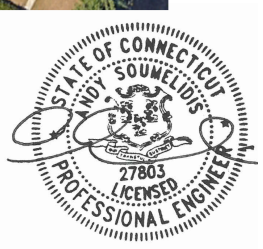
Stormwater Management Report

Prepared for:

Nautilus Botanicals EJV LLC

1308 East Main Street

Stamford, Connecticut



Andy Soumelidis, P.E.

CT #27803

May 17, 2024

LANDTECH

Civil Engineering · Site Planning
Environmental Science & Engineering
Structural Engineering · Land Surveying
Permit Coordination & Management
Construction Management & Financing

Executive Summary:

Existing Site Description:

Currently, the site is developed with an existing restaurant, access drive and, surface parking area. The site currently contains 0.48± acres of impervious coverage including off-site impervious or approximately 98% of the site drainage area.

From a stormwater perspective, runoff currently sheet flows to the Noroton River located along the eastern property line. There are currently no stormwater management facilities to control the peak rate of runoff or provide treatment.

Proposed Site Conditions:

The proposed redevelopment of the subject site consists of the renovation of the existing structure, construction of a 2nd story addition, (no increase to footprint) and the removal of the existing shed, gravel area and roofed area as indicated on the drainage plans. The proposed renovation will result in a net reduction in impervious areas, thus the peak runoff rate for all studied storm events will also be reduced.

As to stormwater, in accordance w/ section 2.4.E of the city of Stamford Stormwater drainage manual, an infiltration system is proposed to provide water quality treatment for the existing impervious areas while maintain existing drainage patterns. The area of the site contributing to the proposed infiltration system will include the existing parking lot and portions of the existing structure that currently flow onto the existing parking lot.

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Introduction:

LandTech has been retained by Nautilus Botanicals EJV1 LLC to provide drainage design and permitting assistance for the property, located at 1308 East Main Street in Stamford Connecticut. The project consists of the redevelopment of the existing site for a hybrid cannabis facility. Currently, the site is developed with an existing restaurant, access drive, and surface parking area. The proposed redevelopment of the subject site consists of the renovation of the existing structure, construction of a 2nd story addition, (no increase to footprint) and the removal of the existing shed, gravel area and roofed area as indicated on the drainage plans. The proposed renovation will result in a net reduction in impervious areas, thus the peak runoff rate for all studied storm events will also be reduced. The site currently contains 0.48± acres of impervious coverage including offsite impervious areas, or approximately 98% of the site drainage area.

General Methodology:

The rainwater runoff from the site was analyzed using the HydroCAD® computer software which utilizes NRCS TR-55/TR-20 methodology. Surface Area, Type of Ground Cover, Slopes, Soil Characteristics, and Rainfall Distribution are all inputs into the calculation. Surface areas were determined by digitizing within the AutoCAD files. Soil types were determined using the NRCS Web-based soil mapping service. Other calculations were performed using generally accepted engineering formulae as applicable.

Rainfall depths were taken from the NOAA Atlas 14, volume 10, custom printed for the project site. This information is provided in Appendix B. We have provided computations for the 1-year, 2-Year, 5-Year, 10-Year, 25-Year, 50-Year and 100-Year storm events.

For the purposes of our analysis, an infiltration rate of 1.02 in/hr was used in accordance w/ table 5-1 of the Stamford Drainage Manual guidance based on the site's hydrologic soil group and soil types observed during soil testing.

On-Site Soils:

Soils within the developed portion of the site are predominately Udorthents Urban Land Complex. The Hydrologic Soil Group for the site is B, Selected portions of the NRCS Soils Report are provided in Appendix A.

Test Pits observed in the vicinity of the proposed underground detention system indicate the presence of fill present to approximately 24" below grade. To ensure that draining out of the system occurs, we have set the invert of the proposed drainage system below this fill layer.

Site Hydrological Description:

From a hydrological standpoint, the site can be viewed as a single watershed area consisting of 0.49 acres. Drainage Area 1 includes the entirety of the site and surrounding off-site impervious areas. Drainage from the site currently flows overland west to east into the Noroton River. There are no stormwater facilities located within the studied the area in the existing condition.

The drainage areas are more completely described as follows:

Existing Conditions:

Drainage Area EX-1: This drainage area consists of the entire existing site, and includes several offsite impervious areas located outside of the property line totaling 0.49 acres. The overall watershed is comprised of approximately 98% impervious coverage and 2% pervious coverage. The pervious areas are largely comprised of grass or landscaped areas. This drainage basin flows overland west to east into the Noroton River.

Proposed Conditions:

Drainage Area PR-1A: This drainage area consists of 0.07 acres of the site, and includes the eastern portion of the existing building roof and a small portion of the existing site landscaping. This drainage area is not practical to capture as it overhangs across the ex. River bank and will follow its historic flow path east into the Noroton river. The impervious areas although not captured have been factored in to sizing the required water treatment volume.

Drainage Area PR-1B: This area consists of 0.43 acres and contains the parking lot, the majority of the existing landscaped areas, a portion of the existing roof and offsite impervious areas. Flows from this area are captured by a proposed infiltration system located underneath the existing parking lot. Runoff will be captured via a proposed stone trench drain along the eastern edge of the existing parking lot. During storm events in excess of the water quality volume the infiltration system and conveyance pipe will fill and excess flows will overflow in a controlled manner via the concrete lip of the proposed trench drain and follow the historic drainage path.

HydroCAD Results Summary:

The following summary table represents the results of our analysis, as described above.

Storm Event	Drainage Area	Existing / Req.	Proposed	Δ	Δ (%)
1-YR	DA-1	1.43 cfs	0.38 cfs	-1.05	-73.4%
2-YR	DA-1	1.75 cfs	1.17 cfs	-0.58	-33.1%
5-YR	DA-1	2.27 cfs	2.22 cfs	-0.05	-2.2%
10-YR	DA-1	2.69 cfs	2.64 cfs	-0.05	-1.9%
25-YR	DA-1	3.28 cfs	3.22 cfs	-0.06	-1.6%
50-YR	DA-1	3.71 cfs	3.65 cfs	-0.06	-1.6%
100-YR	DA-1	4.18 cfs	4.12 cfs	-0.06	-1.4%
WATER QUALITY (cf)		1,667.44	1,822.20		

As shown, runoff rates for all other storm events are decreased as a result of the proposed project.

Stormwater Quality:

Under the existing conditions, there are no stormwater facilities on the site. Given the existing site constraints, we have proposed a stormwater system that will serve to improve the quality of the stormwater discharge over the current conditions. As well as thermal cooling benefits enhancing the water quality of the adjacent Noroton river.

As previously discussed, runoff from the subject property flows directly into the Noroton River. Based on the proposed design, the peak stormwater runoff rate will be reduced for all storm events. The proposed stormwater system has been sized to provide treatment for the existing impervious areas through the use of a structural bmp infiltration system.

Stormwater Overflow:

The stormwater overflow for the proposed stormwater system is a 20 LF level spreader with a concrete lip. When the stormwater system fills during larger storms this level spreader will fill and additional flows will overtop the level spreader in a controlled mannerand flow into the Noroton River. This level spreader was sized using the CT DEEP "Connecticut Stormwater Manual" Chapter 13, see Appendix G for sizing calculations.

Conclusions:

The proposed stormwater management system has been designed to maintain existing drainage patterns on the site and to maintain existing rates of flow at or below the existing conditions. In addition, stormwater quality measures have been proposed that will improve the quality of the stormwater runoff from the site.

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

Appendix A

NRCS Soils Information


73° 30' 30" W
73° 30' 26" W
625320
625330
625340
625350
625360
625370
625380
625390
625400
625410
625420
41° 3' 43" N
41° 3' 38" N
4546710
4546700
4546690
4546680
4546670
4546660
4546650
4546640
4546630
4546620
4546610
4546600
4546590
4546580
W
306
Brookside Dr
Noroton River
1
Soil Map may not be valid at this scale.
Map Scale: 1:675 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0
10
20
40
60
Feet
0
30
60
120
180
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

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

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: State of Connecticut, Western Part
Survey Area Data: Version 1, Sep 15, 2023

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

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

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
306	Udorthents-Urban land complex	B	0.8	97.1%
W	Water		0.0	2.9%
Totals for Area of Interest			**0.9**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Appendix B

NOAA Rainfall Data

NOAA Atlas 14, Volume 10, Version 3
Location name: Stamford, Connecticut, USA*
Latitude: 41.0612°, Longitude: -73.5077°
Elevation: 8 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.365** (0.283-0.462)	**0.425** (0.330-0.539)	**0.523** (0.405-0.666)	**0.605** (0.465-0.773)	**0.717** (0.534-0.950)	**0.803** (0.585-1.08)	**0.891** (0.630-1.24)	**0.987** (0.664-1.40)	**1.12** (0.726-1.64)	**1.23** (0.776-1.84)
10-min	**0.517** (0.401-0.654)	**0.602** (0.467-0.763)	**0.741** (0.574-0.943)	**0.857** (0.659-1.10)	**1.02** (0.757-1.35)	**1.14** (0.829-1.53)	**1.26** (0.892-1.76)	**1.40** (0.941-1.99)	**1.59** (1.03-2.33)	**1.74** (1.10-2.60)
15-min	**0.608** (0.472-0.770)	**0.708** (0.550-0.898)	**0.872** (0.675-1.11)	**1.01** (0.776-1.29)	**1.20** (0.890-1.58)	**1.34** (0.975-1.80)	**1.48** (1.05-2.06)	**1.64** (1.11-2.34)	**1.86** (1.21-2.74)	**2.04** (1.29-3.06)
30-min	**0.849** (0.660-1.08)	**0.991** (0.769-1.26)	**1.22** (0.946-1.56)	**1.41** (1.09-1.81)	**1.68** (1.25-2.22)	**1.88** (1.37-2.53)	**2.08** (1.47-2.89)	**2.30** (1.55-3.28)	**2.60** (1.69-3.82)	**2.84** (1.80-4.25)
60-min	**1.09** (0.848-1.38)	**1.27** (0.988-1.62)	**1.57** (1.22-2.00)	**1.82** (1.40-2.32)	**2.16** (1.60-2.86)	**2.42** (1.76-3.25)	**2.68** (1.89-3.72)	**2.96** (1.99-4.21)	**3.34** (2.16-4.90)	**3.63** (2.30-5.43)
2-hr	**1.41** (1.10-1.77)	**1.66** (1.30-2.09)	**2.07** (1.61-2.62)	**2.42** (1.87-3.07)	**2.89** (2.16-3.80)	**3.24** (2.38-4.35)	**3.61** (2.57-5.00)	**4.02** (2.72-5.68)	**4.58** (2.98-6.69)	**5.04** (3.20-7.49)
3-hr	**1.62** (1.27-2.03)	**1.92** (1.51-2.41)	**2.41** (1.89-3.04)	**2.82** (2.19-3.57)	**3.38** (2.54-4.45)	**3.81** (2.80-5.10)	**4.25** (3.04-5.88)	**4.74** (3.21-6.69)	**5.44** (3.55-7.91)	**6.01** (3.82-8.90)
6-hr	**2.04** (1.61-2.54)	**2.44** (1.92-3.04)	**3.08** (2.42-3.85)	**3.61** (2.83-4.54)	**4.35** (3.29-5.68)	**4.90** (3.63-6.53)	**5.48** (3.94-7.55)	**6.14** (4.18-8.61)	**7.10** (4.64-10.3)	**7.88** (5.03-11.6)
12-hr	**2.52** (2.00-3.12)	**3.02** (2.40-3.74)	**3.83** (3.04-4.76)	**4.51** (3.55-5.63)	**5.44** (4.14-7.06)	**6.13** (4.57-8.12)	**6.87** (4.98-9.42)	**7.72** (5.27-10.7)	**8.96** (5.88-12.9)	**9.99** (6.39-14.6)
24-hr	**2.95** (2.36-3.63)	**3.57** (2.86-4.39)	**4.59** (3.66-5.66)	**5.43** (4.30-6.74)	**6.59** (5.05-8.52)	**7.45** (5.60-9.84)	**8.38** (6.12-11.5)	**9.46** (6.48-13.1)	**11.1** (7.29-15.8)	**12.4** (7.99-18.1)
2-day	**3.28** (2.65-4.01)	**4.05** (3.26-4.95)	**5.29** (4.25-6.49)	**6.33** (5.05-7.80)	**7.75** (5.99-9.98)	**8.81** (6.66-11.6)	**9.95** (7.32-13.6)	**11.3** (7.78-15.6)	**13.4** (8.84-19.0)	**15.2** (9.78-21.9)
3-day	**3.54** (2.87-4.31)	**4.38** (3.54-5.33)	**5.74** (4.63-7.02)	**6.88** (5.51-8.44)	**8.44** (6.54-10.8)	**9.60** (7.29-12.6)	**10.8** (8.01-14.8)	**12.4** (8.52-16.9)	**14.7** (9.69-20.7)	**16.6** (10.7-23.9)
4-day	**3.79** (3.08-4.60)	**4.67** (3.79-5.67)	**6.11** (4.94-7.44)	**7.31** (5.87-8.94)	**8.95** (6.95-11.4)	**10.2** (7.74-13.3)	**11.5** (8.50-15.6)	**13.1** (9.02-17.9)	**15.5** (10.3-21.8)	**17.5** (11.3-25.1)
7-day	**4.51** (3.68-5.44)	**5.47** (4.46-6.60)	**7.03** (5.71-8.52)	**8.33** (6.72-10.1)	**10.1** (7.88-12.8)	**11.4** (8.73-14.8)	**12.9** (9.52-17.3)	**14.5** (10.1-19.7)	**17.1** (11.3-23.9)	**19.2** (12.4-27.3)
10-day	**5.22** (4.28-6.28)	**6.23** (5.10-7.50)	**7.87** (6.42-9.50)	**9.24** (7.48-11.2)	**11.1** (8.68-14.0)	**12.5** (9.56-16.1)	**14.0** (10.4-18.7)	**15.7** (10.9-21.3)	**18.2** (12.1-25.4)	**20.3** (13.2-28.8)
20-day	**7.37** (6.08-8.80)	**8.50** (7.00-10.2)	**10.3** (8.49-12.4)	**11.9** (9.68-14.3)	**14.0** (11.0-17.4)	**15.6** (11.9-19.8)	**17.2** (12.7-22.5)	**19.0** (13.3-25.5)	**21.4** (14.3-29.6)	**23.4** (15.2-32.9)
30-day	**9.14** (7.57-10.9)	**10.4** (8.57-12.3)	**12.4** (10.2-14.7)	**14.0** (11.5-16.8)	**16.3** (12.8-20.2)	**18.0** (13.8-22.7)	**19.8** (14.6-25.6)	**21.6** (15.1-28.8)	**24.0** (16.1-33.0)	**25.8** (16.8-36.2)
45-day	**11.3** (9.42-13.4)	**12.7** (10.5-15.0)	**14.8** (12.3-17.6)	**16.6** (13.7-19.9)	**19.1** (15.1-23.5)	**21.0** (16.1-26.3)	**22.9** (16.9-29.4)	**24.7** (17.4-32.8)	**27.1** (18.2-37.1)	**28.8** (18.8-40.2)
60-day	**13.2** (11.0-15.5)	**14.6** (12.1-17.2)	**16.9** (14.0-20.0)	**18.8** (15.5-22.4)	**21.4** (16.9-26.2)	**23.4** (18.0-29.2)	**25.4** (18.7-32.5)	**27.3** (19.3-36.2)	**29.7** (20.0-40.5)	**31.3** (20.5-43.6)

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

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

Please refer to NOAA Atlas 14 document for more information.

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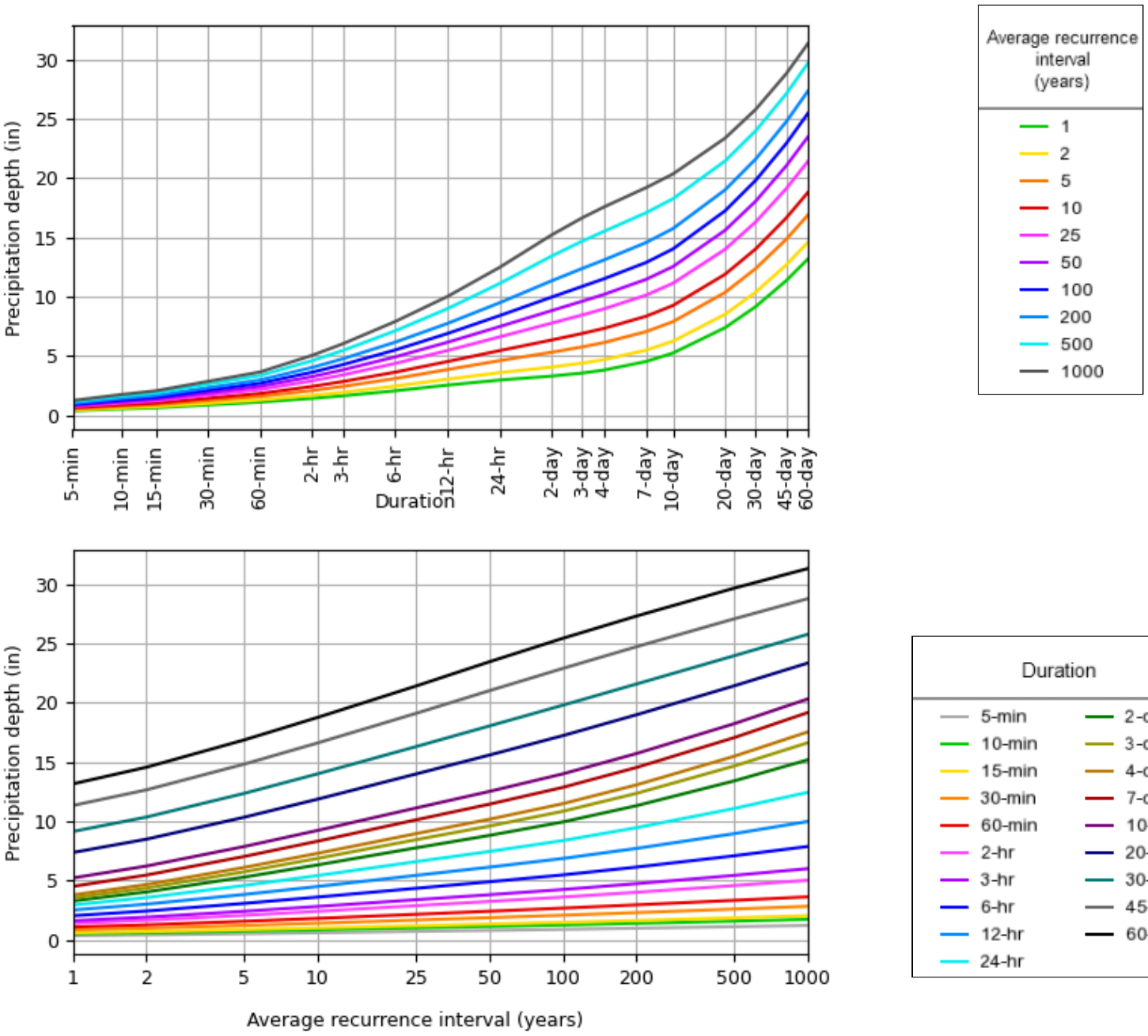
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 41.0612°, Longitude: -73.5077°



NOAA Atlas 14, Volume 10, Version 3

Created (GMT): Thu May 16 16:05:15 2024

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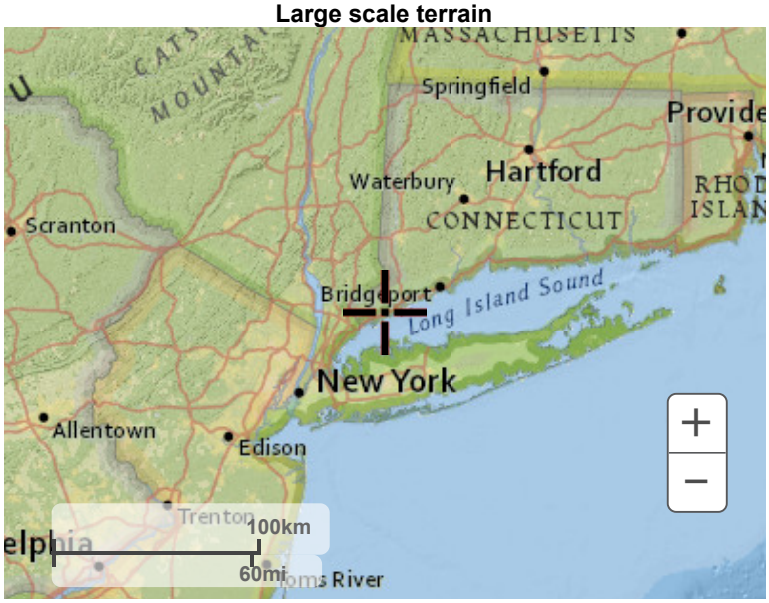
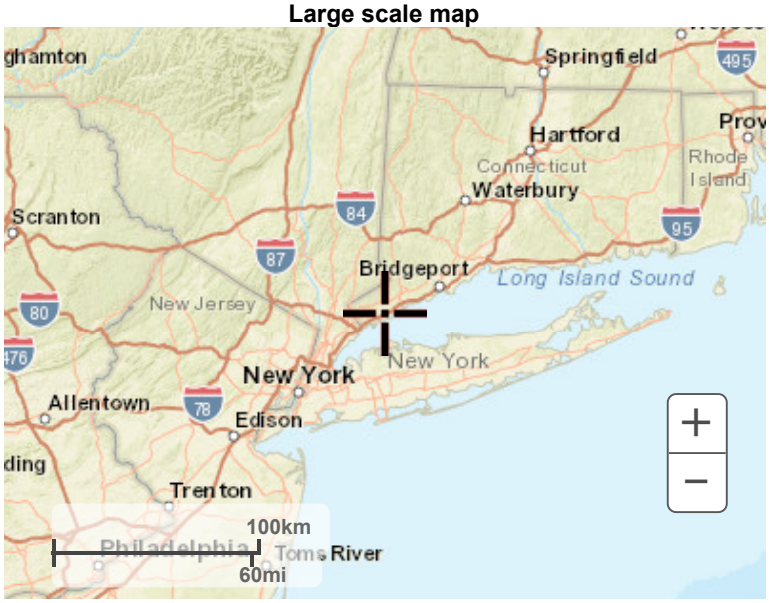
Maps & aerials

Small scale terrain

Large scale terrain



Large scale map



Large scale aerial

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

Appendix C

Watershed Maps

LANDTECH

\\192.168.111.4\PROJECTS\1. ACTIVE PROJECTS\24056-01 NAUTILUS BOTANICALS - 1308 EAST MAIN ST., STAMFORD\DRAWINGS\NAUTILUS BOTANICALS - 1308 EAST MAI ST - SITE PLAN.DWG

N

TOWN LINE — TOWN LINE — TOWN LINE — TOWN LINE — TOWN LINE — TOWN LINE — TOWN LINE — TOWN LINE — TOWN LINE — TOWN LINE — TOWN LINE

NOROTON RIVER

EAST MAIN STREET
(CT ROUTE #1)

EX-1

SCALE IN FEET

0 30 60 90

NOT FOR CONSTRUCTION
FOR REVIEW AND APPROVAL BY PUBLIC AGENCIES ONLY

LANDTECH

SITE/CIVIL • ENVIRONMENTAL • SURVEYING • PLANNING
518 RIVERSIDE AVENUE • WESTPORT, CT 06880 • 203-454-2110
HELLO@LANDTECHCONSULT.COM • WWW.LANDTECHCONSULT.COM

REVISION DATE	ISSUE

PREPARED FOR:
NAUTILUS BOTANICALS EJV1 LLC.

PROJECT LOCATION:
1308 EAST MAIN STREET
STAMFORD, CT.

TITLE:
SITE IMPROVEMENTS FOR A PROPOSED HYBRID CANNABIS FACILITY
EXISTING WATERSHED MAP

PROJECT No.	24056-01
SCALE	1" = 30'
DATE	5/17/2024
DESIGNED BY:	RW
CHECKED BY:	CL

EX-WS

LANDTECH

\\192.168.111.4\PROJECTS\1. ACTIVE PROJECTS\24056-01 NAUTILUS BOTANICALS - 1308 EAST MAIN ST., STAMFORD\DRAWINGS\NAUTILUS BOTANICALS - 1308 EAST MAIN ST - SITE PLAN.DWG

N

EAST MAIN STREET
(CT ROUTE #1)

NOROTON RIVER

TOWN LINE — TOWN LINE — TOWN LINE — TOWN LINE — TOWN LINE — TOWN LINE — TOWN LINE — TOWN LINE — TOWN LINE — TOWN LINE

PR-1A

PR-1B

SILL 7.8

SILL 7.0

SILL 8.3

SILL 15.0

TW 14.9

TW 16.2

TW 15.1

TW 16.0

TW 23.4

TW 23.8

TW 19.3

TW 17.0

SCALE IN FEET

0 30 60 90

NOT FOR CONSTRUCTION
FOR REVIEW AND APPROVAL BY PUBLIC AGENCIES ONLY

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ISSUE	REVISION DATE

PREPARED FOR:
NAUTILUS BOTANICALS EJV1 LLC.

PROJECT LOCATION:
1308 EAST MAIN STREET
STAMFORD, CT.

TITLE:
SITE IMPROVEMENTS FOR A PROPOSED HYBRID CANNABIS FACILITY
PROPOSED WATERSHED MAP

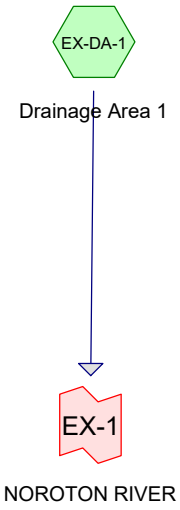
PROJECT No.	24056-01
SCALE: 1" = 30"	DATE: 5/17/2024
DESIGNED BY: RW	CHECKED BY: CL

PR-WS

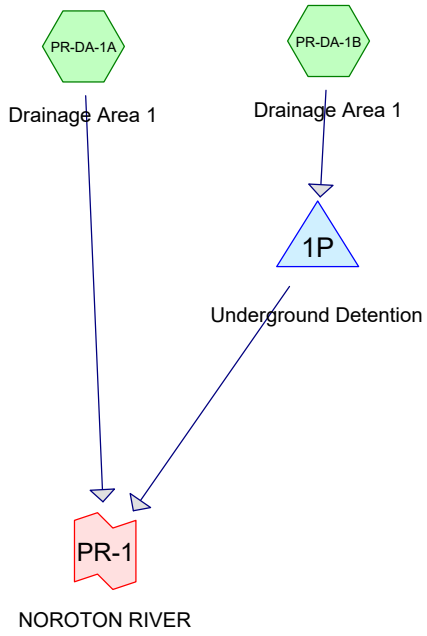
Appendix D

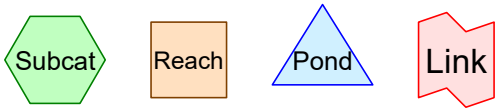
HydroCAD® Summary Output

Existing Conditions



Proposed Conditions





Routing Diagram for STAMFORD- Drainage
Prepared by Land-Tech Consultant, Printed 5/17/2024

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1yr Storm	Type III 24-hr		Default	24.00	1	2.95	2
2	2yr Storm	Type III 24-hr		Default	24.00	1	3.57	2
3	5yr Storm	Type III 24-hr		Default	24.00	1	4.59	2
4	10yr Storm	Type III 24-hr		Default	24.00	1	5.43	2
5	25yr Storm	Type III 24-hr		Default	24.00	1	6.59	2
6	50yr-Storm	Type III 24-hr		Default	24.00	1	7.45	2
7	100yr Storm	Type III 24-hr		Default	24.00	1	8.38	2

Summary for Subcatchment EX-DA-1: Drainage Area 1

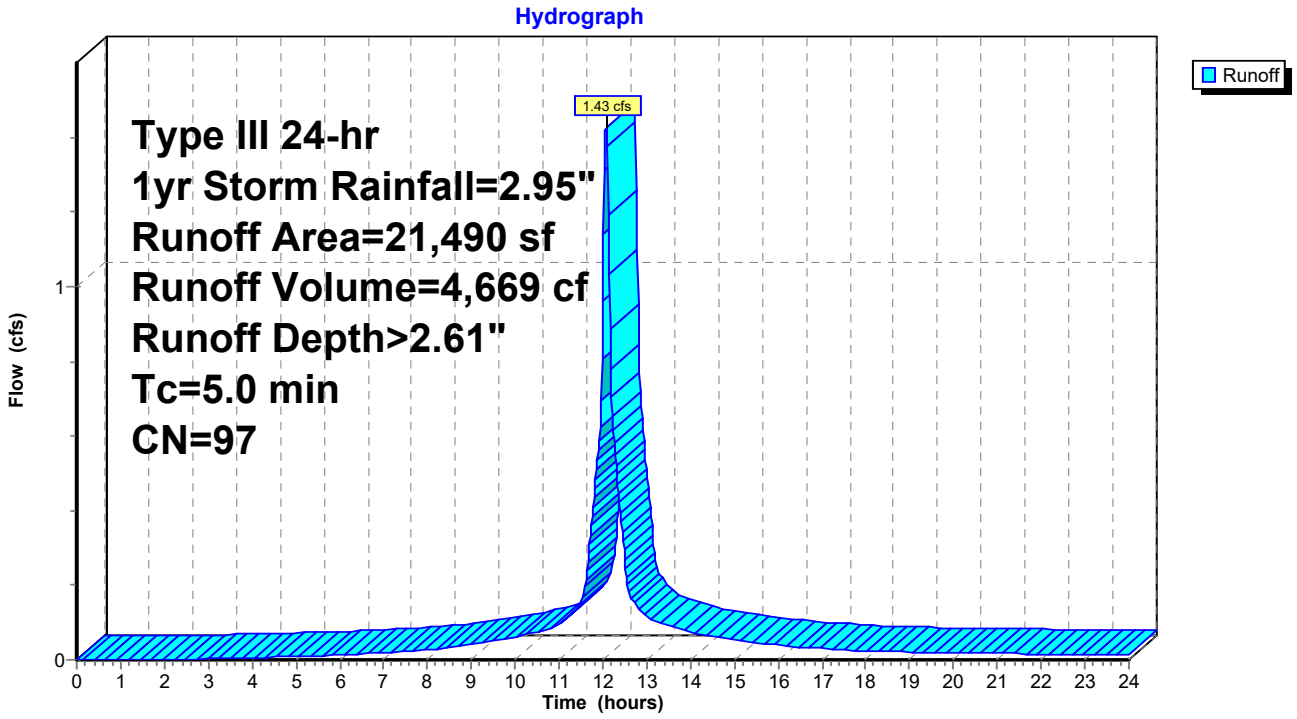
Runoff = 1.43 cfs @ 12.07 hrs, Volume= 4,669 cf, Depth> 2.61"
Routed to Link EX-1 : NOROTON RIVER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 1yr Storm Rainfall=2.95"

	Area (sf)	CN	Description
*	3,738	98	Existing Building Roof Area
*	15,643	98	Existing Onsite Parking/Driveway/Walk
*	1,640	98	Existing Offsite Parking/Driveway/Walk
	469	61	>75% Grass cover, Good, HSG B
	21,490	97	Weighted Average
	469		2.18% Pervious Area
	21,021		97.82% Impervious Area

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

Subcatchment EX-DA-1: Drainage Area 1



Summary for Subcatchment PR-DA-1A: Drainage Area 1

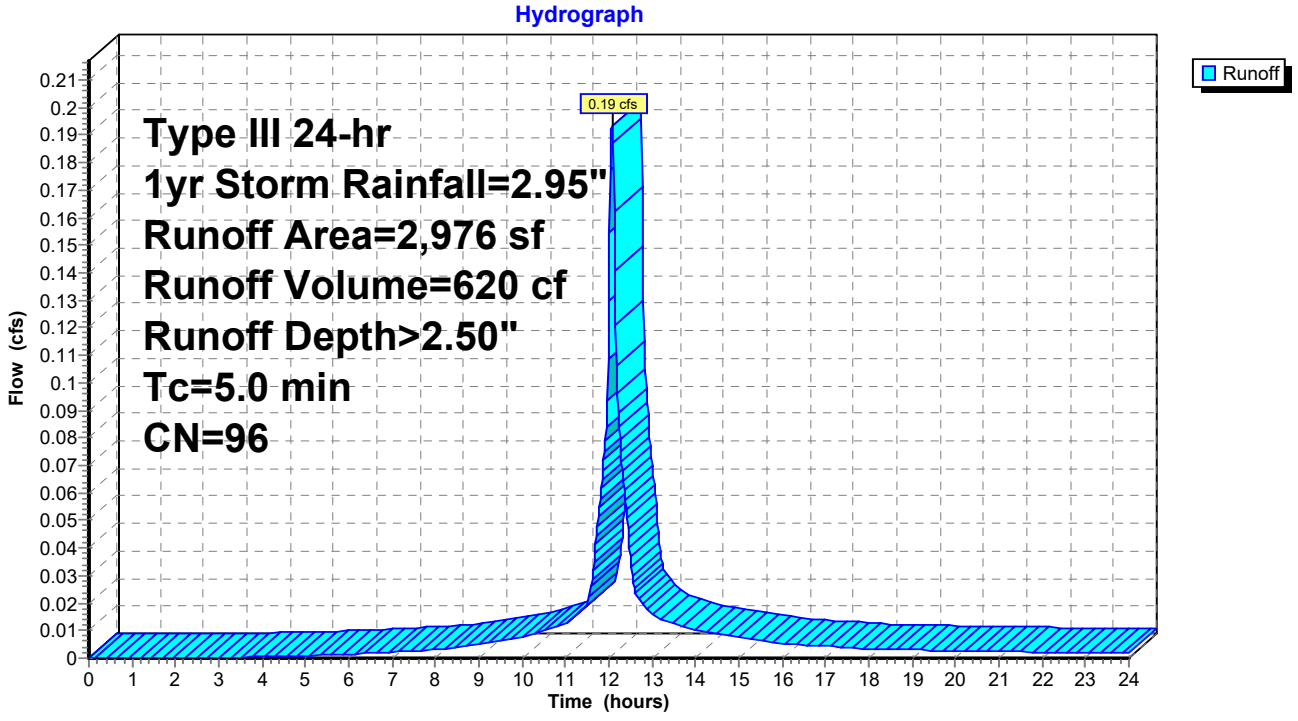
Runoff = 0.19 cfs @ 12.07 hrs, Volume= 620 cf, Depth> 2.50"
Routed to Link PR-1 : NOROTON RIVER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 1yr Storm Rainfall=2.95"

	Area (sf)	CN	Description
*	2,850	98	Existing Building Roof Area
	126	61	>75% Grass cover, Good, HSG B
	2,976	96	Weighted Average
	126		4.23% Pervious Area
	2,850		95.77% Impervious Area

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

Subcatchment PR-DA-1A: Drainage Area 1



Summary for Subcatchment PR-DA-1B: Drainage Area 1

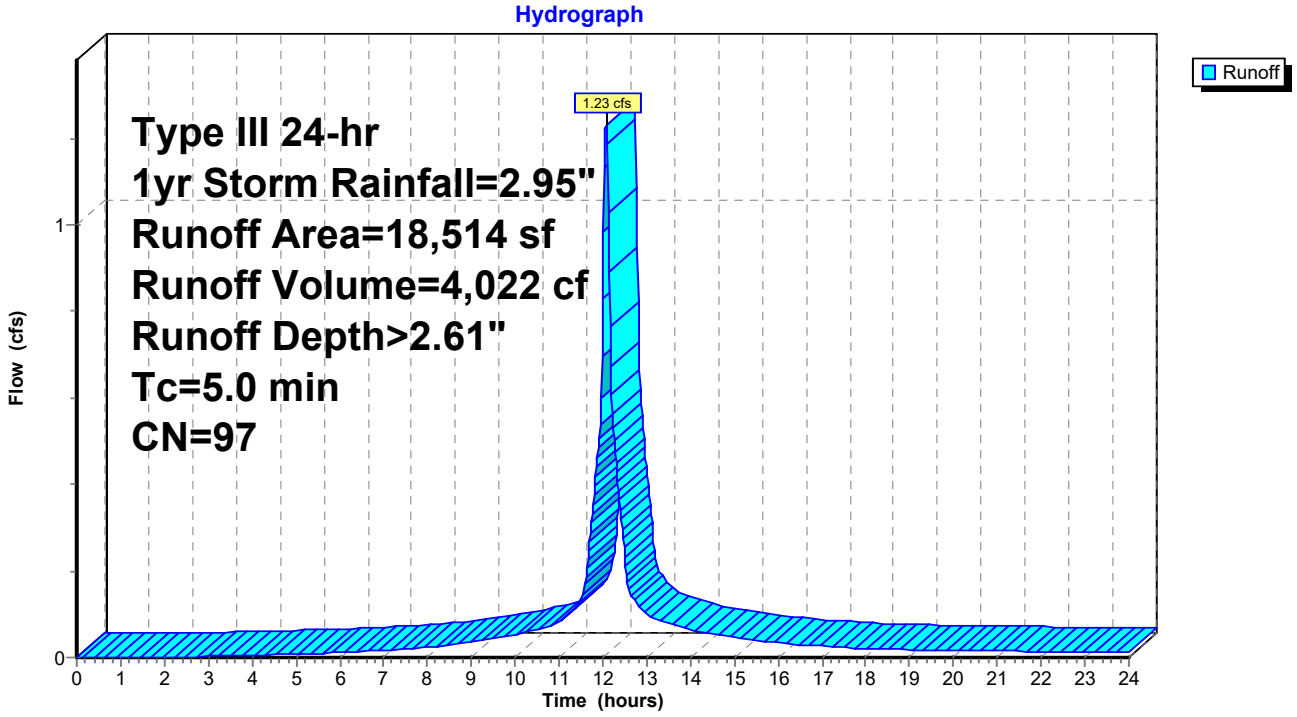
Runoff = 1.23 cfs @ 12.07 hrs, Volume= 4,022 cf, Depth> 2.61"
Routed to Pond 1P : Underground Detention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 1yr Storm Rainfall=2.95"

	Area (sf)	CN	Description
*	673	98	Existing Building Roof Area
*	15,643	98	Existing Onsite Parking/Driveway/Walk
*	1,640	98	Existing Offsite Parking/Driveway/Walk
	343	61	>75% Grass cover, Good, HSG B
*	215	61	Roof to be revmoved
	18,514	97	Weighted Average
	558		3.01% Pervious Area
	17,956		96.99% Impervious Area

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

Subcatchment PR-DA-1B: Drainage Area 1



Summary for Pond 1P: Underground Detention

[92] Warning: Device #2 is above defined storage

Inflow Area = 18,514 sf, 96.99% Impervious, Inflow Depth > 2.61" for 1yr Storm event
Inflow = 1.23 cfs @ 12.07 hrs, Volume= 4,022 cf
Outflow = 0.35 cfs @ 12.41 hrs, Volume= 2,554 cf, Atten= 71%, Lag= 20.1 min
Discarded = 0.03 cfs @ 9.62 hrs, Volume= 1,927 cf
Primary = 0.32 cfs @ 12.41 hrs, Volume= 627 cf
Routed to Link PR-1 : NOROTON RIVER

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 6.30' @ 12.38 hrs Surf.Area= 1,280 sf Storage= 1,822 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 110.7 min (877.4 - 766.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.30'	10 cf	**20.00'W x 64.00'L x 2.00'H Field A** 2,560 cf Overall - 2,534 cf Embedded = 26 cf x 40.0% Voids
#2A	4.30'	1,812 cf	**Concrete Galley 4x8x2** x 40 Inside #1 Inside= 42.0"W x 21.0"H => 6.04 sf x 7.50'L = 45.3 cf Outside= 48.0"W x 24.0"H => 7.92 sf x 8.00'L = 63.4 cf 40 Chambers in 5 Rows
		1,822 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#0	Primary	6.30'	**Automatic Storage Overflow** (Discharged without head)
#1	Discarded	4.30'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	7.00'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=0.03 cfs @ 9.62 hrs HW=4.33' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 12.41 hrs HW=6.30' TW=0.00' (Dynamic Tailwater)
↑**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Underground Detention - Chamber Wizard Field A

Chamber Model = Concrete Galley 4x8x2 (Concrete Galley, UCPI 24" Low Profile Galley or equivalent)
Inside= 42.0"W x 21.0"H => 6.04 sf x 7.50'L = 45.3 cf
Outside= 48.0"W x 24.0"H => 7.92 sf x 8.00'L = 63.4 cf

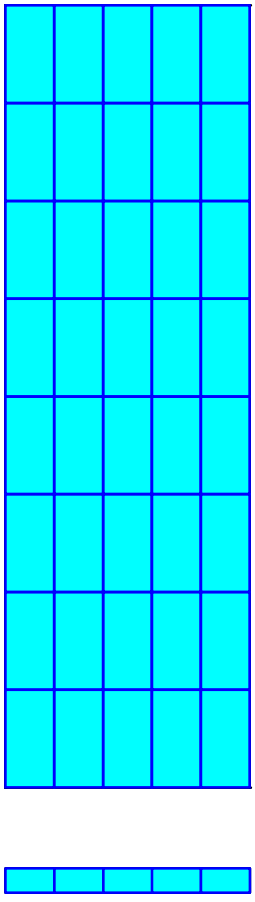
8 Chambers/Row x 8.00' Long = 64.00' Row Length
5 Rows x 48.0" Wide = 20.00' Base Width
24.0" Chamber Height = 2.00' Field Height

40 Chambers x 45.3 cf = 1,812.0 cf Chamber Storage
40 Chambers x 63.4 cf = 2,534.4 cf Displacement

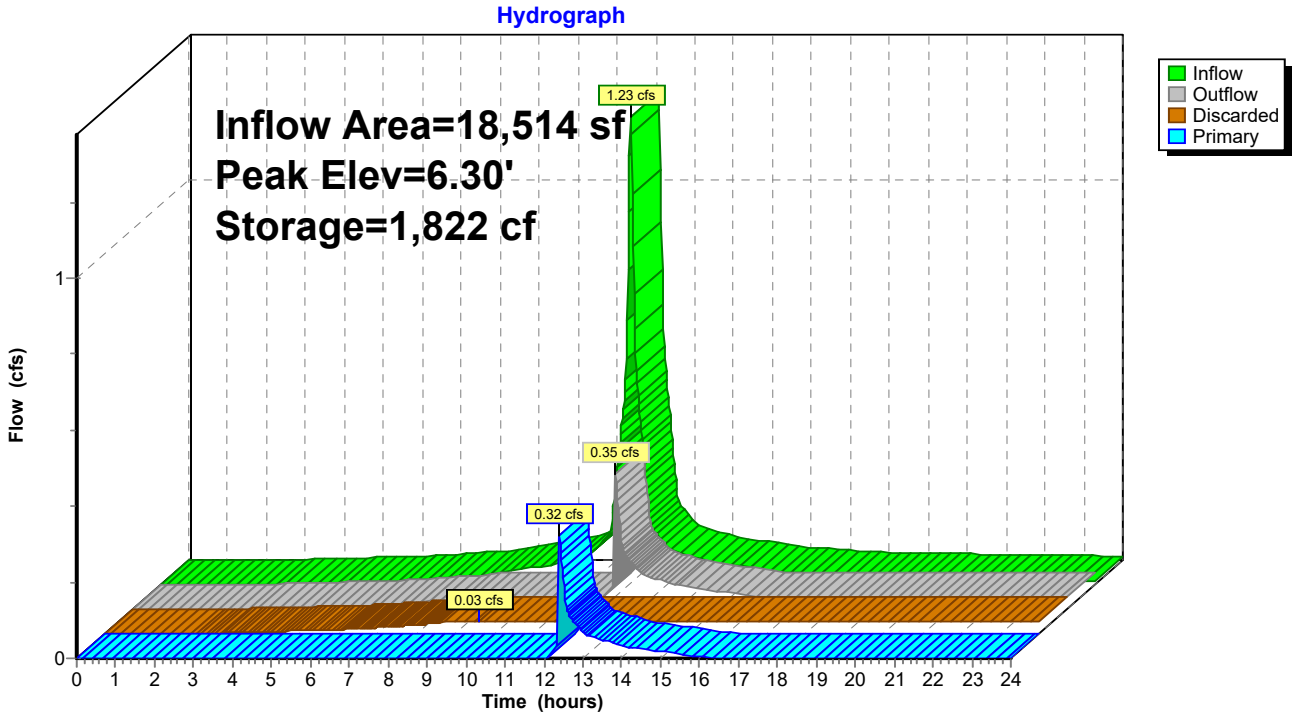
2,560.0 cf Field - 2,534.4 cf Chambers = 25.6 cf Stone x 40.0% Voids = 10.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,822.2 cf = 0.042 af
Overall Storage Efficiency = 71.2%
Overall System Size = 64.00' x 20.00' x 2.00'

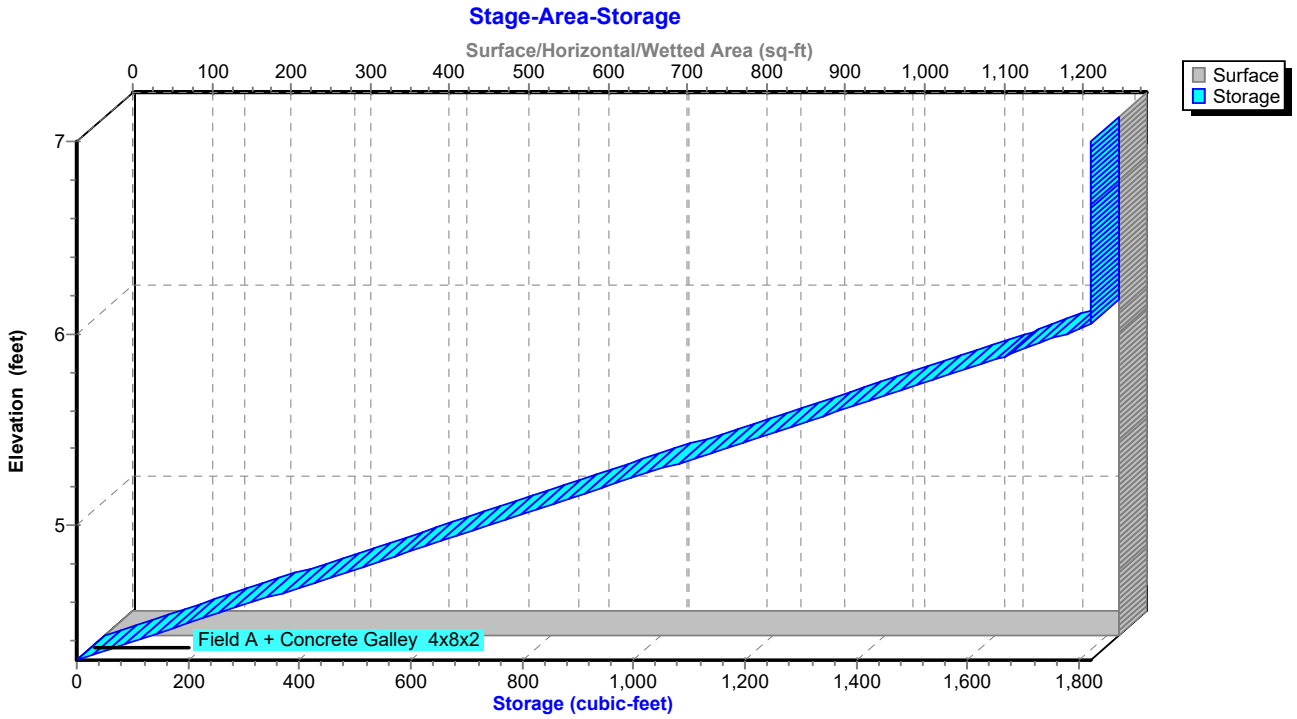
40 Chambers
94.8 cy Field
0.9 cy Stone



Pond 1P: Underground Detention



Pond 1P: Underground Detention



Stage-Area-Storage for Pond 1P: Underground Detention

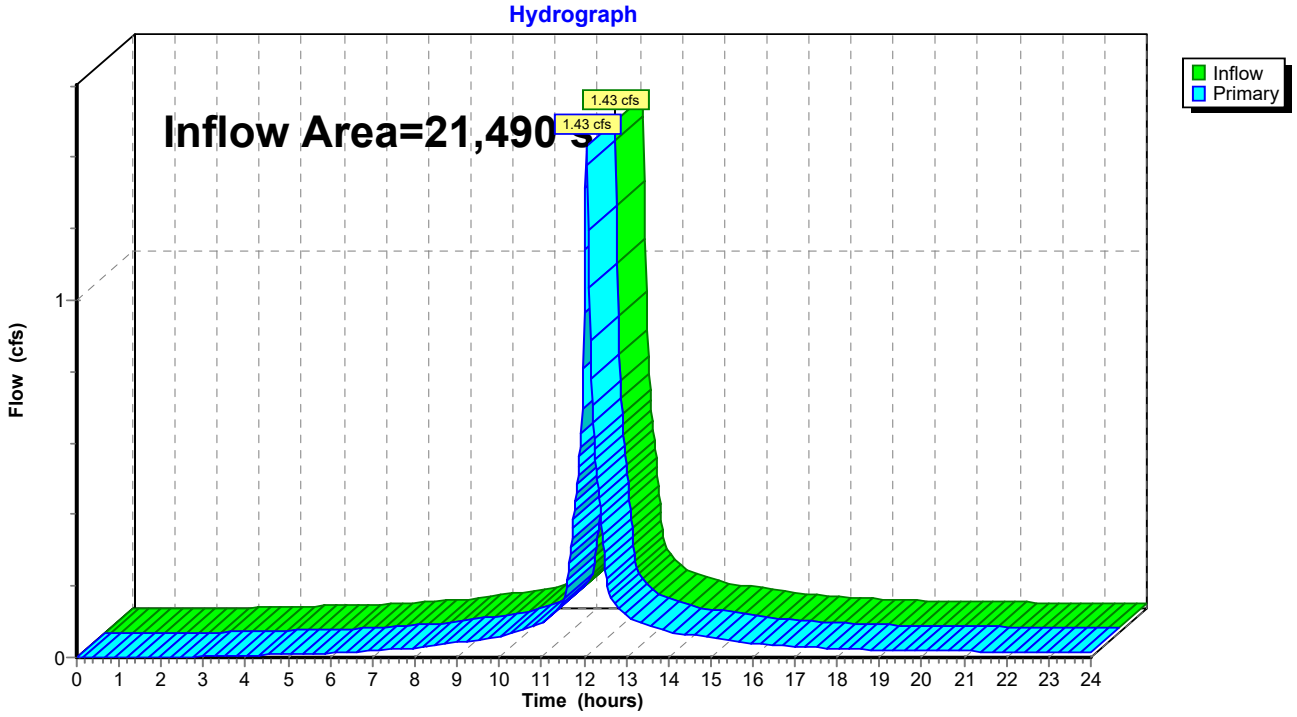
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
4.30	**1,280**	0
4.35	1,280	53
4.40	1,280	106
4.45	1,280	158
4.50	1,280	211
4.55	1,280	264
4.60	1,280	317
4.65	1,280	369
4.70	1,280	422
4.75	1,280	475
4.80	1,280	528
4.85	1,280	580
4.90	1,280	633
4.95	1,280	686
5.00	1,280	739
5.05	1,280	791
5.10	1,280	844
5.15	1,280	897
5.20	1,280	950
5.25	1,280	1,002
5.30	1,280	1,055
5.35	1,280	1,108
5.40	1,280	1,161
5.45	1,280	1,213
5.50	1,280	1,266
5.55	1,280	1,319
5.60	1,280	1,372
5.65	1,280	1,424
5.70	1,280	1,477
5.75	1,280	1,530
5.80	1,280	1,583
5.85	1,280	1,635
5.90	1,280	1,686
5.95	1,280	1,731
6.00	1,280	1,777
6.05	1,280	1,821
6.10	1,280	1,821
6.15	1,280	1,821
6.20	1,280	1,822
6.25	1,280	1,822
6.30	1,280	**1,822**
6.35	1,280	1,822
6.40	1,280	1,822
6.45	1,280	1,822
6.50	1,280	1,822
6.55	1,280	1,822
6.60	1,280	1,822
6.65	1,280	1,822
6.70	1,280	1,822
6.75	1,280	1,822
6.80	1,280	1,822
6.85	1,280	1,822
6.90	1,280	1,822
6.95	1,280	1,822
7.00	1,280	1,822

Summary for Link EX-1: NOROTON RIVER

Inflow Area = 21,490 sf, 97.82% Impervious, Inflow Depth > 2.61" for 1yr Storm event
Inflow = 1.43 cfs @ 12.07 hrs, Volume= 4,669 cf
Primary = 1.43 cfs @ 12.07 hrs, Volume= 4,669 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node EX-Total

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link EX-1: NOROTON RIVER

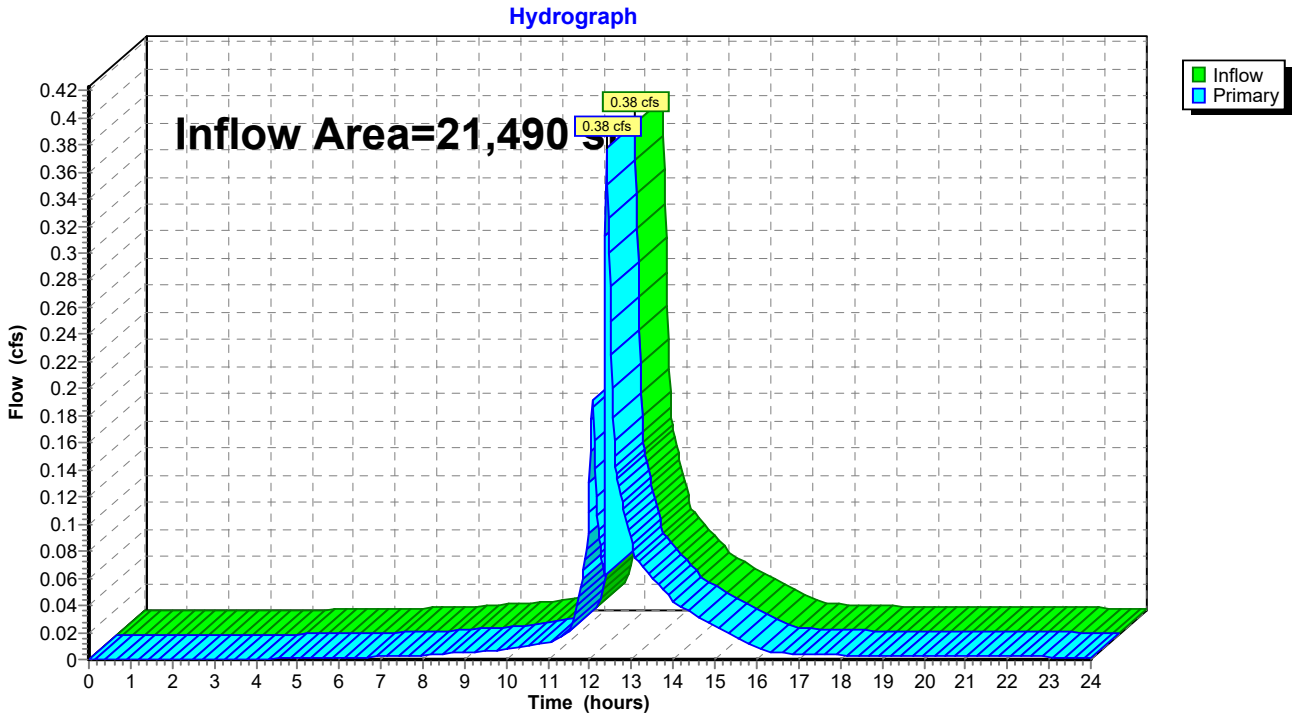


Summary for Link PR-1: NOROTON RIVER

Inflow Area = 21,490 sf, 96.82% Impervious, Inflow Depth > 0.70" for 1yr Storm event
Inflow = 0.38 cfs @ 12.40 hrs, Volume= 1,247 cf
Primary = 0.38 cfs @ 12.40 hrs, Volume= 1,247 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node PR-Total

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link PR-1: NOROTON RIVER



Summary for Subcatchment EX-DA-1: Drainage Area 1

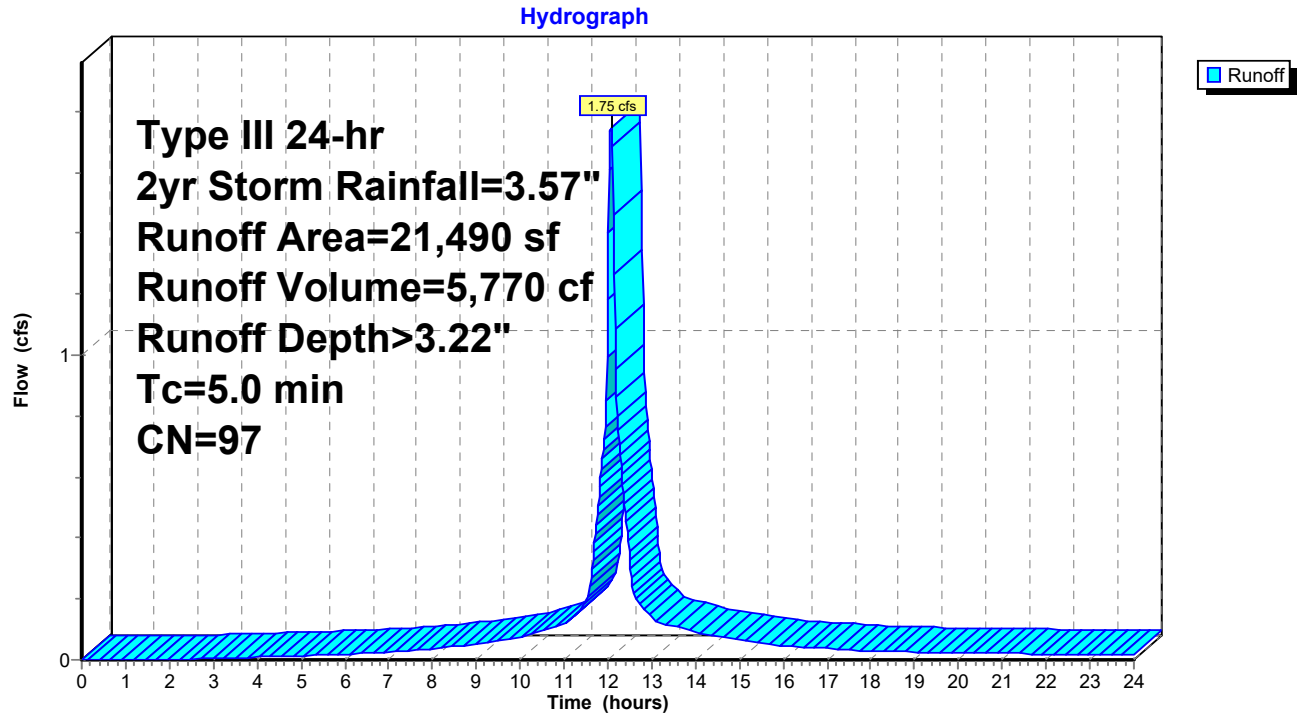
Runoff = 1.75 cfs @ 12.07 hrs, Volume= 5,770 cf, Depth> 3.22"
Routed to Link EX-1 : NOROTON RIVER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2yr Storm Rainfall=3.57"

	Area (sf)	CN	Description
*	3,738	98	Existing Building Roof Area
*	15,643	98	Existing Onsite Parking/Driveway/Walk
*	1,640	98	Existing Offsite Parking/Driveway/Walk
	469	61	>75% Grass cover, Good, HSG B
	21,490	97	Weighted Average
	469		2.18% Pervious Area
	21,021		97.82% Impervious Area

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

Subcatchment EX-DA-1: Drainage Area 1



Summary for Subcatchment PR-DA-1A: Drainage Area 1

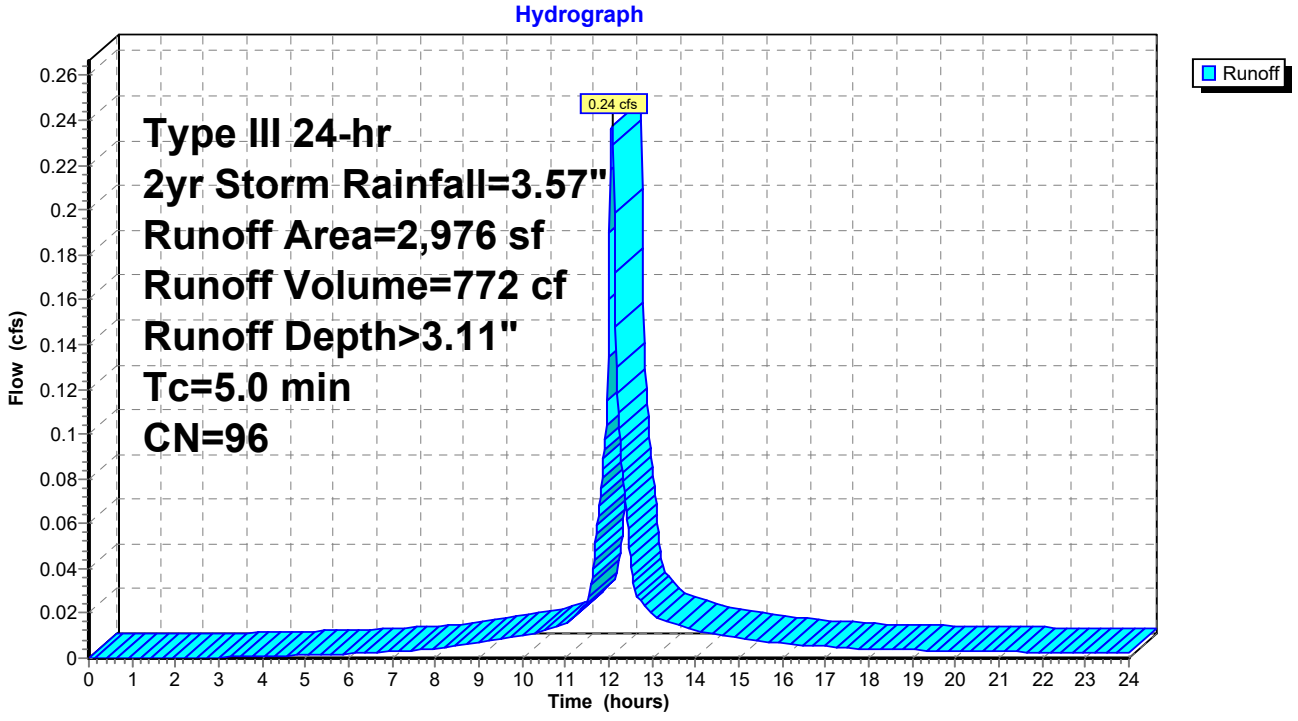
Runoff = 0.24 cfs @ 12.07 hrs, Volume= 772 cf, Depth> 3.11"
Routed to Link PR-1 : NOROTON RIVER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2yr Storm Rainfall=3.57"

	Area (sf)	CN	Description
*	2,850	98	Existing Building Roof Area
	126	61	>75% Grass cover, Good, HSG B
	2,976	96	Weighted Average
	126		4.23% Pervious Area
	2,850		95.77% Impervious Area

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

Subcatchment PR-DA-1A: Drainage Area 1



Summary for Subcatchment PR-DA-1B: Drainage Area 1

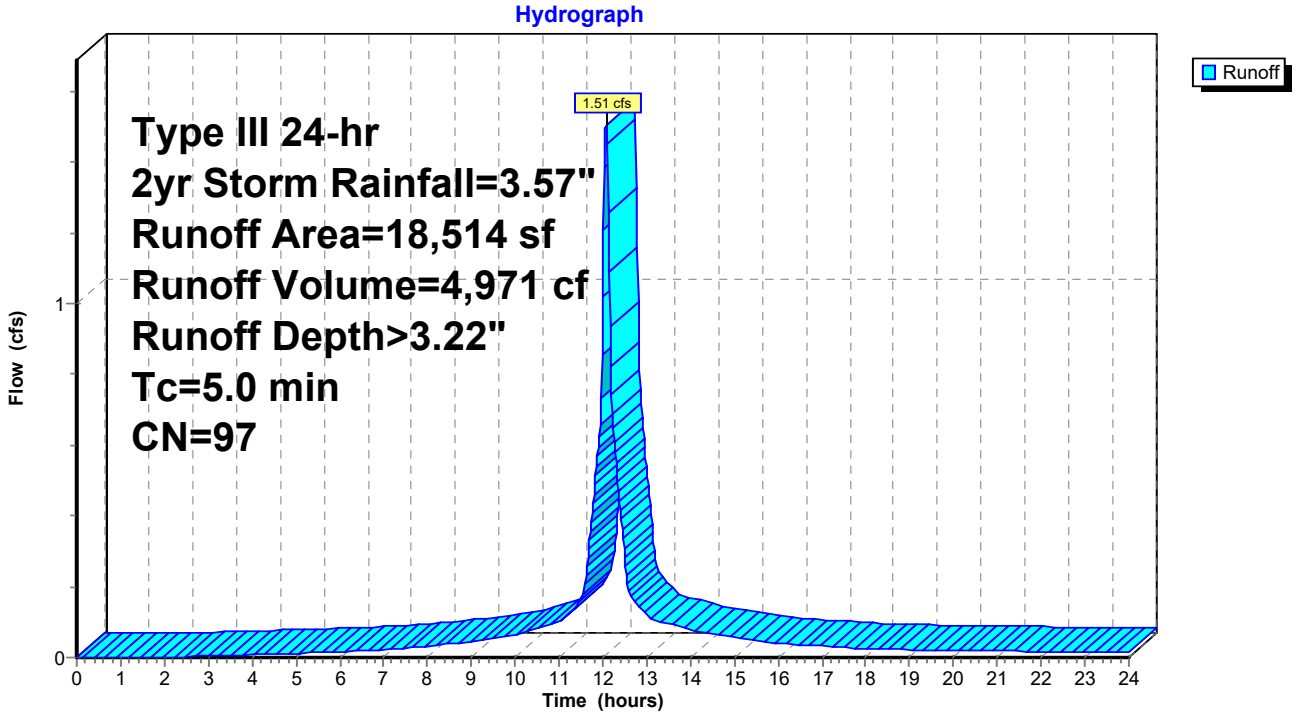
Runoff = 1.51 cfs @ 12.07 hrs, Volume= 4,971 cf, Depth> 3.22"
Routed to Pond 1P : Underground Detention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2yr Storm Rainfall=3.57"

	Area (sf)	CN	Description
*	673	98	Existing Building Roof Area
*	15,643	98	Existing Onsite Parking/Driveway/Walk
*	1,640	98	Existing Offsite Parking/Driveway/Walk
	343	61	>75% Grass cover, Good, HSG B
*	215	61	Roof to be revmoved
	18,514	97	Weighted Average
	558		3.01% Pervious Area
	17,956		96.99% Impervious Area

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

Subcatchment PR-DA-1B: Drainage Area 1



Summary for Pond 1P: Underground Detention

[92] Warning: Device #2 is above defined storage

Inflow Area = 18,514 sf, 96.99% Impervious, Inflow Depth > 3.22" for 2yr Storm event
Inflow = 1.51 cfs @ 12.07 hrs, Volume= 4,971 cf
Outflow = 1.06 cfs @ 12.17 hrs, Volume= 3,412 cf, Atten= 29%, Lag= 5.8 min
Discarded = 0.03 cfs @ 9.02 hrs, Volume= 2,014 cf
Primary = 1.03 cfs @ 12.17 hrs, Volume= 1,398 cf
Routed to Link PR-1 : NOROTON RIVER

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 6.30' @ 12.14 hrs Surf.Area= 1,280 sf Storage= 1,822 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 76.8 min (838.8 - 762.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.30'	10 cf	**20.00'W x 64.00'L x 2.00'H Field A** 2,560 cf Overall - 2,534 cf Embedded = 26 cf x 40.0% Voids
#2A	4.30'	1,812 cf	**Concrete Galley 4x8x2** x 40 Inside #1 Inside= 42.0"W x 21.0"H => 6.04 sf x 7.50'L = 45.3 cf Outside= 48.0"W x 24.0"H => 7.92 sf x 8.00'L = 63.4 cf 40 Chambers in 5 Rows
		1,822 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#0	Primary	6.30'	**Automatic Storage Overflow** (Discharged without head)
#1	Discarded	4.30'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	7.00'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=0.03 cfs @ 9.02 hrs HW=4.33' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 12.17 hrs HW=6.30' TW=0.00' (Dynamic Tailwater)
↑—**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Underground Detention - Chamber Wizard Field A

Chamber Model = Concrete Galley 4x8x2 (Concrete Galley, UCPI 24" Low Profile Galley or equivalent)
Inside= 42.0"W x 21.0"H => 6.04 sf x 7.50'L = 45.3 cf
Outside= 48.0"W x 24.0"H => 7.92 sf x 8.00'L = 63.4 cf

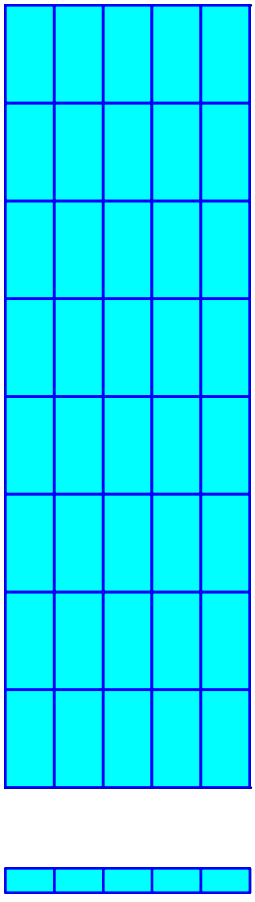
8 Chambers/Row x 8.00' Long = 64.00' Row Length
5 Rows x 48.0" Wide = 20.00' Base Width
24.0" Chamber Height = 2.00' Field Height

40 Chambers x 45.3 cf = 1,812.0 cf Chamber Storage
40 Chambers x 63.4 cf = 2,534.4 cf Displacement

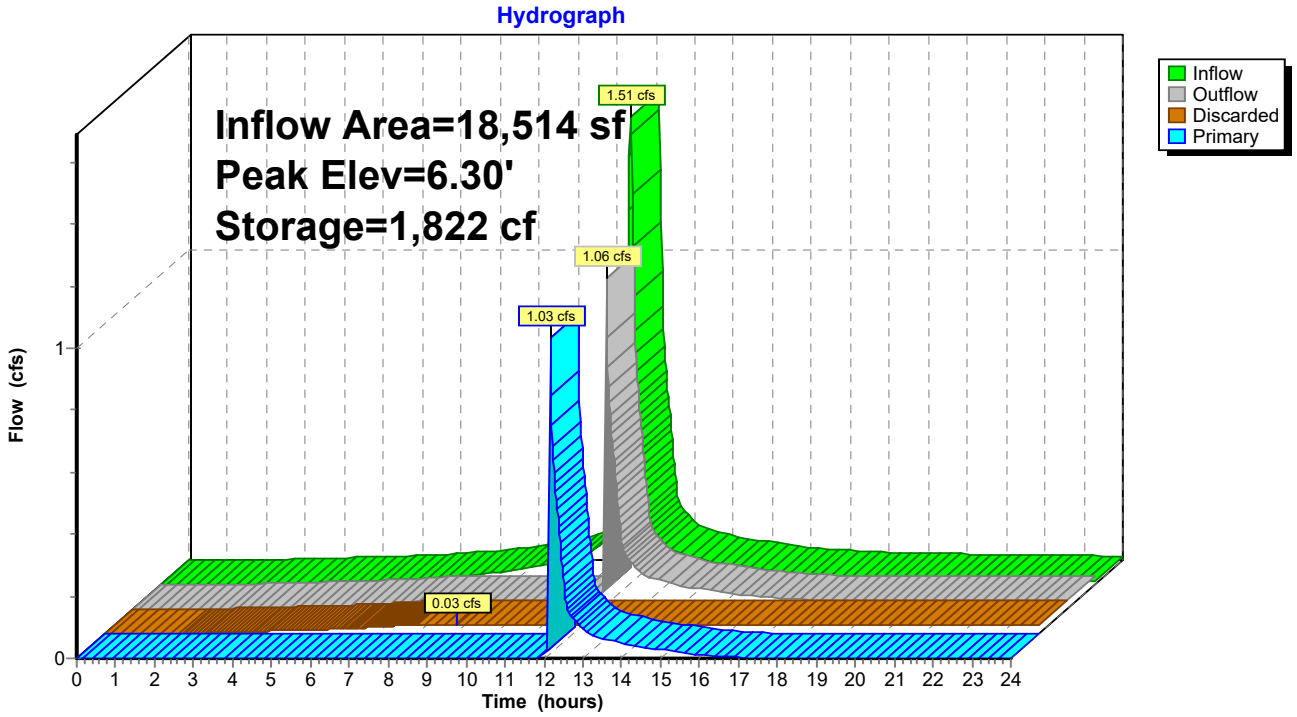
2,560.0 cf Field - 2,534.4 cf Chambers = 25.6 cf Stone x 40.0% Voids = 10.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,822.2 cf = 0.042 af
Overall Storage Efficiency = 71.2%
Overall System Size = 64.00' x 20.00' x 2.00'

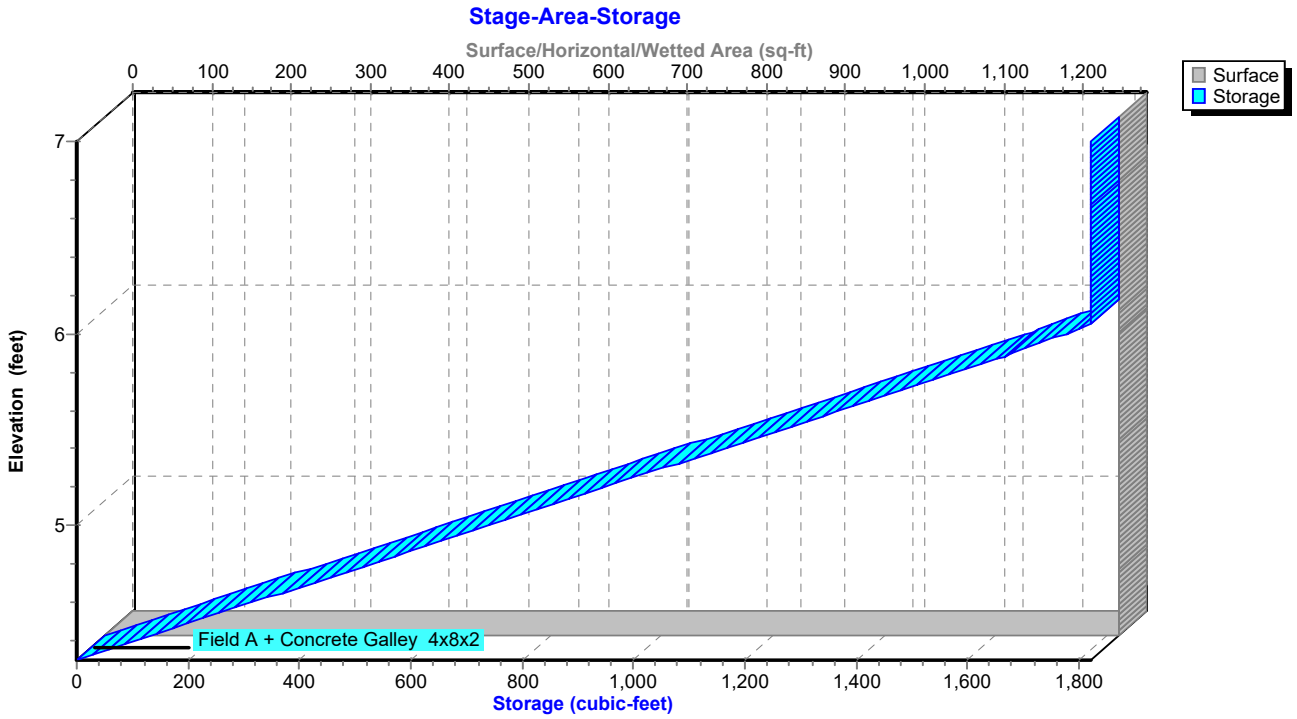
40 Chambers
94.8 cy Field
0.9 cy Stone



Pond 1P: Underground Detention



Pond 1P: Underground Detention



Stage-Area-Storage for Pond 1P: Underground Detention

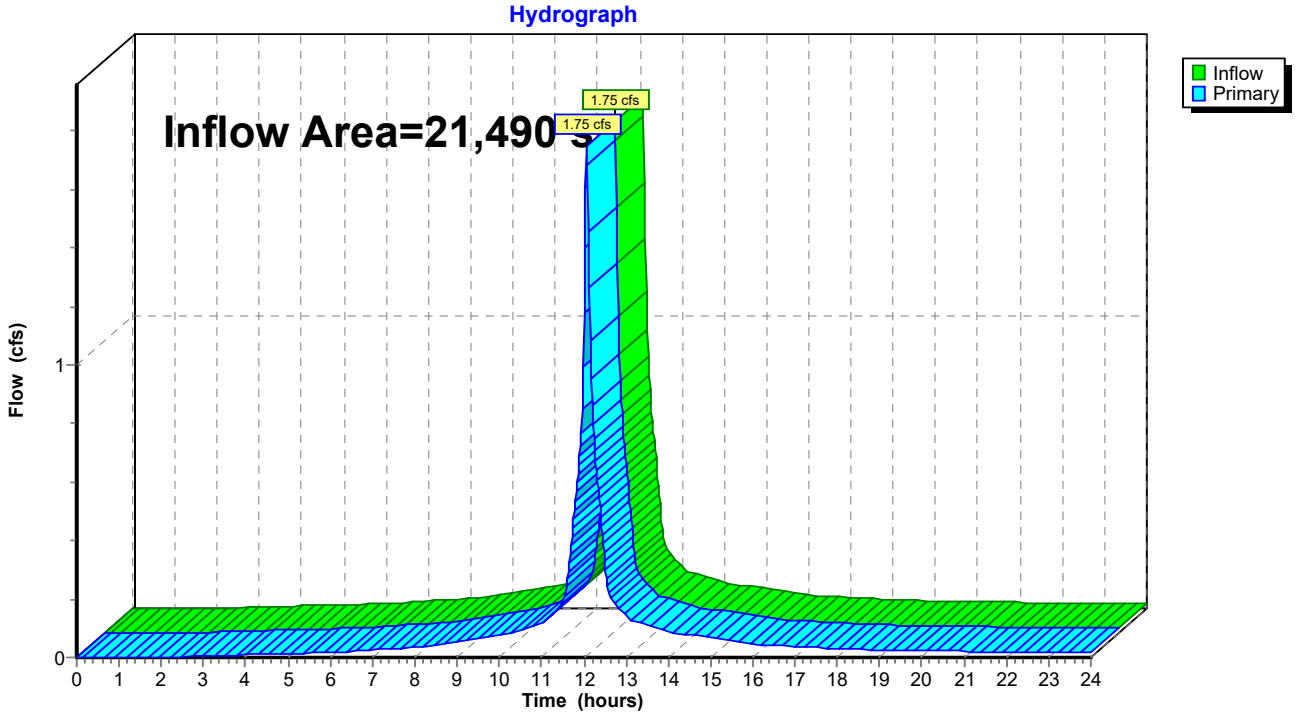
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
4.30	**1,280**	0
4.35	1,280	53
4.40	1,280	106
4.45	1,280	158
4.50	1,280	211
4.55	1,280	264
4.60	1,280	317
4.65	1,280	369
4.70	1,280	422
4.75	1,280	475
4.80	1,280	528
4.85	1,280	580
4.90	1,280	633
4.95	1,280	686
5.00	1,280	739
5.05	1,280	791
5.10	1,280	844
5.15	1,280	897
5.20	1,280	950
5.25	1,280	1,002
5.30	1,280	1,055
5.35	1,280	1,108
5.40	1,280	1,161
5.45	1,280	1,213
5.50	1,280	1,266
5.55	1,280	1,319
5.60	1,280	1,372
5.65	1,280	1,424
5.70	1,280	1,477
5.75	1,280	1,530
5.80	1,280	1,583
5.85	1,280	1,635
5.90	1,280	1,686
5.95	1,280	1,731
6.00	1,280	1,777
6.05	1,280	1,821
6.10	1,280	1,821
6.15	1,280	1,821
6.20	1,280	1,822
6.25	1,280	1,822
6.30	1,280	**1,822**
6.35	1,280	1,822
6.40	1,280	1,822
6.45	1,280	1,822
6.50	1,280	1,822
6.55	1,280	1,822
6.60	1,280	1,822
6.65	1,280	1,822
6.70	1,280	1,822
6.75	1,280	1,822
6.80	1,280	1,822
6.85	1,280	1,822
6.90	1,280	1,822
6.95	1,280	1,822
7.00	1,280	1,822

Summary for Link EX-1: NOROTON RIVER

Inflow Area = 21,490 sf, 97.82% Impervious, Inflow Depth > 3.22" for 2yr Storm event
Inflow = 1.75 cfs @ 12.07 hrs, Volume= 5,770 cf
Primary = 1.75 cfs @ 12.07 hrs, Volume= 5,770 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node EX-Total

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link EX-1: NOROTON RIVER

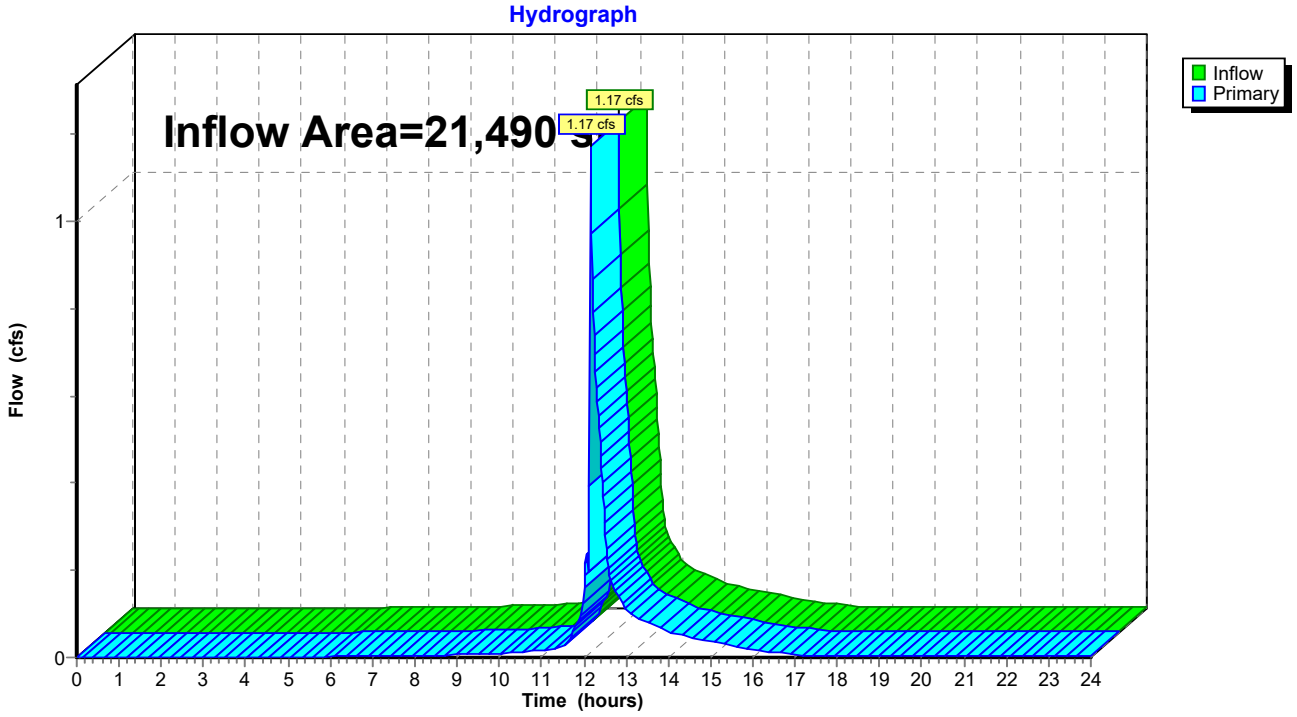


Summary for Link PR-1: NOROTON RIVER

Inflow Area = 21,490 sf, 96.82% Impervious, Inflow Depth > 1.21" for 2yr Storm event
Inflow = 1.17 cfs @ 12.17 hrs, Volume= 2,170 cf
Primary = 1.17 cfs @ 12.17 hrs, Volume= 2,170 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node PR-Total

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link PR-1: NOROTON RIVER



Summary for Subcatchment EX-DA-1: Drainage Area 1

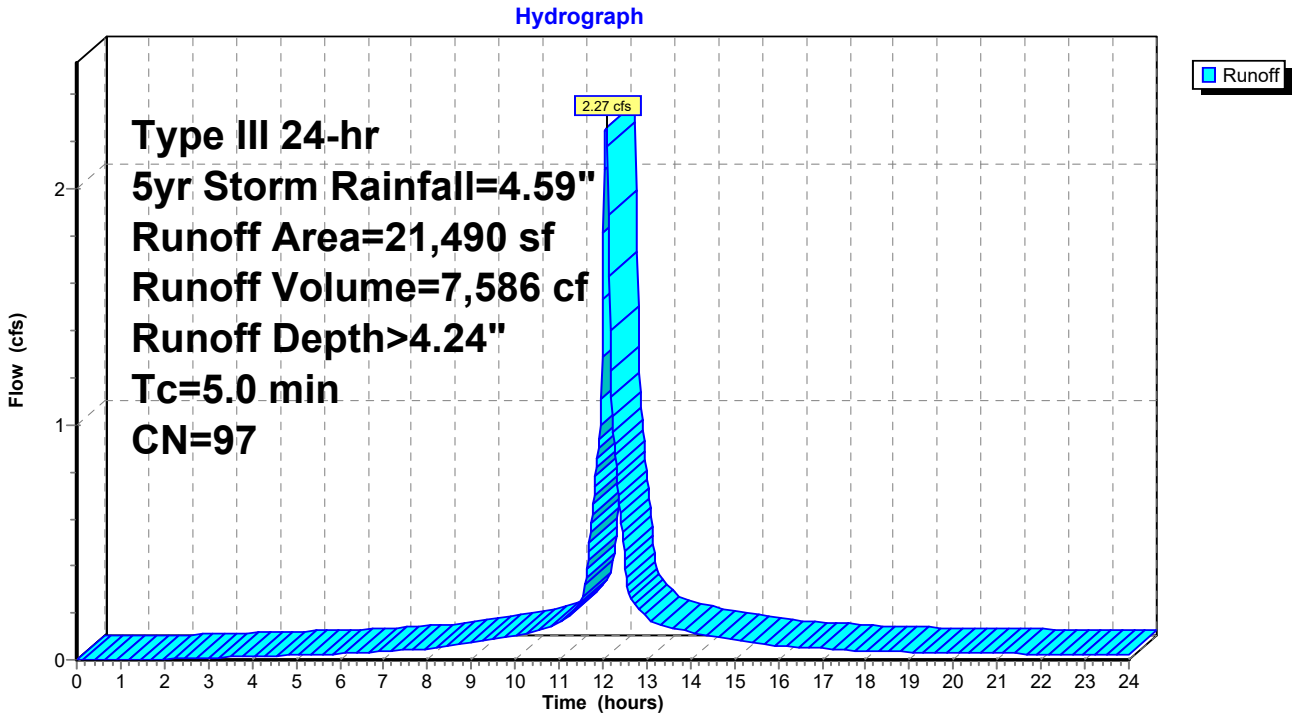
Runoff = 2.27 cfs @ 12.07 hrs, Volume= 7,586 cf, Depth> 4.24"
Routed to Link EX-1 : NOROTON RIVER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 5yr Storm Rainfall=4.59"

	Area (sf)	CN	Description
*	3,738	98	Existing Building Roof Area
*	15,643	98	Existing Onsite Parking/Driveway/Walk
*	1,640	98	Existing Offsite Parking/Driveway/Walk
	469	61	>75% Grass cover, Good, HSG B
	21,490	97	Weighted Average
	469		2.18% Pervious Area
	21,021		97.82% Impervious Area

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

Subcatchment EX-DA-1: Drainage Area 1



Summary for Subcatchment PR-DA-1A: Drainage Area 1

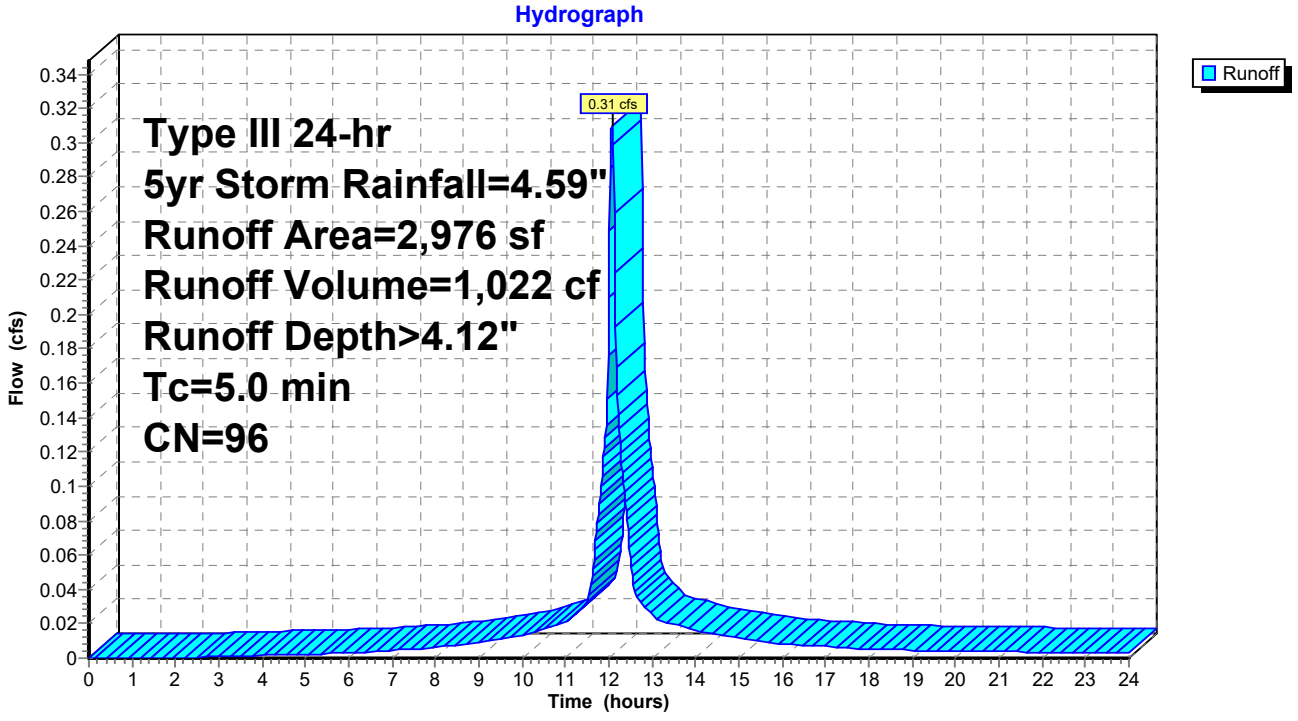
Runoff = 0.31 cfs @ 12.07 hrs, Volume= 1,022 cf, Depth> 4.12"
Routed to Link PR-1 : NOROTON RIVER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 5yr Storm Rainfall=4.59"

	Area (sf)	CN	Description
*	2,850	98	Existing Building Roof Area
	126	61	>75% Grass cover, Good, HSG B
	2,976	96	Weighted Average
	126		4.23% Pervious Area
	2,850		95.77% Impervious Area

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

Subcatchment PR-DA-1A: Drainage Area 1



Summary for Subcatchment PR-DA-1B: Drainage Area 1

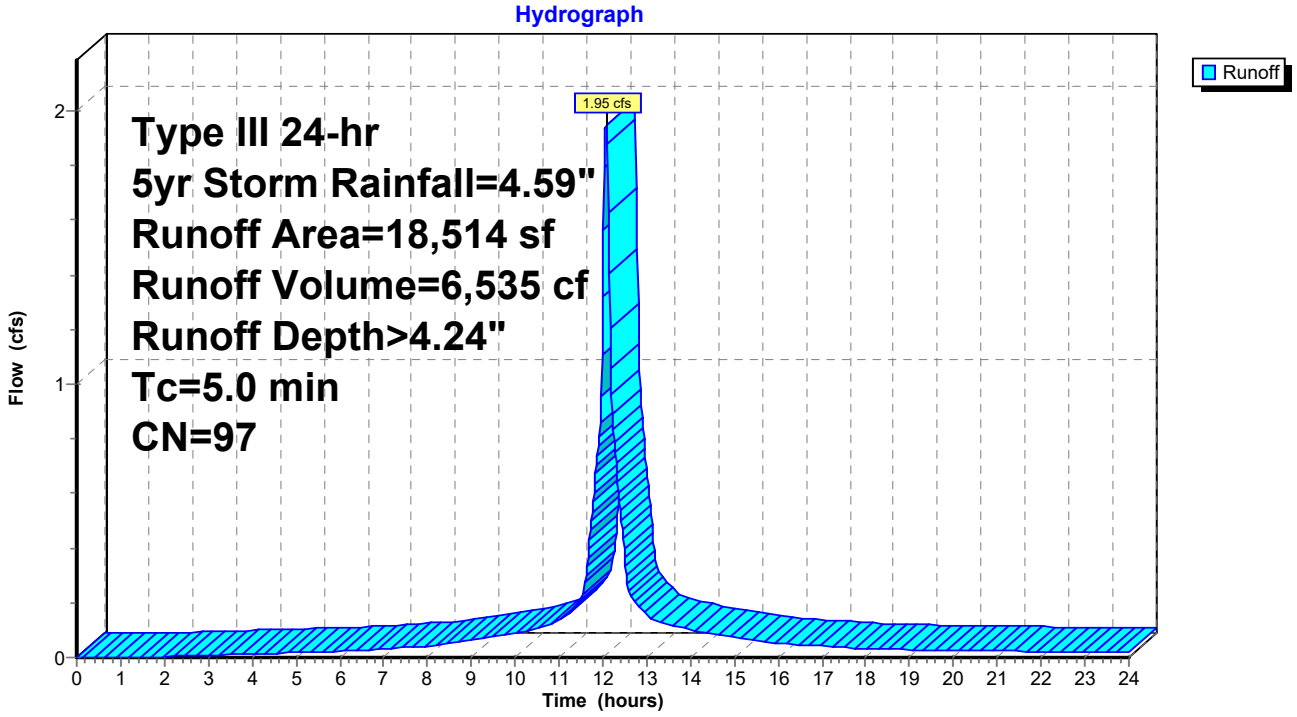
Runoff = 1.95 cfs @ 12.07 hrs, Volume= 6,535 cf, Depth> 4.24"
Routed to Pond 1P : Underground Detention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 5yr Storm Rainfall=4.59"

	Area (sf)	CN	Description
*	673	98	Existing Building Roof Area
*	15,643	98	Existing Onsite Parking/Driveway/Walk
*	1,640	98	Existing Offsite Parking/Driveway/Walk
	343	61	>75% Grass cover, Good, HSG B
*	215	61	Roof to be revmoved
	18,514	97	Weighted Average
	558		3.01% Pervious Area
	17,956		96.99% Impervious Area

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

Subcatchment PR-DA-1B: Drainage Area 1



Summary for Pond 1P: Underground Detention

[92] Warning: Device #2 is above defined storage

Inflow Area = 18,514 sf, 96.99% Impervious, Inflow Depth > 4.24" for 5yr Storm event
Inflow = 1.95 cfs @ 12.07 hrs, Volume= 6,535 cf
Outflow = 1.94 cfs @ 12.08 hrs, Volume= 4,856 cf, Atten= 1%, Lag= 0.6 min
Discarded = 0.03 cfs @ 8.12 hrs, Volume= 2,132 cf
Primary = 1.91 cfs @ 12.08 hrs, Volume= 2,723 cf
Routed to Link PR-1 : NOROTON RIVER

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 6.30' @ 12.02 hrs Surf.Area= 1,280 sf Storage= 1,822 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 49.6 min (805.8 - 756.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.30'	10 cf	**20.00'W x 64.00'L x 2.00'H Field A** 2,560 cf Overall - 2,534 cf Embedded = 26 cf x 40.0% Voids
#2A	4.30'	1,812 cf	**Concrete Galley 4x8x2** x 40 Inside #1 Inside= 42.0"W x 21.0"H => 6.04 sf x 7.50'L = 45.3 cf Outside= 48.0"W x 24.0"H => 7.92 sf x 8.00'L = 63.4 cf 40 Chambers in 5 Rows
		1,822 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#0	Primary	6.30'	**Automatic Storage Overflow** (Discharged without head)
#1	Discarded	4.30'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	7.00'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=0.03 cfs @ 8.12 hrs HW=4.33' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 12.08 hrs HW=6.30' TW=0.00' (Dynamic Tailwater)
↑—**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Underground Detention - Chamber Wizard Field A

Chamber Model = Concrete Galley 4x8x2 (Concrete Galley, UCPI 24" Low Profile Galley or equivalent)
Inside= 42.0"W x 21.0"H => 6.04 sf x 7.50'L = 45.3 cf
Outside= 48.0"W x 24.0"H => 7.92 sf x 8.00'L = 63.4 cf

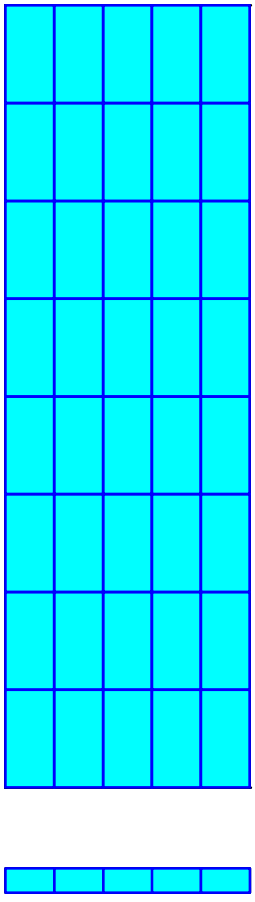
8 Chambers/Row x 8.00' Long = 64.00' Row Length
5 Rows x 48.0" Wide = 20.00' Base Width
24.0" Chamber Height = 2.00' Field Height

40 Chambers x 45.3 cf = 1,812.0 cf Chamber Storage
40 Chambers x 63.4 cf = 2,534.4 cf Displacement

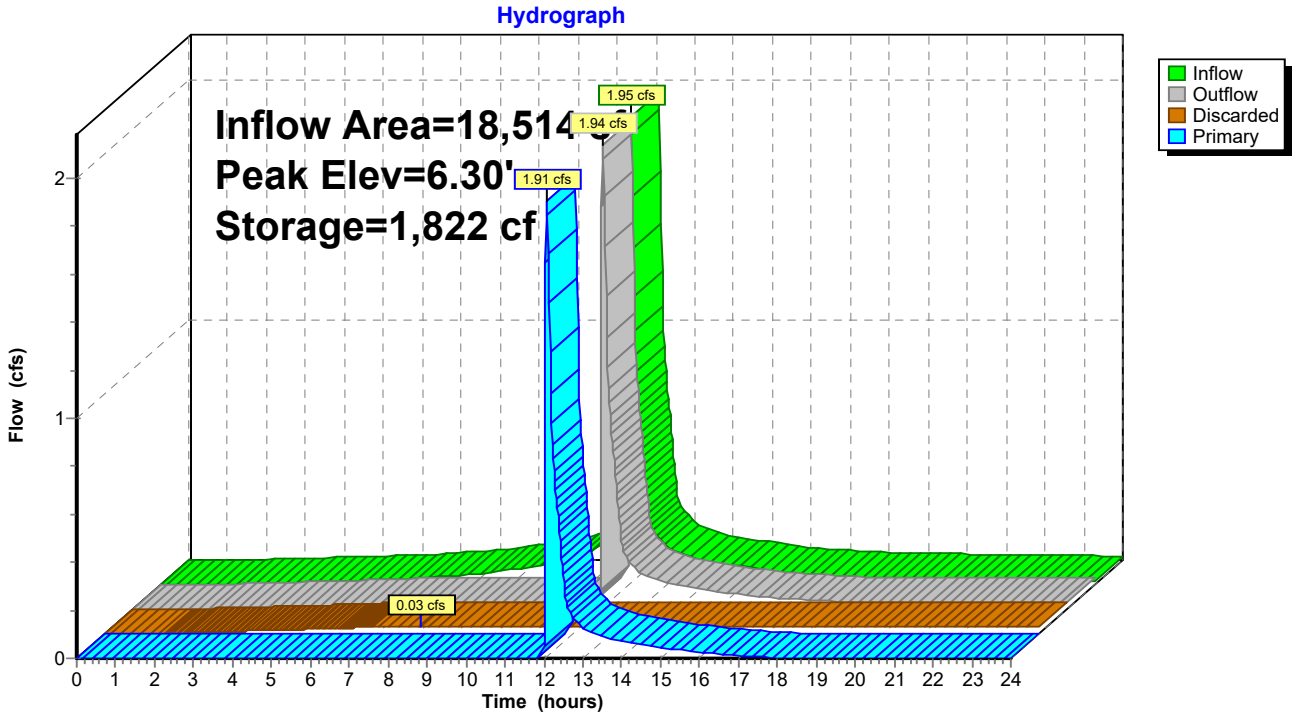
2,560.0 cf Field - 2,534.4 cf Chambers = 25.6 cf Stone x 40.0% Voids = 10.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,822.2 cf = 0.042 af
Overall Storage Efficiency = 71.2%
Overall System Size = 64.00' x 20.00' x 2.00'

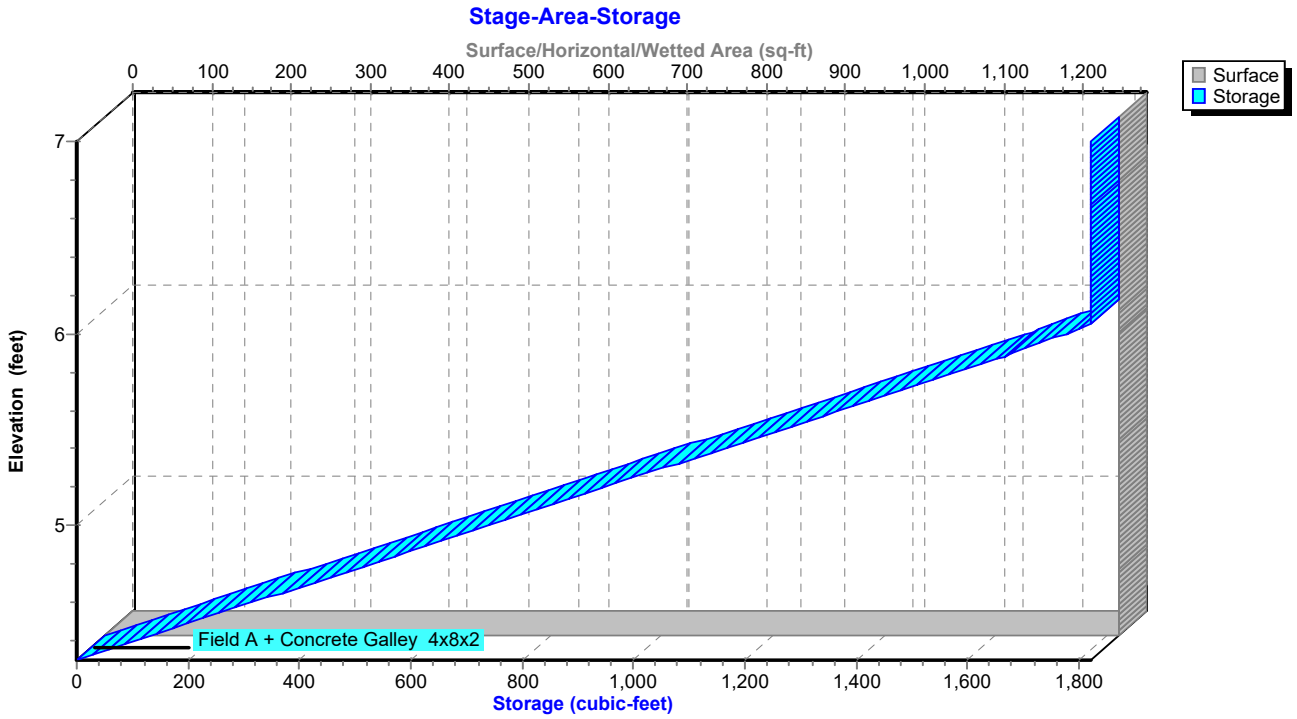
40 Chambers
94.8 cy Field
0.9 cy Stone



Pond 1P: Underground Detention



Pond 1P: Underground Detention



Stage-Area-Storage for Pond 1P: Underground Detention

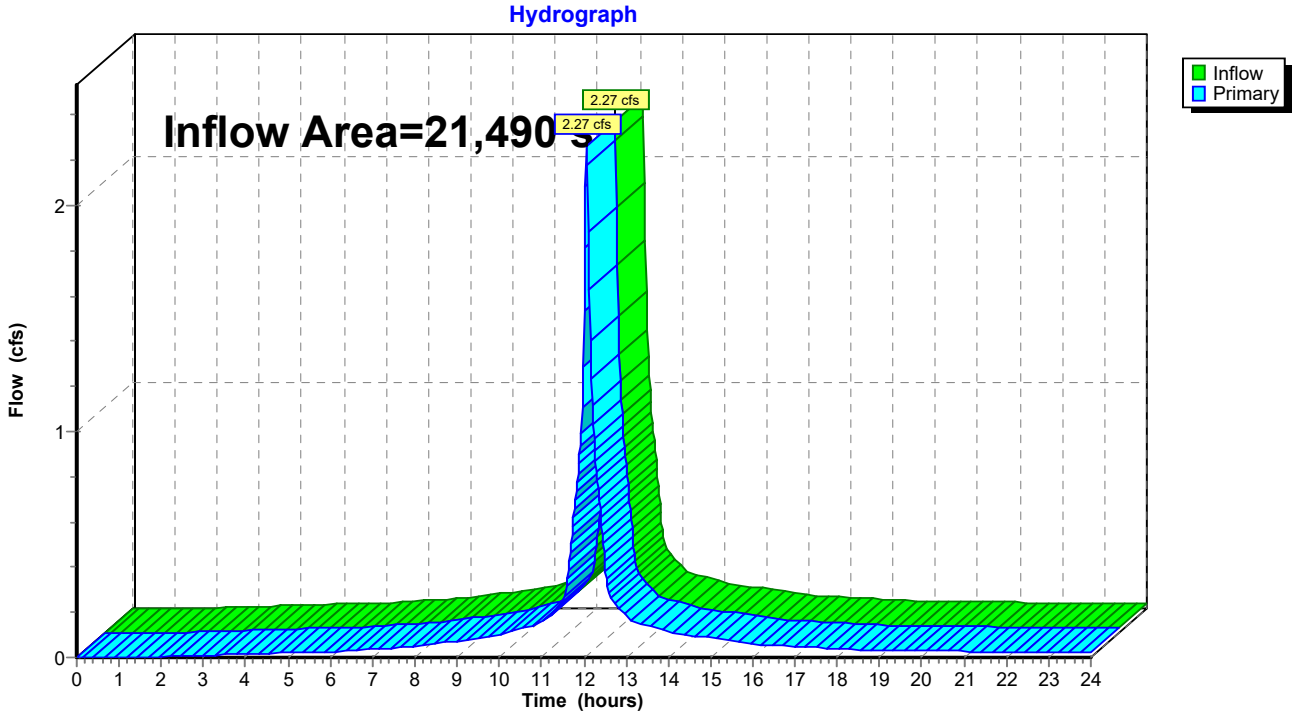
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
4.30	**1,280**	0
4.35	1,280	53
4.40	1,280	106
4.45	1,280	158
4.50	1,280	211
4.55	1,280	264
4.60	1,280	317
4.65	1,280	369
4.70	1,280	422
4.75	1,280	475
4.80	1,280	528
4.85	1,280	580
4.90	1,280	633
4.95	1,280	686
5.00	1,280	739
5.05	1,280	791
5.10	1,280	844
5.15	1,280	897
5.20	1,280	950
5.25	1,280	1,002
5.30	1,280	1,055
5.35	1,280	1,108
5.40	1,280	1,161
5.45	1,280	1,213
5.50	1,280	1,266
5.55	1,280	1,319
5.60	1,280	1,372
5.65	1,280	1,424
5.70	1,280	1,477
5.75	1,280	1,530
5.80	1,280	1,583
5.85	1,280	1,635
5.90	1,280	1,686
5.95	1,280	1,731
6.00	1,280	1,777
6.05	1,280	1,821
6.10	1,280	1,821
6.15	1,280	1,821
6.20	1,280	1,822
6.25	1,280	1,822
6.30	1,280	**1,822**
6.35	1,280	1,822
6.40	1,280	1,822
6.45	1,280	1,822
6.50	1,280	1,822
6.55	1,280	1,822
6.60	1,280	1,822
6.65	1,280	1,822
6.70	1,280	1,822
6.75	1,280	1,822
6.80	1,280	1,822
6.85	1,280	1,822
6.90	1,280	1,822
6.95	1,280	1,822
7.00	1,280	1,822

Summary for Link EX-1: NOROTON RIVER

Inflow Area = 21,490 sf, 97.82% Impervious, Inflow Depth > 4.24" for 5yr Storm event
Inflow = 2.27 cfs @ 12.07 hrs, Volume= 7,586 cf
Primary = 2.27 cfs @ 12.07 hrs, Volume= 7,586 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node EX-Total

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link EX-1: NOROTON RIVER

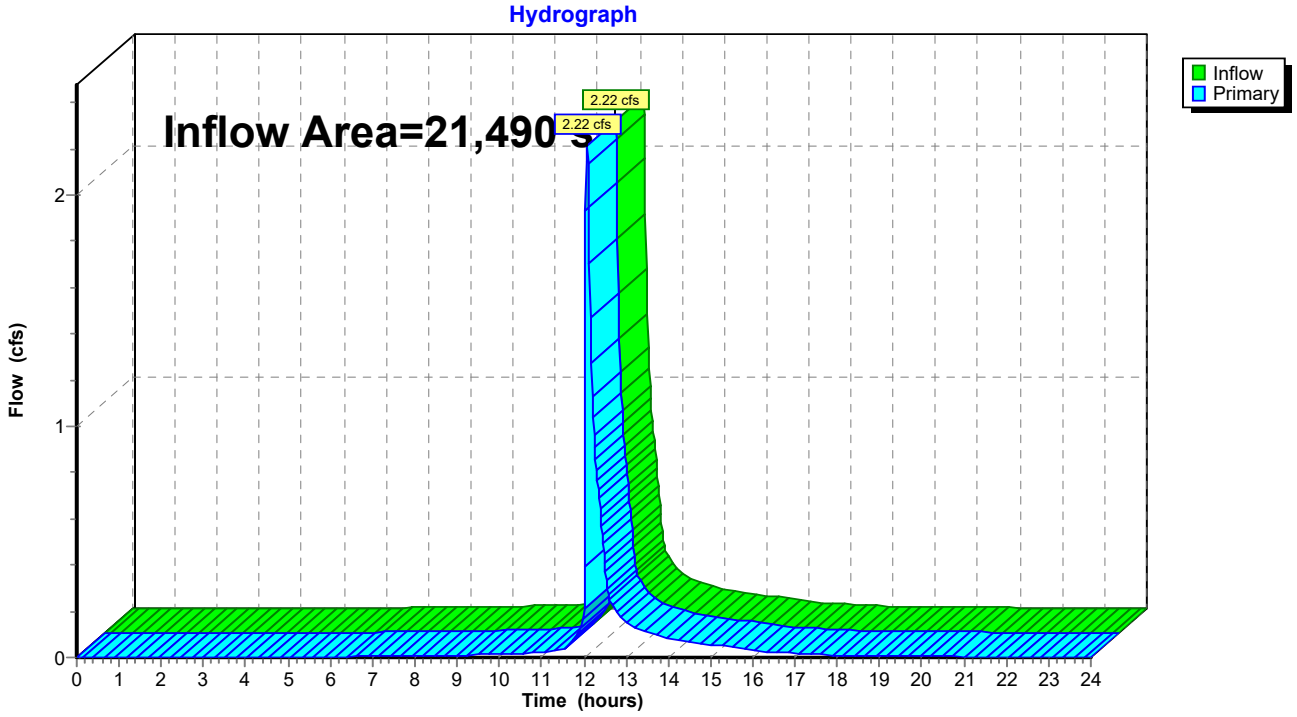


Summary for Link PR-1: NOROTON RIVER

Inflow Area = 21,490 sf, 96.82% Impervious, Inflow Depth > 2.09" for 5yr Storm event
Inflow = 2.22 cfs @ 12.08 hrs, Volume= 3,746 cf
Primary = 2.22 cfs @ 12.08 hrs, Volume= 3,746 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node PR-Total

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link PR-1: NOROTON RIVER



Summary for Subcatchment EX-DA-1: Drainage Area 1

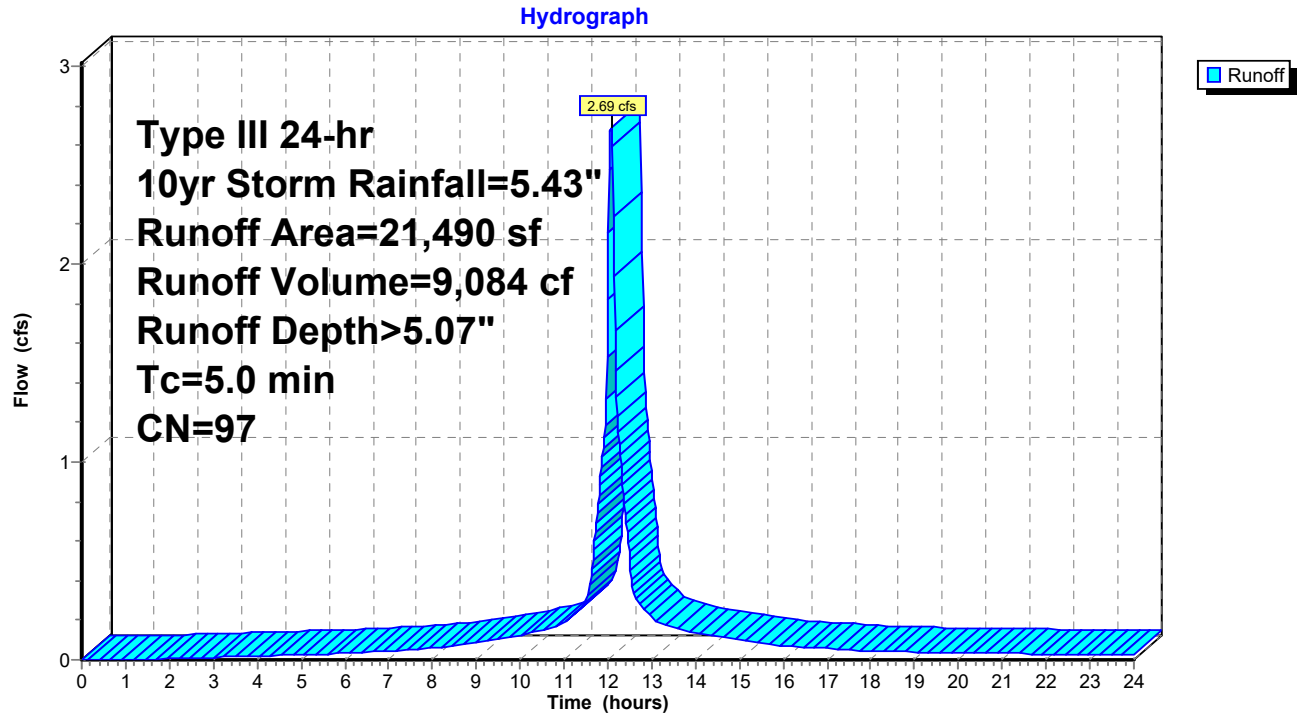
Runoff = 2.69 cfs @ 12.07 hrs, Volume= 9,084 cf, Depth> 5.07"
Routed to Link EX-1 : NOROTON RIVER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10yr Storm Rainfall=5.43"

	Area (sf)	CN	Description
*	3,738	98	Existing Building Roof Area
*	15,643	98	Existing Onsite Parking/Driveway/Walk
*	1,640	98	Existing Offsite Parking/Driveway/Walk
	469	61	>75% Grass cover, Good, HSG B
	21,490	97	Weighted Average
	469		2.18% Pervious Area
	21,021		97.82% Impervious Area

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

Subcatchment EX-DA-1: Drainage Area 1



Summary for Subcatchment PR-DA-1A: Drainage Area 1

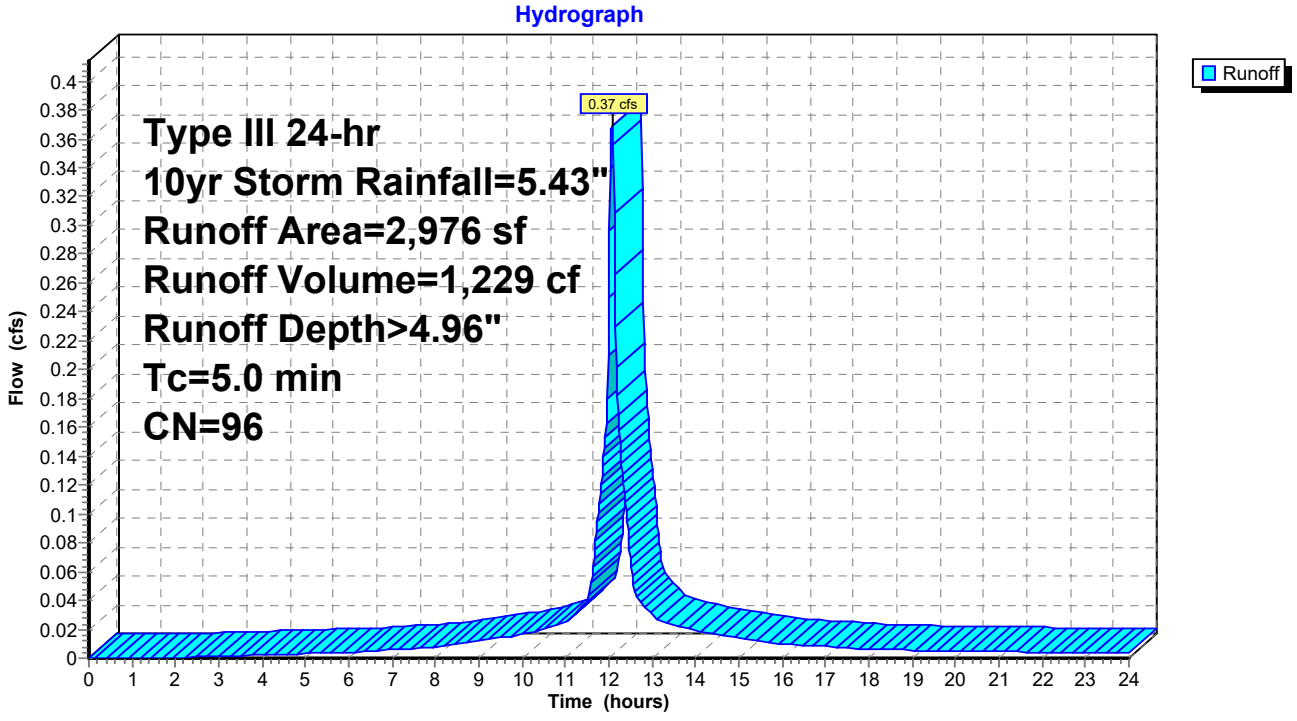
Runoff = 0.37 cfs @ 12.07 hrs, Volume= 1,229 cf, Depth> 4.96"
Routed to Link PR-1 : NOROTON RIVER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10yr Storm Rainfall=5.43"

	Area (sf)	CN	Description
*	2,850	98	Existing Building Roof Area
	126	61	>75% Grass cover, Good, HSG B
	2,976	96	Weighted Average
	126		4.23% Pervious Area
	2,850		95.77% Impervious Area

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

Subcatchment PR-DA-1A: Drainage Area 1



Summary for Subcatchment PR-DA-1B: Drainage Area 1

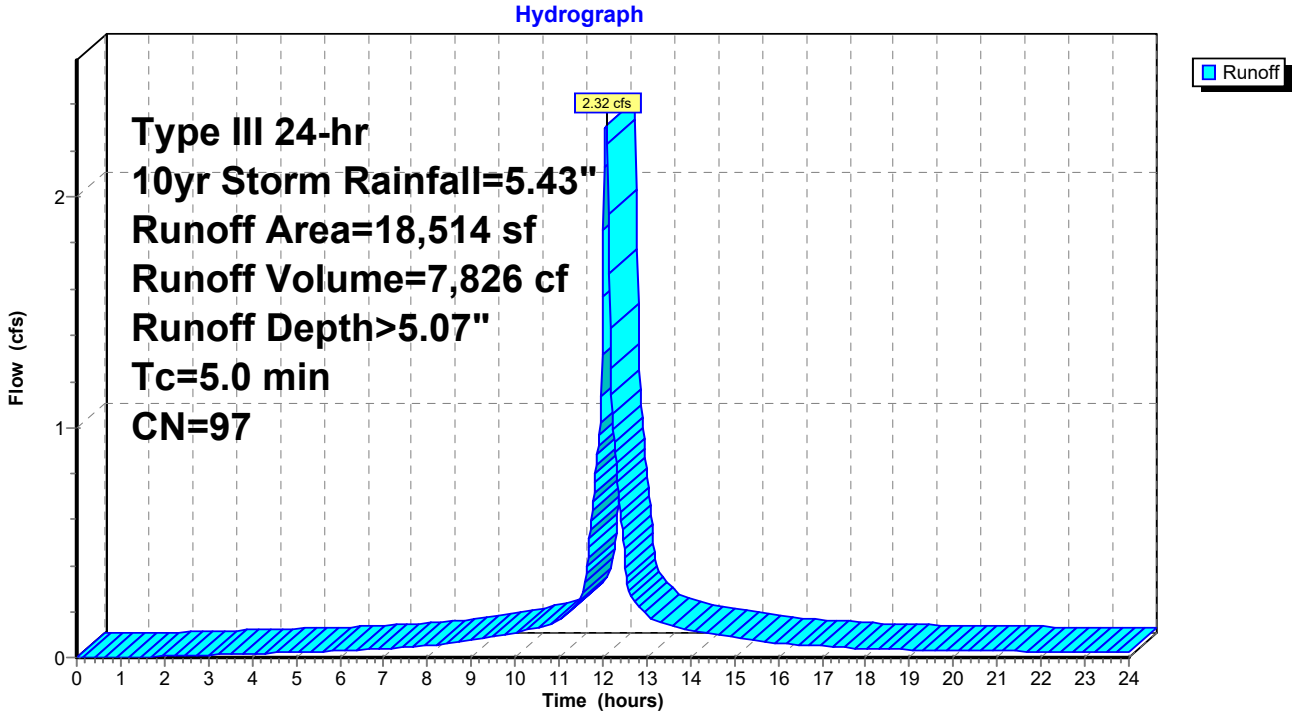
Runoff = 2.32 cfs @ 12.07 hrs, Volume= 7,826 cf, Depth> 5.07"
Routed to Pond 1P : Underground Detention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10yr Storm Rainfall=5.43"

	Area (sf)	CN	Description
*	673	98	Existing Building Roof Area
*	15,643	98	Existing Onsite Parking/Driveway/Walk
*	1,640	98	Existing Offsite Parking/Driveway/Walk
	343	61	>75% Grass cover, Good, HSG B
*	215	61	Roof to be revmoved
	18,514	97	Weighted Average
	558		3.01% Pervious Area
	17,956		96.99% Impervious Area

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

Subcatchment PR-DA-1B: Drainage Area 1



Summary for Pond 1P: Underground Detention

[92] Warning: Device #2 is above defined storage

Inflow Area = 18,514 sf, 96.99% Impervious, Inflow Depth > 5.07" for 10yr Storm event
Inflow = 2.32 cfs @ 12.07 hrs, Volume= 7,826 cf
Outflow = 2.30 cfs @ 12.08 hrs, Volume= 6,077 cf, Atten= 1%, Lag= 0.6 min
Discarded = 0.03 cfs @ 7.40 hrs, Volume= 2,212 cf
Primary = 2.27 cfs @ 12.08 hrs, Volume= 3,865 cf
Routed to Link PR-1 : NOROTON RIVER

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 6.30' @ 11.92 hrs Surf.Area= 1,280 sf Storage= 1,822 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 39.3 min (792.1 - 752.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.30'	10 cf	**20.00'W x 64.00'L x 2.00'H Field A** 2,560 cf Overall - 2,534 cf Embedded = 26 cf x 40.0% Voids
#2A	4.30'	1,812 cf	**Concrete Galley 4x8x2** x 40 Inside #1 Inside= 42.0"W x 21.0"H => 6.04 sf x 7.50'L = 45.3 cf Outside= 48.0"W x 24.0"H => 7.92 sf x 8.00'L = 63.4 cf 40 Chambers in 5 Rows
		1,822 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#0	Primary	6.30'	**Automatic Storage Overflow** (Discharged without head)
#1	Discarded	4.30'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	7.00'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=0.03 cfs @ 7.40 hrs HW=4.33' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 12.08 hrs HW=6.30' TW=0.00' (Dynamic Tailwater)
↑—**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Underground Detention - Chamber Wizard Field A

Chamber Model = Concrete Galley 4x8x2 (Concrete Galley, UCPI 24" Low Profile Galley or equivalent)
Inside= 42.0"W x 21.0"H => 6.04 sf x 7.50'L = 45.3 cf
Outside= 48.0"W x 24.0"H => 7.92 sf x 8.00'L = 63.4 cf

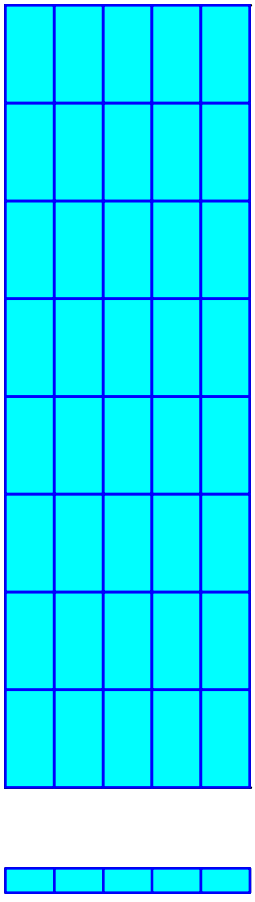
8 Chambers/Row x 8.00' Long = 64.00' Row Length
5 Rows x 48.0" Wide = 20.00' Base Width
24.0" Chamber Height = 2.00' Field Height

40 Chambers x 45.3 cf = 1,812.0 cf Chamber Storage
40 Chambers x 63.4 cf = 2,534.4 cf Displacement

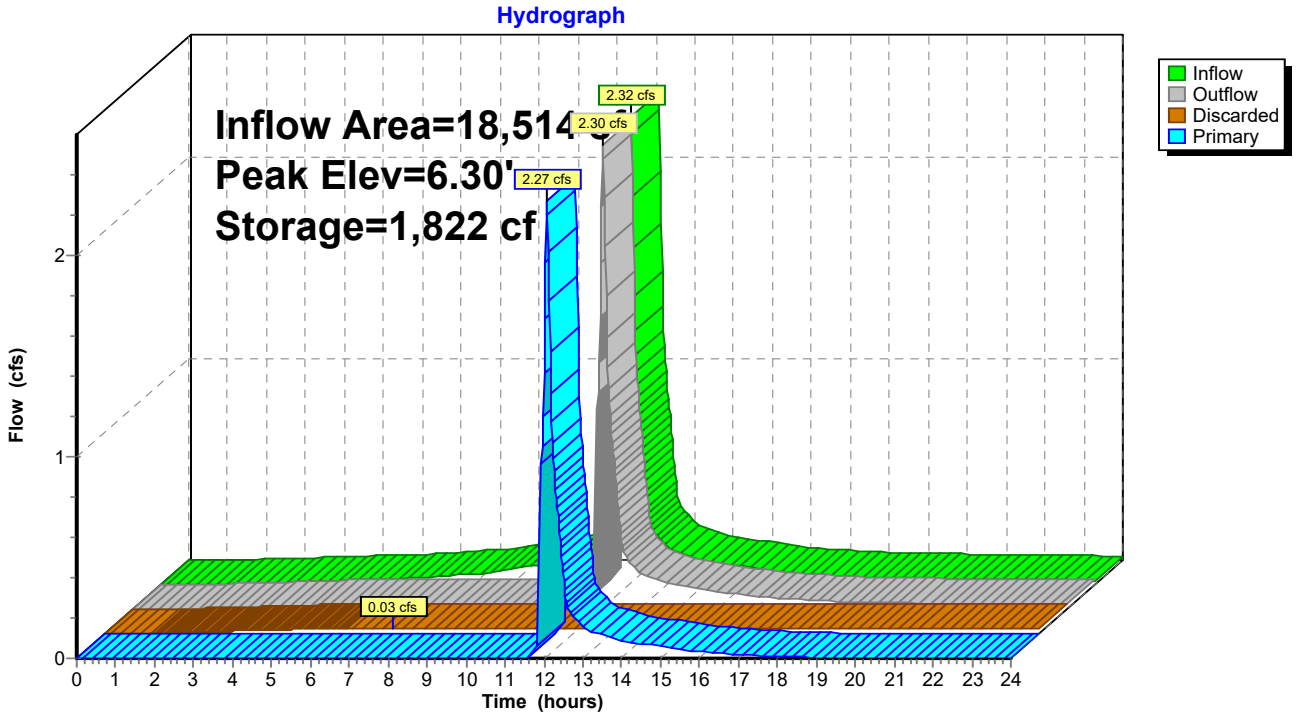
2,560.0 cf Field - 2,534.4 cf Chambers = 25.6 cf Stone x 40.0% Voids = 10.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,822.2 cf = 0.042 af
Overall Storage Efficiency = 71.2%
Overall System Size = 64.00' x 20.00' x 2.00'

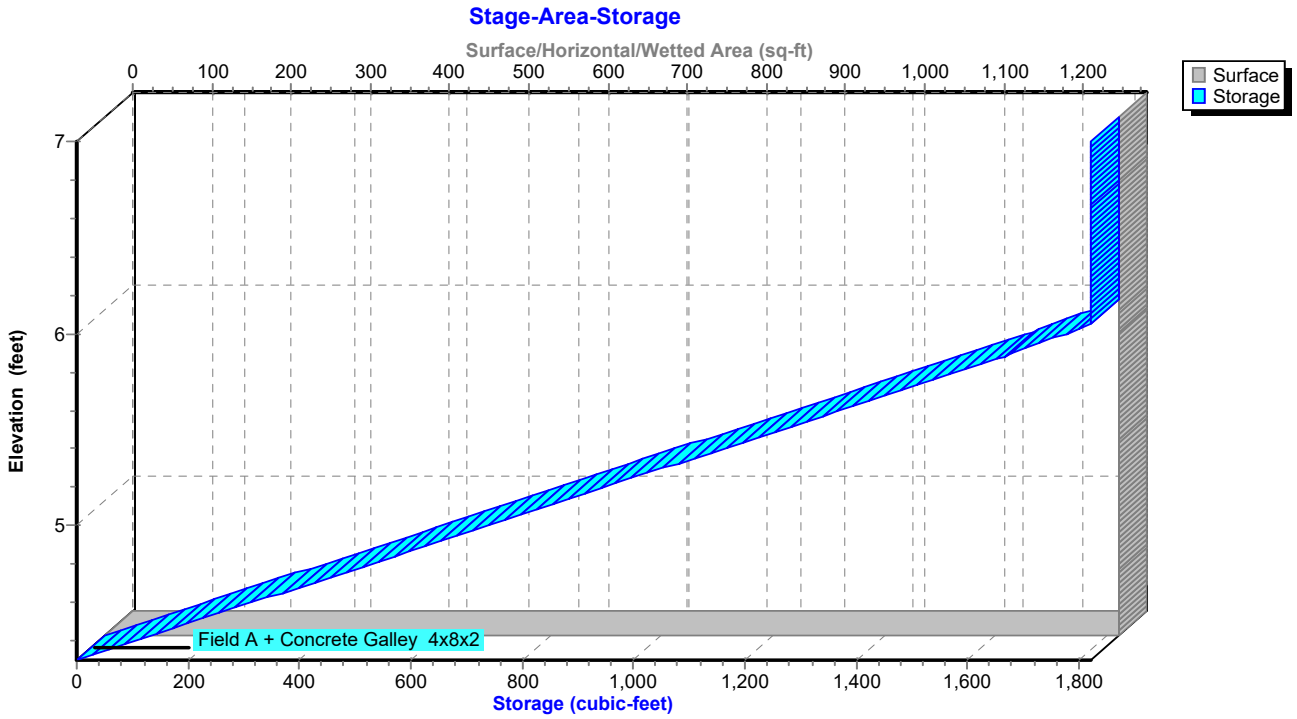
40 Chambers
94.8 cy Field
0.9 cy Stone



Pond 1P: Underground Detention



Pond 1P: Underground Detention



Stage-Area-Storage for Pond 1P: Underground Detention

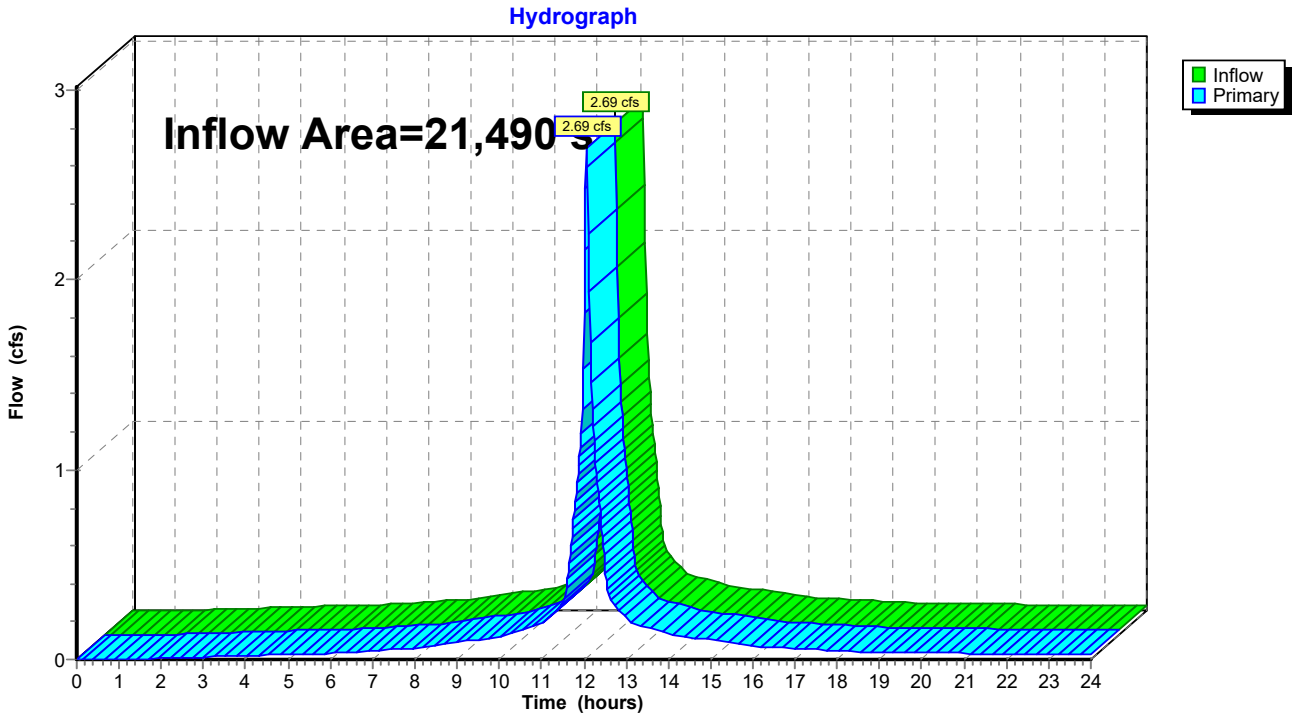
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
4.30	**1,280**	0
4.35	1,280	53
4.40	1,280	106
4.45	1,280	158
4.50	1,280	211
4.55	1,280	264
4.60	1,280	317
4.65	1,280	369
4.70	1,280	422
4.75	1,280	475
4.80	1,280	528
4.85	1,280	580
4.90	1,280	633
4.95	1,280	686
5.00	1,280	739
5.05	1,280	791
5.10	1,280	844
5.15	1,280	897
5.20	1,280	950
5.25	1,280	1,002
5.30	1,280	1,055
5.35	1,280	1,108
5.40	1,280	1,161
5.45	1,280	1,213
5.50	1,280	1,266
5.55	1,280	1,319
5.60	1,280	1,372
5.65	1,280	1,424
5.70	1,280	1,477
5.75	1,280	1,530
5.80	1,280	1,583
5.85	1,280	1,635
5.90	1,280	1,686
5.95	1,280	1,731
6.00	1,280	1,777
6.05	1,280	1,821
6.10	1,280	1,821
6.15	1,280	1,821
6.20	1,280	1,822
6.25	1,280	1,822
6.30	1,280	**1,822**
6.35	1,280	1,822
6.40	1,280	1,822
6.45	1,280	1,822
6.50	1,280	1,822
6.55	1,280	1,822
6.60	1,280	1,822
6.65	1,280	1,822
6.70	1,280	1,822
6.75	1,280	1,822
6.80	1,280	1,822
6.85	1,280	1,822
6.90	1,280	1,822
6.95	1,280	1,822
7.00	1,280	1,822

Summary for Link EX-1: NOROTON RIVER

Inflow Area = 21,490 sf, 97.82% Impervious, Inflow Depth > 5.07" for 10yr Storm event
Inflow = 2.69 cfs @ 12.07 hrs, Volume= 9,084 cf
Primary = 2.69 cfs @ 12.07 hrs, Volume= 9,084 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node EX-Total

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link EX-1: NOROTON RIVER

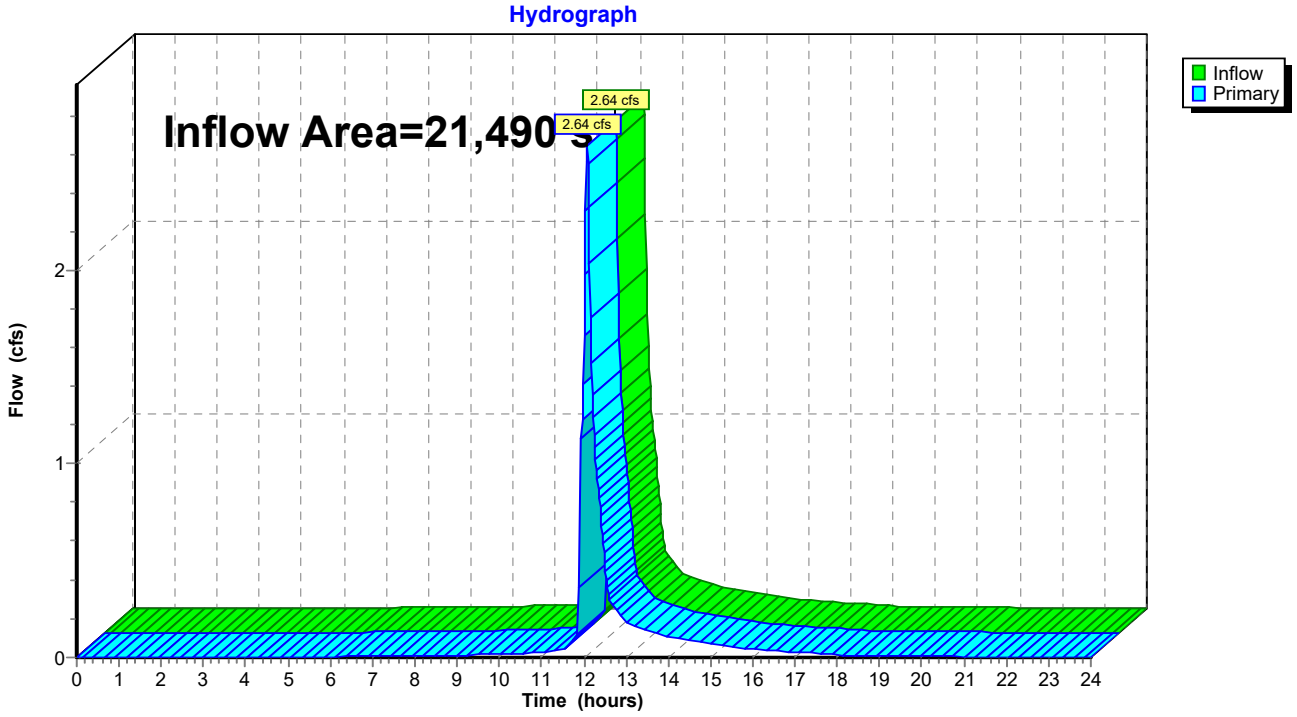


Summary for Link PR-1: NOROTON RIVER

Inflow Area = 21,490 sf, 96.82% Impervious, Inflow Depth > 2.84" for 10yr Storm event
Inflow = 2.64 cfs @ 12.08 hrs, Volume= 5,095 cf
Primary = 2.64 cfs @ 12.08 hrs, Volume= 5,095 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node PR-Total

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link PR-1: NOROTON RIVER



Summary for Subcatchment EX-DA-1: Drainage Area 1

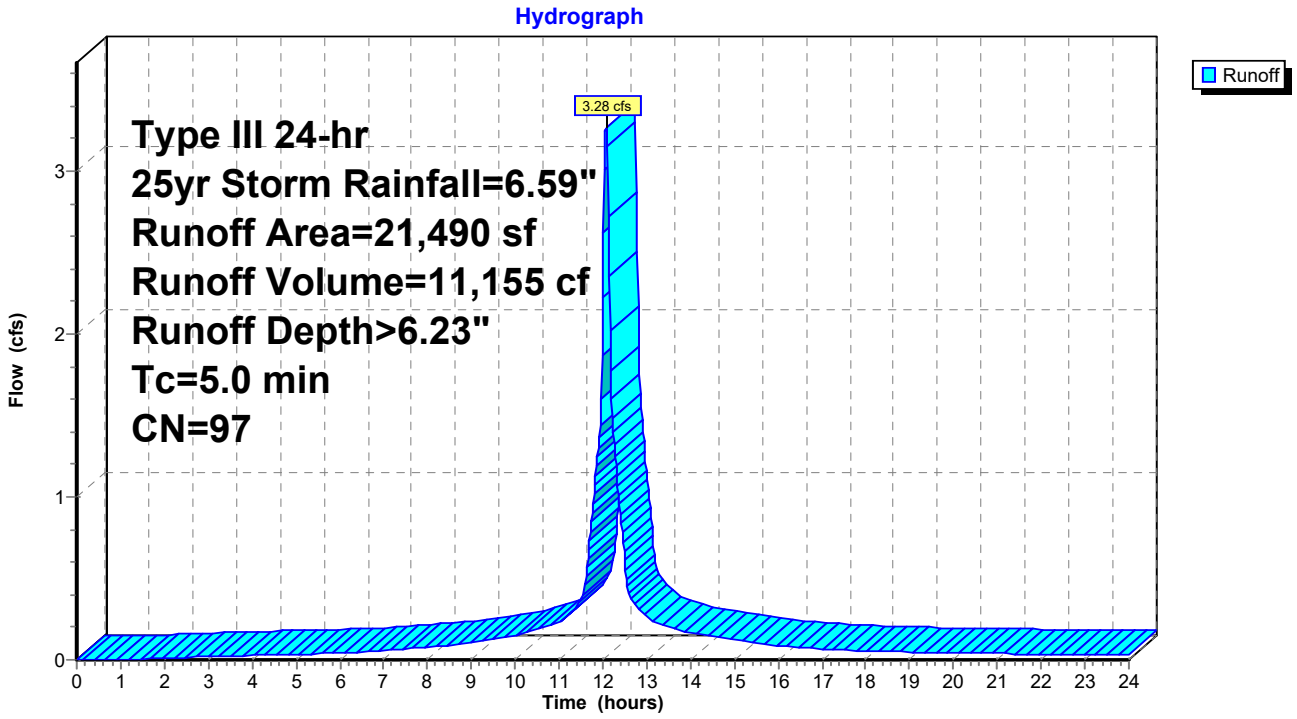
Runoff = 3.28 cfs @ 12.07 hrs, Volume= 11,155 cf, Depth> 6.23"
Routed to Link EX-1 : NOROTON RIVER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25yr Storm Rainfall=6.59"

	Area (sf)	CN	Description
*	3,738	98	Existing Building Roof Area
*	15,643	98	Existing Onsite Parking/Driveway/Walk
*	1,640	98	Existing Offsite Parking/Driveway/Walk
	469	61	>75% Grass cover, Good, HSG B
	21,490	97	Weighted Average
	469		2.18% Pervious Area
	21,021		97.82% Impervious Area

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

Subcatchment EX-DA-1: Drainage Area 1



Summary for Subcatchment PR-DA-1A: Drainage Area 1

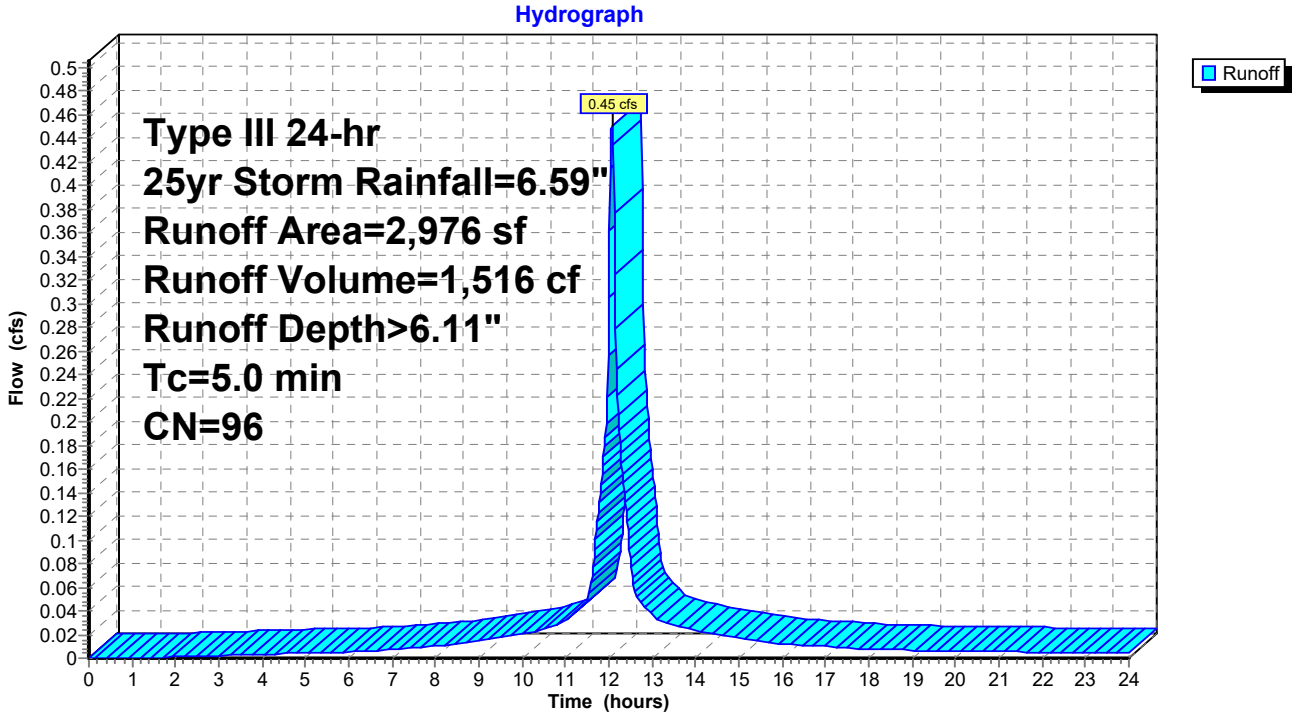
Runoff = 0.45 cfs @ 12.07 hrs, Volume= 1,516 cf, Depth> 6.11"
Routed to Link PR-1 : NOROTON RIVER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25yr Storm Rainfall=6.59"

	Area (sf)	CN	Description
*	2,850	98	Existing Building Roof Area
	126	61	>75% Grass cover, Good, HSG B
	2,976	96	Weighted Average
	126		4.23% Pervious Area
	2,850		95.77% Impervious Area

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

Subcatchment PR-DA-1A: Drainage Area 1



Summary for Subcatchment PR-DA-1B: Drainage Area 1

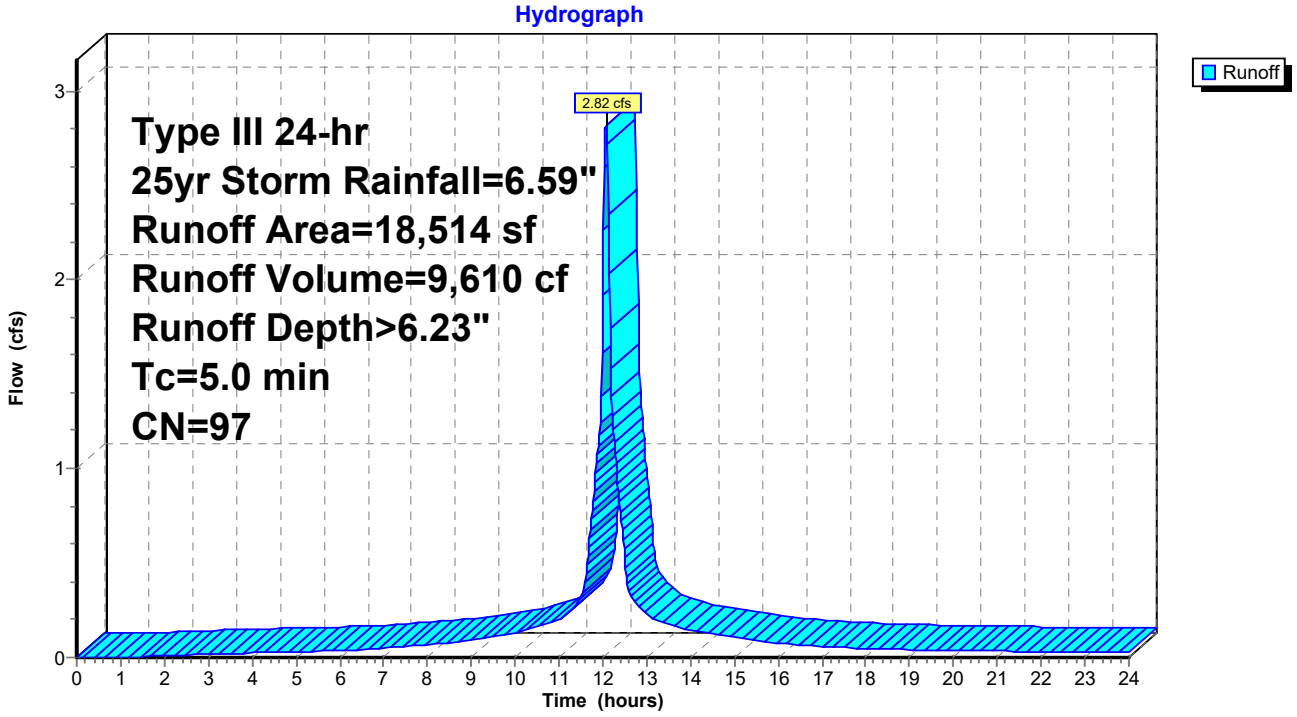
Runoff = 2.82 cfs @ 12.07 hrs, Volume= 9,610 cf, Depth> 6.23"
Routed to Pond 1P : Underground Detention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25yr Storm Rainfall=6.59"

	Area (sf)	CN	Description
*	673	98	Existing Building Roof Area
*	15,643	98	Existing Onsite Parking/Driveway/Walk
*	1,640	98	Existing Offsite Parking/Driveway/Walk
	343	61	>75% Grass cover, Good, HSG B
*	215	61	Roof to be revmoved
	18,514	97	Weighted Average
	558		3.01% Pervious Area
	17,956		96.99% Impervious Area

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

Subcatchment PR-DA-1B: Drainage Area 1



Summary for Pond 1P: Underground Detention

[92] Warning: Device #2 is above defined storage

Inflow Area = 18,514 sf, 96.99% Impervious, Inflow Depth > 6.23" for 25yr Storm event
Inflow = 2.82 cfs @ 12.07 hrs, Volume= 9,610 cf
Outflow = 2.80 cfs @ 12.08 hrs, Volume= 7,809 cf, Atten= 1%, Lag= 0.6 min
Discarded = 0.03 cfs @ 6.52 hrs, Volume= 2,302 cf
Primary = 2.77 cfs @ 12.08 hrs, Volume= 5,507 cf
Routed to Link PR-1 : NOROTON RIVER

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 6.30' @ 11.72 hrs Surf.Area= 1,280 sf Storage= 1,822 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 33.6 min (782.7 - 749.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.30'	10 cf	**20.00'W x 64.00'L x 2.00'H Field A** 2,560 cf Overall - 2,534 cf Embedded = 26 cf x 40.0% Voids
#2A	4.30'	1,812 cf	**Concrete Galley 4x8x2** x 40 Inside #1 Inside= 42.0"W x 21.0"H => 6.04 sf x 7.50'L = 45.3 cf Outside= 48.0"W x 24.0"H => 7.92 sf x 8.00'L = 63.4 cf 40 Chambers in 5 Rows
		1,822 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#0	Primary	6.30'	**Automatic Storage Overflow** (Discharged without head)
#1	Discarded	4.30'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	7.00'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=0.03 cfs @ 6.52 hrs HW=4.33' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 12.08 hrs HW=6.30' TW=0.00' (Dynamic Tailwater)
↑—**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Underground Detention - Chamber Wizard Field A

Chamber Model = Concrete Galley 4x8x2 (Concrete Galley, UCPI 24" Low Profile Galley or equivalent)
Inside= 42.0"W x 21.0"H => 6.04 sf x 7.50'L = 45.3 cf
Outside= 48.0"W x 24.0"H => 7.92 sf x 8.00'L = 63.4 cf

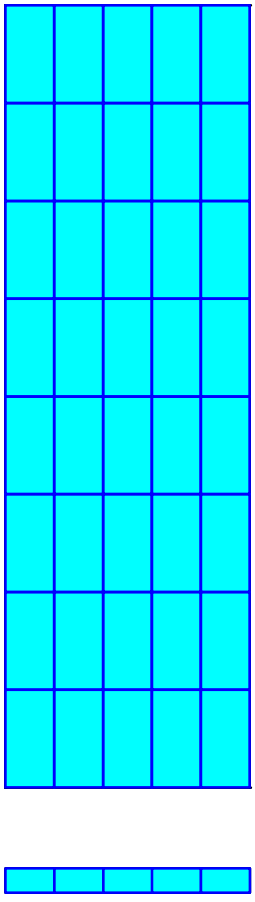
8 Chambers/Row x 8.00' Long = 64.00' Row Length
5 Rows x 48.0" Wide = 20.00' Base Width
24.0" Chamber Height = 2.00' Field Height

40 Chambers x 45.3 cf = 1,812.0 cf Chamber Storage
40 Chambers x 63.4 cf = 2,534.4 cf Displacement

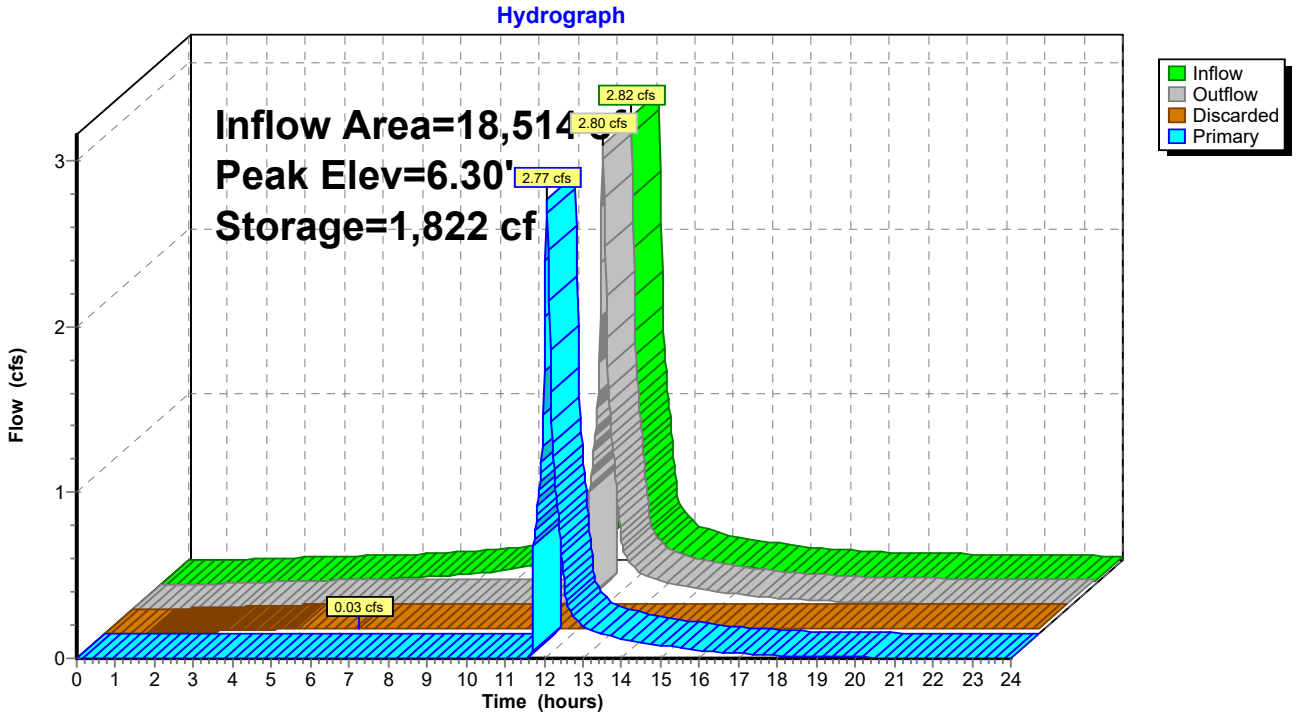
2,560.0 cf Field - 2,534.4 cf Chambers = 25.6 cf Stone x 40.0% Voids = 10.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,822.2 cf = 0.042 af
Overall Storage Efficiency = 71.2%
Overall System Size = 64.00' x 20.00' x 2.00'

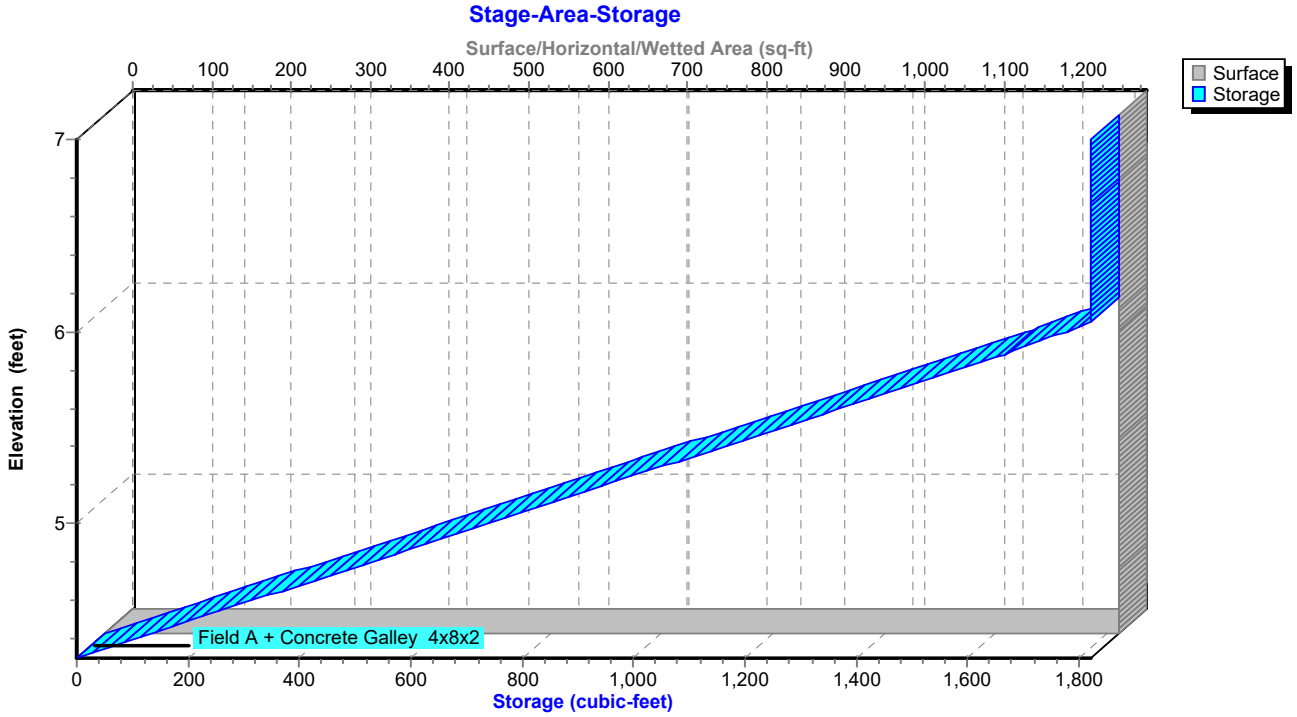
40 Chambers
94.8 cy Field
0.9 cy Stone



Pond 1P: Underground Detention



Pond 1P: Underground Detention



Stage-Area-Storage for Pond 1P: Underground Detention

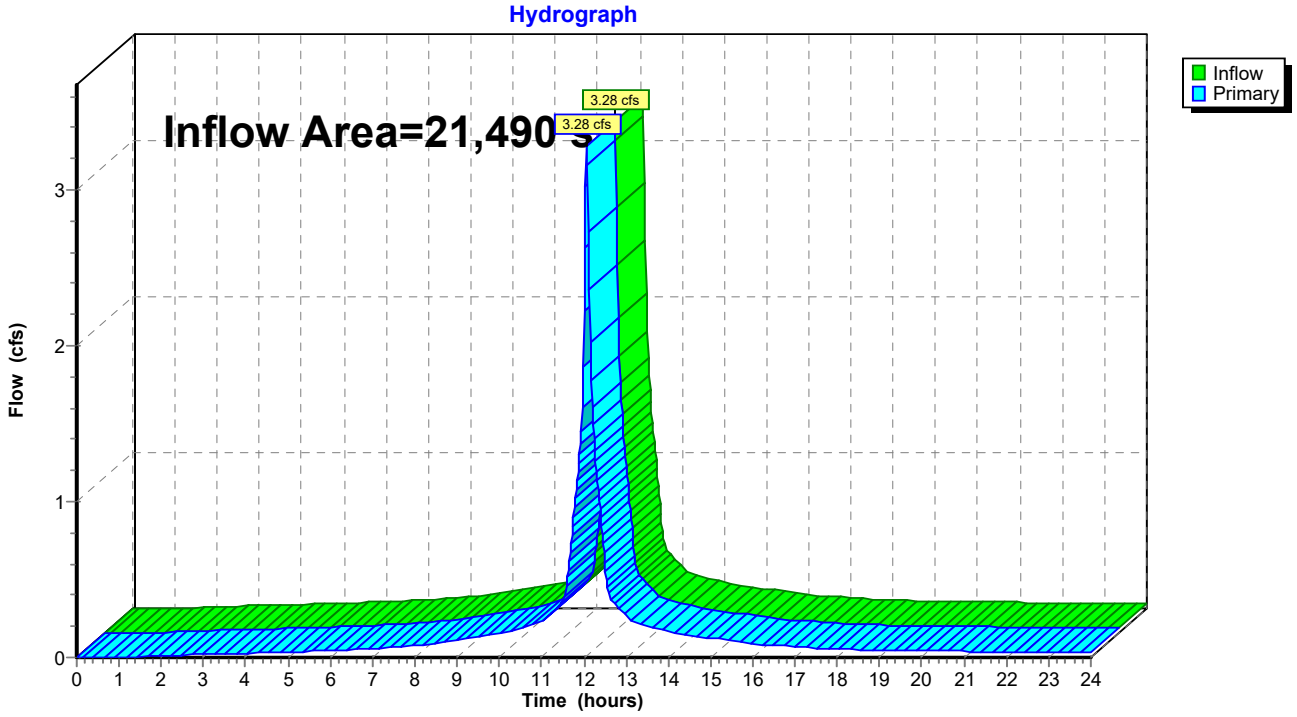
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
4.30	**1,280**	0
4.35	1,280	53
4.40	1,280	106
4.45	1,280	158
4.50	1,280	211
4.55	1,280	264
4.60	1,280	317
4.65	1,280	369
4.70	1,280	422
4.75	1,280	475
4.80	1,280	528
4.85	1,280	580
4.90	1,280	633
4.95	1,280	686
5.00	1,280	739
5.05	1,280	791
5.10	1,280	844
5.15	1,280	897
5.20	1,280	950
5.25	1,280	1,002
5.30	1,280	1,055
5.35	1,280	1,108
5.40	1,280	1,161
5.45	1,280	1,213
5.50	1,280	1,266
5.55	1,280	1,319
5.60	1,280	1,372
5.65	1,280	1,424
5.70	1,280	1,477
5.75	1,280	1,530
5.80	1,280	1,583
5.85	1,280	1,635
5.90	1,280	1,686
5.95	1,280	1,731
6.00	1,280	1,777
6.05	1,280	1,821
6.10	1,280	1,821
6.15	1,280	1,821
6.20	1,280	1,822
6.25	1,280	1,822
6.30	1,280	**1,822**
6.35	1,280	1,822
6.40	1,280	1,822
6.45	1,280	1,822
6.50	1,280	1,822
6.55	1,280	1,822
6.60	1,280	1,822
6.65	1,280	1,822
6.70	1,280	1,822
6.75	1,280	1,822
6.80	1,280	1,822
6.85	1,280	1,822
6.90	1,280	1,822
6.95	1,280	1,822
7.00	1,280	1,822

Summary for Link EX-1: NOROTON RIVER

Inflow Area = 21,490 sf, 97.82% Impervious, Inflow Depth > 6.23" for 25yr Storm event
Inflow = 3.28 cfs @ 12.07 hrs, Volume= 11,155 cf
Primary = 3.28 cfs @ 12.07 hrs, Volume= 11,155 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node EX-Total

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link EX-1: NOROTON RIVER

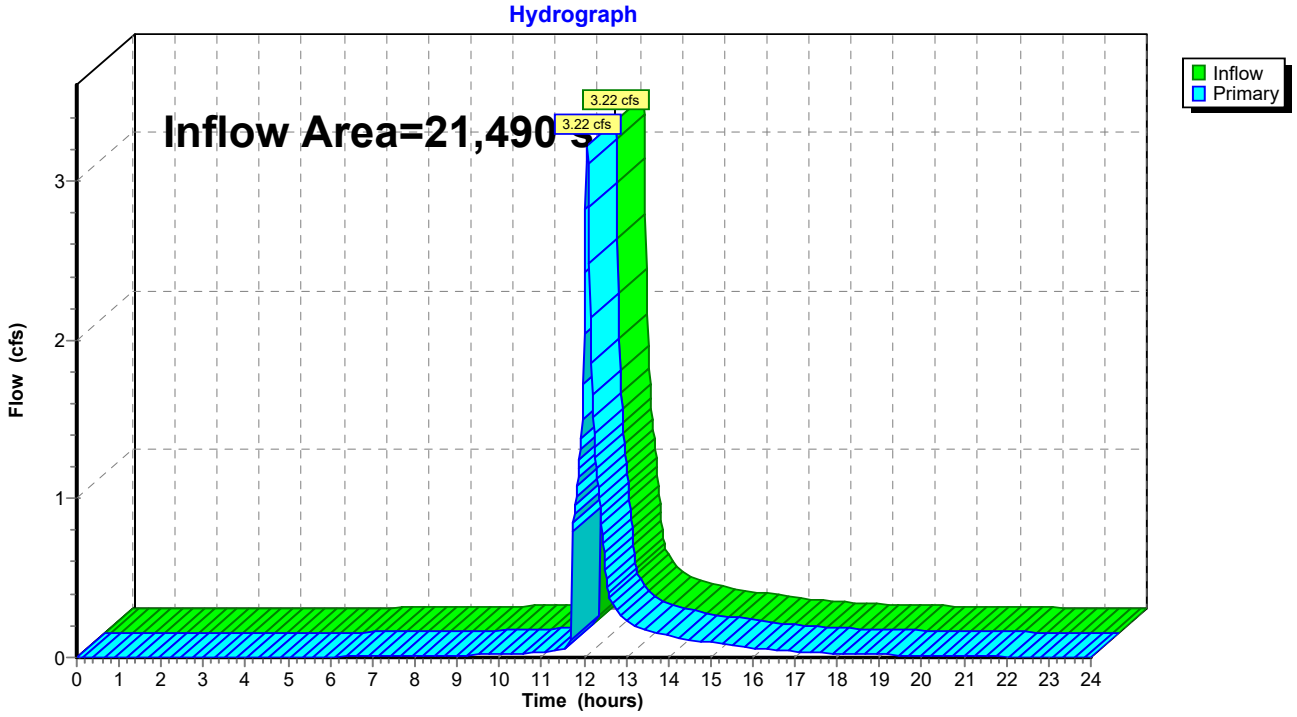


Summary for Link PR-1: NOROTON RIVER

Inflow Area = 21,490 sf, 96.82% Impervious, Inflow Depth > 3.92" for 25yr Storm event
Inflow = 3.22 cfs @ 12.08 hrs, Volume= 7,023 cf
Primary = 3.22 cfs @ 12.08 hrs, Volume= 7,023 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node PR-Total

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link PR-1: NOROTON RIVER



Summary for Subcatchment EX-DA-1: Drainage Area 1

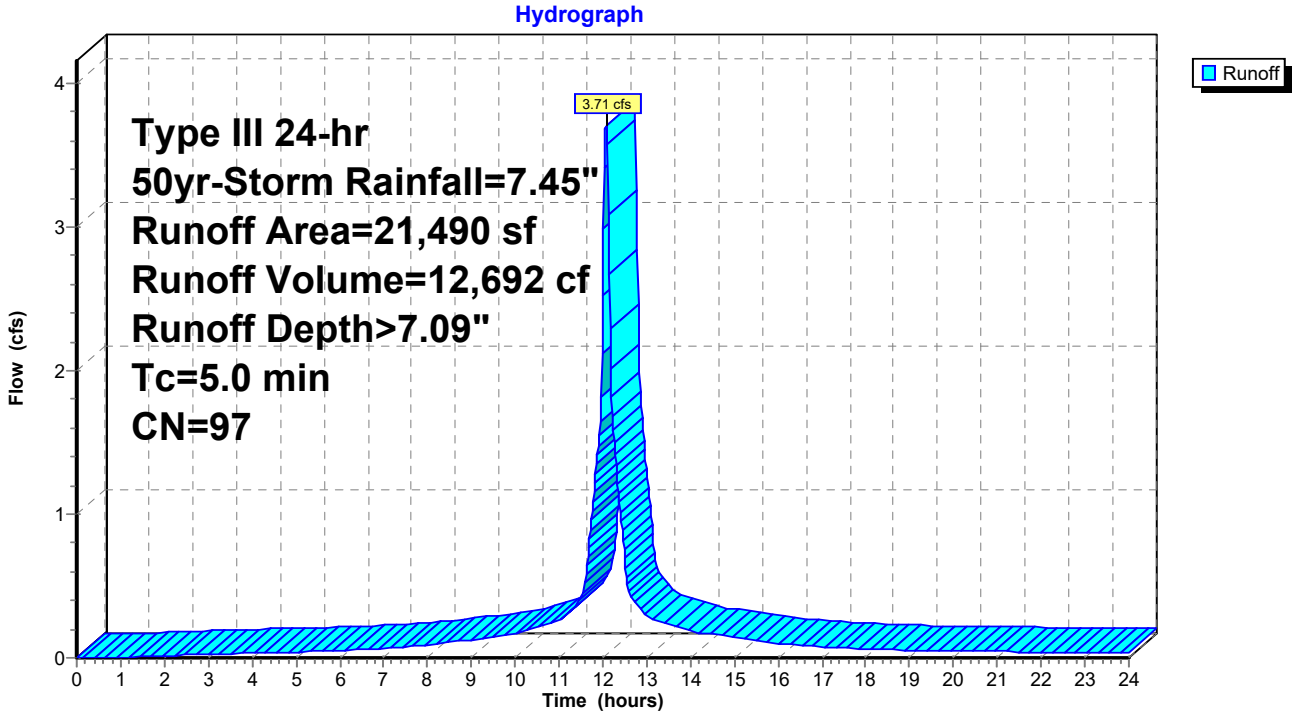
Runoff = 3.71 cfs @ 12.07 hrs, Volume= 12,692 cf, Depth> 7.09"
Routed to Link EX-1 : NOROTON RIVER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 50yr-Storm Rainfall=7.45"

	Area (sf)	CN	Description
*	3,738	98	Existing Building Roof Area
*	15,643	98	Existing Onsite Parking/Driveway/Walk
*	1,640	98	Existing Offsite Parking/Driveway/Walk
	469	61	>75% Grass cover, Good, HSG B
	21,490	97	Weighted Average
	469		2.18% Pervious Area
	21,021		97.82% Impervious Area

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

Subcatchment EX-DA-1: Drainage Area 1



Summary for Subcatchment PR-DA-1A: Drainage Area 1

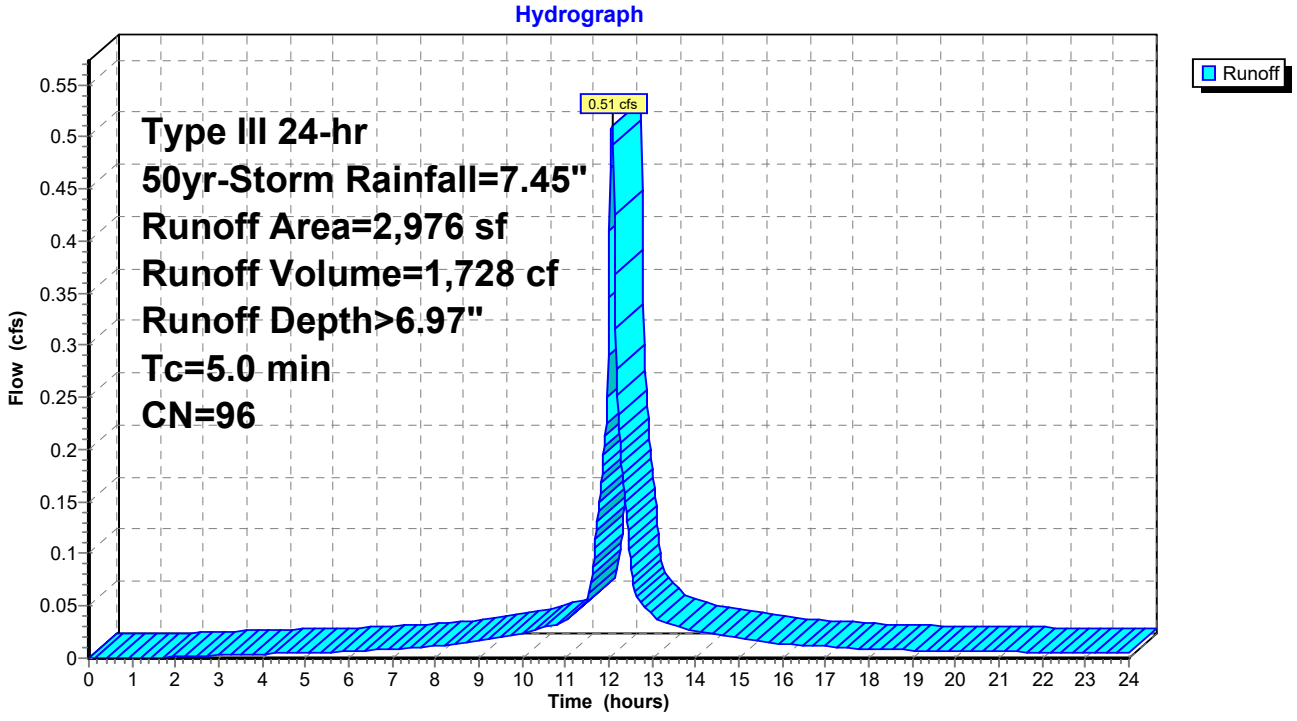
Runoff = 0.51 cfs @ 12.07 hrs, Volume= 1,728 cf, Depth> 6.97"
Routed to Link PR-1 : NOROTON RIVER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 50yr-Storm Rainfall=7.45"

	Area (sf)	CN	Description
*	2,850	98	Existing Building Roof Area
	126	61	>75% Grass cover, Good, HSG B
	2,976	96	Weighted Average
	126		4.23% Pervious Area
	2,850		95.77% Impervious Area

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

Subcatchment PR-DA-1A: Drainage Area 1



Summary for Subcatchment PR-DA-1B: Drainage Area 1

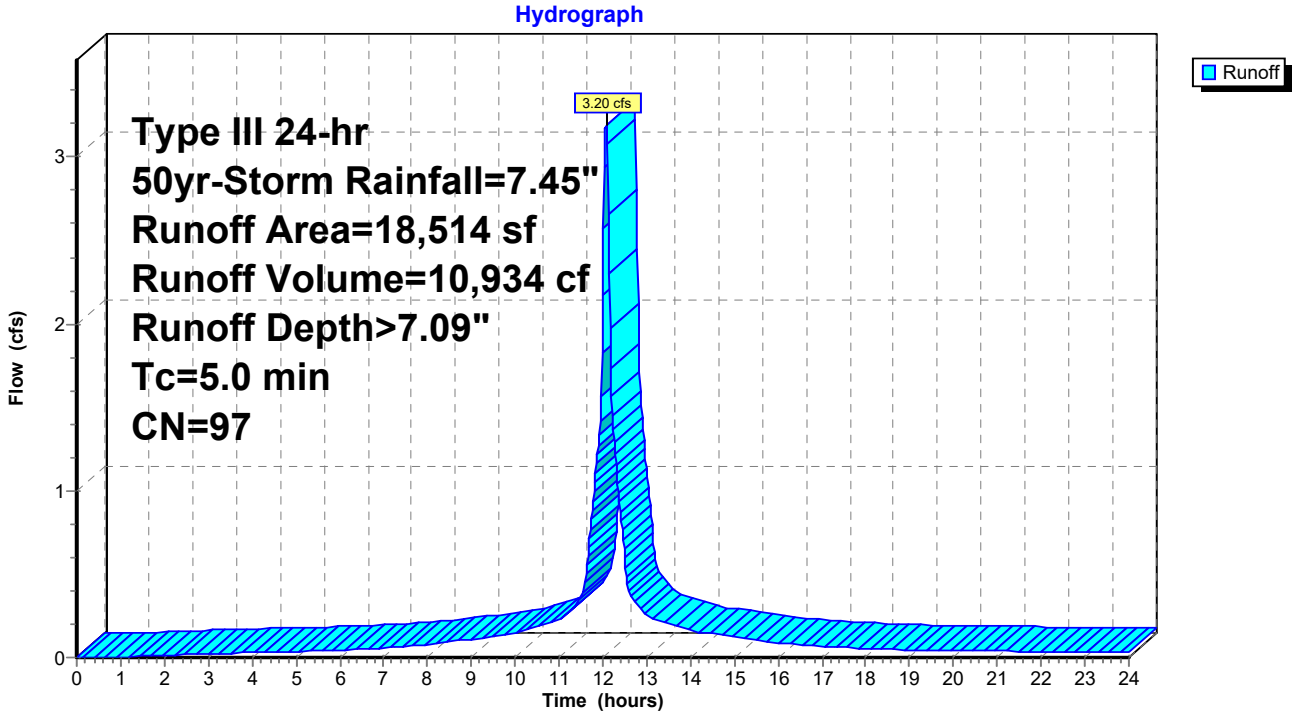
Runoff = 3.20 cfs @ 12.07 hrs, Volume= 10,934 cf, Depth> 7.09"
Routed to Pond 1P : Underground Detention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 50yr-Storm Rainfall=7.45"

	Area (sf)	CN	Description
*	673	98	Existing Building Roof Area
*	15,643	98	Existing Onsite Parking/Driveway/Walk
*	1,640	98	Existing Offsite Parking/Driveway/Walk
	343	61	>75% Grass cover, Good, HSG B
*	215	61	Roof to be revmoved
	18,514	97	Weighted Average
	558		3.01% Pervious Area
	17,956		96.99% Impervious Area

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

Subcatchment PR-DA-1B: Drainage Area 1



Summary for Pond 1P: Underground Detention

[92] Warning: Device #2 is above defined storage

Inflow Area = 18,514 sf, 96.99% Impervious, Inflow Depth > 7.09" for 50yr-Storm event
Inflow = 3.20 cfs @ 12.07 hrs, Volume= 10,934 cf
Outflow = 3.17 cfs @ 12.08 hrs, Volume= 9,116 cf, Atten= 1%, Lag= 0.6 min
Discarded = 0.03 cfs @ 5.70 hrs, Volume= 2,350 cf
Primary = 3.14 cfs @ 12.08 hrs, Volume= 6,766 cf
Routed to Link PR-1 : NOROTON RIVER

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 6.30' @ 11.50 hrs Surf.Area= 1,280 sf Storage= 1,822 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 32.6 min (779.6 - 747.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.30'	10 cf	**20.00'W x 64.00'L x 2.00'H Field A** 2,560 cf Overall - 2,534 cf Embedded = 26 cf x 40.0% Voids
#2A	4.30'	1,812 cf	**Concrete Galley 4x8x2** x 40 Inside #1 Inside= 42.0"W x 21.0"H => 6.04 sf x 7.50'L = 45.3 cf Outside= 48.0"W x 24.0"H => 7.92 sf x 8.00'L = 63.4 cf 40 Chambers in 5 Rows
		1,822 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#0	Primary	6.30'	**Automatic Storage Overflow** (Discharged without head)
#1	Discarded	4.30'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	7.00'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=0.03 cfs @ 5.70 hrs HW=4.33' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 12.08 hrs HW=6.30' TW=0.00' (Dynamic Tailwater)
↑—**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Underground Detention - Chamber Wizard Field A

Chamber Model = Concrete Galley 4x8x2 (Concrete Galley, UCPI 24" Low Profile Galley or equivalent)
Inside= 42.0"W x 21.0"H => 6.04 sf x 7.50'L = 45.3 cf
Outside= 48.0"W x 24.0"H => 7.92 sf x 8.00'L = 63.4 cf

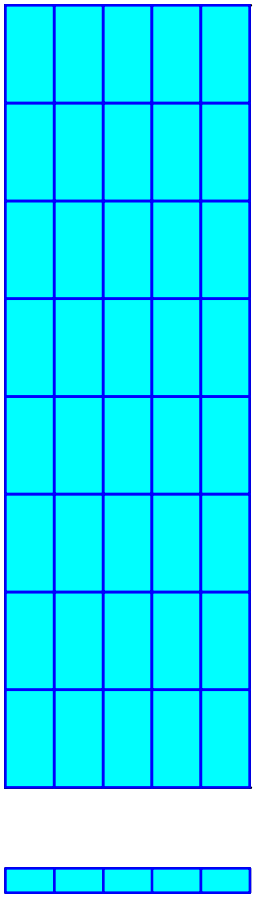
8 Chambers/Row x 8.00' Long = 64.00' Row Length
5 Rows x 48.0" Wide = 20.00' Base Width
24.0" Chamber Height = 2.00' Field Height

40 Chambers x 45.3 cf = 1,812.0 cf Chamber Storage
40 Chambers x 63.4 cf = 2,534.4 cf Displacement

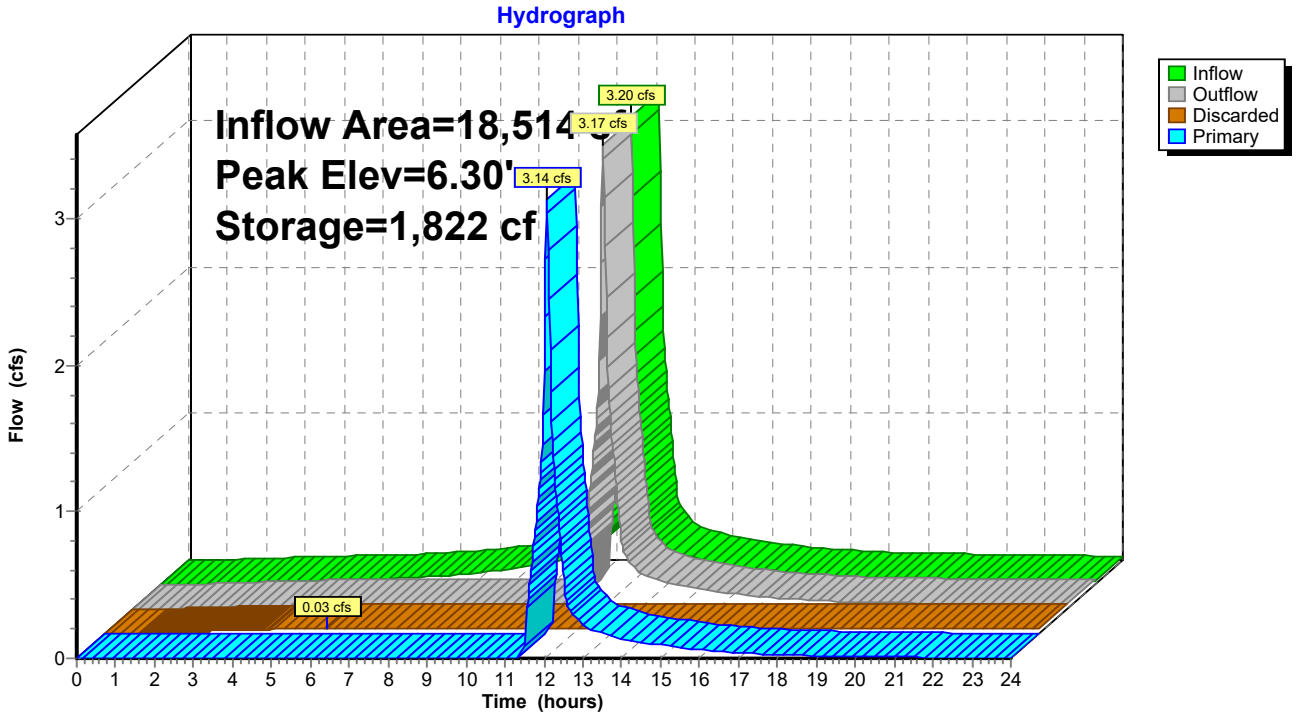
2,560.0 cf Field - 2,534.4 cf Chambers = 25.6 cf Stone x 40.0% Voids = 10.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,822.2 cf = 0.042 af
Overall Storage Efficiency = 71.2%
Overall System Size = 64.00' x 20.00' x 2.00'

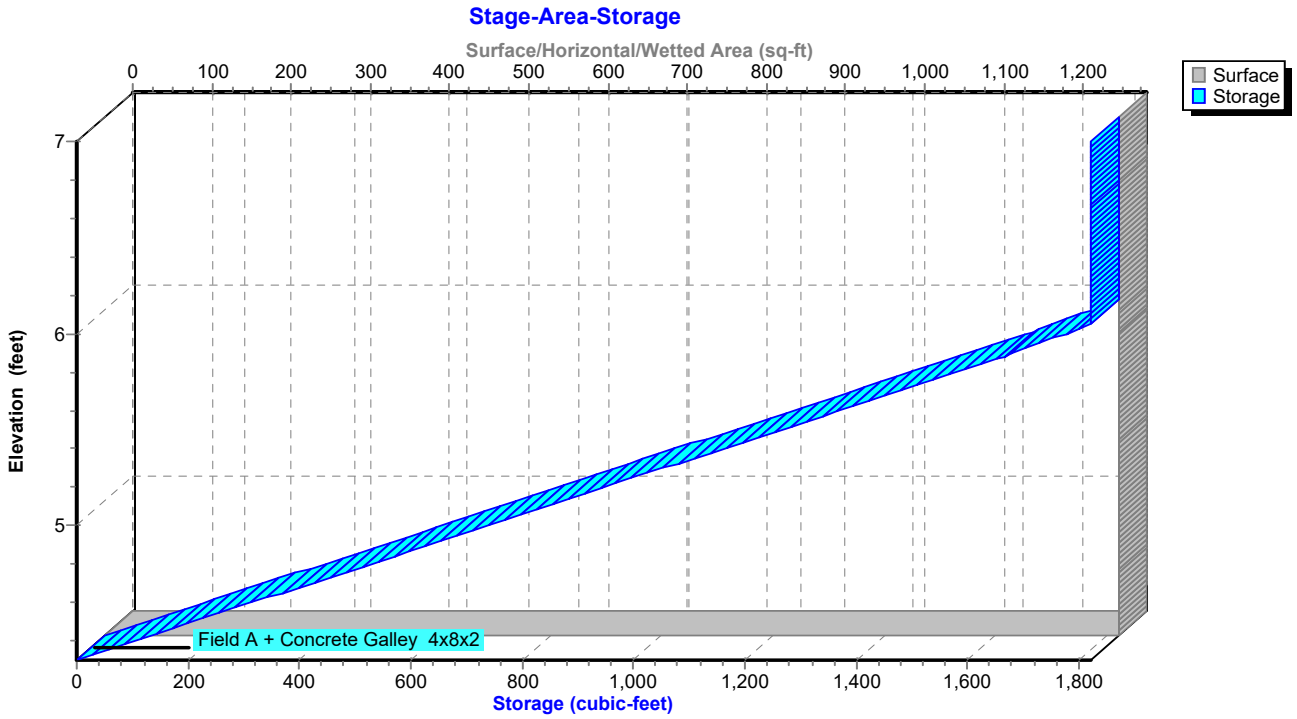
40 Chambers
94.8 cy Field
0.9 cy Stone



Pond 1P: Underground Detention



Pond 1P: Underground Detention



Stage-Area-Storage for Pond 1P: Underground Detention

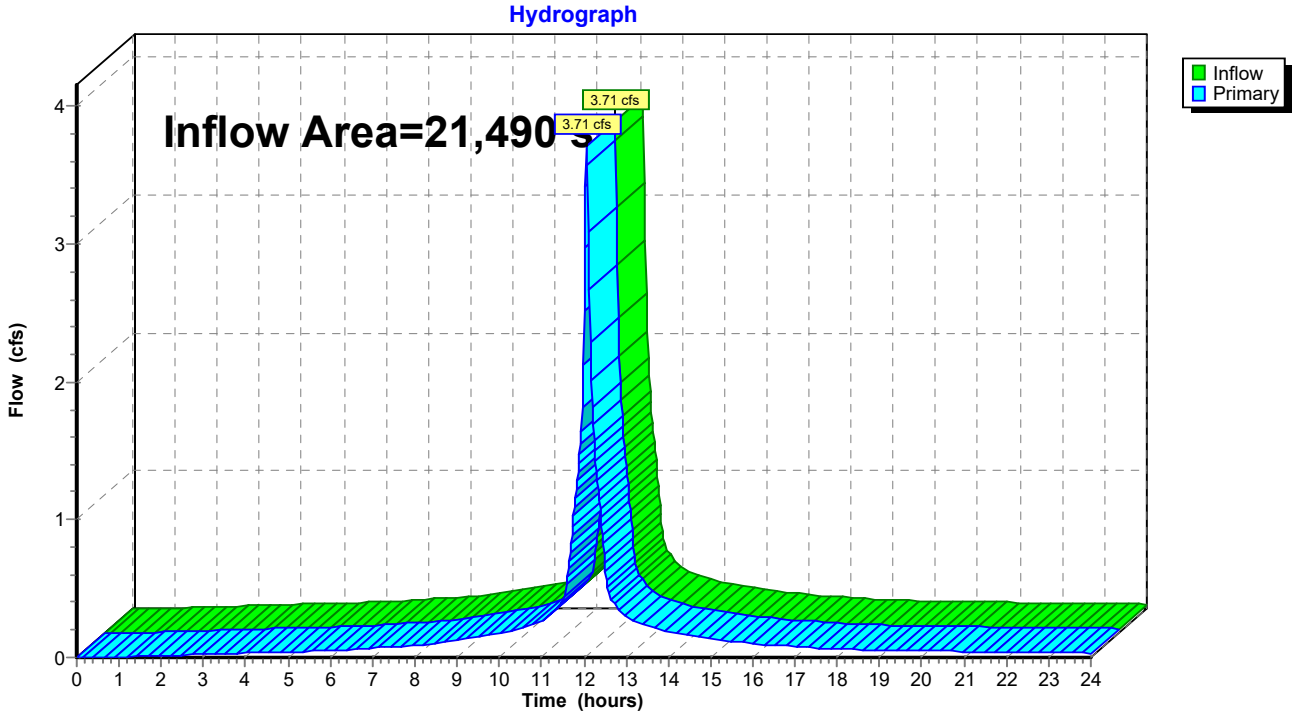
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
4.30	**1,280**	0
4.35	1,280	53
4.40	1,280	106
4.45	1,280	158
4.50	1,280	211
4.55	1,280	264
4.60	1,280	317
4.65	1,280	369
4.70	1,280	422
4.75	1,280	475
4.80	1,280	528
4.85	1,280	580
4.90	1,280	633
4.95	1,280	686
5.00	1,280	739
5.05	1,280	791
5.10	1,280	844
5.15	1,280	897
5.20	1,280	950
5.25	1,280	1,002
5.30	1,280	1,055
5.35	1,280	1,108
5.40	1,280	1,161
5.45	1,280	1,213
5.50	1,280	1,266
5.55	1,280	1,319
5.60	1,280	1,372
5.65	1,280	1,424
5.70	1,280	1,477
5.75	1,280	1,530
5.80	1,280	1,583
5.85	1,280	1,635
5.90	1,280	1,686
5.95	1,280	1,731
6.00	1,280	1,777
6.05	1,280	1,821
6.10	1,280	1,821
6.15	1,280	1,821
6.20	1,280	1,822
6.25	1,280	1,822
6.30	1,280	**1,822**
6.35	1,280	1,822
6.40	1,280	1,822
6.45	1,280	1,822
6.50	1,280	1,822
6.55	1,280	1,822
6.60	1,280	1,822
6.65	1,280	1,822
6.70	1,280	1,822
6.75	1,280	1,822
6.80	1,280	1,822
6.85	1,280	1,822
6.90	1,280	1,822
6.95	1,280	1,822
7.00	1,280	1,822

Summary for Link EX-1: NOROTON RIVER

Inflow Area = 21,490 sf, 97.82% Impervious, Inflow Depth > 7.09" for 50yr-Storm event
Inflow = 3.71 cfs @ 12.07 hrs, Volume= 12,692 cf
Primary = 3.71 cfs @ 12.07 hrs, Volume= 12,692 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node EX-Total

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link EX-1: NOROTON RIVER

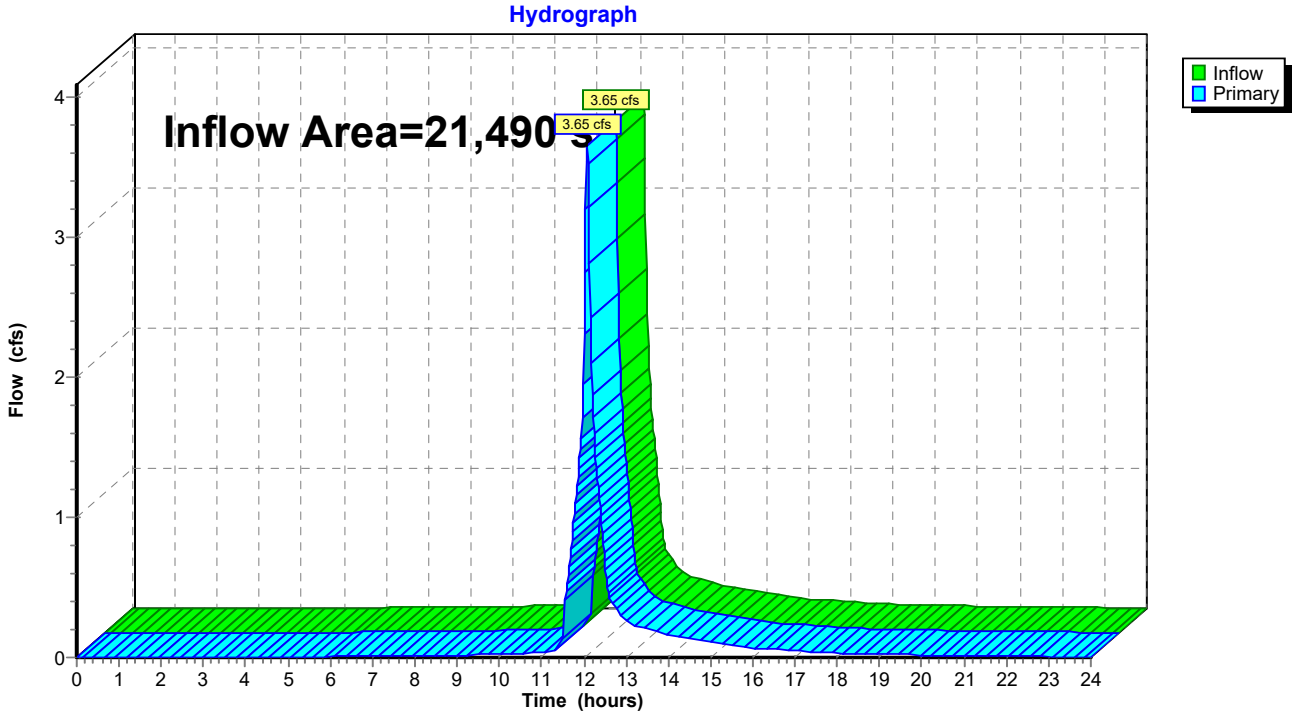


Summary for Link PR-1: NOROTON RIVER

Inflow Area = 21,490 sf, 96.82% Impervious, Inflow Depth > 4.74" for 50yr-Storm event
Inflow = 3.65 cfs @ 12.08 hrs, Volume= 8,494 cf
Primary = 3.65 cfs @ 12.08 hrs, Volume= 8,494 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node PR-Total

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link PR-1: NOROTON RIVER



Summary for Subcatchment EX-DA-1: Drainage Area 1

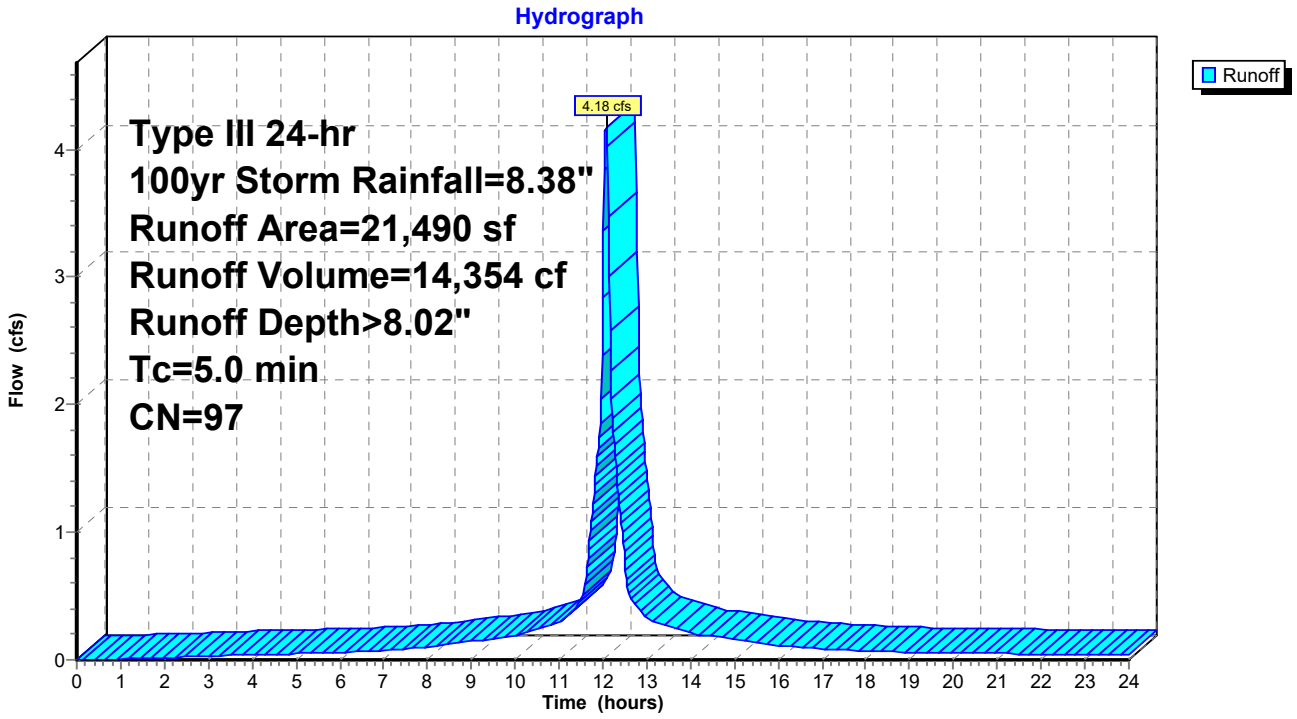
Runoff = 4.18 cfs @ 12.07 hrs, Volume= 14,354 cf, Depth> 8.02"
Routed to Link EX-1 : NOROTON RIVER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 100yr Storm Rainfall=8.38"

	Area (sf)	CN	Description
*	3,738	98	Existing Building Roof Area
*	15,643	98	Existing Onsite Parking/Driveway/Walk
*	1,640	98	Existing Offsite Parking/Driveway/Walk
	469	61	>75% Grass cover, Good, HSG B
	21,490	97	Weighted Average
	469		2.18% Pervious Area
	21,021		97.82% Impervious Area

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

Subcatchment EX-DA-1: Drainage Area 1



Summary for Subcatchment PR-DA-1A: Drainage Area 1

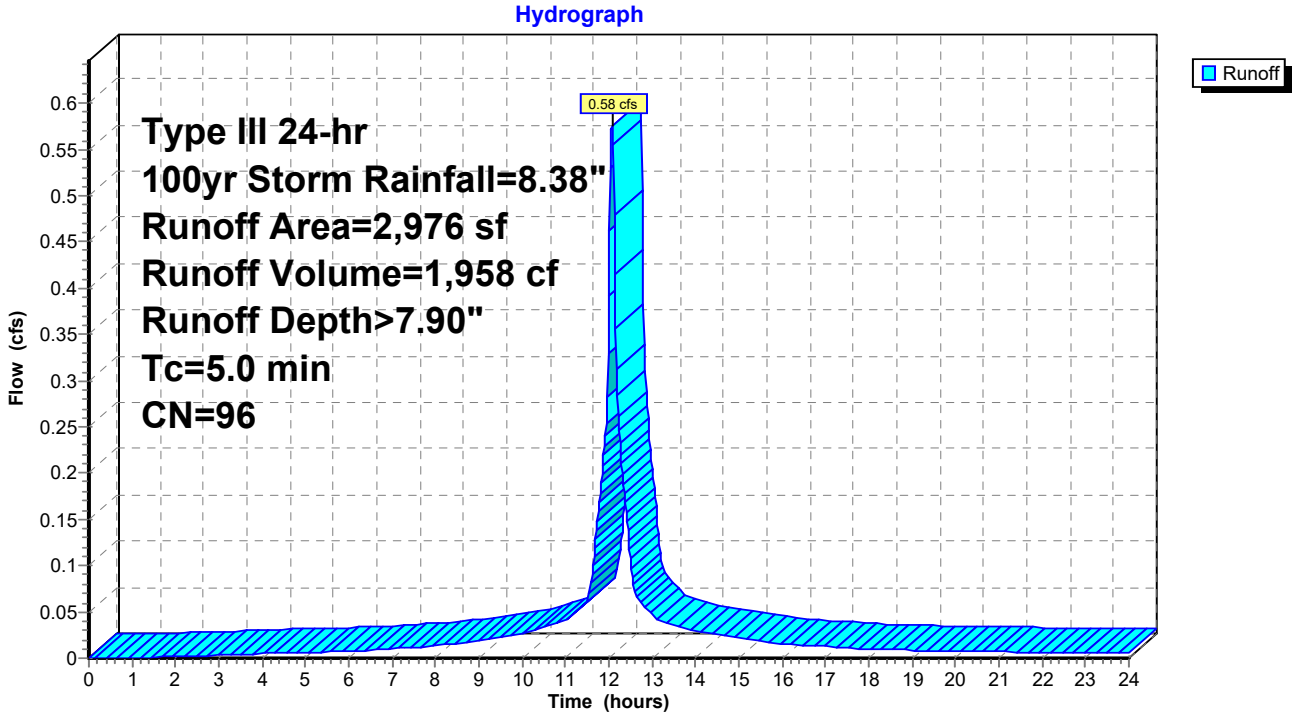
Runoff = 0.58 cfs @ 12.07 hrs, Volume= 1,958 cf, Depth> 7.90"
Routed to Link PR-1 : NOROTON RIVER

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 100yr Storm Rainfall=8.38"

	Area (sf)	CN	Description
*	2,850	98	Existing Building Roof Area
	126	61	>75% Grass cover, Good, HSG B
	2,976	96	Weighted Average
	126		4.23% Pervious Area
	2,850		95.77% Impervious Area

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

Subcatchment PR-DA-1A: Drainage Area 1



Summary for Subcatchment PR-DA-1B: Drainage Area 1

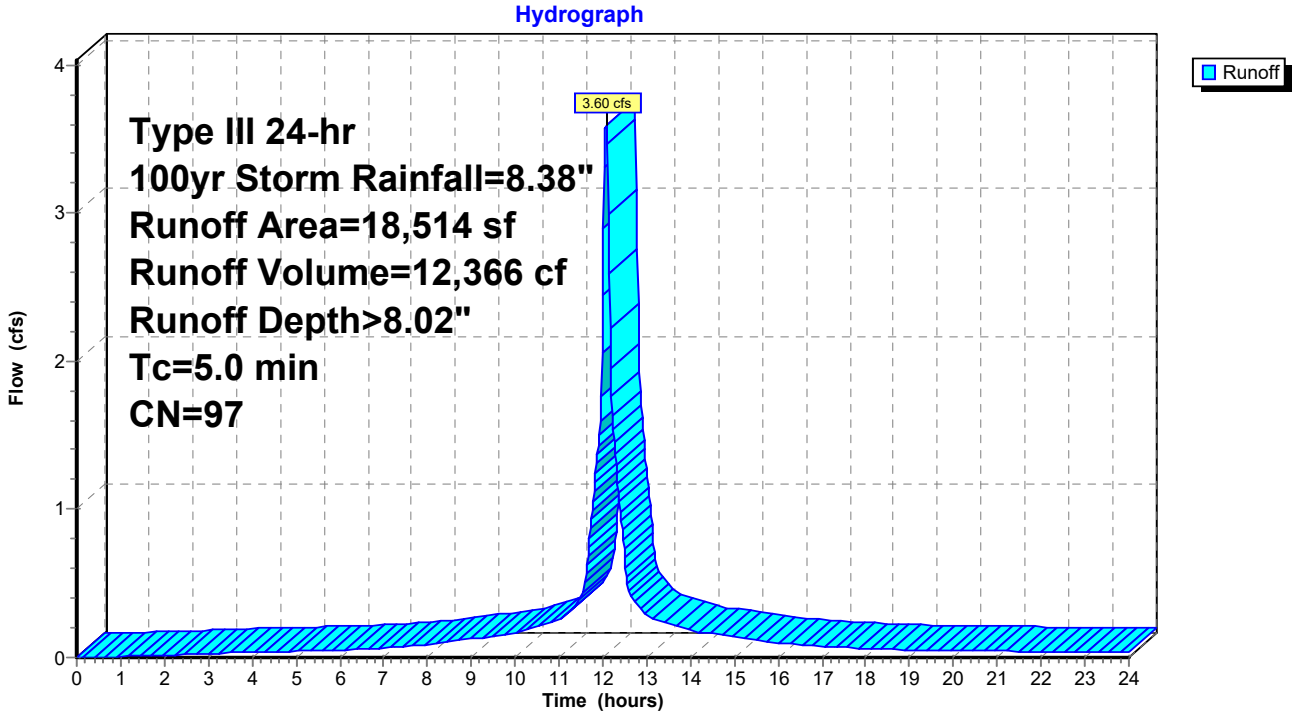
Runoff = 3.60 cfs @ 12.07 hrs, Volume= 12,366 cf, Depth> 8.02"
Routed to Pond 1P : Underground Detention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 100yr Storm Rainfall=8.38"

	Area (sf)	CN	Description
*	673	98	Existing Building Roof Area
*	15,643	98	Existing Onsite Parking/Driveway/Walk
*	1,640	98	Existing Offsite Parking/Driveway/Walk
	343	61	>75% Grass cover, Good, HSG B
*	215	61	Roof to be revmoved
	18,514	97	Weighted Average
	558		3.01% Pervious Area
	17,956		96.99% Impervious Area

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

Subcatchment PR-DA-1B: Drainage Area 1



Summary for Pond 1P: Underground Detention

[92] Warning: Device #2 is above defined storage

Inflow Area = 18,514 sf, 96.99% Impervious, Inflow Depth > 8.02" for 100yr Storm event
Inflow = 3.60 cfs @ 12.07 hrs, Volume= 12,366 cf
Outflow = 3.57 cfs @ 12.08 hrs, Volume= 10,544 cf, Atten= 1%, Lag= 0.6 min
Discarded = 0.03 cfs @ 4.94 hrs, Volume= 2,391 cf
Primary = 3.54 cfs @ 12.08 hrs, Volume= 8,153 cf
Routed to Link PR-1 : NOROTON RIVER

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 6.30' @ 11.18 hrs Surf.Area= 1,280 sf Storage= 1,822 cf

Plug-Flow detention time= 96.6 min calculated for 10,535 cf (85% of inflow)
Center-of-Mass det. time= 32.7 min (777.7 - 745.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.30'	10 cf	**20.00'W x 64.00'L x 2.00'H Field A** 2,560 cf Overall - 2,534 cf Embedded = 26 cf x 40.0% Voids
#2A	4.30'	1,812 cf	**Concrete Galley 4x8x2** x 40 Inside #1 Inside= 42.0"W x 21.0"H => 6.04 sf x 7.50'L = 45.3 cf Outside= 48.0"W x 24.0"H => 7.92 sf x 8.00'L = 63.4 cf 40 Chambers in 5 Rows
		1,822 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#0	Primary	6.30'	**Automatic Storage Overflow** (Discharged without head)
#1	Discarded	4.30'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	7.00'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=0.03 cfs @ 4.94 hrs HW=4.33' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 12.08 hrs HW=6.30' TW=0.00' (Dynamic Tailwater)
↑—**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Underground Detention - Chamber Wizard Field A

Chamber Model = Concrete Galley 4x8x2 (Concrete Galley, UCPI 24" Low Profile Galley or equivalent)
Inside= 42.0"W x 21.0"H => 6.04 sf x 7.50'L = 45.3 cf
Outside= 48.0"W x 24.0"H => 7.92 sf x 8.00'L = 63.4 cf

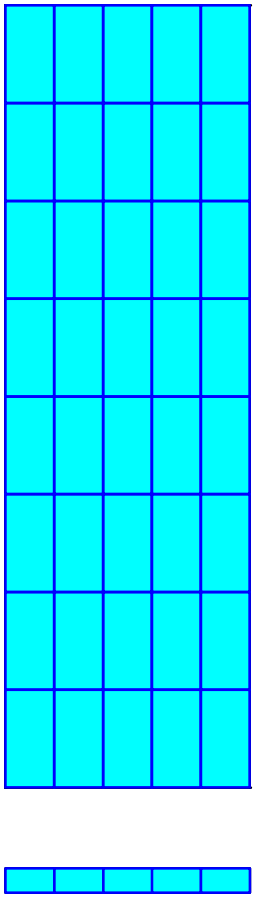
8 Chambers/Row x 8.00' Long = 64.00' Row Length
5 Rows x 48.0" Wide = 20.00' Base Width
24.0" Chamber Height = 2.00' Field Height

40 Chambers x 45.3 cf = 1,812.0 cf Chamber Storage
40 Chambers x 63.4 cf = 2,534.4 cf Displacement

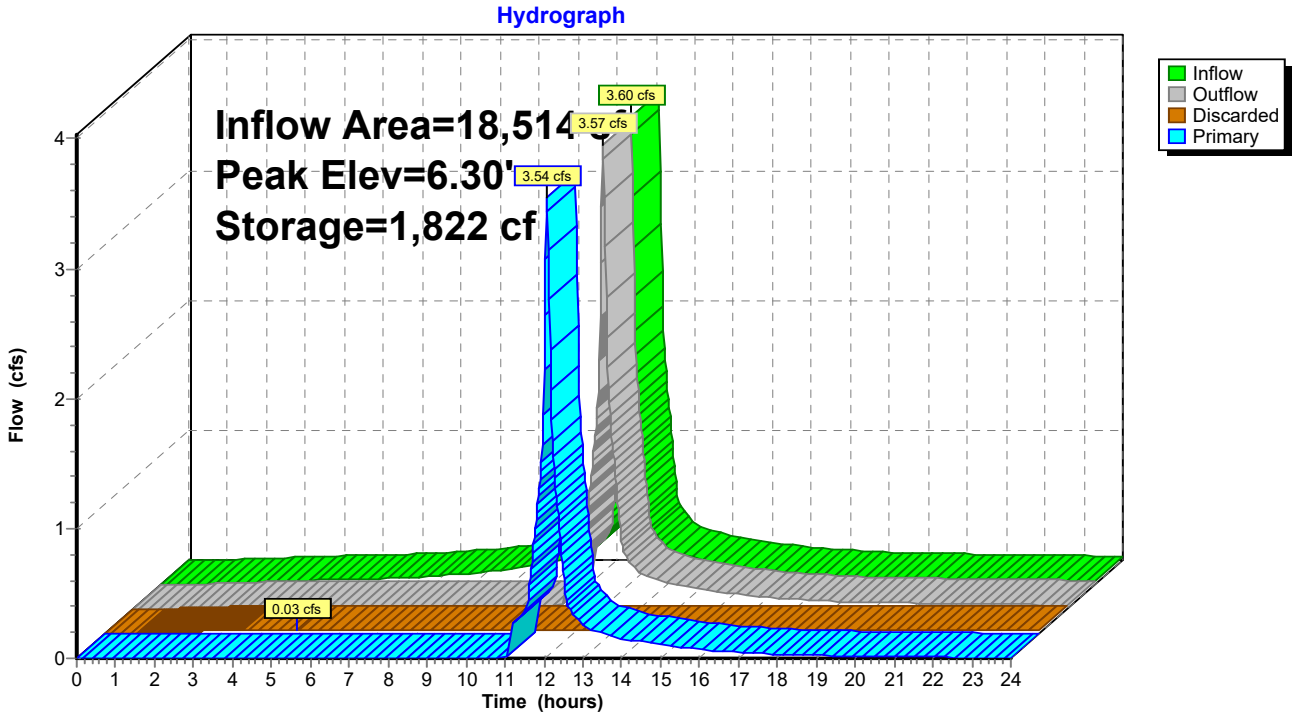
2,560.0 cf Field - 2,534.4 cf Chambers = 25.6 cf Stone x 40.0% Voids = 10.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,822.2 cf = 0.042 af
Overall Storage Efficiency = 71.2%
Overall System Size = 64.00' x 20.00' x 2.00'

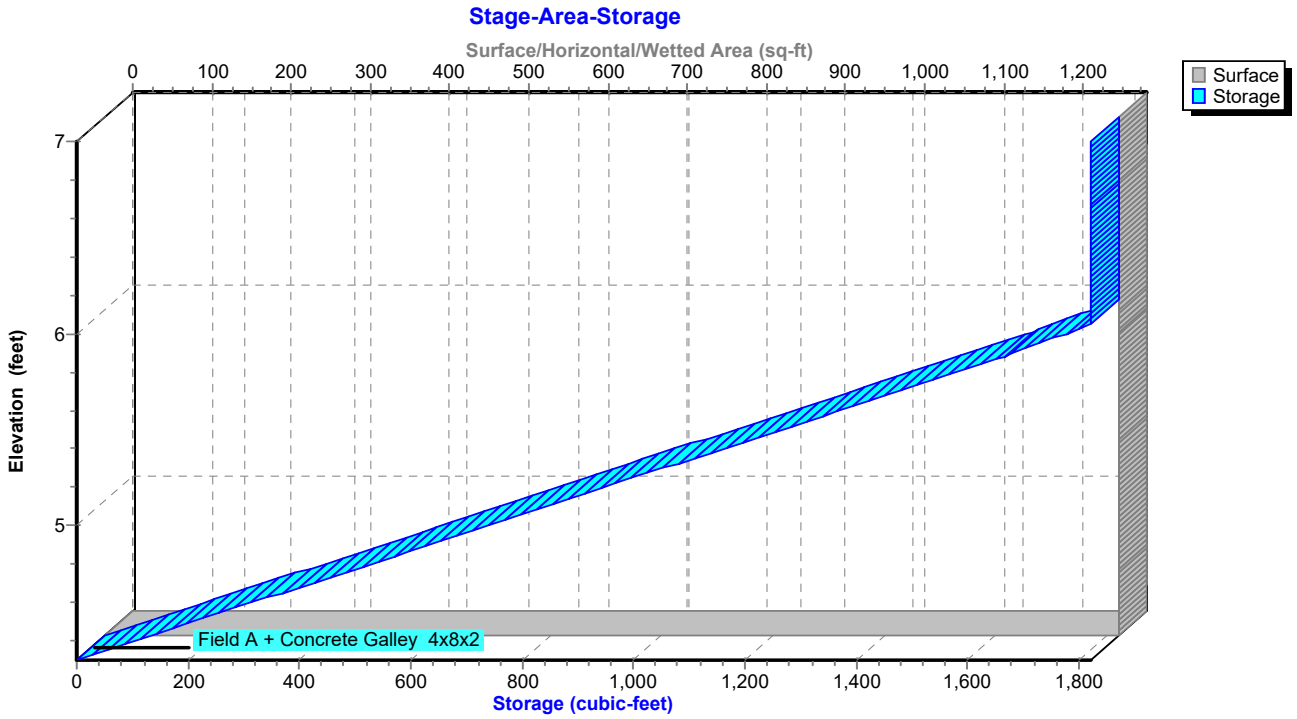
40 Chambers
94.8 cy Field
0.9 cy Stone



Pond 1P: Underground Detention



Pond 1P: Underground Detention



Stage-Area-Storage for Pond 1P: Underground Detention

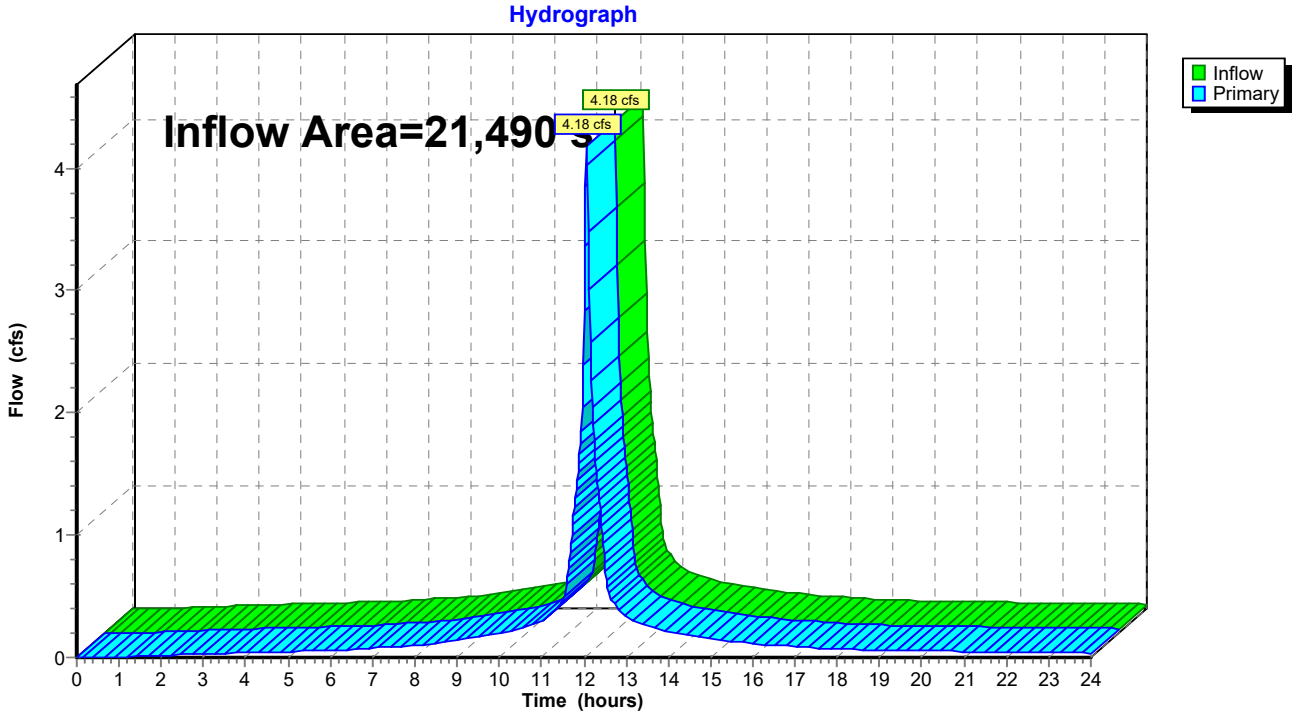
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
4.30	**1,280**	0
4.35	1,280	53
4.40	1,280	106
4.45	1,280	158
4.50	1,280	211
4.55	1,280	264
4.60	1,280	317
4.65	1,280	369
4.70	1,280	422
4.75	1,280	475
4.80	1,280	528
4.85	1,280	580
4.90	1,280	633
4.95	1,280	686
5.00	1,280	739
5.05	1,280	791
5.10	1,280	844
5.15	1,280	897
5.20	1,280	950
5.25	1,280	1,002
5.30	1,280	1,055
5.35	1,280	1,108
5.40	1,280	1,161
5.45	1,280	1,213
5.50	1,280	1,266
5.55	1,280	1,319
5.60	1,280	1,372
5.65	1,280	1,424
5.70	1,280	1,477
5.75	1,280	1,530
5.80	1,280	1,583
5.85	1,280	1,635
5.90	1,280	1,686
5.95	1,280	1,731
6.00	1,280	1,777
6.05	1,280	1,821
6.10	1,280	1,821
6.15	1,280	1,821
6.20	1,280	1,822
6.25	1,280	1,822
6.30	1,280	**1,822**
6.35	1,280	1,822
6.40	1,280	1,822
6.45	1,280	1,822
6.50	1,280	1,822
6.55	1,280	1,822
6.60	1,280	1,822
6.65	1,280	1,822
6.70	1,280	1,822
6.75	1,280	1,822
6.80	1,280	1,822
6.85	1,280	1,822
6.90	1,280	1,822
6.95	1,280	1,822
7.00	1,280	1,822

Summary for Link EX-1: NOROTON RIVER

Inflow Area = 21,490 sf, 97.82% Impervious, Inflow Depth > 8.02" for 100yr Storm event
Inflow = 4.18 cfs @ 12.07 hrs, Volume= 14,354 cf
Primary = 4.18 cfs @ 12.07 hrs, Volume= 14,354 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node EX-Total

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link EX-1: NOROTON RIVER

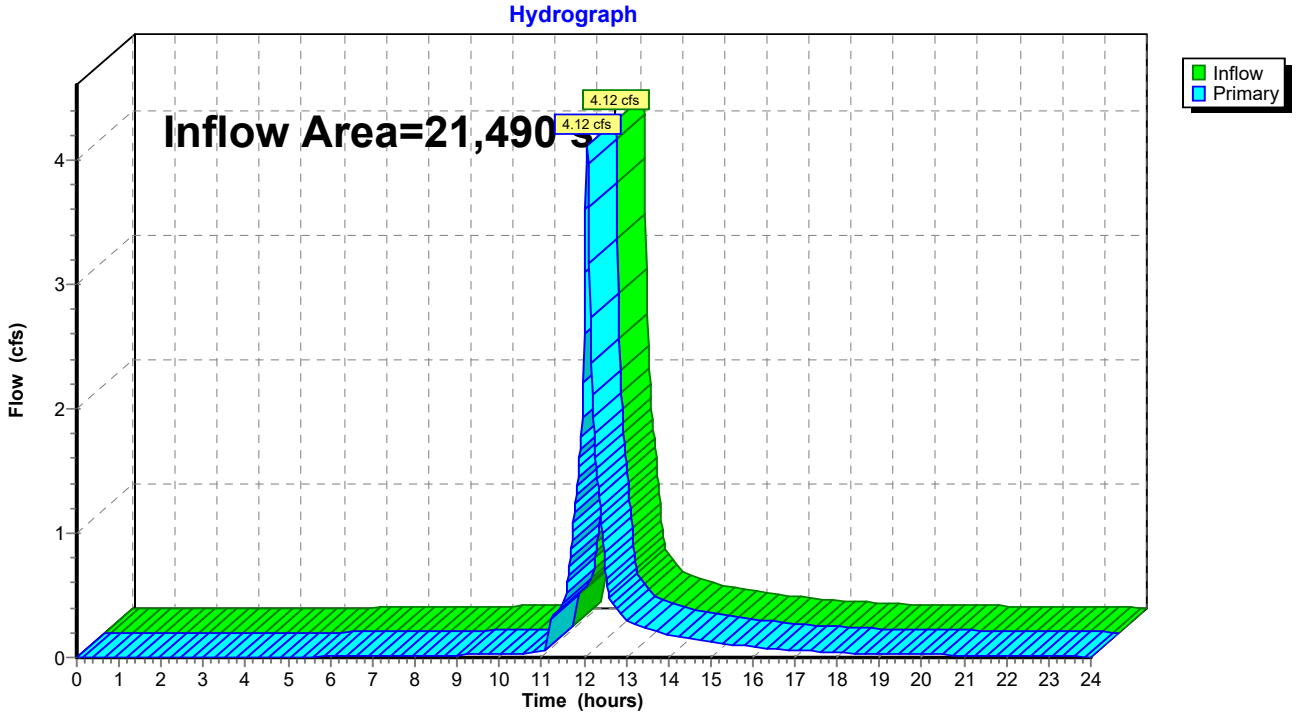


Summary for Link PR-1: NOROTON RIVER

Inflow Area = 21,490 sf, 96.82% Impervious, Inflow Depth > 5.65" for 100yr Storm event
Inflow = 4.12 cfs @ 12.08 hrs, Volume= 10,111 cf
Primary = 4.12 cfs @ 12.08 hrs, Volume= 10,111 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node PR-Total

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link PR-1: NOROTON RIVER



Appendix E

Water Quality Summary Calculations

Project:	**1308 East Main St**	By:	**RW**	Date:	**5/16/2024**
	Stamford, CT	Checked:	**CL**	Revised:	

1. Water Quality Volume - Drainage Area #2 (Less Undeveloped Site Area)

a. Compute volumetric runoff coefficient, R R = 0.05+0.009(*I*)

	Proposed		
Total Drainage Area, *A*	0.493	acres	
Total Impervious Area	0.483	acres	
Percentage of Impervious Area, *I*	98.0%		
Runoff Coefficient, *R*	0.932		

b. Compute water quality volume, WQV WQV = [(1")(*R*)(*A*)]/12

Total Project Area, *A*	0.493	acres	
Runoff Coefficient, *R*	0.932		
Water Quality Volume, *WQV*	0.038	acre-foot	
100 % Water Quality Volume, *WQV*	**1,667.44**	**cf**	***Required***
WQV in concrete galleries	**1,822.20**	**cf**	
Total WQV	**1,822.20**	**cf**	***Provided***

Water Quality Volume provided > required

Appendix F

Operation & Maintenance Plan

Operations and Maintenance Plan

1308 East Main Street, Stamford, CT
May 15, 2024

Scope:

The purpose of the Operations and Maintenance Plan is to ensure that the existing and proposed stormwater components installed at *1308 East Main Street,* are maintained in operational condition throughout the life of the project. The service procedures associated with this plan shall be performed as required by the parties legally responsible for their maintenance.

Recommended Frequency of Service:

As further defined below, all stormwater components should be checked on a periodic basis and kept in full working order. Ultimately, the required frequency of inspection and service will depend on runoff quantities, pollutant loading, and clogging due to debris. At a minimum, we recommend that all stormwater components be inspected and serviced twice per year, once before winter begins and once during spring cleanup.

Qualified Inspector:

The inspections must be completed by an individual experienced in the construction and maintenance of stormwater drainage systems. Once every five years the inspections must be completed by a professional engineer.

Service Procedures:

1. Catch Basins & Drainage Inlets:

    a. Catch basins and drainage inlets shall be completely cleaned of accumulated debris and sediments at the completion of construction.
    b. For the first year, catch basins and drainage inlets shall be inspected on a quarterly basis.
    c. Any accumulated debris within the catch basins/inlets shall be removed and any repairs as required.
    d. From the second year onward, visual inspections shall occur twice per year, once in the spring and once in the fall, after fall cleanup of leaves has occurred.
    e. Accumulated debris within the catch basins/inlets shall be removed and repairs made as required.
    f. Accumulated sediments shall be removed at which time they are within 12 inches of the invert of the outlet pipe.
    g. Any additional maintenance required per the manufacturer's specifications shall also be completed.

2. Storm Drainage Piping and Manholes/Junction Boxes:

    a. All storm drainage piping shall be completely flushed of debris and accumulated sediment at the completion of construction.
    b. Manholes/Junction Boxes shall be inspected and repaired on an annual basis.
    c. Unless system performance indicates degradation of piping, comprehensive video inspection of storm drainage piping shall occur once every ten years.
    d. Any additional maintenance required per the manufacturer's specifications shall also be completed.

3. Drainage Outfalls/Splash Pads/Scour Holes/Level Spreaders:

    a. All outfalls shall be completely cleaned of accumulated debris and sediments at the completion of construction. Any repairs to outlet protection material (rip rap) shall be performed.
    b. For the first year, outfalls shall be inspected on a quarterly basis.
    c. Any accumulated debris shall be removed and any repairs made to the outfalls as required.
    d. From the second year onward, visual inspections shall occur twice per year, once in the spring and once in the fall, after fall cleanup of leaves has occurred.
    e. Accumulated debris shall be removed and repairs made as required.
    f. Any erosion shall be promptly repaired and the cause of the erosion shall be identified and corrected.
    g. Any additional maintenance required per the manufacturer's specifications shall also be completed.

4. Drywells and Infiltration Systems:

    a. All drywells/infiltrators shall be completely cleaned of accumulated debris and sediments upon the completion of construction.
    b. For the first year, the drywells/infiltrators shall be inspected on a quarterly basis.
    c. Any accumulated debris within the drywells/infiltrators shall be removed and any repairs made to the units as required.
    d. From the second year onward, visual inspection shall occur twice per year, once in the spring and once in the fall, after fall cleanup of leaves has occurred.
    e. Accumulated debris within the units shall be removed and repairs made as required.
    f. Any additional maintenance required per the manufacturer's specifications shall also be completed.

Disposal of Debris and Sediment:

All debris and sediment removed from the stormwater structures and bioretention/biofiltration basins shall be disposed of legally. There shall be no dumping of silt or debris into or in proximity to any inland or tidal wetlands.

Maintenance Records:

The Owners(s) must maintain all records (logs, invoices, reports, data, etc.) and have them readily available for inspection at all times.

Operations and Maintenance Log (Page 1 of 2)

1308 East Main Street, Stamford, CT
May 15, 2024

Type of Inspection: ☐ Spring ☐ Fall ☐ Other

Inspector's Name:_____ Date of Inspection:_____

Affiliation:_____ Phone #:_____

Catch Basins & Drainage Inlets:

- Has accumulated debris been removed from grates? ☐ Yes ☐ No ☐ N/A
- Do any basins require additional repair? (identify below): ☐ Yes ☐ No ☐ N/A
- Have sumps been cleaned of sediment? ☐ Yes ☐ No ☐ N/A

Notes:

Storm Drainage Piping and Manholes/Junction Boxes:

- Has accumulated debris been removed? ☐ Yes ☐ No ☐ N/A
- Do any manholes require additional repair? (identify below): ☐ Yes ☐ No ☐ N/A
- Is there any evidence of stormwater piping failure? ☐ Yes ☐ No ☐ N/A
- Has a comprehensive video inspection been completed? ☐ Yes ☐ No ☐ N/A

Notes:

Drainage Outfalls/Splash Pads/Scour Holes/Level Spreaders:

- Have all drainage outlets been cleared of debris? ☐ Yes ☐ No ☐ N/A
- Have all outlet protections been inspected/repaired? ☐ Yes ☐ No ☐ N/A
- Have all erosion issues been repaired? ☐ Yes ☐ No ☐ N/A

Notes:

Operations and Maintenance Log (Page 2 of 2)

1308 East Main Street, Stamford, CT
May 15, 2024

Drywells and Infiltration Systems:

- Have units been cleared of debris/sediments? ☐ Yes ☐ No ☐ N/A
- Do units require additional repair? (identify below): ☐ Yes ☐ No ☐ N/A
- Has draining times of system been verified? ☐ Yes ☐ No ☐ N/A

Notes:

Please make additional notes/observations and particular concerns below. Also record any additional maintenance that has been performed:

Signature of Inspector: **Date:**

Appendix G

Conveyance and Drawdown Calculations

Project: **1308 East Main St** By: **RW** Date: **5/16/2024**
Stamford, CT Checked: **CL** Revised:

Infiltration System Drawdown Calculations

Time drawdown: INF-1

4x8x2 Concrete Galleries

Design Volume = 1822.2 ft^3

Infiltration Rate = 1.02 in/hr (as per Table 5.1 of the Stamford Drainage Manual)

Bottom Area = 1,280 sf

$$Time_{drawdown} = \frac{1822.2\ ft^3}{(1.02\ in/hr)(1\ ft/12\ in)(1{,}380\ ft^2)} = 17\ hours$$

Therefore:	Provided Drawdown Time	<	Required Drawdown Time	
	17 hours	<	72 hours	OK

Project:	**1308 East Main St**	By:	**RW**	Date:	**5/16/2024**
	Stamford, CT	Checked:	**CL**	Revised:	

Conveyance Computations Drainage Area 2A (to Underground Detention)

Q_{10} = 2.27 (from HydroCAD)
Slope = 4.43%

$Q_{pipe} = (1.49/n)(A/P)^{2/3}S^{1/2}$

$Q_{pipe} = (1.49/0.01)(0.785/3.14)^{2/3}(0.044)^{1/2}$

Q_{pipe} = 12.40 cfs (12" PVC)

$Q_{pipe} > Q_{50}$

Emergency Overflow Computations

Q100 = 3.54 (from HydroCAD)
0.25 CFS allowed per LF of Level spreader (CT DEEP Connecticut Stormwater Manuel Chapter 13)

Min Length = 3.54 / 0.25
Min Length = 14.16 **Required**
Provided Level Spreader Length = 20 LF
Provided > Required

Appendix H

DCIA Tracking Worksheet

Directly Connected Impervious Area Tracking Worksheet
City of Stamford Drainage Manual

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

Part 1: General Information (All Projects)

Project Name	Nautilus Botanicals EJV1 LLC
Project Address	1308 East Main Street Stamford Ct
Project Applicant	Nautilus Botanicals EJV1 LLC
Title of Plan	Proposed Site Improvements for a Building Renovation
Revision Date of Plan	5/16/2023
Tax Account Number	Nautilus Botanicals EJV1 LLC

Part 2: Project Details (All Projects)

1. What type of development is this? (choose from dropdown)	Redevelopment	
2. What is the total area of the project site?	21,680 S.F (0.56 Ac.)	ft^2
3. What is the total area of land disturbance for this project?	8,000 S.F. (0.18 Ac.)	ft^2
4. Does project site drain to High Quality Waters, a Direct Waterfront, or within 500 ft. of Tidal Wetlands? (Yes/No)	No	
Does Standard 1 apply based on information above?	YES	

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

5. What is the current (pre-development) ***DCIA*** for the site?	0	ft^2
6. Will the proposed development increase ***DCIA*** (without consideration of proposed stormwater management)? (Yes/No)	No	
7. What is the proposed-development ***total impervious area*** for the site?	19,480 S.F. (0.45 Ac.)	ft^2
Water Quality Volume (WQV)	1,667.4 C.F.	ft^3
Standard 1 requirement	100%	
Required treatment/retention volume	1,667.4 C.F.	ft^3
Provided treatment/retention volume for proposed development	1,822.2 C.F.	ft^3

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

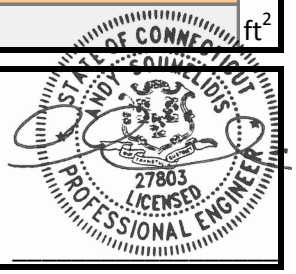
Pre-development ***total impervious area***	19660 S.F. (0.45 Ac.)	ft^2
Current ***DCIA***	0	ft^2
Proposed-development ***total impervious area***	19480 S.F. (0.45 Ac.)	ft^2
Proposed-development ***DCIA*** (after stormwater management)	0	ft^2
Net change in ***DCIA*** from current to proposed-development	0	ft^2

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

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

Certification Statement

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



Engineer's Signature _____ Date 5/17/2024 Engineer's Seal _____