ENGINEERING REPORT

For The Proposed:

Site Redevelopment

Located At:
5 Victoria Drive
Monroe, Connecticut 06468

Prepared On:
March 23, 2021

Revised On:
May 7, 2021

Prepared By:

SOLLI ENGINEERING

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INTRODUCTION

Solli Engineering has prepared this Engineering Report to provide an analysis of the stormwater drainage and soil erosion and sediment control measures associated with the proposed site improvements of the property located at 5 Victoria Drive, Monroe, Connecticut. The subject site is currently improved with a ±12,035 square-foot existing building, existing 200' x 110' athletic field, utilities and drainage features, with proposed building addition of 22,179 SF and improvements to parking areas, drives and landscaping. The design is in compliance with all applicable Town of Monroe codes and regulations as well as all other applicable state and federal requirements and regulations.

PROJECT DESCRIPTION

EXISTING CONDITIONS

The site is located at 5 Victoria Drive in Monroe, Connecticut. The overall site totals approximately 8.27 acres and is bound by Victoria Drive to the north, Swiss Army Corporate headquarters to the east, commercial property to the south, and vacant land to the west. The Pequonnock River runs north to south along the eastern edge of the property. The property is owned by Victoria Drive Associates, LLC and is zoned Business 2 (B-2). The property is located just north of the Trumbull town line, with a portion of the property in Trumbull, and is accessed via Victoria Drive, providing access to the project site from Route 25. Victoria Drive is private drive, which also provides primary access to the Swiss Army Corporate Headquarters and the proposed retail development of 2 Victoria Drive.

Wetlands exist on the site surrounding the Pequonnock River, and two isolated wetlands also exist in the easterly and southerly portions of the site (See Appendix A, Figure 5, Regulated Area Map). The wetlands were delineated by certified soil scientists from Environmental Planning Services on April 1 and 7, 2014. See Appendix B for the Soils Report prepared for the property.

According to FEMA, portions of the project site are within a 100-year flood zone, generally following the Pequonnock River; refer to Figure 2, FEMA Flood Map, in Appendix A for more details. The project site is located outside of all public water supply watersheds in accordance with the Connecticut Department of Public Health (CT DPH) requirements; Refer to Figure 6, Public Watershed Map, in Appendix A for more details.

The majority of the existing site consists of developed impervious parking and building surfaces, in addition to a large athletic field. Additionally, areas with poorly drained ground cover with large areas of compacted gravel are located throughout the southern end of the property. Refer to the "Stormwater Management" section of this report for detailed information regarding the hydrology of the existing conditions.

WETLAND ASSESSMENT

The current on-site wetland area, delineated on April 1 and 7, 2014 by Environmental Planning Services, is approximately 2.99 acres. Significant wetland restoration and mitigation was previously approved and conducted as part of application IWC-2014-13. The wetland delineation was recently updated by JMM

Wetlands Consulting on April 30 and May 2, 2021. The new wetland limits reflect the previous wetland restoration work completed. See Sheet 2.61 for additional planting lists and approximate layout of additional plans and mixes which will further enhance the current wetlands. See Appendix B for the Wetland Soils Report provided by Environmental Planning Services.

PROPOSED SITE IMPROVEMENTS

The proposed site improvements consist of maintaining the existing ±12,035 square-foot building and constructing a 22,359 square-foot building expansion off the northeast side of the building. The project will also maintain the majority of the existing pavement to the north of the existing building for parking and access. The proposed development includes the construction of two paved parking areas, one to the east of the proposed building expansion, of approximately 59 parking spaces, and one to south of the existing building of approximately 32 spaces. An access dive around the proposed building expansion will connect into a proposed grass paver parking lot with approximately 43 spaces. The project also includes the installation/ modification of 17 parking spaces adjacent to the front of the existing building, for a total of 151 proposed parking spaces. The size of the existing athletic field will be decreased to accommodate the site improvements.

The development proposes to remove the majority of the existing parking area and athletic field to accommodate the proposed building expansion, parking improvements and athletic field modifications. The redevelopment will result in a slight increase in impervious area of approximately 0.92 acres compared to that of existing conditions. The improved quality of the proposed pervious area has provided a reduction in the peak discharge rates compared to that of existing conditions for all storm events. The redevelopment also provides a water quality basin which will treat the water quality volume; ensuring that runoff from the proposed parking area and athletic field is treated prior to entering the adjacent wetlands. Refer to the "Stormwater Management" section of this report for detailed information regarding the hydrology of the proposed conditions.

STORMWATER MANAGEMENT

The stormwater management plan and design for the project is intended to be in compliance with the Town of Monroe Subdivision of Land Regulations Article III, Section 111-302, Town of Monroe MS4 Stormwater Management Plan, 2004 Connecticut Stormwater Quality Manual and the CT DOT 2000 Drainage Manual, while taking prevailing site conditions and practical considerations into account.

METHODOLOGY

Stormwater runoff analysis for both existing and proposed conditions was performed using the software packages HydraFlow and HydroCAD. These software packages use a computer implementation of the SCS – Synthetic Unit Hydrograph methodology to compute volumes and rates of runoff. The watershed area, rainfall depths and intensity, curve number and time of concentration are factors that influence the computed results.

Rainfall depths for this property were used for calculating the volumes and rates of runoff for this particular project. The depths were taken from the NOAA Atlas 14 documents (Latitude: 41.2987°, Longitude: -73.2479°) and are listed in Table 1 below.

Table 1: Rainfall Data

Return Period	24-hr Rainfall Depth (in)
2-year	3.56
5-year	4.63
10-year	5.51
25-year	6.72
50-year	7.62
100-year	8.60

HydraFlow automatically computes the rainfall intensity from its own IDF curves when the rainfall intensity data is provided. Table 2 shows the data that was used to generate the IDF curves. This information was taken from the NOAA Atlas 14 documents (Latitude: 41.2987°, Longitude: -73.2479°) and are listed in Table 2 below.

Table 2: IDF Table

Intermediate Intensity Values (in/hr.)				
Return Period	**5-Minute**	**15-Minute**	**30-Minute**	**60-Minute**
2-yr	5.10	2.83	1.97	1.26
5-yr	6.31	3.51	2.44	1.56
10-yr	7.32	4.07	2.83	1.81
25-yr	8.71	4.84	3.36	2.15
50-yr	9.76	5.42	3.77	2.42
100-yr	10.80	6.03	4.19	2.68

SCS uses the runoff curve number (CN) method to estimate runoff from storm rainfall. The major factors that determine CN are the watershed's soil and cover conditions, cover type, treatment and hydrologic condition. The higher percentage of impervious cover within a watershed will result in a higher curve number. A composite curve number was calculated for each analyzed watershed.

The time of concentration is the time it takes for runoff to travel from the hydraulically most distant point of the watershed to a point of interest within the watershed. The time of concentration is calculated by adding the travel times of sheet flow, shallow concentrated flow and open channel flow, or some combination of these depending on the watershed and its features.

EXISTING HYDROLOGY

The majority of the slopes on site range from approximately 0.5 percent to 10 percent, with a high elevation of approximately 305 feet at the northern portion of the site, adjacent to Victoria Drive, and a low elevation of approximately 291 feet at the Pequonnock River edge. According to the NRCS Soil Survey Geographic database for the State of Connecticut, the majority of the site, in which the project is proposed, is comprised of Hinckley gravelly sandy loam with some Saco Silt loam. These soils have a hydrologic soil group rating

of A and B/D, respectively. A breakdown of all the soils, located within the property limits, as well as the NRCS Soil Survey Map for the site can be found in Appendix A, Figure 3.

Approximately 4.54 acres of the 8.27± acre site was analyzed for stormwater management purposes. Based on existing drainage patterns, the 4.54 acre area was divided into five (5) contributing drainage areas, labeled Existing Drainage Area 1 (EDA-1), Existing Drainage Area 2 (EDA-2), Existing Drainage Area 3 (EDA-3), Existing Drainage Area 4 (EDA-4) and Existing Drainage Area 5 (EDA-5). The approximate location and delineation of these drainage areas can be seen on Sheet DA-1, Drainage Area Map, found in Appendix D.

EDA-1 has a contributing area of approximately 1.03 acres. This area encompasses the northern portion of the site along Victoria Drive spanning the entire width of the site from west to east and triangulating southwest to the northwest corner of the existing building. The majority of runoff from EDA-1 flows north, overland, into the existing conveyance system located within Victoria Drive. The system routes the runoff through an existing underground water quality structure before discharging into the Pequonnock River.

EDA-2 has a contributing area of approximately 0.36 acres. This area encompasses the northeast portion of the site from the eastern border of EDA-1 spanning east to the Pequonnock River. The majority of runoff from EDA-2 flows northeast, overland, into existing wetland, and eventually into the Pequonnock River.

EDA-3 has a contributing area of approximately 1.65 acres. This area encompasses the eastern portion of the site from the east side of the existing building east to the Pequonnock River, including the existing athletic field. The majority of runoff from EDA-3 flows southeast, overland, then into through a series of stormwater pipes and swales before entering into existing water quality basin (Stormwater Basin #1) and then into existing wetlands to the east which eventually discharges into the Pequonnock River.

EDA-4 has a contributing area of approximately 0.71 acres. This area encompasses the portion of the site to the south of the existing building, including the majority of the existing roof area and extends south to the property line and wetlands. The majority of runoff from EDA-4 flows east and then south, overland, into existing wetlands to the south.

EDA-5 has a contributing area of approximately 0.79 acres. This area encompasses the southern portion of the site between the two large wetland areas. The majority of runoff from EDA-5 flows from the highpoint in the center of the area to the wetlands on the east and west sides.

Characteristics of these drainage areas are summarized in Table 3. A map depicting existing drainage areas and their characteristics, entitled “Existing Drainage Area Map”, sheet EDA-1, can be found in Appendix E.

Table 3: Existing Drainage Area Characteristics

Drainage Area	Area (Acres)	Curve Number (CN)	Time of Concentration (Minutes)
EDA-1	1.03	69	14.9
EDA-2	0.36	70	21.3
EDA-3	1.65	64	6.0
EDA-4	0.71	65	10.5
EDA-5	0.79	72	6.0

Existing peak flows of runoff for all analyzed storm-events are summarized in Table 4. Calculations for the existing hydrology can be found in Appendix C.

Table 4: Existing Peak Flows

Drainage Area	Peak Flow (cfs)					
	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
EDA-1	0.855	1.549	2.177	3.096	3.810	4.605
EDA-2	0.279	0.495	0.690	0.975	1.194	1.438
EDA-3*	0.205	1.458	3.369	5.353	6.773	8.349
EDA-4	0.478	0.953	1.395	2.058	2.579	3.164
EDA-5	1.061	1.816	2.485	3.448	4.184	4.996
Overall Existing	2.374	5.371	9.498	14.04	17.47	21.30

- **- EDA -3 is the release from the detention basin**

PROPOSED HYROLOGY & HYDRAULICS

The proposed redevelopment consists of drainage areas that are of similar patterns to existing contributing areas, within the 4.57 acres analyzed. Based on the proposed drainage patterns, the 8.27-acre area was divided into six (6) contributing drainage areas, labeled Proposed Drainage Area 1 (PDA-1), Proposed Drainage Area 2 (PDA-2), Proposed Drainage Area 3 (PDA-3), Proposed Drainage Area 4 (PDA-4), Proposed Drainage Area 5a (PDA-5a), Proposed Drainage Area 5b (PDA-5b), and Proposed Building. The approximate location and delineation of these drainage areas can be seen on Sheet DA-1, Drainage Area Map, found in Appendix E.

PDA-1 has a contributing area of approximately 0.96 acres. This area encompasses the northern portion of the site along Victoria Drive spanning the entire width of the site from west to east and triangulating southwest to the northwest corner of the existing building. The majority of runoff from PDA-1 flows north, overland, into the existing conveyance system located within Victoria Drive. The system routes the runoff through an existing underground water quality structure before discharging into the Pequonnock River.

PDA-2 has a contributing area of approximately 0.45 acres. This area encompasses the northeast portion of the site from the eastern border of PDA-1 spanning west to the Pequonnock River. The majority of runoff from PDA-2 flows northeast, overland, into existing wetlands, and eventually into the Pequonnock River.

PDA-3 has a contributing area of approximately 1.07 acres. This area encompasses the eastern portion of the site, east of the existing building, and consists of proposed parking area and athletic field. The majority of runoff from PDA-3 flows southeast, overland, into the existing water quality basin (Stormwater Basin #1) that is to remain as installed. The stormwater runoff leaves the water quality basin via a spillway outlet and travels into the adjacent existing wetland. The existing wetland eventually discharges into the Pequonnock River.

PDA-4 has a contributing area of approximately 0.78 acres. This area encompasses the southwest portion of the site including the majority of the existing roof area and extends south the property line. The majority of runoff from PDA-4 flows east and then south, overland, into existing wetlands to the south. The flows will be collected it a storm drainage system and routed through a hydrodynamic separator prior to discharge towards the wetlands.

PDA-5a has a contributing area of approximately 0.33 acres. This area encompasses the anticipated overflow gravel parking lot at the southern portion of the site between the two large wetland areas. The flows from the site will be directed to a detention basin (Stormwater Basin #2) prior to high level overflow to the wetlands.

PDA-5b has a contributing area of approximately 0.47 acres. This area encompasses the remaining area of the southern portion of the site, including a portion of the paved access drive over the existing storm culvert. This runoff will be directed to a leak-off area with provided riprap protection to the downstream wetlands.

The building expansion is 0.51 acres and will be directed to an underground detention system to accommodate the required reduction in peak runoff flow.

Characteristics of these drainage areas are summarized in Table 5. A map depicting proposed drainage areas can be found in Appendix E.

Table 5: Proposed Drainage Area Characteristics

Drainage Area	Area (Acres)	Curve Number (CN)	Time of Concentration (Minutes)
PDA-1	0.96	63	14.9
PDA-2	0.45	68	21.3
PDA-3	1.07	71	6.0
PDA-4	0.78	84	6.0
PDA-5a	0.33	39	9.0
PDA-5b	0.47	42	6.0
Building Expansion	0.51	98	6.0

Proposed peak flows and volumes for all analyzed storms are summarized in Table 6. Calculations for the proposed hydrology can be found in Appendix C.

Table 6: Proposed Peak Flows

Drainage Area	Peak Flow (cfs)					
	2-yr	**5-yr**	**10-yr**	**25-yr**	**50-yr**	**100-yr**
PDA-1	0.486	1.028	1.546	2.325	2.940	3.638
PDA-2	0.303	0.560	0.795	1.141	1.410	1.711
PDA-3*	1.350	2.352	3.245	4.536	5.525	6.464
PDA-4	1.883	2.761	3.492	4.508	5.263	6.082
PDA-5a**	0.001	0.006	0.032	0.109	0.213	0.360
PDA-5b	0.003	0.028	0.095	0.304	0.528	0.809
Total Drainage Area Excluding Building	2.344	4.965	8.238	11.79	14.47	17.48
Roof Underground System	0.00	0.05	0.13	0.54	1.14	2.04
Total Proposed	2.344	5.015	8.368	12.37	15.61	19.52

* - PDA-3 is the release from the associated detention basin (Stormwater Basin #1).

** - PDA-5a is the release from the associated detention basin (Stormwater Basin #2).

In an effort to improve the quality of the stormwater discharged from the site, the project will include grass-lined swales, a hydrodynamic separator, and a water quality basin. These stormwater quality measures are intended to provide limited removal of pollutants before runoff reaches the Pequonnock River located east of the project site.

STORMWATER CONCLUSION

The majority of the existing site consists of poorly drained ground cover conditions with large areas of compacted gravel throughout. The redevelopment proposes to remove the compacted gravel and other poorly drained surfaces and replace it with topsoil and grass cover within all proposed landscaped areas. The redevelopment will result in a slight increase in impervious area of approximately 0.92 acres compared to that of existing conditions. The quality of the proposed pervious area has provided a reduction in the peak discharge rates compared to that of existing conditions for the 2-, 5-, 10-, 25-, 50- and 100-year storm event.

The stormwater quality measures provided as part of the proposed redevelopment include a sediment forebay, catch basin with a two-foot sump, hydrodynamic separator and a water quality basin. These measures will result in an enhancement to the stormwater runoff discharged from the site.

Table 7: Peak Flow Comparison Table

Drainage Area	Peak Flow (cfs)					
	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Overall Existing	2.374	5.371	9.498	14.04	17.47	21.3
Overall Proposed	2.344	5.015	8.368	12.37	15.61	19.52
Comparison	-0.03	-0.356	-1.13	-1.67	-1.86	-1.78

SOIL EROSION AND SEDIMENT CONTROL

The proposed plans for soil erosion and sediment control prepared for this project have been developed in accordance with the Town of Monroe Zoning Regulations, Article 6.5, effective through December 29, 2020, as well as the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, prepared by the Connecticut Council on Soil and Water Conservation in cooperation with the Connecticut Department of Environmental Protection.

The soil erosion and sediment control measures that will be proposed as part of this project include geotextile silt fences, temporary sediment traps, stone check dams, temporary diversion swales, construction entrance, dust control measures, riprap stabilization, temporary stockpile area, and inlet protection for stormwater drainage features.

The temporary sediment traps will be excavated to detain sediment-laden runoff from contributing drainage areas located within the project's limits of disturbance. The sediment traps are proposed in the low-lying areas of each contributing drainage area and have been sized to provide a minimum storage volume of 134 cubic yards per acre of drainage area per 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.

For more detail regarding layout and design of the soil erosion and sediment control measures implemented as part of this project see Sheet 2.31, Soil Erosion & Sediment Control Plan and Sheet 2.41, Soil Erosion & Sediment Control Notes & Details within the civil plan set.

SITE UTILITIES

WATER

An existing twelve (12) inch water main within Victoria Drive from Main Street (Route 25) provides domestic water service to the existing building. The water service has been extended to the building and the project does not propose any changes to the existing utility connections or locations. The water line will be expanded internally to the proposed building expansion.

TELEPHONE AND ELECTRIC

Existing telephone and electrical services are located within Victoria Drive and are provided by AT&T and Eversource, respectively. The utilities have been extended to the building and do not propose any changes to the existing utility connections or locations. The associated utilities will be expanded internally to the proposed building expansion.

GAS

The existing site currently utilizes propane as a fuel source which is stored in an above ground tank located in the southwest corner of the property. The tank will be relocated to accommodate the parking lot expansion and will continue to be the source of heat for the building. There is currently natural gas service in the area which is provided by the Southern Connecticut Gas Company via an existing 4 inch gas main located within Victoria Drive. There is no intention of connecting to the Gas Main at this time.

SUBSURFACE SEWAGE DISPOSAL SYSTEM

The existing subsurface sewage disposal system will be maintained under the proposed conditions. The existing septic system providing disposal for the 12,035± square-foot existing building consists of a 1,000 gallon septic tank, pump chamber, two distributions boxes, a leaching field and associated piping. Per the design plans on file with the Trumbull Monroe Health District, prepared by Spath-Bjorklund Associates, Inc., the existing leaching field is comprised of a single row of 12-inch high leaching galleries approximately 72 feet long. The system is located north of the existing building. Refer to the plan entitled "Subsurface Sewage Disposal System, Main Street (CT Route 25), Monroe, Connecticut, Prepared For L&L Evergreen," prepared by Spath-Bjorklund Associates, Inc., located in Appendix D, for details and design regarding the existing septic system to remain.

The site was investigated by Solli Engineering on January 19th, 2015 to observe the conditions of the primary treatment facilities as well as the existing leaching field of 5 Victoria Drive, Monroe, Connecticut. Solli Engineering observed the septic tank to be concrete, with two manhole risers. The concrete of the tank appeared to be in good condition with no corrosion. The water elevation in the septic tank was at the invert of the inlet pipe. The inlet had no baffle and appeared to be a 6-inch PVC pipe. The outlet pipe was not visible from the riser location.

Solli Engineering attempted to look into the pump chamber, but the cover was locked and could not be opened. The electric panel associated with the pump appeared to be in good conditions. The pump was shut off at the time of the investigation.

The leaching field and distribution boxes were buried and could not be accessed or observed. There was no odor or breakout present during out investigation.

The redevelopment proposes to expand the existing system. The new design will require 1,500 gallons per day. This would equate to requiring 1,000 square feet of effective leaching area. The existing system has

424.8 square feet of effective leaching area. The proposed system will provide an additional 870 square feet. Along with the leach field expansion, the septic tank will need to be replaced with a 2,000 gallon septic tank. For more details regarding the existing and proposed design flow calculations refer to the Septic Evaluation Memorandum, prepared by Solli Engineering, in Appendix D.

EARTHWORK

The proposed redevelopment will require filling for the proposed building expansion and cutting in the southern property of the property. The proposed construction of the parking lot, and associated drainage features will require a total export of approximately ±139 cubic yards within the floodplain area and a total export of ±1,577 cubic yards within the upland review area. The total project will require an import of approximately ±2,535 cubic yards to accommodate the proposed redevelopment.

DESCRIPTION OF FILLING AND/OR EXCAVATION ACTIVITY WITHIN REGULATED AREA

Proposed work within the regulated area consists of a portion of the proposed building, paved parking lot, storm drainage, septic leaching field and stormwater detention basin.

Within the regulated area, the development will require a cut of approximately 1,045 CY. The proposed fill is approximately 2,622 CY. Therefore, the net fill within the regulated area totals approximately 1,577 CY.

TRAFFIC IMPACT STATEMENT

In the vicinity of the project site, Victoria Drive is private roadway that runs east to west with a posted speed limit of 15 miles per hour. The roadway intersects with Route 25 as the westbound approach of the signalized T-intersection. Sidewalks are not provided along Victoria Drive except for a small portion east of the project site where the Housatonic Railway Trail runs along Victoria Drive.

Main Street (Route 25) is a principal arterial that runs north to south, with a posted speed limit of 40 miles per hour in the vicinity of the proposed development. Main Street (Route 25) is a two-lane bi-directional roadway with intermittent widening at major intersections along the corridor to accommodate exclusive turn lanes. Main Street (Route 25) provides local and regional access to the surrounding area with a mix of commercial, retail and residential uses along the corridor. No sidewalks are provided along Main Street (Route 25) in the vicinity of the proposed development.

To evaluate the potential traffic impact associated with the proposed development, the potential trips to be generated by the proposed development were estimated using data from the Institute of Transportation Engineers (ITE) Trip Generation, 10th Edition. The trip generation was calculated for the weekday PM and Saturday midday peak hours, based on the proposed 22,179 square foot indoor recreational facility. Currently, the Institute of Transportation Engineers does contain data specific to indoor recreational facilities, therefore, data published for Ice Skating Rink, Land Use Code 465, was utilized based on the similar functional characteristics to the proposed facility. ITE Trip Generation rate sheets are included in Appendix F of this report. It is anticipated that the proposed development will generate 29 trips (17 entering,

12 exiting) during the weekday PM peak hour and 59 trips (31 entering, 28 exiting) during the Saturday midday peak hour. The table below summarizes the anticipated trip generation for the proposed facility during the weekday PM peak hour and Saturday midday peak hour.

ANTICIPATED PEAK HOUR TRIP GENERATION PROPOSED INDOOR RECREATIONAL FACILITY 5 VICTORIA DRIVE, MONROE, CT						
	WEEKDAY PM PEAK HOUR			**SATURDAY MIDDAY PEAK HOUR**		
	ENTER	**EXIT**	**TOTAL**	**ENTER**	**EXIT**	**TOTAL**
LUC 465 Ice Skating Rink – 22,359 Square Feet	17	12	29	31	28	59

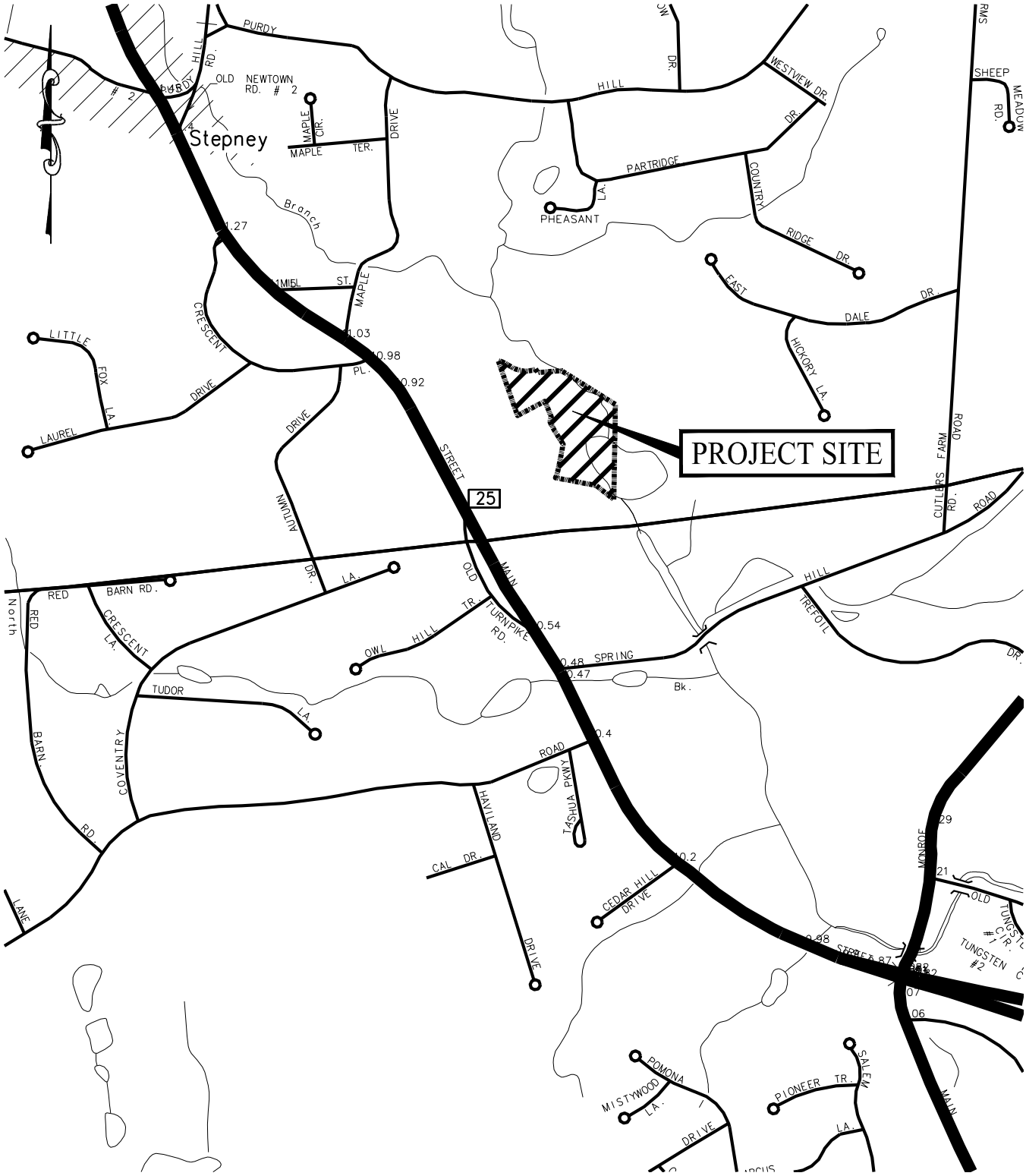
Based on the low volumes of new trips anticipated to be generated by the proposed site development, no adverse impact to the operating conditions of the area roadway network is expected.

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APPENDIX A
FIGURES

Site Location Map (Figure 1)
FEMA Flood Map (Figure 2)
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USGS Map (Figure 7)
Slope Area Map (Figure 8)
Floodplain Storage Capacity (Existing) [Figure 9A]
Floodplain Storage Capacity (Proposed) [Figure 9B]



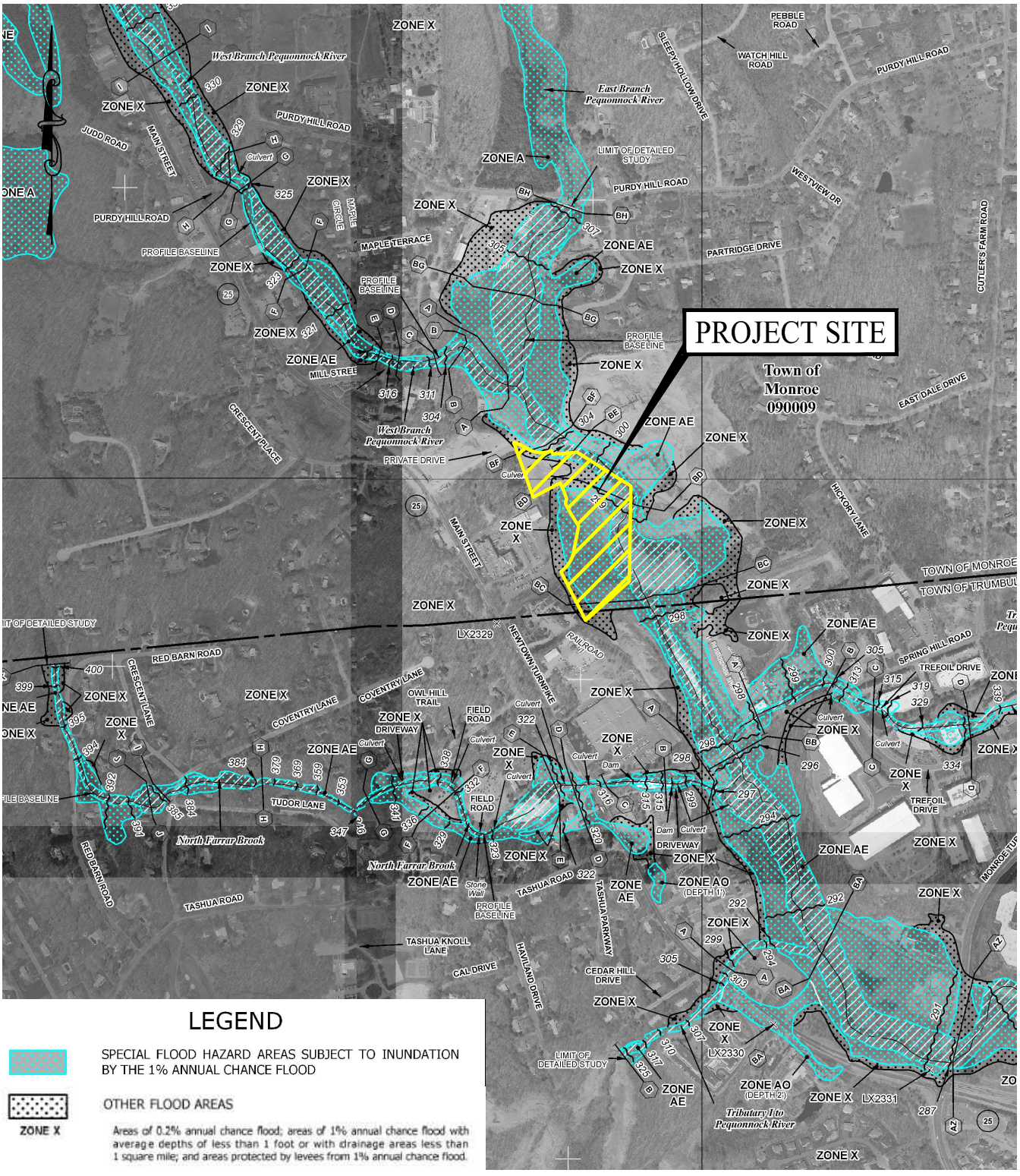
NOTE: BASE MAP INFORMATION TAKEN FROM http://ct.gov/dot, MAP NUMBERS 84 AND 144

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SITE LOCATION MAP

5 VICTORIA DRIVE
MONROE, CONNECTICUT

Project #:	2012301
Plan Date:	03/23/21
Scale:	1" = 1,000'
Figure:	1



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

OTHER FLOOD AREAS

ZONE X

Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

NOTE: BASE MAP INFORMATION TAKEN FROM MSC.FEMA.GOV, AREA NUMBER 09001C0286F AND 09001C0267F

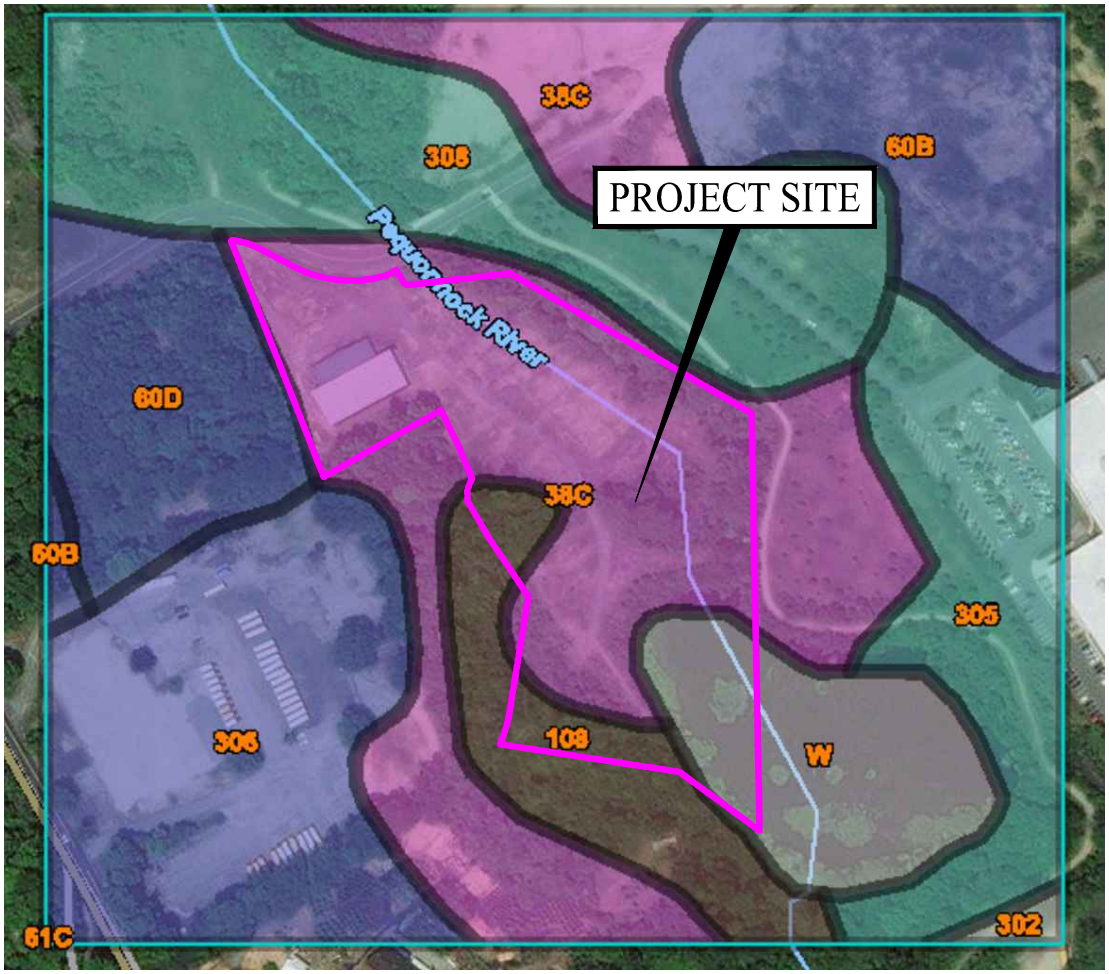
1,000 0 500 1,000

SOLLI ENGINEERING
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T: (203) 880-5455 F: (203) 880-9695

FEMA SURVEY MAP

5 VICTORIA DRIVE
MONROE, CONNECTICUT

Project #:	2012301
Plan Date:	03/23/21
Scale:	1" = 1,000'
Figure:	2



Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
38C	Hinckley loamy sand, 3 to 15 percent slopes	A	15.0	28.2%
60B	Canton and Charlton fine sandy loams, 3 to 8 percent slopes	B	5.1	9.7%
60D	Canton and Charlton soils, 15 to 25 percent slopes	B	4.1	7.8%
61C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes, very stony	B	0.0	0.0%
108	Saco silt loam	B/D	3.4	6.3%
302	Dumps		0.2	0.4%
305	Udorthents-Pits complex, gravelly	C	5.0	9.5%
306	Udorthents-Urban land complex	B	8.0	15.1%
308	Udorthents, smoothed	C	8.6	16.2%
W	Water		3.6	6.8%
Totals for Area of Interest			**53.2**	**100.0%**

NOTE
SOIL MAP INFORMATION TAKEN FROM THE NATURAL RESOURCES CONSERVATION SERVICE, URL: http://websoilsurvey.nrcs.usda.gov
DATE OF IMAGE: AUGUST 14, 2006.

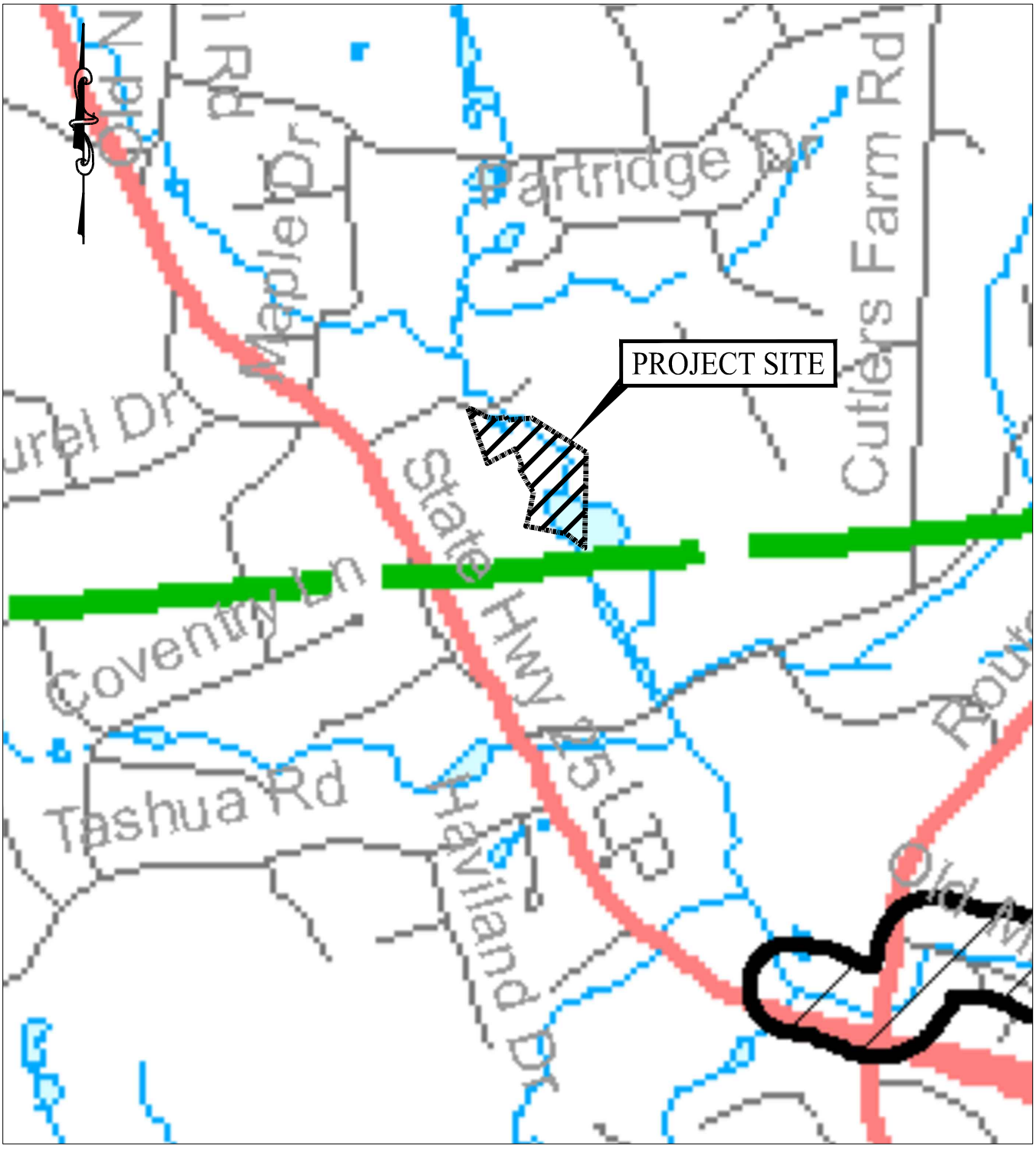
300 0 150 300

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SOIL SURVEY MAP

5 VICTORIA DRIVE
MONROE, CONNECTICUT

Project #:	2012301
Plan Date:	03/23/21
Scale:	1" = 300'
Figure:	3



NOTE: BASE MAP INFORMATION TAKEN
FROM CT DEEP NATURAL DIVERSITY DATA
BASE AREAS, MONROE, CT DECEMBER 2019
(MAP ND085.PDF)
URL:https://portal.ct.gov/DEEP/Endangered-Species/Natural-Diversity-Data-Base-Maps

1,000 0 500 1,000

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NATURAL DIVERSITY DATA MAP

5 VICTORIA DRIVE
MONROE, CONNECTICUT

Project #:	2012301
Plan Date:	03/23/21
Scale:	1" = 1,000'
Figure:	4

GENERAL NOTES

1. WETLANDS WERE DELINEATED AND FLAGGED BY ENVIRONMENTAL PLANNING SERVICES, LLC.
2. THE LIMIT OF UPLAND REVIEW AREA CONSISTS OF A 100-FOOT OFFSET FROM THE LIMITS OF WETLANDS AND 150-FOOT OFFSET FROM THE LIMITS OF THE PEQUONNOCK RIVER.

WETLAND AREA TABLE

AREA	ACRES
PROPERTY AREA	8.27±
WETLANDS ON PROPERTY	2.99±
UPLAND REVIEW AREA ON PROPERTY	3.69±
WETLANDS TO BE ALTERED	0.00±
UPLAND REVIEW AREA TO BE ALTERED	2.34±
TOTAL REGULATED AREA TO BE ALTERED	2.34±



Rev. #:	Date	Description

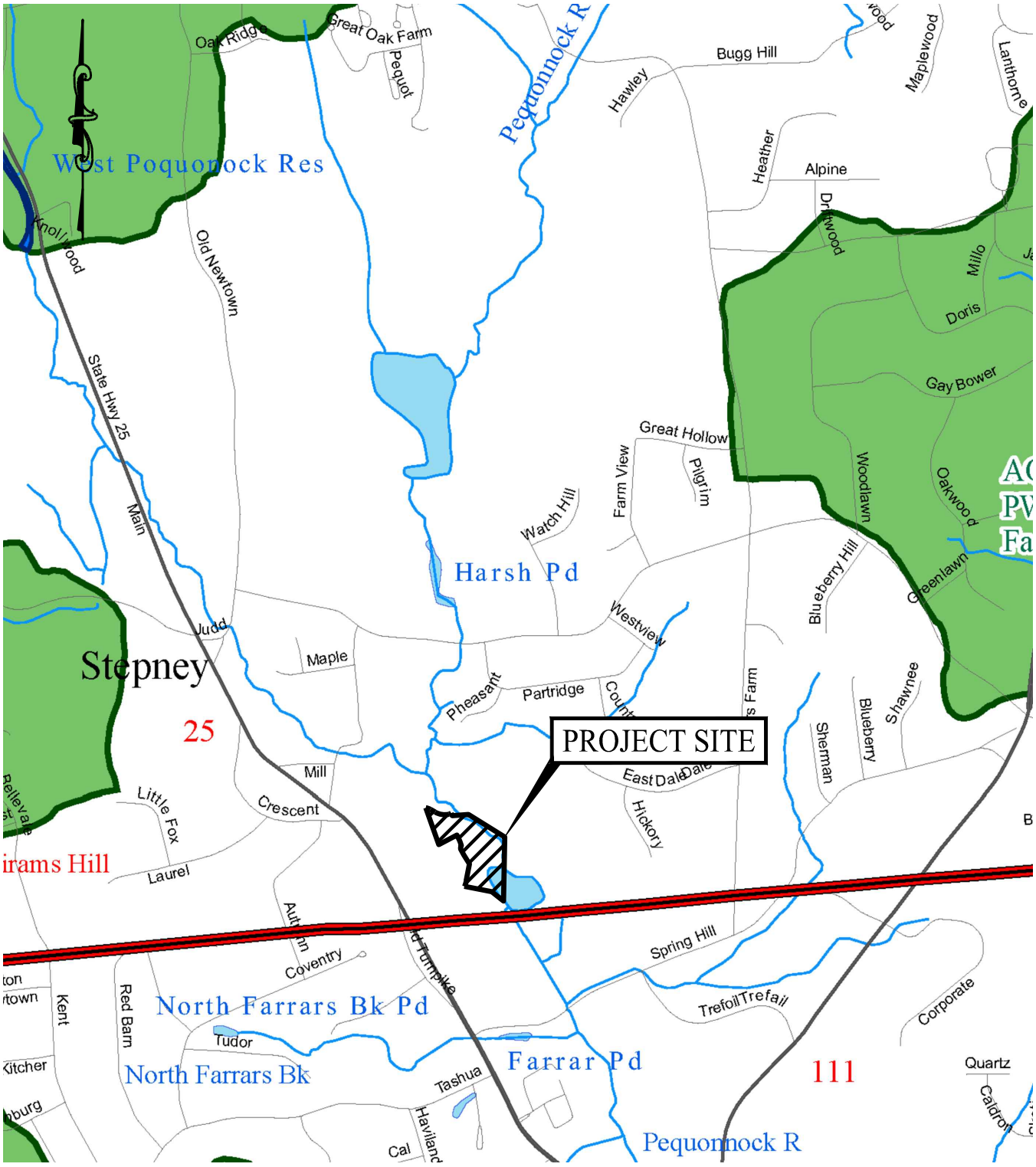
SOLLI ENGINEERING
501 Main Street, Monroe, CT 06468
T: (203) 880-5455 | F: (203) 880-9695

Drawn By:	CJP
Checked By:	KMS
Project #:	2012301
Plan Date:	03/23/21
Scale:	1" = 100'

Project:
PROPOSED SITE REDEVELOPMENT
5 VICTORIA DRIVE
MONROE, CONNECTICUT

Sheet Title:
REGULATED AREA MAP

SHEET #:
FIG. 5



NOTE: WATERSHED MAP INFORMATION TAKEN FROM A MAP ENTITLED "PUBLIC DRINKING WATER SOURCE PROTECTION AREAS, MONROE, CT" DATED SEPTEMBER 2006

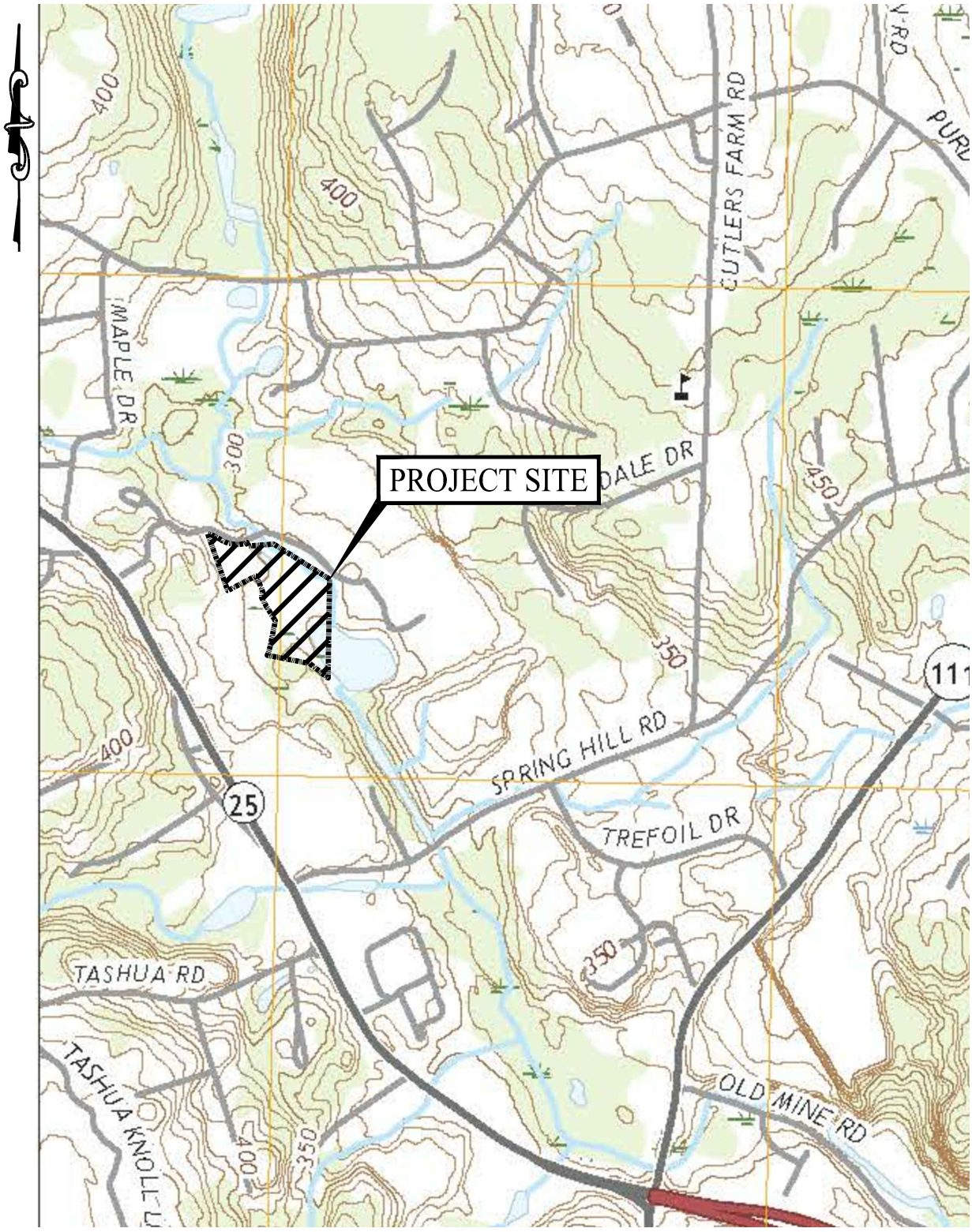
1,500 0 750 1,500

SOLLI ENGINEERING
501 Main Street, Monroe, CT 06468
T: (203) 880-5455 F: (203) 880-9695

PUBLIC WATERSHED SUPPLY MAP

5 VICTORIA DRIVE
MONROE, CONNECTICUT

Project #:	2012301
Plan Date:	03/23/21
Scale:	1" = 1,500'
Figure:	6



NOTE: BASE MAP INFORMATION TAKEN FROM USGS BOTSFORD CONNECTICUT QUADRANGLE 7.5-MINUTE SERIES. NGA REF. NO. USGSX24K6438

1,000 0 500 1,000

SOLLI ENGINEERING
501 Main Street, Monroe, CT 06468
T: (203) 880-5455 F: (203) 880-9695

USGS MAP

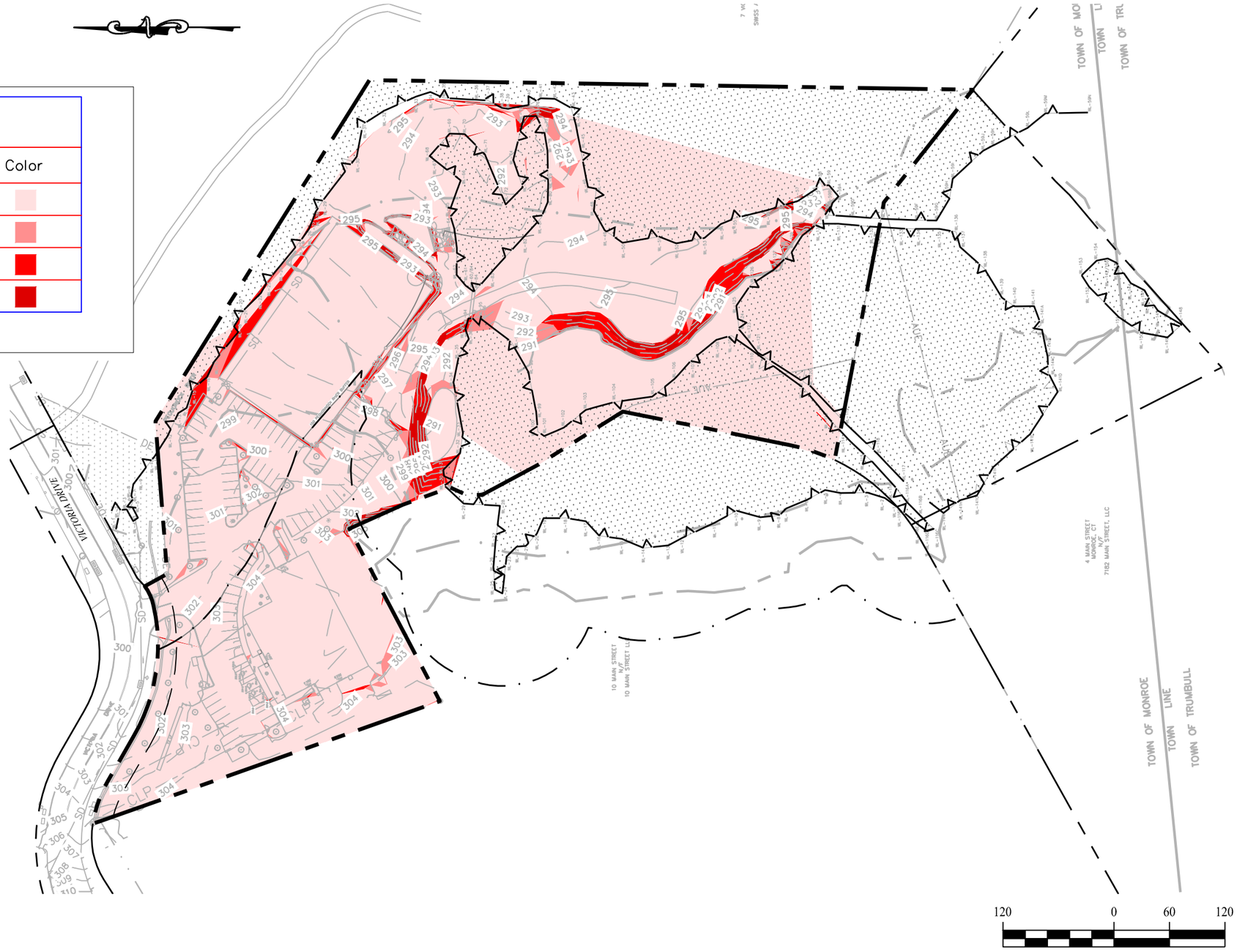
5 VICTORIA DRIVE
MONROE, CONNECTICUT

Project #:	2012301
Plan Date:	03/23/21
Scale:	1" = 1,000'
Figure:	7

Slopes Table				
Number	Minimum Slope	Maximum Slope	Area (SF)	Color
1	0.00%	10.00%	274,230	
2	10.00%	15.00%	6,508	
3	15.00%	25.00%	9,188	
4	25.00%	100.00%	8,698	

GENERAL NOTES

1. EXISTING CONDITIONS INFORMATION TAKEN FROM A PLAN ENTITLED "IMPROVEMENT LOCATION SURVEY OF 5 VICTORIA DRIVE" DATED MARCH 19, 2017, REVISED DECEMBER 14, 2020, SCALE: 1"=60', BY ACCURATE LAND SURVEYING, LLC.
2. TOPOGRAPHY DATA WITHIN WETLAND AREAS NOT SURVEYED AND THUS HAS BEEN EXCLUDED FROM THE SLOPES TABLE.



Rev. #:	Date	Description

SOLLI ENGINEERING
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Drawn By:	CJP
Checked By:	KMS
Project #:	2012301
Plan Date:	03/23/21
Scale:	1" = 120'

Project:
PROPOSED SITE REDEVELOPMENT
5 VICTORIA DRIVE
MONROE, CONNECTICUT

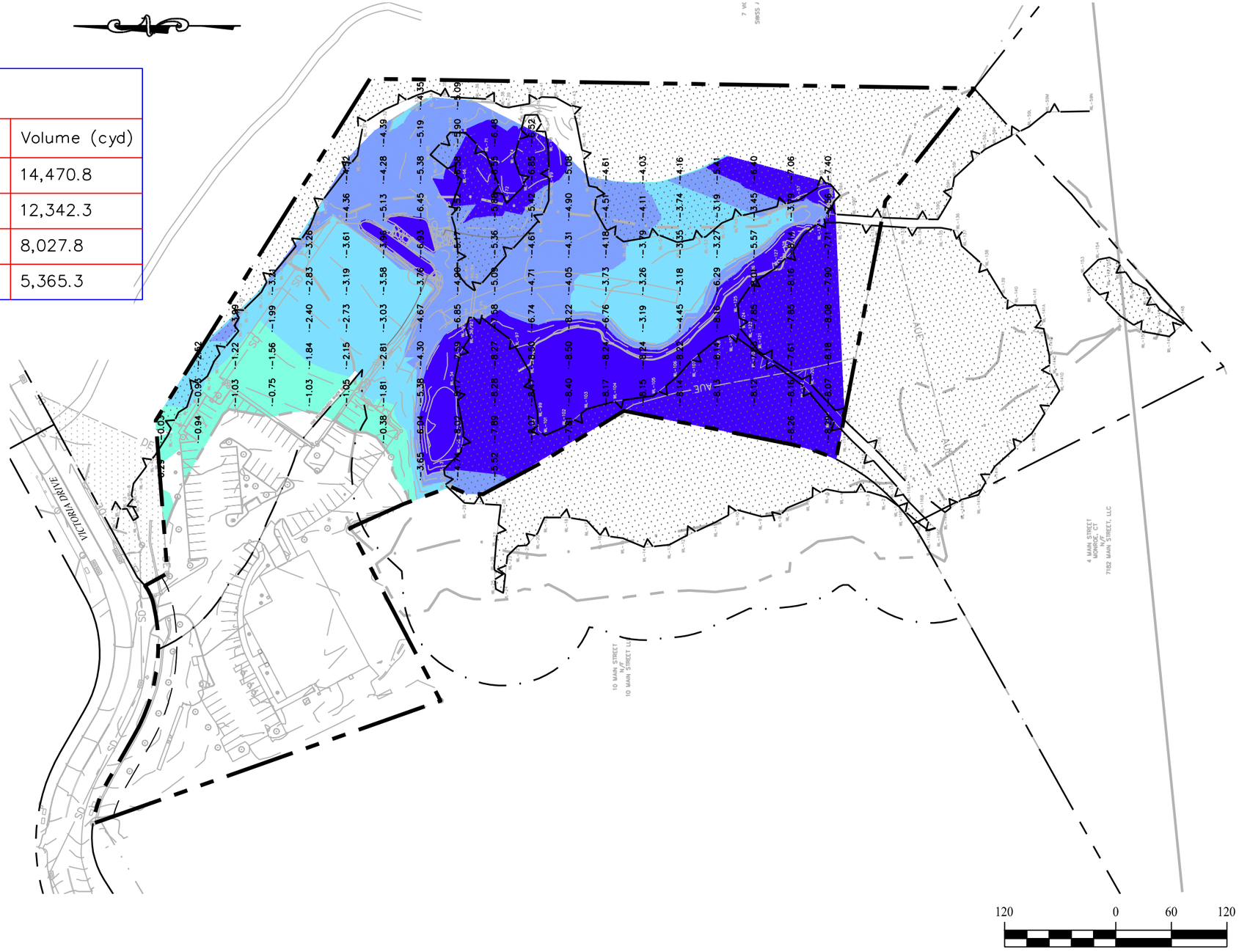
Sheet Title:
SLOPE AREA MAP

SHEET #:
FIG. 8

Elevations Table				
Number	Color	Minimum Elevation	Maximum Elevation	Volume (cyd)
1		−2	0	14,470.8
2		−4	−2	12,342.3
3		−6	−4	8,027.8
4		−9	−6	5,365.3

GENERAL NOTES

1. EXISTING CONDITIONS INFORMATION TAKEN FROM A PLAN ENTITLED "IMPROVEMENT LOCATION SURVEY OF 5 VICTORIA DRIVE" DATED MARCH 19, 2017, REVISED DECEMBER 14, 2020, SCALE: 1"=60', BY ACCURATE LAND SURVEYING, LLC.



Rev. #: Date Description

SOLLI ENGINEERING
501 Main Street, Monroe, CT 06468
T: (203) 880-5455 | F: (203) 880-9695

Drawn By:	CJP
Checked By:	KMS
Project #:	2012301
Plan Date:	04/28/21
Scale:	1" = 120'

Project:
PROPOSED SITE REDEVELOPMENT
5 VICTORIA DRIVE
MONROE, CONNECTICUT

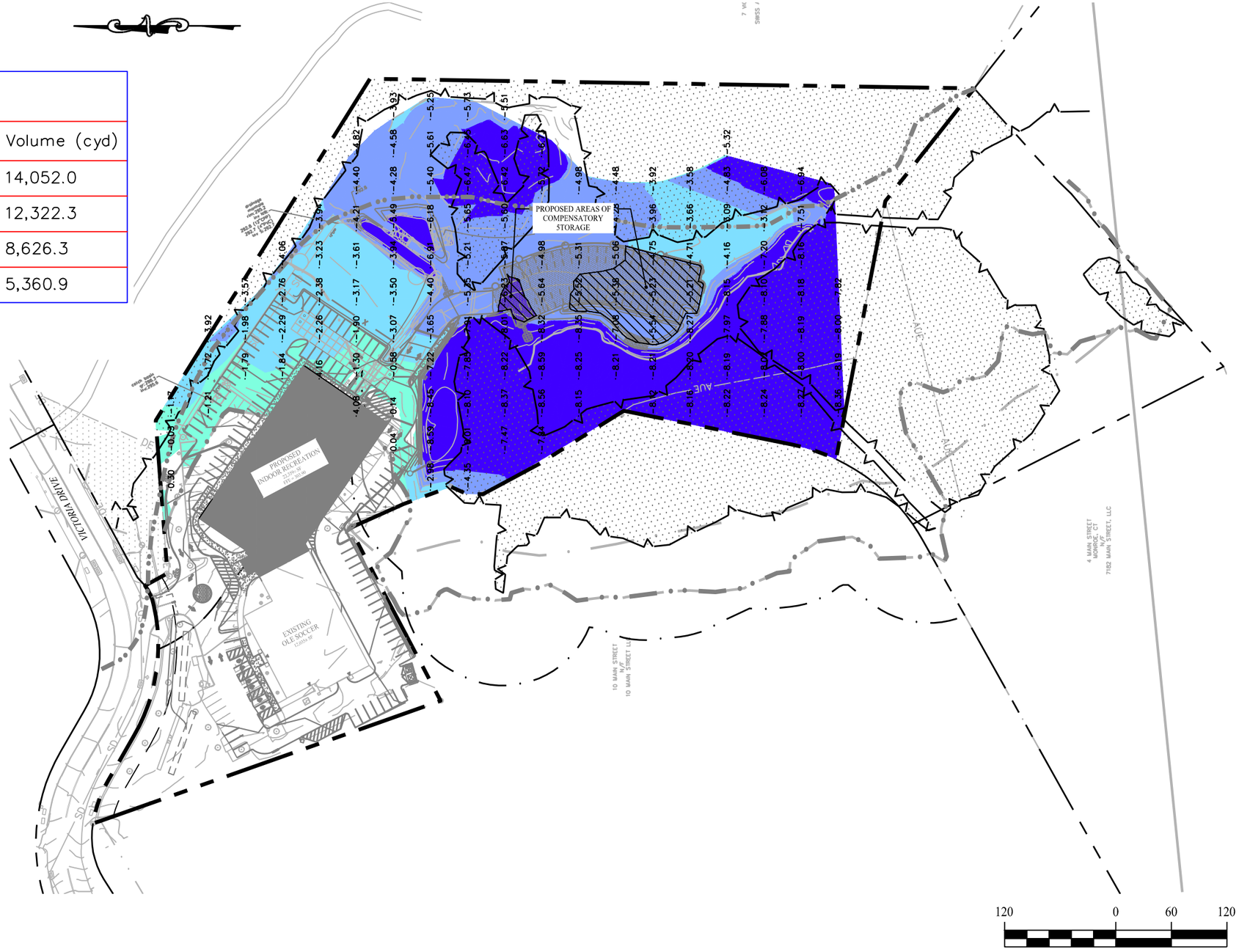
Sheet Title:
FLOODPLAIN STORAGE CAPACITY (EXISTING)

SHEET #:
FIG. 9A

Elevations Table				
Number	Color	Minimum Elevation	Maximum Elevation	Volume (cyd)
1		−2	0	14,052.0
2		−4	−2	12,322.3
3		−6	−4	8,626.3
4		−10	−6	5,360.9

GENERAL NOTES

1. EXISTING CONDITIONS INFORMATION TAKEN FROM A PLAN ENTITLED "IMPROVEMENT LOCATION SURVEY OF 5 VICTORIA DRIVE" DATED MARCH 19, 2017, REVISED DECEMBER 14, 2020, SCALE: 1"=60', BY ACCURATE LAND SURVEYING, LLC.



Rev. #:	Date	Description

SOLLI ENGINEERING
501 Main Street, Monroe, CT 06468
T: (203) 880-5455 | F: (203) 880-9695

Drawn By:	CJP
Checked By:	KMS
Project #:	2012301
Plan Date:	04/28/21
Scale:	1" = 120'

Project:
PROPOSED SITE REDEVELOPMENT
5 VICTORIA DRIVE
MONROE, CONNECTICUT

Sheet Title:
FLOODPLAIN STORAGE CAPACITY (PROPOSED)

SHEET #:
FIG. 9B

APPENDIX B
WETLAND ASSESSMENT

Soils Report prepared by Environmental Planning Services, LLC

August 24, 2014

Mr. Kevin Solli
Solli Engineering
523 Pepper Street
Monroe, CT 06468

RE: 5 Victoria Drive
Monroe, Connecticut

Dear Mr. Solli:

EPS was retained to delineate the wetlands and watercourses on the above referenced parcel. The wetland delineation was conducted by an EPS soil scientist, according to the requirements of the CT Inland Wetlands and Watercourses Act (P.A. 155). Wetlands are defined as areas of poorly drained, very poorly drained, floodplain, and alluvial soils, as delineated by a soil scientist. Watercourses are defined as bogs, swamps, or marshes, as well as lakes, ponds, rivers, streams, etc., whether natural or man-made, permanent or intermittent. Any competent professional may delineate watercourses.

The wetlands were delineated by walking across the parcel in question on April 1 and 7, 2014, and examining the upper 20" of the soil profile with a spade and auger. Those areas meeting the requirements noted above were marked with pink plastic flagging tape numbered IWC 1-59A-N, 60-85, 86-116A-F, 117-141A-K, and 142-155.

SOILS
The wetlands consist of:
108—Saco silt loam
AQ--Aquents

The Saco component is on flood plains. Slopes are 0 to 2 percent. The parent material consists of coarse-silty alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained.

Aquents is a miscellaneous land type is used to denote areas that consist primarily of man-made or man-disturbed that are wet. These soils have an aquic soil moisture regime and can be expected to support hydrophytic vegetation. Typically, these soils occur in places where less than 2 feet of earthen material have been placed over poorly and very poorly drained soils; or where the natural soils have been mixed so that the natural soil layers are not identifiable; or where the soil materials have been excavated to the water table. On this site they consist of

89 Belknap Road
West Hartford, CT 06117
Phone 860-236-1578 Fax
michael.klein@epsct.com

116 Smith Road
East Haddam, CT 06423
Phone 860-873-9119 Fax
eric.davison@epsct.com

138 Mystic Road
North Stonington, CT 06359
Phone 860-535-0625 Fax
james.cowen@epsct.com

www.epsct.com

shallow fill over poorly drained soils and an excavated pond.

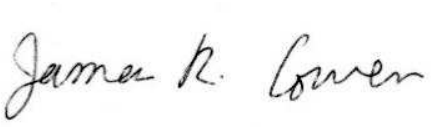
The non-wetland soils were not examined in detail, except as was necessary to determine the wetland boundary. They consist primarily of:

38C—Hinckley gravelly sandy loam, 3 to 15 percent slopes
306—Udorthents-Urban land complex

The Hinckley component is on eskers on valleys, kames on valleys, outwash plains on valleys, terraces on valleys. Slopes are 3 to 15 percent. The parent material consists of sandy and gravelly glaciofluvial deposits derived from granite and/or schist and/or gneiss. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained

The Udorthents component is on urban land. Slopes are 0 to 25 percent. The parent material consists of drift. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Urban land is a miscellaneous land type used to denote areas that are primarily buildings, pavement, lawns and landscaping. In the Udorthents-Urban Land complex, these two land types are intermingled on the land in a complex pattern that is neither practical nor necessary to separate.

Respectfully submitted,



submitted electronically

James R. Cowen

Registered Soil Scientist
Certified Professional Wetland Scientist

APPENDIX C
EXISTING & PROPOSED HYDROLOGY CALCULATIONS

NOAA Atlas Precipitation Data
Watershed Model Schematic
Hydrograph Return Period Recap
Hydrograph Summary Report
HydroCAD Routing and Summary for Proposed Roof Underground Storage
Existing Curve Number Calculations
Existing Time of Concentration Calculations
Proposed Curve Number Calculations
Proposed Time of Concentration Calculations
Hydroflow Storm Sewer Schematic
Hydrflow Storm Sewer Tabular Reports
Hydroflow Storm Sewer Profile
Runoff Coefficient Calculations for Collection System
Hydrodynamic Separator Calculations and Details
Water Quality Volume Calculations

NOAA Atlas 14, Volume 10, Version 3
Location name: Monroe, Connecticut, USA*
Latitude: 41.2987°, Longitude: -73.2479°
Elevation: 346.16 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	**0.363** (0.277-0.464)	**0.425** (0.324-0.544)	**0.526** (0.400-0.676)	**0.610** (0.462-0.787)	**0.726** (0.534-0.968)	**0.813** (0.587-1.10)	**0.904** (0.635-1.26)	**1.00** (0.673-1.43)	**1.15** (0.742-1.67)	**1.26** (0.799-1.87)
10-min	**0.514** (0.392-0.658)	**0.602** (0.459-0.771)	**0.745** (0.567-0.959)	**0.864** (0.654-1.12)	**1.03** (0.756-1.37)	**1.15** (0.831-1.56)	**1.28** (0.900-1.79)	**1.42** (0.954-2.02)	**1.63** (1.05-2.37)	**1.79** (1.13-2.65)
15-min	**0.604** (0.462-0.774)	**0.708** (0.540-0.907)	**0.877** (0.667-1.13)	**1.02** (0.770-1.31)	**1.21** (0.889-1.61)	**1.36** (0.978-1.84)	**1.51** (1.06-2.10)	**1.68** (1.12-2.38)	**1.91** (1.24-2.79)	**2.10** (1.33-3.12)
30-min	**0.840** (0.642-1.08)	**0.984** (0.751-1.26)	**1.22** (0.927-1.57)	**1.41** (1.07-1.83)	**1.68** (1.24-2.24)	**1.89** (1.36-2.55)	**2.10** (1.47-2.91)	**2.32** (1.55-3.29)	**2.62** (1.70-3.82)	**2.86** (1.81-4.23)
60-min	**1.08** (0.822-1.38)	**1.26** (0.961-1.62)	**1.56** (1.19-2.01)	**1.81** (1.37-2.34)	**2.15** (1.58-2.86)	**2.42** (1.74-3.26)	**2.68** (1.87-3.71)	**2.96** (1.98-4.19)	**3.33** (2.15-4.85)	**3.61** (2.29-5.35)
2-hr	**1.39** (1.07-1.77)	**1.64** (1.26-2.09)	**2.05** (1.57-2.61)	**2.38** (1.81-3.05)	**2.84** (2.10-3.77)	**3.19** (2.31-4.30)	**3.56** (2.51-4.92)	**3.95** (2.66-5.57)	**4.52** (2.93-6.54)	**4.97** (3.16-7.31)
3-hr	**1.61** (1.24-2.04)	**1.90** (1.46-2.41)	**2.38** (1.83-3.03)	**2.78** (2.12-3.55)	**3.33** (2.47-4.40)	**3.74** (2.72-5.02)	**4.17** (2.96-5.78)	**4.66** (3.14-6.55)	**5.37** (3.49-7.74)	**5.95** (3.78-8.72)
6-hr	**2.02** (1.57-2.54)	**2.41** (1.87-3.04)	**3.05** (2.36-3.85)	**3.58** (2.75-4.54)	**4.31** (3.22-5.67)	**4.86** (3.56-6.50)	**5.44** (3.89-7.51)	**6.11** (4.13-8.52)	**7.10** (4.63-10.2)	**7.93** (5.06-11.5)
12-hr	**2.48** (1.94-3.10)	**2.99** (2.34-3.75)	**3.83** (2.98-4.81)	**4.53** (3.50-5.70)	**5.48** (4.12-7.17)	**6.20** (4.57-8.25)	**6.96** (5.01-9.57)	**7.85** (5.33-10.9)	**9.18** (6.01-13.1)	**10.3** (6.59-14.9)
24-hr	**2.91** (2.29-3.62)	**3.56** (2.80-4.43)	**4.63** (3.62-5.77)	**5.51** (4.29-6.90)	**6.72** (5.09-8.76)	**7.62** (5.67-10.1)	**8.60** (6.24-11.8)	**9.77** (6.66-13.5)	**11.6** (7.59-16.4)	**13.1** (8.40-18.8)
2-day	**3.28** (2.59-4.05)	**4.07** (3.22-5.03)	**5.37** (4.23-6.65)	**6.45** (5.05-8.02)	**7.94** (6.05-10.3)	**9.02** (6.76-11.9)	**10.2** (7.50-14.0)	**11.7** (8.01-16.1)	**14.1** (9.27-19.8)	**16.2** (10.4-23.0)
3-day	**3.57** (2.83-4.39)	**4.44** (3.52-5.46)	**5.86** (4.63-7.23)	**7.04** (5.53-8.72)	**8.66** (6.63-11.2)	**9.85** (7.41-13.0)	**11.2** (8.23-15.3)	**12.8** (8.78-17.5)	**15.5** (10.2-21.6)	**17.7** (11.4-25.2)
4-day	**3.84** (3.06-4.70)	**4.76** (3.78-5.83)	**6.26** (4.96-7.69)	**7.50** (5.91-9.26)	**9.22** (7.07-11.9)	**10.5** (7.89-13.8)	**11.9** (8.75-16.2)	**13.6** (9.33-18.5)	**16.4** (10.8-22.8)	**18.8** (12.1-26.6)
7-day	**4.61** (3.69-5.61)	**5.61** (4.48-6.84)	**7.25** (5.77-8.86)	**8.61** (6.82-10.6)	**10.5** (8.06-13.4)	**11.9** (8.96-15.5)	**13.4** (9.85-18.0)	**15.2** (10.5-20.6)	**18.0** (12.0-25.0)	**20.5** (13.3-28.9)
10-day	**5.35** (4.30-6.50)	**6.41** (5.14-7.79)	**8.13** (6.50-9.91)	**9.56** (7.60-11.7)	**11.5** (8.89-14.7)	**13.0** (9.82-16.8)	**14.6** (10.7-19.5)	**16.4** (11.4-22.1)	**19.2** (12.8-26.6)	**21.6** (14.0-30.3)
20-day	**7.62** (6.16-9.19)	**8.78** (7.08-10.6)	**10.7** (8.58-12.9)	**12.2** (9.79-14.9)	**14.4** (11.1-18.1)	**16.0** (12.1-20.4)	**17.7** (13.0-23.3)	**19.6** (13.6-26.2)	**22.2** (14.8-30.5)	**24.4** (15.8-33.9)
30-day	**9.48** (7.69-11.4)	**10.7** (8.68-12.9)	**12.7** (10.3-15.3)	**14.4** (11.5-17.4)	**16.7** (12.9-20.8)	**18.4** (13.9-23.3)	**20.2** (14.8-26.2)	**22.1** (15.4-29.3)	**24.6** (16.4-33.5)	**26.5** (17.3-36.8)
45-day	**11.8** (9.58-14.1)	**13.1** (10.6-15.7)	**15.2** (12.3-18.3)	**17.0** (13.7-20.5)	**19.4** (15.1-24.0)	**21.3** (16.1-26.7)	**23.2** (16.9-29.8)	**25.0** (17.5-33.1)	**27.4** (18.4-37.2)	**29.2** (19.0-40.3)
60-day	**13.7** (11.2-16.3)	**15.0** (12.3-17.9)	**17.3** (14.0-20.7)	**19.1** (15.4-23.0)	**21.7** (16.9-26.7)	**23.7** (18.0-29.6)	**25.6** (18.7-32.7)	**27.5** (19.3-36.2)	**29.8** (20.1-40.4)	**31.5** (20.6-43.4)

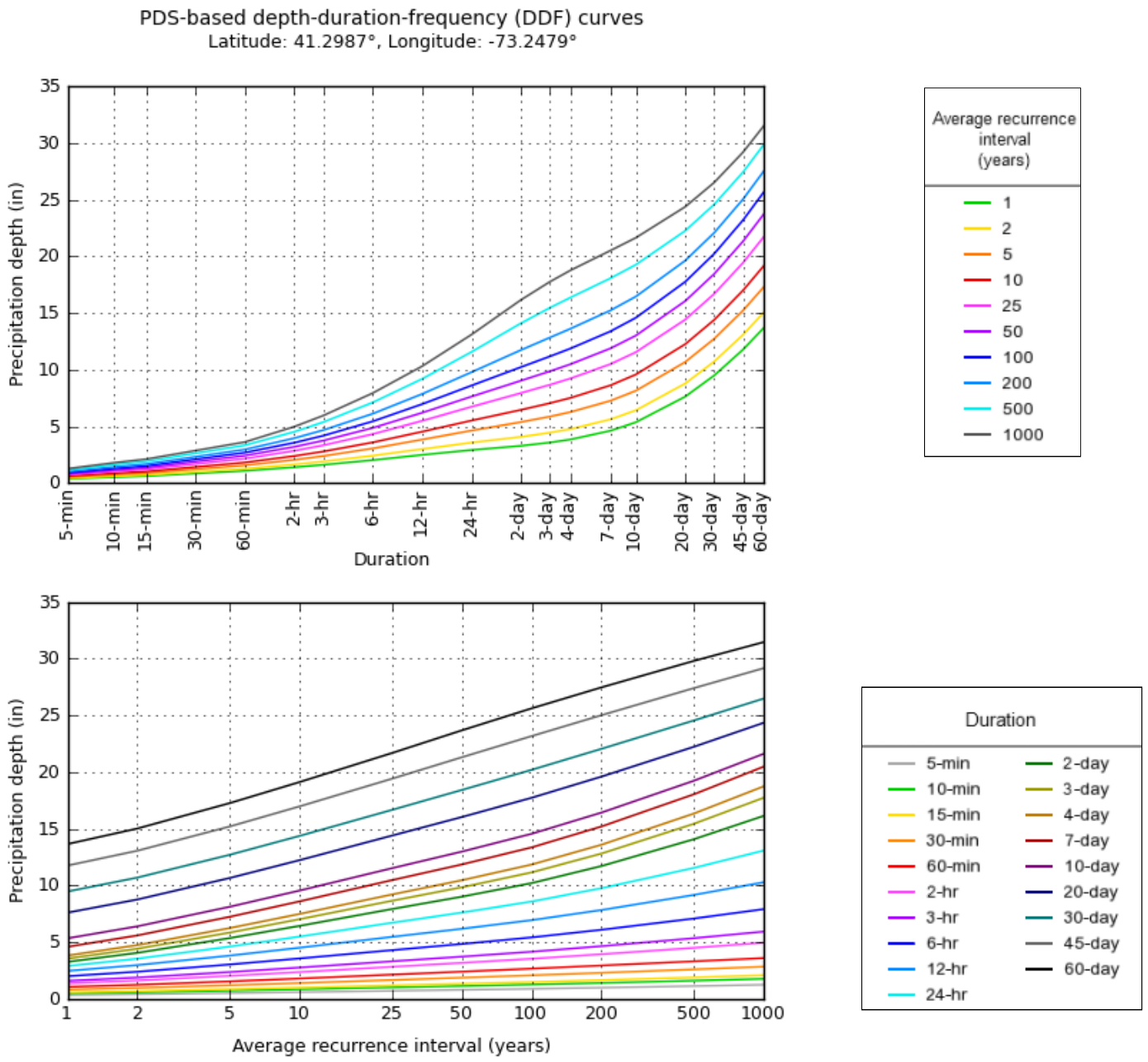
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

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



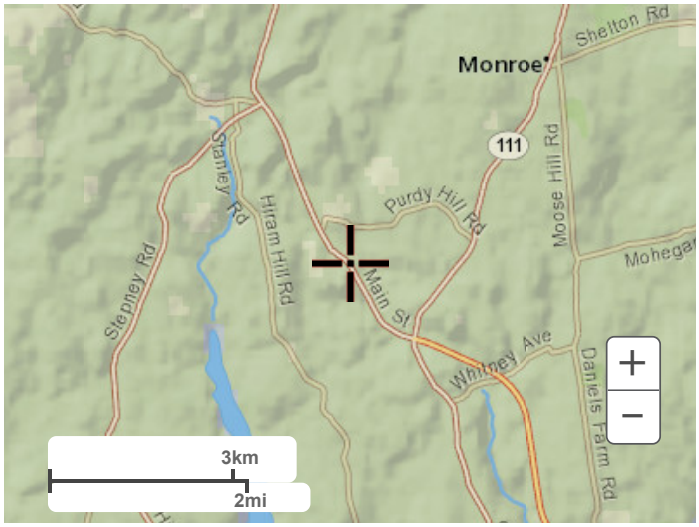
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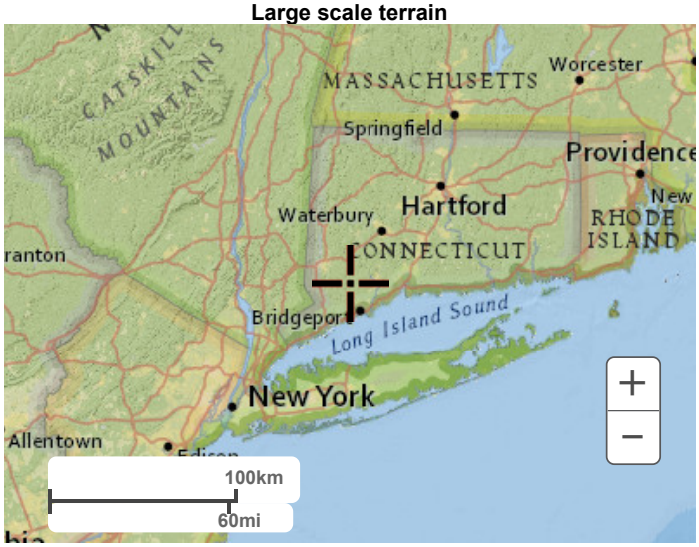
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Maps & aerials

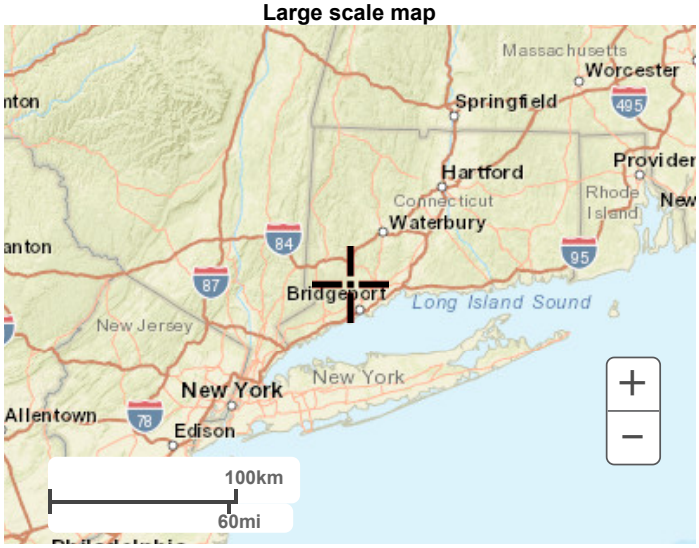
Small scale terrain



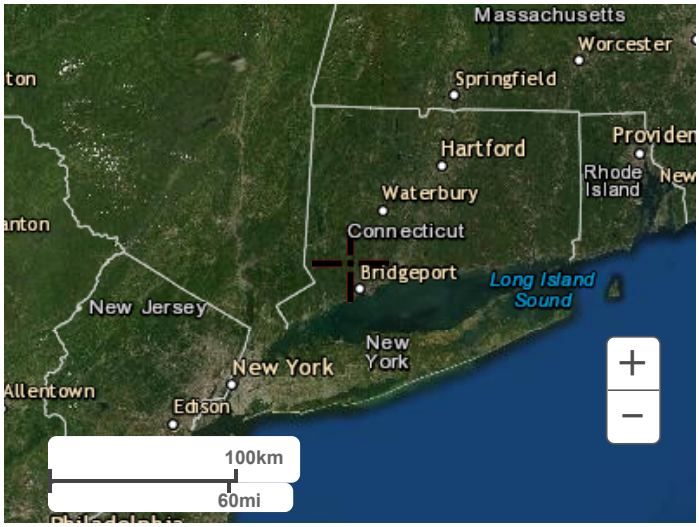
Large scale terrain



Large scale map



Large scale aerial



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NOAA Atlas 14, Volume 10, Version 3
Location name: Monroe, Connecticut, USA*
Latitude: 41.2987°, Longitude: -73.2479°
Elevation: 346.16 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	**4.36** (3.32-5.57)	**5.10** (3.89-6.53)	**6.31** (4.80-8.11)	**7.32** (5.54-9.44)	**8.71** (6.41-11.6)	**9.76** (7.04-13.2)	**10.8** (7.62-15.1)	**12.0** (8.08-17.1)	**13.8** (8.90-20.1)	**15.1** (9.59-22.4)
10-min	**3.08** (2.35-3.95)	**3.61** (2.75-4.63)	**4.47** (3.40-5.75)	**5.18** (3.92-6.69)	**6.17** (4.54-8.23)	**6.91** (4.99-9.37)	**7.69** (5.40-10.7)	**8.54** (5.72-12.1)	**9.75** (6.31-14.2)	**10.7** (6.79-15.9)
15-min	**2.42** (1.85-3.10)	**2.83** (2.16-3.63)	**3.51** (2.67-4.51)	**4.07** (3.08-5.25)	**4.84** (3.56-6.45)	**5.42** (3.91-7.35)	**6.03** (4.24-8.40)	**6.70** (4.49-9.50)	**7.65** (4.95-11.1)	**8.42** (5.33-12.5)
30-min	**1.68** (1.28-2.15)	**1.97** (1.50-2.52)	**2.44** (1.85-3.13)	**2.83** (2.14-3.65)	**3.36** (2.47-4.48)	**3.77** (2.72-5.10)	**4.19** (2.93-5.81)	**4.63** (3.11-6.57)	**5.24** (3.39-7.63)	**5.72** (3.62-8.47)
60-min	**1.08** (0.822-1.38)	**1.26** (0.961-1.62)	**1.56** (1.19-2.01)	**1.81** (1.37-2.34)	**2.15** (1.58-2.86)	**2.42** (1.74-3.26)	**2.68** (1.87-3.71)	**2.96** (1.98-4.19)	**3.33** (2.15-4.85)	**3.61** (2.29-5.35)
2-hr	**0.696** (0.535-0.886)	**0.820** (0.630-1.04)	**1.02** (0.782-1.31)	**1.19** (0.906-1.53)	**1.42** (1.05-1.88)	**1.60** (1.16-2.15)	**1.78** (1.25-2.46)	**1.98** (1.33-2.79)	**2.26** (1.47-3.27)	**2.49** (1.58-3.66)
3-hr	**0.534** (0.412-0.678)	**0.632** (0.487-0.802)	**0.793** (0.609-1.01)	**0.925** (0.707-1.18)	**1.11** (0.822-1.46)	**1.25** (0.907-1.67)	**1.39** (0.986-1.92)	**1.55** (1.05-2.18)	**1.79** (1.16-2.58)	**1.98** (1.26-2.90)
6-hr	**0.337** (0.262-0.424)	**0.402** (0.312-0.507)	**0.509** (0.394-0.643)	**0.598** (0.460-0.758)	**0.720** (0.538-0.947)	**0.811** (0.595-1.09)	**0.908** (0.649-1.25)	**1.02** (0.690-1.42)	**1.19** (0.773-1.70)	**1.32** (0.844-1.93)
12-hr	**0.206** (0.161-0.258)	**0.248** (0.194-0.311)	**0.318** (0.247-0.399)	**0.376** (0.290-0.473)	**0.455** (0.342-0.595)	**0.514** (0.379-0.685)	**0.577** (0.415-0.794)	**0.652** (0.442-0.903)	**0.762** (0.498-1.09)	**0.855** (0.547-1.24)
24-hr	**0.121** (0.095-0.151)	**0.148** (0.117-0.184)	**0.193** (0.151-0.240)	**0.230** (0.179-0.287)	**0.280** (0.212-0.365)	**0.318** (0.236-0.421)	**0.358** (0.260-0.492)	**0.407** (0.277-0.561)	**0.482** (0.316-0.682)	**0.546** (0.350-0.783)
2-day	**0.068** (0.054-0.084)	**0.085** (0.067-0.105)	**0.112** (0.088-0.139)	**0.134** (0.105-0.167)	**0.165** (0.126-0.214)	**0.188** (0.141-0.249)	**0.213** (0.156-0.293)	**0.244** (0.167-0.334)	**0.293** (0.193-0.413)	**0.336** (0.217-0.480)
3-day	**0.050** (0.039-0.061)	**0.062** (0.049-0.076)	**0.081** (0.064-0.100)	**0.098** (0.077-0.121)	**0.120** (0.092-0.156)	**0.137** (0.103-0.181)	**0.155** (0.114-0.213)	**0.178** (0.122-0.243)	**0.215** (0.141-0.300)	**0.246** (0.159-0.350)
4-day	**0.040** (0.032-0.049)	**0.050** (0.039-0.061)	**0.065** (0.052-0.080)	**0.078** (0.062-0.097)	**0.096** (0.074-0.124)	**0.109** (0.082-0.143)	**0.124** (0.091-0.169)	**0.142** (0.097-0.193)	**0.170** (0.112-0.238)	**0.195** (0.126-0.277)
7-day	**0.027** (0.022-0.033)	**0.033** (0.027-0.041)	**0.043** (0.034-0.053)	**0.051** (0.041-0.063)	**0.062** (0.048-0.080)	**0.071** (0.053-0.092)	**0.080** (0.059-0.107)	**0.091** (0.062-0.122)	**0.107** (0.071-0.149)	**0.122** (0.079-0.172)
10-day	**0.022** (0.018-0.027)	**0.027** (0.021-0.032)	**0.034** (0.027-0.041)	**0.040** (0.032-0.049)	**0.048** (0.037-0.061)	**0.054** (0.041-0.070)	**0.061** (0.045-0.081)	**0.069** (0.047-0.092)	**0.080** (0.053-0.111)	**0.090** (0.058-0.126)
20-day	**0.016** (0.013-0.019)	**0.018** (0.015-0.022)	**0.022** (0.018-0.027)	**0.026** (0.020-0.031)	**0.030** (0.023-0.038)	**0.033** (0.025-0.043)	**0.037** (0.027-0.048)	**0.041** (0.028-0.055)	**0.046** (0.031-0.064)	**0.051** (0.033-0.071)
30-day	**0.013** (0.011-0.016)	**0.015** (0.012-0.018)	**0.018** (0.014-0.021)	**0.020** (0.016-0.024)	**0.023** (0.018-0.029)	**0.026** (0.019-0.032)	**0.028** (0.020-0.036)	**0.031** (0.021-0.041)	**0.034** (0.023-0.047)	**0.037** (0.024-0.051)
45-day	**0.011** (0.009-0.013)	**0.012** (0.010-0.014)	**0.014** (0.011-0.017)	**0.016** (0.013-0.019)	**0.018** (0.014-0.022)	**0.020** (0.015-0.025)	**0.021** (0.016-0.028)	**0.023** (0.016-0.031)	**0.025** (0.017-0.034)	**0.027** (0.018-0.037)
60-day	**0.009** (0.008-0.011)	**0.010** (0.009-0.012)	**0.012** (0.010-0.014)	**0.013** (0.011-0.016)	**0.015** (0.012-0.019)	**0.016** (0.012-0.021)	**0.018** (0.013-0.023)	**0.019** (0.013-0.025)	**0.021** (0.014-0.028)	**0.022** (0.014-0.030)

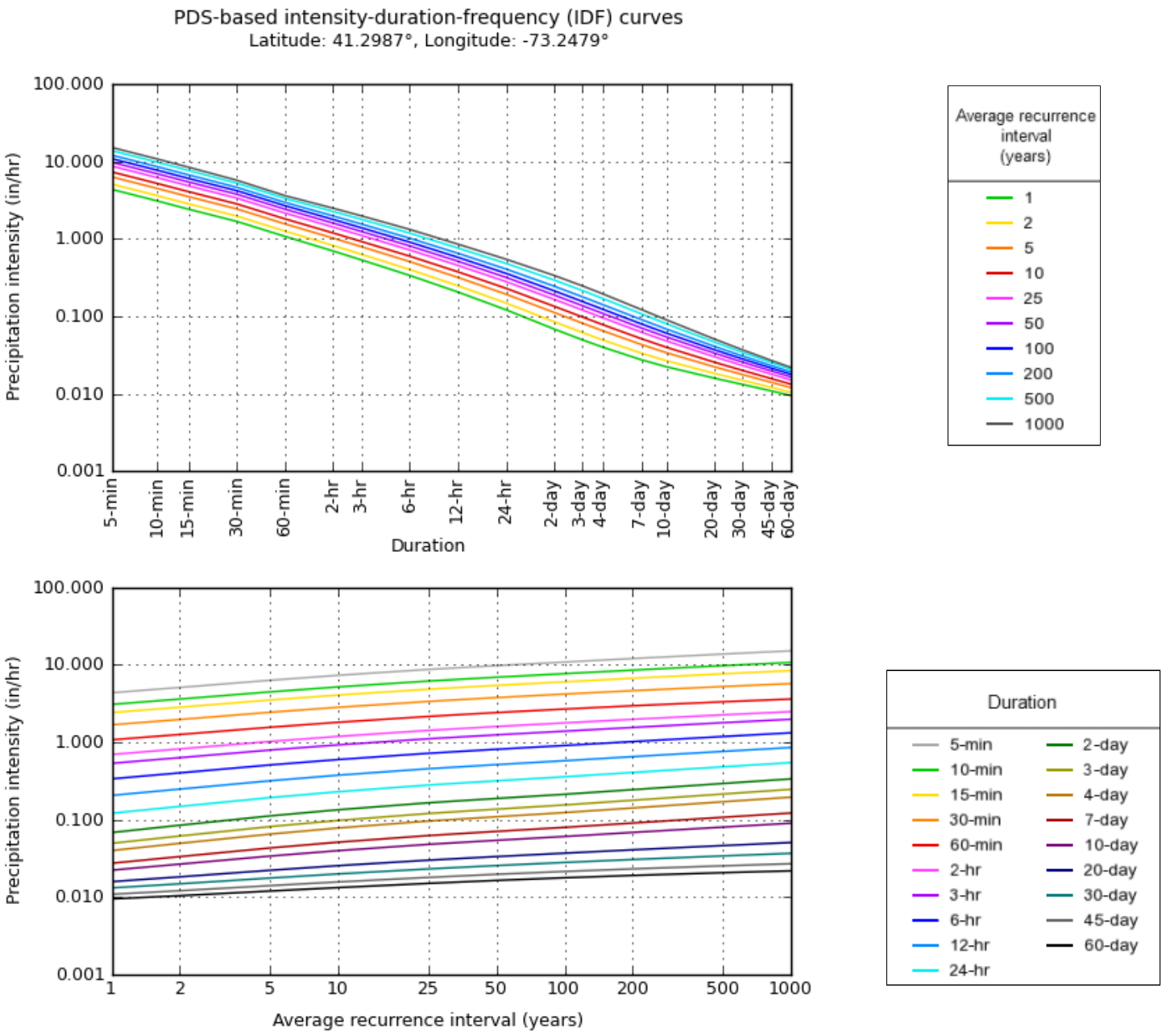
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

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



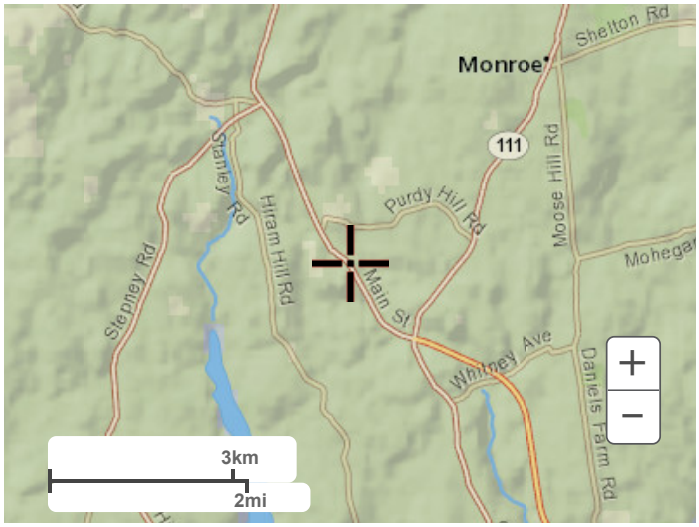
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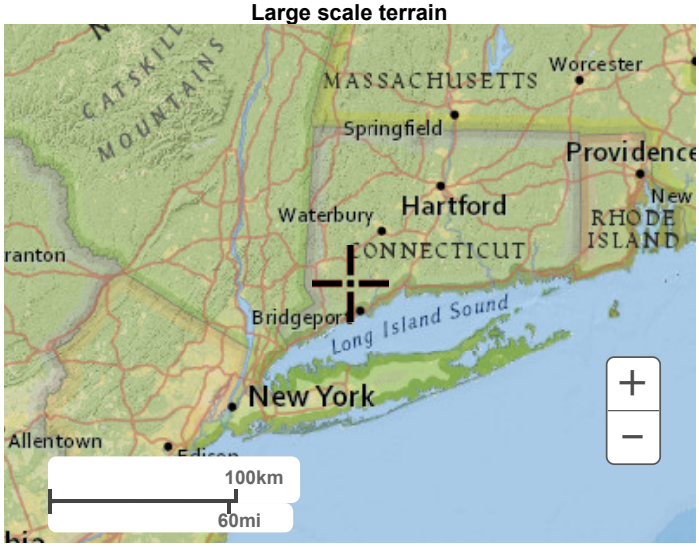
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Maps & aerials

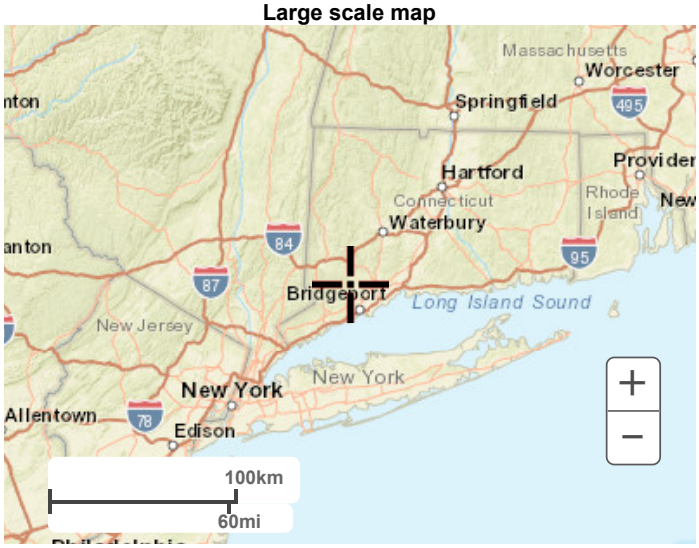
Small scale terrain



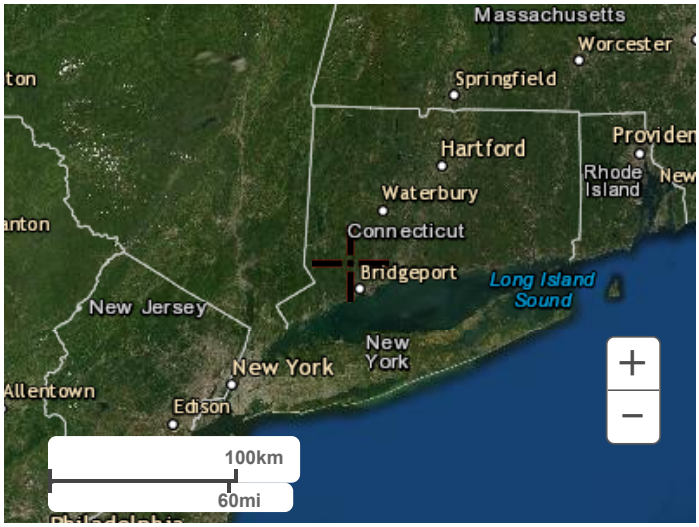
Large scale terrain



Large scale map



Large scale aerial



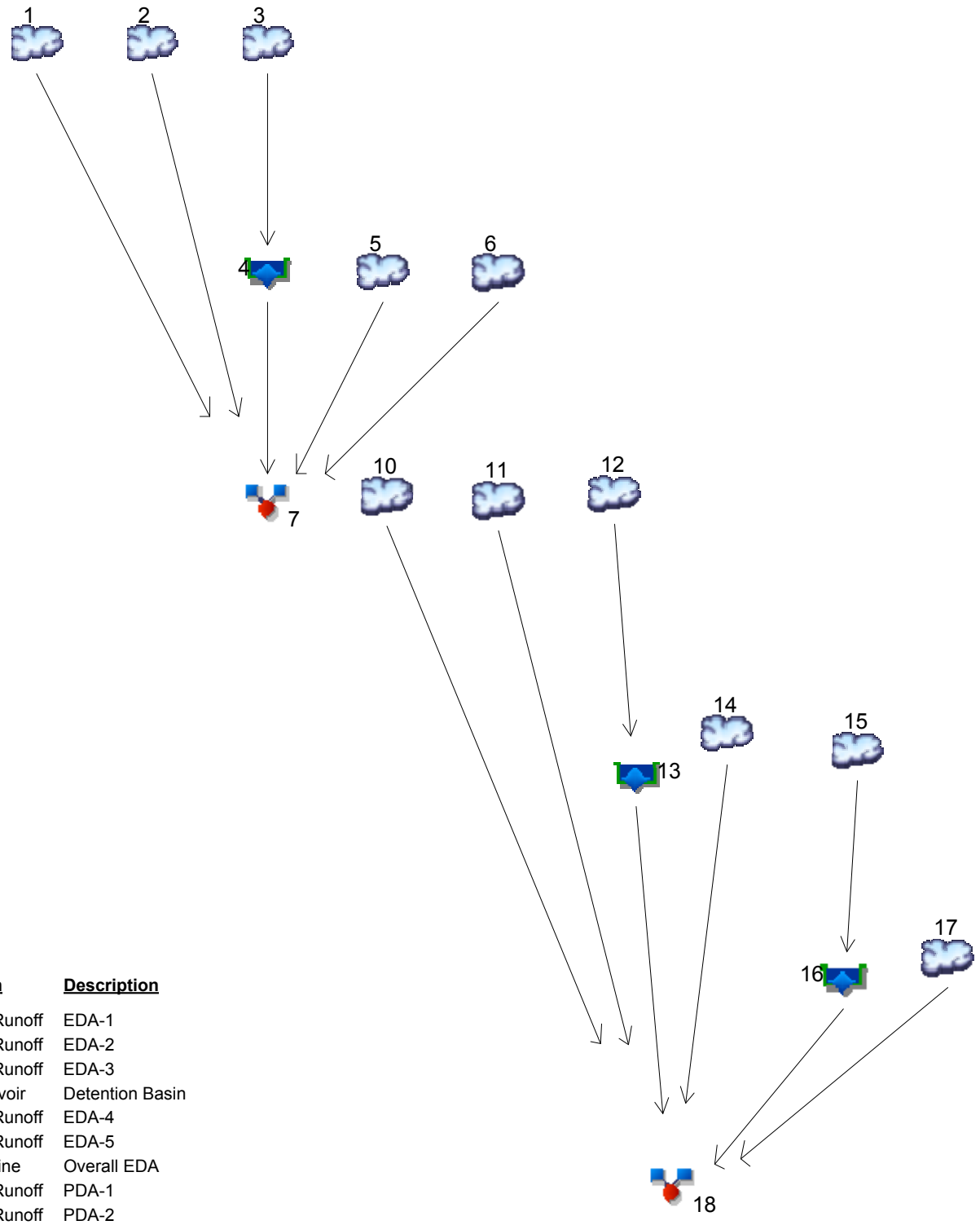
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Watershed Model Schematic

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



Legend

Hyd.	Origin	Description
1	SCS Runoff	EDA-1
2	SCS Runoff	EDA-2
3	SCS Runoff	EDA-3
4	Reservoir	Detention Basin
5	SCS Runoff	EDA-4
6	SCS Runoff	EDA-5
7	Combine	Overall EDA
10	SCS Runoff	PDA-1
11	SCS Runoff	PDA-2
12	SCS Runoff	PDA-3
13	Reservoir	Stormwater Basin #1
14	SCS Runoff	PDA-4
15	SCS Runoff	PDA-5a
16	Reservoir	Stormwater Basin #2
17	SCS Runoff	PDA-5b
18	Combine	Overall PDA (exclude building)

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	SCS Runoff	------	-------	0.855	-------	1.549	2.177	3.096	3.810	4.605	EDA-1
2	SCS Runoff	------	-------	0.279	-------	0.495	0.690	0.975	1.194	1.438	EDA-2
3	SCS Runoff	------	-------	1.218	-------	2.505	3.714	5.522	6.943	8.542	EDA-3
4	Reservoir	3	-------	0.205	-------	1.458	3.369	5.353	6.773	8.349	Detention Basin
5	SCS Runoff	------	-------	0.478	-------	0.953	1.395	2.058	2.579	3.164	EDA-4
6	SCS Runoff	------	-------	1.061	-------	1.816	2.485	3.448	4.184	4.996	EDA-5
7	Combine	1, 2, 4, 5, 6	-------	2.374	-------	5.371	9.498	14.04	17.47	21.30	Overall EDA
10	SCS Runoff	------	-------	0.486	-------	1.028	1.546	2.325	2.940	3.638	PDA-1
11	SCS Runoff	------	-------	0.303	-------	0.560	0.795	1.141	1.410	1.711	PDA-2
12	SCS Runoff	------	-------	1.350	-------	2.352	3.245	4.536	5.525	6.620	PDA-3
13	Reservoir	12	-------	0.295	-------	1.590	3.038	4.396	5.372	6.464	Stormwater Basin #1
14	SCS Runoff	------	-------	1.883	-------	2.761	3.492	4.508	5.263	6.082	PDA-4
15	SCS Runoff	------	-------	0.001	-------	0.006	0.032	0.109	0.213	0.360	PDA-5a
16	Reservoir	15	-------	0.000	-------	0.000	0.000	0.000	0.000	0.000	Stormwater Basin #2
17	SCS Runoff	------	-------	0.003	-------	0.028	0.095	0.304	0.528	0.809	PDA-5b
18	Combine	10, 11, 13, 14, 16, 17	-------	2.344	-------	4.965	8.238	11.79	14.47	17.48	Overall PDA (exclude building)

Hydrograph Summary Report

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

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.855	1	732	3,702	------	------	------	EDA-1
2	SCS Runoff	0.279	1	737	1,379	------	------	------	EDA-2
3	SCS Runoff	1.218	1	726	4,544	------	------	------	EDA-3
4	Reservoir	0.205	1	774	2,761	3	293.51	1,828	Detention Basin
5	SCS Runoff	0.478	1	730	2,056	------	------	------	EDA-4
6	SCS Runoff	1.061	1	725	3,431	------	------	------	EDA-5
7	Combine	2.374	1	728	13,329	1, 2, 4, 5, 6	------	------	Overall EDA
10	SCS Runoff	0.486	1	733	2,401	------	------	------	PDA-1
11	SCS Runoff	0.303	1	737	1,544	------	------	------	PDA-2
12	SCS Runoff	1.350	1	725	4,414	------	------	------	PDA-3
13	Reservoir	0.295	1	753	2,631	12	293.52	1,847	Stormwater Basin #1
14	SCS Runoff	1.883	1	725	5,805	------	------	------	PDA-4
15	SCS Runoff	0.001	1	1326	14	------	------	------	PDA-5a
16	Reservoir	0.000	1	n/a	0	15	291.05	13.9	Stormwater Basin #2
17	SCS Runoff	0.003	1	1324	77	------	------	------	PDA-5b
18	Combine	2.344	1	725	12,458	10, 11, 13, 14, 16, 17	------	------	Overall PDA (exclude building)

Hydrograph Summary Report

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

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	1.549	1	731	6,330	------	------	------	EDA-1
2	SCS Runoff	0.495	1	736	2,330	------	------	------	EDA-2
3	SCS Runoff	2.505	1	725	8,311	------	------	------	EDA-3
4	Reservoir	1.458	1	733	6,528	3	293.58	2,030	Detention Basin
5	SCS Runoff	0.953	1	729	3,705	------	------	------	EDA-4
6	SCS Runoff	1.816	1	725	5,669	------	------	------	EDA-5
7	Combine	5.371	1	731	24,563	1, 2, 4, 5, 6	------	------	Overall EDA
10	SCS Runoff	1.028	1	732	4,460	------	------	------	PDA-1
11	SCS Runoff	0.560	1	736	2,673	------	------	------	PDA-2
12	SCS Runoff	2.352	1	725	7,374	------	------	------	PDA-3
13	Reservoir	1.590	1	730	5,591	12	293.58	2,045	Stormwater Basin #1
14	SCS Runoff	2.761	1	725	8,567	------	------	------	PDA-4
15	SCS Runoff	0.006	1	874	158	------	------	------	PDA-5a
16	Reservoir	0.000	1	n/a	0	15	291.11	158	Stormwater Basin #2
17	SCS Runoff	0.028	1	745	392	------	------	------	PDA-5b
18	Combine	4.965	1	729	21,683	10, 11, 13, 14, 16, 17	------	------	Overall PDA (exclude building)

Hydrograph Summary Report

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

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	2.177	1	731	8,733	------	------	------	EDA-1
2	SCS Runoff	0.690	1	735	3,195	------	------	------	EDA-2
3	SCS Runoff	3.714	1	725	11,865	------	------	------	EDA-3
4	Reservoir	3.369	1	727	10,082	3	293.64	2,223	Detention Basin
5	SCS Runoff	1.395	1	729	5,251	------	------	------	EDA-4
6	SCS Runoff	2.485	1	725	7,682	------	------	------	EDA-5
7	Combine	9.498	1	727	34,943	1, 2, 4, 5, 6	------	------	Overall EDA
10	SCS Runoff	1.546	1	731	6,416	------	------	------	PDA-1
11	SCS Runoff	0.795	1	736	3,712	------	------	------	PDA-2
12	SCS Runoff	3.245	1	725	10,051	------	------	------	PDA-3
13	Reservoir	3.038	1	727	8,268	12	293.63	2,192	Stormwater Basin #1
14	SCS Runoff	3.492	1	724	10,921	------	------	------	PDA-4
15	SCS Runoff	0.032	1	745	377	------	------	------	PDA-5a
16	Reservoir	0.000	1	n/a	0	15	291.26	377	Stormwater Basin #2
17	SCS Runoff	0.095	1	738	802	------	------	------	PDA-5b
18	Combine	8.238	1	726	30,119	10, 11, 13, 14, 16, 17	------	------	Overall PDA (exclude building)

Hydrograph Summary Report

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

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	3.096	1	730	12,285	------	------	------	EDA-1
2	SCS Runoff	0.975	1	735	4,469	------	------	------	EDA-2
3	SCS Runoff	5.522	1	725	17,233	------	------	------	EDA-3
4	Reservoir	5.353	1	726	15,450	3	293.69	2,384	Detention Basin
5	SCS Runoff	2.058	1	728	7,575	------	------	------	EDA-4
6	SCS Runoff	3.448	1	725	10,622	------	------	------	EDA-5
7	Combine	14.04	1	727	50,400	1, 2, 4, 5, 6	------	------	Overall EDA
10	SCS Runoff	2.325	1	731	9,385	------	------	------	PDA-1
11	SCS Runoff	1.141	1	735	5,253	------	------	------	PDA-2
12	SCS Runoff	4.536	1	725	13,975	------	------	------	PDA-3
13	Reservoir	4.396	1	726	12,192	12	293.66	2,310	Stormwater Basin #1
14	SCS Runoff	4.508	1	724	14,233	------	------	------	PDA-4
15	SCS Runoff	0.109	1	734	804	------	------	------	PDA-5a
16	Reservoir	0.000	1	n/a	0	15	291.54	804	Stormwater Basin #2
17	SCS Runoff	0.304	1	727	1,551	------	------	------	PDA-5b
18	Combine	11.79	1	726	42,614	10, 11, 13, 14, 16, 17	------	------	Overall PDA (exclude building)

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1	SCS Runoff	3.810	1	730	15,063	------	------	------	EDA-1
2	SCS Runoff	1.194	1	735	5,462	------	------	------	EDA-2
3	SCS Runoff	6.943	1	725	21,499	------	------	------	EDA-3
4	Reservoir	6.773	1	726	19,715	3	293.72	2,486	Detention Basin
5	SCS Runoff	2.579	1	728	9,416	------	------	------	EDA-4
6	SCS Runoff	4.184	1	725	12,902	------	------	------	EDA-5
7	Combine	17.47	1	726	62,557	1, 2, 4, 5, 6	------	------	Overall EDA
10	SCS Runoff	2.940	1	731	11,752	------	------	------	PDA-1
11	SCS Runoff	1.410	1	735	6,462	------	------	------	PDA-2
12	SCS Runoff	5.525	1	725	17,027	------	------	------	PDA-3
13	Reservoir	5.372	1	726	15,244	12	293.69	2,385	Stormwater Basin #1
14	SCS Runoff	5.263	1	724	16,734	------	------	------	PDA-4
15	SCS Runoff	0.213	1	730	1,200	------	------	------	PDA-5a
16	Reservoir	0.000	1	n/a	0	15	291.76	1,200	Stormwater Basin #2
17	SCS Runoff	0.528	1	726	2,224	------	------	------	PDA-5b
18	Combine	14.47	1	726	52,416	10, 11, 13, 14, 16, 17	------	------	Overall PDA (exclude building)

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Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	4.605	1	730	18,186	------	------	------	EDA-1
2	SCS Runoff	1.438	1	735	6,576	------	------	------	EDA-2
3	SCS Runoff	8.542	1	725	26,345	------	------	------	EDA-3
4	Reservoir	8.349	1	726	24,562	3	293.75	2,594	Detention Basin
5	SCS Runoff	3.164	1	728	11,503	------	------	------	EDA-4
6	SCS Runoff	4.996	1	725	15,451	------	------	------	EDA-5
7	Combine	21.30	1	726	76,278	1, 2, 4, 5, 6	------	------	Overall EDA
10	SCS Runoff	3.638	1	730	14,448	------	------	------	PDA-1
11	SCS Runoff	1.711	1	735	7,824	------	------	------	PDA-2
12	SCS Runoff	6.620	1	725	20,445	------	------	------	PDA-3
13	Reservoir	6.464	1	726	18,662	12	293.71	2,465	Stormwater Basin #1
14	SCS Runoff	6.082	1	724	19,483	------	------	------	PDA-4
15	SCS Runoff	0.360	1	729	1,699	------	------	------	PDA-5a
16	Reservoir	0.000	1	n/a	0	15	292.03	1,699	Stormwater Basin #2
17	SCS Runoff	0.809	1	726	3,052	------	------	------	PDA-5b
18	Combine	17.48	1	726	63,470	10, 11, 13, 14, 16, 17	------	------	Overall PDA (exclude building)

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	SCS Runoff	------	-------	0.855	-------	1.549	2.177	3.096	3.810	4.605	EDA-1
2	SCS Runoff	------	-------	0.279	-------	0.495	0.690	0.975	1.194	1.438	EDA-2
3	SCS Runoff	------	-------	1.218	-------	2.505	3.714	5.522	6.943	8.542	EDA-3
4	Reservoir	3	-------	0.205	-------	1.458	3.369	5.353	6.773	8.349	Detention Basin
5	SCS Runoff	------	-------	0.478	-------	0.953	1.395	2.058	2.579	3.164	EDA-4
6	SCS Runoff	------	-------	1.061	-------	1.816	2.485	3.448	4.184	4.996	EDA-5
7	Combine	1, 2, 4, 5, 6	-------	2.374	-------	5.371	9.498	14.04	17.47	21.30	Overall EDA
10	SCS Runoff	------	-------	0.486	-------	1.028	1.546	2.325	2.940	3.638	PDA-1
11	SCS Runoff	------	-------	0.303	-------	0.560	0.795	1.141	1.410	1.711	PDA-2
12	SCS Runoff	------	-------	1.350	-------	2.352	3.245	4.536	5.525	6.620	PDA-3
13	Reservoir	12	-------	0.295	-------	1.590	3.038	4.396	5.372	6.464	Stormwater Basin #1
14	SCS Runoff	------	-------	1.883	-------	2.761	3.492	4.508	5.263	6.082	PDA-4
15	SCS Runoff	------	-------	0.001	-------	0.006	0.032	0.109	0.213	0.360	PDA-5a
16	Reservoir	15	-------	0.000	-------	0.000	0.000	0.000	0.000	0.000	Stormwater Basin #2
17	SCS Runoff	------	-------	0.003	-------	0.028	0.095	0.304	0.528	0.809	PDA-5b
18	Combine	10, 11, 13, 14, 16, 17	-------	2.344	-------	4.965	8.238	11.79	14.47	17.48	Overall PDA (exclude building)

Hydrograph Summary Report

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

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.855	1	732	3,702	------	------	------	EDA-1
2	SCS Runoff	0.279	1	737	1,379	------	------	------	EDA-2
3	SCS Runoff	1.218	1	726	4,544	------	------	------	EDA-3
4	Reservoir	0.205	1	774	2,761	3	293.51	1,828	Detention Basin
5	SCS Runoff	0.478	1	730	2,056	------	------	------	EDA-4
6	SCS Runoff	1.061	1	725	3,431	------	------	------	EDA-5
7	Combine	2.374	1	728	13,329	1, 2, 4, 5, 6	------	------	Overall EDA
10	SCS Runoff	0.486	1	733	2,401	------	------	------	PDA-1
11	SCS Runoff	0.303	1	737	1,544	------	------	------	PDA-2
12	SCS Runoff	1.350	1	725	4,414	------	------	------	PDA-3
13	Reservoir	0.295	1	753	2,631	12	293.52	1,847	Stormwater Basin #1
14	SCS Runoff	1.883	1	725	5,805	------	------	------	PDA-4
15	SCS Runoff	0.001	1	1326	14	------	------	------	PDA-5a
16	Reservoir	0.000	1	n/a	0	15	291.05	13.9	Stormwater Basin #2
17	SCS Runoff	0.003	1	1324	77	------	------	------	PDA-5b
18	Combine	2.344	1	725	12,458	10, 11, 13, 14, 16, 17	------	------	Overall PDA (exclude building)

Hydrograph Summary Report

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

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	1.549	1	731	6,330	------	------	------	EDA-1
2	SCS Runoff	0.495	1	736	2,330	------	------	------	EDA-2
3	SCS Runoff	2.505	1	725	8,311	------	------	------	EDA-3
4	Reservoir	1.458	1	733	6,528	3	293.58	2,030	Detention Basin
5	SCS Runoff	0.953	1	729	3,705	------	------	------	EDA-4
6	SCS Runoff	1.816	1	725	5,669	------	------	------	EDA-5
7	Combine	5.371	1	731	24,563	1, 2, 4, 5, 6	------	------	Overall EDA
10	SCS Runoff	1.028	1	732	4,460	------	------	------	PDA-1
11	SCS Runoff	0.560	1	736	2,673	------	------	------	PDA-2
12	SCS Runoff	2.352	1	725	7,374	------	------	------	PDA-3
13	Reservoir	1.590	1	730	5,591	12	293.58	2,045	Stormwater Basin #1
14	SCS Runoff	2.761	1	725	8,567	------	------	------	PDA-4
15	SCS Runoff	0.006	1	874	158	------	------	------	PDA-5a
16	Reservoir	0.000	1	n/a	0	15	291.11	158	Stormwater Basin #2
17	SCS Runoff	0.028	1	745	392	------	------	------	PDA-5b
18	Combine	4.965	1	729	21,683	10, 11, 13, 14, 16, 17	------	------	Overall PDA (exclude building)

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1	SCS Runoff	2.177	1	731	8,733	------	------	------	EDA-1
2	SCS Runoff	0.690	1	735	3,195	------	------	------	EDA-2
3	SCS Runoff	3.714	1	725	11,865	------	------	------	EDA-3
4	Reservoir	3.369	1	727	10,082	3	293.64	2,223	Detention Basin
5	SCS Runoff	1.395	1	729	5,251	------	------	------	EDA-4
6	SCS Runoff	2.485	1	725	7,682	------	------	------	EDA-5
7	Combine	9.498	1	727	34,943	1, 2, 4, 5, 6	------	------	Overall EDA
10	SCS Runoff	1.546	1	731	6,416	------	------	------	PDA-1
11	SCS Runoff	0.795	1	736	3,712	------	------	------	PDA-2
12	SCS Runoff	3.245	1	725	10,051	------	------	------	PDA-3
13	Reservoir	3.038	1	727	8,268	12	293.63	2,192	Stormwater Basin #1
14	SCS Runoff	3.492	1	724	10,921	------	------	------	PDA-4
15	SCS Runoff	0.032	1	745	377	------	------	------	PDA-5a
16	Reservoir	0.000	1	n/a	0	15	291.26	377	Stormwater Basin #2
17	SCS Runoff	0.095	1	738	802	------	------	------	PDA-5b
18	Combine	8.238	1	726	30,119	10, 11, 13, 14, 16, 17	------	------	Overall PDA (exclude building)

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3	SCS Runoff	5.522	1	725	17,233	------	------	------	EDA-3
4	Reservoir	5.353	1	726	15,450	3	293.69	2,384	Detention Basin
5	SCS Runoff	2.058	1	728	7,575	------	------	------	EDA-4
6	SCS Runoff	3.448	1	725	10,622	------	------	------	EDA-5
7	Combine	14.04	1	727	50,400	1, 2, 4, 5, 6	------	------	Overall EDA
10	SCS Runoff	2.325	1	731	9,385	------	------	------	PDA-1
11	SCS Runoff	1.141	1	735	5,253	------	------	------	PDA-2
12	SCS Runoff	4.536	1	725	13,975	------	------	------	PDA-3
13	Reservoir	4.396	1	726	12,192	12	293.66	2,310	Stormwater Basin #1
14	SCS Runoff	4.508	1	724	14,233	------	------	------	PDA-4
15	SCS Runoff	0.109	1	734	804	------	------	------	PDA-5a
16	Reservoir	0.000	1	n/a	0	15	291.54	804	Stormwater Basin #2
17	SCS Runoff	0.304	1	727	1,551	------	------	------	PDA-5b
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2	SCS Runoff	1.194	1	735	5,462	------	------	------	EDA-2
3	SCS Runoff	6.943	1	725	21,499	------	------	------	EDA-3
4	Reservoir	6.773	1	726	19,715	3	293.72	2,486	Detention Basin
5	SCS Runoff	2.579	1	728	9,416	------	------	------	EDA-4
6	SCS Runoff	4.184	1	725	12,902	------	------	------	EDA-5
7	Combine	17.47	1	726	62,557	1, 2, 4, 5, 6	------	------	Overall EDA
10	SCS Runoff	2.940	1	731	11,752	------	------	------	PDA-1
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12	SCS Runoff	5.525	1	725	17,027	------	------	------	PDA-3
13	Reservoir	5.372	1	726	15,244	12	293.69	2,385	Stormwater Basin #1
14	SCS Runoff	5.263	1	724	16,734	------	------	------	PDA-4
15	SCS Runoff	0.213	1	730	1,200	------	------	------	PDA-5a
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17	SCS Runoff	0.528	1	726	2,224	------	------	------	PDA-5b
18	Combine	14.47	1	726	52,416	10, 11, 13, 14, 16, 17	------	------	Overall PDA (exclude building)

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3	SCS Runoff	8.542	1	725	26,345	------	------	------	EDA-3
4	Reservoir	8.349	1	726	24,562	3	293.75	2,594	Detention Basin
5	SCS Runoff	3.164	1	728	11,503	------	------	------	EDA-4
6	SCS Runoff	4.996	1	725	15,451	------	------	------	EDA-5
7	Combine	21.30	1	726	76,278	1, 2, 4, 5, 6	------	------	Overall EDA
10	SCS Runoff	3.638	1	730	14,448	------	------	------	PDA-1
11	SCS Runoff	1.711	1	735	7,824	------	------	------	PDA-2
12	SCS Runoff	6.620	1	725	20,445	------	------	------	PDA-3
13	Reservoir	6.464	1	726	18,662	12	293.71	2,465	Stormwater Basin #1
14	SCS Runoff	6.082	1	724	19,483	------	------	------	PDA-4
15	SCS Runoff	0.360	1	729	1,699	------	------	------	PDA-5a
16	Reservoir	0.000	1	n/a	0	15	292.03	1,699	Stormwater Basin #2
17	SCS Runoff	0.809	1	726	3,052	------	------	------	PDA-5b
18	Combine	17.48	1	726	63,470	10, 11, 13, 14, 16, 17	------	------	Overall PDA (exclude building)

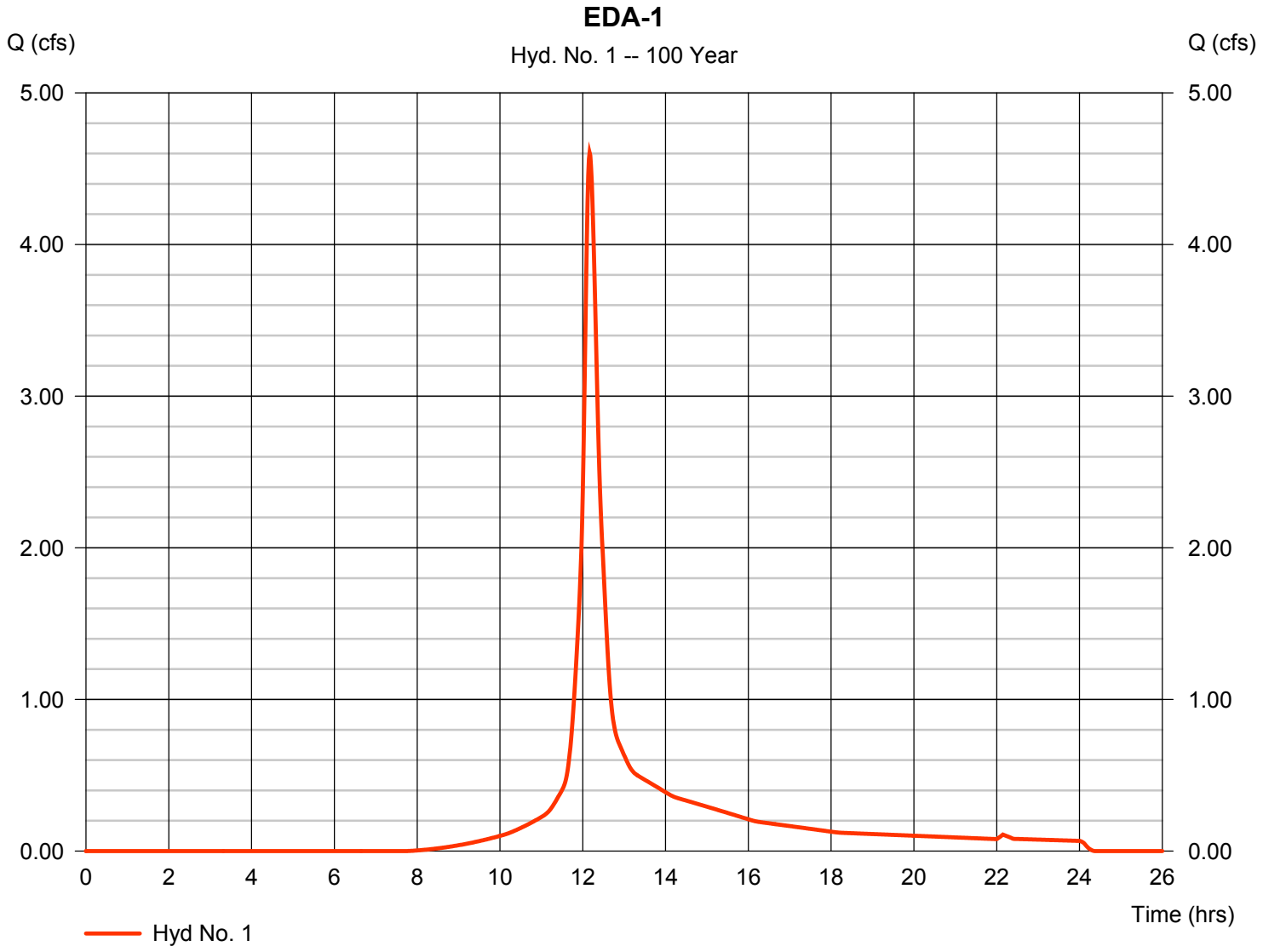
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 05 / 7 / 2021

Hyd. No. 1

EDA-1

Hydrograph type	= SCS Runoff	Peak discharge	= 4.605 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.17 hrs
Time interval	= 1 min	Hyd. volume	= 18,186 cuft
Drainage area	= 1.030 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 14.90 min
Total precip.	= 8.60 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



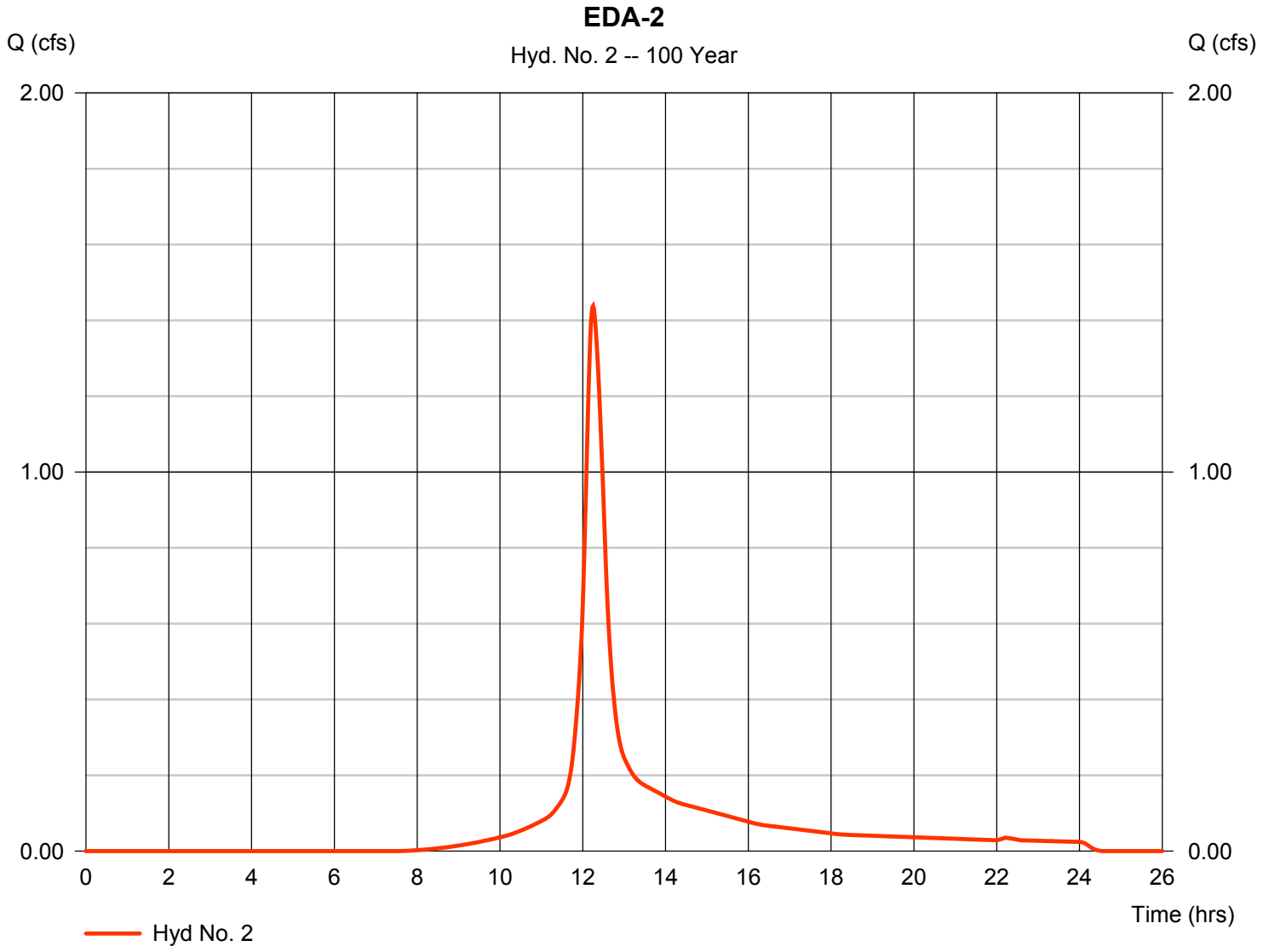
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 05 / 7 / 2021

Hyd. No. 2

EDA-2

Hydrograph type	= SCS Runoff	Peak discharge	= 1.438 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.25 hrs
Time interval	= 1 min	Hyd. volume	= 6,576 cuft
Drainage area	= 0.360 ac	Curve number	= 70
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 21.30 min
Total precip.	= 8.60 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



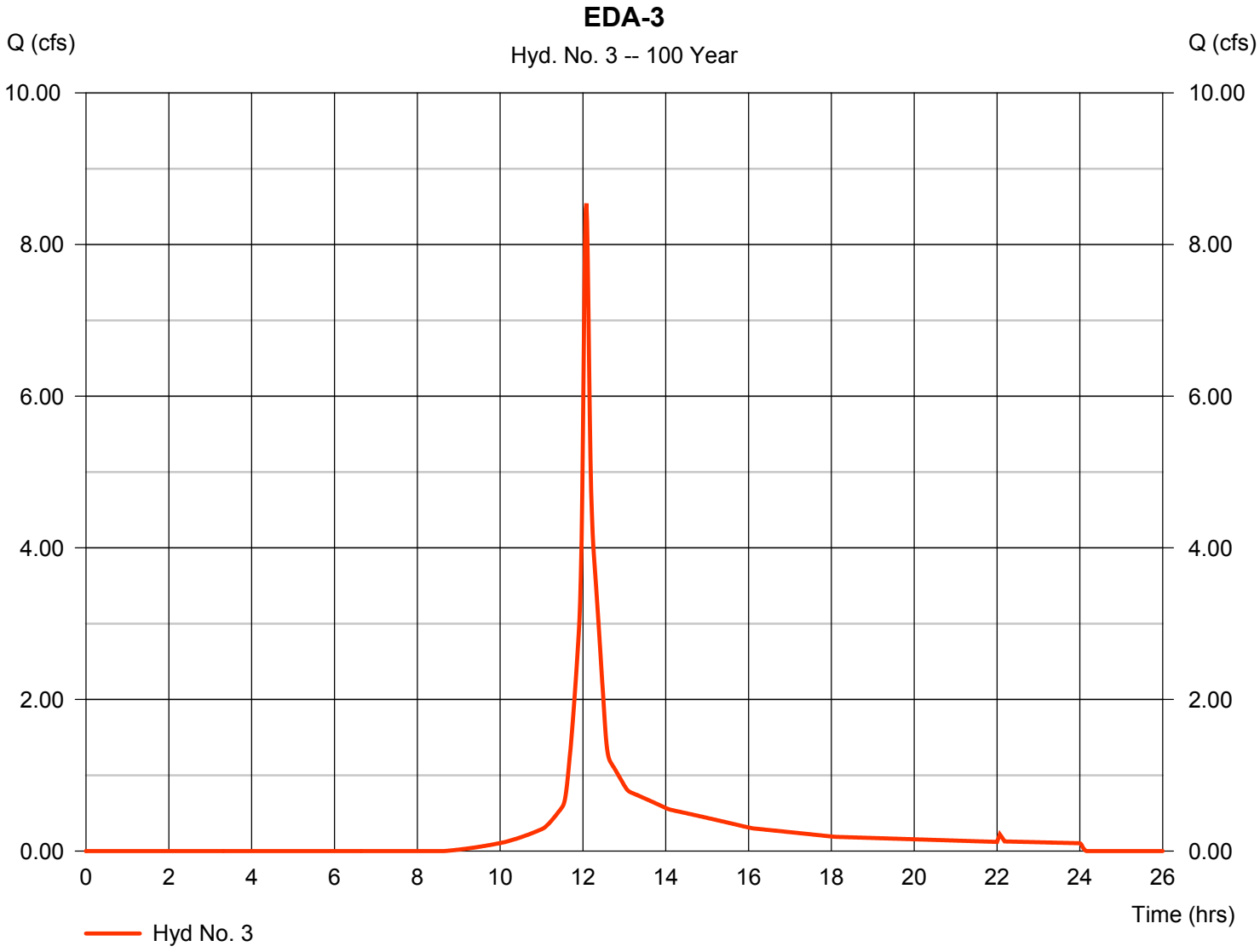
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 05 / 7 / 2021

Hyd. No. 3

EDA-3

Hydrograph type	= SCS Runoff	Peak discharge	= 8.542 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.08 hrs
Time interval	= 1 min	Hyd. volume	= 26,345 cuft
Drainage area	= 1.650 ac	Curve number	= 64
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 8.60 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

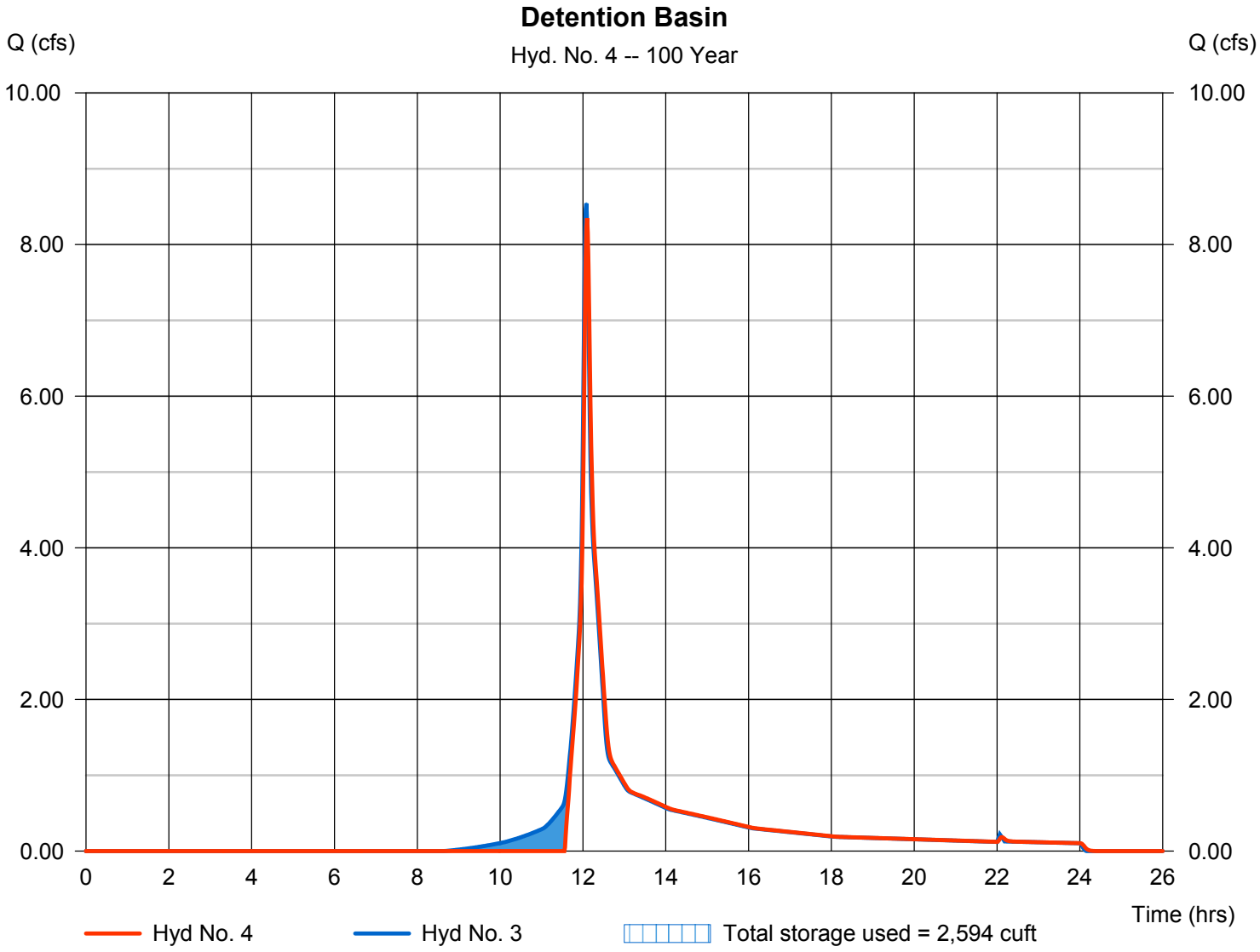
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 05 / 7 / 2021

Hyd. No. 4

Detention Basin

Hydrograph type	=	Reservoir	Peak discharge	=	8.349 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.10 hrs
Time interval	=	1 min	Hyd. volume	=	24,562 cuft
Inflow hyd. No.	=	3 - EDA-3	Max. Elevation	=	293.75 ft
Reservoir name	=	Ex Detention Basin	Max. Storage	=	2,594 cuft

Storage Indication method used.



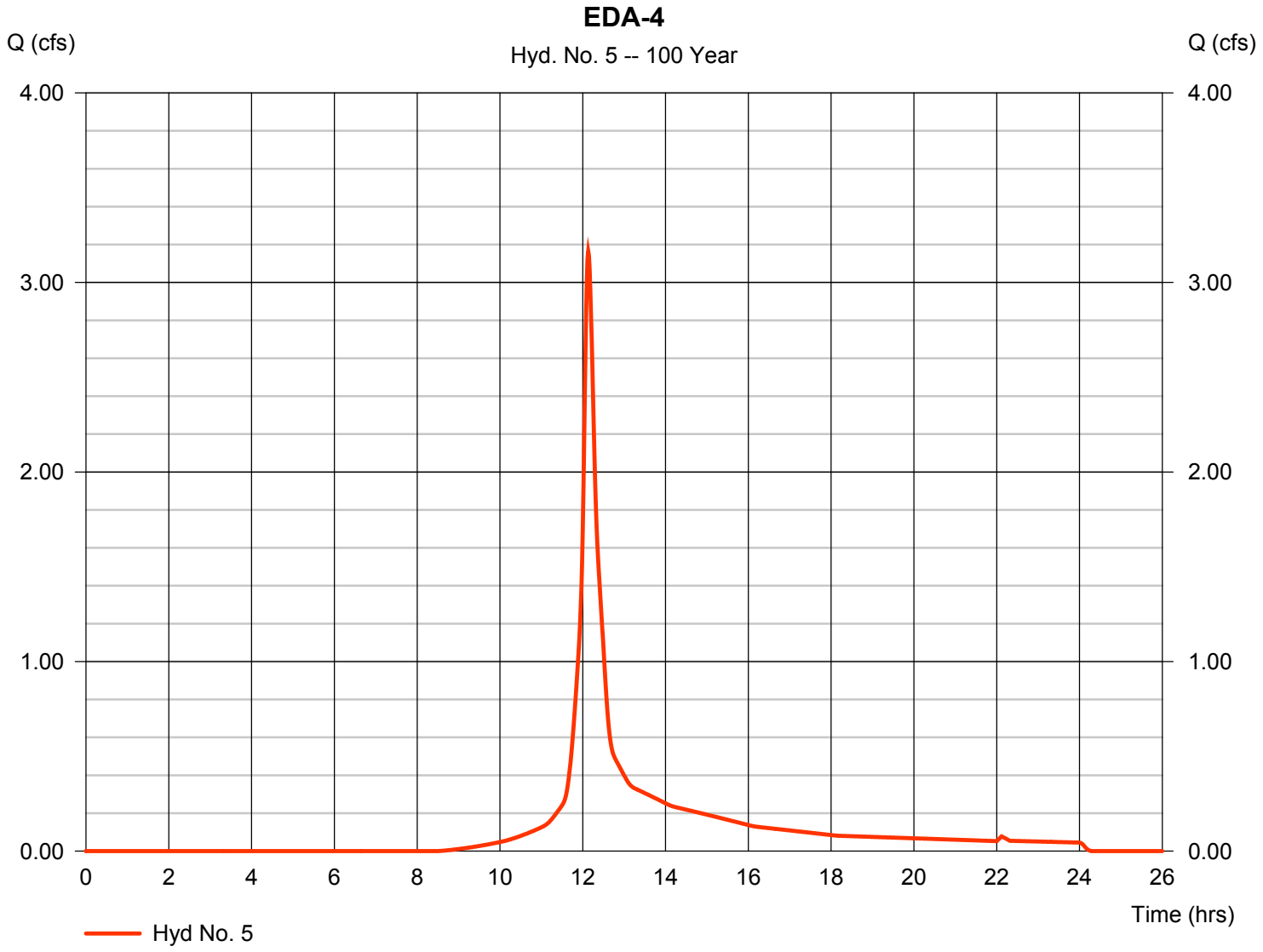
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 05 / 7 / 2021

Hyd. No. 5

EDA-4

Hydrograph type	= SCS Runoff	Peak discharge	= 3.164 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.13 hrs
Time interval	= 1 min	Hyd. volume	= 11,503 cuft
Drainage area	= 0.710 ac	Curve number	= 65
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.50 min
Total precip.	= 8.60 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



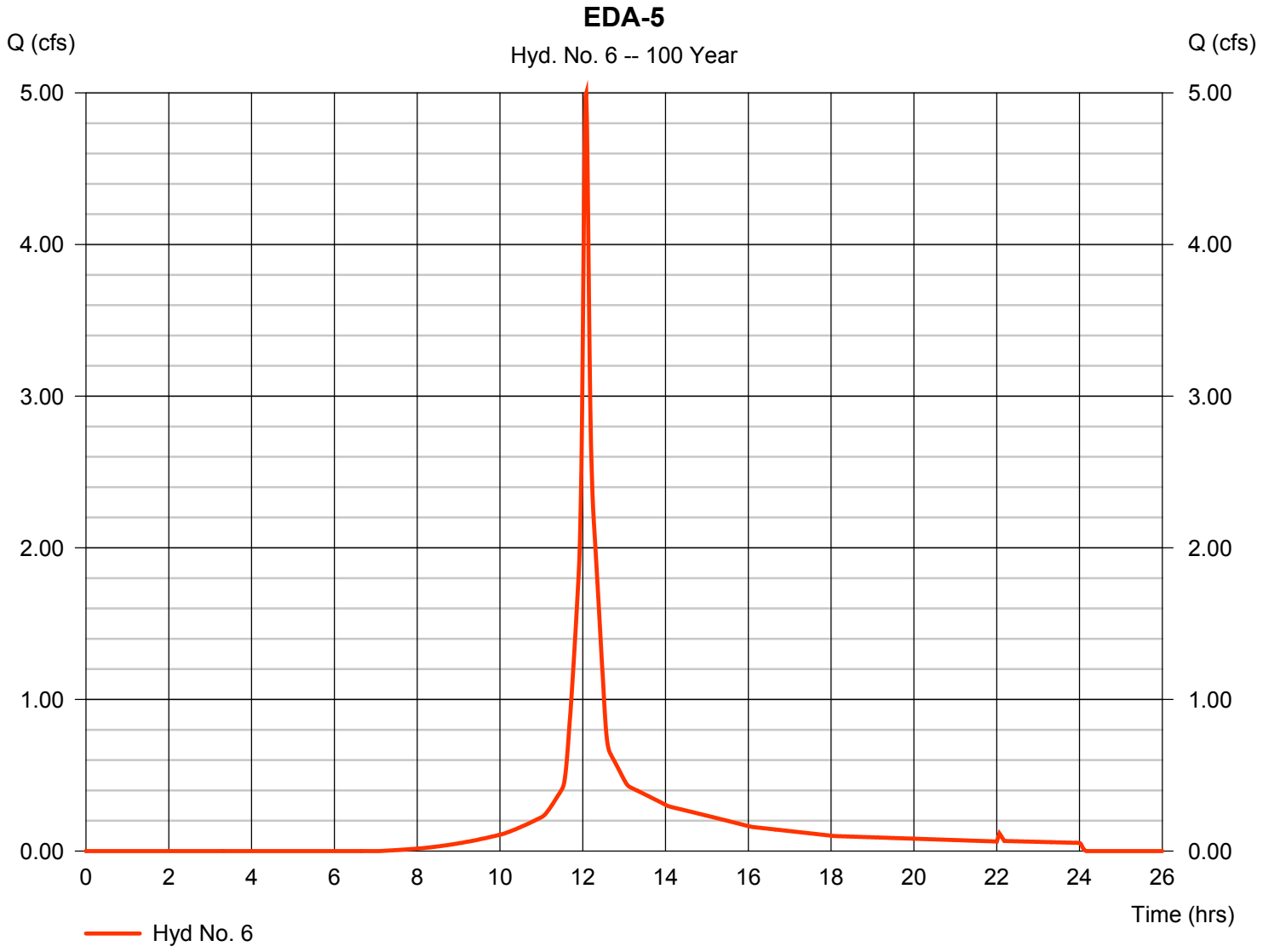
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 05 / 7 / 2021

Hyd. No. 6

EDA-5

Hydrograph type	= SCS Runoff	Peak discharge	= 4.996 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.08 hrs
Time interval	= 1 min	Hyd. volume	= 15,451 cuft
Drainage area	= 0.790 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 8.60 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



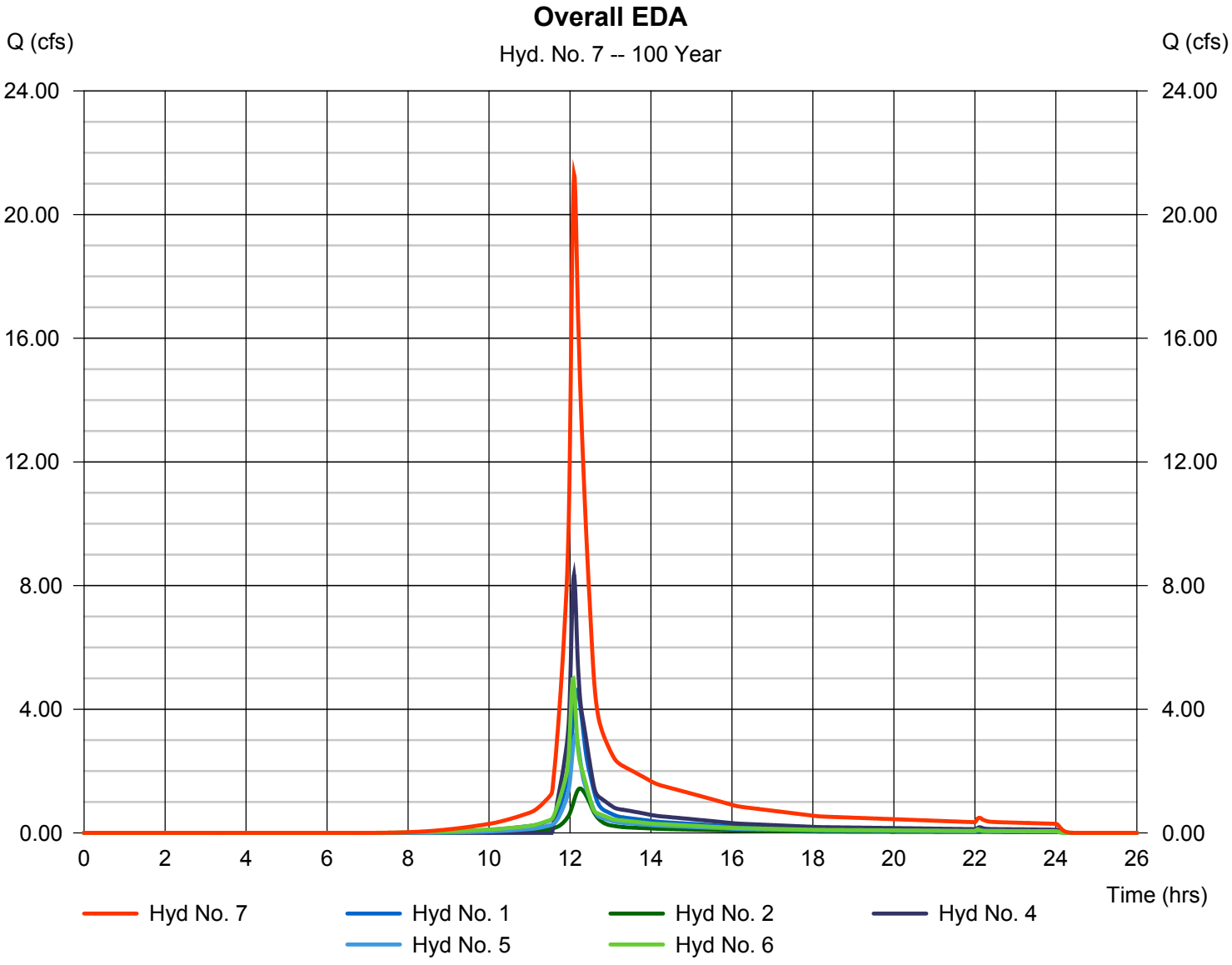
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 05 / 7 / 2021

Hyd. No. 7

Overall EDA

Hydrograph type	= Combine	Peak discharge	= 21.30 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 1 min	Hyd. volume	= 76,278 cuft
Inflow hyds.	= 1, 2, 4, 5, 6	Contrib. drain. area	= 2.890 ac



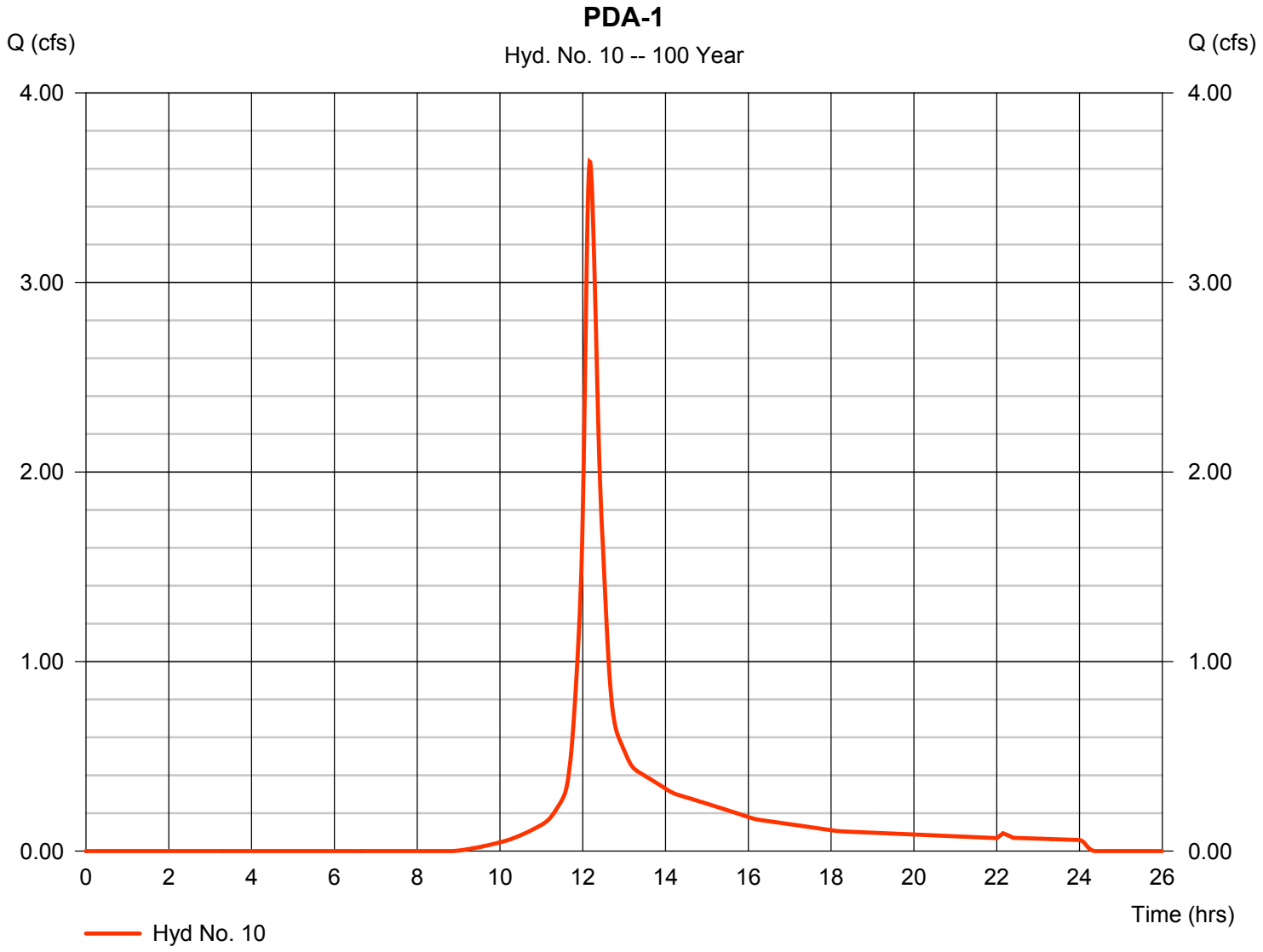
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 05 / 7 / 2021

Hyd. No. 10

PDA-1

Hydrograph type	= SCS Runoff	Peak discharge	= 3.638 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.17 hrs
Time interval	= 1 min	Hyd. volume	= 14,448 cuft
Drainage area	= 0.960 ac	Curve number	= 63
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 14.90 min
Total precip.	= 8.60 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



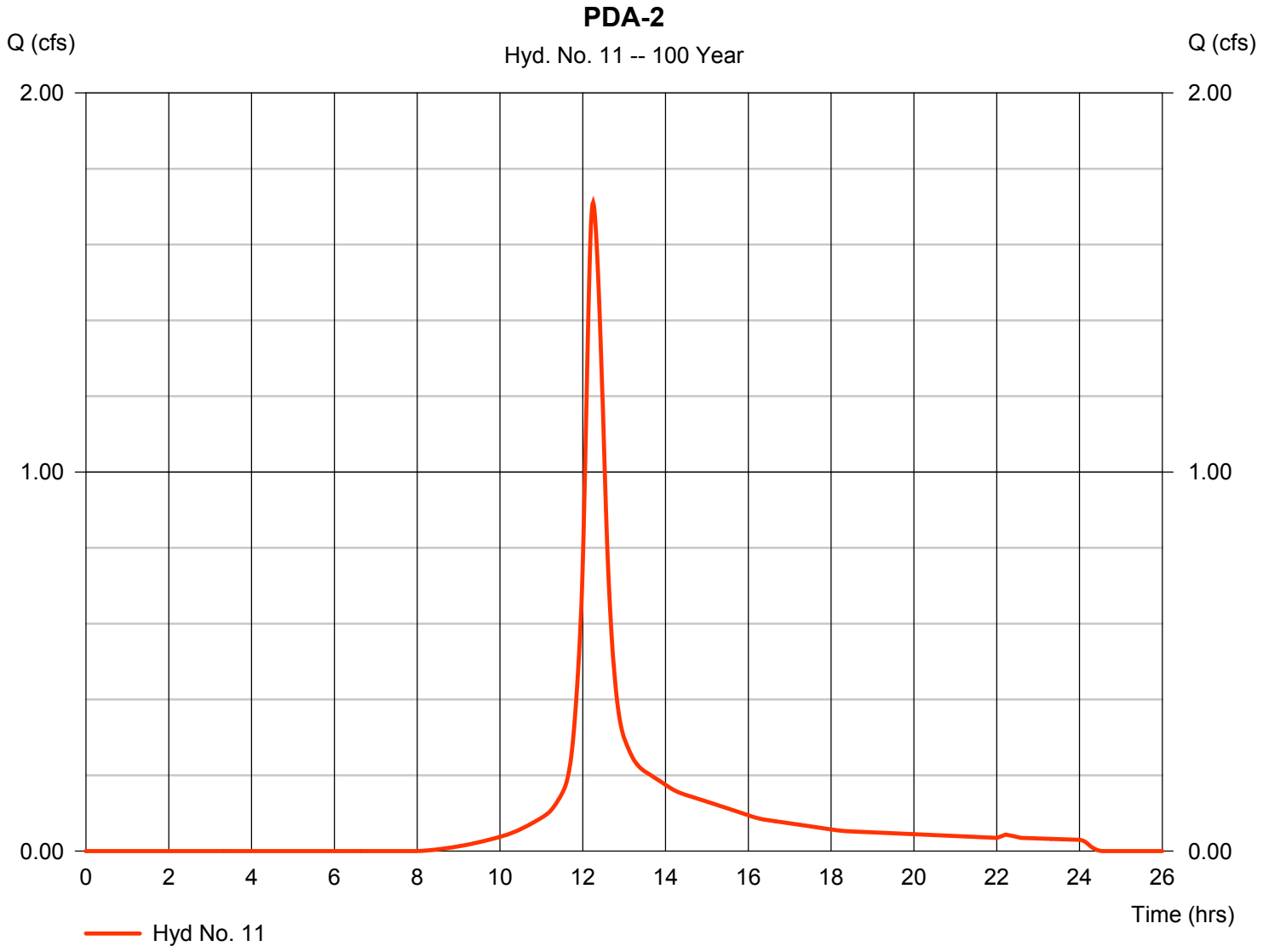
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 05 / 7 / 2021

Hyd. No. 11

PDA-2

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.711 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.25 hrs
Time interval	=	1 min	Hyd. volume	=	7,824 cuft
Drainage area	=	0.450 ac	Curve number	=	68
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	21.30 min
Total precip.	=	8.60 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



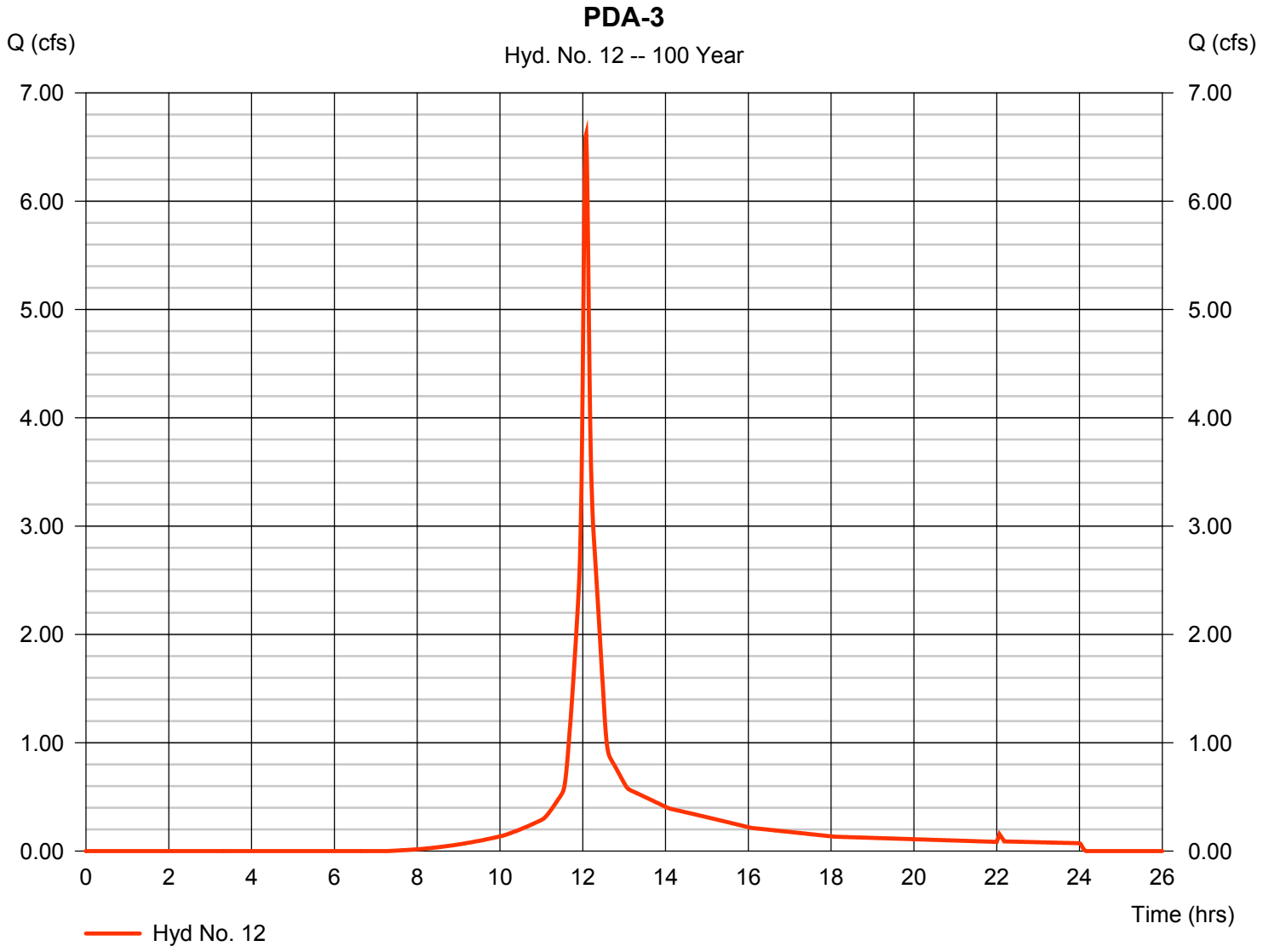
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 05 / 7 / 2021

Hyd. No. 12

PDA-3

Hydrograph type	= SCS Runoff	Peak discharge	= 6.620 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.08 hrs
Time interval	= 1 min	Hyd. volume	= 20,445 cuft
Drainage area	= 1.070 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 8.60 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

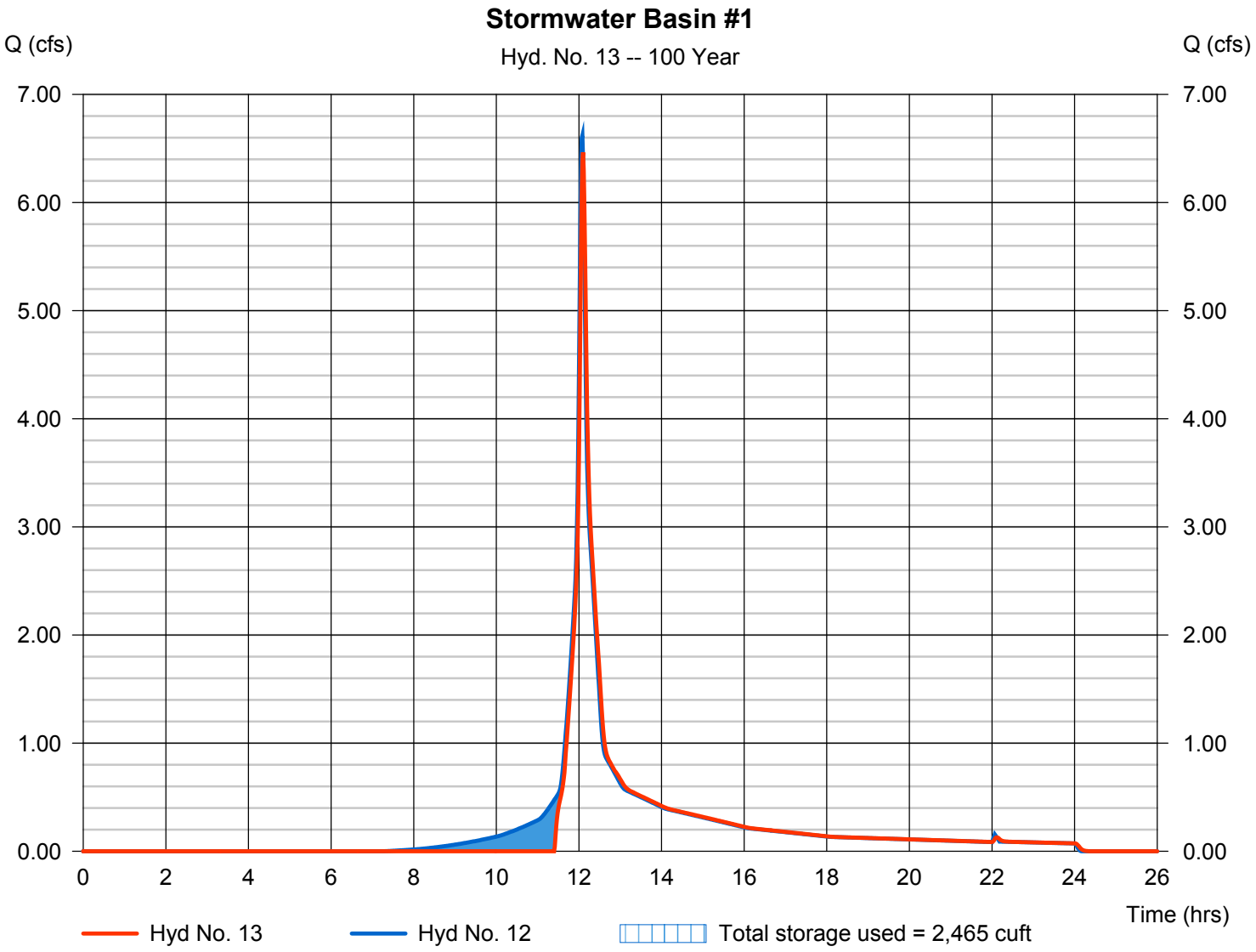
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 05 / 7 / 2021

Hyd. No. 13

Stormwater Basin #1

Hydrograph type	=	Reservoir	Peak discharge	=	6.464 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.10 hrs
Time interval	=	1 min	Hyd. volume	=	18,662 cuft
Inflow hyd. No.	=	12 - PDA-3	Max. Elevation	=	293.71 ft
Reservoir name	=	Stormwater Basin 1	Max. Storage	=	2,465 cuft

Storage Indication method used.



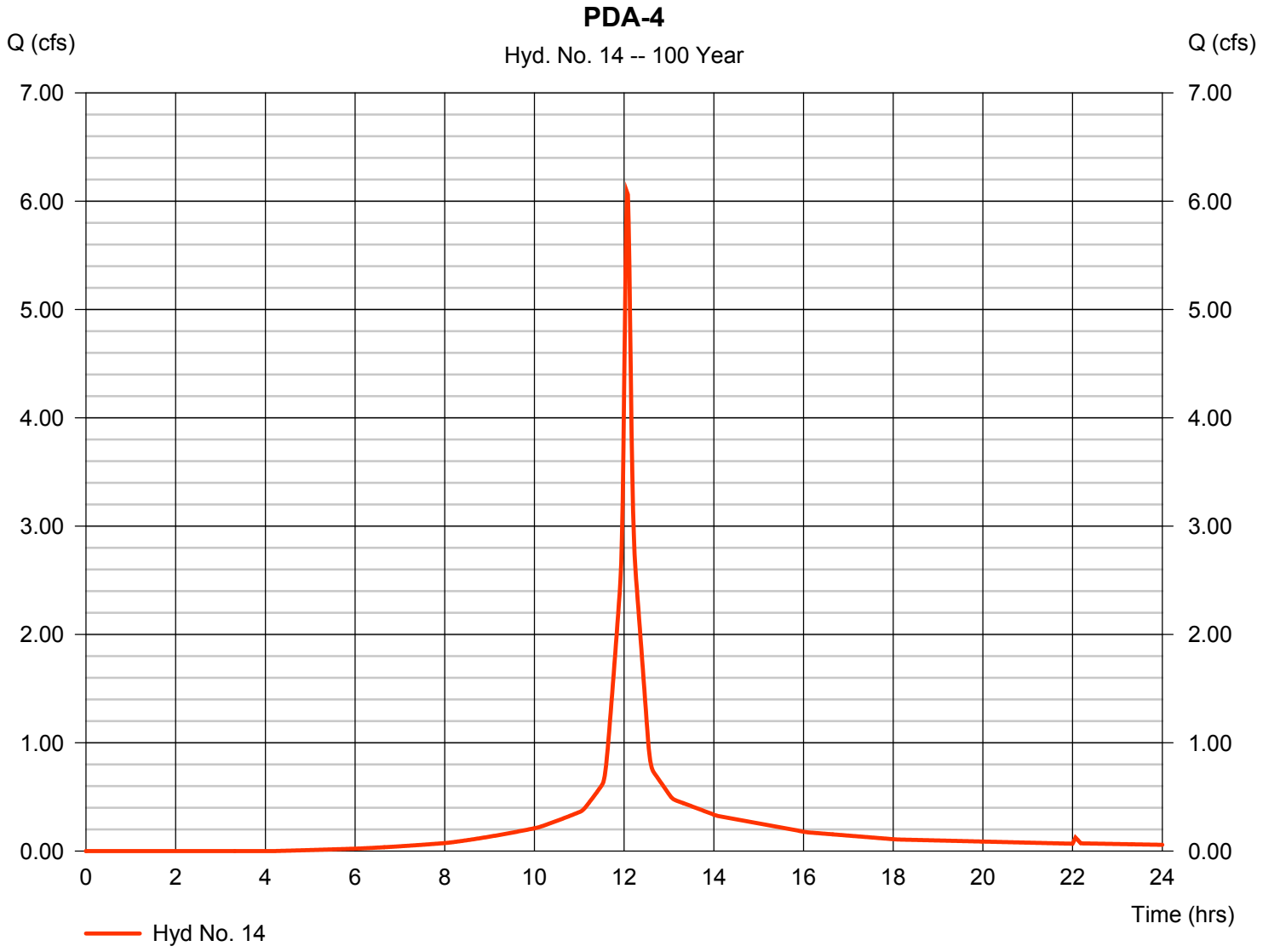
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 05 / 7 / 2021

Hyd. No. 14

PDA-4

Hydrograph type	= SCS Runoff	Peak discharge	= 6.082 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 1 min	Hyd. volume	= 19,483 cuft
Drainage area	= 0.780 ac	Curve number	= 84
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 8.60 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



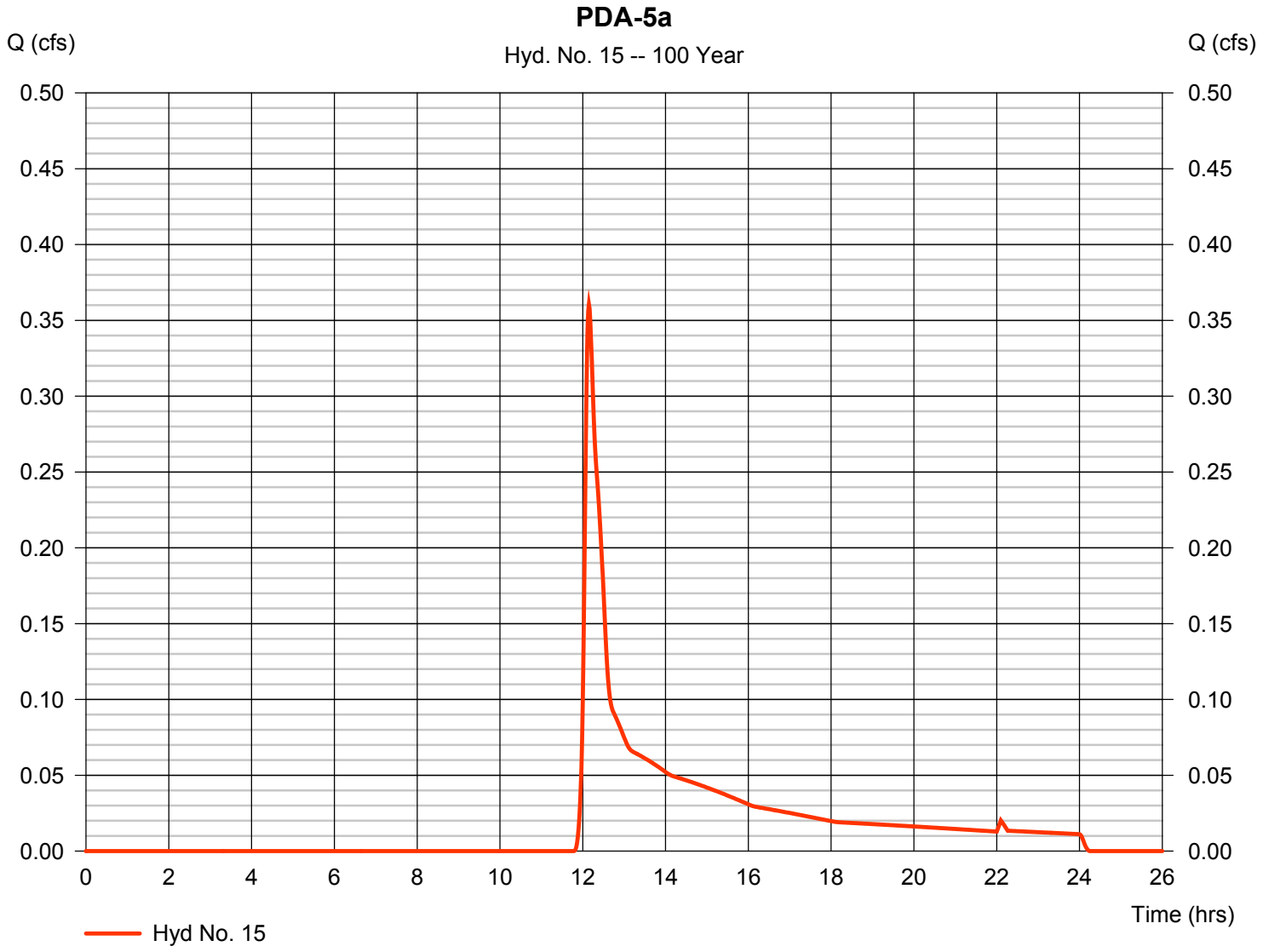
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 05 / 7 / 2021

Hyd. No. 15

PDA-5a

Hydrograph type	= SCS Runoff	Peak discharge	= 0.360 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.15 hrs
Time interval	= 1 min	Hyd. volume	= 1,699 cuft
Drainage area	= 0.330 ac	Curve number	= 39
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 9.00 min
Total precip.	= 8.60 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

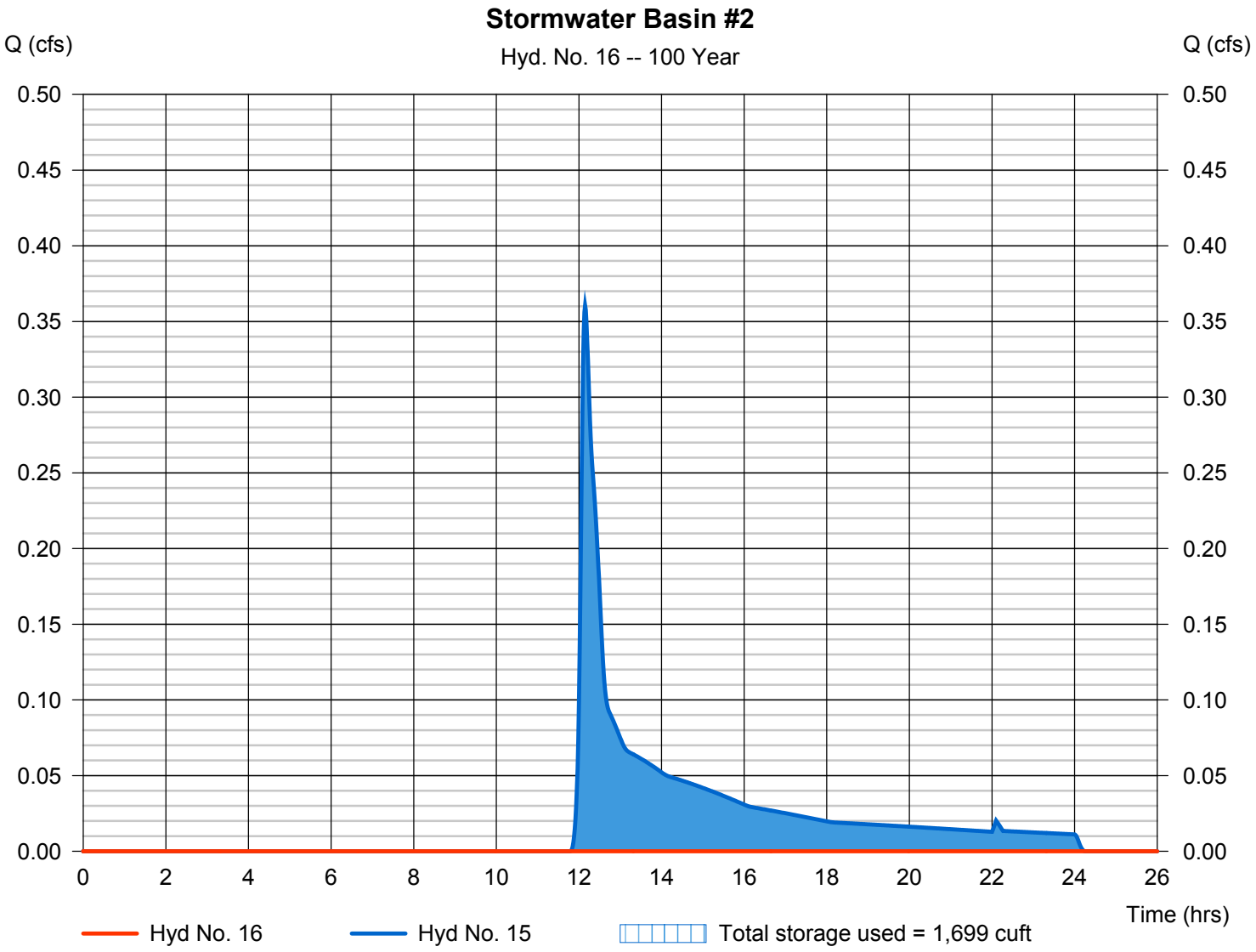
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 05 / 7 / 2021

Hyd. No. 16

Stormwater Basin #2

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.	=	15 - PDA-5a	Max. Elevation	=	292.03 ft
Reservoir name	=	Prop Detention Basin - Rear	Max. Storage	=	1,699 cuft

Storage Indication method used.



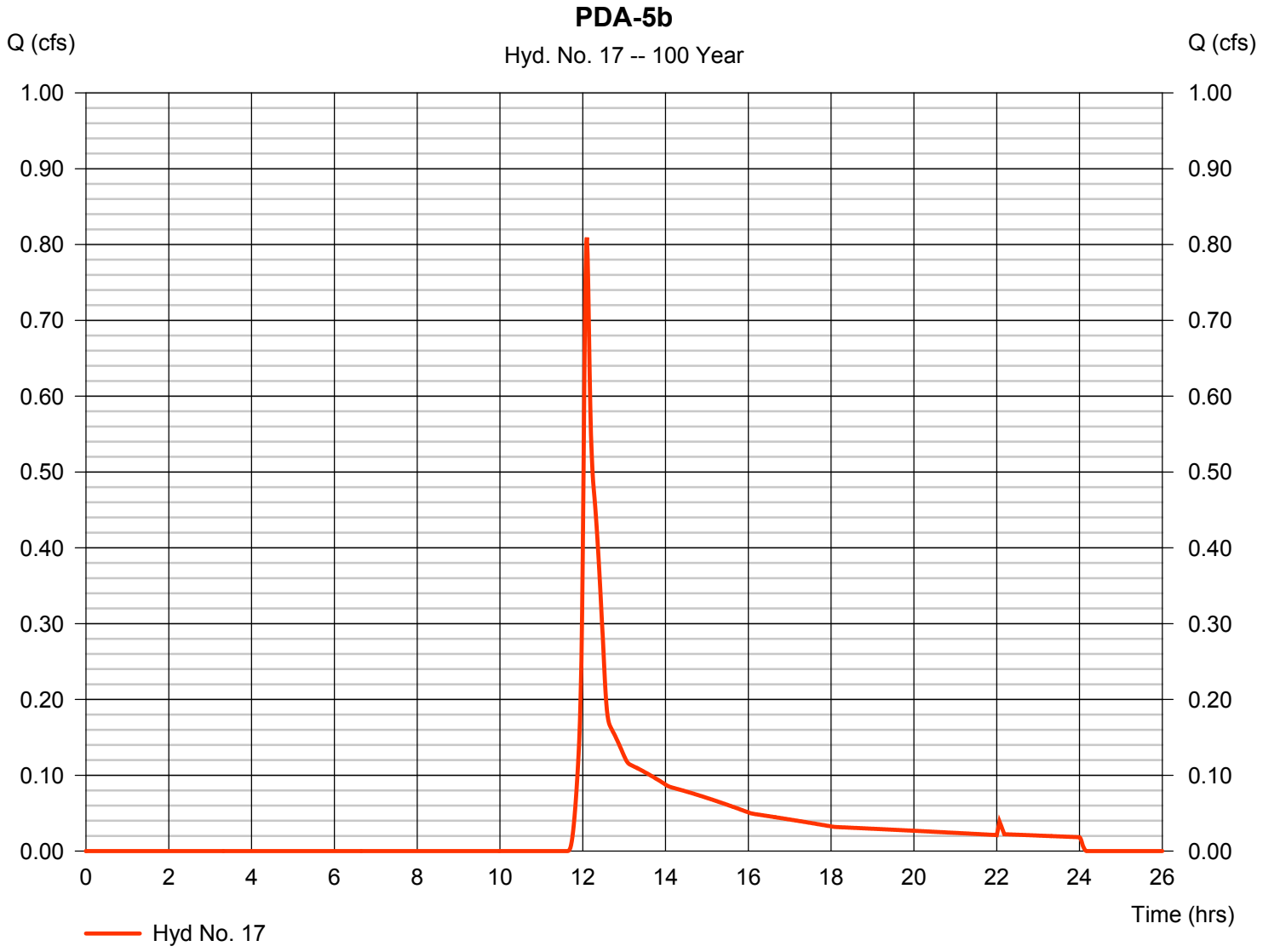
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 05 / 7 / 2021

Hyd. No. 17

PDA-5b

Hydrograph type	= SCS Runoff	Peak discharge	= 0.809 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 1 min	Hyd. volume	= 3,052 cuft
Drainage area	= 0.470 ac	Curve number	= 42
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 8.60 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



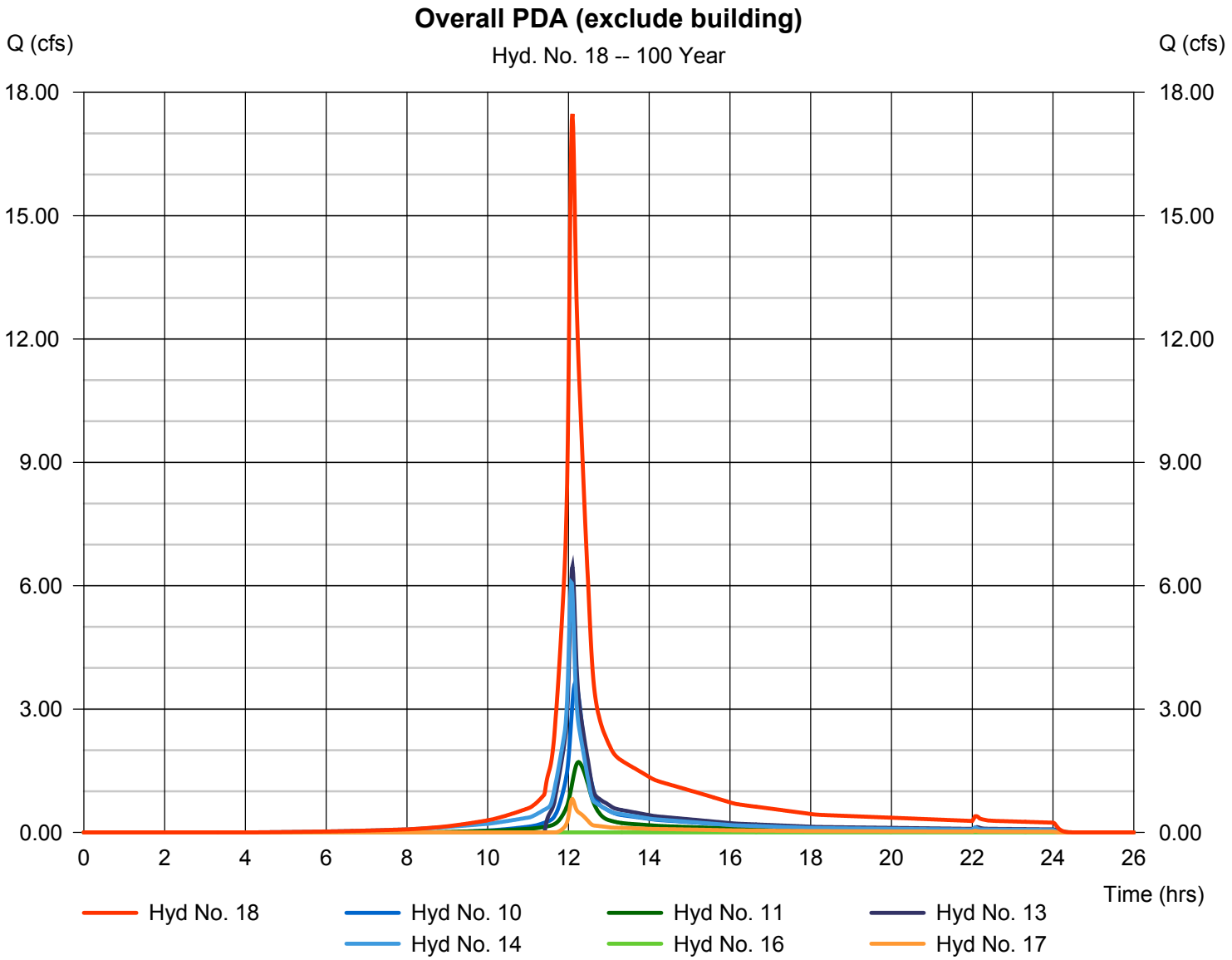
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 05 / 7 / 2021

Hyd. No. 18

Overall PDA (exclude building)

Hydrograph type	= Combine	Peak discharge	= 17.48 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 1 min	Hyd. volume	= 63,470 cuft
Inflow hyds.	= 10, 11, 13, 14, 16, 17	Contrib. drain. area	= 2.660 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 05 / 7 / 2021

Hyd. No. 4

Detention Basin

Hydrograph type	= Reservoir	Peak discharge	= 8.349 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 1 min	Hyd. volume	= 24,562 cuft
Inflow hyd. No.	= 3 - EDA-3	Reservoir name	= Ex Detention Basi
Max. Elevation	= 293.75 ft	Max. Storage	= 2,594 cuft

Storage Indication method used.

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 5)

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
11.58	0.738	293.51	-----	-----	-----	-----	0.207	-----	-----	-----	-----	0.207
11.67	1.150	293.55	-----	-----	-----	-----	0.807	-----	-----	-----	-----	0.807
11.75	1.683	293.58	-----	-----	-----	-----	1.456	-----	-----	-----	-----	1.456
11.83	2.306	293.60	-----	-----	-----	-----	2.054	-----	-----	-----	-----	2.054
11.92	3.046	293.62	-----	-----	-----	-----	2.803	-----	-----	-----	-----	2.802
12.00	5.564	293.67	-----	-----	-----	-----	4.643	-----	-----	-----	-----	4.643
12.08	8.542 <<	293.75	-----	-----	-----	-----	8.235	-----	-----	-----	-----	8.235
12.17	5.729	293.71	-----	-----	-----	-----	6.488	-----	-----	-----	-----	6.488
12.25	4.014	293.66	-----	-----	-----	-----	4.313	-----	-----	-----	-----	4.313
12.33	3.361	293.64	-----	-----	-----	-----	3.559	-----	-----	-----	-----	3.559
12.42	2.667	293.62	-----	-----	-----	-----	2.882	-----	-----	-----	-----	2.882
12.50	1.934	293.60	-----	-----	-----	-----	2.160	-----	-----	-----	-----	2.160
12.58	1.346	293.58	-----	-----	-----	-----	1.546	-----	-----	-----	-----	1.547
12.67	1.174	293.57	-----	-----	-----	-----	1.235	-----	-----	-----	-----	1.235
12.75	1.099	293.56	-----	-----	-----	-----	1.131	-----	-----	-----	-----	1.131
12.83	1.022	293.56	-----	-----	-----	-----	1.053	-----	-----	-----	-----	1.053
12.92	0.944	293.56	-----	-----	-----	-----	0.975	-----	-----	-----	-----	0.975
13.00	0.865	293.56	-----	-----	-----	-----	0.896	-----	-----	-----	-----	0.896
13.08	0.800	293.55	-----	-----	-----	-----	0.823	-----	-----	-----	-----	0.823
13.17	0.772	293.55	-----	-----	-----	-----	0.783	-----	-----	-----	-----	0.782

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Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
13.25	0.752	293.55	-----	-----	-----	-----	0.760	-----	-----	-----	-----	0.760
13.33	0.733	293.55	-----	-----	-----	-----	0.742	-----	-----	-----	-----	0.742
13.42	0.713	293.55	-----	-----	-----	-----	0.726	-----	-----	-----	-----	0.726
13.50	0.693	293.55	-----	-----	-----	-----	0.707	-----	-----	-----	-----	0.707
13.58	0.673	293.55	-----	-----	-----	-----	0.687	-----	-----	-----	-----	0.687
13.67	0.652	293.54	-----	-----	-----	-----	0.667	-----	-----	-----	-----	0.667
13.75	0.631	293.54	-----	-----	-----	-----	0.646	-----	-----	-----	-----	0.646
13.83	0.611	293.54	-----	-----	-----	-----	0.626	-----	-----	-----	-----	0.626
13.92	0.590	293.54	-----	-----	-----	-----	0.605	-----	-----	-----	-----	0.605
14.00	0.568	293.54	-----	-----	-----	-----	0.584	-----	-----	-----	-----	0.584
14.08	0.550	293.54	-----	-----	-----	-----	0.563	-----	-----	-----	-----	0.563
14.17	0.539	293.54	-----	-----	-----	-----	0.548	-----	-----	-----	-----	0.548
14.25	0.529	293.54	-----	-----	-----	-----	0.536	-----	-----	-----	-----	0.536
14.33	0.519	293.54	-----	-----	-----	-----	0.526	-----	-----	-----	-----	0.526
14.42	0.509	293.53	-----	-----	-----	-----	0.516	-----	-----	-----	-----	0.516
14.50	0.499	293.53	-----	-----	-----	-----	0.506	-----	-----	-----	-----	0.506
14.58	0.489	293.53	-----	-----	-----	-----	0.496	-----	-----	-----	-----	0.496
14.67	0.479	293.53	-----	-----	-----	-----	0.486	-----	-----	-----	-----	0.486
14.75	0.469	293.53	-----	-----	-----	-----	0.476	-----	-----	-----	-----	0.476
14.83	0.458	293.53	-----	-----	-----	-----	0.466	-----	-----	-----	-----	0.466
14.92	0.448	293.53	-----	-----	-----	-----	0.456	-----	-----	-----	-----	0.456
15.00	0.438	293.53	-----	-----	-----	-----	0.445	-----	-----	-----	-----	0.445
15.08	0.428	293.53	-----	-----	-----	-----	0.435	-----	-----	-----	-----	0.435
15.17	0.417	293.53	-----	-----	-----	-----	0.425	-----	-----	-----	-----	0.425
15.25	0.407	293.53	-----	-----	-----	-----	0.414	-----	-----	-----	-----	0.414
15.33	0.396	293.53	-----	-----	-----	-----	0.404	-----	-----	-----	-----	0.404
15.42	0.386	293.53	-----	-----	-----	-----	0.393	-----	-----	-----	-----	0.393
15.50	0.375	293.53	-----	-----	-----	-----	0.383	-----	-----	-----	-----	0.383

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Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
15.58	0.364	293.52	-----	-----	-----	-----	0.372	-----	-----	-----	-----	0.372
15.67	0.354	293.52	-----	-----	-----	-----	0.361	-----	-----	-----	-----	0.361
15.75	0.343	293.52	-----	-----	-----	-----	0.351	-----	-----	-----	-----	0.351
15.83	0.332	293.52	-----	-----	-----	-----	0.340	-----	-----	-----	-----	0.340
15.92	0.322	293.52	-----	-----	-----	-----	0.329	-----	-----	-----	-----	0.329
16.00	0.311	293.52	-----	-----	-----	-----	0.319	-----	-----	-----	-----	0.319
16.08	0.301	293.52	-----	-----	-----	-----	0.308	-----	-----	-----	-----	0.308
16.17	0.296	293.52	-----	-----	-----	-----	0.300	-----	-----	-----	-----	0.301
16.25	0.291	293.52	-----	-----	-----	-----	0.295	-----	-----	-----	-----	0.295
16.33	0.287	293.52	-----	-----	-----	-----	0.290	-----	-----	-----	-----	0.290
16.42	0.282	293.52	-----	-----	-----	-----	0.285	-----	-----	-----	-----	0.286
16.50	0.278	293.52	-----	-----	-----	-----	0.281	-----	-----	-----	-----	0.281
16.58	0.273	293.52	-----	-----	-----	-----	0.276	-----	-----	-----	-----	0.276
16.67	0.268	293.52	-----	-----	-----	-----	0.272	-----	-----	-----	-----	0.272
16.75	0.264	293.52	-----	-----	-----	-----	0.267	-----	-----	-----	-----	0.267
16.83	0.259	293.52	-----	-----	-----	-----	0.262	-----	-----	-----	-----	0.262
16.92	0.254	293.52	-----	-----	-----	-----	0.258	-----	-----	-----	-----	0.258
17.00	0.250	293.52	-----	-----	-----	-----	0.253	-----	-----	-----	-----	0.253
17.08	0.245	293.52	-----	-----	-----	-----	0.248	-----	-----	-----	-----	0.248
17.17	0.240	293.52	-----	-----	-----	-----	0.244	-----	-----	-----	-----	0.244
17.25	0.235	293.52	-----	-----	-----	-----	0.239	-----	-----	-----	-----	0.239
17.33	0.231	293.52	-----	-----	-----	-----	0.234	-----	-----	-----	-----	0.234
17.42	0.226	293.52	-----	-----	-----	-----	0.229	-----	-----	-----	-----	0.229
17.50	0.221	293.52	-----	-----	-----	-----	0.224	-----	-----	-----	-----	0.225
17.58	0.216	293.51	-----	-----	-----	-----	0.220	-----	-----	-----	-----	0.220
17.67	0.212	293.51	-----	-----	-----	-----	0.215	-----	-----	-----	-----	0.215
17.75	0.207	293.51	-----	-----	-----	-----	0.210	-----	-----	-----	-----	0.210
17.83	0.202	293.51	-----	-----	-----	-----	0.205	-----	-----	-----	-----	0.206

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Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
17.92	0.197	293.51	-----	-----	-----	-----	0.201	-----	-----	-----	-----	0.201
18.00	0.192	293.51	-----	-----	-----	-----	0.196	-----	-----	-----	-----	0.196
18.08	0.188	293.51	-----	-----	-----	-----	0.191	-----	-----	-----	-----	0.191
18.17	0.187	293.51	-----	-----	-----	-----	0.188	-----	-----	-----	-----	0.188
18.25	0.185	293.51	-----	-----	-----	-----	0.186	-----	-----	-----	-----	0.186
18.33	0.184	293.51	-----	-----	-----	-----	0.185	-----	-----	-----	-----	0.185
18.42	0.182	293.51	-----	-----	-----	-----	0.184	-----	-----	-----	-----	0.183
18.50	0.181	293.51	-----	-----	-----	-----	0.182	-----	-----	-----	-----	0.182
18.58	0.180	293.51	-----	-----	-----	-----	0.181	-----	-----	-----	-----	0.181
18.67	0.178	293.51	-----	-----	-----	-----	0.179	-----	-----	-----	-----	0.179
18.75	0.177	293.51	-----	-----	-----	-----	0.178	-----	-----	-----	-----	0.178
18.83	0.175	293.51	-----	-----	-----	-----	0.176	-----	-----	-----	-----	0.176
18.92	0.174	293.51	-----	-----	-----	-----	0.175	-----	-----	-----	-----	0.175
19.00	0.173	293.51	-----	-----	-----	-----	0.174	-----	-----	-----	-----	0.174
19.08	0.171	293.51	-----	-----	-----	-----	0.172	-----	-----	-----	-----	0.172
19.17	0.170	293.51	-----	-----	-----	-----	0.171	-----	-----	-----	-----	0.171
19.25	0.168	293.51	-----	-----	-----	-----	0.169	-----	-----	-----	-----	0.169
19.33	0.167	293.51	-----	-----	-----	-----	0.168	-----	-----	-----	-----	0.168
19.42	0.166	293.51	-----	-----	-----	-----	0.167	-----	-----	-----	-----	0.167
19.50	0.164	293.51	-----	-----	-----	-----	0.165	-----	-----	-----	-----	0.165
19.58	0.163	293.51	-----	-----	-----	-----	0.164	-----	-----	-----	-----	0.164
19.67	0.161	293.51	-----	-----	-----	-----	0.162	-----	-----	-----	-----	0.162
19.75	0.160	293.51	-----	-----	-----	-----	0.161	-----	-----	-----	-----	0.161
19.83	0.159	293.51	-----	-----	-----	-----	0.160	-----	-----	-----	-----	0.160
19.92	0.157	293.51	-----	-----	-----	-----	0.158	-----	-----	-----	-----	0.158
20.00	0.156	293.51	-----	-----	-----	-----	0.157	-----	-----	-----	-----	0.157
20.08	0.154	293.51	-----	-----	-----	-----	0.155	-----	-----	-----	-----	0.155
20.17	0.153	293.51	-----	-----	-----	-----	0.154	-----	-----	-----	-----	0.154

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Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
20.25	0.151	293.51	-----	-----	-----	-----	0.152	-----	-----	-----	-----	0.152
20.33	0.150	293.51	-----	-----	-----	-----	0.151	-----	-----	-----	-----	0.151
20.42	0.148	293.51	-----	-----	-----	-----	0.150	-----	-----	-----	-----	0.150
20.50	0.147	293.51	-----	-----	-----	-----	0.148	-----	-----	-----	-----	0.148
20.58	0.146	293.51	-----	-----	-----	-----	0.147	-----	-----	-----	-----	0.147
20.67	0.144	293.51	-----	-----	-----	-----	0.145	-----	-----	-----	-----	0.145
20.75	0.143	293.51	-----	-----	-----	-----	0.144	-----	-----	-----	-----	0.144
20.83	0.141	293.51	-----	-----	-----	-----	0.142	-----	-----	-----	-----	0.142
20.92	0.140	293.51	-----	-----	-----	-----	0.141	-----	-----	-----	-----	0.141
21.00	0.138	293.51	-----	-----	-----	-----	0.140	-----	-----	-----	-----	0.139
21.08	0.137	293.51	-----	-----	-----	-----	0.138	-----	-----	-----	-----	0.138
21.17	0.136	293.51	-----	-----	-----	-----	0.137	-----	-----	-----	-----	0.137
21.25	0.134	293.51	-----	-----	-----	-----	0.135	-----	-----	-----	-----	0.135
21.33	0.133	293.51	-----	-----	-----	-----	0.134	-----	-----	-----	-----	0.134
21.42	0.131	293.51	-----	-----	-----	-----	0.132	-----	-----	-----	-----	0.132
21.50	0.130	293.51	-----	-----	-----	-----	0.131	-----	-----	-----	-----	0.131
21.58	0.128	293.51	-----	-----	-----	-----	0.130	-----	-----	-----	-----	0.129
21.67	0.127	293.51	-----	-----	-----	-----	0.128	-----	-----	-----	-----	0.128
21.75	0.125	293.51	-----	-----	-----	-----	0.126	-----	-----	-----	-----	0.126
21.83	0.124	293.51	-----	-----	-----	-----	0.125	-----	-----	-----	-----	0.125
21.92	0.122	293.51	-----	-----	-----	-----	0.124	-----	-----	-----	-----	0.123
22.00	0.121	293.51	-----	-----	-----	-----	0.122	-----	-----	-----	-----	0.122
22.08	0.209	293.51	-----	-----	-----	-----	0.174	-----	-----	-----	-----	0.174
22.17	0.141	293.51	-----	-----	-----	-----	0.169	-----	-----	-----	-----	0.170
22.25	0.126	293.51	-----	-----	-----	-----	0.138	-----	-----	-----	-----	0.138
22.33	0.125	293.51	-----	-----	-----	-----	0.129	-----	-----	-----	-----	0.129
22.42	0.124	293.51	-----	-----	-----	-----	0.125	-----	-----	-----	-----	0.126
22.50	0.123	293.51	-----	-----	-----	-----	0.124	-----	-----	-----	-----	0.124

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Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
22.58	0.122	293.51	-----	-----	-----	-----	0.123	-----	-----	-----	-----	0.123
22.67	0.121	293.51	-----	-----	-----	-----	0.122	-----	-----	-----	-----	0.122
22.75	0.120	293.51	-----	-----	-----	-----	0.120	-----	-----	-----	-----	0.121
22.83	0.119	293.51	-----	-----	-----	-----	0.120	-----	-----	-----	-----	0.119
22.92	0.118	293.51	-----	-----	-----	-----	0.119	-----	-----	-----	-----	0.118
23.00	0.117	293.51	-----	-----	-----	-----	0.117	-----	-----	-----	-----	0.117
23.08	0.115	293.51	-----	-----	-----	-----	0.116	-----	-----	-----	-----	0.116
23.17	0.114	293.51	-----	-----	-----	-----	0.115	-----	-----	-----	-----	0.115
23.25	0.113	293.51	-----	-----	-----	-----	0.114	-----	-----	-----	-----	0.114
23.33	0.112	293.51	-----	-----	-----	-----	0.113	-----	-----	-----	-----	0.113
23.42	0.111	293.51	-----	-----	-----	-----	0.112	-----	-----	-----	-----	0.112
23.50	0.110	293.51	-----	-----	-----	-----	0.111	-----	-----	-----	-----	0.111
23.58	0.109	293.51	-----	-----	-----	-----	0.110	-----	-----	-----	-----	0.110
23.67	0.108	293.51	-----	-----	-----	-----	0.109	-----	-----	-----	-----	0.109
23.75	0.107	293.51	-----	-----	-----	-----	0.107	-----	-----	-----	-----	0.107
23.83	0.106	293.51	-----	-----	-----	-----	0.106	-----	-----	-----	-----	0.106
23.92	0.104	293.51	-----	-----	-----	-----	0.105	-----	-----	-----	-----	0.105
24.00	0.103	293.51	-----	-----	-----	-----	0.104	-----	-----	-----	-----	0.104

...End

Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 05 / 7 / 2021

Pond No. 1 - Ex Detention Basin

Pond Data

Pond storage is based on user-defined values.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	292.00	n/a	0	0
0.50	292.50	n/a	265	265
1.00	293.00	n/a	550	814
1.50	293.50	n/a	969	1,783
2.00	294.00	n/a	1,619	3,402
2.50	294.50	n/a	358	3,760

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	Inactive	Inactive	Inactive	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 1	1	1	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	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 20.00	Inactive	Inactive	0.00
Crest El. (ft)	= 293.50	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Ciplti	70 degV	Broad	---
Multi-Stage	= No	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	292.00	---	---	---	---	0.00	---	---	---	---	---	0.000
0.05	26	292.05	---	---	---	---	0.00	---	---	---	---	---	0.000
0.10	53	292.10	---	---	---	---	0.00	---	---	---	---	---	0.000
0.15	79	292.15	---	---	---	---	0.00	---	---	---	---	---	0.000
0.20	106	292.20	---	---	---	---	0.00	---	---	---	---	---	0.000
0.25	132	292.25	---	---	---	---	0.00	---	---	---	---	---	0.000
0.30	159	292.30	---	---	---	---	0.00	---	---	---	---	---	0.000
0.35	185	292.35	---	---	---	---	0.00	---	---	---	---	---	0.000
0.40	212	292.40	---	---	---	---	0.00	---	---	---	---	---	0.000
0.45	238	292.45	---	---	---	---	0.00	---	---	---	---	---	0.000
0.50	265	292.50	---	---	---	---	0.00	---	---	---	---	---	0.000
0.55	319	292.55	---	---	---	---	0.00	---	---	---	---	---	0.000
0.60	374	292.60	---	---	---	---	0.00	---	---	---	---	---	0.000
0.65	429	292.65	---	---	---	---	0.00	---	---	---	---	---	0.000
0.70	484	292.70	---	---	---	---	0.00	---	---	---	---	---	0.000
0.75	539	292.75	---	---	---	---	0.00	---	---	---	---	---	0.000
0.80	594	292.80	---	---	---	---	0.00	---	---	---	---	---	0.000
0.85	649	292.85	---	---	---	---	0.00	---	---	---	---	---	0.000
0.90	704	292.90	---	---	---	---	0.00	---	---	---	---	---	0.000
0.95	759	292.95	---	---	---	---	0.00	---	---	---	---	---	0.000
1.00	814	293.00	---	---	---	---	0.00	---	---	---	---	---	0.000
1.05	911	293.05	---	---	---	---	0.00	---	---	---	---	---	0.000
1.10	1,008	293.10	---	---	---	---	0.00	---	---	---	---	---	0.000
1.15	1,105	293.15	---	---	---	---	0.00	---	---	---	---	---	0.000
1.20	1,202	293.20	---	---	---	---	0.00	---	---	---	---	---	0.000
1.25	1,299	293.25	---	---	---	---	0.00	---	---	---	---	---	0.000
1.30	1,395	293.30	---	---	---	---	0.00	---	---	---	---	---	0.000
1.35	1,492	293.35	---	---	---	---	0.00	---	---	---	---	---	0.000
1.40	1,589	293.40	---	---	---	---	0.00	---	---	---	---	---	0.000
1.45	1,686	293.45	---	---	---	---	0.00	---	---	---	---	---	0.000
1.50	1,783	293.50	---	---	---	---	0.00	---	---	---	---	---	0.000
1.55	1,945	293.55	---	---	---	---	0.74	---	---	---	---	---	0.744
1.60	2,107	293.60	---	---	---	---	2.11	---	---	---	---	---	2.105
1.65	2,269	293.65	---	---	---	---	3.87	---	---	---	---	---	3.868
1.70	2,431	293.70	---	---	---	---	5.95	---	---	---	---	---	5.955
1.75	2,592	293.75	---	---	---	---	8.32	---	---	---	---	---	8.322
1.80	2,754	293.80	---	---	---	---	10.94	---	---	---	---	---	10.94
1.85	2,916	293.85	---	---	---	---	13.79	---	---	---	---	---	13.79

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Ex Detention Basin

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	3,078	293.90	---	---	---	---	16.84	---	---	---	---	---	16.84
1.95	3,240	293.95	---	---	---	---	20.10	---	---	---	---	---	20.10
2.00	3,402	294.00	---	---	---	---	23.55	---	---	---	---	---	23.55
2.05	3,438	294.05	---	---	---	---	27.16	---	---	---	---	---	27.16
2.10	3,474	294.10	---	---	---	---	30.95	---	---	---	---	---	30.95
2.15	3,509	294.15	---	---	---	---	34.90	---	---	---	---	---	34.90
2.20	3,545	294.20	---	---	---	---	39.00	---	---	---	---	---	39.00
2.25	3,581	294.25	---	---	---	---	43.25	---	---	---	---	---	43.25
2.30	3,617	294.30	---	---	---	---	47.65	---	---	---	---	---	47.65
2.35	3,653	294.35	---	---	---	---	52.18	---	---	---	---	---	52.18
2.40	3,688	294.40	---	---	---	---	56.85	---	---	---	---	---	56.85
2.45	3,724	294.45	---	---	---	---	61.66	---	---	---	---	---	61.66
2.50	3,760	294.50	---	---	---	---	66.60	---	---	---	---	---	66.60

...End

Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 05 / 7 / 2021

Pond No. 1 - Ex Detention Basin

Pond Data

Pond storage is based on user-defined values.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	292.00	n/a	0	0
0.50	292.50	n/a	265	265
1.00	293.00	n/a	550	814
1.50	293.50	n/a	969	1,783
2.00	294.00	n/a	1,619	3,402
2.50	294.50	n/a	358	3,760

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	Inactive	Inactive	Inactive	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 1	1	1	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	Yes	Yes	No

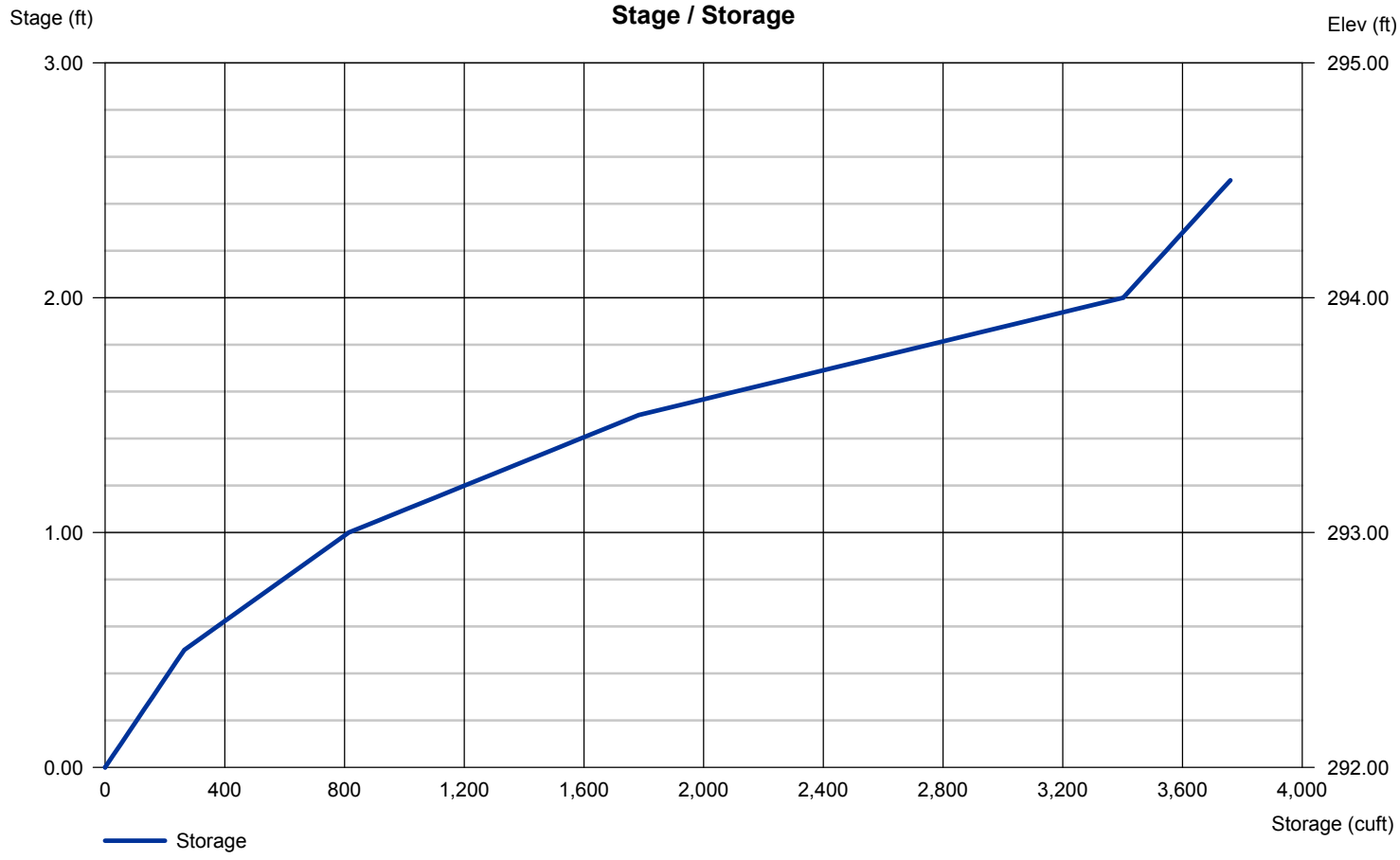
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 20.00	Inactive	Inactive	0.00
Crest El. (ft)	= 293.50	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Ciplti	70 degV	Broad	---
Multi-Stage	= No	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).



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 05 / 7 / 2021

Hyd. No. 13

Stormwater Basin #1

Hydrograph type	= Reservoir	Peak discharge	= 6.464 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 1 min	Hyd. volume	= 18,662 cuft
Inflow hyd. No.	= 12 - PDA-3	Reservoir name	= Stormwater Basin
Max. Elevation	= 293.71 ft	Max. Storage	= 2,465 cuft

Storage Indication method used.

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp. Print interval = 5)

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
11.50	0.533	293.53	-----	-----	-----	-----	0.395	-----	-----	-----	-----	0.395
11.58	0.665	293.54	-----	-----	-----	-----	0.546	-----	-----	-----	-----	0.546
11.67	1.016	293.55	-----	-----	-----	-----	0.814	-----	-----	-----	-----	0.814
11.75	1.456	293.57	-----	-----	-----	-----	1.276	-----	-----	-----	-----	1.276
11.83	1.947	293.59	-----	-----	-----	-----	1.750	-----	-----	-----	-----	1.750
11.92	2.509	293.61	-----	-----	-----	-----	2.310	-----	-----	-----	-----	2.309
12.00	4.445	293.64	-----	-----	-----	-----	3.672	-----	-----	-----	-----	3.672
12.08	6.620 <<	293.71	-----	-----	-----	-----	6.394	-----	-----	-----	-----	6.393
12.17	4.343	293.68	-----	-----	-----	-----	5.007	-----	-----	-----	-----	5.007
12.25	3.001	293.63	-----	-----	-----	-----	3.283	-----	-----	-----	-----	3.284
12.33	2.493	293.62	-----	-----	-----	-----	2.652	-----	-----	-----	-----	2.652
12.42	1.966	293.60	-----	-----	-----	-----	2.129	-----	-----	-----	-----	2.129
12.50	1.420	293.58	-----	-----	-----	-----	1.633	-----	-----	-----	-----	1.633
12.58	0.985	293.56	-----	-----	-----	-----	1.138	-----	-----	-----	-----	1.138
12.67	0.858	293.56	-----	-----	-----	-----	0.904	-----	-----	-----	-----	0.904
12.75	0.801	293.55	-----	-----	-----	-----	0.826	-----	-----	-----	-----	0.826
12.83	0.744	293.55	-----	-----	-----	-----	0.767	-----	-----	-----	-----	0.767
12.92	0.686	293.55	-----	-----	-----	-----	0.720	-----	-----	-----	-----	0.720
13.00	0.628	293.54	-----	-----	-----	-----	0.668	-----	-----	-----	-----	0.668
13.08	0.580	293.54	-----	-----	-----	-----	0.614	-----	-----	-----	-----	0.614

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Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
13.17	0.559	293.54	-----	-----	-----	-----	0.578	-----	-----	-----	-----	0.578
13.25	0.545	293.54	-----	-----	-----	-----	0.557	-----	-----	-----	-----	0.557
13.33	0.530	293.54	-----	-----	-----	-----	0.541	-----	-----	-----	-----	0.541
13.42	0.515	293.54	-----	-----	-----	-----	0.526	-----	-----	-----	-----	0.526
13.50	0.500	293.53	-----	-----	-----	-----	0.511	-----	-----	-----	-----	0.511
13.58	0.485	293.53	-----	-----	-----	-----	0.496	-----	-----	-----	-----	0.496
13.67	0.470	293.53	-----	-----	-----	-----	0.481	-----	-----	-----	-----	0.481
13.75	0.455	293.53	-----	-----	-----	-----	0.465	-----	-----	-----	-----	0.466
13.83	0.439	293.53	-----	-----	-----	-----	0.450	-----	-----	-----	-----	0.450
13.92	0.424	293.53	-----	-----	-----	-----	0.435	-----	-----	-----	-----	0.435
14.00	0.408	293.53	-----	-----	-----	-----	0.419	-----	-----	-----	-----	0.420
14.08	0.395	293.53	-----	-----	-----	-----	0.404	-----	-----	-----	-----	0.405
14.17	0.386	293.53	-----	-----	-----	-----	0.393	-----	-----	-----	-----	0.393
14.25	0.379	293.53	-----	-----	-----	-----	0.385	-----	-----	-----	-----	0.385
14.33	0.372	293.53	-----	-----	-----	-----	0.377	-----	-----	-----	-----	0.377
14.42	0.364	293.52	-----	-----	-----	-----	0.370	-----	-----	-----	-----	0.370
14.50	0.357	293.52	-----	-----	-----	-----	0.363	-----	-----	-----	-----	0.362
14.58	0.350	293.52	-----	-----	-----	-----	0.355	-----	-----	-----	-----	0.355
14.67	0.342	293.52	-----	-----	-----	-----	0.348	-----	-----	-----	-----	0.348
14.75	0.335	293.52	-----	-----	-----	-----	0.340	-----	-----	-----	-----	0.340
14.83	0.327	293.52	-----	-----	-----	-----	0.333	-----	-----	-----	-----	0.333
14.92	0.320	293.52	-----	-----	-----	-----	0.325	-----	-----	-----	-----	0.325
15.00	0.312	293.52	-----	-----	-----	-----	0.318	-----	-----	-----	-----	0.318
15.08	0.305	293.52	-----	-----	-----	-----	0.310	-----	-----	-----	-----	0.310
15.17	0.297	293.52	-----	-----	-----	-----	0.303	-----	-----	-----	-----	0.303
15.25	0.290	293.52	-----	-----	-----	-----	0.295	-----	-----	-----	-----	0.295
15.33	0.282	293.52	-----	-----	-----	-----	0.288	-----	-----	-----	-----	0.288
15.42	0.275	293.52	-----	-----	-----	-----	0.280	-----	-----	-----	-----	0.280

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Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
15.50	0.267	293.52	-----	-----	-----	-----	0.273	-----	-----	-----	-----	0.272
15.58	0.259	293.52	-----	-----	-----	-----	0.265	-----	-----	-----	-----	0.265
15.67	0.252	293.52	-----	-----	-----	-----	0.257	-----	-----	-----	-----	0.257
15.75	0.244	293.52	-----	-----	-----	-----	0.249	-----	-----	-----	-----	0.250
15.83	0.236	293.52	-----	-----	-----	-----	0.242	-----	-----	-----	-----	0.242
15.92	0.228	293.52	-----	-----	-----	-----	0.234	-----	-----	-----	-----	0.234
16.00	0.221	293.52	-----	-----	-----	-----	0.226	-----	-----	-----	-----	0.226
16.08	0.214	293.51	-----	-----	-----	-----	0.219	-----	-----	-----	-----	0.219
16.17	0.210	293.51	-----	-----	-----	-----	0.214	-----	-----	-----	-----	0.213
16.25	0.207	293.51	-----	-----	-----	-----	0.209	-----	-----	-----	-----	0.209
16.33	0.203	293.51	-----	-----	-----	-----	0.206	-----	-----	-----	-----	0.206
16.42	0.200	293.51	-----	-----	-----	-----	0.203	-----	-----	-----	-----	0.203
16.50	0.197	293.51	-----	-----	-----	-----	0.199	-----	-----	-----	-----	0.199
16.58	0.193	293.51	-----	-----	-----	-----	0.196	-----	-----	-----	-----	0.196
16.67	0.190	293.51	-----	-----	-----	-----	0.193	-----	-----	-----	-----	0.193
16.75	0.187	293.51	-----	-----	-----	-----	0.189	-----	-----	-----	-----	0.189
16.83	0.183	293.51	-----	-----	-----	-----	0.186	-----	-----	-----	-----	0.186
16.92	0.180	293.51	-----	-----	-----	-----	0.183	-----	-----	-----	-----	0.183
17.00	0.177	293.51	-----	-----	-----	-----	0.179	-----	-----	-----	-----	0.179
17.08	0.173	293.51	-----	-----	-----	-----	0.176	-----	-----	-----	-----	0.176
17.17	0.170	293.51	-----	-----	-----	-----	0.172	-----	-----	-----	-----	0.172
17.25	0.167	293.51	-----	-----	-----	-----	0.169	-----	-----	-----	-----	0.169
17.33	0.163	293.51	-----	-----	-----	-----	0.166	-----	-----	-----	-----	0.166
17.42	0.160	293.51	-----	-----	-----	-----	0.162	-----	-----	-----	-----	0.162
17.50	0.156	293.51	-----	-----	-----	-----	0.159	-----	-----	-----	-----	0.159
17.58	0.153	293.51	-----	-----	-----	-----	0.155	-----	-----	-----	-----	0.155
17.67	0.150	293.51	-----	-----	-----	-----	0.152	-----	-----	-----	-----	0.152
17.75	0.146	293.51	-----	-----	-----	-----	0.149	-----	-----	-----	-----	0.149

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Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
17.83	0.143	293.51	-----	-----	-----	-----	0.145	-----	-----	-----	-----	0.145
17.92	0.139	293.51	-----	-----	-----	-----	0.142	-----	-----	-----	-----	0.142
18.00	0.136	293.51	-----	-----	-----	-----	0.139	-----	-----	-----	-----	0.138
18.08	0.133	293.51	-----	-----	-----	-----	0.135	-----	-----	-----	-----	0.135
18.17	0.132	293.51	-----	-----	-----	-----	0.133	-----	-----	-----	-----	0.133
18.25	0.131	293.51	-----	-----	-----	-----	0.132	-----	-----	-----	-----	0.132
18.33	0.130	293.51	-----	-----	-----	-----	0.130	-----	-----	-----	-----	0.131
18.42	0.129	293.51	-----	-----	-----	-----	0.130	-----	-----	-----	-----	0.130
18.50	0.128	293.51	-----	-----	-----	-----	0.129	-----	-----	-----	-----	0.129
18.58	0.127	293.51	-----	-----	-----	-----	0.128	-----	-----	-----	-----	0.128
18.67	0.126	293.51	-----	-----	-----	-----	0.126	-----	-----	-----	-----	0.127
18.75	0.125	293.51	-----	-----	-----	-----	0.125	-----	-----	-----	-----	0.126
18.83	0.124	293.51	-----	-----	-----	-----	0.125	-----	-----	-----	-----	0.125
18.92	0.123	293.51	-----	-----	-----	-----	0.124	-----	-----	-----	-----	0.124
19.00	0.122	293.51	-----	-----	-----	-----	0.123	-----	-----	-----	-----	0.123
19.08	0.121	293.51	-----	-----	-----	-----	0.121	-----	-----	-----	-----	0.122
19.17	0.120	293.51	-----	-----	-----	-----	0.120	-----	-----	-----	-----	0.120
19.25	0.119	293.51	-----	-----	-----	-----	0.120	-----	-----	-----	-----	0.119
19.33	0.118	293.51	-----	-----	-----	-----	0.119	-----	-----	-----	-----	0.118
19.42	0.117	293.51	-----	-----	-----	-----	0.117	-----	-----	-----	-----	0.117
19.50	0.116	293.51	-----	-----	-----	-----	0.116	-----	-----	-----	-----	0.116
19.58	0.115	293.51	-----	-----	-----	-----	0.115	-----	-----	-----	-----	0.115
19.67	0.114	293.51	-----	-----	-----	-----	0.115	-----	-----	-----	-----	0.114
19.75	0.113	293.51	-----	-----	-----	-----	0.114	-----	-----	-----	-----	0.113
19.83	0.112	293.51	-----	-----	-----	-----	0.112	-----	-----	-----	-----	0.112
19.92	0.111	293.51	-----	-----	-----	-----	0.111	-----	-----	-----	-----	0.111
20.00	0.110	293.51	-----	-----	-----	-----	0.110	-----	-----	-----	-----	0.110
20.08	0.109	293.51	-----	-----	-----	-----	0.110	-----	-----	-----	-----	0.109

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Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
20.17	0.108	293.51	-----	-----	-----	-----	0.108	-----	-----	-----	-----	0.108
20.25	0.107	293.51	-----	-----	-----	-----	0.107	-----	-----	-----	-----	0.107
20.33	0.106	293.51	-----	-----	-----	-----	0.106	-----	-----	-----	-----	0.106
20.42	0.105	293.51	-----	-----	-----	-----	0.105	-----	-----	-----	-----	0.105
20.50	0.103	293.51	-----	-----	-----	-----	0.104	-----	-----	-----	-----	0.104
20.58	0.102	293.51	-----	-----	-----	-----	0.103	-----	-----	-----	-----	0.103
20.67	0.101	293.51	-----	-----	-----	-----	0.102	-----	-----	-----	-----	0.102
20.75	0.100	293.51	-----	-----	-----	-----	0.101	-----	-----	-----	-----	0.101
20.83	0.099	293.51	-----	-----	-----	-----	0.100	-----	-----	-----	-----	0.100
20.92	0.098	293.51	-----	-----	-----	-----	0.099	-----	-----	-----	-----	0.099
21.00	0.097	293.51	-----	-----	-----	-----	0.098	-----	-----	-----	-----	0.098
21.08	0.096	293.51	-----	-----	-----	-----	0.097	-----	-----	-----	-----	0.097
21.17	0.095	293.51	-----	-----	-----	-----	0.096	-----	-----	-----	-----	0.096
21.25	0.094	293.51	-----	-----	-----	-----	0.095	-----	-----	-----	-----	0.095
21.33	0.093	293.51	-----	-----	-----	-----	0.094	-----	-----	-----	-----	0.094
21.42	0.092	293.51	-----	-----	-----	-----	0.093	-----	-----	-----	-----	0.093
21.50	0.091	293.51	-----	-----	-----	-----	0.092	-----	-----	-----	-----	0.092
21.58	0.090	293.51	-----	-----	-----	-----	0.091	-----	-----	-----	-----	0.091
21.67	0.089	293.51	-----	-----	-----	-----	0.090	-----	-----	-----	-----	0.090
21.75	0.088	293.51	-----	-----	-----	-----	0.089	-----	-----	-----	-----	0.089
21.83	0.087	293.51	-----	-----	-----	-----	0.088	-----	-----	-----	-----	0.088
21.92	0.086	293.51	-----	-----	-----	-----	0.087	-----	-----	-----	-----	0.087
22.00	0.085	293.51	-----	-----	-----	-----	0.086	-----	-----	-----	-----	0.086
22.08	0.147	293.51	-----	-----	-----	-----	0.122	-----	-----	-----	-----	0.122
22.17	0.099	293.51	-----	-----	-----	-----	0.119	-----	-----	-----	-----	0.119
22.25	0.089	293.51	-----	-----	-----	-----	0.097	-----	-----	-----	-----	0.097
22.33	0.088	293.51	-----	-----	-----	-----	0.090	-----	-----	-----	-----	0.090
22.42	0.087	293.51	-----	-----	-----	-----	0.088	-----	-----	-----	-----	0.088

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Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
22.50	0.086	293.51	-----	-----	-----	-----	0.087	-----	-----	-----	-----	0.087
22.58	0.086	293.51	-----	-----	-----	-----	0.086	-----	-----	-----	-----	0.086
22.67	0.085	293.51	-----	-----	-----	-----	0.085	-----	-----	-----	-----	0.085
22.75	0.084	293.51	-----	-----	-----	-----	0.085	-----	-----	-----	-----	0.085
22.83	0.083	293.51	-----	-----	-----	-----	0.084	-----	-----	-----	-----	0.084
22.92	0.083	293.51	-----	-----	-----	-----	0.083	-----	-----	-----	-----	0.083
23.00	0.082	293.51	-----	-----	-----	-----	0.082	-----	-----	-----	-----	0.082
23.08	0.081	293.51	-----	-----	-----	-----	0.081	-----	-----	-----	-----	0.082
23.17	0.080	293.51	-----	-----	-----	-----	0.081	-----	-----	-----	-----	0.081
23.25	0.079	293.51	-----	-----	-----	-----	0.080	-----	-----	-----	-----	0.080
23.33	0.079	293.51	-----	-----	-----	-----	0.079	-----	-----	-----	-----	0.079
23.42	0.078	293.51	-----	-----	-----	-----	0.079	-----	-----	-----	-----	0.078
23.50	0.077	293.51	-----	-----	-----	-----	0.078	-----	-----	-----	-----	0.078
23.58	0.076	293.51	-----	-----	-----	-----	0.077	-----	-----	-----	-----	0.077
23.67	0.076	293.51	-----	-----	-----	-----	0.076	-----	-----	-----	-----	0.076
23.75	0.075	293.51	-----	-----	-----	-----	0.075	-----	-----	-----	-----	0.075
23.83	0.074	293.51	-----	-----	-----	-----	0.075	-----	-----	-----	-----	0.075
23.92	0.073	293.50	-----	-----	-----	-----	0.074	-----	-----	-----	-----	0.074
24.00	0.072	293.50	-----	-----	-----	-----	0.073	-----	-----	-----	-----	0.073

...End

Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 05 / 7 / 2021

Pond No. 2 - Stormwater Basin 1

Pond Data

Pond storage is based on user-defined values.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	292.00	n/a	0	0
0.50	292.50	n/a	265	265
1.00	293.00	n/a	549	814
1.50	293.50	n/a	969	1,783
2.00	294.00	n/a	1,619	3,402
2.50	294.50	n/a	358	3,760

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	Inactive	Inactive	Inactive	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 1	1	1	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	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 20.00	Inactive	Inactive	0.00
Crest El. (ft)	= 293.50	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Ciplti	70 degV	Broad	---
Multi-Stage	= No	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	292.00	---	---	---	---	0.00	---	---	---	---	---	0.000
0.05	27	292.05	---	---	---	---	0.00	---	---	---	---	---	0.000
0.10	53	292.10	---	---	---	---	0.00	---	---	---	---	---	0.000
0.15	80	292.15	---	---	---	---	0.00	---	---	---	---	---	0.000
0.20	106	292.20	---	---	---	---	0.00	---	---	---	---	---	0.000
0.25	133	292.25	---	---	---	---	0.00	---	---	---	---	---	0.000
0.30	159	292.30	---	---	---	---	0.00	---	---	---	---	---	0.000
0.35	186	292.35	---	---	---	---	0.00	---	---	---	---	---	0.000
0.40	212	292.40	---	---	---	---	0.00	---	---	---	---	---	0.000
0.45	239	292.45	---	---	---	---	0.00	---	---	---	---	---	0.000
0.50	265	292.50	---	---	---	---	0.00	---	---	---	---	---	0.000
0.55	320	292.55	---	---	---	---	0.00	---	---	---	---	---	0.000
0.60	375	292.60	---	---	---	---	0.00	---	---	---	---	---	0.000
0.65	430	292.65	---	---	---	---	0.00	---	---	---	---	---	0.000
0.70	485	292.70	---	---	---	---	0.00	---	---	---	---	---	0.000
0.75	540	292.75	---	---	---	---	0.00	---	---	---	---	---	0.000
0.80	594	292.80	---	---	---	---	0.00	---	---	---	---	---	0.000
0.85	649	292.85	---	---	---	---	0.00	---	---	---	---	---	0.000
0.90	704	292.90	---	---	---	---	0.00	---	---	---	---	---	0.000
0.95	759	292.95	---	---	---	---	0.00	---	---	---	---	---	0.000
1.00	814	293.00	---	---	---	---	0.00	---	---	---	---	---	0.000
1.05	911	293.05	---	---	---	---	0.00	---	---	---	---	---	0.000
1.10	1,008	293.10	---	---	---	---	0.00	---	---	---	---	---	0.000
1.15	1,105	293.15	---	---	---	---	0.00	---	---	---	---	---	0.000
1.20	1,202	293.20	---	---	---	---	0.00	---	---	---	---	---	0.000
1.25	1,299	293.25	---	---	---	---	0.00	---	---	---	---	---	0.000
1.30	1,395	293.30	---	---	---	---	0.00	---	---	---	---	---	0.000
1.35	1,492	293.35	---	---	---	---	0.00	---	---	---	---	---	0.000
1.40	1,589	293.40	---	---	---	---	0.00	---	---	---	---	---	0.000
1.45	1,686	293.45	---	---	---	---	0.00	---	---	---	---	---	0.000
1.50	1,783	293.50	---	---	---	---	0.00	---	---	---	---	---	0.000
1.55	1,945	293.55	---	---	---	---	0.74	---	---	---	---	---	0.744
1.60	2,107	293.60	---	---	---	---	2.11	---	---	---	---	---	2.105
1.65	2,269	293.65	---	---	---	---	3.87	---	---	---	---	---	3.868
1.70	2,431	293.70	---	---	---	---	5.95	---	---	---	---	---	5.955
1.75	2,592	293.75	---	---	---	---	8.32	---	---	---	---	---	8.322
1.80	2,754	293.80	---	---	---	---	10.94	---	---	---	---	---	10.94
1.85	2,916	293.85	---	---	---	---	13.79	---	---	---	---	---	13.79

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Stormwater Basin 1

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	3,078	293.90	---	---	---	---	16.84	---	---	---	---	---	16.84
1.95	3,240	293.95	---	---	---	---	20.10	---	---	---	---	---	20.10
2.00	3,402	294.00	---	---	---	---	23.55	---	---	---	---	---	23.55
2.05	3,438	294.05	---	---	---	---	27.16	---	---	---	---	---	27.16
2.10	3,474	294.10	---	---	---	---	30.95	---	---	---	---	---	30.95
2.15	3,509	294.15	---	---	---	---	34.90	---	---	---	---	---	34.90
2.20	3,545	294.20	---	---	---	---	39.00	---	---	---	---	---	39.00
2.25	3,581	294.25	---	---	---	---	43.25	---	---	---	---	---	43.25
2.30	3,617	294.30	---	---	---	---	47.65	---	---	---	---	---	47.65
2.35	3,653	294.35	---	---	---	---	52.18	---	---	---	---	---	52.18
2.40	3,688	294.40	---	---	---	---	56.85	---	---	---	---	---	56.85
2.45	3,724	294.45	---	---	---	---	61.66	---	---	---	---	---	61.66
2.50	3,760	294.50	---	---	---	---	66.60	---	---	---	---	---	66.60

...End

Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 05 / 7 / 2021

Pond No. 2 - Stormwater Basin 1

Pond Data

Pond storage is based on user-defined values.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	292.00	n/a	0	0
0.50	292.50	n/a	265	265
1.00	293.00	n/a	549	814
1.50	293.50	n/a	969	1,783
2.00	294.00	n/a	1,619	3,402
2.50	294.50	n/a	358	3,760

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	Inactive	Inactive	Inactive	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 1	1	1	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	Yes	Yes	No

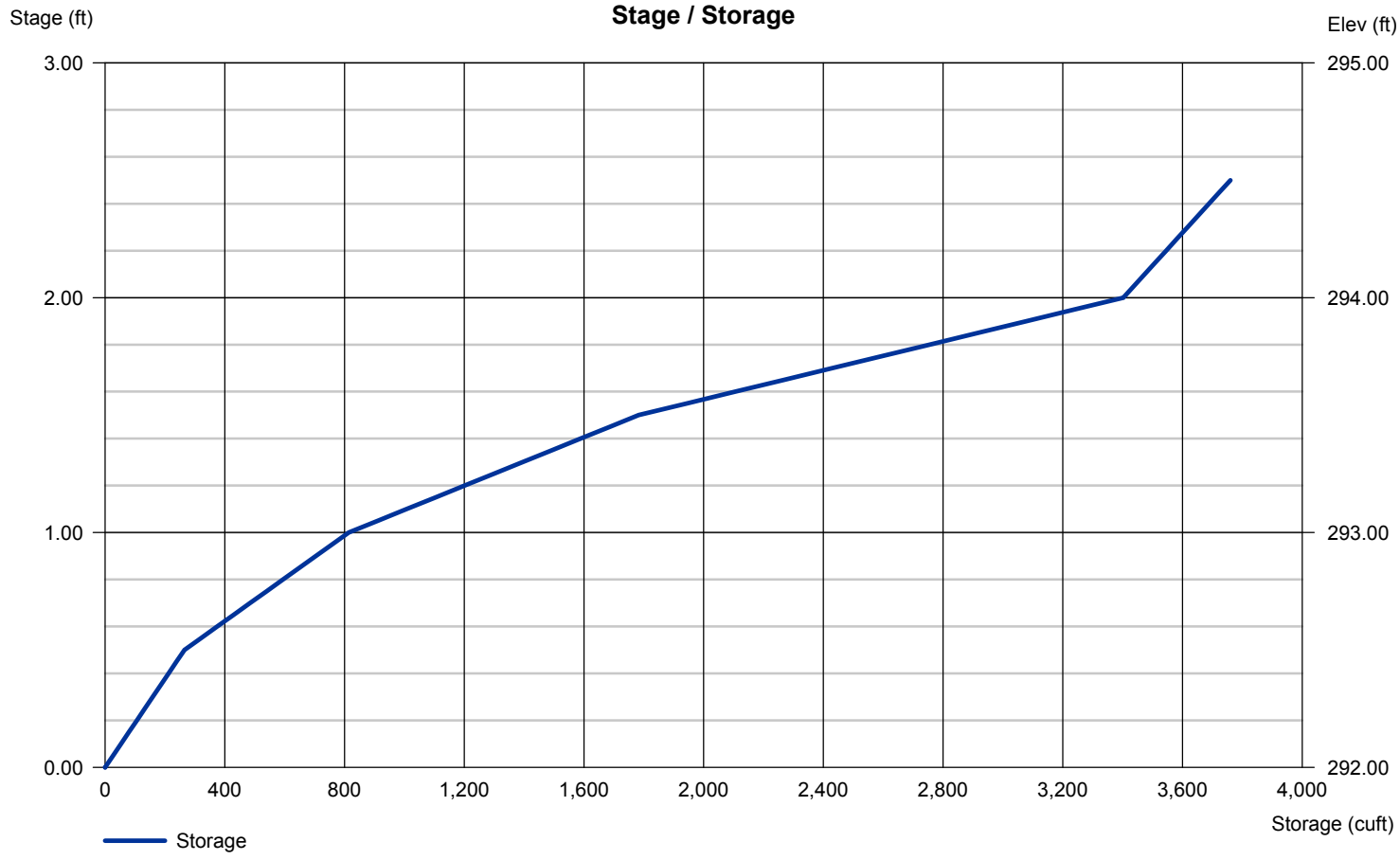
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 20.00	Inactive	Inactive	0.00
Crest El. (ft)	= 293.50	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Ciplti	70 degV	Broad	---
Multi-Stage	= No	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).



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 05 / 7 / 2021

Pond No. 3 - Prop Detention Basin - Rear

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 291.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	291.00	1,324	0	0
0.50	291.50	1,628	737	737
1.00	292.00	1,973	899	1,635
1.50	292.50	2,324	1,073	2,708
2.00	293.00	2,685	1,251	3,959

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	Inactive	Inactive	Inactive	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 1	1	1	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	Yes	Yes	No

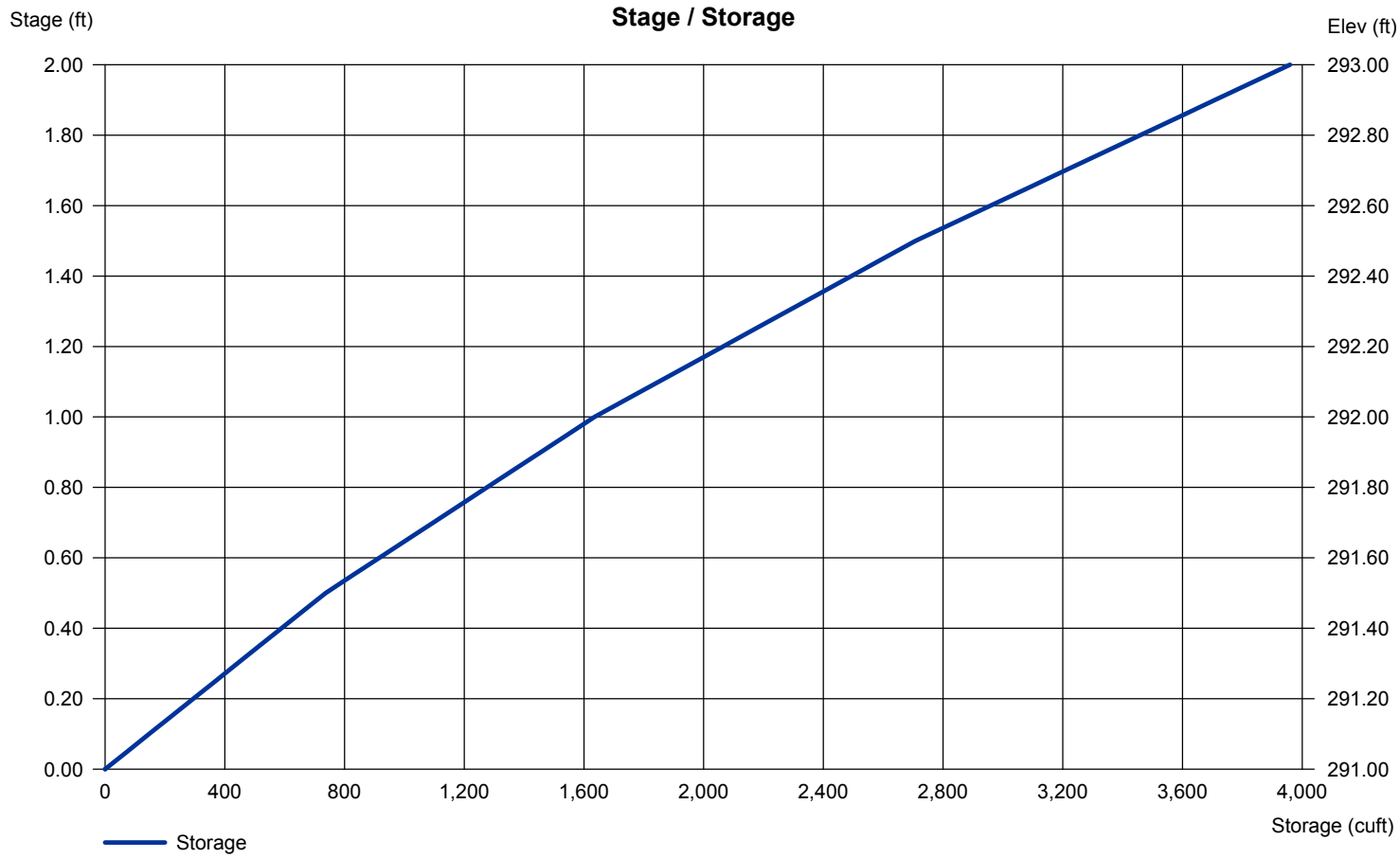
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 25.50	Inactive	Inactive	0.00
Crest El. (ft)	= 292.25	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Ciplti	70 degV	Broad	---
Multi-Stage	= No	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).



Hydrograph Report

Hyd. No. 16

Stormwater Basin #2

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.	= 15 - PDA-5a	Reservoir name	= Prop Detention Ba
Max. Elevation	= 292.03 ft	Max. Storage	= 1,699 cuft

Storage Indication method used.

...End

Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Friday, 05 / 7 / 2021

Pond No. 3 - Prop Detention Basin - Rear

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 291.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	291.00	1,324	0	0
0.50	291.50	1,628	737	737
1.00	292.00	1,973	899	1,635
1.50	292.50	2,324	1,073	2,708
2.00	293.00	2,685	1,251	3,959

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	Inactive	Inactive	Inactive	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 1	1	1	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	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 25.50	Inactive	Inactive	0.00
Crest El. (ft)	= 292.25	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Ciplti	70 degV	Broad	---
Multi-Stage	= No	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	291.00	---	---	---	---	0.00	---	---	---	---	---	0.000
0.05	74	291.05	---	---	---	---	0.00	---	---	---	---	---	0.000
0.10	147	291.10	---	---	---	---	0.00	---	---	---	---	---	0.000
0.15	221	291.15	---	---	---	---	0.00	---	---	---	---	---	0.000
0.20	295	291.20	---	---	---	---	0.00	---	---	---	---	---	0.000
0.25	368	291.25	---	---	---	---	0.00	---	---	---	---	---	0.000
0.30	442	291.30	---	---	---	---	0.00	---	---	---	---	---	0.000
0.35	516	291.35	---	---	---	---	0.00	---	---	---	---	---	0.000
0.40	589	291.40	---	---	---	---	0.00	---	---	---	---	---	0.000
0.45	663	291.45	---	---	---	---	0.00	---	---	---	---	---	0.000
0.50	737	291.50	---	---	---	---	0.00	---	---	---	---	---	0.000
0.55	826	291.55	---	---	---	---	0.00	---	---	---	---	---	0.000
0.60	916	291.60	---	---	---	---	0.00	---	---	---	---	---	0.000
0.65	1,006	291.65	---	---	---	---	0.00	---	---	---	---	---	0.000
0.70	1,096	291.70	---	---	---	---	0.00	---	---	---	---	---	0.000
0.75	1,186	291.75	---	---	---	---	0.00	---	---	---	---	---	0.000
0.80	1,276	291.80	---	---	---	---	0.00	---	---	---	---	---	0.000
0.85	1,366	291.85	---	---	---	---	0.00	---	---	---	---	---	0.000
0.90	1,456	291.90	---	---	---	---	0.00	---	---	---	---	---	0.000
0.95	1,546	291.95	---	---	---	---	0.00	---	---	---	---	---	0.000
1.00	1,635	292.00	---	---	---	---	0.00	---	---	---	---	---	0.000
1.05	1,743	292.05	---	---	---	---	0.00	---	---	---	---	---	0.000
1.10	1,850	292.10	---	---	---	---	0.00	---	---	---	---	---	0.000
1.15	1,957	292.15	---	---	---	---	0.00	---	---	---	---	---	0.000
1.20	2,065	292.20	---	---	---	---	0.00	---	---	---	---	---	0.000
1.25	2,172	292.25	---	---	---	---	0.00	---	---	---	---	---	0.000
1.30	2,279	292.30	---	---	---	---	0.95	---	---	---	---	---	0.946
1.35	2,386	292.35	---	---	---	---	2.68	---	---	---	---	---	2.682
1.40	2,494	292.40	---	---	---	---	4.93	---	---	---	---	---	4.928
1.45	2,601	292.45	---	---	---	---	7.59	---	---	---	---	---	7.589
1.50	2,708	292.50	---	---	---	---	10.61	---	---	---	---	---	10.61
1.55	2,833	292.55	---	---	---	---	13.95	---	---	---	---	---	13.95
1.60	2,959	292.60	---	---	---	---	17.58	---	---	---	---	---	17.58
1.65	3,084	292.65	---	---	---	---	21.48	---	---	---	---	---	21.48
1.70	3,209	292.70	---	---	---	---	25.63	---	---	---	---	---	25.63
1.75	3,334	292.75	---	---	---	---	30.01	---	---	---	---	---	30.01
1.80	3,459	292.80	---	---	---	---	34.63	---	---	---	---	---	34.63
1.85	3,584	292.85	---	---	---	---	39.46	---	---	---	---	---	39.46

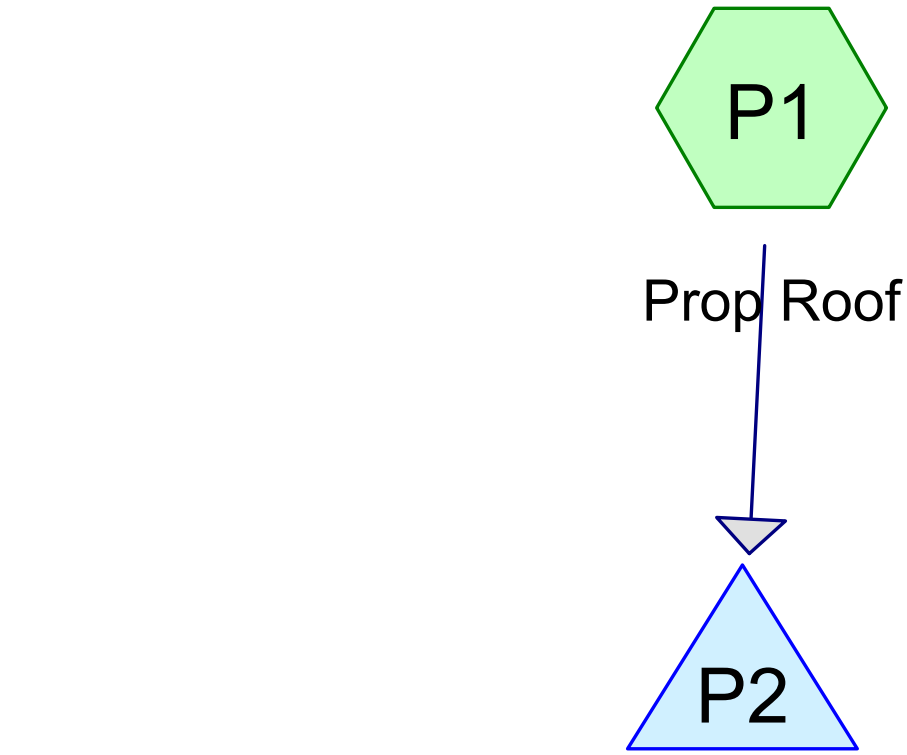
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Prop Detention Basin - Rear

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	3,709	292.90	---	---	---	---	44.49	---	---	---	---	---	44.49
1.95	3,834	292.95	---	---	---	---	49.72	---	---	---	---	---	49.72
2.00	3,959	293.00	---	---	---	---	55.15	---	---	---	---	---	55.15

...End



Underground System

Subcat Reach Pond Link

Routing Diagram for 2012301 - hydrocad - building
Prepared by Microsoft, Printed 4/6/2021
HydroCAD® 10.00-22 s/n 10621 © 2018 HydroCAD Software Solutions LLC

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment P1: Prop Roof Runoff Area=22,359 sf 100.00% Impervious Runoff Depth>3.21"
Tc=6.0 min CN=98 Runoff=1.81 cfs 0.137 af

Pond P2: Underground System Peak Elev=294.46' Storage=5,985 cf Inflow=1.81 cfs 0.137 af
Outflow=0.00 cfs 0.000 af

Total Runoff Area = 0.513 ac Runoff Volume = 0.137 af Average Runoff Depth = 3.21"
0.00% Pervious = 0.000 ac 100.00% Impervious = 0.513 ac

Summary for Subcatchment P1: Prop Roof

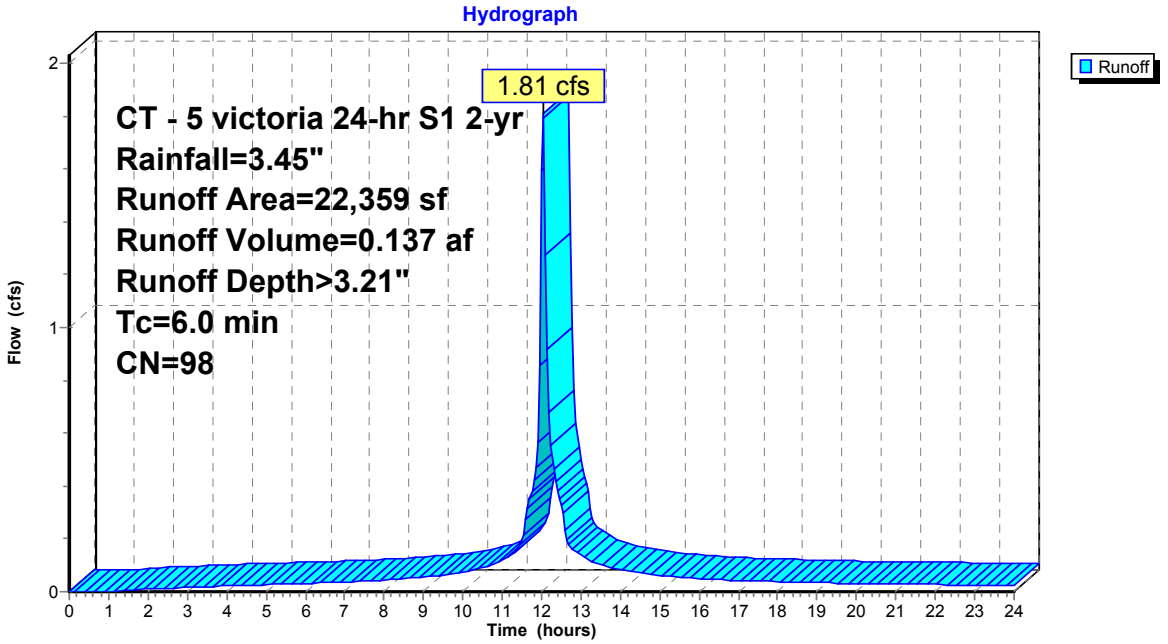
Runoff = 1.81 cfs @ 12.04 hrs, Volume= 0.137 af, Depth> 3.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
CT - 5 victoria 24-hr S1 2-yr Rainfall=3.45"

Area (sf)	CN	Description
22,359	98	Roofs, HSG A
22,359		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, direct flow**

Subcatchment P1: Prop Roof



Summary for Pond P2: Underground System

Inflow Area = 0.513 ac,100.00% Impervious, Inflow Depth > 3.21" for 2-yr event
Inflow = 1.81 cfs @ 12.04 hrs, Volume= 0.137 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 294.46' @ 24.00 hrs Surf.Area= 2,880 sf Storage= 5,985 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1A	291.80'	576 cf	**24.00'W x 120.00'L x 4.17'H Field A** 12,000 cf Overall - 10,560 cf Embedded = 1,440 cf x 40.0% Voids
#2A	292.30'	7,508 cf	**retain_it retain_it 3.0'** x 45 Inside #1 Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf 3 Rows adjusted for 169.9 cf perimeter wall
		8,084 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	294.50'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=291.80' (Free Discharge)
↑—**1=Orifice/Grate** (Controls 0.00 cfs)

Pond P2: Underground System - Chamber Wizard Field A

Chamber Model = retain_it retain_it 3.0' (retain-it®)
Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
3 Rows adjusted for 169.9 cf perimeter wall

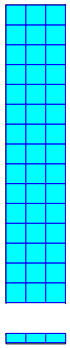
15 Chambers/Row x 8.00' Long = 120.00' Row Length
3 Rows x 96.0" Wide = 24.00' Base Width
6.0" Base + 44.0" Chamber Height = 4.17' Field Height

4.7 cf Sidewall x 15 x 2 + 4.7 cf Endwall x 3 x 2 = 169.9 cf Perimeter Wall
45 Chambers x 170.6 cf - 169.9 cf Perimeter wall = 7,507.5 cf Chamber Storage
45 Chambers x 234.7 cf = 10,560.0 cf Displacement

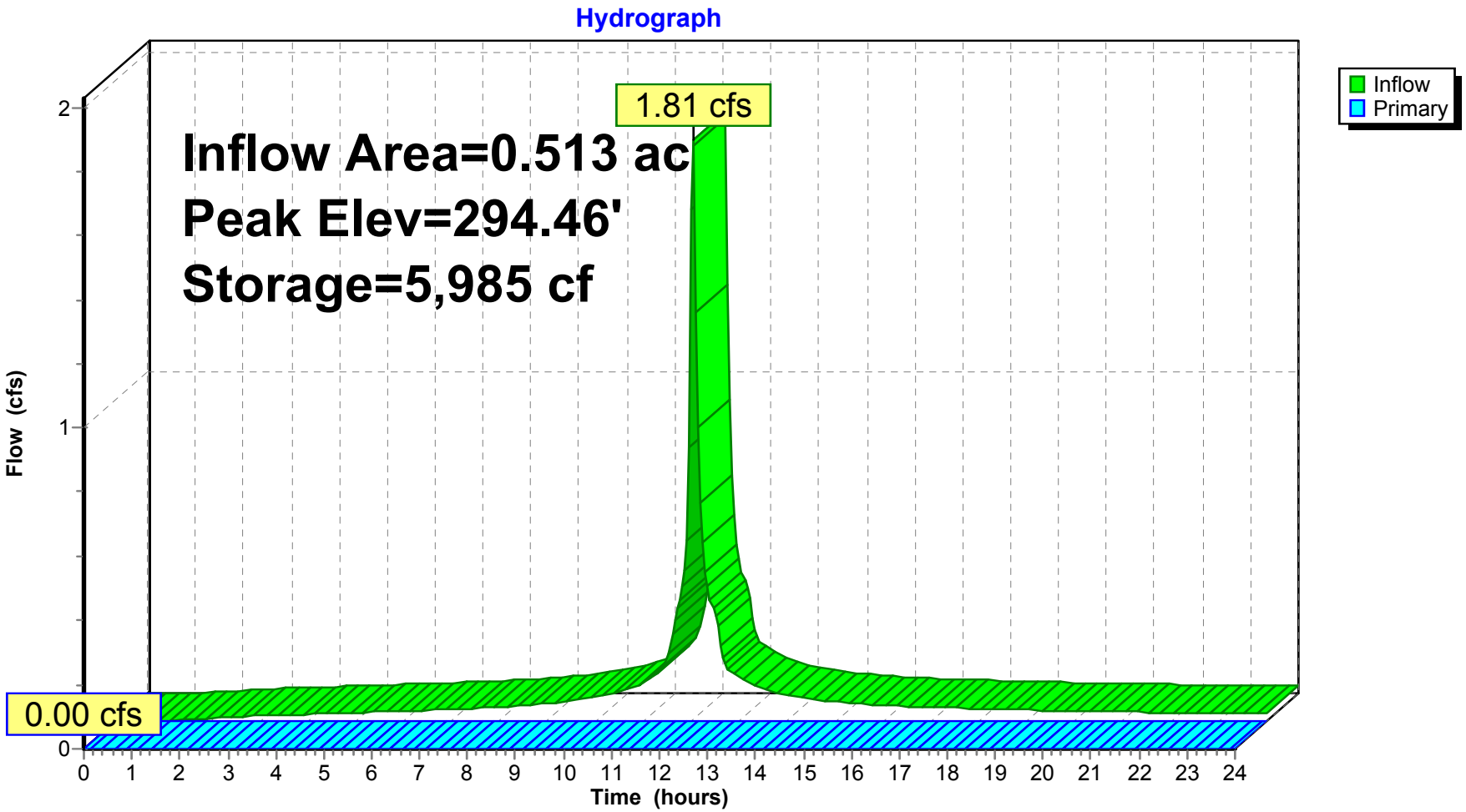
12,000.0 cf Field - 10,560.0 cf Chambers = 1,440.0 cf Stone x 40.0% Voids = 576.0 cf Stone Storage

Chamber Storage + Stone Storage = 8,083.5 cf = 0.186 af
Overall Storage Efficiency = 67.4%
Overall System Size = 120.00' x 24.00' x 4.17'

45 Chambers
444.4 cy Field
53.3 cy Stone



Pond P2: Underground System



Stage-Discharge for Pond P2: Underground System

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
291.80	0.00	295.50	2.67
291.90	0.00	295.60	2.93
292.00	0.00	295.70	3.16
292.10	0.00	295.80	3.38
292.20	0.00	295.90	**3.59**
292.30	0.00		
292.40	0.00		
292.50	0.00		
292.60	0.00		
292.70	0.00		
292.80	0.00		
292.90	0.00		
293.00	0.00		
293.10	0.00		
293.20	0.00		
293.30	0.00		
293.40	0.00		
293.50	0.00		
293.60	0.00		
293.70	0.00		
293.80	0.00		
293.90	0.00		
294.00	0.00		
294.10	0.00		
294.20	0.00		
294.30	0.00		
294.40	0.00		
294.50	0.00		
294.60	0.04		
294.70	0.17		
294.80	0.37		
294.90	0.63		
295.00	0.95		
295.10	1.30		
295.20	1.67		
295.30	2.05		
295.40	2.40		

Stage-Area-Storage for Pond P2: Underground System

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
291.80	0	295.50	8,084
291.90	115	295.60	8,084
292.00	230	295.70	8,084
292.10	346	295.80	8,084
292.20	461	295.90	**8,084**
292.30	576		
292.40	826		
292.50	1,077		
292.60	1,327		
292.70	1,577		
292.80	1,827		
292.90	2,078		
293.00	2,328		
293.10	2,578		
293.20	2,828		
293.30	3,079		
293.40	3,329		
293.50	3,579		
293.60	3,829		
293.70	4,080		
293.80	4,330		
293.90	4,580		
294.00	4,830		
294.10	5,081		
294.20	5,331		
294.30	5,581		
294.40	5,831		
294.50	6,082		
294.60	6,332		
294.70	6,582		
294.80	6,832		
294.90	7,083		
295.00	7,333		
295.10	7,583		
295.20	7,833		
295.30	8,084		
295.40	8,084		

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment P1: Prop Roof Runoff Area=22,359 sf 100.00% Impervious Runoff Depth>4.07"
Tc=6.0 min CN=98 Runoff=2.16 cfs 0.174 af

Pond P2: Underground System Peak Elev=294.61' Storage=6,352 cf Inflow=2.16 cfs 0.174 af
Outflow=0.05 cfs 0.030 af

Total Runoff Area = 0.513 ac Runoff Volume = 0.174 af Average Runoff Depth = 4.07"
0.00% Pervious = 0.000 ac 100.00% Impervious = 0.513 ac

Summary for Subcatchment P1: Prop Roof

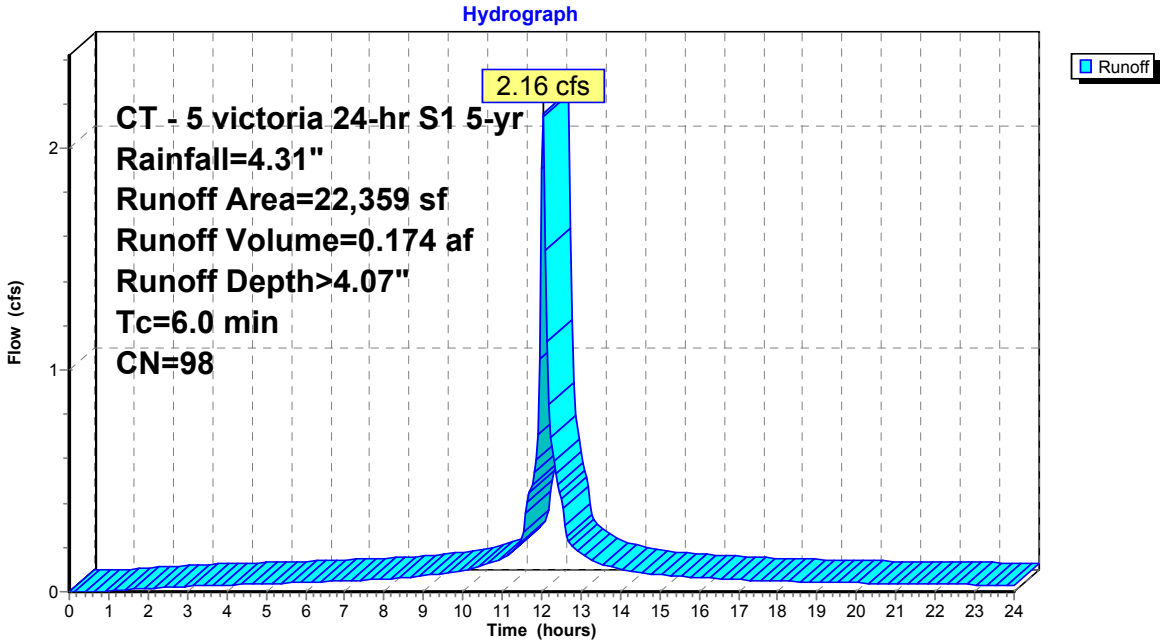
Runoff = 2.16 cfs @ 12.04 hrs, Volume= 0.174 af, Depth> 4.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
CT - 5 victoria 24-hr S1 5-yr Rainfall=4.31"

Area (sf)	CN	Description
22,359	98	Roofs, HSG A
22,359		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, direct flow**

Subcatchment P1: Prop Roof



Summary for Pond P2: Underground System

Inflow Area = 0.513 ac,100.00% Impervious, Inflow Depth > 4.07" for 5-yr event
Inflow = 2.16 cfs @ 12.04 hrs, Volume= 0.174 af
Outflow = 0.05 cfs @ 17.28 hrs, Volume= 0.030 af, Atten= 98%, Lag= 314.2 min
Primary = 0.05 cfs @ 17.28 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 294.61' @ 17.28 hrs Surf.Area= 2,880 sf Storage= 6,352 cf

Plug-Flow detention time= 768.1 min calculated for 0.030 af (17% of inflow)
Center-of-Mass det. time= 417.2 min (1,168.6 - 751.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	291.80'	576 cf	**24.00'W x 120.00'L x 4.17'H Field A** 12,000 cf Overall - 10,560 cf Embedded = 1,440 cf x 40.0% Voids
#2A	292.30'	7,508 cf	**retain_it retain_it 3.0'** x 45 Inside #1 Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf 3 Rows adjusted for 169.9 cf perimeter wall
		8,084 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	294.50'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.05 cfs @ 17.28 hrs HW=294.61' (Free Discharge)
↑**1=Orifice/Grate** (Orifice Controls 0.05 cfs @ 1.12 fps)

Pond P2: Underground System - Chamber Wizard Field A

Chamber Model = retain_it retain_it 3.0' (retain-it®)
Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
3 Rows adjusted for 169.9 cf perimeter wall

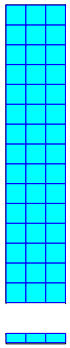
15 Chambers/Row x 8.00' Long = 120.00' Row Length
3 Rows x 96.0" Wide = 24.00' Base Width
6.0" Base + 44.0" Chamber Height = 4.17' Field Height

4.7 cf Sidewall x 15 x 2 + 4.7 cf Endwall x 3 x 2 = 169.9 cf Perimeter Wall
45 Chambers x 170.6 cf - 169.9 cf Perimeter wall = 7,507.5 cf Chamber Storage
45 Chambers x 234.7 cf = 10,560.0 cf Displacement

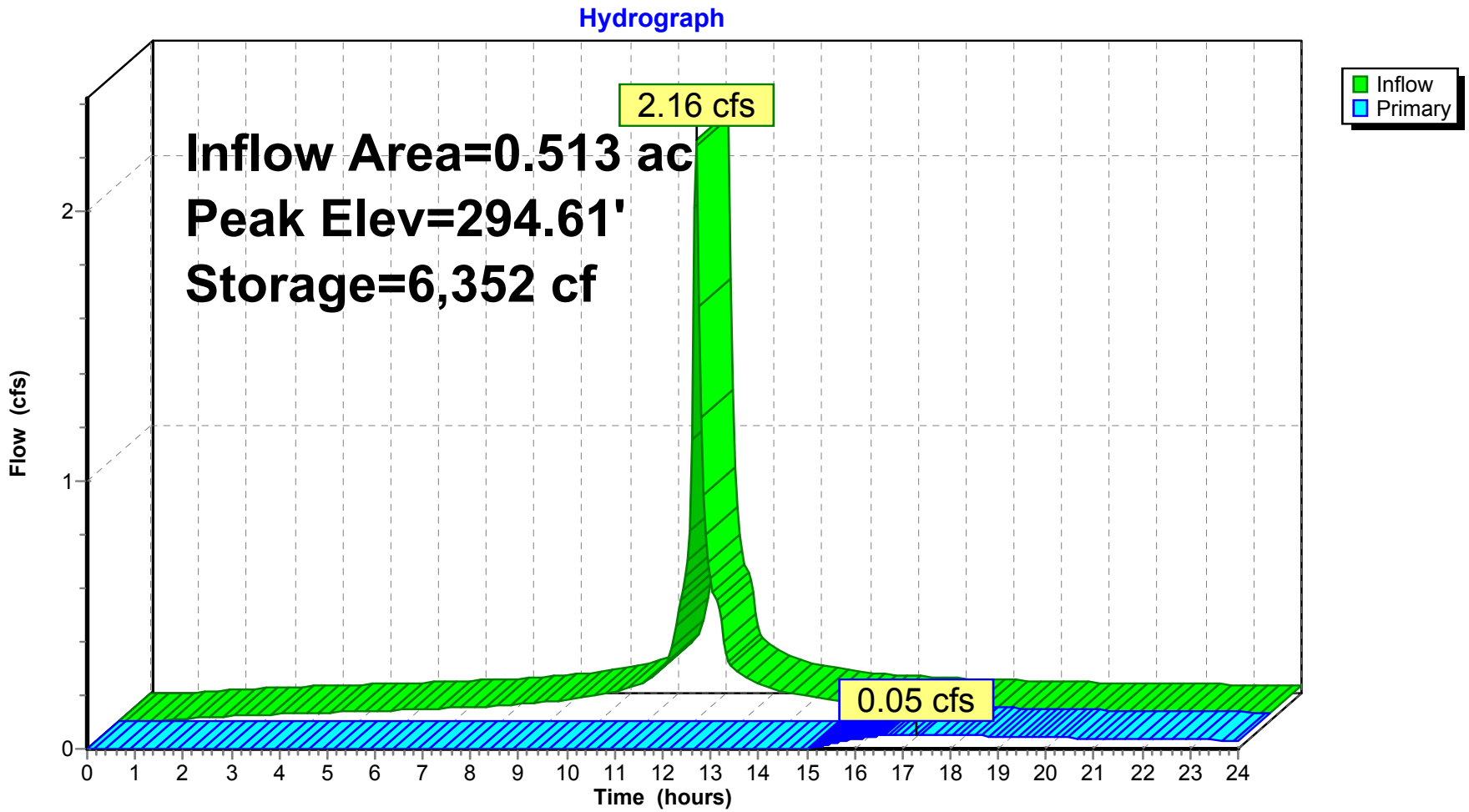
12,000.0 cf Field - 10,560.0 cf Chambers = 1,440.0 cf Stone x 40.0% Voids = 576.0 cf Stone Storage

Chamber Storage + Stone Storage = 8,083.5 cf = 0.186 af
Overall Storage Efficiency = 67.4%
Overall System Size = 120.00' x 24.00' x 4.17'

45 Chambers
444.4 cy Field
53.3 cy Stone



Pond P2: Underground System



Stage-Discharge for Pond P2: Underground System

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
291.80	0.00	295.50	2.67
291.90	0.00	295.60	2.93
292.00	0.00	295.70	3.16
292.10	0.00	295.80	3.38
292.20	0.00	295.90	**3.59**
292.30	0.00		
292.40	0.00		
292.50	0.00		
292.60	0.00		
292.70	0.00		
292.80	0.00		
292.90	0.00		
293.00	0.00		
293.10	0.00		
293.20	0.00		
293.30	0.00		
293.40	0.00		
293.50	0.00		
293.60	0.00		
293.70	0.00		
293.80	0.00		
293.90	0.00		
294.00	0.00		
294.10	0.00		
294.20	0.00		
294.30	0.00		
294.40	0.00		
294.50	0.00		
294.60	0.04		
294.70	0.17		
294.80	0.37		
294.90	0.63		
295.00	0.95		
295.10	1.30		
295.20	1.67		
295.30	2.05		
295.40	2.40		

Stage-Area-Storage for Pond P2: Underground System

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
291.80	0	295.50	8,084
291.90	115	295.60	8,084
292.00	230	295.70	8,084
292.10	346	295.80	8,084
292.20	461	295.90	**8,084**
292.30	576		
292.40	826		
292.50	1,077		
292.60	1,327		
292.70	1,577		
292.80	1,827		
292.90	2,078		
293.00	2,328		
293.10	2,578		
293.20	2,828		
293.30	3,079		
293.40	3,329		
293.50	3,579		
293.60	3,829		
293.70	4,080		
293.80	4,330		
293.90	4,580		
294.00	4,830		
294.10	5,081		
294.20	5,331		
294.30	5,581		
294.40	5,831		
294.50	6,082		
294.60	6,332		
294.70	6,582		
294.80	6,832		
294.90	7,083		
295.00	7,333		
295.10	7,583		
295.20	7,833		
295.30	8,084		
295.40	8,084		

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment P1: Prop Roof Runoff Area=22,359 sf 100.00% Impervious Runoff Depth>4.88"
Tc=6.0 min CN=98 Runoff=2.51 cfs 0.209 af

Pond P2: Underground System Peak Elev=294.67' Storage=6,519 cf Inflow=2.51 cfs 0.209 af
Outflow=0.13 cfs 0.064 af

Total Runoff Area = 0.513 ac Runoff Volume = 0.209 af Average Runoff Depth = 4.88"
0.00% Pervious = 0.000 ac 100.00% Impervious = 0.513 ac

Summary for Subcatchment P1: Prop Roof

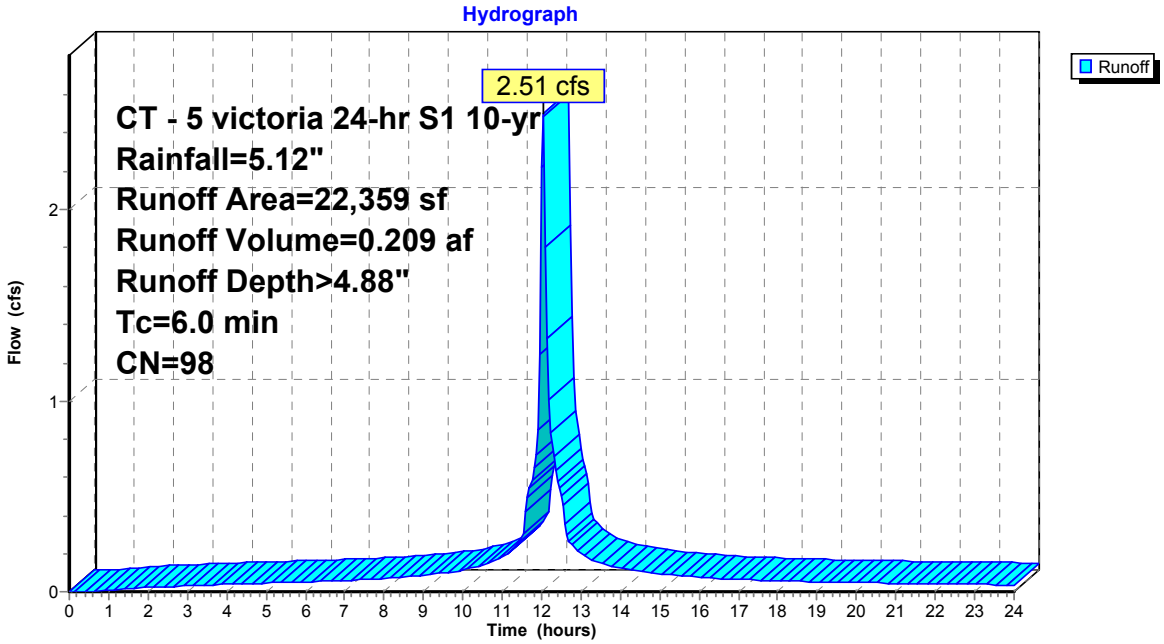
Runoff = 2.51 cfs @ 12.04 hrs, Volume= 0.209 af, Depth> 4.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
CT - 5 victoria 24-hr S1 10-yr Rainfall=5.12"

Area (sf)	CN	Description
22,359	98	Roofs, HSG A
22,359		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, direct flow**

Subcatchment P1: Prop Roof



Summary for Pond P2: Underground System

Inflow Area = 0.513 ac,100.00% Impervious, Inflow Depth > 4.88" for 10-yr event
Inflow = 2.51 cfs @ 12.04 hrs, Volume= 0.209 af
Outflow = 0.13 cfs @ 13.83 hrs, Volume= 0.064 af, Atten= 95%, Lag= 107.3 min
Primary = 0.13 cfs @ 13.83 hrs, Volume= 0.064 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 294.67' @ 13.83 hrs Surf.Area= 2,880 sf Storage= 6,519 cf

Plug-Flow detention time= 530.6 min calculated for 0.064 af (31% of inflow)
Center-of-Mass det. time= 287.3 min (1,035.3 - 748.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	291.80'	576 cf	**24.00'W x 120.00'L x 4.17'H Field A** 12,000 cf Overall - 10,560 cf Embedded = 1,440 cf x 40.0% Voids
#2A	292.30'	7,508 cf	**retain_it retain_it 3.0'** x 45 Inside #1 Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf 3 Rows adjusted for 169.9 cf perimeter wall
		8,084 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	294.50'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.13 cfs @ 13.83 hrs HW=294.67' (Free Discharge)
↑**1=Orifice/Grate** (Orifice Controls 0.13 cfs @ 1.42 fps)

Pond P2: Underground System - Chamber Wizard Field A

Chamber Model = retain_it retain_it 3.0' (retain-it®)
Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
3 Rows adjusted for 169.9 cf perimeter wall

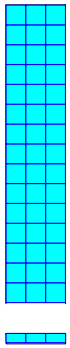
15 Chambers/Row x 8.00' Long = 120.00' Row Length
3 Rows x 96.0" Wide = 24.00' Base Width
6.0" Base + 44.0" Chamber Height = 4.17' Field Height

4.7 cf Sidewall x 15 x 2 + 4.7 cf Endwall x 3 x 2 = 169.9 cf Perimeter Wall
45 Chambers x 170.6 cf - 169.9 cf Perimeter wall = 7,507.5 cf Chamber Storage
45 Chambers x 234.7 cf = 10,560.0 cf Displacement

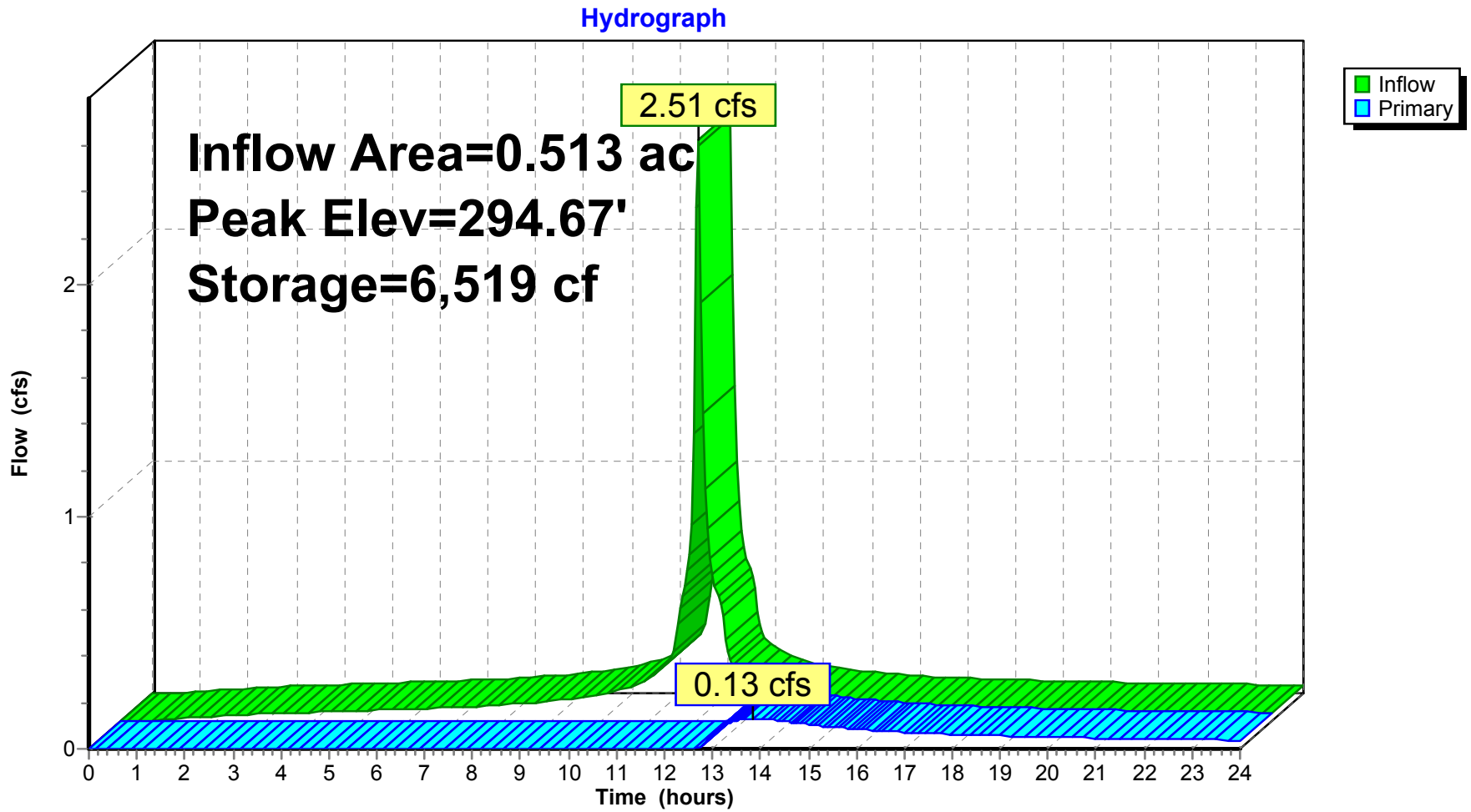
12,000.0 cf Field - 10,560.0 cf Chambers = 1,440.0 cf Stone x 40.0% Voids = 576.0 cf Stone Storage

Chamber Storage + Stone Storage = 8,083.5 cf = 0.186 af
Overall Storage Efficiency = 67.4%
Overall System Size = 120.00' x 24.00' x 4.17'

45 Chambers
444.4 cy Field
53.3 cy Stone



Pond P2: Underground System



Stage-Discharge for Pond P2: Underground System

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
291.80	0.00	295.50	2.67
291.90	0.00	295.60	2.93
292.00	0.00	295.70	3.16
292.10	0.00	295.80	3.38
292.20	0.00	295.90	**3.59**
292.30	0.00		
292.40	0.00		
292.50	0.00		
292.60	0.00		
292.70	0.00		
292.80	0.00		
292.90	0.00		
293.00	0.00		
293.10	0.00		
293.20	0.00		
293.30	0.00		
293.40	0.00		
293.50	0.00		
293.60	0.00		
293.70	0.00		
293.80	0.00		
293.90	0.00		
294.00	0.00		
294.10	0.00		
294.20	0.00		
294.30	0.00		
294.40	0.00		
294.50	0.00		
294.60	0.04		
294.70	0.17		
294.80	0.37		
294.90	0.63		
295.00	0.95		
295.10	1.30		
295.20	1.67		
295.30	2.05		
295.40	2.40		

Stage-Area-Storage for Pond P2: Underground System

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
291.80	0	295.50	8,084
291.90	115	295.60	8,084
292.00	230	295.70	8,084
292.10	346	295.80	8,084
292.20	461	295.90	**8,084**
292.30	576		
292.40	826		
292.50	1,077		
292.60	1,327		
292.70	1,577		
292.80	1,827		
292.90	2,078		
293.00	2,328		
293.10	2,578		
293.20	2,828		
293.30	3,079		
293.40	3,329		
293.50	3,579		
293.60	3,829		
293.70	4,080		
293.80	4,330		
293.90	4,580		
294.00	4,830		
294.10	5,081		
294.20	5,331		
294.30	5,581		
294.40	5,831		
294.50	6,082		
294.60	6,332		
294.70	6,582		
294.80	6,832		
294.90	7,083		
295.00	7,333		
295.10	7,583		
295.20	7,833		
295.30	8,084		
295.40	8,084		

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment P1: Prop Roof Runoff Area=22,359 sf 100.00% Impervious Runoff Depth>6.17"
Tc=6.0 min CN=98 Runoff=3.01 cfs 0.264 af

Pond P2: Underground System Peak Elev=294.87' Storage=7,018 cf Inflow=3.01 cfs 0.264 af
Outflow=0.56 cfs 0.118 af

Total Runoff Area = 0.513 ac Runoff Volume = 0.264 af Average Runoff Depth = 6.17"
0.00% Pervious = 0.000 ac 100.00% Impervious = 0.513 ac

Summary for Subcatchment P1: Prop Roof

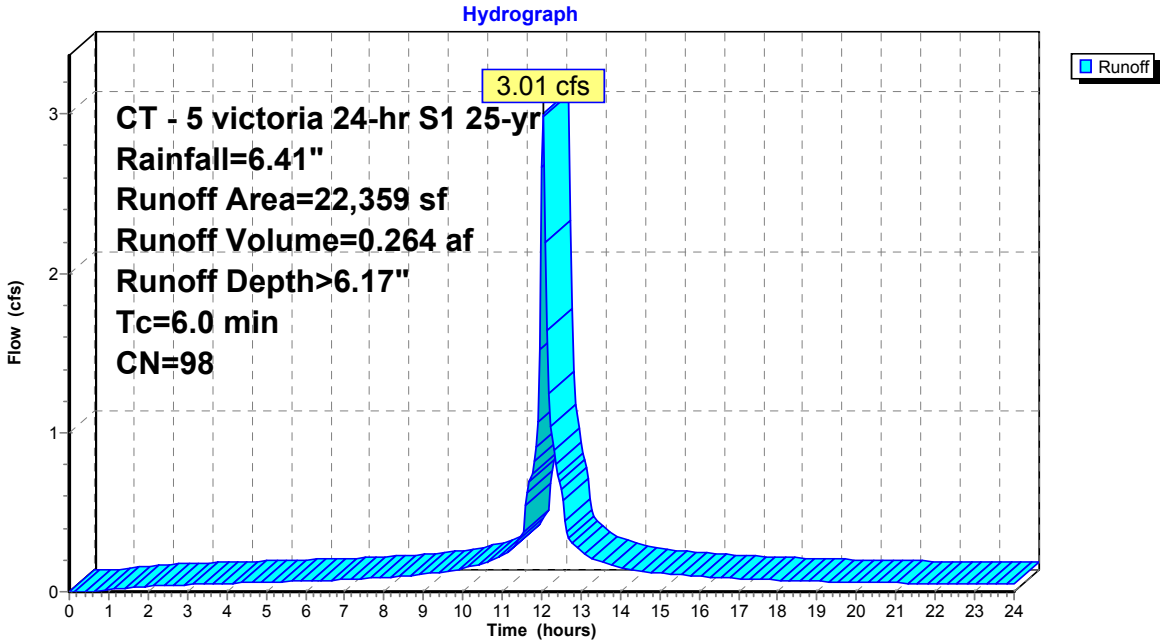
Runoff = 3.01 cfs @ 12.04 hrs, Volume= 0.264 af, Depth> 6.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
CT - 5 victoria 24-hr S1 25-yr Rainfall=6.41"

Area (sf)	CN	Description
22,359	98	Roofs, HSG A
22,359		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, direct flow**

Subcatchment P1: Prop Roof



Summary for Pond P2: Underground System

Inflow Area = 0.513 ac,100.00% Impervious, Inflow Depth > 6.17" for 25-yr event
Inflow = 3.01 cfs @ 12.04 hrs, Volume= 0.264 af
Outflow = 0.56 cfs @ 12.55 hrs, Volume= 0.118 af, Atten= 81%, Lag= 30.9 min
Primary = 0.56 cfs @ 12.55 hrs, Volume= 0.118 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 294.87' @ 12.55 hrs Surf.Area= 2,880 sf Storage= 7,018 cf

Plug-Flow detention time= 386.0 min calculated for 0.118 af (45% of inflow)
Center-of-Mass det. time= 205.2 min (949.3 - 744.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	291.80'	576 cf	**24.00'W x 120.00'L x 4.17'H Field A** 12,000 cf Overall - 10,560 cf Embedded = 1,440 cf x 40.0% Voids
#2A	292.30'	7,508 cf	**retain_it retain_it 3.0'** x 45 Inside #1 Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf 3 Rows adjusted for 169.9 cf perimeter wall
		8,084 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	294.50'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.56 cfs @ 12.55 hrs HW=294.87' (Free Discharge)
↑**1=Orifice/Grate** (Orifice Controls 0.56 cfs @ 2.08 fps)

Pond P2: Underground System - Chamber Wizard Field A

Chamber Model = retain_it retain_it 3.0' (retain-it®)
Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
3 Rows adjusted for 169.9 cf perimeter wall

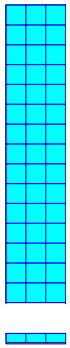
15 Chambers/Row x 8.00' Long = 120.00' Row Length
3 Rows x 96.0" Wide = 24.00' Base Width
6.0" Base + 44.0" Chamber Height = 4.17' Field Height

4.7 cf Sidewall x 15 x 2 + 4.7 cf Endwall x 3 x 2 = 169.9 cf Perimeter Wall
45 Chambers x 170.6 cf - 169.9 cf Perimeter wall = 7,507.5 cf Chamber Storage
45 Chambers x 234.7 cf = 10,560.0 cf Displacement

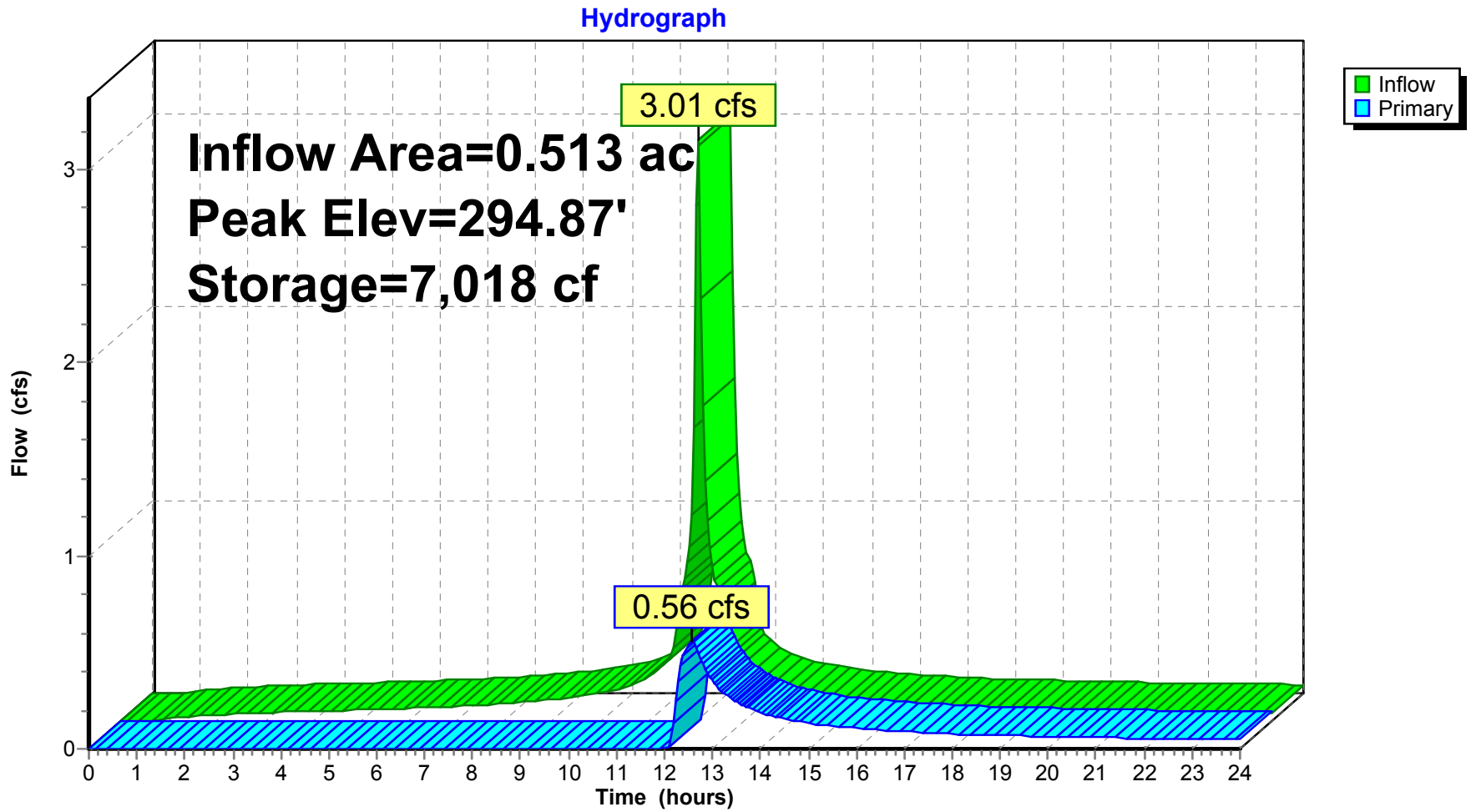
12,000.0 cf Field - 10,560.0 cf Chambers = 1,440.0 cf Stone x 40.0% Voids = 576.0 cf Stone Storage

Chamber Storage + Stone Storage = 8,083.5 cf = 0.186 af
Overall Storage Efficiency = 67.4%
Overall System Size = 120.00' x 24.00' x 4.17'

45 Chambers
444.4 cy Field
53.3 cy Stone



Pond P2: Underground System



Stage-Discharge for Pond P2: Underground System

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
291.80	0.00	295.50	2.67
291.90	0.00	295.60	2.93
292.00	0.00	295.70	3.16
292.10	0.00	295.80	3.38
292.20	0.00	295.90	**3.59**
292.30	0.00		
292.40	0.00		
292.50	0.00		
292.60	0.00		
292.70	0.00		
292.80	0.00		
292.90	0.00		
293.00	0.00		
293.10	0.00		
293.20	0.00		
293.30	0.00		
293.40	0.00		
293.50	0.00		
293.60	0.00		
293.70	0.00		
293.80	0.00		
293.90	0.00		
294.00	0.00		
294.10	0.00		
294.20	0.00		
294.30	0.00		
294.40	0.00		
294.50	0.00		
294.60	0.04		
294.70	0.17		
294.80	0.37		
294.90	0.63		
295.00	0.95		
295.10	1.30		
295.20	1.67		
295.30	2.05		
295.40	2.40		

Stage-Area-Storage for Pond P2: Underground System

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
291.80	0	295.50	8,084
291.90	115	295.60	8,084
292.00	230	295.70	8,084
292.10	346	295.80	8,084
292.20	461	295.90	**8,084**
292.30	576		
292.40	826		
292.50	1,077		
292.60	1,327		
292.70	1,577		
292.80	1,827		
292.90	2,078		
293.00	2,328		
293.10	2,578		
293.20	2,828		
293.30	3,079		
293.40	3,329		
293.50	3,579		
293.60	3,829		
293.70	4,080		
293.80	4,330		
293.90	4,580		
294.00	4,830		
294.10	5,081		
294.20	5,331		
294.30	5,581		
294.40	5,831		
294.50	6,082		
294.60	6,332		
294.70	6,582		
294.80	6,832		
294.90	7,083		
295.00	7,333		
295.10	7,583		
295.20	7,833		
295.30	8,084		
295.40	8,084		

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment P1: Prop Roof Runoff Area=22,359 sf 100.00% Impervious Runoff Depth>7.35"
Tc=6.0 min CN=98 Runoff=3.46 cfs 0.315 af

Pond P2: Underground System Peak Elev=295.06' Storage=7,471 cf Inflow=3.46 cfs 0.315 af
Outflow=1.14 cfs 0.168 af

Total Runoff Area = 0.513 ac Runoff Volume = 0.315 af Average Runoff Depth = 7.35"
0.00% Pervious = 0.000 ac 100.00% Impervious = 0.513 ac

Summary for Subcatchment P1: Prop Roof

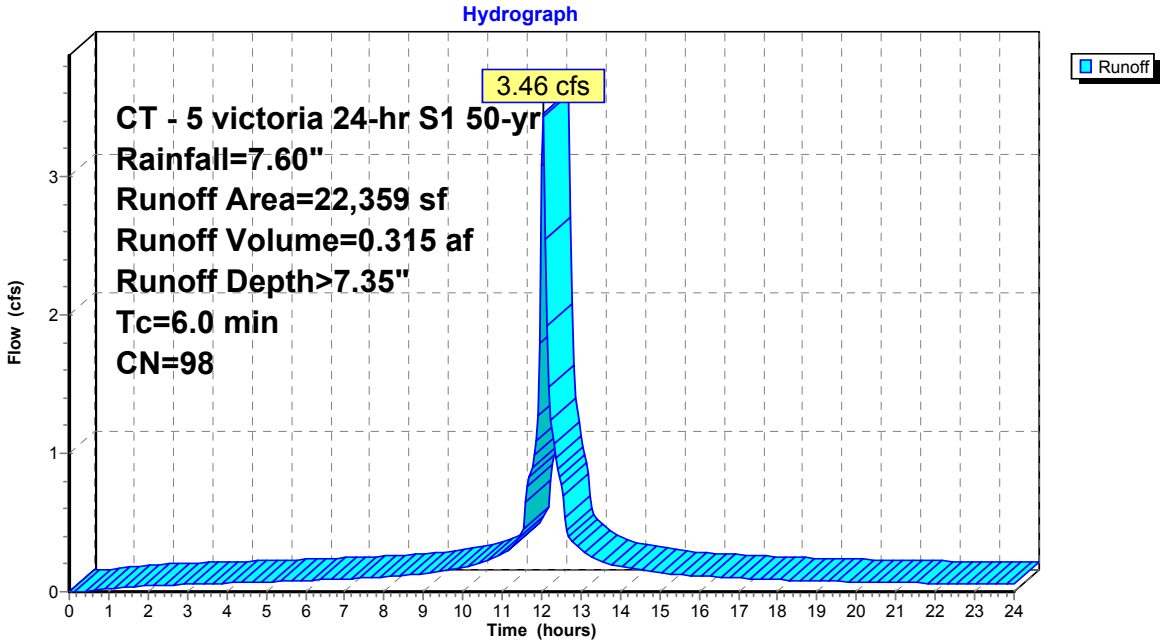
Runoff = 3.46 cfs @ 12.04 hrs, Volume= 0.315 af, Depth> 7.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
CT - 5 victoria 24-hr S1 50-yr Rainfall=7.60"

Area (sf)	CN	Description
22,359	98	Roofs, HSG A
22,359		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, direct flow**

Subcatchment P1: Prop Roof



Summary for Pond P2: Underground System

Inflow Area = 0.513 ac,100.00% Impervious, Inflow Depth > 7.35" for 50-yr event
Inflow = 3.46 cfs @ 12.04 hrs, Volume= 0.315 af
Outflow = 1.14 cfs @ 12.28 hrs, Volume= 0.168 af, Atten= 67%, Lag= 14.7 min
Primary = 1.14 cfs @ 12.28 hrs, Volume= 0.168 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 295.06' @ 12.28 hrs Surf.Area= 2,880 sf Storage= 7,471 cf

Plug-Flow detention time= 328.7 min calculated for 0.168 af (54% of inflow)
Center-of-Mass det. time= 172.0 min (913.5 - 741.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	291.80'	576 cf	**24.00'W x 120.00'L x 4.17'H Field A** 12,000 cf Overall - 10,560 cf Embedded = 1,440 cf x 40.0% Voids
#2A	292.30'	7,508 cf	**retain_it retain_it 3.0'** x 45 Inside #1 Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf 3 Rows adjusted for 169.9 cf perimeter wall
		8,084 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	294.50'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.13 cfs @ 12.28 hrs HW=295.05' (Free Discharge)
↑**1=Orifice/Grate** (Orifice Controls 1.13 cfs @ 2.53 fps)

Pond P2: Underground System - Chamber Wizard Field A

Chamber Model = retain_it retain_it 3.0' (retain-it®)
Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
3 Rows adjusted for 169.9 cf perimeter wall

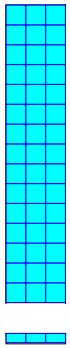
15 Chambers/Row x 8.00' Long = 120.00' Row Length
3 Rows x 96.0" Wide = 24.00' Base Width
6.0" Base + 44.0" Chamber Height = 4.17' Field Height

4.7 cf Sidewall x 15 x 2 + 4.7 cf Endwall x 3 x 2 = 169.9 cf Perimeter Wall
45 Chambers x 170.6 cf - 169.9 cf Perimeter wall = 7,507.5 cf Chamber Storage
45 Chambers x 234.7 cf = 10,560.0 cf Displacement

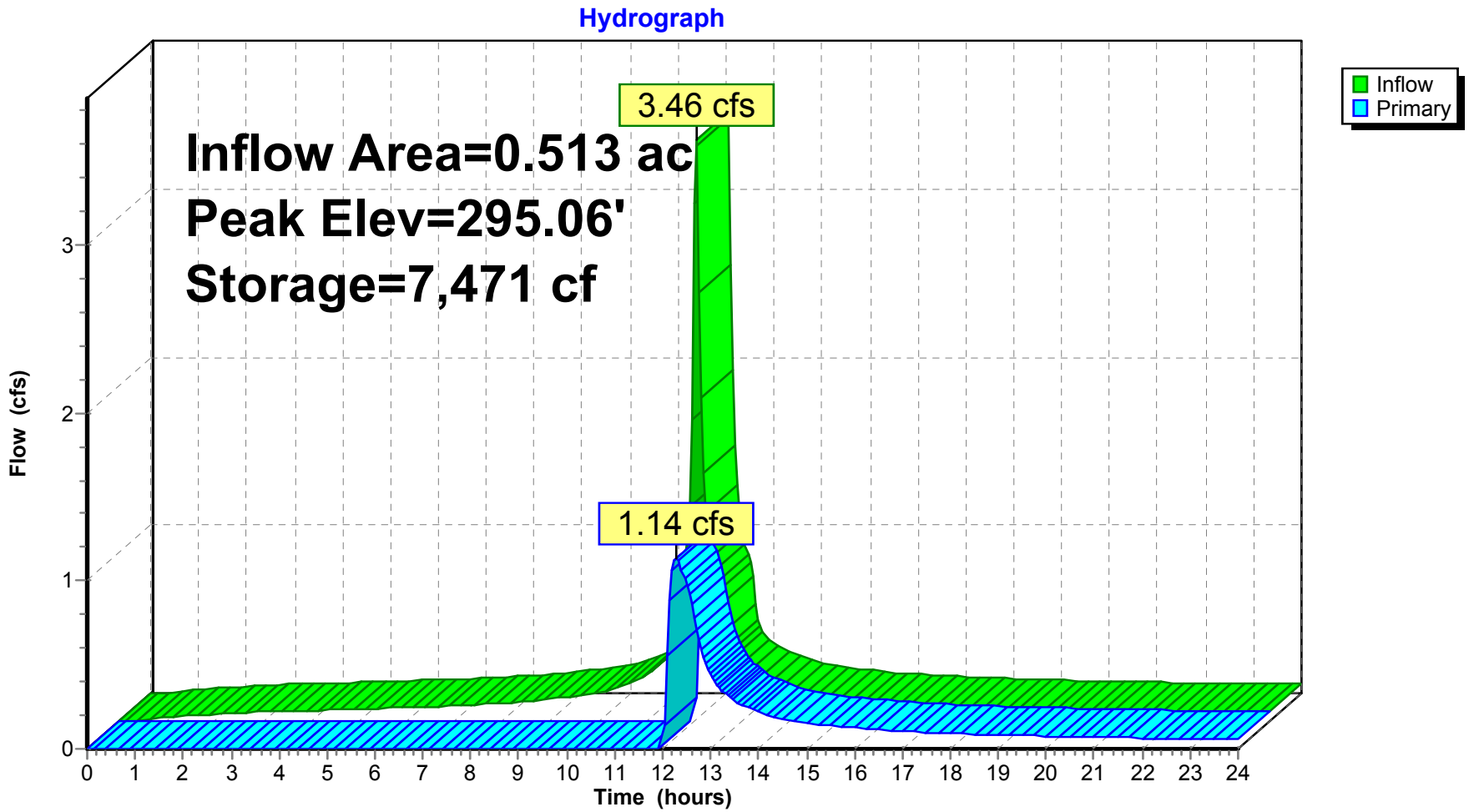
12,000.0 cf Field - 10,560.0 cf Chambers = 1,440.0 cf Stone x 40.0% Voids = 576.0 cf Stone Storage

Chamber Storage + Stone Storage = 8,083.5 cf = 0.186 af
Overall Storage Efficiency = 67.4%
Overall System Size = 120.00' x 24.00' x 4.17'

45 Chambers
444.4 cy Field
53.3 cy Stone



Pond P2: Underground System



Stage-Discharge for Pond P2: Underground System

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
291.80	0.00	295.50	2.67
291.90	0.00	295.60	2.93
292.00	0.00	295.70	3.16
292.10	0.00	295.80	3.38
292.20	0.00	295.90	**3.59**
292.30	0.00		
292.40	0.00		
292.50	0.00		
292.60	0.00		
292.70	0.00		
292.80	0.00		
292.90	0.00		
293.00	0.00		
293.10	0.00		
293.20	0.00		
293.30	0.00		
293.40	0.00		
293.50	0.00		
293.60	0.00		
293.70	0.00		
293.80	0.00		
293.90	0.00		
294.00	0.00		
294.10	0.00		
294.20	0.00		
294.30	0.00		
294.40	0.00		
294.50	0.00		
294.60	0.04		
294.70	0.17		
294.80	0.37		
294.90	0.63		
295.00	0.95		
295.10	1.30		
295.20	1.67		
295.30	2.05		
295.40	2.40		

Stage-Area-Storage for Pond P2: Underground System

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
291.80	0	295.50	8,084
291.90	115	295.60	8,084
292.00	230	295.70	8,084
292.10	346	295.80	8,084
292.20	461	295.90	**8,084**
292.30	576		
292.40	826		
292.50	1,077		
292.60	1,327		
292.70	1,577		
292.80	1,827		
292.90	2,078		
293.00	2,328		
293.10	2,578		
293.20	2,828		
293.30	3,079		
293.40	3,329		
293.50	3,579		
293.60	3,829		
293.70	4,080		
293.80	4,330		
293.90	4,580		
294.00	4,830		
294.10	5,081		
294.20	5,331		
294.30	5,581		
294.40	5,831		
294.50	6,082		
294.60	6,332		
294.70	6,582		
294.80	6,832		
294.90	7,083		
295.00	7,333		
295.10	7,583		
295.20	7,833		
295.30	8,084		
295.40	8,084		

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment P1: Prop Roof Runoff Area=22,359 sf 100.00% Impervious Runoff Depth>8.77"
Tc=6.0 min CN=98 Runoff=4.05 cfs 0.375 af

Pond P2: Underground System Peak Elev=295.30' Storage=8,074 cf Inflow=4.05 cfs 0.375 af
Outflow=2.04 cfs 0.228 af

Total Runoff Area = 0.513 ac Runoff Volume = 0.375 af Average Runoff Depth = 8.77"
0.00% Pervious = 0.000 ac 100.00% Impervious = 0.513 ac

Summary for Subcatchment P1: Prop Roof

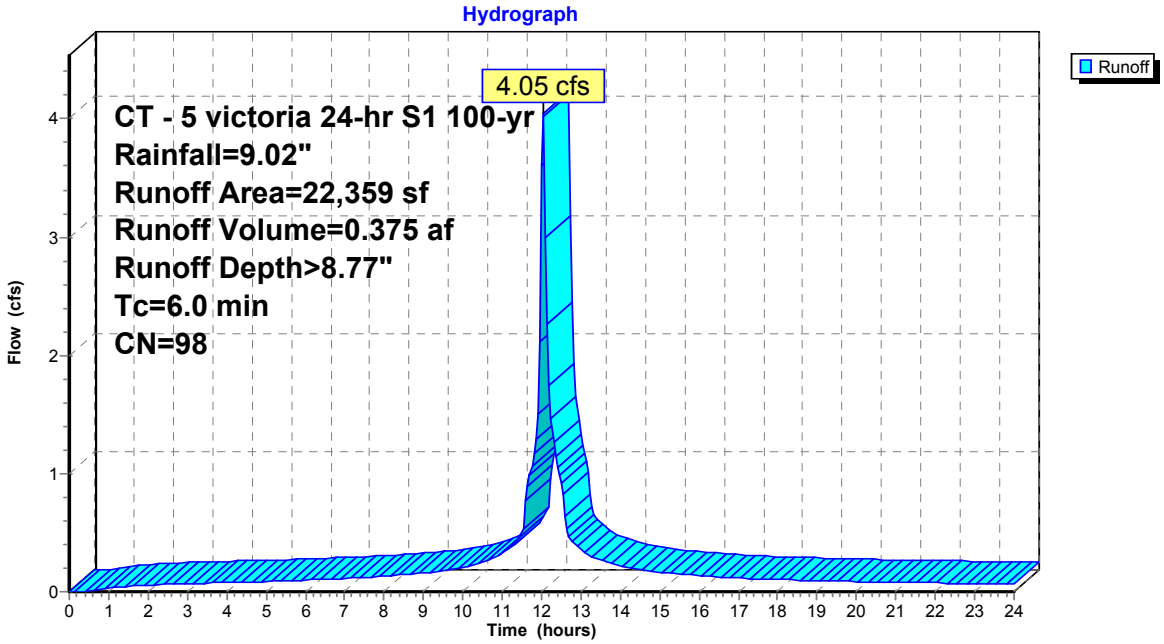
Runoff = 4.05 cfs @ 12.04 hrs, Volume= 0.375 af, Depth> 8.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
CT - 5 victoria 24-hr S1 100-yr Rainfall=9.02"

Area (sf)	CN	Description
22,359	98	Roofs, HSG A
22,359		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, direct flow**

Subcatchment P1: Prop Roof



Summary for Pond P2: Underground System

Inflow Area = 0.513 ac,100.00% Impervious, Inflow Depth > 8.77" for 100-yr event
Inflow = 4.05 cfs @ 12.04 hrs, Volume= 0.375 af
Outflow = 2.04 cfs @ 12.17 hrs, Volume= 0.228 af, Atten= 50%, Lag= 8.1 min
Primary = 2.04 cfs @ 12.17 hrs, Volume= 0.228 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 295.30' @ 12.17 hrs Surf.Area= 2,880 sf Storage= 8,074 cf

Plug-Flow detention time= 291.8 min calculated for 0.228 af (61% of inflow)
Center-of-Mass det. time= 151.3 min (890.5 - 739.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	291.80'	576 cf	**24.00'W x 120.00'L x 4.17'H Field A** 12,000 cf Overall - 10,560 cf Embedded = 1,440 cf x 40.0% Voids
#2A	292.30'	7,508 cf	**retain_it retain_it 3.0'** x 45 Inside #1 Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf 3 Rows adjusted for 169.9 cf perimeter wall
		8,084 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	294.50'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.01 cfs @ 12.17 hrs HW=295.29' (Free Discharge)
↑**1=Orifice/Grate** (Orifice Controls 2.01 cfs @ 3.03 fps)

Pond P2: Underground System - Chamber Wizard Field A

Chamber Model = retain_it retain_it 3.0' (retain-it®)
Inside= 84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
Outside= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
3 Rows adjusted for 169.9 cf perimeter wall

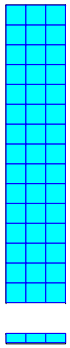
15 Chambers/Row x 8.00' Long = 120.00' Row Length
3 Rows x 96.0" Wide = 24.00' Base Width
6.0" Base + 44.0" Chamber Height = 4.17' Field Height

4.7 cf Sidewall x 15 x 2 + 4.7 cf Endwall x 3 x 2 = 169.9 cf Perimeter Wall
45 Chambers x 170.6 cf - 169.9 cf Perimeter wall = 7,507.5 cf Chamber Storage
45 Chambers x 234.7 cf = 10,560.0 cf Displacement

12,000.0 cf Field - 10,560.0 cf Chambers = 1,440.0 cf Stone x 40.0% Voids = 576.0 cf Stone Storage

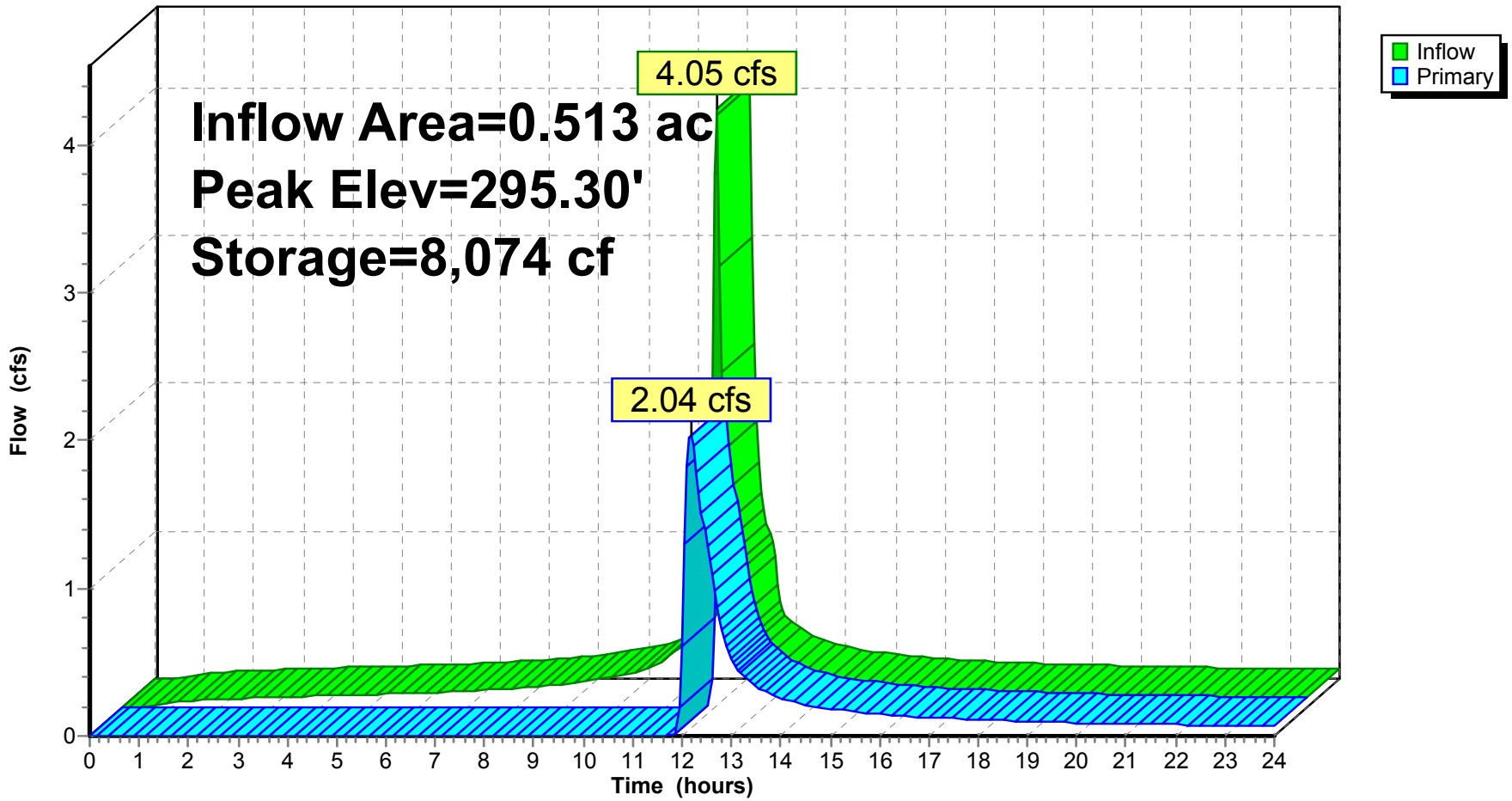
Chamber Storage + Stone Storage = 8,083.5 cf = 0.186 af
Overall Storage Efficiency = 67.4%
Overall System Size = 120.00' x 24.00' x 4.17'

45 Chambers
444.4 cy Field
53.3 cy Stone



Pond P2: Underground System

Hydrograph



Stage-Discharge for Pond P2: Underground System

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
291.80	0.00	295.50	2.67
291.90	0.00	295.60	2.93
292.00	0.00	295.70	3.16
292.10	0.00	295.80	3.38
292.20	0.00	295.90	**3.59**
292.30	0.00		
292.40	0.00		
292.50	0.00		
292.60	0.00		
292.70	0.00		
292.80	0.00		
292.90	0.00		
293.00	0.00		
293.10	0.00		
293.20	0.00		
293.30	0.00		
293.40	0.00		
293.50	0.00		
293.60	0.00		
293.70	0.00		
293.80	0.00		
293.90	0.00		
294.00	0.00		
294.10	0.00		
294.20	0.00		
294.30	0.00		
294.40	0.00		
294.50	0.00		
294.60	0.04		
294.70	0.17		
294.80	0.37		
294.90	0.63		
295.00	0.95		
295.10	1.30		
295.20	1.67		
295.30	2.05		
295.40	2.40		

Stage-Area-Storage for Pond P2: Underground System

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
291.80	0	295.50	8,084
291.90	115	295.60	8,084
292.00	230	295.70	8,084
292.10	346	295.80	8,084
292.20	461	295.90	**8,084**
292.30	576		
292.40	826		
292.50	1,077		
292.60	1,327		
292.70	1,577		
292.80	1,827		
292.90	2,078		
293.00	2,328		
293.10	2,578		
293.20	2,828		
293.30	3,079		
293.40	3,329		
293.50	3,579		
293.60	3,829		
293.70	4,080		
293.80	4,330		
293.90	4,580		
294.00	4,830		
294.10	5,081		
294.20	5,331		
294.30	5,581		
294.40	5,831		
294.50	6,082		
294.60	6,332		
294.70	6,582		
294.80	6,832		
294.90	7,083		
295.00	7,333		
295.10	7,583		
295.20	7,833		
295.30	8,084		
295.40	8,084		

Project **Proposed Development** By **CJP** Date **03/18/21**

Location **5 Victoria Drive, Monroe CT** Checked **MSL** Date **03/18/21**

Bold one: **Existing** Proposed **Existing Drainage Area 1 (EDA-1)**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
A	**Impervious Area**	**98**			**0.39**	**38.42**
A	**Pervious Area - Fair**	**49**			**0.60**	**29.23**
A	**Gravel Area**	**76**			**0.04**	**2.78**
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one CN source per line				Totals =	**1.03**	**70.43**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{70.43}{1.03} =$ 68.70 Use CN = **69**

Project **5 Victoria Drive Development** By **CJP** Date **03/18/21**

Location **5 Victoria Drive, Monroe CT** Checked **MSL** Date **03/18/21**

Bold one: **Existing** Proposed **Existing Drainage Area 2 (EDA-2)**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
A	**Impervious Area**	**98**			**0.15**	**15.04**
A	**Pervious Area - Fair**	**49**			**0.21**	**10.34**
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one CN source per line				Totals =	**0.36**	**25.39**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{25.39}{0.36} =$ 69.63 Use CN = **70**

Project **5 Victoria Drive Development** By **CJP** Date **03/18/21**

Location **5 Victoria Drive, Monroe CT** Checked **MSL** Date **03/18/21**

Bold one: **Existing** Proposed **Existing Drainage Area 3 (EDA-3)**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
A	**Impervious Area**	**98**			**0.59**	**58.07**
A	**Pervious Area - Fair**	**49**			**0.38**	**18.40**
A	**Athletic Field**	**39**			**0.63**	**24.74**
A	**Gravel Area**	**76**			**0.05**	**3.51**
						0.00
						0.00
						0.00
						0.00
1 Use only one CN source per line				Totals =	**1.65**	**104.71**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{104.71}{1.65} =$ 63.52 Use CN = **64**

Project **5 Victoria Drive Development** By **CJP** Date **03/18/21**

Location **5 Victoria Drive, Monroe CT** Checked **MSL** Date **03/18/21**

Bold one: **Existing** Proposed **Existing Drainage Area 4 (EDA-4)**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
A	**Impervious Area**	**98**			**0.19**	**19.07**
A	**Pervious Area - Fair**	**49**			**0.46**	**22.57**
A	**Gravel Area**	**76**			**0.05**	**4.14**
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one CN source per line				Totals =	**0.71**	**45.78**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{45.78}{0.71} =$ 64.51 Use CN = **65**

Project **5 Victoria Drive Development** By **CJP** Date **03/18/21**

Location **5 Victoria Drive, Monroe CT** Checked **MSL** Date **03/18/21**

Bold one: **Existing** Proposed **Existing Drainage Area 5 (EDA-5)**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
A	**Impervious Area**	**98**			**0.07**	**7.26**
A	**Pervious Area - Poor**	**68**			**0.65**	**43.88**
A	**Gravel Area**	**76**			**0.07**	**5.22**
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one CN source per line				Totals =	**0.79**	**56.36**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{56.36}{0.79} =$ 71.52 Use CN = **72**

Project	**5 Victoria Drive Development**	By	**CJP**	Date	**03/18/21**
Location	**5 Victoria Drive, Monroe, CT**	Checked	**MSL**	Date	**03/18/21**

Bold One: **Present** Developed

Bold One: **T_c** T_t through subarea **Existing Drainage Area 1 (EDA-1)**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)		Segment ID	AB			
1. Surface description (table 3-1)			Dense Grasses			
2. Manning's roughness coeff., n (table 3-1)			0.240			
3. Flow Length, L (total L ≤ 300 ft)		ft	98			
4. Two-yr 24-hr rainfall, P_2		in	3.56			
5. Land slope, s		ft/ft	0.019			
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	Compute T_t	hr	0.227	+		= 0.227

Shallow concentrated flow		Segment ID	BC	CD		
7. Surface description (paved or unpaved)			unpaved	paved		
8. Flow length, L		ft	111	84		
9. Watercourse slope, s		ft/ft	0.02	0.02		
10. Average velocity, V (Conn DOT Equations 6.C.4 & C.C.5)		ft/s	2.17	2.98		
11. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr	0.014	+ 0.008	=	0.022

Channel flow		Segment ID				
12. Cross sectional flow area, a		ft^2				
13. Wetted perimeter, p_w		ft				
14. Hydraulic radius, r $r = \frac{a}{p_w}$	Compute r	ft				
15. Channel slope, s		ft/ft				
16. Manning's roughness coeff., n						
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	Compute V	ft/s				
18. Flow length, L		ft				
19. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr		+	=	0.000
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)				**Hours**	=	0.249
				Minutes	=	14.9

Project	**5 Victoria Drive Development**	By	**CJP**	Date	**03/18/21**
Location	**5 Victoria Drive, Monroe, CT**	Checked	**MSL**	Date	**03/18/21**

Bold One: **Present** Developed

Bold One: **T_c** T_t through subarea **Existing Drainage Area 2 (EDA-2)**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)		Segment ID	AB	BC		
1. Surface description (table 3-1)			Dense Grasses	Dense Grasses		
2. Manning's roughness coeff., n (table 3-1)			0.240	0.240		
3. Flow Length, L (total L ≤ 300 ft)		ft	125	22		
4. Two-yr 24-hr rainfall, P_2		in	3.56	3.56		
5. Land slope, s		ft/ft	0.012	0.158		
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	Compute T_t	hr	0.326	+ 0.029	=	0.355

Shallow concentrated flow		Segment ID				
7. Surface description (paved or unpaved)						
8. Flow length, L		ft				
9. Watercourse slope, s		ft/ft				
10. Average velocity, V (Conn DOT Equations 6.C.4 & C.C.5)		ft/s				
11. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr		+	=	0.000

Channel flow		Segment ID				
12. Cross sectional flow area, a		ft^2				
13. Wetted perimeter, p_w		ft				
14. Hydraulic radius, r $r = \frac{a}{p_w}$	Compute r	ft				
15. Channel slope, s		ft/ft				
16. Manning's roughness coeff., n						
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	Compute V	ft/s				
18. Flow length, L		ft				
19. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr		+	=	0.000

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)	**Hours**	=	0.355
	Minutes	=	21.3

Project	**5 Victoria Drive Development**	By	**CJP**	Date	**03/18/21**
Location	**5 Victoria Drive, Monroe, CT**	Checked	**MSL**	Date	**03/18/21**

Bold One: **Present** Developed

Bold One: **T_c** T_t through subarea **Existing Drainage Area 3 (EDA-3)**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)		Segment ID	**AB**					
1. Surface description (table 3-1)			**Short Grass**					
2. Manning's roughness coeff., n (table 3-1)			**0.150**					
3. Flow Length, L (total L ≤ 300 ft)		ft	**50**					
4. Two-yr 24-hr rainfall, P_2		in	**3.56**					
5. Land slope, s		ft/ft	**0.030**					
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	Compute T_t	hr	**0.076**	+		=	**0.076**	
Shallow concentrated flow		Segment ID						
7. Surface description (paved or unpaved)								
8. Flow length, L		ft						
9. Watercourse slope, s		ft/ft						
10. Average velocity, V (Conn DOT Equations 6.C.4 & C.C.5)		ft/s						
11. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr		+		=	**0.000**	
Channel flow		Segment ID	**BC**					
12. Cross sectional flow area, a		ft^2	**1.00**					
13. Wetted perimeter, p_w		ft	**4.22**					
14. Hydraulic radius, r $r = \frac{a}{p_w}$	Compute r	ft	**0.24**					
15. Channel slope, s		ft/ft	**0.020**					
16. Manning's roughness coeff., n			**0.033**					
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	Compute V	ft/s	**2.45**					
18. Flow length, L		ft	**100.00**					
19. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr	**0.011**	+		=	**0.011**	
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)					**Hours**	=	**0.087**	
					Minutes	=	**5.2**	

Project	**5 Victoria Drive Development**	By	**CJP**	Date	**03/18/21**
Location	**5 Victoria Drive, Monroe, CT**	Checked	**MSL**	Date	**03/18/21**

Bold One: **Present** Developed

Bold One: **T_c** T_t through subarea **Existing Drainage Area 4 (EDA-4)**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)		Segment ID	AB			
1. Surface description (table 3-1)			Grass - Bermuda-grass			
2. Manning's roughness coeff., n (table 3-1)			0.130			
3. Flow Length, L (total L ≤ 150 ft)		ft	150			
4. Two-yr 24-hr rainfall, P_2		in	3.56			
5. Land slope, s		ft/ft	0.026			
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	Compute T_t	hr	0.172	+		= 0.172

Shallow concentrated flow		Segment ID	BC	CD		
7. Surface description (paved or unpaved)			Unpaved	Unpaved		
8. Flow length, L		ft	22	23		
9. Watercourse slope, s		ft/ft	0.05	0.17		
10. Average velocity, V (Conn DOT Equations 6.C.4 & C.C.5)		ft/s	3.61	6.73		
11. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr	0.002	+ 0.001	=	0.003

Channel flow		Segment ID				
12. Cross sectional flow area, a		ft^2				
13. Wetted perimeter, p_w		ft				
14. Hydraulic radius, r $r = \frac{a}{p_w}$	Compute r	ft				
15. Channel slope, s		ft/ft				
16. Manning's roughness coeff., n						
17. $V = \frac{1.49\ r^{2/3} s^{1/2}}{n}$	Compute V	ft/s				
18. Flow length, L		ft				
19. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr		+	=	0.000

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)	**Hours**	=	0.175
	Minutes	=	10.5

Project	**5 Victoria Drive Development**	By	**CJP**	Date	**05/07/21**
Location	**5 Victoria Drive, Monroe, CT**	Checked	**CJB**	Date	**05/07/21**

Bold One: **Present** Developed

Bold One: **T_c** T_t through subarea **Existing Drainage Area 5 (EDA-5)**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)		Segment ID	AB			
1. Surface description (table 3-1)			Grass - Short grass			
2. Manning's roughness coeff., n (table 3-1)			0.150			
3. Flow Length, L (total L ≤ 150 ft)		ft	40			
4. Two-yr 24-hr rainfall, P_2		in	3.56			
5. Land slope, s		ft/ft	0.011			
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	Compute T_t	hr	0.093	+		= 0.093

Shallow concentrated flow		Segment ID	BC			
7. Surface description (paved or unpaved)			Unpaved			
8. Flow length, L		ft	12			
9. Watercourse slope, s		ft/ft	0.39			
10. Average velocity, V (Conn DOT Equations 6.C.4 & C.C.5)		ft/s	10.03			
11. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr	0.000	+		= 0.000

Channel flow		Segment ID				
12. Cross sectional flow area, a		ft^2				
13. Wetted perimeter, p_w		ft				
14. Hydraulic radius, r $r = \frac{a}{p_w}$	Compute r	ft				
15. Channel slope, s		ft/ft				
16. Manning's roughness coeff., n						
17. $V = \frac{1.49\ r^{2/3} s^{1/2}}{n}$	Compute V	ft/s				
18. Flow length, L		ft				
19. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr		+		= 0.000

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)	**Hours** =	0.093
	Minutes =	5.6

Project **Proposed Development** By **CJP** Date **04/07/21**

Location **5 Victoria Drive, Monroe CT** Checked **MSL** Date **04/07/21**

Bold one: Existing **Proposed** **Proposed Drainage Area 1 (PDA-1)**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
A	**Impervious Area**	**98**			**0.40**	**38.92**
A	**Pervious Area - Good**	**39**			**0.56**	**21.84**
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one CN source per line				Totals =	**0.96**	**60.76**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{60.76}{0.96} =$ 63.48 Use CN = **63**

Project **5 Victoria Drive Development** By **CJP** Date **04/07/21**

Location **5 Victoria Drive, Monroe CT** Checked **MSL** Date **04/07/21**

Bold one: Existing **Proposed** **Proposed Drainage Area 2 (PDA-2)**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
A	**Impervious Area**	**98**			**0.22**	**21.78**
A	**Pervious Area - Good**	**39**			**0.23**	**8.79**
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one CN source per line				Totals =	**0.45**	**30.57**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{30.57}{0.45} =$ 68.29 Use CN = **68**

Project **5 Victoria Drive Development** By **CJP** Date **04/07/21**

Location **5 Victoria Drive, Monroe CT** Checked **MSL** Date **04/07/21**

Bold one: Existing **Proposed** **Proposed Drainage Area 3 (PDA-3)**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
A	**Impervious Area**	**98**			**0.57**	**56.15**
A	**Pervious Area - Good**	**39**			**0.27**	**10.58**
A	**Athletic Field**	**39**			**0.23**	**8.85**
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one CN source per line				Totals =	**1.07**	**75.58**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{75.58}{1.07} =$ 70.56 Use CN = **71**

Project **5 Victoria Drive Development** By **CJP** Date **04/07/21**

Location **5 Victoria Drive, Monroe CT** Checked **MSL** Date **04/07/21**

Bold one: Existing **Proposed** **Proposed Drainage Area 4 (PDA-4)**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
A	**Impervious Area**	**98**			**0.60**	**58.61**
A	**Pervious Area - Good**	**39**			**0.18**	**7.05**
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one CN source per line				Totals =	**0.78**	**65.66**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{65.66}{0.78} =$ 84.30 Use CN = **84**

Project **5 Victoria Drive Development** By **CJP** Date **05/06/21**

Location **5 Victoria Drive, Monroe CT** Checked **CJB** Date **05/06/21**

Bold one: Existing **Proposed** **Proposed Drainage Area 5a (PDA-5a)**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
A	**Impervious Area**	**98**			**0.00**	**0.00**
A	**Pervious Area - Good**	**39**			**0.11**	**4.24**
A	**Grass Paver Area**	**39**			**0.22**	**8.68**
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one CN source per line				Totals =	**0.33**	**12.93**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{12.93}{0.33} =$ 39.00 Use CN = **39**

Project **5 Victoria Drive Development** By **CJP** Date **05/06/21**

Location **5 Victoria Drive, Monroe CT** Checked **CJB** Date **05/06/21**

Bold one: Existing **Proposed** **Proposed Drainage Area 5b (PDA-5b)**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
A	**Impervious Area**	**98**			**0.02**	**2.23**
A	**Pervious Area - Good**	**39**			**0.38**	**14.82**
A	**Grass Paver Area**	**39**			**0.07**	**2.54**
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one CN source per line				Totals =	**0.47**	**19.58**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{19.58}{0.47} =$ 41.87 Use CN = **42**

Project	**5 Victoria Drive Development**	By	**CJP**	Date	**03/18/21**
Location	**5 Victoria Drive, Monroe, CT**	Checked	**MSL**	Date	**03/18/21**

Bold One: Present **Developed**

Bold One: **T_c** T_t through subarea **Proposed Drainage Area 1 (PDA-1)**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)		Segment ID	**AB**			
1. Surface description (table 3-1)			**Dense Grasses**			
2. Manning's roughness coeff., n (table 3-1)			**0.240**			
3. Flow Length, L (total L ≤ 300 ft)		ft	**98**			
4. Two-yr 24-hr rainfall, P_2		in	**3.56**			
5. Land slope, s		ft/ft	**0.019**			
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	Compute T_t	hr	**0.227**	+		= **0.227**

Shallow concentrated flow		Segment ID	**BC**	**CD**		
7. Surface description (paved or unpaved)			**unpaved**	**paved**		
8. Flow length, L		ft	**111**	**84**		
9. Watercourse slope, s		ft/ft	**0.02**	**0.02**		
10. Average velocity, V (Conn DOT Equations 6.C.4 & C.C.5)		ft/s	**2.17**	**2.98**		
11. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr	**0.014**	+ **0.008**	=	**0.022**

Channel flow		Segment ID				
12. Cross sectional flow area, a		ft^2				
13. Wetted perimeter, p_w		ft				
14. Hydraulic radius, r $r = \frac{a}{p_w}$	Compute r	ft				
15. Channel slope, s		ft/ft				
16. Manning's roughness coeff., n						
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	Compute V	ft/s				
18. Flow length, L		ft				
19. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr		+	=	**0.000**

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)	**Hours** =	**0.249**
	Minutes =	**14.9**

Project	**5 Victoria Drive Development**	By	**CJP**	Date	**03/18/21**
Location	**5 Victoria Drive, Monroe, CT**	Checked	**MSL**	Date	**03/18/21**

Bold One: Present **Developed**

Bold One: **T_c** T_t through subarea **Proposed Drainage Area 2 (PDA-2)**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)		Segment ID	**AB**	**BC**		
1. Surface description (table 3-1)			**Dense Grasses**	**Dense Grasses**		
2. Manning's roughness coeff., n (table 3-1)			**0.240**	**0.240**		
3. Flow Length, L (total L ≤ 300 ft)		ft	**125**	**22**		
4. Two-yr 24-hr rainfall, P_2		in	**3.56**	**3.56**		
5. Land slope, s		ft/ft	**0.012**	**0.158**		
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	Compute T_t	hr	**0.326**	+ **0.029**	=	**0.355**

Shallow concentrated flow		Segment ID				
7. Surface description (paved or unpaved)						
8. Flow length, L		ft				
9. Watercourse slope, s		ft/ft				
10. Average velocity, V (Conn DOT Equations 6.C.4 & C.C.5)		ft/s				
11. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr		+	=	**0.000**

Channel flow		Segment ID				
12. Cross sectional flow area, a		ft^2				
13. Wetted perimeter, p_w		ft				
14. Hydraulic radius, r $r = \frac{a}{p_w}$	Compute r	ft				
15. Channel slope, s		ft/ft				
16. Manning's roughness coeff., n						
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	Compute V	ft/s				
18. Flow length, L		ft				
19. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr		+	=	**0.000**

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)	**Hours**	=	**0.355**
	Minutes	=	**21.3**

Project	**5 Victoria Drive Development**	By	**CJP**	Date	**03/18/21**
Location	**5 Victoria Drive, Monroe, CT**	Checked	**MSL**	Date	**03/18/21**

Bold One: Present **Developed**

Bold One: **T_c** T_t through subarea **Proposed Drainage Area 3 (PDA-3)**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)		Segment ID						
1. Surface description (table 3-1)								
2. Manning's roughness coeff., n (table 3-1)								
3. Flow Length, L (total L $\leq$ 300 ft)		ft						
4. Two-yr 24-hr rainfall, P_2		in						
5. Land slope, s		ft/ft						
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	Compute T_t	hr		+		=	**0.000**	
Shallow concentrated flow		Segment ID						
7. Surface description (paved or unpaved)								
8. Flow length, L		ft						
9. Watercourse slope, s		ft/ft						
10. Average velocity, V (Conn DOT Equations 6.C.4 & C.C.5)		ft/s						
11. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr		+		=	**0.000**	
Channel flow		Segment ID	**AB**					
12. Cross sectional flow area, a		ft^2	**1.00**					
13. Wetted perimeter, p_w		ft	**4.22**					
14. Hydraulic radius, r $r = \frac{a}{p_w}$	Compute r	ft	**0.24**					
15. Channel slope, s		ft/ft	**0.020**					
16. Manning's roughness coeff., n			**0.033**					
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	Compute V	ft/s	**2.45**					
18. Flow length, L		ft	**100.00**					
19. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr	**0.011**	+		=	**0.011**	
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)					**Hours**	=	**0.011**	
					Minutes	=	**0.7**	

Project	**5 Victoria Drive Development**	By	**CJP**	Date	**03/18/21**
Location	**5 Victoria Drive, Monroe, CT**	Checked	**MSL**	Date	**03/18/21**

Bold One: Present **Developed**

Bold One: **T_c** T_t through subarea **Proposed Drainage Area 4 (PDA-4)**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)		Segment ID	**AB**	**AB**		
1. Surface description (table 3-1)			**Grass - Bermuda-grass**	**Grass - Bermuda-grass**		
2. Manning's roughness coeff., n (table 3-1)			**0.130**	**0.130**		
3. Flow Length, L (total L $\leq$ 150 ft)		ft	**30**	**21**		
4. Two-yr 24-hr rainfall, P_2		in	**3.56**	**3.56**		
5. Land slope, s		ft/ft	**0.067**	**0.095**		
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	Compute T_t	hr	**0.033**	+ **0.021**	=	**0.054**

Shallow concentrated flow		Segment ID	**BC**			
7. Surface description (paved or unpaved)			**Unpaved**			
8. Flow length, L		ft	**14**			
9. Watercourse slope, s		ft/ft	**0.21**			
10. Average velocity, V (Conn DOT Equations 6.C.4 & C.C.5)		ft/s	**7.47**			
11. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr	**0.001**	+	=	**0.001**

Channel flow		Segment ID				
12. Cross sectional flow area, a		ft^2				
13. Wetted perimeter, p_w		ft				
14. Hydraulic radius, r $r = \frac{a}{p_w}$	Compute r	ft				
15. Channel slope, s		ft/ft				
16. Manning's roughness coeff., n						
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	Compute V	ft/s				
18. Flow length, L		ft				
19. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr		+	=	**0.000**
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)				**Hours**	=	**0.054**
				Minutes	=	**3.3**

Project	**5 Victoria Drive Development**	By	**CJP**	Date	**03/18/21**
Location	**5 Victoria Drive, Monroe, CT**	Checked	**CJB**	Date	**03/18/21**

Bold One: Present **Developed**

Bold One: **T_c** T_t through subarea **Proposed Drainage Area 5a (PDA-5a)**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)		Segment ID	**AB**			
1. Surface description (table 3-1)			**Grass Paver**			
2. Manning's roughness coeff., n (table 3-1)			**0.150**			
3. Flow Length, L (total L ≤ 150 ft)		ft	**71**			
4. Two-yr 24-hr rainfall, P_2		in	**3.56**			
5. Land slope, s		ft/ft	**0.010**			
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	Compute T_t	hr	**0.155**	+		= **0.155**

Shallow concentrated flow		Segment ID				
7. Surface description (paved or unpaved)						
8. Flow length, L		ft				
9. Watercourse slope, s		ft/ft				
10. Average velocity, V (Conn DOT Equations 6.C.4 & C.C.5)		ft/s				
11. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr		+		= **0.000**

Channel flow		Segment ID				
12. Cross sectional flow area, a		ft^2				
13. Wetted perimeter, p_w		ft				
14. Hydraulic radius, r $r = \frac{a}{p_w}$	Compute r	ft				
15. Channel slope, s		ft/ft				
16. Manning's roughness coeff., n						
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$	Compute V	ft/s				
18. Flow length, L		ft				
19. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr		+		= **0.000**

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)	**Hours** =	**0.155**
	Minutes =	**9.3**

Project	**5 Victoria Drive Development**	By	**CJP**	Date	**05/06/21**
Location	**5 Victoria Drive, Monroe, CT**	Checked	**CJB**	Date	**05/06/21**

Bold One: Present **Developed**

Bold One: **T_c** T_t through subarea **Proposed Drainage Area 5b (PDA-5b)**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

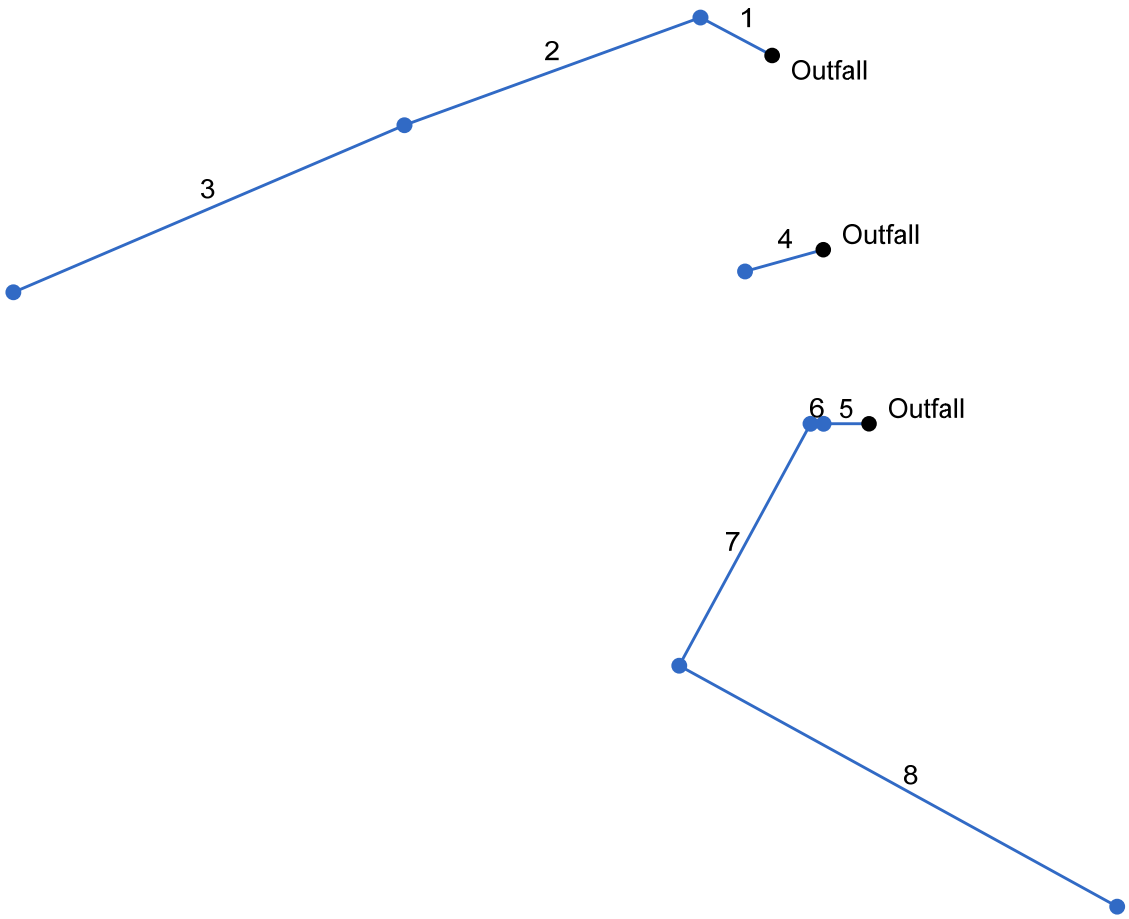
Sheet flow (Applicable to T_c Only)		Segment ID	**AB**			
1. Surface description (table 3-1)			**Grass Paver**			
2. Manning's roughness coeff., n (table 3-1)			**0.150**			
3. Flow Length, L (total L ≤ 150 ft)		ft	**30**			
4. Two-yr 24-hr rainfall, P_2		in	**3.56**			
5. Land slope, s		ft/ft	**0.100**			
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	Compute T_t	hr	**0.031**	+		= **0.031**

Shallow concentrated flow		Segment ID				
7. Surface description (paved or unpaved)						
8. Flow length, L		ft				
9. Watercourse slope, s		ft/ft				
10. Average velocity, V (Conn DOT Equations 6.C.4 & C.C.5)		ft/s				
11. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr		+		= **0.000**

Channel flow		Segment ID				
12. Cross sectional flow area, a		ft^2				
13. Wetted perimeter, p_w		ft				
14. Hydraulic radius, r $r = \frac{a}{p_w}$	Compute r	ft				
15. Channel slope, s		ft/ft				
16. Manning's roughness coeff., n						
17. $V = \frac{1.49\ r^{2/3} s^{1/2}}{n}$	Compute V	ft/s				
18. Flow length, L		ft				
19. $T_t = \frac{L}{3600\ V}$	Compute T_t	hr		+		= **0.000**

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)	**Hours**	=	**0.031**
	Minutes	=	**1.9**

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



Project File: Storm System.stm	Number of lines: 8	Date: 4/27/2021

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1		Manhole	295.20	Cir	4.00	4.00	12	Cir	292.80	12	Cir	292.80
2		Combination	296.73	Cir	4.00	4.00	12	Cir	294.00	12	Cir	294.00
3		Grate	298.30	Cir	4.00	4.00	12	Cir	295.60			
4		Grate	304.00	Cir	4.00	4.00	12	Cir	299.00			
5		Manhole	298.00	Cir	4.00	4.00	18	Cir	293.99	18	Cir	293.99
6		Combination	299.67	Cir	4.00	4.00	18	Cir	294.07	18	Cir	294.07
7		Combination	302.70	Cir	4.00	4.00	18	Cir	297.69	18	Cir	297.69
8		Combination	302.35	Cir	4.00	4.00	18	Cir	298.85			

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	25.000	0.00	0.49	0.00	0.00	0.46	0.0	8.3	8.6	3.98	0.00	5.07	12	0.00	292.80	292.80	293.80	294.07	293.80	295.20	MH-1
2	1	97.000	0.40	0.49	0.94	0.38	0.46	6.0	8.0	8.8	4.05	4.29	5.16	12	1.24	292.80	294.00	294.38	295.45	295.20	296.73	CB-2
3	2	131.000	0.09	0.09	0.95	0.09	0.09	6.0	6.0	10.0	0.86	4.26	2.07	12	1.22	294.00	295.60	295.66	295.99	296.73	298.30	CB-1
4	End	25.000	0.51	0.51	0.95	0.48	0.48	6.0	6.0	10.0	4.85	15.43	6.32	12	16.00	295.00	299.00	296.00	299.91	298.00	304.00	CB-6
5	End	14.000	0.00	0.69	0.00	0.00	0.60	0.0	7.6	9.0	5.43	30.25	4.00	18	7.07	293.00	293.99	294.50	294.89	294.50	298.00	HYD-1
6	5	4.000	0.12	0.69	0.90	0.11	0.60	6.0	7.5	9.0	5.43	16.09	4.93	18	2.00	293.99	294.07	294.89	294.97	298.00	299.67	CB-3
7	6	85.000	0.06	0.57	0.75	0.05	0.49	6.0	7.0	9.3	4.61	23.48	4.41	18	4.26	294.07	297.69	294.97	298.51	299.67	302.70	CB-4
8	7	154.000	0.51	0.51	0.88	0.45	0.45	6.0	6.0	10.0	4.49	9.87	4.56	18	0.75	297.69	298.85	298.51	299.66	302.70	302.35	CB-5

Project File: Storm System.stm

Number of lines: 8

Run Date: 4/27/2021

NOTES:Intensity = 49.85 / (Inlet time + 3.80) ^ 0.70; Return period =Yrs. 100 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1		0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	2.00	0.050	0.020	0.013	0.00	0.00	0.00	0.00	0.0	Off
2		3.76	0.00	3.76	0.00	Comb	3.5	2.31	3.12	2.31	1.35	Sag	2.00	0.050	0.020	0.013	0.45	19.37	0.45	19.37	0.0	1
3		0.86	0.00	0.86	0.00	Grate	0.0	0.00	3.12	2.31	1.35	Sag	2.00	0.050	0.020	0.013	0.18	6.08	0.18	6.08	0.0	2
4		4.85	0.00	4.85	0.00	Grate	0.0	0.00	2.00	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.47	20.35	0.47	20.35	0.0	Off
5		0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	2.00	0.050	0.020	0.013	0.00	0.00	0.00	0.00	0.0	Off
6		1.08	0.00	1.08	0.00	Comb	3.5	2.31	3.12	2.31	1.35	Sag	2.00	0.050	0.020	0.013	0.22	8.15	0.22	8.15	0.0	5
7		0.45	0.00	0.45	0.00	Comb	3.5	2.31	3.12	2.31	1.35	Sag	2.00	0.050	0.020	0.013	0.15	4.33	0.15	4.33	0.0	6
8		4.49	0.00	4.49	0.00	Comb	3.5	2.31	3.12	2.31	1.35	Sag	2.00	0.050	0.020	0.013	0.50	21.85	0.50	21.85	0.0	7

Project File: Storm System.stm

Number of lines: 8

Run Date: 4/27/2021

NOTES: Inlet N-Values = 0.016; Intensity = 49.85 / (Inlet time + 3.80) ^ 0.70; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
(1)	(in) (2)	(cfs) (3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(ft) (12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(K) (23)	(ft) (24)
1	12	3.98	292.80	293.80	1.00	0.79	5.07	0.40	294.20	1.067	25.000	292.80	294.07	1.00	0.79	5.07	0.40	294.47	1.067	1.067	0.267	0.78	0.31
2	12	4.05	292.80	294.38	1.00	0.79	5.16	0.41	294.79	1.104	97.000	294.00	295.45	1.00	0.79	5.16	0.41	295.86	1.104	1.104	1.071	0.50	0.21
3	12	0.86	294.00	295.66	1.00	0.28	1.09	0.02	295.68	0.049	131.000	295.60	295.99 j	0.39**	0.28	3.05	0.14	296.13	0.489	0.269	n/a	1.00	0.14
4	12	4.85	295.00	296.00	1.00*	0.75	6.18	0.59	296.59	1.581	25.000	299.00	299.91 j	0.91**	0.75	6.47	0.65	300.56	1.382	1.481	n/a	1.00	0.65
5	18	5.43	293.00	294.50	1.50*	1.10	3.07	0.15	294.65	0.228	14.000	293.99	294.89 j	0.90**	1.10	4.92	0.38	295.26	0.509	0.368	n/a	0.15	n/a
6	18	5.43	293.99	294.89	0.90	1.10	4.93	0.38	295.26	0.000	4.000	294.07	294.97	0.90**	1.10	4.92	0.38	295.34	0.000	0.000	n/a	1.35	n/a
7	18	4.61	294.07	294.97	0.90	0.99	4.18	0.33	295.30	0.000	85.000	297.69	298.51 j	0.82**	0.99	4.64	0.33	298.85	0.000	0.000	n/a	1.50	n/a
8	18	4.49	297.69	298.51	0.82	0.98	4.52	0.33	298.84	0.000	154.000	298.85	299.66 j	0.81**	0.98	4.60	0.33	299.99	0.000	0.000	n/a	1.00	0.33

Project File: Storm System.stm | Number of lines: 8 | Run Date: 4/27/2021

Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraflow HGL Computation Procedure

General Procedure:

Hydraflow computes the HGL using the Bernoulli energy equation. Manning's equation is used to determine energy losses due to pipe friction. In a standard step, iterative procedure, Hydraflow assumes upstream HGLs until the energy equation balances. If the energy equation cannot balance, supercritical flow exists and critical depth is temporarily assumed at the upstream end. A supercritical flow Profile is then computed using the same procedure in a downstream direction using momentum principles.

Col. 1 The line number being computed. Calculations begin at Line 1 and proceed upstream.

Col. 2 The line size. In the case of non-circular pipes, the line rise is printed above the span.

Col. 3 Total flow rate in the line.

Col. 4 The elevation of the downstream invert.

Col. 5 Elevation of the hydraulic grade line at the downstream end. This is computed as the upstream HGL + Minor loss of this line's downstream line.

Col. 6 The downstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 7 Cross-sectional area of the flow at the downstream end.

Col. 8 The velocity of the flow at the downstream end, (Col. 3 / Col. 7).

Col. 9 Velocity head (Velocity squared / 2g).

Col. 10 The elevation of the energy grade line at the downstream end, HGL + Velocity head, (Col. 5 + Col. 9).

Col. 11 The friction slope at the downstream end (the S or Slope term in Manning's equation).

Col. 12 The line length.

Col. 13 The elevation of the upstream invert.

Col. 14 Elevation of the hydraulic grade line at the upstream end.

Col. 15 The upstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 16 Cross-sectional area of the flow at the upstream end.

Col. 17 The velocity of the flow at the upstream end, (Col. 3 / Col. 16).

Col. 18 Velocity head (Velocity squared / 2g).

Col. 19 The elevation of the energy grade line at the upstream end, HGL + Velocity head, (Col. 14 + Col. 18) .

Col. 20 The friction slope at the upstream end (the S or Slope term in Manning's equation).

Col. 21 The average of the downstream and upstream friction slopes.

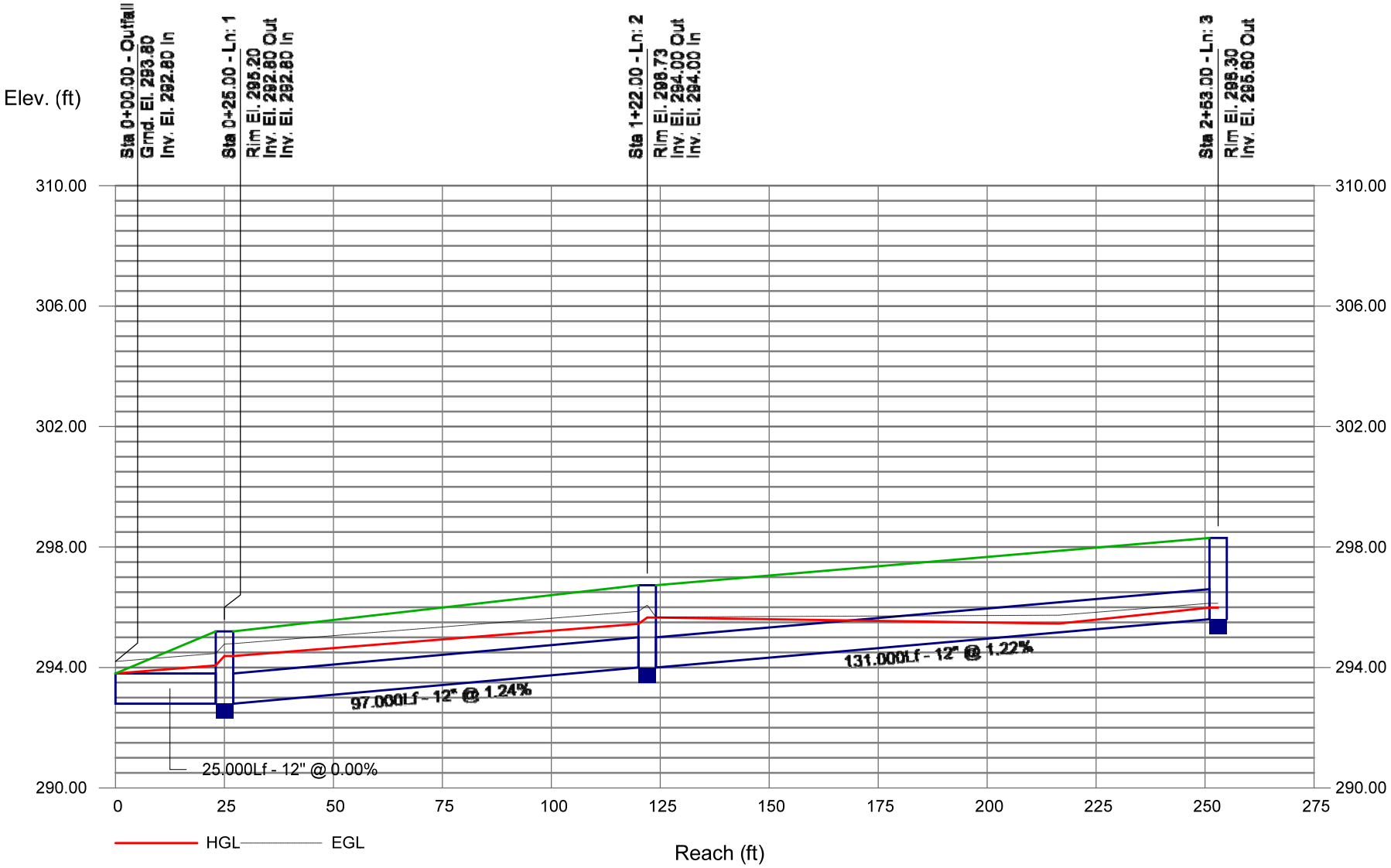
Col. 22 Energy loss. Average Sf/100 x Line Length (Col. 21/100 x Col. 12). Equals (EGL upstream - EGL downstream) +/- tolerance.

Col. 23 The junction loss coefficient (K).

Col. 24 Minor loss. (Col. 23 x Col. 18). Is added to upstream HGL and used as the starting HGL for the next upstream line(s).

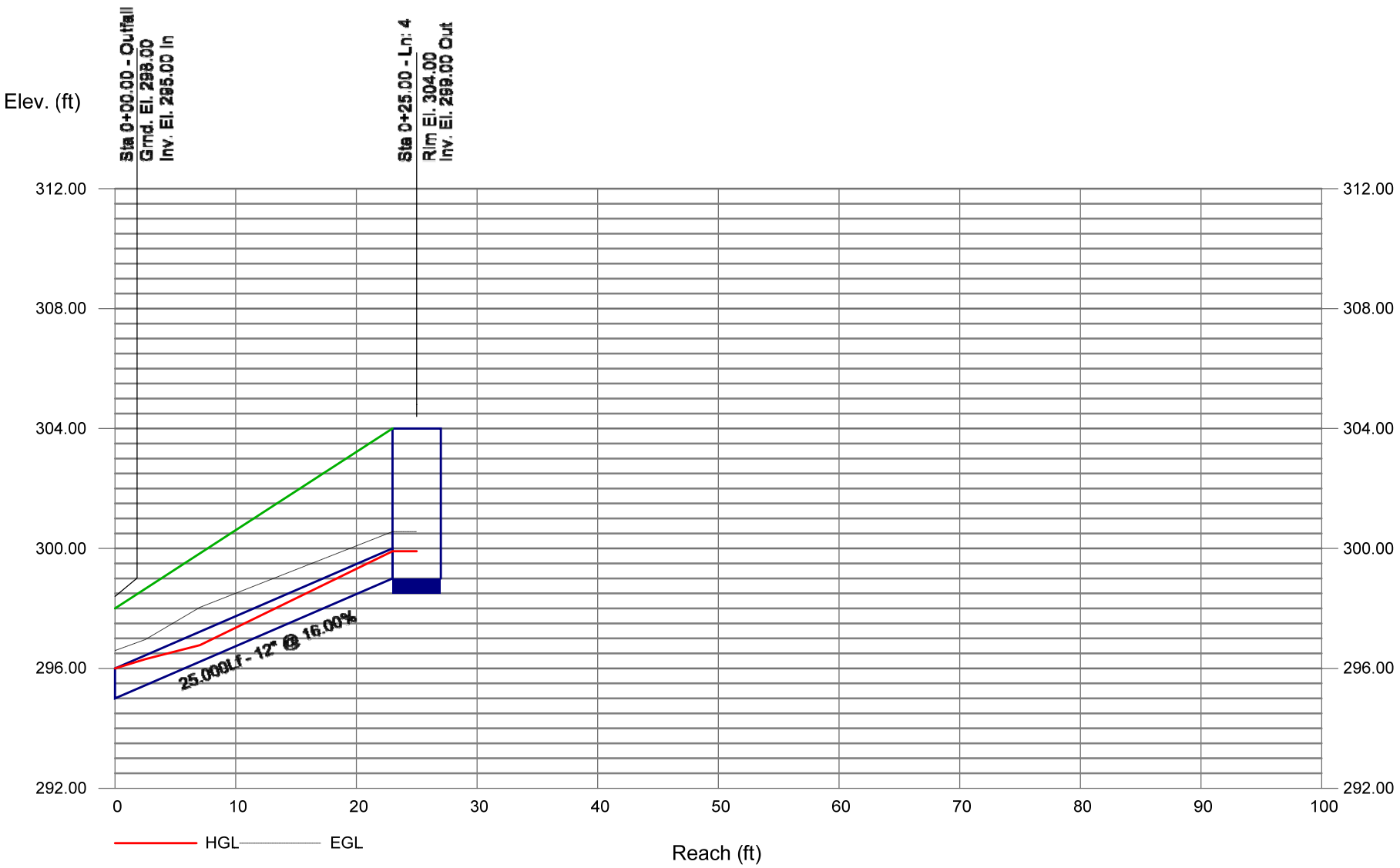
Storm Sewer Profile

Proj. file: Storm System.stm



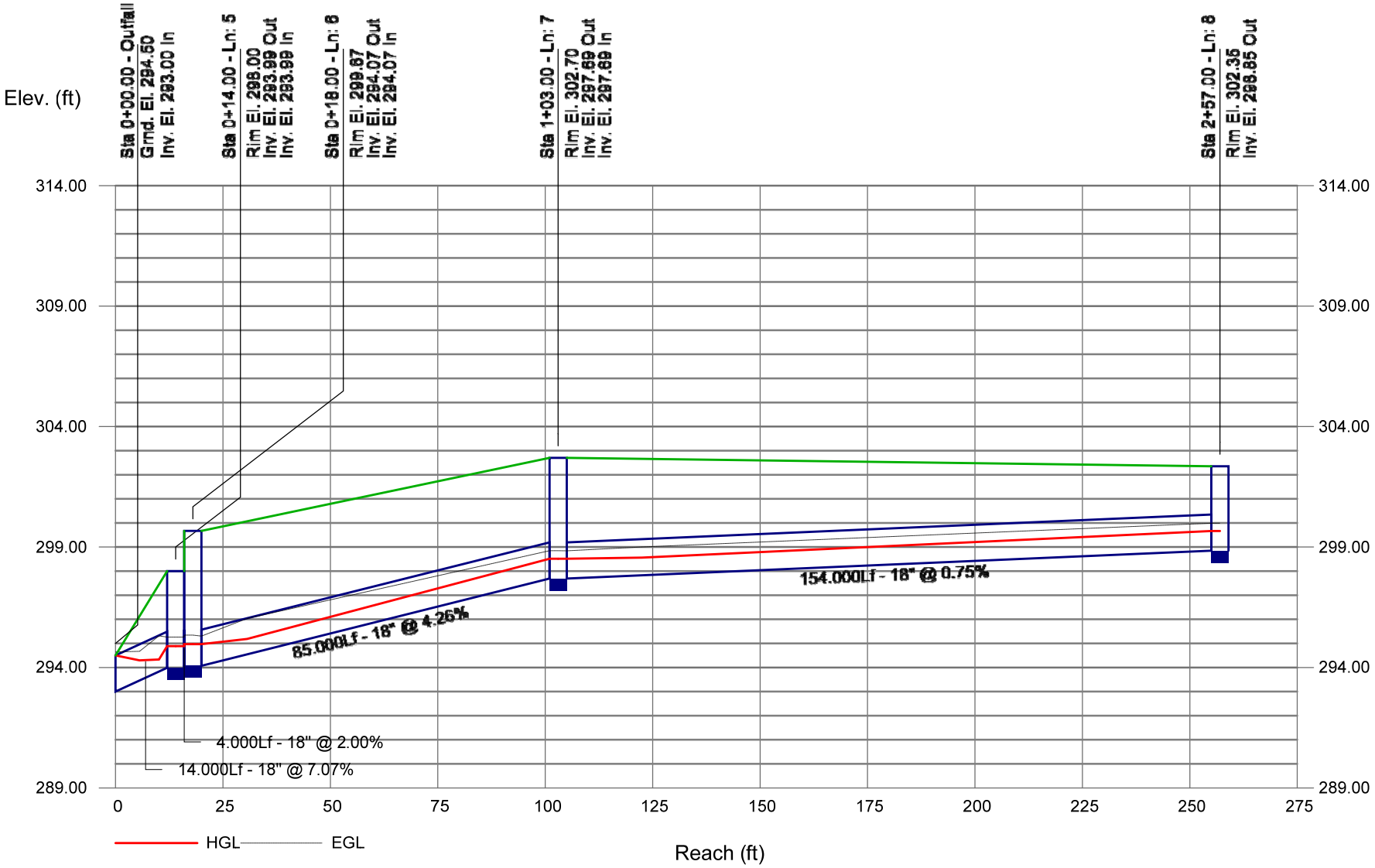
Storm Sewer Profile

Proj. file: Storm System.stm



Storm Sewer Profile

Proj. file: Storm System.stm



Project **5 Victoria Drive Development** By **AWC** Date **04/27/21**

Location **5 Victoria Drive, Monroe, CT** Checked **KMS** Date **04/27/21**

Bold one: Present **Developed** **Proposed Subcatchment Area 1**

1. Runoff Coefficient ©

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	C [1]			Area [x] acres [ ] mi^2 [ ] %	Product of C x area
A	Impervious Area	0.95			0.090	0.09
A	Pervious Area	0.35			0.000	0.00
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one C source per line				Totals =	0.090	0.09

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{0.09}{0.09} =$ 0.95 Use C = **0.95**

2. Runoff

		Storm 1	Storm 2	Storm 3
Frequency	yr			
Rainfall, P (24-hour)	in			
S				
Runoff, Q	in			

(Use P and CN with Table 2-1, Fig. 2-1,

Project **5 Victoria Drive Development** By **AWC** Date **04/27/21**

Location **5 Victoria Drive, Monroe, CT** Checked **KMS** Date **04/27/21**

Bold one: Present **Developed** **Proposed Subcatchment Area 2**

1. Runoff Coefficient ©

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	C [1]			Area [x] acres [ ] mi^2 [ ] %	Product of C x area
A	Impervious Area	0.95			0.390	0.37
A	Pervious Area	0.35			0.010	0.00
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one C source per line				Totals =	0.400	0.37

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{0.37}{0.40} =$ 0.94 Use C = **0.94**

2. Runoff

		Storm 1	Storm 2	Storm 3
Frequency	yr			
Rainfall, P (24-hour)	in			
S				
Runoff, Q	in			

(Use P and CN with Table 2-1, Fig. 2-1,

Project **5 Victoria Drive Development** By **AWC** Date **04/27/21**

Location **5 Victoria Drive, Monroe, CT** Checked **KMS** Date **04/27/21**

Bold one: Present **Developed** **Proposed Subcatchment Area 3**

1. Runoff Coefficient ©

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	C [1]			Area [x] acres [ ] mi^2 [ ] %	Product of C x area
A	Impervious Area	0.95			0.110	0.10
A	Pervious Area	0.35			0.010	0.00
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one C source per line				Totals =	0.120	0.11

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{0.11}{0.12} =$ 0.90 Use C = **0.90**

2. Runoff

		Storm 1	Storm 2	Storm 3
Frequency	yr			
Rainfall, P (24-hour)	in			
S				
Runoff, Q	in			

(Use P and CN with Table 2-1, Fig. 2-1,

Project **5 Victoria Drive Development** By **AWC** Date **04/27/21**

Location **5 Victoria Drive, Monroe, CT** Checked **KMS** Date **04/27/21**

Bold one: Present **Developed** **Proposed Subcatchment Area 4**

1. Runoff Coefficient ©

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	C [1]			Area [x] acres [ ] mi^2 [ ] %	Product of C x area
A	Impervious Area	0.95			0.040	0.04
A	Pervious Area	0.35			0.020	0.01
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one C source per line				Totals =	0.060	0.05

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{0.05}{0.06} =$ 0.75 Use C = **0.75**

2. Runoff

		Storm 1	Storm 2	Storm 3
Frequency	yr			
Rainfall, P (24-hour)	in			
S				
Runoff, Q	in			

(Use P and CN with Table 2-1, Fig. 2-1,

Project **5 Victoria Drive Development** By **AWC** Date **04/27/21**

Location **5 Victoria Drive, Monroe, CT** Checked **KMS** Date **04/27/21**

Bold one: Present **Developed** **Proposed Subcatchment Area 5**

1. Runoff Coefficient ©

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	C [1]			Area [x] acres [ ] mi^2 [ ] %	Product of C x area
A	Impervious Area	0.95			0.450	0.43
A	Pervious Area	0.35			0.060	0.02
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one C source per line				Totals =	0.510	0.45

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{0.45}{0.51} =$ 0.88 Use C = **0.88**

2. Runoff

		Storm 1	Storm 2	Storm 3
Frequency	yr			
Rainfall, P (24-hour)	in			
S				
Runoff, Q	in			

(Use P and CN with Table 2-1, Fig. 2-1,

Project **5 Victoria Drive Development** By **AWC** Date **04/27/21**

Location **5 Victoria Drive, Monroe, CT** Checked **KMS** Date **04/27/21**

Bold one: Present **Developed** **Proposed Subcatchment Area 6**

1. Runoff Coefficient ©

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	C [1]			Area [x] acres [ ] mi^2 [ ] %	Product of C x area
A	Impervious Area	0.95			0.510	0.48
A	Pervious Area	0.35			0.000	0.00
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
1 Use only one C source per line				Totals =	0.510	0.48

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{0.48}{0.51} =$ 0.95 Use C = **0.95**

2. Runoff

		Storm 1	Storm 2	Storm 3
Frequency	yr			
Rainfall, P (24-hour)	in			
S				
Runoff, Q	in			

(Use P and CN with Table 2-1, Fig. 2-1,

Project: 5 Victoria Drive
Location: Monroe, CT
Prepared For: Solli Engineering

Purpose:

To calculate the Water Quality Flow (WQF) associated with Water Quality Volume (WQV). The WQV results in the capture and treatment of runoff associated with the first inch of rainfall.

Reference: Connecticut Stormwater Quality Manual and United States Department of Agriculture Natural Resources Conservation Service TR-55 Manual.

Given:

Structure Name	A (acres)	Percent Imp. (%)*	A ($miles^2$)	Runoff Coefficient	t_c (min)*	t_c (hr)
WQS-1	0.69	87.00	0.00108	0.833	6.0	0.10

* A minimum t_c of 6 minutes (0.1 hours) should be used.

Procedure: The Water Quality Flow (WQF) is calculated using the Water Quality Volume (WQV).

1. Compute WQV in watershed inches using the following equation:

$$WQV = P * R * A$$

where: WQV = water quality volume
P = 1"
R = volumetric runoff coefficient = 0.05 + 0.009*percent impervious
A = Area (acres)

Structure Name	R	P (in)	WQV (ac-in)	WQV (ac-ft)	WQV (cu ft)
WQS-1	0.833	1.00	0.575	0.048	2086

2. Compute the NRCS Runoff Curve Number (CN) using the following equation, or graphically using Figure 2-1 from TR-55 (USDA, 1986):

$$CN = 1000 / [10+5P+10Q-10(Q^2+1.25QP)^{1/2}]$$

where: CN = Runoff Curve Number
P = 1"
Q = runoff depth (watershed inches)

Structure Name	Q (in)	CN
WQS-1	0.833	98

3. Using computed CN, read initial abstraction (I_a) from Table 4-1 in Chapter 4 of TR-55; compute I_a/P, interpolating when appropriate.

Structure Name	I_a (in)	I_a/P
WQS-1	0.041	0.041

4. Compute the time of concentration (t_c) in hours and the drainage area in square miles.

Structure Name	t_c (hr)	A (miles^2)
WQS-1	0.100	0.00108

5. Read the unit peak discharge (q_u) from Exhibit 4-III in Chapter 4 of TR-55 for appropriate t_c and Type III rainfall distribution.

Rainfall Distribution Type:	III

Structure Name	t_c (hr)	I_a/P	q_u (csm/in)
WQS-1	0.100	0.041	700

6. Compute the water quality flow (WQF) from the following equation:

$$\mathbf{WQF = (q_u)*(A)*(Q)}$$

where: WQF = water quality flow (cfs)
q_u = unit peak discharge (cfs/mi^2/inch)
A = drainage area (mi^2)
Q = runoff depth (watershed inches)

Structure Name	q_u (csm/in)	A (miles^2)	Q (in)	WQF (cfs)	Device[1]
WQS-1	700	0.00108	0.833	**0.63**	**FD-4HC**

[1]Proposed Device is sized so that the required site WQF is less than the treatment flow at which the device achieves at least 80% TSS removal, as documented by enclosed test data.

First Defense® High Capacity

A Simple Solution for your Trickiest Sites

Product Profile

The First Defense® High Capacity is an enhanced vortex separator that combines an effective stormwater treatment chamber with an integral peak flow bypass. It efficiently removes sediment total suspended solids (TSS), trash and hydrocarbons from stormwater runoff without washing out previously captured pollutants. The First Defense® High Capacity is available in several model configurations to accommodate a wide range of pipe sizes, peak flows and depth constraints (**Table 1**, next page).

Applications

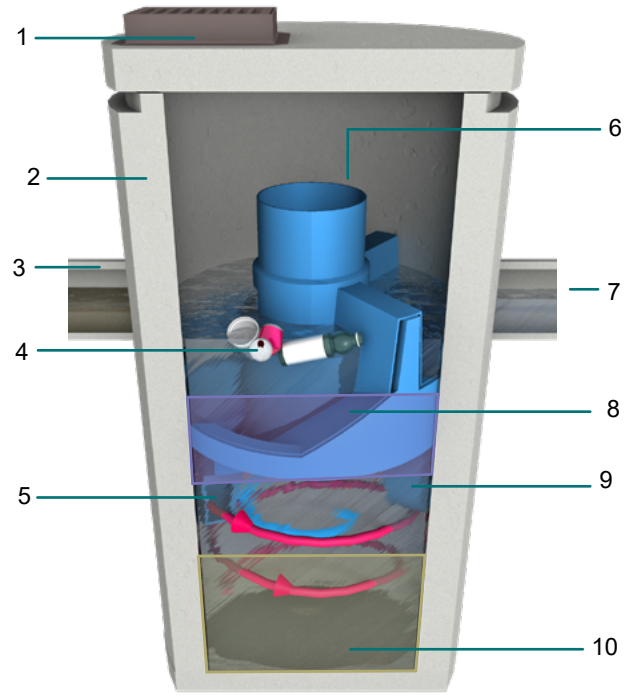
- Stormwater treatment at the point of entry into the drainage line
- Sites constrained by space, topography or drainage profiles with limited slope and depth of cover
- Retrofit installations where stormwater treatment is placed on or tied into an existing storm drain line
- Pretreatment for filters, infiltration and storage

Advantages

- Inlet options include surface grate or multiple inlet pipes
- Integral high capacity bypass conveys large peak flows without the need for "offline" arrangements using separate junction manholes
- Proven to prevent pollutant washout at up to 450% of its treatment flow
- Long flow path through the device ensures a long residence time within the treatment chamber, enhancing pollutant settling
- Delivered to site pre-assembled and ready for installation

Verified by NJCAT and NJDEP

Fig.1 The First Defense® High Capacity has internal components designed to efficiently capture pollutants and prevent washout at peak flows.



Components

1. Inlet Grate (optional)
2. Precast chamber
3. Inlet Pipe (optional)
4. Floatables Draw Off Slot (not pictured)
5. Inlet Chute
6. Internal Bypass
7. Outlet pipe
8. Oil and Floatables Storage
9. Outlet chute
10. Sediment Storage Sump

How it Works

The First Defense® High Capacity has internal components designed to remove and retain gross debris, total suspended solids (TSS) and hydrocarbons (**Fig.1**).

Contaminated stormwater runoff enters the inlet chute from a surface grate and/or inlet pipe. The inlet chute introduces flow into the chamber tangentially to create a low energy vortex flow regime (magenta arrow) that directs sediment into the sump while oils, floating trash and debris rise to the surface.

Treated stormwater exits through a submerged outlet chute located opposite to the direction of the rotating flow (blue arrow). Enhanced vortex separation is provided by forcing the rotating flow within the vessel to follow the longest path possible rather than directly from inlet to outlet.

Higher flows bypass the treatment chamber to prevent turbulence and washout of captured pollutants. An internal bypass conveys infrequent peak flows directly to the outlet eliminating the need for, and expense of, external bypass control structures. A floatables draw off slot functions to convey floatables into the treatment chamber prior to bypass.

Hydro International, 94 Hutchins Drive, Portland, ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212
Email: stormwaterinquiry@hydro-int.com Web: www.hydro-int.com

First Defense® High Capacity

Sizing & Design

This adaptable online treatment system works easily with large pipes, multiple inlet pipes, inlet grates and now, contains a high capacity bypass for the conveyance of large peak flows. Designed with site flexibility in mind, the First Defense® High Capacity allows engineers to maximize available site space without compromising treatment level.

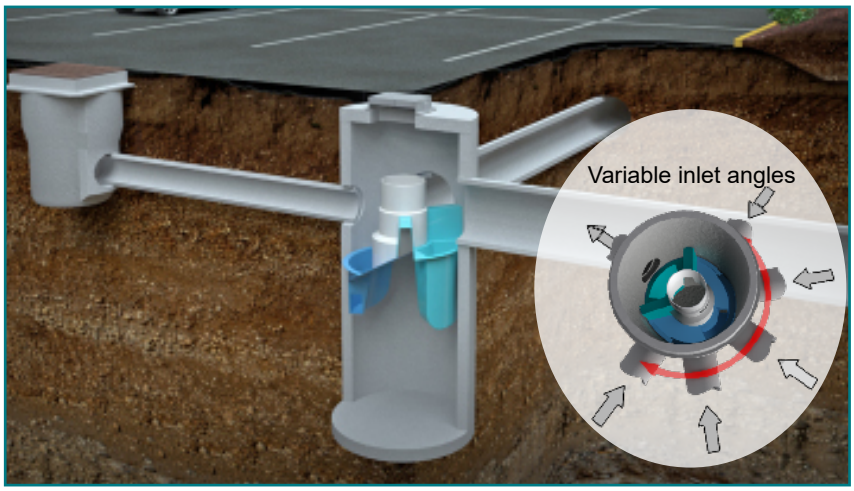


Fig 2. Works with multiple inlet pipes and grates

Inspection and Maintenance

Nobody maintains our systems better than we do. To ensure optimal, ongoing device performance, be sure to recommend Hydro International as a preferred service and maintenance provider to your clients.

Call **1 (800) 848-2706** to schedule an inspection and cleanout or learn more at **hydro-int.com/service**

Sizing Calculator for Engineers



This simple online tool will recommend the best separator, model size and online/offline arrangement based on site-specific data entered by the user.

Go to hydro-int.com/sizing to access the tool.



Fig 3. Maintenance is done with a vactor truck

Table 1. First Defense® High Capacity Design Criteria.

First Defense® High Capacity Model Number	Diameter	Typical TSS Treatment Flow Rates		Peak Online Flow Rate	Maximum Pipe Diameter[1]	Oil Storage Capacity	Typical Sediment Storage Capacity[2]	Minimum Distance from Outlet Invert to Top of Rim[3]	Standard Distance from Outlet Invert to Sump Floor
		NJDEP Certified	110µm						
	(ft / m)	(cfs / L/s)	(cfs / L/s)	(cfs / L/s)	(in / mm)	(gal / L)	(yd^3 / m^3)	(ft / m)	(ft / m)
FD-3HC	3 / 0.9	0.84 / 23.7	1.06 / 30.0	15 / 424	18 / 457	125 / 473	0.4 / 0.3	2.0 - 3.5 / 0.6 - 1.0	3.71 / 1.13
FD-4HC	4 / 1.2	1.50 / 42.4	1.88 / 53.2	18 / 510	24 / 600	191 / 723	0.7 / 0.5	2.3 - 3.9 / 0.7 - 1.2	4.97 / 1.5
FD-5HC	5 / 1.5	2.35 / 66.2	2.94 / 83.2	20 / 566	24 / 600	300 / 1135	1.1 / .84	2.5 - 4.5 / 0.7 - 1.3	5.19 / 1.5
FD-6HC	6 / 1.8	3.38 / 95.7	4.23 / 119.8	32 / 906	30 / 750	496 / 1,878	1.6 / 1.2	3.0 - 5.1 / 0.9 - 1.6	5.97 / 1.8
FD-8HC	8 / 2.4	6.00 / 169.9	7.52 / 212.9	50 / 1,415	48 / 1219	1120 / 4239	2.8 / 2.1	3.0 - 6.0 / 0.9 -1.8	7.40 / 2.2

[1]Contact Hydro International when larger pipe sizes are required.
[2]Contact Hydro International when custom sediment storage capacity is required.
[3]Minimum distance for models depends on pipe diameter.

Hydro International, 94 Hutchins Drive, Portland, ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212
Email: stormwaterinquiry@hydro-int.com Web: www.hydro-int.com

Technical Abstract
First Defense® - High Capacity

NJCAT Verified 80% TSS Removal for 50 to 150 µm Particle Size Range

Introduction

Hydro International has a state-of-the-art hydraulics and test facility that is used both to develop products and to evaluate performance. Through controlled testing using industry standard test protocols, Hydro's treatment products are evaluated under varying hydraulic and sediment load conditions. With a known drainage area or water quality flow rate, these test results are used to benchmark treatment objectives and to select the correct model size.

A common stormwater treatment goal for manufactured treatment devices is to reduce the Total Suspended Solids (TSS) concentration by at least 80%. To comply with this goal, a silica-based test sand with known particle size gradation (PSD) and density is injected into the treatment system at different flow rates. With known TSS concentrations and particle sizes before and after treatment, efficiency curves are plotted and used to predict TSS reductions for a range of particle sizes.

OK110 Silica Test Sand

U.S. Silica OK110 is a common test sand that has been used by the industry but is no longer available. However, its PSD can be modelled from a blend of silica sands having a wide range of particle sizes. This abstract summarizes test results based on a particle size range similar to OK110 for the First Defense® High Capacity (FDHC). All test protocols and results have been independently verified by the New Jersey Corporation for Advanced Technology (NJCAT). The full report can be viewed at: FDHC_PSD_Removal_Verification_Report_9-16.pdf

First Defense High Capacity (FDHC)

The FDHC (Figure 1) has patented flow modifying internal components that create a gentle swirling flow path within the Vortex Chamber. The rotating flow creates low energy vortex forces that supplement gravitational settling forces to enhance separation of pollutants.

The internal components are fit into precast manholes to collect runoff as part of typical drainage network system. During rain events, flow enters either from a surface inlet grate or inlet pipe. As flow enters the manhole, components divert flow and pollutants into a Vortex Chamber beneath a separation module, that includes both Inlet\Outlet Chutes and Bypass Weirs. The internal Bypass Weirs divert peak flows over the separation module and away from the Vortex Chamber where pollutants are collecting. This prevents high velocities from re-suspending captured pollutants during infrequent but large storm events.

Capable of providing high pollutant removals for a wide range of flow rates and pipe sizes, the FDHC can be installed ether online or offline depending on pipes and peak flows. Its efficiency and simplicity make it economical to install and maintain.

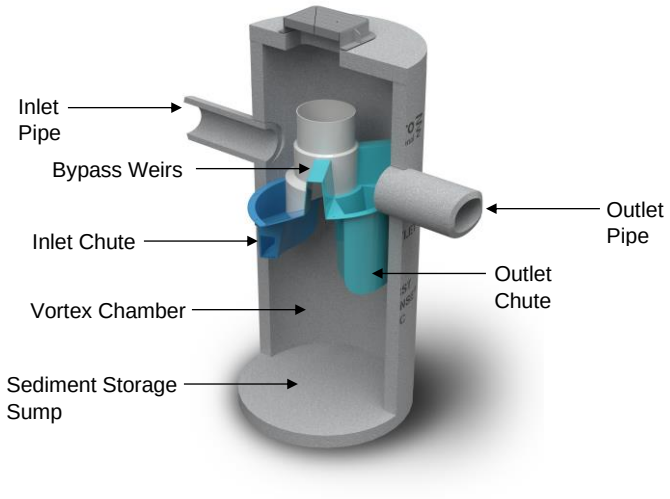


Figure 1 - First Defense High Capacity

Laboratory Testing Arrangement

The laboratory setup (Figure 2) consisted of a recirculating closed loop system with an 8-inch (200 mm) submersible Flygt pump that conveyed water from a 23,000 gal (87,064 L) reservoir through a PVC pipe network to the 4-ft (1.2m) FDHC. The flow rate of the pump was controlled by a GE Fuji Electric AF-300 P11 Adjustable Frequency Drive and measured by an EMCO Flow Systems 4411e Electromagnetic Flow Transmitter. Test sand was injected into the incoming flow stream using a volumetric screw feeder situated 10-ft prior to entering the test unit.

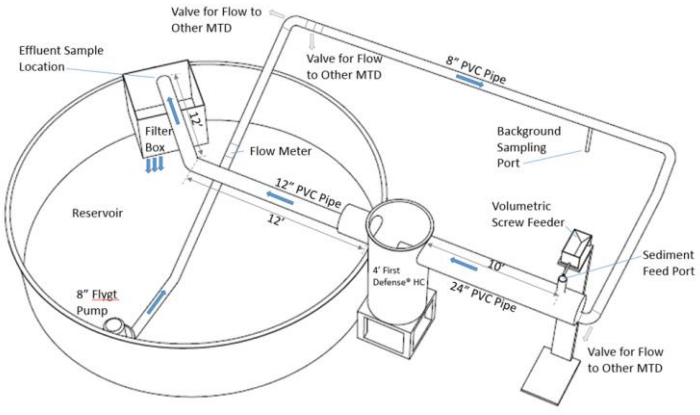


Figure 2 - Set-up of the Portland, Maine hydraulic testing facility

Test Sediment

The feed sediment injected into the inlet during removal efficiency testing was a blend of commercially available silica sands ranging from 2 µm to 1,000 µm. The PSD of the test sediment was analyzed by an independent laboratory in accordance with ASTM D 422-63.

First Defense® - High Capacity

To evaluate the performance consistent with OK110 test sand, results were analyzed from the particle sizes range of 50 µm to 150 µm (D_{50}=108µm). A comparison between the 50 – 150 µm range and OK110 gradation is shown in Figure 3. The 50 – 150 µm test sand gradation is overall finer than OK110 between 50 µm and 100 µm. For example, the test sand had 15% finer than 75 µm compared to the OK110 PSD that had only 3% less than 75 microns. Given that finer particles are more difficult to remove, performance results for 50 to 150 µm PSD is considered conservative.

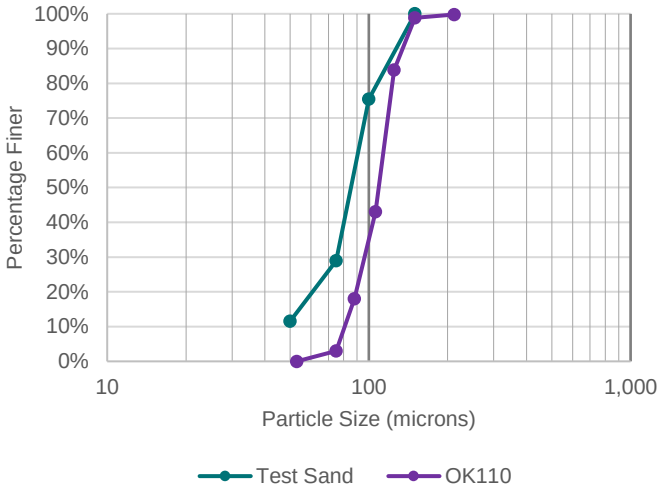


Figure 3 - Particle Size Distribution Comparison

Removal Efficiency Testing

Removal efficiency testing with the feed sediment was conducted in accordance with Section 5 of the NJDEP Laboratory Protocol for Manufactured Treatment Devices. Five flow rates ranging from 0.38 cfs to 1.88 cfs were tested to assess the performance trend.

The test sediment was fed into the flow stream at a rate that was equivalent to 200 mg/L. The average influent TSS concentration was calculated using the total sediment mass and volume of water added during dosing. The influent concentration for each particle size band was calculated using the percentage of particles in each particle size band and known average inlet concentration. Three time-spaced effluent grab samples were composited and analyzed using laser diffraction (ISO 13320) to evaluate the effluent particle sizes.

Table 1 – 50 – 150 µm Particle Size Range Test Results

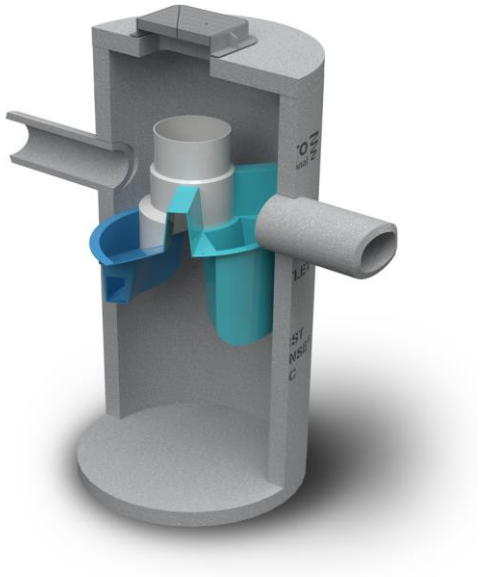
Flow	Inlet Mass	Outlet Mass	Removal
cfs (L/s)	grams	grams	%
0.38 (10.8)	1,554.6	107.1	93.1
0.75 (21.2)	1,761.0	150.8	91.4
1.13 (32.0)	1,872.8	127.2	93.2
1.5 (42.5)	2,203.2	226.7	89.7
1.88 (53.2)	2,366.6	303.8	87.2

The average effluent sediment concentration of the three composited samples was also measured for each flow rate in accordance with ASTM D3977-97. The effluent concentration for each particle size band was then calculated using the average effluent composite concentration and percentage of particles in each particle size band.

Percent removed at each of the five tested flow rates is shown in Table 1. Inlet concentrations of the OK110 particle size range varied from 79-84 mg/L compared to 4-8.5 mg/L at the outlet. As expected, the highest concentration measured at the outlet was at the highest tested flow rate of 1.88 cfs (53.2 L/s). In general, the 4-ft FDHC removed greater than 85% of the OK110 particle size range for all tested flow rates. Table 2 provides “Treatment Flow Rates” for the available models.

Table 2 – FDHC Treatment Flow Rate for > 85% OK110

Model:	FD-3HC	FD-4HC	FD-5HC	FD-6HC	FD-8HC
Size:	3 ft (900 mm)	4 ft (1.2 m)	5 ft (1.5 m)	6 ft (1.8 m)	8 ft (2.4m)
cfs:	1.06	1.88	2.94	4.23	7.52
L/s:	30.02	53.2	83.3	119.8	212.9



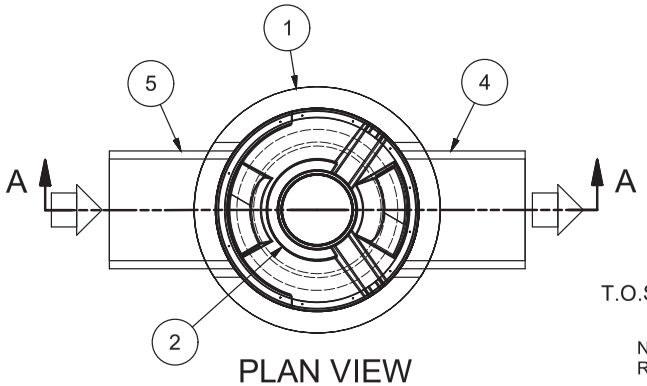
For design purposes the selected model’s Treatment Flow Rate must be equal or greater to the site’s required Water Quality Flow Rate. The peak flow rate and maximum pipe size must be considered to determine whether an online or offline configuration is appropriate. Full removal curves are available on request.

Refer First Defense product information brochure or visit www.hydro-int.com/us for more information

Hydro International. 94 Hutchins Drive. Portland. ME 04102
Tel: 207.756.6200 Fax: 207.756.6212
Email: stormwaterinquiry@hydro-int.com Web: www.hydro-int.com

Stormwater Solutions

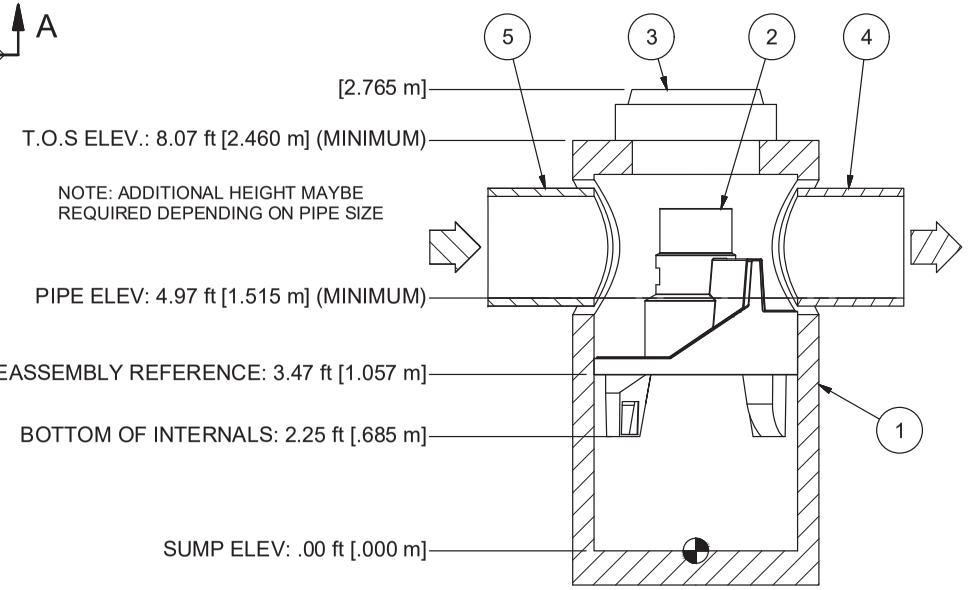
© Hydro International FDHC_TA_110um_G2001



PLAN VIEW

HYDRO FRAME AND COVER (INCLUDED)

GRADE RINGS BY OTHERS AS REQUIRED



SECTION A-A

PRODUCT SPECIFICATION:

1. PEAK HYDRAULIC FLOW: 18.0 cfs (510 l/s)
2. MIN SEDIMENT STORAGE CAPACITY: 0.7 cu. yd. (0.5 cu. m.)
3. OIL STORAGE CAPACITY: 191 gal. (723 liters)
4. MAXIMUM INLET/OUTLET PIPE DIAMETERS: 24 in. (600 mm)
5. THE TREATMENT SYSTEM SHALL USE AN INDUCED VORTEX TO SEPARATE POLLUTANTS FROM STORMWATER RUNOFF.
6. FOR MORE PRODUCT INFORMATION INCLUDING REGULATORY ACCEPTANCES, PLEASE VISIT https://hydro-int.com/en/products/first-defense

GENERAL NOTES:

1. General Arrangement drawings only. Contact Hydro International for site specific drawings.
2. The diameter of the inlet and outlet pipes may be no more than 24".
3. Multiple inlet pipes possible (refer to project plan).
4. Inlet/outlet pipe angle can vary to align with drainage network (refer to project plan.s)
5. Peak flow rate and minimum height limited by available cover and pipe diameter.
6. Larger sediment storage capacity may be provided with a deeper sump depth.

PARTS LIST

ITEM	QTY	SIZE (in)	SIZE (mm)	DESCRIPTION
1	1	48	1200	I.D. PRECAST MANHOLE
2	1			INTERNAL COMPONENTS (PRE-INSTALLED)
3	1			FRAME AND COVER or GRATE
4	1	24 (MAX)	600 (MAX)	OUTLET PIPE (BY OTHERS)
5	1	24 (MAX)	600 (MAX)	INLET PIPE (BY OTHERS)

ANY WARRANTY GIVEN BY HYDRO INTERNATIONAL WILL APPLY ONLY TO THOSE ITEMS SUPPLIED BY IT. ACCORDINGLY HYDRO INTERNATIONAL CANNOT ACCEPT ANY RESPONSIBILITY FOR ANY STRUCTURE, PLANT, OR EQUIPMENT, (OR THE PERFORMANCE THERE OF) DESIGNED, BUILT, MANUFACTURED, OR SUPPLIED BY ANY THIRD PARTY. HYDRO INTERNATIONAL HAVE A POLICY OF CONTINUOUS DEVELOPMENT AND RESERVE THE RIGHT TO AMEND THE SPECIFICATION. HYDRO INTERNATIONAL CANNOT ACCEPT LIABILITY FOR PERFORMANCE OF ITS EQUIPMENT, (OR ANY PART THEREOF), IF THE EQUIPMENT IS SUBJECT TO CONDITIONS OUTSIDE ANY DESIGN SPECIFICATION. HYDRO INTERNATIONAL OWNS THE COPYRIGHT OF THIS DRAWING, WHICH IS SUPPLIED IN CONFIDENCE. IT MUST NOT BE USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS SUPPLIED AND MUST NOT BE REPRODUCED, IN WHOLE OR IN PART, WITHOUT PRIOR PERMISSION IN WRITING FROM HYDRO INTERNATIONAL.

PROJECTION

IF IN DOUBT ASK

COMMENTS:

1. MANHOLE WALL AND SLAB THICKNESSES ARE NOT TO SCALE.

2. CONTACT HYDRO INTERNATIONAL FOR A BOTTOM OF STRUCTURE ELEVATION PRIOR TO SETTING FIRST DEFENSE MANHOLE.

3. CONTRACTOR TO CONFIRM RIM, PIPE INVERTS, PIPE DIA. AND PIPE ORIENTATION PRIOR TO RELEASE OF UNIT TO FABRICATION.

DATE:	SCALE:
11/8/2019	1:30

DRAWN BY:	CHECKED BY:	APPROVED BY
JLL3	-	

Title

4-ft DIAMETER

FIRST DEFENSE HIGH CAPACITY

GENERAL ARRANGEMENT

Hydro International

hydro-int.com

HYDRO INTERNATIONAL

DO NOT SCALE DRAWING
STEEL FABRICATION TOLERANCES
UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES.

LINEAR	ANGULAR
000 - 012in = ±0.04in	000 - 120in = ±1°
012 - 024in = ±0.06in	120 - 240in = ±0.5°
024 - 048in = ±0.08in	240in >>>> = ±0.25°
048 - 120in = ±0.12in	
120in >>>> = ±0.20in	

WEIGHT:	MATERIAL:
N/A	

STOCK NUMBER:

DRAWING NO.: 4FDHC_FDHC GA STD

SHEET SIZE:	SHEET:	Rev:
B	1 OF 1	-

Turning Water Around…®

First Defense® Materials and Design

A. Structures for precast stormwater treatment systems shall conform to ASTM C478, C857 and C858 and meet the following additional requirements:

   1. In all cases the wall thickness shall be no less than the minimum thickness necessary to sustain HS20-44 loading requirements as determined by a licensed professional engineer.

   2. Sections shall have tongue and groove or ship-lap joints with butyl mastic sealant conforming to ASTM C 990.

   3. Cement shall be Type II or Type III Portland cement conforming to ASTM C150.

   4. Aggregates shall conform to ASTM C33

   5. All sections shall be cured by an approved method. Sections shall not be shipped until the concrete has attained a compressive strength of 4,000 psi and shall have a 28 day compressive strength of 5000 psi.

   6. Pipe openings shall be sized to accept pipes of the specified size(s) and material(s), and shall be sealed by the Contractor with hydraulic cement conforming to ASTM C595M.

B. Internal stainless steel components shall be grade 304 stainless steel in accordance with ASTM A314.

C. 4’ & 6’ diameter internal plastic components shall be rotationally molded from high density polyethylene.

D. Casting for manhole frames and covers shall be in accordance with ASTM A48, CL. 35B and AASHTO M306. Castings shall be placed on top of the structure per the requirements of the project engineer.

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com
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WATER QUALITY VOLUME (WQV) COMPUTATIONS FOR DRAIANGE BASIN PDA-3

Project: Proposed Site Redevelopment
Location: 5 Victoria Drive, Monroe, Connecticut
Date: 04/28/21

Water Quality Volume Calculations:

$WQV = \frac{(1")(R)(A)}{12}$

Where:
WQV = water quality volume (ac-ft)
R = volumentric runoff coefficient = 0.05+0.009(I)
I = percent impervious cover (see below)
A = site area in acres

$I = \frac{A_{IMP}}{A_{TOT}} \times 100$

Where:
I = percent impervious cover
A_{IMP} = area of impervious cover
A_{TOT} = total area of watershed

Watershed Description:	PDA-3		
Area of impervious coverage, A_{IMP}	0.57	Acres	
Total area of watershed, A_{TOT}	1.07	Acres	
Percent impverious cover, I	53.27	%	
Volumentric runoff coefficient, R	0.53		
Water Quality Volume, WQV	0.047	ac-ft	2,056 cf

Groundwater Recharge Volume Calculations:

GRv = (P) (D) (I) / 12 *Section 7, Table 7-1, Summary of Stormwater Treatment Practice Sizing Criteria per 2004 Connecticut Stormwater Quality Manual*

GRv = Groundwater Recharge Volume (acre-feet)
P = 1" (90% rainfall event)
D = Recharge Factor, see Table
I = Impervious Area (acres)

Hydrologic Soil Group	Recharge Factor
A	0.60
B	0.40
C	0.25
D	0.10

Total Proposed Impervious Area
24,829 sq.ft.
0.57 acres

HSG -A
Recharge Factor
0.60

GRv = 0.029 acre-feet
1,241 ft^3

Water Quality Flow Calculations:

WQf = (qu)(A)(Q)
WQf = Peak Discharge for water quality event (cfs)
qu = unit peak discharge (cfs/mi^2 /in)
A = drainage area (square miles)
Q = runoff volume (WQv/A) (watershed inches)

$CN = 1000 / [10 + 5*P + 10*Q - 10*(Q^2 + 1.25*Q*P)^{1/2}]$ *Chapter 7 of 2004 Connecticut Stormwater Quality Manual*

P=	1	inches
Q=	0.320	inches
WQv =	0.029	acre-ft
Total Drainage Area =	1.07	acre
CN =	89.98	

Ia = 200/CN -2

Ia = 0.223

Compute Ia/P

P=	1	inches
Ia / P =	0.22	

Tc= 6 min
0.100 hr

Exhibit 4-III

Tc=	0.100
Ia / P =	0.22
q_u =	600

WQf = (qu)(A)(Q)

qu =	600	csm/in
A =	0.002	mi^2 (acre/640)
Q =	0.320	inches
WQf =	0.32	cfs

APPENDIX D
Septic Design

Subsurface Sewage Disposal System Plan, Prepared By Spath-Bjorklund Associates
Test Pit Observation Logs
Septic Design Memorandum to the Monroe Health Department

NOTES:

THIS PLAN IS SUBJECT TO THE FOLLOWING GENERAL CONDITIONS:

LAND DISTURBANCE WILL BE KEPT TO A MINIMUM. RESTABILIZATION WILL BE SCHEDULED AS SOON AS PRACTICABLE.

HAYBALE FILTERS WILL BE INSTALLED AT ALL CULVERT OUTLETS AND ALONG THE TOE OF ALL CRITICAL CUT AND FILL SLOPES.

ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARDS & SPECIFICATIONS OF THE EROSION & SEDIMENT CONTROL HANDBOOK.

EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED PRIOR TO CONSTRUCTION WHENEVER POSSIBLE.

ALL CONTROL MEASURES WILL BE MAINTAINED IN EFFECTIVE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD.

ADDITIONAL CONTROL MEASURES WILL BE INSTALLED DURING THE CONSTRUCTION PERIOD IF NECESSARY OR REQUIRED.

SEDIMENT REMOVED FROM THE CONTROL STRUCTURES WILL BE DISPOSED OF IN A MANNER WHICH IS CONSISTENT WITH THE INTENT OF THIS PLAN.

THE OWNER IS ASSIGNED THE RESPONSIBILITY FOR IMPLEMENTING THIS EROSION AND SEDIMENT CONTROL PLAN. THIS RESPONSIBILITY INCLUDES THE INSTALLATION AND MAINTENANCE OF CONTROL MEASURES, INFORMING ALL PARTIES ENGAGED ON THE CONSTRUCTION SITE THE REQUIREMENTS AND OBJECTIVES OF THE PLAN, NOTIFYING THE PLANNING & ZONING OFFICE OF ANY TRANSFER OF THIS RESPONSIBILITY AND FOR CONVEYING A COPY OF THE EROSION & SEDIMENT CONTROL PLAN IF THE TITLE TO THE LAND IS TRANSFERRED.

THE BUILDING AND SYSTEM LOCATION SHOWN IS ONE OF MANY POSSIBLE LAYOUTS. HOWEVER ANY VARIATION FROM THIS PLAN IS TO BE APPROVED BY A PROFESSIONAL ENGINEER.

ALL CONSTRUCTION METHODS, MATERIALS AND SYSTEM INSTALLATIONS ARE TO CONFORM TO ALL APPLICABLE LOCAL AND STATE REGULATIONS.

TOPOGRAPHIC DATA AND PROPERTY LINES SHOWN ARE ONLY APPROXIMATE AND ARE SUBJECT TO THE REVISION WHICH AN ACTUAL FIELD SURVEY MAY INDICATE. TOPOGRAPHIC DATA IS BASED ON THE SUBDIVISION GRADING PLAN. PROPERTY LINES ARE BASED ON THE SUBDIVISION RECORD MAP.

GRADING IS TO BE ACCORDING TO ALL APPLICABLE REGULATIONS AND NORMAL STANDARDS OF GOOD PRACTICE.

THE TEST RESULTS AND SOIL TYPES SHOWN APPLY ONLY TO THE TEST HOLE SHOWN AND MAY OR MAY NOT APPLY TO OTHER AREAS ON THE SITE. THE SOIL TYPES SHOWN AND EXISTING GRADES ARE TO BE VERIFIED OVER THE ENTIRE SEPTIC AREA PRIOR TO CONSTRUCTION.

THE BENCHMARK SHOWN ON THIS PLAN IS TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL ON SITE AND OFF SITE FIELD CONDITIONS AND TO ESTABLISH THAT NO CHANGES HAVE OCCURRED SINCE THE ISSUANCE OF THIS PLAN. THE DESIGN ENGINEER IS TO BE NOTIFIED OF ANY FIELD CONDITIONS WHICH CONFLICT WITH THIS PLAN.

NO LOOSE OR OPEN JOINTED, PERFORATED, SLOTTED OR PERVIOUS PIPE DRAIN IS TO BE LOCATED WITHIN 50' DOWN GRADIENT OF ANY SEPTIC SYSTEM AREA.

CARE SHOULD BE TAKEN DURING SITE DEVELOPMENT TO PROTECT THE PROPOSED SEPTIC SYSTEM AREA FROM UNNECESSARY DISTURBANCE. IF CARE IS NOT TAKEN AND AREA IS NOT PROTECTED AS NOTED ON THIS PLAN PREMATURE FAILURE OF THE SYSTEM MAY RESULT.

ALL BANKRUN GRAVEL IS TO MEET TOWN AND/OR STATE OF CONNECTICUT SPECIFICATIONS AND YIELD A PERCOLATION RATE OF 1" IN 10 MINUTES OR LESS WHEN IN PLACE.

THE PURPOSE OF THIS PROPOSED SEPTIC SYSTEM IS TO DISPOSE OF DOMESTIC SEWAGE CONSISTING OF WATER AND HUMAN EXCRETIONS OR OTHER WATERBORNE WASTES INCIDENTAL TO THE OCCUPANCY OF A RESIDENTIAL BUILDING AND NOT TO BE USED FOR WASTE WATER FROM WATER SOFTENING EQUIPMENT, WATER FROM CELLAR OR FLOOR DRAINS OR SURFACE WATER FROM ROOFS, PAVED SURFACES OR YARD DRAINS.

THE SEPTIC TANK(S) SHALL BE CAPABLE OF SUPPORTING THE SUPERIMPOSED LOAD(S) AS SHOWN ON THIS PLAN. THE SUPERIMPOSED LOAD(S) SHALL CONSIST OF THE EARTH LOAD AND THE LIVE LOAD. THE EARTH LOAD SHALL BE COMPUTED FROM THE DEPTH OF SOIL COVER SHOWN ON THIS PLAN. THE MINIMUM EARTH LOAD SHALL BE FOR SOIL COVER OF EIGHTEEN INCHES. THE MINIMUM LIVE LOAD SHALL BE AN H - 10 LOADING FOR ANY TANK LOCATED UNDER PAVEMENT. THE LIVE LOAD SHALL BE AN H - 20 LOADING.

THE PROPOSED BUILDING AND PRIMARY SEPTIC SYSTEM SHOWN HEREON ARE TO BE STAKED OUT, OFFSET AND ELEVATED FOR CONSTRUCTION BY A QUALIFIED SURVEYOR.

AS CONDITION OF APPROVAL OF THIS PLAN A PERCOLATION TEST SHALL BE CONDUCTED IN THE FILL AFTER IT IS PLACED TO DETERMINE ITS QUALITY AND AN "AS-BUILT" PLAN SHALL BE PREPARED BY A QUALIFIED SURVEYOR AND SUBMITTED TO THE APPLICABLE AGENCIES FOR APPROVAL.

CALL BEFORE YOU DIG 1-800-922-4455

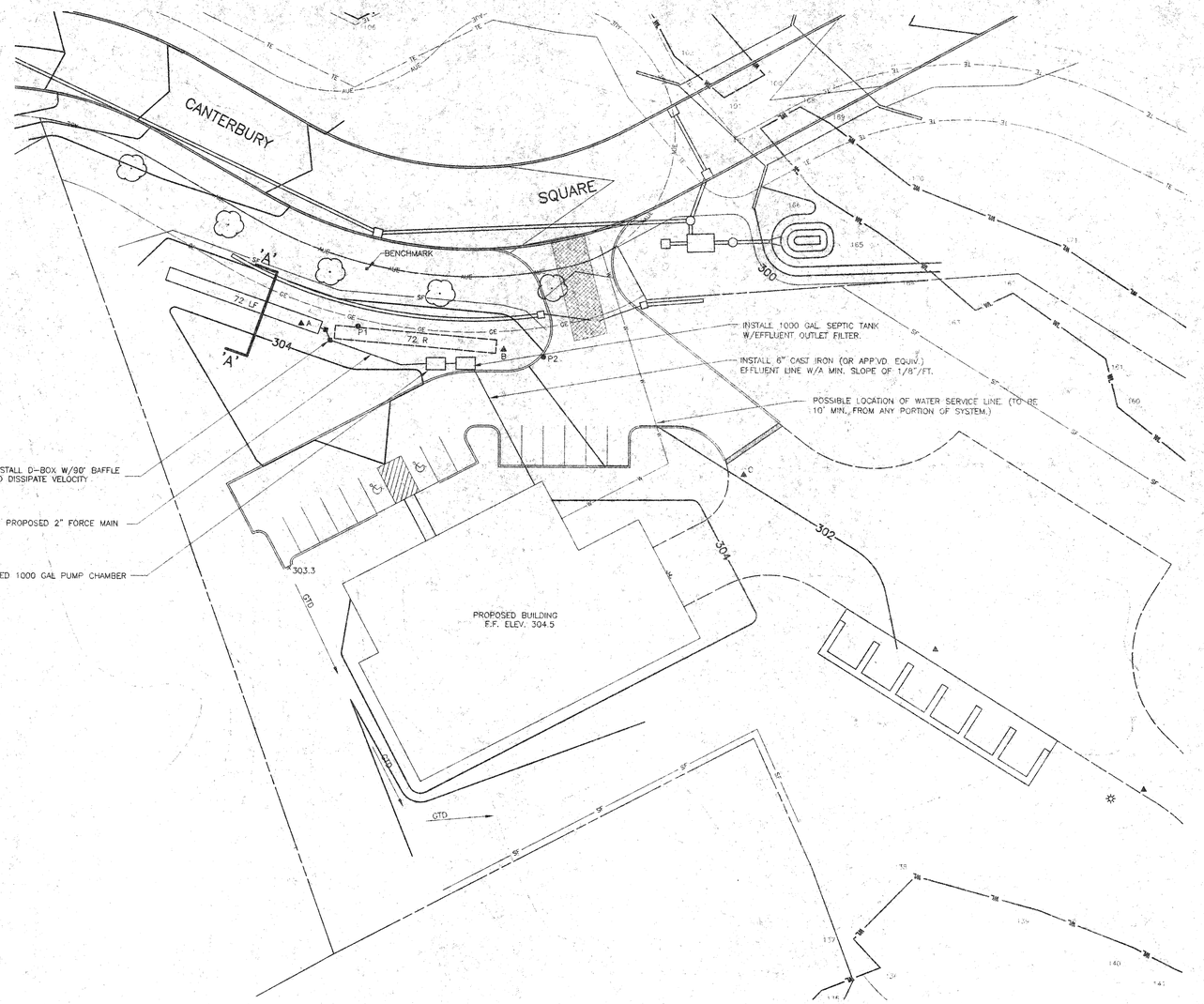
LEGEND

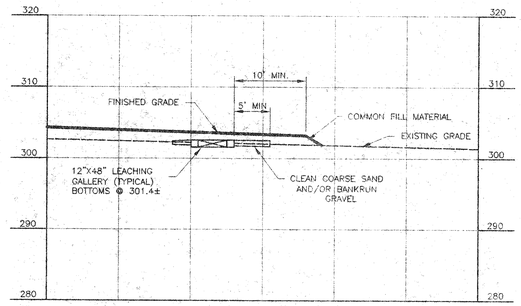
- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING SPOT ELEVATION
- 520.2 PROPOSED SPOT ELEVATION
- EXISTING DRAINAGE
- PROPOSED DRAINAGE
- INLAND WETLANDS WITH FLAG #
- OBSERVATION HOLE
- PERCOLATION TEST
- GTO GRADE TO DRAIN
- SYNTHETIC FILTER BARRIER
- LP PRIMARY SEPTIC SYSTEM
- RP RESERVE SEPTIC SYSTEM
- DISTRIBUTION BOX

THIS MAP IS NOT VALID UNLESS EMBOSSED WITH THE SEAL OR AFFIXED WITH THE INK STAMP OF THE SIGNATORY.

I HEREBY DECLARE THAT THE PERCOLATION TESTS SHOWN HEREON WERE CONDUCTED IN ACCORDANCE WITH THE CURRENT HEALTH CODE OF THE STATE OF CONNECTICUT, BY THE STAFF OF SPATH-BJORKLUND ASSOCIATES, INC. EXCEPT AS OTHERWISE NOTED ABOVE. THIS IS IN NO WAY A GUARANTEE AGAINST FAILURE DUE TO INDETERMINABLE CIRCUMSTANCES OF NATURAL PHENOMENON BEYOND THE SCOPE OF NORMAL INVESTIGATION.

CONN. PE #11361





SECTION A-A
SCALE: 1"=10'

DESIGN BASIS

SQ. FT. OFFICE SPACE: 2152 ; S.F./EMPLOYEE : 200
2152 S.F. OFFICE / 200 S.F./EMPLOYEE = 11 EMPLOYEES
WAREHOUSE SPACE = 10 EMPLOYEES
TOTAL EMPLOYEES = 21
21 EMPLOYEES X 20 GPD/EMPLOYEE = 420 GPD

PERCOLATION RATE: 1"/1-10 MIN.; SEWAGE APP. RATE: 1.5 GPD/SF ELA
420 GPD / 1.5 GPD/SF ELA = 280 SF ELA REQUIRED

USE 12"X48" GALLERIES @ 5.9 SF ELA/LF
280 SF ELA / 5.9 SF ELA/LF = 47.45 LF REQUIRED

MLSS CALCULATIONS

SLOPE = 1-2%
RESTRICTIVE LAYER @ 33""
HENGE HF = 42"
42 (HF) x 1.4 (FF) x 1.2 (PF) = MLSS
MLSS REQUIRED = 70.6

PRIMARY SYSTEM PREPARATION

REMOVE ALL TOPSOIL FROM PRIMARY SEPTIC SYSTEM AREA AND 5' ON ALL SIDES. REPLACE WITH CLEAN, COURSE SAND AND/OR BANKRUN GRAVEL TO 1' BELOW SUITABLY COMPACTED FINISHED GRADE. REMAINING FILL TO BE CLEAN, COMMON FILL MATERIAL.

PRIMARY SYSTEM SPECIFICATIONS

INSTALL 72 LF OF 12"X48" LEACHING GALLERIES, ARRANGED IN SERIES AS SHOWN.
TOTAL EFFECTIVE AREA: 424.8 SF

PERCOLATION TEST DATA

P1 7/3/03		P2 7/3/03		P-XX DATE		P-XX DATE	
DIA: 8" DEPTH: 14" PRESOAK: 8:36 DRY: 10:25		DIA: 8" DEPTH: 16" PRESOAK: 8:46 DRY: 10:25		DIA: XXX DEPTH: XXX PRESOAK: XXX DRY: XXX		DIA: XXX DEPTH: XXX PRESOAK: XXX DRY: XXX	
TIME	READING	TIME	READING	TIME	READING	TIME	READING
10:27	4 1/4"	10:30	3 3/4"	XXXX	XXXXXX	XXXXX	XXXXXXX
10:37	9 7/8"	10:40	6 1/8"	XXXXX	XXXXXXX	XXXXX	XXXXXXX
10:47	11 1/2"	10:50	7 1/2"	XXXXX	XXXXXXX	XXXXX	XXXXXXX
10:57	12 1/2"	11:00	9"	XXXXX	XXXXXXX	XXXXX	XXXXXXX
11:07	13 1/2"	11:10	10 1/2"	XXXXX	XXXXXXX	XXXXX	XXXXXXX
11:17	DRY	11:20	11 3/4"	XXXXX	XXXXXXX	XXXXX	XXXXXXX
		11:30	12 7/8"	XXXXX	XXXXXXX	XXXXX	XXXXXXX
				XXXXX	XXXXXXX	XXXXX	XXXXXXX
				XXXXX	XXXXXXX	XXXXX	XXXXXXX
1"/10 MIN.		1"/8.8 MIN.		XXXXX MIN		XXXXX MIN	

OBSERVATION HOLE DATA

TEST PIT: A		DATE: 6/17/03
DEPTH	SOIL DESCRIPTION	
0-10" 10-32" 32-58"	TOPSOIL OR-BRN. FINE SILTY LOAM OLIVE-BRN. MED. SILTY SAND W/6-10" ROCKS	
LEDGE AT: 58"	WATER AT: 49"	MOTTLING AT: NONE ROOTS AT: 35"

TEST PIT: B		DATE: 6/17/03
DEPTH	SOIL DESCRIPTION	
0-6" 6-20" 20-66"	TOPSOIL OLIVE-TAN COARSE SAND W/STONES YEL.-BRN. FINE SAND	
LEDGE AT: 66"	WATER AT: 56"	MOTTLING AT: NONE ROOTS AT: 50"

TEST PIT: C		DATE: 6/17/03
DEPTH	SOIL DESCRIPTION	
0-4" 4-24" 24-66"	TOPSOIL OLIVE-TAN MED.-COARSE SAND W/STONES OR.-BRN. MED. SILTY SAND W/12" PEAT LAYER @ 40"	
LEDGE AT: 68"	WATER AT: 66"	MOTTLING AT: 33" ROOTS AT: 40"

APPROXIMATE PROPOSED ELEVATIONS

FIRST FLOOR EL. : 304.5 +/-
EFFLUENT LINE AT BUILDING : INV. 301.5
BOTTOM OF GALLERIES : SEE SECTION 'A-A'
FINISHED GRADE OVER SYSTEM : SEE SECTION 'A-A'
SEPTIC TANK INLET : INV. 300.75
BENCHMARK : HUB AS SHOWN (15' O/S); ELEV. 301.8+/-

NO.	DATE	DESCRIPTION
		REVISIONS

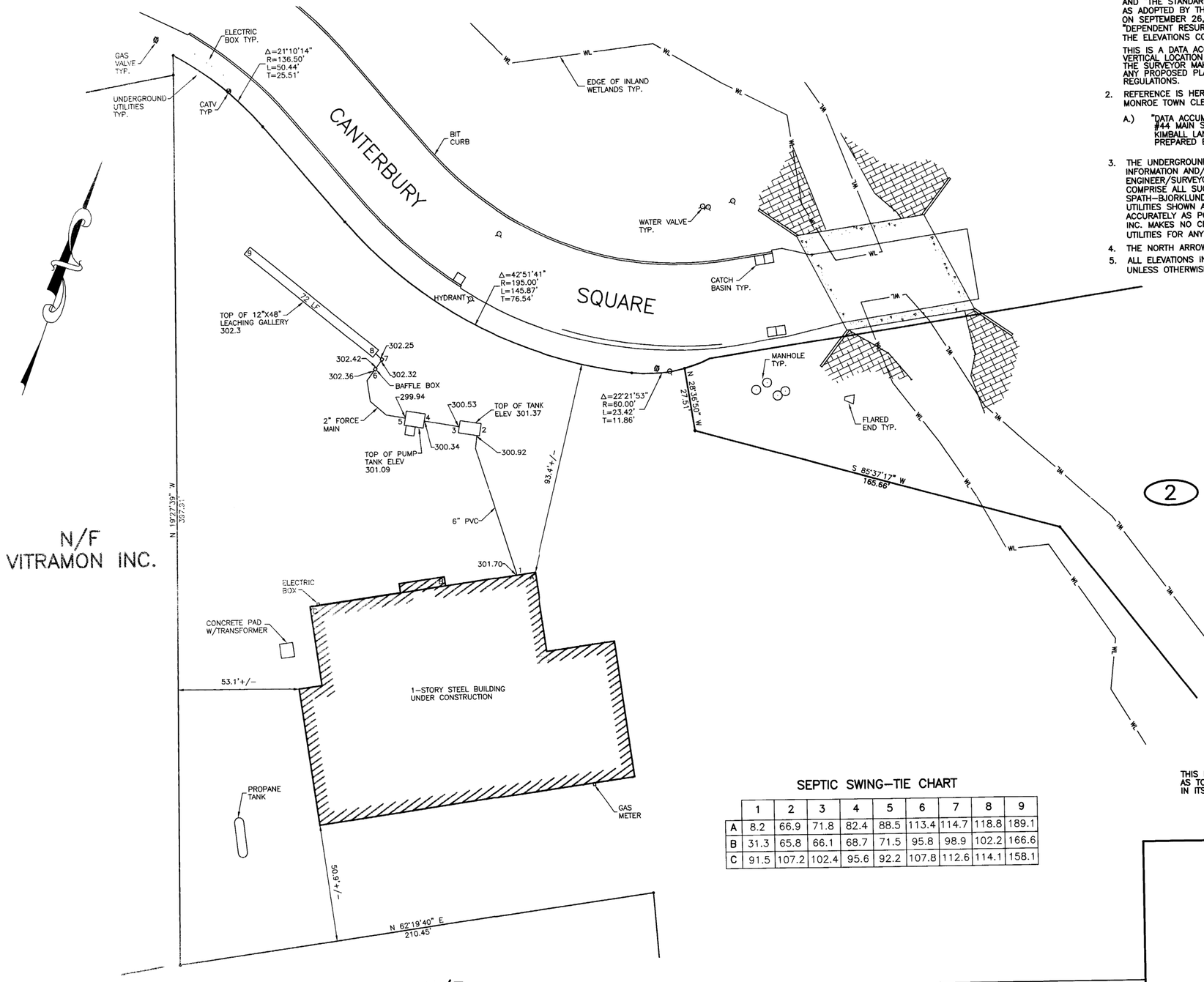
SUBSURFACE SEWAGE DISPOSAL SYSTEM

MAIN STREET (CT ROUTE 25)
MONROE, CONNECTICUT
PREPARED FOR
L. & L. EVERGREEN

30 0 30 60

DATE:	SCALE:	DRAFTER:	JOB NO:	FILE NUMBER:
5-24-04	1"=30'	JSB	1194X2	

SPATH-BJORKLUND ASSOCIATES, INC.
PO Box 324, Monroe, Connecticut 06468
Phone: 203-268-5816



NOTES:

1. THIS MAP HAS BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-300b-1 THRU 20-300b-20 AND "THE STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996. THE BOUNDARY DETERMINATION IS BASED ON A "DEPENDENT RESURVEY", CONFORMING TO HORIZONTAL CLASS "A-2" AND THE ELEVATIONS CONFORM TO VERTICAL CLASS "V-3".

   THIS IS A DATA ACCUMULATION PLAN TO SHOW THE HORIZONTAL AND VERTICAL LOCATION OF THE SEPTIC SYSTEM AS OF THE DATE SHOWN. THE SURVEYOR MAKES NO CERTIFICATION AS TO THE CONFORMANCE TO ANY PROPOSED PLANS, LOCAL AND/OR STATE HEALTH CODES OR REGULATIONS.
2. REFERENCE IS HEREBY MADE TO THE FOLLOWING MAPS ON FILE IN THE MONROE TOWN CLERK'S OFFICE:
   A.) "DATA ACCUMULATION PLAN DEPICTING LOT LINE REVISION FOR #38, #42 #44 MAIN STREET (CT RT. #25) MONROE/TRUMBULL, CONNECTICUT PREPARED FOR KIMBALL LAND HOLDINGS, LLC"; DATED 4/02/03 (REV TO 5/22/03); SCALE 1"=100'; PREPARED BY SPATH-BJORKLUND ASSOCIATES, INC. SHEET 1/2 & 2/2
3. THE UNDERGROUND UTILITIES SHOWN, IF ANY, HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND/OR FROM EXISTING DRAWINGS BY OTHERS AS NOTED HEREON. THE ENGINEER/SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. SPATH-BJORKLUND ASSOCIATES, INC. FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED, ALTHOUGH THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. SPATH-BJORKLUND ASSOCIATES, INC. MAKES NO CERTIFICATION AS TO THE CONDITION OR SUITABILITY OF THE UNDERGROUND UTILITIES FOR ANY INTENDED USE.
4. THE NORTH ARROW BEARING IS BASED ON THE MAP REFERENCED IN NOTE 2A.
5. ALL ELEVATIONS IN THE SEPTIC SYSTEM AREA ARE TO THE TOP OF PIPE UNLESS OTHERWISE NOTED.

SEPTIC SWING-TIE CHART

	1	2	3	4	5	6	7	8	9
A	8.2	66.9	71.8	82.4	88.5	113.4	114.7	118.8	189.1
B	31.3	65.8	66.1	68.7	71.5	95.8	98.9	102.2	166.6
C	91.5	107.2	102.4	95.6	92.2	107.8	112.6	114.1	158.1

THIS MAP IS INTENDED TO SHOW THE SEPTIC ASBUILT AND BUILDING LOCATION AS TO THE APPLICABLE LOT LINES, AND IS NOT INTENDED TO SHOW THE LOT IN ITS ENTIRETY.

NOT VALID UNLESS EMBOSSED WITH SEAL OR FIXED WITH THE LIVE STAMP OF THE SIGNATORY

TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON

JASON T. SPATH SR. CT LS 70136

NO.	DATE	DESCRIPTION

REVISIONS

DATA ACCUMULATION PLAN

SEPTIC ASBUILT

PREPARED FOR

L & L EVERGREEN

5 CANTERBURY SQUARE

MONROE, CONNECTICUT

30 0 30 60

DATE:	SCALE:	DRAFTER:	JOB NUMBER:	FILE NUMBER:
4/19/05	1"=30'	DCH	1194X2	SM 1338

SPATH-BJORKLUND ASSOCIATES, INC
PO Box 324, Monroe, Connecticut 06468
Phone: 203-268-5216

1/1

SOLLI ENGINEERING
523 Pepper Street, Monroe, CT 06468 T: (203) 880-5455 F: (203) 445-9560

5 Victoria Drive
Monroe, Connecticut

TP-101
Project # 1400501
June 2, 2014

TEST PIT FIELD LOG

PERSONNEL PRESENT	EXCAVATION EQUIPMENT				
Kevin Solli	Contractor	New England Materials		Assumed Ground Surface El.	
Casey Burch	Operator	Herman Castelli		Datum	
James Cowan	Make	John Deere	Model	Temperature	80
Herman Castelli	Bucket Capacity		Reach	Weather	Sunny
Rich Sammon					

Depth	Soil Description	Excav. Effort	Cobble and Boulder Data	Remark No.
0" - 25"	3/4" Process-Fill Material, Dark Grey/Black	E	NONE	
25" - 50"	Organic Materials Layer w/ Roots	E	NONE	
50" - 89 "	Grey Gleyed Matrix Layer w/ Redoximorphic Features	E	NONE	

REMARKS:

1. No Ledge
2. No Refusal
3. Water @ 68"
4. Roots @ 25" - 40"

TEST PIT PLAN



North

LEGEND

COBBLES AND BOULDERS

Size Range Classification	Letter Designation
3" - 12"	Cobble (C)
12" - 24	Small (S)
24" - 36"	Medium (M)
36" and Larger	Large (L)

PROPORTIONS USED (QUANTITATIVE TERMS)

TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

QUALITATIVE TERMS

OCCASIONAL
FEW
FREQUENT
NUMEROUS

EXCAVATION EFFORT

E - Easy
M - Moderate
D - Difficult

▼ Observed Depth to Groundwater

SOLLI ENGINEERING
523 Pepper Street, Monroe, CT 06468 T: (203) 880-5455 F: (203) 445-9560

5 Victoria Drive
Monroe, Connecticut

TP-102
Project # 1400501
June 2, 2014

TEST PIT FIELD LOG

PERSONNEL PRESENT	EXCAVATION EQUIPMENT					
Kevin Solli	Contractor	New England Materials			Assumed Ground Surface El.	
Casey Burch	Operator	Herman Castelli			Datum	
James Cowan	Make	John Deere	Model		Temperature	80
Herman Castelli	Bucket Capacity		Reach		Weather	Sunny
Rich Sammon						

Depth	Soil Description	Excav. Effort	Cobble and Boulder Data	Remark No.
0" - 8"	Organic Material	E	NONE	
8" - 47"	Heterogenius Fill Material, Small Cobbles Throughout	M	S	
47" - 50"	Dark Gray, Wet Silty Loam with Concentrations, Trace Clay, Natural Wetland Soil, Some Organics (10YR21)	E/M/D	C/S/M/L	
50" - 60"	Gleyed Layer, Very Wet, Spongy (10YR31			

REMARKS:

1. No Ledge
2. No Refusal
3. Water @ 47"

TEST PIT PLAN



North

LEGEND

COBBLES AND BOULDERS

Size Range Classification	Letter Designation
3" - 12"	Cobble (C)
12" - 24	Small (S)
24" - 36"	Medium (M)
36" and Larger	Large (L)

PROPORTIONS USED (QUANTITATIVE TERMS)

TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

QUALITATIVE TERMS

OCCASIONAL
FEW
FREQUENT
NUMEROUS

EXCAVATION EFFORT

E - Easy
M - Moderate
D - Difficult

▼ Observed Depth to Groundwater

SOLLI ENGINEERING
523 Pepper Street, Monroe, CT 06468 T: (203) 880-5455 F: (203) 445-9560

5 Victoria Drive
Monroe, Connecticut

TP-103
Project # 1400501
June 2, 2014

TEST PIT FIELD LOG

PERSONNEL PRESENT	EXCAVATION EQUIPMENT				
Kevin Solli	Contractor	New England Materials		Assumed Ground Surface El.	
Casey Burch	Operator	Herman Castelli		Datum	
James Cowan	Make	John Deere	Model	Temperature	80
Herman Castelli	Bucket Capacity		Reach	Weather	Sunny
Rich Sammon					

Depth	Soil Description	Excav. Effort	Cobble and Boulder Data	Remark No.
0" - 10"	Brown Mulch/Organic Material Layer	E	NONE	
10" - 47"	Brown Sandy Loam w/ Gravel, Fill Material, Brick Fragments	E	C	
47" - 74"	Dark Gray, Wet Silty Loam, Trace Clay, Natural Wetland Soil, Some Organics (Mineral reduced matrix with concentrations)	E	C	
74" - 76"	OA-Organic Horizon, Dark Gray Gleyed Matrix			

REMARKS:

1. No Ledge
2. No Refusal
3. Water @ 61"
4. Roots @ 48"

TEST PIT PLAN



North

LEGEND

COBBLES AND BOULDERS

Size Range Classification	Letter Designation
3" - 12"	Cobble (C)
12" - 24	Small (S)
24" - 36"	Medium (M)
36" and Larger	Large (L)

PROPORTIONS USED (QUANTITATIVE TERMS)

TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

QUALITATIVE TERMS

OCCASIONAL
FEW
FREQUENT
NUMEROUS

EXCAVATION EFFORT

E - Easy
M - Moderate
D - Difficult

▼ Observed Depth to Groundwater

SOLLI ENGINEERING
523 Pepper Street, Monroe, CT 06468 T: (203) 880-5455 F: (203) 445-9560

5 Victoria Drive
Monroe, Connecticut

TP-104
Project # 1400501
June 2, 2014

TEST PIT FIELD LOG

PERSONNEL PRESENT	EXCAVATION EQUIPMENT				
Kevin Solli	Contractor	New England Materials		Assumed Ground Surface El.	
Casey Burch	Operator	Herman Castelli		Datum	
James Cowan	Make	John Deere	Model	Temperature	80
Herman Castelli	Bucket Capacity		Reach	Weather	Sunny
Rich Sammon					

Depth	Soil Description	Excav. Effort	Cobble and Boulder Data	Remark No.
0" - 10"	3/4" Process Fill Material, Little Sand	E	C	
10" - 35"	Gray, Medium Sand (Glacial Fluvial) w/ Roots	E	C	
35" - 60"	Brown/Gray Coarse Sand, Former Bed Material (Glacial Fluvial)	E	C	

REMARKS:

1. No Ledge
2. No Refusal
3. Water @ 48"
4. Roots @ 10" - 24"
5. Roots looked as if they were Gleyed Material at one point in time, then filled over.

TEST PIT PLAN



North

LEGEND

COBBLES AND BOULDERS

Size Range Classification	Letter Designation
3" - 12"	Cobble (C)
12" - 24	Small (S)
24" - 36"	Medium (M)
36" and Larger	Large (L)

PROPORTIONS USED (QUANTITATIVE TERMS)

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SOME (SO)	20-35%
AND	35-50%

QUALITATIVE TERMS

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EXCAVATION EFFORT

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D - Difficult

▼ Observed Depth to Groundwater

SOLLI ENGINEERING
523 Pepper Street, Monroe, CT 06468 T: (203) 880-5455 F: (203) 445-9560

5 Victoria Drive
Monroe, Connecticut

TP-105
Project # 1400501
June 2, 2014

TEST PIT FIELD LOG

PERSONNEL PRESENT	EXCAVATION EQUIPMENT				
Kevin Solli	Contractor	New England Materials		Assumed Ground Surface El.	
Casey Burch	Operator	Herman Castelli		Datum	
James Cowan	Make	John Deere	Model	Temperature	80
Herman Castelli	Bucket Capacity		Reach	Weather	Sunny
Rich Sammon					

Depth	Soil Description	Excav. Effort	Cobble and Boulder Data	Remark No.
0" - 8"	Brown, Mulch/Organic Layer	E	NONE	
8" - 24"	Light Brown, Fine Sandy Loam w/ Concentrations of Organic Fragments and Organic Stained Roots	E	C	
24" - 62"	Heterogenius Fill	E	C	
62" - 69"	Bright Concentrations (75.YR46), Fine Sandy Loam	E	C	
69" - 89"	Gray (5YR31) Gleyed Matrix Material, Very Fine Sandy Loam	E	C	

REMARKS:

1. No Ledge
2. No Refusal
3. Water @
4. Roots @ 24" - 29" & 41"- 48", Organic stained saturated soils surrounding roots

TEST PIT PLAN



North

LEGEND

COBBLES AND BOULDERS

Size Range Classification	Letter Designation
3" - 12"	Cobble (C)
12" - 24	Small (S)
24" - 36"	Medium (M)
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AND	35-50%

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NUMEROUS

EXCAVATION EFFORT

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D - Difficult

▼ Observed Depth to Groundwater

SOLLI ENGINEERING
523 Pepper Street, Monroe, CT 06468 T: (203) 880-5455 F: (203) 445-9560

5 Victoria Drive
Monroe, Connecticut

TP-106
Project # 1400501
June 2, 2014

TEST PIT FIELD LOG

PERSONNEL PRESENT	EXCAVATION EQUIPMENT				
Kevin Solli	Contractor	New England Materials		Assumed Ground Surface El.	
Casey Burch	Operator	Herman Castelli		Datum	
James Cowan	Make	John Deere	Model	Temperature	80
Herman Castelli	Bucket Capacity		Reach	Weather	Sunny
Rich Sammon					

Depth	Soil Description	Excav. Effort	Cobble and Boulder Data	Remark No.
0"-_10_"	Top Soil w/ Roots	E	NONE	
_10_"-_51_"	Heterogenius Fill with Lense of Concentrations, Small Cobbles throughout	M	S	
_51_"-_80_"	Glaciol Fluvial-Coarse Sand, Trace Silt	M	S	

REMARKS:

1. No Ledge
2. No Refusal
3. Water @ 74"
4. Roots @ 52" - 68"

TEST PIT PLAN



North

LEGEND

COBBLES AND BOULDERS

Size Range Classification	Letter Designation
3" - 12"	Cobble (C)
12" - 24	Small (S)
24" - 36"	Medium (M)
36" and Larger	Large (L)

PROPORTIONS USED (QUANTITATIVE TERMS)

TRACE (TR)	0-10%
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EXCAVATION EFFORT

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D - Difficult

▼ Observed Depth to Groundwater

SOLLI ENGINEERING

MEMORANDUM

To: Matthew Brattolli, RS; Town Sanitarian

From: Michael Lambert, P.E.
Kevin Solli, P.E.

Subject: Septic Evaluation of 5 Victoria Drive
5 Victoria Drive, Monroe, CT 06468
Project #: 2012301

Date: 03/23/2021

CC: Scott Schatzlein, P.E. / Town of Monroe Engineer

Solli Engineering has prepared this memorandum to provide an analysis of the septic system design associated with the proposed site improvements of 5 Victoria Drive, Monroe, Connecticut. The subject site consists of a 12,035 square-foot athletic facility with associated parking and utilities. The project proposes to expand the building by 22,179 square feet. All of the utilities to the existing building are to remain and connected to the building expansion internally. The project also includes additional parking, to the east of the building, and the modification to the existing athletic field, to the southeast of the building.

The existing septic system consists of a 1,000 gallon septic tank, pump chamber, two distributions boxes, a leaching field and associated piping. Per the design plans on file with the Trumbull Monroe Health District, prepared by Spath-Bjorklund Associates, Inc., the existing leaching field is comprised of a single row of 12-inch high concrete leaching galleries approximately 72 feet long. Refer to the attached plan entitled "Subsurface Sewage Disposal System, Main Street (CT Route 25), Monroe, Connecticut, Prepared For L&L Evergreen," prepared by Spath-Bjorklund Associates, Inc., for details regarding the layout of the existing septic system.

Test pit observations and percolation test were performed on June 17, 2003 and July 3, 2003, respectively, by Spath-Bjorklund Associates, Inc. Generally, soils were recorded to be top soil at an average depth of approximately 0 to 7 inches ("A" Horizon) and orange tan coarse sand with stones at an average depth of approximately 7 to 25 inches ("B" Horizon) and yellow brown fine sand at an average depth of 25 to 64 inches. A percolation rate of less than 10 minutes per inch was used in the design of the existing septic system.

The existing system was design for a warehouse/office facility with a total of 21 employees, resulting in a total design flow of approximately 420 gallons per day. The proposed design flow produced by the new development of the site will generate 1,500 gallons per day.

Ole Soccer and Indoor Box Lacrosse is considered an indoor/outdoor recreational facility. Since the *Connecticut Technical Standards for Subsurface Sewage Disposal Systems* has no design flow calculation requirement for a recreational facility, calculations were taken from similar design manuals from nearby states. The *New Hampshire Code of Administrative Rules* was used to determine an adequate design flow guideline for this type of use. According to this manual, the design flow for a recreational facility with bathrooms but no showers is defined as 5 gallons per day per person. Based on data, provided by the operator of the facility, the total participation for this these uses are not to exceed 300 people per day. Using this number with the design criteria for a recreational facility, the design flow was found to be 1,500 gallons per day.

With a design flow of 1,500 gallons per day, the proposed use will coincide with a non-problematic sewage and would require an application rate of 1.5 for a percolation rate being less than 10.1 min/inch. This would require 1,000 square feet of effective leaching area. As the existing leach fields can accommodate 424.8 square feet, the proposed expansion would require 75 linear feet of Mantis Double-Wide 58 to be installed. This would account for an additional 870 square feet; giving the total effective leaching area on-site 1,294.8 square feet.

The existing septic tank is only 1,000 gallons and will be proposed to be replaced with a 2,000-gallon tank to meet the proposed demands.

It is our opinion that the proposed system modifications will be able to adequately service the proposed expansion of the development.

APPENDIX E
DESIGN PLANS

Existing Drainage Area Map (EDA-1)
Proposed Drainage Area Map (PDA-1)
Sub-catchment Area Map (CB-1)
Grading & Drainage Plan (2.21)
Soil Erosion & Sediment Control Plan (2.31)
Soil Erosion & Sediment Control Notes & Details (2.41)
Utility Plan (2.51)
Landscaping Plan (2.61)
Lighting Plan (2.71)

GENERAL NOTES

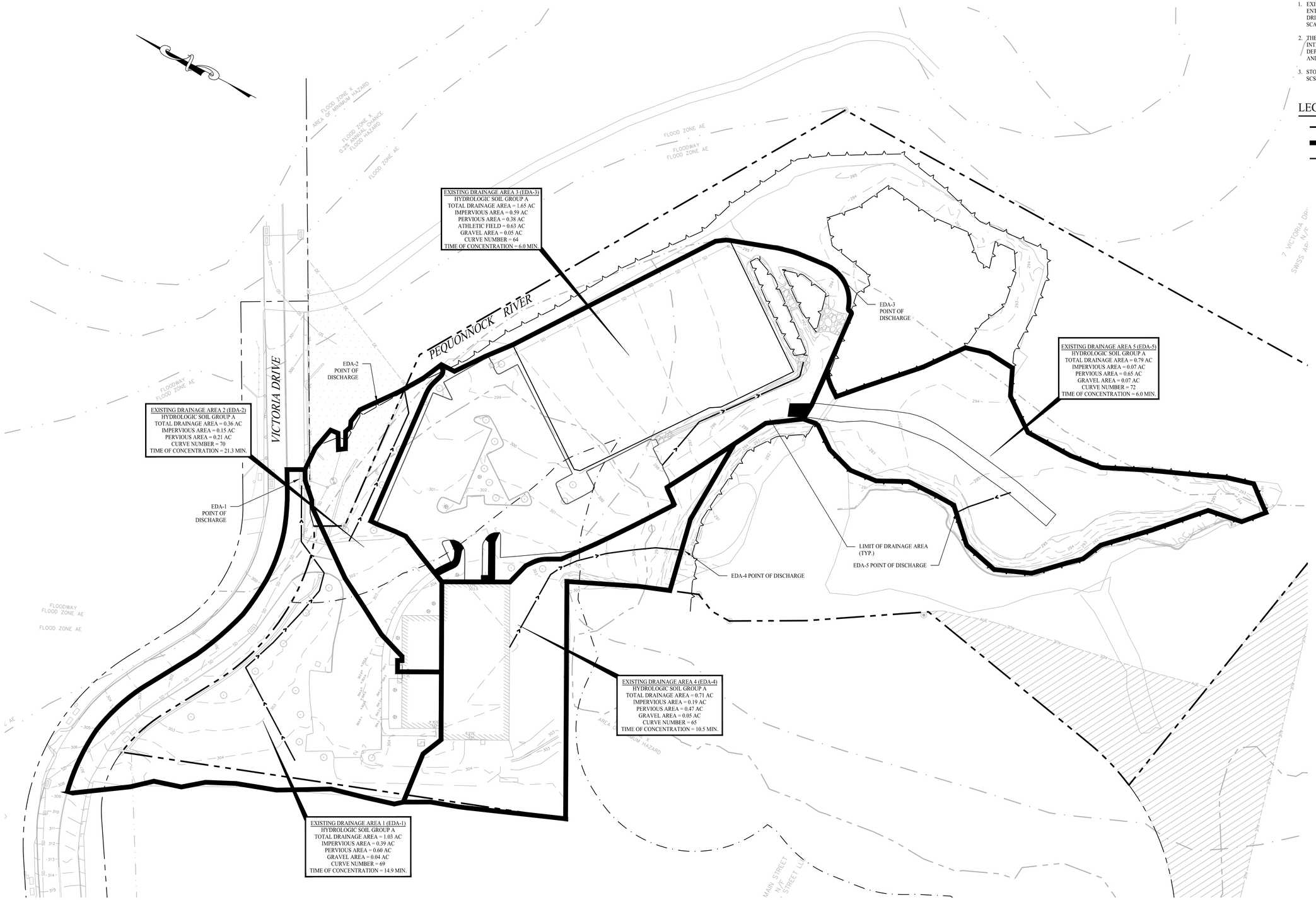
1. EXISTING CONDITIONS INFORMATION TAKEN FROM A PLAN ENTITLED "IMPROVEMENT LOCATION SURVEY OF 5 VICTORIA DRIVE" DATED MARCH 29, 2017, REVISED DECEMBER 14, 2020, SCALE: 1"=60', BY ACCURATE LAND SURVEYING, LLC.
2. THE STORMWATER MANAGEMENT PLAN AND DESIGN IS INTENDED TO BE IN COMPLIANCE WITH THE 2000 CONNECTICUT DEPARTMENT OF TRANSPORTATION (CTDOT) DRAINAGE MANUAL AND THE 2004 CONNECTICUT STORMWATER QUALITY MANUAL.
3. STORMWATER RUNOFF ANALYSIS WAS CALCULATED USING THE SCS TR-55 METHODOLOGY.

LEGEND

PROPERTY LINE

LIMITS OF DRAINAGE AREAS

FLOW PATH



Rev. #:	Date	Description
1	05/06/21	IWC COMMENTS

Graphic Scale: 40 0 40 80

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501 Main Street, Monroe, CT 06468 T: (203) 880-5455 F: (203) 880-9695
351 Newbury Street, Boston, MA 02115 T: (617) 203-3160 F: (203) 880-9695

Drawn By:	CJP
Checked By:	MSL
Approved By:	KMS
Project #:	2012301
Plan Date:	03/23/21
Scale:	1" = 40'

STATE OF CONNECTICUT KEVIN M. SOLLI 25759 LICENSED PROFESSIONAL ENGINEER

Kevin Solli, P.E.
CT 25759

Project:

PROPOSED SITE REDEVELOPMENT

5 VICTORIA DRIVE
MONROE, CONNECTICUT

Sheet Title:

EXISTING DRAINAGE AREA MAP

Sheet #:

EDA-1

May 07, 2021 – 8:16am chris
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GENERAL NOTES

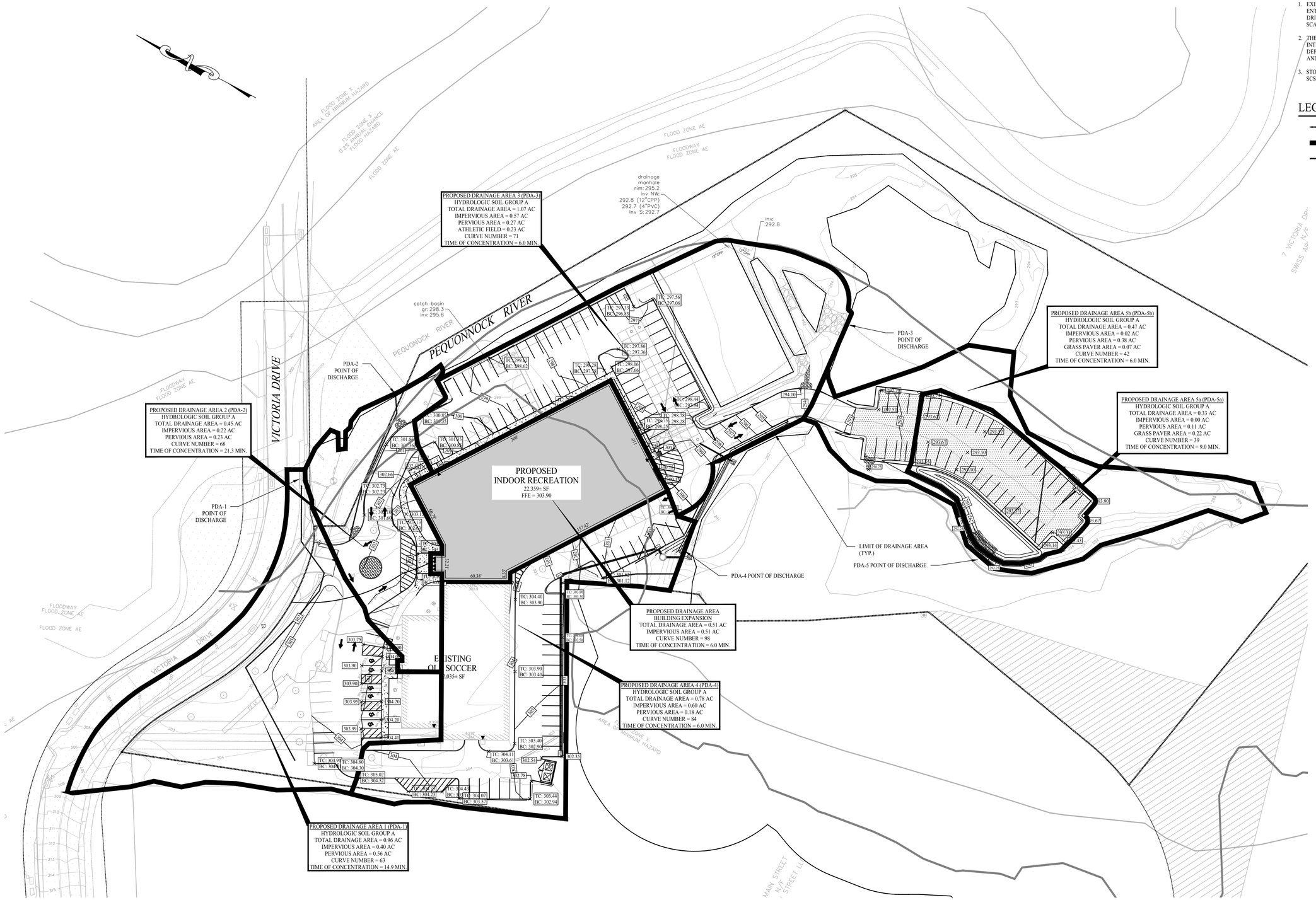
1. EXISTING CONDITIONS INFORMATION TAKEN FROM A PLAN ENTITLED "IMPROVEMENT LOCATION SURVEY OF 5 VICTORIA DRIVE" DATED MARCH 29, 2017, REVISED DECEMBER 14, 2020, SCALE: 1"=60', BY ACCURATE LAND SURVEYING, LLC.
2. THE STORMWATER MANAGEMENT PLAN AND DESIGN IS INTENDED TO BE IN COMPLIANCE WITH THE 2000 CONNECTICUT DEPARTMENT OF TRANSPORTATION (CTDOT) DRAINAGE MANUAL AND THE 2004 CONNECTICUT STORMWATER QUALITY MANUAL.
3. STORMWATER RUNOFF ANALYSIS WAS CALCULATED USING THE SCS TR-55 METHODOLOGY.

LEGEND

PROPERTY LINE

LIMITS OF DRAINAGE AREAS

FLOW PATH



Rev. #:	Date	Description
2	05/06/21	IWC COMMENTS
1	04/07/21	P&Z SUBMISSION

Graphic Scale: 40 0 40 80

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351 Newbury Street, Boston, MA 02115 T: (617) 203-3160 F: (203) 880-9695

Drawn By:	CJP
Checked By:	MSL
Approved By:	KMS
Project #:	2012301
Plan Date:	03/23/21
Scale:	1" = 40'

STATE OF CONNECTICUT KEVIN M. SOLLI 20759 LICENSED PROFESSIONAL ENGINEER

Kevin Solli, P.E.
CT 25759

Project:

PROPOSED SITE REDEVELOPMENT

5 VICTORIA DRIVE
MONROE, CONNECTICUT

Sheet Title: PROPOSED DRAINAGE AREA MAP

Sheet #: PDA-1

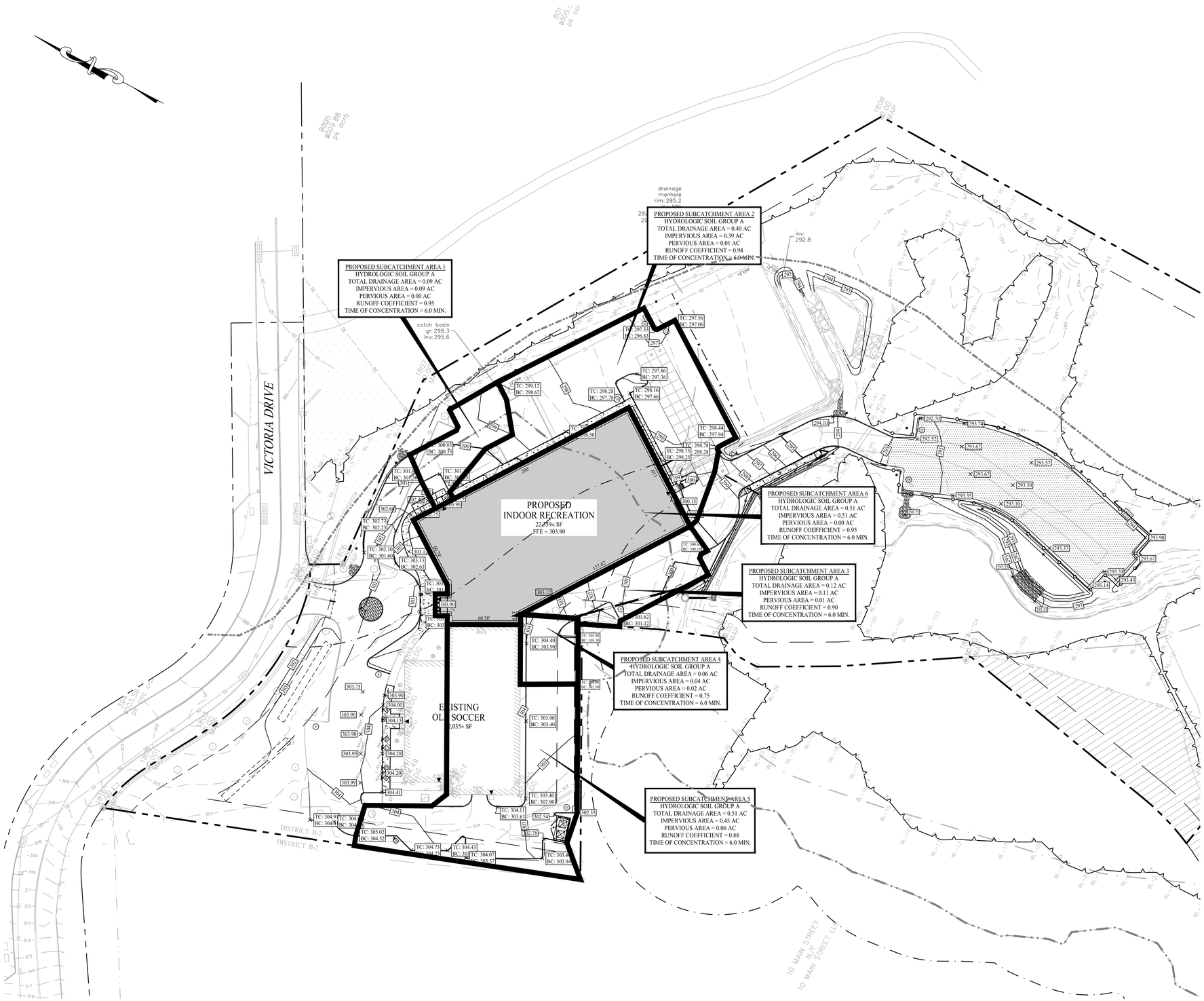
May 07, 2021 – 8:17am chris
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GENERAL NOTES

1. EXISTING CONDITIONS INFORMATION TAKEN FROM A PLAN ENTITLED "PLAN OF PROPERTY OF 5 VICTORIA DRIVE" DATED MAY 13, 2014, SCALE: 1"=60', BY ACCURATE LAND SURVEYING, LLC.
2. THE STORMWATER MANAGEMENT PLAN AND DESIGN IS INTENDED TO BE IN COMPLIANCE WITH THE 2000 CONNECTICUT DEPARTMENT OF TRANSPORTATION (CTDOT) DRAINAGE MANUAL AND THE 2004 CONNECTICUT STORMWATER QUALITY MANUAL.
3. STORMWATER RUNOFF ANALYSIS WAS CALCULATED USING THE SCS TR-55 METHODOLOGY.

LEGEND

- PROPERTY LINE
- LIMITS OF DRAINAGE AREAS
- LIMIT OF SUBCATCHMENT AREA
- FLOW PATH



Rev. #:	Date	Description

Graphic Scale: 40 0 40 80

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351 Newbury Street, Boston, MA 02115 T: (617) 203-3160 F: (203) 880-9695

Drawn By:	CJP
Checked By:	MSL
Approved By:	KMS
Project #:	2012301
Plan Date:	04/28/21
Scale:	1" = 40'

Kevin Solli, P.E.
CT 25759

Project:

PROPOSED SITE REDEVELOPMENT

5 VICTORIA DRIVE
MONROE, CONNECTICUT

Sheet Title: SUBCATCHMENT AREA MAP

Sheet #: CB-1

Apr 27, 2021 – 2:25pm anthony
X:\SE Files\Project Data\2020\2012301 – 5 Victoria Drive – Monroe, CT\Cadd Data\2012301-CB-1.dwg

GRADING AND DRAINAGE NOTES

1. EXISTING CONDITIONS INFORMATION TAKEN FROM A PLAN ENTITLED "IMPROVEMENT LOCATION SURVEY OF 5 VICTORIA DRIVE" DATED MARCH 29, 2017, REVISED MARCH 30, 2021, SCALE: 1"=60', BY ACCURATE LAND SURVEYING, LLC.REFER TO SAID PLAN FOR ALL DIMENSIONS, BEARINGS OR ANGLES OF PROPERTY LINES, EASEMENTS AND RIGHTS-OF-WAY.
2. THESE PLANS ARE FOR PERMITTING PURPOSES ONLY AND ARE NOT FOR CONSTRUCTION. NO CONSTRUCTION OR DEMOLITION SHALL BEGIN UNTIL APPROVAL OF THE FINAL PLANS IS GRANTED BY ALL GOVERNING AND REGULATORY AGENCIES AND ISSUANCE OF A DULY AUTHORIZED CERTIFIED OF ZONING COMPLIANCE AND BUILDING PERMIT FROM THE TOWN OF MONROE.
3. SEE SHEET 2.51 FOR A DETAILED LAYOUT OF THE PROPOSED UTILITY FEATURES AND SUBSURFACE SEWAGE DISPOSAL SYSTEM.
4. THE CONTRACTOR SHALL PRESERVE EXISTING VEGETATION WHERE POSSIBLE AND/OR AS NOTED ON DRAWINGS. REFER TO EROSION CONTROL PLAN FOR LIMIT OF DISTURBANCE AND EROSION CONTROL NOTES.
5. TOPSOIL SHALL BE STRIPPED AND STOCKPILE ON SITE FOR USE IN FINAL LANDSCAPING.
6. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY CONSTRUCTION PERMITS REQUIRED BY GOVERNMENT AND LOCAL AGENCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY CONSTRUCTION PERMITS FROM THE TOWN OF NEWTOWN REQUIRED TO PERFORM ALL WORK, INCLUDING FOR STREET CUTS AND CONNECTIONS TO EXISTING UTILITIES. THE CONTRACTOR SHALL POST ALL BONDS, PAY ALL FEES, PROVIDE PROOF OF INSURANCE AND PROVIDE TRAFFIC CONTROL NECESSARY FOR THIS WORK.
7. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN TRAFFIC DEVICES FOR PROTECTION OF VEHICLES AND PEDESTRIANS CONSISTING OF DRUMS, BARRIERS, SIGNS, LIGHTS, FENCES AND UNIFORMED TRAFFIC CONTROLLERS AS REQUIRED, ORDERED BY THE ENGINEER OR REQUIRED BY THE STATE AND LOCAL GOVERNING AUTHORITIES.
8. THE CONTRACTOR SHALL ABIDE BY THE FILL INTAKE PROTOCOLS SET FORT BY THE PROJECT AND/OR PROPERTY OWNER.
9. UNDERDRAINS SHALL BE ADDED, IF DETERMINED NECESSARY IN THE FIELD BY THE OWNER/GEOTECHNICAL ENGINEER, AFTER SUBGRADE IS ROUGH GRADED.
10. ALL DISTURBANCE INCURRED TO TOWN OR STATE PROPERTY DUE TO CONSTRUCTION SHALL BE RESTORED TO ITS PREVIOUS CONDITION OR BETTER, TO THE SATISFACTION OF THE TOWN OF MONROE AUTHORITY.
11. IF IMPACTED OR CONTAMINATED SOIL IS ENCOUNTERED BY THE CONTRACTOR, THE CONTRACTOR SHALL SUSPEND EXCAVATION WORK OF IMPACTED SOIL AND NOTIFY THE OWNER AND/OR OWNER'S ENVIRONMENTAL CONSULTANT PRIOR TO PROCEEDING WITH FURTHER WORK IN THE IMPACTED SOIL LOCATION UNTIL FURTHER INSTRUCTED BY THE OWNER AND/OR OWNER'S ENVIRONMENTAL CONSULTANT.
12. ALL PIPE LENGTHS ARE HORIZONTAL DISTANCES AND ARE APPROXIMATE.
13. GRADING CONTRACTOR SHALL RESTORE TO GRADE AND COMPACT ALL AREAS DISTURBED BY BUILDING CONSTRUCTION PRIOR TO BASE AND PAVING OPERATIONS COMMENCING.

LEGEND

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJOINING LOT LINE
- MAJOR CONTOURS
- MINOR CONTOURS
- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- CONTOUR LABEL
- PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION
- GRADE TO DRAIN
- SWALE
- STORM DRAIN PIPE
- PERFORATED UNDERDRAIN / TRENCH DRAIN
- TYPE "C" CATCH BASIN
- TYPE "CL" CATCH BASIN
- STORM MANHOLE
- WATER QUALITY UNIT
- FLARE END SECTION

VICTORIA DRIVE

PROPOSED INDOOR RECREATION
22,359± SF
FFE = 303.90

EXISTING OLE SOCCER
12,035± SF

MAXIMUM 2% SLOPE WITHIN ADA PARKING AREA

APPROXIMATE LIMITS OF FLOODWAY PER FEMA MAP

PROPOSED CATCH BASIN (CB-2) TO BE INSTALLED OVER EXISTING PIPE
TF = 296.73
EXISTING INV. (S) = 294.00

PROPOSED INSPECTION PORT MANHOLES (TYP.)

PROPOSED 3-FT RETAIN-IT STORM DETENTION SYSTEM W/ 6" STONE BOTTOM
3 ROWS BY 15 CHAMBERS (TOTAL 45 CHAMBERS)
TOP OF CHAMBERS = 296.0
BOTTOM OF CHAMBERS = 292.3
BOTTOM OF STONE = 291.8

PROPOSED ROOF LEADER COLLECTION SYSTEM FROM PROPOSED ADDITION TO BE ROUTED TO UNDERGROUND DETENTION SYSTEM
INV. AT SYSTEM = 295.0

CONVERT EXISTING CATCH BASIN (CB-1) TO CURBLESS (TYPE "CL") TOP
(PROTECT AND MAINTAIN EXISTING INVERTS)

APPROXIMATE LIMITS OF FLOODPLAIN (ZONE "AE")
ELEV = 300.0±

PROPOSED PAVEMENT LEAKOFF (TYP.)

drainage manhole
rim: 295.2
inv NW: 292.8 (12"CPP)
292.7 (4"PVC)
Inv S: 292.7

inv: 292.8

MAINTAIN EXISTING STORMWATER BASIN #1
(WATER QUALITY BASIN)
BOTTOM ELEV. = 292.00
EXISTING SPILLWAY ELEV. = 293.50
PROPOSED SPILLWAY ELEV. = 293.50

PROPOSED PAVEMENT LEAKOFF (TYP.)

TW=295.0
BW=293.0

PROPOSED PARKING LOT LEAKOFF (TYP.)

PROPOSED OUTLET FROM UNDERGROUND DETENTION
INV. = 293.50
WITH RIPRAP SPLASH PAD

TW=298.0
BW=293.5

PROPOSED 33 LF OF 12" RCP @ S = 3.03%

PROPOSED OUTLET INV. = 294.50

TW=299.0
BW=293.0

PROPOSED RETAINING WALL (MAX 6' HEIGHT)

PROPOSED FLARED END SECTION
INV. = 293.00
WITH RIPRAP SPLASH PAD

PROPOSED 14 LF OF 18" HDPE @ S = 7.07%

PROPOSED 4' FIRST DEFENSE HYDRODYNAMIC SEPARATOR WITHIN MANHOLE W/ WATERTIGHT COVER
TF = 298.00
INV (IN) = 293.99
INV (OUT) = 293.99

PROPOSED CATCH BASIN (CB-3)
TF = 299.67
INV. (IN) = 294.07
INV. (OUT) = 294.07

PROPOSED 4 LF OF 18" HDPE @ S = 2.0%

PROPOSED 85 LF OF 18" HDPE @ S =4.25%

PROPOSED CATCH BASIN (CB-4)
TF = 302.70
INV. (SW) = 297.69
INV. (S) = 297.69

PROPOSED 154 LF OF 18" HDPE @ S = 0.75%

PROPOSED CATCH BASIN (CB-5)
TF = 302.35
INV. (OUT) = 298.85

PROPOSED STORMWATER BASIN #2
BOTTOM ELEV. = 291.00
SPILLWAY ELEVATION = 292.25

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2	05/06/21	IWC COMMENTS
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Graphic Scale: 30 0 30 60

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Drawn By:	CJP
Checked By:	MSL
Approved By:	KMS
Project #:	2012301
Plan Date:	03/23/21
Scale:	1" = 30'

STATE OF CONNECTICUT · KEVIN M. SOLLI · 25759 · LICENSED PROFESSIONAL ENGINEER

Kevin Solli, P.E.
CT 25759

Project:

PROPOSED SITE REDEVELOPMENT
5 VICTORIA DRIVE
MONROE, CONNECTICUT

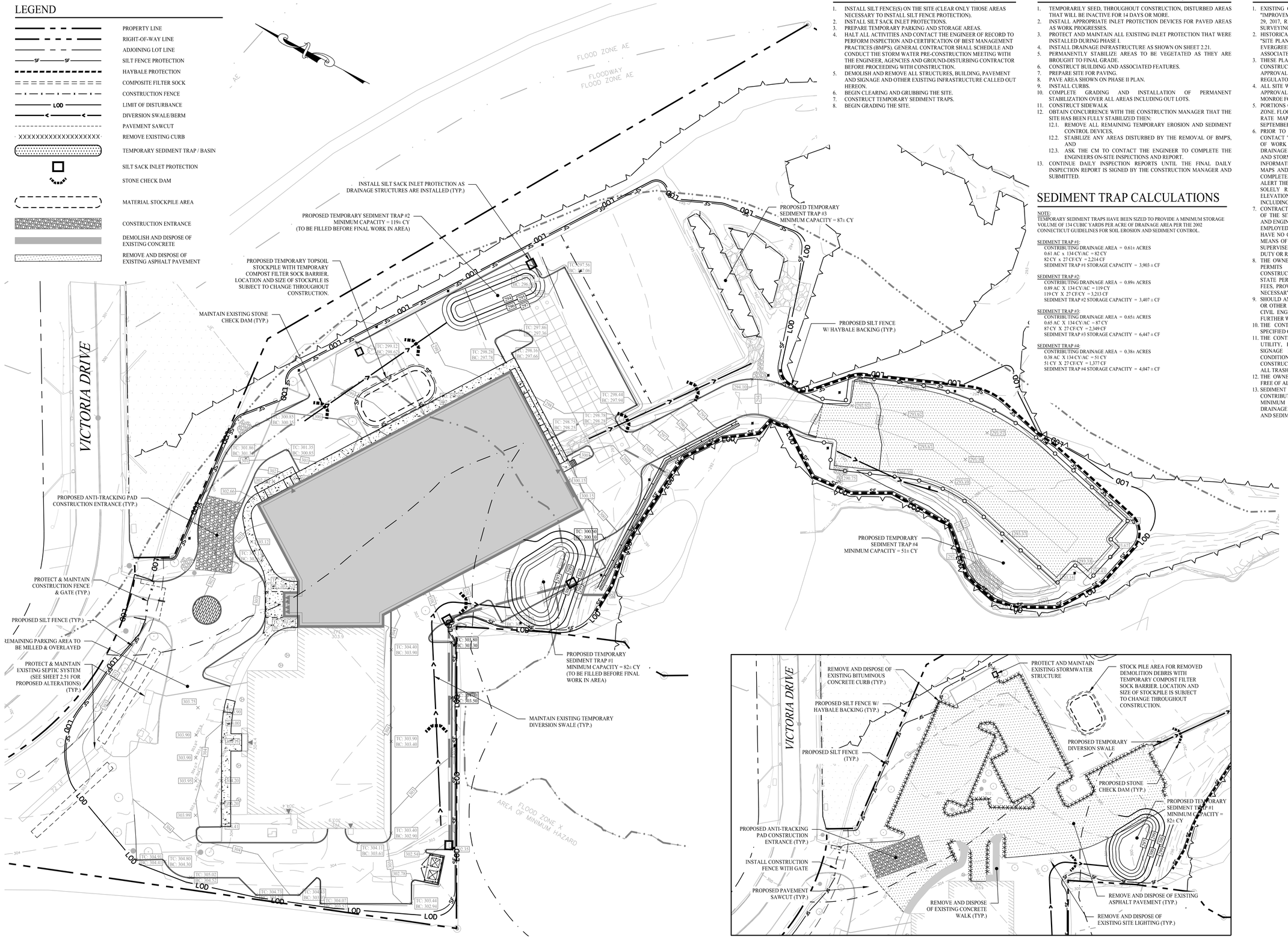
Sheet Title: GRADING & DRAINAGE PLAN

Sheet #: 2.21

May 07, 2021 – 8:08am chris
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LEGEND

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJOINING LOT LINE
- SF SILT FENCE PROTECTION
- HAYBALE PROTECTION
- COMPOSITE FILTER SOCK
- CONSTRUCTION FENCE
- LOD LIMIT OF DISTURBANCE
- DIVERSION SWALE/BERM
- PAVEMENT SAWCUT
- XXXXXXXXXXXXXXXXXX REMOVE EXISTING CURB
- TEMPORARY SEDIMENT TRAP / BASIN
- SILT SACK INLET PROTECTION
- STONE CHECK DAM
- MATERIAL STOCKPILE AREA
- CONSTRUCTION ENTRANCE
- DEMOLISH AND DISPOSE OF EXISTING CONCRETE
- REMOVE AND DISPOSE OF EXISTING ASPHALT PAVEMENT



SOIL EROSION & SEDIMENT CONTROL PLAN - PHASE II

SCALE: 1" = 30'

PHASE I CONSTRUCTION SEQUENCE

1. INSTALL SILT FENCE(S) ON THE SITE (CLEAR ONLY THOSE AREAS NECESSARY TO INSTALL SILT FENCE PROTECTION).
2. INSTALL SILT SACK INLET PROTECTIONS.
3. PREPARE TEMPORARY PARKING AND STORAGE AREAS.
4. HALT ALL ACTIVITIES AND CONTACT THE ENGINEER OF RECORD TO PERFORM INSPECTION AND CERTIFICATION OF BEST MANAGEMENT PRACTICES (BMP'S). GENERAL CONTRACTOR SHALL SCHEDULE AND CONDUCT THE STORM WATER PRE-CONSTRUCTION MEETING WITH THE ENGINEER, AGENCIES AND GROUND-DISTURBING CONTRACTOR BEFORE PROCEEDING WITH CONSTRUCTION.
5. DEMOLISH AND REMOVE ALL STRUCTURES, BUILDING, PAVEMENT AND SIGNAGE AND OTHER EXISTING INFRASTRUCTURE CALLED OUT HEREON.
6. BEGIN CLEARING AND GRUBBING THE SITE.
7. CONSTRUCT TEMPORARY SEDIMENT TRAPS.
8. BEGIN GRADING THE SITE.

PHASE II CONSTRUCTION SEQUENCE

1. TEMPORARILY SEED, THROUGHOUT CONSTRUCTION, DISTURBED AREAS THAT WILL BE INACTIVE FOR 14 DAYS OR MORE.
2. INSTALL APPROPRIATE INLET PROTECTION DEVICES FOR PAVED AREAS AS WORK PROGRESSES.
3. PROTECT AND MAINTAIN ALL EXISTING INLET PROTECTION THAT WERE INSTALLED DURING PHASE I.
4. INSTALL DRAINAGE INFRASTRUCTURE AS SHOWN ON SHEET 2.21.
5. PERMANENTLY STABILIZE AREAS TO BE VEGETATED AS THEY ARE BROUGHT TO FINAL GRADE.
6. CONSTRUCT BUILDING AND ASSOCIATED FEATURES.
7. PREPARE SITE FOR PAVING.
8. PAVE AREA SHOWN ON PHASE II PLAN.
9. INSTALL CURBS.
10. COMPLETE GRADING AND INSTALLATION OF PERMANENT STABILIZATION OVER ALL AREAS INCLUDING OUT LOTS.
11. CONSTRUCT SIDEWALK
12. OBTAIN CONCURRENCE WITH THE CONSTRUCTION MANAGER THAT THE SITE HAS BEEN FULLY STABILIZED THEN:
    - 12.1. REMOVE ALL REMAINING TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES,
    - 12.2. STABILIZE ANY AREAS DISTURBED BY THE REMOVAL OF BMP'S, AND
    - 12.3. ASK THE CM TO CONTACT THE ENGINEER TO COMPLETE THE ENGINEERS ON-SITE INSPECTIONS AND REPORT.
13. CONTINUE DAILY INSPECTION REPORTS UNTIL THE FINAL DAILY INSPECTION REPORT IS SIGNED BY THE CONSTRUCTION MANAGER AND SUBMITTED.

SEDIMENT TRAP CALCULATIONS

NOTE:
TEMPORARY SEDIMENT TRAPS HAVE BEEN SIZED TO PROVIDE A MINIMUM STORAGE VOLUME OF 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA PER THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL..

SEDIMENT TRAP #1:
CONTRIBUTING DRAINAGE AREA = 0.61± ACRES
0.61 AC x 134 CY/AC = 82 CY
82 CY x 27 CF/CY = 2,214 CF
SEDIMENT TRAP #1 STORAGE CAPACITY = 3,903 ± CF

SEDIMENT TRAP #2:
CONTRIBUTING DRAINAGE AREA = 0.89± ACRES
0.89 AC X 134 CY/AC = 119 CY
119 CY X 27 CF/CY = 3,213 CF
SEDIMENT TRAP #2 STORAGE CAPACITY = 3,407 ± CF

SEDIMENT TRAP #3:
CONTRIBUTING DRAINAGE AREA = 0.65± ACRES
0.65 AC X 134 CY/AC = 87 CY
87 CY X 27 CF/CY = 2,349 CF
SEDIMENT TRAP #3 STORAGE CAPACITY = 6,447 ± CF

SEDIMENT TRAP #4:
CONTRIBUTING DRAINAGE AREA = 0.38± ACRES
0.38 AC X 134 CY/AC = 51 CY
51 CY X 27 CF/CY = 1,377 CF
SEDIMENT TRAP #4 STORAGE CAPACITY = 4,047 ± CF

GENERAL NOTES

1. EXISTING CONDITIONS INFORMATION TAKEN FROM A PLAN ENTITLED "IMPROVEMENT LOCATION SURVEY OF 5 VICTORIA DRIVE" DATED MARCH 29, 2017, REVISED MARCH 30, 2021, SCALE: 1"=60', BY ACCURATE LAND SURVEYING, LLC.
2. HISTORICAL WETLAND INFORMATION TAKEN FROM A PLAN ENTITLED "SITE PLAN, MAIN STREET, MONROE, CONNECTICUT, PREPARED FOR L&L EVERGREEN" DATED APRIL 16 2003, SCALE 1"=40', SPATH-BJORKLUND ASSOCIATES.
3. THESE PLANS ARE FOR PERMITTING PURPOSES ONLY AND ARE NOT FOR CONSTRUCTION. NO CONSTRUCTION OR DEMOLITION SHALL BEGIN UNTIL APPROVAL OF THE FINAL PLANS IS GRANTED BY ALL GOVERNING AND REGULATORY AGENCIES.
4. ALL SITE WORK TO BE COMPLETED IN ACCORDANCE WITH ALL PERMITS, APPROVALS AND CONDITIONS OF APPROVALS ISSUED BY THE TOWN OF MONROE FOR THIS PROJECT.
5. PORTIONS OF THE SITE LIES WITHIN THE 100-YEAR AND 500-YEAR FLOOD ZONE. FLOOD ZONE INFORMATION TAKEN FORM FEMA FLOOD INSURANCE RATE MAP, PANEL NUMBER 09003C0458F, PANEL 458 OF 675, DATED SEPTEMBER 26TH, 2008.
6. PRIOR TO DEMOLITION OR CONSTRUCTION, THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" 72 HOURS BEFORE COMMENCEMENT OF WORK AT 1-800-922-4455 AND VERIFY ALL UTILITY AND STORM DRAINAGE SYSTEM LOCATIONS. INFORMATION ON EXISTING UTILITIES AND STORM DRAINAGE SYSTEMS HAS BEEN COMPILED FROM AVAILABLE INFORMATION INCLUDING UTILITY PROVIDER AND MUNICIPAL RECORD MAPS AND/OR FIELD SURVEY AND IS NOT GUARANTEED CORRECT OR COMPLETE. UTILITIES AND STORM DRAINAGE SYSTEMS ARE SHOWN TO ALERT THE CONTRACTOR TO THEIR PRESENCE AND THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STORM DRAINAGE SYSTEMS INCLUDING SERVICES.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY AND SECURITY OF THE SITE DURING ALL PHASES OF CONSTRUCTION. THE ARCHITECT AND ENGINEER ARE NOT RESPONSIBLE FOR SITE SAFETY MEASURES TO BE EMPLOYED DURING CONSTRUCTION. THE ARCHITECT AND ENGINEER HAVE NO CONTRACTUAL DUTY TO CONTROL THE SAFEST METHODS OR MEANS OF THE WORK, JOB SITE RESPONSIBILITIES, SUPERVISION OR TO SUPERVISE SAFETY AND DOES NOT VOLUNTARILY ASSUME ANY SUCH DUTY OR RESPONSIBILITY.
8. THE OWNER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY ZONING PERMITS REQUIRED BY GOVERNMENT AGENCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN ALL LOCAL AND STATE PERMITS. THE CONTRACTOR SHALL POST ALL BONDS, PAY ALL FEES, PROVIDE PROOF OF INSURANCE AND PROVIDE TRAFFIC CONTROL NECESSARY FOR THIS WORK.
9. SHOULD ANY UNCHARTED OR INCORRECTLY CHARTED, EXISTING PIPING OR OTHER UTILITY BE UNCOVERED DURING EXCAVATION, CONSULT THE CIVIL ENGINEER IMMEDIATELY FOR DIRECTIONS BEFORE PROCEEDING FURTHER WITH WORK IN THIS AREA.
10. THE CONTRACT LIMIT IS THE PROPERTY LINE UNLESS OTHERWISE SPECIFIED OR SHOWN ON THE CONTRACT DRAWINGS.
11. THE CONTRACTOR SHALL RESTORE ANY DRAINAGE STRUCTURE, PIPE, UTILITY, PAVEMENT, CURBS, SIDEWALKS, LANDSCAPED AREAS OR SIGNAGE DISTURBED DURING CONSTRUCTION TO THEIR ORIGINAL CONDITION OR BETTER, AS APPROVED BY THE CIVIL ENGINEER. DURING CONSTRUCTION CONTRACTOR IS TO HAVE THE SITE MAINTAINED FREE OF ALL TRASH, LITTER, DEBRIS AND OVERGROWN VEGETATION.
12. THE OWNER SHALL BE RESPONSIBLE TO HAVE THE SITE MAINTAINED FREE OF ALL TRASH, LITTER, DEBRIS AND OVERGROWN VEGETATION.
13. SEDIMENT TRAPS ARE PROPOSED IN THE LOW-LYING AREAS OF EACH CONTRIBUTING DRAINAGE AREA AND HAVE BEEN SIZED TO PROVIDE A MINIMUM STORAGE VOLUME OF 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA PER 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL.

DEMOLITION & SOIL EROSION CONTROL PLAN - PHASE I

SCALE: 1" = 40'

Rev. #:	Date	Description
2	05/06/21	IWC COMMENTS
1	04/07/21	P&Z SUBMISSION

Graphic Scale: 30 0 30 60

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Drawn By:	CJP
Checked By:	MSL
Approved By:	KMS
Project #:	2012301
Plan Date:	03/23/21
Scale:	AS SHOWN

STATE OF CONNECTICUT — KEVIN M. SOLLI — 25759 — LICENSED PROFESSIONAL ENGINEER

Kevin Solli, P.E.
CT 25759

Project:

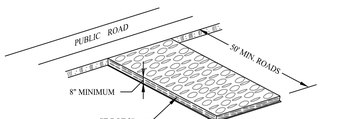
PROPOSED SITE REDEVELOPMENT

5 VICTORIA DRIVE
MONROE, CONNECTICUT

Sheet Title: SOIL EROSION & SEDIMENT CONTROL PLAN

Sheet #: 2.31

May 07, 2021 – 8:07am chris
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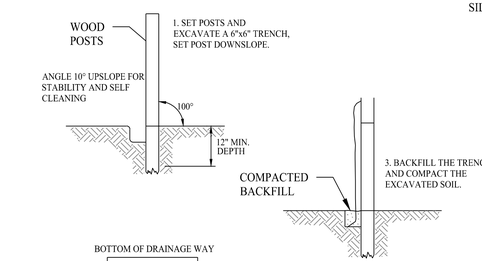
GRADATION TABLE

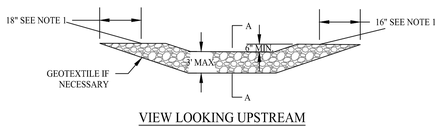
SQUARE MESH SIEVES	CONN. DOT 2" CRUSHED GRAVEL % FINER	ASTM C-33 NO. 2 % FINER	ASTM C-33 NO. 3 % FINER
2 1/2 INCHES	100	90-100	100
2 INCHES	95-100	35-70	90-100
1 1/2 INCHES	35-70	0-15	35-70
1 1/4 INCHES	0-25	---	---
1 INCHES	0-10	---	0-15
3/4 INCHES	---	0-5	---
1/2 INCHES	---	---	0-5
3/8 INCHES	---	---	---

SOURCE:
U.S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, STORRS, CONNECTICUT

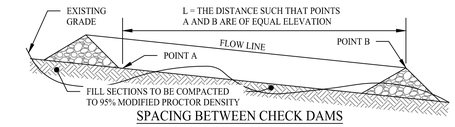
CONSTRUCTION ENTRANCE

SCALE: NTS

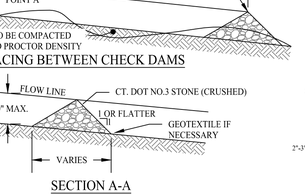




VIEW LOOKING UPSTREAM



SPACING BETWEEN CHECK DAMS



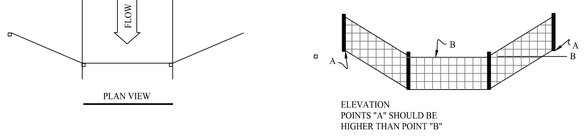
SECTION A-A

NOTES
1. KEY STONE INTO THE DITCH BANKS AND EXTEND INTO THE ABUTMENTS A MINIMUM OF 18" TO PREVENT FLOW FROM FLANKING THE DAM.
2. THE MINIMUM DESIGN CAPACITY SHALL CONVEY A 2 YEAR-24 HOUR PEAK FLOW.

STONE CHECK DAM DETAIL

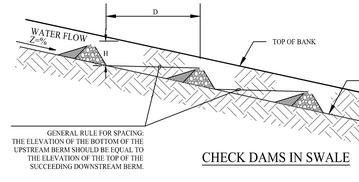
SCALE: NTS

WHEREVER SILT FENCE RUNS ACROSS OR PERPENDICULAR TO SURFACE CONTOURS, 10-FOOT LONG WINGS OF SILT FENCE PLACED PERPENDICULAR TO THE MAIN RUN OF SILT FENCE SHOULD BE PROVIDED AT APPROXIMATE INTERVALS OF 50-FEET.



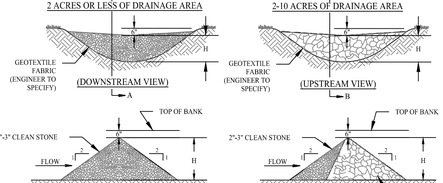
SILT FENCE PROTECTION DETAIL

SCALE: NTS



GENERAL RULE FOR SPACING:
THE ELEVATION OF THE BOTTOM OF THE UPSTREAM BENCH SHOULD BE EQUAL TO THE ELEVATION OF THE TOP OF THE SUCCEEDING DOWNSTREAM BERM.

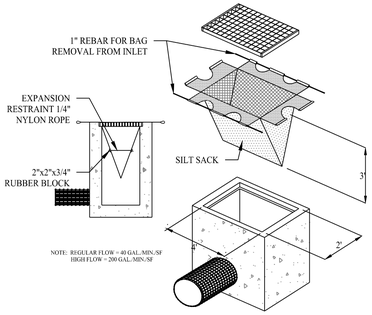
CHECK DAMS IN SWALE



ELEVATION A

ELEVATION B

NOTE: SEE SITE MAP FOR LOCATION OF CHECK DAM(S).



NOTE: REGULAR FLOW = 40 GAL. MIN./SF
HIGH FLOW = 200 GAL. MIN./SF

SILT SACK DETAIL

SCALE: NTS

SOIL EROSION AND SEDIMENT CONTROL GENERAL NOTES

SEDIMENT & EROSION CONTROL NARRATIVE
THE SEDIMENT AND EROSION CONTROL PLAN WAS DEVELOPED TO PROTECT THE EXISTING ROADWAY AND STORM DRAINAGE SYSTEMS, ADJACENT PROPERTIES, AND ANY ADJACENT WETLAND AREA AND WATER COURSE FROM SEDIMENT LADEN SURFACE RUNOFF AND EROSION.

CONSTRUCTION SCHEDULE
THE ANTICIPATED STARTING DATE FOR CONSTRUCTION IS SUMMER 2021 WITH COMPLETION ANTICIPATED BY SUMMER 2022. APPROPRIATE EROSION CONTROL MEASURES AS DESCRIBED HEREIN, SHALL BE INSTALLED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF ALL SITE CLEARING OR CONSTRUCTION ACTIVITY. SCHEDULE WORK TO MINIMIZE THE LENGTH OF TIME THAT BARE SOIL WILL BE EXPOSED.

CONTINGENCY EROSION PLAN
THE CONTRACTOR SHALL INSTALL ALL SPECIFIED EROSION CONTROL MEASURES AND WILL BE REQUIRED TO MAINTAIN THEM IN THEIR INTENDED FUNCTIONING CONDITION. THE LAND USE AGENTS OF THE TOWN OF MONROE AND PROJECT ENGINEER SHALL HAVE THE AUTHORITY TO REQUIRE SUPPLEMENTAL MAINTENANCE OR ADDITIONAL MEASURES IF FIELD CONDITIONS ARE ENCOUNTERED BEYOND WHAT WOULD NORMALLY BE ANTICIPATED.

OPERATION REQUIREMENTS
CLEARING AND GRUBBING OPERATIONS:
1. ALL SEDIMENTATION AND EROSION CONTROL MEASURES, INCLUDING THE CONSTRUCTION OF TEMPORARY SEDIMENTATION TRAPS AND STONE CONSTRUCTION ENTRANCE ANTI-TRACKING PADS, WILL BE INSTALLED PRIOR TO THE START OF CLEARING AND GRUBBING OPERATIONS.
2. FOLLOWING INSTALLATION OF ALL SEDIMENTATION AND EROSION CONTROL MEASURES, THE CONTRACTOR SHALL NOT PROCEED WITH GRADING, FILLING OR OTHER CONSTRUCTION OPERATIONS UNTIL THE ENGINEER HAS INSPECTED AND APPROVED ALL INSTALLATIONS.
3. THE CONTRACTOR SHALL TAKE EXTREME CARE DURING CLEARING AND GRUBBING OPERATIONS SO AS NOT TO DISTURB UNPROTECTED WETLAND AREAS OR SEDIMENTATION AND EROSION CONTROL DEVICES.
4. FOLLOWING THE COMPLETION OF CLEARING AND GRUBBING OPERATIONS, ALL AREAS SHALL BE STABILIZED WITH TOPSOIL AND SEEDING OR PROCESSED AGGREGATE STONE AS SOON AS PRACTICAL
5. ALL REMOVED TOPSOIL OR PLANT SPECIES MATERIAL SHALL BE FULLY REMOVED FROM THE SITE AND TAKEN TO AN APPROVED AND/OR ACCEPTABLE DISPOSAL LOCATION.

ROUGH GRADING OPERATIONS:
1. DURING THE REMOVAL AND/OR PLACEMENT OF EARTH AS INDICATED ON THE GRADING PLAN, TOPSOIL SHALL BE STRIPPED AND APPROPRIATELY STOCKPILED FOR FUTURE REUSE.
2. ALL STOCKPILED TOPSOIL SHALL BE SEEDED, MULCHED WITH HAY, AND ENCLOSED BY A SILTATION FENCE.

FILLING OPERATIONS:
1. PRIOR TO FILLING, ALL SEDIMENTATION AND EROSION CONTROL DEVICES SHALL BE PROPERLY IMPLEMENTED, MAINTAINED AND FULLY INSTALLED, AS DIRECTED BY THE ENGINEER AND AS SHOWN ON THIS PLAN.
2. ALL FILL MATERIAL ADJACENT TO ANY WETLAND AREAS, IF APPLICABLE TO THIS PROJECT, SHALL BE GOOD QUALITY, WITH LESS THAN 5% FINES PASSING THROUGH A #200 SIEVE (BANK RUN). SHALL BE PLACED IN LIFT THICKNESS NOT GREATER THAN THAT SPECIFIED IN PROJECT SPECIFICATIONS. LIFTS SHALL BE COMPACTED TO 95% MAX. DRY DENSITY MODIFIED PROCTOR OR AS SPECIFIED IN THE CONTRACT SPECIFICATIONS OR IN THE GEOTECHNICAL REPORT.
3. AS GENERAL GRADING OPERATIONS PROGRESS, ANY TEMPORARY DIVERSION DITCHES SHALL BE RAISED OR LOWERED, AS NECESSARY, TO DIVERT SURFACE RUNOFF TO THE SEDIMENT TRAPS AND BASIN.

PLACEMENT OF DRAINAGE STRUCTURES, UTILITIES, AND ROADWAY CONSTRUCTION OPERATIONS:
1. SILT FENCES SHALL BE INSTALLED AT THE DOWNHILL SIDES OF TEMPORARY SEDIMENT TRAP AND BASIN SLOPES, MUD PUMP DISCHARGES, AND UTILITY TRENCH MATERIAL STOCKPILES. HAY BALES MAY BE USED IF SHOWN ON THE EROSION CONTROL PLANS OR IF DIRECTED BY THE PROJECT ENGINEER.

FINAL GRADING AND PAVING OPERATIONS:
1. ALL INLET AND OUTLET PROTECTION SHALL BE PLACED AND MAINTAINED AS SHOWN ON EROSION CONTROL PLANS AND DETAILS, AND AS DESCRIBED IN SPECIFICATIONS AND AS DESCRIBED HEREIN.
2. NO CUT OR FILL SLOPES SHALL EXCEED 2:1 EXCEPT WHERE STABILIZED BY ROCK FACED EMBANKMENTS OR EROSION CONTROL BLANKETS, JUTE MESH AND VEGETATION. ALL SLOPES SHALL BE SEEDED, AND ANY ROAD OR DRIVEWAY SHOULDER AND BANKS SHALL BE STABILIZED IMMEDIATELY UPON COMPLETION OF FINAL GRADING UNTIL TURF IS ESTABLISHED.
3. PAVEMENT SUBBASE AND BASE COURSES SHALL BE INSTALLED OVER AREAS TO BE PAVED AS SOON AS FINAL SUB-GRADES ARE ESTABLISHED AND UNDERGROUND UTILITIES AND STORM DRAINAGE SYSTEMS HAVE BEEN INSTALLED.
4. AFTER CONSTRUCTION OF PAVEMENT, TOPSOIL, FINAL SEED, MULCH AND LANDSCAPING, REMOVE ALL TEMPORARY EROSION CONTROL DEVICES ONLY AFTER ALL AREAS HAVE BEEN PAVED AND/OR GRASS HAS BEEN WELL ESTABLISHED AND THE SITE HAS BEEN INSPECTED AND APPROVED BY THE TOWN OF MONROE AND TOWN OF MONROE INLAND WETLANDS COMMISSION.

INSTALLATION OF SEDIMENTATION AND EROSION CONTROL MEASURES
I. SILTATION FENCE:
   A. DIG A SIX INCH TRENCH ON THE UPHILL SIDE OF THE DESIGNATED FENCE LINE LOCATION.
   B. POSITION THE POST AT THE BACK OF THE TRENCH (DOWNHILL SIDE), AND HAMMER THE POST AT LEAST 1.5 FEET INTO THE GROUND.
   C. LAY THE BOTTOM SIX INCHES OF THE FABRIC INTO THE TRENCH TO PREVENT UNDERMINING BY STORM WATER RUN-OFF.
   D. BACKFILL THE TRENCH AND COMPACT.
II. HAY BALES
   A. BALES SHALL BE PLACED IN A SINGLE ROW, LENGTHWISE, ORIENTED PARALLEL TO THE CONTOUR, WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER.
   B. BALES SHALL BE ENTRENCHED AND BACKFILLED. A TRENCH SHALL BE EXCAVATED THE WIDTH OF A BALE AND THE LENGTH OF THE PROPOSED BARRIER TO A MINIMUM DEPTH OF FOUR INCHES. AFTER THE BALES ARE STAKED, THE EXCAVATED SOIL SHALL BE BACKFILLED AGAINST THE BARRIER.
   C. EACH BALE SHALL BE SECURELY ANCHORED BY AT LEAST TWO (2) STAKES.
   D. THE GAPS BETWEEN BALES SHALL BE WEDGED WITH STRAW TO PREVENT WATER LEAKAGE.
   E. THE BARRIER SHALL BE EXTENDED TO SUCH A LENGTH THAT THE BOTTOMS OF THE END BALES ARE HIGHER IN ELEVATION THAN THE TOP OF THE LOWEST MIDDLE BALE, TO ENSURE THAT RUN-OFF WILL FLOW EITHER THROUGH OR OVER THE BARRIER, BUT NOT AROUND IT.

OPERATION AND MAINTENANCE OF SEDIMENTATION AND EROSION CONTROL MEASURES
I. SILTATION FENCE:
   I. ALL SILTATION FENCES SHALL BE INSPECTED AS A MINIMUM WEEKLY OR AFTER EACH RAINFALL. ALL DETERIORATED FABRIC AND DAMAGED POSTS SHALL BE REPLACED AND PROPERLY REPOSITIONED IN ACCORDANCE WITH THIS PLAN.
   J. SEDIMENT DEPOSITS SHALL BE REMOVED FROM BEHIND THE FENCE WHEN THEY EXCEED A HEIGHT OF ONE FOOT.
II. HAY BALES
   A. ALL HAY BALE RINGS SHALL BE INSPECTED FOLLOWING EACH RAINFALL. REPAIR OR REPLACEMENT SHALL BE PROMPTLY MADE AS NEEDED.
   B. DEPOSITS SHALL BE REMOVED AND CLEANED-OUT IF ONE HALF OF THE ORIGINAL HEIGHT OF THE BALES BECOMES FILLED WITH SEDIMENT.
III. CHECK DAMS:
   A. ALL STONE CHECK DAMS SHALL BE INSPECTED FOLLOWING EACH RAINFALL. REPAIR OF STONE CHECK DAMS SHALL BE PROMPTLY MADE AND ACCUMULATED SEDIMENT REMOVED WHEN IT REACTIES ONE HALF OF THE HEIGHT OF THE CHECK DAM.
IV. TEMPORARY/PERMANENT DRAINAGE SWALES:
   A. SWALES SHALL BE INSPECTED FOLLOWING EACH RAINFALL. REPAIR OF ANY WASHED OUT OR ERODED SLOPES SHALL BE MADE PROMPTLY AND THE AREA SHALL BE RESEEDED AS NECESSARY.

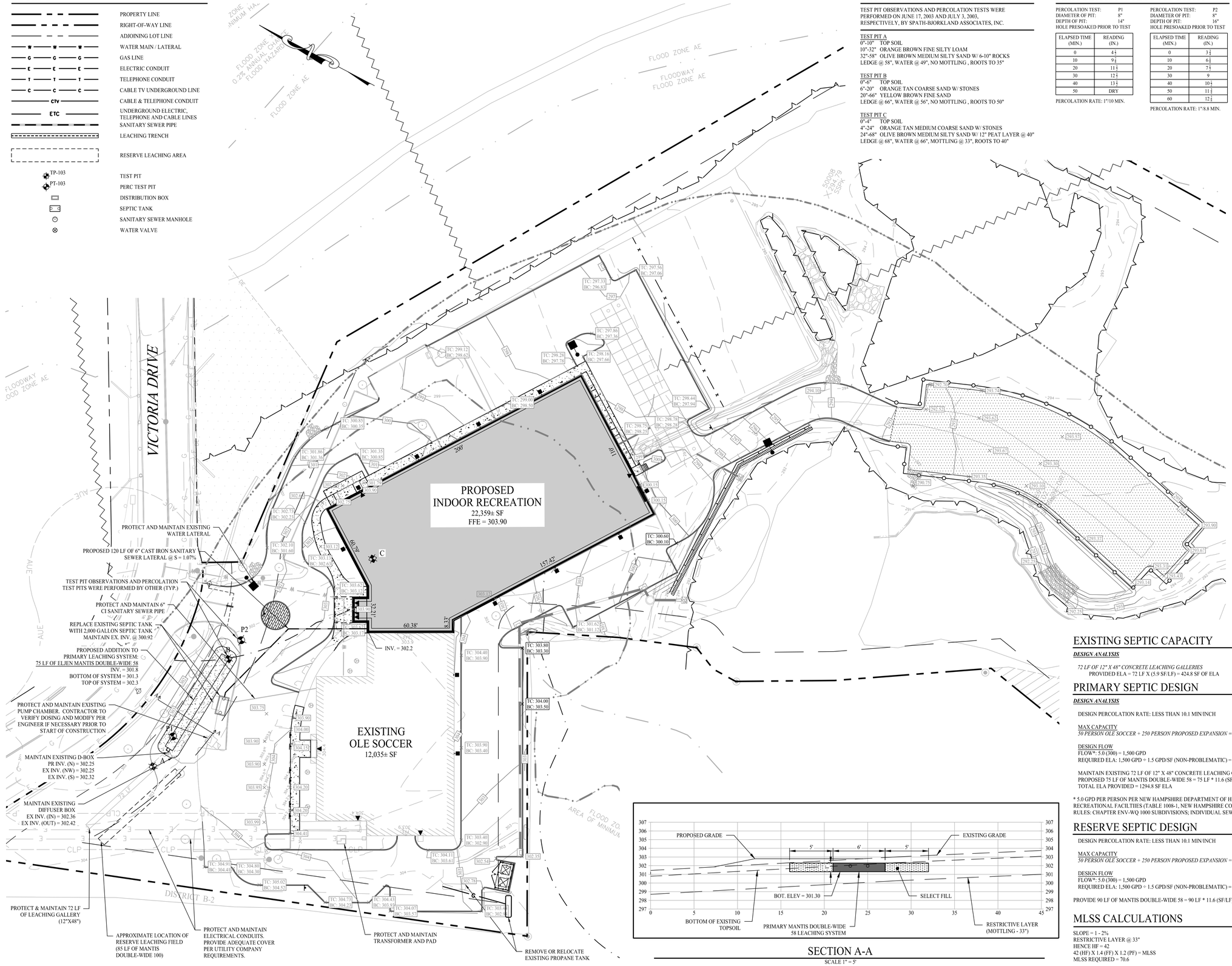
EROSION AND SEDIMENT CONTROL PLAN
1. HAY BALE FILTERS OR SILTATION FENCE WILL BE INSTALLED AT ALL CULVERT OUTLETS IF CULVERT OUTLETS ARE APPLICABLE TO THIS PROJECT AND ALONG THE TOE OF ALL CRITICAL CUT AND FILL SLOPES.
2. CULVERT DISCHARGE AREAS WILL BE PROTECTED WITH RIP RAP CHANNELS; ENERGY DISSIPATERS WILL BE INSTALLED AS SHOWN ON THESE PLANS AND AS NECESSARY.
3. CATCH BASINS WILL BE PROTECTED WITH HAY BALE FILTERS, SILT SACKS, SILTATION FENCE, OR OTHER INLET PROTECTION DEVICES PER DETAILS, THROUGHOUT THE CONSTRUCTION PERIOD AND UNTIL ALL DISTURBED AREAS ARE THOROUGHLY STABILIZED.
4. ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL MANUAL, LATEST EDITION.
5. EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED PRIOR TO CONSTRUCTION WHENEVER POSSIBLE
6. ALL CONTROL MEASURES WILL BE MAINTAINED IN EFFECTIVE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD.
7. ADDITIONAL CONTROL MEASURES WILL BE INSTALLED DURING THE CONSTRUCTION PERIOD, IF NECESSARY OR REQUIRED OR AS DIRECTED BY THE CIVIL ENGINEER OR BY LOCAL GOVERNING OFFICIALS.
8. SEDIMENT REMOVED FROM EROSION CONTROL STRUCTURES WILL BE DISPOSED IN A MANNER WHICH IS CONSISTENT WITH THE INTENT AND REQUIREMENTS OF THE EROSION CONTROL PLANS, NOTES, AND DETAILS.
9. THE OWNER IS ASSIGNED THE RESPONSIBILITY FOR IMPLEMENTING THIS EROSION AND SEDIMENT CONTROL PLAN. THIS RESPONSIBILITY INCLUDES THE INSTALLATION AND MAINTENANCE OF CONTROL MEASURES, INFORMING ALL PARTIES ENGAGED ON THE CONSTRUCTION SITE OF THE REQUIREMENTS AND OBJECTIVES OF THE PLAN.

CONSTRUCTION SEQUENCE
THE FOLLOWING CONSTRUCTION SEQUENCE IS RECOMMENDED:
1. CONTACT TOWN OF MONROE AGENT AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO COMMENCEMENT OF ANY DEMOLITION, CONSTRUCTION OR REGULATED ACTIVITY ON THIS PROJECT.
2. CLEARING LIMITS SHALL BE PHYSICALLY MARKED IN THE FIELD AND APPROVED BY THE TOWN OF MONROE AGENT PRIOR TO THE START OF WORK ON THE SITE. INSTALL TREE PROTECTION AND PERIMETER SILT FENCE.
3. CONSTRUCT STONE CONSTRUCTION ANTI-TRACKING PADS AT CONSTRUCTION ENTRANCES/EXITS AND WRAP FILTER FABRIC AROUND GRATES OF CATCH BASINS OR INSTALL SILT SACKS ON CATCH BASIN INLETS ON OFF SITE ROADS. INSTALL SILT FENCE AND OTHER EROSION CONTROL DEVICES INDICATED ON THESE PLANS AT PERIMETER OF PROPOSED SITE DISTURBANCE AND INSTALL ALL EROSION CONTROL MEASURES AND TREE PROTECTION INDICATED ON THESE PLANS. INSTALL SEDIMENT BASINS AND SEDIMENT TRAPS IF REQUIRED AT LOW AREAS OF SITE OR AS ORDERED BY THE ENGINEER OR AS SHOWN ON THESE PLANS.
4. CLEAR AND GRUB SITE. STOCKPILE CHIPS. STOCKPILE TOPSOIL. INSTALL EROSION CONTROLS AT STOCKPILES.
5. BUILDING AND SITE DEMOLITION AND REMOVAL. PAVEMENT REMOVAL.
6. COMMENCE EARTHWORK, CONSTRUCT FILL SLOPE RETAINING WALLS. INSTALL ADDITIONAL EROSION CONTROLS AS WORK PROGRESSES AND CONTINUE STORM DRAINAGE SYSTEM CONSTRUCTION, TOPSOIL AND SEED SLOPES WHICH HAVE ACHIEVED FINAL SITE GRADING.
7. CONSTRUCTION STAKING OF ALL BUILDING CORNERS, UTILITIES, ACCESS DRIVES, AND PARKING AREAS.
8. ROUGH GRADING AND FILLING OF SUBGRADES AND SLOPES.
9. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO ELIMINATE THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.
10. BEFORE DISPOSING OF SOIL OR RECEIVING BORROW FOR THE SITE, THE CONTRACTOR MUST PROVIDE EVIDENCE THAT EACH SPOIL OR BORROW AREA HAS AN EROSION AND SEDIMENT CONTROL PLAN APPROVED BY THE TOWN OF MONROE AND WHICH IS BEING IMPLEMENTED AND MAINTAINED. THE CONTRACTOR SHALL ALSO NOTIFY THE TOWN OF MONROE IN WRITING OF ALL RECEIVING SPOIL AND BORROW AREAS WHEN THEY HAVE BEEN IDENTIFIED.
11. CONTINUE INSTALLATION OF STORM DRAINAGE AS SUBGRADE ELEVATIONS ARE ACHIEVED.
12. BUILDING FOUNDATION SUBGRADE AND PAD SUBGRADE PREPARATION.
13. BUILDING FOUNDATION CONSTRUCTION. BEGIN BUILDING SUPERSTRUCTURE
14. THROUGHOUT CONSTRUCTION SEQUENCE, REMOVE SEDIMENT FROM BEHIND SILT FENCES, HAY BALES AND OTHER EROSION CONTROL DEVICES, AND FROM SEDIMENTATION BASINS AND SEDIMENT TRAPS AS REQUIRED. REMOVAL SHALL BE ON A PERIODIC BASIS (EVERY SIGNIFICANT RAINFALL OF 0.25 INCH OR GREATER). INSPECTION OF EROSION CONTROL MEASURES SHALL BE ON A WEEKLY BASIS AND AFTER EACH RAINFALL OF 0.25 INCHES OR GREATER. SEDIMENT COLLECTED SHALL BE DEPOSITED AND SPREAD EVENLY ON BASIN/SEDIMENTATION BASIN CONSTRUCTION.
15. INSTALL SANITARY LATERAL AND UTILITIES. COMPLETE STORM DRAINAGE SYSTEM.
16. INSTALL SITE LIGHTING AND TRASH ENCLOSURE.
17. COMPLETE GRADING TO SUBGRADES AND CONSTRUCT PARKING AREA SUBGRADE.
18. CONSTRUCT CURBS, PAVEMENT STRUCTURE AND SIDEWALKS
19. CONDUCT FINE GRADING.
20. CONSTRUCT OFF SITE ROADWAY AND SIGNAL IMPROVEMENTS
21. PAVING OF PARKING AREAS AND DRIVEWAYS
22. FINAL FINE GRADING OF SLOPE AND NON-PAVED AREAS.
23. PLACE 4" TOPSOIL ON SLOPES AFTER FINAL GRADING IS COMPLETED. FERTILIZE SEED AND MULCH. SEED MIXTURE TO BE INSTALLED APRIL 1- JUNE 1 OR AUGUST 15-OCTOBER 1. USE EROSION CONTROL BLANKETS AS REQUIRED OR ORDERED FOR SLOPES GREATER THAN 3:1 AND AS SHOWN ON LANDSCAPE PLANS OR EROSION CONTROL PLANS. FOR TEMPORARY STABILIZATION BEYOND SEEDING DATES USE ANNUAL RYE AT 4.0 LBS/1,000 S.F. FERTILIZE WITH 10-10-10 AT 1.0 LBS. OF NITROGEN PER 1,000 S.F. AND LIME AT 100 LBS/1,000 S.F. (MAX.).
24. LANDSCAPE ISLANDS INTERIOR NON-PAVED AREA AND PERIMETER AREAS.
25. INSTALL SIGNING AND PAVEMENT MARKINGS
26. CLEAN STORM DRAINAGE PIPE STRUCTURES, DETENTION SYSTEMS AND WATER QUALITY DEVICES OF DEBRIS AND SEDIMENT.
27. UPON DIRECTION OF THE TOWN OF MONROE AGENT, EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED FOLLOWING STABILIZATION OF THE SITE.

SEDIMENT AND EROSION CONTROL NOTES
1. THE OWNER IS RESPONSIBLE FOR IMPLEMENTING THIS SEDIMENT AND EROSION CONTROL PLAN. THIS RESPONSIBILITY INCLUDES THE PROPER INSTALLATION AND MAINTENANCE OF EROSION CONTROL MEASURES, INFORMING ALL PARTIES ENGAGED WITH CONSTRUCTION ON THE SITE OF THE REQUIREMENTS AND OBJECTIVES OF THIS PLAN, INFORMING THE GOVERNING AUTHORITY OR INLAND WETLANDS AGENCY OF ANY TRANSFER OF THIS RESPONSIBILITY, AND FOR CONVEYING A COPY OF THE SEDIMENT & EROSION CONTROL PLAN IF THE TITLE TO THE LAND IS TRANSFERRED.
2. AN EROSION CONTROL BOND MAY BE REQUIRED TO BE POSTED WITH THE TOWN OF MONROE TO ENSURE IMPLEMENTATION OF THE EROSION CONTROL MEASURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE POSTING OF THIS BOND AND FOR INQUIRIES TO THE TOWN OF MONROE FOR INFORMATION ON THE METHOD, TYPE AND AMOUNT OF THE BOND POSTING UNLESS OTHERWISE DIRECTED BY THE OWNER.
3. VISUAL SITE INSPECTIONS SHALL BE CONDUCTED WEEKLY, AND AFTER EACH MEASURABLE PRECIPITATION EVENT OF 0.10 INCHES OR GREATER BY QUALIFIED PERSONNEL, TRAINED AND EXPERIENCED IN EROSION AND SEDIMENT CONTROL, TO ASCERTAIN THAT THE EROSION AND SEDIMENT CONTROL (E&S) BMPS ARE OPERATIONAL AND EFFECTIVE IN PREVENTING POLLUTION. A WRITTEN REPORT OF EACH INSPECTION SHALL BE KEPT, AND INCLUDE:
   A) A SUMMARY OF THE SITE CONDITIONS, E&S BMPS, AND COMPLIANCE; AND
   B) THE DATE, TIME, AND THE NAME OF THE PERSON CONDUCTING THE INSPECTION
4. THE CONTRACTOR SHALL CONSTRUCT ALL SEDIMENT AND EROSION CONTROLS IN ACCORDANCE WITH THE CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL, PREPARED BY CTDEEP, LATEST EDITION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, AND AS DIRECTED BY THE TOWN OF MONROE. THE CONTRACTOR SHALL KEEP A COPY OF THE GUIDELINES ON-SITE FOR REFERENCE DURING CONSTRUCTION.
5. ADDITIONAL AND/OR ALTERNATIVE SEDIMENT AND EROSION CONTROL MEASURES MAY BE INSTALLED DURING THE CONSTRUCTION PERIOD IF FOUND NECESSARY BY THE CONTRACTOR, OWNER, CIVIL ENGINEER, TOWN OF MONROE, TOWN OF MONROE INLAND WETLANDS COMMISSION, OR GOVERNING AGENCIES. THE CONTRACTOR SHALL CONTACT THE OWNER AND APPROPRIATE GOVERNING AGENCIES FOR APPROVAL IF ALTERNATIVE CONTROLS OTHER THAN THOSE SHOWN ON THE PLANS ARE PROPOSED.
6. THE CONTRACTOR SHALL INSPECT ALL SEDIMENT AND EROSION CONTROLS BEFORE AND AFTER EACH STORM (0.10 INCHES OR GREATER RAINFALL), OR AT LEAST WEEKLY, TO VERIFY THAT THE CONTROLS ARE OPERATING PROPERLY AND MAKE REPAIRS WHERE NECESSARY.
7. THE CONTRACTOR SHALL KEEP A SUPPLY OF EROSION CONTROL MATERIAL (HAY BALES, SILT FENCE, JUTE MESH,RIP RAP ETC.) ON-SITE FOR MAINTENANCE AND EMERGENCY REPAIRS.
8. INSTALL PERIMETER SEDIMENT CONTROLS PRIOR TO CLEARING OR CONSTRUCTION. ALL CONSTRUCTION SHALL BE CONTAINED WITHIN THE LIMIT OF DISTURBANCE, WHICH SHALL BE MARKED WITH SILT FENCE, SAFETY FENCE, HAY BALES, RIBBONS, OR OTHER MEANS PRIOR TO CLEARING. CONSTRUCTION ACTIVITY SHALL REMAIN ON THE UPHILL SIDE OF THE SILT FENCE UNLESS WORK IS SPECIFICALLY CALLED FOR ON THE DOWNHILL SIDE OF THE FENCE.
9. STONE CONSTRUCTION ENTRANCE ANTI-TRACKING PADS SHALL BE INSTALLED AT START OF CONSTRUCTION AND MAINTAINED THROUGHOUT THE DURATION OF CONSTRUCTION. THE LOCATION OF THE TRACKING PADS MAY CHANGE AS VARIOUS PHASES OF CONSTRUCTION ARE COMPLETED.
10. TOPSOIL SHALL BE STRIPPED AND STOCKPILED FOR USE IN FINAL LANDSCAPING. ALL EARTH STOCKPILES SHALL HAVE HAY BALES OR SILT FENCE AROUND THE LIMIT OF PILE. PILES SHALL BE TEMPORARILY SEEDED IF PILE IS TO REMAIN IN PLACE FOR MORE THAN 7 DAYS.
11. SEDIMENTATION TRAPS SHALL PROVIDE 134 CUBIC YARDS OF SEDIMENT STORAGE PER DISTURBED ACRE CONTRIBUTING TO THE BASIN. PROVIDE BASIN VOLUMES FOR ALL DISTURBANCE ON SITE. SEDIMENT BASINS SHALL BE DESIGNED TO HANDLE THE TOTAL SEDIMENT STORAGE VOLUME THROUGHOUT THE DURATION OF THE PROJECT PLUS THE REQUIRED TEMPORARY STORAGE VOLUME WITH 6" OF FREEBOARD FROM THE PRIMARY OUTLET.
12. MINIMIZE LAND DISTURBANCES. SEED AND MULCH DISTURBED AREAS WITH TEMPORARY MIX AS SOON AS PRACTICABLE (2 WEEK MAXIMUM UNSTABILIZED PERIOD) USING PERENNIAL RYEGRASS AT 40 LBS PER ACRE. MULCH ALL CUT AND FILL SLOPES AND SMALL AREAS WITH CEREAL RYE OR WINTER HAY AT A RATE OF 2 TONS PER ACRE. IF NECESSARY, REPLACE LOOSE HAY ON SLOPES WITH EROSION CONTROL BLANKETS OR JUTE CLOTH. MODERATELY GRADED AREAS, ISLANDS, AND TEMPORARY CONSTRUCTION STAGING AREAS MAY BE HYDROSEEDED WITH TACKIFIER.
13. SILT FENCE AND OTHER SEDIMENT CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH CONTRACT DRAWINGS AND MANUFACTURER'S RECOMMENDATIONS PRIOR TO WORK IN ANY UPLAND AREAS.
14. EXCAVATED MATERIAL FROM TEMPORARY SILT TRAPS MUST BE STOCKPILED ON UPHILL SIDE OF SILT FENCE.
15. INSTALL SILT FENCE ACCORDING TO MANUFACTURER'S INSTRUCTION, PARTICULARLY, BURY LOWER EDGE OF FABRIC INTO GROUND. SILT FENCE SHALL BE MIRAFI 100X OR EQUIVALENT, AMOCO SILT STOP OR EQUIVALENT APPROVED BY THE CIVIL ENGINEER. FILTER FABRIC USED SHALL BE MIRAFI 100X OR EQUIVALENT. SEE SPECIFICATIONS FOR FURTHER INFORMATION.
16. WHERE INDICATED ON EROSION CONTROL PLANS USE NEW HAY BALES AND REPLACE THEM WHENEVER THEIR CONDITION DETERIORATES BEYOND REASONABLE USABILITY. STAKE HAY BALES SECURELY INTO GROUND AND BUTT TIGHTLY TOGETHER TO PREVENT UNDERCUTTING AND BYPASSING.
17. INSTALL TEMPORARY DIVERSION DITCHES, PLUNGE POOLS, SEDIMENT TRAPS, AND DEWATERING PITS AS SHOWN AND AS NECESSARY DURING VARIOUS PHASES OF CONSTRUCTION TO CONTROL RUNOFF UNTIL UPHILL AREAS ARE STABILIZED. LOCATION OF TEMPORARY SEDIMENT TRAPS WILL REQUIRE REVIEW AND APPROVAL BY THE CIVIL ENGINEER AND GOVERNING OFFICIAL.
18. DIRECT ALL DEWATERING PUMP DISCHARGE TO A SEDIMENT CONTROL DEVICE SUCH AS TEMPORARY PITS, SEDIMENT TRAPS OR GRASS FILTERS WITHIN THE APPROVED LIMIT OF DISTURBANCE. DISCHARGE TO STORM DRAINAGE SYSTEM OR SURFACE WATERS FROM SEDIMENT CONTROLS SHALL BE CLEAR.
19. BLOCK THE UPSTREAM ENDS OF DETENTION BASIN/SEDIMENTATION BASIN OUTLET CONTROL ORIFICE UNTIL SITE IS STABILIZED. CONVERT TEMPORARY SEDIMENT TRAPS TO PERMANENT DETENTION BASINS ONCE SITE HAS BEEN STABILIZED. CLEAN OUT OUTLET CONTROL STRUCTURES AS NECESSARY AND REMOVE ACCUMULATED SEDIMENT FROM BOTTOM OF BASIN. BLOCK END OF STORM SEWERS IN EXPOSED TRENCHES WITH BOARDS AND SANDBAGS AT THE END OF EACH WORKING DAY WHEN RAIN IS EXPECTED.
20. SWEEP AFFECTED PORTIONS OF OFF SITE ROADS ONE OR MORE TIMES A DAY (OR LESS FREQUENTLY IF TRACKING IS NOT A PROBLEM) DURING CONSTRUCTION. OTHER DUST CONTROL MEASURES TO BE USED AS NECESSARY INCLUDE WATERING DOWN DISTURBED AREAS, USING CALCIUM CHLORIDE, AND COVERING LOADS ON DUMP TRUCKS.
21. PERIODICALLY CHECK ACCUMULATED SEDIMENT LEVELS IN THE SEDIMENT TRAPS AND BASINS DURING CONSTRUCTION AND CLEAN ACCUMULATED SILT WHEN NECESSARY OR WHEN ONE FOOT OF SEDIMENT HAS ACCUMULATED OR PER SPECIFIC CLEANOUT MARKER ELEVATIONS. CLEAN ACCUMULATED SEDIMENT FROM CATCH BASIN SUMPS AS NECESSARY AND AS DIRECTED BY THE CIVIL ENGINEER OR OWNER'S CONSTRUCTION REPRESENTATIVE. REMOVE ACCUMULATED SEDIMENT FROM BEHIND HAY BALES AND SILT FENCE WHEN LEVEL REACHES HALF THE HEIGHT OF THE HAY BALE OR ONE FOOT AT SILT FENCE. DISPOSE OF SEDIMENT LEGALLY EITHER ON OR OFF SITE.
22. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO ELIMINATE THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.
23. ALL PUMPING OF SEDIMENT LADEN WATER SHALL BE THROUGH A SEDIMENT CONTROL BMP, SUCH AS A PUMPED WATER FILTER BAG OR EQUIVALENT SEDIMENT REMOVAL FACILITY, OVER UNDISTURBED VEGETATED AREAS.
24. ALL EXCAVATED MATERIAL SHALL BE PLACED ON THE HIGH SIDE OF UTILITY AND STORM PIPE TRENCHES SO AS TO ALLOW THE TRENCH TO INTERCEPT ALL SILT LADEN RUNOFF.
25. CONTRACTOR SHALL ONLY EXCAVATE AS MUCH UTILITY AND STORM PIPE TRENCH WORK AS CAN BE COMPLETED, BACKFIL

LEGEND

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJOINING LOT LINE
- WATER MAIN / LATERAL
- GAS LINE
- ELECTRIC CONDUIT
- TELEPHONE CONDUIT
- CABLE TV UNDERGROUND LINE
- CABLE & TELEPHONE CONDUIT
- UNDERGROUND ELECTRIC, TELEPHONE AND CABLE LINES
- SANITARY SEWER PIPE
- LEACHING TRENCH
- RESERVE LEACHING AREA
- TP-103 — TEST PIT
- PT-103 — PERC TEST PIT
- DISTRIBUTION BOX
- SEPTIC TANK
- SANITARY SEWER MANHOLE
- WATER VALVE


VICTORIA DRIVE
PROPOSED INDOOR RECREATION
22,359± SF
FFE = 303.90
EXISTING OLE SOCCER
12,035± SF
200'
111'
157.42'
60.38'
8.33'
45.10'
124.71'
FLOOD ZONE AE
FLOODWAY
FLOOD ZONE AE
FLOOD ZONE AE
0.2% ANNUAL CHANCE FLOOD HAZARD
AREA OF MINIMUM FLOOD ZONE AE
FLOODWAY
FLOOD ZONE AE
DISTRICT B-2
PROTECT AND MAINTAIN EXISTING WATER LATERAL
PROPOSED 120 LF OF 6" CAST IRON SANITARY SEWER LATERAL @ S = 1.07%
TEST PIT OBSERVATIONS AND PERCOLATION TEST PITS WERE PERFORMED BY OTHER (TYP.)
PROTECT AND MAINTAIN 6" CI SANITARY SEWER PIPE
REPLACE EXISTING SEPTIC TANK WITH 2,000 GALLON SEPTIC TANK MAINTAIN EX. INV. @ 300.92
PROPOSED ADDITION TO PRIMARY LEACHING SYSTEM:
75 LF OF ELJEN MANTIS DOUBLE-WIDE 58
INV. = 301.8
BOTTOM OF SYSTEM = 301.3
TOP OF SYSTEM = 302.3
PROTECT AND MAINTAIN EXISTING PUMP CHAMBER. CONTRACTOR TO VERIFY DOSING AND MODIFY PER ENGINEER IF NECESSARY PRIOR TO START OF CONSTRUCTION
MAINTAIN EXISTING D-BOX
PR INV. (N) = 302.25
EX INV. (NW) = 302.25
EX INV. (S) = 302.32
MAINTAIN EXISTING DIFFUSER BOX
EX INV. (IN) = 302.36
EX INV. (OUT) = 302.42
PROTECT & MAINTAIN 72 LF OF LEACHING GALLERY (12"X48")
APPROXIMATE LOCATION OF RESERVE LEACHING FIELD (85 LF OF MANTIS DOUBLE-WIDE 100)
PROTECT AND MAINTAIN ELECTRICAL CONDUITS. PROVIDE ADEQUATE COVER PER UTILITY COMPANY REQUIREMENTS.
PROTECT AND MAINTAIN TRANSFORMER AND PAD
REMOVE OR RELOCATE EXISTING PROPANE TANK
INV. = 302.2
P1
P2
C
TC: 297.56 BC: 297.06
TC: 297.33 BC: 296.83
TC: 297.86 BC: 297.36
TC: 298.16 BC: 297.66
TC: 298.28 BC: 297.78
TC: 299.12 BC: 298.62
TC: 299.00 BC: 298.50
TC: 298.44 BC: 297.94
TC: 298.75 BC: 298.25
TC: 298.78 BC: 298.28
TC: 300.85 BC: 300.35
TC: 301.86 BC: 301.36
TC: 301.35 BC: 300.85
TC: 302.79 BC: 302.23
TC: 302.10 BC: 301.60
TC: 303.13 BC: 302.63
TC: 303.42 BC: 303.12
TC: 303.67 BC: 303.17
TC: 300.60 BC: 300.10
TC: 301.62 BC: 301.12
TC: 303.80 BC: 303.30
TC: 304.00 BC: 303.50
TC: 304.40 BC: 303.90
TC: 303.90 BC: 303.40
TC: 303.40 BC: 302.90
TC: 304.11 BC: 303.61
TC: 304.91 BC: 304.41
TC: 304.80 BC: 304.30
TC: 305.02 BC: 304.52
TC: 304.73 BC: 304.23
TC: 304.43 BC: 303.93
TC: 304.07 BC: 303.57
TC: 303.40 BC: 302.90
302.54
302.78
302.35
294.10
293.43
293.30
293.67
293.75
293.90
293.37
293.14
292.75
292.75
290.75
293.54
293.90
293.67
293.30
293.43

PROPOSED PLANT SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	ROOT	SIZE	COMMENTS
TREES						
BN	2	BETULA NIGRA 'HERITAGE'	HERITAGE RIVER BIRCH	B&B	2"-2 1/2" DBH	MULTI-STEM
UNDERSTORY TREES						
MV	4	MAGNOLIA VIRGINIANA	SWEETBAY MAGNOLIA	B&B	2"-2 1/2" DBH	FULL, EXTRA HEAVY
UPLAND SHRUBS						
AA	11	ARONIA ARBUTIFOLIA	RED CHOKEBERRY	CONT	18"-24" HT	FULL, EXTRA HEAVY
AD	3	AZALEA 'DELAWARE VALLEY WHITE'	DELAWARE VALLEY WHITE AZALEA	CONT	18"-24" HT	FULL, EXTRA HEAVY
CA	3	CLETHRA ALNIFOLIA 'RUBY SPICE'	SWEET PEPPERBUSH	CONT	18"-24" HT	FULL, EXTRA HEAVY
CS	22	CORNUS SERICEA 'BAILEYI'	RED TWIG DOGWOOD	CONT	18"-24" HT	FULL, EXTRA HEAVY
HV	3	HAMAMMELIS VIRGINIANA 'SPRING BLOOMER'	SPRING BLOOMER WITCHHAZEL	CONT	18"-24" HT	FULL, EXTRA HEAVY
IG	6	ILEX GLABRA	INKBERRY	CONT	18"-24" HT	FULL, EXTRA HEAVY
IGC	8	ILEX GLABRA 'COMPACTA'	INKBERRY	CONT	18"-24" HT	FULL, EXTRA HEAVY
IV	11	ILEX VERTICILLATA (FEMALE)	WINTERBERRY	CONT	18"-24" HT	FULL, EXTRA HEAVY
IVM	2	ILEX VERTICILLATA (MALE)	WINTERBERRY	CONT	18"-24" HT	FULL, EXTRA HEAVY
IVS	6	ITEA VIRGINIA 'SPRICH'	LITTLE HENRY DWARF VIRGINIA SWEETSPIRE	CONT	18"-24" HT	FULL, EXTRA HEAVY
MP	10	MYRICA PENSYLVANICA	NORTHERN BAYBERRY	CONT	18"-24" HT	FULL, EXTRA HEAVY
PM	12	PINUS MUGO 'MOPS'	MUGO PINE	CONT	18"-24" HT	FULL, EXTRA HEAVY
VC	10	VACCINIUM CORYMBOSUM	HIGH-BUSH BLUEBERRY	CONT	18"-24" HT	FULL, EXTRA HEAVY
GROUNDCOVER						
JW	155	JUNIPERUS HORIZONTALIS 'WILTONII'	CREEPING JUNIPER	CONT	# 1 CONT	
GRASSES						
SC	12	SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM	CONT	1 GAL	
TRANSPLANTED PLANTS						
TREES						
SM	5	ACER SACCHARUM	SUGAR MAPLE			
BN	6	PLATANUS ACERIFOLIA	LONDON PLANE TREE			
UNDERSTORY TREES						
SG	5	PRUNUS SERRULATA 'SNOWGOOSE'	SNOWGOOSE CHERRY			
SHRUBS						
BI	4	BROADLEAF ILEX	HOLLY			

SEED MIXES

NEW ENGLAND EROSION CONTROL/RESTORATION MIX (NEW ENGLAND WETLAND PLANTS, INC.)
APPLICATION RATE: 1 LB/2,500 S.F.

NEW ENGLAND CONSERVATION / WILDLIFE MIX (NEW ENGLAND WETLAND PLANTS, INC.)
APPLICATION RATE: 1 LB/1,450 S.F.

PLANTING SOIL NOTES

1. ALL PLANTING MIXES SHALL BE PREPARED PRIOR TO DELIVERY TO SITE
2. PLANTING MIX FOR TREES AND SHRUBS SHALL BE AS FOLLOWS
   3 PARTS SCREED TOPSOIL
   1 PART CLEAN WASHED COARSE SAND
   1 PART PEAT HUMUS
   5 LBS. SUPER PHOSPHATE PER CUBIC YARD OF MIX
3. MYCORRHIZAL INNCOULANT TO BE MYCOR TREE SAVER TRANSPLANT BY PLANT HEALTH CARE, INC. (1-800-421-9051) OR APPROVED EQUAL.
4. TERRASORB AVAILABLE FROM PLANT HEALTH CARE, INC. OR APPROVED EQUAL
5. SUBMIT CERTIFICATION OF PLANTING MIX FOR TREES AND SHRUBS FROM SOIL DISTRIBUTOR.
6. TOPSOIL MIX SHALL INCLUDE:
   3 PARTS SCREENED TOPSOIL
   1 PART SAND
   1 PART HUMUS
   5 LBS. SUPER PHOSPHATE PER CU. YD. OF MIX
7. TOPSOIL:

A. PROVIDE A NATURAL, FERTILE, FRIABLE, NATURAL LOAM SURFACE SOIL CAPABLE OF SUSTAINING VIGOROUS PLANT GROWTH, OF UNIFORM COMPOSITION THROUGHOUT AND WITHOUT ADMIXTURES OF SUBSOIL, AND FREE OF STONES, LUMPS, PLANTS, ROOTS, STICKS OR OTHER EXTRANEOUS MATTER.

B. TOPSOIL SHALL CONTAIN NOT LESS THAN 4% NOR MORE THAN 20% ORGANIC MATTER AS DETERMINED BY THE WET COMBUSTION METHOD.

C. MECHANICAL ANALYSIS

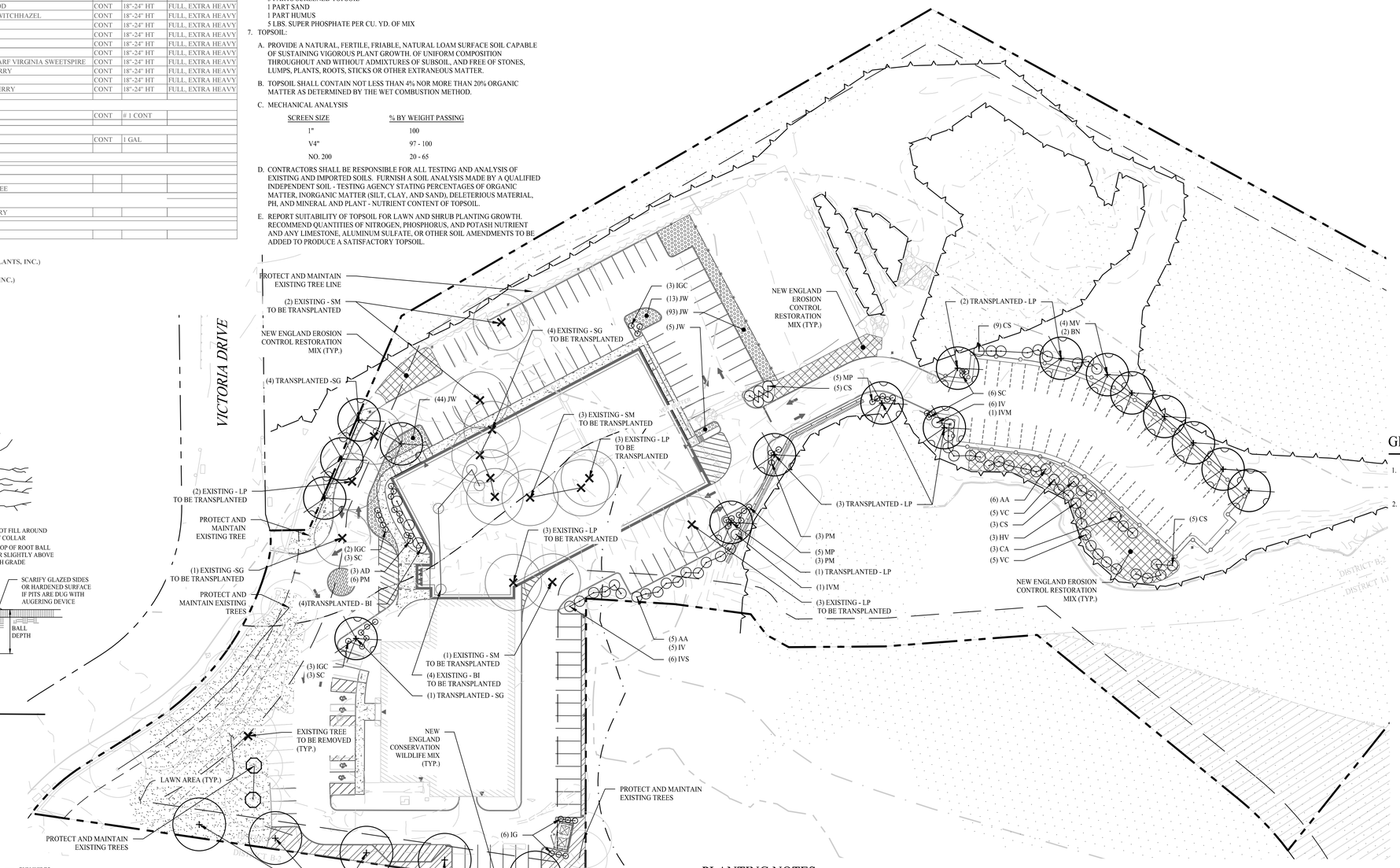
SCREEN SIZE	% BY WEIGHT PASSING
1"	100
V4"	97 - 100
NO. 200	20 - 65

D. CONTRACTORS SHALL BE RESPONSIBLE FOR ALL TESTING AND ANALYSIS OF EXISTING AND IMPORTED SOILS. FURNISH A SOIL ANALYSIS MADE BY A QUALIFIED INDEPENDENT SOIL - TESTING AGENCY STATING PERCENTAGES OF ORGANIC MATTER, INORGANIC MATTER (SILT, CLAY, AND SAND), DELETERIOUS MATERIAL, PH, AND MINERAL AND PLANT - NUTRIENT CONTENT OF TOPSOIL.

E. REPORT SUITABILITY OF TOPSOIL FOR LAWN AND SHRUB PLANTING GROWTH. RECOMMEND QUANTITIES OF NITROGEN, PHOSPHORUS, AND POTASH NUTRIENT AND ANY LIMESTONE, ALUMINUM SULFATE, OR OTHER SOIL AMENDMENTS TO BE ADDED TO PRODUCE A SATISFACTORY TOPSOIL.

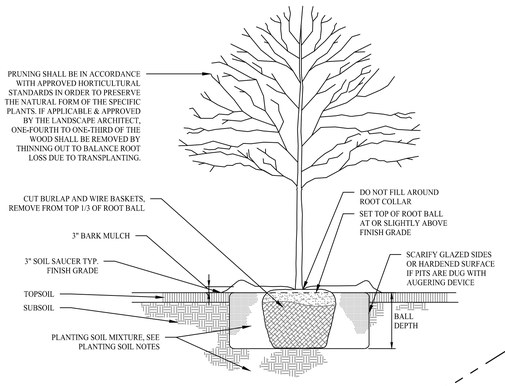
LEGEND

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJOINING LOT LINE
- EXISTING TREE LINE
- PROPOSED TREE LINE
- EXISTING TREE
- OVERSTORY TREE
- UNDERSTORY TREE
- EVERGREEN TREE
- SHRUBS & GROUNDCOVER
- TREE TO BE REMOVED OR TRANSPLANTED
- LAWN
- NEW ENGLAND EROSION CONTROL RESTORATION MIX
- NEW ENGLAND CONSERVATION WILDLIFE MIX
- GROUND COVER



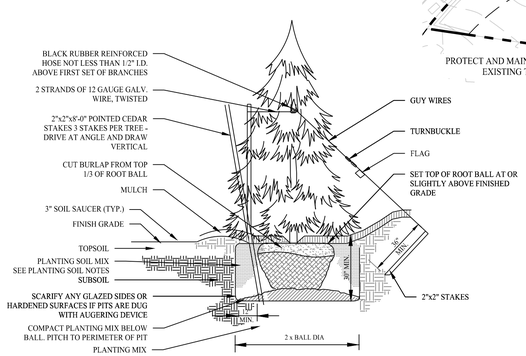
GENERAL NOTES

1. THESE PLANS ARE FOR PERMITTING PURPOSES ONLY AND ARE NOT FOR CONSTRUCTION. NO CONSTRUCTION OR DEMOLITION SHALL BEGIN UNTIL APPROVAL OF THE FINAL PLANS IS GRANTED BY ALL GOVERNING AND REGULATORY AGENCIES.
2. EXISTING CONDITIONS INFORMATION TAKEN FROM A PLAN ENTITLED "IMPROVEMENT LOCATION SURVEY OF 5 VICTORIA DRIVE" DATED MARCH 29, 2017, REVISED MARCH 30, 2021, SCALE: 1"=60', BY ACCURATE LAND SURVEYING, LLC.



TREE PLANTING

SCALE: NTS

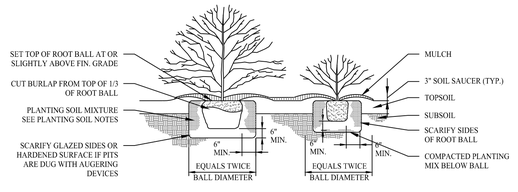


STAKING: STAKING FOR EVERGREEN TREES OVER 6' HT.

GUYING: GUYING FOR EVERGREEN TREES OVER 10' HT.

EVERGREEN TREE PLANTING

SCALE: NTS



BALLED AND BURLAPPED CONTAINER GROWN

NOTE
1. IN AREAS OF MASS PLANTING, CONTINUOUSLY EXCAVATE AND MULCH ENTIRE BED.

SHRUB / GROUNDCOVER PLANTING

SCALE: NTS

PLANTING NOTES

1. BE AWARE OF ALL UNDERGROUND UTILITIES PRIOR TO ANY EXCAVATION OR PLANTING OPERATIONS. USE CARE TO PROTECT EXISTING UTILITIES FROM DAMAGE, CONTACT "CALL BEFORE YOU DIG" PRIOR TO EXCAVATION.
2. ALL PLANTINGS ARE TO BE INSTALLED BY A QUALIFIED LANDSCAPE CONTRACTOR.
3. THE CONTRACTOR SHALL BE REQUIRED TO CARRY WORKMEN'S COMPENSATION INSURANCE AND COMPREHENSIVE GENERAL LIABILITY INSURANCE. CERTIFICATES WILL BE REQUIRED PRIOR TO SIGNING CONTRACTS.
4. CONTRACTOR IS RESPONSIBLE FOR JOBSITE SAFETY. CONTRACTOR SHALL MAINTAIN A SAFE JOBSITE AT ALL TIMES.
5. CONTRACTOR SHALL BE FAMILIAR WITH THE SITE VERIFY ALL DIMENSIONS, GRADES AND EXISTING CONDITIONS. REPORT ANY DISCREPANCIES TO LANDSCAPE DESIGNER.
6. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS AND LICENSES REQUIRED FOR COMPLETING WORK.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSAL OF ALL EXCAVATED SOIL, BRUSH AND DEBRIS OFF-SITE IN A SAFE AND LEGAL MANNER.
8. NOTIFY OWNER OR LANDSCAPE DESIGNER 72 HOURS MINIMUM IN ADVANCE OF STARTING PLANTING OPERATIONS. RECEIVE APPROVAL FOR LAYOUT OF ALL BED LINES AND MATERIAL LOCATIONS PRIOR TO INSTALLATION.
9. PROTECT EXISTING VEGETATION TO REMAIN FROM DAMAGE DURING CONSTRUCTION. IT IS THE INTENT OF THIS CONTRACT TO AVOID ANY DISTURBANCE TO EXISTING VEGETATION ON THE SITE OTHER THAN THOSE SPECIFICALLY DESIGNATED FOR REMOVAL. ADJUSTMENTS SHALL BE MADE IN THE FIELD AT THE DIRECTION OF THE LANDSCAPE DESIGNER.
10. CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL PLANTING, SEEDING AND TREE WORK WITH OTHER TRADES. RESPECT OTHER TRADES WORK AT ALL TIMES.
11. CONTRACTOR IS TO EXERCISE EXTREME CARE DURING THE COURSE OF DEMOLITION AND REMOVALS ANY DAMAGE TO EXISTING FACILITIES, UTILITIES OR TREES TO REMAIN SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPLACE IN KIND.
12. CONTRACTOR IS RESPONSIBLE FOR RESTORING ALL AREAS DAMAGED TO PRE-EXISTING CONDITIONS AS A RESULT OF PLANTING OPERATIONS TO OWNERS AND/OR LANDSCAPE DESIGNERS APPROVAL.
13. VEGETATION TO BE REMOVED, NOT INDICATED ON PLAN, SHALL BE TAGGED IN FIELD BY LANDSCAPE DESIGNER.
14. THE LANDSCAPE DESIGNER RESERVES THE RIGHT TO REJECT INFERIOR PLANT MATERIALS AND SUBSTITUTIONS. THE LANDSCAPE DESIGNER IS WILLING TO MAKE TWO TRIPS TO SUPPLIERS TO TAG, REVIEW AND APPROVE MATERIALS. PREVIOUSLY UNAPPROVED MATERIALS MAY BE REJECTED AT THE SITE. MINIMALLY, ALL MATERIALS WILL CONFORM TO THE "AMERICAN STANDARD FOR NURSERY STOCK" (ANSI Z60.1 - 2004) OF THE AMERICAN ASSOCIATION OF NURSERYMEN.
15. ALL PLANT MATERIAL SHALL BE GUARANTEED BY THE CONTRACTOR TO BE IN GOOD, HEALTHY AND FLOURISHING CONDITION FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE. THE CONTRACTOR SHALL REPLACE, AS SOON AS WEATHER AND SEASONAL CONDITIONS PERMIT, ALL DEAD PLANTS AND ALL PLANTS NOT IN A VIGOROUS, THRIVING CONDITION, AS DETERMINED BY THE LANDSCAPE DESIGNER DURING, AND AT THE END OF THE GUARANTEE PERIOD. WARRANTY REPLACEMENT WILL BE PROVIDED AT NO COST TO THE OWNER AND INCLUDE MATERIALS AND LABOR. CONTRACTOR IS RESPONSIBLE FOR REPAIR OF ANY DAMAGE INCURRED DURING REPLACEMENT OF WARRANTY MATERIALS.
16. WHEN THERE IS A DISCREPANCY BETWEEN PLANT QUANTITIES SHOWN ON THE PLANT LIST & THE PLAN, USE THE QUANTITIES FROM THE PLAN.
17. PERENNIALS, GROUNDCOVERS & GRASSES TO BE FIELD LOCATED BY LANDSCAPE DESIGNER. COORDINATE TO NOTIFY LANDSCAPE DESIGNER AT LEAST 72 HOURS IN ADVANCE OF EXPECTED INSTALLATION DATE. ON THAT DATE ALL BEDS SHALL BE PREPARED & ALL PLANT MATERIAL SHALL BE ON SITE.
18. PROVIDE A MINIMUM 6" TOPSOIL FOR ALL DISTURBED AREAS. SUBMIT SAMPLE OF TOPSOIL AND SOIL TEST RESULTS FOR LANDSCAPE DESIGNER APPROVAL PRIOR TO DELIVERING TO SITE.
19. MULCH ALL BEDS SHOWN AS CONTINUOUS WITH A 3" MINIMUM OF DOUBLE SHREDDED CEDAR BARK MULCH. SAMPLE TO BE SUBMITTED TO LANDSCAPE DESIGNER FOR APPROVAL.
20. ALL PLANT MATERIALS TO BE SOURCED FROM LOCALLY GROWN GROWERS.
21. TRANSPLANTED MATERIALS TO BE WATERED, HEELED IN AND TENDED BY CONTRACTOR UNTIL FINAL PLACEMENT.

Rev. #:	Date	Description
2	05/06/21	IWC COMMENTS
1	04/07/21	P&Z SUBMISSION

Graphic Scale: 40 0 40 80

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Drawn By:	FLO
Checked By:	MFB
Approved By:	KMS
Project #:	2012301
Plan Date:	03/23/21
Scale:	1" = 40'

Mary Blackburn, P.L.A.
CT 1499

Project:

PROPOSED SITE REDEVELOPMENT
5 VICTORIA DRIVE
MONROE, CONNECTICUT

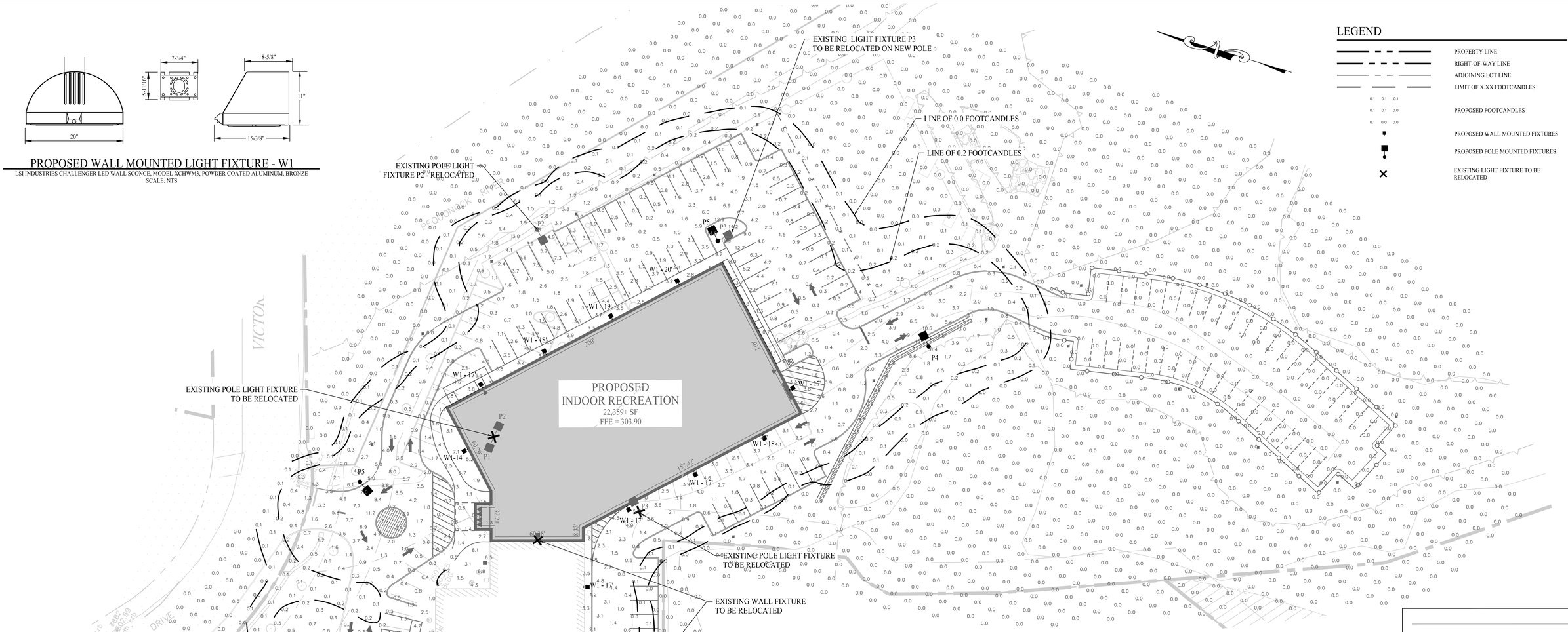
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Sheet #: 2.61

May 07, 2021 – 7:20am chris
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PROPOSED WALL MOUNTED LIGHT FIXTURE - W1

LSI INDUSTRIES CHALLENGER LED WALL SCONCE, MODEL XCHWM3, POWDER COATED ALUMINUM, BRONZE
SCALE: NTS



LEGEND

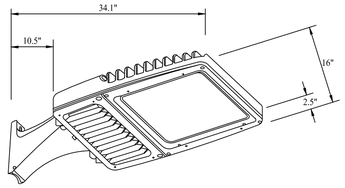
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJOINING LOT LINE
- LIMIT OF X.XX FOOTCANDLES
- PROPOSED FOOTCANDLES
- PROPOSED WALL MOUNTED FIXTURES
- PROPOSED POLE MOUNTED FIXTURES
- EXISTING LIGHT FIXTURE TO BE RELOCATED

FIXTURE SCHEDULE

QTY	CALLOUT	SYMBOL	FIXTURE DESCRIPTION	MODEL	NOTES	LUMENS
11	W1		WALL MOUNTED FIXTURE	CROSSOVER - LED CHALLENGER® WALL SCONCE (XCHWM3)	72W 4200K LED, MOUNTING HEIGHT AS SHOWN IN THE PLAN	6115
1	P4		POLE MOUNTED FIXTURE	GE EVOLVE LED AREA LIGHT, MODEL EASB, CAST ALUMINUM, BRONZE	236W 4000K LED, 20' MOUNTING HEIGHT	19,100
2	P5		POLE MOUNTED FIXTURE	GE EVOLVE LED AREA LIGHT, MODEL EASB, CAST ALUMINUM, BRONZE	285W 4000K LED, 20' MOUNTING HEIGHT	23,600

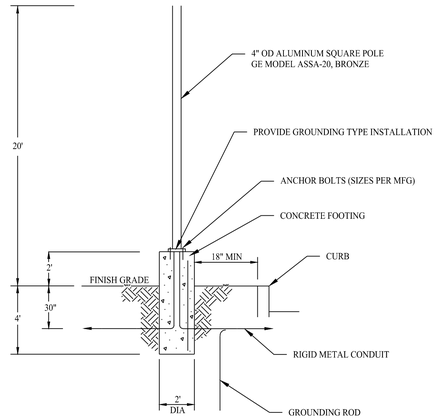
LIGHTING NOTES

1. THESE PLANS ARE FOR PERMITTING PURPOSES ONLY AND ARE NOT FOR CONSTRUCTION. NO CONSTRUCTION OR DEMOLITION SHALL BEGIN UNTIL APPROVAL OF THE FINAL PLANS IS GRANTED BY ALL GOVERNING AND REGULATORY AGENCIES.
2. CONTRACTOR TO PERFORM ALL SITE WORK PROPOSED HEREON IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL PERMITS AND CONDITIONS OF APPROVALS ISSUED FOR THIS PROJECT.
3. EXISTING CONDITIONS INFORMATION TAKEN FROM A PLAN ENTITLED "IMPROVEMENT LOCATION SURVEY OF 5 VICTORIA DRIVE" DATED MARCH 29, 2017, REVISED MARCH 30, 2021, SCALE: 1"=60', BY ACCURATE LAND SURVEYING, LLC.
4. ALL LIGHT FIXTURES TO BE MOUNTED AND INSTALLED PER MANUFACTURER SPECIFICATIONS.
5. ALL WORK AND RELATED MATERIALS SHALL COMPLY WITH CITY, COUNTY, AND OTHER APPLICABLE GOVERNING AUTHORITY REQUIREMENTS.



PROPOSED POLE MOUNTED LIGHT FIXTURE - P4 & P5

GE EVOLVE LED AREA LIGHT,MODEL EASB, POWDER COATED ALUMINUM, BRONZE
SCALE: NTS



PROPOSED LIGHT POLE - P4 & P5

GE EVOLVE LED AREA LIGHT,MODEL EASB, POWDER COATED ALUMINUM, BRONZE
SCALE: NTS

Rev. #:	Date	Description
2	05/06/21	IWC COMMENTS
1	04/07/21	P&Z SUBMISSION

Graphic Scale: 30 0 30 60

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Drawn By:	FLO
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Approved By:	KMS
Project #:	2012301
Plan Date:	03/23/21
Scale:	1" = 30'

Mary Blackburn, P.L.A.
CT 1499

Project:

PROPOSED SITE REDEVELOPMENT
5 VICTORIA DRIVE
MONROE, CONNECTICUT

Sheet Title: LIGHTING PLAN

Sheet #: 2.71

May 07, 2021 - 7:20am chris
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APPENDIX F
Traffic Engineering

ITE Trip Generation Data

Ice Skating Rink
(465)

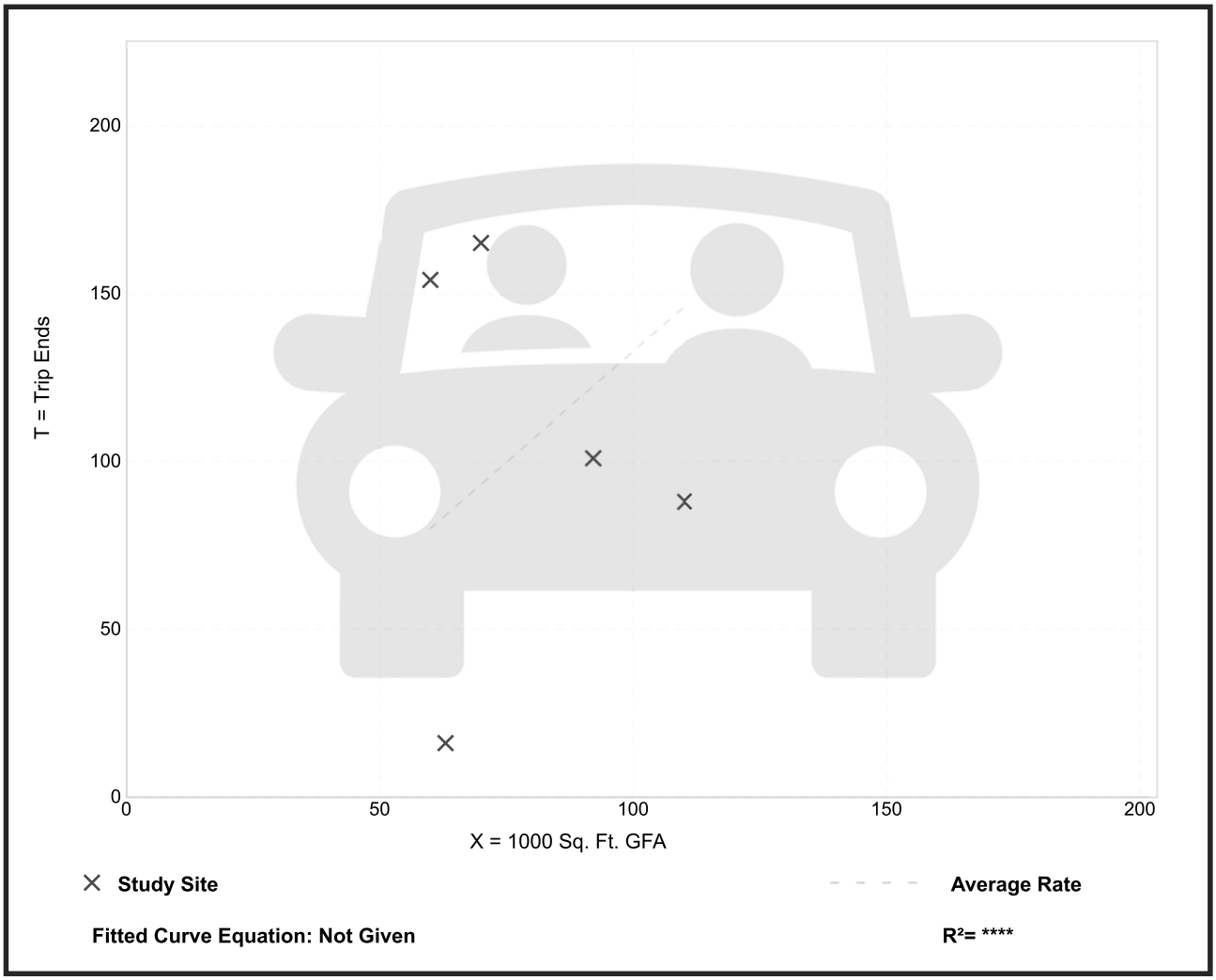
Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 5
Avg. 1000 Sq. Ft. GFA: 79
Directional Distribution: 55% entering, 45% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.33	0.25 - 2.57	0.93

Data Plot and Equation

Caution – Small Sample Size



Trip Gen Manual, 10th Edition ● Institute of Transportation Engineers

Ice Skating Rink
(465)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Saturday, Peak Hour of Generator**

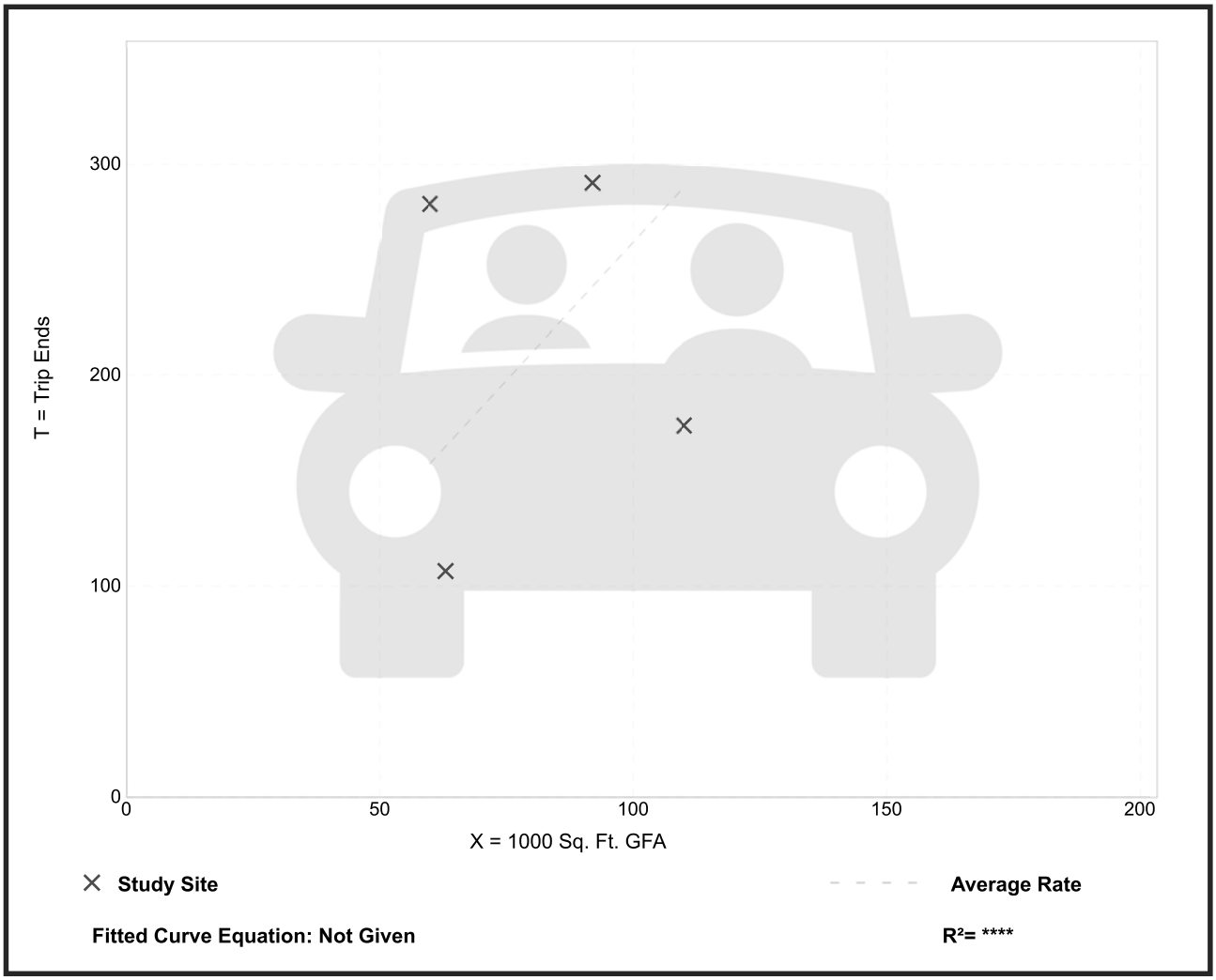
Setting/Location: **General Urban/Suburban**
Number of Studies: 4
Avg. 1000 Sq. Ft. GFA: 81
Directional Distribution: 53% entering, 47% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.63	1.60 - 4.68	1.36

Data Plot and Equation

Caution – Small Sample Size



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