11 November 2020
***Revised 22 December 2020***

Antonio Iadarola, P.E.
Town Engineer
4 Brush Hill Road
New Fairfield, CT 06082

**RE: Stormwater Management Analysis**
**New Fairfield High School**
**54 Gillotti Road**
**New Fairfield, Connecticut 06812**
**Langan Project No.: 140215301**

Dear Mr. Iadarola:

This report provides an analysis of peak runoff discharges and the engineering design for the proposed stormwater conveyance system associated with the proposed New Fairfield High School located at 54 Gillotti Road in New Fairfield, Connecticut. The analysis area totals about 26.66-acres.

## PROJECT DESPCRIPTION

### Existing Site Conditions

The project site is located within the about 83.46-acre parcel owned by the Town of New Fairfield located at 54 Gillotti Road in New Fairfield, Connecticut. This parcel is currently occupied by the New Fairfield High School and Middle School as well as two residential buildings and garages. The proposed project site is located within the southern portion of this parcel and bound by residential properties to the north, south, and west, and the Meeting House Hill School to the east, see Figure 1. The site is located within the Residential 88 (R-88) zone. School use is permitted within this zone via a special permit.

A topographic survey prepared by Langan, dated April 21, 2020, indicates site elevations (NAVD88) vary from about 950 feet south of the existing school to about 910 feet at the project limit north of the existing school.

Based upon FEMA's Flood Insurance Rate Map (FIRM) Map number 09001C0110F for Fairfield County, Panel Number 110 of 626, effective date June 18, 2010, the entirety of the site is located within Zone X. This area is determined to be outside the 0.2% annual chance floodplain, see Figure 2.

According to the Web Soil Survey of Fairfield County published by the Natural Resources Conservation Service (NRCS), the site is comprised of Udorthents-Urban land complex, Udorthents-Smoothed, and Woodbridge fine sandy loam, see Figure 3. The closest surface water is an onsite wetland located in the northwestern portion of the site and is about 160 feet from the proposed project limits of disturbance.

**Proposed Project**

The proposed project includes renovations and partial demolition of the about 156,550 SF existing New Fairfield Middle & High School and the construction of a new 80,580 SF High School to the southwest of the existing school. Proposed site work includes a new parking layout, revising the bus and parent drop-off locations, new sidewalks, and a new central plaza area. Associated site utility and stormwater management improvements are also proposed to accommodate the project.

**STORMWATER QUALITY IMPROVEMENTS (See Appendix D)**

The proposed stormwater management plan was developed using the Connecticut Stormwater Quality Manual. This approach combines treatment practices in series to enhanced pollutant removal and achieve groundwater recharge, channel protection and peak runoff attenuation. Practices are classified as primary or secondary treatment types. Primary practices can be used as stand-alone treatment and secondary practices must be applied together with other measures to meet water quality objectives. The following section describes the measures proposed for the project:

**Primary practices**:

- **Underground Infiltration System** with pretreatment capture runoff from impervious areas and allow for infiltration of stormwater and pollutant removal through pervious soil. The proposed basins were designed to meet the following criteria for maximum effectiveness:
    - Minimum infiltration rate greater than 0.3 in/ hr
    - Minimum 5 feet of separation from basin bottom to groundwater and bedrock
    - Maximum drainage area of 5 acres
    - Location in natural soils
- **Bio-retention** are shallow depressions designed to filter runoff through a planted soil bed. Treated runoff is collected in an underdrain system which discharges into a storm sewer network. The rain gardens located in the center landscape islands of the parking lots meet the following design guidance

- Grade parking to slope towards bioretention practice
- Provide flat or slotted curb around island to reduce concentrated flow
- Plant suitable materials that can withstand alternating wet and dry conditions

**Secondary practices**

- **Hydrodynamic Separators/ swirl concentrators** are designed to remove coarse solids and oil droplets. These units are sized based on the water quality flow and are used in areas with high potential for spills, such as parking lots and loading areas. The units are designed to fully treat the Water Quality Flows (WQF) being directed to them, while allowing peak flows from the less frequent, more severe events to bypass the unit. The WQF is defined within CTDEEP's Stormwater Quality Manual as:

  *"The peak flow associated with the water quality volume calculated using the NRCS Graphical Discharge Method. Although most of the stormwater treatment practices in this Manual should be sized based on WQV, some treatment practices such as grass drainage channels and proprietary treatment devices (designed to treat higher flow rates, thereby requiring less water quality storage volume) are more appropriately designed based on peak flow rate. In this approach, a stormwater treatment facility must have a flow rate capacity equal to or greater than the WQF in order to treat the entire water quality volume".*

- **Deep Sump Catch Basins** provide for limited removal of trash, oil, and sediment from stormwater for small catchment areas with high imperviousness. These are used throughout the project as a pre-treatment measure before draining to a primary practice.

**PEAK RUNOFF ANALYSIS (See Appendices A & B)**

The stormwater management system was designed in accordance with Section 1.5.4 of the New Fairfield Zoning Regulations, amended to 4-4-2016. These regulations require that a site shall be designed to minimize runoff volumes, prevent flooding, reduce soil erosion, and protect water quality. Mechanisms for this purpose shall be designed to handle runoff up to, and including, a 25-year, 24-hour duration storm event. For the purpose of this report the 2-, 10-, and 25-year storms were analyzed.

The peak runoff discharges for the existing and proposed conditions were analyzed using the USDA Soil Conservation Service Publication Technical Release (TR-55) "Urban Hydrology for Small Watersheds", which provides procedures for estimating runoff and peak discharges in small watersheds. The analysis is based upon the watershed areas, land coverage, soil group types, curve numbers (CN), times of concentration (Tc), rainfall distribution type, and rainfall amount for the design storm events. The pre- and post-development peak discharge rates of

runoff have been evaluated utilizing stormwater modeling software. The extents of the project limit was included in the analysis; see Drawings EXWS and PRWS.

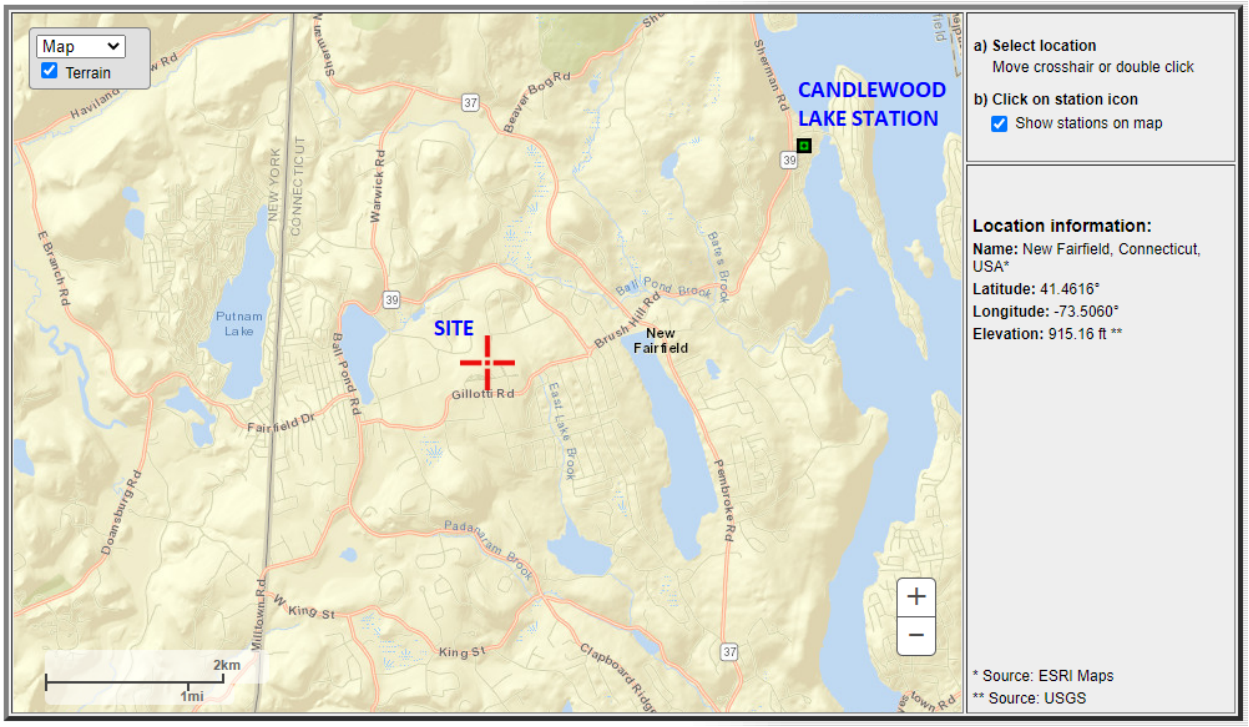
The peak runoff discharges for the existing and proposed conditions were analyzed using Soil Conservation Service (SCS) methodology which outlines procedures for calculating peak rates of runoff resulting from precipitation events as well as procedures for developing runoff hydrographs. The extents of our project limit was included in the analysis; see Drawings EXWS and PRWS. Values for area, curve number (CN), and a time of concentration (Tc) were calculated for the existing and proposed conditions.

The curve number is a land sensitive coefficient that dictates the relationship between total rainfall depth and direct storm runoff. The soils within the watershed are divided into hydrologic soil groups (A, B, C, and D). The SCS classification system evaluates the runoff potential of a soil according to its infiltration and transmission rates. "A" soils have the lowest runoff potential, while "D" soils have the greatest runoff potential. Soils within the project area are mostly Udorthents-Urban land complex with a hydrologic soil rating of "B" and Woodbridge fine sandy loam with a hydrologic soil group designation of "C/D". A small area in the northwest section of the project limits is Udorthents-Smoothed with a hydrologic soil rating of "C".

The time of concentration (Tc) is defined as the time for runoff to travel from the hydraulically most distant point in the watershed to a point of interest. Values of time of concentration were determined for existing and proposed conditions based on land cover and slope of the flow path using methods outlined in TR-55.

For this study, a 24-hour SCS Type III standard rainfall distribution was used to determine the peak flow rates discharging from the site. Precipitation data used for the various storm events is based on the "NOAA Atlas 14 Point Precipitation Frequency Estimates: CT" for Candlewood Lake Station. Candlewood Lake Station was chosen for rainfall data because it is the station located within the closest proximity of the project location as shown in Graphic 1. A summary of all rainfall data utilized in the analysis for this site is provided below and a complete compilation of data provided by NOAA for this location is included in Appendix C.

**Graphic 1. NOAA Rainfall Data Location Map**




| NOAA Precipitation Depth per Average Recurrence Interval [in] | | | |
|---|---|---|---|
| **Duration** | **2-Year** | **10-Year** | **25-Year** |
| **24-hour** | 3.50 | 5.49 | 6.72 |

## Existing Condition (See Appendix A)

The existing site is currently developed with the existing high school and middle school, a couple of residential buildings to the south, as well as various athletic fields and facilities. Impervious areas include building roofs, hardscape walkways and drives, and parking lots. Existing Watershed A (see Drawing No. EXWS) encompasses about 6.9-acres and includes two residential dwellings, garage, driveway, lawn and wooded area. This watershed flows untreated to the existing drainage collection system located in Gillotti Road.

Existing Watershed B encompasses about 17.64-acres and includes portions of the school, parking lot, athletic fields. This watershed flows untreated into an existing storm system onsite and discharges to the onsite wetland located in the northwest portion of the property.

Existing Watershed C is about 2.12-acres and comprised of a portion of the parking lot south of the school. This watershed flows untreated into an existing storm system onsite and discharges

east of the school. This existing system then sheet flows east and ultimately discharges towards a pond located on site.

**Proposed Condition (See Appendix B)**

In the proposed condition, (see Drawing No. PRWS) Watershed A1 (2.80-acres) encompasses Gillotti Road, a portion of the driveway and associated lawn and wooded areas. The stormwater runoff will sheet flow towards Gillotti Road and discharge to the existing drainage collection system.

Proposed Watershed A2 (2.70-acres) encompasses a portion of the southern parking lot, and associated landscape islands. The stormwater will be caught by catch basins and piped underground to the water quality unit before discharging into an underground stormwater infiltration system. The proposed underground stormwater infiltration system will provide water quality treatment and control the rate of stormwater runoff resulting from the development to less than existing conditions rates. The water quality units have been selected to achieve a minimum 80% of the annual solids load reduction and a 100% floatables reduction. The overflow from the infiltration system will be pipped to the existing drainage collection system in Gillotti Road.

Proposed Watershed B will be divided into five subwatersheds – B1 to B5. Proposed Watershed B1 (2.40-acres) encompasses the southern parking lot, a portion of proposed school, access drive, the southern parking lot and associated landscape islands. The stormwater will be caught by catch basins and piped underground to a water quality unit before discharging into an underground stormwater infiltration system. The proposed underground stormwater infiltration system will provide water quality treatment and control the rate of stormwater runoff resulting from the development to less than existing conditions rates. The overflow from the infiltration system will be directed towards the onsite wetland located northwest of the proposed school. The water quality units have been selected to achieve a minimum 80% of the annual solids load reduction and a 100% floatables reduction.

Proposed Watershed B2 (0.30-acres) encompasses A portion of the western parking lot, a portion and associated landscape islands. The stormwater will sheet flow to the bioretention stormwater management practice. A gravel diaphragm runs along the edge of the parking lot to provide pre-treatment prior to the stormwater runoff entering the bioretention basin. Underdrains will be provided for the bioretention system. The proposed bioretention basin will provide water quality treatment for the associated parking lot. The overflow will be directed towards the onsite wetland located north west of the proposed school.

Proposed Watershed B3 (2.60-acres) encompasses a portion of the proposed school, access drive and courtyard. The stormwater will be caught by catch basins and piped underground to a water quality unit before discharging into an underground stormwater infiltration system. The proposed underground stormwater infiltration system will provide water quality treatment and control the rate of stormwater runoff resulting from the development to less than existing conditions rates. The overflow from the infiltration system will be directed towards the onsite wetland located northwest of the proposed school. The water quality units have been selected to achieve a minimum 80% of the annual solids load reduction and a 100% floatables reduction.

Proposed Watershed B4 (1.30-acres) encompasses the northern parking lot and associated landscape islands. The stormwater will be caught by catch basins and piped underground to a water quality unit before discharging into an underground stormwater infiltration system. The proposed underground stormwater infiltration system will provide water quality treatment and control the rate of stormwater runoff resulting from the development to less than existing conditions rates. The overflow from the infiltration system will be directed towards the onsite wetland located northwest of the proposed school. The water quality units have been selected to achieve a minimum 80% of the annual solids load reduction and a 100% floatables reduction.

Proposed Watershed B5 (12.48-acres) consists of the athletic fields that sheet flows towards the onsite wetland.

Proposed Watershed C1 (2.08-acres) was reduced in size and impervious cover from the existing condition, but otherwise remained the same and discharges to the existing drainage collection system and eventually flows east towards the pond on site.

Per Section 1.5.4 of the Town of New Fairfield Zoning Regulations, all development shall be designed to the extent practical with the goal of no net runoff from the site through the use Best Management Practices (BMP to minimize, treat, prevent, and/or reduce degradation of water quality and flooding potential due to storm water runoff from parking and/or impervious surfaces and to reduce Effective Impervious Coverage wherever possible. a site shall be designed to maximize the amount of runoff able to percolate directly into the soil. Mechanisms for this purpose were designed for all storms up to and including the 25-year, 24-hour storm event. An outlet control structure, utilizing low flow orifices and a high-flow overflow weir is proposed to help attenuate and reduce peak flow rates.

Our drainage analysis shows that the proposed development will maintain existing drainage patterns, control the rate of stormwater runoff resulting from the development, and provide water quality treatment and erosion control during and after construction.

The total watershed peak flow rates are summarized below.

**Site Discharge Peak Flow Comparison for WS-A, Gillotti Road (CFS)**

| | Current | Proposed | Delta | % Reduction |
|---|---|---|---|---|
| **2- Year** | 6.50 | 5.96 | -0.54 | 9.1% |
| **10-Year** | 15.06 | 14.77 | -0.29 | 2.0% |
| **25-Year** | 20.85 | 19.49 | -1.36 | 7.0% |

**Site Discharge Peak Flow Comparison for Combined WS-B, Wetland (CFS)**

| | Current | Proposed | Delta | % Reduction |
|---|---|---|---|---|
| **2- Year** | 21.49 | 18.94 | -2.55 | 13.5% |
| **10-Year** | 44.83 | 43.85 | -0.98 | 2.2% |
| **25-Year** | 60.06 | 59.90 | -0.16 | 0.3% |

**Site Discharge Peak Flow Comparison for WS-C, 18" Pipe (CFS)**

| | Current | Proposed | Delta | % Reduction |
|---|---|---|---|---|
| **2- Year** | 5.60 | 5.17 | -0.43 | 8.3% |
| **10-Year** | 9.42 | 8.94 | -0.48 | 5.3% |
| **25-Year** | 11.76 | 11.26 | -0.50 | 4.4% |

**Site Discharge Peak Flow Comparison (CFS)**

| | Current | Proposed | Delta | % Reduction |
|---|---|---|---|---|
| **2- Year** | 33.59 | 30.07 | -3.52 | 11.7% |
| **10-Year** | 69.31 | 67.56 | -1.75 | 2.6% |
| **25-Year** | 92.67 | 90.65 | -2.02 | 2.2% |

## STORMWATER CONVEYANCE SYSTEM (See Appendix E)

The stormwater conveyance system was sized using the Rational Method for the 25-year storm event. A 25-year storm event was chosen as directed by the New Fairfield town engineer in a phone conversation on 11/09/20. Values for area, runoff coefficient (C), and a time of concentration were calculated for each drainage area. The average runoff coefficient was calculated based upon the following cover types:

| Cover | C |
|---|---|
| Grass/Pervious | 0.3 |
| Pavement/Impervious | 0.9 |

Rainfall intensities were taken from the "NOAA Atlas 14 Point Precipitation Frequency Estimates: CT" for Hartford Bradley AP Station in Connecticut. Stormwater pipes were then sized based upon the Manning's Equation for full flow pipe capacity.

Please refer to the Drawings for additional drainage information.

## LIST OF FIGURES



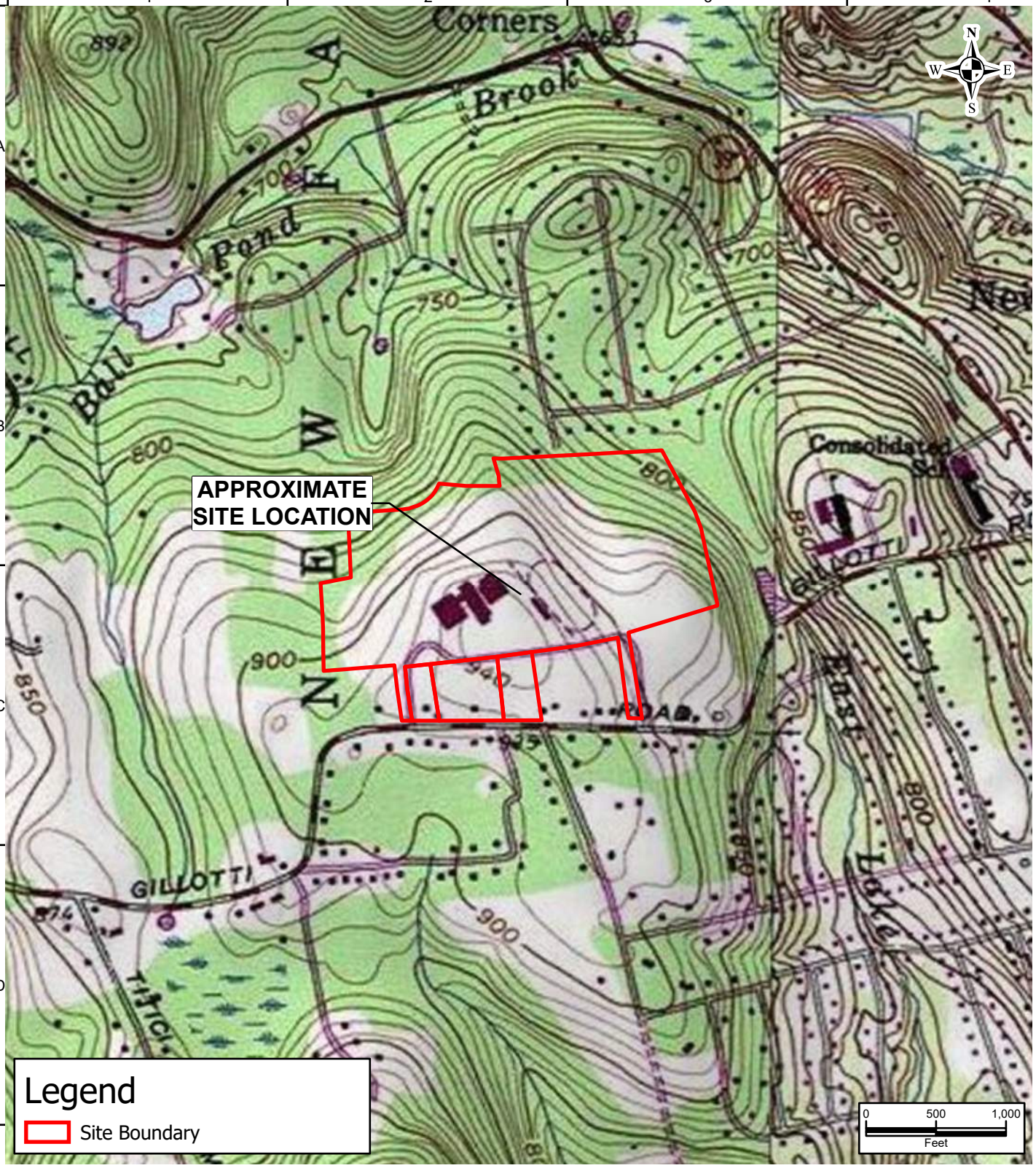
## LIST OF DRAWINGS



## REFERENCE DRAWINGS (See Submission Set)



## LIST OF APPENDICES



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Langan International
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Project
**New Fairfield High School**

NEW FAIRFIELD
COUNTY
FAIRFIELD CONNECTICUT

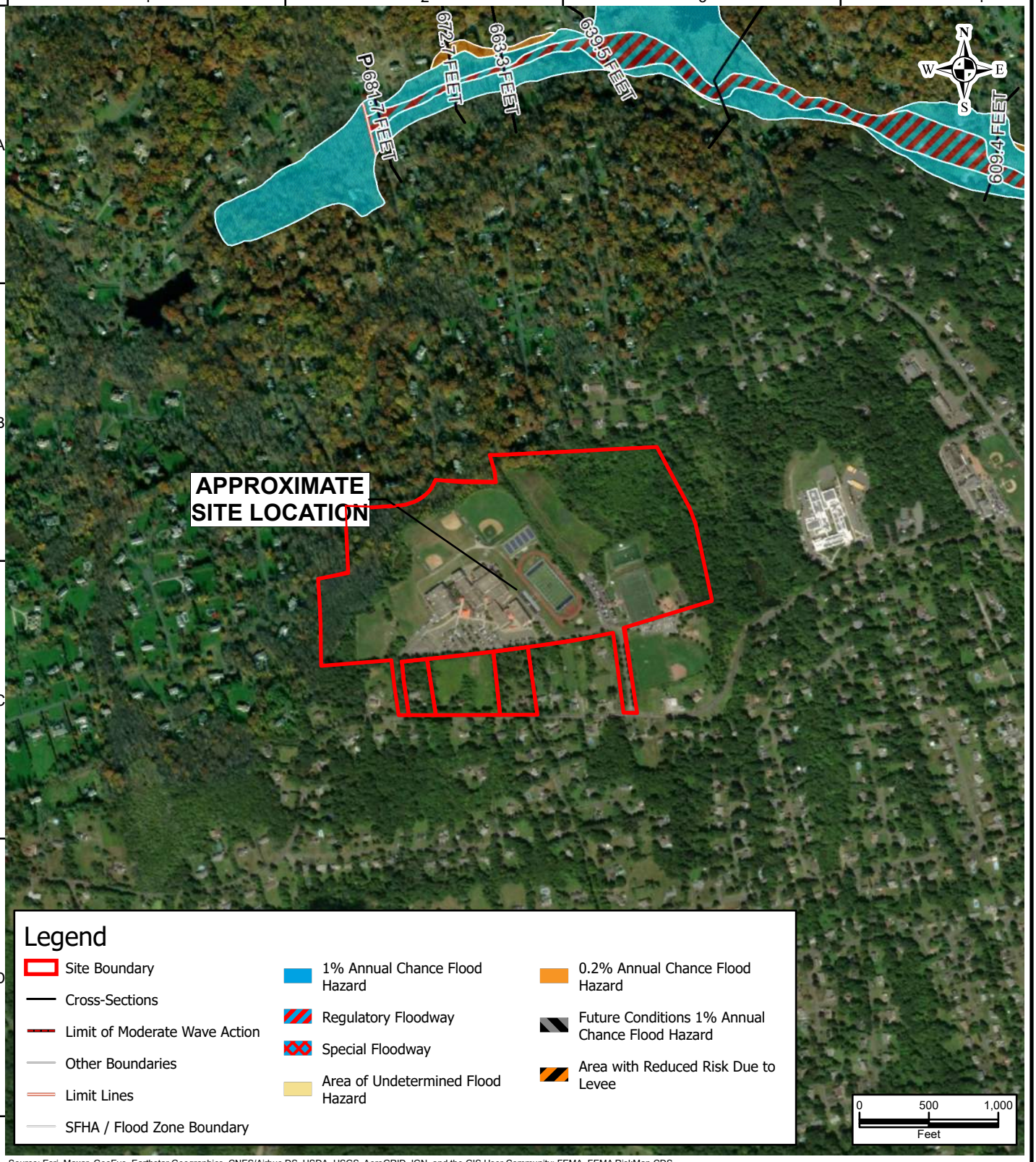
Drawing Title
**SITE LOCATION**

| | |
|---|---|
| Project No. | 140215301 |
| Date | 11/10/2020 |
| Scale | 1:1,000 |
| Drawn By | Site Analyzer |
| Submission Date | 11/11/2020 |

Figure
**1**




Spatial Reference: NAD 1983 StatePlane Connecticut FIPS 0600 Feet




Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; FEMA, FEMA RiskMap CDS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Langan International
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Project
**New Fairfield High School**

NEW FAIRFIELD
COUNTY
FAIRFIELD CONNECTICUT

Drawing Title
**EFFECTIVE FEMA FIRM**

| | |
|---|---|
| Project No. | 140215301 |
| Date | 11/10/2020 |
| Scale | 1:1,000 |
| Drawn By | Site Analyzer |
| Submission Date | 11/11/2020 |

Figure
**2**




Spatial Reference: NAD 1983 StatePlane Connecticut FIPS 0600 Feet


**Tables — Hydrologic Soil Group — Summary By Map Unit**

**Summary by Map Unit — State of Connecticut (CT600)**

Summary by Map Unit — State of Connecticut (CT600)

| Map unit symbol | Map unit name | Rating |
|---|---|---|
| 3 | Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony | D |
| 4 | Leicester fine sandy loam | B/D |
| 45A | Woodbridge fine sandy loam, 0 to 3 percent slopes | C/D |
| 45B | Woodbridge fine sandy loam, 3 to 8 percent slopes | C/D |
| 46B | Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony | C/D |
| 46C | Woodbridge fine sandy loam, 8 to 15 percent slopes, very stony | C/D |
| 47C | Woodbridge fine sandy loam, 3 to 15 percent slopes, extremely stony | C/D |
| 48B | Georgia and Amenia silt loams, 2 to 8 percent slopes | C |
| 49B | Georgia and Amenia silt loams, 3 to 8 percent slopes, very stony | C |
| 73C | Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky | B |
| 85B | Paxton and Montauk fine sandy loams, 3 to 8 percent slopes, very stony | C |
| 85C | Paxton and Montauk fine sandy loams, 8 to 15 percent slopes, very stony | C |
| 86D | Paxton and Montauk fine sandy loams, 15 to 35 percent slopes, extremely stony | C |
| 306 | Udorthents-Urban land complex | B |
| 308 | Udorthents, smoothed | C |


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Project
**New Fairfield High School**

NEW FAIRFIELD
COUNTY
FAIRFIELD CONNECTICUT

Drawing Title
**NRCS SOIL MAP**

| | |
|---|---|
| Project No. | 140215301 |
| Date | 11/10/2020 |
| Scale | 1:1,000 |
| Drawn By | Site Analyzer |
| Submission Date | 11/11/2020 |

Figure **3**



Disclaimer: This information is produced by an automated system and may not be complete. The absence of a feature is not a confirmation that the feature is not present at the subject location. Information produced is in the public domain and unless noted has not been field verified or provided for any specific use. Users are also cautioned to confirm the information shown is suitable for their intended use.
Spatial Reference: NAD 1983 StatePlane Connecticut FIPS 0600 Feet

# GENERAL NOTES

1. EXISTING INFORMATION OBTAINED FROM A PLAN TITLED "PARTIAL BOUNDARY AND TOPOGRAPHIC SURVEY", NEW FAIRFIELD MIDDLE & HIGH SCHOOL, 54 & 56 GILLOTTI ROAD, NEW FAIRFIELD, CT, DATED APRIL 9, 2020, AND PREPARED BY LANGAN.
2. PROPOSED BUILDING FOOTPRINT RECEIVED ELECTRONICALLY FROM JCJ ARCHITECTURE IN OCTOBER 2020.
3. WETLANDS WERE DELINEATED AND FIELD LOCATED BY ALL-POINTS TECHNOLOGY CORPORATION DURING THE MONTH OF FEBRUARY 2020.
4. THE SITE IS LOCATED WITHIN ZONE X, AN AREA OF MINIMAL FLOODING, PER FEMA FIRM MAP 09001C0110F, EFFECTIVE DATE 6/18/2010.

NRCS SOIL TYPE: 308
UDORTHENTS, SMOOTHED
HYDROLOGIC SOIL GROUP: C

NRCS SOIL TYPE: 306
UDORTHENTS-URBAN LAND COMPLEX
HYDROLOGIC SOIL GROUP: B

NRCS SOIL TYPE: 308
UDORTHENTS, SMOOTHED
HYDROLOGIC SOIL GROUP: C

EX-WS B
(WETLAND, NORTHWEST)
AREA: 17.64 AC.
CN: 79
TC: 20.0 MIN.

EX-WS C (18" EAST)
AREA: 2.12 AC.
CN: 92
TC: 9.3 MIN.

EX-WS A (GILLOTTI)
AREA: 6.90 AC.
CN: 74
TC: 19.6 MIN.

NRCS SOIL TYPE: 45A
WOODBRIDGE FINE SANDY LOAM
HYDROLOGIC SOIL GROUP: C/D

80 0 40 80
SCALE: 1 INCH = 80 FEET


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NEW FAIRFIELD HIGH SCHOOL

NEW FAIRFIELD CONNECTICUT

# EXISTING WATERSHED MAP

| | |
|---|---|
| Project No. 20DASY091044N0620 | Drawing No. EXWS |
| Langan Project No. 140215301 | |
| Date NOVEMBER 11, 2020 | |
| Scale 1"=80' | |

# GENERAL NOTES

1. EXISTING INFORMATION OBTAINED FROM A PLAN TITLED "PARTIAL BOUNDARY AND TOPOGRAPHIC SURVEY", NEW FAIRFIELD MIDDLE & HIGH SCHOOL, 54 & 56 GILLOTTI ROAD, NEW FAIRFIELD, CT, DATED APRIL 9, 2020, AND PREPARED BY LANGAN.
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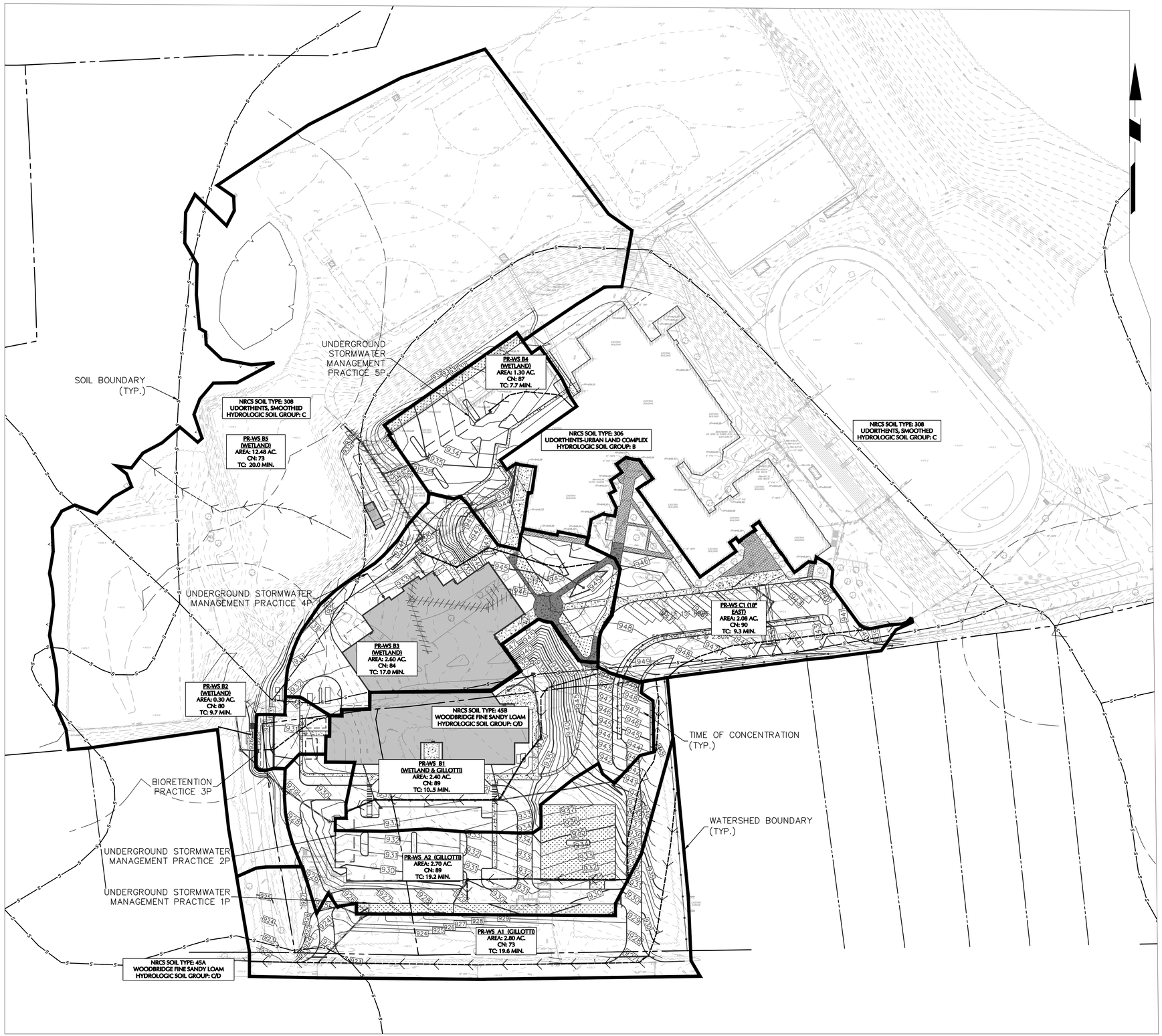


80 0 40 80
SCALE: 1 INCH = 80 FEET


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NEW FAIRFIELD HIGH SCHOOL

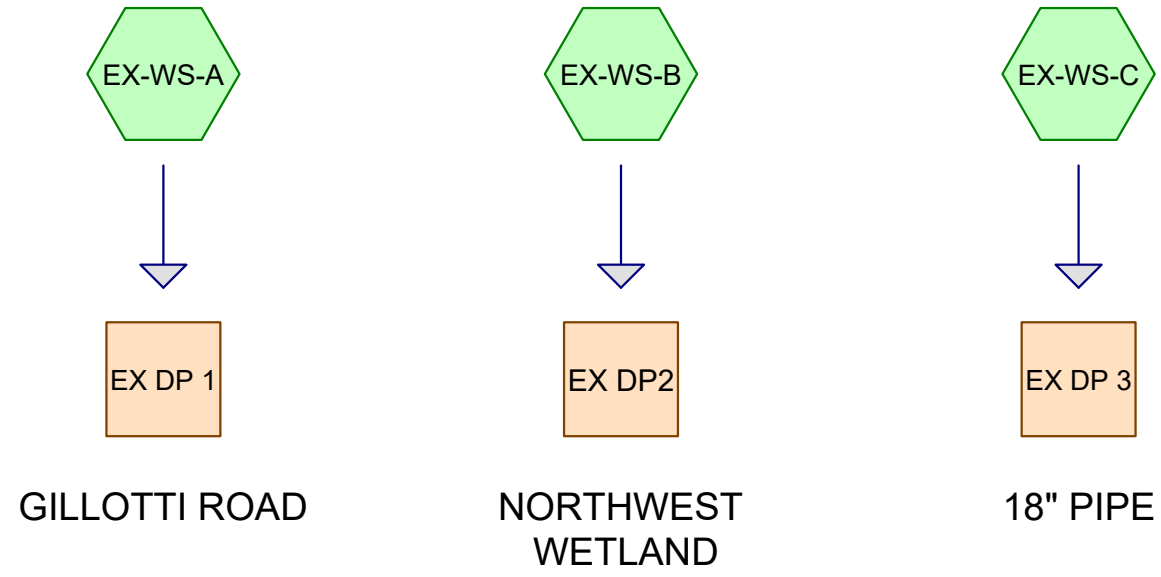
NEW FAIRFIELD CONNECTICUT

# PROPOSED WATERSHED MAP

| Project No. | Drawing No. |
|---|---|
| 20DASY091044N0620 | PRWS |
| Langan Project No. | |
| 140215301 | |
| Date | |
| NOVEMBER 11, 2020 | |
| Scale | |
| 1"=80' | |

# APPENDIX A

## Existing Stormwater Discharge Calculations




Subcat Reach Pond Link

**Routing Diagram for Existing**
Prepared by Langan Eng & Env Srvcs, Inc, Printed 11/11/2020

## Area Listing (all nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 5.700 | 69 | 50-75% Grass cover, Fair, HSG B (EX-WS-A, EX-WS-B, EX-WS-C) |
| 7.400 | 79 | 50-75% Grass cover, Fair, HSG C (EX-WS-B) |
| 5.170 | 98 | Paved parking, HSG B (EX-WS-B, EX-WS-C) |
| 0.900 | 98 | Paved parking, HSG C (EX-WS-A) |
| 2.290 | 60 | Woods, Fair, HSG B (EX-WS-B, EX-WS-C) |
| 5.200 | 73 | Woods, Fair, HSG C (EX-WS-A, EX-WS-B) |
| **26.660** | **78** | **TOTAL AREA** |

## Summary for Subcatchment EX-WS-A:

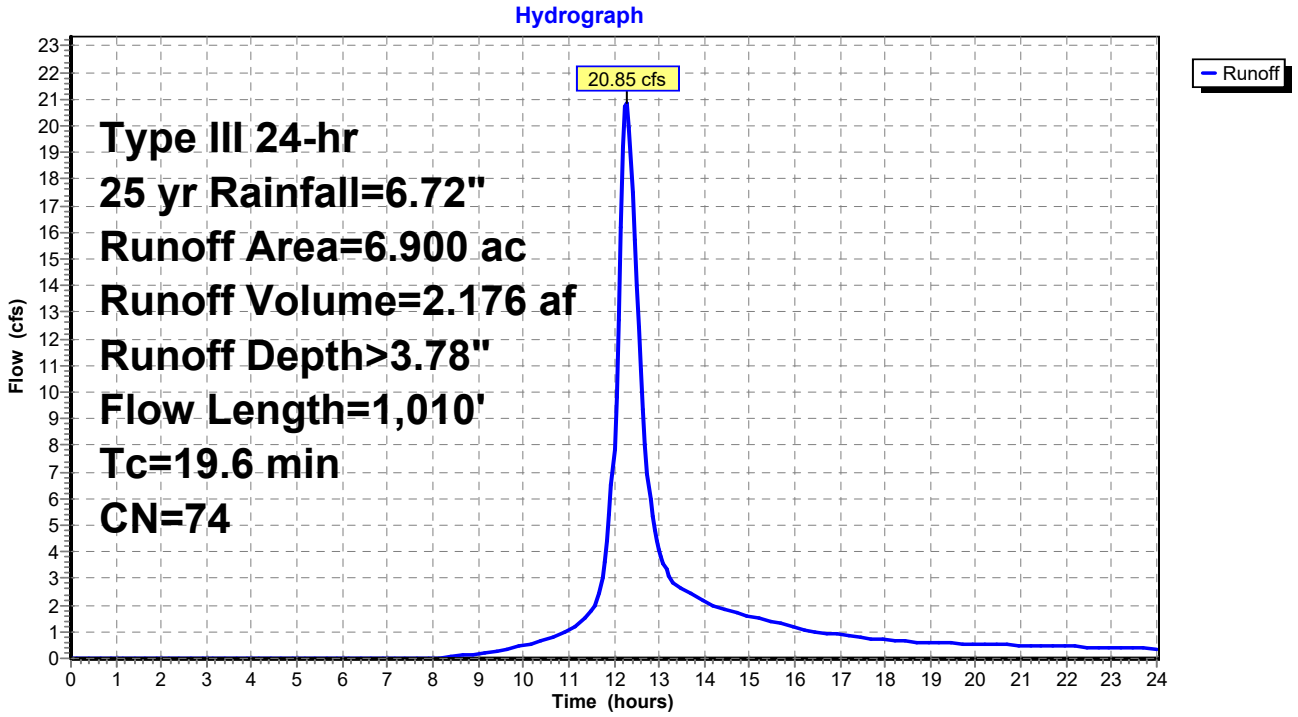
Runoff = 20.85 cfs @ 12.27 hrs, Volume= 2.176 af, Depth> 3.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.72"

| Area (ac) | CN | Description |
|---|---|---|
| 0.900 | 98 | Paved parking, HSG C |
| 4.100 | 69 | 50-75% Grass cover, Fair, HSG B |
| 1.900 | 73 | Woods, Fair, HSG C |
| 6.900 | 74 | Weighted Average |
| 6.000 | | 86.96% Pervious Area |
| 0.900 | | 13.04% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 7.0 | 45 | 0.0600 | 0.11 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50" |
| 6.3 | 105 | 0.0600 | 0.28 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.50" |
| 0.5 | 55 | 0.0600 | 1.71 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 4.0 | 270 | 0.0500 | 1.12 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 0.9 | 155 | 0.0200 | 2.87 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 0.9 | 380 | 0.0150 | 6.98 | 8.57 | **Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished |
| 19.6 | 1,010 | Total | | | |

## Subcatchment EX-WS-A:



## Summary for Subcatchment EX-WS-B:

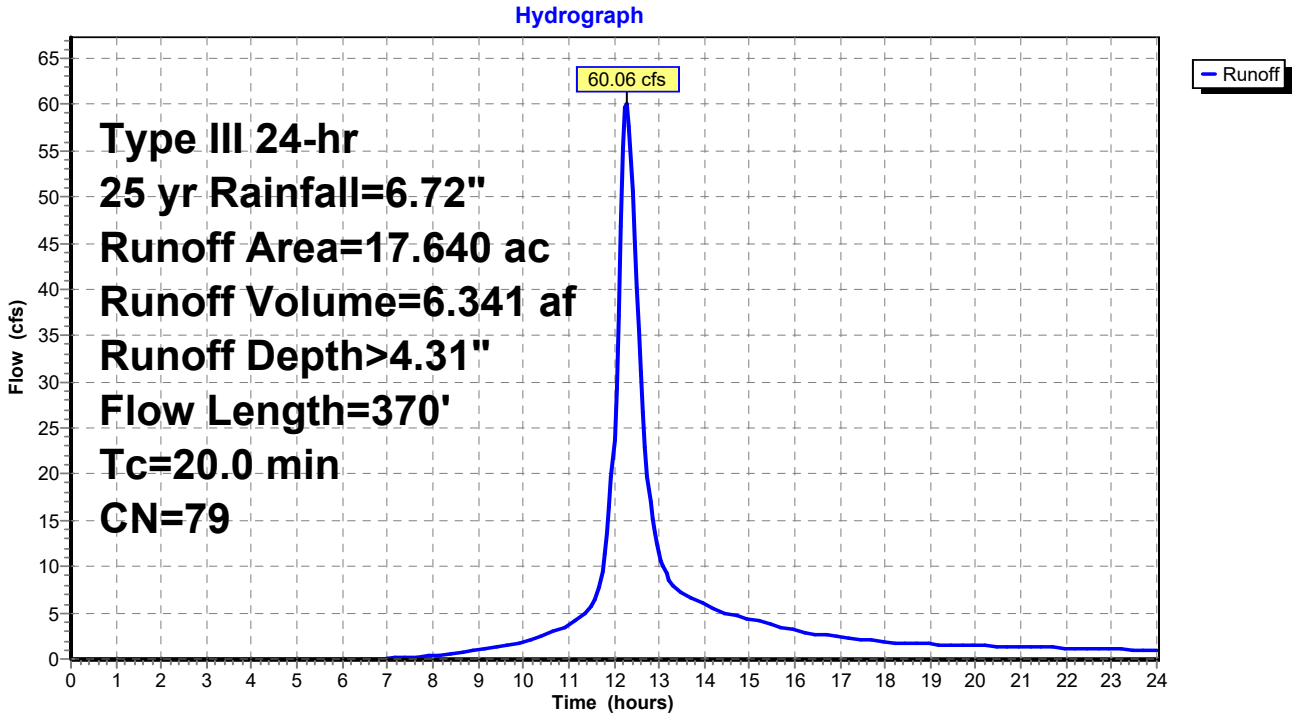
Runoff = 60.06 cfs @ 12.27 hrs, Volume= 6.341 af, Depth> 4.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.72"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 98 | Paved parking, HSG B |
| 2.240 | 60 | Woods, Fair, HSG B |
| 7.400 | 79 | 50-75% Grass cover, Fair, HSG C |
| 1.200 | 69 | 50-75% Grass cover, Fair, HSG B |
| 3.300 | 73 | Woods, Fair, HSG C |
| 17.640 | 79 | Weighted Average |
| 14.140 | | 80.16% Pervious Area |
| 3.500 | | 19.84% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 17.1 | 150 | 0.0100 | 0.15 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.50" |
| 1.2 | 50 | 0.0100 | 0.70 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 1.7 | 170 | 0.0600 | 1.71 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 20.0 | 370 | Total | | | |

## Subcatchment EX-WS-B:



## Summary for Subcatchment EX-WS-C:

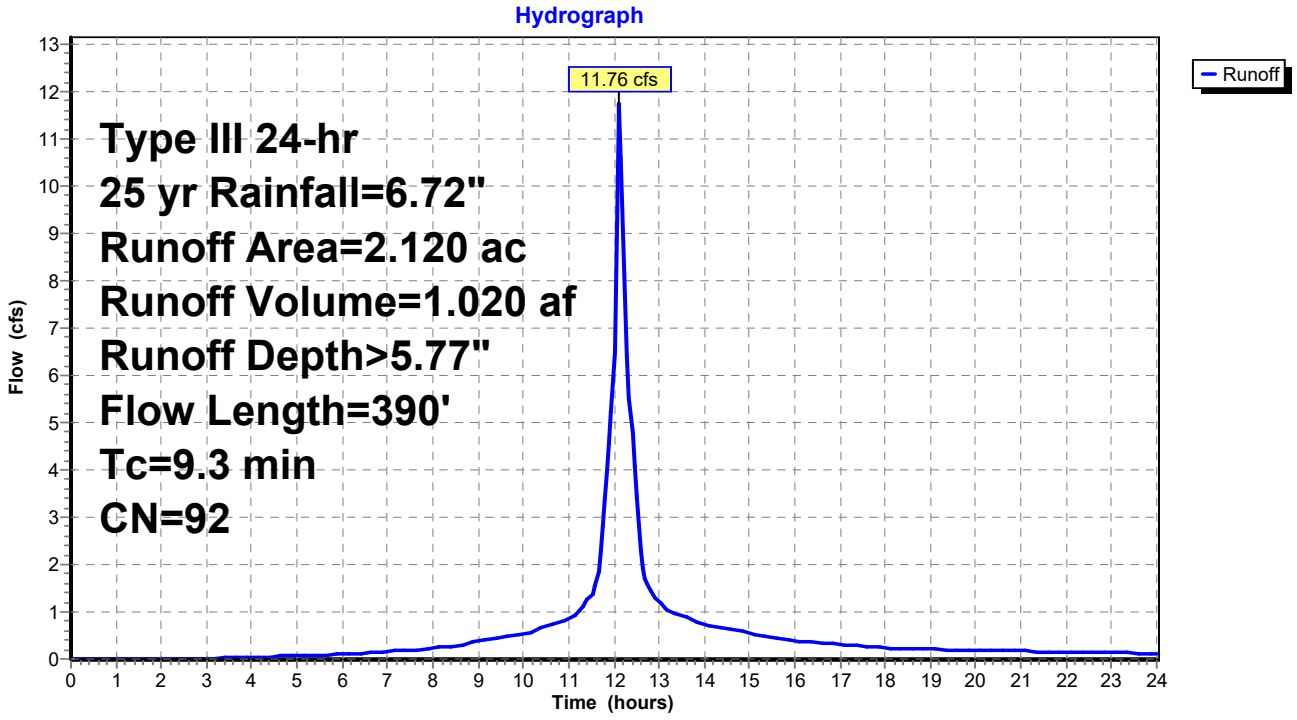
Runoff = 11.76 cfs @ 12.13 hrs, Volume= 1.020 af, Depth> 5.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.72"

| Area (ac) | CN | Description |
|---|---|---|
| 1.670 | 98 | Paved parking, HSG B |
| 0.050 | 60 | Woods, Fair, HSG B |
| 0.400 | 69 | 50-75% Grass cover, Fair, HSG B |
| 2.120 | 92 | Weighted Average |
| 0.450 | | 21.23% Pervious Area |
| 1.670 | | 78.77% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.3 | 10 | 0.0100 | 0.04 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50" |
| 3.4 | 20 | 0.0100 | 0.10 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.50" |
| 0.9 | 120 | 0.0600 | 2.32 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50" |
| 0.7 | 240 | 0.0800 | 5.74 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 9.3 | 390 | Total | | | |

## Subcatchment EX-WS-C:

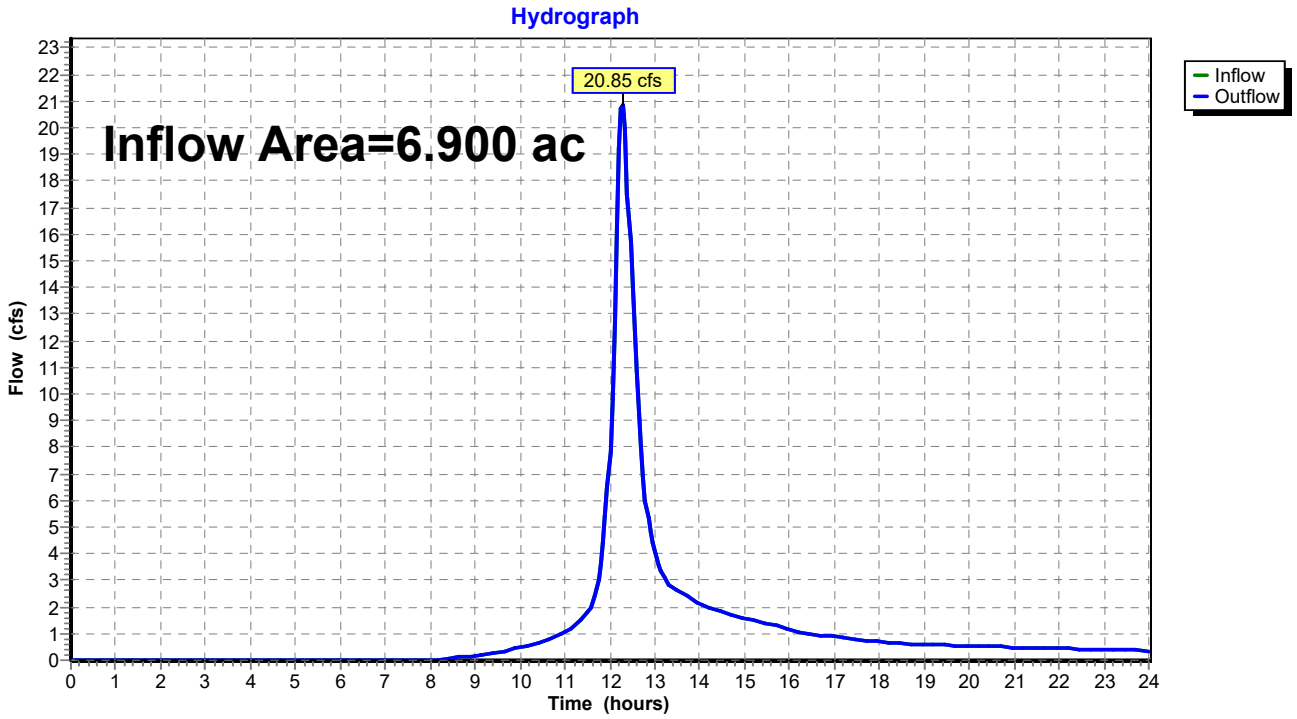


## Summary for Reach EX DP 1: GILLOTTI ROAD

Inflow Area = 6.900 ac, 13.04% Impervious, Inflow Depth > 3.78" for 25 yr event
Inflow = 20.85 cfs @ 12.27 hrs, Volume= 2.176 af
Outflow = 20.85 cfs @ 12.27 hrs, Volume= 2.176 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

## Reach EX DP 1: GILLOTTI ROAD

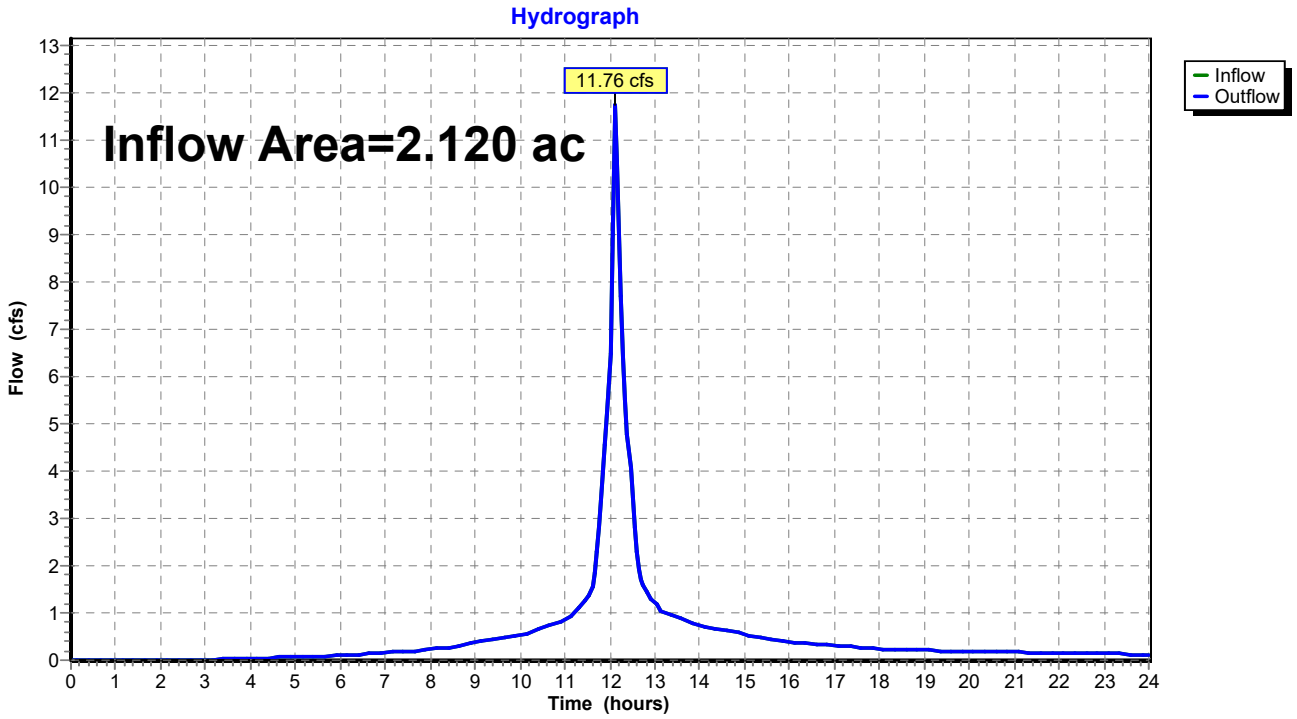


## Summary for Reach EX DP 3: 18" PIPE

Inflow Area = 2.120 ac, 78.77% Impervious, Inflow Depth > 5.77" for 25 yr event
Inflow = 11.76 cfs @ 12.13 hrs, Volume= 1.020 af
Outflow = 11.76 cfs @ 12.13 hrs, Volume= 1.020 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

### Reach EX DP 3: 18" PIPE

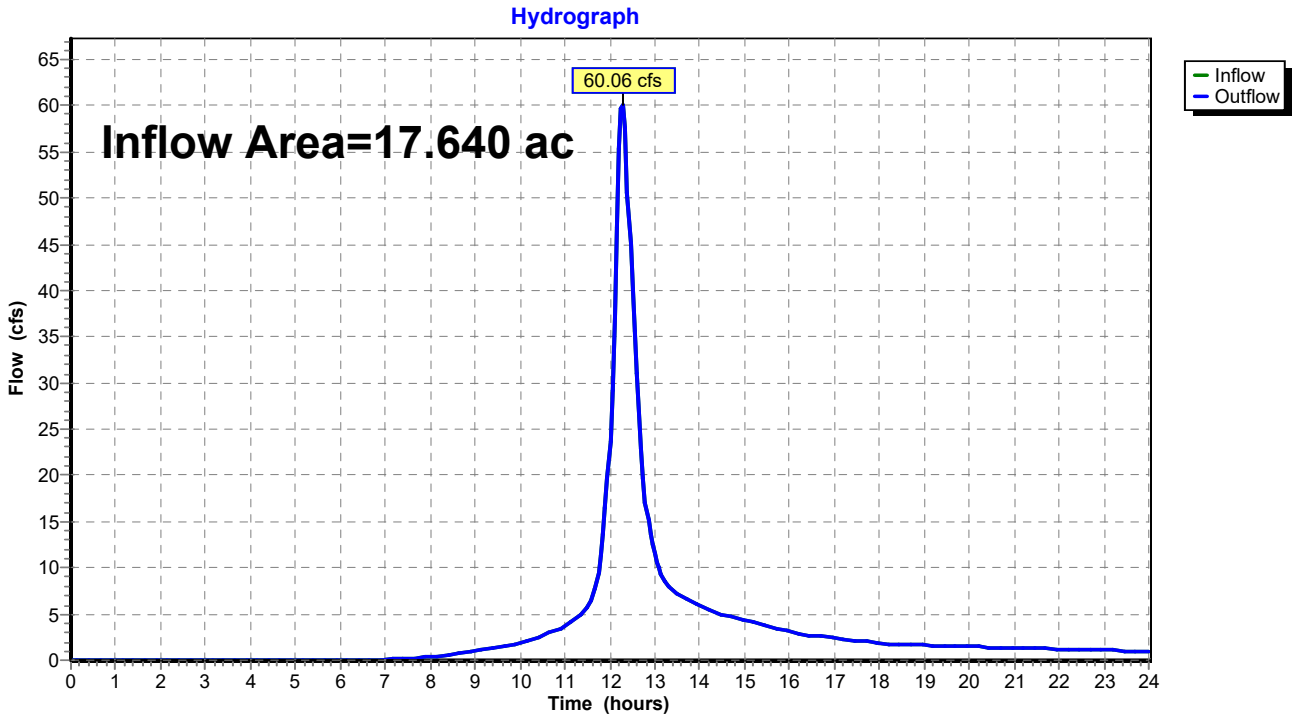


## Summary for Reach EX DP2: NORTHWEST WETLAND

Inflow Area = 17.640 ac, 19.84% Impervious, Inflow Depth > 4.31" for 25 yr event
Inflow = 60.06 cfs @ 12.27 hrs, Volume= 6.341 af
Outflow = 60.06 cfs @ 12.27 hrs, Volume= 6.341 af, Atten= 0%, Lag= 0.0 min

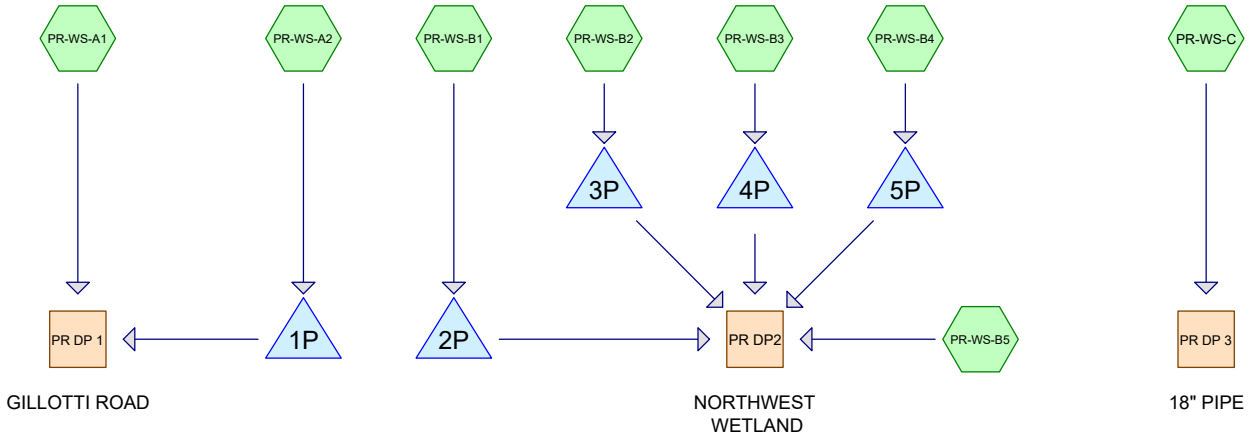
Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

## Reach EX DP2: NORTHWEST WETLAND



# APPENDIX B

## Proposed Stormwater Discharge Calculations




Subcat Reach Pond Link

**Routing Diagram for Proposed-revised**
Prepared by Langan Eng & Env Srvcs, Inc, Printed 11/11/2020

## Area Listing (all nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 1.900 | 69 | 50-75% Grass cover, Fair, HSG B (PR-WS-A2, PR-WS-B5) |
| 5.340 | 79 | 50-75% Grass cover, Fair, HSG C (PR-WS-B5) |
| 3.470 | 61 | >75% Grass cover, Good, HSG B (PR-WS-A1, PR-WS-B2, PR-WS-B3, PR-WS-B4, PR-WS-C) |
| 0.900 | 74 | >75% Grass cover, Good, HSG C (PR-WS-B1) |
| 0.520 | 85 | Green parking (PR-WS-A2) |
| 7.640 | 98 | Paved parking, HSG B (PR-WS-A2, PR-WS-B1, PR-WS-B2, PR-WS-B3, PR-WS-B4, PR-WS-B5, PR-WS-C) |
| 0.700 | 98 | Paved parking, HSG C (PR-WS-A1) |
| 2.290 | 60 | Woods, Fair, HSG B (PR-WS-B5, PR-WS-C) |
| 3.900 | 73 | Woods, Fair, HSG C (PR-WS-A1, PR-WS-B5) |
| **26.660** | **79** | **TOTAL AREA** |

## Summary for Subcatchment PR-WS-A1:

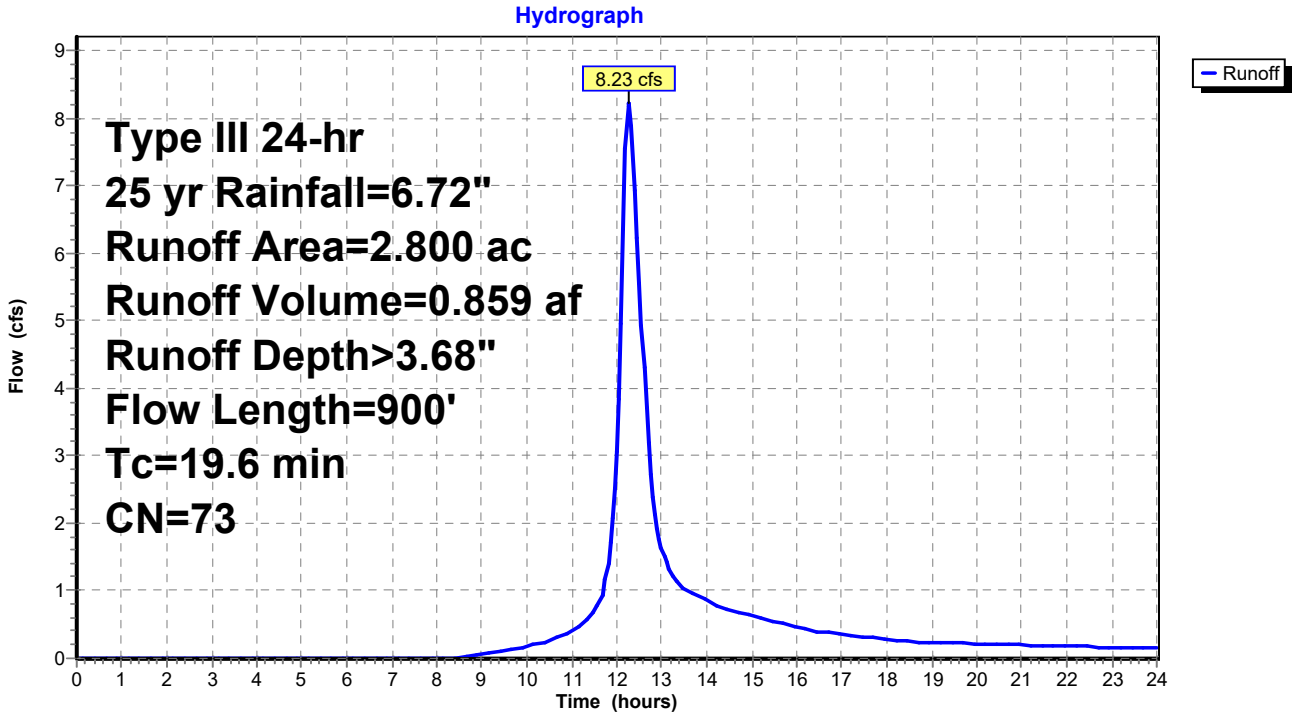
Runoff = 8.23 cfs @ 12.27 hrs, Volume= 0.859 af, Depth> 3.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.72"

| Area (ac) | CN | Description |
|---|---|---|
| 0.700 | 98 | Paved parking, HSG C |
| 1.500 | 61 | >75% Grass cover, Good, HSG B |
| 0.600 | 73 | Woods, Fair, HSG C |
| 2.800 | 73 | Weighted Average |
| 2.100 | | 75.00% Pervious Area |
| 0.700 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.2 | 90 | 0.0600 | 0.12 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50" |
| 4.0 | 60 | 0.0600 | 0.25 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.50" |
| 0.9 | 90 | 0.0600 | 1.71 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 1.6 | 280 | 0.0200 | 2.87 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 0.9 | 380 | 0.0150 | 6.98 | 8.57 | **Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished |
| 19.6 | 900 | Total | | | |

## Subcatchment PR-WS-A1:



## Summary for Subcatchment PR-WS-A2:

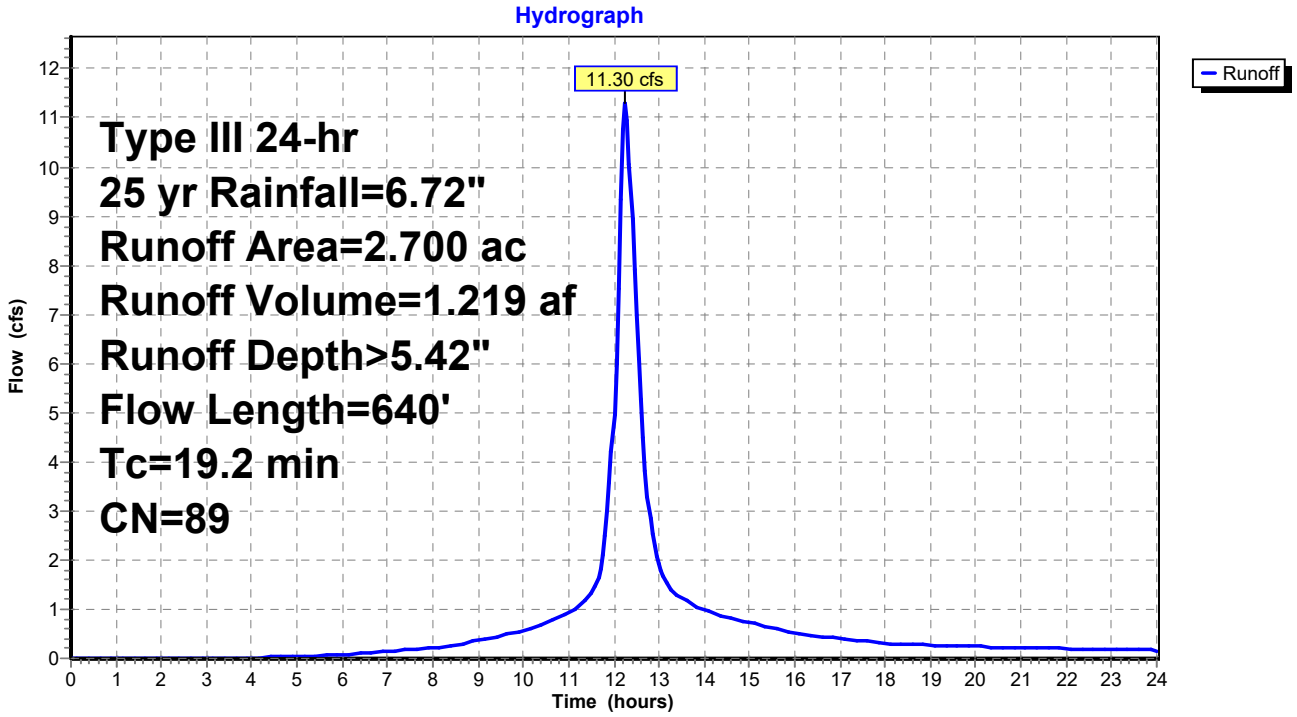
Runoff = 11.30 cfs @ 12.26 hrs, Volume= 1.219 af, Depth> 5.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.72"

| | Area (ac) | CN | Description |
|---|---|---|---|
| | 1.580 | 98 | Paved parking, HSG B |
| | 0.600 | 69 | 50-75% Grass cover, Fair, HSG B |
| * | 0.520 | 85 | Green parking |
| | 2.700 | 89 | Weighted Average |
| | 1.120 | | 41.48% Pervious Area |
| | 1.580 | | 58.52% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 17.3 | 150 | 0.0250 | 0.14 | | **Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50" |
| 0.5 | 30 | 0.0250 | 1.11 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 0.5 | 160 | 0.0600 | 4.97 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 0.9 | 300 | 0.0100 | 5.26 | 6.46 | **Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior |
| 19.2 | 640 | Total | | | |

## Subcatchment PR-WS-A2:



## Summary for Subcatchment PR-WS-B1:

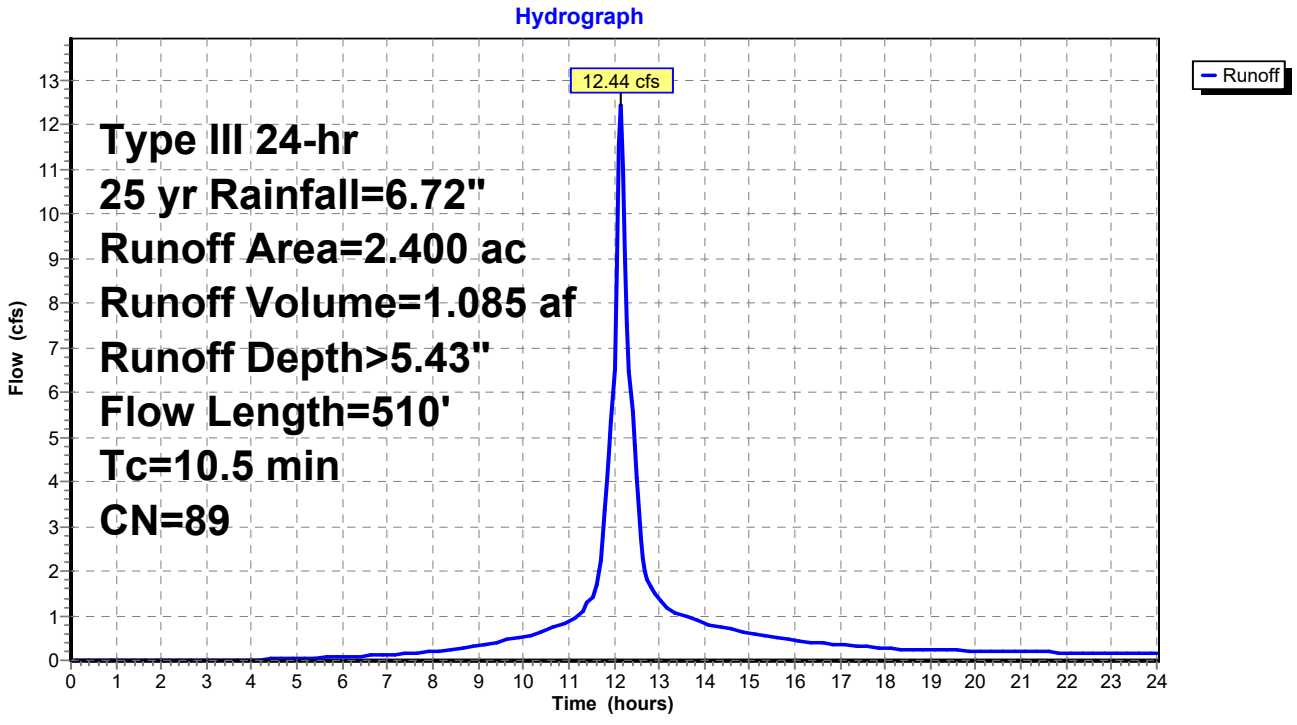
Runoff = 12.44 cfs @ 12.14 hrs, Volume= 1.085 af, Depth> 5.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.72"

| Area (ac) | CN | Description |
|---|---|---|
| 1.500 | 98 | Paved parking, HSG B |
| 0.900 | 74 | >75% Grass cover, Good, HSG C |
| 2.400 | 89 | Weighted Average |
| 0.900 | | 37.50% Pervious Area |
| 1.500 | | 62.50% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 150 | 0.1200 | 0.27 | | **Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50" |
| 1.3 | 360 | 0.0100 | 4.54 | 3.56 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 10.5 | 510 | Total | | | |

## Subcatchment PR-WS-B1:



## Summary for Subcatchment PR-WS-B2:

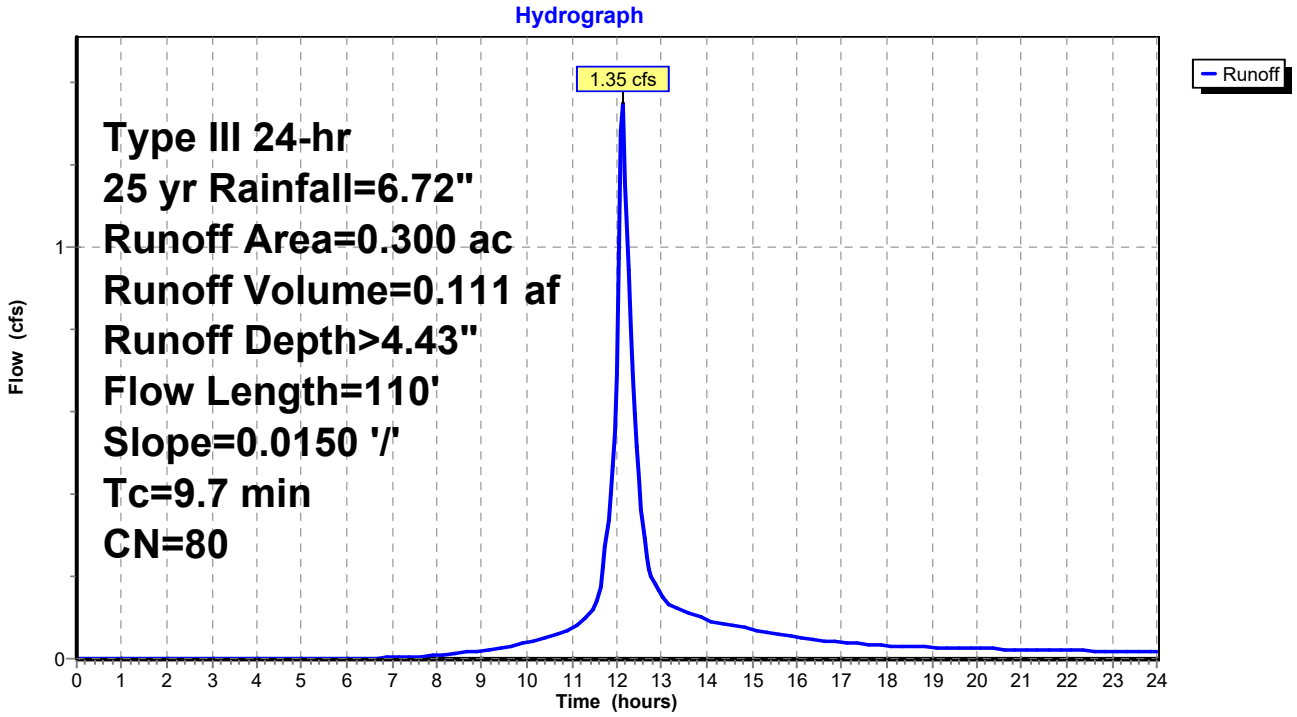
Runoff = 1.35 cfs @ 12.14 hrs, Volume= 0.111 af, Depth> 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.72"

| Area (ac) | CN | Description |
|---|---|---|
| 0.150 | 98 | Paved parking, HSG B |
| 0.150 | 61 | >75% Grass cover, Good, HSG B |
| 0.300 | 80 | Weighted Average |
| 0.150 | | 50.00% Pervious Area |
| 0.150 | | 50.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.8 | 50 | 0.0150 | 0.09 | | **Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50" |
| 0.9 | 60 | 0.0150 | 1.16 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50" |
| 9.7 | 110 | Total | | | |

## Subcatchment PR-WS-B2:



## Summary for Subcatchment PR-WS-B3:

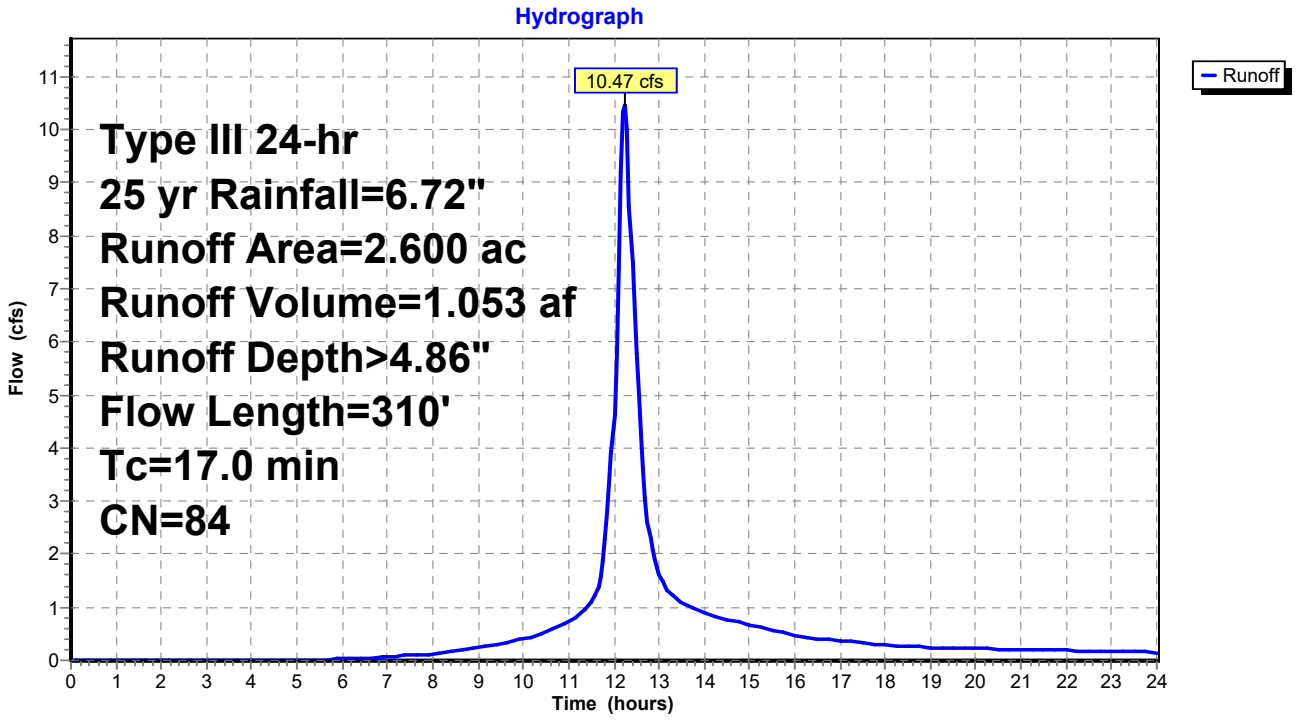
Runoff = 10.47 cfs @ 12.23 hrs, Volume= 1.053 af, Depth> 4.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.72"

| Area (ac) | CN | Description |
|---|---|---|
| 1.600 | 98 | Paved parking, HSG B |
| 1.000 | 61 | >75% Grass cover, Good, HSG B |
| 2.600 | 84 | Weighted Average |
| 1.000 | | 38.46% Pervious Area |
| 1.600 | | 61.54% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.5 | 90 | 0.0100 | 0.09 | | **Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50" |
| 0.5 | 220 | 0.0300 | 7.86 | 6.17 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 17.0 | 310 | Total | | | |

## Subcatchment PR-WS-B3:



## Summary for Subcatchment PR-WS-B4:

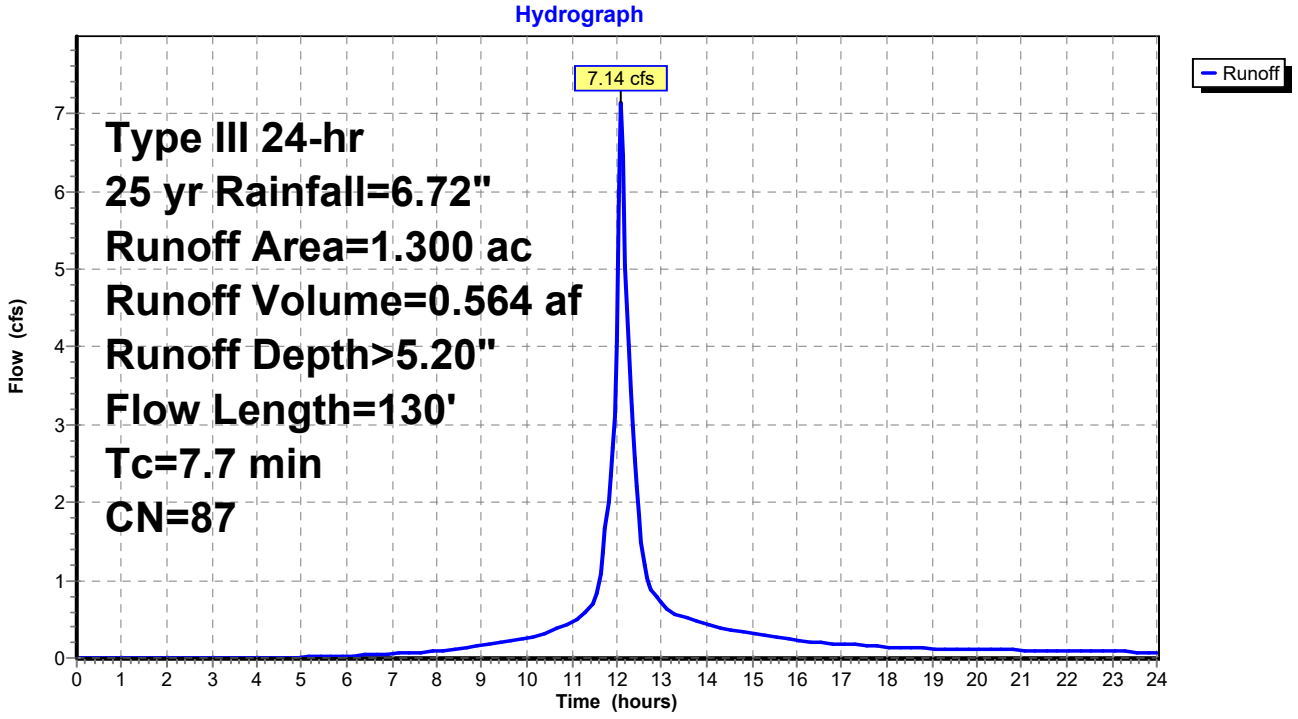
Runoff = 7.14 cfs @ 12.11 hrs, Volume= 0.564 af, Depth> 5.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.72"

| Area (ac) | CN | Description |
|---|---|---|
| 0.900 | 98 | Paved parking, HSG B |
| 0.400 | 61 | >75% Grass cover, Good, HSG B |
| 1.300 | 87 | Weighted Average |
| 0.400 | | 30.77% Pervious Area |
| 0.900 | | 69.23% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.9 | 30 | 0.0100 | 0.07 | | **Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50" |
| 0.7 | 70 | 0.0300 | 1.58 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50" |
| 0.1 | 30 | 0.0120 | 4.97 | 3.90 | **Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 7.7 | 130 | Total | | | |

## Subcatchment PR-WS-B4:



## Summary for Subcatchment PR-WS-B5:

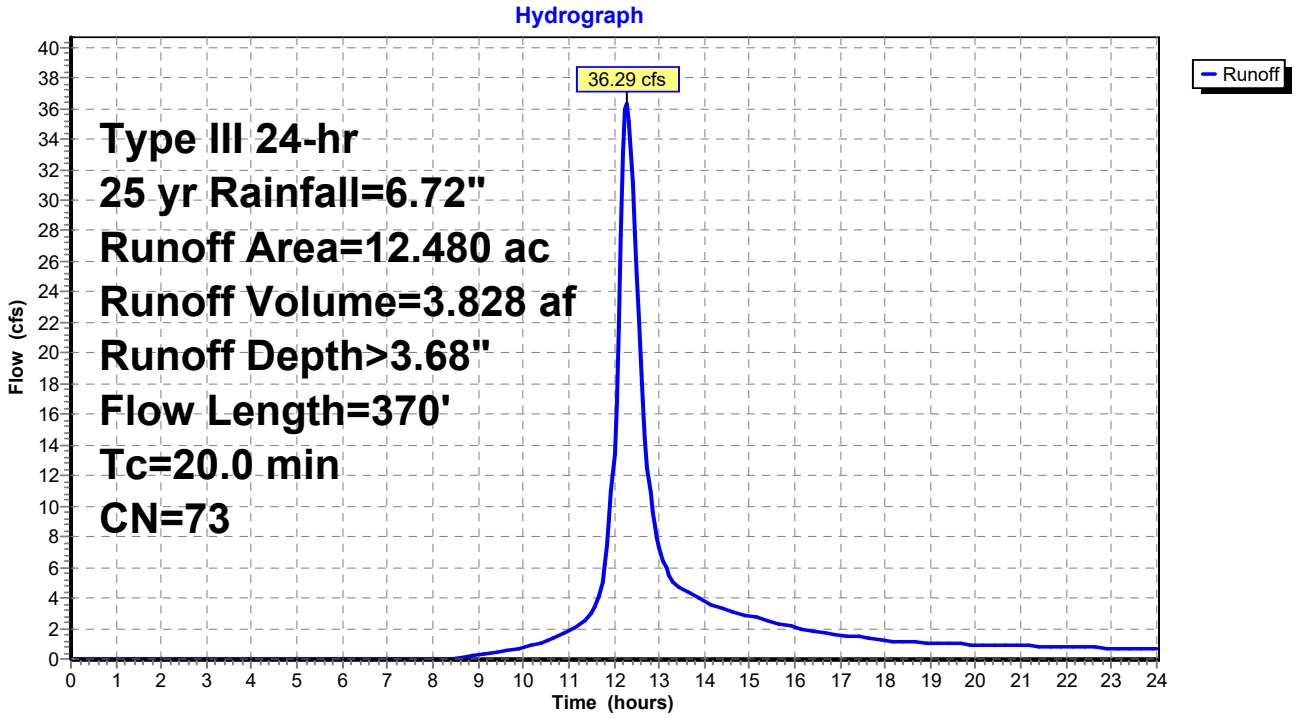
Runoff = 36.29 cfs @ 12.28 hrs, Volume= 3.828 af, Depth> 3.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.72"

| Area (ac) | CN | Description |
|---|---|---|
| 0.300 | 98 | Paved parking, HSG B |
| 2.240 | 60 | Woods, Fair, HSG B |
| 5.340 | 79 | 50-75% Grass cover, Fair, HSG C |
| 1.300 | 69 | 50-75% Grass cover, Fair, HSG B |
| 3.300 | 73 | Woods, Fair, HSG C |
| 12.480 | 73 | Weighted Average |
| 12.180 | | 97.60% Pervious Area |
| 0.300 | | 2.40% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 17.1 | 150 | 0.0100 | 0.15 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.50" |
| 1.2 | 50 | 0.0100 | 0.70 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 1.7 | 170 | 0.0600 | 1.71 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 20.0 | 370 | Total | | | |

## Subcatchment PR-WS-B5:



## Summary for Subcatchment PR-WS-C:

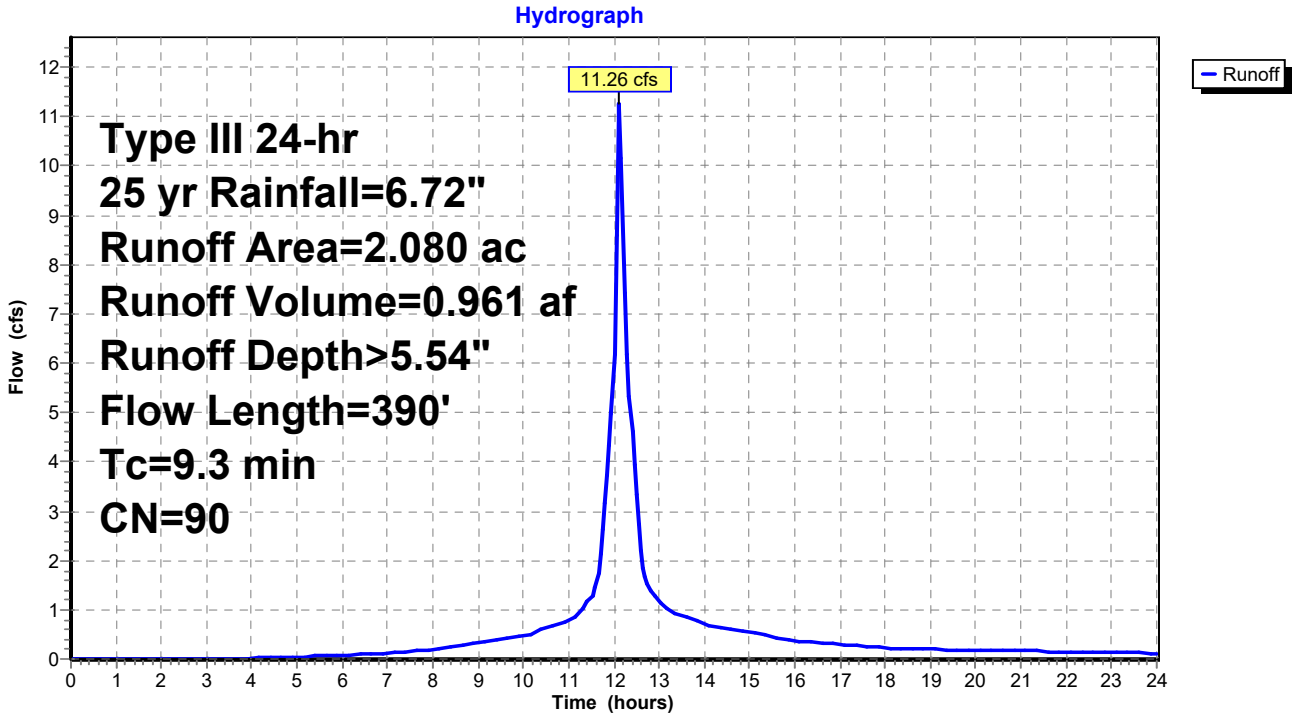
Runoff = 11.26 cfs @ 12.13 hrs, Volume= 0.961 af, Depth> 5.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.72"

| Area (ac) | CN | Description |
|---|---|---|
| 1.610 | 98 | Paved parking, HSG B |
| 0.050 | 60 | Woods, Fair, HSG B |
| 0.420 | 61 | >75% Grass cover, Good, HSG B |
| 2.080 | 90 | Weighted Average |
| 0.470 | | 22.60% Pervious Area |
| 1.610 | | 77.40% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.3 | 10 | 0.0100 | 0.04 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50" |
| 3.4 | 20 | 0.0100 | 0.10 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.50" |
| 0.9 | 120 | 0.0600 | 2.32 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50" |
| 0.7 | 240 | 0.0800 | 5.74 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 9.3 | 390 | Total | | | |

## Subcatchment PR-WS-C:

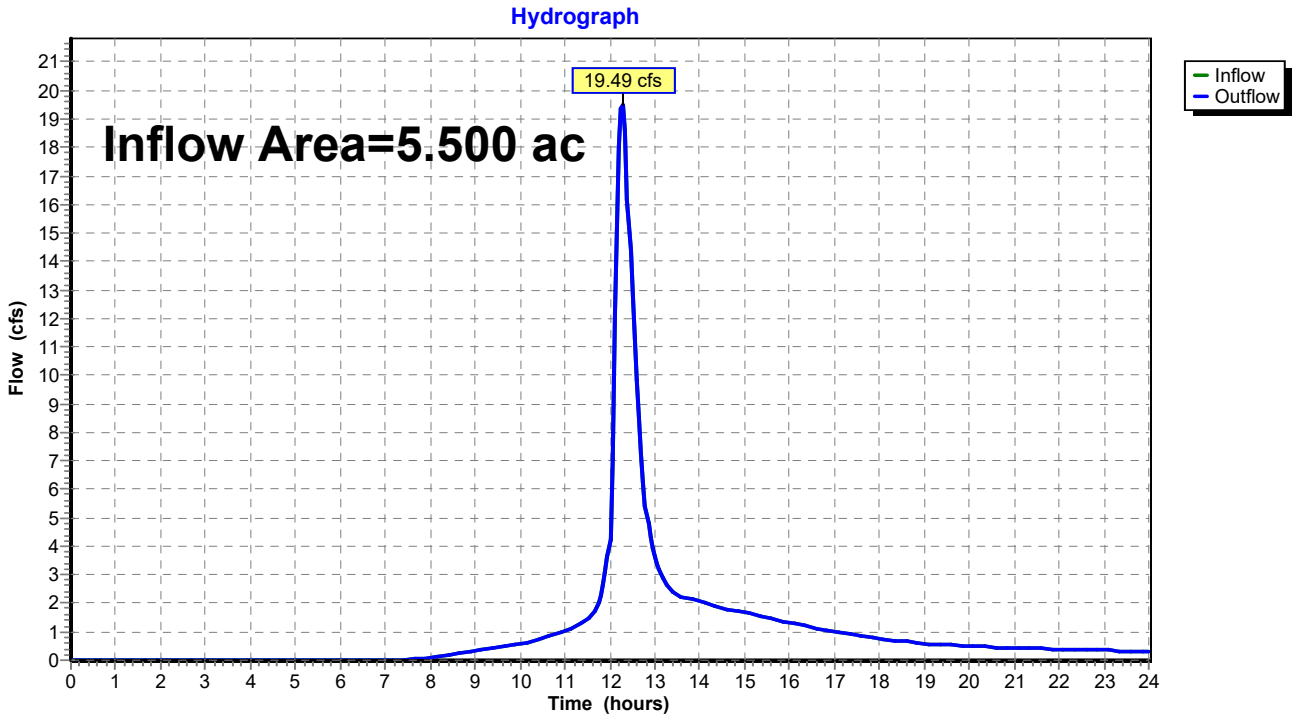


## Summary for Reach PR DP 1: GILLOTTI ROAD

Inflow Area = 5.500 ac, 41.45% Impervious, Inflow Depth > 4.47" for 25 yr event
Inflow = 19.49 cfs @ 12.27 hrs, Volume= 2.049 af
Outflow = 19.49 cfs @ 12.27 hrs, Volume= 2.049 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

## Reach PR DP 1: GILLOTTI ROAD

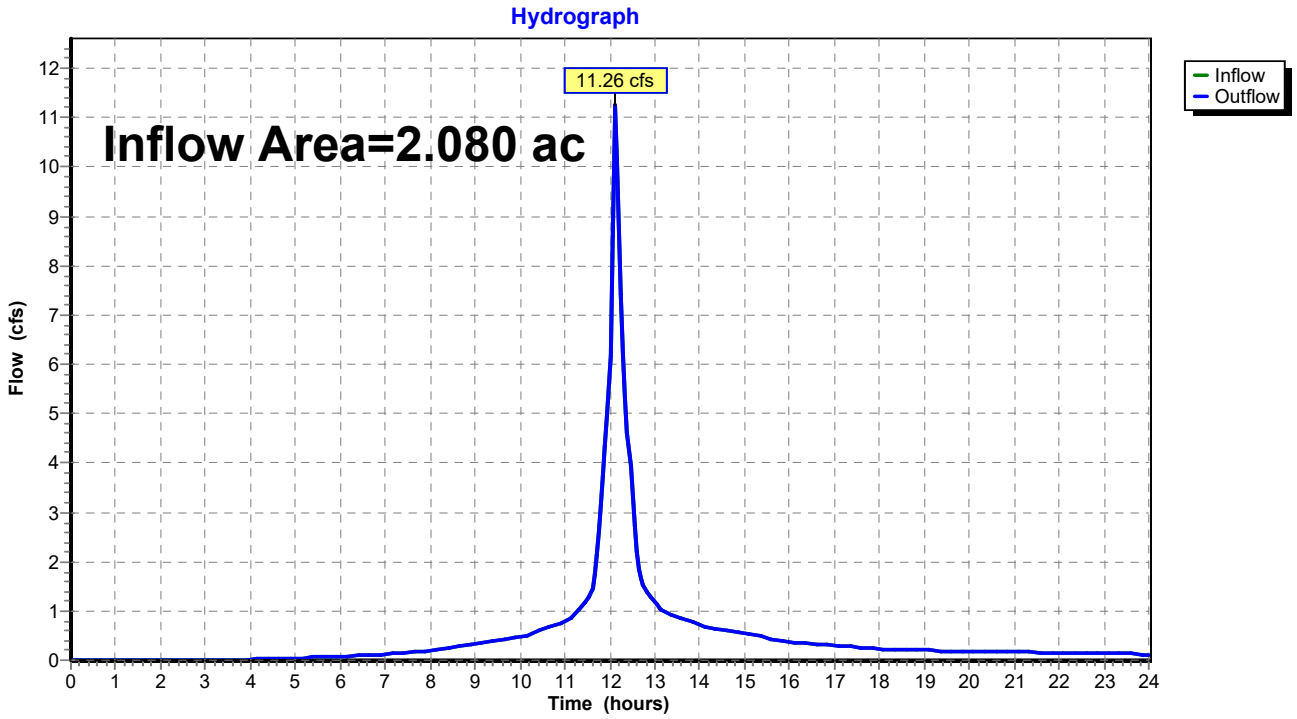


## Summary for Reach PR DP 3: 18" PIPE

Inflow Area = 2.080 ac, 77.40% Impervious, Inflow Depth > 5.54" for 25 yr event
Inflow = 11.26 cfs @ 12.13 hrs, Volume= 0.961 af
Outflow = 11.26 cfs @ 12.13 hrs, Volume= 0.961 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

## Reach PR DP 3: 18" PIPE

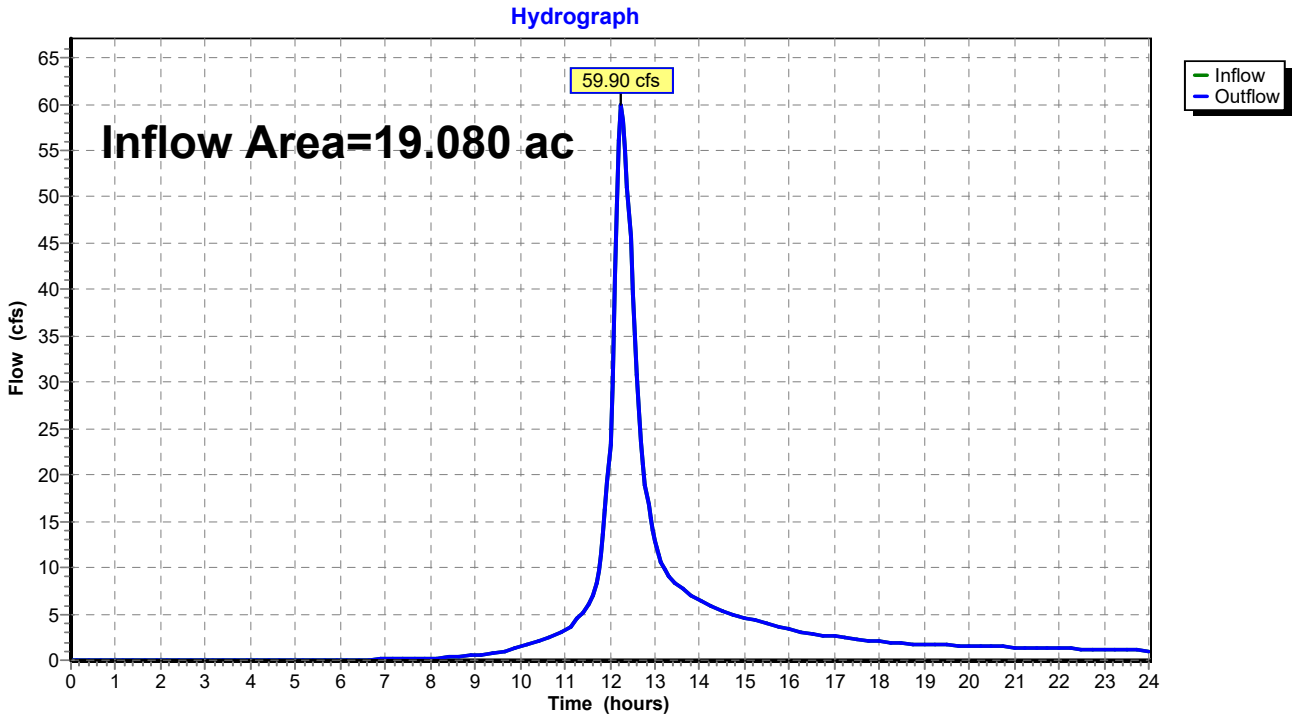


## Summary for Reach PR DP2: NORTHWEST WETLAND

Inflow Area = 19.080 ac, 23.32% Impervious, Inflow Depth > 4.09" for 25 yr event
Inflow = 59.90 cfs @ 12.26 hrs, Volume= 6.498 af
Outflow = 59.90 cfs @ 12.26 hrs, Volume= 6.498 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

## Reach PR DP2: NORTHWEST WETLAND



## Summary for Pond 1P:

Inflow Area = 2.700 ac, 58.52% Impervious, Inflow Depth > 5.42" for 25 yr event
Inflow = 11.30 cfs @ 12.26 hrs, Volume= 1.219 af
Outflow = 11.26 cfs @ 12.27 hrs, Volume= 1.191 af, Atten= 0%, Lag= 0.8 min
Primary = 11.26 cfs @ 12.27 hrs, Volume= 1.191 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 924.12' @ 12.27 hrs Surf.Area= 0.051 ac Storage= 0.169 af

Plug-Flow detention time= 55.8 min calculated for 1.188 af (97% of inflow)
Center-of-Mass det. time= 41.9 min ( 836.8 - 794.9 )

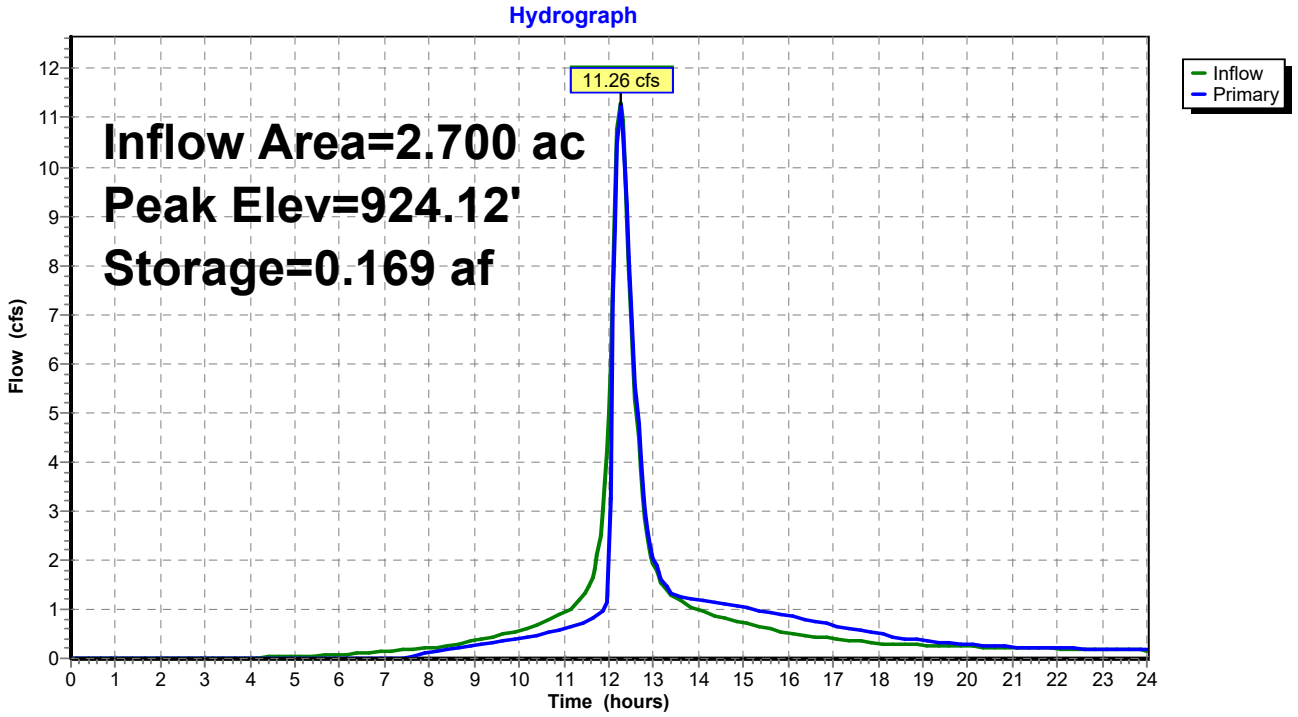
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 918.70' | 0.073 af | **15.58'W x 141.93'L x 5.50'H Field A**<br>0.279 af Overall - 0.097 af Embedded = 0.182 af x 40.0% Voids |
| #2A | 919.45' | 0.097 af | **ADS_StormTech MC-3500 d +Cap**x 38 Inside #1<br>Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf<br>Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap<br>2 Rows of 19 Chambers<br>Cap Storage= +14.9 cf x 2 x 2 rows = 59.6 cf |
| | | 0.170 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 919.50' | **18.0" Round Culvert**<br>L= 60.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 919.50' / 916.00' S= 0.0583 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf |
| #2 | Device 1 | 923.30' | **4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #3 | Device 1 | 919.50' | **5.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=11.17 cfs @ 12.27 hrs HW=924.12' (Free Discharge)
└**1=Culvert** (Passes 11.17 cfs of 13.21 cfs potential flow)
  ├**2=Broad-Crested Rectangular Weir** (Weir Controls 9.79 cfs @ 2.99 fps)
  └**3=Orifice/Grate** (Orifice Controls 1.38 cfs @ 10.11 fps)

## Pond 1P:


Hydrograph
11.26 cfs
Inflow Area=2.700 ac
Peak Elev=924.12'
Storage=0.169 af
Inflow
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

## Summary for Pond 2P:

Inflow Area = 2.400 ac, 62.50% Impervious, Inflow Depth > 5.43" for 25 yr event
Inflow = 12.44 cfs @ 12.14 hrs, Volume= 1.085 af
Outflow = 9.80 cfs @ 12.23 hrs, Volume= 1.075 af, Atten= 21%, Lag= 5.4 min
Primary = 9.80 cfs @ 12.23 hrs, Volume= 1.075 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 927.54' @ 12.23 hrs Surf.Area= 0.045 ac Storage= 0.150 af

Plug-Flow detention time= 21.3 min calculated for 1.072 af (99% of inflow)
Center-of-Mass det. time= 15.1 min ( 802.8 - 787.7 )

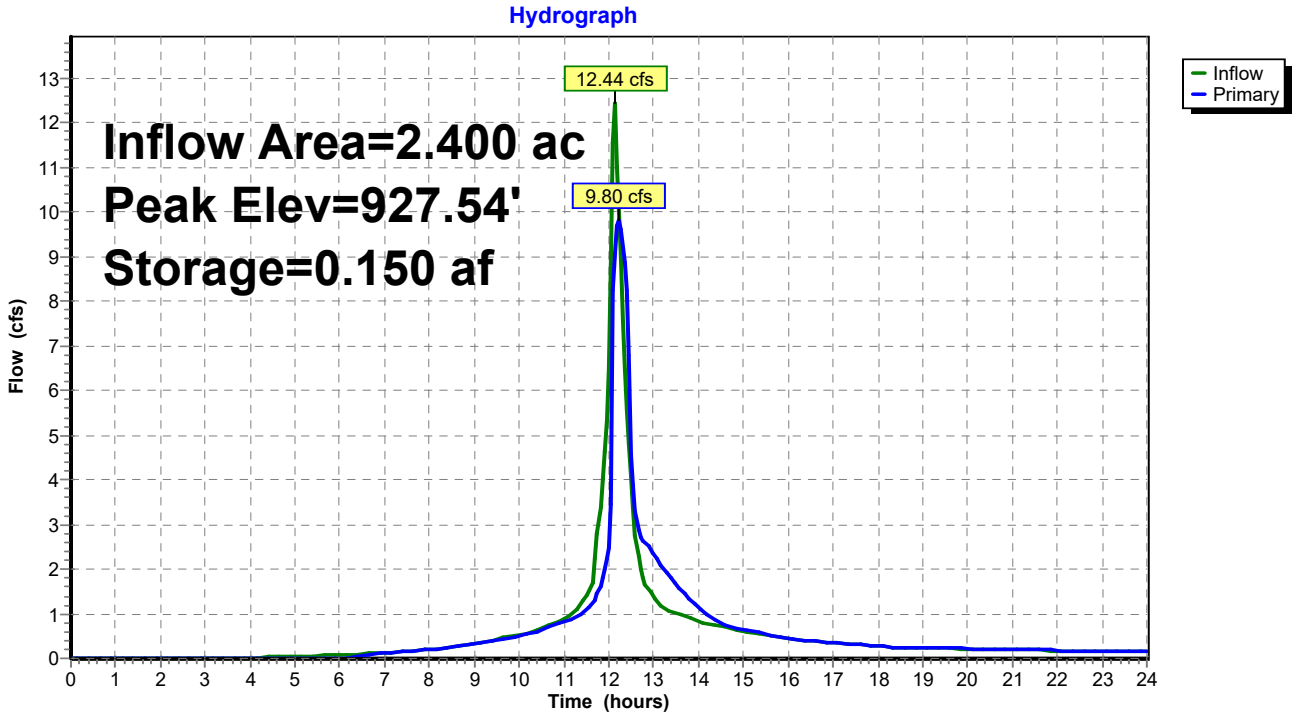
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 922.10' | 0.070 af | **23.25'W x 85.07'L x 5.75'H Field A**<br>0.261 af Overall - 0.085 af Embedded = 0.176 af x 40.0% Voids |
| #2A | 923.10' | 0.085 af | **ADS_StormTech MC-3500 d +Cap**x 33 Inside #1<br>Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf<br>Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap<br>3 Rows of 11 Chambers<br>Cap Storage= +14.9 cf x 2 x 3 rows = 89.4 cf |
| | | 0.156 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 922.50' | **15.0" Round Culvert**<br>L= 60.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 922.50' / 921.40' S= 0.0183 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf |
| #2 | Device 1 | 925.50' | **5.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |
| #3 | Device 1 | 922.50' | **8.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=9.75 cfs @ 12.23 hrs HW=927.50' (Free Discharge)
└**1=Culvert** (Inlet Controls 9.75 cfs @ 7.95 fps)
  ├**2=Broad-Crested Rectangular Weir** (Passes < 46.83 cfs potential flow)
  └**3=Orifice/Grate** (Passes < 3.63 cfs potential flow)

## Pond 2P:


Hydrograph
Inflow Area=2.400 ac
Peak Elev=927.54'
Storage=0.150 af
12.44 cfs
9.80 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

## Summary for Pond 3P:

Inflow Area = 0.300 ac, 50.00% Impervious, Inflow Depth > 4.43" for 25 yr event
Inflow = 1.35 cfs @ 12.14 hrs, Volume= 0.111 af
Outflow = 1.34 cfs @ 12.15 hrs, Volume= 0.101 af, Atten= 0%, Lag= 1.0 min
Primary = 1.34 cfs @ 12.15 hrs, Volume= 0.101 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 927.62' @ 12.15 hrs Surf.Area= 924 sf Storage= 533 cf

Plug-Flow detention time= 64.2 min calculated for 0.101 af (91% of inflow)
Center-of-Mass det. time= 20.8 min ( 832.9 - 812.1 )

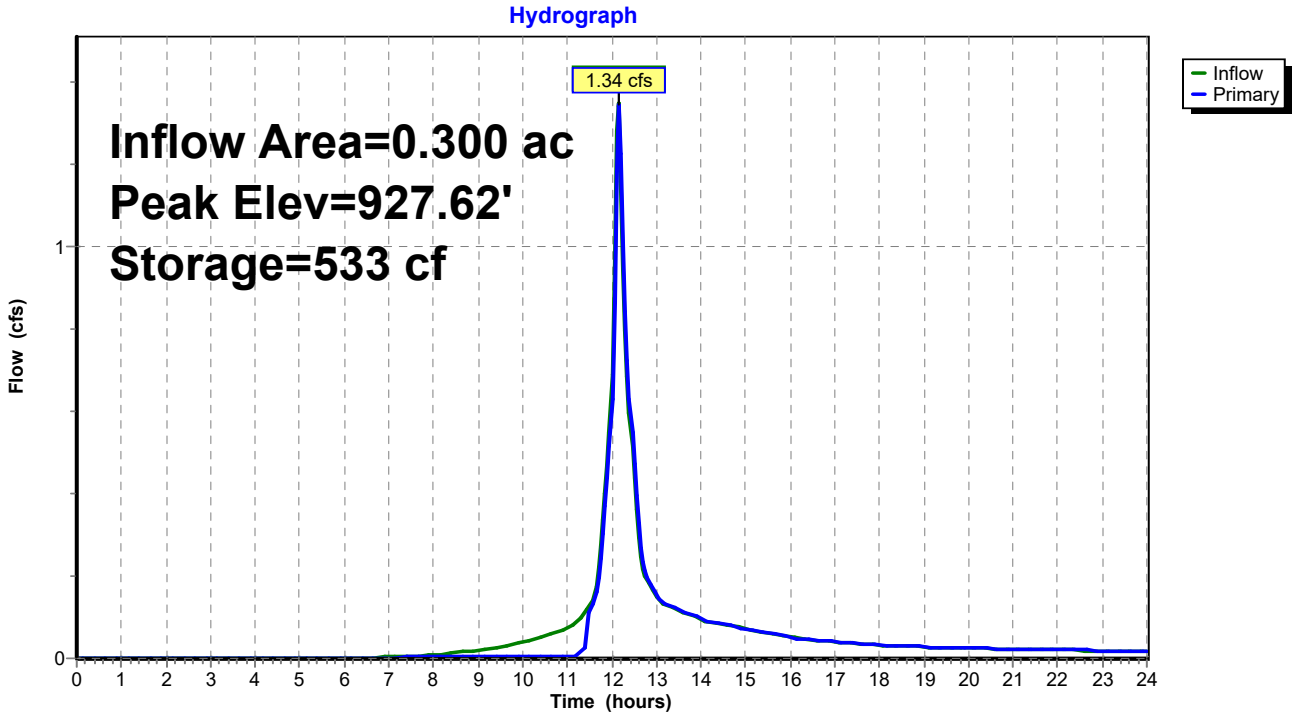
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 927.00' | 1,450 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 927.00 | 800 | 0 | 0 |
| 928.00 | 1,000 | 900 | 900 |
| 928.50 | 1,200 | 550 | 1,450 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 923.00' | **12.0" Round Culvert**<br>L= 30.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 923.00' / 921.50' S= 0.0500 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |
| #2 | Device 1 | 923.00' | **6.0" Vert. Underdrain** C= 0.600 |
| #3 | Device 1 | 928.00' | **30.0" x 48.0" Horiz. Horiz. Grate** C= 0.600<br>Limited to weir flow at low heads |
| #4 | Device 2 | 927.00' | **0.250 in/hr Exfiltration through bioretention media over Surface area**<br>Phase-In= 0.01' |
| #5 | Primary | 927.50' | **162.0 deg x 10.0' long x 1.00' rise Overflow Weir** Cv= 2.47 (C= 3.09) |

**Primary OutFlow** Max=1.33 cfs @ 12.15 hrs HW=927.62' (Free Discharge)
- **1=Culvert** (Passes 0.01 cfs of 6.06 cfs potential flow)
  - **2=Underdrain** (Passes 0.01 cfs of 1.98 cfs potential flow)
    - **4=Exfiltration through bioretention media** (Exfiltration Controls 0.01 cfs)
  - **3=Horiz. Grate** ( Controls 0.00 cfs)
- **5=Overflow Weir** (Weir Controls 1.32 cfs @ 1.05 fps)

## Pond 3P:


Hydrograph
Inflow Area=0.300 ac
Peak Elev=927.62'
Storage=533 cf
1.34 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0
1
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

## Summary for Pond 4P:

Inflow Area = 2.600 ac, 61.54% Impervious, Inflow Depth > 4.86" for 25 yr event
Inflow = 10.47 cfs @ 12.23 hrs, Volume= 1.053 af
Outflow = 8.36 cfs @ 12.36 hrs, Volume= 1.004 af, Atten= 20%, Lag= 8.1 min
Primary = 8.36 cfs @ 12.36 hrs, Volume= 1.004 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 926.68' @ 12.36 hrs Surf.Area= 0.057 ac Storage= 0.168 af

Plug-Flow detention time= 50.4 min calculated for 1.004 af (95% of inflow)
Center-of-Mass det. time= 24.9 min ( 832.7 - 807.8 )

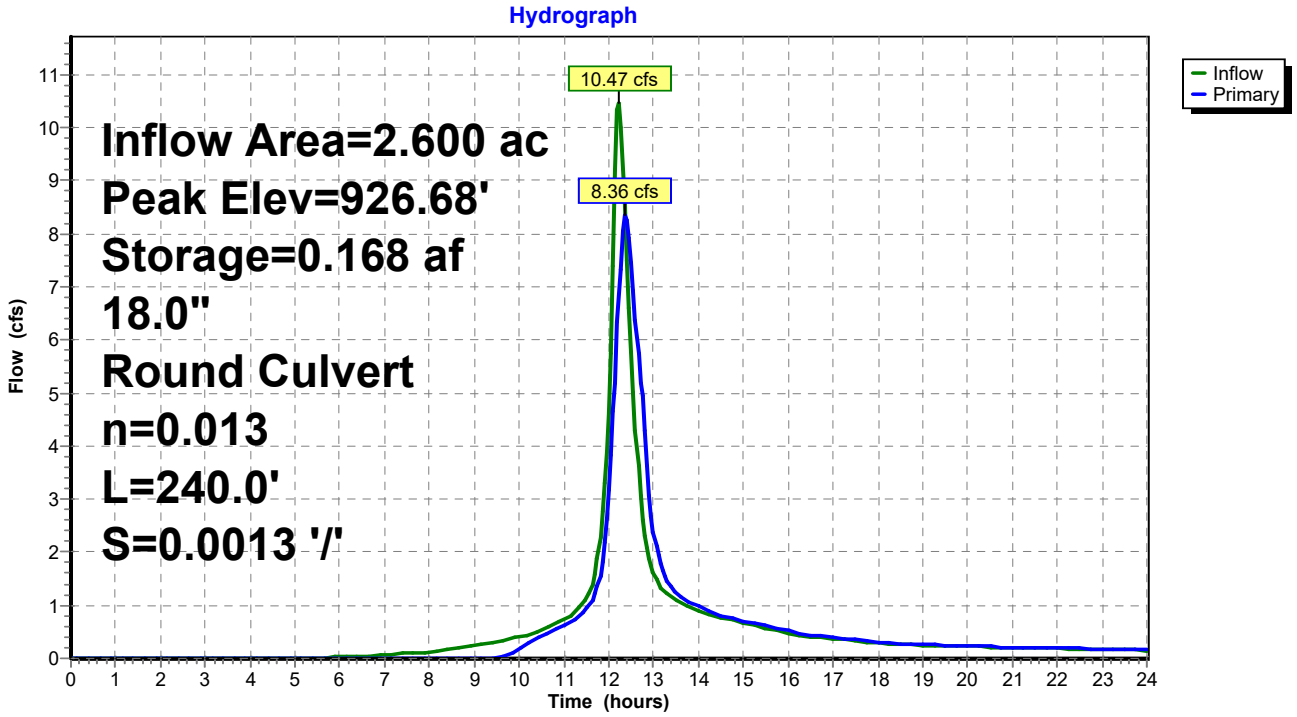
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 922.00' | 0.090 af | **16.58'W x 150.10'L x 5.75'H Field A**<br>0.329 af Overall - 0.102 af Embedded = 0.226 af x 40.0% Voids |
| #2A | 923.00' | 0.102 af | **ADS_StormTech MC-3500 d +Cap**x 40 Inside #1<br>Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf<br>Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap<br>2 Rows of 20 Chambers<br>Cap Storage= +14.9 cf x 2 x 2 rows = 59.6 cf |
| | | 0.193 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 923.30' | **18.0" Round Culvert**<br>L= 240.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 923.30' / 923.00' S= 0.0013 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf |

**Primary OutFlow** Max=8.32 cfs @ 12.36 hrs HW=926.66' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 8.32 cfs @ 4.71 fps)

## Pond 4P:


Hydrograph
Inflow Area=2.600 ac
Peak Elev=926.68'
Storage=0.168 af
18.0"
Round Culvert
n=0.013
L=240.0'
S=0.0013 '/'
10.47 cfs
8.36 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

## Summary for Pond 5P:

Inflow Area = 1.300 ac, 69.23% Impervious, Inflow Depth > 5.20" for 25 yr event
Inflow = 7.14 cfs @ 12.11 hrs, Volume= 0.564 af
Outflow = 5.94 cfs @ 12.17 hrs, Volume= 0.490 af, Atten= 17%, Lag= 3.6 min
Primary = 5.94 cfs @ 12.17 hrs, Volume= 0.490 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 929.96' @ 12.17 hrs Surf.Area= 0.035 ac Storage= 0.094 af

Plug-Flow detention time= 92.5 min calculated for 0.489 af (87% of inflow)
Center-of-Mass det. time= 35.6 min ( 827.3 - 791.7 )

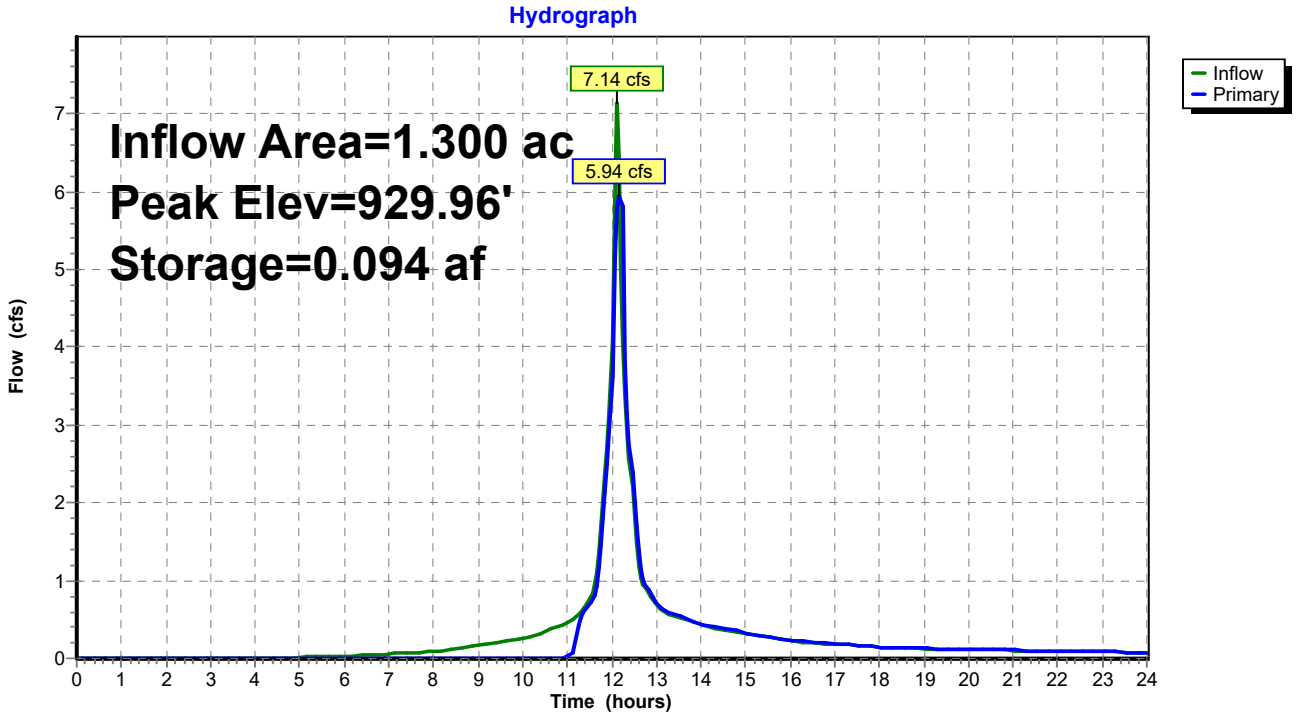
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 925.80' | 0.055 af | **23.75'W x 64.06'L x 5.75'H Field A**<br>0.201 af Overall - 0.063 af Embedded = 0.138 af x 40.0% Voids |
| #2A | 926.80' | 0.063 af | **ADS_StormTech MC-3500 d +Cap**x 24 Inside #1<br>Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf<br>Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap<br>3 Rows of 8 Chambers<br>Cap Storage= +14.9 cf x 2 x 3 rows = 89.4 cf |
| | | 0.118 af | Total Available Storage |

Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 925.50' | **12.0" Round Culvert**<br>L= 78.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 925.50' / 923.70' S= 0.0231 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |
| #2 | Device 1 | 929.00' | **4.0' long x 0.5' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |

**Primary OutFlow** Max=5.92 cfs @ 12.17 hrs HW=929.94' (Free Discharge)
↑**1=Culvert** (Inlet Controls 5.92 cfs @ 7.54 fps)
↑**2=Broad-Crested Rectangular Weir** (Passes 5.92 cfs of 12.05 cfs potential flow)

## Pond 5P:


Hydrograph
Inflow Area=1.300 ac
Peak Elev=929.96'
Storage=0.094 af
7.14 cfs
5.94 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

# APPENDIX C

## NOAA Rainfall Data

**NOAA Atlas 14, Volume 10, Version 3**
**CANDLEWOOD LAKE**
**Station ID: 06-1093**
**Location name: New Fairfield, Connecticut, USA***
**Latitude: 41.484°, Longitude: -73.4625°**
**Elevation:**
**Elevation (station metadata): 502 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 | **0.358** (0.272-0.473) | **0.419** (0.317-0.553) | **0.518** (0.390-0.686) | **0.599** (0.450-0.797) | **0.711** (0.519-0.983) | **0.796** (0.570-1.12) | **0.884** (0.616-1.29) | **0.978** (0.653-1.46) | **1.11** (0.716-1.71) | **1.21** (0.764-1.91) |
| 10-min | **0.508** (0.385-0.670) | **0.593** (0.449-0.783) | **0.732** (0.553-0.970) | **0.848** (0.637-1.13) | **1.01** (0.735-1.39) | **1.13** (0.808-1.59) | **1.25** (0.873-1.82) | **1.39** (0.926-2.07) | **1.57** (1.01-2.42) | **1.71** (1.08-2.70) |
| 15-min | **0.597** (0.453-0.788) | **0.698** (0.528-0.921) | **0.862** (0.650-1.14) | **0.998** (0.749-1.33) | **1.19** (0.865-1.64) | **1.33** (0.951-1.87) | **1.47** (1.03-2.15) | **1.63** (1.09-2.44) | **1.84** (1.19-2.85) | **2.01** (1.27-3.18) |
| 30-min | **0.833** (0.631-1.10) | **0.969** (0.733-1.28) | **1.19** (0.899-1.58) | **1.38** (1.03-1.83) | **1.63** (1.19-2.25) | **1.82** (1.31-2.57) | **2.02** (1.41-2.94) | **2.23** (1.49-3.34) | **2.51** (1.62-3.88) | **2.73** (1.73-4.31) |
| 60-min | **1.07** (0.809-1.41) | **1.24** (0.938-1.64) | **1.52** (1.15-2.01) | **1.75** (1.32-2.34) | **2.08** (1.51-2.87) | **2.32** (1.66-3.27) | **2.57** (1.79-3.73) | **2.83** (1.89-4.23) | **3.18** (2.06-4.92) | **3.45** (2.18-5.44) |
| 2-hr | **1.40** (1.06-1.83) | **1.62** (1.23-2.13) | **1.99** (1.50-2.62) | **2.29** (1.73-3.03) | **2.71** (1.99-3.75) | **3.02** (2.19-4.27) | **3.35** (2.37-4.93) | **3.75** (2.51-5.60) | **4.34** (2.82-6.70) | **4.85** (3.08-7.62) |
| 3-hr | **1.61** (1.23-2.11) | **1.88** (1.43-2.46) | **2.31** (1.76-3.04) | **2.68** (2.02-3.54) | **3.17** (2.34-4.39) | **3.54** (2.58-5.02) | **3.94** (2.81-5.82) | **4.44** (2.98-6.61) | **5.22** (3.39-8.03) | **5.89** (3.75-9.24) |
| 6-hr | **2.00** (1.53-2.61) | **2.38** (1.82-3.10) | **2.98** (2.28-3.91) | **3.49** (2.65-4.59) | **4.18** (3.10-5.77) | **4.68** (3.43-6.63) | **5.25** (3.77-7.75) | **5.96** (4.01-8.84) | **7.09** (4.61-10.9) | **8.07** (5.15-12.6) |
| 12-hr | **2.42** (1.87-3.15) | **2.94** (2.26-3.82) | **3.78** (2.90-4.93) | **4.48** (3.41-5.87) | **5.44** (4.05-7.49) | **6.15** (4.51-8.66) | **6.92** (4.99-10.2) | **7.89** (5.33-11.7) | **9.39** (6.13-14.3) | **10.7** (6.85-16.6) |
| 24-hr | **2.84** (2.19-3.67) | **3.50** (2.70-4.53) | **4.59** (3.53-5.96) | **5.49** (4.20-7.16) | **6.72** (5.03-9.21) | **7.64** (5.62-10.7) | **8.63** (6.23-12.6) | **9.86** (6.68-14.5) | **11.8** (7.69-17.9) | **13.4** (8.59-20.7) |
| 2-day | **3.25** (2.52-4.18) | **4.03** (3.13-5.20) | **5.31** (4.11-6.87) | **6.38** (4.90-8.29) | **7.84** (5.89-10.7) | **8.91** (6.59-12.5) | **10.1** (7.33-14.7) | **11.6** (7.86-16.9) | **13.8** (9.09-21.0) | **15.8** (10.2-24.4) |
| 3-day | **3.54** (2.76-4.55) | **4.39** (3.41-5.65) | **5.78** (4.48-7.45) | **6.93** (5.34-8.99) | **8.52** (6.41-11.6) | **9.68** (7.18-13.5) | **11.0** (7.98-16.0) | **12.6** (8.55-18.3) | **15.0** (9.90-22.7) | **17.2** (11.1-26.5) |
| 4-day | **3.80** (2.96-4.87) | **4.69** (3.65-6.02) | **6.16** (4.78-7.93) | **7.38** (5.69-9.54) | **9.05** (6.82-12.3) | **10.3** (7.63-14.3) | **11.6** (8.47-16.9) | **13.3** (9.08-19.4) | **15.9** (10.5-24.0) | **18.2** (11.8-28.0) |
| 7-day | **4.49** (3.51-5.73) | **5.48** (4.28-7.01) | **7.11** (5.53-9.11) | **8.46** (6.55-10.9) | **10.3** (7.79-13.9) | **11.7** (8.69-16.2) | **13.2** (9.60-19.0) | **15.0** (10.3-21.8) | **17.8** (11.8-26.7) | **20.2** (13.1-30.9) |
| 10-day | **5.18** (4.06-6.60) | **6.23** (4.88-7.95) | **7.95** (6.20-10.2) | **9.38** (7.28-12.1) | **11.3** (8.58-15.3) | **12.8** (9.52-17.6) | **14.4** (10.5-20.6) | **16.2** (11.1-23.5) | **19.1** (12.6-28.5) | **21.4** (13.9-32.7) |
| 20-day | **7.38** (5.80-9.35) | **8.52** (6.70-10.8) | **10.4** (8.15-13.3) | **12.0** (9.32-15.3) | **14.1** (10.7-18.8) | **15.7** (11.7-21.4) | **17.4** (12.6-24.5) | **19.3** (13.3-27.7) | **21.8** (14.5-32.5) | **23.9** (15.6-36.3) |
| 30-day | **9.22** (7.28-11.7) | **10.4** (8.22-13.2) | **12.4** (9.75-15.8) | **14.1** (11.0-18.0) | **16.3** (12.4-21.6) | **18.1** (13.4-24.3) | **19.8** (14.2-27.5) | **21.6** (14.9-31.0) | **24.0** (16.0-35.6) | **25.8** (16.8-39.2) |
| 45-day | **11.5** (9.10-14.5) | **12.8** (10.1-16.2) | **14.9** (11.7-18.9) | **16.7** (13.0-21.2) | **19.1** (14.5-25.1) | **20.9** (15.5-28.1) | **22.8** (16.4-31.4) | **24.6** (17.0-35.1) | **26.9** (18.0-39.7) | **28.5** (18.6-43.1) |
| 60-day | **13.4** (10.6-16.9) | **14.8** (11.7-18.6) | **17.0** (13.4-21.5) | **18.8** (14.8-24.0) | **21.4** (16.2-28.1) | **23.4** (17.4-31.2) | **25.3** (18.2-34.8) | **27.1** (18.9-38.7) | **29.4** (19.7-43.4) | **31.0** (20.3-46.8) |

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

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

Please refer to NOAA Atlas 14 document for more information.

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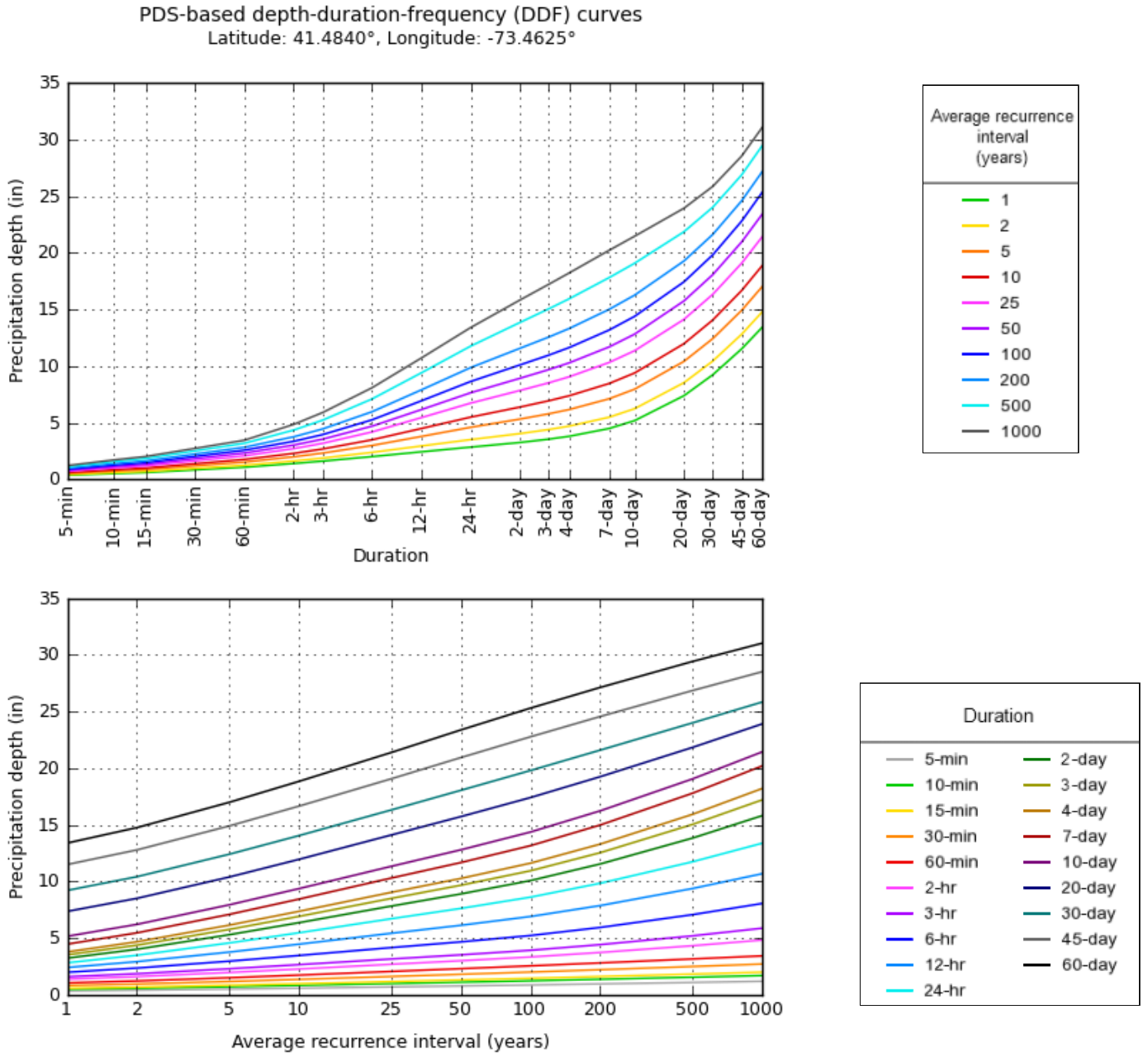
## PF graphical




NOAA Atlas 14, Volume 10, Version 3

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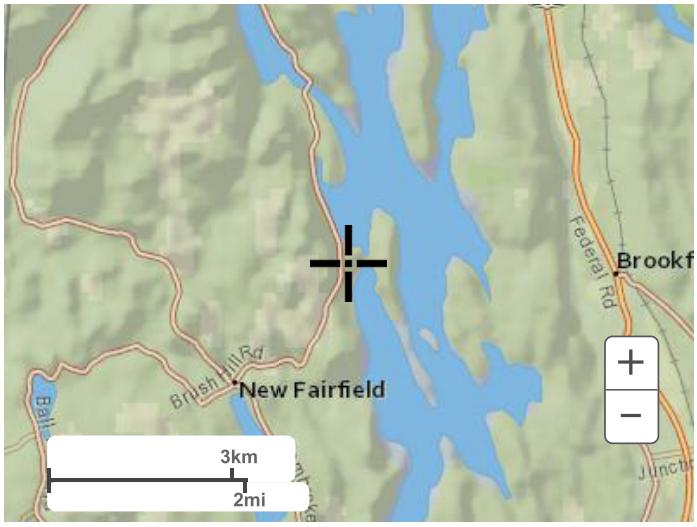
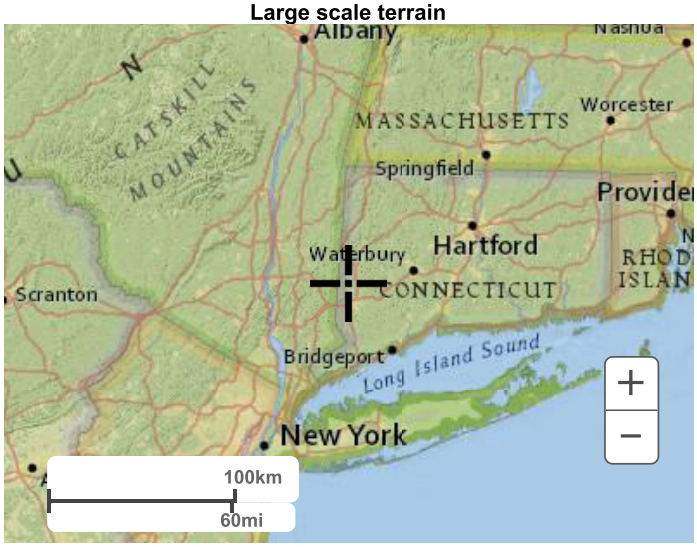
## Maps & aerials

**Small scale terrain**




**Large scale terrain**




**Large scale map**


**Large scale aerial**

**NOAA Atlas 14, Volume 10, Version 3**
**Location name: New Fairfield, Connecticut, USA***
**Latitude: 41.484°, Longitude: -73.4625°**
**Elevation: 515.81 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/hour)[1]**

| Duration | Average recurrence interval (years) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 5 | 10 | 25 | 50 | 100 | 200 | 500 | 1000 |
| 5-min | **4.30** (3.26-5.68) | **5.03** (3.80-6.64) | **6.22** (4.68-8.23) | **7.19** (5.40-9.56) | **8.53** (6.23-11.8) | **9.55** (6.84-13.5) | **10.6** (7.39-15.4) | **11.7** (7.84-17.5) | **13.3** (8.59-20.5) | **14.5** (9.17-22.9) |
| 10-min | **3.05** (2.31-4.02) | **3.56** (2.69-4.70) | **4.39** (3.32-5.82) | **5.09** (3.82-6.77) | **6.04** (4.41-8.36) | **6.77** (4.85-9.55) | **7.52** (5.24-10.9) | **8.32** (5.56-12.4) | **9.41** (6.08-14.6) | **10.3** (6.50-16.2) |
| 15-min | **2.39** (1.81-3.15) | **2.79** (2.11-3.68) | **3.45** (2.60-4.56) | **3.99** (3.00-5.31) | **4.74** (3.46-6.56) | **5.31** (3.80-7.49) | **5.90** (4.11-8.58) | **6.52** (4.36-9.76) | **7.38** (4.77-11.4) | **8.05** (5.10-12.7) |
| 30-min | **1.67** (1.26-2.20) | **1.94** (1.47-2.56) | **2.38** (1.80-3.16) | **2.75** (2.07-3.66) | **3.26** (2.38-4.50) | **3.65** (2.61-5.14) | **4.04** (2.81-5.87) | **4.46** (2.98-6.67) | **5.02** (3.25-7.77) | **5.46** (3.46-8.62) |
| 60-min | **1.07** (0.809-1.41) | **1.24** (0.938-1.64) | **1.52** (1.15-2.01) | **1.75** (1.32-2.34) | **2.08** (1.51-2.87) | **2.32** (1.66-3.27) | **2.57** (1.79-3.73) | **2.83** (1.89-4.23) | **3.18** (2.06-4.92) | **3.45** (2.18-5.44) |
| 2-hr | **0.698** (0.530-0.916) | **0.810** (0.615-1.06) | **0.992** (0.752-1.31) | **1.14** (0.863-1.52) | **1.35** (0.996-1.87) | **1.51** (1.09-2.14) | **1.68** (1.19-2.46) | **1.88** (1.26-2.80) | **2.17** (1.41-3.35) | **2.42** (1.54-3.81) |
| 3-hr | **0.535** (0.408-0.701) | **0.624** (0.476-0.819) | **0.770** (0.585-1.01) | **0.891** (0.673-1.18) | **1.06** (0.781-1.46) | **1.18** (0.858-1.67) | **1.31** (0.937-1.94) | **1.48** (0.993-2.20) | **1.74** (1.13-2.67) | **1.96** (1.25-3.08) |
| 6-hr | **0.335** (0.256-0.436) | **0.397** (0.303-0.518) | **0.498** (0.380-0.652) | **0.582** (0.442-0.766) | **0.698** (0.518-0.964) | **0.782** (0.572-1.11) | **0.876** (0.630-1.30) | **0.995** (0.670-1.48) | **1.18** (0.770-1.81) | **1.35** (0.860-2.11) |
| 12-hr | **0.201** (0.155-0.261) | **0.244** (0.187-0.317) | **0.314** (0.240-0.409) | **0.372** (0.283-0.487) | **0.452** (0.336-0.621) | **0.510** (0.374-0.719) | **0.575** (0.414-0.844) | **0.655** (0.442-0.967) | **0.780** (0.509-1.19) | **0.888** (0.568-1.38) |
| 24-hr | **0.118** (0.091-0.153) | **0.146** (0.113-0.189) | **0.191** (0.147-0.248) | **0.229** (0.175-0.298) | **0.280** (0.209-0.384) | **0.318** (0.234-0.446) | **0.360** (0.260-0.526) | **0.411** (0.278-0.604) | **0.490** (0.321-0.744) | **0.558** (0.358-0.864) |
| 2-day | **0.068** (0.053-0.087) | **0.084** (0.065-0.108) | **0.111** (0.086-0.143) | **0.133** (0.102-0.173) | **0.163** (0.123-0.223) | **0.186** (0.137-0.260) | **0.210** (0.153-0.307) | **0.241** (0.164-0.353) | **0.288** (0.189-0.436) | **0.330** (0.212-0.508) |
| 3-day | **0.049** (0.038-0.063) | **0.061** (0.047-0.078) | **0.080** (0.062-0.104) | **0.096** (0.074-0.125) | **0.118** (0.089-0.161) | **0.134** (0.100-0.188) | **0.152** (0.111-0.222) | **0.174** (0.119-0.255) | **0.209** (0.137-0.316) | **0.239** (0.154-0.368) |
| 4-day | **0.040** (0.031-0.051) | **0.049** (0.038-0.063) | **0.064** (0.050-0.083) | **0.077** (0.059-0.099) | **0.094** (0.071-0.128) | **0.107** (0.080-0.149) | **0.121** (0.088-0.176) | **0.139** (0.095-0.202) | **0.166** (0.109-0.250) | **0.190** (0.123-0.291) |
| 7-day | **0.027** (0.021-0.034) | **0.033** (0.025-0.042) | **0.042** (0.033-0.054) | **0.050** (0.039-0.065) | **0.061** (0.046-0.083) | **0.070** (0.052-0.096) | **0.078** (0.057-0.113) | **0.089** (0.061-0.130) | **0.106** (0.070-0.159) | **0.120** (0.078-0.184) |
| 10-day | **0.022** (0.017-0.027) | **0.026** (0.020-0.033) | **0.033** (0.026-0.042) | **0.039** (0.030-0.050) | **0.047** (0.036-0.064) | **0.053** (0.040-0.073) | **0.060** (0.044-0.086) | **0.068** (0.046-0.098) | **0.079** (0.053-0.119) | **0.089** (0.058-0.136) |
| 20-day | **0.015** (0.012-0.019) | **0.018** (0.014-0.023) | **0.022** (0.017-0.028) | **0.025** (0.019-0.032) | **0.029** (0.022-0.039) | **0.033** (0.024-0.045) | **0.036** (0.026-0.051) | **0.040** (0.028-0.058) | **0.046** (0.030-0.068) | **0.050** (0.032-0.076) |
| 30-day | **0.013** (0.010-0.016) | **0.014** (0.011-0.018) | **0.017** (0.014-0.022) | **0.020** (0.015-0.025) | **0.023** (0.017-0.030) | **0.025** (0.019-0.034) | **0.027** (0.020-0.038) | **0.030** (0.021-0.043) | **0.033** (0.022-0.049) | **0.036** (0.023-0.054) |
| 45-day | **0.011** (0.008-0.013) | **0.012** (0.009-0.015) | **0.014** (0.011-0.017) | **0.015** (0.012-0.020) | **0.018** (0.013-0.023) | **0.019** (0.014-0.026) | **0.021** (0.015-0.029) | **0.023** (0.016-0.033) | **0.025** (0.017-0.037) | **0.026** (0.017-0.040) |
| 60-day | **0.009** (0.007-0.012) | **0.010** (0.008-0.013) | **0.012** (0.009-0.015) | **0.013** (0.010-0.017) | **0.015** (0.011-0.019) | **0.016** (0.012-0.022) | **0.018** (0.013-0.024) | **0.019** (0.013-0.027) | **0.020** (0.014-0.030) | **0.022** (0.014-0.033) |

[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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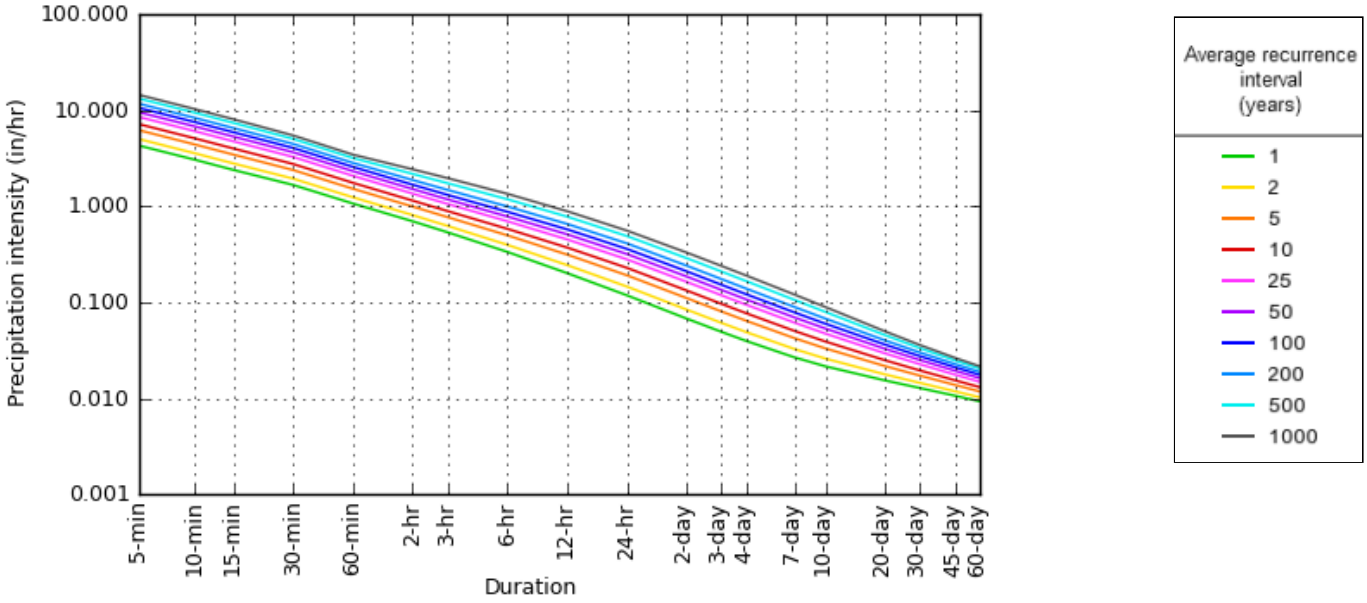
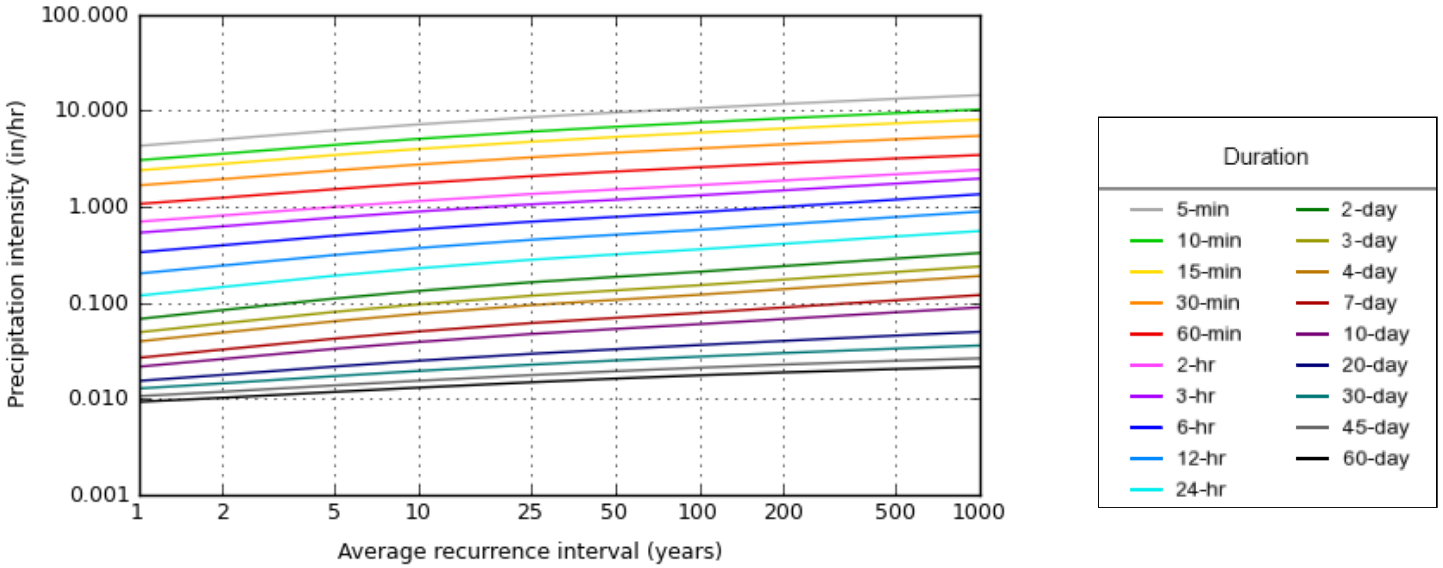
## PF graphical

PDS-based intensity-duration-frequency (IDF) curves
Latitude: 41.4840°, Longitude: -73.4625°

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Created (GMT): Tue Nov 10 21:22:41 2020

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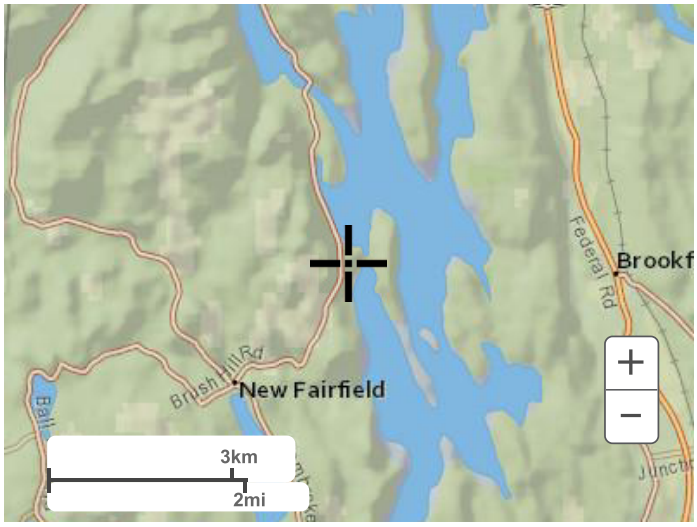
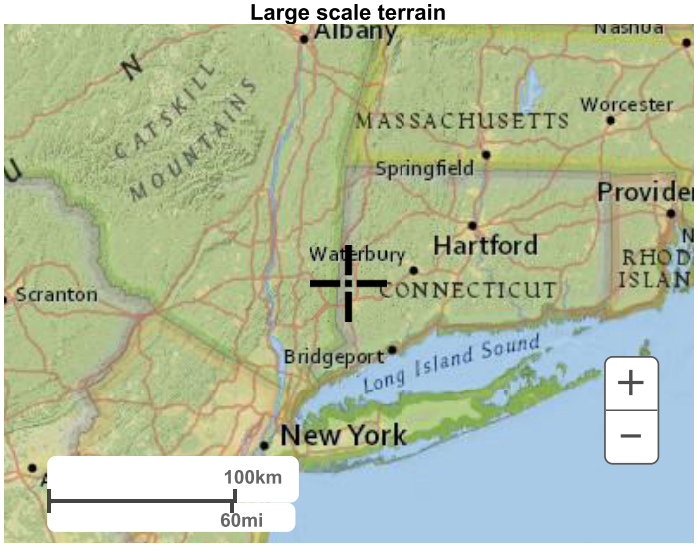
## Maps & aerials

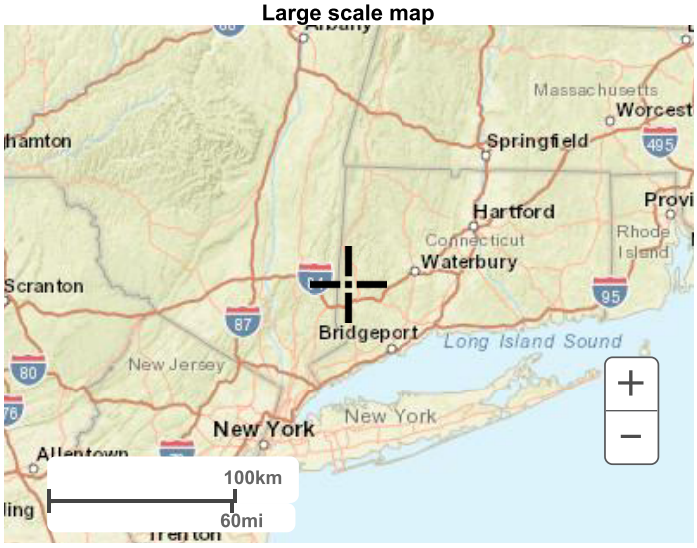
**Small scale terrain**




**Large scale terrain**




**Large scale map**




**Large scale aerial**

# APPENDIX D

## Stormwater Quality Calculations

# Total Required Water Quality Volume Calculation Worksheet

| Design Point(s): | DP1, DP2, and DP3 | | | | | | |
|---|---|---|---|---|---|---|---|
| P= | 1.00 | *inch* | | | | | |
| **Breakdown of Subcatchments** | | | | | | | |
| **Subcatchment Number** | **Subcatchment Model Number** | **Total Area** *(Acres)* | **Impervious Area** *(Acres)* | **Percent Impervious** *%* | **Rv** | **WQv** *($ft^3$)* | **Description** |
| 1 | 1P | 2.70 | 1.58 | 59% | 0.58 | 5,652 | Underground Infiltration System |
| 2 | 2P | 2.40 | 1.50 | 63% | 0.61 | 5,336 | Underground Infiltration System |
| 3 | 3P | 0.30 | 0.15 | 50% | 0.50 | 545 | Bioretention |
| 4 | 4P | 2.60 | 1.60 | 62% | 0.60 | 5,699 | Infiltration Trench |
| 5 | 5P | 1.30 | 0.90 | 69% | 0.67 | 3,176 | Infiltration Trench |
| Subtotal | | 9.30 | 5.73 | 62% | 0.60 | 20,408 | Subtotal 1 |
| **Total** | | **9.30** | **5.73** | **62%** | **0.60** | **20,408** | **WQv** |

LANGAN

# Underground Infiltration System Worksheet

| Design Point(s): | PR DP 1 |
|---|---|

| Enter Site Data For Drainage Area to be Treated by Practice | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Subcatchment Number** | **Subcatchment Model Number** | **Total Area** *(Acres)* | **Impervious Area** *(Acres)* | **Percent Impervious** *%* | **Rv** | **WQv** *($ft^3$)* | **Precipitation** *(in)* | **Description** |
| 1 | 1P | 2.70 | 1.58 | 0.59 | 0.58 | 5,652 | 1.00 | Underground Infiltration System |

| Size An Infiltration Basin | | | | |
|---|---|---|---|---|
| Design Volume | | 5,652 | $ft^3$ | WQv |
| Volume Provided | | 7,405 | $ft^3$ | *Storage Volume provided in underground infiltration system (not including pretreatment)* |
| Sizing √ | | OK | | *The underground infiltration system must provide storage equal to or greater than the WQv of the contributing area.* |

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# Underground Infiltration System Worksheet

| Design Point(s): | PR DP 2 |
|---|---|

| Enter Site Data For Drainage Area to be Treated by Practice | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Subcatchment Number** | **Subcatchment Model Number** | **Total Area** *(Acres)* | **Impervious Area** *(Acres)* | **Percent Impervious** *%* | **Rv** | **WQv** *($ft^3$)* | **Precipitation** *(in)* | **Description** |
| 2 | 2P | 2.40 | 1.50 | 0.63 | 0.61 | 5,336 | 1.00 | Underground Infiltration System |

| Size An Infiltration Basin | | | | |
|---|---|---|---|---|
| Design Volume | | 5,336 | $ft^3$ | WQv |
| Volume Provided | | 6,795 | $ft^3$ | *Storage Volume provided in underground infiltration system (not including pretreatment)* |
| Sizing √ | | OK | | *The underground infiltration system must provide storage equal to or greater than the WQv of the contributing area.* |

# Underground Infiltration System Worksheet

| Design Point(s): | PR DP 2 |
|---|---|

| Enter Site Data For Drainage Area to be Treated by Practice | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Subcatchment Number** | **Subcatchment Model Number** | **Total Area** *(Acres)* | **Impervious Area** *(Acres)* | **Percent Impervious** *%* | **Rv** | **WQv** *($ft^3$)* | **Precipitation** *(in)* | **Description** |
| 5 | 5P | 1.30 | 0.90 | 0.69 | 0.67 | 3,176 | 1.00 | Infiltration Trench |

| Size An Infiltration Basin | | | | |
|---|---|---|---|---|
| Design Volume | | 3,176 | $ft^3$ | WQv |
| Volume Provided | | 5140.00 | $ft^3$ | *Storage Volume provided in underground infiltration system (not including pretreatment)* |
| Sizing √ | | OK | | *The underground infiltration system must provide storage equal to or greater than the WQv of the contributing area.* |

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# Bioretention Worksheet

***(For use on HSG C or D Soils with underdrains)***

**Af=WQv*(df)/[k*(hf+df)(tf)]**

where:

| | |
|---|---|
| *Af* | Required Surface Area ($ft^2$) |
| *WQv* | Water Quality Volume ($ft^3$) |
| *df* | Depth of the Soil Medium (ft) |
| *hf* | Average height of water above the planter bed (ft) |
| *tf* | The Design Time to Filter the Treatment Volume Through the Filter Media (days) |
| *k* | Hydraulic conductivity (ft/day) |

| **Design Point(s):** | **DP1, DP2, and DP3** |
|---|---|

| **Enter Site Data For Drainage Area to be Treated by Practice** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Subcatchment Number** | **Subcatchment Model Number** | **Total Area** *(Acres)* | **Impervious Area** *(Acres)* | **Percent Impervious** *%* | **Rv** | **WQv** *($ft^3$)* | **Precipitation** *(in)* | **Description** |
| 3 | 3P | 0.30 | 0.15 | 0.50 | 0.50 | 545 | 1.00 | Bioretention |
| Enter Impervious Area Reduced by Disconnection of Rooftops | | | | 50% | 0.50 | 545 | <<WQv after adjusting for Disconnected Rooftops | |
| Enter the portion of the WQv that is not reduced for all practices routed to this practice. | | | | | | | *$ft^3$* | |

| **Soil Information** | | |
|---|---|---|
| Soil Group | C | |
| Using Underdrains? | *yes* | *Okay* |

| **Pretreatment** | | | |
|---|---|---|---|
| WQv | 545 | *$ft^3$* | |
| Pretreatment Sizing | 25% | *of WQv* | |
| Required Pretreatment Volume | 136 | *$ft^3$* | |
| Pretreatment Provided | 550 | *$ft^3$* | |
| Pretreatment techniques utilized | *Other* | | |

| **Calculate the Minimum Filter Area** | | | | |
|---|---|---|---|---|
| WQv | | 545 | *$ft^3$* | |
| Media Type | -- | Bioretention Soil | | |
| Depth of Soil Media | *df* | 2.5 | *ft* | *2.5 ft to 4 ft* |
| Hydraulic Conductivity | *k* | 0.5 | *ft/day* | |
| Average Height of Ponding | *hf* | 0.25 | *ft* | *typically 0.25 ft* |
| Filter Time | *tf* | 2.00 | *days* | |
| **Required Filter Area** | ***Af*** | **495** | ***$ft^2$*** | |

| **Determine Actual Bioretention Area** | | | |
|---|---|---|---|
| Filter Width | 8 | *ft* | |
| Filter Length | 100 | *ft* | |
| Filter Area | 800 | *$ft^2$* | *OK* |
| Actual Volume Provided | 880 | *$ft^3$* | |

| **Determine Underdrain** | | | |
|---|---|---|---|
| Underdrain Gravel Bed With | 3 | *ft* | |
| Required length of underdrain | 27 | *ft* | |
| Provided length of underdain | 50 | *ft* | *OK* |

| **Determine Runoff Reduction** |
|---|

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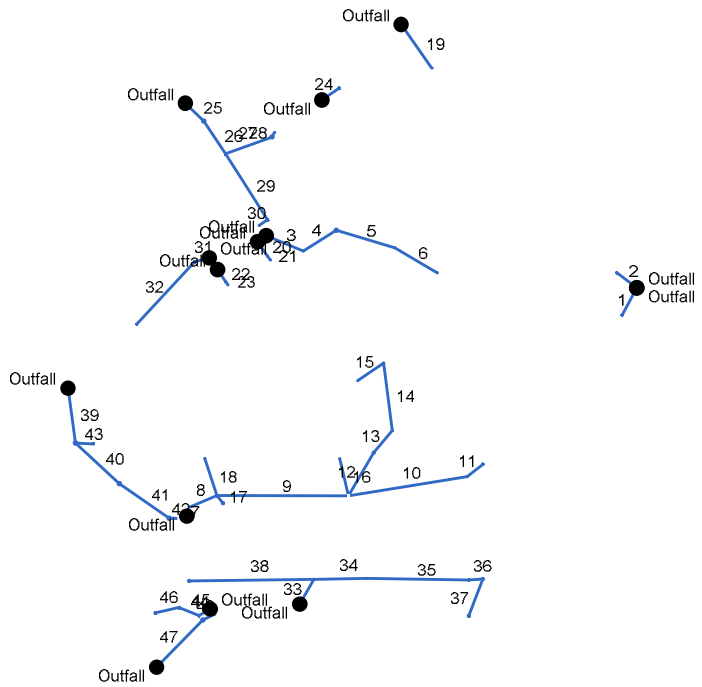
# APPENDIX E

## Stormwater Conveyance System Calculations

# Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan




| Project File: New Fairfield-revised.stm | Number of lines: 48 | Date: 11/11/2020 |
|---|---|---|

# Storm Sewer Tabulation



| Station | | Len | Drng Area | | Rnoff coeff | Area x C | | Tc | | Rain (I) | Total flow | Cap full | Vel | Pipe | | Invert Elev | | HGL Elev | | Grnd / Rim Elev | | Line ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Line | To Line | (ft) | Incr (ac) | Total (ac) | (C) | Incr | Total | Inlet (min) | Syst (min) | (in/hr) | (cfs) | (cfs) | (ft/s) | Size (in) | Slope (%) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | |
| 1 | End | 49.913 | 0.18 | 0.18 | 0.90 | 0.16 | 0.16 | 6.0 | 6.0 | 7.9 | 1.28 | 6.46 | 3.46 | 12 | 2.80 | 933.60 | 935.00 | 934.08 | 935.48 | 943.76 | 944.91 | MH302 - CCB300 |
| 2 | End | 39.980 | 0.34 | 0.34 | 0.90 | 0.31 | 0.31 | 6.0 | 6.0 | 7.9 | 2.41 | 7.22 | 4.35 | 12 | 3.50 | 933.60 | 935.00 | 934.26 | 935.66 | 943.76 | 943.86 | MH302 - CCB301 |
| 3 | End | 63.642 | 0.09 | 1.08 | 0.40 | 0.04 | 0.54 | 17.0 | 17.9 | 4.5 | 2.41 | 6.84 | 4.35 | 12 | 3.14 | 924.90 | 926.90 | 925.56 | 927.56 | 927.75 | 931.58 | OUTFALL - YD20 |
| 4 | 3 | 61.820 | 0.00 | 0.99 | 0.00 | 0.00 | 0.50 | 17.0 | 17.5 | 4.5 | 2.28 | 10.91 | 4.15 | 12 | 7.99 | 926.89 | 931.83 | 927.56 | 932.48 | 931.58 | 943.24 | YD205 - MH206 |
| 5 | 4 | 97.000 | 0.63 | 0.99 | 0.40 | 0.25 | 0.50 | 17.0 | 17.0 | 4.6 | 2.32 | 7.72 | 6.43 | 12 | 4.00 | 935.40 | 939.28 | 935.78 | 939.93 | 943.24 | 943.96 | MH206 - YD207 |
| 6 | 5 | 77.503 | 0.36 | 0.36 | 0.70 | 0.25 | 0.25 | 7.0 | 7.0 | 7.3 | 1.85 | 3.87 | 3.67 | 12 | 1.01 | 939.28 | 940.06 | 939.93 | 940.64 | 943.96 | 944.16 | YD207 - YD208 |
| 7 | End | 12.228 | 0.04 | 2.78 | 0.90 | 0.04 | 1.90 | 12.0 | 12.2 | 5.6 | 10.57 | 14.55 | 6.73 | 18 | 1.64 | 922.40 | 922.60 | 923.65 | 923.85 | 927.10 | 931.12 | OUTFALL - WQS- |
| 8 | 7 | 51.814 | 0.37 | 2.74 | 0.70 | 0.26 | 1.87 | 5.0 | 12.0 | 5.6 | 10.44 | 12.24 | 6.66 | 18 | 1.16 | 922.60 | 923.20 | 923.85 | 924.44 | 931.12 | 930.74 | WQS112A - CCB |
| 9 | 8 | 208.786 | 0.33 | 1.58 | 0.50 | 0.17 | 0.97 | 5.0 | 11.3 | 5.8 | 5.62 | 8.93 | 5.07 | 15 | 1.63 | 923.20 | 926.60 | 924.44 | 927.56 | 930.74 | 931.79 | CCB112 - CCB10 |
| 10 | 9 | 190.363 | 0.16 | 0.28 | 0.80 | 0.13 | 0.24 | 5.0 | 5.5 | 8.2 | 1.94 | 8.10 | 6.23 | 12 | 4.41 | 928.30 | 936.70 | 928.63 | 937.29 | 931.79 | 940.26 | CCB-112 - CCB11 |
| 11 | 10 | 32.176 | 0.12 | 0.12 | 0.90 | 0.11 | 0.11 | 5.0 | 5.0 | 8.5 | 0.92 | 8.87 | 2.51 | 12 | 5.28 | 936.70 | 938.40 | 937.29 | 938.80 | 940.26 | 941.76 | CCB110 - CCB11 |
| 12 | 9 | 79.129 | 0.07 | 0.58 | 0.40 | 0.03 | 0.22 | 10.0 | 10.5 | 6.0 | 1.32 | 3.88 | 2.09 | 12 | 1.01 | 926.20 | 927.00 | 927.56 | 927.64 | 931.79 | 931.50 | CCB105 - CLCB1 |
| 13 | 12 | 46.195 | 0.15 | 0.51 | 0.40 | 0.06 | 0.19 | 10.0 | 10.0 | 6.2 | 1.18 | 4.01 | 2.72 | 12 | 1.08 | 927.00 | 927.50 | 927.69 | 927.96 | 931.50 | 931.51 | CLCB106 - CLCB |
| 14 | 13 | 108.035 | 0.32 | 0.36 | 0.30 | 0.10 | 0.13 | 7.0 | 8.3 | 6.8 | 0.89 | 4.07 | 2.82 | 12 | 1.11 | 927.50 | 928.70 | 927.96 | 929.10 | 931.51 | 933.08 | CLCB107 - CLCB |
| 15 | 14 | 49.593 | 0.04 | 0.04 | 0.90 | 0.04 | 0.04 | 6.0 | 6.0 | 7.9 | 0.28 | 3.87 | 1.60 | 12 | 1.01 | 928.70 | 929.20 | 929.10 | 929.42 | 933.08 | 932.98 | CLCB108 - YD10 |
| 16 | 9 | 60.556 | 0.39 | 0.39 | 0.90 | 0.35 | 0.35 | 6.0 | 6.0 | 7.9 | 2.76 | 2.55 | 5.07 | 10 | 1.16 | 928.30 | 929.00 | 929.13 | 929.95 | 931.79 | 933.00 | CCB105 - RL |
| 17 | 8 | 15.798 | 0.37 | 0.37 | 0.70 | 0.26 | 0.26 | 5.0 | 5.0 | 8.5 | 2.20 | 5.32 | 5.32 | 12 | 1.90 | 927.70 | 928.00 | 928.15 | 928.63 | 930.74 | 931.00 | CCB112 - CCB11 |
| 18 | 8 | 62.139 | 0.42 | 0.42 | 0.90 | 0.38 | 0.38 | 5.0 | 5.0 | 8.5 | 3.22 | 3.43 | 6.64 | 10 | 2.09 | 927.70 | 929.00 | 928.34 | 929.77 | 930.74 | 933.00 | CCB112 - RL |
| 19 | End | 84.414 | 0.10 | 0.10 | 0.90 | 0.09 | 0.09 | 5.0 | 5.0 | 8.5 | 0.77 | 1.67 | 3.00 | 10 | 0.50 | 929.16 | 929.58 | 929.55 | 929.99 | 931.03 | 933.00 | OUTFALL - RL |
| 20 | End | 27.840 | 0.23 | 0.71 | 0.40 | 0.09 | 0.52 | 12.0 | 12.0 | 5.6 | 2.93 | 10.60 | 4.75 | 12 | 7.54 | 924.90 | 927.00 | 925.63 | 927.73 | 927.66 | 933.01 | OUTFALL - YD20 |
| 21 | 20 | 7.709 | 0.48 | 0.48 | 0.90 | 0.43 | 0.43 | 5.0 | 5.0 | 8.5 | 3.68 | 6.04 | 7.05 | 10 | 6.49 | 927.00 | 927.50 | 927.73 | 928.29 | 933.01 | 933.00 | YD204 - RL |
| 22 | End | 23.701 | 0.06 | 0.61 | 0.30 | 0.02 | 0.51 | 7.0 | 7.0 | 7.3 | 3.77 | 9.71 | 5.43 | 12 | 6.33 | 924.90 | 926.40 | 925.73 | 927.23 | 933.00 | 933.01 | OUTFALL -YD205 |

Project File: New Fairfield-revised.stm | Number of lines: 48 | Run Date: 11/11/2020

NOTES:Intensity = 38.74 / (Inlet time + 3.60) ^ 0.70; Return period =Yrs. 25 ; c = cir e = ellip b = box

# Storm Sewer Tabulation



| Station | | Len | Drng Area | | Rnoff coeff | Area x C | | Tc | | Rain (I) | Total flow | Cap full | Vel | Pipe | | Invert Elev | | HGL Elev | | Grnd / Rim Elev | | Line ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Line | To Line | (ft) | Incr (ac) | Total (ac) | (C) | Incr | Total | Inlet (min) | Syst (min) | (in/hr) | (cfs) | (cfs) | (ft/s) | Size (in) | Slope (%) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | |
| 23 | 22 | 5.353 | 0.55 | 0.55 | 0.90 | 0.50 | 0.50 | 5.0 | 5.0 | 8.5 | 4.21 | 5.27 | 5.96 | 12 | 1.87 | 926.40 | 926.50 | 927.23 | 927.36 | 933.01 | 933.00 | YD205A - RL |
| 24 | End | 33.208 | 1.30 | 1.30 | 0.70 | 0.91 | 0.91 | 7.7 | 7.7 | 7.0 | 6.39 | 4.23 | 8.18 | 12 | 1.20 | 926.30 | 926.70 | 927.26 | 928.14 | 926.91 | 930.71 | OUTFALL - WQU |
| 25 | End | 40.834 | 0.00 | 0.70 | 0.00 | 0.00 | 0.21 | 12.0 | 12.6 | 5.4 | 14.29 | 11.26 | 8.23 | 18 | 0.98 | 923.00 | 923.40 | 924.39 | 925.06 | 922.95 | 932.80 | OUTFALL - MH20 |
| 26 | 25 | 62.103 | 0.70 | 0.70 | 0.30 | 0.21 | 0.21 | 12.0 | 12.5 | 5.5 | 14.30 | 7.91 | 8.09 | 18 | 0.48 | 923.40 | 923.70 | 925.33 | 926.31 | 932.80 | 932.50 | MH201 - CLCB20 |
| 27 | 26 | 78.433 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 7.0 | 12.0 | 0.0 | 4.45 | 6.89 | 5.67 | 12 | 3.19 | 923.70 | 926.20 | 928.52 | 929.56 | 932.50 | 935.12 | CLCB202 - OCS2 |
| 28 | 27 | 8.373 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 12.0 | 12.0 | 0.0 | 4.45 | 4.22 | 5.67 | 12 | 1.19 | 926.20 | 926.30 | 929.92 | 930.03 | 935.12 | 934.00 | OCS200 - UG SY |
| 29 | 26 | 124.633 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 12.0 | 12.1 | 0.0 | 8.70 | 8.53 | 4.92 | 18 | 0.56 | 923.70 | 924.40 | 928.52 | 929.25 | 932.50 | 934.94 | CLCB202 - OCS2 |
| 30 | 29 | 16.102 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 12.0 | 12.0 | 0.0 | 8.70 | 8.96 | 4.92 | 18 | 0.62 | 924.40 | 924.50 | 929.62 | 929.72 | 934.94 | 934.00 | OCS203 - UG SY |
| 31 | End | 24.458 | 0.12 | 0.59 | 0.90 | 0.11 | 0.44 | 12.0 | 13.0 | 5.4 | 2.34 | 6.04 | 4.30 | 12 | 2.45 | 924.90 | 925.50 | 925.55 | 926.15 | 926.06 | 933.83 | OUTFALL - CCB2 |
| 32 | 31 | 135.107 | 0.47 | 0.47 | 0.70 | 0.33 | 0.33 | 12.0 | 12.0 | 5.6 | 1.84 | 3.93 | 3.65 | 12 | 1.04 | 925.50 | 926.90 | 926.15 | 927.48 | 933.83 | 930.12 | CCB212 - CCB21 |
| 33 | End | 45.243 | 0.02 | 1.58 | 0.90 | 0.02 | 1.09 | 15.1 | 16.8 | 4.6 | 5.07 | 16.44 | 5.28 | 15 | 5.53 | 919.50 | 922.00 | 920.41 | 922.91 | 923.06 | 930.00 | OUTFALL - WQS |
| 34 | 33 | 84.783 | 0.05 | 1.16 | 0.80 | 0.04 | 0.72 | 15.1 | 16.3 | 4.7 | 3.38 | 8.32 | 3.99 | 15 | 1.42 | 922.00 | 923.20 | 922.91 | 923.94 | 930.00 | 931.39 | CCB104 - WQS13 |
| 35 | 34 | 160.271 | 0.27 | 1.11 | 0.60 | 0.16 | 0.68 | 15.1 | 15.3 | 4.9 | 3.31 | 6.99 | 4.40 | 15 | 1.00 | 923.20 | 924.80 | 923.94 | 925.53 | 931.39 | 930.80 | CCB104 - CCB-11 |
| 36 | 35 | 22.616 | 0.37 | 0.84 | 0.50 | 0.19 | 0.51 | 15.1 | 15.1 | 4.9 | 2.53 | 8.06 | 3.71 | 15 | 1.33 | 924.80 | 925.10 | 925.53 | 925.74 | 930.80 | 931.20 | CCB114 - CCB11 |
| 37 | 36 | 62.850 | 0.47 | 0.47 | 0.70 | 0.33 | 0.33 | 12.0 | 12.0 | 5.6 | 1.84 | 7.38 | 3.28 | 15 | 1.11 | 925.10 | 925.80 | 925.74 | 926.34 | 931.20 | 928.89 | CCB115 - CCB-11 |
| 38 | 33 | 198.230 | 0.40 | 0.40 | 0.90 | 0.36 | 0.36 | 5.0 | 5.0 | 8.5 | 3.06 | 5.27 | 4.46 | 12 | 1.87 | 922.00 | 925.70 | 922.91 | 926.45 | 930.00 | 929.00 | WQS103 - CCB11 |
| 39 | End | 87.870 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 12.0 | 47.1 | 0.0 | 9.53 | 8.80 | 7.97 | 15 | 1.58 | 918.41 | 919.80 | 919.58 | 920.97 | 919.97 | 924.90 | OUTFALL - MH10 |
| 40 | 39 | 95.200 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 12.0 | 12.2 | 0.0 | 9.52 | 8.17 | 7.76 | 15 | 1.37 | 919.80 | 921.10 | 921.95 | 923.71 | 924.90 | 931.88 | MH100 - MH101 |
| 41 | 40 | 96.162 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 12.0 | 12.0 | 0.0 | 9.52 | 7.48 | 7.76 | 15 | 1.14 | 921.10 | 922.20 | 923.87 | 925.65 | 931.88 | 931.70 | MH101 - OCS102 |
| 42 | 41 | 10.411 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 12.0 | 12.0 | 0.0 | 9.52 | 5.35 | 12.12 | 12 | 1.92 | 922.20 | 922.40 | 926.24 | 926.88 | 931.70 | 932.00 | OCS102 - UG SY |
| 43 | 39 | 28.639 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 9.6 | 9.6 | 0.0 | 0.01 | 8.83 | 0.48 | 12 | 5.24 | 921.50 | 923.00 | 921.95 | 923.04 | 924.90 | 928.00 | MH-100 - OCS99 |
| 44 | End | 21.048 | 0.50 | 1.06 | 0.80 | 0.40 | 0.74 | 7.0 | 7.4 | 7.1 | 5.26 | 7.98 | 6.92 | 12 | 4.28 | 919.50 | 920.40 | 920.43 | 921.33 | 923.05 | 925.70 | OUTFALL - WQS |

Project File: New Fairfield-revised.stm | Number of lines: 48 | Run Date: 11/11/2020

NOTES:Intensity = 38.74 / (Inlet time + 3.60) ^ 0.70; Return period =Yrs. 25 ; c = cir e = ellip b = box

# Storm Sewer Tabulation

| Station | | Len | Drng Area | | Rnoff coeff | Area x C | | Tc | | Rain (I) | Total flow | Cap full | Vel | Pipe | | Invert Elev | | HGL Elev | | Grnd / Rim Elev | | Line ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Line | To Line | (ft) | Incr (ac) | Total (ac) | (C) | Incr | Total | Inlet (min) | Syst (min) | (in/hr) | (cfs) | (cfs) | (ft/s) | Size (in) | Slope (%) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | |
| 45 | 44 | 34.286 | 0.06 | 0.56 | 0.60 | 0.04 | 0.34 | 7.0 | 7.2 | 7.2 | 2.43 | 5.51 | 3.78 | 12 | 2.04 | 920.40 | 921.10 | 921.33 | 921.77 | 925.70 | 925.30 | WQS118 - CCB11 |
| 46 | 45 | 38.928 | 0.50 | 0.50 | 0.60 | 0.30 | 0.30 | 7.0 | 7.0 | 7.3 | 2.20 | 5.53 | 4.08 | 12 | 2.06 | 921.10 | 921.90 | 921.77 | 922.53 | 925.30 | 924.60 | CCB119 - CCB12 |
| 47 | End | 104.959 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 15.1 | 15.1 | 0.0 | 11.77 | 12.14 | 9.67 | 15 | 3.01 | 916.04 | 919.20 | 917.25 | 920.41 | 920.02 | 926.50 | OUTFALL - OCS1 |
| 48 | 47 | 20.889 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 15.1 | 15.1 | 0.0 | 11.77 | 11.04 | 9.67 | 15 | 2.49 | 919.20 | 919.72 | 920.41 | 920.93 | 926.50 | 924.32 | OCS121 - UG SY |

Project File: New Fairfield-revised.stm | Number of lines: 48 | Run Date: 11/11/2020

NOTES:Intensity = 38.74 / (Inlet time + 3.60) ^ 0.70; Return period =Yrs. 25 ; c = cir e = ellip b = box