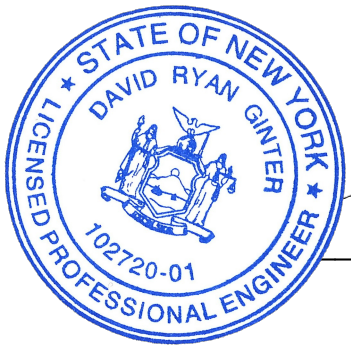
SITE ENGINEERING REPORT

2 Shore Road
Mamaroneck, NY

Prepared For
Scott & Orly Miller
70 Greenhaven Road
Rye, NY 10580

Prepared by
Redniss & Mead, Inc.
22 First Street
Stamford, CT
(203) 327-0500

Issued on
August 6, 2023



David R. Ginter, P.E.
NY Lic. No. 102720-01

Table of Contents

Orientation Map
(1”=1,500’)

Narrative

Project Description

The applicant is seeking approval to improve their single-family residential property located in the R-15 zone. Improvements include raising the existing dwelling to be compliant with local and federal flood zone regulations, improving vehicular access to the house, and installing a new septic system to replace the failing system which exists today. The property is located on the south side of Shore Road along the Long Island Sound.

Existing Conditions:

The property is currently developed with a single-family residence central to the site, a small driveway, patios, a pier, and other ancillary improvements typically found on a residential property. The lot area is approximately 1.73 acres; 0.71± acres of which is above mean high water. The property is bound residential properties to the north, east, and west and the Long Island Sound to the south. Ground cover is predominantly maintained lawn, with pockets of exposed ledge and clusters of mature shrubs and ornamental trees. There is a topographic ridge running north to south along the westerly edge of the property. Stormwater from the site ultimately discharges into the Long Island Sound via a series of drains and penetrations in the seawall that exists south of the residence. The property is on public water and private septic. Portions of the property lie within FEMA Flood Zone's VE-15 (south side), VE-14 (center), and AE-13 (north side) as depicted on FIRM map #36119C0354F, effective 9/28/2007 as amended by LOMR 21-02-0550P effective 4/20/2022.

The USDA NRCS Websoil Survey does not classify the on-site soils. As such, a total of six (6) test pits were conducted on 05/11/2022 to evaluate soil conditions and identify depth to ledge & groundwater. The test pits generally contained a surface layer of topsoil followed by an in-situ soil profile consisting of compacted sands and silty loam. Ledge rock was encountered in test pit #6 at 12". Ground water or evidence of seasonal high groundwater (mottling) was observed in test pit #5 and #6 respectively. Based on these results combined with the soil's inability to infiltrate water during percolation tests, we classified the on-site soils as HSG-D.

Proposed Conditions:

The proposed limit of disturbance will encompass an area of the site totaling 0.58± acres in size, approximately half of which is related to the proposed septic leaching area enhancement and removal of existing hardscapes. Surrounding areas not impacted by construction activities will be delineated with silt fence and will remain undisturbed. No stockpiling will occur outside the limit of disturbance or south of the seawall. The proposed dwellings flood compliant design will offset the large volume of fill required for the septic system and will result in no loss of flood storage (see Appendix #5).

The improvements result in 13 sq.ft. of additional impervious coverage. The goal of the proposed stormwater management system is to provide water quality treatment for the proposed parking court. Given the proximity to Long Island Sound, peak flow & volume control is not of great concern, however, the proposed system has been designed to maintain or reduce the peak rates

of runoff in all storm events up to and including the 100-year storm event. The proposed stormwater management system consists of a lined rain garden which will provide treatment for 1,903 sq.ft. of impervious coverage which significantly exceeds the 13 sq.ft. increase in coverage. The proposed raingarden will have a total treatment capacity of 240 cu.ft. in 12" of ponding and a 12" soil profile. It will be located on the north side of the residence. Due to the low-lying elevation of the subject property and the expected presence of high groundwater, providing a stormwater infiltration practice for the entire site that complies with the NYDEC Stormwater Design Manual is not feasible. In lieu of this, the proposed raingarden will be lined and will drain to the south of the residence through the existing seawall penetrations.

An analysis of the pre and post construction peak flow rates for the property has been prepared using HydroCAD. The model uses rainfall intensities based on NOAA atlas-14 (see appendix #5). See Appendix #3 for model results. The following table documents the sites peak rates of runoff for both pre-construction and post-construction conditions through the 100-year storm event:

Subcatch. 1S & Link 4L	Peak Flow (cfs)			
Return Period (years)	Ex (1S)	Pr (4L)	Change	% Change
1	**1.08**	**1.04**	**-0.04**	**-3.7%**
2	**1.46**	**1.40**	**-0.06**	**-4.1%**
5	**2.10**	**1.99**	**-0.11**	**-5.2%**
10	**2.64**	**2.49**	**-0.15**	**-5.7%**
25	**3.39**	**3.18**	**-0.21**	**-6.2%**
50	**3.94**	**3.68**	**-0.26**	**-6.6%**
100	**4.53**	**4.23**	**-0.30**	**-6.6%**

Stormwater quality will be enhanced with addition of the raingarden system as it will cool stormwater runoff and filter pollutants on-site prior to discharging into the Long Island Sound.

Sediment and Erosion Controls:

A Sediment and Erosion Control Plan, including a system of controls both temporary and permanent, has been provided to minimize erosion and contain & properly dispose of any accumulation of sediment during construction. The erosion control measures proposed shall be installed and maintained in accordance with The New York Standards and Specifications for Erosion and Sediment Control. Temporary sediment and erosion controls include silt fence, anti-tracking pads & tree protection. The proper use of sediment and erosion controls minimizes potential negative impacts during construction.

Conclusion:

The stormwater design employs effective strategies designed to filter sediments and pollutants from the water through filtration practices. Based on the above information and with proper implementation of the design drawings, the proposed development will not adversely impact adjacent or downstream properties or Town or State-owned drainage facilities.

Appendix I

Existing Drainage Basin Map
Proposed Drainage Basin Map

LONG
ISLAND
SOUND

EXISTING SITE
30,904 SF
CN: 85.6
TC: 5 MIN.

EXISTING DRAINAGE BASIN EXHIBIT

2 SHORE ROAD
MAMARONECK, NY

REDNISS & MEAD

LAND SURVEYING
CIVIL ENGINEERING
PLANNING & ZONING CONSULTING
PERMITTING

22 First Street | Stamford, CT 06905
Tel: 203.327.0500 | Fax: 203.357.1118
www.rednissmead.com

COMM. NO.:	DATE:
10393	09/06/2023
	SCALE: 1" = 20'

PROPOSED
BYPASS BASIN
28,200 SF
CN: 84.9
TC: 5 MIN.

PROPOSED
RAINGARDEN
BASIN
2,704 SF
CN: 92.7
TC: 5 MIN.

OPEN
JOINTED
DECK

LONG
ISLAND
SOUND

PROPOSED DRAINAGE BASIN EXHIBIT

2 SHORE ROAD
MAMARONECK, NY

REDNISS & MEAD

LAND SURVEYING
CIVIL ENGINEERING
PLANNING & ZONING CONSULTING
PERMITTING

22 First Street | Stamford, CT 06905
Tel: 203.327.0500 | Fax: 203.357.1118
www.rednissmead.com

COMM. NO.:	DATE:
10393	09/06/2023
	SCALE: 1" = 20'

Appendix 2

WQV Calculations

Water Quality Volume Calculations

Project: *2 Shore Road*	**Project #:** *10393*	**Date:** *9/6/2023*
Location: *Mamaroneck, New York*	**By:** *SPC*	**Checked:** *DRG*

Raingarden #1

Area=	0.062	acres
Impervious Area=	0.044	acres
P=	1.5	inches[a]
I=	0.704	[b]
R=	0.683	[c]
WQV=	0.005	ac. ft. [d]

Required WQV=	**230.99 ft.^{3}**
Provided WQV*=	**245.00 ft.^{3}**

[a] P=90% Rainfall Event Number, See Figure 4.1 in Section 4.2 of the 2015 New York State Stormwater Management Design Manual

[b] I=Percent Impervious Coverage

[c] R=0.05+0.009(I); Volumetric runoff Coefficient, Equation taken from 2004 Connecticut Stormwater Quality Manual section 7.4.1

[d] WQV=(P*Rv*A)/12; Water Quality Volume, Equation taken from 2015 New York State Stormwater Management Design Manual section 4.2

* Storage provided below overflow area drain

REDNISS & MEAD

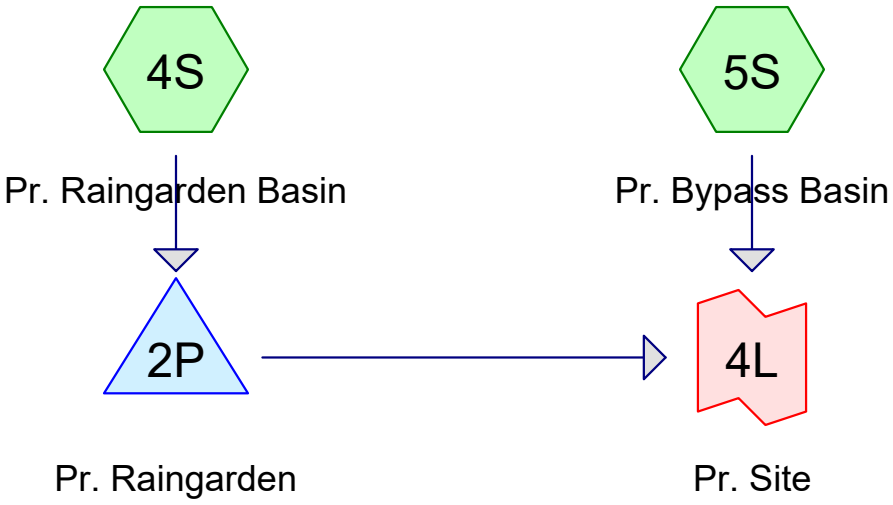
Appendix 3

HydroCAD Model

Existing Conditions

Ex. Site

Proposed Conditions



Subcat Reach Pond Link

Routing Diagram for 2 Shore Road HydroCAD
Prepared by Redniss & Mead, Inc, Printed 9/6/2023

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	Type III 24-hr		Default	24.00	1	2.82	2
2	2-Year	Type III 24-hr		Default	24.00	1	3.44	2
3	5-Year	Type III 24-hr		Default	24.00	1	4.44	2
4	10-Year	Type III 24-hr		Default	24.00	1	5.28	2
5	25-Year	Type III 24-hr		Default	24.00	1	6.43	2
6	50-Year	Type III 24-hr		Default	24.00	1	7.28	2
7	100-Year	Type III 24-hr		Default	24.00	1	8.20	2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
42,597	80.0	>75% Grass cover, Good, HSG D (1S, 4S, 5S)
19,211	98.0	Impervious (1S, 4S, 5S)
61,808	**85.6**	**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.001 hrs, 24001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Ex. Site Runoff Area=30,904 sf 31.06% Impervious Runoff Depth>1.48"
Tc=10.0 min CN=85.6 Runoff=1.08 cfs 3,805 cf

Subcatchment4S: Pr. Raingarden Basin Runoff Area=2,704 sf 70.38% Impervious Runoff Depth>2.05"
Tc=10.0 min CN=92.7 Runoff=0.13 cfs 462 cf

Subcatchment5S: Pr. Bypass Basin Runoff Area=28,200 sf 27.34% Impervious Runoff Depth>1.43"
Tc=10.0 min CN=84.9 Runoff=0.95 cfs 3,356 cf

Pond 2P: Pr. Raingarden Peak Elev=6.97' Storage=28 cf Inflow=0.13 cfs 462 cf
Outflow=0.10 cfs 458 cf

Link 4L: Pr. Site Inflow=1.04 cfs 3,814 cf
Primary=1.04 cfs 3,814 cf

Total Runoff Area = 61,808 sf Runoff Volume = 7,624 cf Average Runoff Depth = 1.48"
68.92% Pervious = 42,597 sf 31.08% Impervious = 19,211 sf

Time span=0.00-24.00 hrs, dt=0.001 hrs, 24001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Ex. Site Runoff Area=30,904 sf 31.06% Impervious Runoff Depth>2.01"
Tc=10.0 min CN=85.6 Runoff=1.46 cfs 5,173 cf

Subcatchment4S: Pr. Raingarden Basin Runoff Area=2,704 sf 70.38% Impervious Runoff Depth>2.64"
Tc=10.0 min CN=92.7 Runoff=0.16 cfs 596 cf

Subcatchment5S: Pr. Bypass Basin Runoff Area=28,200 sf 27.34% Impervious Runoff Depth>1.95"
Tc=10.0 min CN=84.9 Runoff=1.30 cfs 4,588 cf

Pond 2P: Pr. Raingarden Peak Elev=7.12' Storage=47 cf Inflow=0.16 cfs 596 cf
Outflow=0.11 cfs 591 cf

Link 4L: Pr. Site Inflow=1.40 cfs 5,179 cf
Primary=1.40 cfs 5,179 cf

Total Runoff Area = 61,808 sf Runoff Volume = 10,356 cf Average Runoff Depth = 2.01"
68.92% Pervious = 42,597 sf 31.08% Impervious = 19,211 sf

Time span=0.00-24.00 hrs, dt=0.001 hrs, 24001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Ex. Site Runoff Area=30,904 sf 31.06% Impervious Runoff Depth>2.91"
Tc=10.0 min CN=85.6 Runoff=2.10 cfs 7,481 cf

Subcatchment4S: Pr. Raingarden Basin Runoff Area=2,704 sf 70.38% Impervious Runoff Depth>3.61"
Tc=10.0 min CN=92.7 Runoff=0.22 cfs 814 cf

Subcatchment5S: Pr. Bypass Basin Runoff Area=28,200 sf 27.34% Impervious Runoff Depth>2.84"
Tc=10.0 min CN=84.9 Runoff=1.88 cfs 6,674 cf

Pond 2P: Pr. Raingarden Peak Elev=7.36' Storage=89 cf Inflow=0.22 cfs 814 cf
Outflow=0.12 cfs 810 cf

Link 4L: Pr. Site Inflow=1.99 cfs 7,483 cf
Primary=1.99 cfs 7,483 cf

Total Runoff Area = 61,808 sf Runoff Volume = 14,969 cf Average Runoff Depth = 2.91"
68.92% Pervious = 42,597 sf 31.08% Impervious = 19,211 sf

Time span=0.00-24.00 hrs, dt=0.001 hrs, 24001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Ex. Site Runoff Area=30,904 sf 31.06% Impervious Runoff Depth>3.68"
Tc=10.0 min CN=85.6 Runoff=2.64 cfs 9,482 cf

Subcatchment4S: Pr. Raingarden Basin Runoff Area=2,704 sf 70.38% Impervious Runoff Depth>4.43"
Tc=10.0 min CN=92.7 Runoff=0.27 cfs 999 cf

Subcatchment5S: Pr. Bypass Basin Runoff Area=28,200 sf 27.34% Impervious Runoff Depth>3.61"
Tc=10.0 min CN=84.9 Runoff=2.37 cfs 8,486 cf

Pond 2P: Pr. Raingarden Peak Elev=7.56' Storage=131 cf Inflow=0.27 cfs 999 cf
Outflow=0.13 cfs 995 cf

Link 4L: Pr. Site Inflow=2.49 cfs 9,481 cf
Primary=2.49 cfs 9,481 cf

Total Runoff Area = 61,808 sf Runoff Volume = 18,967 cf Average Runoff Depth = 3.68"
68.92% Pervious = 42,597 sf 31.08% Impervious = 19,211 sf

Time span=0.00-24.00 hrs, dt=0.001 hrs, 24001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Ex. Site Runoff Area=30,904 sf 31.06% Impervious Runoff Depth>4.77"
Tc=10.0 min CN=85.6 Runoff=3.39 cfs 12,277 cf

Subcatchment4S: Pr. Raingarden Basin Runoff Area=2,704 sf 70.38% Impervious Runoff Depth>5.56"
Tc=10.0 min CN=92.7 Runoff=0.33 cfs 1,254 cf

Subcatchment5S: Pr. Bypass Basin Runoff Area=28,200 sf 27.34% Impervious Runoff Depth>4.69"
Tc=10.0 min CN=84.9 Runoff=3.05 cfs 11,023 cf

Pond 2P: Pr. Raingarden Peak Elev=7.83' Storage=196 cf Inflow=0.33 cfs 1,254 cf
Outflow=0.14 cfs 1,249 cf

Link 4L: Pr. Site Inflow=3.18 cfs 12,272 cf
Primary=3.18 cfs 12,272 cf

Total Runoff Area = 61,808 sf Runoff Volume = 24,553 cf Average Runoff Depth = 4.77"
68.92% Pervious = 42,597 sf 31.08% Impervious = 19,211 sf

Summary for Subcatchment 1S: Ex. Site

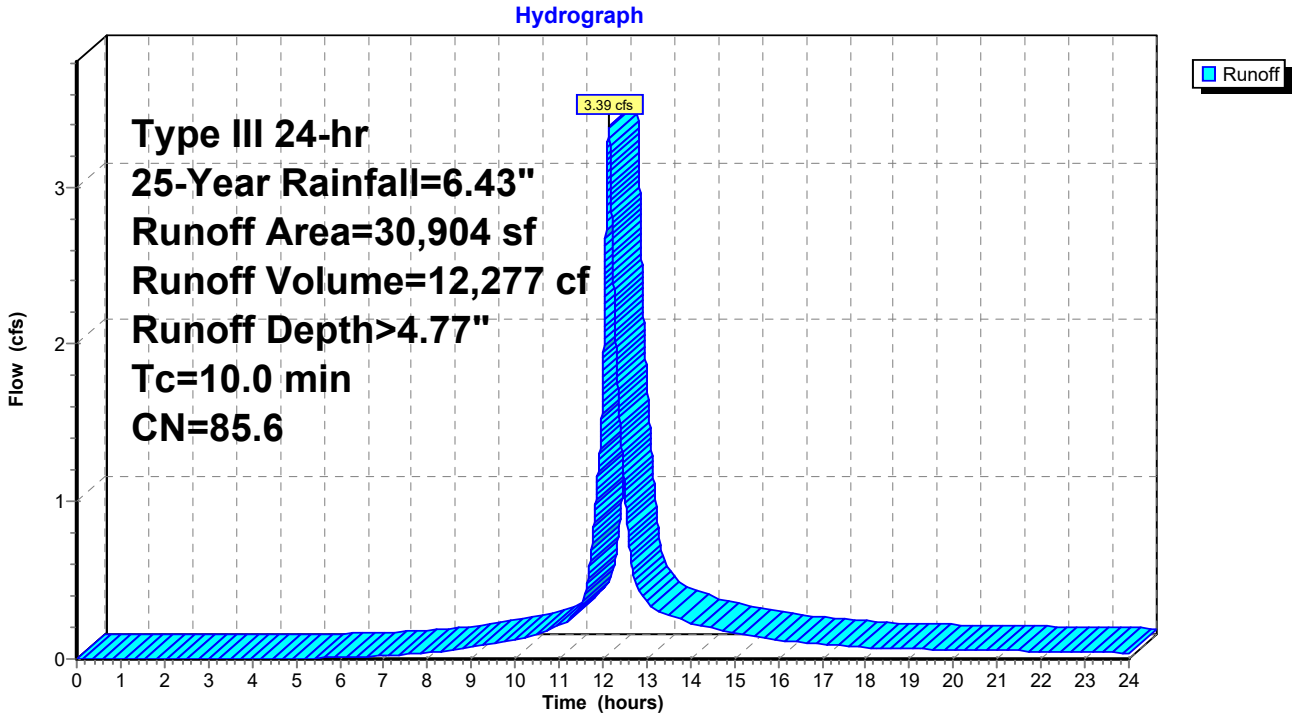
Runoff = 3.39 cfs @ 12.13 hrs, Volume= 12,277 cf, Depth> 4.77"
Routed to nonexistent node 1L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.001 hrs
Type III 24-hr 25-Year Rainfall=6.43"

	Area (sf)	CN	Description
	21,305	80.0	>75% Grass cover, Good, HSG D
*	9,599	98.0	Impervious
	30,904	85.6	Weighted Average
	21,305		68.94% Pervious Area
	9,599		31.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 1S: Ex. Site



Summary for Subcatchment 4S: Pr. Raingarden Basin

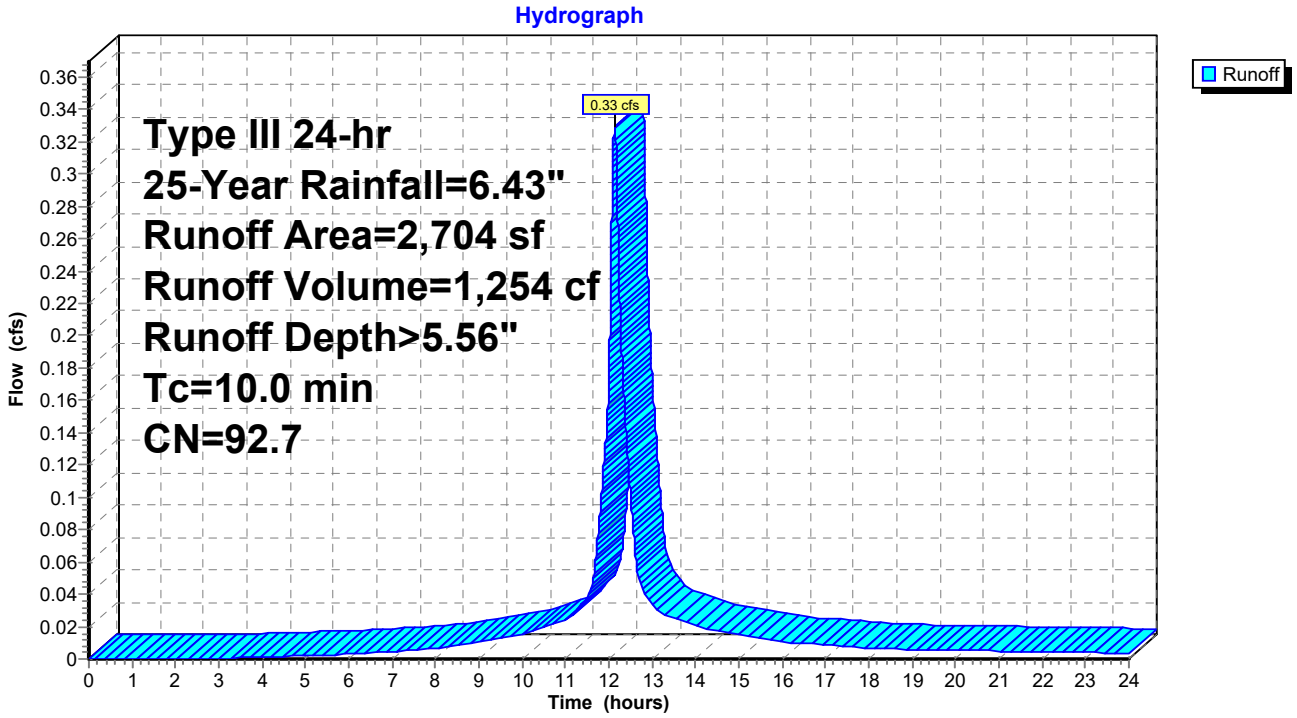
Runoff = 0.33 cfs @ 12.13 hrs, Volume= 1,254 cf, Depth> 5.56"
Routed to Pond 2P : Pr. Raingarden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.001 hrs
Type III 24-hr 25-Year Rainfall=6.43"

	Area (sf)	CN	Description
	801	80.0	>75% Grass cover, Good, HSG D
*	1,903	98.0	Impervious
	2,704	92.7	Weighted Average
	801		29.62% Pervious Area
	1,903		70.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 4S: Pr. Raingarden Basin



Summary for Subcatchment 5S: Pr. Bypass Basin

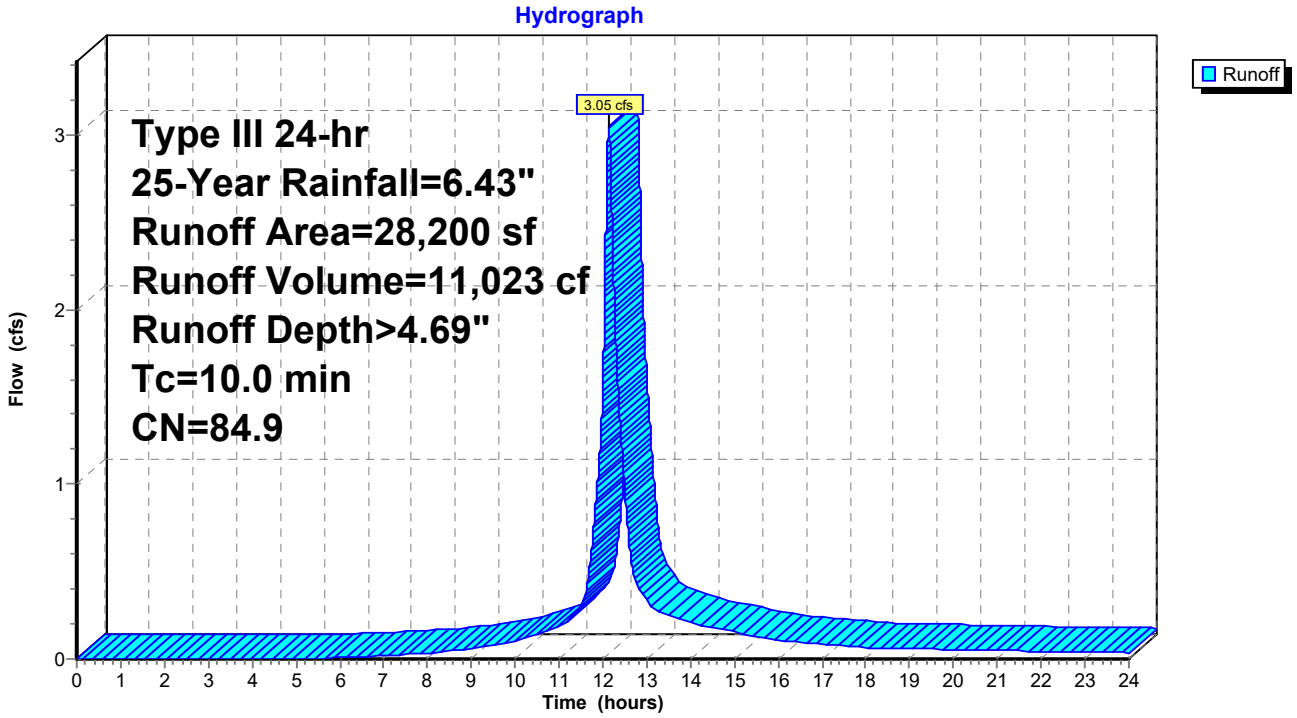
Runoff = 3.05 cfs @ 12.13 hrs, Volume= 11,023 cf, Depth> 4.69"
Routed to Link 4L : Pr. Site

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.001 hrs
Type III 24-hr 25-Year Rainfall=6.43"

	Area (sf)	CN	Description
	20,491	80.0	>75% Grass cover, Good, HSG D
*	7,709	98.0	Impervious
	28,200	84.9	Weighted Average
	20,491		72.66% Pervious Area
	7,709		27.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**
5.0	0	Total, Increased to minimum Tc = 10.0 min			

Subcatchment 5S: Pr. Bypass Basin



Summary for Pond 2P: Pr. Raingarden

Inflow Area = 2,704 sf, 70.38% Impervious, Inflow Depth > 5.56" for 25-Year event
Inflow = 0.33 cfs @ 12.13 hrs, Volume= 1,254 cf
Outflow = 0.14 cfs @ 12.40 hrs, Volume= 1,249 cf, Atten= 58%, Lag= 16.0 min
Primary = 0.14 cfs @ 12.40 hrs, Volume= 1,249 cf
Routed to Link 4L : Pr. Site

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.001 hrs
Peak Elev= 7.83' @ 12.40 hrs Surf.Area= 426 sf Storage= 196 cf

Plug-Flow detention time= 11.4 min calculated for 1,249 cf (100% of inflow)
Center-of-Mass det. time= 9.1 min (784.1 - 775.0)

Volume	Invert	Avail.Storage	Storage Description
#1	5.70'	6 cf	**Perforated Underdrain Stone (Prismatic)** Listed below (Recalc) 18 cf Overall - 3 cf Embedded = 15 cf x 40.0% Voids
#2	5.75'	3 cf	**6.0" Round Perforated Underdrain Embedded in Stone** Inside #1 L= 15.0' 3 cf Overall - 0.2" Wall Thickness = 3 cf
#3	6.50'	20 cf	**Raingarden Soil Mix (Prismatic)** Listed below (Recalc) 67 cf Overall x 30.0% Voids
#4	7.00'	391 cf	**Surface Ponding (Prismatic)** Listed below (Recalc)
		420 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.70	23	0	0
6.50	23	18	18

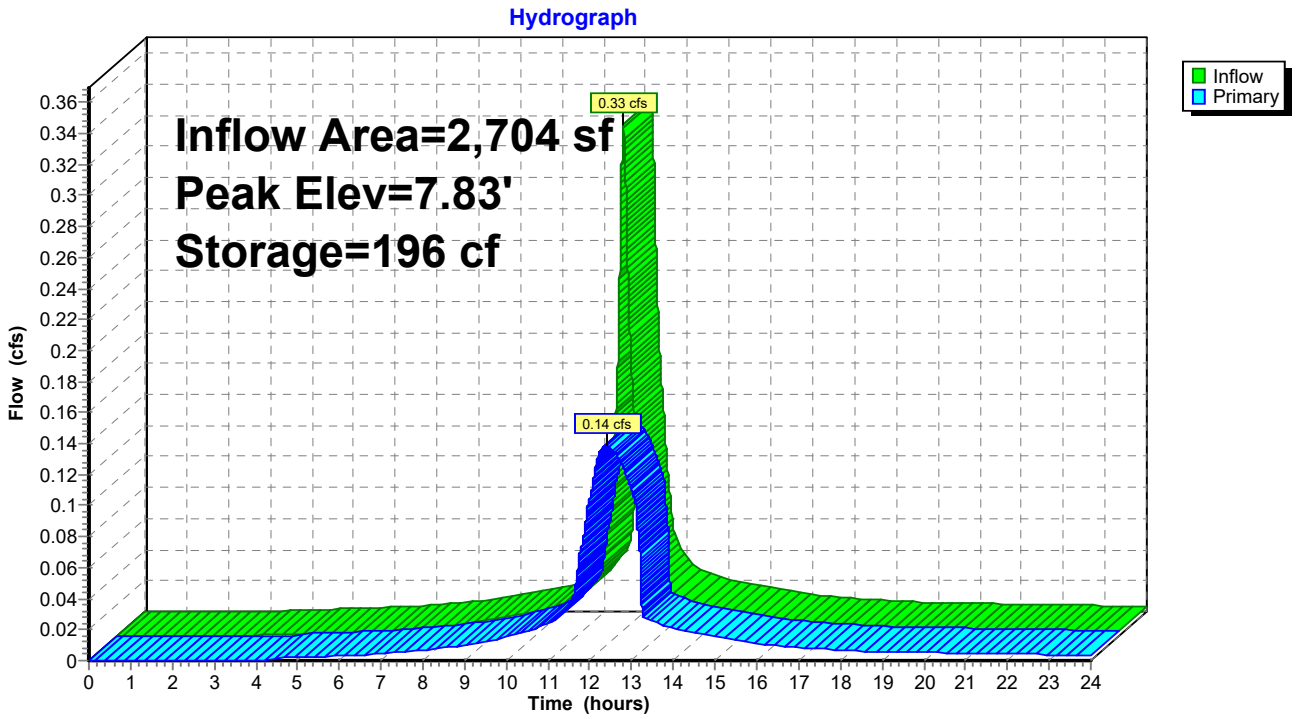
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.50	134	0	0
7.00	134	67	67

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
7.00	134	0	0
8.00	298	216	216
8.50	400	175	391

Device	Routing	Invert	Outlet Devices
#1	Primary	6.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Device 1	6.00'	**6.0" Round Perforated Underdrain** L= 15.0' Ke= 0.500 Inlet / Outlet Invert= 6.00' / 6.00' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf
#3	Primary	8.00'	**4.5' long x 0.5' breadth Area Drain Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.14 cfs @ 12.40 hrs HW=7.83' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.14 cfs @ 6.36 fps)
└─**2=Perforated Underdrain** (Passes 0.14 cfs of 1.19 cfs potential flow)
└─**3=Area Drain Overflow** (Controls 0.00 cfs)

Pond 2P: Pr. Raingarden



Stage-Area-Storage for Pond 2P: Pr. Raingarden

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
5.70	0	6.22	6	6.74	19
5.71	0	6.23	6	6.75	19
5.72	0	6.24	7	6.76	19
5.73	0	6.25	7	6.77	20
5.74	0	6.26	7	6.78	20
5.75	0	6.27	7	6.79	21
5.76	1	6.28	7	6.80	21
5.77	1	6.29	7	6.81	21
5.78	1	6.30	7	6.82	22
5.79	1	6.31	7	6.83	22
5.80	1	6.32	7	6.84	23
5.81	1	6.33	7	6.85	23
5.82	1	6.34	7	6.86	23
5.83	1	6.35	8	6.87	24
5.84	1	6.36	8	6.88	24
5.85	2	6.37	8	6.89	25
5.86	2	6.38	8	6.90	25
5.87	2	6.39	8	6.91	25
5.88	2	6.40	8	6.92	26
5.89	2	6.41	8	6.93	26
5.90	2	6.42	8	6.94	27
5.91	2	6.43	8	6.95	27
5.92	2	6.44	8	6.96	27
5.93	3	6.45	9	6.97	28
5.94	3	6.46	9	6.98	28
5.95	3	6.47	9	6.99	29
5.96	3	6.48	9	7.00	29
5.97	3	6.49	9	7.01	30
5.98	3	6.50	9	7.02	32
5.99	3	6.51	9	7.03	33
6.00	4	6.52	10	7.04	35
6.01	4	6.53	10	7.05	36
6.02	4	6.54	11	7.06	37
6.03	4	6.55	11	7.07	39
6.04	4	6.56	11	7.08	40
6.05	4	6.57	12	7.09	42
6.06	4	6.58	12	7.10	43
6.07	5	6.59	13	7.11	45
6.08	5	6.60	13	7.12	46
6.09	5	6.61	13	7.13	48
6.10	5	6.62	14	7.14	49
6.11	5	6.63	14	7.15	51
6.12	5	6.64	15	7.16	53
6.13	5	6.65	15	7.17	54
6.14	5	6.66	15	7.18	56
6.15	6	6.67	16	7.19	57
6.16	6	6.68	16	7.20	59
6.17	6	6.69	17	7.21	61
6.18	6	6.70	17	7.22	63
6.19	6	6.71	17	7.23	64
6.20	6	6.72	18	7.24	66
6.21	6	6.73	18	7.25	68

Stage-Area-Storage for Pond 2P: Pr. Raingarden (continued)

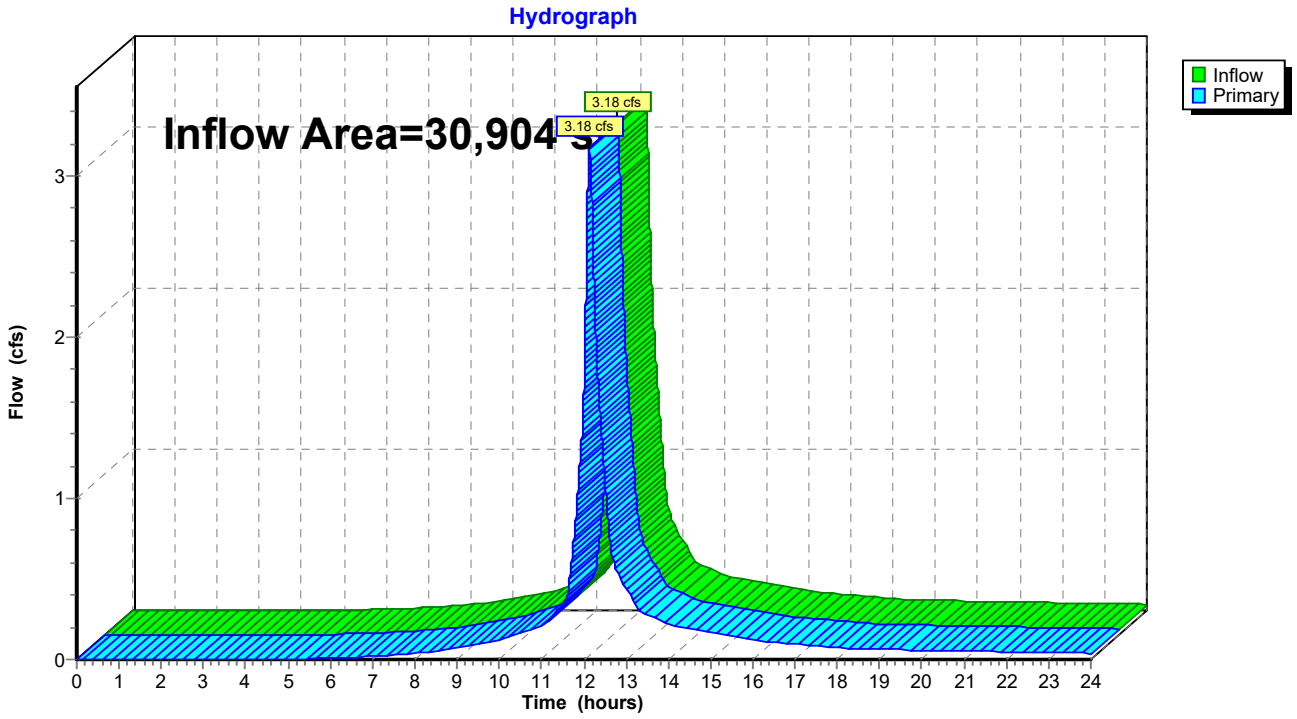
Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
7.26	69	7.78	183	8.30	344
7.27	71	7.79	186	8.31	347
7.28	73	7.80	189	8.32	351
7.29	75	7.81	191	8.33	355
7.30	77	7.82	194	8.34	358
7.31	78	7.83	197	8.35	362
7.32	80	7.84	199	8.36	366
7.33	82	7.85	202	8.37	369
7.34	84	7.86	205	8.38	373
7.35	86	7.87	208	8.39	377
7.36	88	7.88	210	8.40	381
7.37	90	7.89	213	8.41	384
7.38	92	7.90	216	8.42	388
7.39	94	7.91	219	8.43	392
7.40	96	7.92	222	8.44	396
7.41	98	7.93	225	8.45	400
7.42	100	7.94	227	8.46	404
7.43	102	7.95	230	8.47	408
7.44	104	7.96	233	8.48	412
7.45	106	7.97	236	8.49	416
7.46	108	7.98	239	8.50	**420**
7.47	110	7.99	242		
7.48	112	8.00	245		
7.49	114	8.01	248		
7.50	117	8.02	251		
7.51	119	8.03	254		
7.52	121	8.04	257		
7.53	123	8.05	260		
7.54	125	8.06	263		
7.55	128	8.07	266		
7.56	130	8.08	270		
7.57	132	8.09	273		
7.58	134	8.10	276		
7.59	137	8.11	279		
7.60	139	8.12	282		
7.61	141	8.13	286		
7.62	144	8.14	289		
7.63	146	8.15	292		
7.64	148	8.16	295		
7.65	151	8.17	299		
7.66	153	8.18	302		
7.67	156	8.19	305		
7.68	158	8.20	309		
7.69	161	8.21	312		
7.70	163	8.22	316		
7.71	166	8.23	319		
7.72	168	8.24	322		
7.73	171	8.25	326		
7.74	173	8.26	329		
7.75	176	8.27	333		
7.76	178	8.28	337		
7.77	181	8.29	340		

Summary for Link 4L: Pr. Site

Inflow Area = 30,904 sf, 31.10% Impervious, Inflow Depth > 4.77" for 25-Year event
Inflow = 3.18 cfs @ 12.13 hrs, Volume= 12,272 cf
Primary = 3.18 cfs @ 12.13 hrs, Volume= 12,272 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 6L

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.001 hrs

Link 4L: Pr. Site



Time span=0.00-24.00 hrs, dt=0.001 hrs, 24001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Ex. Site Runoff Area=30,904 sf 31.06% Impervious Runoff Depth>5.58"
Tc=10.0 min CN=85.6 Runoff=3.94 cfs 14,371 cf

Subcatchment4S: Pr. Raingarden Basin Runoff Area=2,704 sf 70.38% Impervious Runoff Depth>6.40"
Tc=10.0 min CN=92.7 Runoff=0.38 cfs 1,443 cf

Subcatchment5S: Pr. Bypass Basin Runoff Area=28,200 sf 27.34% Impervious Runoff Depth>5.50"
Tc=10.0 min CN=84.9 Runoff=3.55 cfs 12,925 cf

Pond 2P: Pr. Raingarden Peak Elev=8.01' Storage=247 cf Inflow=0.38 cfs 1,443 cf
Outflow=0.16 cfs 1,439 cf

Link 4L: Pr. Site Inflow=3.68 cfs 14,363 cf
Primary=3.68 cfs 14,363 cf

Total Runoff Area = 61,808 sf Runoff Volume = 28,739 cf Average Runoff Depth = 5.58"
68.92% Pervious = 42,597 sf 31.08% Impervious = 19,211 sf

Time span=0.00-24.00 hrs, dt=0.001 hrs, 24001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Ex. Site Runoff Area=30,904 sf 31.06% Impervious Runoff Depth>6.47"
Tc=10.0 min CN=85.6 Runoff=4.53 cfs 16,655 cf

Subcatchment4S: Pr. Raingarden Basin Runoff Area=2,704 sf 70.38% Impervious Runoff Depth>7.31"
Tc=10.0 min CN=92.7 Runoff=0.43 cfs 1,648 cf

Subcatchment5S: Pr. Bypass Basin Runoff Area=28,200 sf 27.34% Impervious Runoff Depth>6.38"
Tc=10.0 min CN=84.9 Runoff=4.10 cfs 15,002 cf

Pond 2P: Pr. Raingarden Peak Elev=8.04' Storage=258 cf Inflow=0.43 cfs 1,648 cf
Outflow=0.27 cfs 1,644 cf

Link 4L: Pr. Site Inflow=4.23 cfs 16,646 cf
Primary=4.23 cfs 16,646 cf

Total Runoff Area = 61,808 sf Runoff Volume = 33,306 cf Average Runoff Depth = 6.47"
68.92% Pervious = 42,597 sf 31.08% Impervious = 19,211 sf

Appendix 4

Rainfall Data

NOAA Atlas 14, Volume 10, Version 3
Location name: Rye, New York, USA*
Latitude: 40.9459°, Longitude: -73.7102°
Elevation: 21 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** (0.278-0.477)	**0.428** (0.325-0.560)	**0.532** (0.403-0.696)	**0.618** (0.466-0.812)	**0.736** (0.539-0.998)	**0.826** (0.593-1.14)	**0.918** (0.642-1.29)	**1.02** (0.681-1.46)	**1.15** (0.747-1.70)	**1.26** (0.799-1.89)
10-min	**0.517** (0.393-0.676)	**0.607** (0.461-0.794)	**0.754** (0.571-0.988)	**0.876** (0.659-1.15)	**1.04** (0.763-1.41)	**1.17** (0.841-1.61)	**1.30** (0.909-1.83)	**1.44** (0.965-2.07)	**1.64** (1.06-2.41)	**1.79** (1.13-2.68)
15-min	**0.608** (0.463-0.795)	**0.714** (0.542-0.934)	**0.887** (0.671-1.16)	**1.03** (0.776-1.36)	**1.23** (0.898-1.66)	**1.38** (0.989-1.89)	**1.53** (1.07-2.16)	**1.70** (1.14-2.44)	**1.92** (1.24-2.83)	**2.10** (1.33-3.15)
30-min	**0.844** (0.642-1.10)	**0.992** (0.753-1.30)	**1.23** (0.934-1.62)	**1.43** (1.08-1.88)	**1.71** (1.25-2.32)	**1.92** (1.38-2.64)	**2.13** (1.49-3.00)	**2.36** (1.58-3.39)	**2.67** (1.73-3.94)	**2.92** (1.85-4.36)
60-min	**1.08** (0.821-1.41)	**1.27** (0.965-1.66)	**1.58** (1.20-2.07)	**1.84** (1.38-2.42)	**2.19** (1.60-2.97)	**2.46** (1.77-3.38)	**2.74** (1.91-3.85)	**3.03** (2.03-4.35)	**3.42** (2.21-5.04)	**3.73** (2.36-5.58)
2-hr	**1.46** (1.11-1.89)	**1.70** (1.30-2.22)	**2.11** (1.60-2.75)	**2.44** (1.85-3.20)	**2.91** (2.13-3.91)	**3.26** (2.35-4.45)	**3.62** (2.53-5.06)	**3.99** (2.68-5.70)	**4.50** (2.92-6.59)	**4.90** (3.11-7.28)
3-hr	**1.69** (1.30-2.20)	**1.98** (1.52-2.57)	**2.46** (1.87-3.19)	**2.85** (2.16-3.72)	**3.39** (2.49-4.55)	**3.80** (2.74-5.17)	**4.22** (2.96-5.88)	**4.66** (3.14-6.63)	**5.27** (3.43-7.69)	**5.75** (3.66-8.51)
6-hr	**2.10** (1.61-2.70)	**2.47** (1.90-3.20)	**3.09** (2.37-4.00)	**3.61** (2.75-4.68)	**4.31** (3.19-5.77)	**4.85** (3.52-6.58)	**5.40** (3.82-7.52)	**6.01** (4.06-8.50)	**6.87** (4.48-9.95)	**7.56** (4.82-11.1)
12-hr	**2.47** (1.91-3.17)	**2.96** (2.28-3.80)	**3.76** (2.89-4.84)	**4.43** (3.39-5.72)	**5.34** (3.98-7.14)	**6.03** (4.41-8.18)	**6.76** (4.82-9.42)	**7.59** (5.14-10.7)	**8.81** (5.76-12.7)	**9.83** (6.29-14.3)
24-hr	**2.82** (2.19-3.60)	**3.44** (2.66-4.39)	**4.44** (3.43-5.69)	**5.28** (4.06-6.79)	**6.43** (4.81-8.55)	**7.28** (5.36-9.85)	**8.20** (5.90-11.4)	**9.29** (6.31-13.0)	**10.9** (7.17-15.6)	**12.3** (7.91-17.9)
2-day	**3.21** (2.50-4.08)	**3.95** (3.07-5.02)	**5.15** (4.00-6.56)	**6.15** (4.75-7.86)	**7.52** (5.66-9.97)	**8.54** (6.32-11.5)	**9.64** (6.99-13.4)	**11.0** (7.48-15.3)	**13.0** (8.56-18.5)	**14.8** (9.51-21.3)
3-day	**3.52** (2.75-4.46)	**4.32** (3.37-5.48)	**5.63** (4.38-7.15)	**6.71** (5.20-8.56)	**8.20** (6.19-10.8)	**9.30** (6.90-12.5)	**10.5** (7.62-14.6)	**12.0** (8.15-16.5)	**14.2** (9.32-20.1)	**16.1** (10.4-23.0)
4-day	**3.80** (2.97-4.80)	**4.64** (3.62-5.86)	**6.00** (4.68-7.61)	**7.14** (5.54-9.08)	**8.70** (6.57-11.5)	**9.86** (7.32-13.2)	**11.1** (8.07-15.3)	**12.6** (8.62-17.4)	**14.9** (9.83-21.1)	**16.9** (10.9-24.1)
7-day	**4.52** (3.55-5.69)	**5.42** (4.25-6.83)	**6.88** (5.39-8.70)	**8.10** (6.31-10.3)	**9.78** (7.40-12.8)	**11.0** (8.20-14.7)	**12.4** (8.98-16.9)	**13.9** (9.56-19.1)	**16.3** (10.8-22.9)	**18.2** (11.8-26.0)
10-day	**5.19** (4.09-6.52)	**6.13** (4.82-7.70)	**7.65** (6.00-9.64)	**8.92** (6.96-11.3)	**10.7** (8.09-13.9)	**12.0** (8.91-15.8)	**13.4** (9.69-18.1)	**14.9** (10.3-20.4)	**17.3** (11.4-24.1)	**19.2** (12.4-27.2)
20-day	**7.19** (5.69-8.98)	**8.22** (6.49-10.3)	**9.90** (7.80-12.4)	**11.3** (8.85-14.2)	**13.2** (10.0-17.0)	**14.7** (10.9-19.2)	**16.2** (11.7-21.6)	**17.8** (12.3-24.1)	**19.9** (13.3-27.7)	**21.7** (14.1-30.5)
30-day	**8.86** (7.03-11.0)	**9.96** (7.89-12.4)	**11.8** (9.29-14.7)	**13.3** (10.4-16.6)	**15.3** (11.6-19.6)	**16.9** (12.6-21.9)	**18.5** (13.3-24.4)	**20.1** (13.9-27.2)	**22.2** (14.8-30.7)	**23.8** (15.5-33.3)
45-day	**10.9** (8.71-13.6)	**12.1** (9.65-15.1)	**14.1** (11.2-17.6)	**15.7** (12.4-19.7)	**18.0** (13.7-22.9)	**19.7** (14.7-25.4)	**21.4** (15.4-28.1)	**23.0** (16.0-31.0)	**25.1** (16.8-34.6)	**26.6** (17.4-37.1)
60-day	**12.7** (10.1-15.8)	**14.0** (11.1-17.3)	**16.1** (12.8-20.0)	**17.8** (14.1-22.2)	**20.2** (15.4-25.7)	**22.1** (16.5-28.4)	**23.9** (17.2-31.2)	**25.6** (17.8-34.3)	**27.6** (18.5-37.9)	**29.1** (19.0-40.5)

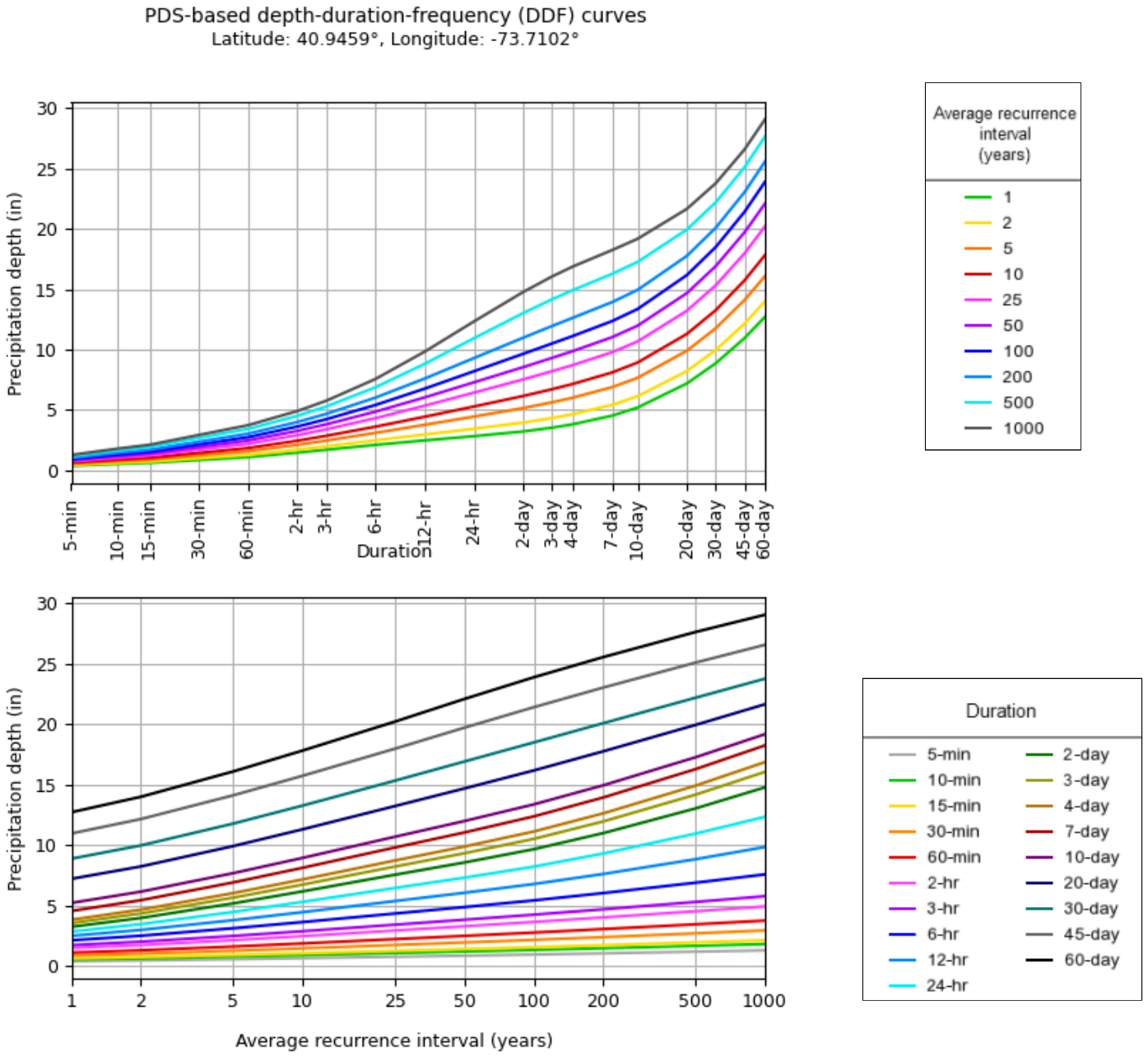
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

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.

Back to Top

PF graphical



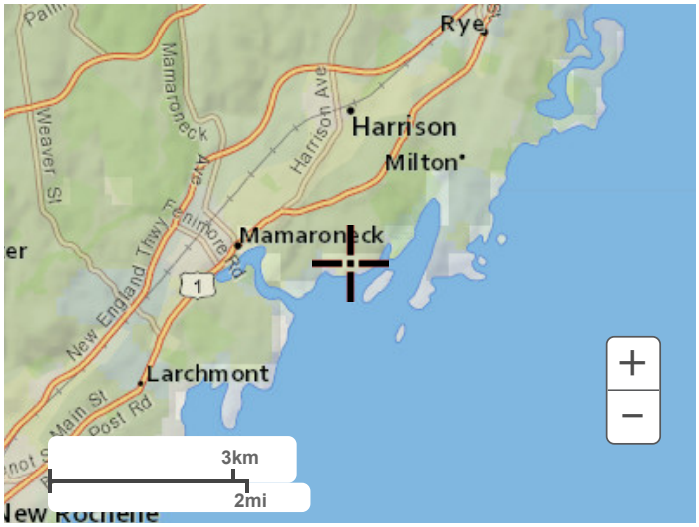
NOAA Atlas 14, Volume 10, Version 3

Created (GMT): Thu Jul 13 18:31:04 2023

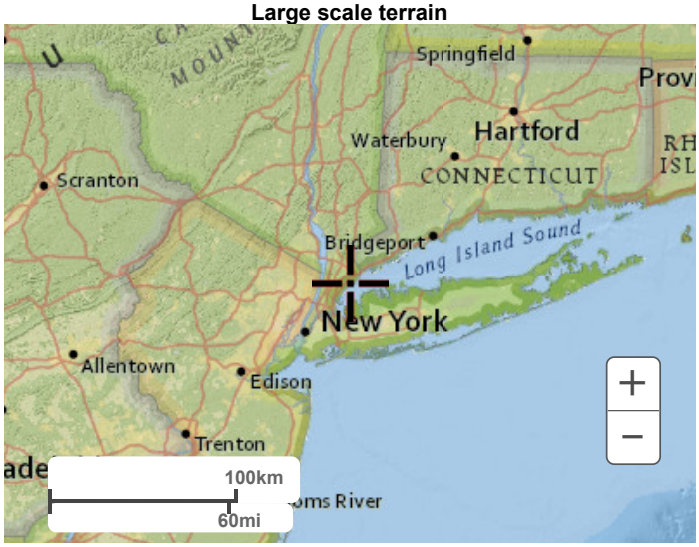
Back to Top

Maps & aerials

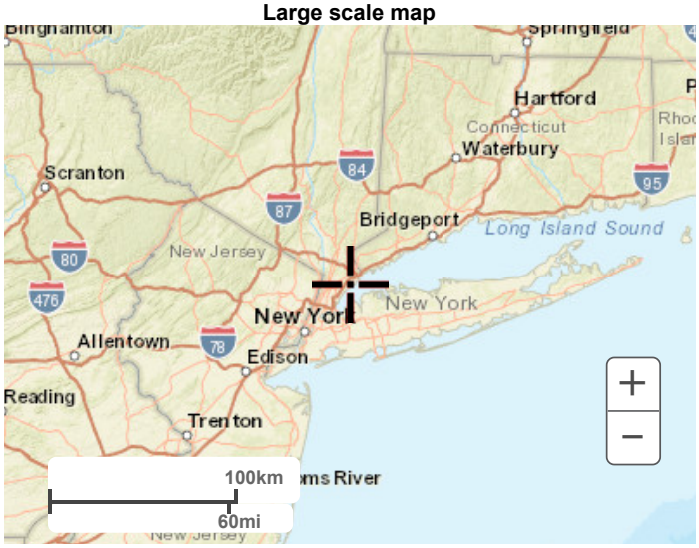
Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

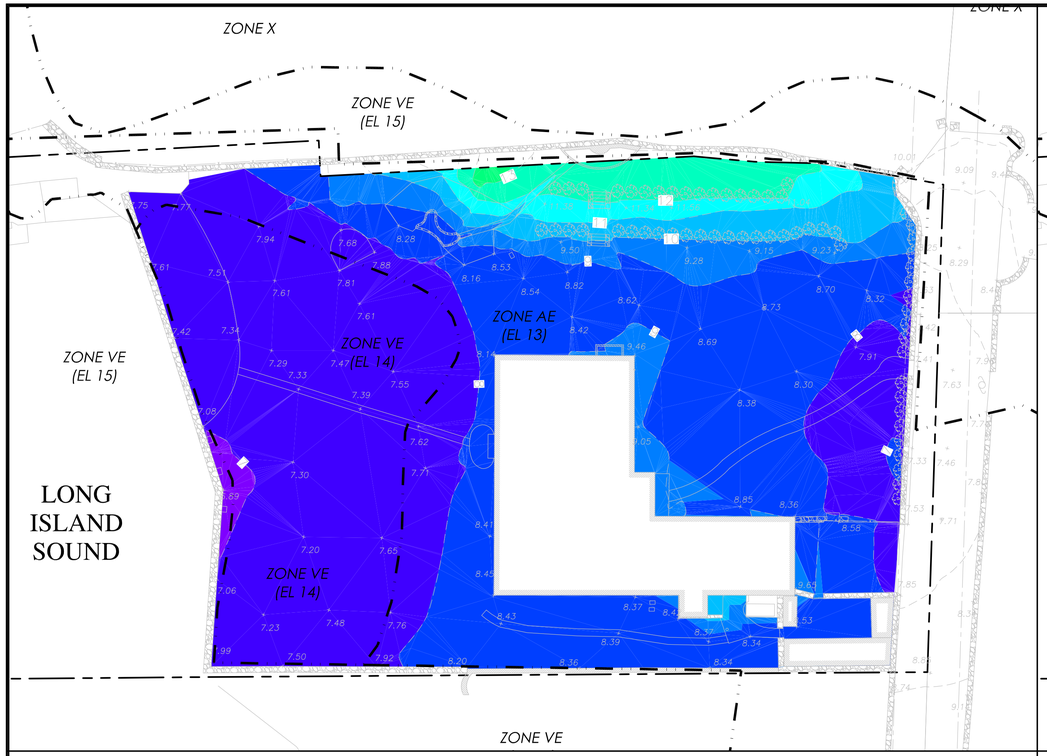
Back to Top

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

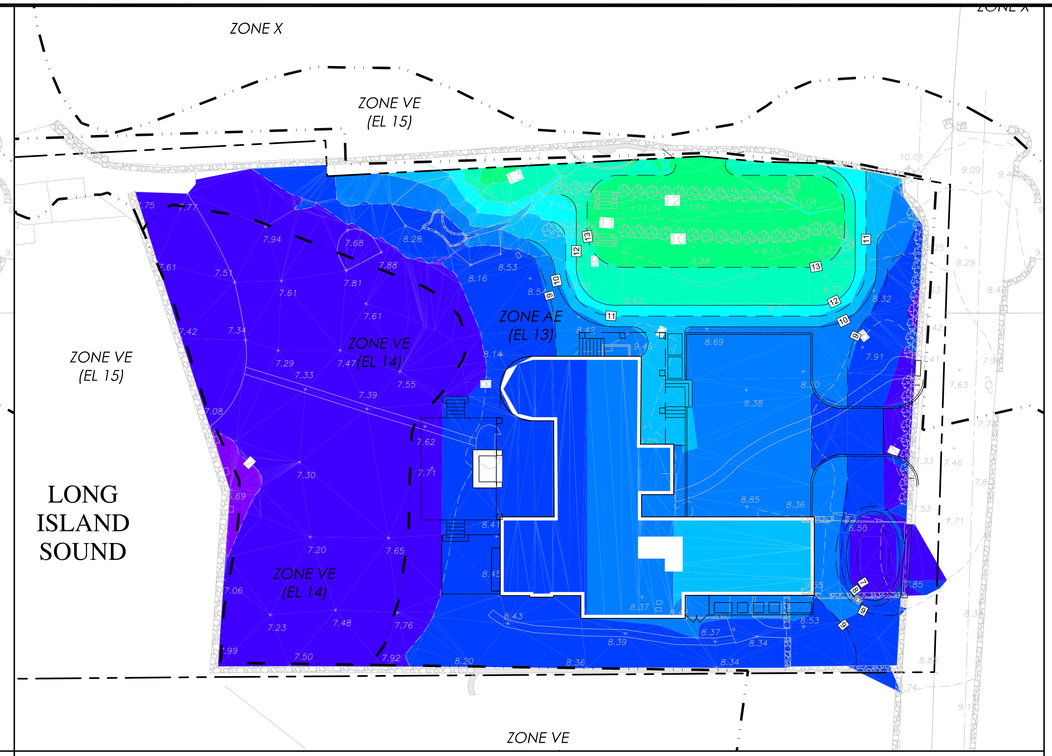
Disclaimer

Appendix 5

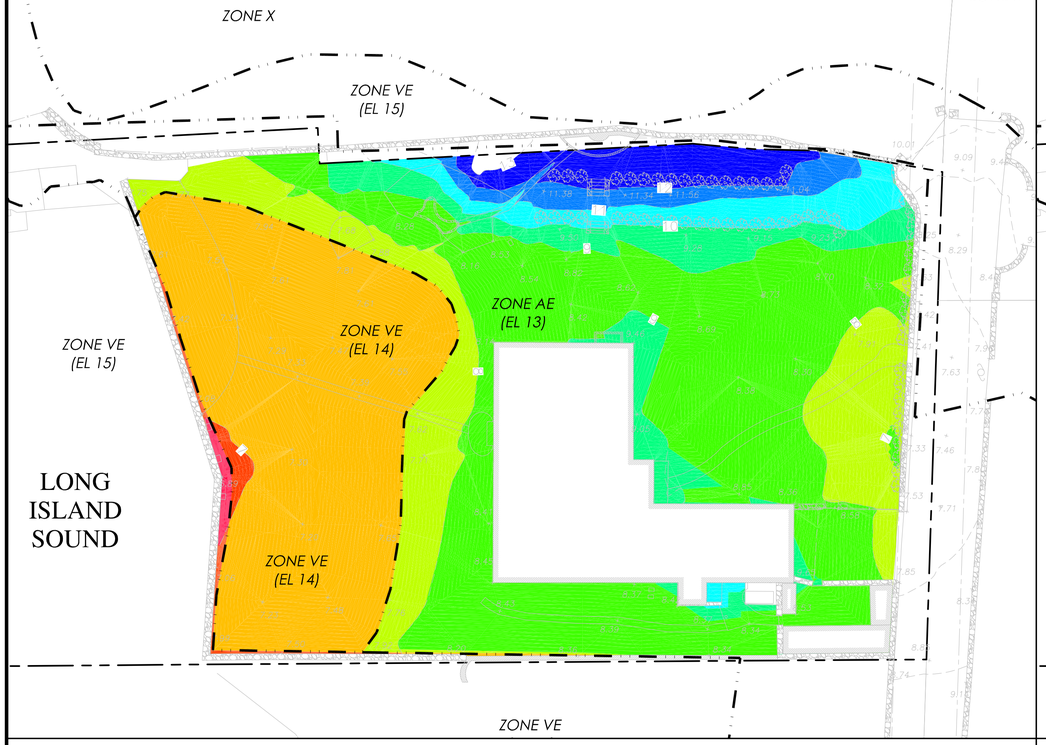
Compensatory Storage Exhibit



EXISTING SITE CONDITIONS (ELEVATION)



PROPOSED SITE CONDITIONS (ELEVATION)



EXISTING SITE CONDITIONS (FLOODING)

PROPOSED SITE CONDITIONS (FLOODING)

ELEVATIONS LEGEND

HATCH	ELEVATION
	AREA UNAVAILABLE TO FLOODING
	13 TO 14
	12 TO 13
	11 TO 12
	10 TO 11
	9 TO 10
	8 TO 9
	7 TO 8
	<7

FLOODING LEGEND

HATCH	FLOOD DEPTH
	NO FLOODING
	0' TO 1'
	1' TO 2'
	2' TO 3'
	3' TO 4'
	4' TO 5'
	5' TO 6'
	6' TO 7'
	7' TO 8'
	> 8'

EXISTING SITE FLOOD STORAGE: 4,244 CU.YD.
PROPOSED SITE FLOOD STORAGE: 4,262 CU.YD.
CHANGE IN FLOOD STORAGE: +18 CU.YD. (GAIN)

REDNISS & MEAD
LAND SURVEYING
CIVIL ENGINEERING
PLANNING & ZONING CONSULTING
PERMITTING
22 First Street | Stamford, CT 06905
Tel: 203.327.0500 | Fax: 203.357.1118
www.rednissmead.com

COMPENSATORY STORAGE EXHIBIT
DEPICTING
2 SHORE ROAD
MAMARONECK, NY
PREPARED FOR
SCOTT & ORLY MILLER

SCALE: 1"=20' (0 20 40)

SHEET No:

FLOOD

Comm. No.: 10393

8/8/2023 8:53 AM N:\Jobfiles\21000\10300\10393\DWG\10393 Master.DWG