STORMWATER MANAGEMENT REPORT

1300 South Main Street
Plantsville, Connecticut

Prepared For
CALITO DEVELOPMENT GROUP, LLC.
HEC Project #0545C

September 19, 2023

By

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Barton N. Bovee, P.E. #13653
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SEAL or STAMP IS AFFIXED HERETO.

Table of Contents

I. INTRODUCTION

1.1 Objective

The intent of this report is to summarize the engineering drainage analysis and technical findings for 1300 South Main Street (State Route 10). The development team desires to present to the Town of Southington all of the pertinent site factors which have influenced the plan; thereby making a joint effort to solidify a design proposal that ensures a balance of quality, technical adequacy, and conservation. This document will demonstrate that the proposed Stormwater Management plan will comply with the Town of Southington drainage criteria, and that there will be no significant impact on downstream properties.

To achieve these objectives Harry E. Cole & Son (HEC) conducted an evaluation of regulatory criteria, existing site conditions, and the proposed development plan. Specific to this mission were the assessment of Stormwater Management opportunities, constraints, and the various competing site factors, which are important to the design and layout of the project. Elements that were most critical in developing a stormwater plan, included the following:

- **A.)** An inventory and inspection of the site soils and surficial geology, wetland/watercourses, surface drainage and runoff patterns, general forms of vegetation, wildlife, and habitat values, topography-shapes, slopes and orientation, physical constraints, surroundings.
- **B.)** Site background and history.
- **C.)** Zoning and land use regulations.
- **D.)** Infrastructure capacity and demands.
- **E.)** Off-site impacts, engineering and construction practices.
- **F.)** Previous Drainage Calculations.

II. EXISTING CONDITIONS

2.1 Site Location

The 4.09± acre subject site is located at 1300 South Main Street (State Route 10) in Southington Connecticut.

2.2 Site Description

The current 4.09± acre project is comprised of one existing parcel currently zoned Business (B). The existing parcel is almost entirely wooded; the only improved area is a small paved section which is the access to South Main Street for this parcel and the adjacent parcel to the south. Town Water and Sewage mains are located in South Main Street on the East side of the property. Drainage for the property is divided into two basins. Basin E1 is comprised of 3.57 acres and slopes at grades of 1-5% to the southwest towards the Quinnipiac River. Basin E2 drains southeasterly across the existing pavement and to catch basins along South Main Street at grades between 1-3%. Both basins will eventually flow into the Quinnipiac River prior to the bridge of South Main Street. Soils on the site have a predominate hydrologic rating of A and B/D. The A soils make up the entire developable area, while the B/D soils are the wetland soils to the

West side of the property along the river. The 'A' type soils are composed of Hartford sandy loam and Penwood loamy sand have high infiltration rates. While the 'B/D' soils composed of Fluvaquents-Udifluvents complex have moderate to slow infiltration rates.

III. POST-DEVELOPMENT CONDITIONS

3.1 Proposed Facilities

The proposed plan will clear a portion of the site to construct a 12,670± square foot auto body facility. The building will be serviced by public water and sewer from the mains in South Main Street. One detention basin (P1) is proposed to collect flows from the majority of the site and release regulated flows into the wetlands. The southeast corner of the site (P2) will collect runoff in a collection system and connect to the existing stormwater collection system located in South Main Street. This system flows southerly to outlet at the Quinnipiac River.

3.2 Detention

Detention for the site will be provided in the form of a dry detention basin. Slopes for this basin are 5:1 on the sides. This basin will receive runoff from the building's roof, the parking and vehicle circulation area and immediate surrounding areas. Flows from the detention basin are regulated and released into the wetlands through an emergency spillway on the north side of the basin. A summary of the site flows is located in Appendix B. The summary table depicts an overall decease in runoff.

3.3 Water Quality

Water Quality for the northern and western portion of the site has been provided in the detention basin. Calculations can be found in Appendix C.

IV. FINDINGS & CONCLUSION

Overall, a reduction in peak flows for the site will be achieved with the designed drainage system, and the conveyance systems will adequately convey runoff for all design storms. In summary, we believe the proposed stormwater management plan has satisfied the Town of Southington's drainage criteria and significant impacts to downstream properties should not occur.

V. TECHNICAL CRITERIA & METHODOLOGY

5.1 Technical Criteria

Design Element	Design Frequency
-Detention Basin Sizing	2, 5, 10, 25, & 100 Year
-Water Quality Basin	2004 CT Stormwater Manual

5.2 Methodology	Design Storm
-Detention Volume	24-Hour Type III from NOAA Atlas Precipitation Frequency Data Serve
-Peak infrastructure flow	Rational Method with NOAA Atlas Precipitation Frequency Data Serve IDF tables.

Time of Concentration: Interpreted from topography with the aid of computer software. Based on calculations from the State of Connecticut, Department of Transportation equations for Sheet-Flow (6.C.2), Shallow Concentrated Flow (6.C.4) and Open Channel Flow (6.C.6).

Areas: Estimates from computer software (Land Desktop) and results of surveying.

REFERENCES

1) Rules and Regulations Controlling Subdivision of Land, Town of Southington, Connecticut

2) Town of Southington Zoning Regulations

3) 2004 Connecticut Stormwater Quality Manual, Connecticut Department of Environmental Protection, 79 Elm Street, Hartford, Connecticut

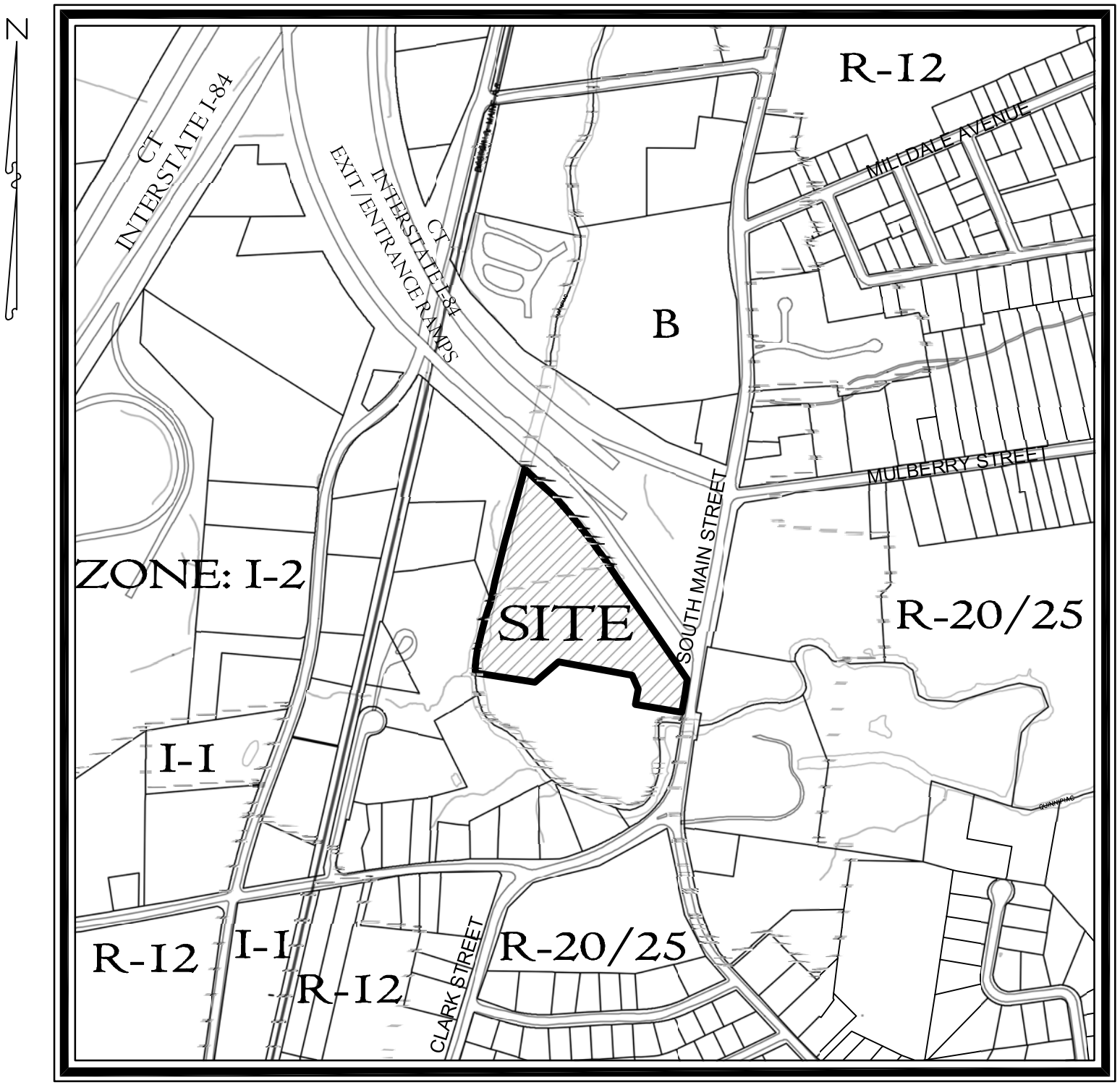
4) 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, Connecticut Council on Soil and Water Conservation, 79 Elm Street, Hartford, Connecticut.

5) 2000 Drainage Manual, Connecticut Department of Transportation,

APPENDICES TABLE OF CONTENTS

APPENDIX 'A'

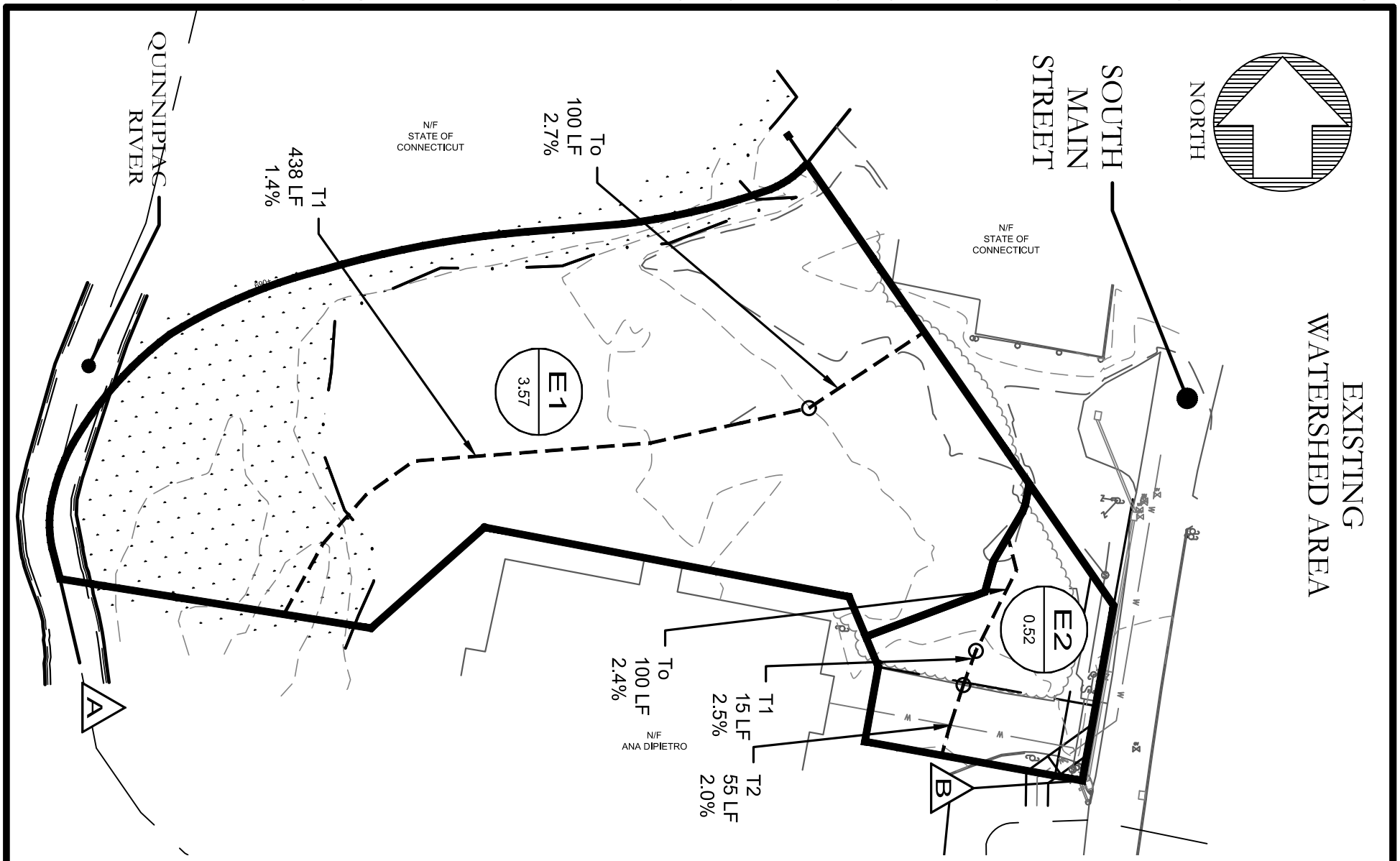
FIGURES



KEY MAP

SCALE: 1"=500'

DRAWING NAME: P:\Land Projects\0545C-Calito Development Group, LLC-1300 South Main Street, Plantsville CT\Stormwater Management\Figures\0545C - Drainage - Existing Watershed Areas.dwg LAYOUT: 02 PLOT DATE: Sep 19, 2023 - 11:29am OPERATOR: panico



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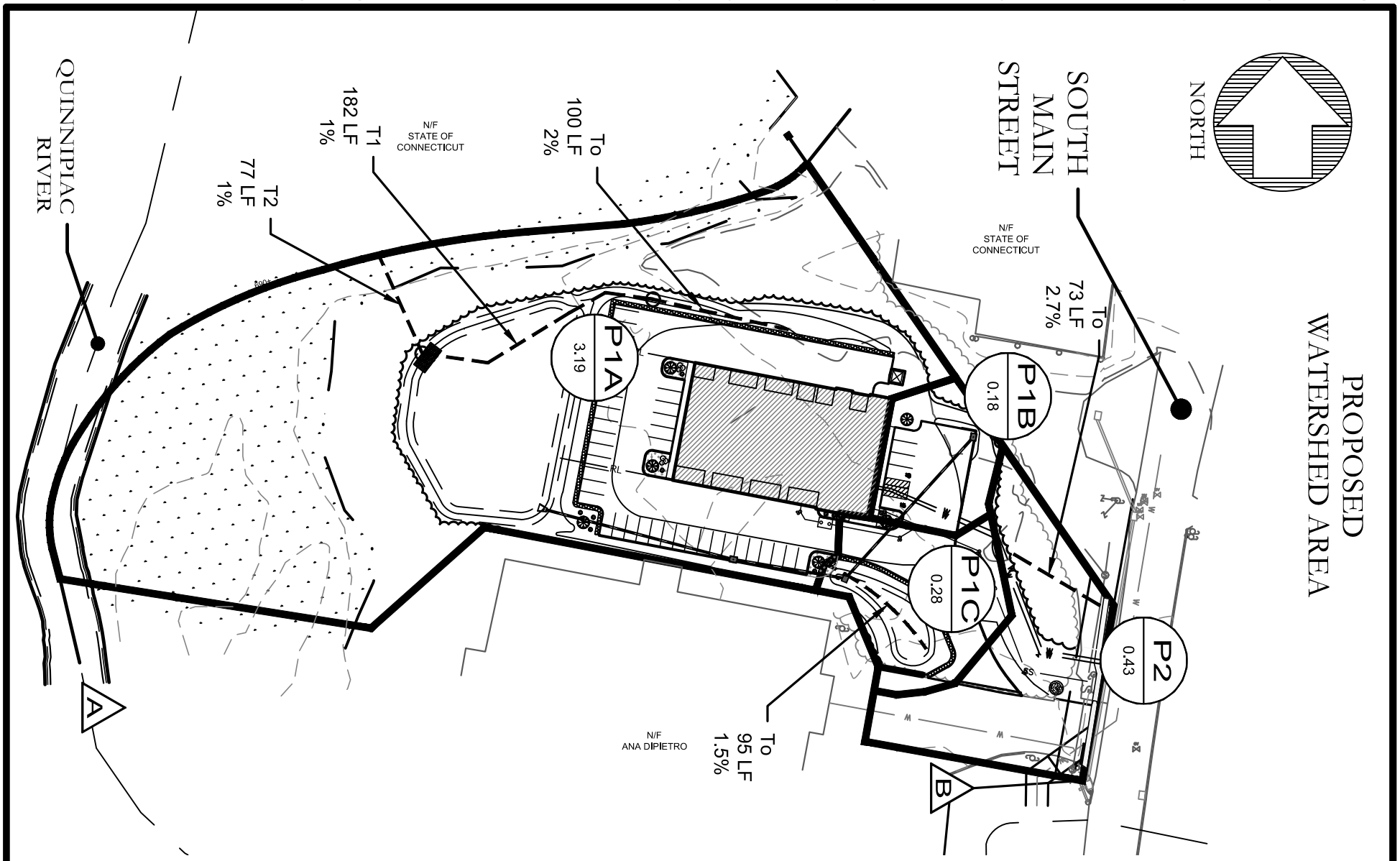
1300 South Main Street
PRE DEVELOPMENT WATERSHED AREA MAP
Plantsville, Connecticut

Scale: 1"=100'
Date: Sept. 19, 2023
Project #: 0545C

02

DRAWING NAME: P:\Land Projects\0545C-Calito Development Group, LLC-1300 South Main Street, Plantsville CT\Stormwater Management\Figures\0545C - Drainage - Proposed Watershed Areas.dwg LAYOUT: 03 PLOT DATE: Sep 21, 2023 - 2:20pm OPERATOR: panico



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1300 South Main Street
POST DEVELOPMENT
WATERSHED AREA MAP
Plantsville, Connecticut

Scale: 1"=100'

Date: Sept. 18, 2023

Project #: 0545C

03

Hydrologic Soil Group—State of Connecticut
(1300 SOuth Mian St)

Map Scale: 1:1,950 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 25 50 100 150

Feet
0 50 100 200 300

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 18, Dec 6, 2018

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

Date(s) aerial images were photographed: Aug 27, 2016—Oct 30, 2017

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
33A	Hartford sandy loam, 0 to 3 percent slopes	A	2.6	18.1%
33B	Hartford sandy loam, 3 to 8 percent slopes	A	0.1	0.4%
35A	Penwood loamy sand, 0 to 3 percent slopes	A	1.4	10.0%
109	Fluvaquents-Udifluvents complex, frequently flooded	B/D	4.1	28.8%
306	Udorthents-Urban land complex	B	6.1	42.6%
Totals for Area of Interest			**14.2**	**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.

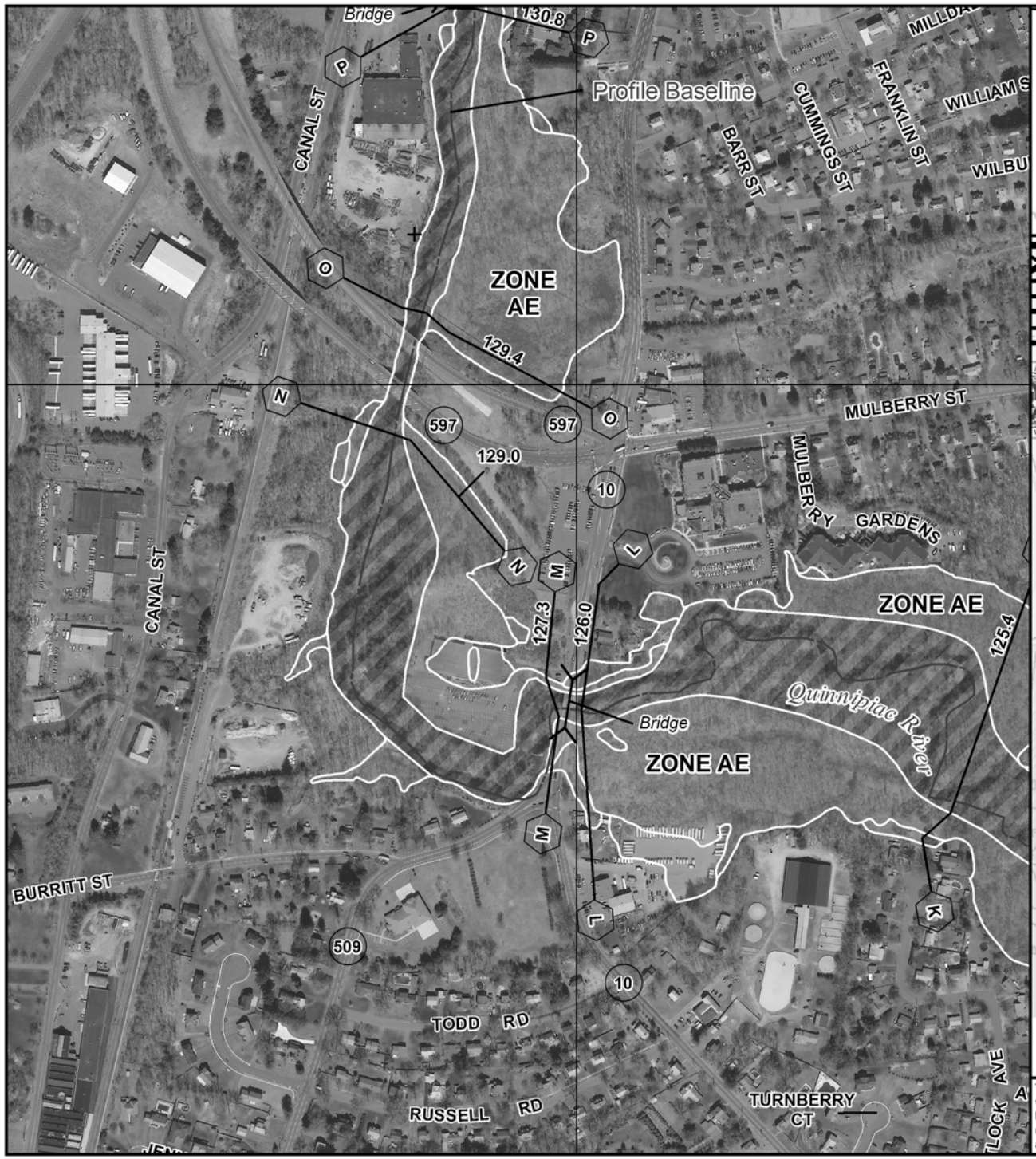
If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher



National Flood Insurance Program

NATIONAL FLOOD INSURAN
FLOOD INSURANCE RATE M

Hartford County, CT
(ALL JURISDICTIONS)
PANEL **0584** OF **0675**

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
SOUTHINGTON, TOWN OF	090037	0584	G

VERSION NUMBER
2.3.3.2

MAP NUMBER
09003C0584G

MAP REVISED
May 16, 2017

Natural Diversity Data Base Areas

SOUTHINGTON, CT

June 2023

State and Federal Listed Species

Critical Habitat

Town Boundary

NOTE: This map shows known locations of State and Federal Listed Species and Critical Habitats. Information on listed species is collected and compiled by the Natural Diversity Data Base (NDDB) from a variety of data sources . Exact locations of species have been buffered to produce the generalized locations.

This map is intended for use as a preliminary screening tool for conducting a Natural Diversity Data Base Review Request. To use the map, locate the project boundaries and any additional affected areas If the project is within a hatched area there may be a potential conflict with a listed species. For more information, use DEEP ezFile https://filings.deep.ct.gov/DEEPPortal/ to submit a Request for Natural Diversity Data Base State Listed Species Review or Site Assessment. More detailed instructions are provided along with the request form on our website. https://portal.ct.gov/deep-nddbrequest

Use the CTECO Interactive Map Viewers at http://cteco.uconn.edu to more precisely search for and locate a site and to view aerial imagery with NDDB Areas.

QUESTIONS: Department of Energy and Environmental Protection (DEEP)
79 Elm St, Hartford, CT 06106
email: deep.nddbrequest@ct.gov
Phone: (860) 424-3011

Connecticut
Department of Energy & Environmental Protection

APPENDIX 'B'

PRE AND POST DEVELOPMENT ANALYSIS

Pre and Post Development Summary Table

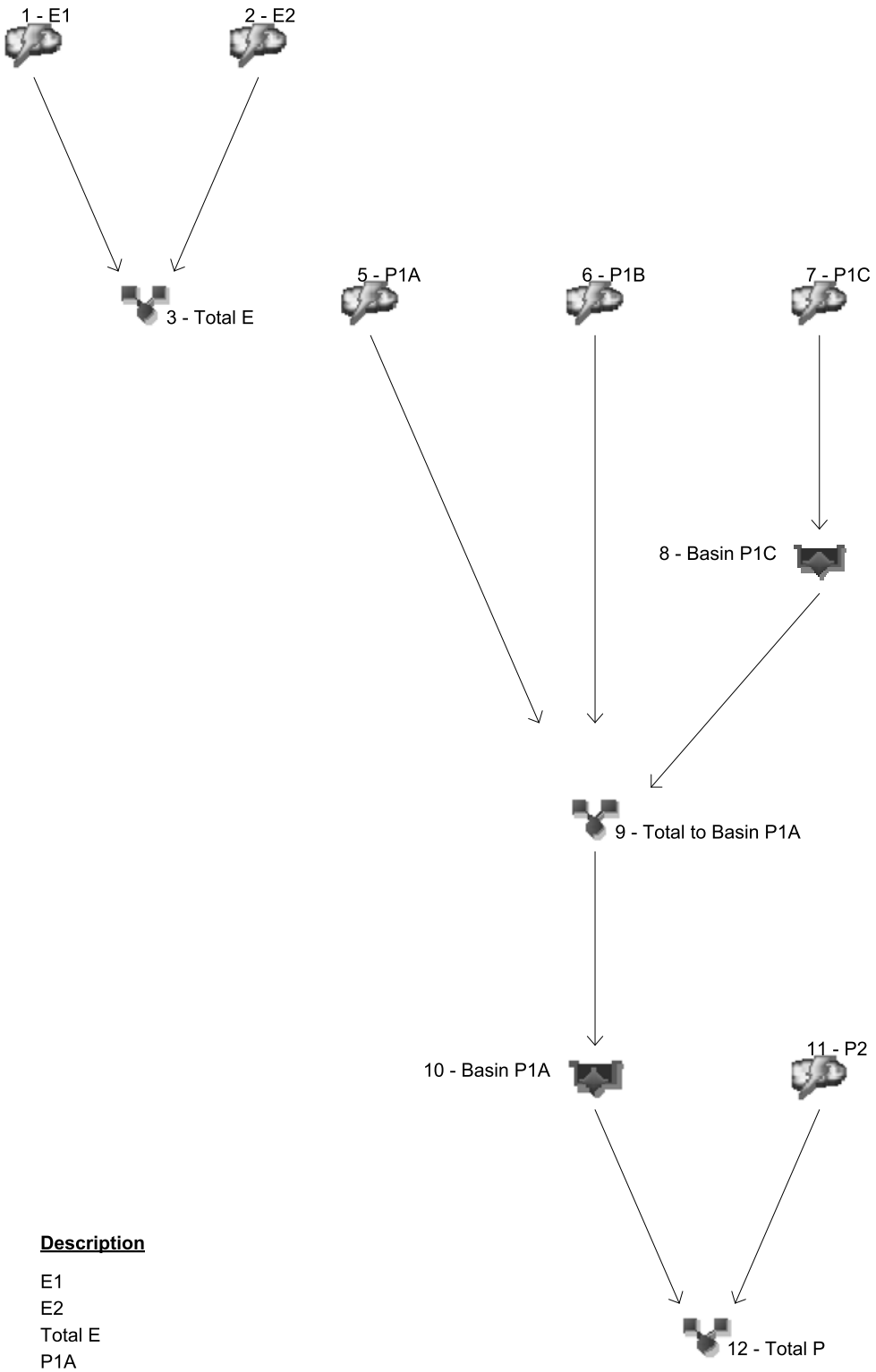
Design Point	Design Storm	Existing Peak Flow (cfs)	Proposed Peak Flow (cfs)	Change in Peak Flow (cfs)
Total	2	2.08	0.71	-1.38
	5	2.66	0.90	-1.75
	10	3.13	1.06	-2.07
	25	3.78	1.28	-2.50
	100	4.79	1.63	-3.16

See note Below

Notes:

1. Proposed Peak flows are a summation of the Detention Pond release for basin P1A (no release) and P2 flows

Watershed Model Schematic



Legend

Hyd.	Origin	Description
1	Rational	E1
2	Rational	E2
3	Combine	Total E
5	Rational	P1A
6	Rational	P1B
7	Rational	P1C
8	Reservoir	Basin P1C
9	Combine	Total to Basin P1A
10	Reservoir	Basin P1A
11	Rational	P2
12	Combine	Total P

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	Rational	------	-------	1.514	-------	1.934	2.279	2.751	-------	3.482	E1
2	Rational	------	-------	0.717	-------	0.916	1.080	1.303	-------	1.651	E2
3	Combine	1, 2	-------	2.079	-------	2.657	3.132	3.780	-------	4.785	Total E
5	Rational	------	-------	2.707	-------	3.459	4.077	4.919	-------	6.229	P1A
6	Rational	------	-------	0.545	-------	0.697	0.823	0.997	-------	1.262	P1B
7	Rational	------	-------	0.304	-------	0.388	0.458	0.552	-------	0.699	P1C
8	Reservoir	7	-------	0.100	-------	0.143	0.180	0.230	-------	0.314	Basin P1C
9	Combine	5, 6, 8	-------	2.757	-------	3.534	4.178	5.058	-------	6.428	Total to Basin P1A
10	Reservoir	9	-------	0.000	-------	0.000	0.000	0.000	-------	0.000	Basin P1A
11	Rational	------	-------	0.705	-------	0.903	1.064	1.284	-------	1.627	P2
12	Combine	10, 11	-------	0.705	-------	0.903	1.064	1.284	-------	1.627	Total P

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	1.514	1	23	2,089	------	------	------	E1
2	Rational	0.717	1	19	817	------	------	------	E2
3	Combine	2.079	1	23	2,906	1, 2	------	------	Total E
5	Rational	2.707	1	22	3,573	------	------	------	P1A
6	Rational	0.545	1	5	164	------	------	------	P1B
7	Rational	0.304	1	21	383	------	------	------	P1C
8	Reservoir	0.100	1	35	373	7	125.19	282	Basin P1C
9	Combine	2.757	1	22	4,109	5, 6, 8	------	------	Total to Basin P1A
10	Reservoir	0.000	1	n/a	0	9	123.31	4,109	Basin P1A
11	Rational	0.705	1	15	635	------	------	------	P2
12	Combine	0.705	1	15	635	10, 11	------	------	Total P

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	1.934	1	23	2,669	------	------	------	E1
2	Rational	0.916	1	19	1,045	------	------	------	E2
3	Combine	2.657	1	23	3,713	1, 2	------	------	Total E
5	Rational	3.459	1	22	4,565	------	------	------	P1A
6	Rational	0.697	1	5	209	------	------	------	P1B
7	Rational	0.388	1	21	489	------	------	------	P1C
8	Reservoir	0.143	1	34	480	7	125.23	344	Basin P1C
9	Combine	3.534	1	22	5,254	5, 6, 8	------	------	Total to Basin P1A
10	Reservoir	0.000	1	n/a	0	9	123.40	5,254	Basin P1A
11	Rational	0.903	1	15	812	------	------	------	P2
12	Combine	0.903	1	15	812	10, 11	------	------	Total P

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	2.279	1	23	3,145	------	------	------	E1
2	Rational	1.080	1	19	1,232	------	------	------	E2
3	Combine	3.132	1	23	4,377	1, 2	------	------	Total E
5	Rational	4.077	1	22	5,382	------	------	------	P1A
6	Rational	0.823	1	5	247	------	------	------	P1B
7	Rational	0.458	1	21	577	------	------	------	P1C
8	Reservoir	0.180	1	34	567	7	125.26	393	Basin P1C
9	Combine	4.178	1	22	6,195	5, 6, 8	------	------	Total to Basin P1A
10	Reservoir	0.000	1	n/a	0	9	123.47	6,195	Basin P1A
11	Rational	1.064	1	15	958	------	------	------	P2
12	Combine	1.064	1	15	958	10, 11	------	------	Total P

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	2.751	1	23	3,796	------	------	------	E1
2	Rational	1.303	1	19	1,486	------	------	------	E2
3	Combine	3.780	1	23	5,282	1, 2	------	------	Total E
5	Rational	4.919	1	22	6,494	------	------	------	P1A
6	Rational	0.997	1	5	299	------	------	------	P1B
7	Rational	0.552	1	21	696	------	------	------	P1C
8	Reservoir	0.230	1	33	686	7	125.30	458	Basin P1C
9	Combine	5.058	1	22	7,479	5, 6, 8	------	------	Total to Basin P1A
10	Reservoir	0.000	1	n/a	0	9	123.56	7,479	Basin P1A
11	Rational	1.284	1	15	1,156	------	------	------	P2
12	Combine	1.284	1	15	1,156	10, 11	------	------	Total P

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	3.482	1	23	4,806	------	------	------	E1
2	Rational	1.651	1	19	1,882	------	------	------	E2
3	Combine	4.785	1	23	6,687	1, 2	------	------	Total E
5	Rational	6.229	1	22	8,222	------	------	------	P1A
6	Rational	1.262	1	5	379	------	------	------	P1B
7	Rational	0.699	1	21	881	------	------	------	P1C
8	Reservoir	0.314	1	33	872	7	125.36	553	Basin P1C
9	Combine	6.428	1	22	9,472	5, 6, 8	------	------	Total to Basin P1A
10	Reservoir	0.000	1	n/a	0	9	123.70	9,472	Basin P1A
11	Rational	1.627	1	15	1,464	------	------	------	P2
12	Combine	1.627	1	15	1,464	10, 11	------	------	Total P

Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	23.2475	3.7000	0.7135	--------
3	0.0000	0.0000	0.0000	--------
5	31.4774	4.0000	0.7287	--------
10	37.2329	4.0000	0.7298	--------
25	43.0321	3.7000	0.7191	--------
50	49.5765	3.8000	0.7237	--------
100	55.5061	3.8000	0.7239	--------

File name: 0545C.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	4.97	3.59	2.88	2.43	2.12	1.89	1.71	1.57	1.45	1.36	1.27	1.20
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.35	4.60	3.68	3.11	2.71	2.41	2.18	2.00	1.85	1.72	1.61	1.52
10	7.49	5.43	4.34	3.66	3.19	2.84	2.57	2.35	2.18	2.03	1.90	1.79
25	9.08	6.55	5.24	4.42	3.85	3.43	3.11	2.85	2.63	2.45	2.30	2.17
50	10.27	7.42	5.93	5.00	4.36	3.88	3.51	3.22	2.97	2.77	2.60	2.45
100	11.50	8.30	6.64	5.59	4.87	4.34	3.93	3.60	3.33	3.10	2.91	2.74

Tc = time in minutes. Values may exceed 60.

Calito Development Group, LLC-1300 South Main Street, Plantsville CT\Stormwater Management\Detention\0545C.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	3.46	0.00	4.55	5.46	6.70	7.62	8.62
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

NOAA Atlas 14, Volume 10, Version 3
Location name: Plantsville, Connecticut, USA*
Latitude: 41.5722°, Longitude: -72.8976°
Elevation: 126 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	0.344 (0.268-0.435)	0.414 (0.322-0.526)	0.529 (0.411-0.674)	0.626 (0.483-0.802)	0.758 (0.566-1.02)	0.858 (0.628-1.18)	0.962 (0.683-1.38)	1.08 (0.725-1.58)	1.24 (0.803-1.89)	1.37 (0.869-2.14)
10-min	0.487 (0.379-0.617)	0.587 (0.457-0.745)	0.751 (0.582-0.957)	0.887 (0.684-1.14)	1.07 (0.802-1.44)	1.22 (0.889-1.67)	1.36 (0.967-1.95)	1.53 (1.03-2.24)	1.76 (1.14-2.68)	1.94 (1.23-3.04)
15-min	0.573 (0.446-0.726)	0.691 (0.537-0.876)	0.884 (0.686-1.13)	1.04 (0.806-1.34)	1.26 (0.943-1.70)	1.43 (1.04-1.97)	1.60 (1.14-2.29)	1.80 (1.21-2.64)	2.07 (1.34-3.16)	2.29 (1.45-3.57)
30-min	0.785 (0.611-0.995)	0.944 (0.734-1.20)	1.20 (0.933-1.53)	1.42 (1.10-1.82)	1.72 (1.28-2.30)	1.94 (1.42-2.67)	2.17 (1.54-3.11)	2.43 (1.64-3.58)	2.80 (1.82-4.28)	3.10 (1.96-4.85)
60-min	0.997 (0.777-1.26)	1.20 (0.931-1.52)	1.52 (1.18-1.94)	1.79 (1.38-2.30)	2.17 (1.62-2.91)	2.45 (1.79-3.37)	2.74 (1.95-3.92)	3.07 (2.07-4.51)	3.54 (2.29-5.40)	3.92 (2.48-6.12)
2-hr	1.31 (1.02-1.65)	1.56 (1.22-1.97)	1.98 (1.54-2.50)	2.32 (1.80-2.95)	2.79 (2.10-3.73)	3.14 (2.31-4.30)	3.52 (2.51-5.01)	3.94 (2.66-5.76)	4.54 (2.95-6.90)	5.04 (3.20-7.82)
3-hr	1.52 (1.20-1.91)	1.81 (1.42-2.28)	2.29 (1.80-2.89)	2.69 (2.10-3.42)	3.24 (2.44-4.32)	3.65 (2.70-4.99)	4.09 (2.93-5.81)	4.58 (3.10-6.68)	5.30 (3.45-8.02)	5.89 (3.75-9.12)
6-hr	1.93 (1.52-2.40)	2.32 (1.83-2.89)	2.95 (2.32-3.70)	3.48 (2.72-4.38)	4.20 (3.19-5.57)	4.74 (3.52-6.45)	5.32 (3.84-7.55)	5.99 (4.07-8.69)	6.99 (4.57-10.5)	7.83 (4.99-12.0)
12-hr	2.38 (1.89-2.95)	2.90 (2.30-3.59)	3.74 (2.96-4.66)	4.44 (3.50-5.56)	5.41 (4.13-7.15)	6.12 (4.58-8.30)	6.90 (5.03-9.79)	7.83 (5.34-11.3)	9.24 (6.06-13.8)	10.4 (6.69-16.0)
24-hr	2.79 (2.24-3.44)	3.46 (2.77-4.26)	4.55 (3.63-5.63)	5.46 (4.32-6.79)	6.70 (5.15-8.84)	7.62 (5.75-10.3)	8.62 (6.35-12.3)	9.89 (6.76-14.2)	11.9 (7.80-17.7)	13.6 (8.73-20.7)
2-day	3.14 (2.53-3.84)	3.96 (3.19-4.85)	5.30 (4.26-6.52)	6.42 (5.12-7.94)	7.95 (6.16-10.5)	9.07 (6.91-12.3)	10.3 (7.69-14.7)	11.9 (8.20-17.1)	14.6 (9.62-21.7)	17.0 (10.9-25.7)
3-day	3.41 (2.76-4.16)	4.32 (3.49-5.26)	5.80 (4.67-7.10)	7.02 (5.62-8.66)	8.72 (6.78-11.4)	9.94 (7.60-13.4)	11.3 (8.48-16.1)	13.1 (9.04-18.7)	16.1 (10.6-23.9)	18.8 (12.1-28.4)
4-day	3.66 (2.97-4.45)	4.62 (3.75-5.62)	6.20 (5.00-7.57)	7.51 (6.02-9.23)	9.31 (7.26-12.2)	10.6 (8.14-14.3)	12.1 (9.07-17.2)	14.0 (9.66-19.9)	17.2 (11.4-25.4)	20.0 (12.9-30.2)
7-day	4.36 (3.56-5.27)	5.44 (4.43-6.58)	7.20 (5.84-8.74)	8.66 (6.98-10.6)	10.7 (8.34-13.8)	12.1 (9.32-16.2)	13.8 (10.3-19.4)	15.9 (11.0-22.4)	19.3 (12.8-28.3)	22.3 (14.4-33.4)
10-day	5.07 (4.15-6.11)	6.21 (5.07-7.48)	8.06 (6.56-9.75)	9.60 (7.76-11.7)	11.7 (9.18-15.1)	13.3 (10.2-17.6)	15.0 (11.2-20.9)	17.1 (11.9-24.1)	20.5 (13.7-30.0)	23.5 (15.3-35.1)
20-day	7.29 (6.00-8.72)	8.49 (6.98-10.2)	10.5 (8.56-12.6)	12.1 (9.83-14.6)	14.3 (11.2-18.2)	16.0 (12.3-20.9)	17.8 (13.2-24.2)	19.9 (13.8-27.7)	22.9 (15.3-33.3)	25.5 (16.6-37.9)
30-day	9.14 (7.55-10.9)	10.4 (8.56-12.4)	12.4 (10.2-14.8)	14.1 (11.5-16.9)	16.3 (12.9-20.6)	18.1 (13.9-23.4)	19.9 (14.7-26.7)	21.9 (15.3-30.3)	24.6 (16.5-35.6)	26.9 (17.5-39.7)
45-day	11.4 (9.48-13.6)	12.7 (10.5-15.1)	14.8 (12.2-17.6)	16.5 (13.5-19.8)	18.9 (14.9-23.6)	20.7 (15.9-26.5)	22.5 (16.6-29.9)	24.4 (17.1-33.7)	26.8 (18.0-38.6)	28.7 (18.7-42.3)
60-day	13.3 (11.1-15.8)	14.6 (12.2-17.3)	16.8 (13.9-20.0)	18.6 (15.2-22.2)	21.0 (16.6-26.1)	22.9 (17.6-29.1)	24.8 (18.2-32.6)	26.5 (18.7-36.5)	28.8 (19.4-41.3)	30.4 (19.9-44.7)

[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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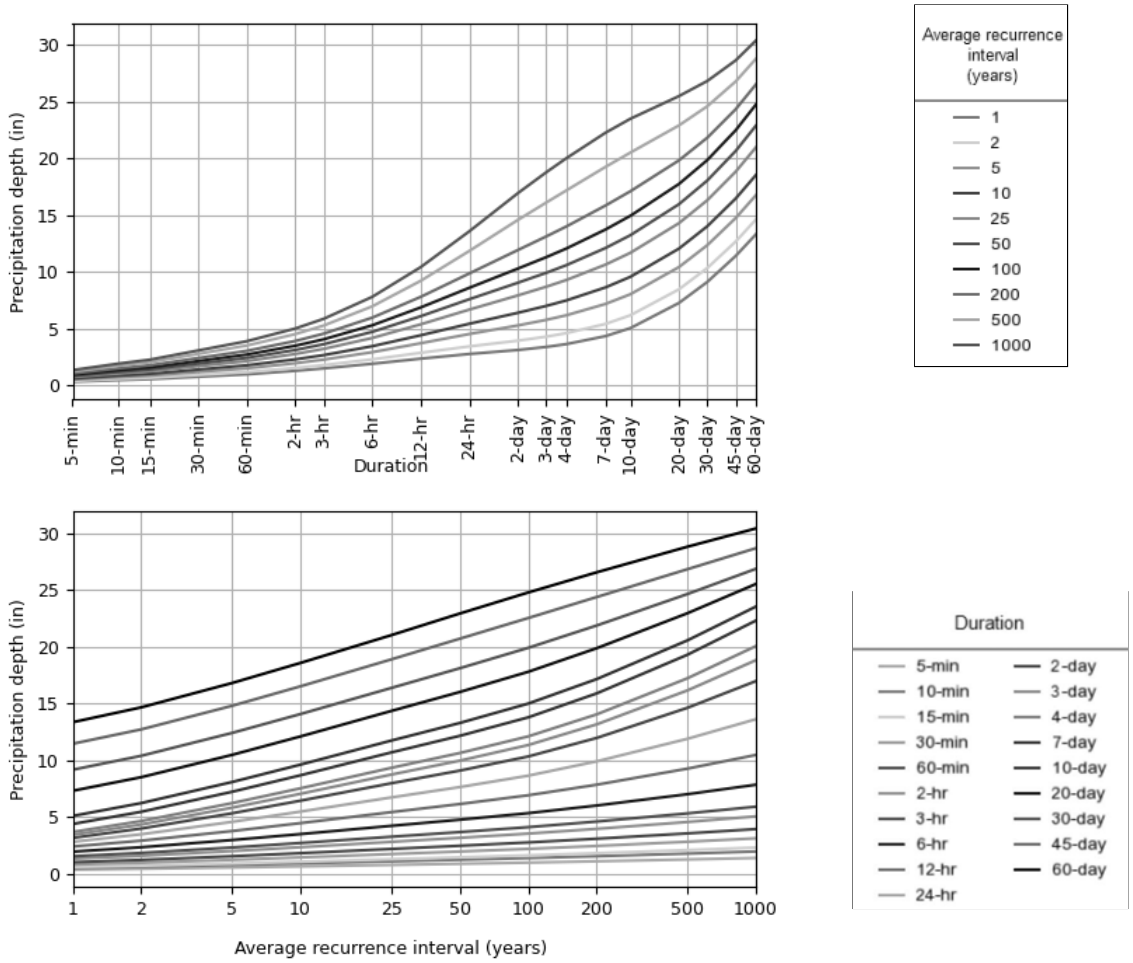
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 41.5722°, Longitude: -72.8976°



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Created (GMT): Tue Sep 19 19:27:01 2023

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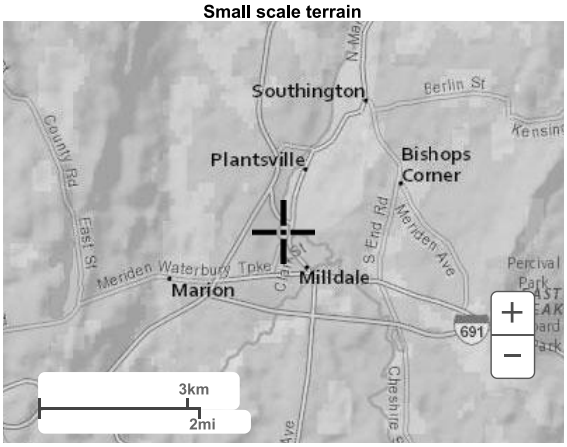
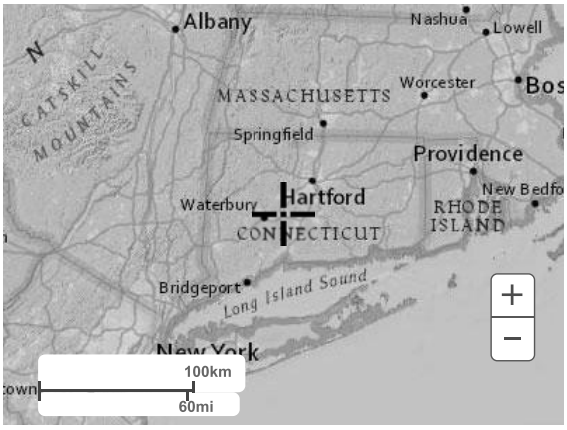
Maps & aerials

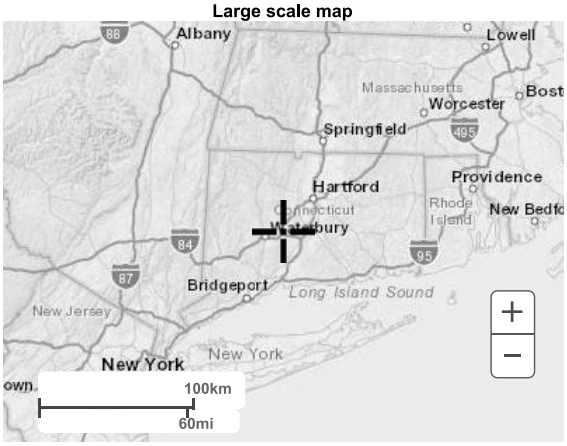
Small scale terrain



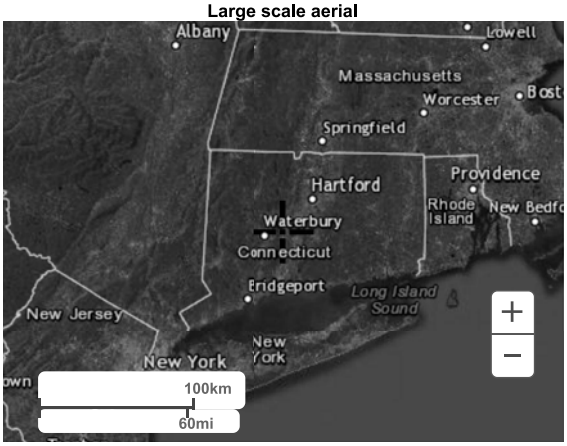
Large scale terrain



Large scale map



Large scale aerial



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National Oceanic and Atmospheric Administration
National Weather Service
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Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

NOAA Atlas 14, Volume 10, Version 3
Location name: Plantsville, Connecticut, USA*
Latitude: 41.5722°, Longitude: -72.8976°
Elevation: 126 ft**
* source: ESRI Maps
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POINT PRECIPITATION FREQUENCY ESTIMATES

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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	**4.13** (3.22-5.22)	**4.97** (3.86-6.31)	**6.35** (4.93-8.09)	**7.51** (5.80-9.62)	**9.10** (6.79-12.2)	**10.3** (7.54-14.2)	**11.5** (8.20-16.5)	**12.9** (8.70-19.0)	**14.9** (9.64-22.7)	**16.5** (10.4-25.7)
10-min	**2.92** (2.27-3.70)	**3.52** (2.74-4.47)	**4.51** (3.49-5.74)	**5.32** (4.10-6.82)	**6.44** (4.81-8.66)	**7.30** (5.33-10.0)	**8.18** (5.80-11.7)	**9.16** (6.17-13.5)	**10.5** (6.83-16.1)	**11.7** (7.39-18.2)
15-min	**2.29** (1.78-2.90)	**2.76** (2.15-3.50)	**3.54** (2.74-4.51)	**4.18** (3.22-5.36)	**5.06** (3.77-6.80)	**5.72** (4.18-7.87)	**6.41** (4.55-9.17)	**7.18** (4.84-10.6)	**8.26** (5.36-12.6)	**9.15** (5.79-14.3)
30-min	**1.57** (1.22-1.99)	**1.89** (1.47-2.40)	**2.41** (1.87-3.07)	**2.84** (2.19-3.64)	**3.43** (2.56-4.61)	**3.88** (2.84-5.34)	**4.34** (3.08-6.22)	**4.86** (3.28-7.15)	**5.60** (3.63-8.56)	**6.21** (3.93-9.69)
60-min	**0.997** (0.777-1.26)	**1.20** (0.931-1.52)	**1.52** (1.18-1.94)	**1.79** (1.38-2.30)	**2.17** (1.62-2.91)	**2.45** (1.79-3.37)	**2.74** (1.95-3.92)	**3.07** (2.07-4.51)	**3.54** (2.29-5.40)	**3.92** (2.48-6.12)
2-hr	**0.654** (0.512-0.824)	**0.780** (0.611-0.984)	**0.987** (0.770-1.25)	**1.16** (0.899-1.48)	**1.40** (1.05-1.86)	**1.57** (1.16-2.15)	**1.76** (1.26-2.51)	**1.97** (1.33-2.88)	**2.27** (1.48-3.45)	**2.52** (1.60-3.91)
3-hr	**0.505** (0.397-0.635)	**0.603** (0.474-0.758)	**0.763** (0.598-0.963)	**0.896** (0.697-1.14)	**1.08** (0.813-1.44)	**1.22** (0.898-1.66)	**1.36** (0.976-1.94)	**1.52** (1.03-2.22)	**1.76** (1.15-2.67)	**1.96** (1.25-3.04)
6-hr	**0.321** (0.254-0.401)	**0.386** (0.305-0.482)	**0.492** (0.387-0.617)	**0.580** (0.454-0.732)	**0.701** (0.532-0.930)	**0.791** (0.588-1.08)	**0.888** (0.641-1.26)	**1.00** (0.680-1.45)	**1.17** (0.762-1.76)	**1.31** (0.833-2.01)
12-hr	**0.197** (0.157-0.244)	**0.240** (0.191-0.298)	**0.310** (0.245-0.386)	**0.368** (0.290-0.461)	**0.448** (0.342-0.593)	**0.508** (0.380-0.689)	**0.572** (0.417-0.812)	**0.649** (0.443-0.936)	**0.767** (0.502-1.15)	**0.867** (0.555-1.33)
24-hr	**0.116** (0.093-0.143)	**0.144** (0.115-0.177)	**0.189** (0.151-0.234)	**0.227** (0.180-0.282)	**0.279** (0.214-0.368)	**0.317** (0.239-0.430)	**0.359** (0.264-0.511)	**0.411** (0.281-0.591)	**0.494** (0.324-0.737)	**0.566** (0.363-0.862)
2-day	**0.065** (0.052-0.080)	**0.082** (0.066-0.101)	**0.110** (0.088-0.135)	**0.133** (0.106-0.165)	**0.165** (0.128-0.217)	**0.188** (0.143-0.255)	**0.214** (0.160-0.306)	**0.248** (0.170-0.355)	**0.304** (0.200-0.451)	**0.353** (0.227-0.534)
3-day	**0.047** (0.038-0.057)	**0.059** (0.048-0.073)	**0.080** (0.064-0.098)	**0.097** (0.078-0.120)	**0.121** (0.094-0.158)	**0.138** (0.105-0.186)	**0.157** (0.117-0.224)	**0.182** (0.125-0.259)	**0.224** (0.147-0.331)	**0.261** (0.168-0.393)
4-day	**0.038** (0.030-0.046)	**0.048** (0.039-0.058)	**0.064** (0.052-0.078)	**0.078** (0.062-0.096)	**0.096** (0.075-0.126)	**0.110** (0.084-0.149)	**0.125** (0.094-0.178)	**0.146** (0.100-0.207)	**0.179** (0.118-0.264)	**0.208** (0.134-0.314)
7-day	**0.025** (0.021-0.031)	**0.032** (0.026-0.039)	**0.042** (0.034-0.052)	**0.051** (0.041-0.062)	**0.063** (0.049-0.082)	**0.072** (0.055-0.096)	**0.081** (0.061-0.115)	**0.094** (0.065-0.133)	**0.114** (0.076-0.168)	**0.132** (0.085-0.198)
10-day	**0.021** (0.017-0.025)	**0.025** (0.021-0.031)	**0.033** (0.027-0.040)	**0.039** (0.032-0.048)	**0.048** (0.038-0.062)	**0.055** (0.042-0.073)	**0.062** (0.046-0.086)	**0.071** (0.049-0.100)	**0.085** (0.056-0.125)	**0.098** (0.063-0.146)
20-day	**0.015** (0.012-0.018)	**0.017** (0.014-0.021)	**0.021** (0.017-0.026)	**0.025** (0.020-0.030)	**0.029** (0.023-0.037)	**0.033** (0.025-0.043)	**0.037** (0.027-0.050)	**0.041** (0.028-0.057)	**0.047** (0.031-0.069)	**0.053** (0.034-0.078)
30-day	**0.012** (0.010-0.015)	**0.014** (0.011-0.017)	**0.017** (0.014-0.020)	**0.019** (0.015-0.023)	**0.022** (0.017-0.028)	**0.025** (0.019-0.032)	**0.027** (0.020-0.037)	**0.030** (0.021-0.042)	**0.034** (0.022-0.049)	**0.037** (0.024-0.055)
45-day	**0.010** (0.008-0.012)	**0.011** (0.009-0.013)	**0.013** (0.011-0.016)	**0.015** (0.012-0.018)	**0.017** (0.013-0.021)	**0.019** (0.014-0.024)	**0.020** (0.015-0.027)	**0.022** (0.015-0.031)	**0.024** (0.016-0.035)	**0.026** (0.017-0.039)
60-day	**0.009** (0.007-0.010)	**0.010** (0.008-0.012)	**0.011** (0.009-0.013)	**0.012** (0.010-0.015)	**0.014** (0.011-0.018)	**0.015** (0.012-0.020)	**0.017** (0.012-0.022)	**0.018** (0.012-0.025)	**0.019** (0.013-0.028)	**0.021** (0.013-0.031)

[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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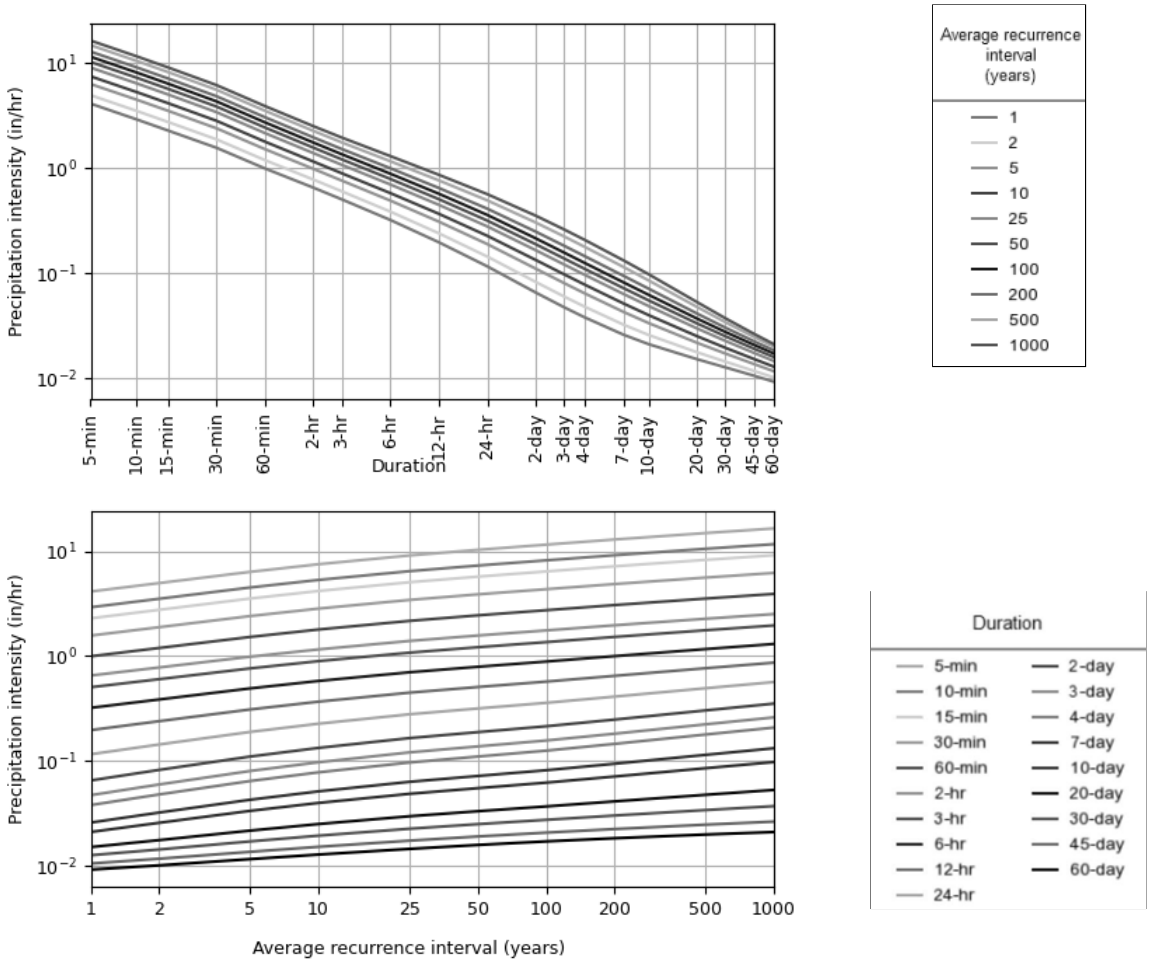
PF graphical

PDS-based intensity-duration-frequency (IDF) curves
Latitude: 41.5722°, Longitude: -72.8976°



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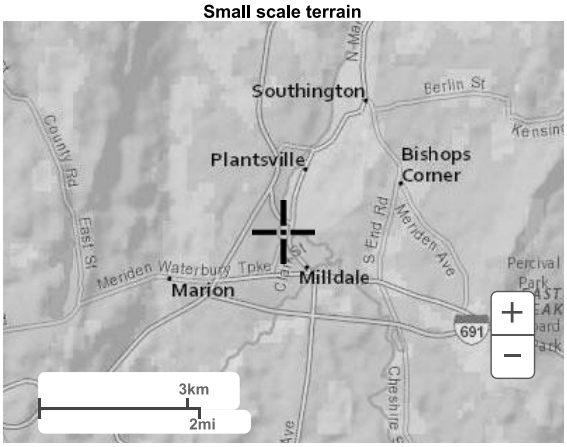
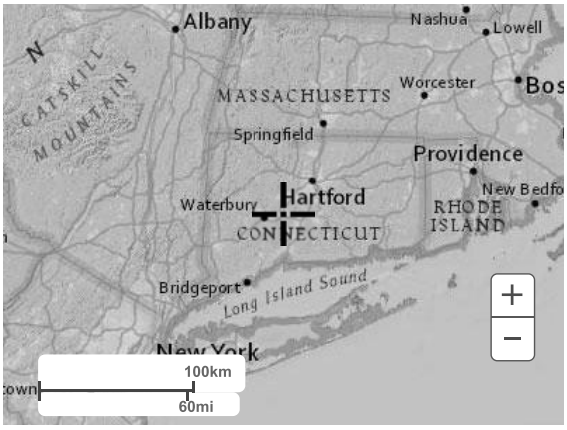
Maps & aerials

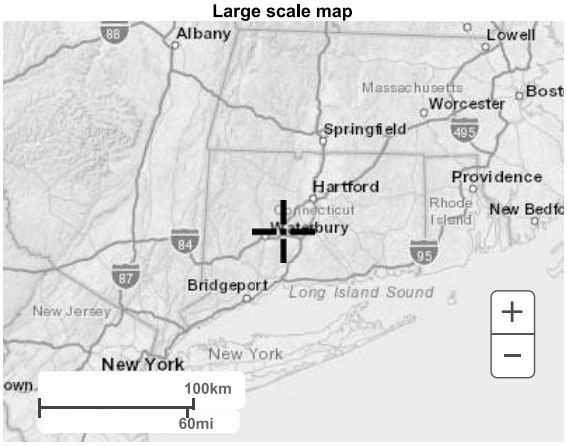
Small scale terrain



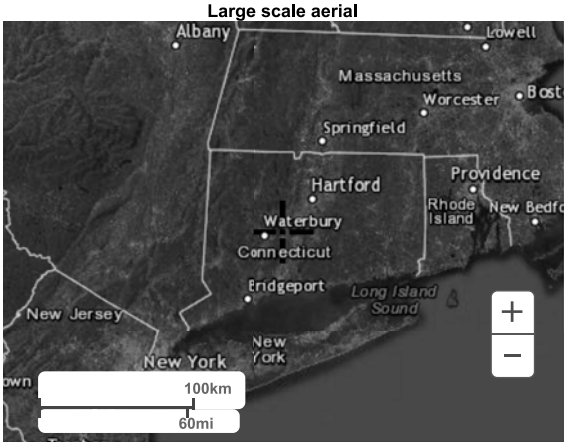
Large scale terrain



Large scale map



Large scale aerial



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

RATIONAL METHOD COMPOSITE RUNOFF COEFFICIENTS

Character of Surface	Runoff Coefficient	Source
Asphalt, Concrete, Roofs & Water Surface	0.95	CONN DOT Table 6-5
Industrial Impervious Area	0.75	CONN DOT Table 6-4
Residential Single Family Area	0.50	CONN DOT Table 6-4
Parks & Cemeteries	0.25	CONN DOT Table 6-4
Unimproved Areas	0.30	CONN DOT Table 6-4
		CONN DOT Table 6-4

Character of Surface	Runoff Coefficient	Source
Forest (Hydrologic Type D Soil)	0.22	McCuen, 1989 Table 7-2
Forest (Hydrologic Type B Soil)	0.18	McCuen, 1989 Table 7-3
Lawns Sandy Soil (Steep 7%+)	0.18	McCuen, 1989 Table 7-3
Lawns Sandy Soil (2% to 7%)	0.16	McCuen, 1989 Table 7-3
		McCuen, 1989 Table 7-3

Project: 1300 South Main Street
Plantsville, CT

Calcs By: BTP
Date: 9/19/23
Revised :

Basin ID	Basin Area (acres)	Asphalt, Concrete, Roofs & Water Surface (acres)	Industrial Impervious Area (acres)	Residential Single Family Area (acres)	Parks & Cemeteries (acres)	Unimproved Areas (acres)	0 (acres)	Forest (Hydrologic Type D Soil) (acres)	Forest (Hydrologic Type B Soil) (acres)	Lawns Sandy Soil (Steep 7%+) (acres)	Lawns Sandy Soil (2% to 7%) (acres)	Composite Runoff Coefficient
E1	3.57	0.05						1.03	2.48		0.01	0.20
E2	0.52	0.20							0.25		0.07	0.48
P1A	3.19	0.75						1.03	0.69		0.73	0.37
P1B	0.18	0.10							0.01		0.07	0.61
P1C	0.28	0.11									0.18	0.46
P2	0.43	0.22							0.11		0.10	0.57

Note:

TIME OF CONCENTRATION COMPUTATIONS

Project: 1300 South Main Street
Plantsville, CT

Calculations By: BTP
Date: 9/19/2023

Overland Flow: (Maximum 150 FT)

$$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5} s^{0.4}}$$ (TR-55 Equation 3-3)

T_t=Travel Time (Hr)
n=Manning's Roughness (TR-55 Table 3-1)
L=Flow Length (ft)
P_2= 2 Year, 24-hour Ranfall (in)
s=slope (ft/ft)

Shallow Concentrated Flow:

Unpaved: $V=16.1345(s)^{0.5}$
Paved: $V=20.3284(s)^{0.5}$
T_t = L / 60V
(Conn DOT Equations 6.C.4 & C.C.5)

T_t=Travel Time (min)
V=Velocity (ft/s)
s=slope (ft/ft)

Common Manning n Values for overland flow

Woods	0.400	Light Underbrush
Pavement	0.011	
Lawns	0.350	Grass
Dense Grass	0.240	Lovegrass, Bluegrass, Buffalo,Grama & Native

Open Channel\Swale Flow:

$$V = \frac{1.49 r^{\frac{2}{3}} s^{\frac{1}{2}}}{n}$$ (TR-55 Equation 3-4)

T_t=Travel Time (min)
n=Manning's Roughness
L=Flow Length (ft)
V=Velocity (ft/s)
s=slope (ft/ft)
r= hydraulic radius (a/pw)
a=cross-section area (ft^2)
p_w=wetted perimeter (ft)

T_t = L / 60V

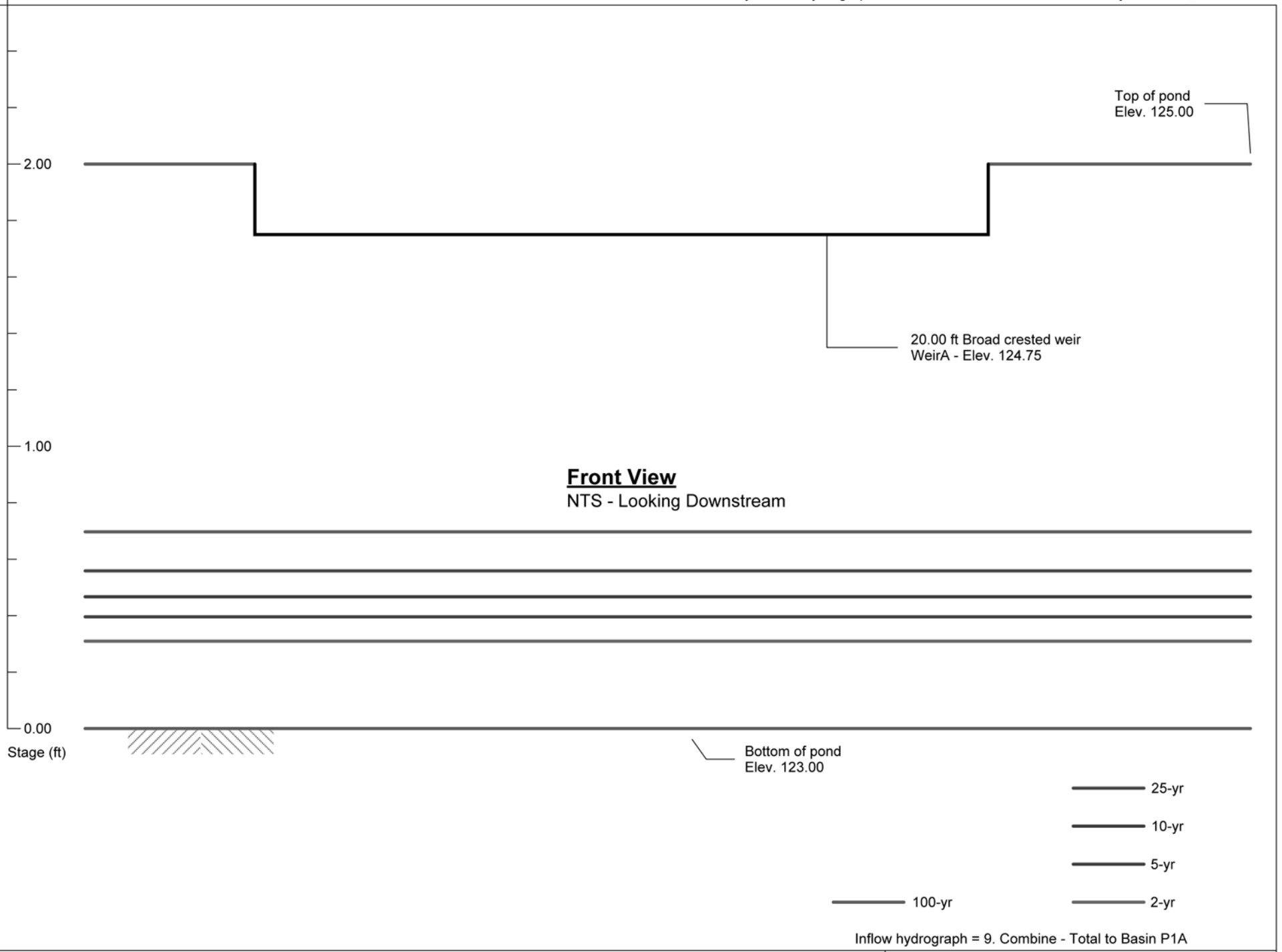
Minimum allowable T_c = 5.00 min.

		Overland Sheet Flow				Shallow Flow					Swale Flow							Pipe Flow					Total
Design Point	Basin(s)	n	L (ft)	S (%)	T_o (min)	Paved (Y or N)	L (ft)	S (%)	V (ft/s)	T_1 (min)	n	Area (s.f.)	Wet. Perim. (ft)	S (%)	V(full flow) (ft/s)	L (ft)	Ts (min)	Dia. (in)	L (ft)	S (%)	V(full flow) (ft/s)	Tp (min)	T (min)
	E1	0.400	100	2.67	19.13	N	438	1.40	1.91	3.82													
				Subtotal	19.13				Subtotal	3.82						Subtotal					Subtotal		22.95
	E2	0.400	100	2.80	18.77	N	15	2.50	2.55	0.10									0.00				
						Y	55	0.73	1.73	0.53													
				Subtotal	18.77				Subtotal	0.63						Subtotal					Subtotal		19.40
	P1A	0.350	100	2.00	19.30	N	182	1.00	1.61	1.88													
						N	77	1.00	1.61	0.80													
				Subtotal	19.30				Subtotal	2.68						Subtotal					Subtotal		21.97
	P1B	Use minimum 5 minutes																					
				Subtotal	0.00				Subtotal	0.00						Subtotal					Subtotal		5.00
	P1C	0.350	95	1.50	20.78																		
				Subtotal	20.78				Subtotal	0.00						Subtotal					Subtotal		20.78
	P2	0.400	73	2.70	14.81														0.00				
				Subtotal	14.81				Subtotal	0.00						Subtotal					Subtotal		14.81

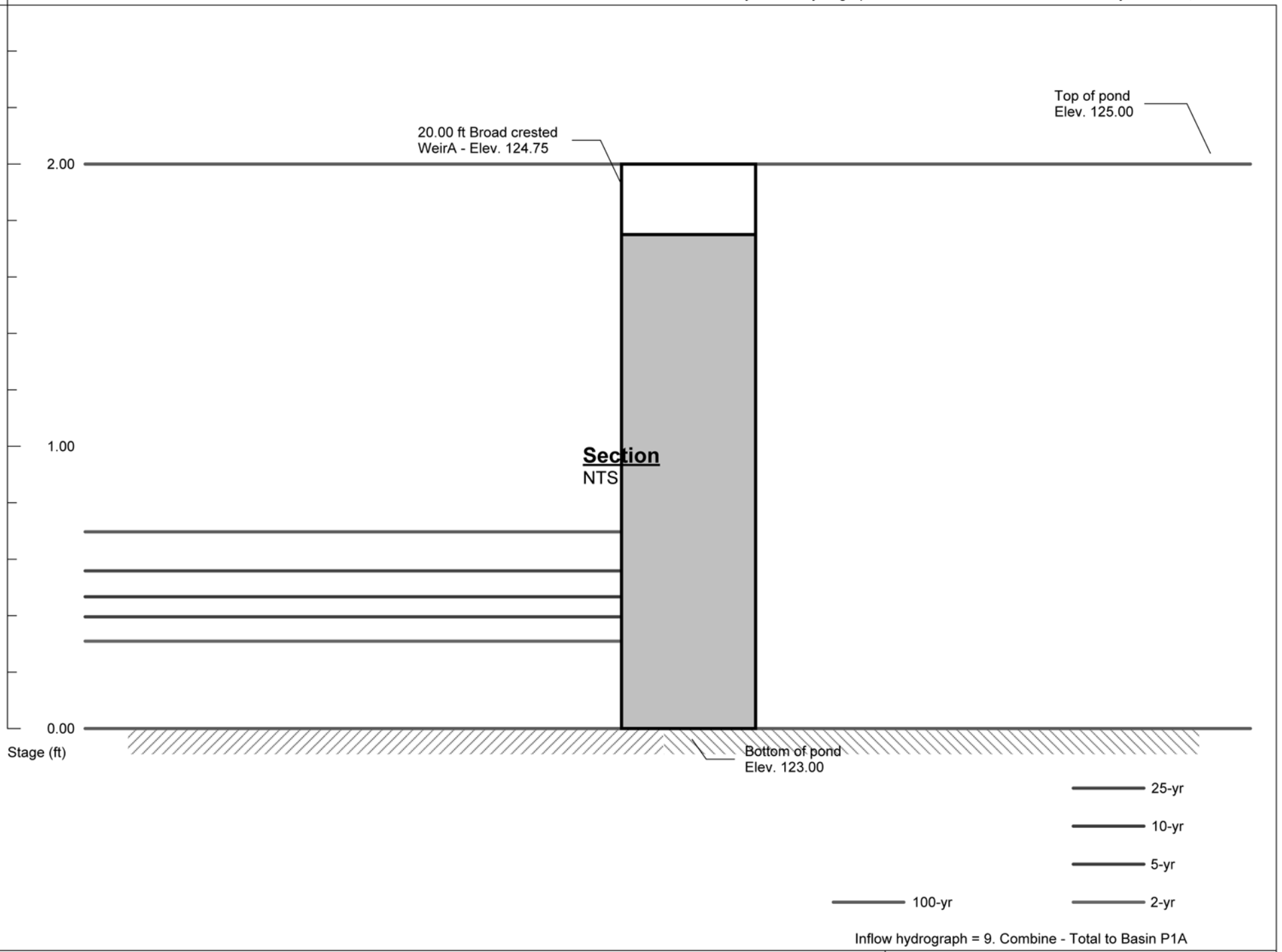
APPENDIX 'C'

DETENTION DESIGN

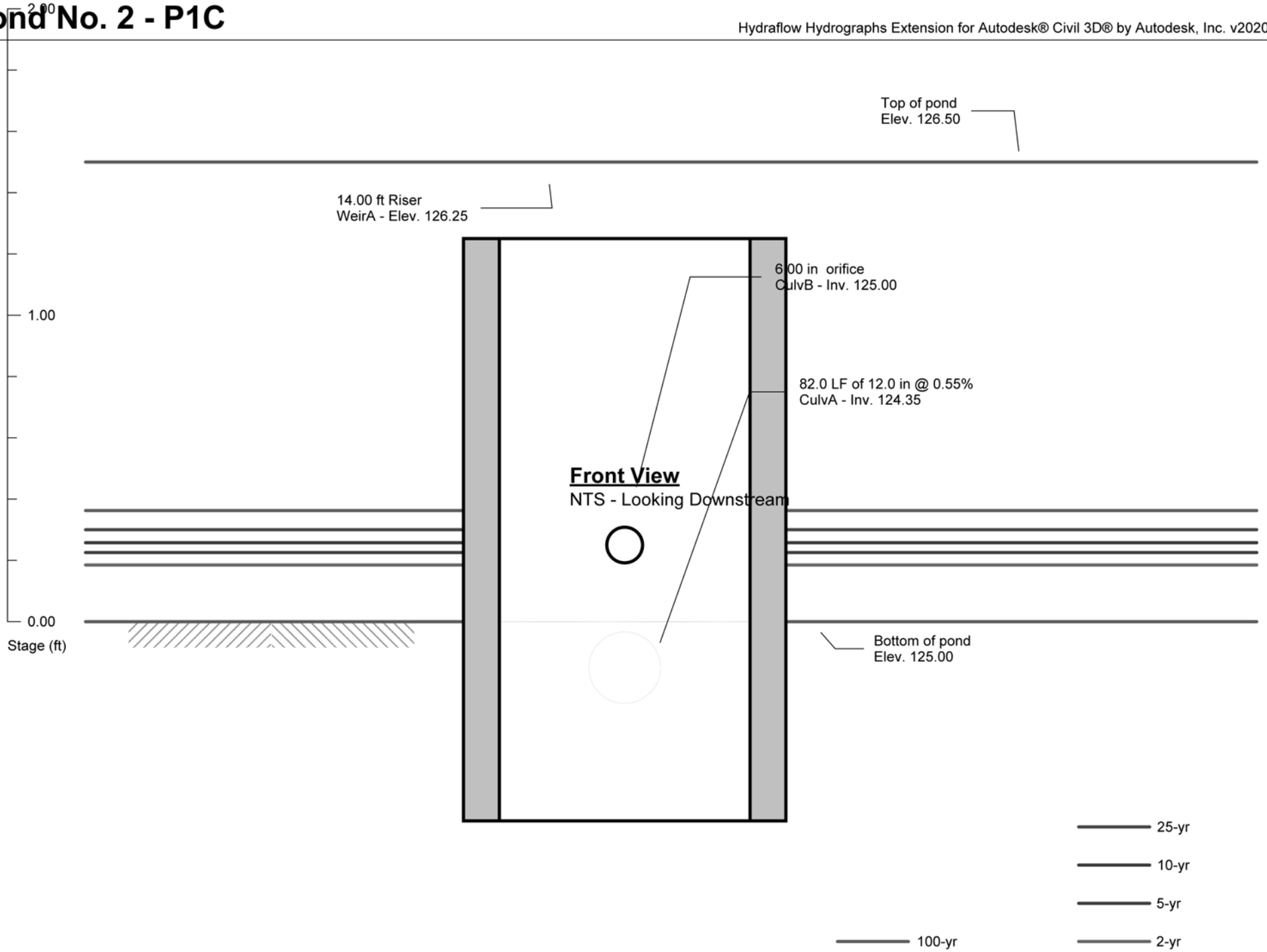
Pond No. 1 - P1A


Top of pond
Elev. 125.00
2.00
20.00 ft Broad crested weir
WeirA - Elev. 124.75
1.00
Front View
NTS - Looking Downstream
0.00
Stage (ft)
Bottom of pond
Elev. 123.00
25-yr
10-yr
5-yr
100-yr
2-yr
Inflow hydrograph = 9. Combine - Total to Basin P1A

Pond No. 1 - P1A

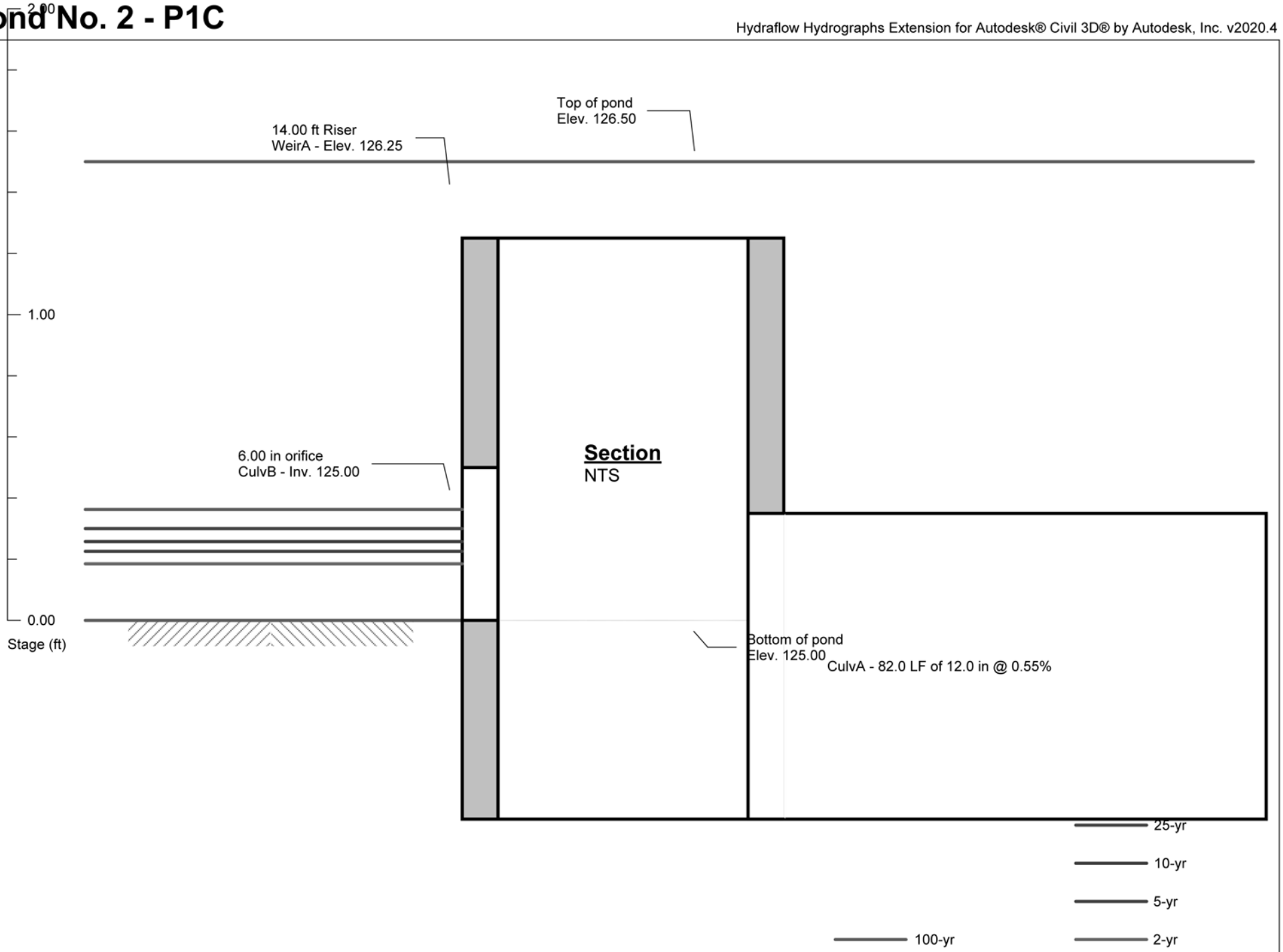

Top of pond
Elev. 125.00
20.00 ft Broad crested
WeirA - Elev. 124.75
2.00
1.00
0.00
Stage (ft)
Section
NTS
Bottom of pond
Elev. 123.00
25-yr
10-yr
5-yr
100-yr
2-yr
Inflow hydrograph = 9. Combine - Total to Basin P1A

Pond No. 2 - P1C



Inflow hydrograph = 7. Rational - P1C

Pond No. 2 - P1C


2.00
1.00
0.00
Stage (ft)
Top of pond
Elev. 126.50
14.00 ft Riser
WeirA - Elev. 126.25
6.00 in orifice
CulvB - Inv. 125.00
Section
NTS
Bottom of pond
Elev. 125.00
CulvA - 82.0 LF of 12.0 in @ 0.55%
25-yr
10-yr
5-yr
100-yr
2-yr
Inflow hydrograph = 7. Rational - P1C

Pond Report

Pond No. 2 - P1C

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 125.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	125.00	1,323	0	0
0.50	125.50	1,737	763	763
1.00	126.00	2,176	976	1,739
1.50	126.50	2,641	1,202	2,941

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	6.00	0.00	0.00
Span (in)	= 12.00	6.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 124.35	125.00	0.00	0.00
Length (ft)	= 82.00	0.00	0.00	0.00
Slope (%)	= 0.55	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 14.00	0.00	0.00	0.00
Crest El. (ft)	= 126.25	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

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

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	125.00	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.05	76	125.05	1.50 ic	0.01 ic	---	---	0.00	---	---	---	---	---	0.008
0.10	153	125.10	1.50 ic	0.03 ic	---	---	0.00	---	---	---	---	---	0.031
0.15	229	125.15	1.50 ic	0.07 ic	---	---	0.00	---	---	---	---	---	0.066
0.20	305	125.20	1.50 ic	0.11 ic	---	---	0.00	---	---	---	---	---	0.114
0.25	381	125.25	1.50 ic	0.17 ic	---	---	0.00	---	---	---	---	---	0.170
0.30	458	125.30	1.50 ic	0.23 ic	---	---	0.00	---	---	---	---	---	0.230
0.35	534	125.35	1.50 ic	0.30 ic	---	---	0.00	---	---	---	---	---	0.298
0.40	610	125.40	1.50 ic	0.36 ic	---	---	0.00	---	---	---	---	---	0.363
0.45	686	125.45	1.50 ic	0.43 ic	---	---	0.00	---	---	---	---	---	0.427
0.50	763	125.50	1.50 ic	0.47 ic	---	---	0.00	---	---	---	---	---	0.473
0.55	860	125.55	1.50 ic	0.52 ic	---	---	0.00	---	---	---	---	---	0.518
0.60	958	125.60	1.50 ic	0.56 ic	---	---	0.00	---	---	---	---	---	0.559
0.65	1,055	125.65	1.50 ic	0.60 ic	---	---	0.00	---	---	---	---	---	0.598
0.70	1,153	125.70	1.50 ic	0.63 ic	---	---	0.00	---	---	---	---	---	0.634
0.75	1,251	125.75	1.50 ic	0.67 ic	---	---	0.00	---	---	---	---	---	0.668
0.80	1,348	125.80	1.50 ic	0.70 ic	---	---	0.00	---	---	---	---	---	0.701
0.85	1,446	125.85	1.50 ic	0.73 ic	---	---	0.00	---	---	---	---	---	0.732
0.90	1,543	125.90	1.50 ic	0.76 ic	---	---	0.00	---	---	---	---	---	0.762
0.95	1,641	125.95	1.50 ic	0.79 ic	---	---	0.00	---	---	---	---	---	0.791
1.00	1,739	126.00	1.50 ic	0.82 ic	---	---	0.00	---	---	---	---	---	0.819
1.05	1,859	126.05	1.50 ic	0.85 ic	---	---	0.00	---	---	---	---	---	0.846
1.10	1,979	126.10	1.50 ic	0.87 ic	---	---	0.00	---	---	---	---	---	0.872
1.15	2,099	126.15	1.50 ic	0.90 ic	---	---	0.00	---	---	---	---	---	0.897
1.20	2,220	126.20	1.50 ic	0.92 ic	---	---	0.00	---	---	---	---	---	0.921
1.25	2,340	126.25	1.50 ic	0.95 ic	---	---	0.00	---	---	---	---	---	0.945
1.30	2,460	126.30	1.50 ic	0.97 ic	---	---	0.52	---	---	---	---	---	1.490
1.35	2,580	126.35	2.36 oc	0.89 ic	---	---	1.47	---	---	---	---	---	2.363
1.40	2,700	126.40	3.30 oc	0.59 ic	---	---	2.71	---	---	---	---	---	3.301
1.45	2,821	126.45	3.78 oc	0.29 ic	---	---	3.49 s	---	---	---	---	---	3.780
1.50	2,941	126.50	3.90 oc	0.22 ic	---	---	3.68 s	---	---	---	---	---	3.900

Pond No. 1 - P1A

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 123.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	123.00	12,717	0	0
0.50	123.50	13,827	6,633	6,633
1.00	124.00	14,976	7,198	13,832
1.50	124.50	15,924	7,723	21,554
2.00	125.00	17,251	8,291	29,845

Culvert / Orifice Structures

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

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 20.00	0.00	0.00	0.00
Crest El. (ft)	= 124.75	0.00	0.00	0.00
Weir Coeff.	= 2.60	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)

TW Elev. (ft) = 0.00

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

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	123.00	---	---	---	---	0.00	---	---	---	---	---	0.000
0.05	663	123.05	---	---	---	---	0.00	---	---	---	---	---	0.000
0.10	1,327	123.10	---	---	---	---	0.00	---	---	---	---	---	0.000
0.15	1,990	123.15	---	---	---	---	0.00	---	---	---	---	---	0.000
0.20	2,653	123.20	---	---	---	---	0.00	---	---	---	---	---	0.000
0.25	3,317	123.25	---	---	---	---	0.00	---	---	---	---	---	0.000
0.30	3,980	123.30	---	---	---	---	0.00	---	---	---	---	---	0.000
0.35	4,643	123.35	---	---	---	---	0.00	---	---	---	---	---	0.000
0.40	5,307	123.40	---	---	---	---	0.00	---	---	---	---	---	0.000
0.45	5,970	123.45	---	---	---	---	0.00	---	---	---	---	---	0.000
0.50	6,633	123.50	---	---	---	---	0.00	---	---	---	---	---	0.000
0.55	7,353	123.55	---	---	---	---	0.00	---	---	---	---	---	0.000
0.60	8,073	123.60	---	---	---	---	0.00	---	---	---	---	---	0.000
0.65	8,793	123.65	---	---	---	---	0.00	---	---	---	---	---	0.000
0.70	9,513	123.70	---	---	---	---	0.00	---	---	---	---	---	0.000
0.75	10,232	123.75	---	---	---	---	0.00	---	---	---	---	---	0.000
0.80	10,952	123.80	---	---	---	---	0.00	---	---	---	---	---	0.000
0.85	11,672	123.85	---	---	---	---	0.00	---	---	---	---	---	0.000
0.90	12,392	123.90	---	---	---	---	0.00	---	---	---	---	---	0.000
0.95	13,112	123.95	---	---	---	---	0.00	---	---	---	---	---	0.000
1.00	13,832	124.00	---	---	---	---	0.00	---	---	---	---	---	0.000
1.05	14,604	124.05	---	---	---	---	0.00	---	---	---	---	---	0.000
1.10	15,376	124.10	---	---	---	---	0.00	---	---	---	---	---	0.000
1.15	16,148	124.15	---	---	---	---	0.00	---	---	---	---	---	0.000
1.20	16,921	124.20	---	---	---	---	0.00	---	---	---	---	---	0.000
1.25	17,693	124.25	---	---	---	---	0.00	---	---	---	---	---	0.000
1.30	18,465	124.30	---	---	---	---	0.00	---	---	---	---	---	0.000
1.35	19,238	124.35	---	---	---	---	0.00	---	---	---	---	---	0.000
1.40	20,010	124.40	---	---	---	---	0.00	---	---	---	---	---	0.000
1.45	20,782	124.45	---	---	---	---	0.00	---	---	---	---	---	0.000
1.50	21,554	124.50	---	---	---	---	0.00	---	---	---	---	---	0.000
1.55	22,384	124.55	---	---	---	---	0.00	---	---	---	---	---	0.000
1.60	23,213	124.60	---	---	---	---	0.00	---	---	---	---	---	0.000
1.65	24,042	124.65	---	---	---	---	0.00	---	---	---	---	---	0.000
1.70	24,871	124.70	---	---	---	---	0.00	---	---	---	---	---	0.000
1.75	25,700	124.75	---	---	---	---	0.00	---	---	---	---	---	0.000
1.80	26,529	124.80	---	---	---	---	0.58	---	---	---	---	---	0.582
1.85	27,358	124.85	---	---	---	---	1.64	---	---	---	---	---	1.645

Continues on next page...

P1A

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
1.90	28,187	124.90	---	---	---	---	3.02	---	---	---	---	---	3.022
1.95	29,016	124.95	---	---	---	---	4.65	---	---	---	---	---	4.652
2.00	29,845	125.00	---	---	---	---	6.50	---	---	---	---	---	6.500

...End

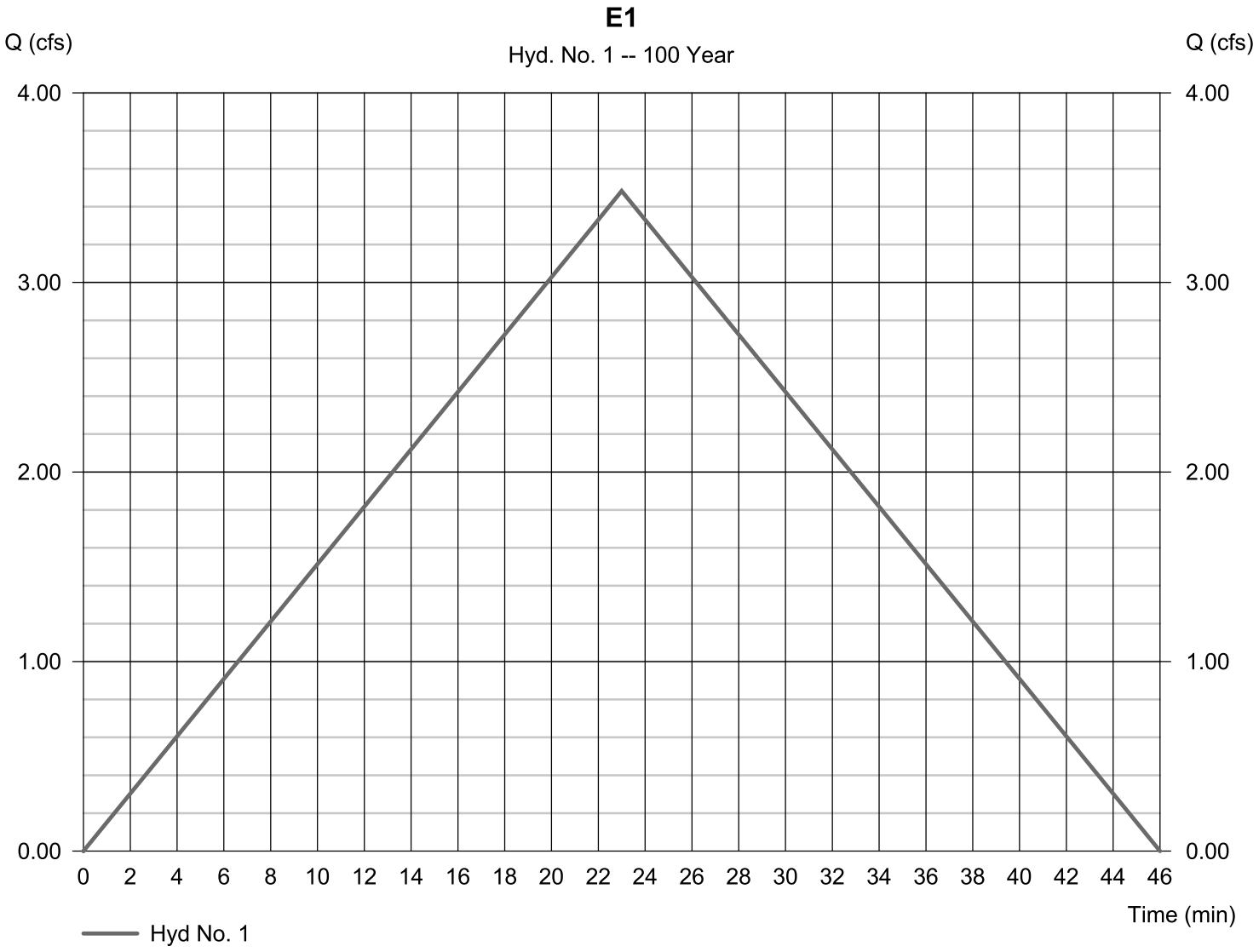
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4 Thursday, 09 / 21 / 2023

Hyd. No. 1

E1

Hydrograph type	=	Rational	Peak discharge	=	3.482 cfs
Storm frequency	=	100 yrs	Time to peak	=	23 min
Time interval	=	1 min	Hyd. volume	=	4,806 cuft
Drainage area	=	3.570 ac	Runoff coeff.	=	0.19
Intensity	=	5.134 in/hr	Tc by User	=	23.00 min
IDF Curve	=	0545C.IDF	Asc/Rec limb fact	=	1/1



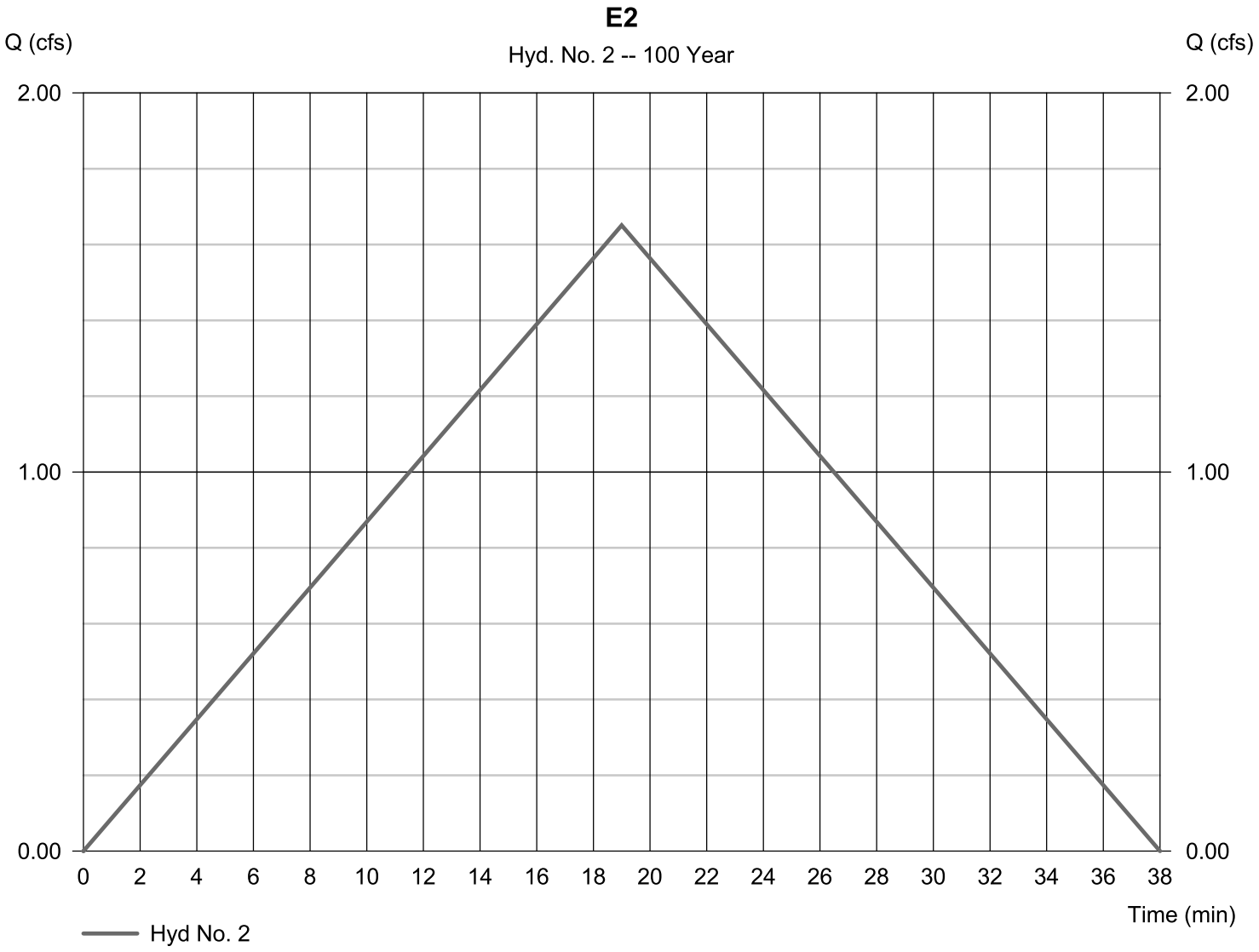
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4 Thursday, 09 / 21 / 2023

Hyd. No. 2

E2

Hydrograph type	= Rational	Peak discharge	= 1.651 cfs
Storm frequency	= 100 yrs	Time to peak	= 19 min
Time interval	= 1 min	Hyd. volume	= 1,882 cuft
Drainage area	= 0.520 ac	Runoff coeff.	= 0.55
Intensity	= 5.771 in/hr	Tc by User	= 19.00 min
IDF Curve	= 0545C.IDF	Asc/Rec limb fact	= 1/1

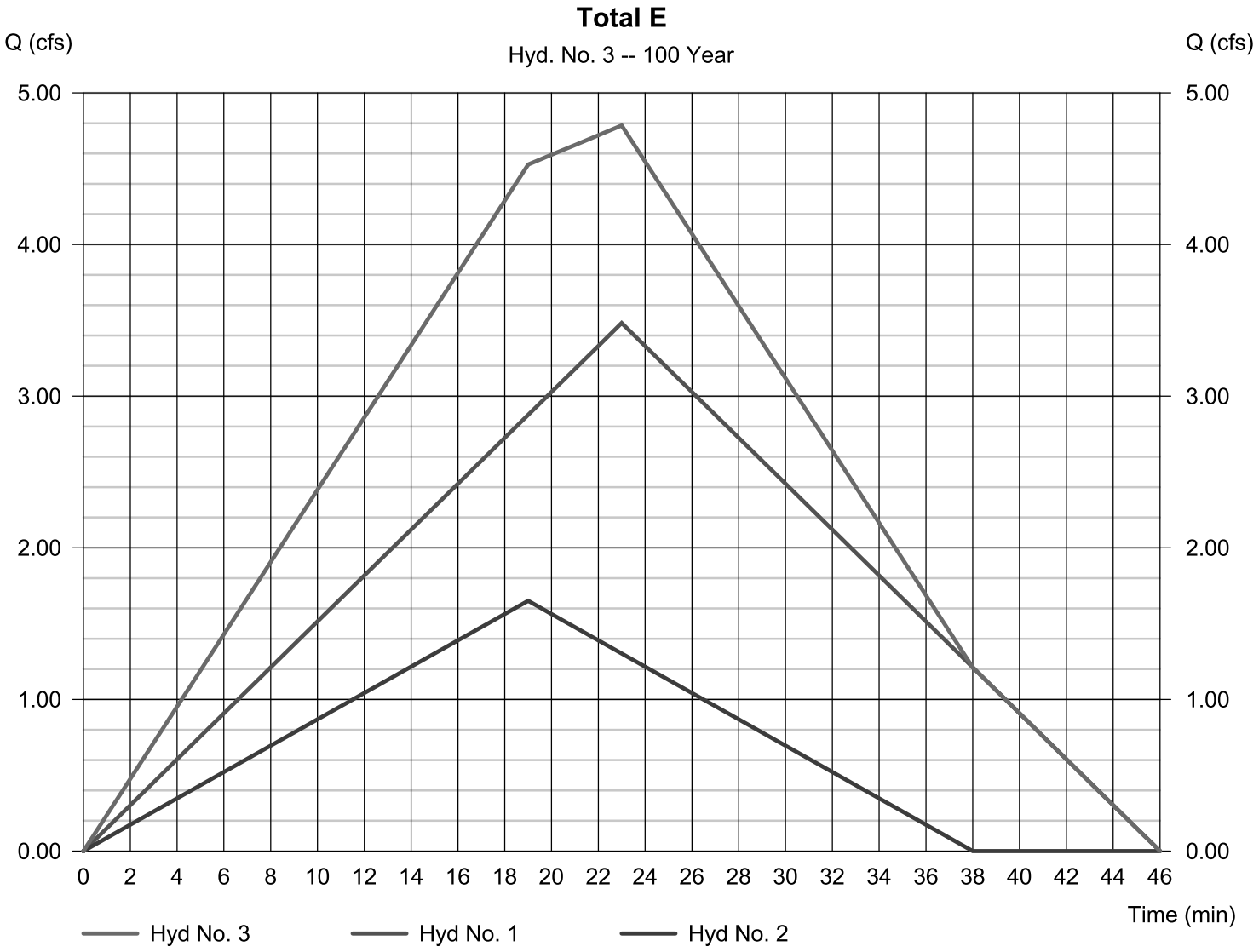


Hydrograph Report

Hyd. No. 3

Total E

Hydrograph type	= Combine	Peak discharge	= 4.785 cfs
Storm frequency	= 100 yrs	Time to peak	= 23 min
Time interval	= 1 min	Hyd. volume	= 6,687 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 4.090 ac

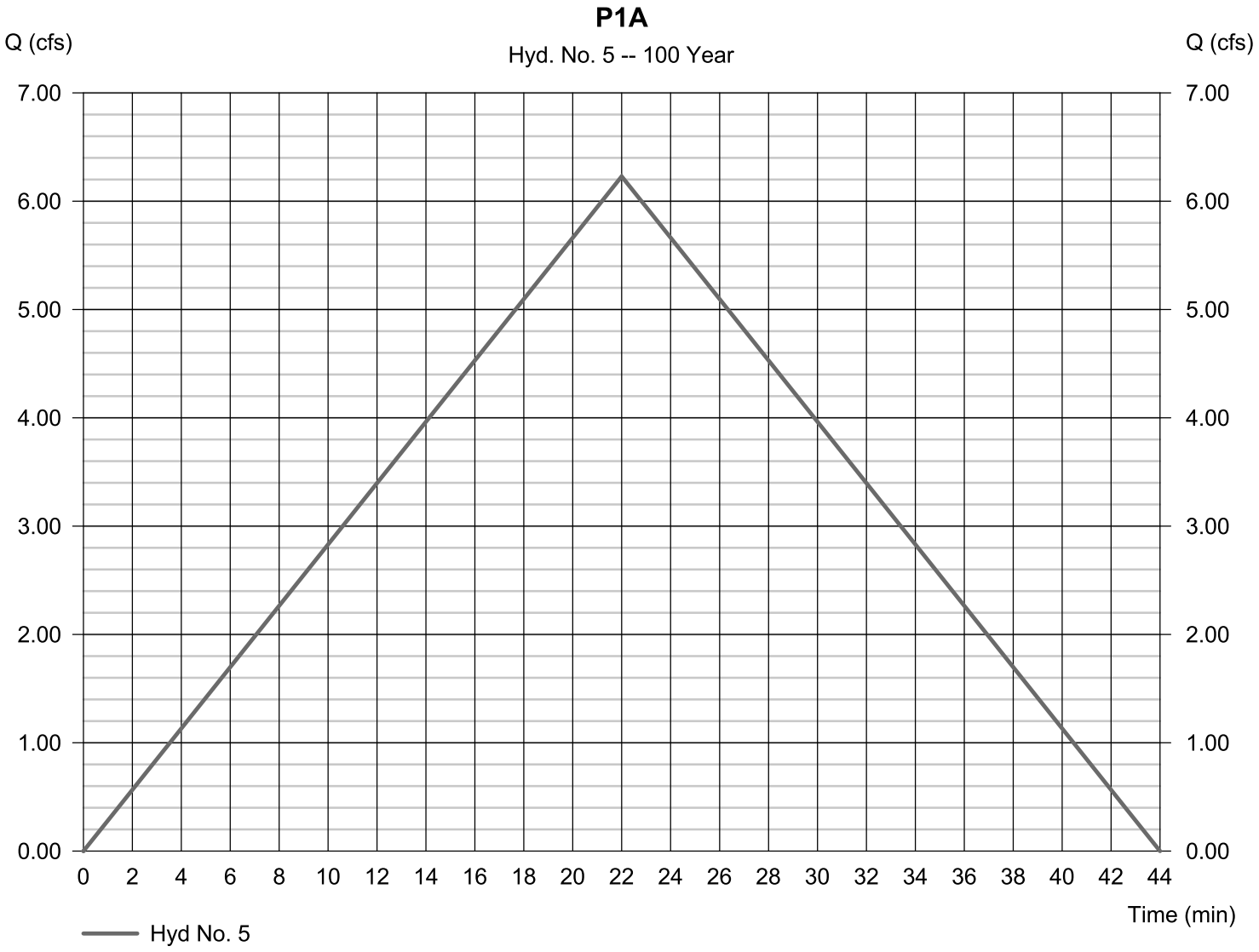


Hydrograph Report

Hyd. No. 5

P1A

Hydrograph type	=	Rational	Peak discharge	=	6.229 cfs
Storm frequency	=	100 yrs	Time to peak	=	22 min
Time interval	=	1 min	Hyd. volume	=	8,222 cuft
Drainage area	=	3.190 ac	Runoff coeff.	=	0.37
Intensity	=	5.277 in/hr	Tc by User	=	22.00 min
IDF Curve	=	0545C.IDF	Asc/Rec limb fact	=	1/1

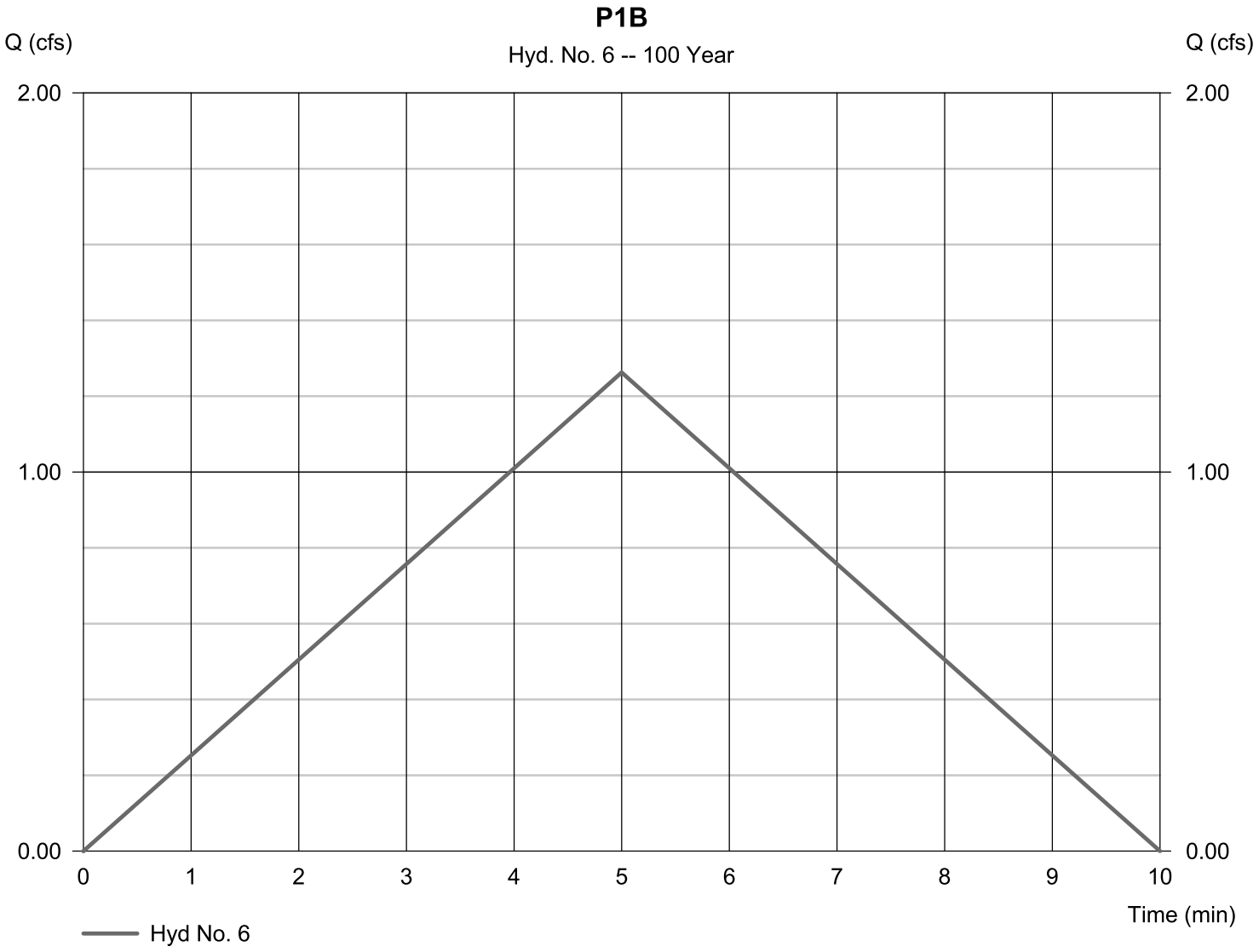


Hydrograph Report

Hyd. No. 6

P1B

Hydrograph type	= Rational	Peak discharge	= 1.262 cfs
Storm frequency	= 100 yrs	Time to peak	= 5 min
Time interval	= 1 min	Hyd. volume	= 379 cuft
Drainage area	= 0.180 ac	Runoff coeff.	= 0.61
Intensity	= 11.497 in/hr	Tc by User	= 5.00 min
IDF Curve	= 0545C.IDF	Asc/Rec limb fact	= 1/1

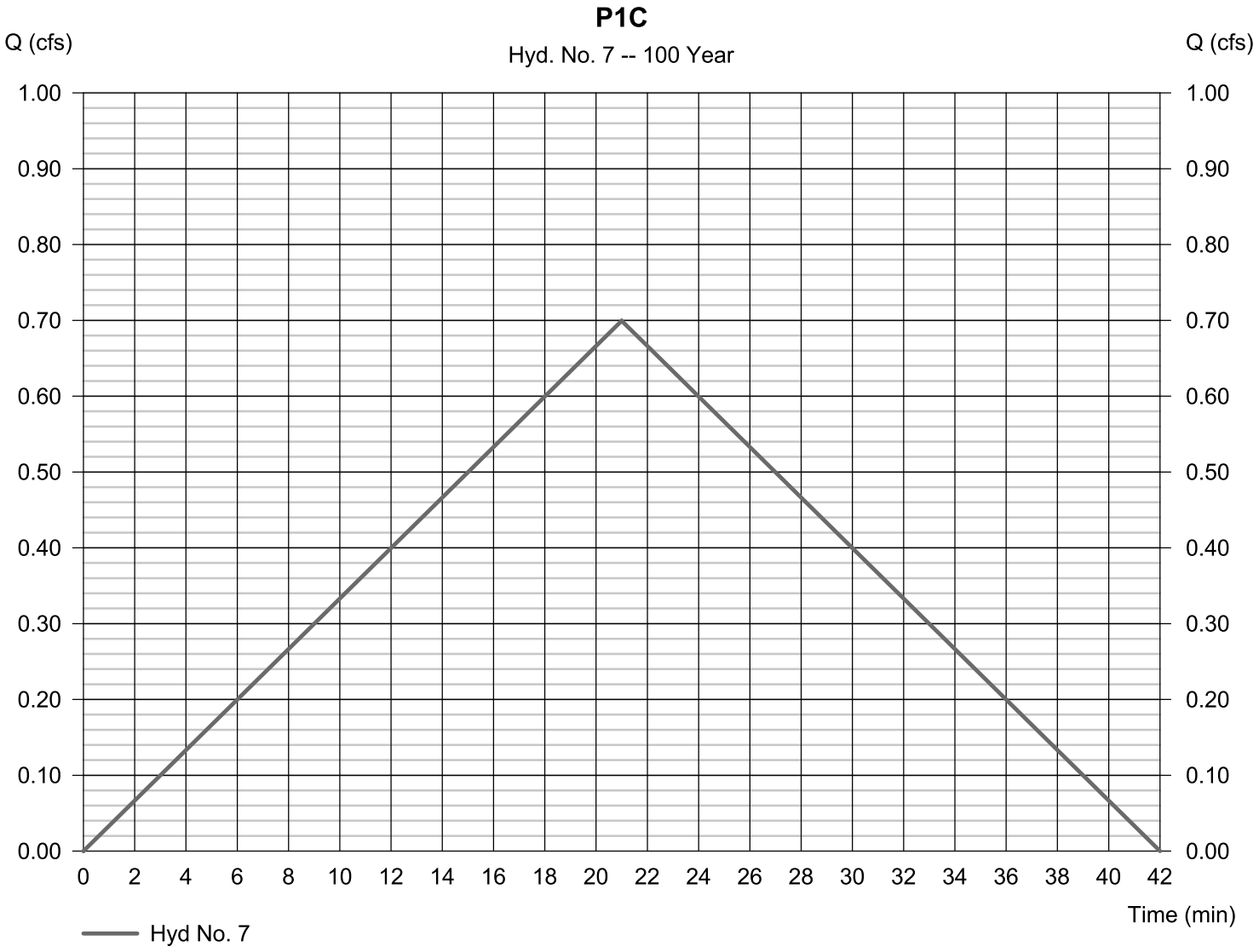


Hydrograph Report

Hyd. No. 7

P1C

Hydrograph type	= Rational	Peak discharge	= 0.699 cfs
Storm frequency	= 100 yrs	Time to peak	= 21 min
Time interval	= 1 min	Hyd. volume	= 881 cuft
Drainage area	= 0.280 ac	Runoff coeff.	= 0.46
Intensity	= 5.430 in/hr	Tc by User	= 21.00 min
IDF Curve	= 0545C.IDF	Asc/Rec limb fact	= 1/1



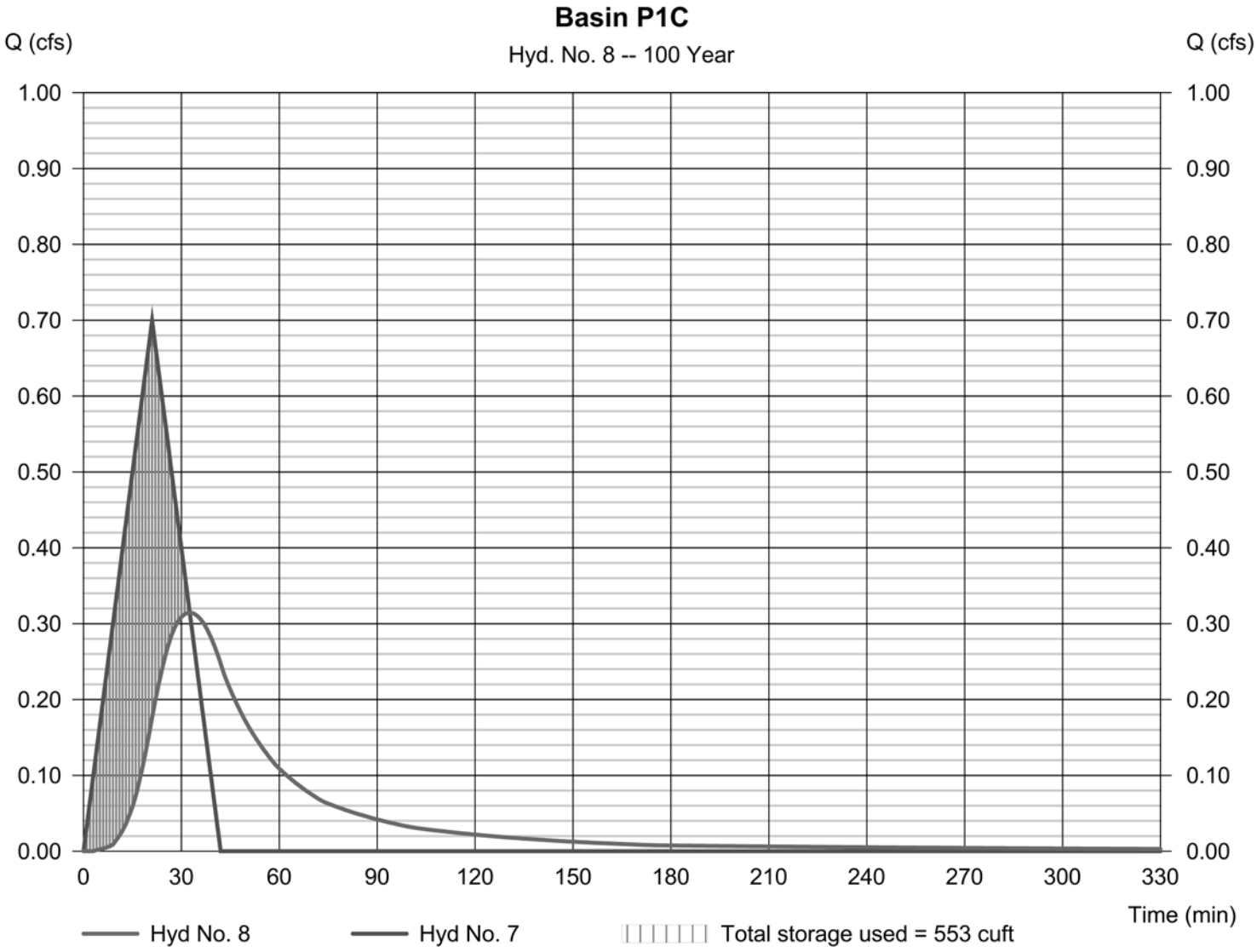
Hydrograph Report

Hyd. No. 8

Basin P1C

Hydrograph type	= Reservoir	Peak discharge	= 0.314 cfs
Storm frequency	= 100 yrs	Time to peak	= 33 min
Time interval	= 1 min	Hyd. volume	= 872 cuft
Inflow hyd. No.	= 7 - P1C	Max. Elevation	= 125.36 ft
Reservoir name	= P1C	Max. Storage	= 553 cuft

Storage Indication method used.

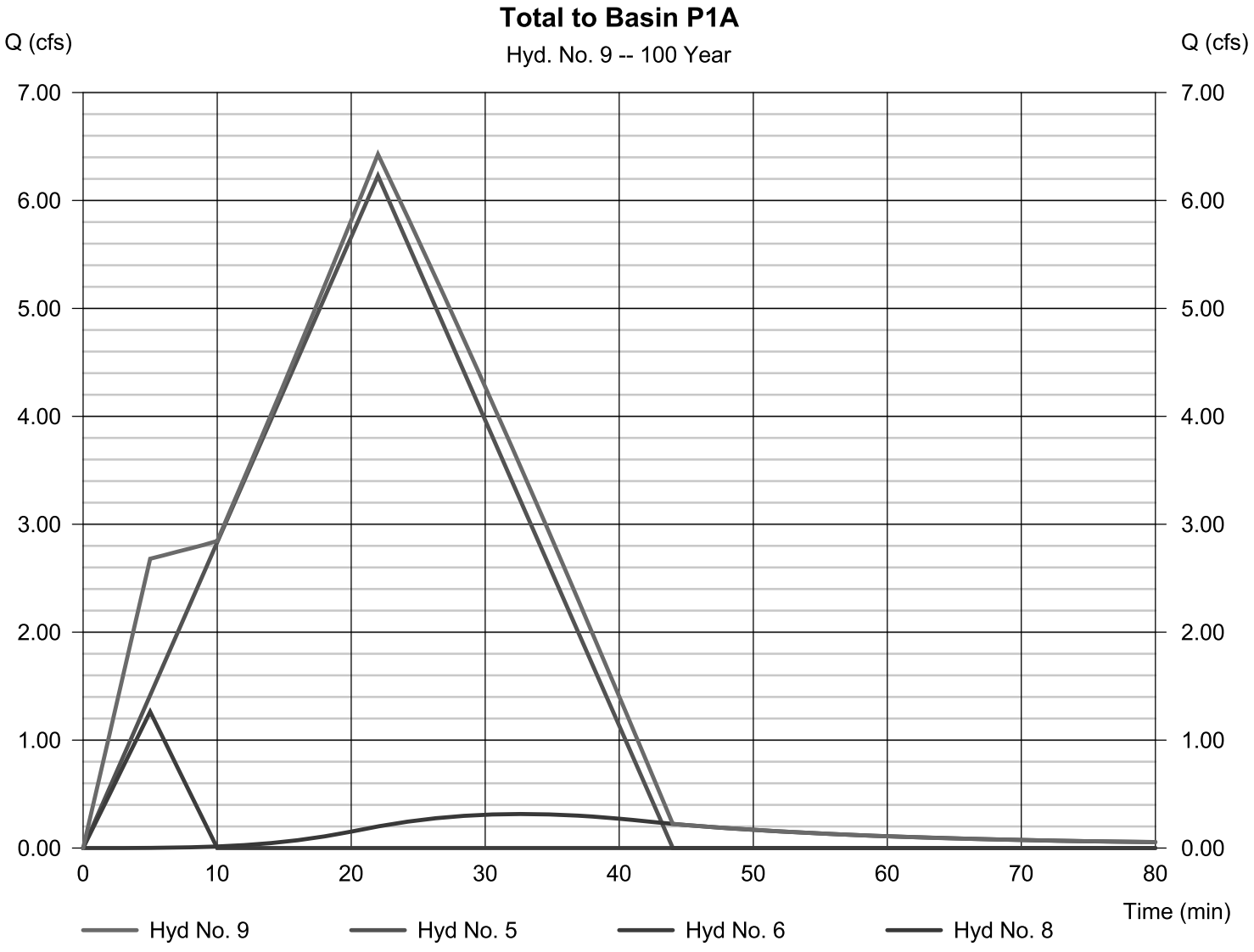


Hydrograph Report

Hyd. No. 9

Total to Basin P1A

Hydrograph type	= Combine	Peak discharge	= 6.428 cfs
Storm frequency	= 100 yrs	Time to peak	= 22 min
Time interval	= 1 min	Hyd. volume	= 9,472 cuft
Inflow hyds.	= 5, 6, 8	Contrib. drain. area	= 3.370 ac



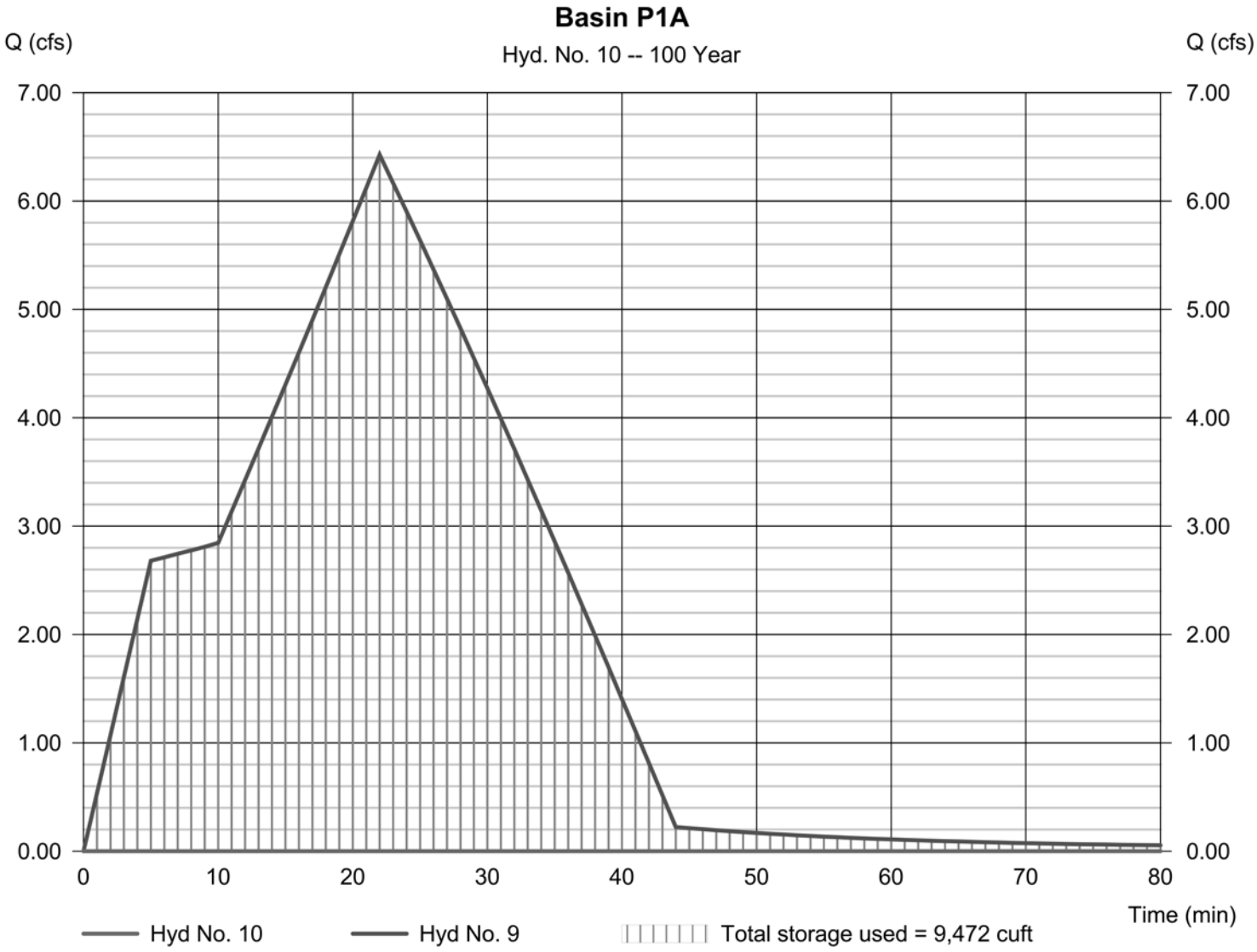
Hydrograph Report

Hyd. No. 10

Basin P1A

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 9 - Total to Basin P1A	Max. Elevation	= 123.70 ft
Reservoir name	= P1A	Max. Storage	= 9,472 cuft

Storage Indication method used.

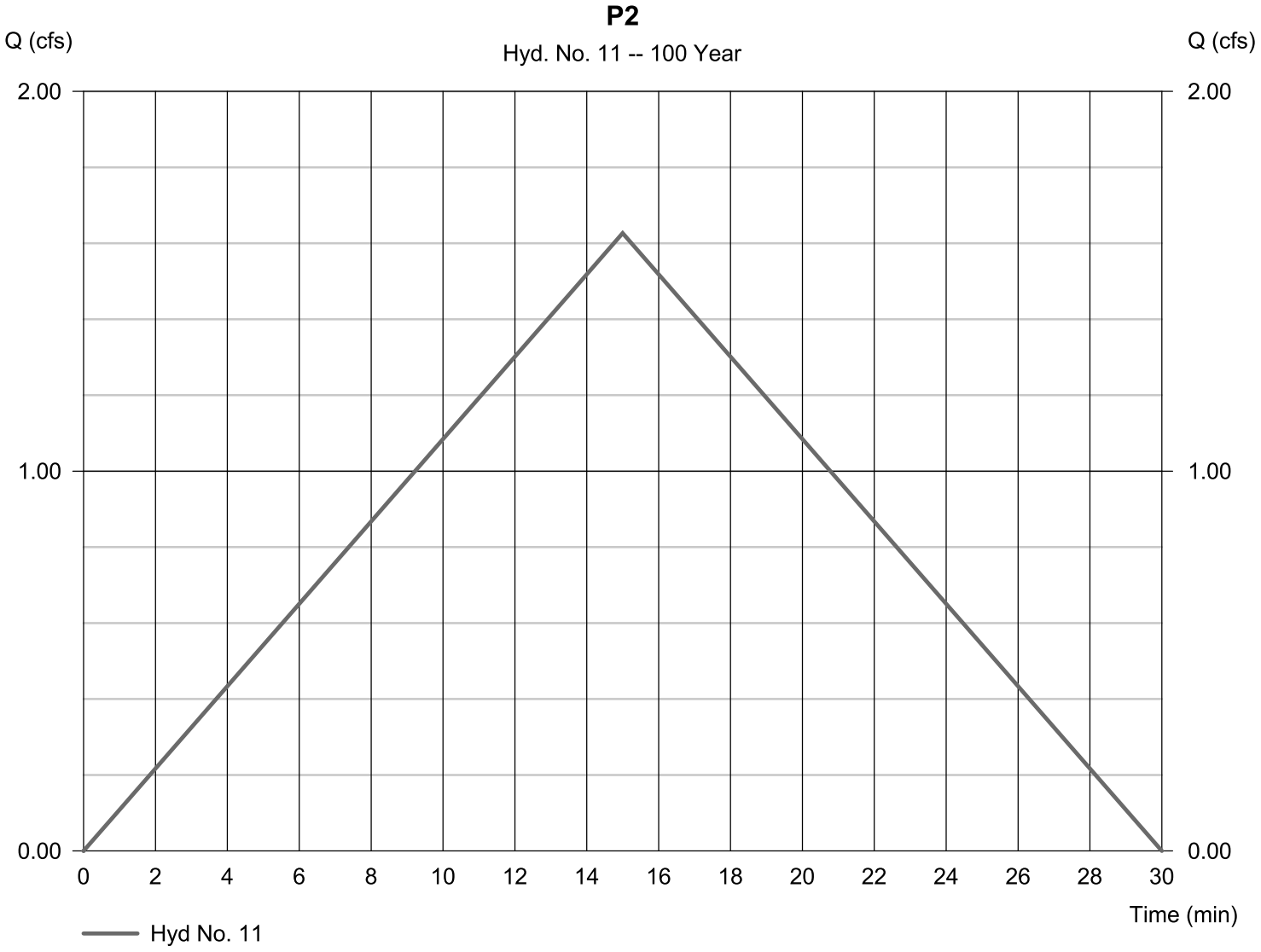


Hydrograph Report

Hyd. No. 11

P2

Hydrograph type	= Rational	Peak discharge	= 1.627 cfs
Storm frequency	= 100 yrs	Time to peak	= 15 min
Time interval	= 1 min	Hyd. volume	= 1,464 cuft
Drainage area	= 0.430 ac	Runoff coeff.	= 0.57
Intensity	= 6.636 in/hr	Tc by User	= 15.00 min
IDF Curve	= 0545C.IDF	Asc/Rec limb fact	= 1/1

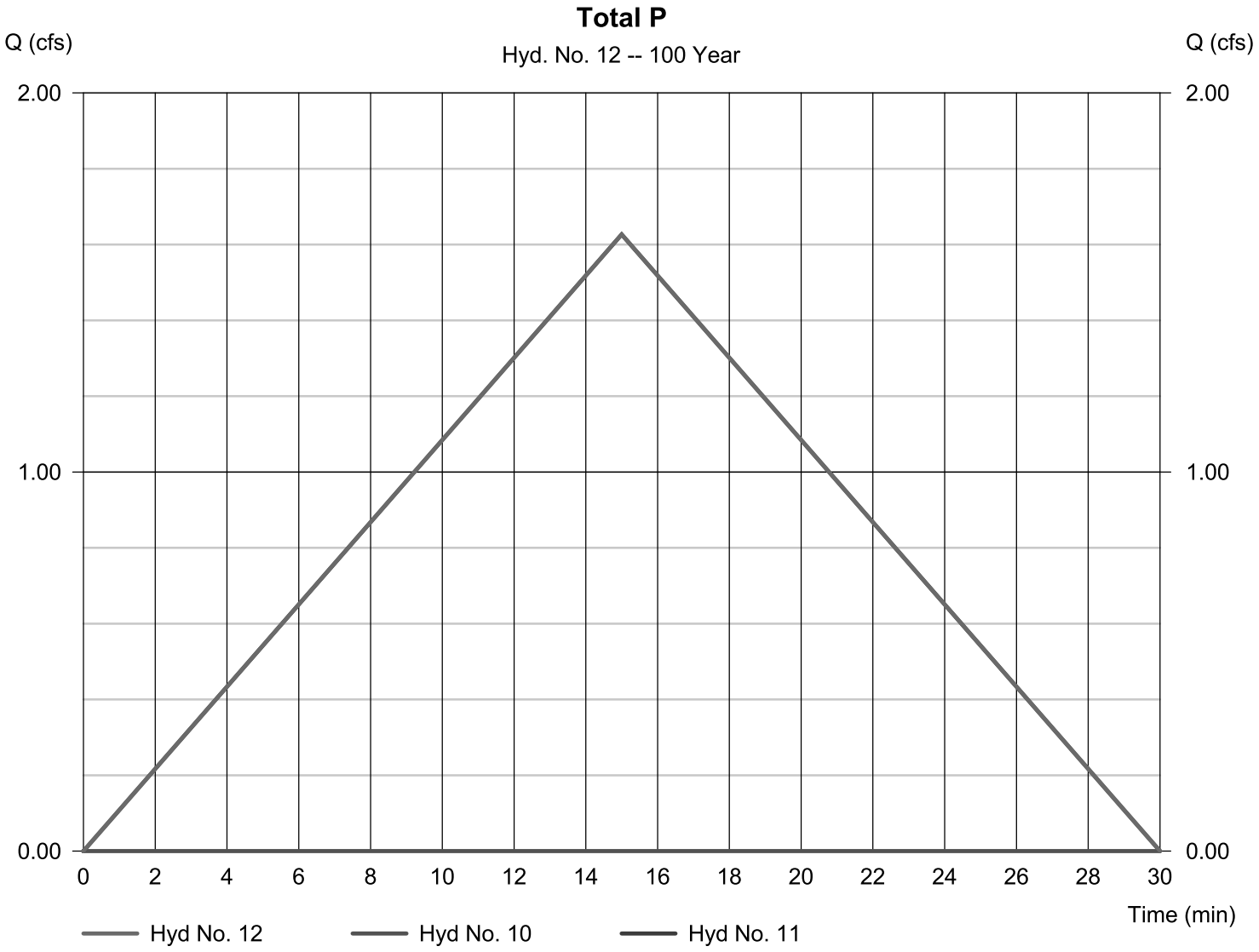


Hydrograph Report

Hyd. No. 12

Total P

Hydrograph type	=	Combine	Peak discharge	=	1.627 cfs
Storm frequency	=	100 yrs	Time to peak	=	15 min
Time interval	=	1 min	Hyd. volume	=	1,464 cuft
Inflow hyds.	=	10, 11	Contrib. drain. area	=	0.430 ac



Stage Storage

1300 South Main Street – Plantsville, CT

Detention Basin P1

Contour Elevation	Contour Area (sq. ft)	Depth (ft)	Incremental Volume Avg. End (cu. ft)	Cumulative Volume Avg. End (cu. ft)	Incremental Volume Conic (cu. ft)	Cumulative Volume Conic (cu. ft)
123.000	12,717.04	N/A	N/A	0.00	N/A	0.00
123.500	13,826.94	0.500	6636.00	6636.00	6634.06	6634.06
124.000	14,976.14	0.500	7200.77	13836.77	7198.86	13832.92
124.500	15,923.77	0.500	7724.98	21561.74	7723.77	21556.69
125.000	17,251.23	0.500	8293.75	29855.50	8291.54	29848.22

Detention Basin P2

Contour Elevation	Contour Area (sq. ft)	Depth (ft)	Incremental Volume Avg. End (cu. ft)	Cumulative Volume Avg. End (cu. ft)	Incremental Volume Conic (cu. ft)	Cumulative Volume Conic (cu. ft)
125.000	1,323.07	N/A	N/A	0.00	N/A	0.00
125.500	1,737.07	0.500	765.04	765.04	762.69	762.69
126.000	2,176.21	0.500	978.32	1743.35	976.26	1738.95
126.500	2,640.49	0.500	1204.17	2947.53	1202.31	2941.26

Water Quality Volume (WQV)

Project: 1300 South Main Street
Plantsville, CT

Project #: 0545C
Date: 9/19/2023
By: BTP

Equation:

WQV = (1")(R)(A)/12 *Section 7.4.1 of 2004 Connecticut Stormwater Quality Manual*

WQV= Water Quality Volume (ac-ft)
R = Volumemetric Runoff Coefficient = 0.05+0.009 (I)
I = Percent Impervious Cover
A = Site Area in Acres

					Required		Main Area		Outlet Area		Total	
					Calculated		Provided	Provided	Provided	Provided	Provided	Provided
Basin #	Site Area "A" (acres)	Impervious Area (acres)	Impervious Cover "I" (%)	Runoff Coefficient "R"	WQV (ac-ft)	WQV (cu-ft)	WQV (cu-ft)	WQV (%)	WQV (cu-ft)	WQV (%)	WQV (cu-ft)	WQV (%)
P1	4.09	1.18	28.9	0.310	0.106	4,597.40	21,556.00	469%	0	0%	21,556.00	469%

Note:

APPENDIX "E'

STORMWATER MANAGEMENT MAINTENANCE SCHEDULE

STORMWATER MANAGEMENT MAINTENANCE SCHEDULE

SOUTHINGTON, CONNECTICUT

The following are the required maintenance and monitoring procedures:

Riprap and Discharge Aprons - Shall be cleared of all sediment deposits and invasive plant species and are to be inspected for rip-rap damage and deterioration. These procedures to be conducted yearly between May I and before September 15.

Emergency Spillway - Shall be cleared of all sediment deposits and invasive plant species and are to be inspected for riprap damage and deterioration. These procedures to be conducted yearly between May 1 and September 15. Repairs shall be executed immediately.

Catch Basins - All basin rim areas and sumps shall be cleaned of all sediment, trash and debris. These procedures to be conducted yearly anytime after May I and before September 15.

Swales - all swales be cleared of all sediment deposits, invasive plant species and debris. Any erosion shall be repaired. These procedures to be conducted annually. Swales shall be inspected two times a year and after significant rainfall events. Additional maintenance, beyond schedule maintenance, may be required based upon inspections.

Detention Basin - Basin shall be cleared of all sediment deposits, invasive plant species and debris. These procedures to be conducted yearly between May 1 and September 15. Basin shall be inspected two times a year and after significant rainfall events. Additional maintenance, beyond scheduled maintenance, may be required based upon inspections.

Slopes - Slope erosion control blankets and vegetation shall be inspected twice a year and after significant rainfall events. Additional maintenance, beyond schedule maintenance, may be required based upon inspections. Any rills or channeling shall be repaired immediately

Parking Lot\Drive Sweeping - Use mechanical sweeping on paved areas where dust and fine materials accumulate. These procedures to be conducted yearly anytime after May I and before September 15.
All sediment deposits, trash and debris shall be removed to a location off-site and disposed of in an environmentally acceptable manner.

All sediment deposits, trash and debris shall be removed to a location off-site and disposed of in an environmentally acceptable manner.