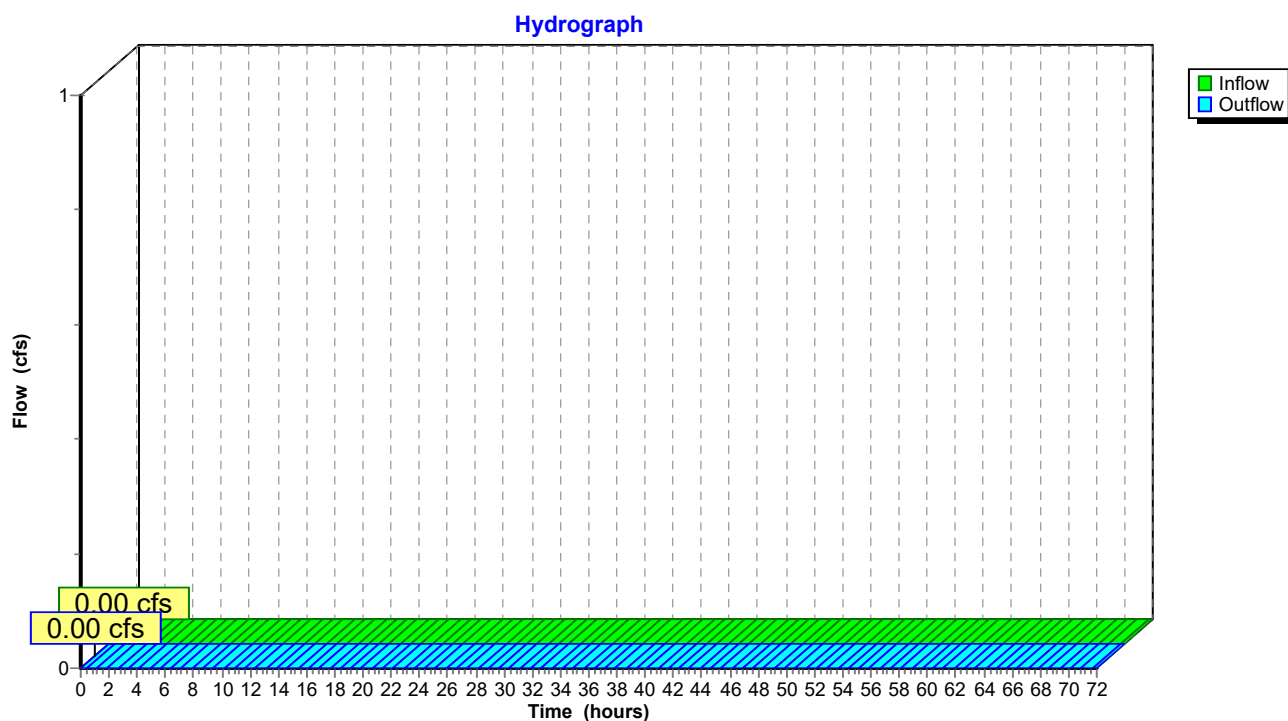
#### Hydrograph



**Summary for Reach PN: North Boundary**

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach POST : Overall Post-Development Runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

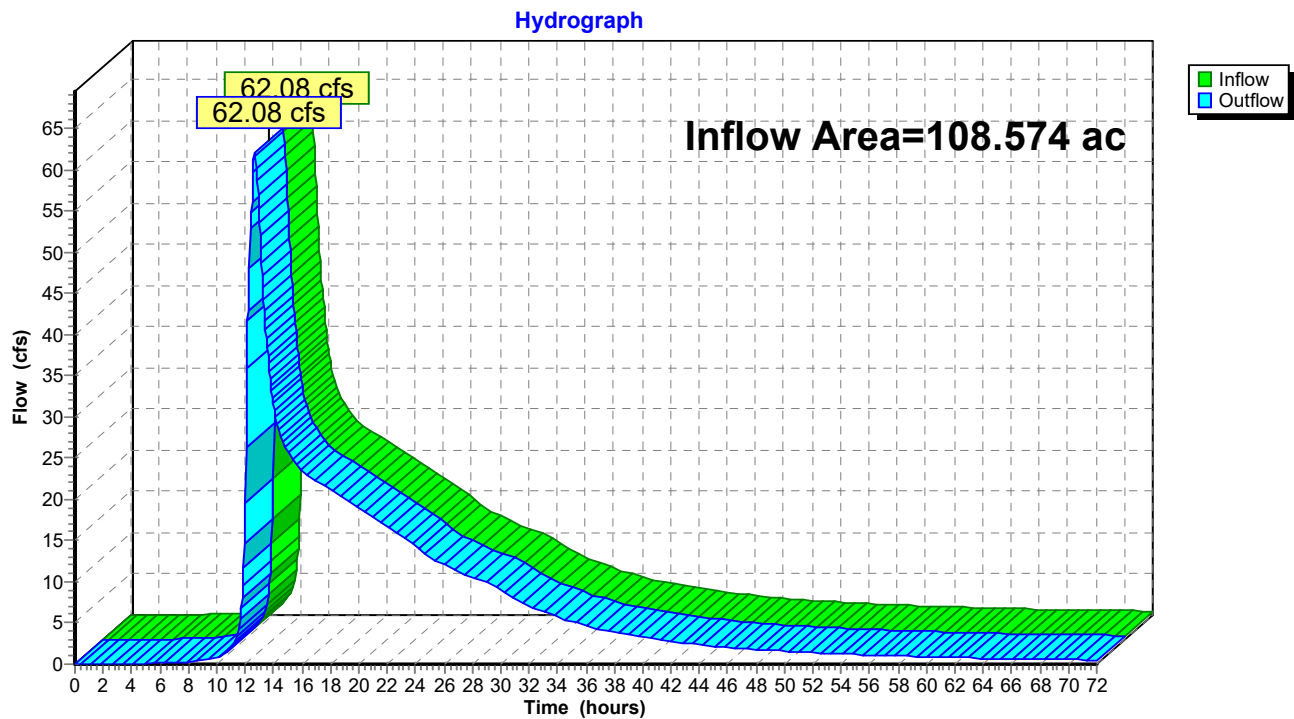
**Reach PN: North Boundary**



**Summary for Reach POST: Overall Post-Development Runoff**

Inflow Area = 108.574 ac, 26.34% Impervious, Inflow Depth > 4.29" for 100-Year event  
Inflow = 62.08 cfs @ 12.67 hrs, Volume= 38.839 af  
Outflow = 62.08 cfs @ 12.67 hrs, Volume= 38.839 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach POST: Overall Post-Development Runoff**

**Summary for Reach PS: South Total (Ditch 44-9)**

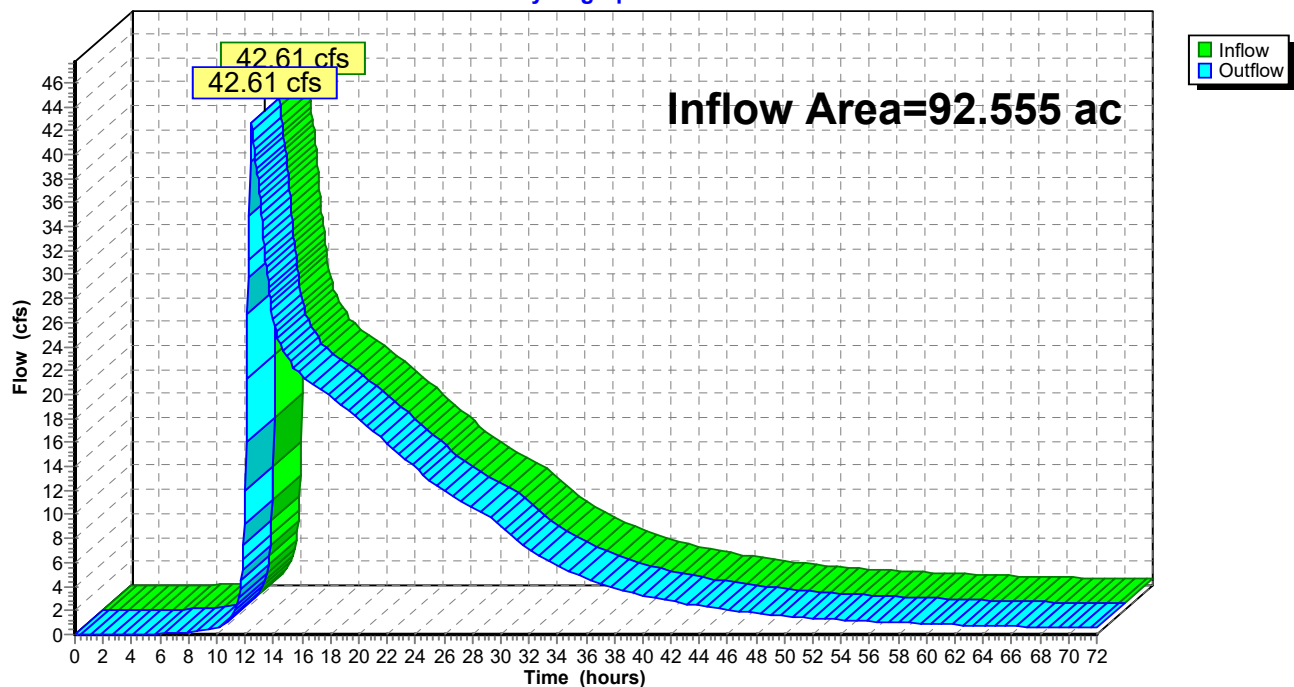
Inflow Area = 92.555 ac, 29.58% Impervious, Inflow Depth > 4.57" for 100-Year event

Inflow = 42.61 cfs @ 12.46 hrs, Volume= 35.277 af

Outflow = 42.61 cfs @ 12.46 hrs, Volume= 35.277 af, Atten= 0%, Lag= 0.0 min

Routed to Reach POST : Overall Post-Development Runoff

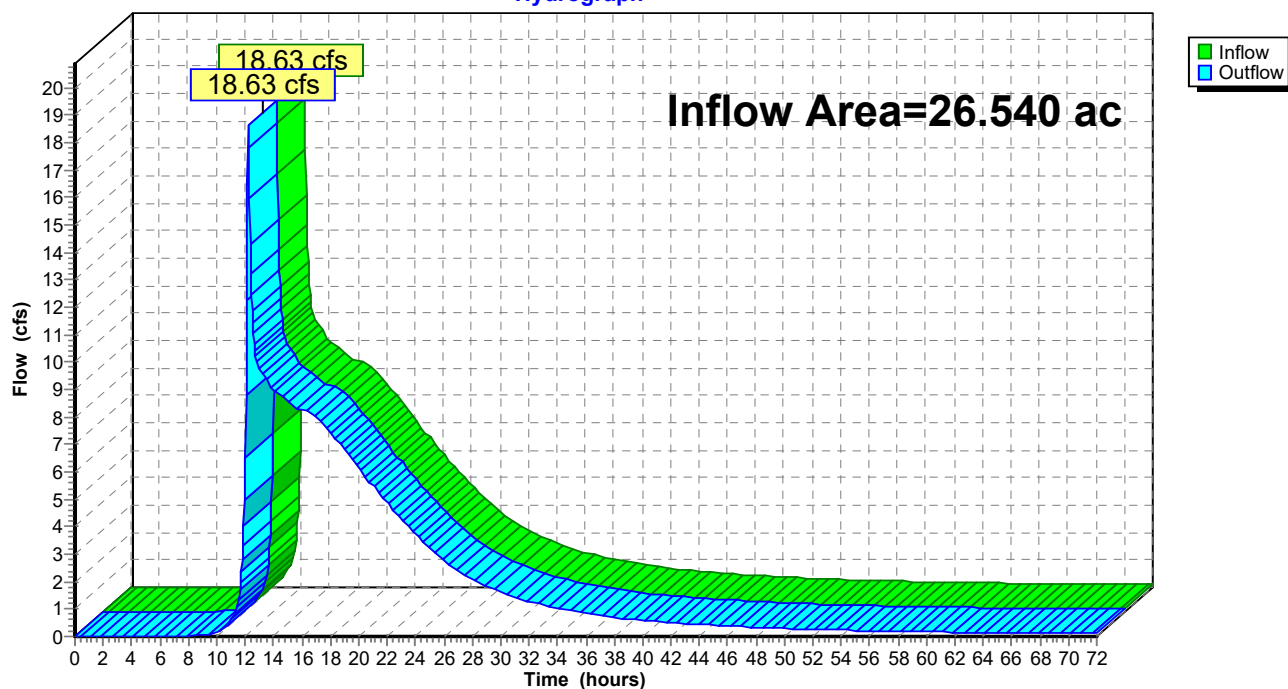
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PS: South Total (Ditch 44-9)****Hydrograph**

**Summary for Reach PSE-Q: SE Quarter (Private Ditch B)**

Inflow Area = 26.540 ac, 26.80% Impervious, Inflow Depth > 4.60" for 100-Year event  
Inflow = 18.63 cfs @ 12.21 hrs, Volume= 10.178 af  
Outflow = 18.63 cfs @ 12.21 hrs, Volume= 10.178 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PS : South Total (Ditch 44-9)

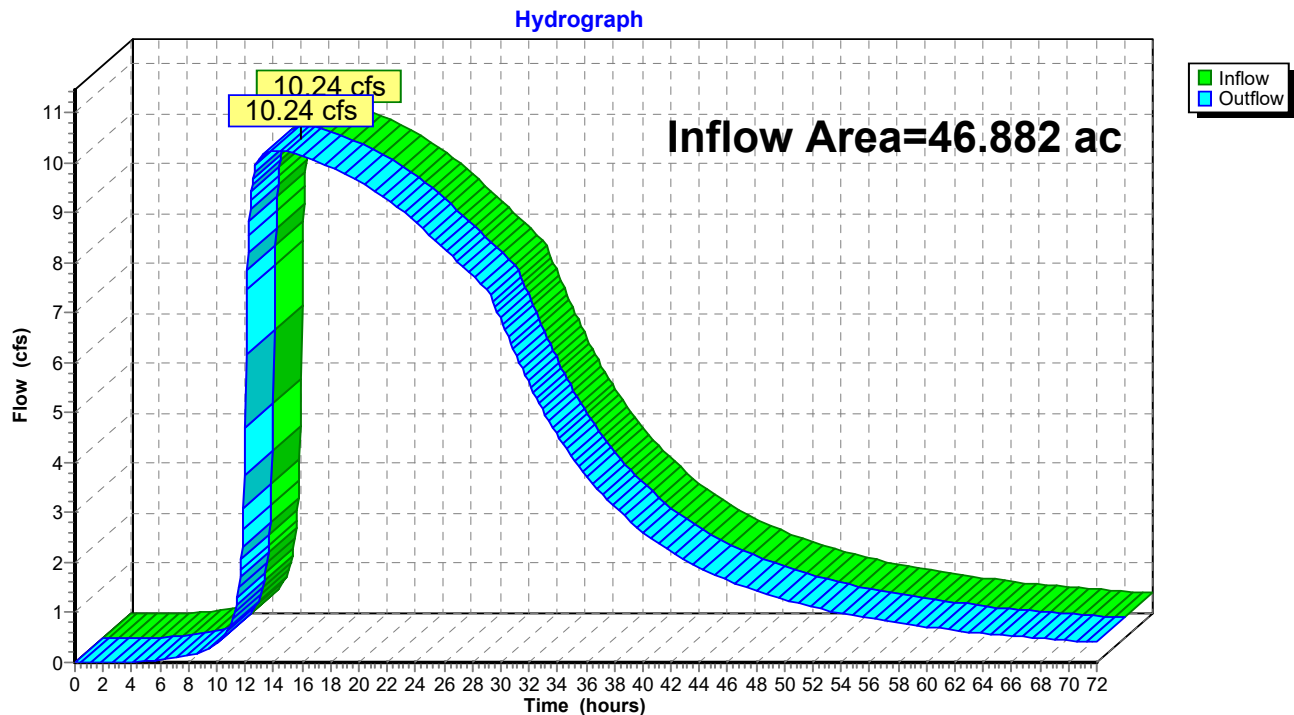
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PSE-Q: SE Quarter (Private Ditch B)****Hydrograph**

**Summary for Reach PSE-QA: SE Quarter (Private Ditch A)**

Inflow Area = 46.882 ac, 39.18% Impervious, Inflow Depth > 5.18" for 100-Year event  
Inflow = 10.24 cfs @ 14.95 hrs, Volume= 20.250 af  
Outflow = 10.24 cfs @ 14.95 hrs, Volume= 20.250 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PS : South Total (Ditch 44-9)

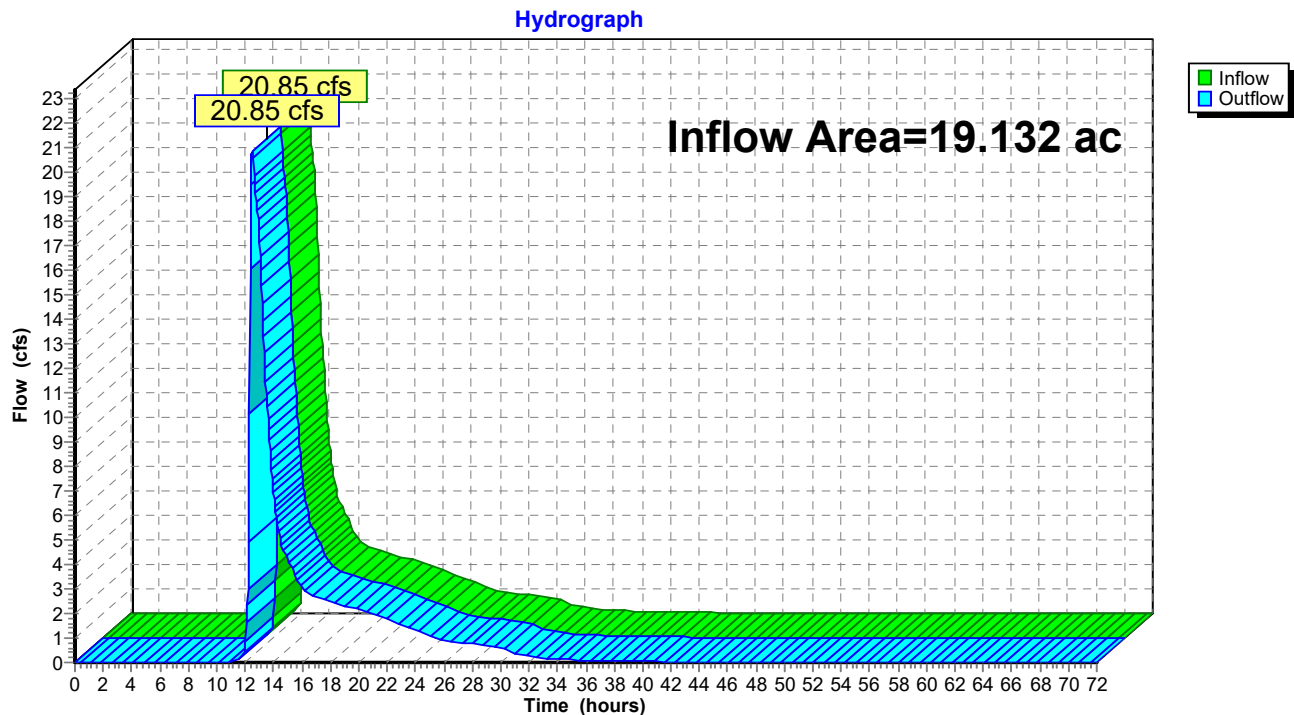
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PSE-QA: SE Quarter (Private Ditch A)**

**Summary for Reach PSW-Q: Southwest Discharge**

Inflow Area = 19.132 ac, 9.91% Impervious, Inflow Depth > 3.04" for 100-Year event  
Inflow = 20.85 cfs @ 12.49 hrs, Volume= 4.849 af  
Outflow = 20.85 cfs @ 12.49 hrs, Volume= 4.849 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach PS : South Total (Ditch 44-9)

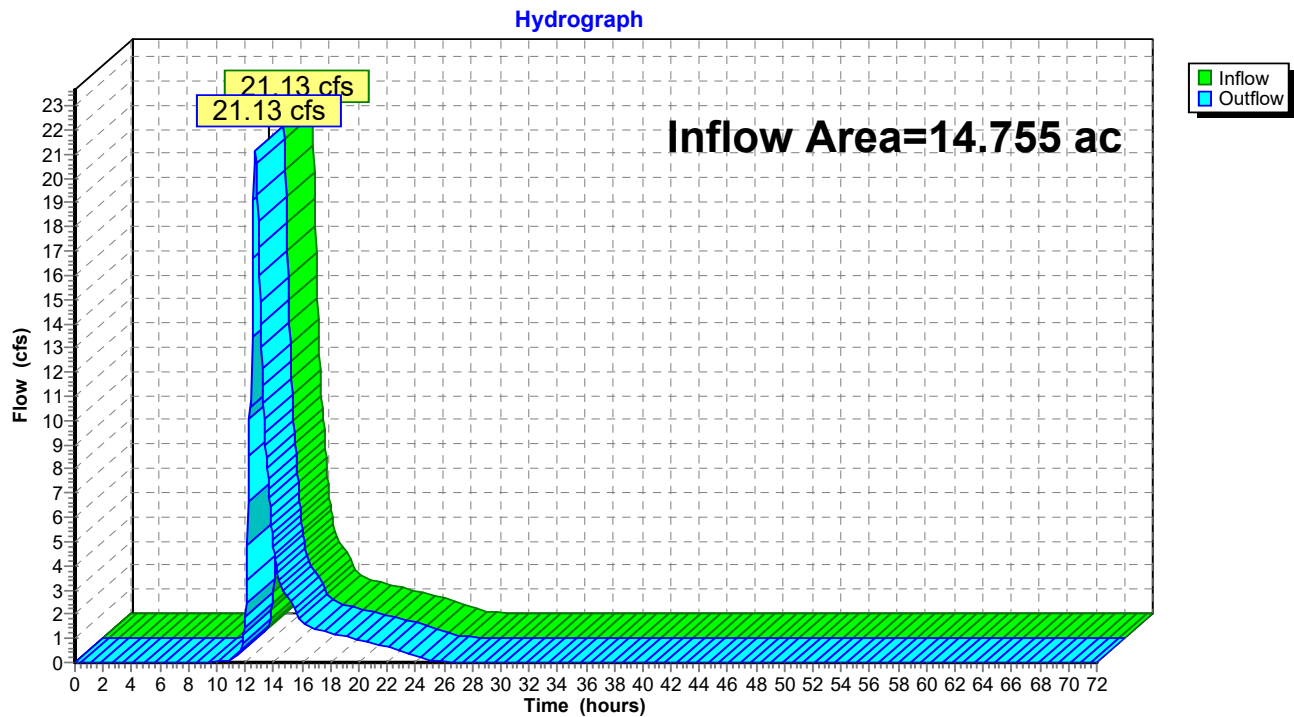
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PSW-Q: Southwest Discharge**

**Summary for Reach PW: West Boundary**

Inflow Area = 14.755 ac, 4.30% Impervious, Inflow Depth = 2.44" for 100-Year event  
Inflow = 21.13 cfs @ 12.71 hrs, Volume= 2.996 af  
Outflow = 21.13 cfs @ 12.71 hrs, Volume= 2.996 af, Atten= 0%, Lag= 0.0 min  
Routed to Reach POST : Overall Post-Development Runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Reach PW: West Boundary**

**LDP24010 Ham Lake**

MSE 24-hr 3 100-Year Rainfall=7.06"

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**Summary for Pond P-12:**

Inflow Area = 23.905 ac, 29.29% Impervious, Inflow Depth = 4.89" for 100-Year event  
 Inflow = 101.84 cfs @ 12.27 hrs, Volume= 9.747 af  
 Outflow = 8.41 cfs @ 13.74 hrs, Volume= 9.253 af, Atten= 92%, Lag= 88.6 min  
 Primary = 8.41 cfs @ 13.74 hrs, Volume= 9.253 af  
 Routed to Reach PSE-Q : SE Quarter (Private Ditch B)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Starting Elev= 897.0' Surf.Area= 121,800 sf Storage= 560,450 cf  
 Peak Elev= 899.1' @ 13.74 hrs Surf.Area= 152,187 sf Storage= 849,530 cf (289,080 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 564.0 min ( 1,351.2 - 787.2 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 890.0' | 990,650 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 890.0               | 52,200               | 0                         | 0                         |
| 894.0               | 78,100               | 260,600                   | 260,600                   |
| 897.0               | 121,800              | 299,850                   | 560,450                   |
| 900.0               | 165,000              | 430,200                   | 990,650                   |

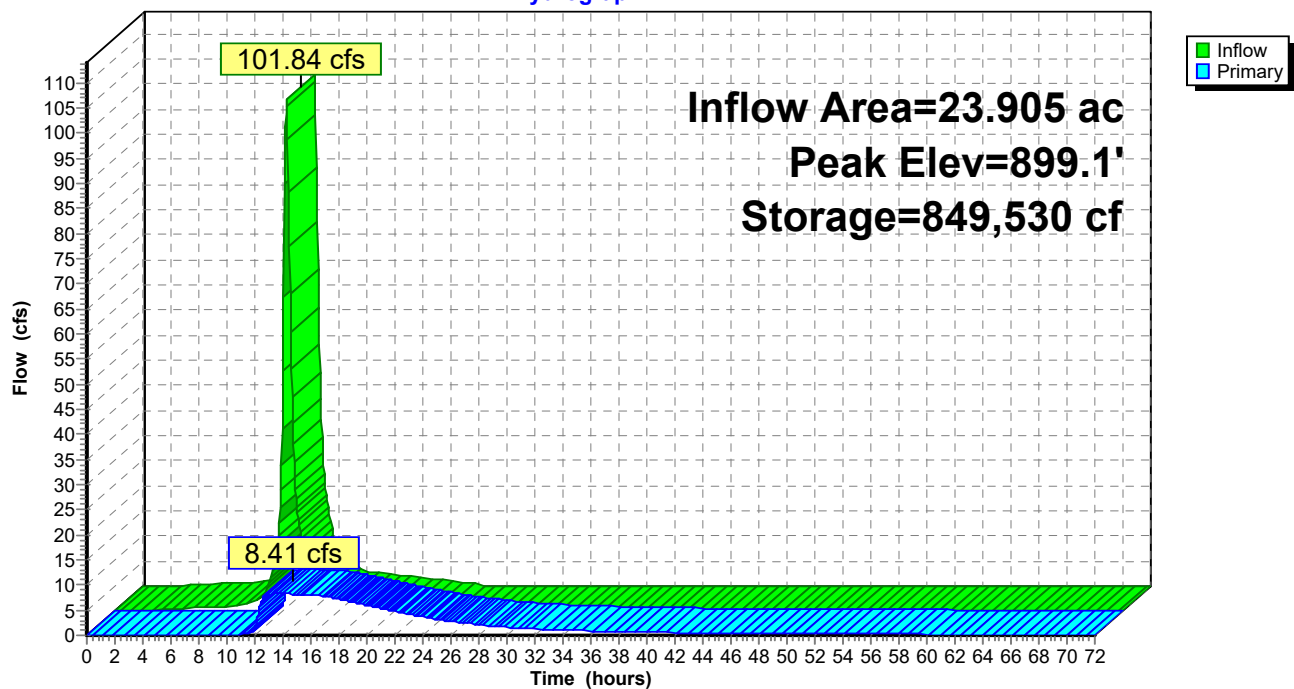
| Device | Routing  | Invert | Outlet Devices                                                                                                                                                                           |
|--------|----------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary  | 897.0' | <b>18.0" Round Culvert</b><br>L= 76.0' RCP, groove end projecting, Ke= 0.200<br>Inlet / Outlet Invert= 897.0' / 896.7' S= 0.0039 ' S= 0.0039 ' Cc= 0.900<br>n= 0.013, Flow Area= 1.77 sf |
| #2     | Device 1 | 896.0' | <b>45.0" W x 6.0" H Vert. Orifice/Grate X 2.00</b> C= 0.600<br>Limited to weir flow at low heads                                                                                         |
| #3     | Device 1 | 899.1' | <b>51.0" x 96.0" Horiz. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads                                                                                                  |

**Primary OutFlow** Max=8.41 cfs @ 13.74 hrs HW=899.1' TW=0.0' (Dynamic Tailwater)

1=Culvert (Barrel Controls 8.41 cfs @ 4.76 fps)  
 2=Orifice/Grate (Passes < 26.23 cfs potential flow)  
 3=Orifice/Grate (Passes < 0.08 cfs potential flow)

**Pond P-12:**

Hydrograph





**LDP24010 Ham Lake**

MSE 24-hr 3 100-Year Rainfall=7.06"

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**Summary for Pond P-3A:**

Inflow Area = 27.311 ac, 43.03% Impervious, Inflow Depth = 5.95" for 100-Year event  
 Inflow = 174.35 cfs @ 12.07 hrs, Volume= 13.551 af  
 Outflow = 6.53 cfs @ 16.75 hrs, Volume= 12.786 af, Atten= 96%, Lag= 281.3 min  
 Primary = 6.53 cfs @ 16.75 hrs, Volume= 12.786 af  
     Routed to Pond P-3B :  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Pond P-3B :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Starting Elev= 898.0' Surf.Area= 311,600 sf Storage= 1,911,300 cf

Peak Elev= 899.4' @ 15.10 hrs Surf.Area= 331,074 sf Storage= 2,360,421 cf (449,121 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 893.9 min ( 1,677.8 - 784.0 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 890.0' | 2,908,800 cf  | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

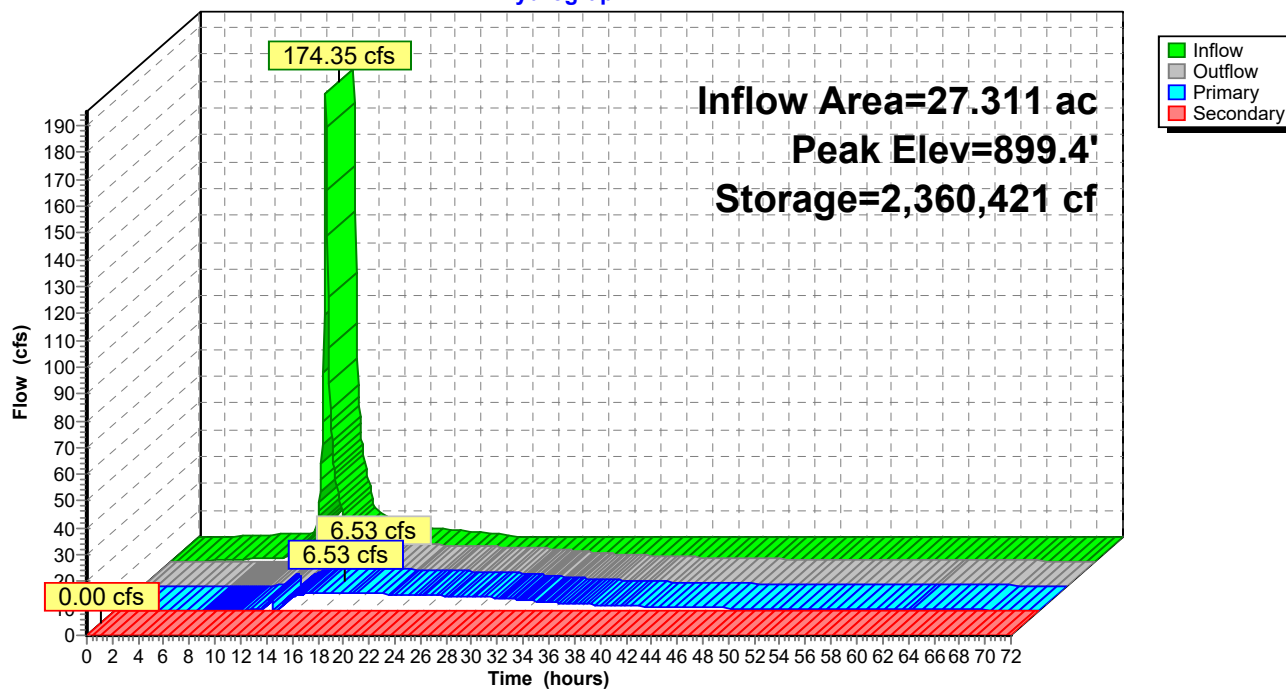
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 890.0               | 187,800              | 0                         | 0                         |
| 895.0               | 243,600              | 1,078,500                 | 1,078,500                 |
| 898.0               | 311,600              | 832,800                   | 1,911,300                 |
| 901.0               | 353,400              | 997,500                   | 2,908,800                 |

| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                                                   |
|--------|-----------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 895.0' | <b>24.0" Round Culvert</b><br>L= 20.0' RCP, groove end w/headwall, Ke= 0.200<br>Inlet / Outlet Invert= 895.0' / 895.0' S= 0.0000 ' S= 0.0000 ' Cc= 0.900<br>n= 0.012, Flow Area= 3.14 sf                                                                         |
| #2     | Secondary | 901.0' | <b>10.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=6.57 cfs @ 16.75 hrs HW=899.4' TW=899.2' (Dynamic Tailwater)↑ **1=Culvert** (Inlet Controls 6.57 cfs @ 2.09 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=898.0' TW=898.0' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

# Pond P-3A:

## Hydrograph



**Summary for Pond P-3B:**

Inflow Area = 46.882 ac, 39.18% Impervious, Inflow Depth > 5.25" for 100-Year event  
 Inflow = 66.51 cfs @ 12.06 hrs, Volume= 20.506 af  
 Outflow = 10.24 cfs @ 14.95 hrs, Volume= 20.250 af, Atten= 85%, Lag= 173.8 min  
 Primary = 10.24 cfs @ 14.95 hrs, Volume= 20.250 af  
 Routed to Reach PSE-QA : SE Quarter (Private Ditch A)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Starting Elev= 898.0' Surf.Area= 104,200 sf Storage= 592,800 cf  
 Peak Elev= 899.3' @ 14.95 hrs Surf.Area= 118,095 sf Storage= 735,801 cf (143,001 cf above start)

Plug-Flow detention time= 1,713.3 min calculated for 6.636 af (32% of inflow)  
 Center-of-Mass det. time= 187.5 min ( 1,627.5 - 1,440.0 )

| Volume              | Invert               | Avail.Storage             | Storage Description                                        |
|---------------------|----------------------|---------------------------|------------------------------------------------------------|
| #1                  | 890.0'               | 954,000 cf                | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet)                                  |
| 890.0               | 44,000               | 0                         | 0                                                          |
| 898.0               | 104,200              | 592,800                   | 592,800                                                    |
| 901.0               | 136,600              | 361,200                   | 954,000                                                    |

| Device | Routing  | Invert | Outlet Devices                                                                                                                                                                                                                                                  |
|--------|----------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary  | 898.0' | <b>5.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |
| #2     | Device 1 | 897.0' | <b>45.0" W x 6.0" H Vert. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads                                                                                                                                                                       |
| #3     | Device 1 | 899.3' | <b>5.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=10.24 cfs @ 14.95 hrs HW=899.3' TW=0.0' (Dynamic Tailwater)

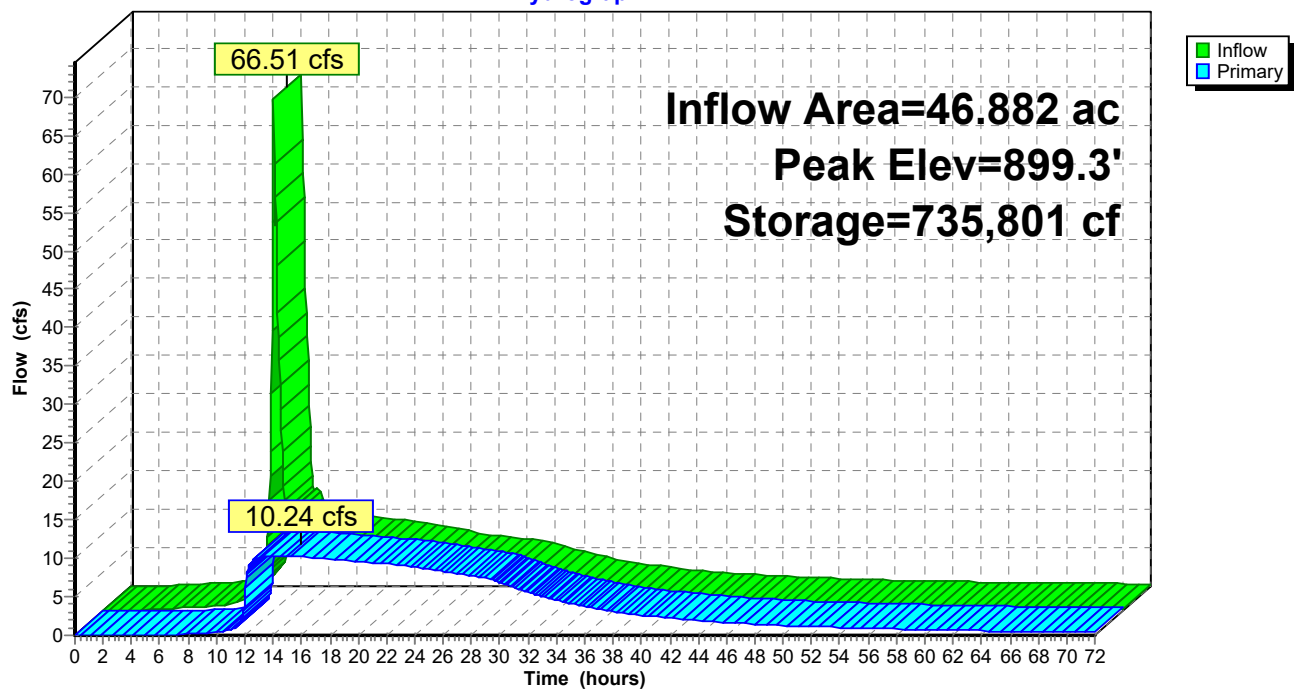
1=Broad-Crested Rectangular Weir (Passes 10.24 cfs of 19.38 cfs potential flow)

2=Orifice/Grate (Orifice Controls 10.24 cfs @ 5.46 fps)

3=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Pond P-3B:**

**Hydrograph**



**LDP24010 Ham Lake**

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**Summary for Pond P-6:**

Inflow Area = 4.739 ac, 32.83% Impervious, Inflow Depth = 4.99" for 100-Year event  
 Inflow = 21.43 cfs @ 12.20 hrs, Volume= 1.970 af  
 Outflow = 1.51 cfs @ 13.72 hrs, Volume= 1.956 af, Atten= 93%, Lag= 91.3 min  
 Primary = 1.51 cfs @ 13.72 hrs, Volume= 1.956 af  
 Routed to Pond PB6 : Wetland 6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Starting Elev= 898.0' Surf.Area= 19,200 sf Storage= 36,008 cf  
 Peak Elev= 900.6' @ 13.72 hrs Surf.Area= 25,015 sf Storage= 92,729 cf (56,721 cf above start)

Plug-Flow detention time= 814.0 min calculated for 1.130 af (57% of inflow)  
 Center-of-Mass det. time= 465.7 min ( 1,249.0 - 783.2 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 895.0' | 103,808 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 895.0               | 7,961                | 0                         | 0                         |
| 897.0               | 12,298               | 20,259                    | 20,259                    |
| 898.0               | 19,200               | 15,749                    | 36,008                    |
| 901.0               | 26,000               | 67,800                    | 103,808                   |

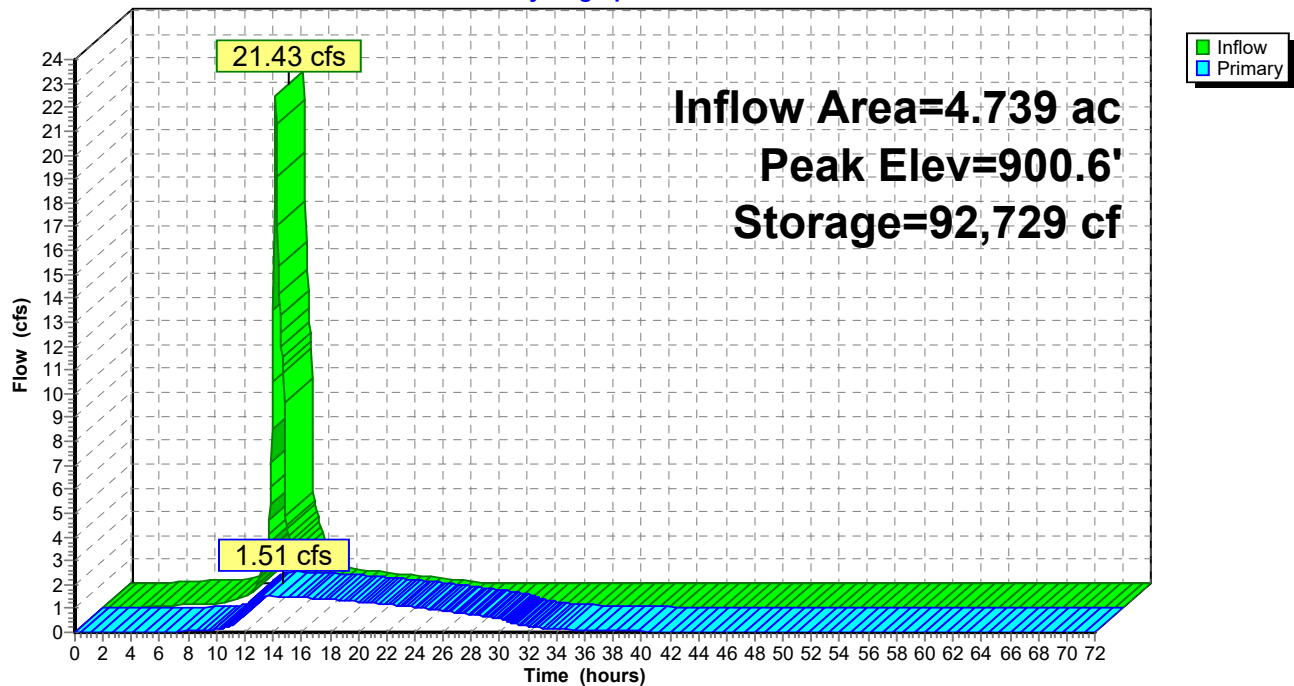
| Device | Routing  | Invert | Outlet Devices                                                                                                                                                                 |
|--------|----------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary  | 898.0' | <b>15.0" Round Culvert</b><br>L= 40.0' RCP, groove end projecting, Ke= 0.200<br>Inlet / Outlet Invert= 898.0' / 897.7' S= 0.0075 ' / Cc= 0.900<br>n= 0.013, Flow Area= 1.23 sf |
| #2     | Device 1 | 897.0' | <b>6.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads                                                                                                     |
| #3     | Device 1 | 900.6' | <b>51.0" x 96.0" Horiz. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads                                                                                        |

**Primary OutFlow** Max=1.51 cfs @ 13.72 hrs HW=900.6' TW=896.2' (Dynamic Tailwater)

1=Culvert (Passes 1.51 cfs of 8.57 cfs potential flow)  
 2=Orifice/Grate (Orifice Controls 1.51 cfs @ 7.71 fps)  
 3=Orifice/Grate ( Controls 0.00 cfs)

**Pond P-6:**

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 100-Year Rainfall=7.06"

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**Summary for Pond P-8:**

Inflow Area = 9.576 ac, 25.07% Impervious, Inflow Depth = 4.57" for 100-Year event  
 Inflow = 51.59 cfs @ 12.25 hrs, Volume= 3.648 af  
 Outflow = 15.90 cfs @ 12.44 hrs, Volume= 3.505 af, Atten= 69%, Lag= 11.6 min  
 Primary = 15.90 cfs @ 12.44 hrs, Volume= 3.505 af  
 Routed to Pond P-3B :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Starting Elev= 898.0' Surf.Area= 57,900 sf Storage= 184,000 cf  
 Peak Elev= 899.3' @ 15.01 hrs Surf.Area= 70,169 sf Storage= 266,408 cf (82,408 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 592.6 min ( 1,381.3 - 788.7 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 893.0' | 400,600 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 893.0               | 15,700               | 0                         | 0                         |
| 898.0               | 57,900               | 184,000                   | 184,000                   |
| 901.0               | 86,500               | 216,600                   | 400,600                   |

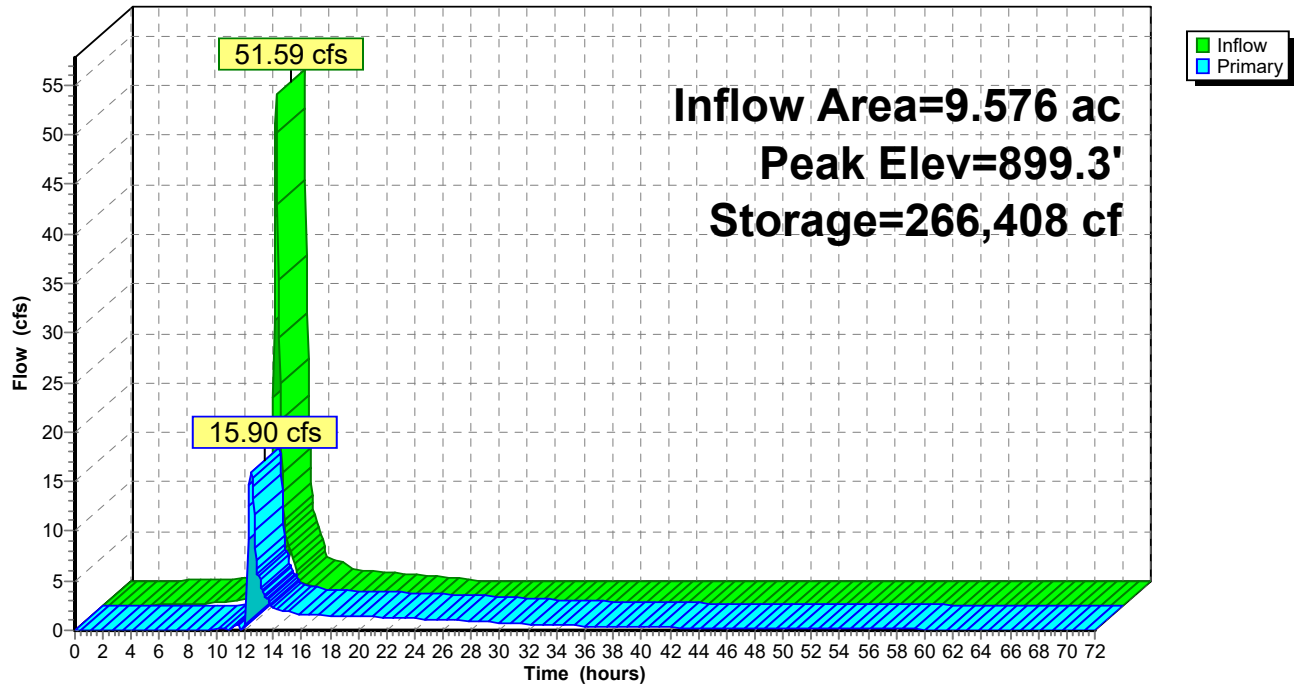
| Device | Routing | Invert | Outlet Devices                                                                                                                                                                                                                                                   |
|--------|---------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 898.0' | <b>10.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=13.55 cfs @ 12.44 hrs HW=899.2' TW=899.1' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir**(Weir Controls 13.55 cfs @ 1.17 fps)

**Pond P-8:**

Hydrograph





**Summary for Pond PB1A: Wetland 1A**

Inflow Area = 10.463 ac, 2.37% Impervious, Inflow Depth = 2.84" for 100-Year event  
 Inflow = 34.26 cfs @ 12.28 hrs, Volume= 2.478 af  
 Outflow = 11.01 cfs @ 12.68 hrs, Volume= 1.562 af, Atten= 68%, Lag= 24.1 min  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach PN : North Boundary  
 Tertiary = 11.01 cfs @ 12.68 hrs, Volume= 1.562 af  
 Routed to Pond P-3A :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 900.1' @ 12.68 hrs Surf.Area= 92,412 sf Storage= 50,548 cf

Plug-Flow detention time= 173.8 min calculated for 1.562 af (63% of inflow)  
 Center-of-Mass det. time= 85.8 min ( 912.2 - 826.4 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 899.0' | 2,338,451 cf  | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 899.0               | 1,799                | 0                         | 0                         |
| 900.0               | 77,989               | 39,894                    | 39,894                    |
| 901.0               | 193,333              | 135,661                   | 175,555                   |
| 902.0               | 368,575              | 280,954                   | 456,509                   |
| 903.0               | 576,105              | 472,340                   | 928,849                   |
| 904.0               | 715,414              | 645,760                   | 1,574,609                 |
| 905.0               | 812,270              | 763,842                   | 2,338,451                 |

| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                              |
|--------|-----------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Secondary | 902.8' | <b>100.0' long x 5.0' breadth To North</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |
| #2     | Tertiary  | 900.0' | <b>100.0' long x 10.0' breadth TO P-3A</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                                                                                        |

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=899.0' TW=0.0' (Dynamic Tailwater)

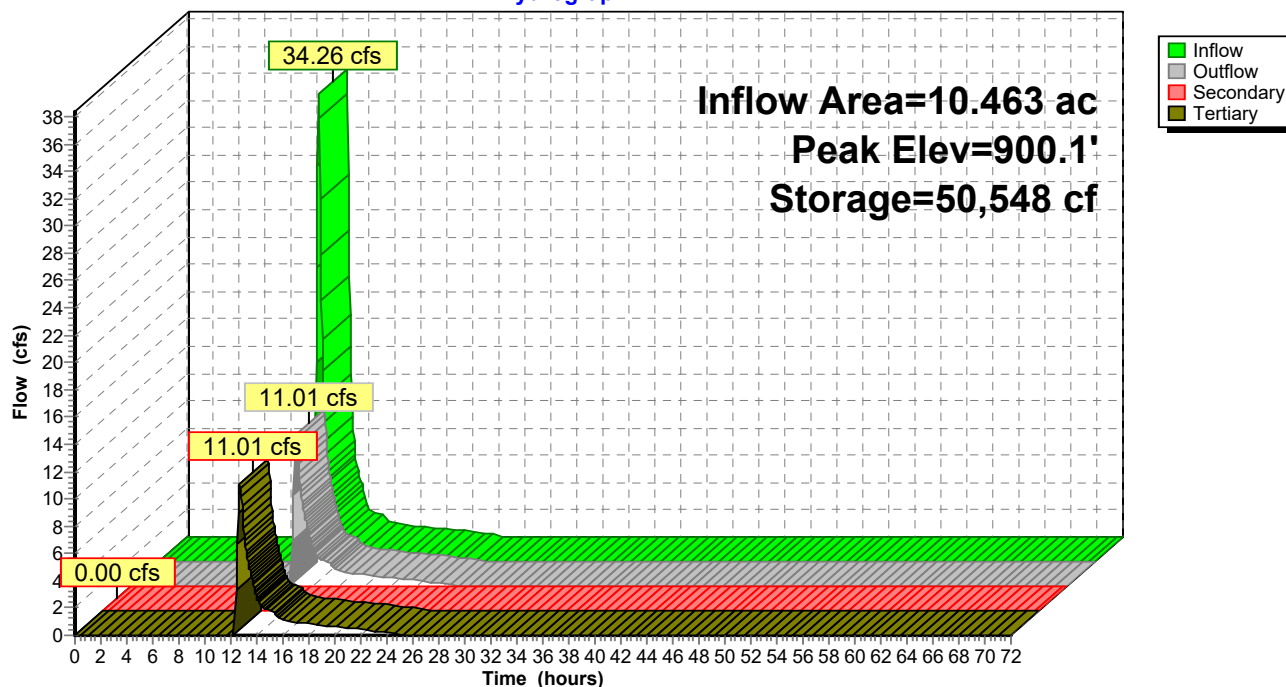
↑ **1=To North** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=10.97 cfs @ 12.68 hrs HW=900.1' TW=899.1' (Dynamic Tailwater)

↑ **2=TO P-3A** (Weir Controls 10.97 cfs @ 0.88 fps)

# Pond PB1A: Wetland 1A

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 100-Year Rainfall=7.06"

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**Summary for Pond PB1B: Wetland 1B**

Inflow Area = 2.259 ac, 9.77% Impervious, Inflow Depth = 3.75" for 100-Year event  
 Inflow = 7.69 cfs @ 12.40 hrs, Volume= 0.707 af  
 Outflow = 7.62 cfs @ 12.39 hrs, Volume= 0.697 af, Atten= 1%, Lag= 0.0 min  
 Primary = 7.62 cfs @ 12.39 hrs, Volume= 0.697 af  
 Routed to Pond PB1C : Wetland 1C

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 901.9' @ 12.82 hrs Surf.Area= 12,447 sf Storage= 1,924 cf

Plug-Flow detention time= 15.7 min calculated for 0.697 af (99% of inflow)  
 Center-of-Mass det. time= 7.1 min ( 823.1 - 815.9 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 901.5' | 194,422 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 901.5               | 55                   | 0                         | 0                         |
| 901.6               | 1,670                | 86                        | 86                        |
| 901.7               | 5,365                | 352                       | 438                       |
| 901.8               | 9,245                | 730                       | 1,168                     |
| 901.9               | 13,840               | 1,154                     | 2,323                     |
| 902.0               | 32,292               | 2,307                     | 4,629                     |
| 903.0               | 54,790               | 43,541                    | 48,170                    |
| 904.0               | 71,685               | 63,238                    | 111,408                   |
| 905.0               | 94,343               | 83,014                    | 194,422                   |

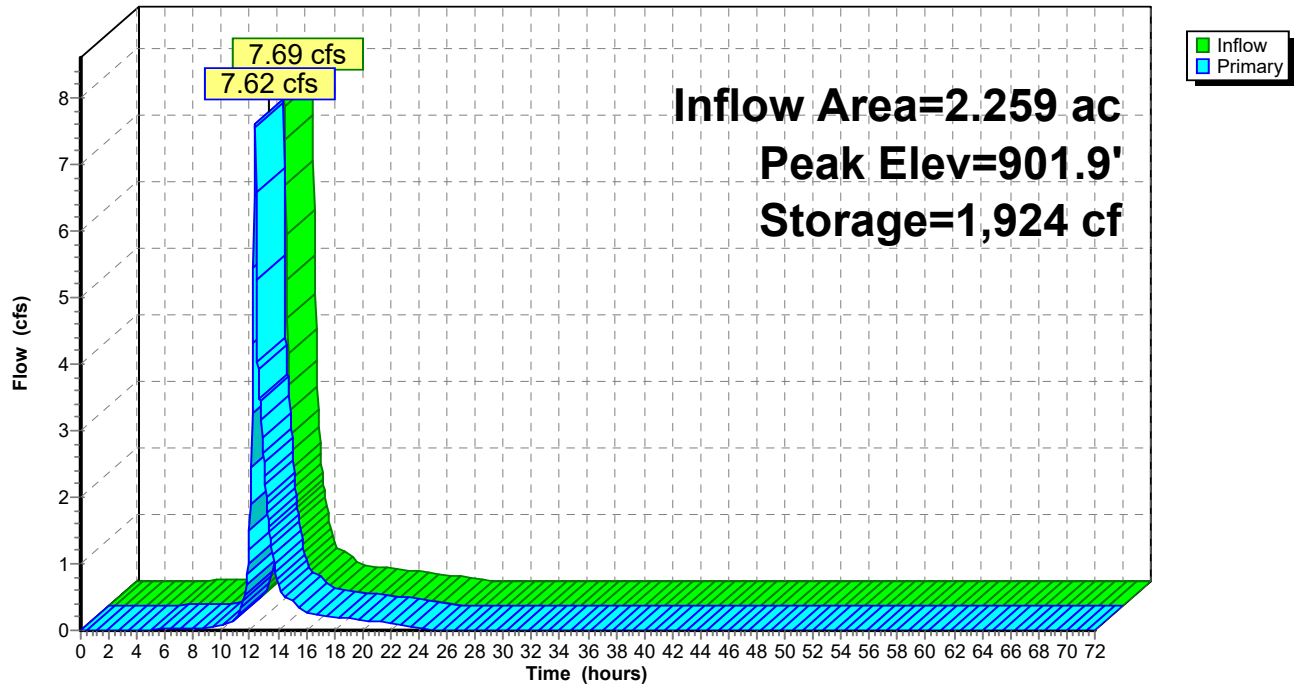
| Device | Routing | Invert | Outlet Devices                                                                                                                                                             |
|--------|---------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 901.5' | <b>50.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=5.79 cfs @ 12.39 hrs HW=901.7' TW=901.6' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 5.79 cfs @ 0.74 fps)

**Pond PB1B: Wetland 1B**

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 100-Year Rainfall=7.06"

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**Summary for Pond PB1C: Wetland 1C**

Inflow Area = 11.034 ac, 4.50% Impervious, Inflow Depth = 3.04" for 100-Year event  
 Inflow = 28.33 cfs @ 12.42 hrs, Volume= 2.797 af  
 Outflow = 16.23 cfs @ 12.77 hrs, Volume= 2.058 af, Atten= 43%, Lag= 21.0 min  
 Primary = 16.23 cfs @ 12.77 hrs, Volume= 2.058 af  
 Routed to Reach PW : West Boundary  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Reach 1C&PB-13 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 901.9' @ 12.77 hrs Surf.Area= 85,797 sf Storage= 45,616 cf

Plug-Flow detention time= 141.3 min calculated for 2.058 af (74% of inflow)  
 Center-of-Mass det. time= 63.0 min ( 896.9 - 833.9 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 900.1' | 577,352 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 900.1               | 174                  | 0                         | 0                         |
| 900.2               | 975                  | 57                        | 57                        |
| 900.5               | 5,734                | 1,006                     | 1,064                     |
| 901.0               | 20,570               | 6,576                     | 7,640                     |
| 901.5               | 36,160               | 14,183                    | 21,822                    |
| 901.8               | 83,591               | 17,963                    | 39,785                    |
| 902.0               | 90,000               | 17,359                    | 57,144                    |
| 903.0               | 100,000              | 95,000                    | 152,144                   |
| 904.0               | 233,558              | 166,779                   | 318,923                   |
| 905.0               | 283,299              | 258,429                   | 577,352                   |

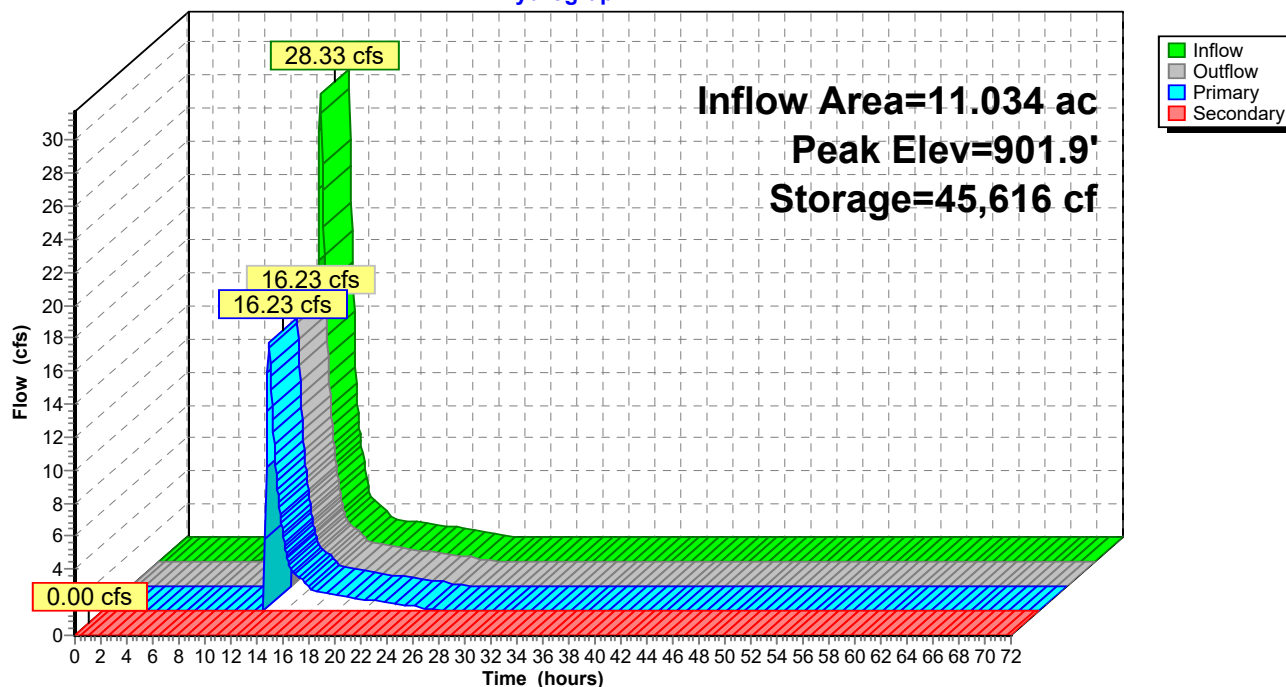
| Device | Routing   | Invert | Outlet Devices                                                                                                                                                                                                                             |
|--------|-----------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 901.7' | <b>100.0' long x 5.0' breadth To West</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |
| #2     | Secondary | 902.1' | <b>10.0' long x 5.0' breadth TO PB-13</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=16.17 cfs @ 12.77 hrs HW=901.9' TW=0.0' (Dynamic Tailwater)  
 ↑1=To West (Weir Controls 16.17 cfs @ 0.96 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=900.1' TW=898.3' (Dynamic Tailwater)  
 ↑2=TO PB-13 ( Controls 0.00 cfs)

# Pond PB1C: Wetland 1C

Hydrograph



**Summary for Pond PB6: Wetland 6**

Inflow Area = 18.280 ac, 10.37% Impervious, Inflow Depth > 3.17" for 100-Year event  
 Inflow = 20.21 cfs @ 12.41 hrs, Volume= 4.833 af  
 Outflow = 19.62 cfs @ 12.52 hrs, Volume= 4.654 af, Atten= 3%, Lag= 6.2 min  
 Primary = 19.62 cfs @ 12.52 hrs, Volume= 4.654 af  
 Routed to Reach PSW-Q : Southwest Discharge

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 896.2' @ 12.52 hrs Surf.Area= 37,686 sf Storage= 12,156 cf

Plug-Flow detention time= 60.8 min calculated for 4.654 af (96% of inflow)  
 Center-of-Mass det. time= 18.6 min ( 1,038.8 - 1,020.2 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 895.0' | 227,572 cf    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

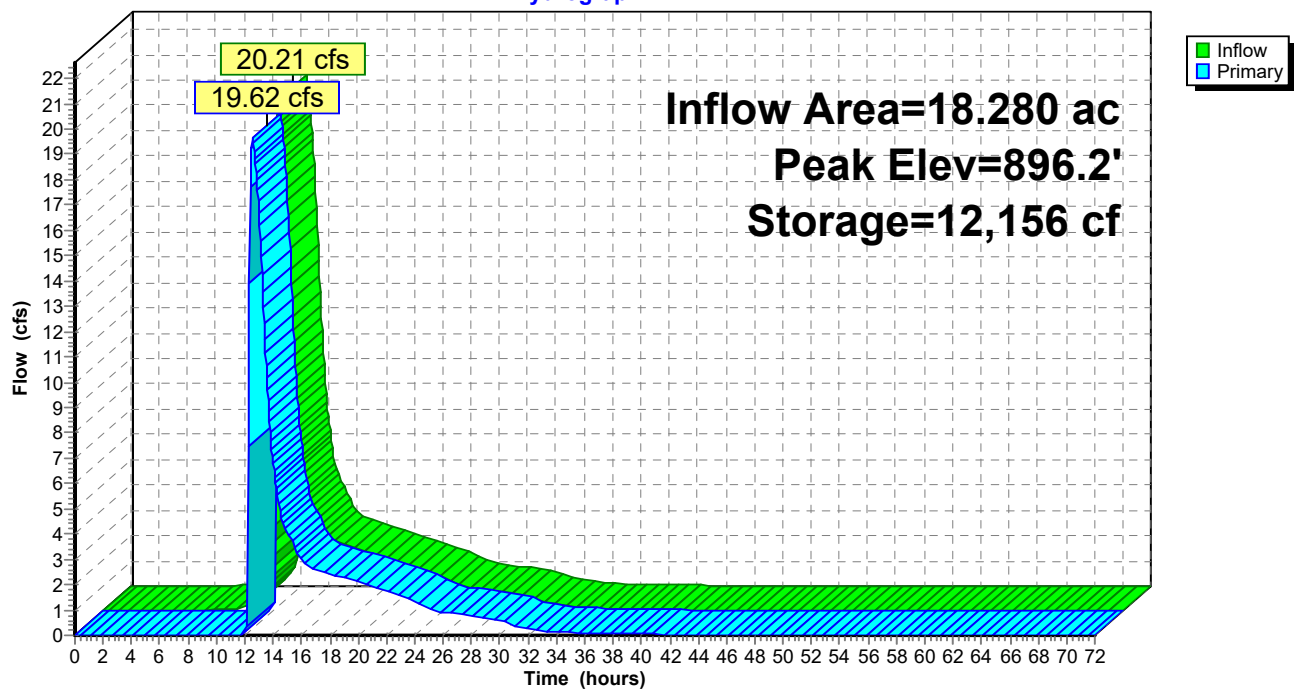
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 895.0               | 500                  | 0                         | 0                         |
| 896.0               | 11,662               | 6,081                     | 6,081                     |
| 897.0               | 117,362              | 64,512                    | 70,593                    |
| 898.0               | 196,595              | 156,979                   | 227,572                   |

| Device | Routing | Invert | Outlet Devices                                                                                                                                                                                                                                                    |
|--------|---------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 896.1' | <b>150.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.5 3.0 3.5<br>4.0 4.5 5.0 5.5<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65<br>2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=19.58 cfs @ 12.52 hrs HW=896.2' TW=0.0' (Dynamic Tailwater)  
 ↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 19.58 cfs @ 0.89 fps)

**Pond PB6: Wetland 6**

Hydrograph





**LDP24010 Ham Lake**

MSE 24-hr 3 100-Year Rainfall=7.06"

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**Summary for Pond PB7A: Wetland 7A**

Inflow Area = 5.178 ac, 4.88% Impervious, Inflow Depth = 2.37" for 100-Year event  
 Inflow = 13.19 cfs @ 12.32 hrs, Volume= 1.024 af  
 Outflow = 12.63 cfs @ 12.37 hrs, Volume= 0.907 af, Atten= 4%, Lag= 3.5 min  
 Primary = 12.63 cfs @ 12.37 hrs, Volume= 0.907 af  
 Routed to Pond PB6 : Wetland 6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 898.3' @ 12.37 hrs Surf.Area= 17,538 sf Storage= 7,280 cf

Plug-Flow detention time= 72.6 min calculated for 0.907 af (89% of inflow)  
 Center-of-Mass det. time= 23.0 min ( 865.8 - 842.8 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 897.5' | 24,008 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

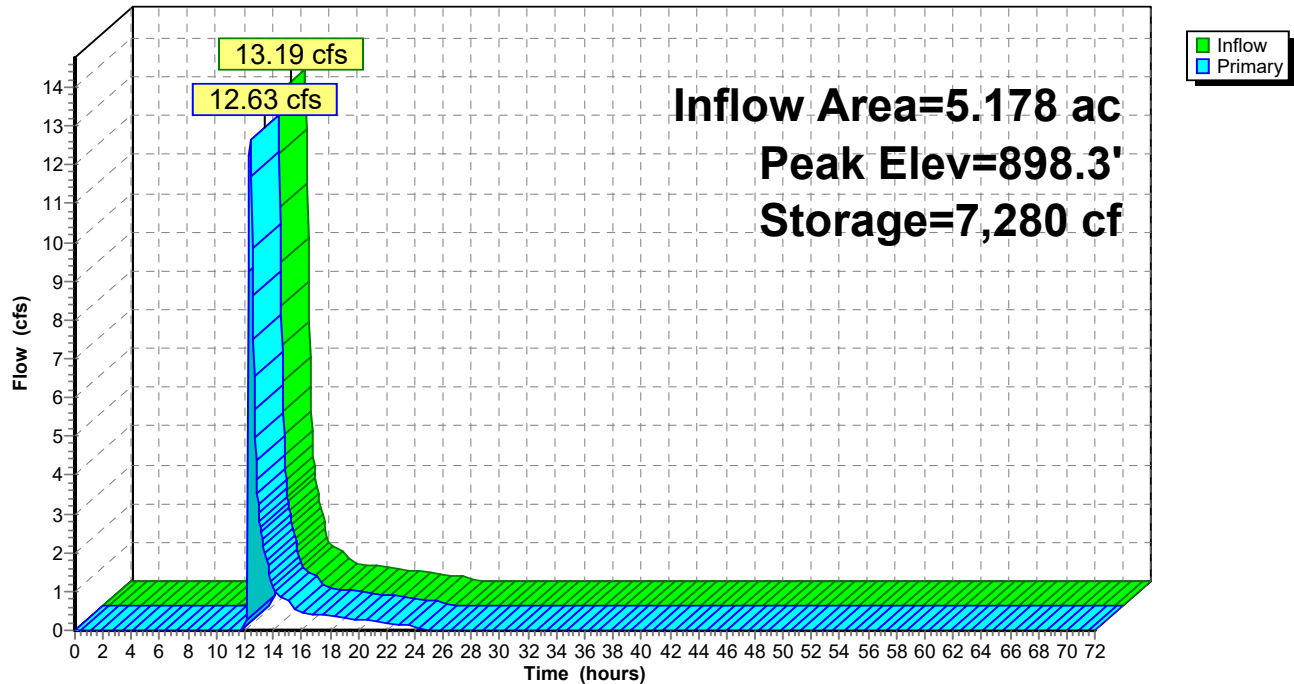
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 897.5               | 1,042                | 0                         | 0                         |
| 898.0               | 9,707                | 2,687                     | 2,687                     |
| 899.0               | 32,934               | 21,321                    | 24,008                    |

| Device | Routing | Invert | Outlet Devices                                                                                                                                      |
|--------|---------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 898.2' | <b>100.0' long x 10.0' breadth To PB6</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=12.25 cfs @ 12.37 hrs HW=898.3' TW=896.2' (Dynamic Tailwater)  
 ↑ **1=To PB6** (Weir Controls 12.25 cfs @ 0.91 fps)

**Pond PB7A: Wetland 7A**

Hydrograph



**Summary for Pond PB7B: Wetland 7B**

Inflow Area = 3.023 ac, 4.72% Impervious, Inflow Depth = 2.53" for 100-Year event  
 Inflow = 11.30 cfs @ 12.18 hrs, Volume= 0.637 af  
 Outflow = 6.35 cfs @ 12.32 hrs, Volume= 0.494 af, Atten= 44%, Lag= 8.3 min  
 Primary = 6.35 cfs @ 12.32 hrs, Volume= 0.494 af  
     Routed to Pond PB7A : Wetland 7A  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
     Routed to Reach P7B&D :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 898.5' @ 12.32 hrs Surf.Area= 27,570 sf Storage= 9,658 cf

Plug-Flow detention time= 121.3 min calculated for 0.493 af (77% of inflow)  
 Center-of-Mass det. time= 49.7 min ( 863.3 - 813.7 )

| Volume | Invert | Avail.Storage | Storage Description                                        |
|--------|--------|---------------|------------------------------------------------------------|
| #1     | 897.7' | 32,037 cf     | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 897.7               | 330                  | 0                         | 0                         |
| 898.0               | 7,784                | 1,217                     | 1,217                     |
| 898.5               | 28,502               | 9,072                     | 10,289                    |
| 899.0               | 58,492               | 21,749                    | 32,037                    |

| Device | Routing   | Invert | Outlet Devices                                                                                                                                                              |
|--------|-----------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary   | 898.3' | <b>50.0' long x 10.0' breadth TO EB-7A</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64                        |
| #2     | Secondary | 899.7' | <b>100.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=6.22 cfs @ 12.32 hrs HW=898.5' TW=898.3' (Dynamic Tailwater)

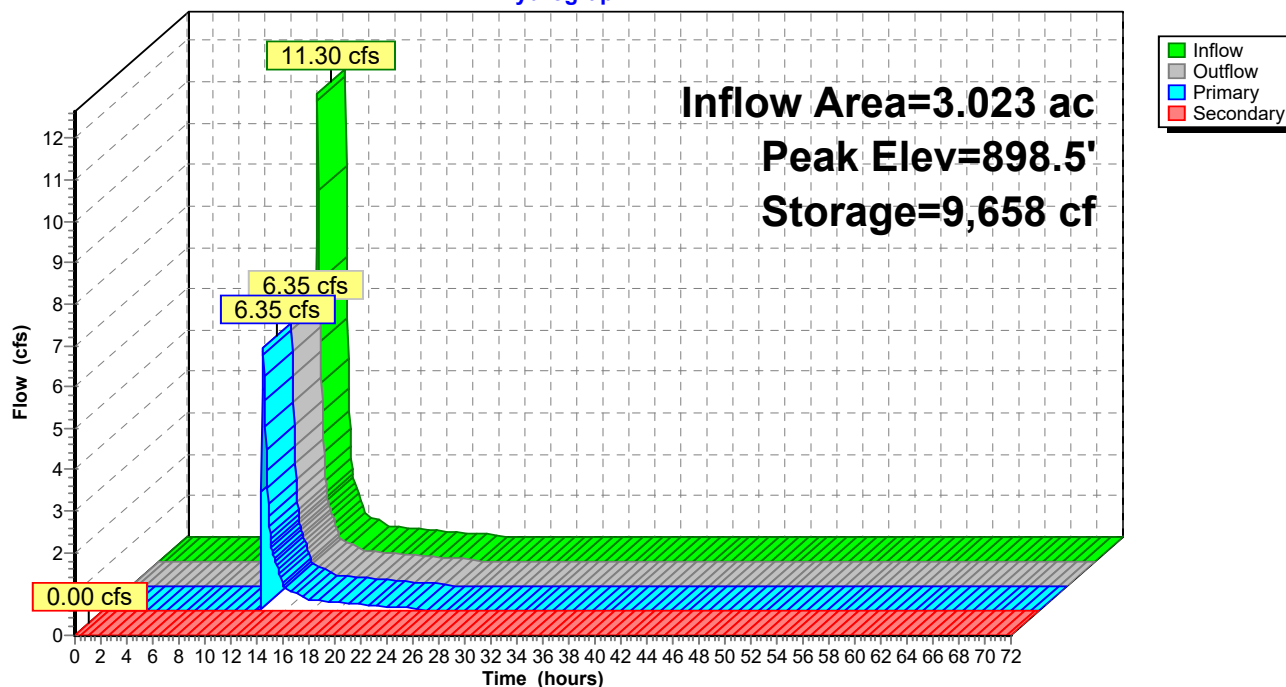
↑ **1=TO EB-7A** (Weir Controls 6.22 cfs @ 0.92 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=897.7' TW=0.0' (Dynamic Tailwater)

↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Pond PB7B: Wetland 7B**

Hydrograph



**LDP24010 Ham Lake**

MSE 24-hr 3 100-Year Rainfall=7.06"

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**Summary for Pond PB7C: Wetland 7C**

Inflow Area = 0.449 ac, 0.00% Impervious, Inflow Depth = 2.75" for 100-Year event  
 Inflow = 2.26 cfs @ 12.12 hrs, Volume= 0.103 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Routed to Pond PB7B : Wetland 7B

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 899.3' @ 24.35 hrs Surf.Area= 6,529 sf Storage= 4,471 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

| Volume              | Invert               | Avail.Storage             | Storage Description                                        |
|---------------------|----------------------|---------------------------|------------------------------------------------------------|
| #1                  | 897.7'               | 5,675 cf                  | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet)                                  |
| 897.7               | 122                  | 0                         | 0                                                          |
| 898.0               | 753                  | 131                       | 131                                                        |
| 898.5               | 2,342                | 774                       | 905                                                        |
| 899.0               | 4,602                | 1,736                     | 2,641                                                      |
| 899.5               | 7,533                | 3,034                     | 5,675                                                      |

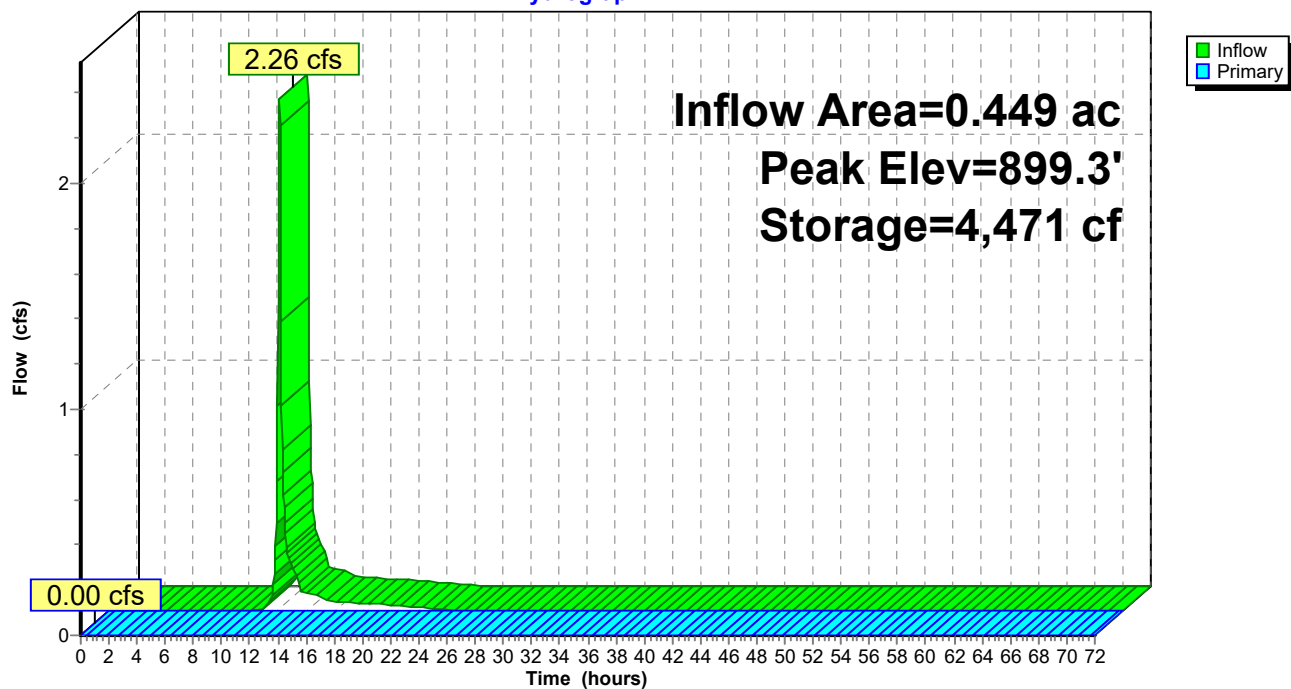
| Device | Routing | Invert | Outlet Devices                                                                                                                                                             |
|--------|---------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 899.6' | <b>50.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6<br>Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=897.7' TW=897.7' (Dynamic Tailwater)

↑1=**Broad-Crested Rectangular Weir**( Controls 0.00 cfs)

**Pond PB7C: Wetland 7C**

Hydrograph



## **APPENDIX D: OTHER PROPOSED HYDROLOGY CALCULATIONS**

Water Quailty Pre-Treatment:

|                                    | PB-3A (F-1) | PB-3A (F-2) | PB-3A (F-3) | P-12 (F-4) | P-6 (F-5) |                             |
|------------------------------------|-------------|-------------|-------------|------------|-----------|-----------------------------|
| <i>TSS:</i>                        |             |             |             |            |           |                             |
| Area Draining To Pond (AC)=        | 3.18        | 1.30        | 1.91        | 9.13       | 0.70      | (From HydroCAD)             |
| Area Draining To Pond (SF)=        | 138521      | 56628       | 83200       | 397703     | 30492     |                             |
| Volume Requirement (CF) Per Acre=  | 1800        | 1800        | 1800        | 1800       | 1800      |                             |
| Dead Storage Volume Reqd (CF)=     | 5724        | 2340        | 3438        | 16434      | 1260      |                             |
| <i>Total Phosphorus:</i>           |             |             |             |            |           |                             |
| New Impervious Area (AC)=          | 1.37        | 0.25        | 1.33        | 3.28       | 0.58      | (From HydroCAD)             |
| New Impervious Area (SF)=          | 59,634      | 11,021      | 57,935      | 142,920    | 25,047    |                             |
| TP Removal Factor=                 | 0.50        | 0.50        | 0.50        | 0.50       | 0.50      |                             |
| Reqd Treatment Vol (CF)=           | 10,933      | 2,020       | 10,621      | 26,202     | 4,592     | (CCWD Calculation)          |
| Pretreatment Volume Provided (CF)= | 23607       | 4539        | 12003       | 34689      | 11532     |                             |
| <i>Forebay Minimum Sizing:</i>     |             |             |             |            |           |                             |
| Min Pretreatment Volume %=         | 10.0%       | 10.0%       | 10.0%       | 10.0%      | 10.0%     | (MPCA requires forebay be   |
| Pretreatment Volume % Provided=    | 127.9%      | 175.3%      | 36.3%       | 600.0%     | 464.3%    | 10% of dead stoarge volume) |

Water Quailty Treatment:

|                                     | P-3A      | P-3B    | P-12      | P-6    | P-8     |                    |
|-------------------------------------|-----------|---------|-----------|--------|---------|--------------------|
| <i>TSS:</i>                         |           |         |           |        |         |                    |
| Area Draining To Pond (AC)=         | 27.31     | 10.0    | 23.86     | 1.92   | 9.58    | (From HydroCAD)    |
| Area Draining To Pond (SF)=         | 1,189,667 | 435,600 | 1,039,516 | 83,635 | 417,131 |                    |
| Volume Requirement (CF) Per Acre=   | 1800      | 1800    | 1800      | 1800   | 1800    |                    |
| Dead Storage Volume Reqd (CF)=      | 49160     | 18000   | 42955     | 3456   | 17237   |                    |
| <i>Total Phosphorus:</i>            |           |         |           |        |         |                    |
| New Impervious Area (AC)=           | 2.31      | 0.39    | 4.14      | 0.72   | 0.31    |                    |
| New Impervious Area (SF)=           | 100,667   | 16,945  | 180,121   | 31,537 | 13,547  |                    |
| TP Removal Factor=                  | 0.50      | 0.60    | 0.50      | 0.50   | 0.50    |                    |
| Reqd Treatment Vol (CF)=            | 18456     | 2589    | 33022     | 5782   | 2484    | (CCWD Calculation) |
| Pre-treatment Volume Provided (CF)= | 28146     | 12003   | 34689     | 11532  |         |                    |
| Wet Pool Volume Provided (CF)=      | 1911300   | 592800  | 560450    | 55800  | 184000  |                    |
| Dead Storage Volume Provided (CF)=  | 1,939,446 | 604,803 | 595,139   | 67,332 | 184,000 |                    |

MPCA WQ Discharge Check:

|                                     | P-3A      | P-3B    | P-12    | P-6    | P-8     |                 |
|-------------------------------------|-----------|---------|---------|--------|---------|-----------------|
| New Impervious Area (ac)=           | 2.31      | 0.39    | 4.14    | 0.72   | 0.31    |                 |
| Treatment Runoff Depth (in)=        | 1.0       | 1.0     | 1.0     | 1.0    | 1.0     |                 |
| Retention Volume (CF)=              | 8389      | 1412    | 15010   | 2628   | 1129    |                 |
| Pond Surface Area on 1" Event (SF)= | 312859    | 105174  | 121800  | 19583  | 58154   | (From HydroCAD) |
| Regulated Discharge/Acre (CFS)=     | 5.66      | 5.66    | 5.66    | 5.66   | 5.66    |                 |
| Maximum Allowable Discharge (CFS)=  | 40.65     | 13.67   | 15.83   | 2.54   | 7.56    |                 |
| Storage Provided Below NWL (CF)=    | 1,911,300 | 592,800 | 560,450 | 55,800 | 184,000 |                 |
| Storage to 1" Runoff (CF)=          | 1,919,689 | 594,212 | 575,460 | 58,428 | 185,129 |                 |
| Dischage Elevation at 1" Runoff=    | 898.20    | 898.20  | 897.30  | 899.20 | 898.10  |                 |
| Dischage at 1" Runoff (cfs)=        | 8.46      | 1.05    | 0.36    | 0.92   | 0.74    |                 |