DRAINAGE SUMMARY REPORT

FOR
"COMMERCIAL DEVELOPMENT"

LOCATED AT
375 FAIRFIELD AVENUE
STAMFORD, CONNECTICUT

PREPARED FOR
375 FAIRFIELD AVENUE ASSOCIATES

October 4, 2023

Derek E. Daunais, PE
CT License No. 22861

23DA_DSR_0

D'ANDREA SURVEYING & ENGINEERING, PC
LAND PLANNERS • ENGINEERS • SURVEYORS

Applicant / Site Information:

Applicant: **375 Fairfield Avenue Associates**
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Engineer: **D'Andrea Surveying & Engineering, PC**
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Site Information:

375 Fairfield Avenue
Block 35, Tax Account #001-3193
Existing / Proposed Zone: M-G Zoning District
Existing / Proposed Use: Commercial

Table of Contents

Introduction:

The Owner of the property located at 375 Fairfield Avenue in Stamford, Connecticut, is proposing to construct two new commercial buildings along with associated improvements at the already developed site. The purpose of this report is to summarize the proposed stormwater treatment improvements for the site as part of the proposed commercial redevelopment. The property is located along the western side of Fairfield Avenue, just south of the intersection with Selleck Street. The property is bordered by Metro-North railroad to the west, Fairfield Avenue to the east, and commercial properties to the south and southeast. It is located in the M-G zoning district and has a total area of 9.3816 acres. The property is located outside all Flood Hazard Areas (refer to Exhibit D).

The property currently contains seven other existing commercial buildings. These building will remain in operation and will not be removed. The construction of the two new buildings will take place in areas that are currently used as surface parking. The total area of land disturbance for the proposed project will be approximately 3.9 acres or 41.5% of the property. The remaining 58.5% of the property will remain the same as under existing conditions.

The proposed improvements will include the removal of the hardscape/compacted gravel surfaces within the limits of disturbance, the construction of two new commercial buildings (Buildings "A" and "B"), the construction of new bituminous concrete driveways and parking lot areas with curbing, retaining walls, sidewalks, the installation of a stormwater collection, retention and conveyance system, installation of various underground utilities, and the implementation of a planting plan. There are currently nine existing driveway entrances to the site. The proposed improvements will eliminate five of these entrances and modify four of them, so there will be a total of only four driveway entrances to the property after construction has been completed. Refer to the Site Plan Review Set, prepared by D'Andrea Surveying & Engineering, P.C. for a depiction of existing conditions and the proposed site improvements.

The proposed development will decrease the total amount of impervious coverage from 396,183 square feet (S.F.) (or 96.9%) to 388,070 S.F. (or 95.0%), which is a decrease of approximately 8,113 S.F. or (1.9%), as compared to existing conditions. Existing compacted gravel parking area surfaces have been considered as impervious surfaces for the purpose of this total impervious coverage comparison. A proposed storm drainage system, including catch basins with deep sumps and traps, cyclonic hydrodynamic oil/grit removal treatment systems, porous pavement systems, and subsurface retention/infiltration systems, will be installed to treat Water Quality Flow (WQF), infiltrate a minimum of the half Water Quality Flow (WQF), and reduce both peak flow discharge rates and runoff volume to off-site areas, as compared to existing conditions. There are currently no stormwater retention or infiltration treatment measures on the site within the areas of proposed development. Drainage patterns and discharge points will be similar as under existing conditions.

The on-site watershed drainage basins for existing and proposed conditions were modeled using HydroCAD 10.0 developed by HydroCAD Software Solutions LLC. The software was used

to generate peak stormwater runoff flow rates for the 1-year to 100-year storm events, using the National Resources Conservation Services (NRCS) method.

Existing Conditions:

Currently, the entire property supports seven commercial buildings. The majority of the remainder of the property consists of either paved or compacted gravel driveway and parking area surfaces with very little vegetated areas and very few trees. The entire property has been previously developed and there are no natural areas remaining. The area designated for the development of proposed Building "A" currently consists of a mixture of compacted gravel and paved parking areas. The area designated for the development of proposed Building "B" currently consists of a large concrete slab surrounded by paved driveway/parking areas. The concrete slab is what remains of a foundation slab from a previously existing building that was removed many years ago. This concrete slab is currently used as a parking area.

Stormwater runoff from the entire site flows to different Points of Concern (POC). The stormwater runoff from Drainage Area 1 (DA-1) flows overland toward Fairfield Avenue where it is collected by street catch basins and discharged into the City of Stamford storm drainage system, POC-A. The stormwater runoff from DA-2A, DA-2B, DA-2C, DA-2D, and DA-2E is collected by the existing on-site storm drainage system and pipe discharged onto the Metro-North property to the west, POC-B. DA-3 consists of existing Building #1. The stormwater runoff from this building is piped to an unknown location, POC-F. The stormwater runoff from the southern end of the property, DA-4, flows onto the adjoining property to the east, POC-C. DA-5A consists of the existing Building #13. The stormwater runoff from this building is piped into an existing on-site infiltration drywell, POC-D. The stormwater runoff from DA-5B is also piped into another existing on-site infiltration drywell, POC-E. Refer to Exhibit "A" for a depiction of existing conditions stormwater runoff flow patterns and watershed areas.

Proposed Conditions:

Under proposed conditions, drainage patterns and discharge points will be similar as under existing conditions. However, new storm drainage treatment and retention facilities have been proposed to help control and treat stormwater runoff before it is discharged off-site. The proposed drainage analysis includes the division of the property into multiple sub-watershed areas discharging to the same points of concern as under existing conditions. Refer to Exhibit "B" for a depiction of proposed conditions stormwater runoff flow patterns and watershed areas.

Drainage Areas 2D, 2E, 3, 4, 5A, and 5B will not be impacted by the proposed development and neither will the stormwater runoff flow or volume to points of concern C, D, and E. These drainage areas will remain the same as under existing conditions. Only existing drainage areas, DA-1, DA-2A, DA-2B, and DA-2C will be impacted by the proposed development and therefore they have been renumbered and remodeled to accommodate the proposed development improvements.

Proposed drainage areas DA-1A through DA-1F are associated with the development of proposed Building "A". Stormwater runoff from DA-1A will flow overland onto Fairfield Avenue where it will be collected by existing street catch basins and discharged into the City of Stamford storm drainage system, POC-A, similar as under existing conditions. The stormwater runoff from DA-1D and DA-1E will be collected by proposed porous pavement parking areas (PP-1 & PP-2). Theses systems have been sized to both retain and infiltrate a minimum of the one-half water quality volume for their associated watershed areas. The overflow from these systems will be piped to the City storm drainage system in Fairfield Avenue, POC-A. The stormwater runoff from DA-1B will be collected by the proposed storm drainage system and first routed through a hydrodynamic oil/grit separator stormwater treatment system and then discharged into a subsurface retention/infiltration system (RS-1). This subsurface retention/infiltration system has been designed to retain a minimum of the one-half water quality volume from its contributing watershed area. The overflow from this system will be piped to the City storm drainage system in Fairfield Avenue, POC-A. Due to restrictive soil conditions the one-half water quality volume stormwater runoff from DA-1C and DA-1F cannot be retained and infiltrated. Instead, the stormwater runoff from these two areas will be treated through the use of a hydrodynamic oil/grit separator stormwater treatment systems prior to being discharged into the City storm drainage system in Fairfield Avenue, POC-A.

Proposed drainage areas DA-2A, DA-2B-1, DA-2B-2, and DA-2C are associated with the development of proposed Building "B". Stormwater runoff from DA-2A will be collected by a new replacement driveway catch basin prior to being piped to the Metro-North property, POC-B. This drainage area will have similar surface conditions as under existing conditions and therefore water quality volume infiltration is not warranted. However, the new catch basin will contain both a deep sump and silt trap, which will assist in stormwater runoff pretreatment and will be an improvement over existing conditions. The stormwater runoff from DA-2B-1 will be collected by a proposed porous pavement parking area (PP-3). This system has been sized to both retain and infiltrate a minimum of the one-half water quality volume for its associated watershed area. The overflow from this system will be piped to the Metro-North property, POC-B. The stormwater runoff from DA-2B-2 will be collected by the proposed storm drainage system and first routed through a hydrodynamic oil/grit separator stormwater treatment system and then discharged into a subsurface retention/infiltration system (RS-2). This subsurface retention/infiltration system has been designed to retain a minimum of the one-half water quality volume from its contributing watershed area. The overflow from this system will be piped to the Metro-North property, POC-B. DA-2C will consist mostly of the existing parking lot located to the southwest of proposed Building "B". The stormwater runoff from DA-2C will continue to be collected by the existing parking lot storm drainage system and piped to the Metro-North property, POC-B, in a similar manner as under existing conditions.

Refer to Appendix "A" for half water quality volume calculations and retention system/porous pavement stage-storage data. The proposed cyclonic hydrodynamic oil/grit removal treatment systems will be designed to treat a minimum of the water quality flow rate from their contributing watershed areas. Refer to Appendix "A" for water quality flow rate calculations.

All proposed catch basins will be equipped with deep sumps and hooded traps over the outlet pipes, which will be used to pretreat the stormwater runoff prior to discharge downstream.

The bottoms of the proposed subsurface retention/infiltration systems have been designed to be set a minimum of 1-foot above any underlying restrictive layer in accordance with the City of Stamford Drainage Manual standards. The Soil Survey of Fairfield County, Connecticut, as developed by the United States Department of Agriculture (USDA) and the Soil Conservation Service (SCS) classifies the majority of the on-site soil group as Urban Land with a hydrologic soil group rating of D. Refer to Exhibit "C" for the NRCS soil delineation map and hydrologic soil group rating. However, on-site test pits were performed, which have characterized the soils as predominately silty sand, which generally have good infiltration characteristics. Due to the existing uses of the property and the presence of existing concrete slabs, test pits were currently unable to be performed in all of the proposed porous pavement and subsurface retention system locations. Therefore, additional deep test pits and hydraulic conductivity tests will be performed in the areas of the proposed retention systems prior to the issuance of a building permit to verify the infiltration rates of the existing soils and if any restrictive soil conditions are present. If any design changes are required due to the results of this additional soil testing, both the results of the additional soil testing and the revised storm drainage design will be submitted to the City Engineering Bureau for review prior to the issuance of a building permit.

Based on the HydroCAD model, both the volume and peak rate of stormwater runoff exiting the site will be decreased for all storm events to POC A and B. Refer to Appendix "B" for a summary and comparison of the peak flow and volume discharge from the subject property for both existing and proposed conditions. In addition to reducing the peak flows, infiltrating one-half the Water Quality Volume and treating the Water Quality Flow from the proposed improvements will help pretreat stormwater runoff from the proposed asphalt parking lot areas and building roofs prior to discharging downstream.

During the construction phase of the project, pretreatment of stormwater runoff will be provided by the use of temporary soil and erosion controls as outlined on the "Sedimentation and Erosion Control Plan," prepared by D'Andrea Surveying & Engineering, P.C. This includes the stockpiling of excess materials for control of sediment and periodic on-site inspections to ensure that the development of the site remains "tight" and stable throughout the construction phase.

Narrative of Impacts to State Drainage Facilities

The Metro-North railroad right-of-way lies adjacent to the western property line of the proposed development. There are no new proposed direct stormwater runoff connections from the proposed development to the railroad right-of-way from any of the proposed building or driveway improvements. There are currently four existing storm drainage pipes that discharge stormwater runoff from the subject property onto the Metro-North property. These existing drainage pipes will remain in use under proposed conditions.

Under existing conditions, the stormwater runoff from the subject property that is discharged onto the railroad right-of-way is untreated. Under proposed conditions, the stormwater

runoff from the area of proposed development on the subject property will first be treated through water quality measures, such as porous pavement areas, subsurface retention/infiltration systems, and cyclonic hydrodynamic oil/grit removal treatment systems. These proposed stormwater treatment measures plus the overall reduction in the peak rate of runoff and volume will result in an overall improvement, as compared to existing conditions. Therefore, there will be no adverse impacts to any existing storm drainage systems that may lie within the railroad right-of-way, as a result of the proposed development.

There is currently an undefined access easement over the subject property to the Metro-North property in favor of the State of Connecticut. An access route through the subject property will be provided and maintained throughout construction and under proposed conditions.

Conclusion

The proposed improvements will reduce the total amount of overall impervious surfaces on the subject property and have been designed to provide water quality treatment measures that will both mitigate stormwater runoff from the site and reduce runoff volumes and peak flow rates, as compared to existing conditions.

Based on the above information, the proposed improvements are designed in accordance with the City of Stamford Stormwater Drainage Manual and will not adversely impact adjacent or downstream properties or City-owned drainage facilities

Exhibits "A" & "B"

Watershed Maps
Existing & Proposed Conditions

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BARFIELD_23DA_DSR_EXHIBIT-A_0.DWG (DED)

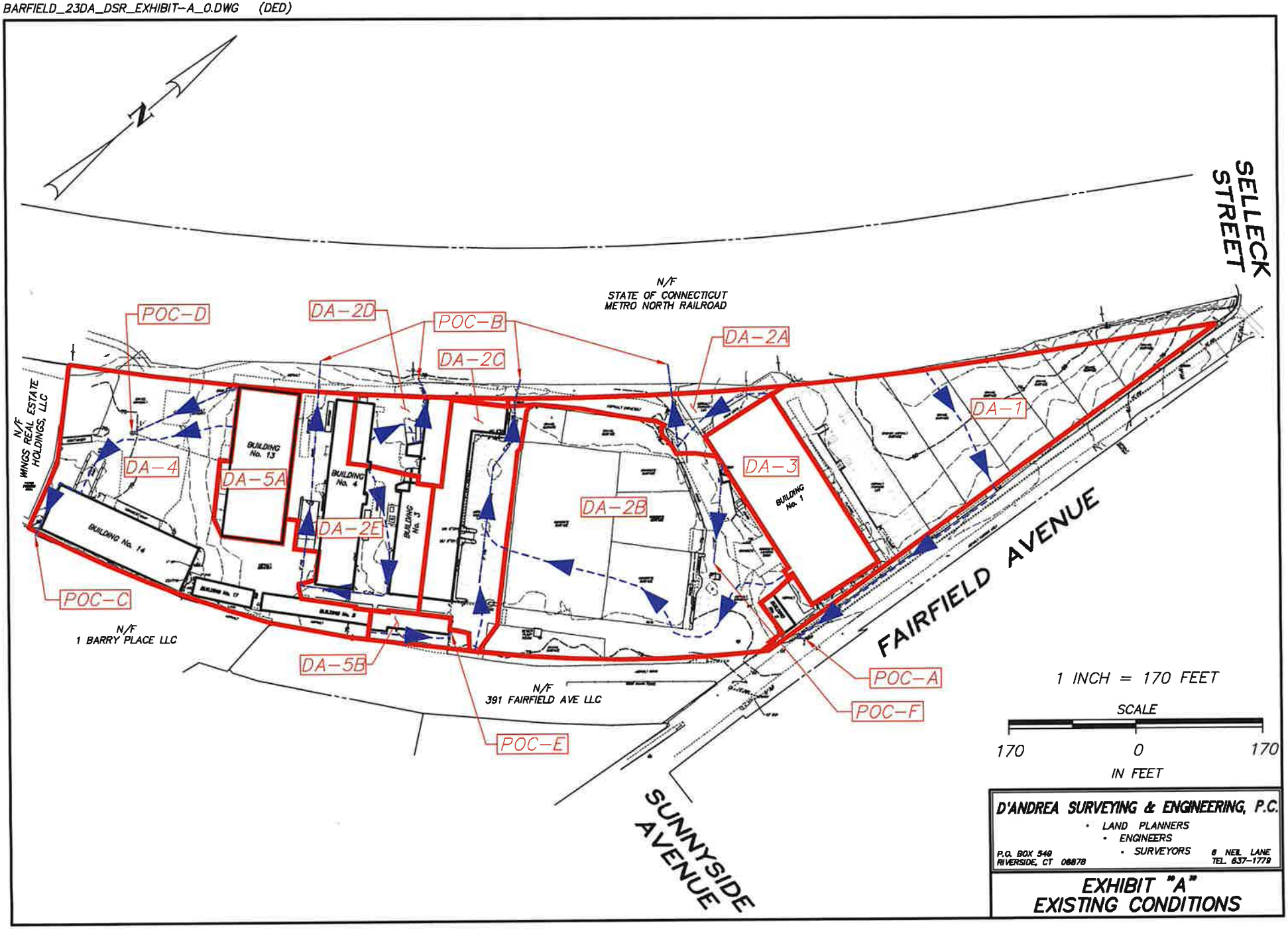

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EXHIBIT "A"
EXISTING CONDITIONS

Exhibit "C"

NRCS Soil Map &
Hydraulic Soil Group Rating

Hydrologic Soil Group—State of Connecticut
(375 Fairfield Avenue, Stamford, CT)

Map Scale: 1:2,560 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0, 35, 70, 140, 210

Feet: 0, 100, 200, 400, 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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: State of Connecticut
Survey Area Data: Version 22, Sep 12, 2022

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

Date(s) aerial images were photographed: Oct 21, 2022—Oct 27, 2022

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
307	Urban land	D	10.5	100.0%
Totals for Area of Interest			**10.5**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Exhibit "D"

FIRM Map

National Flood Hazard Layer FIRMette

FEMA

73°33'26"W 41°2'29"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

73°32'49"W 41°2'1"N

Legend

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

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

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

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

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

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

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

N

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

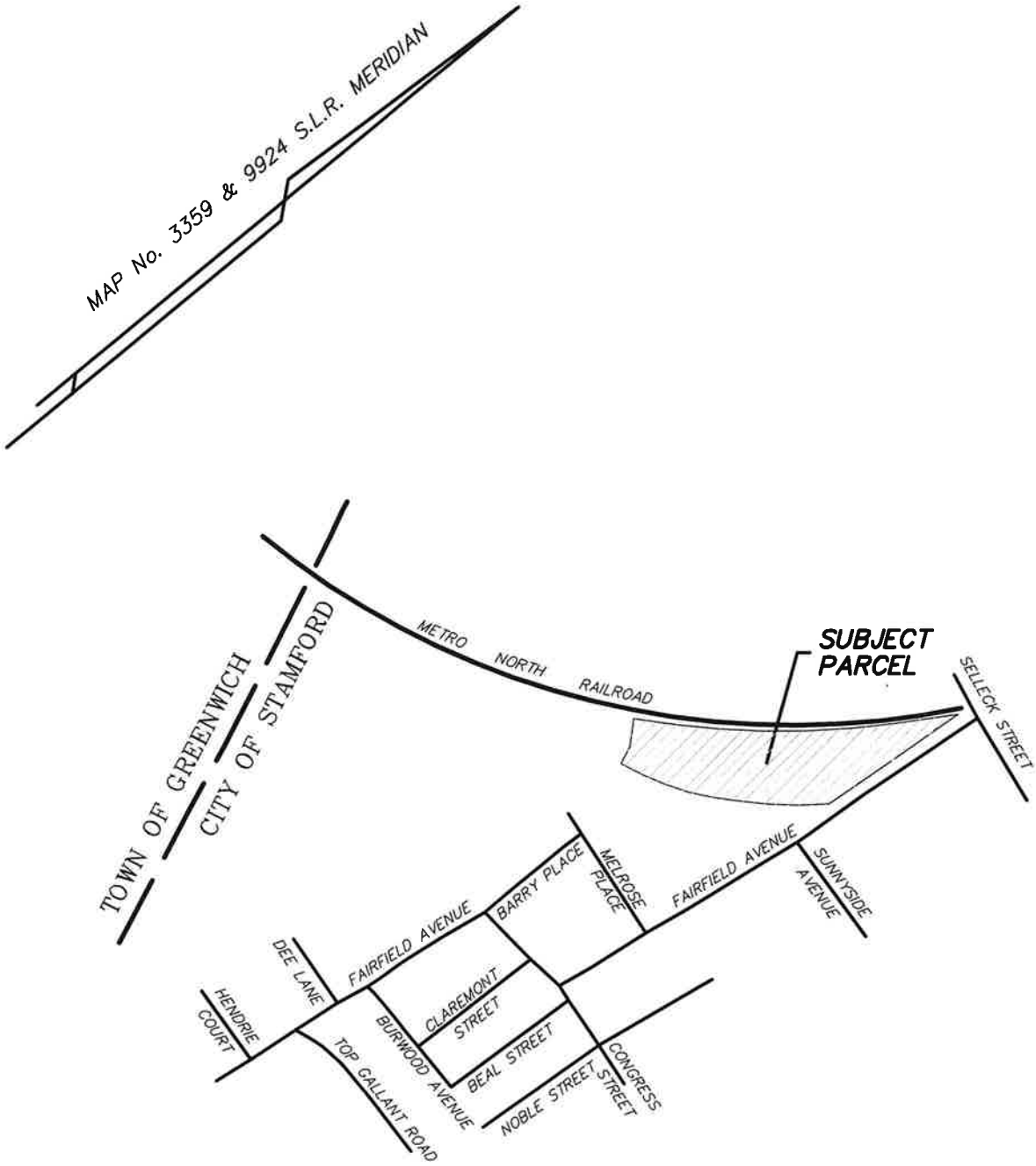
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/20/2023 at 11:31 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Exhibit "E"

Site Vicinity Map



LOCATION MAP – 1" = 800'±

Exhibit "F"

USGS Topographic Quad Map

375 Fairfield Avenue, Stamford - USGS Quad Map 113

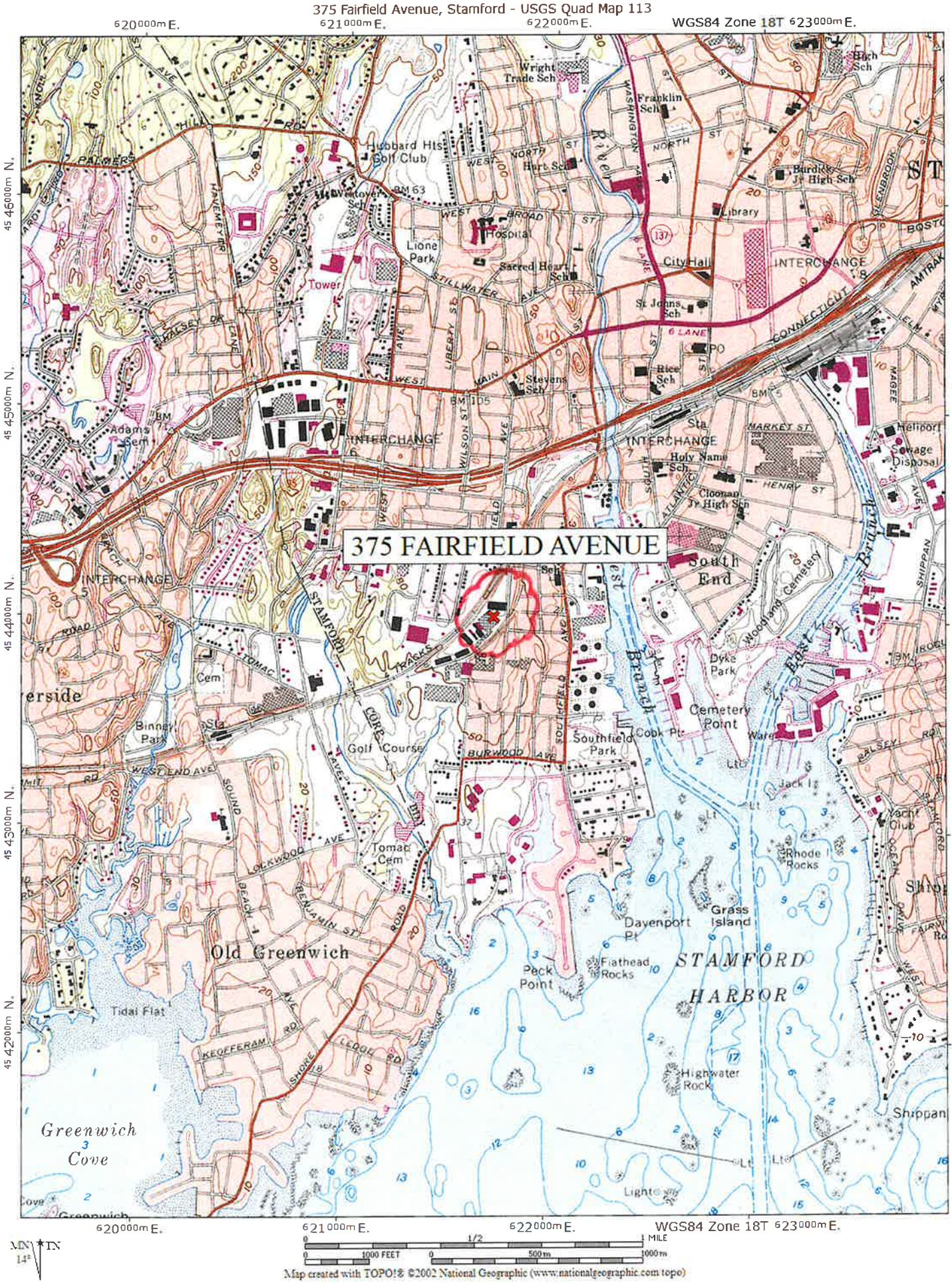


Exhibit "G"

Rainfall Depths and Intensity

NOAA Atlas 14, Volume 10, Version 3
Location name: Stamford, Connecticut, USA*
Latitude: 41.0375°, Longitude: -73.5521°
Elevation: 75 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.365 (0.280-0.466)	0.425 (0.327-0.543)	0.524 (0.401-0.672)	0.606 (0.462-0.781)	0.719 (0.531-0.958)	0.805 (0.583-1.09)	0.893 (0.629-1.24)	0.990 (0.665-1.41)	1.12 (0.728-1.65)	1.23 (0.781-1.84)
10-min	0.516 (0.397-0.660)	0.602 (0.463-0.770)	0.742 (0.569-0.953)	0.859 (0.654-1.11)	1.02 (0.753-1.36)	1.14 (0.826-1.54)	1.27 (0.891-1.76)	1.40 (0.941-2.00)	1.59 (1.03-2.33)	1.75 (1.11-2.60)
15-min	0.608 (0.467-0.776)	0.708 (0.544-0.906)	0.873 (0.669-1.12)	1.01 (0.770-1.30)	1.20 (0.886-1.60)	1.34 (0.971-1.82)	1.49 (1.05-2.08)	1.65 (1.11-2.35)	1.88 (1.21-2.74)	2.06 (1.30-3.06)
30-min	0.850 (0.653-1.08)	0.992 (0.762-1.27)	1.22 (0.938-1.57)	1.42 (1.08-1.83)	1.68 (1.24-2.24)	1.88 (1.36-2.55)	2.09 (1.47-2.91)	2.31 (1.55-3.29)	2.62 (1.70-3.83)	2.86 (1.81-4.25)
60-min	1.09 (0.840-1.40)	1.28 (0.980-1.63)	1.58 (1.21-2.02)	1.82 (1.39-2.35)	2.17 (1.60-2.88)	2.43 (1.76-3.28)	2.70 (1.89-3.74)	2.98 (2.00-4.23)	3.36 (2.18-4.92)	3.66 (2.32-5.44)
2-hr	1.42 (1.10-1.80)	1.67 (1.29-2.12)	2.08 (1.60-2.64)	2.42 (1.85-3.09)	2.88 (2.14-3.81)	3.24 (2.36-4.35)	3.60 (2.54-4.99)	4.00 (2.70-5.65)	4.55 (2.96-6.61)	4.99 (3.17-7.38)
3-hr	1.63 (1.27-2.07)	1.93 (1.50-2.44)	2.42 (1.87-3.07)	2.82 (2.17-3.59)	3.37 (2.51-4.45)	3.79 (2.77-5.09)	4.23 (3.00-5.84)	4.70 (3.18-6.62)	5.38 (3.50-7.79)	5.92 (3.76-8.72)
6-hr	2.06 (1.61-2.58)	2.44 (1.91-3.07)	3.08 (2.40-3.88)	3.61 (2.79-4.57)	4.33 (3.25-5.68)	4.88 (3.58-6.51)	5.45 (3.89-7.50)	6.09 (4.13-8.52)	7.01 (4.58-10.1)	7.77 (4.96-11.4)
12-hr	2.53 (1.99-3.15)	3.02 (2.37-3.77)	3.83 (3.00-4.80)	4.50 (3.50-5.67)	5.43 (4.10-7.09)	6.12 (4.53-8.14)	6.85 (4.93-9.40)	7.69 (5.23-10.7)	8.92 (5.84-12.8)	9.93 (6.36-14.4)
24-hr	2.95 (2.34-3.66)	3.57 (2.82-4.43)	4.59 (3.61-5.71)	5.43 (4.25-6.79)	6.59 (5.00-8.56)	7.45 (5.55-9.87)	8.38 (6.08-11.5)	9.46 (6.46-13.1)	11.1 (7.28-15.7)	12.4 (7.98-18.0)
2-day	3.30 (2.62-4.06)	4.06 (3.23-5.00)	5.30 (4.20-6.55)	6.33 (4.98-7.86)	7.74 (5.92-10.0)	8.79 (6.60-11.6)	9.93 (7.26-13.6)	11.3 (7.74-15.5)	13.4 (8.81-18.9)	15.2 (9.76-21.7)
3-day	3.56 (2.85-4.37)	4.39 (3.51-5.40)	5.75 (4.57-7.08)	6.88 (5.44-8.50)	8.42 (6.46-10.9)	9.57 (7.21-12.6)	10.8 (7.94-14.7)	12.3 (8.46-16.8)	14.6 (9.64-20.5)	16.6 (10.7-23.7)
4-day	3.82 (3.06-4.67)	4.69 (3.75-5.74)	6.12 (4.88-7.51)	7.30 (5.79-9.01)	8.93 (6.87-11.5)	10.1 (7.65-13.3)	11.4 (8.41-15.5)	13.0 (8.95-17.8)	15.4 (10.2-21.6)	17.5 (11.3-24.9)
7-day	4.55 (3.66-5.53)	5.49 (4.42-6.69)	7.04 (5.64-8.60)	8.32 (6.63-10.2)	10.1 (7.78-12.9)	11.4 (8.62-14.8)	12.8 (9.42-17.2)	14.5 (9.99-19.6)	17.0 (11.3-23.7)	19.1 (12.4-27.0)
10-day	5.26 (4.25-6.38)	6.25 (5.05-7.59)	7.88 (6.34-9.59)	9.23 (7.38-11.3)	11.1 (8.57-14.1)	12.5 (9.44-16.1)	13.9 (10.2-18.6)	15.6 (10.8-21.1)	18.1 (12.1-25.2)	20.2 (13.1-28.5)
20-day	7.41 (6.03-8.93)	8.53 (6.93-10.3)	10.4 (8.38-12.5)	11.9 (9.54-14.4)	13.9 (10.8-17.5)	15.5 (11.8-19.8)	17.1 (12.6-22.5)	18.9 (13.2-25.3)	21.3 (14.2-29.3)	23.2 (15.1-32.5)
30-day	9.20 (7.51-11.0)	10.4 (8.48-12.5)	12.4 (10.0-14.9)	14.0 (11.3-16.9)	16.2 (12.6-20.2)	18.0 (13.6-22.7)	19.7 (14.4-25.6)	21.5 (15.0-28.6)	23.8 (16.0-32.7)	25.6 (16.7-35.7)
45-day	11.4 (9.34-13.6)	12.7 (10.4-15.2)	14.8 (12.1-17.8)	16.6 (13.5-20.0)	19.1 (14.9-23.6)	21.0 (15.9-26.3)	22.8 (16.7-29.3)	24.6 (17.3-32.7)	26.9 (18.1-36.8)	28.6 (18.7-39.8)
60-day	13.2 (10.9-15.8)	14.6 (12.0-17.4)	16.9 (13.8-20.2)	18.8 (15.3-22.6)	21.4 (16.7-26.4)	23.4 (17.8-29.3)	25.4 (18.6-32.5)	27.2 (19.1-36.0)	29.6 (19.9-40.2)	31.2 (20.4-43.2)

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

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

Please refer to NOAA Atlas 14 document for more information.

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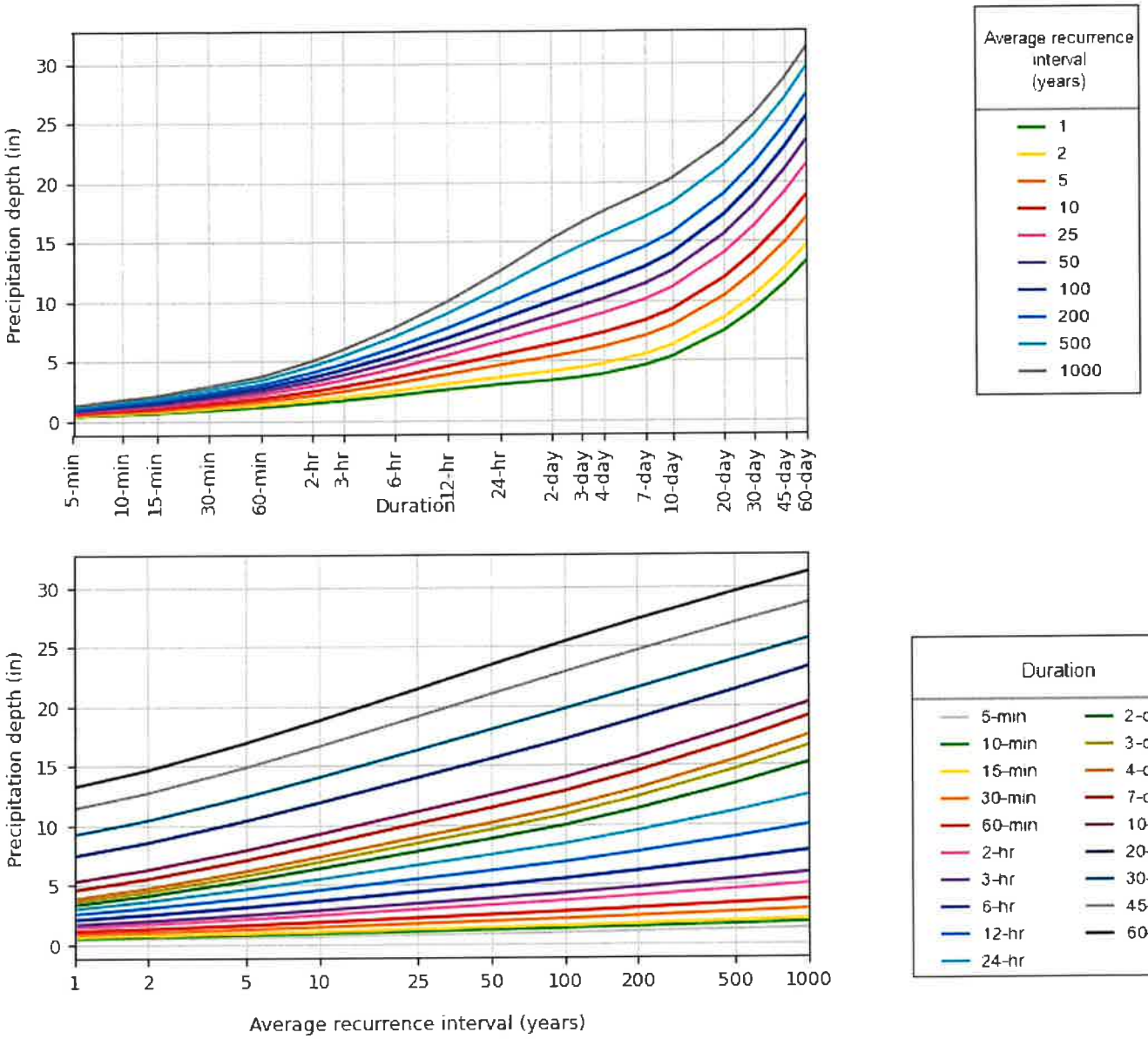
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 41.0375°, Longitude: -73.5521°



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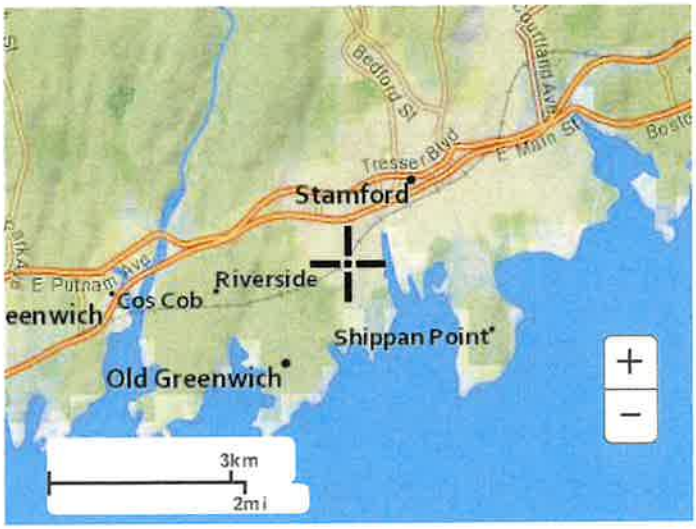
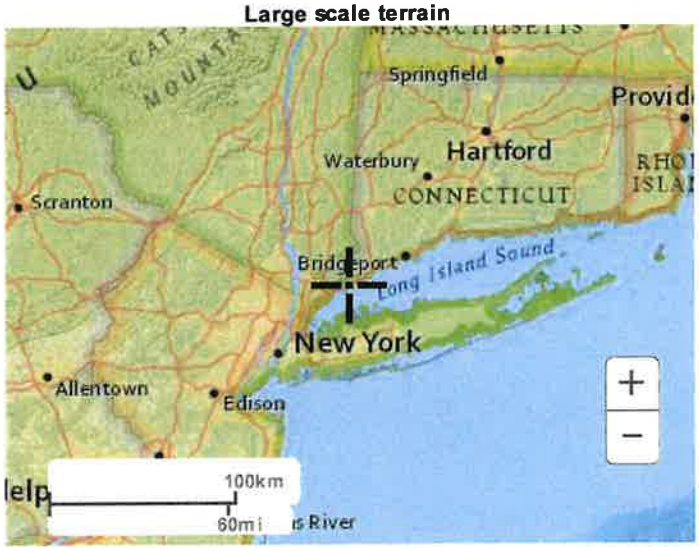
Maps & aerials

Small scale terrain

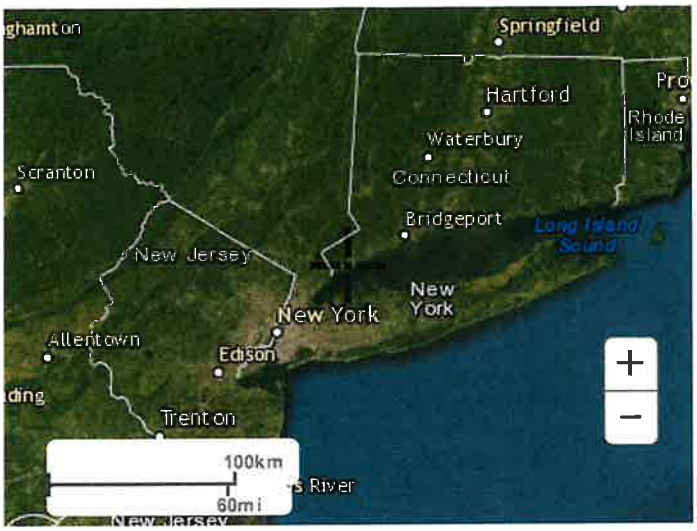


Large scale terrain



Large scale map

Large scale aerial



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

Disclaimer

Appendix "A"

Stormwater Calculations

Water Quality Volume (WQV) Calculations

Name: 375 Fairfield Avenue Associates
Address: 375 Fairfield Avenue, Stamford, Connecticut
Project: Commercial Development

$$WQV = \left(\frac{1\ in}{12\frac{in}{ft}}\right) RA$$

Where,

R= Volumetric Runoff Coefficient = 0.05+0.009I

I= Percent Impervious Coverage

A= Watershed Area (sf)

Drainage Area	Total Area (sf)	Impervious Coverage		R (Runoff Coefficient)	WQV (cf)	½ WQV (cf)
		Area (sf)	% Coverage			
Pr. Area #1B	24,237	23,373	96.4	0.9176	1853.3	911.7
Pr. Area #1C	11,957	11,376	95.1	0.9059	902.7	451.4
Pr. Area #1D	10,615	10,408	98.0	0.9320	824.4	412.2
Pr. Area #1E	6,714	6,417	95.6	0.9104	509.4	254.7
Pr. Area #1F	5,125	4,208	82.1	0.7889	336.9	168.5
Pr. Area #2B-1	16,104	15,570	96.7	0.9203	1,235.0	617.5
Pr. Area #2B-2	87,935	85,078	96.8	0.9212	6,750.5	3,375.3

Pr. Area #1B: The ½ WQV for this drainage area will first be pretreated by hydrodynamic Stormwater Treatment System #3 and then it will be collected and infiltrated by Retention System #1. The storage volume of Retention System #1 below the 12" high-overflow outlet orifice will be approximately 976 cubic feet. Refer to attached Stage-Area Storage Table for RS-1.

Pr. Area #1C: The ½ WQV for this drainage area will be pretreated by hydrodynamic Stormwater Treatment System #2.

Pr. Area #1D: The ½ WQV for this drainage area will be collected and infiltrated by Pervious Pavement System #2. The storage volume of Pervious Pavement System #2 below the 8" high-overflow outlet orifice will be approximately 441 cubic feet. Refer to attached Stage-Area Storage Table for PP-2.

Pr. Area #1E: The ½ WQV for this drainage area will be collected and infiltrated by Pervious Pavement System #1. The storage volume of Pervious Pavement System #1 below the 8" high-overflow outlet orifice will be approximately 305 cubic feet. Refer to attached Stage-Area Storage Table for PP-1.

Pr. Area #1F: The ½ WQV for this drainage area will be pretreated by hydrodynamic Stormwater Treatment System #1.

Pr. Area #2B-1: The ½ WQV for this drainage area will be collected and infiltrated by Pervious Pavement System #3. The storage volume of Pervious Pavement System #3 below the 12" high-overflow outlet orifice will be approximately 2,024 cubic feet. Refer to attached Stage-Area Storage Table for PP-3.

Pr. Area #2B-2: The ½ WQV for this drainage area will first be pretreated by hydrodynamic Stormwater Treatment System #4 and then it will be collected and infiltrated by Retention System #2. The storage volume of Retention System #2 below the 18" high-overflow outlet orifice will be approximately 3,415 cubic feet. Refer to attached Stage-Area Storage Table for RS-2.

Stage-Area-Storage for Pond 17P: RS-1

Elevation (feet)	Storage (cubic-feet)
72.00	0
72.05	11
72.10	22
72.15	34
72.20	45
72.25	56
72.30	67
72.35	78
72.40	90
72.45	101
72.50	112
72.55	136
72.60	160
72.65	183
72.70	206
72.75	230
72.80	253
72.85	276
72.90	299
72.95	322
73.00	345
73.05	368
73.10	390
73.15	413
73.20	435
73.25	458
73.30	480
73.35	502
73.40	524
73.45	546
73.50	567
73.55	589
73.60	610
73.65	632
73.70	653
73.75	674
73.80	694
73.85	715
73.90	735
73.95	755
74.00	775
74.05	794
74.10	813
74.15	832
74.20	850
74.25	868
74.30	886
74.35	903
74.40	919
74.45	935
74.50	949
74.55	963

Elevation (feet)	Storage (cubic-feet)
74.60	976
74.65	987
74.70	999
74.75	1,010
74.80	1,021
74.85	1,032
74.90	1,044
74.95	1,055
75.00	1,066
75.05	1,077
75.10	1,088
75.15	1,100
75.20	1,111
75.25	1,116
75.30	1,118
75.35	1,121
75.40	1,124
75.45	1,127
75.50	1,130
75.55	1,132
75.60	1,135
75.65	1,138
75.70	1,141
75.75	1,144
75.80	1,146
75.85	1,149
75.90	1,152
75.95	1,155
76.00	1,158
76.05	1,160
76.10	1,163
76.15	1,166
76.20	1,169
76.25	1,172
76.30	1,174
76.35	1,177
76.40	1,180
76.45	1,183
76.50	1,186
76.55	1,188
76.60	1,191
76.65	1,194
76.70	1,197
76.75	1,200
76.80	1,202
76.85	1,205
76.90	1,208
76.95	1,211
77.00	**1,214**

← HIGH - OVERFLOW OUTLET

Stage-Area-Storage for Pond 23P: RS-2

Elevation (feet)	Storage (cubic-feet)
67.20	0
67.30	74
67.40	149
67.50	223
67.60	297
67.70	371
67.80	535
67.90	697
68.00	857
68.10	1,017
68.20	1,175
68.30	1,332
68.40	1,487
68.50	1,640
68.60	1,791
68.70	1,941
68.80	2,090
68.90	2,236
69.00	2,378
69.10	2,518
69.20	2,654
69.30	2,786
69.40	2,913
69.50	3,034
69.60	3,148
69.70	3,250
69.80	3,338
69.90	3,415
70.00	3,489
70.10	3,563
70.20	3,637
70.30	3,712
70.40	3,786
70.50	3,811
70.60	3,829
70.70	3,848
70.80	3,866
70.90	3,885
71.00	3,903
71.10	3,922
71.20	3,941
71.30	3,959
71.40	3,978
71.50	3,996
71.60	4,015
71.70	4,033
71.80	4,052
71.90	4,070
72.00	4,089
72.10	4,108
72.20	4,126
72.30	4,145
72.40	4,163
72.50	4,182
72.60	4,200
72.70	4,219
72.80	4,237
72.90	4,256
73.00	4,275
73.10	4,293
73.20	4,312
73.30	4,330
73.40	4,349
73.50	4,367
73.60	4,386
73.70	4,405
73.80	4,423
73.90	4,442
74.00	4,460
74.10	4,479
74.20	4,497
74.30	4,516
74.40	4,534
74.50	**4,553**

← HIGH-OVERFLOW OUTLET

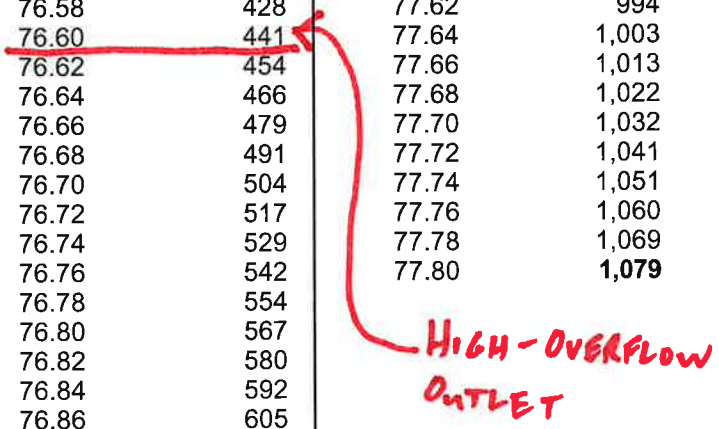
Stage-Area-Storage for Pond 20P: PP-1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
74.90	0	75.94	453
74.92	9	75.96	462
74.94	17	75.98	471
74.96	26	76.00	480
74.98	35	76.02	488
75.00	44	76.04	497
75.02	52	76.06	505
75.04	61	76.08	511
75.06	70	76.10	518
75.08	78	76.12	524
75.10	87	76.14	531
75.12	96	76.16	537
75.14	105	76.18	544
75.16	113	76.20	550
75.18	122	76.22	557
75.20	131	76.24	564
75.22	140	76.26	570
75.24	148	76.28	577
75.26	157	76.30	583
75.28	166	76.32	590
75.30	174	76.34	596
75.32	183	76.36	603
75.34	192	76.38	609
75.36	201	76.40	616
75.38	209	76.42	622
75.40	218	76.44	629
75.42	227	76.46	635
75.44	235	76.48	642
75.46	244	76.50	649
75.48	253	76.52	655
75.50	262	76.54	662
75.52	270	76.56	668
75.54	279	76.58	675
75.56	288	76.60	681
75.58	296	76.62	688
75.60	305	76.64	694
75.62	314	76.66	701
75.64	323	76.68	707
75.66	331	76.70	714
75.68	340	76.72	720
75.70	349	76.74	727
75.72	358	76.76	734
75.74	366	76.78	740
75.76	375	76.80	**747**
75.78	384		
75.80	392		
75.82	401		
75.84	410		
75.86	419		
75.88	427		
75.90	436		
75.92	445		

HIGH-OVERFLOW OUTLET

Stage-Area-Storage for Pond 19P: PP-2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
75.90	0	76.94	655
75.92	13	76.96	668
75.94	25	76.98	680
75.96	38	77.00	693
75.98	50	77.02	706
76.00	63	77.04	718
76.02	76	77.06	729
76.04	88	77.08	739
76.06	101	77.10	748
76.08	113	77.12	758
76.10	126	77.14	767
76.12	139	77.16	776
76.14	151	77.18	786
76.16	164	77.20	795
76.18	176	77.22	805
76.20	189	77.24	814
76.22	202	77.26	824
76.24	214	77.28	833
76.26	227	77.30	843
76.28	239	77.32	852
76.30	252	77.34	862
76.32	265	77.36	871
76.34	277	77.38	880
76.36	290	77.40	890
76.38	302	77.42	899
76.40	315	77.44	909
76.42	328	77.46	918
76.44	340	77.48	928
76.46	353	77.50	937
76.48	365	77.52	947
76.50	378	77.54	956
76.52	391	77.56	965
76.54	403	77.58	975
76.56	416	77.60	984
76.58	428	77.62	994
76.60	441	77.64	1,003
76.62	454	77.66	1,013
76.64	466	77.68	1,022
76.66	479	77.70	1,032
76.68	491	77.72	1,041
76.70	504	77.74	1,051
76.72	517	77.76	1,060
76.74	529	77.78	1,069
76.76	542	77.80	**1,079**
76.78	554		
76.80	567		
76.82	580		
76.84	592		
76.86	605		
76.88	617		
76.90	630		
76.92	643		



Stage-Area-Storage for Pond 22P: PP-3

Elevation (feet)	Storage (cubic-feet)
69.80	0
69.85	51
69.90	101
69.95	152
70.00	202
70.05	253
70.10	304
70.15	354
70.20	405
70.25	455
70.30	506
70.35	557
70.40	607
70.45	658
70.50	708
70.55	759
70.60	810
70.65	860
70.70	911
70.75	961
70.80	1,012
70.85	1,063
70.90	1,113
70.95	1,164
71.00	1,214
71.05	1,265
71.10	1,316
71.15	1,366
71.20	1,417
71.25	1,467
71.30	1,518
71.35	1,569
71.40	1,619
71.45	1,670
71.50	1,720
71.55	1,771
71.60	1,822
71.65	1,872
71.70	1,923
71.75	1,973
71.80	2,024
71.85	2,075
71.90	2,125
71.95	2,176
72.00	2,226
72.05	2,277
72.10	2,328
72.15	2,378
72.20	2,429
72.25	2,479
72.30	2,530
72.35	2,581
72.40	2,631
72.45	2,682
72.50	2,732
72.55	2,783
72.60	2,834
72.65	2,884
72.70	2,935
72.75	2,985
72.80	3,036
72.85	3,087
72.90	3,137
72.95	3,188
73.00	3,238
73.05	3,289
73.10	3,340
73.15	3,390
73.20	3,441
73.25	3,491
73.30	3,529
73.35	3,567
73.40	3,605
73.45	3,643
73.50	3,681
73.55	3,719
73.60	3,757
73.65	3,795
73.70	3,833
73.75	3,871
73.80	3,909
73.85	3,947
73.90	3,985
73.95	4,023
74.00	**4,061**

← HIGH-OVERFLOW OUTLET

Infiltration System Drawdown Calculations

Name: 375 Fairfield Avenue Associates
Address: 375 Fairfield Avenue, Stamford, Connecticut
Project: Commercial Development

- **Drawdown Calculations**
  According to the NRCS Web Soil Survey in Exhibit "C", the site lies within a mapped area of HSG-D soils. The following drawdown calculations are based on the soils observed in each test pit in the vicinity of the respective best management practice. The test pits predominately consisted of silt and sand with some cobbles. A Rawls Infiltration Rate of 0.52 (in/hr) (Loam) was used as an estimate in these calculations. These calculations will be updated, prior to installation, after infiltration tests are performed in the areas of the proposed retention systems.

- **Retention System #1 (RS-1)**

$$Time_{drawdown} = \frac{DV}{(K)(A)}$$

DV	= Design Volume	=	$976\ ft^3$
K	= Infiltration Rate	=	0.52 in/hr
A	= Bottom Area	=	$560\ ft^2$

$$Time_{drawdown} = \frac{976 ft^3}{(0.52^{in}/_{hr})(^{1ft}/_{12in})(560 ft^2)} = 40.2 hrs$$

The proposed Retention System will draw down within 40.2 hours.

- **Retention System #2 (RS-2)**

$$Time_{drawdown} = \frac{DV}{(K)(A)}$$

DV	= Design Volume	=	$3{,}415\ ft^3$
K	= Infiltration Rate	=	0.52 in/hr
A	= Bottom Area	=	$1{,}856\ ft^2$

$$Time_{drawdown} = \frac{3{,}415 ft^3}{(0.52^{in}/_{hr})(^{1ft}/_{12in})1{,}856 ft^2} = 42.5 hr$$

The proposed Retention System will draw down within 42.5 hours.

- **Porous Pavement #1 (PP-1)**

$$Time_{drawdown} = \frac{DV}{(K)(A)}$$

DV = Design Volume = 305 ft^3
K = Infiltration Rate = 0.52 in/hr
A = Bottom Area = 1,090 ft^2

$$Time_{drawdown} = \frac{305 ft^3}{(0.52 in/hr)(1ft/12in)(1{,}090 ft^2)} = 6.5 hrs$$

The proposed Porous Pavement retention volume will drawdown within 6.5 hours.

- **Porous Pavement #2 (PP-2)**

$$Time_{drawdown} = \frac{DV}{(K)(A)}$$

DV = Design Volume = 441 ft^3
K = Infiltration Rate = 0.52 in/hr
A = Bottom Area = 1,575 ft^2

$$Time_{drawdown} = \frac{441 ft^3}{(0.52 in/hr)(1ft/12in)1{,}575 ft^2} = 6.5 hr$$

The proposed Porous Pavement retention volume will drawdown within 6.5 hours.

- **Porous Pavement #3 (PP-3)**

$$Time_{drawdown} = \frac{DV}{(K)(A)}$$

DV = Design Volume = 2,024 ft^3
K = Infiltration Rate = 0.52 in/hr
A = Bottom Area = 2,530 ft^2

$$Time_{drawdown} = \frac{2{,}024 ft^3}{(0.52 in/hr)(1ft/12in)2{,}530 ft^2} = 18.5 hr$$

The proposed Porous Pavement retention volume will drawdown within 18.5 hours.

Water Quality Volume and Flow Calculations
For Proposed Stormwater Treatment Systems

The following calculations have been performed for Drainage Area 1B to SWTS #3.

- **Calculate the Water Quality Volume (WQV)**

$$WQV=\left(\frac{1\text{ in}}{12\frac{\text{in}}{\text{ft}}}\right)RA$$

$A=\text{Drainage Area 1B}=24{,}237\text{ ft}^2$

$A_{impervious}=23{,}373\text{ ft}^2$

$$I=\%Impervious=\frac{A_{impervious}}{A}=\frac{23{,}373\text{ ft}^2}{24{,}237\text{ ft}^2}(100)=96.4\%$$

$$R=\text{Runoff Coefficient}=0.05+0.009I=0.05+0.009(96.4\%)=0.9176$$

$$WQV=\left(\frac{1\text{ in}}{12\frac{\text{in}}{\text{ft}}}\right)(0.9176)(24{,}237\text{ ft}^2)=1{,}853.3\text{ ft}^3$$

Compute the Water Quality Flow Rate (WQF)

$WQF=q_uAQ$

$$Q=\frac{WQV\left(12\frac{\text{in}}{\text{ft}}\right)}{A}=\frac{1{,}853.3\text{ ft}^3\left(12\frac{\text{in}}{\text{ft}}\right)}{24{,}237\text{ ft}^2}=0.9176\text{ in}$$

$P=Design Percipitation=1 inch$

$$CN=\frac{1000}{10+5(1\text{ in})+10(0.9176\text{ in})-10\left((0.9176\text{ in})^2+1.25(0.9176\text{ in})(1\text{ in})\right)^{1/2}}=99.3$$

$T_c=0.167\text{ hr}=10\text{ min}$ *(Minimum value used in calculation)*

$I_a=0.014\text{ in}$ *(extrapolated from Table 4-1 2004 CT Stormwater Quality Manual)*

$\frac{I_a}{P}=0.014\rightarrow q_u\approx 660\frac{\text{csm}}{\text{in}}$ *(From Exhibit 4-111 2004 CT Stormwater Quality Manual)*

$$WQF=q_uAQ=\left(660\frac{\text{csm}}{\text{in}}\right)\left(\frac{24{,}237\text{ ft}^2}{\left(5{,}280\frac{\text{mi}}{\text{ft}}\right)^2}\right)(0.9176\text{ in})=0.53\frac{\text{ft}^3}{\text{s}}\qquad WQF=0.53\frac{ft^3}{s}$$

The following calculations have been performed for Drainage Area 1C to SWTS #2.

- **Calculate the Water Quality Volume (WQV)**

$$WQV=\left(\frac{1\,\text{in}}{12\frac{\text{in}}{\text{ft}}}\right)RA$$

$A=\text{Drainage Area 1C}=11{,}957\,\text{ft}^2$

$A_{impervious}=11{,}376\,\text{ft}^2$

$$I=\%Impervious=\frac{A_{impervious}}{A}=\frac{11{,}376\,\text{ft}^2}{11{,}957\,\text{ft}^2}(100)=95.1\%$$

$$R=\text{Runoff Coefficient}=0.05+0.009\,I=0.05+0.009(95.1\%)=0.9059$$

$$WQV=\left(\frac{1\,\text{in}}{12\frac{\text{in}}{\text{ft}}}\right)(0.9059)(11{,}957\,\text{ft}^2)=902.7\,\text{ft}^3$$

Compute the Water Quality Flow Rate (WQF)

$WQF=q_u AQ$

$$Q=\frac{WQV\left(12\frac{\text{in}}{\text{ft}}\right)}{A}=\frac{902.7\,\text{ft}^3\left(12\frac{\text{in}}{\text{ft}}\right)}{11{,}957\,\text{ft}^2}=0.9059\,\text{in}$$

$P=Design Percipitation=1 inch$

$$CN=\frac{1000}{10+5(1\,\text{in})+10(0.9059\,\text{in})-10\left((0.9059\,\text{in})^2+1.25(0.9059\,\text{in})(1\,\text{in})\right)^{1/2}}=99.2$$

$T_c=0.167\,\text{hr}=10\,\text{min}$ *(Minimum value used in calculation)*

$I_a=0.016\,\text{in}$ *(extrapolated from Table 4-1 2004 CT Stormwater Quality Manual)*

$\frac{I_a}{P}=0.016\rightarrow q_u\approx 650\frac{\text{csm}}{\text{in}}$ *(From Exhibit 4-111 2004 CT Stormwater Quality Manual)*

$$WQF=q_u AQ=\left(650\frac{\text{csm}}{\text{in}}\right)\left(\frac{11{,}957\,\text{ft}^2}{\left(5{,}280\frac{\text{mi}}{\text{ft}}\right)^2}\right)(0.9059\,\text{in})=0.26\frac{\text{ft}^3}{\text{s}}\qquad WQF=0.26\frac{ft^3}{s}$$

The following calculations have been performed for Drainage Area 1F to SWTS #1.

- **Calculate the Water Quality Volume (WQV)**

$$WQV=\left(\frac{1\,\text{in}}{12\frac{\text{in}}{\text{ft}}}\right)RA$$

$A=$ Drainage Area 1F $=5{,}125\,\text{ft}^2$

$A_{impervious}=4{,}208\,\text{ft}^2$

$$I=\%Impervious=\frac{A_{impervious}}{A}=\frac{4{,}208\,\text{ft}^2}{5{,}125\,\text{ft}^2}(100)=82.1\%$$

$$R=\text{Runoff Coefficient}=0.05+0.009\,I=0.05+0.009(82.1\%)=0.7889$$

$$WQV=\left(\frac{1\,\text{in}}{12\frac{\text{in}}{\text{ft}}}\right)(0.7889)(5{,}125\,\text{ft}^2)=336.9\,\text{ft}^3$$

Compute the Water Quality Flow Rate (WQF)

$WQF=q_u AQ$

$$Q=\frac{WQV\left(12\frac{\text{in}}{\text{ft}}\right)}{A}=\frac{336.9\,\text{ft}^3\left(12\frac{\text{in}}{\text{ft}}\right)}{5{,}125\,\text{ft}^2}=0.7889\,\text{in}$$

$P=Design\,Percipitation=1inch$

$$CN=\frac{1000}{10+5(1\,\text{in})+10(0.7889\,\text{in})-10\left((0.7889\,\text{in})^2+1.25(0.7889\,\text{in})(1\,\text{in})\right)^{1/2}}=98.0$$

$T_c=0.167\,\text{hr}=10\,\text{min}$ *(Minimum value used in calculation)*

$I_a=0.041\,\text{in}$ *(extrapolated from Table 4-1 2004 CT Stormwater Quality Manual)*

$\frac{I_a}{P}=0.041 \rightarrow q_u \approx 630\frac{\text{csm}}{\text{in}}$ *(From Exhibit 4-111 2004 CT Stormwater Quality Manual)*

$$WQF=q_u AQ=\left(630\frac{\text{csm}}{\text{in}}\right)\left(\frac{5{,}125\,\text{ft}^2}{\left(5{,}280\frac{\text{mi}}{\text{ft}}\right)^2}\right)(0.7889\,\text{in})=0.09\frac{\text{ft}^3}{\text{s}} \qquad WQF=0.09\frac{ft^3}{s}$$

The following calculations have been performed for Drainage Area 2B-2 to SWTS #4.

- **Calculate the Water Quality Volume (WQV)**

$$WQV=\left(\frac{1\,\text{in}}{12\frac{\text{in}}{\text{ft}}}\right)RA$$

A = Drainage Area 2B-2 = $87{,}935\,\text{ft}^2$

$A_{impervious} = 85{,}078\,\text{ft}^2$

$$I=\%Impervious=\frac{A_{impervious}}{A}=\frac{85{,}078\,\text{ft}^2}{87{,}935\,\text{ft}^2}(100)=96.8\%$$

R = Runoff Coefficient $= 0.05+0.009I = 0.05+0.009(96.8\%) = 0.9212$

$$WQV=\left(\frac{1\,\text{in}}{12\frac{\text{in}}{\text{ft}}}\right)(0.9212)(87{,}935\,\text{ft}^2)=6{,}750.5\,\text{ft}^3$$

Compute the Water Quality Flow Rate (WQF)

$WQF = q_u AQ$

$$Q=\frac{WQV\left(12\frac{\text{in}}{\text{ft}}\right)}{A}=\frac{6{,}750.5\,\text{ft}^3\left(12\frac{\text{in}}{\text{ft}}\right)}{87{,}935\,\text{ft}^2}=0.9212\,\text{in}$$

$P = Design Percipitation = 1 inch$

$$CN=\frac{1000}{10+5(1\,\text{in})+10(0.9212\,\text{in})-10\left((0.9212\,\text{in})^2+1.25(0.9212\,\text{in})(1\,\text{in})\right)^{1/2}}=99.3$$

$T_c = 0.167\,\text{hr} = 10\,\text{min}$ *(Minimum value used in calculation)*

$I_a = 0.014\,\text{in}$ *(extrapolated from Table 4-1 2004 CT Stormwater Quality Manual)*

$\frac{I_a}{P}=0.014 \rightarrow q_u \approx 660\frac{\text{csm}}{\text{in}}$ *(From Exhibit 4-111 2004 CT Stormwater Quality Manual)*

$$WQF=q_u AQ=\left(660\frac{\text{csm}}{\text{in}}\right)\left(\frac{87{,}935\,\text{ft}^2}{\left(5{,}280\frac{\text{mi}}{\text{ft}}\right)^2}\right)(0.9212\,\text{in})=1.92\frac{\text{ft}^3}{\text{s}} \qquad WQF=1.92\frac{ft^3}{s}$$

2. Compute the time of concentration (t_c) based on the methods described in Chapter 3 of TR-55. A minimum value of 0.167 hours (10 minutes) should be used. For sheet flow, the flow path should not be longer than 300 feet.

3. Using the computed CN, t_c, and drainage area (A) in acres, compute the peak discharge for the water quality storm (i.e., the water quality flow [WQF]), based on the procedures described in Chapter 4 of TR-55.

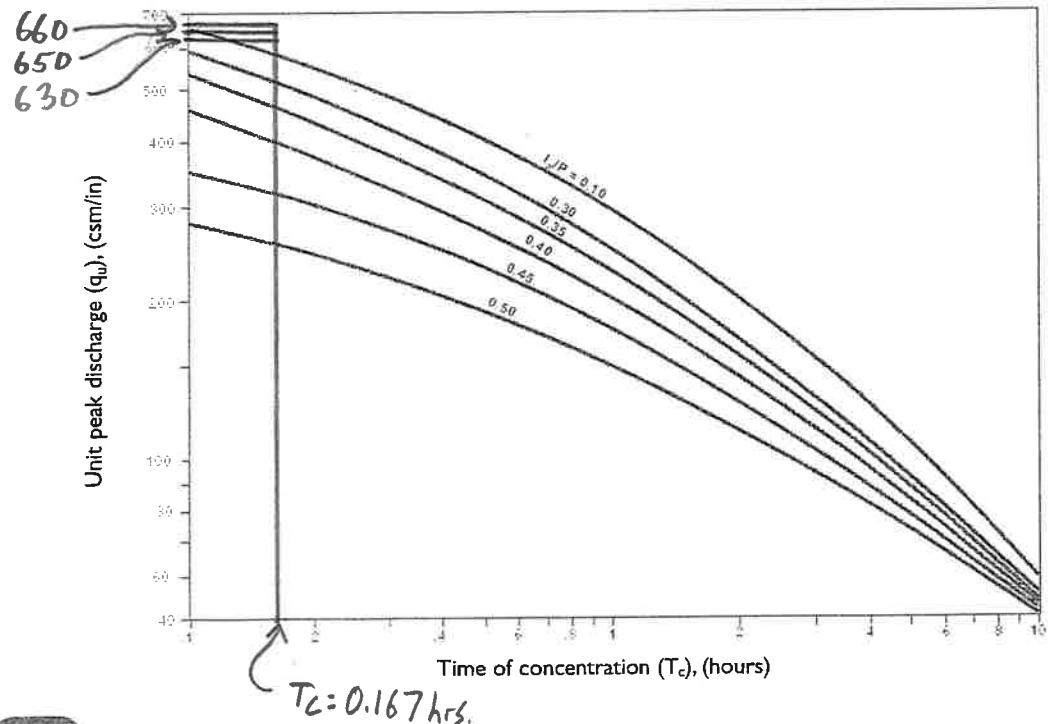
   - *Read initial abstraction (I_a) from Table 4-1 in Chapter 4 of TR-55 (reproduced below); compute I_a/P*

Table 4-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)	Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	55	1.636	70	0.857	85	0.353
41	2.878	56	1.571	71	0.817	86	0.326
42	2.762	57	1.509	72	0.778	87	0.299
43	2.651	58	1.448	73	0.740	88	0.273
44	2.545	59	1.390	74	0.703	89	0.247
45	2.444	60	1.333	75	0.667	90	0.222
46	2.348	61	1.279	76	0.632	91	0.198
47	2.255	62	1.226	77	0.597	92	0.174
48	2.167	63	1.175	78	0.564	93	0.151
49	2.082	64	1.125	79	0.532	94	0.128
50	2.000	65	1.077	80	0.500	95	0.105
51	1.922	66	1.030	81	0.469	96	0.083
52	1.846	67	0.985	82	0.439	97	0.062
53	1.774	68	0.941	83	0.410	98	0.041 ←
54	1.704	69	0.899	84	0.381	99.2	0.016 ←
						99.3	0.014 ←

   - *Read the unit peak discharge (q_u) from Exhibit 4-III in Chapter 4 of TR-55 (reproduced below) for appropriate t_c*

Exhibit 4-III Unit peak discharge (q_u) for NRCS (SCS) type III rainfall distribution



Appendix "B"

HydroCAD Summary Table
Existing & Proposed Conditions

HydroCAD Summary
375 Fairfield Avenue Associates
375 Fairfield Avenue, Stamford, CT
Project ID: 23DA

POC	1 Year Storm				2 Year Storm				5 Year Storm				10 Year Storm				25 Year Storm				50 Year Storm			
	q_{ex} (ft^3/s)	q_p (ft^3/s)	Δq (ft^3/s)	$\%\Delta q$ (ft^3/s)	q_{ex} (ft^3/s)	q_p (ft^3/s)	Δq (ft^3/s)	$\%\Delta q$ (ft^3/s)	q_{ex} (ft^3/s)	q_p (ft^3/s)	Δq (ft^3/s)	$\%\Delta q$ (ft^3/s)	q_{ex} (ft^3/s)	q_p (ft^3/s)	Δq (ft^3/s)	$\%\Delta q$ (ft^3/s)	q_{ex} (ft^3/s)	q_p (ft^3/s)	Δq (ft^3/s)	$\%\Delta q$ (ft^3/s)	q_{ex} (ft^3/s)	q_p (ft^3/s)	Δq (ft^3/s)	$\%\Delta q$ (ft^3/s)
A	5.14	4.87	-0.27	-5%	6.32	6.05	-0.27	-4%	8.24	7.97	-0.27	-3%	9.81	9.51	-0.30	-3%	11.98	11.60	-0.38	-3%	13.57	13.11	-0.46	-3%
B	12.93	12.22	-0.71	-5%	15.79	14.89	-0.90	-6%	20.47	20.14	-0.33	-2%	24.31	24.31	0.00	0%	29.59	29.47	-0.12	0%	33.50	33.23	-0.27	-1%

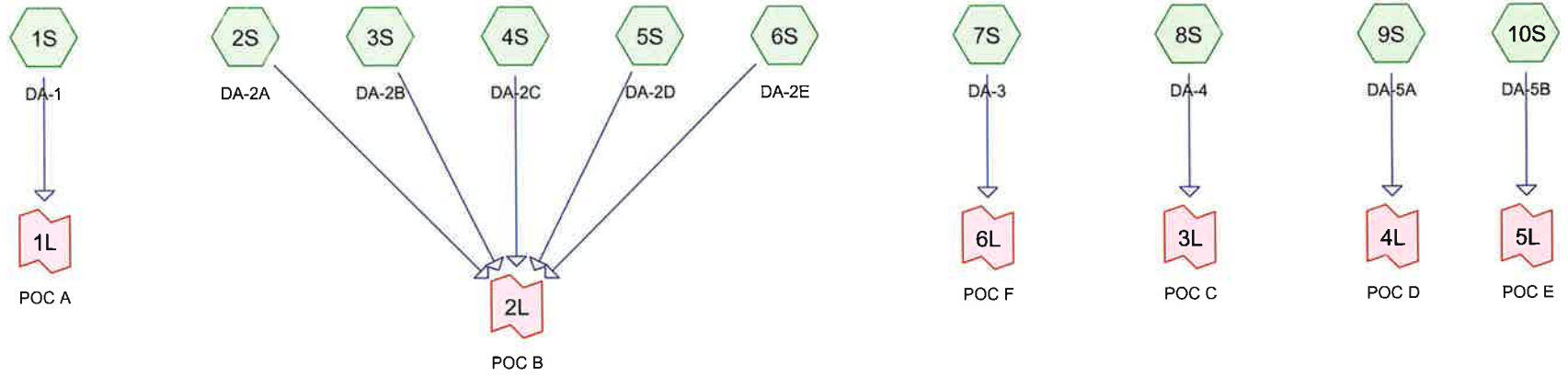
Table 1: Comparison of Exising and Proposed Peak Flow Rates for all Points of Concern pertaining to the Proposed Development.

POC	1 Year Storm				2 Year Storm				5 Year Storm				10 Year Storm				25 Year Storm				50 Year Storm			
	v_{ex} (cf)	v_p (cf)	Δv (cf)	$\%\Delta v$ (cf)	v_{ex} (cf)	v_p (cf)	Δv (cf)	$\%\Delta v$ (cf)	v_{ex} (cf)	v_p (cf)	Δv (cf)	$\%\Delta v$ (cf)	v_{ex} (cf)	v_p (cf)	Δv (cf)	$\%\Delta v$ (cf)	v_{ex} (cf)	v_p (cf)	Δv (cf)	$\%\Delta v$ (cf)	v_{ex} (cf)	v_p (cf)	Δv (cf)	$\%\Delta v$ (cf)
A	16,938	14,986	-1,952	-12%	21,077	19,095	-1,982	-9%	27,917	25,897	-2,020	-7%	33,567	31,522	-2,045	-6%	41,383	39,309	-2,074	-5%	47,184	45,092	-2,092	-4%
B	43,528	38,293	-5,235	-12%	53,737	48,513	-5,224	-10%	70,574	65,366	-5,208	-7%	84,463	79,266	-5,197	-6%	103,660	98,478	-5,182	-5%	117,901	112,729	-5,172	-4%

Table 2: Comparison of Exising and Proposed Runoff Volumes for all Points of Concern pertaining to the Proposed Development.

Appendix "C"

HydroCAD Analysis - Existing Conditions



Subcat Reach Pond Link

Routing Diagram for 23DA_Ex-0
Prepared by RVDI, Printed 9/21/2023

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
12,520	80	>75% Grass cover, Good, HSG D (1S, 2S, 3S, 4S, 5S, 6S, 8S)
79,217	96	Gravel surface, HSG D (1S, 3S, 4S, 8S, 10S)
35,869	98	Paved parking, HSG C (1S)
281,097	98	Paved parking, HSG D (2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S)
408,703	**97**	**TOTAL AREA**

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: DA-1
Runoff Area=81,209 sf 44.17% Impervious Runoff Depth=2.50"
Flow Length=518' Tc=5.9 min CN=96 Runoff=5.14 cfs 16,938 cf

Subcatchment 2S: DA-2A
Runoff Area=11,511 sf 90.29% Impervious Runoff Depth=2.50"
Tc=5.0 min CN=96 Runoff=0.75 cfs 2,401 cf

Subcatchment 3S: DA-2B
Runoff Area=103,810 sf 83.25% Impervious Runoff Depth=2.61"
Flow Length=620' Tc=6.3 min CN=97 Runoff=6.63 cfs 22,568 cf

Subcatchment 4S: DA-2C
Runoff Area=31,123 sf 95.54% Impervious Runoff Depth=2.61"
Tc=5.0 min CN=97 Runoff=2.08 cfs 6,766 cf

Subcatchment 5S: DA-2D
Runoff Area=13,610 sf 96.47% Impervious Runoff Depth=2.61"
Tc=5.0 min CN=97 Runoff=0.91 cfs 2,959 cf

Subcatchment 6S: DA-2E
Runoff Area=38,997 sf 98.03% Impervious Runoff Depth=2.72"
Tc=5.0 min CN=98 Runoff=2.65 cfs 8,834 cf

Subcatchment 7S: DA-3
Runoff Area=28,009 sf 100.00% Impervious Runoff Depth=2.72"
Tc=5.0 min CN=98 Runoff=1.90 cfs 6,345 cf

Subcatchment 8S: DA-4
Runoff Area=77,989 sf 70.01% Impervious Runoff Depth=2.61"
Tc=5.0 min CN=97 Runoff=5.21 cfs 16,955 cf

Subcatchment 9S: DA-5A
Runoff Area=17,400 sf 100.00% Impervious Runoff Depth=2.72"
Tc=5.0 min CN=98 Runoff=1.18 cfs 3,942 cf

Subcatchment 10S: DA-5B
Runoff Area=5,045 sf 63.13% Impervious Runoff Depth=2.61"
Tc=5.0 min CN=97 Runoff=0.34 cfs 1,097 cf

Link 1L: POC A
Inflow=5.14 cfs 16,938 cf
Primary=5.14 cfs 16,938 cf

Link 2L: POC B — Inflow=12.93 cfs 43,528 cf
Primary=12.93 cfs 43,528 cf

Link 3L: POC C — Inflow=5.21 cfs 16,955 cf
Primary=5.21 cfs 16,955 cf

Link 4L: POC D — Inflow=1.18 cfs 3,942 cf
Primary=1.18 cfs 3,942 cf

Link 5L: POC E — Inflow=0.34 cfs 1,097 cf
Primary=0.34 cfs 1,097 cf

Link 6L: POC F — Inflow=1.90 cfs 6,345 cf
Primary=1.90 cfs 6,345 cf

Total Runoff Area = 408,703 sf Runoff Volume = 88,805 cf Average Runoff Depth = 2.61"
22.45% Pervious = 91,737 sf 77.55% Impervious = 316,966 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: DA-1 — Runoff Area=81,209 sf 44.17% Impervious Runoff Depth=3.11"
Flow Length=518' Tc=5.9 min CN=96 Runoff=6.32 cfs 21,077 cf

Subcatchment 2S: DA-2A — Runoff Area=11,511 sf 90.29% Impervious Runoff Depth=3.11"
Tc=5.0 min CN=96 Runoff=0.92 cfs 2,988 cf

Subcatchment 3S: DA-2B — Runoff Area=103,810 sf 83.25% Impervious Runoff Depth=3.22"
Flow Length=620' Tc=6.3 min CN=97 Runoff=8.09 cfs 27,890 cf

Subcatchment 4S: DA-2C — Runoff Area=31,123 sf 95.54% Impervious Runoff Depth=3.22"
Tc=5.0 min CN=97 Runoff=2.54 cfs 8,362 cf

Subcatchment 5S: DA-2D — Runoff Area=13,610 sf 96.47% Impervious Runoff Depth=3.22"
Tc=5.0 min CN=97 Runoff=1.11 cfs 3,656 cf

Subcatchment 6S: DA-2E — Runoff Area=38,997 sf 98.03% Impervious Runoff Depth=3.34"
Tc=5.0 min CN=98 Runoff=3.22 cfs 10,842 cf

Subcatchment 7S: DA-3 — Runoff Area=28,009 sf 100.00% Impervious Runoff Depth=3.34"
Tc=5.0 min CN=98 Runoff=2.31 cfs 7,787 cf

Subcatchment 8S: DA-4 — Runoff Area=77,989 sf 70.01% Impervious Runoff Depth=3.22"
Tc=5.0 min CN=97 Runoff=6.36 cfs 20,953 cf

Subcatchment 9S: DA-5A — Runoff Area=17,400 sf 100.00% Impervious Runoff Depth=3.34"
Tc=5.0 min CN=98 Runoff=1.44 cfs 4,838 cf

Subcatchment 10S: DA-5B — Runoff Area=5,045 sf 63.13% Impervious Runoff Depth=3.22"
Tc=5.0 min CN=97 Runoff=0.41 cfs 1,355 cf

Link 1L: POC A — Inflow=6.32 cfs 21,077 cf
Primary=6.32 cfs 21,077 cf

Link 2L: POC B
Inflow=15.79 cfs 53,737 cf
Primary=15.79 cfs 53,737 cf

Link 3L: POC C
Inflow=6.36 cfs 20,953 cf
Primary=6.36 cfs 20,953 cf

Link 4L: POC D
Inflow=1.44 cfs 4,838 cf
Primary=1.44 cfs 4,838 cf

Link 5L: POC E
Inflow=0.41 cfs 1,355 cf
Primary=0.41 cfs 1,355 cf

Link 6L: POC F
Inflow=2.31 cfs 7,787 cf
Primary=2.31 cfs 7,787 cf

Total Runoff Area = 408,703 sf Runoff Volume = 109,747 cf Average Runoff Depth = 3.22"
22.45% Pervious = 91,737 sf 77.55% Impervious = 316,966 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: DA-1
Runoff Area=81,209 sf 44.17% Impervious Runoff Depth=4.13"
Flow Length=518' Tc=5.9 min CN=96 Runoff=8.24 cfs 27,917 cf

Subcatchment 2S: DA-2A
Runoff Area=11,511 sf 90.29% Impervious Runoff Depth=4.13"
Tc=5.0 min CN=96 Runoff=1.21 cfs 3,957 cf

Subcatchment 3S: DA-2B
Runoff Area=103,810 sf 83.25% Impervious Runoff Depth=4.24"
Flow Length=620' Tc=6.3 min CN=97 Runoff=10.50 cfs 36,668 cf

Subcatchment 4S: DA-2C
Runoff Area=31,123 sf 95.54% Impervious Runoff Depth=4.24"
Tc=5.0 min CN=97 Runoff=3.29 cfs 10,993 cf

Subcatchment 5S: DA-2D
Runoff Area=13,610 sf 96.47% Impervious Runoff Depth=4.24"
Tc=5.0 min CN=97 Runoff=1.44 cfs 4,807 cf

Subcatchment 6S: DA-2E
Runoff Area=38,997 sf 98.03% Impervious Runoff Depth=4.35"
Tc=5.0 min CN=98 Runoff=4.16 cfs 14,149 cf

Subcatchment 7S: DA-3
Runoff Area=28,009 sf 100.00% Impervious Runoff Depth=4.35"
Tc=5.0 min CN=98 Runoff=2.99 cfs 10,162 cf

Subcatchment 8S: DA-4
Runoff Area=77,989 sf 70.01% Impervious Runoff Depth=4.24"
Tc=5.0 min CN=97 Runoff=8.25 cfs 27,547 cf

Subcatchment 9S: DA-5A
Runoff Area=17,400 sf 100.00% Impervious Runoff Depth=4.35"
Tc=5.0 min CN=98 Runoff=1.86 cfs 6,313 cf

Subcatchment 10S: DA-5B
Runoff Area=5,045 sf 63.13% Impervious Runoff Depth=4.24"
Tc=5.0 min CN=97 Runoff=0.53 cfs 1,782 cf

Link 1L: POC A
Inflow=8.24 cfs 27,917 cf
Primary=8.24 cfs 27,917 cf

Link 2L: POC B — Inflow=20.47 cfs 70,574 cf, Primary=20.47 cfs 70,574 cf

Link 3L: POC C — Inflow=8.25 cfs 27,547 cf, Primary=8.25 cfs 27,547 cf

Link 4L: POC D — Inflow=1.86 cfs 6,313 cf, Primary=1.86 cfs 6,313 cf

Link 5L: POC E — Inflow=0.53 cfs 1,782 cf, Primary=0.53 cfs 1,782 cf

Link 6L: POC F — Inflow=2.99 cfs 10,162 cf, Primary=2.99 cfs 10,162 cf

Total Runoff Area = 408,703 sf Runoff Volume = 144,297 cf Average Runoff Depth = 4.24"
22.45% Pervious = 91,737 sf 77.55% Impervious = 316,966 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: DA-1 — Runoff Area=81,209 sf 44.17% Impervious Runoff Depth=4.96"
Flow Length=518' Tc=5.9 min CN=96 Runoff=9.81 cfs 33,567 cf

Subcatchment 2S: DA-2A — Runoff Area=11,511 sf 90.29% Impervious Runoff Depth=4.96"
Tc=5.0 min CN=96 Runoff=1.44 cfs 4,758 cf

Subcatchment 3S: DA-2B — Runoff Area=103,810 sf 83.25% Impervious Runoff Depth=5.08"
Flow Length=620' Tc=6.3 min CN=97 Runoff=12.47 cfs 43,909 cf

Subcatchment 4S: DA-2C — Runoff Area=31,123 sf 95.54% Impervious Runoff Depth=5.08"
Tc=5.0 min CN=97 Runoff=3.91 cfs 13,164 cf

Subcatchment 5S: DA-2D — Runoff Area=13,610 sf 96.47% Impervious Runoff Depth=5.08"
Tc=5.0 min CN=97 Runoff=1.71 cfs 5,757 cf

Subcatchment 6S: DA-2E — Runoff Area=38,997 sf 98.03% Impervious Runoff Depth=5.19"
Tc=5.0 min CN=98 Runoff=4.93 cfs 16,874 cf

Subcatchment 7S: DA-3 — Runoff Area=28,009 sf 100.00% Impervious Runoff Depth=5.19"
Tc=5.0 min CN=98 Runoff=3.54 cfs 12,120 cf

Subcatchment 8S: DA-4 — Runoff Area=77,989 sf 70.01% Impervious Runoff Depth=5.08"
Tc=5.0 min CN=97 Runoff=9.80 cfs 32,987 cf

Subcatchment 9S: DA-5A — Runoff Area=17,400 sf 100.00% Impervious Runoff Depth=5.19"
Tc=5.0 min CN=98 Runoff=2.20 cfs 7,529 cf

Subcatchment 10S: DA-5B — Runoff Area=5,045 sf 63.13% Impervious Runoff Depth=5.08"
Tc=5.0 min CN=97 Runoff=0.63 cfs 2,134 cf

Link 1L: POC A — Inflow=9.81 cfs 33,567 cf, Primary=9.81 cfs 33,567 cf

Link 2L: POC B
Inflow=24.31 cfs 84,463 cf
Primary=24.31 cfs 84,463 cf

Link 3L: POC C
Inflow=9.80 cfs 32,987 cf
Primary=9.80 cfs 32,987 cf

Link 4L: POC D
Inflow=2.20 cfs 7,529 cf
Primary=2.20 cfs 7,529 cf

Link 5L: POC E
Inflow=0.63 cfs 2,134 cf
Primary=0.63 cfs 2,134 cf

Link 6L: POC F
Inflow=3.54 cfs 12,120 cf
Primary=3.54 cfs 12,120 cf

Total Runoff Area = 408,703 sf Runoff Volume = 172,800 cf Average Runoff Depth = 5.07"
22.45% Pervious = 91,737 sf 77.55% Impervious = 316,966 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: DA-1
Runoff Area=81,209 sf 44.17% Impervious Runoff Depth=6.12"
Flow Length=518' Tc=5.9 min CN=96 Runoff=11.98 cfs 41,383 cf

Subcatchment 2S: DA-2A
Runoff Area=11,511 sf 90.29% Impervious Runoff Depth=6.12"
Tc=5.0 min CN=96 Runoff=1.75 cfs 5,866 cf

Subcatchment 3S: DA-2B
Runoff Area=103,810 sf 83.25% Impervious Runoff Depth=6.23"
Flow Length=620' Tc=6.3 min CN=97 Runoff=15.18 cfs 53,919 cf

Subcatchment 4S: DA-2C
Runoff Area=31,123 sf 95.54% Impervious Runoff Depth=6.23"
Tc=5.0 min CN=97 Runoff=4.76 cfs 16,165 cf

Subcatchment 5S: DA-2D
Runoff Area=13,610 sf 96.47% Impervious Runoff Depth=6.23"
Tc=5.0 min CN=97 Runoff=2.08 cfs 7,069 cf

Subcatchment 6S: DA-2E
Runoff Area=38,997 sf 98.03% Impervious Runoff Depth=6.35"
Tc=5.0 min CN=98 Runoff=5.99 cfs 20,640 cf

Subcatchment 7S: DA-3
Runoff Area=28,009 sf 100.00% Impervious Runoff Depth=6.35"
Tc=5.0 min CN=98 Runoff=4.30 cfs 14,824 cf

Subcatchment 8S: DA-4
Runoff Area=77,989 sf 70.01% Impervious Runoff Depth=6.23"
Tc=5.0 min CN=97 Runoff=11.94 cfs 40,508 cf

Subcatchment 9S: DA-5A
Runoff Area=17,400 sf 100.00% Impervious Runoff Depth=6.35"
Tc=5.0 min CN=98 Runoff=2.67 cfs 9,209 cf

Subcatchment 10S: DA-5B
Runoff Area=5,045 sf 63.13% Impervious Runoff Depth=6.23"
Tc=5.0 min CN=97 Runoff=0.77 cfs 2,620 cf

Link 1L: POC A
Inflow=11.98 cfs 41,383 cf
Primary=11.98 cfs 41,383 cf

Link 2L: POC B
Inflow=29.59 cfs 103,660 cf
Primary=29.59 cfs 103,660 cf

Link 3L: POC C
Inflow=11.94 cfs 40,508 cf
Primary=11.94 cfs 40,508 cf

Link 4L: POC D
Inflow=2.67 cfs 9,209 cf
Primary=2.67 cfs 9,209 cf

Link 5L: POC E
Inflow=0.77 cfs 2,620 cf
Primary=0.77 cfs 2,620 cf

Link 6L: POC F
Inflow=4.30 cfs 14,824 cf
Primary=4.30 cfs 14,824 cf

Total Runoff Area = 408,703 sf Runoff Volume = 212,205 cf Average Runoff Depth = 6.23"
22.45% Pervious = 91,737 sf 77.55% Impervious = 316,966 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: DA-1
Runoff Area=81,209 sf 44.17% Impervious Runoff Depth=6.97"
Flow Length=518' Tc=5.9 min CN=96 Runoff=13.57 cfs 47,184 cf

Subcatchment 2S: DA-2A
Runoff Area=11,511 sf 90.29% Impervious Runoff Depth=6.97"
Tc=5.0 min CN=96 Runoff=1.99 cfs 6,688 cf

Subcatchment 3S: DA-2B
Runoff Area=103,810 sf 83.25% Impervious Runoff Depth=7.09"
Flow Length=620' Tc=6.3 min CN=97 Runoff=17.19 cfs 61,346 cf

Subcatchment 4S: DA-2C
Runoff Area=31,123 sf 95.54% Impervious Runoff Depth=7.09"
Tc=5.0 min CN=97 Runoff=5.39 cfs 18,392 cf

Subcatchment 5S: DA-2D
Runoff Area=13,610 sf 96.47% Impervious Runoff Depth=7.09"
Tc=5.0 min CN=97 Runoff=2.36 cfs 8,043 cf

Subcatchment 6S: DA-2E
Runoff Area=38,997 sf 98.03% Impervious Runoff Depth=7.21"
Tc=5.0 min CN=98 Runoff=6.78 cfs 23,433 cf

Subcatchment 7S: DA-3
Runoff Area=28,009 sf 100.00% Impervious Runoff Depth=7.21"
Tc=5.0 min CN=98 Runoff=4.87 cfs 16,830 cf

Subcatchment 8S: DA-4
Runoff Area=77,989 sf 70.01% Impervious Runoff Depth=7.09"
Tc=5.0 min CN=97 Runoff=13.52 cfs 46,087 cf

Subcatchment 9S: DA-5A
Runoff Area=17,400 sf 100.00% Impervious Runoff Depth=7.21"
Tc=5.0 min CN=98 Runoff=3.03 cfs 10,455 cf

Subcatchment 10S: DA-5B
Runoff Area=5,045 sf 63.13% Impervious Runoff Depth=7.09"
Tc=5.0 min CN=97 Runoff=0.87 cfs 2,981 cf

Link 1L: POC A
Inflow=13.57 cfs 47,184 cf
Primary=13.57 cfs 47,184 cf

Link 2L: POC B
Inflow=33.50 cfs 117,901 cf
Primary=33.50 cfs 117,901 cf

Link 3L: POC C
Inflow=13.52 cfs 46,087 cf
Primary=13.52 cfs 46,087 cf

Link 4L: POC D
Inflow=3.03 cfs 10,455 cf
Primary=3.03 cfs 10,455 cf

Link 5L: POC E
Inflow=0.87 cfs 2,981 cf
Primary=0.87 cfs 2,981 cf

Link 6L: POC F
Inflow=4.87 cfs 16,830 cf
Primary=4.87 cfs 16,830 cf

Total Runoff Area = 408,703 sf Runoff Volume = 241,439 cf Average Runoff Depth = 7.09"
22.45% Pervious = 91,737 sf 77.55% Impervious = 316,966 sf

Summary for Subcatchment 1S: DA-1

Runoff = 11.98 cfs @ 12.08 hrs, Volume= 41,383 cf, Depth= 6.12"

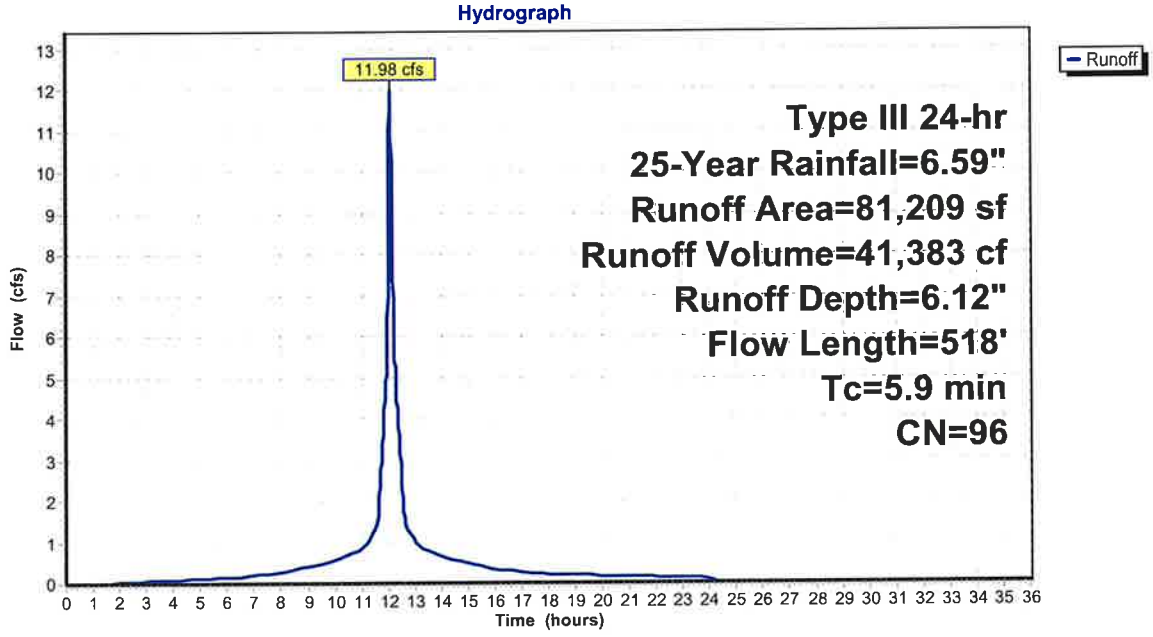
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
35,869	98	Paved parking, HSG C
42,357	96	Gravel surface, HSG D
2,983	80	>75% Grass cover, Good, HSG D
81,209	96	Weighted Average
45,340		55.83% Pervious Area
35,869		44.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	188	0.0190	1.61		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 3.57"
4.0	330	0.0045	1.36		**Shallow Concentrated Flow, 2** Paved Kv= 20.3 fps
5.9	518	Total			

Subcatchment 1S: DA-1

Hydrograph



Summary for Subcatchment 2S: DA-2A

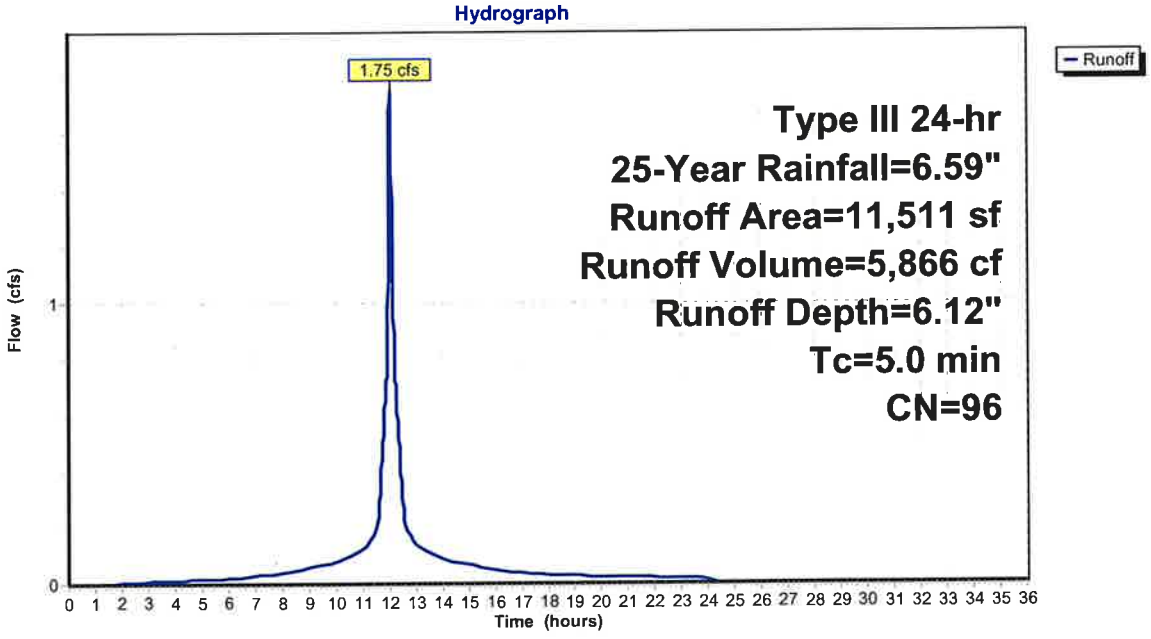
Runoff = 1.75 cfs @ 12.07 hrs, Volume= 5,866 cf, Depth= 6.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
10,393	98	Paved parking, HSG D
1,118	80	>75% Grass cover, Good, HSG D
11,511	96	Weighted Average
1,118		9.71% Pervious Area
10,393		90.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, 1

Subcatchment 2S: DA-2A



Summary for Subcatchment 3S: DA-2B

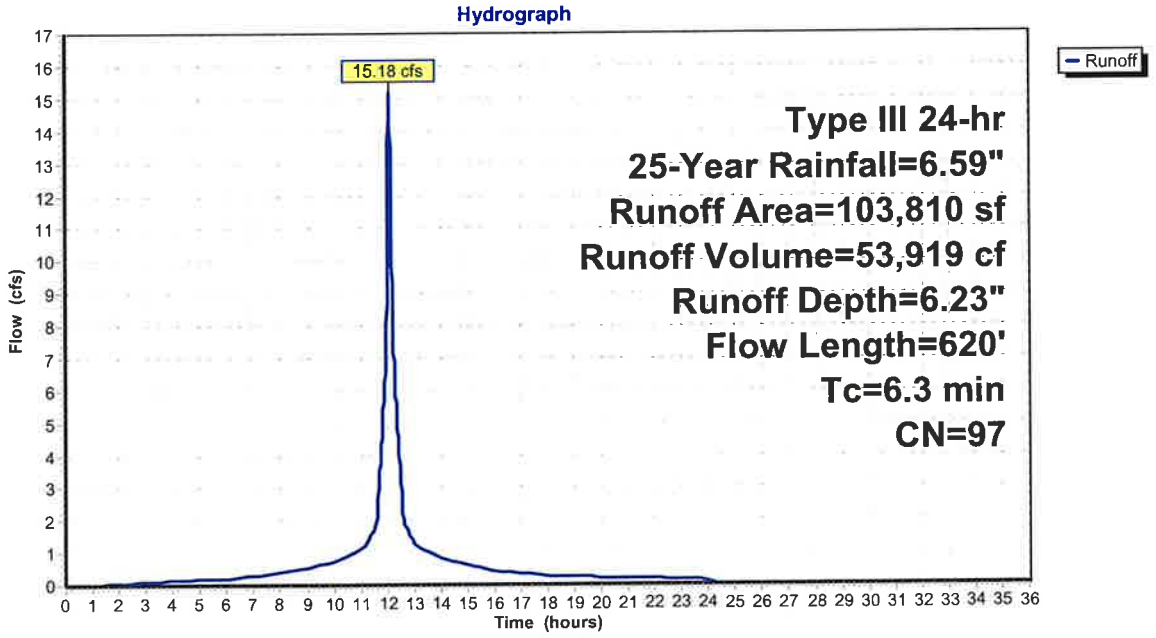
Runoff = 15.18 cfs @ 12.09 hrs, Volume= 53,919 cf, Depth= 6.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
86,420	98	Paved parking, HSG D
13,949	96	Gravel surface, HSG D
3,441	80	>75% Grass cover, Good, HSG D
103,810	97	Weighted Average
17,390		16.75% Pervious Area
86,420		83.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	45	0.0220	1.29		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 3.57"
4.5	250	0.0040	0.92		**Sheet Flow, 2** Smooth surfaces n= 0.011 P2= 3.57"
0.2	40	0.0200	2.87		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
0.9	255	0.0100	4.50	1.57	**Pipe Channel, 5** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.010 PVC, smooth interior
0.1	30	0.0030	3.85	6.80	**Pipe Channel, 6** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
6.3	620	Total			

Subcatchment 3S: DA-2B



Summary for Subcatchment 4S: DA-2C

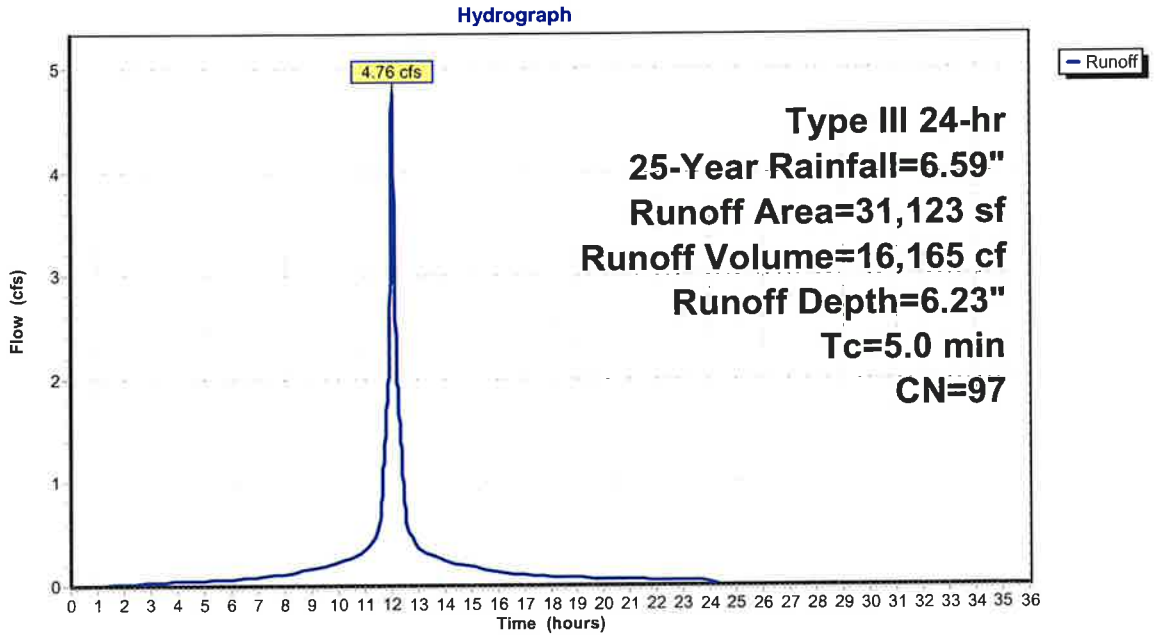
Runoff = 4.76 cfs @ 12.07 hrs, Volume= 16,165 cf, Depth= 6.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
29,734	98	Paved parking, HSG D
158	96	Gravel surface, HSG D
1,231	80	>75% Grass cover, Good, HSG D
31,123	97	Weighted Average
1,389		4.46% Pervious Area
29,734		95.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, 1**

Subcatchment 4S: DA-2C



Summary for Subcatchment 5S: DA-2D

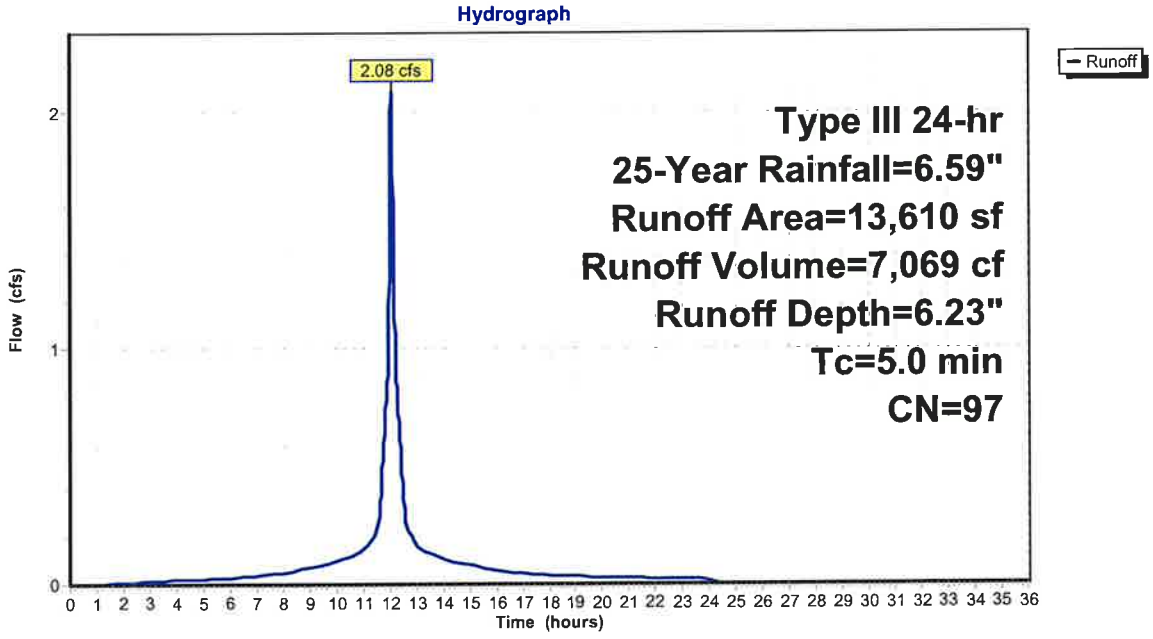
Runoff = 2.08 cfs @ 12.07 hrs, Volume= 7,069 cf, Depth= 6.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
13,130	98	Paved parking, HSG D
480	80	>75% Grass cover, Good, HSG D
13,610	97	Weighted Average
480		3.53% Pervious Area
13,130		96.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, 1

Subcatchment 5S: DA-2D



Summary for Subcatchment 6S: DA-2E

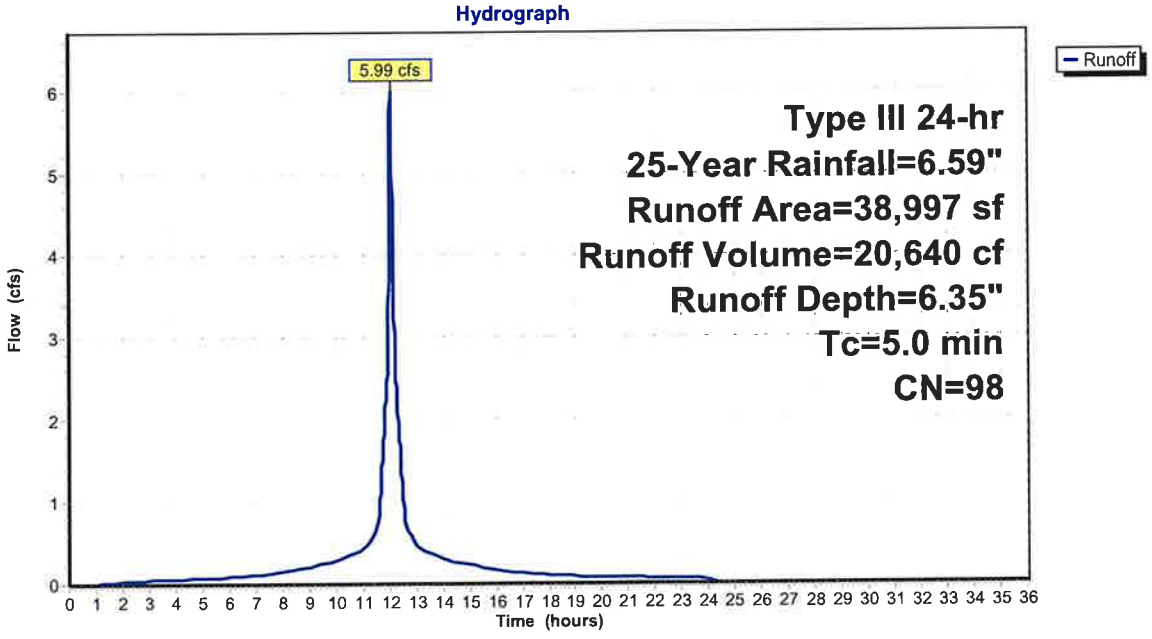
Runoff = 5.99 cfs @ 12.07 hrs, Volume= 20,640 cf, Depth= 6.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
38,227	98	Paved parking, HSG D
770	80	>75% Grass cover, Good, HSG D
38,997	98	Weighted Average
770		1.97% Pervious Area
38,227		98.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, 1

Subcatchment 6S: DA-2E



Summary for Subcatchment 7S: DA-3

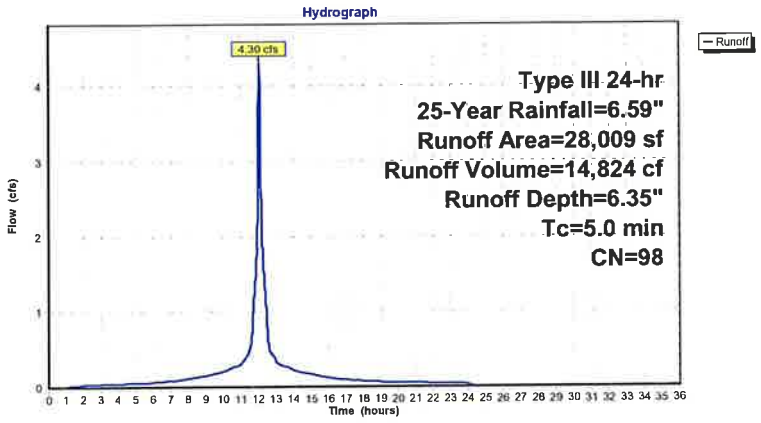
Runoff = 4.30 cfs @ 12.07 hrs, Volume= 14,824 cf, Depth= 6.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
28,009	98	Paved parking, HSG D
28,009		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, 1**

Subcatchment 7S: DA-3



Summary for Subcatchment 8S: DA-4

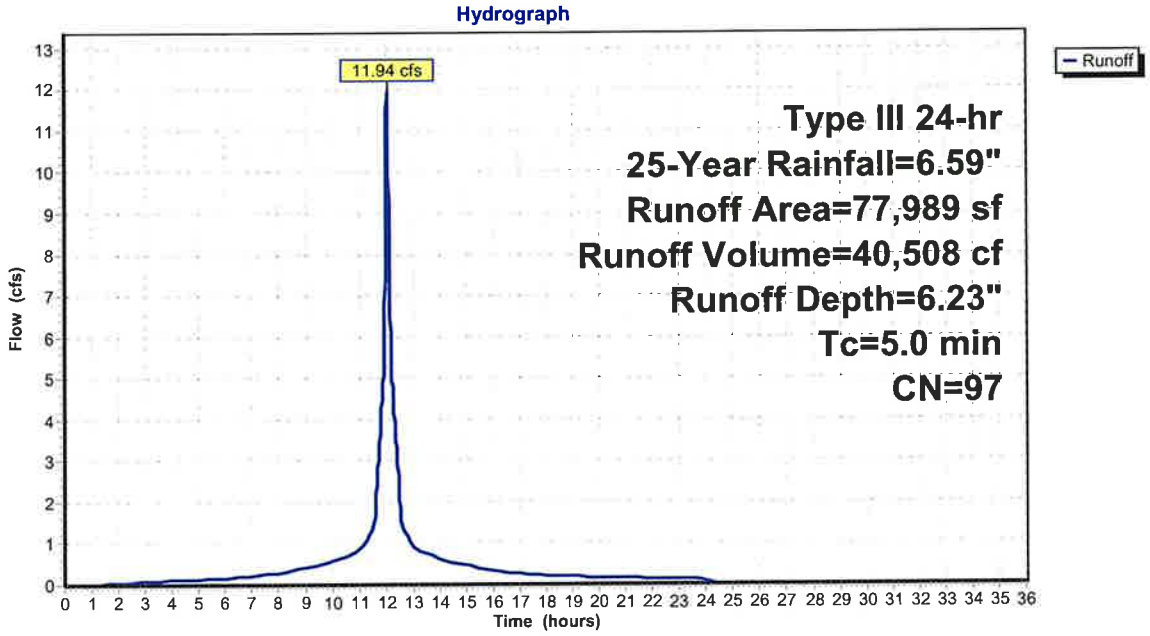
Runoff = 11.94 cfs @ 12.07 hrs, Volume= 40,508 cf, Depth= 6.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
54,599	98	Paved parking, HSG D
20,893	96	Gravel surface, HSG D
2,497	80	>75% Grass cover, Good, HSG D
77,989	97	Weighted Average
23,390		29.99% Pervious Area
54,599		70.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, 1**

Subcatchment 8S: DA-4



Summary for Subcatchment 9S: DA-5A

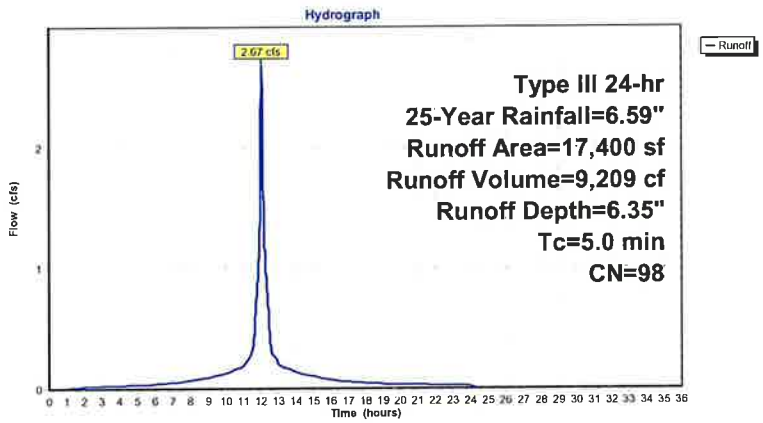
Runoff = 2.67 cfs @ 12.07 hrs, Volume= 9,209 cf, Depth= 6.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
17,400	98	Paved parking, HSG D
17,400		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, 1

Subcatchment 9S: DA-5A



Summary for Subcatchment 10S: DA-5B

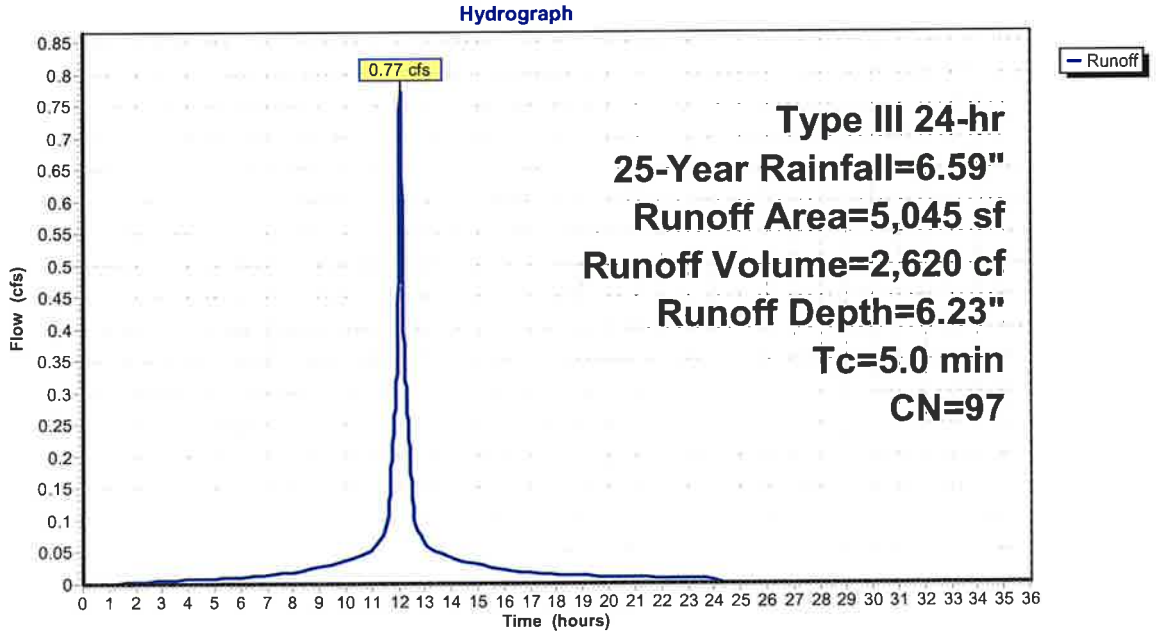
Runoff = 0.77 cfs @ 12.07 hrs, Volume= 2,620 cf, Depth= 6.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
3,185	98	Paved parking, HSG D
1,860	96	Gravel surface, HSG D
5,045	97	Weighted Average
1,860		36.87% Pervious Area
3,185		63.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, 1

Subcatchment 10S: DA-5B

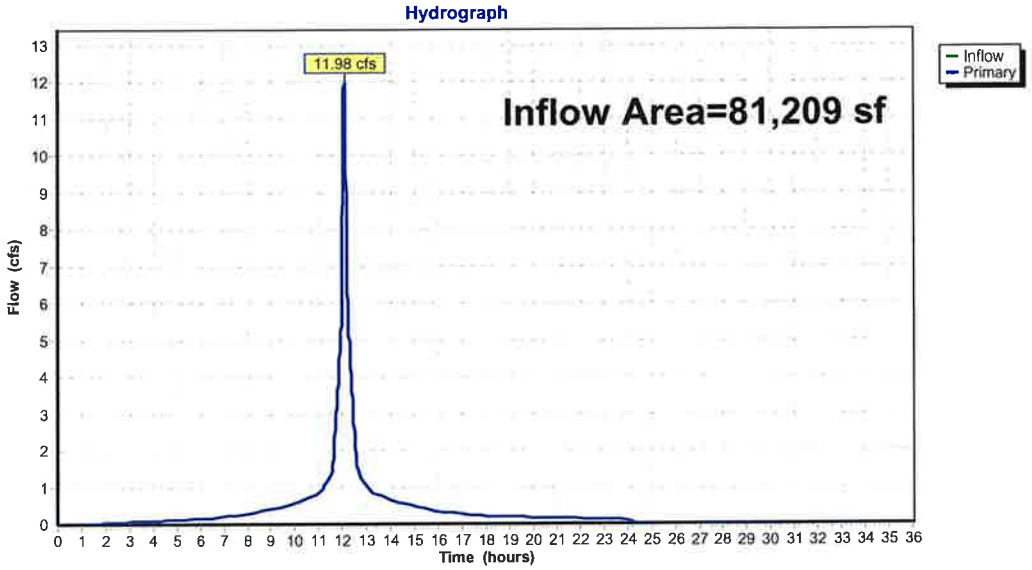


Summary for Link 1L: POC A

Inflow Area = 81,209 sf, 44.17% Impervious, Inflow Depth = 6.12" for 25-Year event
Inflow = 11.98 cfs @ 12.08 hrs, Volume= 41,383 cf
Primary = 11.98 cfs @ 12.08 hrs, Volume= 41,383 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 1L: POC A

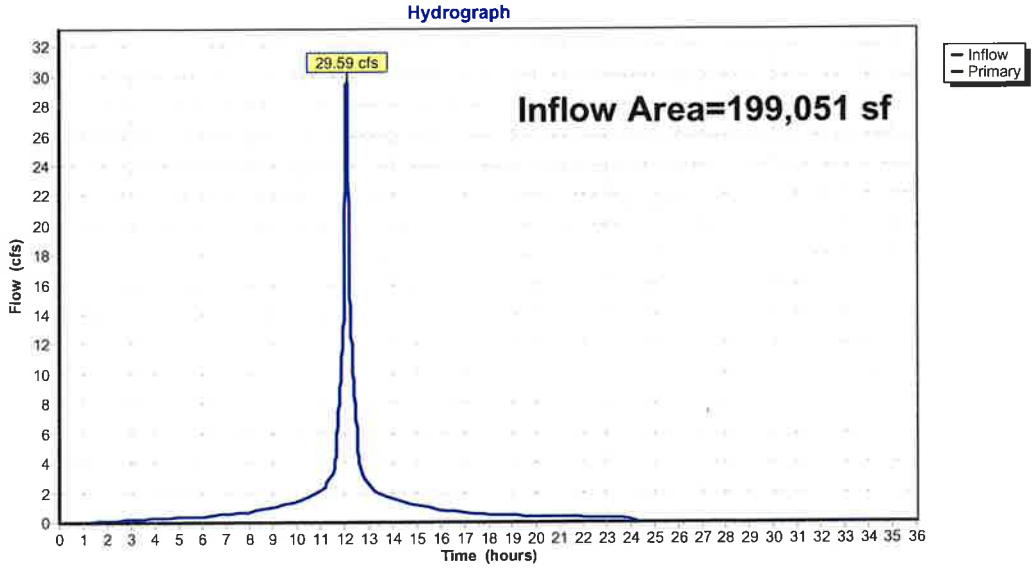


Summary for Link 2L: POC B

Inflow Area = 199,051 sf, 89.38% Impervious, Inflow Depth = 6.25" for 25-Year event
Inflow = 29.59 cfs @ 12.08 hrs, Volume= 103,660 cf
Primary = 29.59 cfs @ 12.08 hrs, Volume= 103,660 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 2L: POC B

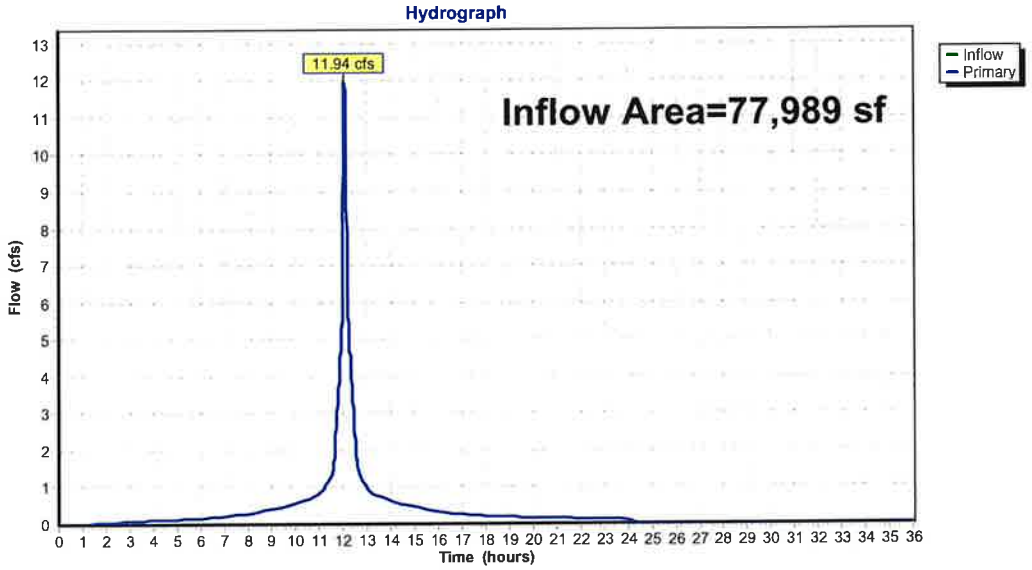


Summary for Link 3L: POC C

Inflow Area = 77,989 sf, 70.01% Impervious, Inflow Depth = 6.23" for 25-Year event
Inflow = 11.94 cfs @ 12.07 hrs, Volume= 40,508 cf
Primary = 11.94 cfs @ 12.07 hrs, Volume= 40,508 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 3L: POC C

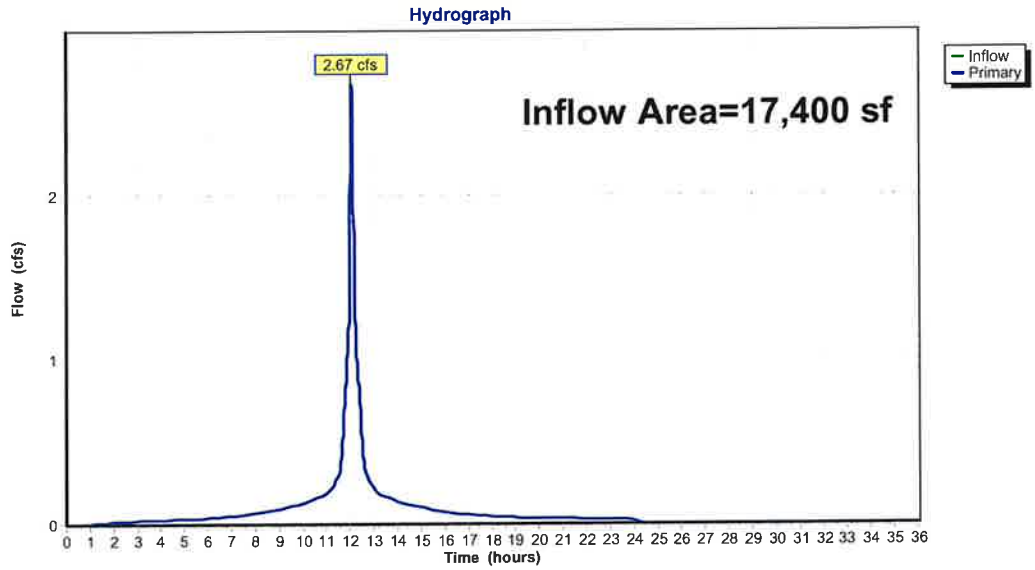


Summary for Link 4L: POC D

Inflow Area = 17,400 sf,100.00% Impervious, Inflow Depth = 6.35" for 25-Year event
Inflow = 2.67 cfs @ 12.07 hrs, Volume= 9,209 cf
Primary = 2.67 cfs @ 12.07 hrs, Volume= 9,209 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 4L: POC D

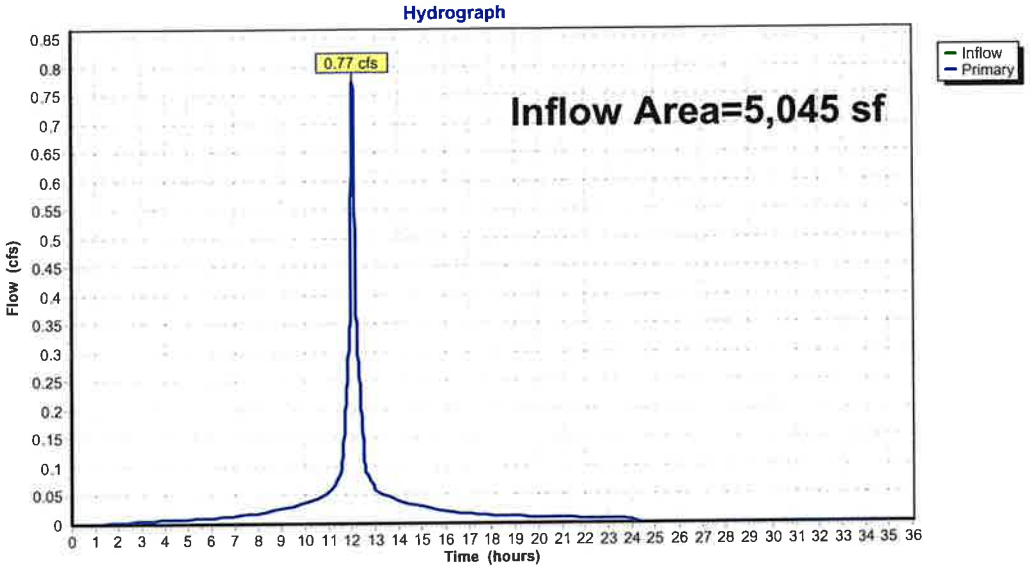


Summary for Link 5L: POC E

Inflow Area = 5,045 sf, 63.13% Impervious, Inflow Depth = 6.23" for 25-Year event
Inflow = 0.77 cfs @ 12.07 hrs, Volume= 2,620 cf
Primary = 0.77 cfs @ 12.07 hrs, Volume= 2,620 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 5L: POC E

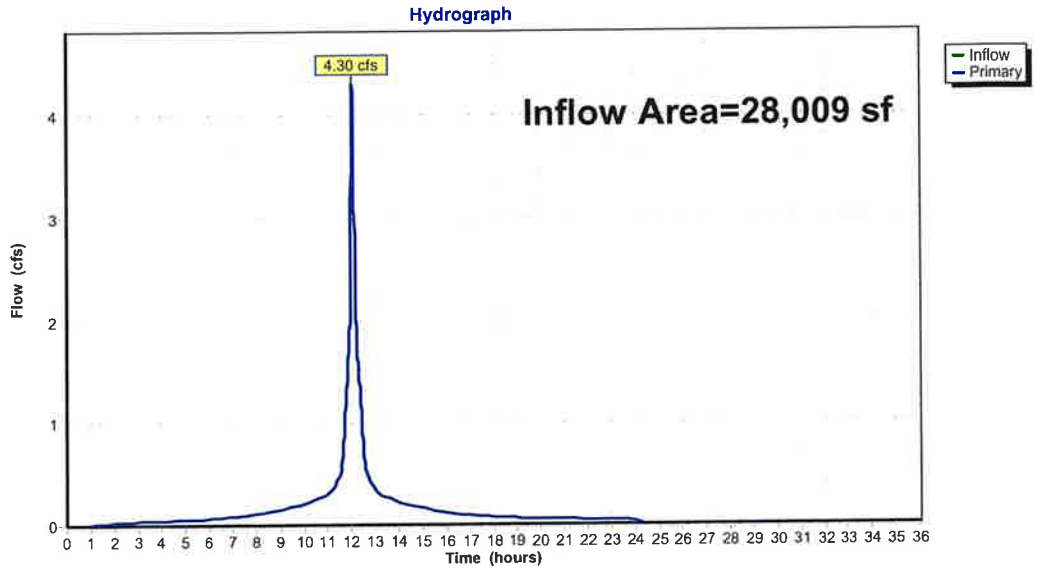


Summary for Link 6L: POC F

Inflow Area = 28,009 sf,100.00% Impervious, Inflow Depth = 6.35" for 25-Year event
Inflow = 4.30 cfs @ 12.07 hrs, Volume= 14,824 cf
Primary = 4.30 cfs @ 12.07 hrs, Volume= 14,824 cf, Atten= 0%, Lag= 0.0 min

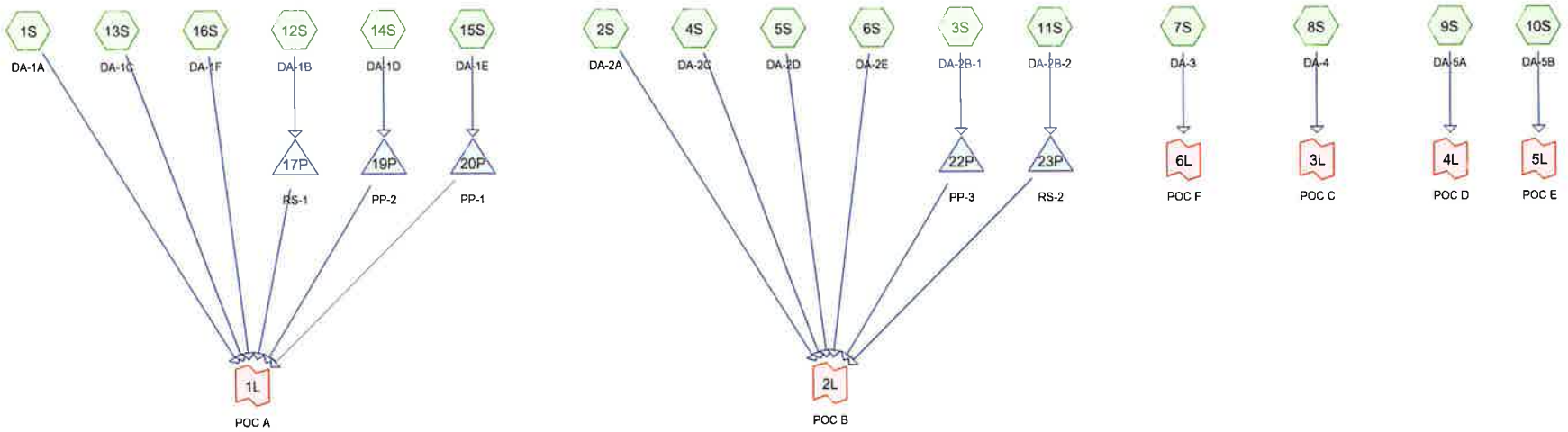
Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 6L: POC F



Appendix "D"

HydroCAD Analysis - Proposed Conditions



Subcat Reach Pond Link

Routing Diagram for 23DA_Pr-0
Prepared by RVDI, Printed 10/4/2023
HydroCAD® 10.00-26 s/n 07356 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
20,633	80	>75% Grass cover, Good, HSG D (1S, 3S, 4S, 5S, 6S, 8S, 11S, 12S, 13S, 14S, 15S, 16S)
28,146	96	Gravel surface, HSG D (3S, 4S, 8S, 10S)
14,480	98	Paved parking, HSG C (1S)
345,444	98	Paved parking, HSG D (2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S)
408,703	**97**	**TOTAL AREA**

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: DA-1A Runoff Area=22,445 sf 64.51% Impervious Runoff Depth=2.11"
Tc=5.0 min CN=92 Runoff=1.30 cfs 3,954 cf

Subcatchment 2S: DA-2A Runoff Area=9,611 sf 100.00% Impervious Runoff Depth=2.72"
Tc=5.0 min CN=98 Runoff=0.65 cfs 2,177 cf

Subcatchment 3S: DA-2B-1 Runoff Area=16,104 sf 65.67% Impervious Runoff Depth=2.61"
Tc=5.0 min CN=97 Runoff=1.08 cfs 3,501 cf

Subcatchment 4S: DA-2C Runoff Area=32,910 sf 90.69% Impervious Runoff Depth=2.61"
Tc=5.0 min CN=97 Runoff=2.20 cfs 7,155 cf

Subcatchment 5S: DA-2D Runoff Area=13,610 sf 96.47% Impervious Runoff Depth=2.61"
Tc=5.0 min CN=97 Runoff=0.91 cfs 2,959 cf

Subcatchment 6S: DA-2E Runoff Area=38,997 sf 98.03% Impervious Runoff Depth=2.72"
Tc=5.0 min CN=98 Runoff=2.65 cfs 8,834 cf

Subcatchment 7S: DA-3 Runoff Area=28,009 sf 100.00% Impervious Runoff Depth=2.72"
Tc=5.0 min CN=98 Runoff=1.90 cfs 6,345 cf

Subcatchment 8S: DA-4 Runoff Area=77,989 sf 70.01% Impervious Runoff Depth=2.61"
Tc=5.0 min CN=97 Runoff=5.21 cfs 16,955 cf

Subcatchment 9S: DA-5A Runoff Area=17,400 sf 100.00% Impervious Runoff Depth=2.72"
Tc=5.0 min CN=98 Runoff=1.18 cfs 3,942 cf

Subcatchment 10S: DA-5B Runoff Area=5,045 sf 63.13% Impervious Runoff Depth=2.61"
Tc=5.0 min CN=97 Runoff=0.34 cfs 1,097 cf

Subcatchment 11S: DA-2B-2 Runoff Area=87,935 sf 96.75% Impervious Runoff Depth=2.61"
Tc=5.0 min CN=97 Runoff=5.87 cfs 19,117 cf

Subcatchment 12S: DA-1B	Runoff Area=24,237 sf 96.44% Impervious Runoff Depth=2.61" Tc=5.0 min CN=97 Runoff=1.62 cfs 5,269 cf
Subcatchment 13S: DA-1C	Runoff Area=11,957 sf 95.14% Impervious Runoff Depth=2.61" Tc=5.0 min CN=97 Runoff=0.80 cfs 2,599 cf
Subcatchment 14S: DA-1D	Runoff Area=10,615 sf 98.05% Impervious Runoff Depth=2.72" Tc=5.0 min CN=98 Runoff=0.72 cfs 2,405 cf
Subcatchment 15S: DA-1E	Runoff Area=6,714 sf 95.58% Impervious Runoff Depth=2.61" Tc=5.0 min CN=97 Runoff=0.45 cfs 1,460 cf
Subcatchment 16S: DA-1F	Runoff Area=5,125 sf 82.11% Impervious Runoff Depth=2.40" Tc=5.0 min CN=95 Runoff=0.33 cfs 1,025 cf
Pond 17P: RS-1	Peak Elev=75.29' Storage=1,118 cf Inflow=1.62 cfs 5,269 cf 12.0" Round Culvert n=0.013 L=112.0' S=0.0152 '/' Outflow=1.62 cfs 4,293 cf
Pond 19P: PP-2	Peak Elev=77.05' Storage=723 cf Inflow=0.72 cfs 2,405 cf 8.0" Round Culvert n=0.010 L=305.0' S=0.0200 '/' Outflow=0.57 cfs 1,961 cf
Pond 20P: PP-1	Peak Elev=75.95' Storage=458 cf Inflow=0.45 cfs 1,460 cf 8.0" Round Culvert n=0.010 L=3.0' S=0.1000 '/' Outflow=0.37 cfs 1,153 cf
Pond 22P: PP-3	Peak Elev=72.00' Storage=2,223 cf Inflow=1.08 cfs 3,501 cf 12.0" Round Culvert n=0.013 L=260.0' S=0.0100 '/' Outflow=0.17 cfs 1,470 cf
Pond 23P: RS-2	Peak Elev=71.39' Storage=3,976 cf Inflow=5.87 cfs 19,117 cf 18.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=5.83 cfs 15,698 cf
Link 1L: POC A	Inflow=4.87 cfs 14,986 cf Primary=4.87 cfs 14,986 cf
Link 2L: POC B	Inflow=12.22 cfs 38,293 cf Primary=12.22 cfs 38,293 cf

Link 3L: POC C	Inflow=5.21 cfs 16,955 cf Primary=5.21 cfs 16,955 cf
Link 4L: POC D	Inflow=1.18 cfs 3,942 cf Primary=1.18 cfs 3,942 cf
Link 5L: POC E	Inflow=0.34 cfs 1,097 cf Primary=0.34 cfs 1,097 cf
Link 6L: POC F	Inflow=1.90 cfs 6,345 cf Primary=1.90 cfs 6,345 cf

Total Runoff Area = 408,703 sf Runoff Volume = 88,793 cf Average Runoff Depth = 2.61"
11.94% Pervious = 48,779 sf 88.06% Impervious = 359,924 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: DA-1A Runoff Area=22,445 sf 64.51% Impervious Runoff Depth=2.70"
Tc=5.0 min CN=92 Runoff=1.64 cfs 5,057 cf

Subcatchment 2S: DA-2A Runoff Area=9,611 sf 100.00% Impervious Runoff Depth=3.34"
Tc=5.0 min CN=98 Runoff=0.79 cfs 2,672 cf

Subcatchment 3S: DA-2B-1 Runoff Area=16,104 sf 65.67% Impervious Runoff Depth=3.22"
Tc=5.0 min CN=97 Runoff=1.31 cfs 4,327 cf

Subcatchment 4S: DA-2C Runoff Area=32,910 sf 90.69% Impervious Runoff Depth=3.22"
Tc=5.0 min CN=97 Runoff=2.69 cfs 8,842 cf

Subcatchment 5S: DA-2D Runoff Area=13,610 sf 96.47% Impervious Runoff Depth=3.22"
Tc=5.0 min CN=97 Runoff=1.11 cfs 3,656 cf

Subcatchment 6S: DA-2E Runoff Area=38,997 sf 98.03% Impervious Runoff Depth=3.34"
Tc=5.0 min CN=98 Runoff=3.22 cfs 10,842 cf

Subcatchment 7S: DA-3 Runoff Area=28,009 sf 100.00% Impervious Runoff Depth=3.34"
Tc=5.0 min CN=98 Runoff=2.31 cfs 7,787 cf

Subcatchment 8S: DA-4 Runoff Area=77,989 sf 70.01% Impervious Runoff Depth=3.22"
Tc=5.0 min CN=97 Runoff=6.36 cfs 20,953 cf

Subcatchment 9S: DA-5A Runoff Area=17,400 sf 100.00% Impervious Runoff Depth=3.34"
Tc=5.0 min CN=98 Runoff=1.44 cfs 4,838 cf

Subcatchment 10S: DA-5B Runoff Area=5,045 sf 63.13% Impervious Runoff Depth=3.22"
Tc=5.0 min CN=97 Runoff=0.41 cfs 1,355 cf

Subcatchment 11S: DA-2B-2 Runoff Area=87,935 sf 96.75% Impervious Runoff Depth=3.22"
Tc=5.0 min CN=97 Runoff=7.17 cfs 23,625 cf

Subcatchment 12S: DA-1B Runoff Area=24,237 sf 96.44% Impervious Runoff Depth=3.22"
Tc=5.0 min CN=97 Runoff=1.98 cfs 6,512 cf

Subcatchment 13S: DA-1C Runoff Area=11,957 sf 95.14% Impervious Runoff Depth=3.22"
Tc=5.0 min CN=97 Runoff=0.98 cfs 3,212 cf

Subcatchment 14S: DA-1D Runoff Area=10,615 sf 98.05% Impervious Runoff Depth=3.34"
Tc=5.0 min CN=98 Runoff=0.88 cfs 2,951 cf

Subcatchment 15S: DA-1E Runoff Area=6,714 sf 95.58% Impervious Runoff Depth=3.22"
Tc=5.0 min CN=97 Runoff=0.55 cfs 1,804 cf

Subcatchment 16S: DA-1F Runoff Area=5,125 sf 82.11% Impervious Runoff Depth=3.01"
Tc=5.0 min CN=95 Runoff=0.40 cfs 1,285 cf

Pond 17P: RS-1 Peak Elev=75.38' Storage=1,123 cf Inflow=1.98 cfs 6,512 cf
12.0" Round Culvert n=0.013 L=112.0' S=0.0152 '/' Outflow=1.97 cfs 5,535 cf

Pond 19P: PP-2 Peak Elev=77.12' Storage=759 cf Inflow=0.88 cfs 2,951 cf
8.0" Round Culvert n=0.010 L=305.0' S=0.0200 '/' Outflow=0.72 cfs 2,508 cf

Pond 20P: PP-1 Peak Elev=76.00' Storage=478 cf Inflow=0.55 cfs 1,804 cf
8.0" Round Culvert n=0.010 L=3.0' S=0.1000 '/' Outflow=0.46 cfs 1,497 cf

Pond 22P: PP-3 Peak Elev=72.14' Storage=2,368 cf Inflow=1.31 cfs 4,327 cf
12.0" Round Culvert n=0.013 L=260.0' S=0.0100 '/' Outflow=0.47 cfs 2,296 cf

Pond 23P: RS-2 Peak Elev=71.63' Storage=4,020 cf Inflow=7.17 cfs 23,625 cf
18.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=7.11 cfs 20,206 cf

Link 1L: POC A Inflow=6.05 cfs 19,095 cf
Primary=6.05 cfs 19,095 cf

Link 2L: POC B Inflow=14.89 cfs 48,513 cf
Primary=14.89 cfs 48,513 cf

Link 3L: POC C
Inflow=6.36 cfs 20,953 cf
Primary=6.36 cfs 20,953 cf

Link 4L: POC D
Inflow=1.44 cfs 4,838 cf
Primary=1.44 cfs 4,838 cf

Link 5L: POC E
Inflow=0.41 cfs 1,355 cf
Primary=0.41 cfs 1,355 cf

Link 6L: POC F
Inflow=2.31 cfs 7,787 cf
Primary=2.31 cfs 7,787 cf

Total Runoff Area = 408,703 sf Runoff Volume = 109,717 cf Average Runoff Depth = 3.22"
11.94% Pervious = 48,779 sf 88.06% Impervious = 359,924 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: DA-1A
Runoff Area=22,445 sf 64.51% Impervious Runoff Depth=3.69"
Tc=5.0 min CN=92 Runoff=2.20 cfs 6,901 cf

Subcatchment 2S: DA-2A
Runoff Area=9,611 sf 100.00% Impervious Runoff Depth=4.35"
Tc=5.0 min CN=98 Runoff=1.03 cfs 3,487 cf

Subcatchment 3S: DA-2B-1
Runoff Area=16,104 sf 65.67% Impervious Runoff Depth=4.24"
Tc=5.0 min CN=97 Runoff=1.70 cfs 5,688 cf

Subcatchment 4S: DA-2C
Runoff Area=32,910 sf 90.69% Impervious Runoff Depth=4.24"
Tc=5.0 min CN=97 Runoff=3.48 cfs 11,624 cf

Subcatchment 5S: DA-2D
Runoff Area=13,610 sf 96.47% Impervious Runoff Depth=4.24"
Tc=5.0 min CN=97 Runoff=1.44 cfs 4,807 cf

Subcatchment 6S: DA-2E
Runoff Area=38,997 sf 98.03% Impervious Runoff Depth=4.35"
Tc=5.0 min CN=98 Runoff=4.16 cfs 14,149 cf

Subcatchment 7S: DA-3
Runoff Area=28,009 sf 100.00% Impervious Runoff Depth=4.35"
Tc=5.0 min CN=98 Runoff=2.99 cfs 10,162 cf

Subcatchment 8S: DA-4
Runoff Area=77,989 sf 70.01% Impervious Runoff Depth=4.24"
Tc=5.0 min CN=97 Runoff=8.25 cfs 27,547 cf

Subcatchment 9S: DA-5A
Runoff Area=17,400 sf 100.00% Impervious Runoff Depth=4.35"
Tc=5.0 min CN=98 Runoff=1.86 cfs 6,313 cf

Subcatchment 10S: DA-5B
Runoff Area=5,045 sf 63.13% Impervious Runoff Depth=4.24"
Tc=5.0 min CN=97 Runoff=0.53 cfs 1,782 cf

Subcatchment 11S: DA-2B-2
Runoff Area=87,935 sf 96.75% Impervious Runoff Depth=4.24"
Tc=5.0 min CN=97 Runoff=9.30 cfs 31,060 cf

Subcatchment 12S: DA-1B
Runoff Area=24,237 sf 96.44% Impervious Runoff Depth=4.24"
Tc=5.0 min CN=97 Runoff=2.56 cfs 8,561 cf

Subcatchment 13S: DA-1C
Runoff Area=11,957 sf 95.14% Impervious Runoff Depth=4.24"
Tc=5.0 min CN=97 Runoff=1.27 cfs 4,223 cf

Subcatchment 14S: DA-1D
Runoff Area=10,615 sf 98.05% Impervious Runoff Depth=4.35"
Tc=5.0 min CN=98 Runoff=1.13 cfs 3,851 cf

Subcatchment 15S: DA-1E
Runoff Area=6,714 sf 95.58% Impervious Runoff Depth=4.24"
Tc=5.0 min CN=97 Runoff=0.71 cfs 2,372 cf

Subcatchment 16S: DA-1F
Runoff Area=5,125 sf 82.11% Impervious Runoff Depth=4.01"
Tc=5.0 min CN=95 Runoff=0.53 cfs 1,714 cf

Pond 17P: RS-1
Peak Elev=75.55' Storage=1,132 cf Inflow=2.56 cfs 8,561 cf
12.0" Round Culvert n=0.013 L=112.0' S=0.0152 '/' Outflow=2.56 cfs 7,585 cf

Pond 19P: PP-2
Peak Elev=77.24' Storage=814 cf Inflow=1.13 cfs 3,851 cf
8.0" Round Culvert n=0.010 L=305.0' S=0.0200 '/' Outflow=0.94 cfs 3,408 cf

Pond 20P: PP-1
Peak Elev=76.07' Storage=509 cf Inflow=0.71 cfs 2,372 cf
8.0" Round Culvert n=0.010 L=3.0' S=0.1000 '/' Outflow=0.62 cfs 2,065 cf

Pond 22P: PP-3
Peak Elev=72.37' Storage=2,599 cf Inflow=1.70 cfs 5,688 cf
12.0" Round Culvert n=0.013 L=260.0' S=0.0100 '/' Outflow=1.18 cfs 3,657 cf

Pond 23P: RS-2
Peak Elev=72.09' Storage=4,106 cf Inflow=9.30 cfs 31,060 cf
18.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=9.24 cfs 27,641 cf

Link 1L: POC A
Inflow=7.97 cfs 25,897 cf
Primary=7.97 cfs 25,897 cf

Link 2L: POC B
Inflow=20.14 cfs 65,366 cf
Primary=20.14 cfs 65,366 cf

Link 3L: POC C
Inflow=8.25 cfs 27,547 cf
Primary=8.25 cfs 27,547 cf

Link 4L: POC D
Inflow=1.86 cfs 6,313 cf
Primary=1.86 cfs 6,313 cf

Link 5L: POC E
Inflow=0.53 cfs 1,782 cf
Primary=0.53 cfs 1,782 cf

Link 6L: POC F
Inflow=2.99 cfs 10,162 cf
Primary=2.99 cfs 10,162 cf

Total Runoff Area = 408,703 sf Runoff Volume = 144,244 cf Average Runoff Depth = 4.24"
11.94% Pervious = 48,779 sf 88.06% Impervious = 359,924 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: DA-1A Runoff Area=22,445 sf 64.51% Impervious Runoff Depth=4.51"
Tc=5.0 min CN=92 Runoff=2.66 cfs 8,436 cf

Subcatchment 2S: DA-2A Runoff Area=9,611 sf 100.00% Impervious Runoff Depth=5.19"
Tc=5.0 min CN=98 Runoff=1.22 cfs 4,159 cf

Subcatchment 3S: DA-2B-1 Runoff Area=16,104 sf 65.67% Impervious Runoff Depth=5.08"
Tc=5.0 min CN=97 Runoff=2.02 cfs 6,812 cf

Subcatchment 4S: DA-2C Runoff Area=32,910 sf 90.69% Impervious Runoff Depth=5.08"
Tc=5.0 min CN=97 Runoff=4.14 cfs 13,920 cf

Subcatchment 5S: DA-2D Runoff Area=13,610 sf 96.47% Impervious Runoff Depth=5.08"
Tc=5.0 min CN=97 Runoff=1.71 cfs 5,757 cf

Subcatchment 6S: DA-2E Runoff Area=38,997 sf 98.03% Impervious Runoff Depth=5.19"
Tc=5.0 min CN=98 Runoff=4.93 cfs 16,874 cf

Subcatchment 7S: DA-3 Runoff Area=28,009 sf 100.00% Impervious Runoff Depth=5.19"
Tc=5.0 min CN=98 Runoff=3.54 cfs 12,120 cf

Subcatchment 8S: DA-4 Runoff Area=77,989 sf 70.01% Impervious Runoff Depth=5.08"
Tc=5.0 min CN=97 Runoff=9.80 cfs 32,987 cf

Subcatchment 9S: DA-5A Runoff Area=17,400 sf 100.00% Impervious Runoff Depth=5.19"
Tc=5.0 min CN=98 Runoff=2.20 cfs 7,529 cf

Subcatchment 10S: DA-5B Runoff Area=5,045 sf 63.13% Impervious Runoff Depth=5.08"
Tc=5.0 min CN=97 Runoff=0.63 cfs 2,134 cf

Subcatchment 11S: DA-2B-2 Runoff Area=87,935 sf 96.75% Impervious Runoff Depth=5.08"
Tc=5.0 min CN=97 Runoff=11.05 cfs 37,194 cf

Subcatchment 12S: DA-1B Runoff Area=24,237 sf 96.44% Impervious Runoff Depth=5.08"
Tc=5.0 min CN=97 Runoff=3.05 cfs 10,252 cf

Subcatchment 13S: DA-1C Runoff Area=11,957 sf 95.14% Impervious Runoff Depth=5.08"
Tc=5.0 min CN=97 Runoff=1.50 cfs 5,058 cf

Subcatchment 14S: DA-1D Runoff Area=10,615 sf 98.05% Impervious Runoff Depth=5.19"
Tc=5.0 min CN=98 Runoff=1.34 cfs 4,593 cf

Subcatchment 15S: DA-1E Runoff Area=6,714 sf 95.58% Impervious Runoff Depth=5.08"
Tc=5.0 min CN=97 Runoff=0.84 cfs 2,840 cf

Subcatchment 16S: DA-1F Runoff Area=5,125 sf 82.11% Impervious Runoff Depth=4.85"
Tc=5.0 min CN=95 Runoff=0.63 cfs 2,070 cf

Pond 17P: RS-1 Peak Elev=75.74' Storage=1,143 cf Inflow=3.05 cfs 10,252 cf
12.0" Round Culvert n=0.013 L=112.0' S=0.0152 '/' Outflow=3.03 cfs 9,276 cf

Pond 19P: PP-2 Peak Elev=77.35' Storage=866 cf Inflow=1.34 cfs 4,593 cf
8.0" Round Culvert n=0.010 L=305.0' S=0.0200 '/' Outflow=1.09 cfs 4,150 cf

Pond 20P: PP-1 Peak Elev=76.14' Storage=529 cf Inflow=0.84 cfs 2,840 cf
8.0" Round Culvert n=0.010 L=3.0' S=0.1000 '/' Outflow=0.75 cfs 2,534 cf

Pond 22P: PP-3 Peak Elev=72.49' Storage=2,718 cf Inflow=2.02 cfs 6,812 cf
12.0" Round Culvert n=0.013 L=260.0' S=0.0100 '/' Outflow=1.62 cfs 4,781 cf

Pond 23P: RS-2 Peak Elev=72.41' Storage=4,166 cf Inflow=11.05 cfs 37,194 cf
18.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=10.95 cfs 33,775 cf

Link 1L: POC A Inflow=9.51 cfs 31,522 cf
Primary=9.51 cfs 31,522 cf

Link 2L: POC B Inflow=24.31 cfs 79,266 cf
Primary=24.31 cfs 79,266 cf

Link 3L: POC C
Inflow=9.80 cfs 32,987 cf
Primary=9.80 cfs 32,987 cf

Link 4L: POC D
Inflow=2.20 cfs 7,529 cf
Primary=2.20 cfs 7,529 cf

Link 5L: POC E
Inflow=0.63 cfs 2,134 cf
Primary=0.63 cfs 2,134 cf

Link 6L: POC F
Inflow=3.54 cfs 12,120 cf
Primary=3.54 cfs 12,120 cf

Total Runoff Area = 408,703 sf Runoff Volume = 172,734 cf Average Runoff Depth = 5.07"
11.94% Pervious = 48,779 sf 88.06% Impervious = 359,924 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: DA-1A
Runoff Area=22,445 sf 64.51% Impervious Runoff Depth=5.65"
Tc=5.0 min CN=92 Runoff=3.29 cfs 10,568 cf

Subcatchment 2S: DA-2A
Runoff Area=9,611 sf 100.00% Impervious Runoff Depth=6.35"
Tc=5.0 min CN=98 Runoff=1.48 cfs 5,087 cf

Subcatchment 3S: DA-2B-1
Runoff Area=16,104 sf 65.67% Impervious Runoff Depth=6.23"
Tc=5.0 min CN=97 Runoff=2.46 cfs 8,364 cf

Subcatchment 4S: DA-2C
Runoff Area=32,910 sf 90.69% Impervious Runoff Depth=6.23"
Tc=5.0 min CN=97 Runoff=5.04 cfs 17,094 cf

Subcatchment 5S: DA-2D
Runoff Area=13,610 sf 96.47% Impervious Runoff Depth=6.23"
Tc=5.0 min CN=97 Runoff=2.08 cfs 7,069 cf

Subcatchment 6S: DA-2E
Runoff Area=38,997 sf 98.03% Impervious Runoff Depth=6.35"
Tc=5.0 min CN=98 Runoff=5.99 cfs 20,640 cf

Subcatchment 7S: DA-3
Runoff Area=28,009 sf 100.00% Impervious Runoff Depth=6.35"
Tc=5.0 min CN=98 Runoff=4.30 cfs 14,824 cf

Subcatchment 8S: DA-4
Runoff Area=77,989 sf 70.01% Impervious Runoff Depth=6.23"
Tc=5.0 min CN=97 Runoff=11.94 cfs 40,508 cf

Subcatchment 9S: DA-5A
Runoff Area=17,400 sf 100.00% Impervious Runoff Depth=6.35"
Tc=5.0 min CN=98 Runoff=2.67 cfs 9,209 cf

Subcatchment 10S: DA-5B
Runoff Area=5,045 sf 63.13% Impervious Runoff Depth=6.23"
Tc=5.0 min CN=97 Runoff=0.77 cfs 2,620 cf

Subcatchment 11S: DA-2B-2
Runoff Area=87,935 sf 96.75% Impervious Runoff Depth=6.23"
Tc=5.0 min CN=97 Runoff=13.46 cfs 45,674 cf

Subcatchment 12S: DA-1B	Runoff Area=24,237 sf 96.44% Impervious Runoff Depth=6.23" Tc=5.0 min CN=97 Runoff=3.71 cfs 12,589 cf
Subcatchment 13S: DA-1C	Runoff Area=11,957 sf 95.14% Impervious Runoff Depth=6.23" Tc=5.0 min CN=97 Runoff=1.83 cfs 6,211 cf
Subcatchment 14S: DA-1D	Runoff Area=10,615 sf 98.05% Impervious Runoff Depth=6.35" Tc=5.0 min CN=98 Runoff=1.63 cfs 5,618 cf
Subcatchment 15S: DA-1E	Runoff Area=6,714 sf 95.58% Impervious Runoff Depth=6.23" Tc=5.0 min CN=97 Runoff=1.03 cfs 3,487 cf
Subcatchment 16S: DA-1F	Runoff Area=5,125 sf 82.11% Impervious Runoff Depth=6.00" Tc=5.0 min CN=95 Runoff=0.77 cfs 2,562 cf
Pond 17P: RS-1	Peak Elev=76.05' Storage=1,160 cf Inflow=3.71 cfs 12,589 cf 12.0" Round Culvert n=0.013 L=112.0' S=0.0152 '/' Outflow=3.69 cfs 11,613 cf
Pond 19P: PP-2	Peak Elev=77.51' Storage=944 cf Inflow=1.63 cfs 5,618 cf 8.0" Round Culvert n=0.010 L=305.0' S=0.0200 '/' Outflow=1.28 cfs 5,175 cf
Pond 20P: PP-1	Peak Elev=76.22' Storage=558 cf Inflow=1.03 cfs 3,487 cf 8.0" Round Culvert n=0.010 L=3.0' S=0.1000 '/' Outflow=0.91 cfs 3,181 cf
Pond 22P: PP-3	Peak Elev=72.59' Storage=2,827 cf Inflow=2.46 cfs 8,364 cf 12.0" Round Culvert n=0.013 L=260.0' S=0.0100 '/' Outflow=2.03 cfs 6,333 cf
Pond 23P: RS-2	Peak Elev=73.04' Storage=4,283 cf Inflow=13.46 cfs 45,674 cf 18.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=13.17 cfs 42,255 cf
Link 1L: POC A	Inflow=11.60 cfs 39,309 cf Primary=11.60 cfs 39,309 cf
Link 2L: POC B	Inflow=29.47 cfs 98,478 cf Primary=29.47 cfs 98,478 cf

Link 3L: POC C	Inflow=11.94 cfs 40,508 cf Primary=11.94 cfs 40,508 cf
Link 4L: POC D	Inflow=2.67 cfs 9,209 cf Primary=2.67 cfs 9,209 cf
Link 5L: POC E	Inflow=0.77 cfs 2,620 cf Primary=0.77 cfs 2,620 cf
Link 6L: POC F	Inflow=4.30 cfs 14,824 cf Primary=4.30 cfs 14,824 cf

Total Runoff Area = 408,703 sf Runoff Volume = 212,125 cf Average Runoff Depth = 6.23"
11.94% Pervious = 48,779 sf 88.06% Impervious = 359,924 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: DA-1A Runoff Area=22,445 sf 64.51% Impervious Runoff Depth=6.50"
Tc=5.0 min CN=92 Runoff=3.76 cfs 12,156 cf

Subcatchment 2S: DA-2A Runoff Area=9,611 sf 100.00% Impervious Runoff Depth=7.21"
Tc=5.0 min CN=98 Runoff=1.67 cfs 5,775 cf

Subcatchment 3S: DA-2B-1 Runoff Area=16,104 sf 65.67% Impervious Runoff Depth=7.09"
Tc=5.0 min CN=97 Runoff=2.79 cfs 9,517 cf

Subcatchment 4S: DA-2C Runoff Area=32,910 sf 90.69% Impervious Runoff Depth=7.09"
Tc=5.0 min CN=97 Runoff=5.70 cfs 19,448 cf

Subcatchment 5S: DA-2D Runoff Area=13,610 sf 96.47% Impervious Runoff Depth=7.09"
Tc=5.0 min CN=97 Runoff=2.36 cfs 8,043 cf

Subcatchment 6S: DA-2E Runoff Area=38,997 sf 98.03% Impervious Runoff Depth=7.21"
Tc=5.0 min CN=98 Runoff=6.78 cfs 23,433 cf

Subcatchment 7S: DA-3 Runoff Area=28,009 sf 100.00% Impervious Runoff Depth=7.21"
Tc=5.0 min CN=98 Runoff=4.87 cfs 16,830 cf

Subcatchment 8S: DA-4 Runoff Area=77,989 sf 70.01% Impervious Runoff Depth=7.09"
Tc=5.0 min CN=97 Runoff=13.52 cfs 46,087 cf

Subcatchment 9S: DA-5A Runoff Area=17,400 sf 100.00% Impervious Runoff Depth=7.21"
Tc=5.0 min CN=98 Runoff=3.03 cfs 10,455 cf

Subcatchment 10S: DA-5B Runoff Area=5,045 sf 63.13% Impervious Runoff Depth=7.09"
Tc=5.0 min CN=97 Runoff=0.87 cfs 2,981 cf

Subcatchment 11S: DA-2B-2 Runoff Area=87,935 sf 96.75% Impervious Runoff Depth=7.09"
Tc=5.0 min CN=97 Runoff=15.24 cfs 51,964 cf

Subcatchment 12S: DA-1B Runoff Area=24,237 sf 96.44% Impervious Runoff Depth=7.09"
Tc=5.0 min CN=97 Runoff=4.20 cfs 14,323 cf

Subcatchment 13S: DA-1C Runoff Area=11,957 sf 95.14% Impervious Runoff Depth=7.09"
Tc=5.0 min CN=97 Runoff=2.07 cfs 7,066 cf

Subcatchment 14S: DA-1D Runoff Area=10,615 sf 98.05% Impervious Runoff Depth=7.21"
Tc=5.0 min CN=98 Runoff=1.85 cfs 6,378 cf

Subcatchment 15S: DA-1E Runoff Area=6,714 sf 95.58% Impervious Runoff Depth=7.09"
Tc=5.0 min CN=97 Runoff=1.16 cfs 3,968 cf

Subcatchment 16S: DA-1F Runoff Area=5,125 sf 82.11% Impervious Runoff Depth=6.85"
Tc=5.0 min CN=95 Runoff=0.88 cfs 2,927 cf

Pond 17P: RS-1 Peak Elev=76.32' Storage=1,175 cf Inflow=4.20 cfs 14,323 cf
12.0" Round Culvert n=0.013 L=112.0' S=0.0152 '/' Outflow=4.17 cfs 13,347 cf

Pond 19P: PP-2 Peak Elev=77.64' Storage=1,005 cf Inflow=1.85 cfs 6,378 cf
8.0" Round Culvert n=0.010 L=305.0' S=0.0200 '/' Outflow=1.42 cfs 5,935 cf

Pond 20P: PP-1 Peak Elev=76.30' Storage=583 cf Inflow=1.16 cfs 3,968 cf
8.0" Round Culvert n=0.010 L=3.0' S=0.1000 '/' Outflow=1.02 cfs 3,661 cf

Pond 22P: PP-3 Peak Elev=72.67' Storage=2,902 cf Inflow=2.79 cfs 9,517 cf
12.0" Round Culvert n=0.013 L=260.0' S=0.0100 '/' Outflow=2.29 cfs 7,485 cf

Pond 23P: RS-2 Peak Elev=73.68' Storage=4,401 cf Inflow=15.24 cfs 51,964 cf
18.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=14.81 cfs 48,545 cf

Link 1L: POC A Inflow=13.11 cfs 45,092 cf
Primary=13.11 cfs 45,092 cf

Link 2L: POC B Inflow=33.23 cfs 112,729 cf
Primary=33.23 cfs 112,729 cf

Link 3L: POC C
Inflow=13.52 cfs 46,087 cf
Primary=13.52 cfs 46,087 cf

Link 4L: POC D
Inflow=3.03 cfs 10,455 cf
Primary=3.03 cfs 10,455 cf

Link 5L: POC E
Inflow=0.87 cfs 2,981 cf
Primary=0.87 cfs 2,981 cf

Link 6L: POC F
Inflow=4.87 cfs 16,830 cf
Primary=4.87 cfs 16,830 cf

Total Runoff Area = 408,703 sf Runoff Volume = 241,351 cf Average Runoff Depth = 7.09"
11.94% Pervious = 48,779 sf 88.06% Impervious = 359,924 sf

Summary for Subcatchment 1S: DA-1A

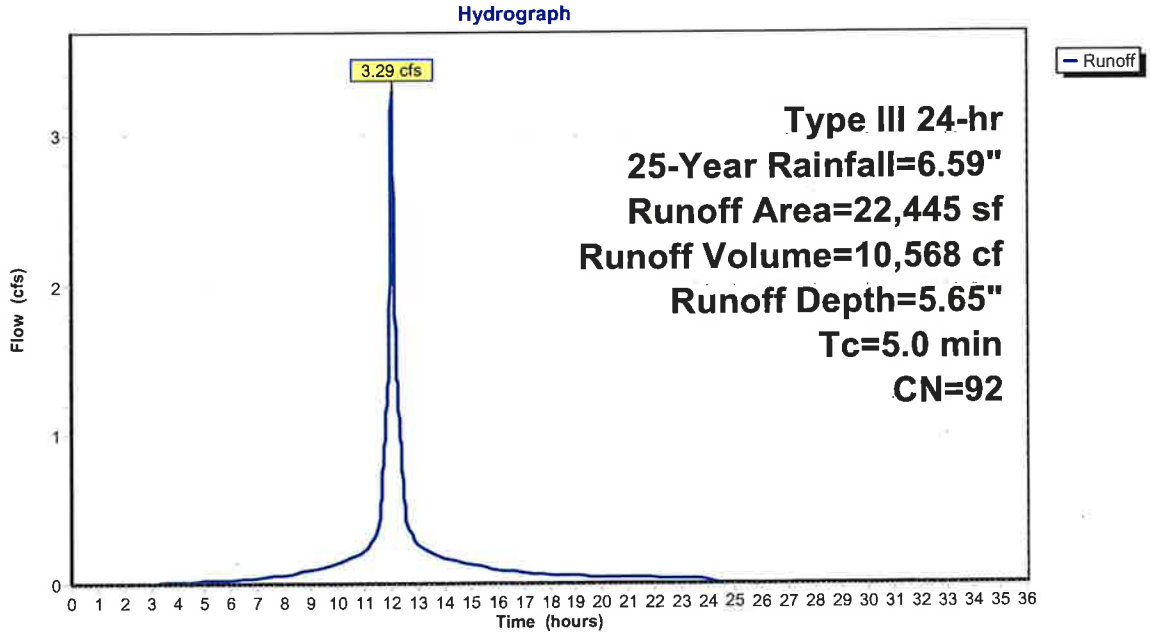
Runoff = 3.29 cfs @ 12.07 hrs, Volume= 10,568 cf, Depth= 5.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
14,480	98	Paved parking, HSG C
7,965	80	>75% Grass cover, Good, HSG D
22,445	92	Weighted Average
7,965		35.49% Pervious Area
14,480		64.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, 1

Subcatchment 1S: DA-1A



Summary for Subcatchment 2S: DA-2A

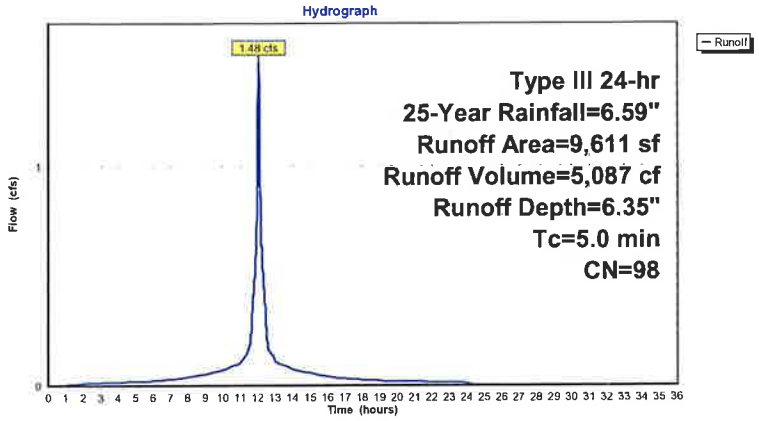
Runoff = 1.48 cfs @ 12.07 hrs, Volume= 5,087 cf, Depth= 6.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
9,611	98	Paved parking, HSG D
9,611		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, 1**

Subcatchment 2S: DA-2A



Summary for Subcatchment 3S: DA-2B-1

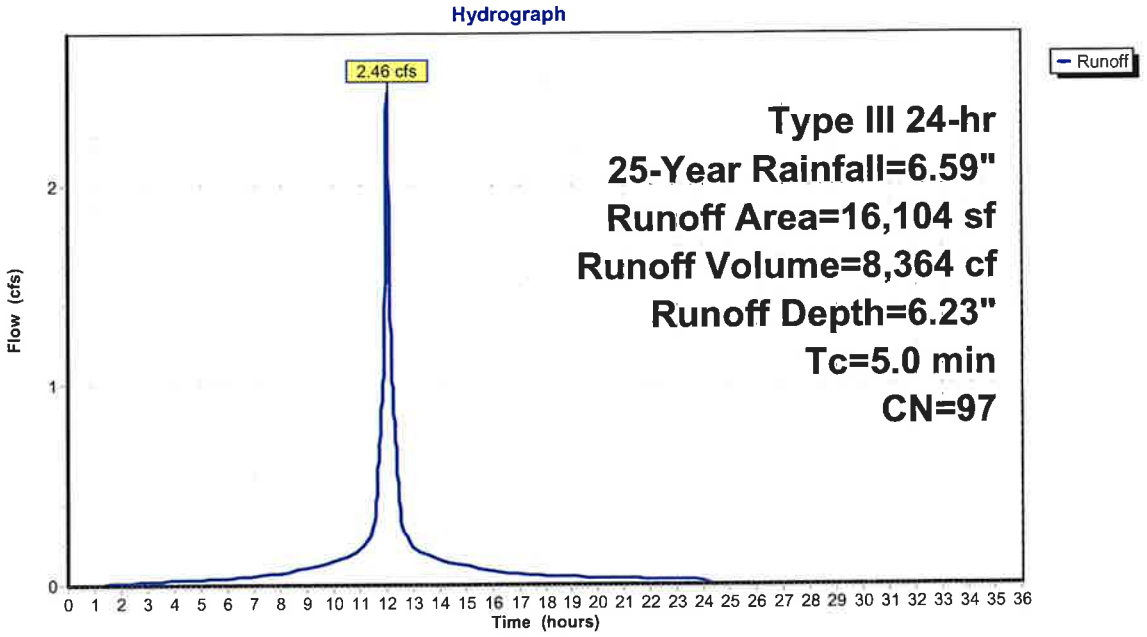
Runoff = 2.46 cfs @ 12.07 hrs, Volume= 8,364 cf, Depth= 6.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
10,576	98	Paved parking, HSG D
4,994	96	Gravel surface, HSG D
534	80	>75% Grass cover, Good, HSG D
16,104	97	Weighted Average
5,528		34.33% Pervious Area
10,576		65.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, 1**

Subcatchment 3S: DA-2B-1



Summary for Subcatchment 4S: DA-2C

Runoff = 5.04 cfs @ 12.07 hrs, Volume= 17,094 cf, Depth= 6.23"

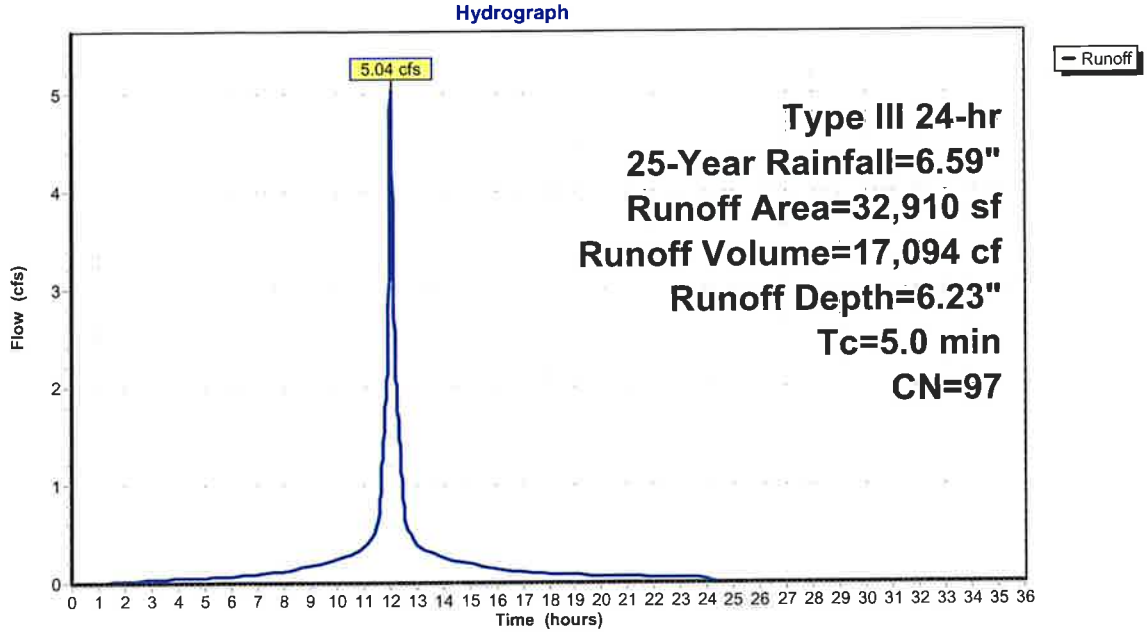
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
29,847	98	Paved parking, HSG D
399	96	Gravel surface, HSG D
2,664	80	>75% Grass cover, Good, HSG D
32,910	97	Weighted Average
3,063		9.31% Pervious Area
29,847		90.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, 1**

Subcatchment 4S: DA-2C

Hydrograph



Summary for Subcatchment 5S: DA-2D

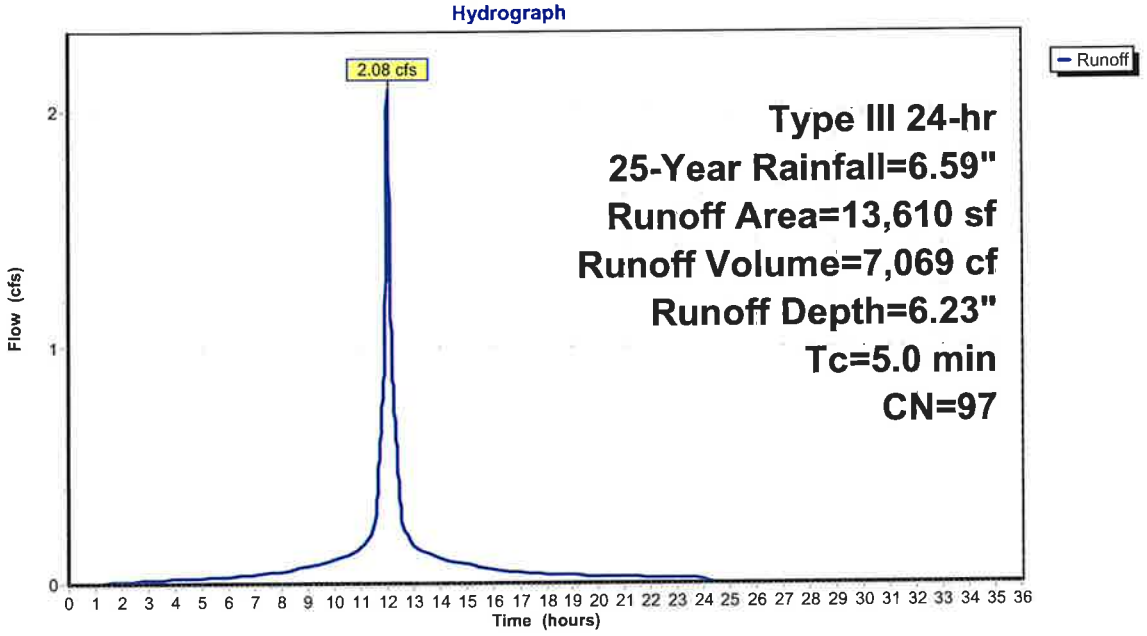
Runoff = 2.08 cfs @ 12.07 hrs, Volume= 7,069 cf, Depth= 6.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
13,130	98	Paved parking, HSG D
480	80	>75% Grass cover, Good, HSG D
13,610	97	Weighted Average
480		3.53% Pervious Area
13,130		96.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, 1

Subcatchment 5S: DA-2D



Summary for Subcatchment 6S: DA-2E

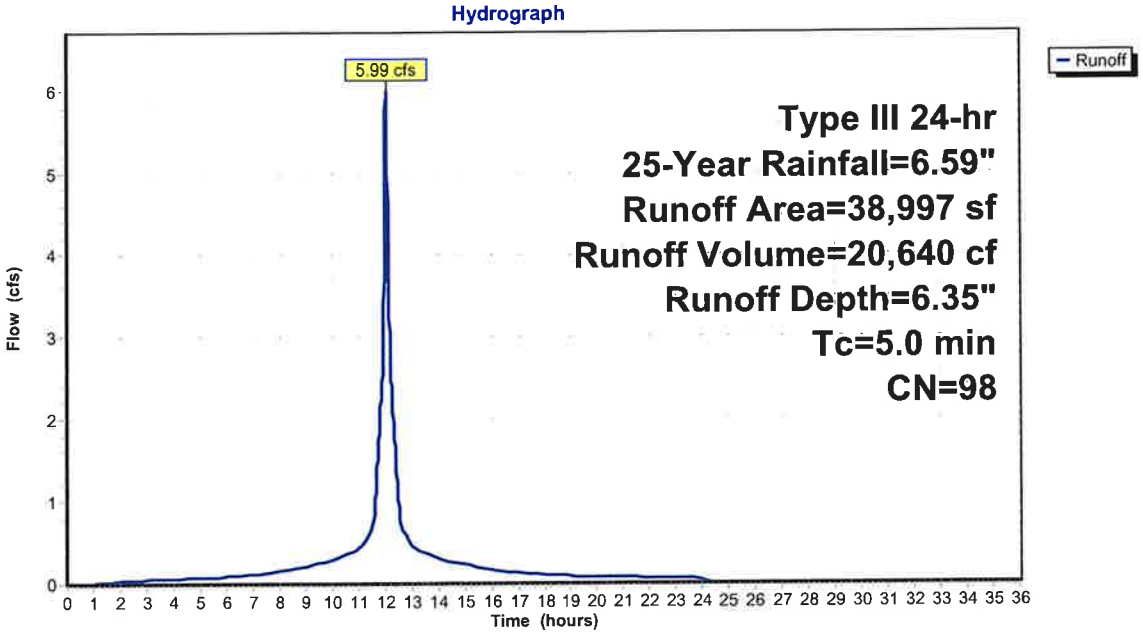
Runoff = 5.99 cfs @ 12.07 hrs, Volume= 20,640 cf, Depth= 6.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
38,227	98	Paved parking, HSG D
770	80	>75% Grass cover, Good, HSG D
38,997	98	Weighted Average
770		1.97% Pervious Area
38,227		98.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, 1**

Subcatchment 6S: DA-2E



Summary for Subcatchment 7S: DA-3

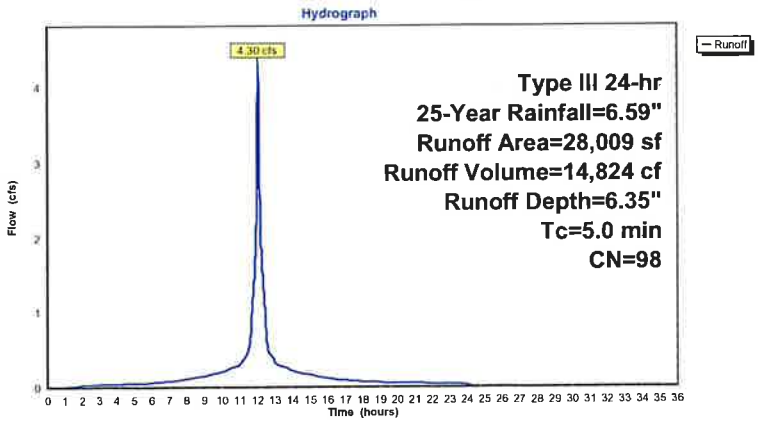
Runoff = 4.30 cfs @ 12.07 hrs, Volume= 14,824 cf, Depth= 6.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
28,009	98	Paved parking, HSG D
28,009		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, 1

Subcatchment 7S: DA-3



Summary for Subcatchment 8S: DA-4

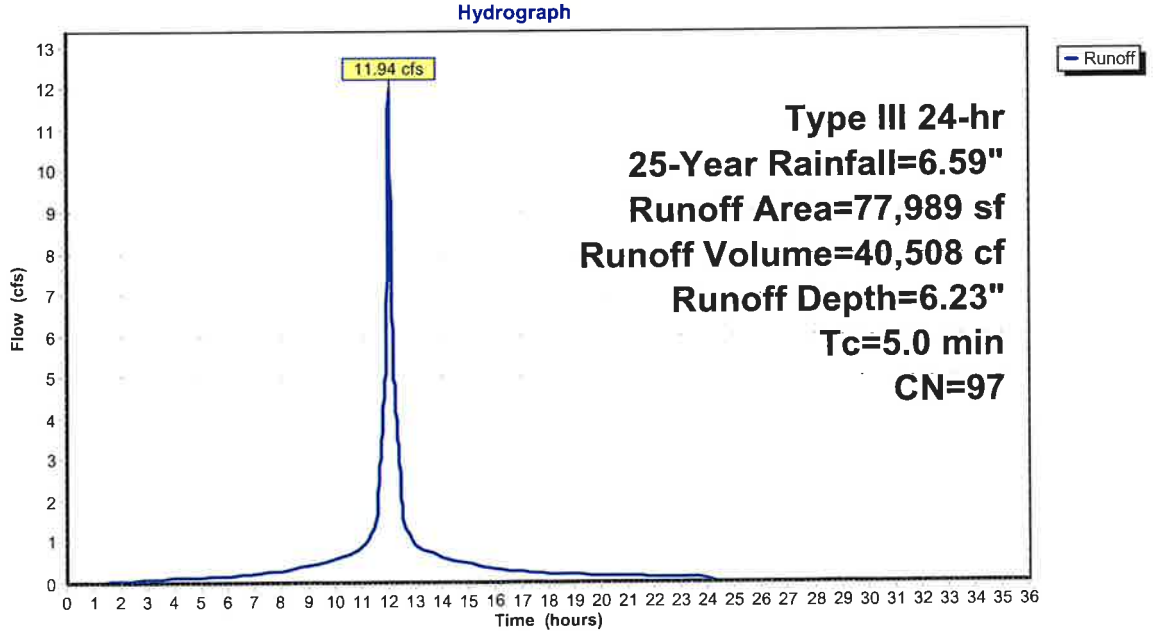
Runoff = 11.94 cfs @ 12.07 hrs, Volume= 40,508 cf, Depth= 6.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
54,599	98	Paved parking, HSG D
20,893	96	Gravel surface, HSG D
2,497	80	>75% Grass cover, Good, HSG D
77,989	97	Weighted Average
23,390		29.99% Pervious Area
54,599		70.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, 1**

Subcatchment 8S: DA-4



Summary for Subcatchment 9S: DA-5A

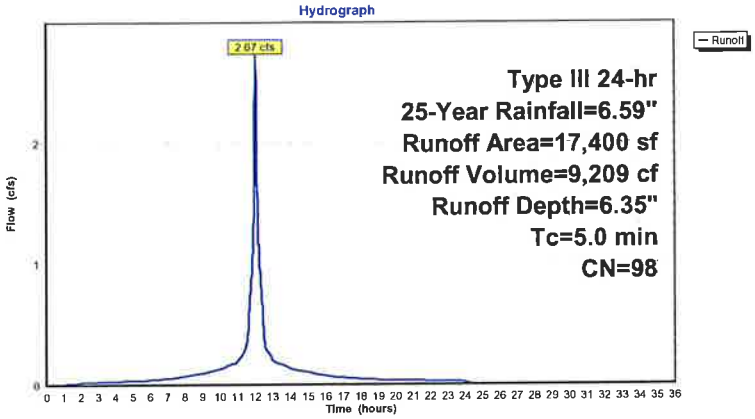
Runoff = 2.67 cfs @ 12.07 hrs, Volume= 9,209 cf, Depth= 6.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
17,400	98	Paved parking, HSG D
17,400		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, 1

Subcatchment 9S: DA-5A



Summary for Subcatchment 10S: DA-5B

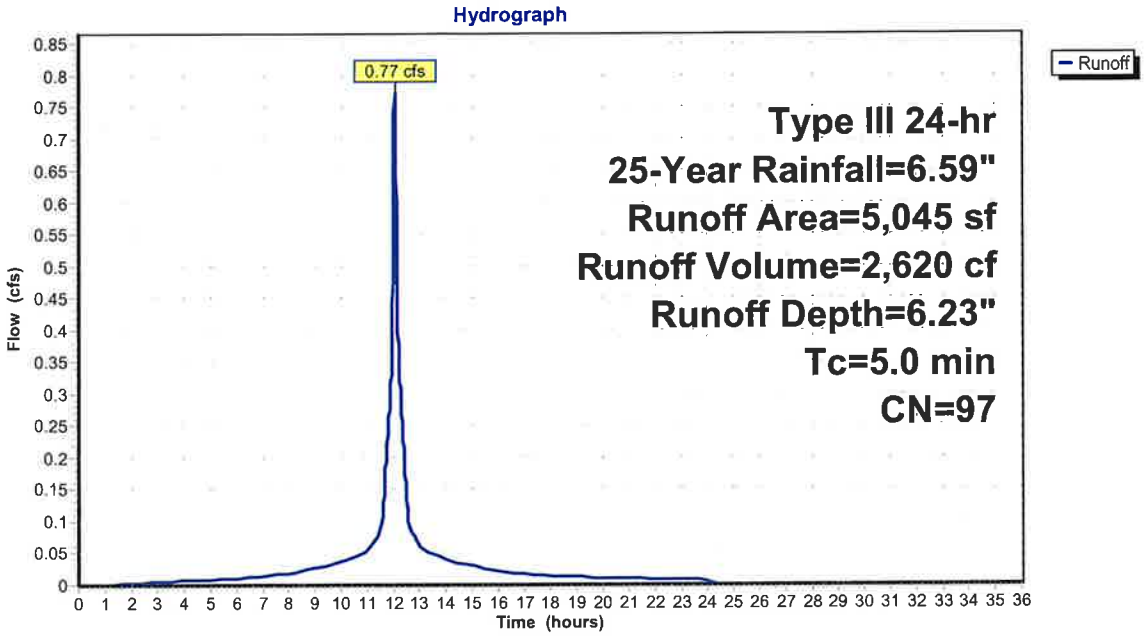
Runoff = 0.77 cfs @ 12.07 hrs, Volume= 2,620 cf, Depth= 6.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
3,185	98	Paved parking, HSG D
1,860	96	Gravel surface, HSG D
5,045	97	Weighted Average
1,860		36.87% Pervious Area
3,185		63.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, 1

Subcatchment 10S: DA-5B



Summary for Subcatchment 11S: DA-2B-2

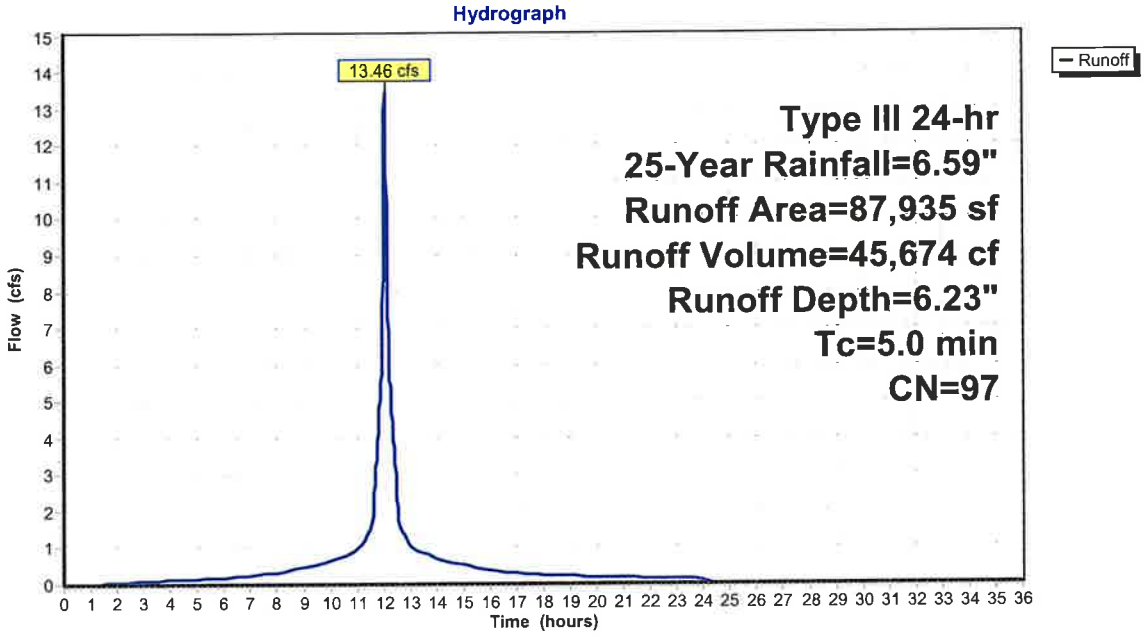
Runoff = 13.46 cfs @ 12.07 hrs, Volume= 45,674 cf, Depth= 6.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
85,078	98	Paved parking, HSG D
2,857	80	>75% Grass cover, Good, HSG D
87,935	97	Weighted Average
2,857		3.25% Pervious Area
85,078		96.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, 1

Subcatchment 11S: DA-2B-2



Summary for Subcatchment 12S: DA-1B

Runoff = 3.71 cfs @ 12.07 hrs, Volume= 12,589 cf, Depth= 6.23"

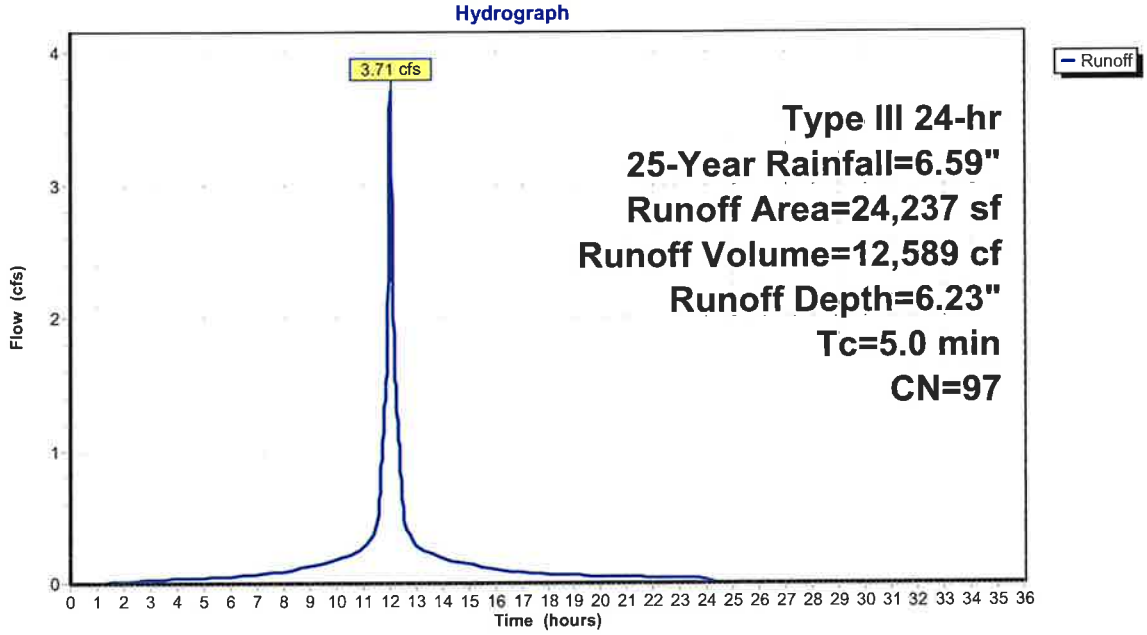
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
23,373	98	Paved parking, HSG D
864	80	>75% Grass cover, Good, HSG D
24,237	97	Weighted Average
864		3.56% Pervious Area
23,373		96.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, 1

Subcatchment 12S: DA-1B

Hydrograph



Summary for Subcatchment 13S: DA-1C

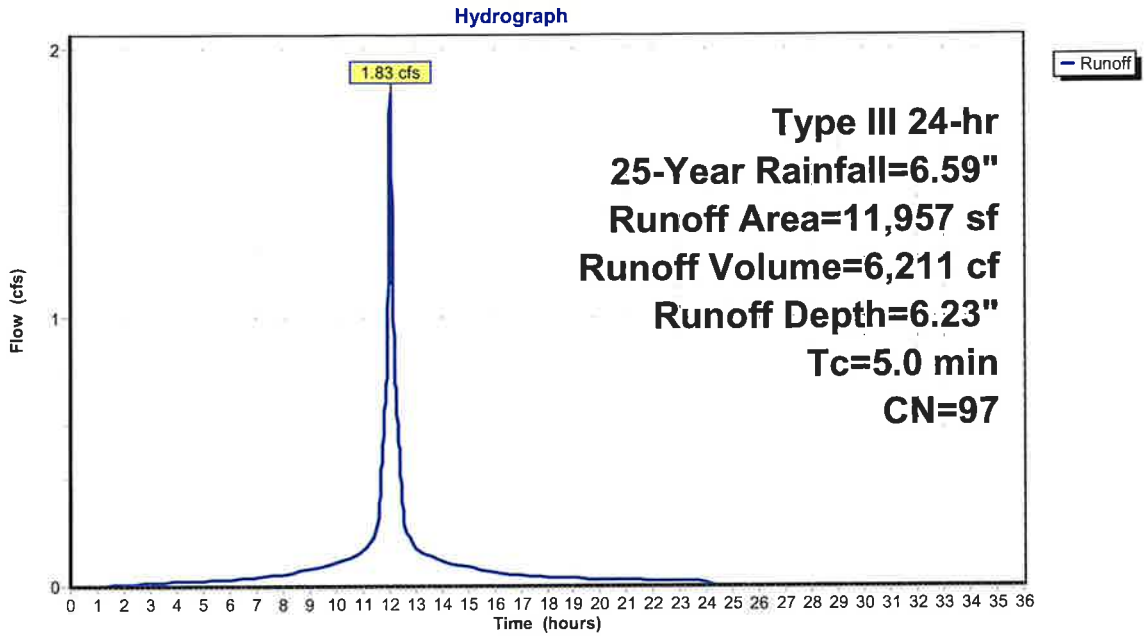
Runoff = 1.83 cfs @ 12.07 hrs, Volume= 6,211 cf, Depth= 6.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
11,376	98	Paved parking, HSG D
581	80	>75% Grass cover, Good, HSG D
11,957	97	Weighted Average
581		4.86% Pervious Area
11,376		95.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, 1**

Subcatchment 13S: DA-1C



Summary for Subcatchment 14S: DA-1D

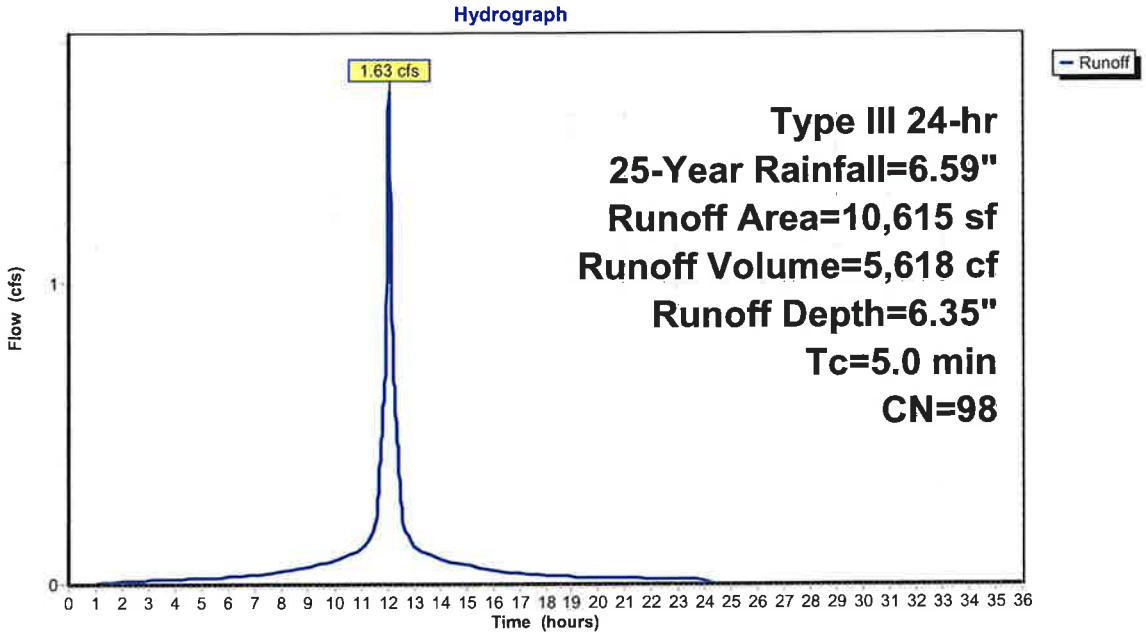
Runoff = 1.63 cfs @ 12.07 hrs, Volume= 5,618 cf, Depth= 6.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
10,408	98	Paved parking, HSG D
207	80	>75% Grass cover, Good, HSG D
10,615	98	Weighted Average
207		1.95% Pervious Area
10,408		98.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, 1

Subcatchment 14S: DA-1D



Summary for Subcatchment 15S: DA-1E

Runoff = 1.03 cfs @ 12.07 hrs, Volume= 3,487 cf, Depth= 6.23"

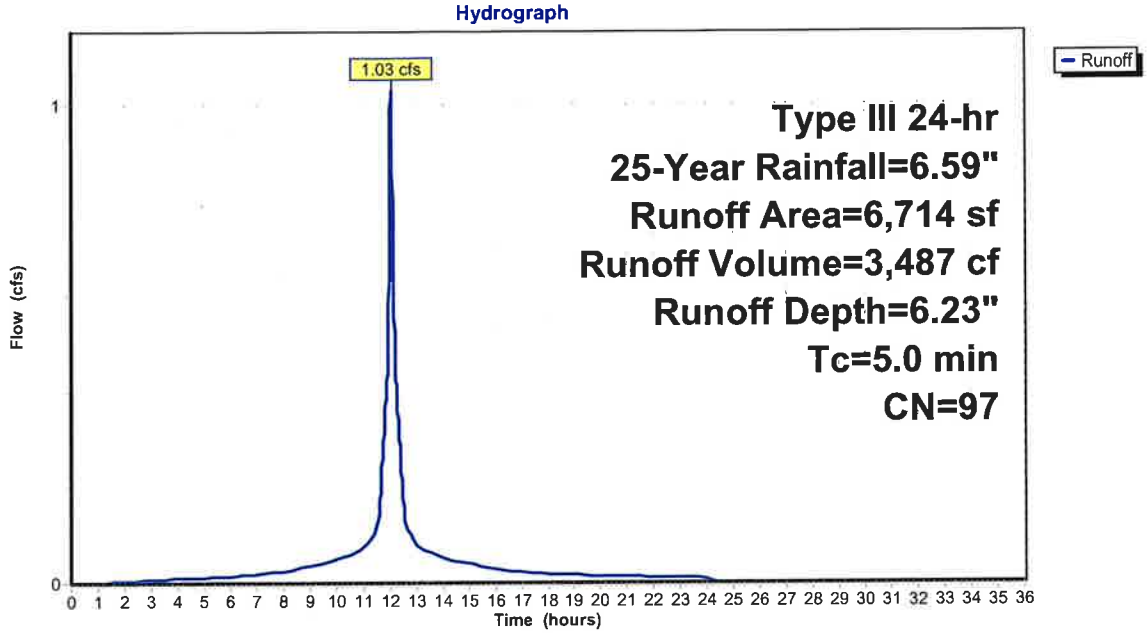
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
6,417	98	Paved parking, HSG D
297	80	>75% Grass cover, Good, HSG D
6,714	97	Weighted Average
297		4.42% Pervious Area
6,417		95.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, 1**

Subcatchment 15S: DA-1E

Hydrograph



Summary for Subcatchment 16S: DA-1F

Runoff = 0.77 cfs @ 12.07 hrs, Volume= 2,562 cf, Depth= 6.00"

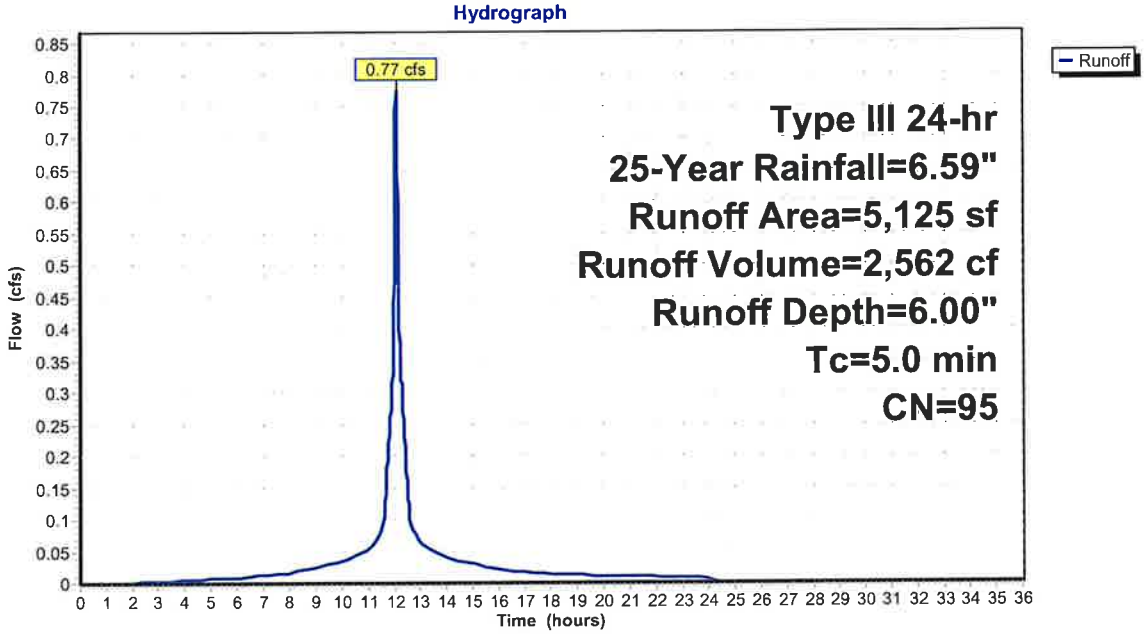
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.59"

Area (sf)	CN	Description
4,208	98	Paved parking, HSG D
917	80	>75% Grass cover, Good, HSG D
5,125	95	Weighted Average
917		17.89% Pervious Area
4,208		82.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, 1

Subcatchment 16S: DA-1F

Hydrograph



Summary for Pond 17P: RS-1

Inflow Area = 24,237 sf, 96.44% Impervious, Inflow Depth = 6.23" for 25-Year event
Inflow = 3.71 cfs @ 12.07 hrs, Volume= 12,589 cf
Outflow = 3.69 cfs @ 12.08 hrs, Volume= 11,613 cf, Atten= 1%, Lag= 0.5 min
Primary = 3.69 cfs @ 12.08 hrs, Volume= 11,613 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 76.05' @ 12.08 hrs Surf.Area= 1,121 sf Storage= 1,160 cf

Plug-Flow detention time= 78.5 min calculated for 11,610 cf (92% of inflow)
Center-of-Mass det. time= 37.2 min (786.7 - 749.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	72.00'	457 cf	**14.75'W x 38.00'L x 3.21'H Field A** 1,798 cf Overall - 656 cf Embedded = 1,143 cf x 40.0% Voids
#2A	72.50'	656 cf	**Cultec R-280HD** x 15 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 3 rows
#3	75.20'	101 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,008 cf Overall x 10.0% Voids
		1,214 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
75.20	560	0	0
77.00	560	1,008	1,008

Device	Routing	Invert	Outlet Devices
#1	Primary	74.60'	**12.0" Round Culvert** L= 112.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.60' / 72.90' S= 0.0152 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.68 cfs @ 12.08 hrs HW=76.05' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 3.68 cfs @ 4.69 fps)

Pond 17P: RS-1 - Chamber Wizard Field A

Chamber Model = Cultec R-280HD (Cultec Recharger® 280HD)
Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf
Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap
Row Length Adjustment= +1.00' x 6.07 sf x 3 rows

47.0" Wide + 6.0" Spacing = 53.0" C-C Row Spacing

5 Chambers/Row x 7.00' Long +1.00' Row Adjustment = 36.00' Row Length +12.0" End Stone x 2 = 38.00' Base Length
3 Rows x 47.0" Wide + 6.0" Spacing x 2 + 12.0" Side Stone x 2 = 14.75' Base Width
6.0" Base + 26.5" Chamber Height + 6.0" Cover = 3.21' Field Height

15 Chambers x 42.5 cf +1.00' Row Adjustment x 6.07 sf x 3 Rows = 655.7 cf Chamber Storage

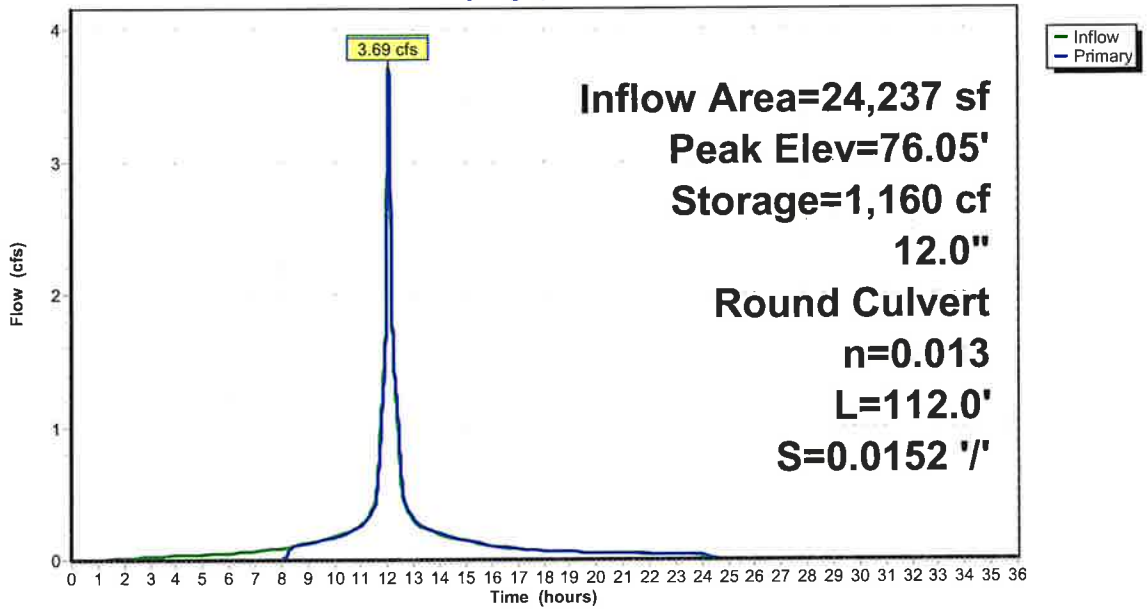
1,798.3 cf Field - 655.7 cf Chambers = 1,142.5 cf Stone x 40.0% Voids = 457.0 cf Stone Storage

Chamber Storage + Stone Storage = 1,112.8 cf = 0.026 af
Overall Storage Efficiency = 61.9%
Overall System Size = 38.00' x 14.75' x 3.21'

15 Chambers
66.6 cy Field
42.3 cy Stone

Pond 17P: RS-1

Hydrograph



Summary for Pond 19P: PP-2

Inflow Area = 10,615 sf, 98.05% Impervious, Inflow Depth = 6.35" for 25-Year event
Inflow = 1.63 cfs @ 12.07 hrs, Volume= 5,618 cf
Outflow = 1.28 cfs @ 12.13 hrs, Volume= 5,175 cf, Atten= 22%, Lag= 3.5 min
Primary = 1.28 cfs @ 12.13 hrs, Volume= 5,175 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 77.51' @ 12.13 hrs Surf.Area= 3,150 sf Storage= 944 cf

Plug-Flow detention time= 94.8 min calculated for 5,173 cf (92% of inflow)
Center-of-Mass det. time= 52.8 min (795.6 - 742.9)

Volume	Invert	Avail.Storage	Storage Description
#1	75.90'	724 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,811 cf Overall x 40.0% Voids
#2	77.05'	354 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,181 cf Overall x 30.0% Voids
		1,079 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
75.90	1,575	0	0
77.05	1,575	1,811	1,811

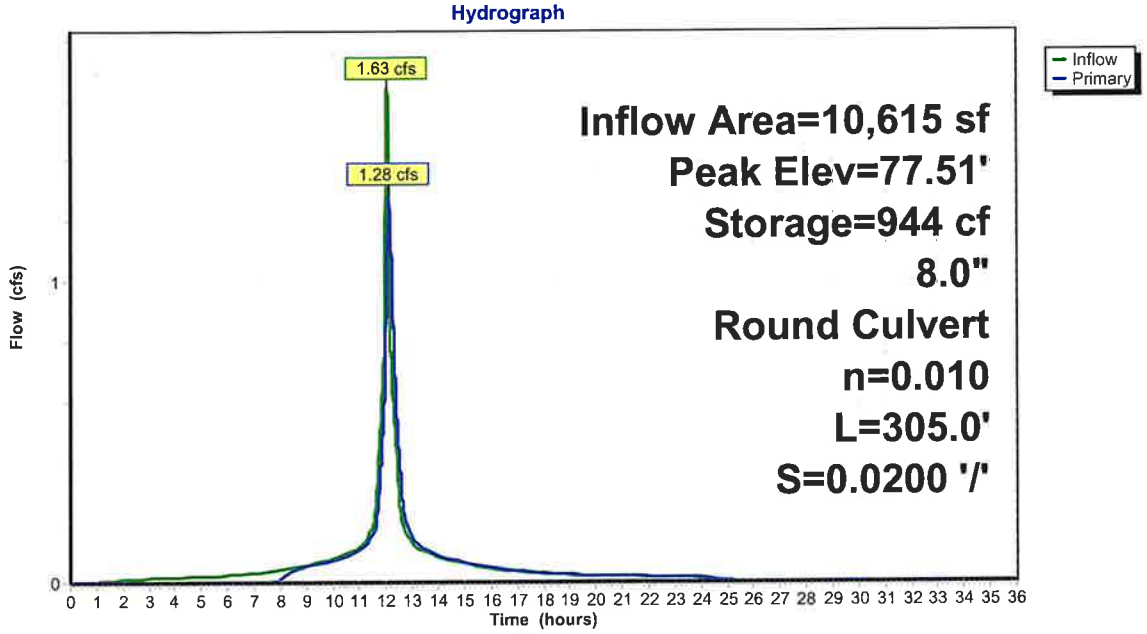
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.05	1,575	0	0
77.80	1,575	1,181	1,181

Device	Routing	Invert	Outlet Devices
#1	Primary	76.60'	**8.0" Round Culvert** L= 305.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 76.60' / 70.50' S= 0.0200 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=1.28 cfs @ 12.13 hrs HW=77.51' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 1.28 cfs @ 3.67 fps)

Pond 19P: PP-2

Hydrograph



Summary for Pond 20P: PP-1

Inflow Area = 6,714 sf, 95.58% Impervious, Inflow Depth = 6.23" for 25-Year event
Inflow = 1.03 cfs @ 12.07 hrs, Volume= 3,487 cf
Outflow = 0.91 cfs @ 12.11 hrs, Volume= 3,181 cf, Atten= 11%, Lag= 2.3 min
Primary = 0.91 cfs @ 12.11 hrs, Volume= 3,181 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 76.22' @ 12.11 hrs Surf.Area= 2,180 sf Storage= 558 cf

Plug-Flow detention time= 96.0 min calculated for 3,180 cf (91% of inflow)
Center-of-Mass det. time= 50.8 min (800.3 - 749.5)

Volume	Invert	Avail.Storage	Storage Description
#1	74.90'	501 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,253 cf Overall x 40.0% Voids
#2	76.05'	245 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 818 cf Overall x 30.0% Voids
		747 cf	Total Available Storage

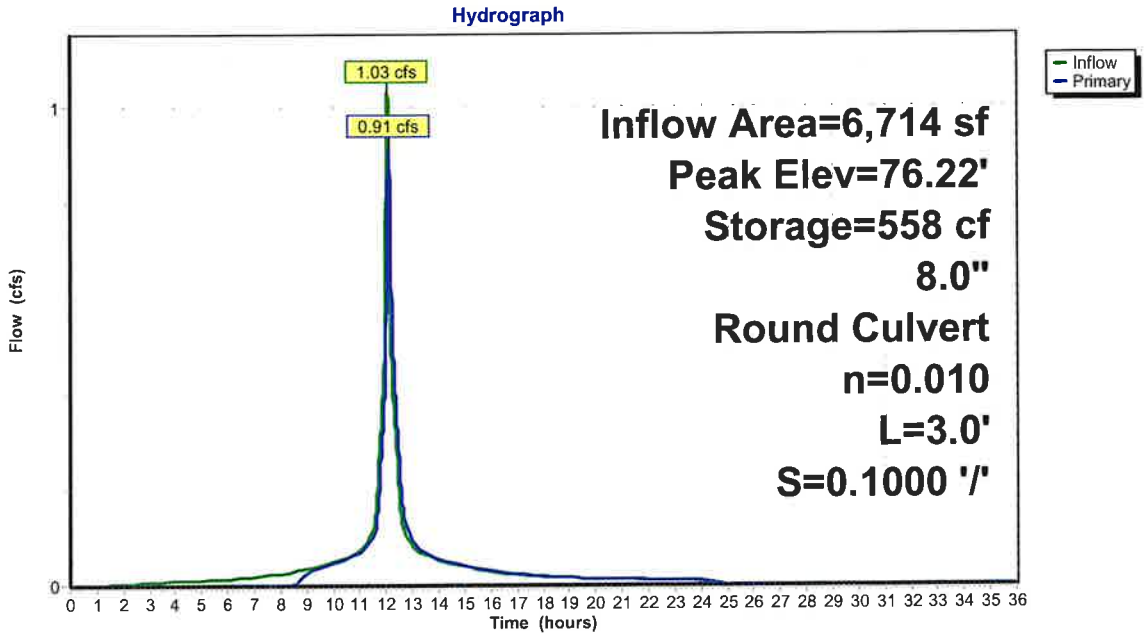
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.90	1,090	0	0
76.05	1,090	1,253	1,253

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
76.05	1,090	0	0
76.80	1,090	818	818

Device	Routing	Invert	Outlet Devices
#1	Primary	75.60'	**8.0" Round Culvert** L= 3.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.60' / 75.30' S= 0.1000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.91 cfs @ 12.11 hrs HW=76.22' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.91 cfs @ 2.69 fps)

Pond 20P: PP-1



Summary for Pond 22P: PP-3

Inflow Area = 16,104 sf, 65.67% Impervious, Inflow Depth = 6.23" for 25-Year event
Inflow = 2.46 cfs @ 12.07 hrs, Volume= 8,364 cf
Outflow = 2.03 cfs @ 12.12 hrs, Volume= 6,333 cf, Atten= 18%, Lag= 3.1 min
Primary = 2.03 cfs @ 12.12 hrs, Volume= 6,333 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 72.59' @ 12.12 hrs Surf.Area= 2,530 sf Storage= 2,827 cf

Plug-Flow detention time= 175.8 min calculated for 6,332 cf (76% of inflow)
Center-of-Mass det. time= 90.8 min (840.3 - 749.5)

Volume	Invert	Avail.Storage	Storage Description
#1	69.80'	3,491 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 8,729 cf Overall x 40.0% Voids
#2	73.25'	569 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,898 cf Overall x 30.0% Voids
		4,061 cf	Total Available Storage

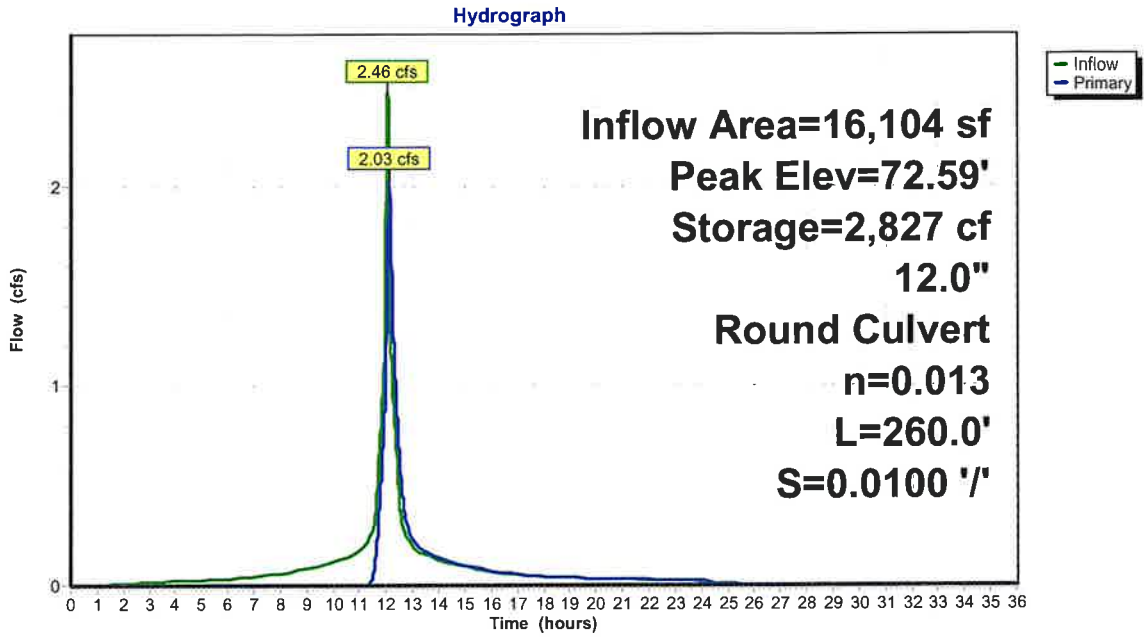
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
69.80	2,530	0	0
73.25	2,530	8,729	8,729

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.25	2,530	0	0
74.00	2,530	1,898	1,898

Device	Routing	Invert	Outlet Devices
#1	Primary	71.80'	**12.0" Round Culvert** L= 260.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 71.80' / 69.20' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.03 cfs @ 12.12 hrs HW=72.59' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 2.03 cfs @ 3.03 fps)

Pond 22P: PP-3



Summary for Pond 23P: RS-2

Inflow Area = 87,935 sf, 96.75% Impervious, Inflow Depth = 6.23" for 25-Year event
Inflow = 13.46 cfs @ 12.07 hrs, Volume= 45,674 cf
Outflow = 13.17 cfs @ 12.09 hrs, Volume= 42,255 cf, Atten= 2%, Lag= 0.9 min
Primary = 13.17 cfs @ 12.09 hrs, Volume= 42,255 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 73.04' @ 12.09 hrs Surf.Area= 3,712 sf Storage= 4,283 cf

Plug-Flow detention time= 79.0 min calculated for 42,243 cf (92% of inflow)
Center-of-Mass det. time= 38.8 min (788.3 - 749.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	67.20'	1,442 cf	**41.25'W x 45.00'L x 3.21'H Field A** 5,955 cf Overall - 2,350 cf Embedded = 3,606 cf x 40.0% Voids
#2A	67.70'	2,350 cf	**Cultec R-280HD** x 54 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 9 rows
#3	70.40'	761 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 7,610 cf Overall x 10.0% Voids
		4,553 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
70.40	1,856	0	0
74.50	1,856	7,610	7,610

Device	Routing	Invert	Outlet Devices
#1	Primary	69.90'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 69.90' / 69.80' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=13.14 cfs @ 12.09 hrs HW=73.04' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 13.14 cfs @ 7.44 fps)

Pond 23P: RS-2 - Chamber Wizard Field A

Chamber Model = Cultec R-280HD (Cultec Recharger® 280HD)
Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf
Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap
Row Length Adjustment= +1.00' x 6.07 sf x 9 rows

47.0" Wide + 6.0" Spacing = 53.0" C-C Row Spacing

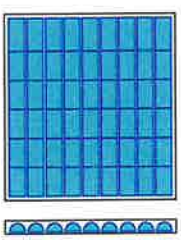
6 Chambers/Row x 7.00' Long +1.00' Row Adjustment = 43.00' Row Length +12.0" End Stone x 2 = 45.00' Base Length
9 Rows x 47.0" Wide + 6.0" Spacing x 8 + 12.0" Side Stone x 2 = 41.25' Base Width
6.0" Base + 26.5" Chamber Height + 6.0" Cover = 3.21' Field Height

54 Chambers x 42.5 cf +1.00' Row Adjustment x 6.07 sf x 9 Rows = 2,349.8 cf Chamber Storage

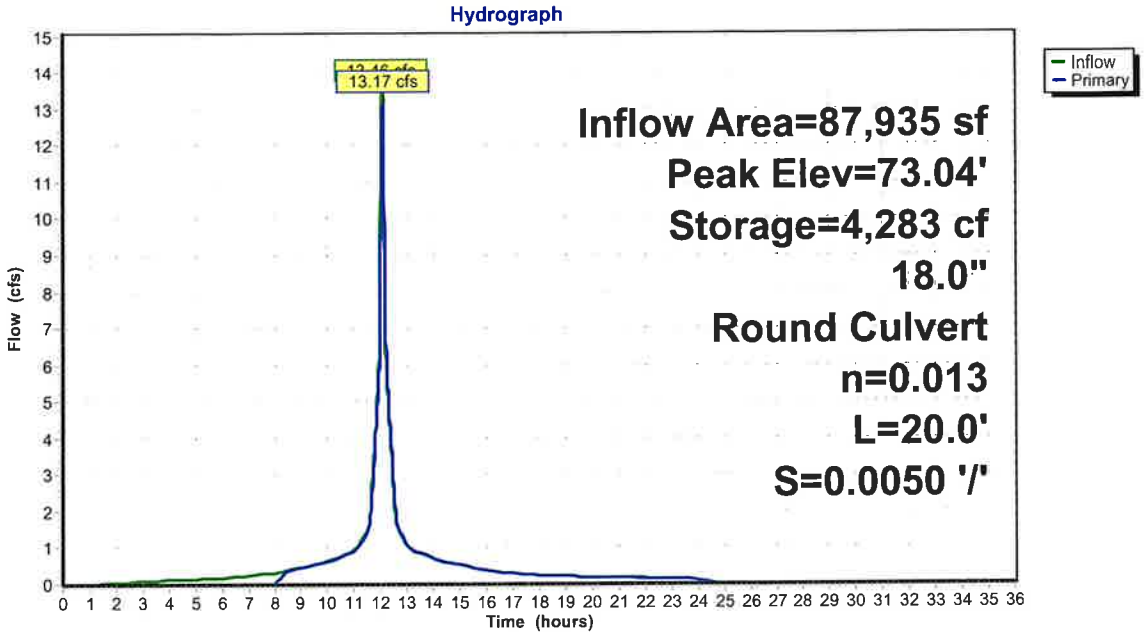
5,955.5 cf Field - 2,349.8 cf Chambers = 3,605.7 cf Stone x 40.0% Voids = 1,442.3 cf Stone Storage

Chamber Storage + Stone Storage = 3,792.0 cf = 0.087 af
Overall Storage Efficiency = 63.7%
Overall System Size = 45.00' x 41.25' x 3.21'

54 Chambers
220.6 cy Field
133.5 cy Stone



Pond 23P: RS-2

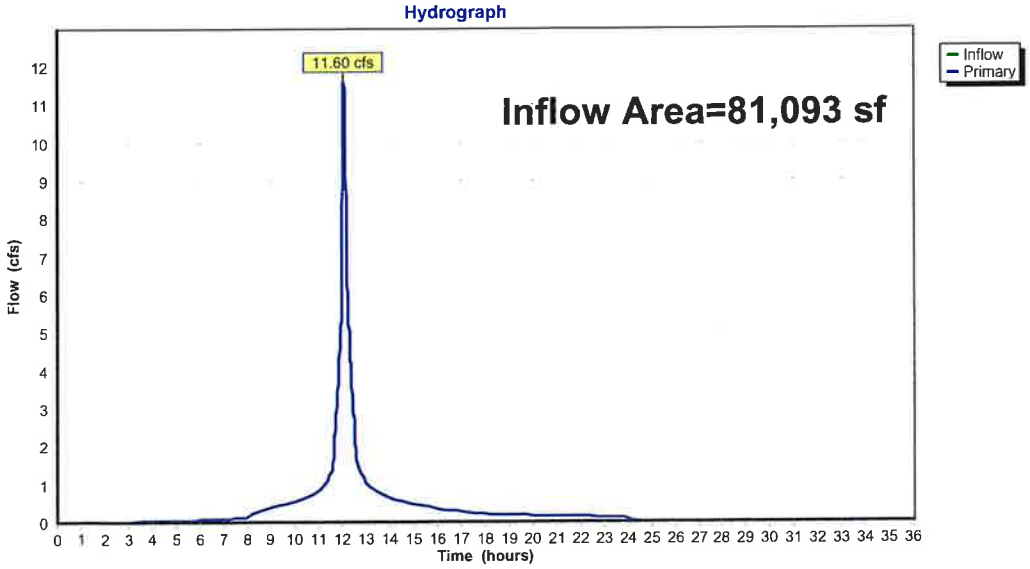


Summary for Link 1L: POC A

Inflow Area = 81,093 sf, 86.64% Impervious, Inflow Depth = 5.82" for 25-Year event
Inflow = 11.60 cfs @ 12.08 hrs, Volume= 39,309 cf
Primary = 11.60 cfs @ 12.08 hrs, Volume= 39,309 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 1L: POC A

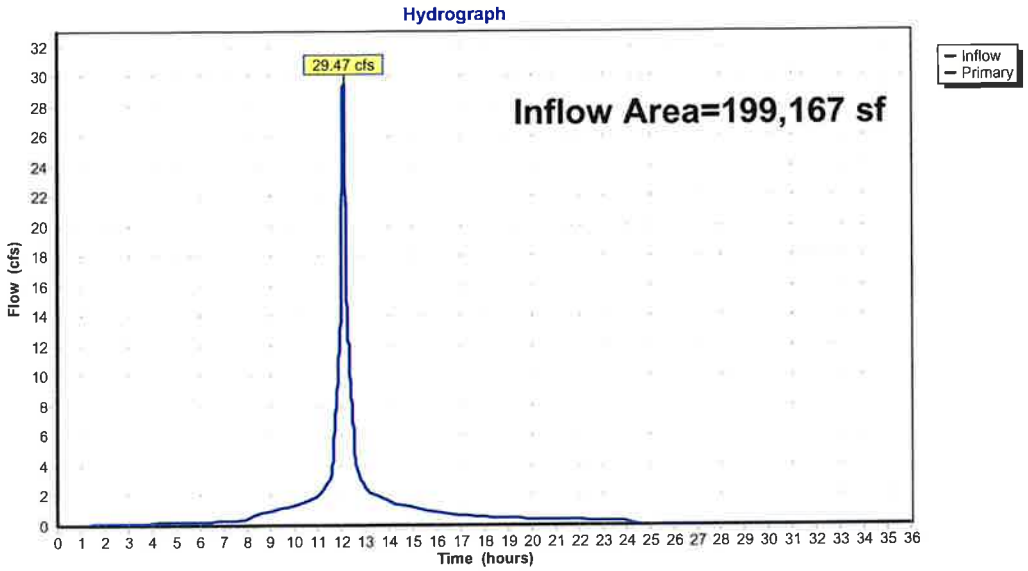


Summary for Link 2L: POC B

Inflow Area = 199,167 sf, 93.62% Impervious, Inflow Depth = 5.93" for 25-Year event
Inflow = 29.47 cfs @ 12.08 hrs, Volume= 98,478 cf
Primary = 29.47 cfs @ 12.08 hrs, Volume= 98,478 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 2L: POC B

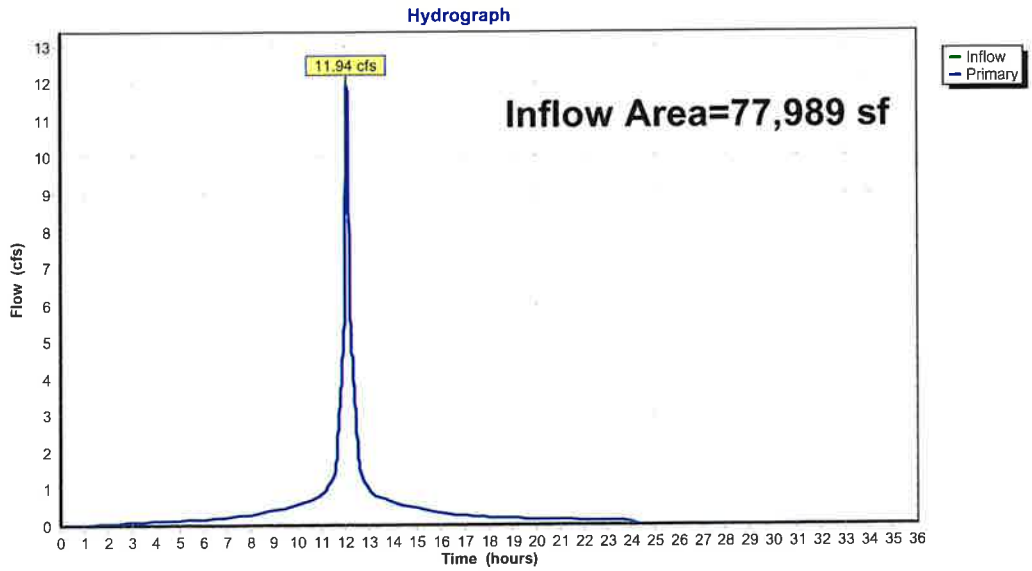


Summary for Link 3L: POC C

Inflow Area = 77,989 sf, 70.01% Impervious, Inflow Depth = 6.23" for 25-Year event
Inflow = 11.94 cfs @ 12.07 hrs, Volume= 40,508 cf
Primary = 11.94 cfs @ 12.07 hrs, Volume= 40,508 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 3L: POC C

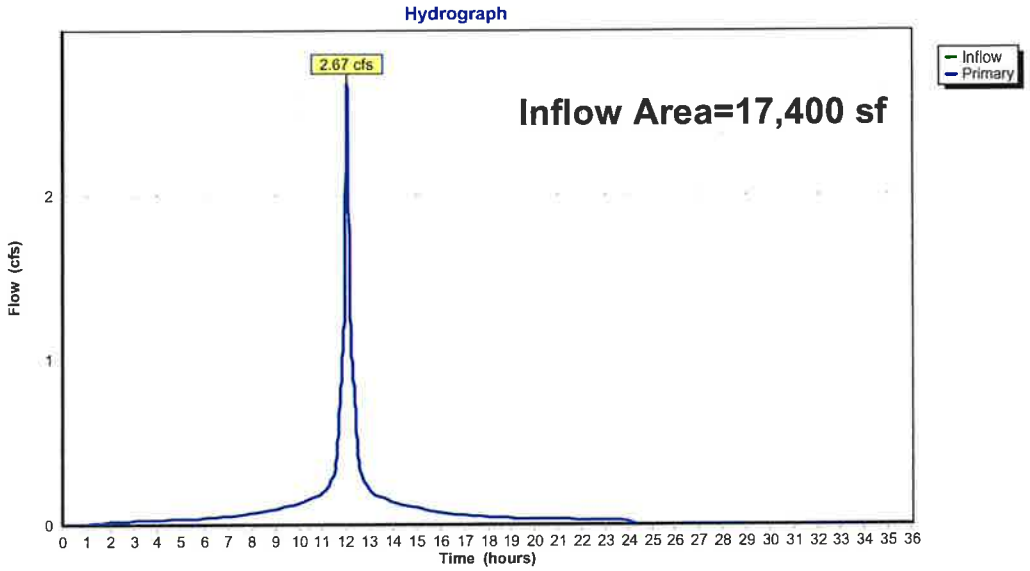


Summary for Link 4L: POC D

Inflow Area = 17,400 sf,100.00% Impervious, Inflow Depth = 6.35" for 25-Year event
Inflow = 2.67 cfs @ 12.07 hrs, Volume= 9,209 cf
Primary = 2.67 cfs @ 12.07 hrs, Volume= 9,209 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 4L: POC D

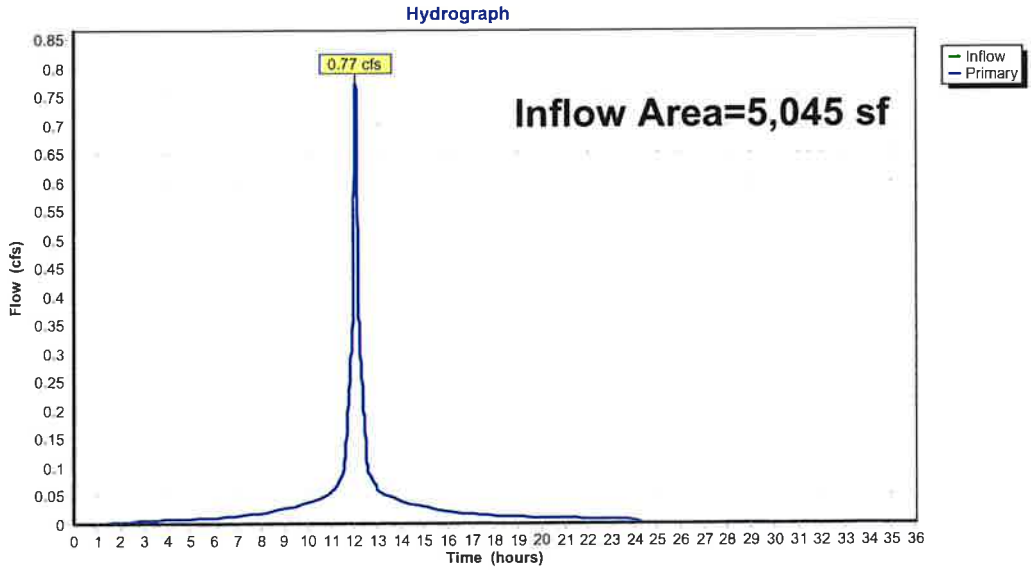


Summary for Link 5L: POC E

Inflow Area = 5,045 sf, 63.13% Impervious, Inflow Depth = 6.23" for 25-Year event
Inflow = 0.77 cfs @ 12.07 hrs, Volume= 2,620 cf
Primary = 0.77 cfs @ 12.07 hrs, Volume= 2,620 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 5L: POC E

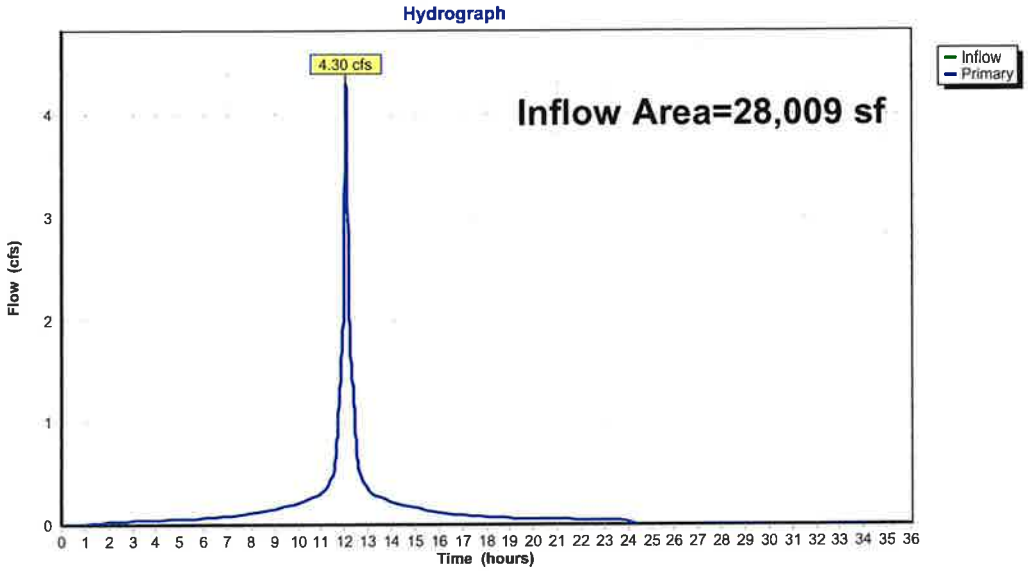


Summary for Link 6L: POC F

Inflow Area = 28,009 sf,100.00% Impervious, Inflow Depth = 6.35" for 25-Year event
Inflow = 4.30 cfs @ 12.07 hrs, Volume= 14,824 cf
Primary = 4.30 cfs @ 12.07 hrs, Volume= 14,824 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 6L: POC F



Appendix "E"

DCIA Worksheet

Directly Connected Impervious Area Tracking Worksheet
City of Stamford Drainage Manual

Note to user: complete all cells of this color only, as indicated by section headings

Part 1: General Information (All Projects)

Project Name	Commercial Development
Project Address	375 Fairfield Avenue
Project Applicant	375 Fairfield Avenue Associates
Title of Plan	Site Plan Review Set
Revision Date of Plan	4-Oct-23
Tax Account Number	001-3193

Part 2: Project Details (All Projects)

1. What type of development is this? (choose from dropdown)	Redevelopment	
2. What is the total area of the project site?	408,703	ft^2
3. What is the total area of land disturbance for this project?	170,240	ft^2
4. Does project site drain to High Quality Waters, a Direct Waterfront, or within 500 ft. of Tidal Wetlands? (Yes/No)	No	
Does Standard 1 apply based on information above?	Yes	

Part 3: Water Quality Target Total (Only for Standard 1 Projects)

5. What is the current (pre-development) ***DCIA*** for the site?	373,738	ft^2
6. Will the proposed development increase ***DCIA*** (without consideration of proposed stormwater management)? (Yes/No)	No	
7. What is the proposed-development ***total impervious area*** for the site?	388,070	ft^2
Water Quality Volume (WQV) (DAs 1B, 1D, 1E, 2B-1, & 2B-2 Only)	11172.6	ft^3
Standard 1 requirement	Retain 1/2 WQV on-site	
Required retention volume	5586.3	ft^3
Provided retention volume for proposed development	7,161.0	ft^3

Part 4: Proposed DCIA Tracking (Only for Standard 1 Projects)

Pre-development ***total impervious area***	396,183	ft^2
Current ***DCIA***	373,738	ft^2
Proposed-development ***total impervious area***	**388,070**	ft^2
Proposed-development ***DCIA*** (after stormwater management)	224,779	ft^2
Net change in ***DCIA*** from current to proposed-development	-148,959	ft^2

Part 5: Post-Development (As-Built Certified) DCIA Tracking (Only for Standard 1 Projects)

Post-development (per as-built) ***total impervious area***		ft^2
Post-development (per as-built) ***DCIA*** (after stormwater management)		ft^2
Net change in ***DCIA*** from current to post-development		ft^2

Certification Statement

I hereby certify that the information contained in this worksheet is true and correct.

Engineer's Signature Derek Daunais Date 10/4/23 Engineer's Seal