

STORMWATER POLLUTION PREVENTION PLAN/
STORMWATER MANAGEMENT REPORT
for 94 Somerstown Road Subdivision, Town of Ossining
Prepared by: Alan Pilch, ALP Engineering & Landscape Architecture, PLLC
Dated: August 3, 2025 (revised)

Introduction – This report is submitted on behalf of the owners of the property, Jennifer and Pascal Smith Couti to subdivide the 94 Somerstown Road property into three (3) residential single family house lots. The subject property is 281,282.6 square feet in size (6.457 acres) in size and is located on the east side of Somerstown Road. The property is bounded by existing single family residentially-zoned lands to the north, east and south. Somerstown Road and other residential properties are to the west. The boundary line with the Town of New Castle is coincident with the northern property line.

The proposed houses would be accessed via a common driveway which is proposed to have a pavement width of 18 feet with a 1-foot wide gravel shoulder on both sides, for a total driveway width of 20 feet. A 30-foot wide easement is proposed for the common driveway which would extend through Lots 3 and 1 to provide access to all of the lots. The proposed driveway is 684 feet in length from its intersection with the edge of pavement of Somerstown Road to the end of the common driveway on Lot 1.

Stormwater Pollution Prevention Plan Narrative Report - All SWPPPs shall provide the following background information and erosion and sediment controls:

(a) Background information about the scope of the project, including location, type and size of the project.

This project involves the proposed subdivision of the 94 Somerstown Road property into three (3) residential single family house lots. The subject property is 281,282.6 square feet in size (6.457 acres) in size and is located on the east side of Somerstown Road.

It is proposed to subdivide the property into three lots, as follows:

Lot 1 is the northeastern-most lot and is proposed to be 87,758 s.f. (1.9917 acres in size) in size.

Lot 2, in the southeastern portion of the property is to be 128,760.9 s.f. (2.9229 acres) in size.

Lot 3 in the northern portion of the property is proposed to be 65,763.5 square feet (1.5097 acres) in size.

(b) A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); wetlands and drainage patterns that could be affected by the construction activity; existing and final slopes; locations of off-site material, waste, borrow or equipment storage areas; and location(s) of the stormwater discharges(s). The site map shall be at a scale no

smaller than one inch equals 50 feet (e.g., one inch equals 500 feet is smaller than one inch equals 100 feet).

The following drawings and supporting figures have been prepared by ALP Engineering & Landscape Architecture, PLLC:

<u>Dwg. No.</u>	<u>Drawing Title</u>	<u>Rev. Date</u>
C-101	Layout / Subdivision Plan	08/02/2025
C-102	Grading and Utilities Plan	08/02/2025
C-103	Erosion and Sediment Control Plan	08/02/2025
C-104	Tree Preservation/Tree Removal Plan	06/30/2025
C-105	Tree Preservation/Tree Removal List	06/30/2025
C-106	Landscape / Tree Planting Plan	08/02/2025
C-107	Steep Slopes Plan	06/30/2025
C-111	Driveway Profile	08/02/2025
C-112	Construction Details	08/02/2025
C-113	Construction Details	08/02/2025
C-114	Construction Details	08/02/2025

Also Included in the Plan Set are the following Town drawings:

Sheet 1 of 3	Landscape Standard Notes
Sheet 2 of 3	Landscape Standard Details
Sheet 3 of 3	Landscape Standard Details

(c) A description of the soil(s) present at the site.

According to the USDA NRCS soils map, two soils types, CrC, Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky, and CsD, Chatfield-Charlton complex, 15 to 35 percent slopes, very rocky are found on the property. The latter soils type is limited to the steep slope areas of the property. Given that all of the proposed work is proposed only in the Charlton-Chatfield complex soils, it is described below.

Charlton-Chatfield Complex soils (CrC) are very dark grayish brown (10YR 3/2) loam over dark brown (10YR 3/3) loam. They are very deep to moderately deep, well drained to somewhat excessively drained soils located on the sides and tops of glaciated hills. This soil is formed in glacial till underlain by highly fractured, folded tilted granite, schist, and gneiss bedrock. Rock outcrops make up approximately 20 percent of this soil.

(d) A construction phasing plan describing the intended sequence of construction activities, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance. Consistent with the New York Standards and Specifications for Erosion and Sediment Control (Erosion Control Manual), not

more than five acres shall be disturbed at any one time unless pursuant to an approved SWPPP. The Town may opt to reduce the amount of land that may be exposed at any one time.

The work is to be completed in a single phase. The total area of land disturbance is calculated to be 125,600 square feet (2.88 acres) of land for the construction of the subdivision and the installation of the stormwater management practices. In accordance with the New York *Standards and Specifications for Erosion and Sediment Control Manual*, not more than five acres shall be disturbed at any one time.

(e) A description of the pollution prevention measures that will be used to control construction materials, chemicals and debris from becoming a pollutant source in stormwater runoff.

A description of construction and waste materials expected to be stored on-site may be referenced on the Erosion Control Plan.

Construction materials expected to be stored temporarily on site for the construction of the new houses include, but are not limited to, soil stockpiles from grading operations, aggregate and crushed stone for subbase for the house footing and foundations, and for the new common driveway to the houses. In addition, construction materials also include wood for the house (forms for the footings and foundations, as well as walls, floors and beams), wood roof trusses, roofing materials, and stone for the walkway. All of these items are not sources of pollution in the short term.

(f) A description of construction and waste materials expected to be stored on site, with updates as appropriate, and a description of controls to reduce pollutants from these materials, including storage practices to minimize exposure of the materials, to stormwater, and spill prevention and response.

The pollution prevention measures to be employed to control litter, construction chemicals and construction debris may be referenced on the Erosion Control Plan. The measures include: silt fence, construction fence/tree protection, and inlet protection.

(g) Temporary and permanent structural and vegetative measures to be used for soil stabilization, runoff control and sediment control for each stage of the project, from initial land clearing and grubbing to project closeout.

Temporary measures to be employed during construction include: (1) silt fences at the limit of disturbance; (2) tree protection measures, (3) construction fencing at the limit of disturbance.

Permanent measures to be employed include stabilization of the ground surface with permanent vegetation, including trees, shrubs and ground covers following the establishment of final grades and the installation of the chambers and storm drainage system.

(h) A site map/construction drawing(s) specifying the location(s), size(s) and length(s) of each erosion and sediment control practice.

Drawing C-103 depicts the proposed location, size and lengths (which can be scaled off the drawing) of each erosion and sediment control practice. The installation of the erosion control measures to be installed will be reviewed prior to the start of construction activity in accordance with Town protocols.

(i) Dimensions, material specifications and installation details for all erosion and sediment control practices, including the siting and sizing of any temporary sediment basins.

The dimensions, material specifications and installation details for all erosion and sediment control practices may be found on the plan (see drawing C-103 and C-111).

(j) Temporary practices that will be converted to permanent control measures.

There are no temporary practices which will be converted to permanent control measures.

(k) An implementation schedule for staging temporary erosion and sediment control practices, including the timing of initial placement and duration that each practice will remain in place until the site is stabilized.

A detailed construction narrative describes the implementation schedule for the temporary erosion and sediment control practices is contained in this SWPPP report. The narrative will be included in the plan set.

(l) A maintenance schedule to ensure continuous and effective operation of the erosion and sediment control practice.

The maintenance schedule for the erosion and sediment control practices may be referenced on the drawing C-103.

(m) The name(s) of the receiving water(s) and NYSDEC classification(s), if applicable.

The western portion of the property lies within the Oliver Pond watershed. The easternmost portion of the property is in the Pocantico River Basin. Ultimately, runoff from the property is conveyed to the Saw Mill River and Hudson River.

(n) A delineation of SWPPP implementation responsibilities for each part of the site.

During construction, the property owners, Pascal and Jennifer Smith Couti, are the party responsible for the implementation of the SWPPP. Once the lots are sold, it will be the responsibility of either a Homeowners' Association, or it will be done by a binding legal agreement between the three lot owners.

(o) A description of structural practices designed to divert flows from exposed soils, store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site to the degree attainable.

It is not proposed to install any structural practices to divert the flows from exposed soils.

(p) Any existing data that describes the stormwater runoff at the site.

The description and quantification of the stormwater runoff from the site is found in this SWPPP report. There are no known other sources that describe the runoff from this site, but the prior attempt to utilize this site for a solar farm may have also provided information regarding stormwater runoff from the property.

SWPPP requirements for Conditions A, B and C:

(a) All information in § 168-8B(1) of this chapter.

See above.

(b) A description of each post-construction stormwater management practice.

Post-construction stormwater management practices are to consist of the following:

- (i) a proposed rain garden for the runoff from proposed house, pool and garage on Lot 1;
- (ii) a proposed rain garden for the runoff from proposed house, pool and garage on Lot 2;
- (iii) a proposed rain garden for the runoff from proposed house, pool and garage on Lot 3;
- (iv) an extended detention basin for the lower portion of the road and for peak rate attenuation from the overall subdivision.
- (v) subsurface chambers to manage the runoff from the portion of the common driveway closest to Somerstown Road.

(c) A site map/construction drawing(s) showing the specific location(s) and size(s) of each postconstruction stormwater management practice.

The location and sizes of each of the post-construction stormwater management practices may be found on drawing C-102.

(d) A hydrologic and hydraulic analysis for all structural components of the stormwater management system for the applicable design storms.

Drawing C-102 shows the proposed sizes, invert elevations and lengths of each storm pipe segment. The storm drainage system has been designed to convey the runoff from the 25-year storm without surcharge.

(e) A comparison of post-development stormwater runoff conditions with predevelopment conditions.

Tables 1 and 2 below summarize the peak rates of runoff to the two design lines in the existing and future conditions. Peak rates of runoff have been calculated using the 13-step methodology in Section 4.9 of the 2024 New York State *Stormwater Management Design Manual*. The calculations show that the peak rate of runoff discharged to design lines will be equal to less than the current peak rates of runoff.

Table 1. Summary of Peak Rates of Runoff to Design Line 1
(all flows are in cubic feet per second)

Storm Event	1-year	2-year	10-year	100-year
Existing Condition Peak Rate to Design Line	0.12	0.49	2.59	10.14
Future Condition Peak Rate to Design Line	0.07	0.30	1.79	9.42

Note: All flows are in cubic feet per second.

Table 1. Summary of Peak Rates of Runoff to Design Line 2
(all flows are in cubic feet per second)

Storm Event	1-year	2-year	10-year	100-year
Existing Condition Peak Rate to Design Line	0.03	0.11	0.82	3.15
Future Condition Peak Rate to Design Line	0.02	0.08	0.58	2.24

Note: All flows are in cubic feet per second.

(f) Dimensions, material specifications and installation details for each postconstruction stormwater management practice.

Rain garden 1 will be 45' long x 25' wide. Rain garden 2 is also proposed to be 45' long x 25' wide. Rain garden 3 is proposed to be 35' long x 12' wide. The detention basin is about 62' long x 52' wide. The subsurface chambers are to be 59' in length x 5'-11" in width.

(g) A maintenance schedule to ensure continuous and effective operation of each postconstruction stormwater management practice.

The maintenance schedule for the post-construction stormwater management practice is detailed on drawing C-111.

(h) Maintenance easements to ensure access to all stormwater management practices at the site for the purpose of inspection and repair. Easements shall be recorded on the plan and shall remain in effect with transfer of title to the property.

Easements to provide for access to the stormwater management practices are depicted on drawing C-101.

(i) An inspection and maintenance agreement binding on all subsequent landowners served by the on-site stormwater management measures in accordance with § 168-10 of this chapter.

The homeowners' association or legally binding agreement between the three future homeowners will maintain the common practices in accordance with the operation and maintenance plan.

FIGURES

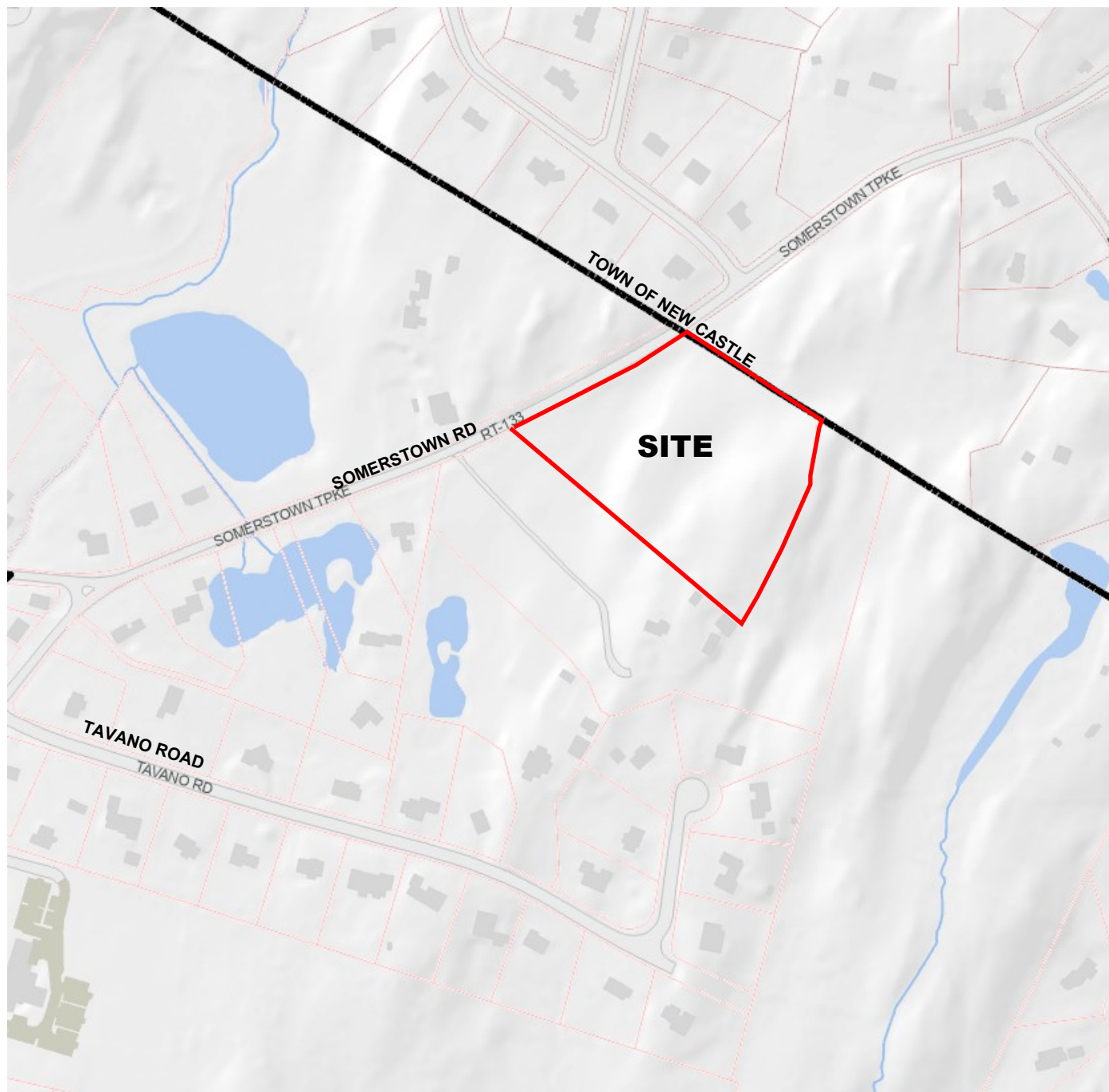
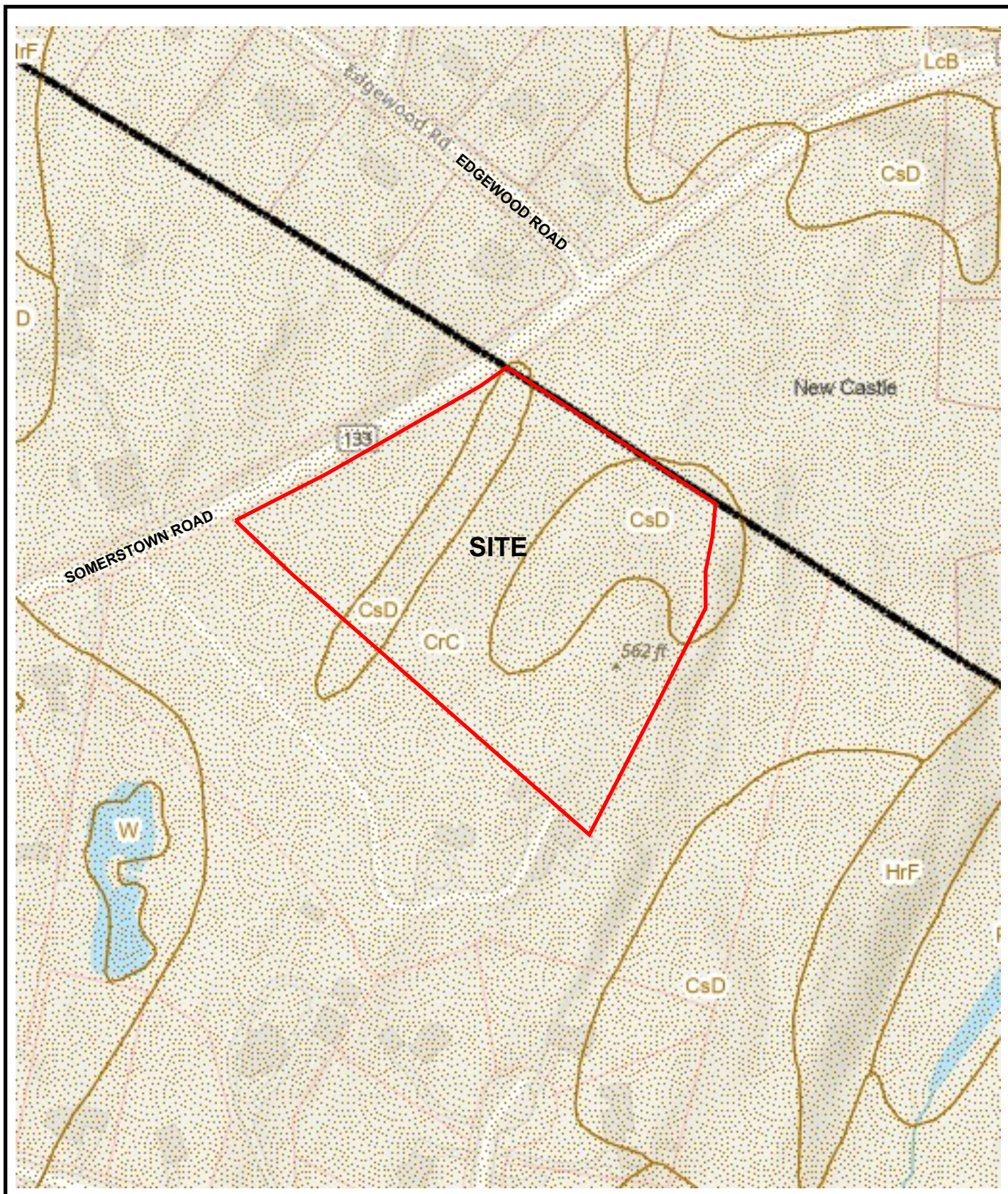


Figure 1
SITE LOCATION MAP
Scale: Not to Scale



LEGEND:

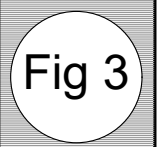
CrC—Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky

CsD—Chatfield-Charlton complex, 15 to 35 percent slopes, very rocky

Figure 2

SOILS MAP

Scale: Not to Scale



SUPPORTING DOCUMENTATION

Table A-2
94 Somerstown Road Subdivision
RAIN GARDEN 1 SUPPORTING CALCULATIONS

RAIN GARDEN DESIGN

Elevation <i>feet</i>	Area <i>s.f.</i>	Incremental Volume <i>c.f.</i>	Volume Sum <i>cu. ft.</i>	Volume Sum <i>acre-feet</i>
549.00	800	0	0	0
549.50	910	428	428	0.0098
550.00	1,050	490	918	0.0211
550.50	1,500	638	1,555	0.0357

Parameters for Rain Garden Design as per 2024 NYS Stormwater Management Design Manual (SMDM)

Equation as per 2024 NYS SMDM:

$$A_f = \frac{(WQ_v) \times (d_f)}{(k) \times (h_f + d_f) \times (t_r)}$$

where,

A_f = surface area of filter bed (in square feet)

WQ_v = Water Quality Volume (in cubic feet)

d_f = filter bed depth (feet)

k = permeability flow rate of filter media (1 foot per day)

h_r = average height of ponding (feet)

t_r = design filter bed drain time (2 days)

		<u>Remarks</u>
WQ_v =	456.0625 cu feet	as per calculation
d_f =	1.5 feet	design
k =	1 foot per day	as per SMDM
h_r =	0.5 feet	calculated
t_r =	2 days	as per SMDM

Surface Area of Filter calculation:

$$A_f = 171.0 \text{ square feet} \quad \text{as per equation above}$$

$$\text{Surface area} = 910.0 \text{ square feet} \quad \text{rain garden design surface area}$$

Since the surface area of the rain garden exceeds the minimum, the design is acceptable.

Table A-3
94 Somerstown Road Subdivision
RAIN GARDEN 2 SUPPORTING CALCULATIONS

RAIN GARDEN DESIGN

Elevation <i>feet</i>	Area <i>s.f.</i>	Incremental Volume <i>c.f.</i>	Volume Sum <i>cu. ft.</i>	Volume Sum <i>acre-feet</i>
556.00	0	0	0	0
557.00	722	361	361	0.0083
557.75	885	603	964	0.0221
558.00	1,001	236	1,199	0.0275
558.50	1,528	632	1,832	0.0420

Parameters for Rain Garden Design as per 2024 NYS Stormwater Management Design Manual (SMDM)

Equation as per 2024 NYS SMDM:

$$Af = \frac{(WQv) \times (df)}{(k) \times (hf+df) \times (tr)}$$

where,

- Af = surface area of filter bed (in square feet)
- WQv = Water Quality Volume (in cubic feet)
- df = filter bed depth (feet)
- k = permeability flow rate of filter media (1 foot per day)
- hr = average height of ponding (feet)
- tr = design filter bed drain time (2 days)

		<i>Remarks</i>
WQv =	327.9875 cu feet	<i>as per calculation</i>
df =	1.5 feet	<i>design</i>
k =	1 foot per day	<i>as per SMDM</i>
hr =	0.875 feet	<i>calculated</i>
tr =	2 days	<i>as per SMDM</i>

Surface Area of Filter calculation:

$$Af = 103.6 \text{ square feet} \quad \text{as per equation above}$$

$$\text{Surface area} = 722.0 \text{ square feet} \quad \text{rain garden design surface area}$$

Since the surface area of the rain garden exceeds the minimum, the design is acceptable.

Table A-4
94 Somerstown Road Subdivision
RAIN GARDEN 3 SUPPORTING CALCULATIONS

RAIN GARDEN DESIGN

Elevation <i>feet</i>	Area <i>s.f.</i>	Incremental Volume <i>c.f.</i>	Volume Sum <i>cu. ft.</i>	Volume Sum <i>acre-feet</i>
518.25	0	0	0	0
518.50	197	25	25	0.0006
519.50	306	252	276	0.0063
520.00	386	173	449	0.0103
520.50	475	215	664	0.0153

Parameters for Rain Garden Design as per 2024 NYS Stormwater Management Design Manual (SMDM)

Equation as per 2024 NYS SMDM:

$$Af = \frac{(WQv) \times (df)}{(k) \times (hf+df) \times (tr)}$$

where,

- Af = surface area of filter bed (in square feet)
- WQv = Water Quality Volume (in cubic feet)
- df = filter bed depth (feet)
- k = permeability flow rate of filter media (1 foot per day)
- hr = average height of ponding (feet)
- tr = design filter bed drain time (2 days)

		<i>Remarks</i>
WQv =	446.1 cu feet	<i>as per calculation</i>
df =	1.5 feet	<i>design</i>
k =	1 foot per day	<i>as per SMDM</i>
hr =	0.625 feet	<i>calculated</i>
tr =	2 days	<i>as per SMDM</i>

Surface Area of Filter calculation:

$$Af = 157.5 \text{ square feet} \quad \text{as per equation above}$$

$$\text{Surface area} = 197.0 \text{ square feet} \quad \text{rain garden design surface area}$$

Since the surface area of the rain garden exceeds the minimum, the design is acceptable.

Table A-1
94 Somerstown Road Subdivision
RAIN GARDEN SUPPORTING CALCULATIONS

FDA-1 TO RAIN GARDEN 1

Rainfall Depth =	1.5 inches
Drainage Area =	6,154 s.f.
Impervious Area =	3,712 s.f.
% Impervious =	60.3 %
Rv =	0.59
WQv =	0.010 ac-feet
WQv =	456.1 cu feet

FDA-2 TO RAIN GARDEN 2

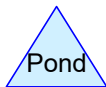
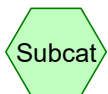
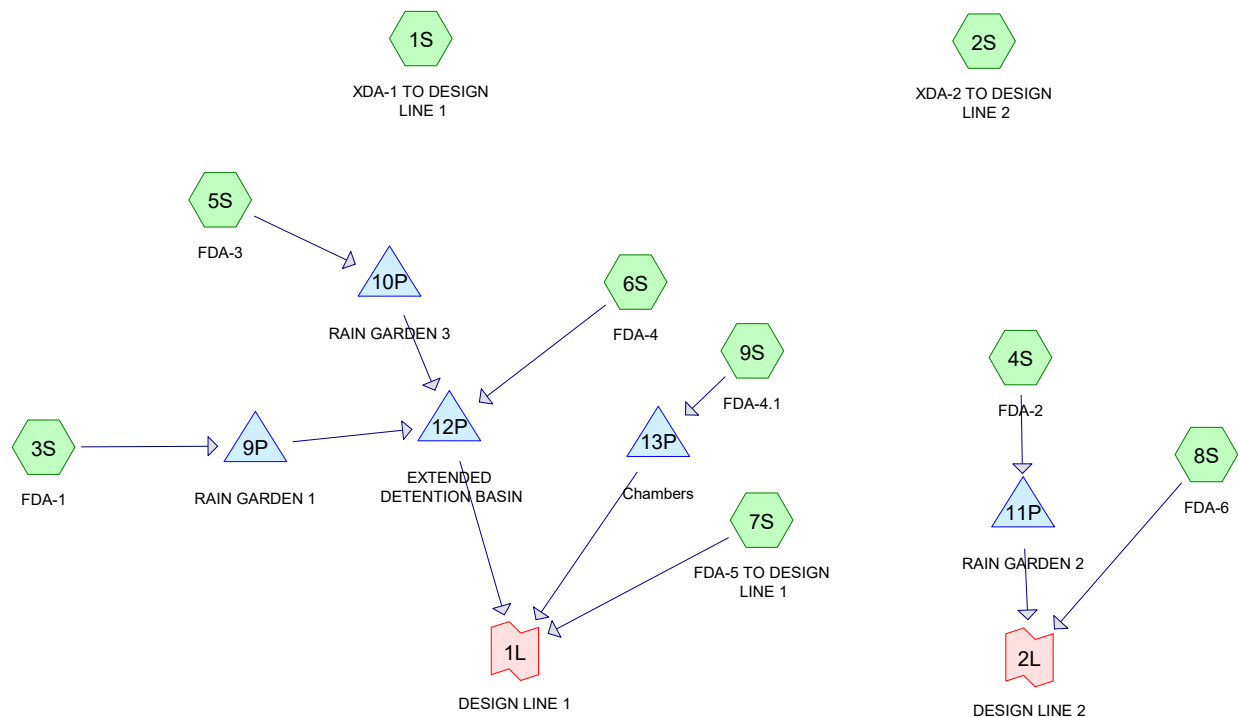
Rainfall Depth =	1.5 inches
Drainage Area =	9,134 s.f.
Impervious Area =	2,408 s.f.
% Impervious =	26.4 %
Rv =	0.29
WQv =	0.008 ac-feet
WQv =	328.0 cu feet

FDA-3 TO RAIN GARDEN 3

Rainfall Depth =	1.5 inches
Drainage Area =	4,292 s.f.
Impervious Area =	3,727 s.f.
% Impervious =	86.8 %
Rv =	0.83
WQv =	0.010 ac-feet
WQv =	446.1 cu feet

Appendix A

***Stormwater Management Report
Hydrographs and Routings***



Routing Diagram for 94 Somerstown Rd SW Plan_08-01-2025X
 Prepared by ALP Engineering & Land Arch
 HydroCAD® 10.20-7a s/n 03392 © 2025 HydroCAD Software Solutions LLC

94 Somerstown Rd SW Plan_08-01-2025X

Prepared by ALP Engineering & Land Arch

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Project Notes

Defined 9 rainfall events from NY-94 Somerstown Rd IDF

Copied 9 events from NY-94 Somerstown Rd 24-hr S1 storm

94 Somerstown Rd SW Plan_08-01-2025X

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	NY-94 Somerstown Rd 24-hr S1	1-yr	Default	24.00	1	2.78	2
2	2-yr	NY-94 Somerstown Rd 24-hr S1	2-yr	Default	24.00	1	3.41	2
3	10-yr	NY-94 Somerstown Rd 24-hr S1	10-yr	Default	24.00	1	5.14	2
4	100-yr	NY-94 Somerstown Rd 24-hr S1	100-yr	Default	24.00	1	9.29	2

94 Somerstown Rd SW Plan_08-01-2025X

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.237	61	>75% Grass cover, Good, HSG B (3S, 4S, 5S, 6S, 7S)
0.319	98	Impervious Surfaces & Roofs, HSG B (6S)
0.171	98	Impervious surfaces, HSG B (3S, 5S)
0.076	58	Meadow, non-grazed, HSG B (6S)
0.043	98	Paved parking, HSG B (9S)
0.055	98	Roofs, HSG B (4S)
11.011	55	Woods, Good, HSG B (1S, 2S, 6S, 7S, 8S)
12.913	58	TOTAL AREA

94 Somerstown Rd SW Plan_08-01-2025X

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	1.237	0.000	0.000	0.000	1.237	>75% Grass cover, Good	3S, 4S, 5S, 6S, 7S
0.000	0.319	0.000	0.000	0.000	0.319	Impervious Surfaces & Roofs	6S
0.000	0.171	0.000	0.000	0.000	0.171	Impervious surfaces	3S, 5S
0.000	0.076	0.000	0.000	0.000	0.076	Meadow, non-grazed	6S
0.000	0.043	0.000	0.000	0.000	0.043	Paved parking	9S
0.000	0.055	0.000	0.000	0.000	0.055	Roofs	4S
0.000	11.011	0.000	0.000	0.000	11.011	Woods, Good	1S, 2S, 6S, 7S, 8S
0.000	12.913	0.000	0.000	0.000	12.913	TOTAL AREA	

94 Somerstown Rd SW Plan_08-01-2025 NY-94 Somerstown Rd 24-hr S1 1-yr Rainfall=2.78"

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Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: XDA-1 TO DESIGN LINE Runoff Area=244,614 sf 0.00% Impervious Runoff Depth=0.14"
Flow Length=1,074' Tc=33.3 min CN=55 Runoff=0.12 cfs 0.066 af

Subcatchment 2S: XDA-2 TO DESIGN LINE 2 Runoff Area=37,786 sf 0.00% Impervious Runoff Depth=0.14"
Tc=6.0 min CN=55 Runoff=0.03 cfs 0.010 af

Subcatchment 3S: FDA-1 Runoff Area=6,154 sf 60.32% Impervious Runoff Depth=1.27"
Tc=6.0 min CN=83 Runoff=0.24 cfs 0.015 af

Subcatchment 4S: FDA-2 Runoff Area=9,134 sf 26.36% Impervious Runoff Depth=0.64"
Tc=6.0 min CN=71 Runoff=0.15 cfs 0.011 af

Subcatchment 5S: FDA-3 Runoff Area=4,292 sf 86.84% Impervious Runoff Depth=2.04"
Tc=6.0 min CN=93 Runoff=0.27 cfs 0.017 af

Subcatchment 6S: FDA-4 Runoff Area=86,571 sf 16.06% Impervious Runoff Depth=0.41"
Tc=10.0 min CN=65 Runoff=0.53 cfs 0.068 af

Subcatchment 7S: FDA-5 TO DESIGN LINE Runoff Area=145,156 sf 0.00% Impervious Runoff Depth=0.14"
Tc=30.0 min CN=55 Runoff=0.07 cfs 0.039 af

Subcatchment 8S: FDA-6 Runoff Area=26,879 sf 0.00% Impervious Runoff Depth=0.14"
Tc=6.0 min CN=55 Runoff=0.02 cfs 0.007 af

Subcatchment 9S: FDA-4.1 Runoff Area=1,888 sf 100.00% Impervious Runoff Depth=2.55"
Tc=6.0 min CN=98 Runoff=0.14 cfs 0.009 af

Pond 9P: RAIN GARDEN 1 Peak Elev=549.20' Storage=163 cf Inflow=0.24 cfs 0.015 af
Discarded=0.04 cfs 0.015 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.015 af

Pond 10P: RAIN GARDEN 3 Peak Elev=519.65' Storage=324 cf Inflow=0.27 cfs 0.017 af
Discarded=0.02 cfs 0.017 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.017 af

Pond 11P: RAIN GARDEN 2 Peak Elev=556.62' Storage=138 cf Inflow=0.15 cfs 0.011 af
Discarded=0.02 cfs 0.011 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.011 af

Pond 12P: EXTENDED DETENTION BASIN Peak Elev=509.48' Storage=1,132 cf Inflow=0.53 cfs 0.068 af
Discarded=0.05 cfs 0.068 af Primary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.068 af

Pond 13P: Chambers Peak Elev=506.78' Storage=146 cf Inflow=0.14 cfs 0.009 af
Discarded=0.01 cfs 0.009 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.009 af

Link 1L: DESIGN LINE 1 Inflow=0.07 cfs 0.039 af
Primary=0.07 cfs 0.039 af

Link 2L: DESIGN LINE 2 Inflow=0.02 cfs 0.007 af
Primary=0.02 cfs 0.007 af

Total Runoff Area = 12.913 ac Runoff Volume = 0.242 af Average Runoff Depth = 0.22"
95.44% Pervious = 12.324 ac 4.56% Impervious = 0.589 ac

Summary for Subcatchment 1S: XDA-1 TO DESIGN LINE 1

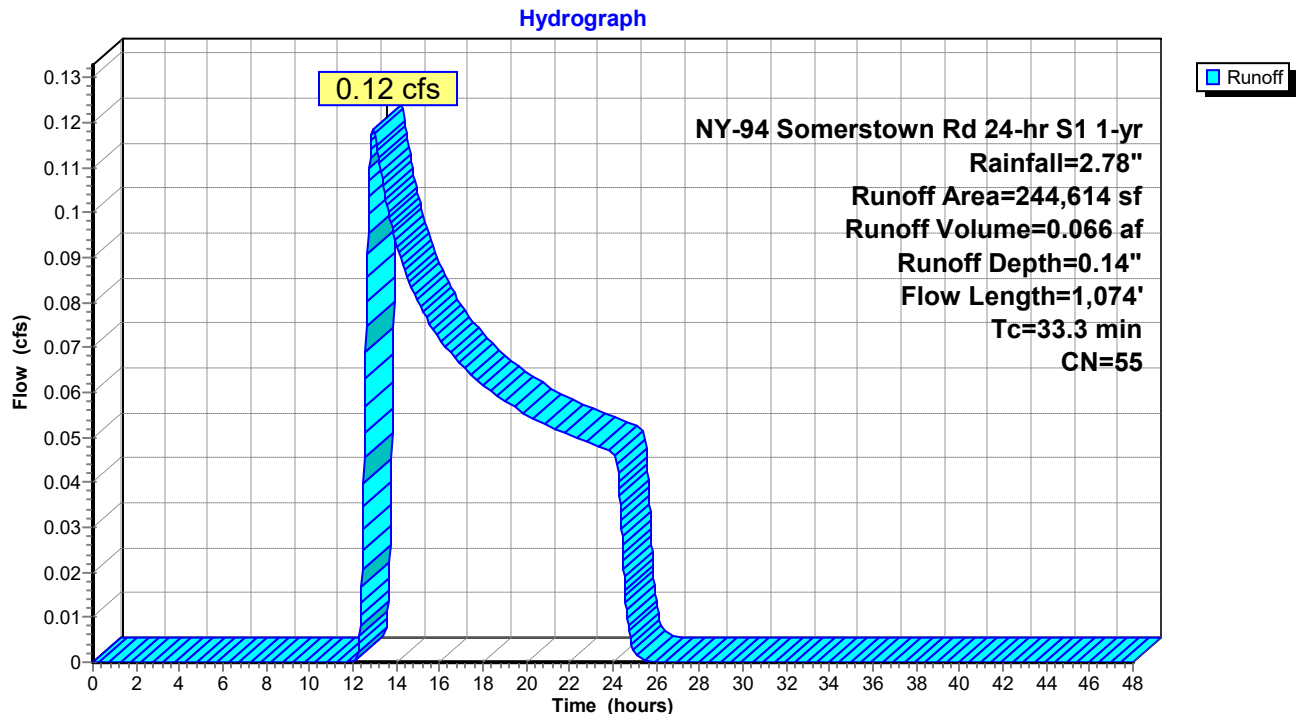
Runoff = 0.12 cfs @ 12.93 hrs, Volume= 0.066 af, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NY-94 Somerstown Rd 24-hr S1 1-yr Rainfall=2.78"

Area (sf)	CN	Description
244,614	55	Woods, Good, HSG B
244,614		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	56	0.1071	0.14		Sheet Flow, A-B
					Woods: Light underbrush n= 0.400 P2= 3.41"
0.9	131	0.2328	2.41		Shallow Concentrated Flow, B-C
					Woodland Kv= 5.0 fps
4.3	280	0.0482	1.10		Shallow Concentrated Flow, C-D
					Woodland Kv= 5.0 fps
2.1	143	0.0524	1.14		Shallow Concentrated Flow, D-E
					Woodland Kv= 5.0 fps
19.3	464	0.0064	0.40		Shallow Concentrated Flow, E-F
					Woodland Kv= 5.0 fps
33.3	1,074	Total			

Subcatchment 1S: XDA-1 TO DESIGN LINE 1



Summary for Subcatchment 2S: XDA-2 TO DESIGN LINE 2

Runoff = 0.03 cfs @ 12.53 hrs, Volume= 0.010 af, Depth= 0.14"

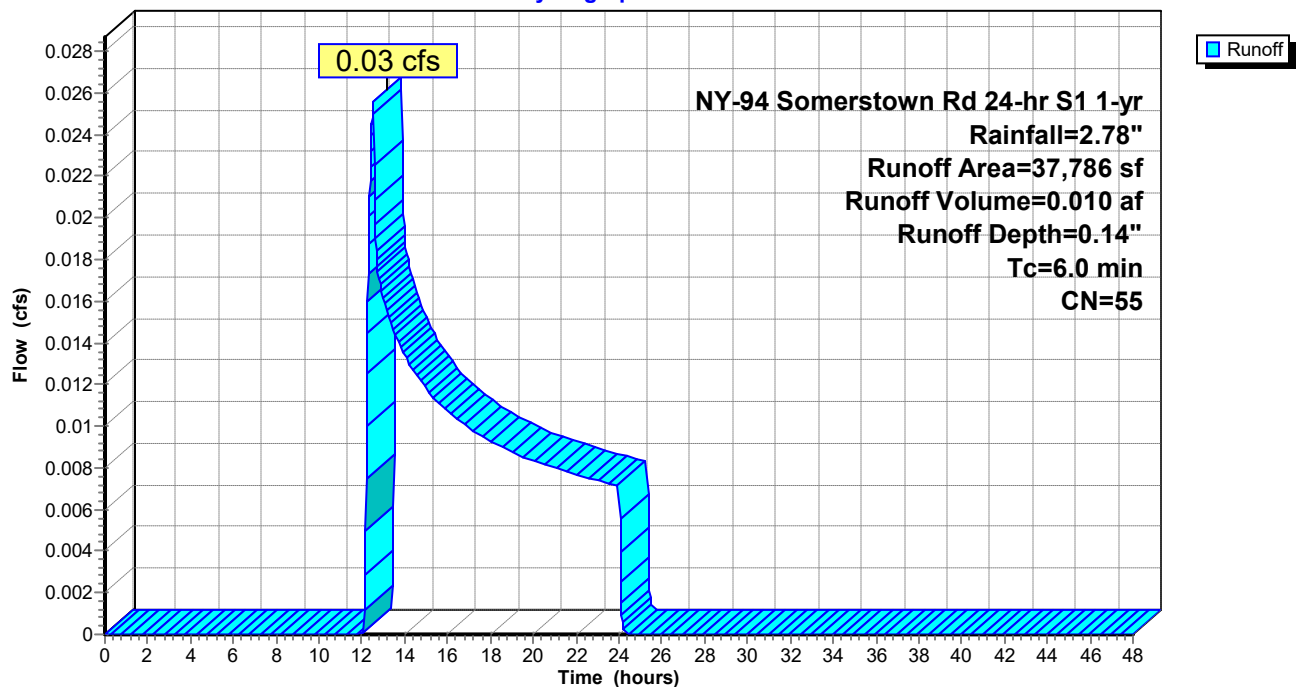
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NY-94 Somerstown Rd 24-hr S1 1-yr Rainfall=2.78"

Area (sf)	CN	Description
37,786	55	Woods, Good, HSG B
37,786		100.00% Pervious Area

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

Subcatchment 2S: XDA-2 TO DESIGN LINE 2

Hydrograph



Summary for Subcatchment 3S: FDA-1

Runoff = 0.24 cfs @ 12.04 hrs, Volume= 0.015 af, Depth= 1.27"
 Routed to Pond 9P : RAIN GARDEN 1

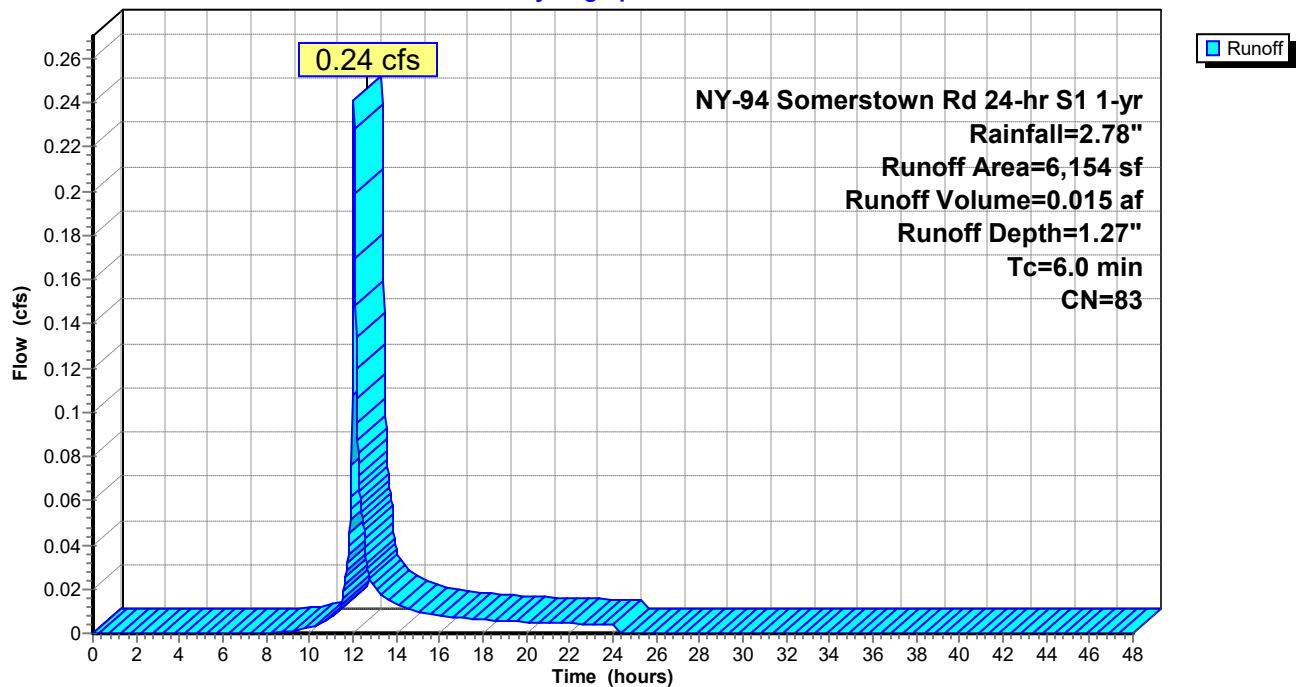
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 NY-94 Somerstown Rd 24-hr S1 1-yr Rainfall=2.78"

	Area (sf)	CN	Description
*	3,712	98	Impervious surfaces, HSG B
	2,442	61	>75% Grass cover, Good, HSG B
	6,154	83	Weighted Average
	2,442		39.68% Pervious Area
	3,712		60.32% Impervious Area

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

Subcatchment 3S: FDA-1

Hydrograph



Summary for Subcatchment 4S: FDA-2

Runoff = 0.15 cfs @ 12.05 hrs, Volume= 0.011 af, Depth= 0.64"
 Routed to Pond 11P : RAIN GARDEN 2

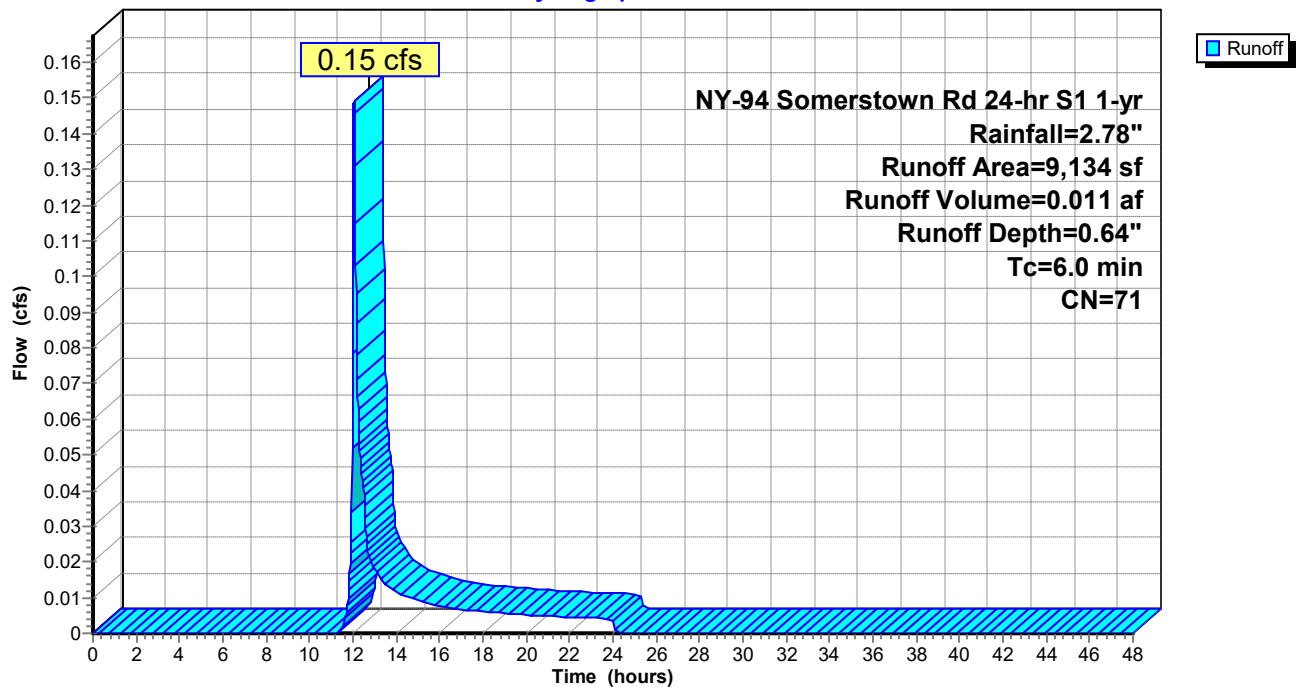
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 NY-94 Somerstown Rd 24-hr S1 1-yr Rainfall=2.78"

Area (sf)	CN	Description
2,408	98	Roofs, HSG B
6,726	61	>75% Grass cover, Good, HSG B
9,134	71	Weighted Average
6,726		73.64% Pervious Area
2,408		26.36% Impervious Area

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

Subcatchment 4S: FDA-2

Hydrograph



Summary for Subcatchment 5S: FDA-3

Runoff = 0.27 cfs @ 12.04 hrs, Volume= 0.017 af, Depth= 2.04"
 Routed to Pond 10P : RAIN GARDEN 3

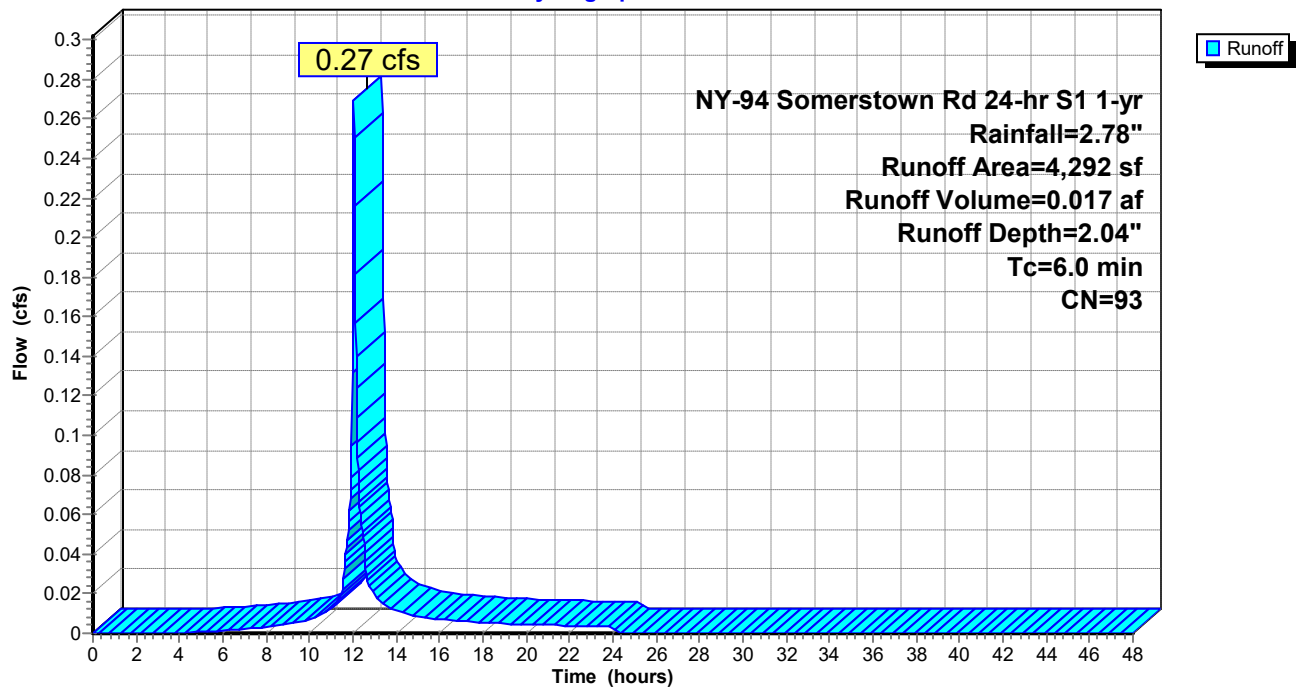
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 NY-94 Somerstown Rd 24-hr S1 1-yr Rainfall=2.78"

	Area (sf)	CN	Description
*	3,727	98	Impervious surfaces, HSG B
	565	61	>75% Grass cover, Good, HSG B
	4,292	93	Weighted Average
	565		13.16% Pervious Area
	3,727		86.84% Impervious Area

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

Subcatchment 5S: FDA-3

Hydrograph



Summary for Subcatchment 6S: FDA-4

Runoff = 0.53 cfs @ 12.13 hrs, Volume= 0.068 af, Depth= 0.41"
 Routed to Pond 12P : EXTENDED DETENTION BASIN

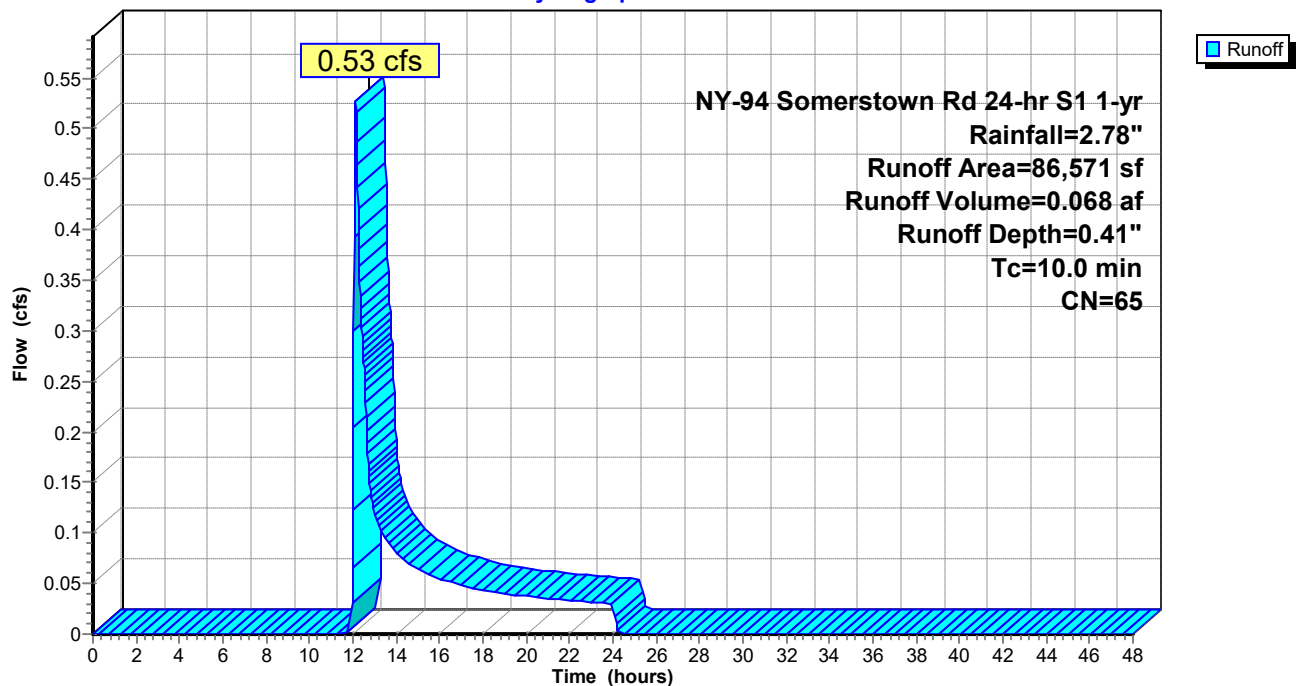
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 NY-94 Somerstown Rd 24-hr S1 1-yr Rainfall=2.78"

	Area (sf)	CN	Description
*	13,904	98	Impervious Surfaces & Roofs, HSG B
	44,003	61	>75% Grass cover, Good, HSG B
	25,342	55	Woods, Good, HSG B
	3,322	58	Meadow, non-grazed, HSG B
	86,571	65	Weighted Average
	72,667		83.94% Pervious Area
	13,904		16.06% Impervious Area

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

Subcatchment 6S: FDA-4

Hydrograph



Summary for Subcatchment 7S: FDA-5 TO DESIGN LINE 1

Runoff = 0.07 cfs @ 12.87 hrs, Volume= 0.039 af, Depth= 0.14"
Routed to Link 1L : DESIGN LINE 1

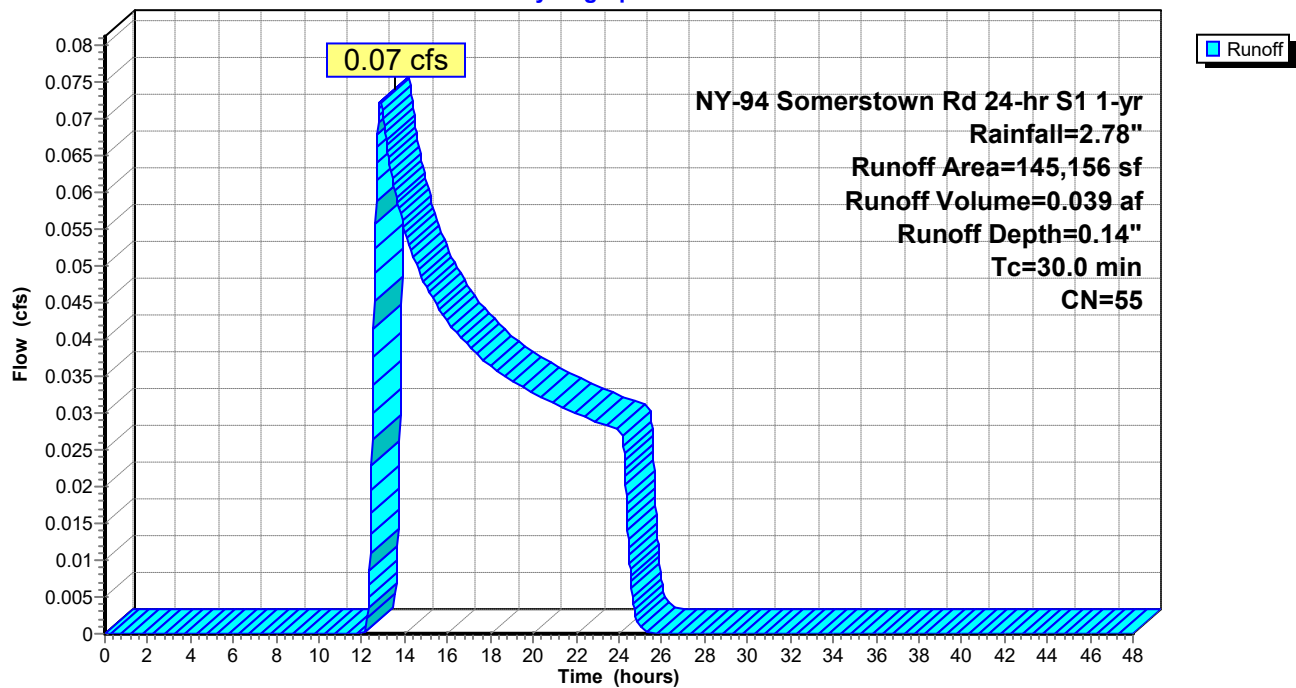
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NY-94 Somerstown Rd 24-hr S1 1-yr Rainfall=2.78"

Area (sf)	CN	Description
156	61	>75% Grass cover, Good, HSG B
145,000	55	Woods, Good, HSG B
145,156	55	Weighted Average
145,156		100.00% Pervious Area

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

Subcatchment 7S: FDA-5 TO DESIGN LINE 1

Hydrograph



Summary for Subcatchment 8S: FDA-6

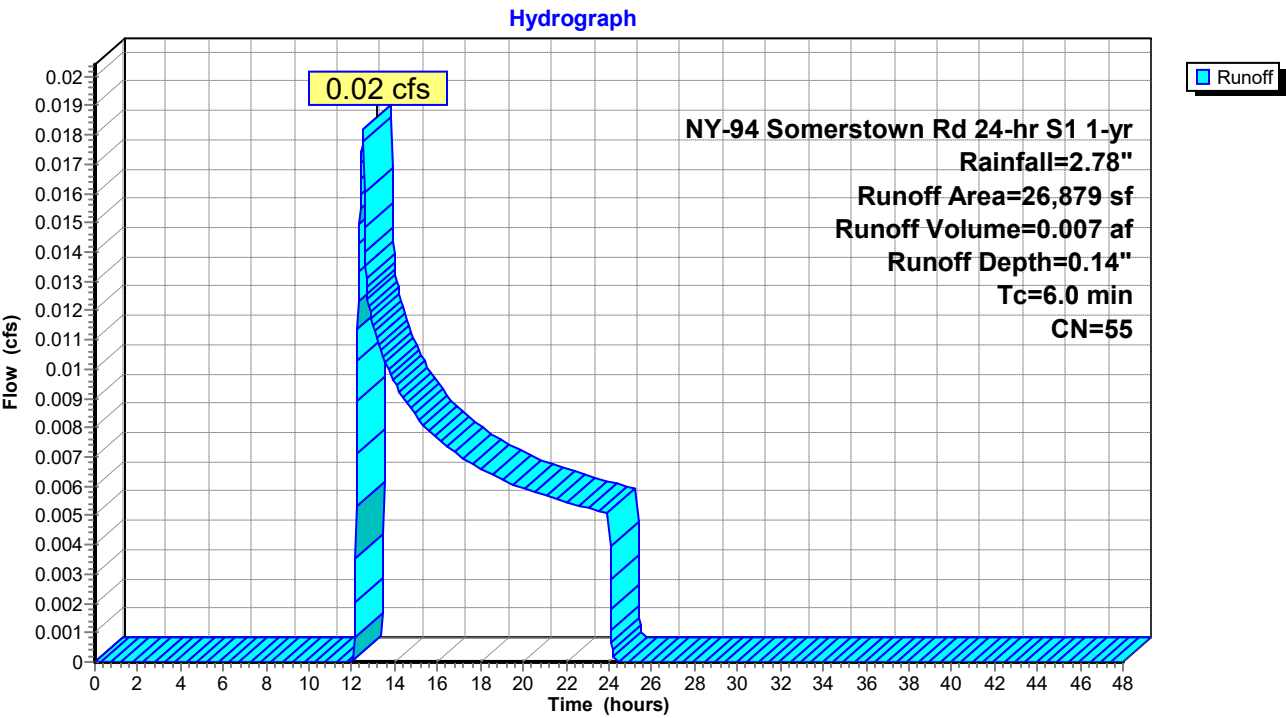
Runoff = 0.02 cfs @ 12.53 hrs, Volume= 0.007 af, Depth= 0.14"
Routed to Link 2L : DESIGN LINE 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NY-94 Somerstown Rd 24-hr S1 1-yr Rainfall=2.78"

Area (sf)	CN	Description
26,879	55	Woods, Good, HSG B
26,879		100.00% Pervious Area

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

Subcatchment 8S: FDA-6



Summary for Subcatchment 9S: FDA-4.1

Runoff = 0.14 cfs @ 12.04 hrs, Volume= 0.009 af, Depth= 2.55"
Routed to Pond 13P : Chambers

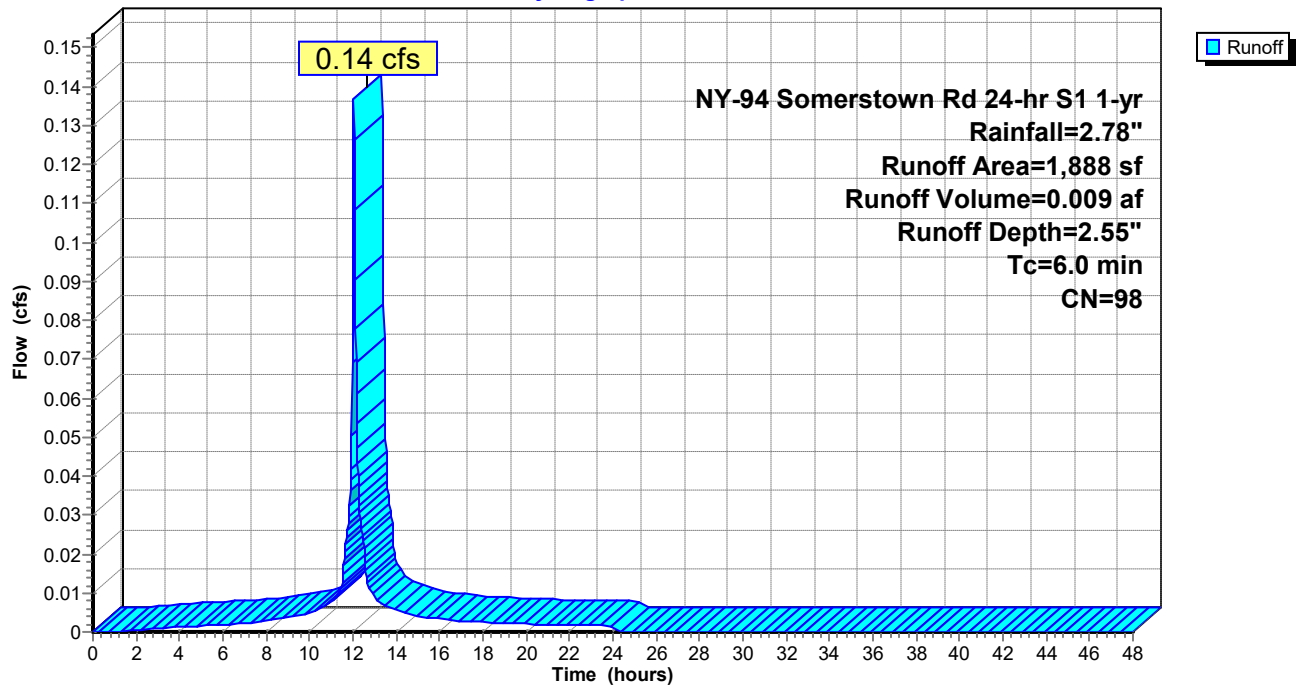
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NY-94 Somerstown Rd 24-hr S1 1-yr Rainfall=2.78"

Area (sf)	CN	Description
1,888	98	Paved parking, HSG B
1,888		100.00% Impervious Area

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

Subcatchment 9S: FDA-4.1

Hydrograph



Summary for Pond 9P: RAIN GARDEN 1

Inflow Area = 0.141 ac, 60.32% Impervious, Inflow Depth = 1.27" for 1-yr event
 Inflow = 0.24 cfs @ 12.04 hrs, Volume= 0.015 af
 Outflow = 0.04 cfs @ 12.58 hrs, Volume= 0.015 af, Atten= 84%, Lag= 32.2 min
 Discarded = 0.04 cfs @ 12.58 hrs, Volume= 0.015 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routed to Pond 12P : EXTENDED DETENTION BASIN

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 549.20' @ 12.58 hrs Surf.Area= 844 sf Storage= 163 cf

Plug-Flow detention time= 27.2 min calculated for 0.015 af (100% of inflow)

Center-of-Mass det. time= 27.2 min (885.0 - 857.8)

Volume	Invert	Avail.Storage	Storage Description
#1	549.00'	1,555 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
549.00	800	0	0
549.50	910	428	428
550.00	1,050	490	918
550.50	1,500	638	1,555

Device	Routing	Invert	Outlet Devices
#1	Primary	550.00'	4.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Discarded	549.00'	2.000 in/hr Exfiltration over Horizontal area
#3	Primary	550.35'	3.0' long (Profile 6) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 3.12 3.41 3.59

Discarded OutFlow Max=0.04 cfs @ 12.58 hrs HW=549.20' (Free Discharge)

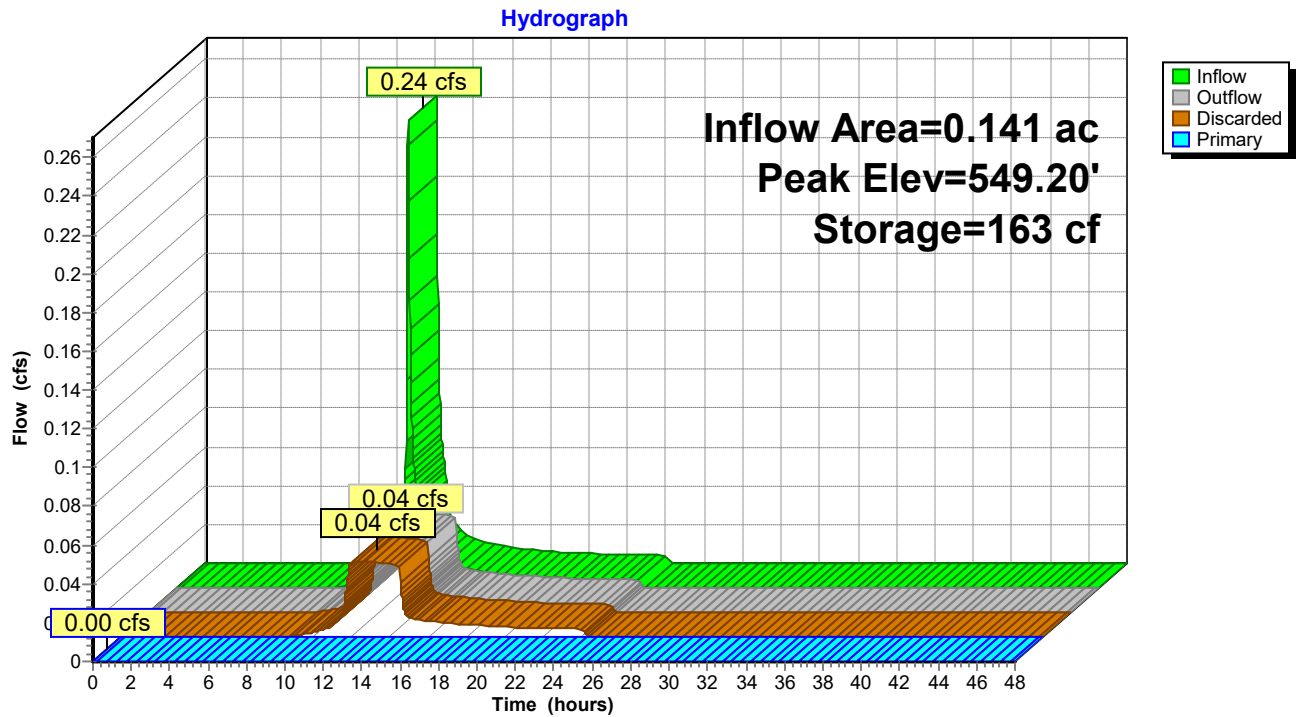
↑ **2=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=549.00' (Free Discharge)

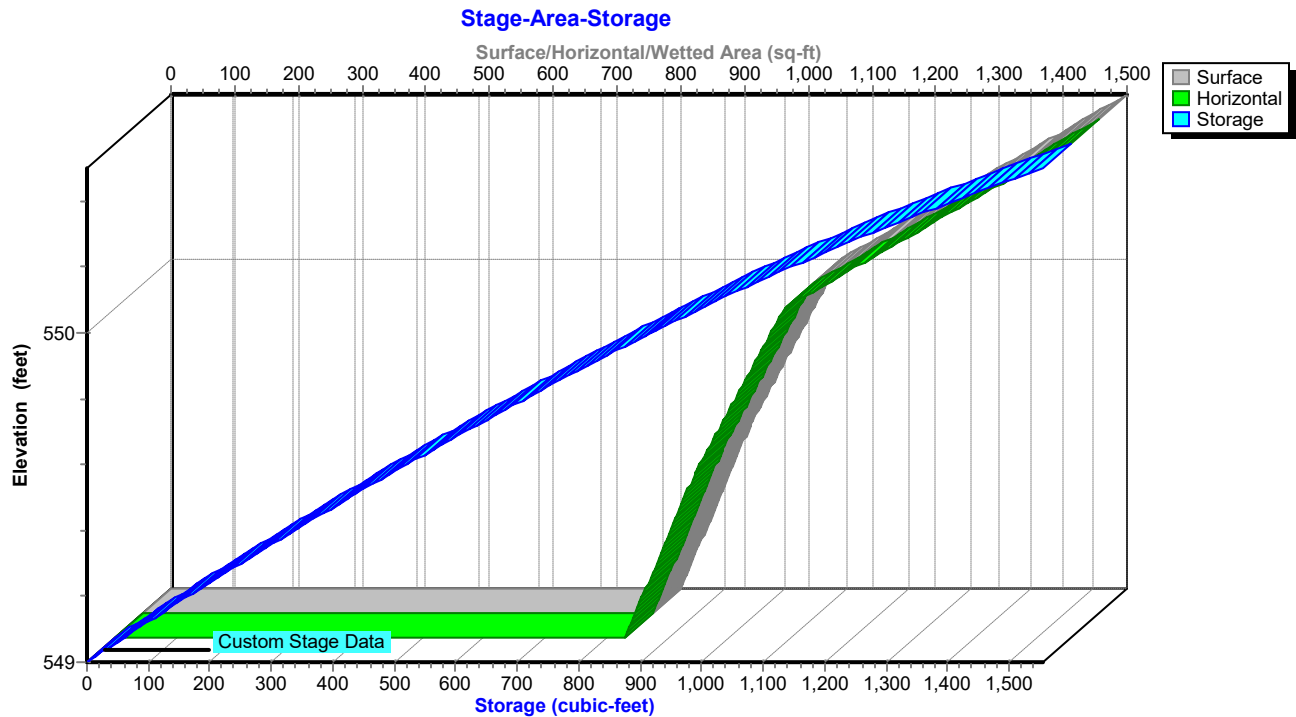
↑ **1=Orifice/Grate** (Controls 0.00 cfs)

↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 9P: RAIN GARDEN 1



Pond 9P: RAIN GARDEN 1



Summary for Pond 10P: RAIN GARDEN 3

Inflow Area = 0.099 ac, 86.84% Impervious, Inflow Depth = 2.04" for 1-yr event
 Inflow = 0.27 cfs @ 12.04 hrs, Volume= 0.017 af
 Outflow = 0.02 cfs @ 13.36 hrs, Volume= 0.017 af, Atten= 94%, Lag= 79.3 min
 Discarded = 0.02 cfs @ 13.36 hrs, Volume= 0.017 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routed to Pond 12P : EXTENDED DETENTION BASIN

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 519.65' @ 13.36 hrs Surf.Area= 330 sf Storage= 324 cf

Plug-Flow detention time= 219.7 min calculated for 0.017 af (100% of inflow)

Center-of-Mass det. time= 219.7 min (1,026.8 - 807.1)

Volume	Invert	Avail.Storage	Storage Description
#1	518.25'	664 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
518.25	0	0	0
518.50	197	25	25
519.50	306	252	276
520.00	386	173	449
520.50	475	215	664

Device	Routing	Invert	Outlet Devices
#1	Primary	520.00'	4.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Discarded	518.25'	2.000 in/hr Exfiltration over Horizontal area
#3	Primary	520.25'	3.0' long (Profile 6) Broad-Crested Rectangular Weir
			Head (feet) 0.49 0.98 1.48
			Coef. (English) 3.12 3.41 3.59

Discarded OutFlow Max=0.02 cfs @ 13.36 hrs HW=519.65' (Free Discharge)

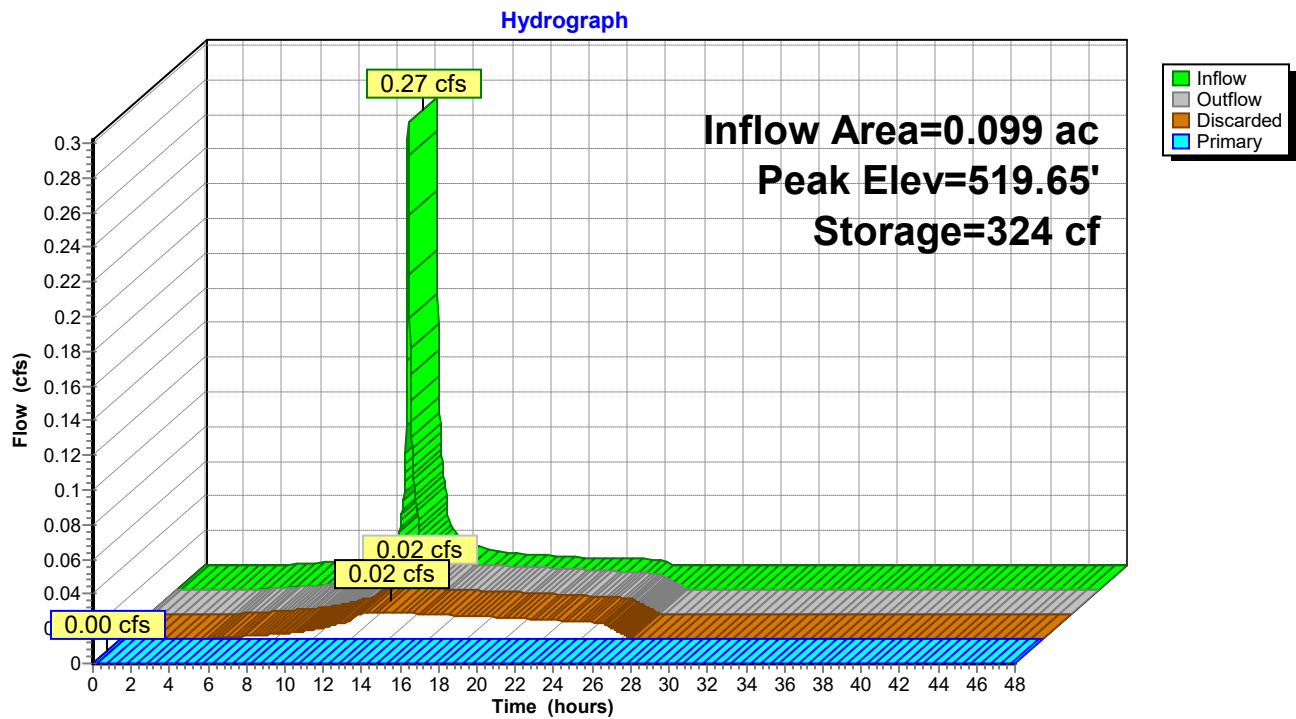
↑ **2=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=518.25' (Free Discharge)

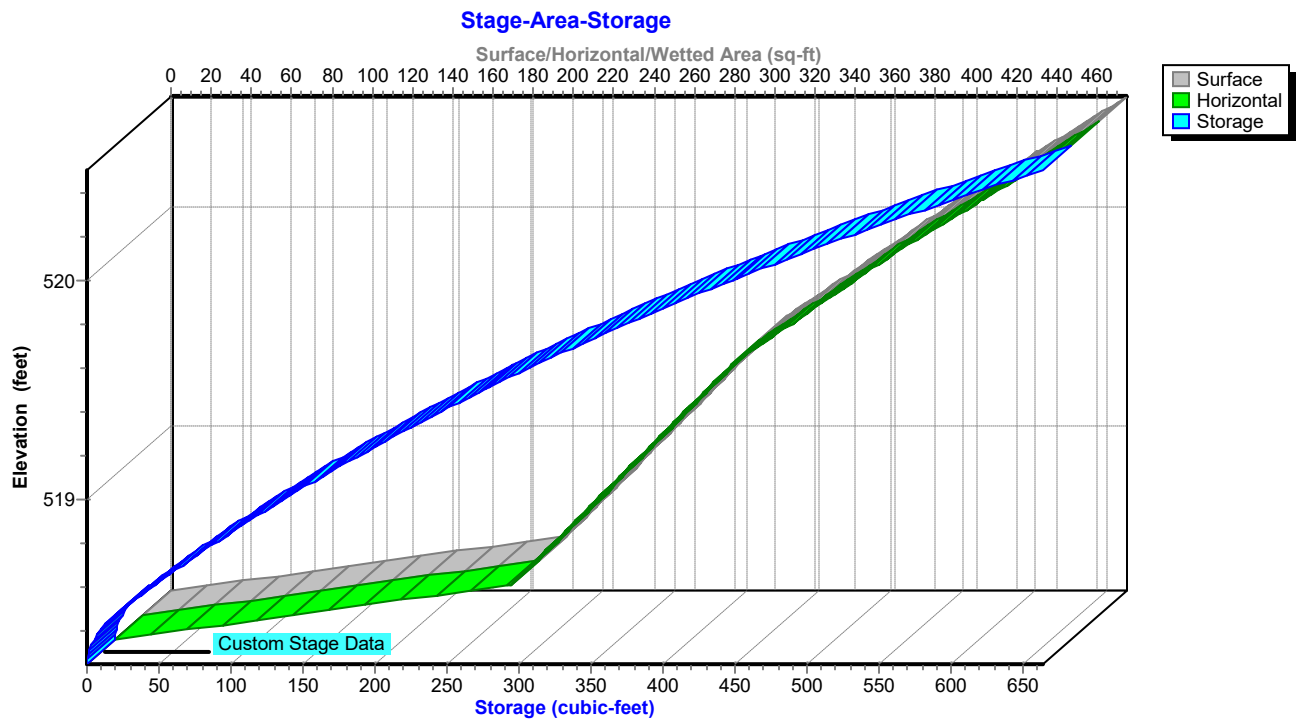
↑ **1=Orifice/Grate** (Controls 0.00 cfs)

↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10P: RAIN GARDEN 3



Pond 10P: RAIN GARDEN 3



Summary for Pond 11P: RAIN GARDEN 2

Inflow Area = 0.210 ac, 26.36% Impervious, Inflow Depth = 0.64" for 1-yr event
 Inflow = 0.15 cfs @ 12.05 hrs, Volume= 0.011 af
 Outflow = 0.02 cfs @ 12.80 hrs, Volume= 0.011 af, Atten= 86%, Lag= 45.1 min
 Discarded = 0.02 cfs @ 12.80 hrs, Volume= 0.011 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Link 2L : DESIGN LINE 2

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 556.62' @ 12.80 hrs Surf.Area= 446 sf Storage= 138 cf

Plug-Flow detention time= 73.1 min calculated for 0.011 af (100% of inflow)
 Center-of-Mass det. time= 73.0 min (981.4 - 908.3)

Volume	Invert	Avail.Storage	Storage Description
#1	556.00'	1,832 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

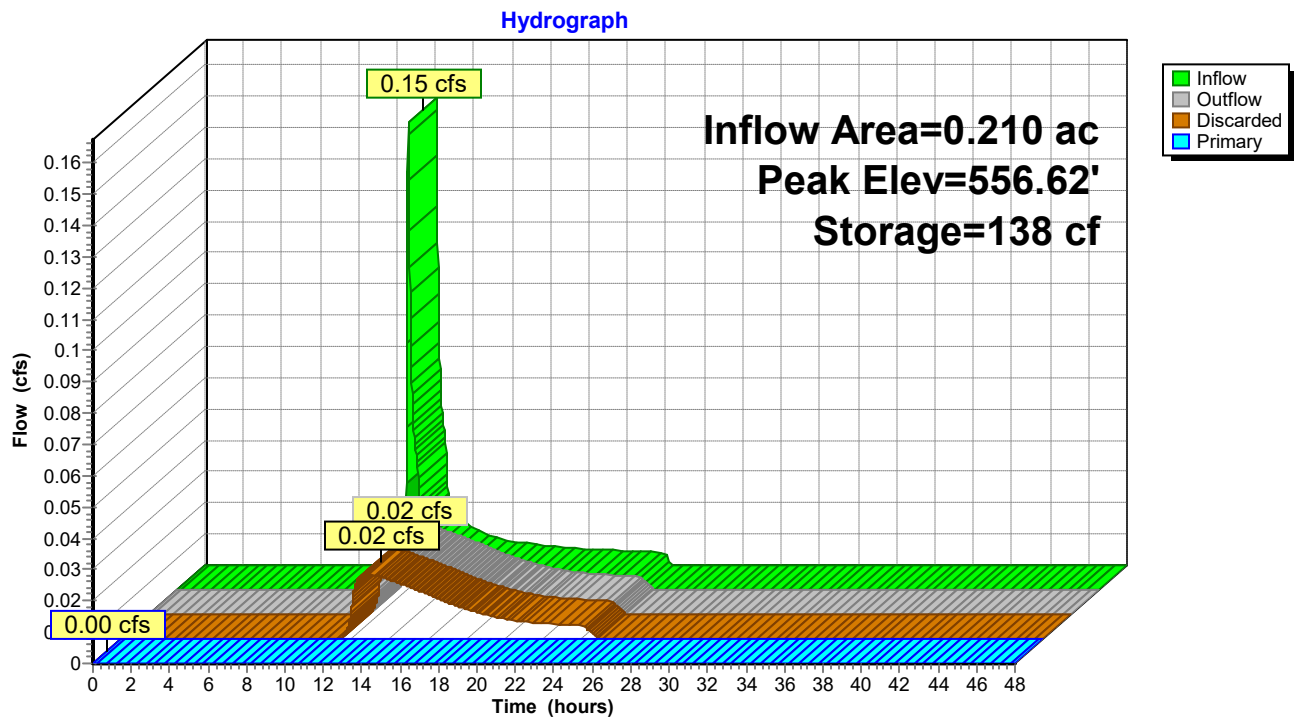
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
556.00	0	0	0
557.00	722	361	361
557.75	885	603	964
558.00	1,001	236	1,199
558.50	1,528	632	1,832

Device	Routing	Invert	Outlet Devices
#1	Primary	558.00'	4.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Discarded	556.00'	2.000 in/hr Exfiltration over Horizontal area
#3	Primary	558.25'	3.0' long (Profile 6) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 3.12 3.41 3.59

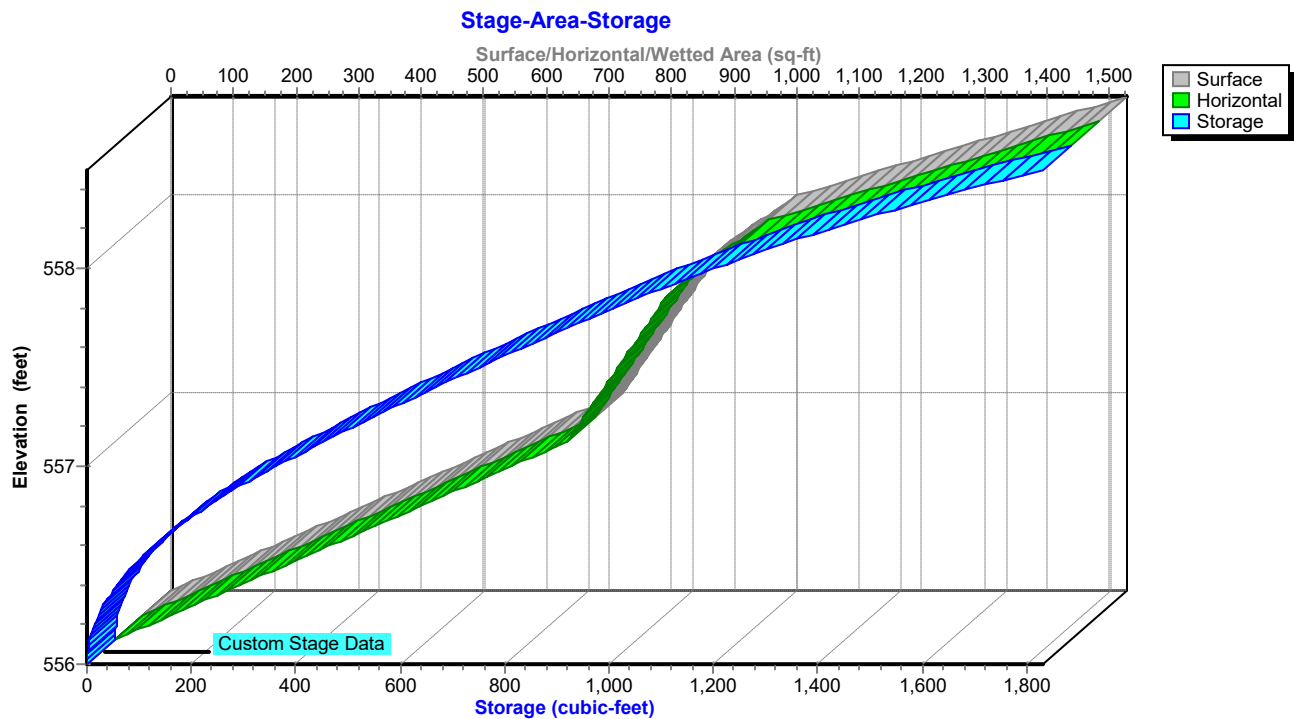
Discarded OutFlow Max=0.02 cfs @ 12.80 hrs HW=556.62' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=556.00' (Free Discharge)
 ↑ **1=Orifice/Grate** (Controls 0.00 cfs)
 ↓ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 11P: RAIN GARDEN 2



Pond 11P: RAIN GARDEN 2



Summary for Pond 12P: EXTENDED DETENTION BASIN

Inflow Area = 2.227 ac, 22.00% Impervious, Inflow Depth = 0.37" for 1-yr event
 Inflow = 0.53 cfs @ 12.13 hrs, Volume= 0.068 af
 Outflow = 0.05 cfs @ 15.99 hrs, Volume= 0.068 af, Atten= 90%, Lag= 232.0 min
 Discarded = 0.05 cfs @ 15.99 hrs, Volume= 0.068 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Link 1L : DESIGN LINE 1

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 509.48' @ 15.99 hrs Surf.Area= 1,180 sf Storage= 1,132 cf

Plug-Flow detention time= 323.5 min calculated for 0.068 af (100% of inflow)
 Center-of-Mass det. time= 323.4 min (1,267.6 - 944.2)

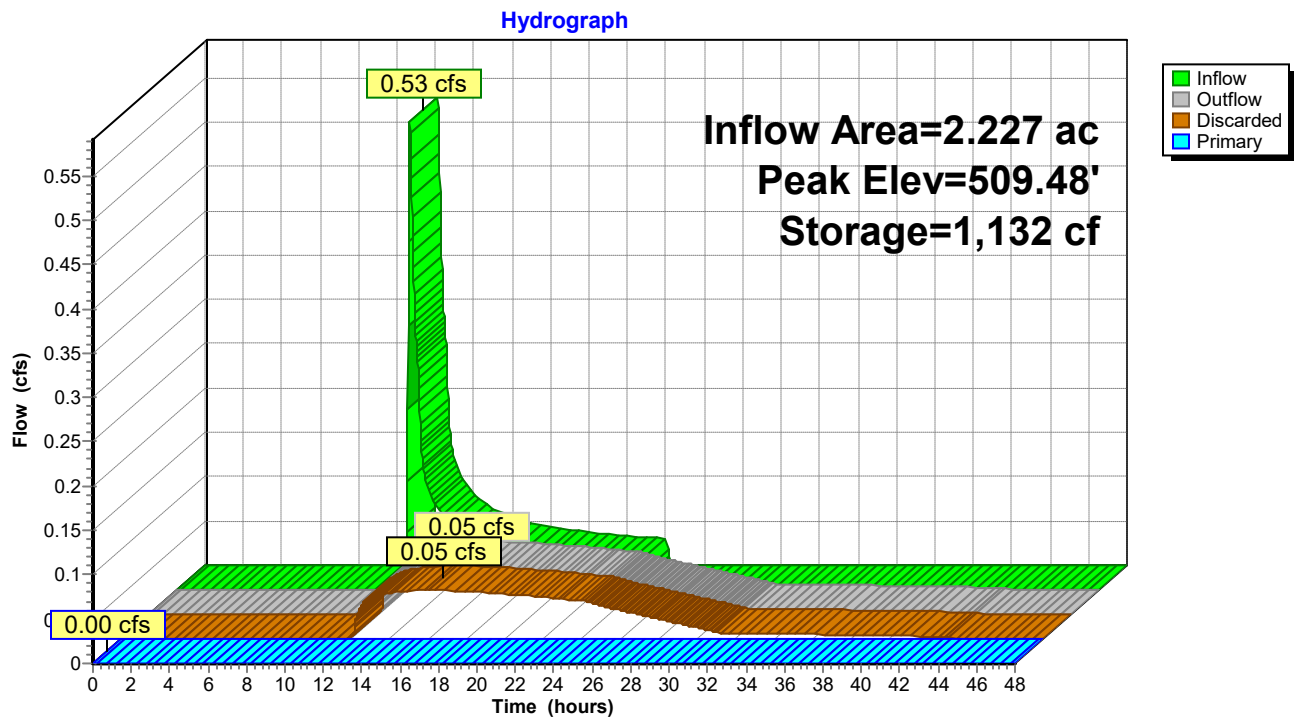
Volume	Invert	Avail.Storage	Storage Description
#1	506.00'	17,768 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
506.00	50	0	0
507.00	98	74	74
508.00	146	122	196
509.00	779	463	659
510.00	1,609	1,194	1,853
512.00	2,141	3,750	5,603
514.00	2,608	4,749	10,352
516.00	3,087	5,695	16,047
516.50	3,800	1,722	17,768

Device	Routing	Invert	Outlet Devices
#1	Primary	510.75'	3.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	511.75'	8.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	515.50'	5.0' long (Profile 6) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 3.12 3.41 3.59
#4	Discarded	506.00'	2.000 in/hr Exfiltration over Horizontal area

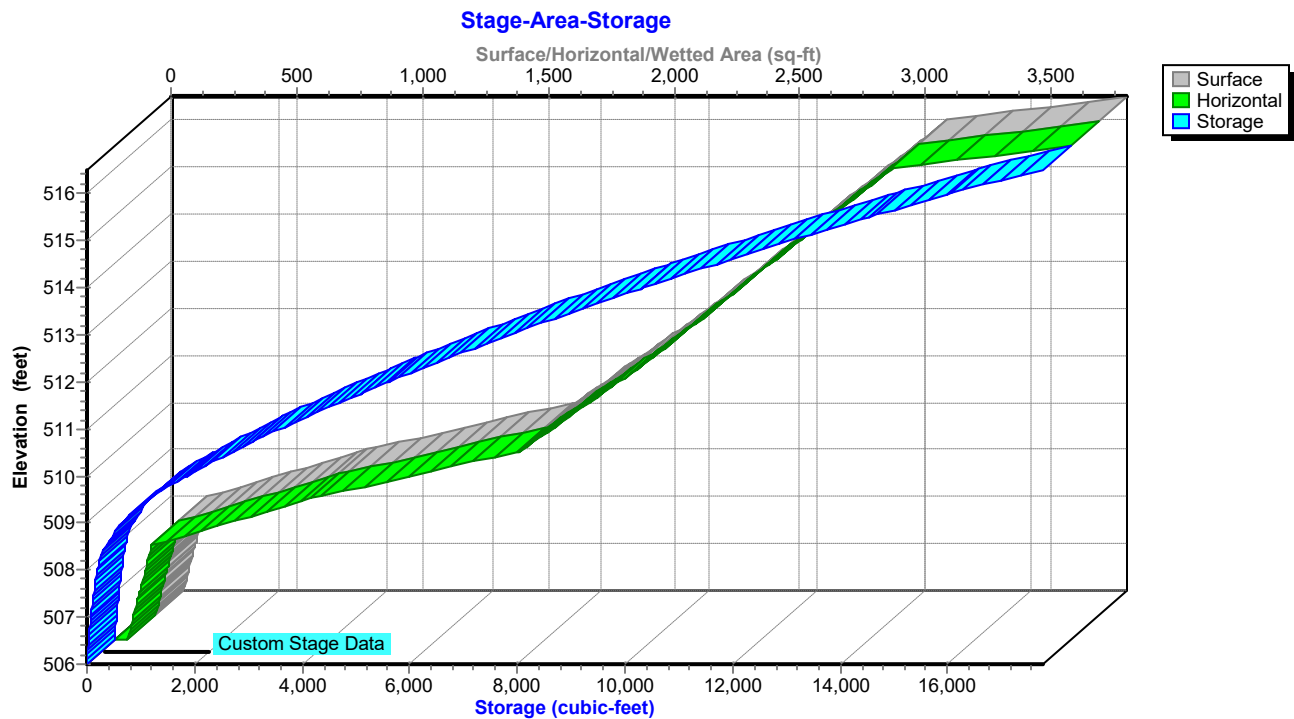
Discarded OutFlow Max=0.05 cfs @ 15.99 hrs HW=509.48' (Free Discharge)
 ↑ **4=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=506.00' (Free Discharge)
 ↑ **1=Orifice/Grate** (Controls 0.00 cfs)
 ↓ **2=Orifice/Grate** (Controls 0.00 cfs)
 ↓ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 12P: EXTENDED DETENTION BASIN



Pond 12P: EXTENDED DETENTION BASIN



Summary for Pond 13P: Chambers

Inflow Area = 0.043 ac, 100.00% Impervious, Inflow Depth = 2.55" for 1-yr event
 Inflow = 0.14 cfs @ 12.04 hrs, Volume= 0.009 af
 Outflow = 0.01 cfs @ 11.18 hrs, Volume= 0.009 af, Atten= 94%, Lag= 0.0 min
 Discarded = 0.01 cfs @ 11.18 hrs, Volume= 0.009 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Link 1L : DESIGN LINE 1

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs / 2
 Peak Elev= 506.78' @ 13.17 hrs Surf.Area= 349 sf Storage= 146 cf

Plug-Flow detention time= 132.6 min calculated for 0.009 af (100% of inflow)
 Center-of-Mass det. time= 132.5 min (894.3 - 761.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	506.00'	310 cf	5.92'W x 59.00'L x 3.21'H Field A 1,120 cf Overall - 346 cf Embedded = 774 cf x 40.0% Voids
#2A	506.50'	346 cf	Cultec R-280HD x 8 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 1 rows
		656 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	506.00'	1.000 in/hr Exfiltration over Horizontal area
#2	Device 3	506.75'	4.0" Round Culvert L= 32.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 506.75' / 506.50' S= 0.0078 '/' Cc= 0.900 n= 0.012, Flow Area= 0.09 sf
#3	Primary	508.50'	15.0" x 15.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.01 cfs @ 11.18 hrs HW=506.03' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=506.00' (Free Discharge)

↑ **3=Orifice/Grate** (Controls 0.00 cfs)

↑ **2=Culvert** (Controls 0.00 cfs)

Pond 13P: Chambers - Chamber Wizard Field A

Chamber Model = Cultec R-280HD (Cultec Recharger® 280HD)

Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf

Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap

Row Length Adjustment= +1.00' x 6.07 sf x 1 rows

8 Chambers/Row x 7.00' Long +1.00' Row Adjustment = 57.00' Row Length +12.0" End Stone x 2 = 59.00'
Base Length

1 Rows x 47.0" Wide + 12.0" Side Stone x 2 = 5.92' Base Width

6.0" Stone Base + 26.5" Chamber Height + 6.0" Stone Cover = 3.21' Field Height

8 Chambers x 42.5 cf +1.00' Row Adjustment x 6.07 sf x 1 Rows = 346.1 cf Chamber Storage

1,120.0 cf Field - 346.1 cf Chambers = 773.9 cf Stone x 40.0% Voids = 309.6 cf Stone Storage

Chamber Storage + Stone Storage = 655.6 cf = 0.015 af

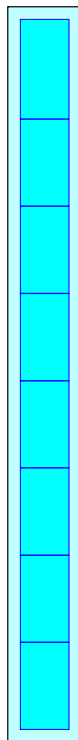
Overall Storage Efficiency = 58.5%

Overall System Size = 59.00' x 5.92' x 3.21'

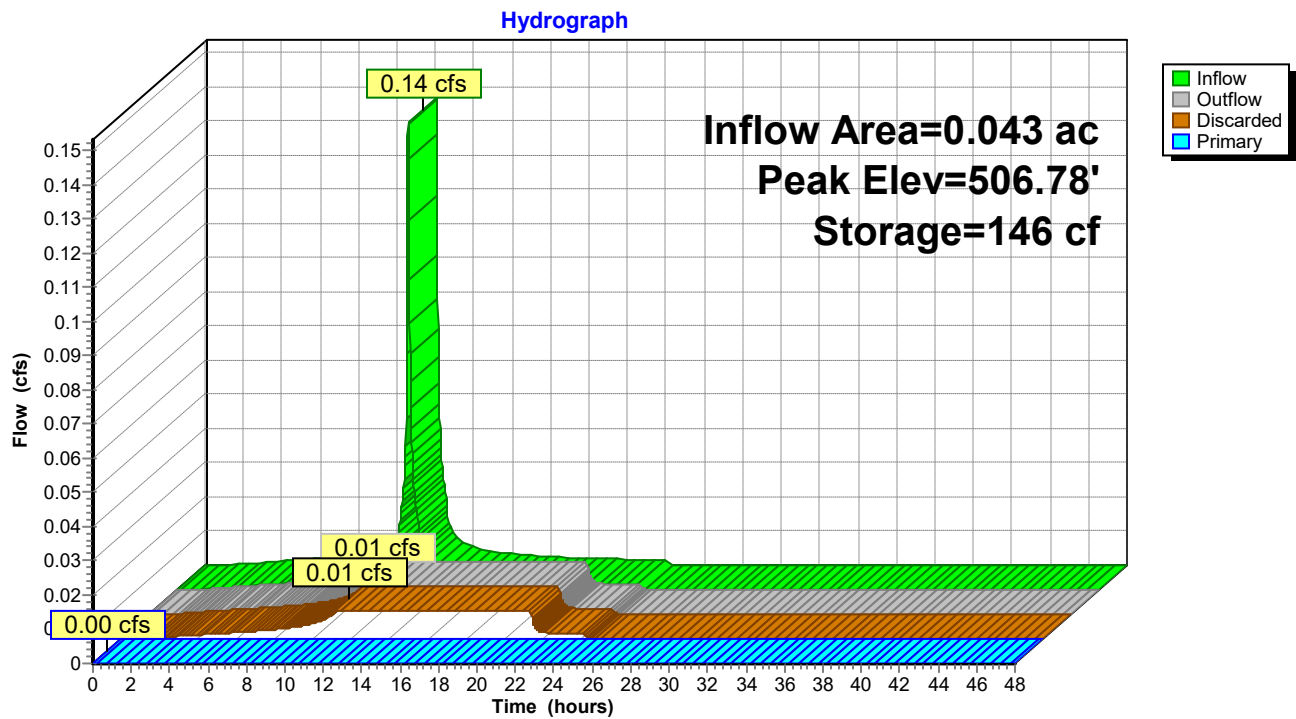
8 Chambers

41.5 cy Field

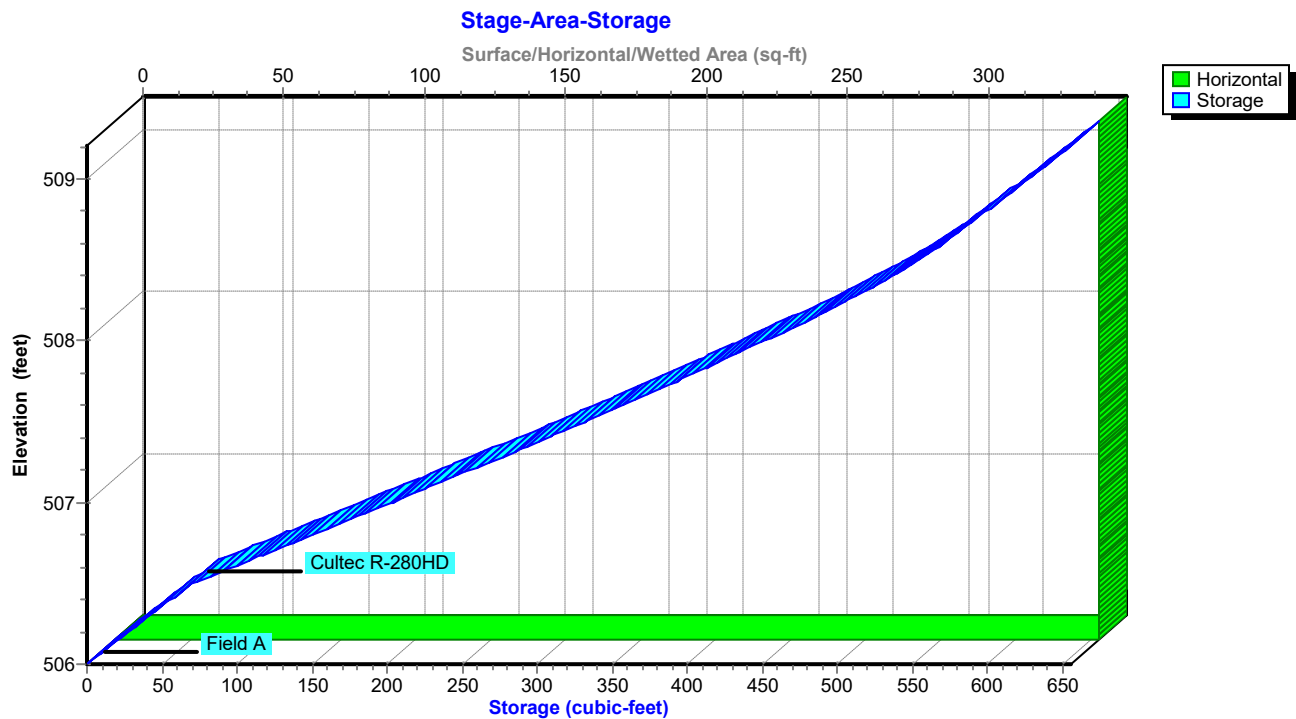
28.7 cy Stone



Pond 13P: Chambers



Pond 13P: Chambers

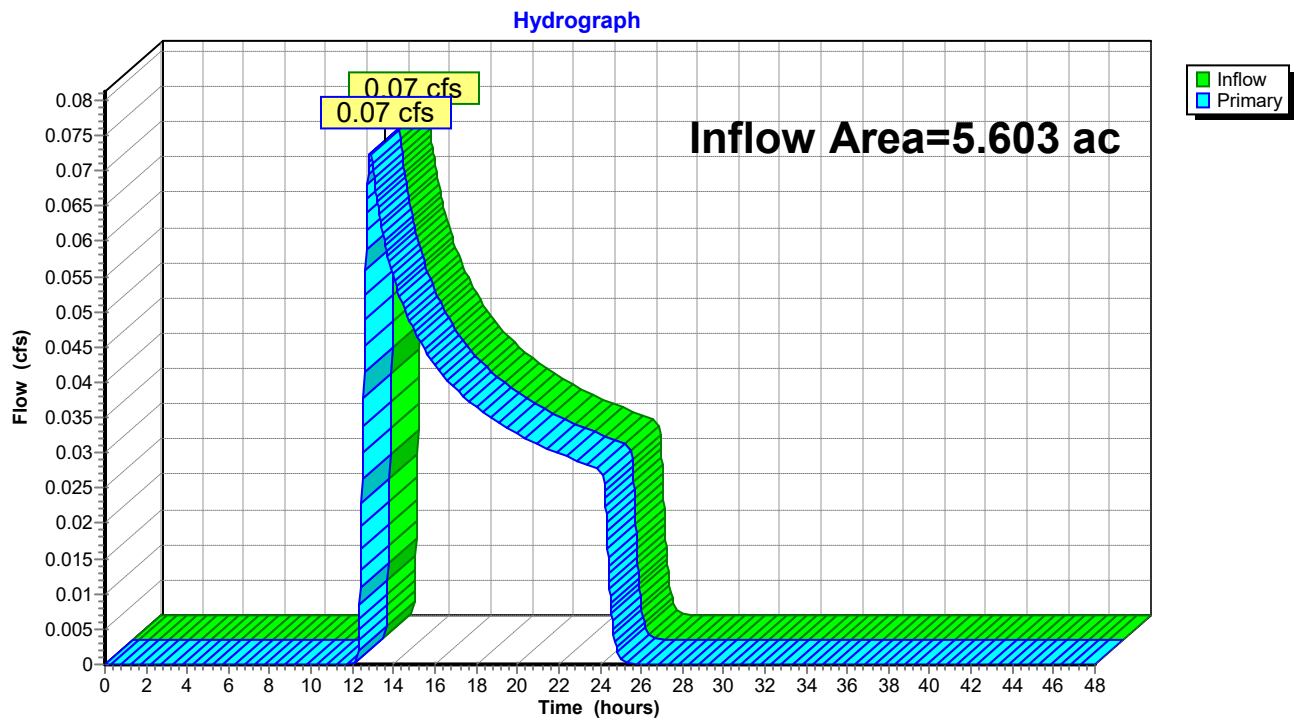


Summary for Link 1L: DESIGN LINE 1

Inflow Area = 5.603 ac, 9.52% Impervious, Inflow Depth = 0.08" for 1-yr event
Inflow = 0.07 cfs @ 12.87 hrs, Volume= 0.039 af
Primary = 0.07 cfs @ 12.87 hrs, Volume= 0.039 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link 1L: DESIGN LINE 1

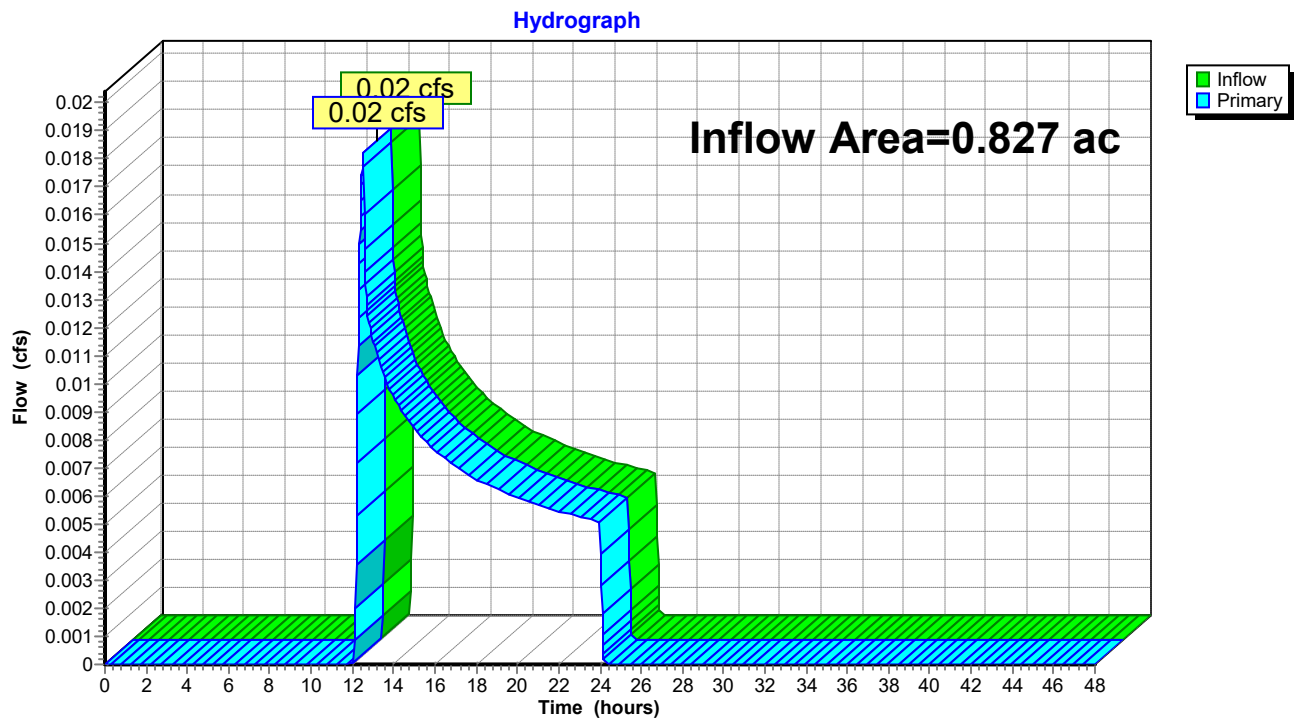


Summary for Link 2L: DESIGN LINE 2

Inflow Area = 0.827 ac, 6.69% Impervious, Inflow Depth = 0.10" for 1-yr event
Inflow = 0.02 cfs @ 12.53 hrs, Volume= 0.007 af
Primary = 0.02 cfs @ 12.53 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link 2L: DESIGN LINE 2



94 Somerstown Rd SW Plan_08-01-2025 NY-94 Somerstown Rd 24-hr S1 2-yr Rainfall=3.41"

Prepared by ALP Engineering & Land Arch

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Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: XDA-1 TO DESIGN LINE Runoff Area=244,614 sf 0.00% Impervious Runoff Depth=0.32"
Flow Length=1,074' Tc=33.3 min CN=55 Runoff=0.49 cfs 0.148 af

Subcatchment 2S: XDA-2 TO DESIGN LINE 2 Runoff Area=37,786 sf 0.00% Impervious Runoff Depth=0.32"
Tc=6.0 min CN=55 Runoff=0.11 cfs 0.023 af

Subcatchment 3S: FDA-1 Runoff Area=6,154 sf 60.32% Impervious Runoff Depth=1.78"
Tc=6.0 min CN=83 Runoff=0.33 cfs 0.021 af

Subcatchment 4S: FDA-2 Runoff Area=9,134 sf 26.36% Impervious Runoff Depth=1.01"
Tc=6.0 min CN=71 Runoff=0.25 cfs 0.018 af

Subcatchment 5S: FDA-3 Runoff Area=4,292 sf 86.84% Impervious Runoff Depth=2.65"
Tc=6.0 min CN=93 Runoff=0.33 cfs 0.022 af

Subcatchment 6S: FDA-4 Runoff Area=86,571 sf 16.06% Impervious Runoff Depth=0.71"
Tc=10.0 min CN=65 Runoff=1.16 cfs 0.117 af

Subcatchment 7S: FDA-5 TO DESIGN LINE Runoff Area=145,156 sf 0.00% Impervious Runoff Depth=0.32"
Tc=30.0 min CN=55 Runoff=0.30 cfs 0.088 af

Subcatchment 8S: FDA-6 Runoff Area=26,879 sf 0.00% Impervious Runoff Depth=0.32"
Tc=6.0 min CN=55 Runoff=0.08 cfs 0.016 af

Subcatchment 9S: FDA-4.1 Runoff Area=1,888 sf 100.00% Impervious Runoff Depth=3.18"
Tc=6.0 min CN=98 Runoff=0.16 cfs 0.011 af

Pond 9P: RAIN GARDEN 1 Peak Elev=549.32' Storage=271 cf Inflow=0.33 cfs 0.021 af
Discarded=0.04 cfs 0.021 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.021 af

Pond 10P: RAIN GARDEN 3 Peak Elev=519.97' Storage=438 cf Inflow=0.33 cfs 0.022 af
Discarded=0.02 cfs 0.022 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.022 af

Pond 11P: RAIN GARDEN 2 Peak Elev=556.84' Storage=256 cf Inflow=0.25 cfs 0.018 af
Discarded=0.03 cfs 0.018 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.018 af

Pond 12P: EXTENDED DETENTION BASIN Peak Elev=510.28' Storage=2,318 cf Inflow=1.16 cfs 0.117 af
Discarded=0.08 cfs 0.117 af Primary=0.00 cfs 0.000 af Outflow=0.08 cfs 0.117 af

Pond 13P: Chambers Peak Elev=506.97' Storage=195 cf Inflow=0.16 cfs 0.011 af
Discarded=0.01 cfs 0.011 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.011 af

Link 1L: DESIGN LINE 1 Inflow=0.30 cfs 0.088 af
Primary=0.30 cfs 0.088 af

Link 2L: DESIGN LINE 2 Inflow=0.08 cfs 0.016 af
Primary=0.08 cfs 0.016 af

Total Runoff Area = 12.913 ac Runoff Volume = 0.463 af Average Runoff Depth = 0.43"
95.44% Pervious = 12.324 ac 4.56% Impervious = 0.589 ac

Summary for Subcatchment 1S: XDA-1 TO DESIGN LINE 1

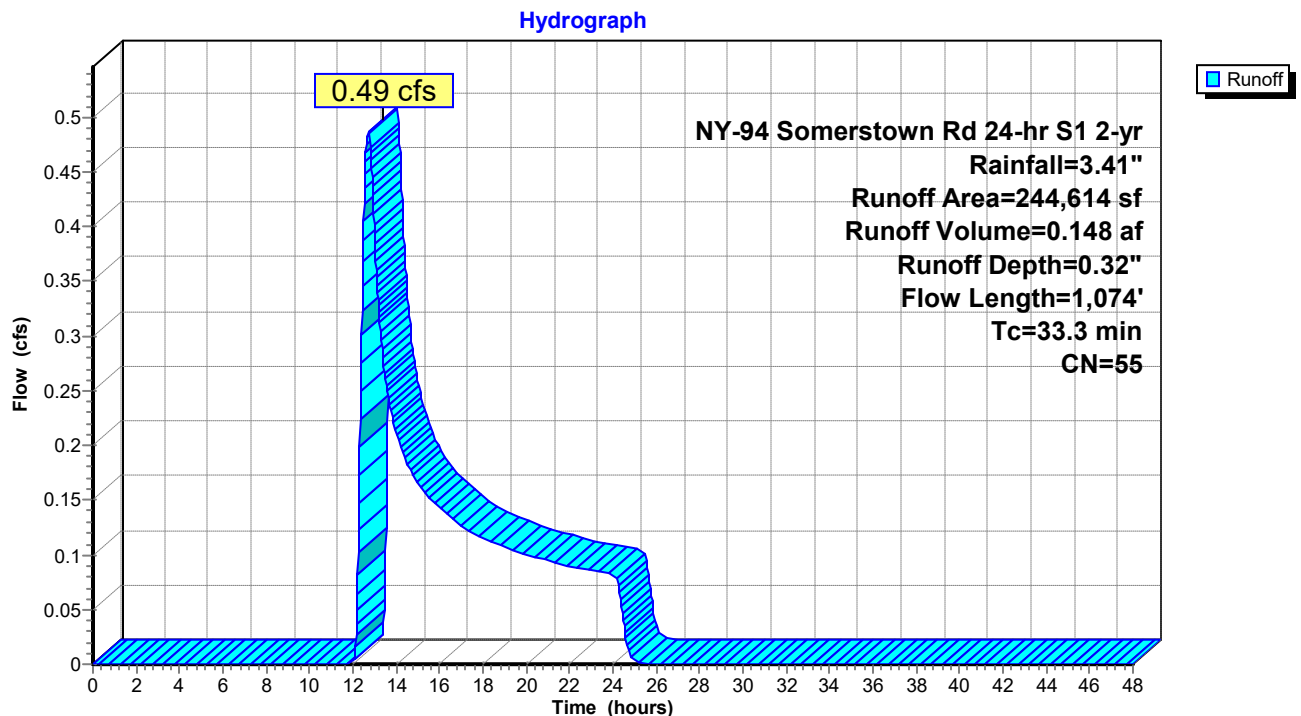
Runoff = 0.49 cfs @ 12.70 hrs, Volume= 0.148 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NY-94 Somerstown Rd 24-hr S1 2-yr Rainfall=3.41"

Area (sf)	CN	Description
244,614	55	Woods, Good, HSG B
244,614		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	56	0.1071	0.14		Sheet Flow, A-B
					Woods: Light underbrush n= 0.400 P2= 3.41"
0.9	131	0.2328	2.41		Shallow Concentrated Flow, B-C
					Woodland Kv= 5.0 fps
4.3	280	0.0482	1.10		Shallow Concentrated Flow, C-D
					Woodland Kv= 5.0 fps
2.1	143	0.0524	1.14		Shallow Concentrated Flow, D-E
					Woodland Kv= 5.0 fps
19.3	464	0.0064	0.40		Shallow Concentrated Flow, E-F
					Woodland Kv= 5.0 fps
33.3	1,074	Total			

Subcatchment 1S: XDA-1 TO DESIGN LINE 1



Summary for Subcatchment 2S: XDA-2 TO DESIGN LINE 2

Runoff = 0.11 cfs @ 12.15 hrs, Volume= 0.023 af, Depth= 0.32"

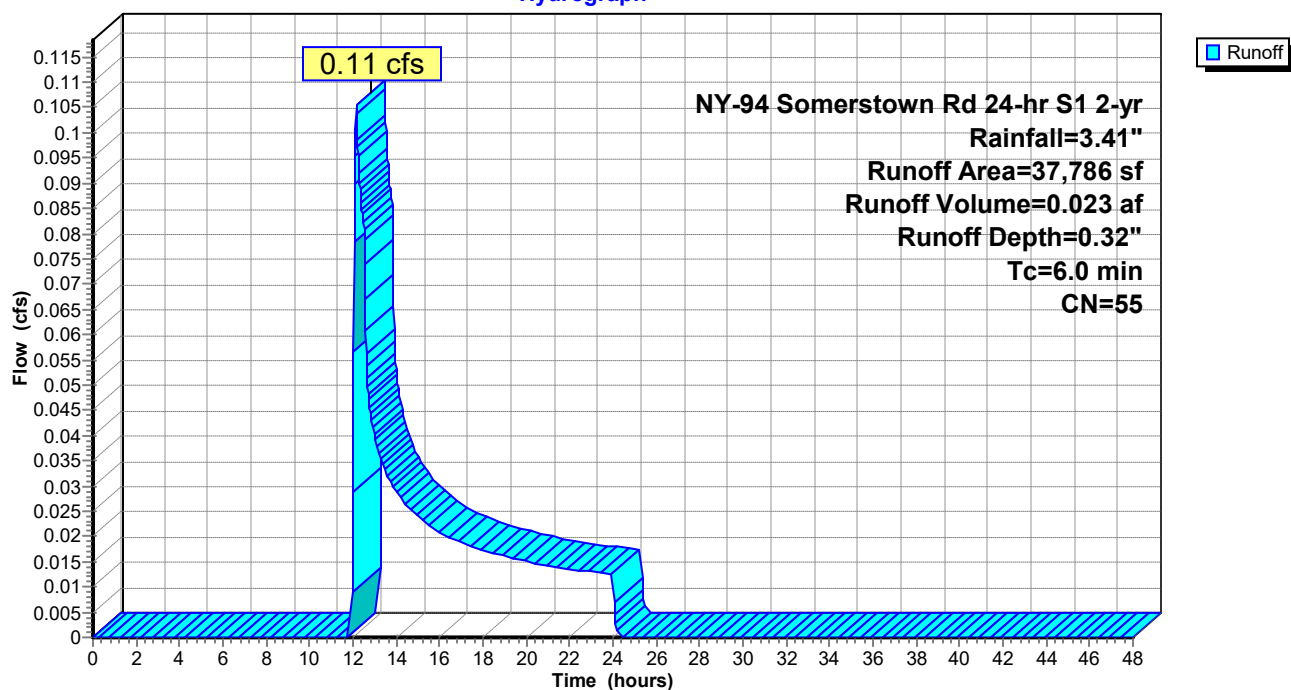
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NY-94 Somerstown Rd 24-hr S1 2-yr Rainfall=3.41"

Area (sf)	CN	Description
37,786	55	Woods, Good, HSG B
37,786		100.00% Pervious Area

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

Subcatchment 2S: XDA-2 TO DESIGN LINE 2

Hydrograph



Summary for Subcatchment 3S: FDA-1

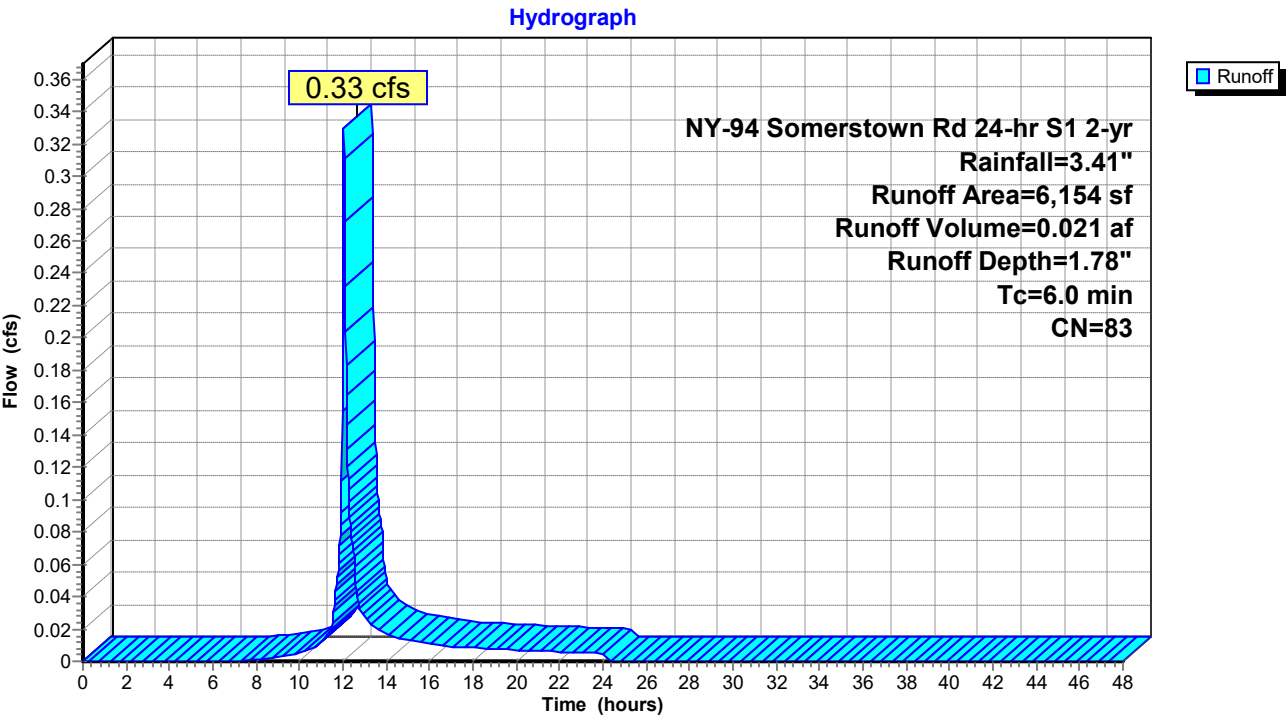
Runoff = 0.33 cfs @ 12.04 hrs, Volume= 0.021 af, Depth= 1.78"
Routed to Pond 9P : RAIN GARDEN 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NY-94 Somerstown Rd 24-hr S1 2-yr Rainfall=3.41"

	Area (sf)	CN	Description
*	3,712	98	Impervious surfaces, HSG B
	2,442	61	>75% Grass cover, Good, HSG B
	6,154	83	Weighted Average
	2,442		39.68% Pervious Area
	3,712		60.32% Impervious Area

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

Subcatchment 3S: FDA-1



Summary for Subcatchment 4S: FDA-2

Runoff = 0.25 cfs @ 12.04 hrs, Volume= 0.018 af, Depth= 1.01"
 Routed to Pond 11P : RAIN GARDEN 2

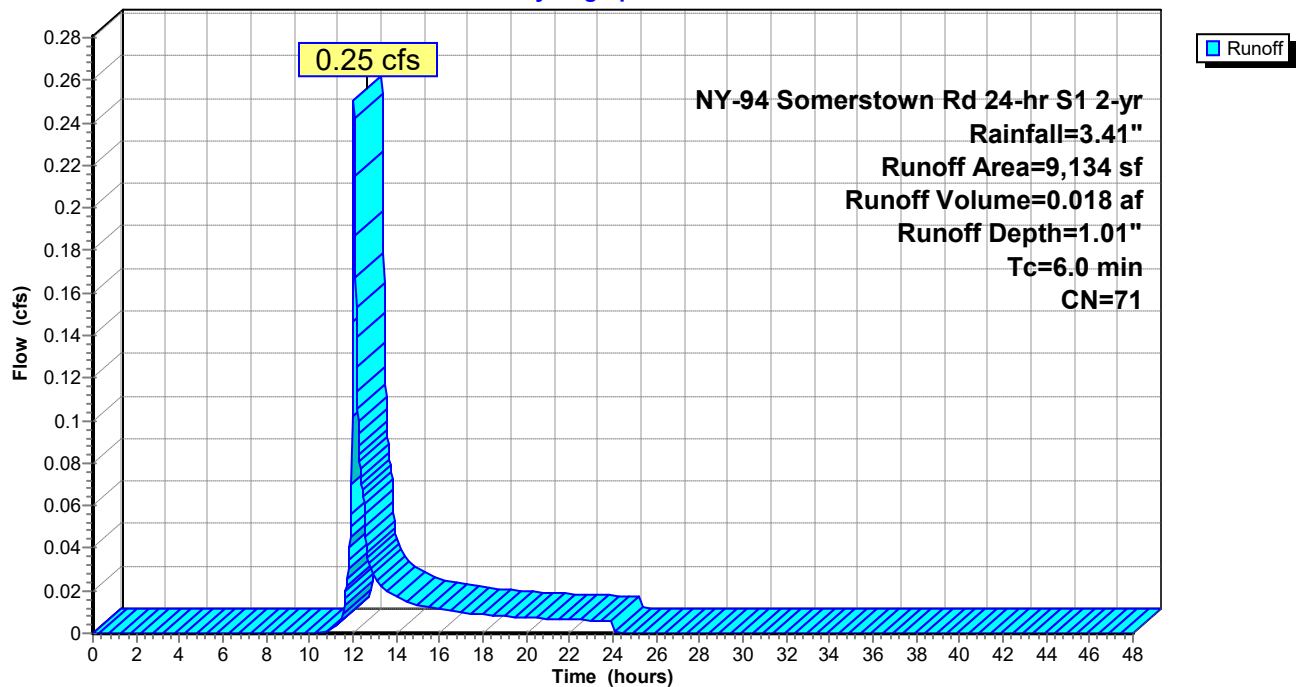
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 NY-94 Somerstown Rd 24-hr S1 2-yr Rainfall=3.41"

Area (sf)	CN	Description
2,408	98	Roofs, HSG B
6,726	61	>75% Grass cover, Good, HSG B
9,134	71	Weighted Average
6,726		73.64% Pervious Area
2,408		26.36% Impervious Area

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

Subcatchment 4S: FDA-2

Hydrograph



Summary for Subcatchment 5S: FDA-3

Runoff = 0.33 cfs @ 12.04 hrs, Volume= 0.022 af, Depth= 2.65"
Routed to Pond 10P : RAIN GARDEN 3

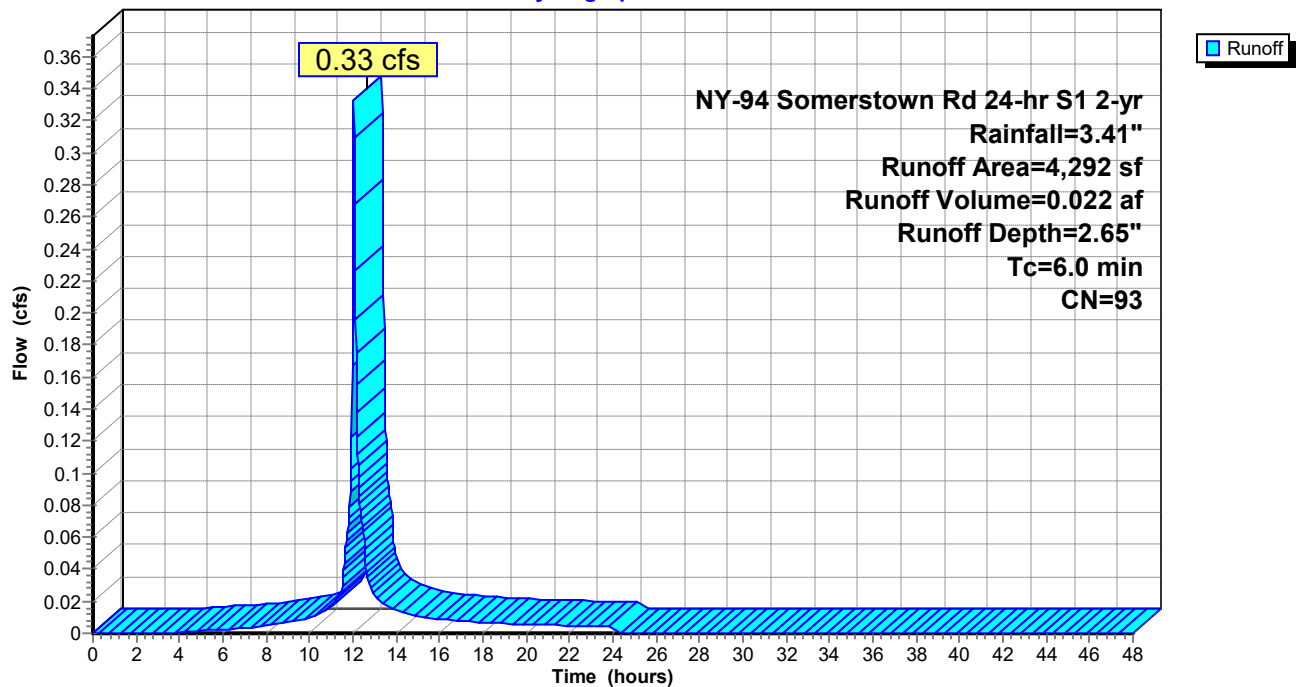
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NY-94 Somerstown Rd 24-hr S1 2-yr Rainfall=3.41"

	Area (sf)	CN	Description
*	3,727	98	Impervious surfaces, HSG B
	565	61	>75% Grass cover, Good, HSG B
	4,292	93	Weighted Average
	565		13.16% Pervious Area
	3,727		86.84% Impervious Area

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

Subcatchment 5S: FDA-3

Hydrograph



Summary for Subcatchment 6S: FDA-4

Runoff = 1.16 cfs @ 12.11 hrs, Volume= 0.117 af, Depth= 0.71"
 Routed to Pond 12P : EXTENDED DETENTION BASIN

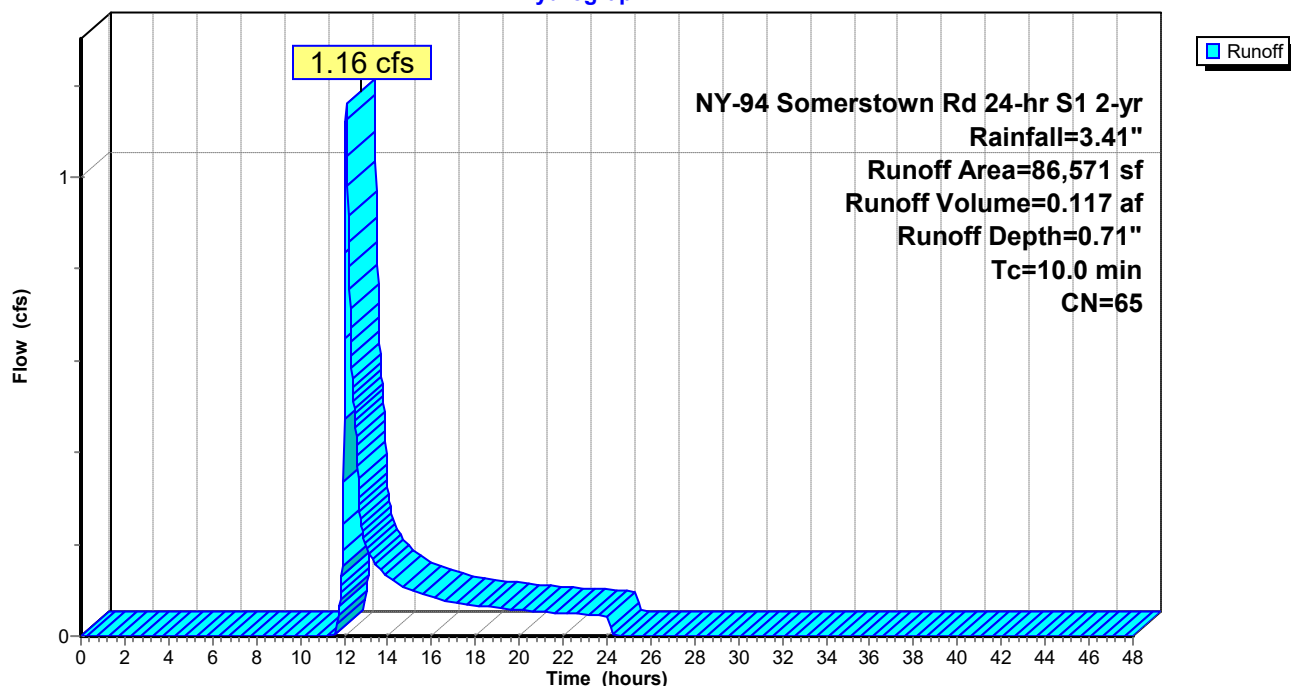
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 NY-94 Somerstown Rd 24-hr S1 2-yr Rainfall=3.41"

	Area (sf)	CN	Description
*	13,904	98	Impervious Surfaces & Roofs, HSG B
	44,003	61	>75% Grass cover, Good, HSG B
	25,342	55	Woods, Good, HSG B
	3,322	58	Meadow, non-grazed, HSG B
	86,571	65	Weighted Average
	72,667		83.94% Pervious Area
	13,904		16.06% Impervious Area

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

Subcatchment 6S: FDA-4

Hydrograph



Summary for Subcatchment 7S: FDA-5 TO DESIGN LINE 1

Runoff = 0.30 cfs @ 12.65 hrs, Volume= 0.088 af, Depth= 0.32"
Routed to Link 1L : DESIGN LINE 1

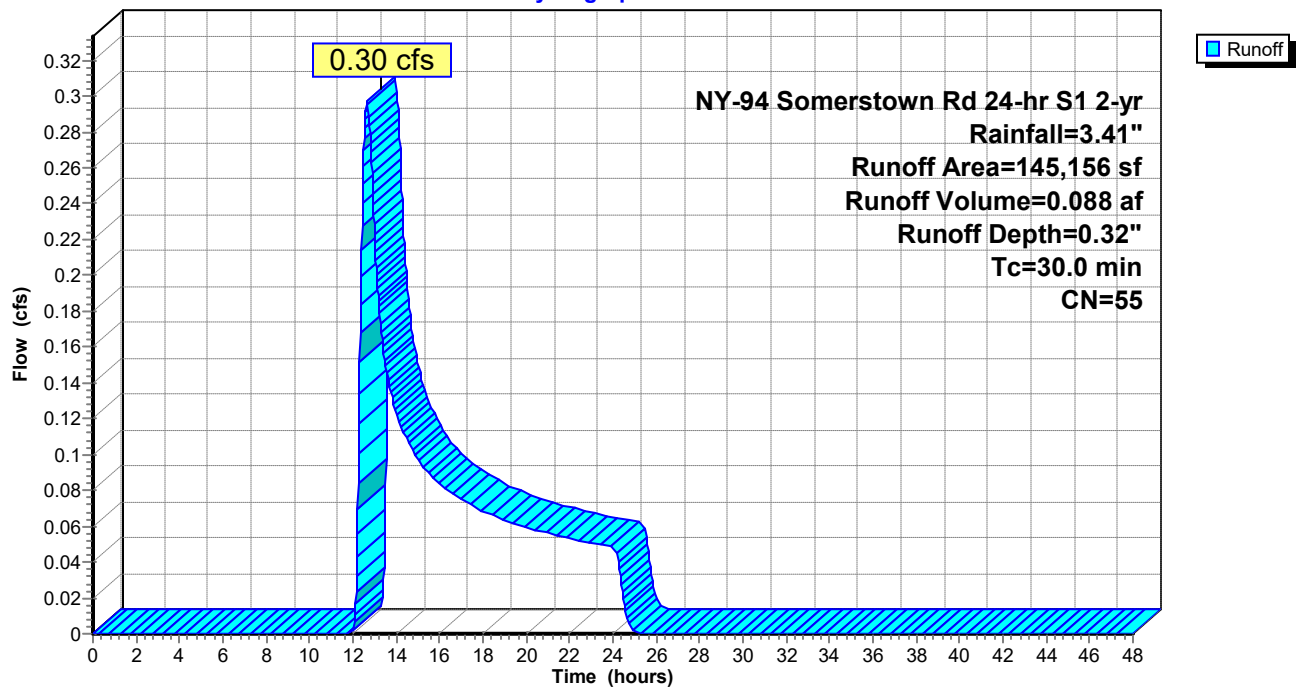
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NY-94 Somerstown Rd 24-hr S1 2-yr Rainfall=3.41"

Area (sf)	CN	Description
156	61	>75% Grass cover, Good, HSG B
145,000	55	Woods, Good, HSG B
145,156	55	Weighted Average
145,156		100.00% Pervious Area

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

Subcatchment 7S: FDA-5 TO DESIGN LINE 1

Hydrograph



Summary for Subcatchment 8S: FDA-6

Runoff = 0.08 cfs @ 12.15 hrs, Volume= 0.016 af, Depth= 0.32"
 Routed to Link 2L : DESIGN LINE 2

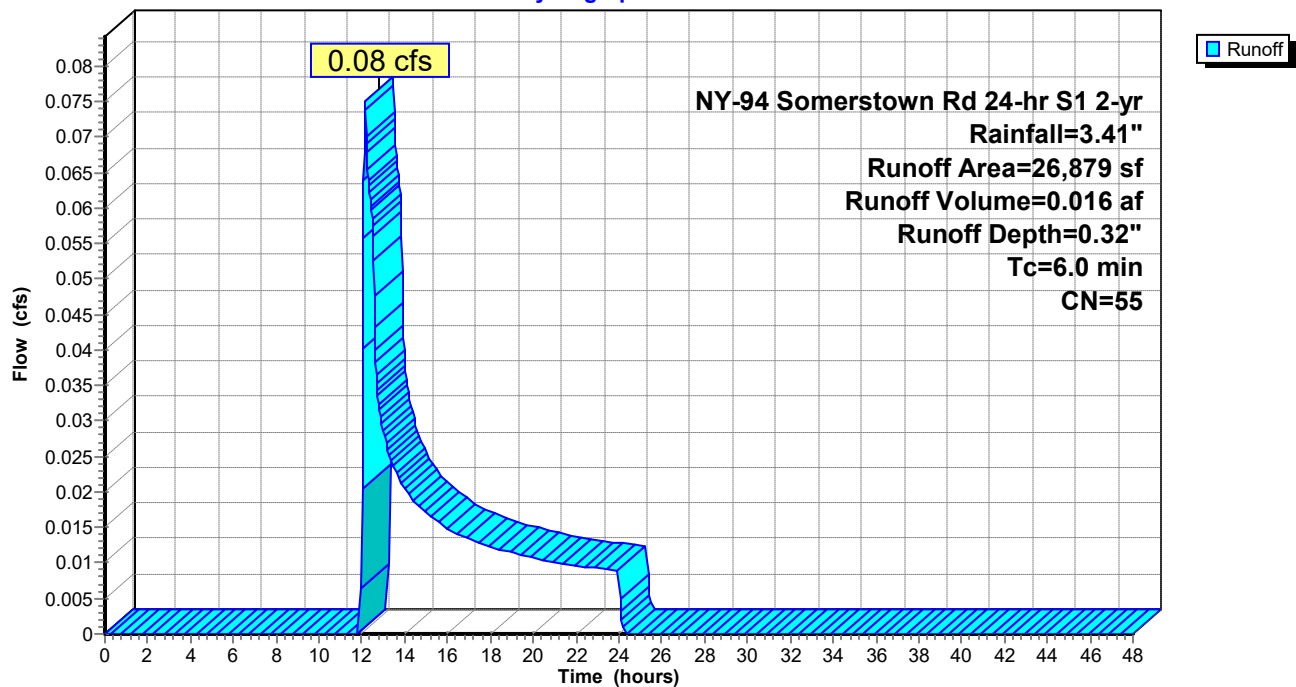
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 NY-94 Somerstown Rd 24-hr S1 2-yr Rainfall=3.41"

Area (sf)	CN	Description
26,879	55	Woods, Good, HSG B
26,879		100.00% Pervious Area

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

Subcatchment 8S: FDA-6

Hydrograph



Summary for Subcatchment 9S: FDA-4.1

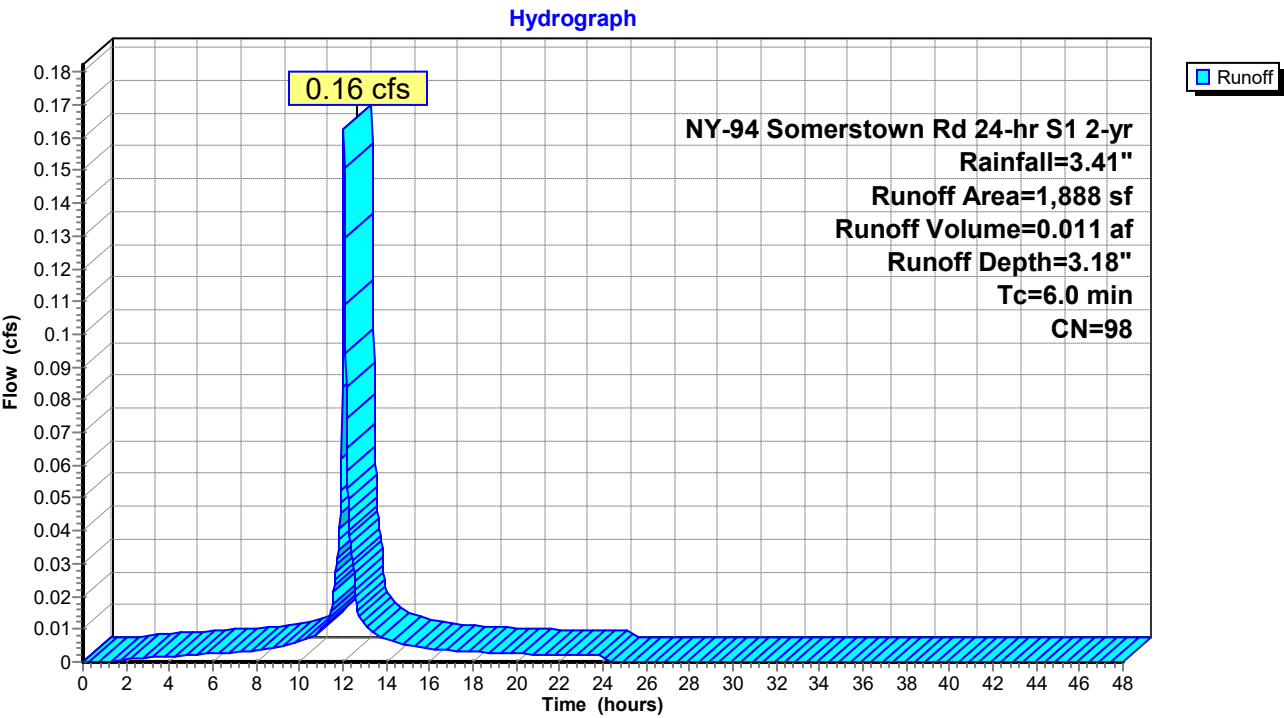
Runoff = 0.16 cfs @ 12.04 hrs, Volume= 0.011 af, Depth= 3.18"
Routed to Pond 13P : Chambers

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NY-94 Somerstown Rd 24-hr S1 2-yr Rainfall=3.41"

Area (sf)	CN	Description
1,888	98	Paved parking, HSG B
1,888		100.00% Impervious Area

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

Subcatchment 9S: FDA-4.1



Summary for Pond 9P: RAIN GARDEN 1

Inflow Area = 0.141 ac, 60.32% Impervious, Inflow Depth = 1.78" for 2-yr event
 Inflow = 0.33 cfs @ 12.04 hrs, Volume= 0.021 af
 Outflow = 0.04 cfs @ 12.65 hrs, Volume= 0.021 af, Atten= 88%, Lag= 36.5 min
 Discarded = 0.04 cfs @ 12.65 hrs, Volume= 0.021 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Pond 12P : EXTENDED DETENTION BASIN

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 549.32' @ 12.65 hrs Surf.Area= 871 sf Storage= 271 cf

Plug-Flow detention time= 47.0 min calculated for 0.021 af (100% of inflow)
 Center-of-Mass det. time= 47.0 min (893.6 - 846.6)

Volume	Invert	Avail.Storage	Storage Description
#1	549.00'	1,555 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

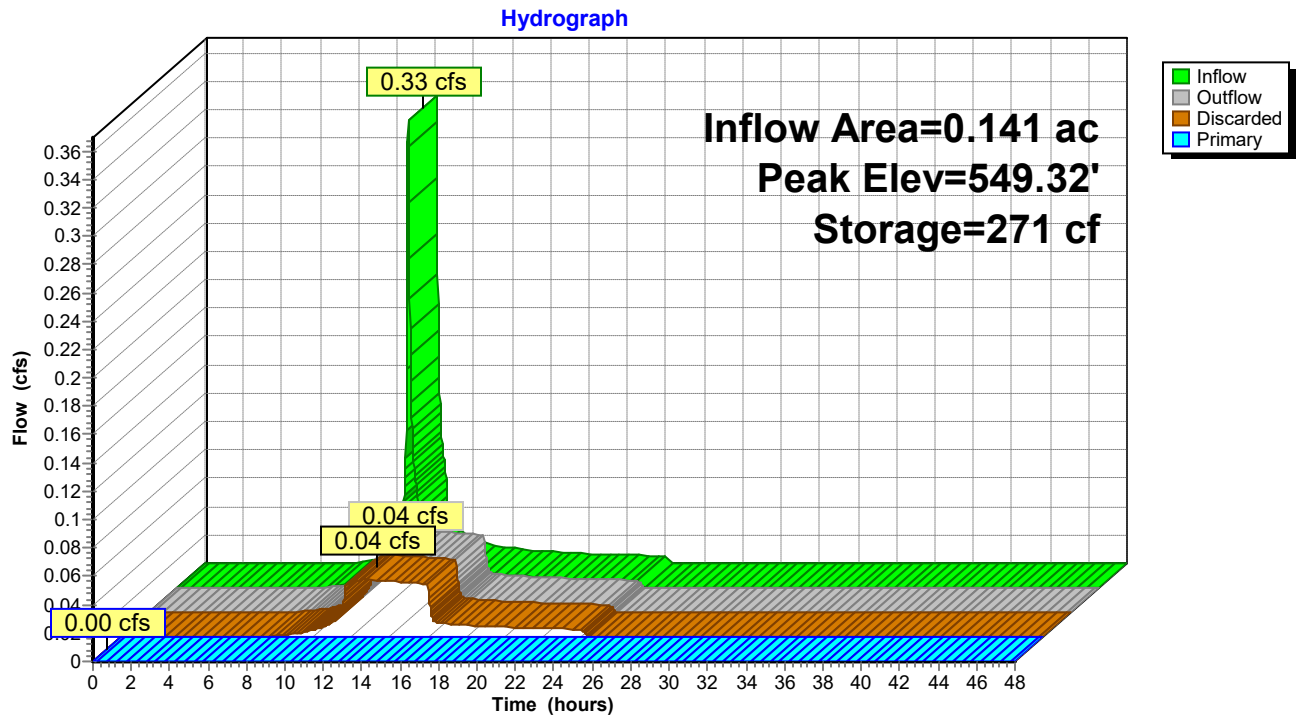
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
549.00	800	0	0
549.50	910	428	428
550.00	1,050	490	918
550.50	1,500	638	1,555

Device	Routing	Invert	Outlet Devices
#1	Primary	550.00'	4.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Discarded	549.00'	2.000 in/hr Exfiltration over Horizontal area
#3	Primary	550.35'	3.0' long (Profile 6) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 3.12 3.41 3.59

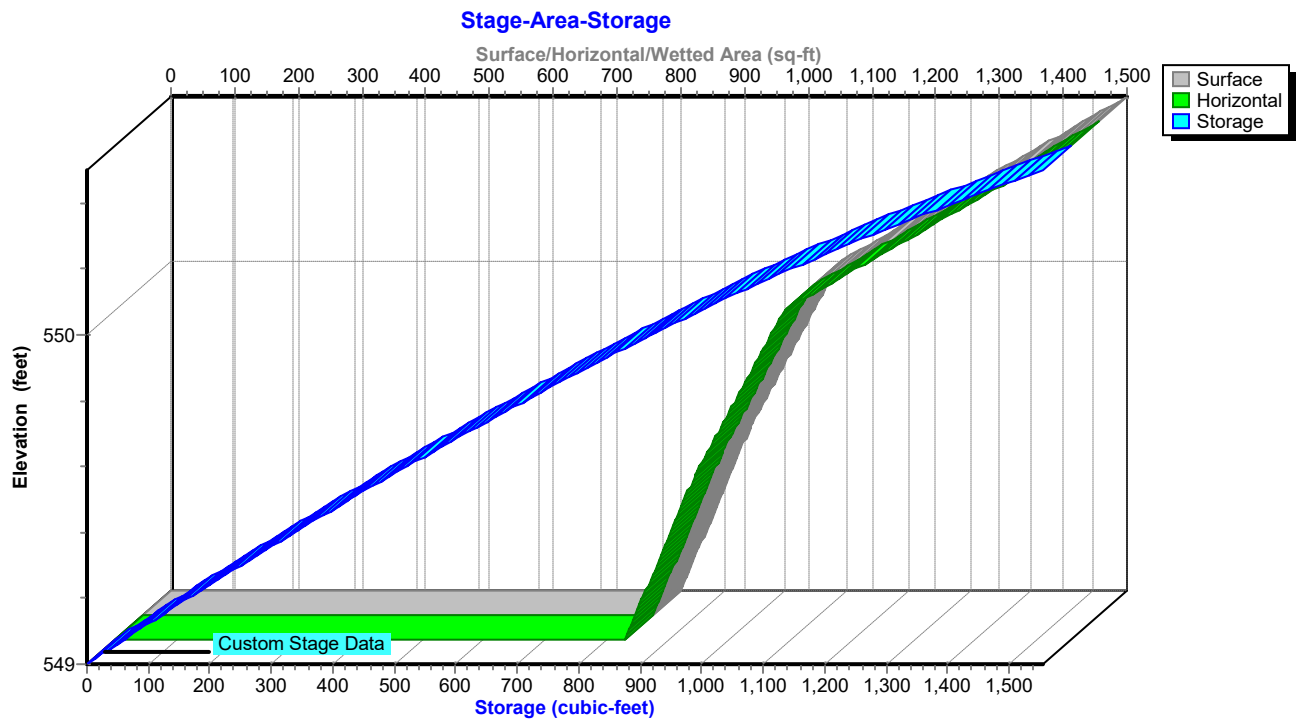
Discarded OutFlow Max=0.04 cfs @ 12.65 hrs HW=549.32' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=549.00' (Free Discharge)
 ↑ **1=Orifice/Grate** (Controls 0.00 cfs)
 ↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 9P: RAIN GARDEN 1



Pond 9P: RAIN GARDEN 1



Summary for Pond 10P: RAIN GARDEN 3

Inflow Area = 0.099 ac, 86.84% Impervious, Inflow Depth = 2.65" for 2-yr event
 Inflow = 0.33 cfs @ 12.04 hrs, Volume= 0.022 af
 Outflow = 0.02 cfs @ 13.53 hrs, Volume= 0.022 af, Atten= 95%, Lag= 89.6 min
 Discarded = 0.02 cfs @ 13.53 hrs, Volume= 0.022 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Pond 12P : EXTENDED DETENTION BASIN

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 519.97' @ 13.53 hrs Surf.Area= 381 sf Storage= 438 cf

Plug-Flow detention time= 268.2 min calculated for 0.022 af (100% of inflow)
 Center-of-Mass det. time= 268.2 min (1,066.9 - 798.8)

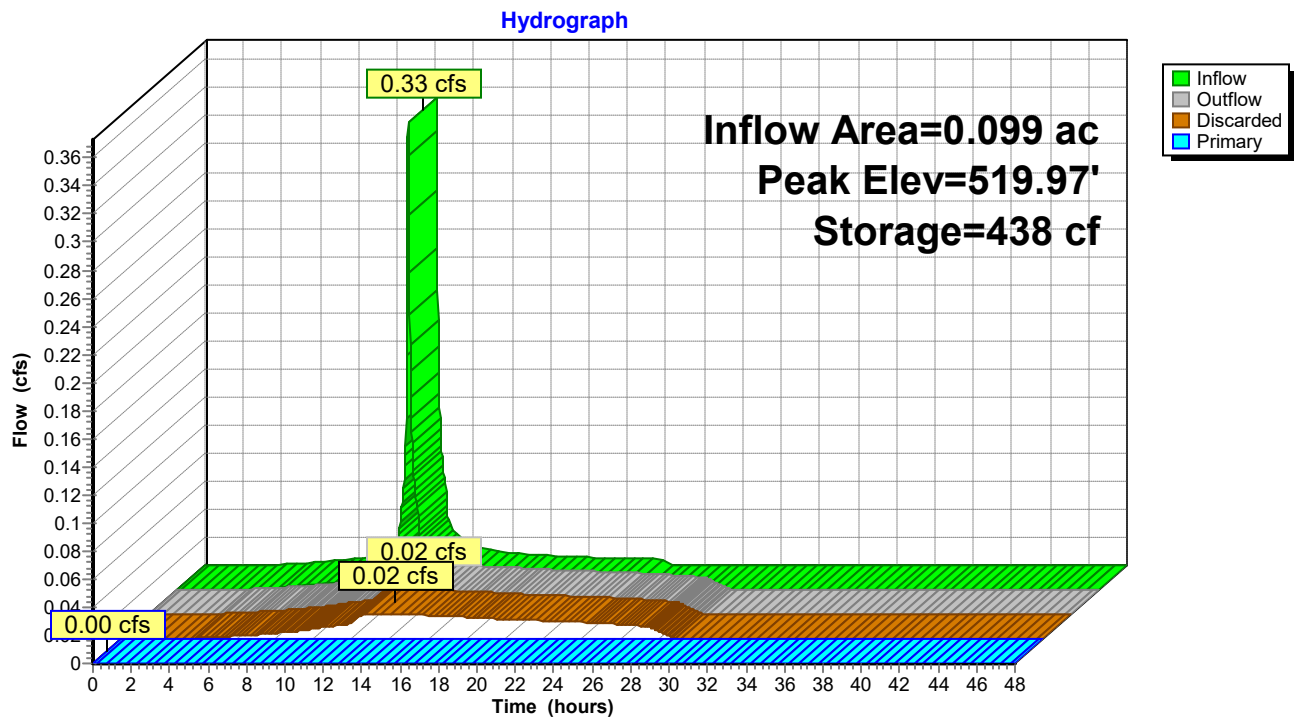
Volume	Invert	Avail.Storage	Storage Description
#1	518.25'	664 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
518.25	0	0	0
518.50	197	25	25
519.50	306	252	276
520.00	386	173	449
520.50	475	215	664

Device	Routing	Invert	Outlet Devices
#1	Primary	520.00'	4.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Discarded	518.25'	2.000 in/hr Exfiltration over Horizontal area
#3	Primary	520.25'	3.0' long (Profile 6) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 3.12 3.41 3.59

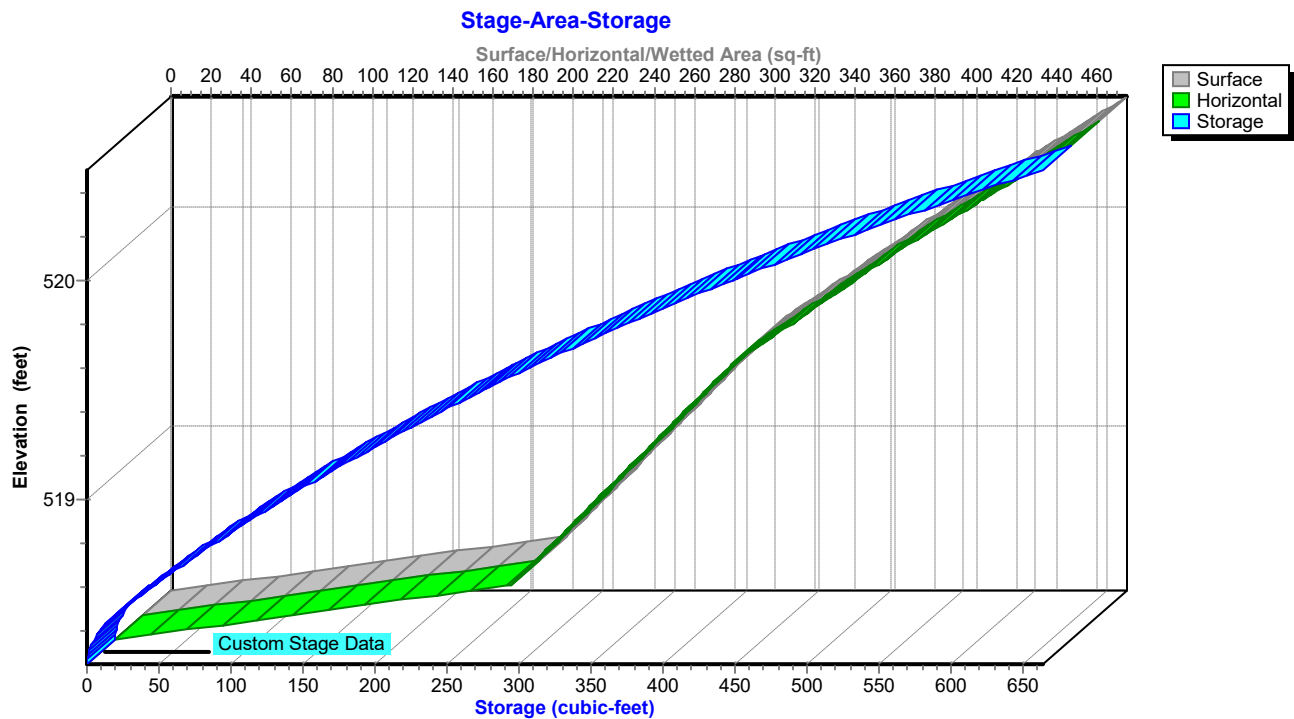
Discarded OutFlow Max=0.02 cfs @ 13.53 hrs HW=519.97' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=518.25' (Free Discharge)
 ↑ **1=Orifice/Grate** (Controls 0.00 cfs)
 ↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10P: RAIN GARDEN 3



Pond 10P: RAIN GARDEN 3



Summary for Pond 11P: RAIN GARDEN 2

Inflow Area = 0.210 ac, 26.36% Impervious, Inflow Depth = 1.01" for 2-yr event
 Inflow = 0.25 cfs @ 12.04 hrs, Volume= 0.018 af
 Outflow = 0.03 cfs @ 12.93 hrs, Volume= 0.018 af, Atten= 89%, Lag= 53.4 min
 Discarded = 0.03 cfs @ 12.93 hrs, Volume= 0.018 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Link 2L : DESIGN LINE 2

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 556.84' @ 12.93 hrs Surf.Area= 608 sf Storage= 256 cf

Plug-Flow detention time= 104.9 min calculated for 0.018 af (100% of inflow)
 Center-of-Mass det. time= 104.9 min (996.3 - 891.4)

Volume	Invert	Avail.Storage	Storage Description
#1	556.00'	1,832 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

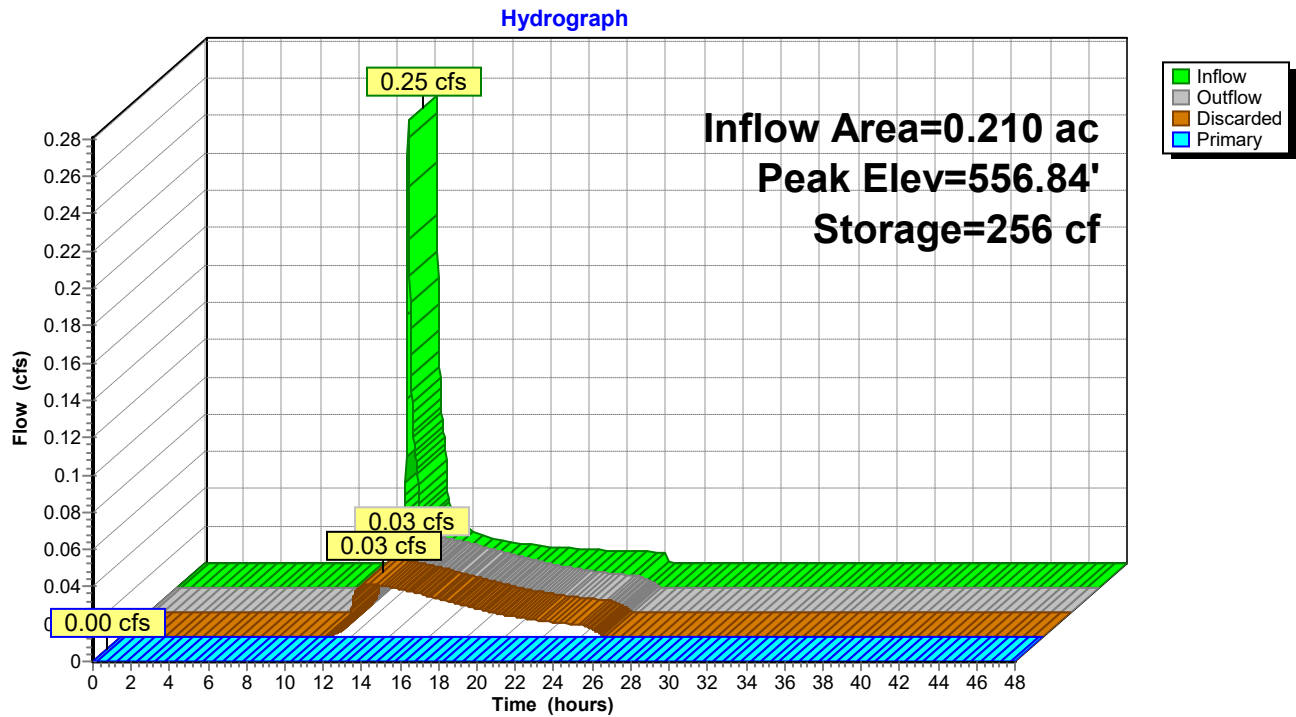
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
556.00	0	0	0
557.00	722	361	361
557.75	885	603	964
558.00	1,001	236	1,199
558.50	1,528	632	1,832

Device	Routing	Invert	Outlet Devices
#1	Primary	558.00'	4.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Discarded	556.00'	2.000 in/hr Exfiltration over Horizontal area
#3	Primary	558.25'	3.0' long (Profile 6) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 3.12 3.41 3.59

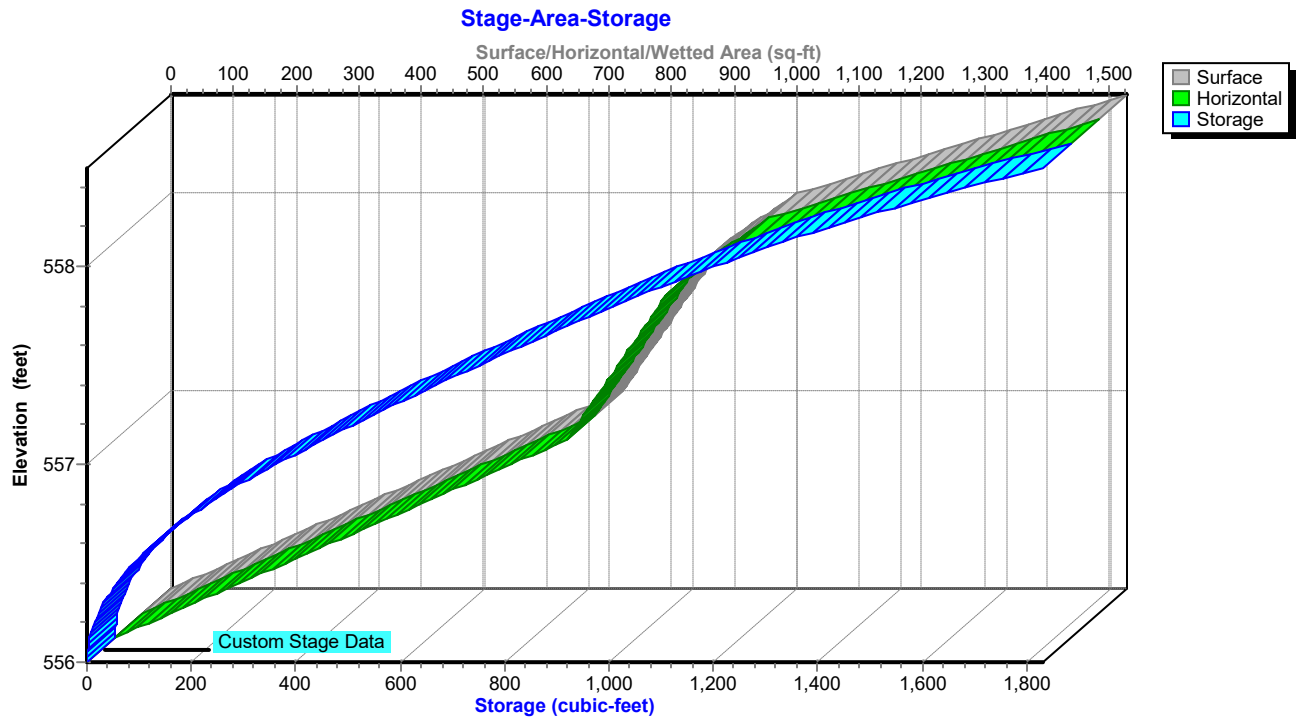
Discarded OutFlow Max=0.03 cfs @ 12.93 hrs HW=556.84' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=556.00' (Free Discharge)
 ↑ **1=Orifice/Grate** (Controls 0.00 cfs)
 ↓ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 11P: RAIN GARDEN 2



Pond 11P: RAIN GARDEN 2



Summary for Pond 12P: EXTENDED DETENTION BASIN

Inflow Area = 2.227 ac, 22.00% Impervious, Inflow Depth = 0.63" for 2-yr event
 Inflow = 1.16 cfs @ 12.11 hrs, Volume= 0.117 af
 Outflow = 0.08 cfs @ 16.65 hrs, Volume= 0.117 af, Atten= 93%, Lag= 272.6 min
 Discarded = 0.08 cfs @ 16.65 hrs, Volume= 0.117 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Link 1L : DESIGN LINE 1

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 510.28' @ 16.65 hrs Surf.Area= 1,684 sf Storage= 2,318 cf

Plug-Flow detention time= 414.8 min calculated for 0.117 af (100% of inflow)
 Center-of-Mass det. time= 414.7 min (1,334.8 - 920.2)

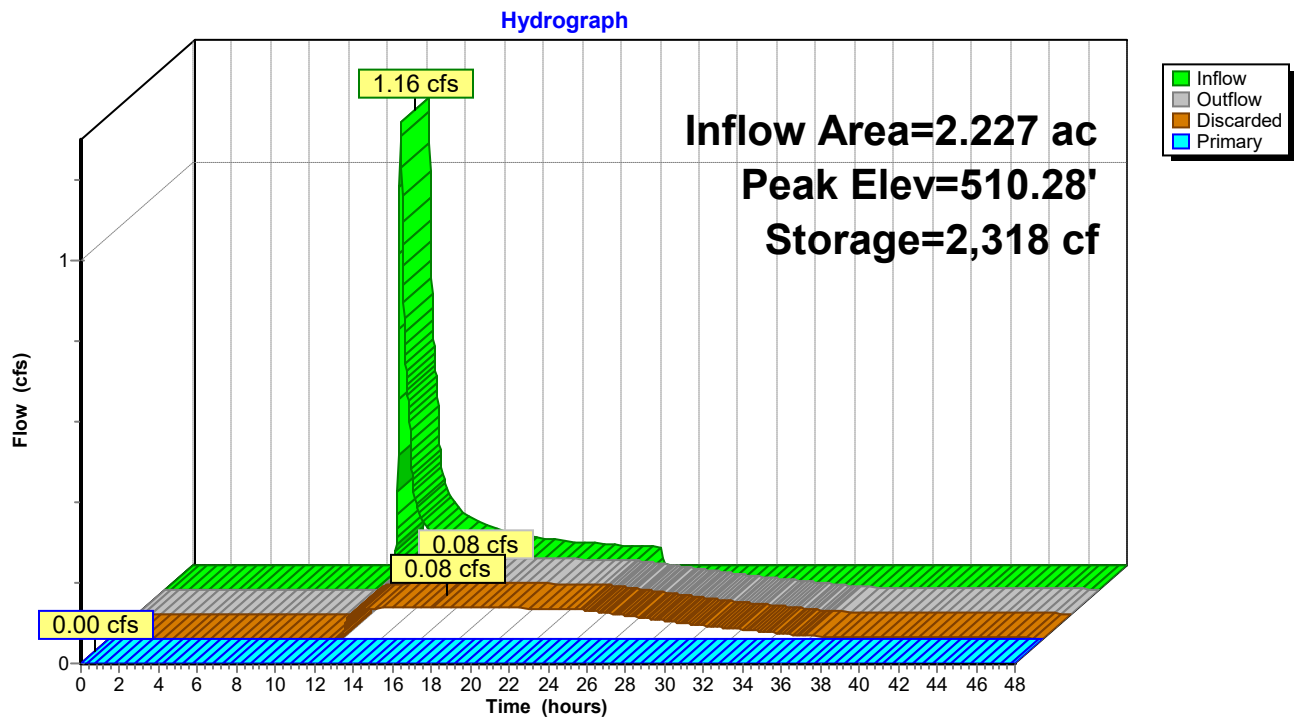
Volume	Invert	Avail.Storage	Storage Description
#1	506.00'	17,768 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
506.00	50	0	0
507.00	98	74	74
508.00	146	122	196
509.00	779	463	659
510.00	1,609	1,194	1,853
512.00	2,141	3,750	5,603
514.00	2,608	4,749	10,352
516.00	3,087	5,695	16,047
516.50	3,800	1,722	17,768

Device	Routing	Invert	Outlet Devices
#1	Primary	510.75'	3.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	511.75'	8.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	515.50'	5.0' long (Profile 6) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 3.12 3.41 3.59
#4	Discarded	506.00'	2.000 in/hr Exfiltration over Horizontal area

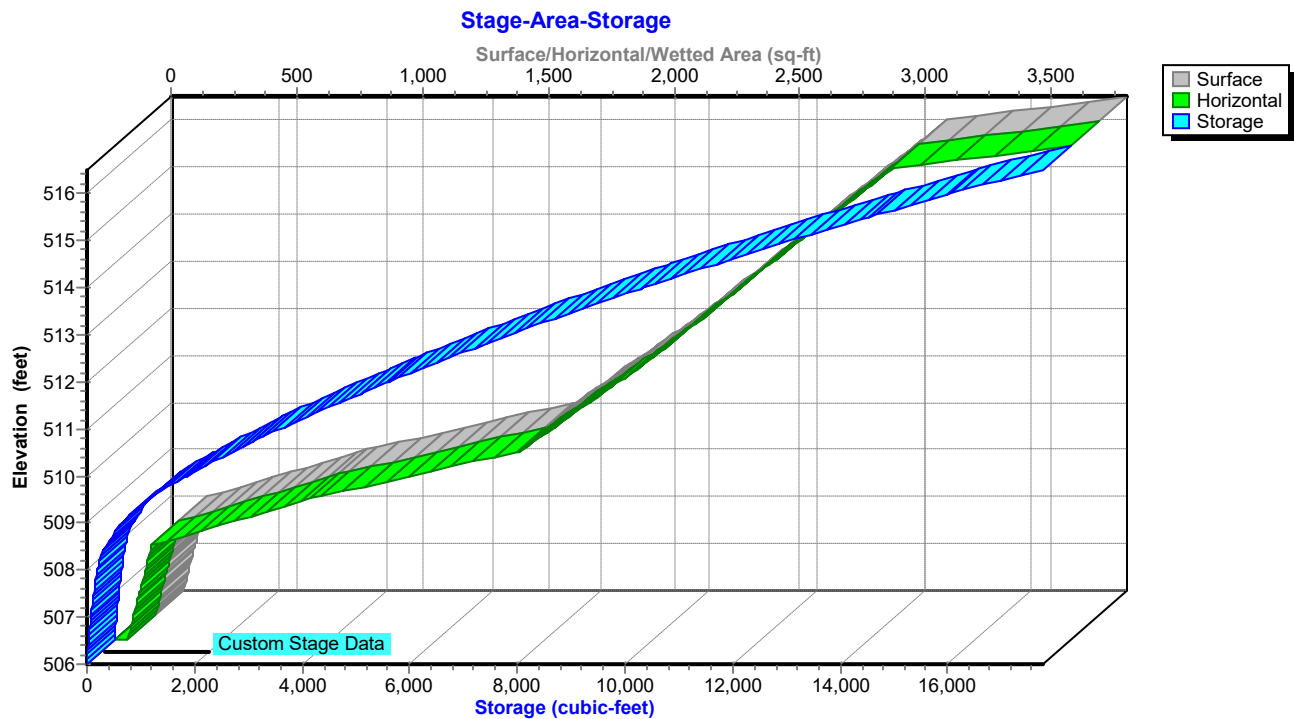
Discarded OutFlow Max=0.08 cfs @ 16.65 hrs HW=510.28' (Free Discharge)
 ↑ **4=Exfiltration** (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=506.00' (Free Discharge)
 ↑ **1=Orifice/Grate** (Controls 0.00 cfs)
 ↓ **2=Orifice/Grate** (Controls 0.00 cfs)
 ↓ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 12P: EXTENDED DETENTION BASIN



Pond 12P: EXTENDED DETENTION BASIN



Summary for Pond 13P: Chambers

Inflow Area = 0.043 ac, 100.00% Impervious, Inflow Depth = 3.18" for 2-yr event
 Inflow = 0.16 cfs @ 12.04 hrs, Volume= 0.011 af
 Outflow = 0.01 cfs @ 10.82 hrs, Volume= 0.011 af, Atten= 95%, Lag= 0.0 min
 Discarded = 0.01 cfs @ 10.82 hrs, Volume= 0.011 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Link 1L : DESIGN LINE 1

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs / 2
 Peak Elev= 506.97' @ 13.56 hrs Surf.Area= 349 sf Storage= 195 cf

Plug-Flow detention time= 189.1 min calculated for 0.011 af (100% of inflow)
 Center-of-Mass det. time= 189.1 min (945.9 - 756.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	506.00'	310 cf	5.92'W x 59.00'L x 3.21'H Field A 1,120 cf Overall - 346 cf Embedded = 774 cf x 40.0% Voids
#2A	506.50'	346 cf	Cultec R-280HD x 8 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 1 rows
		656 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	506.00'	1.000 in/hr Exfiltration over Horizontal area
#2	Device 3	506.75'	4.0" Round Culvert L= 32.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 506.75' / 506.50' S= 0.0078 '/' Cc= 0.900 n= 0.012, Flow Area= 0.09 sf
#3	Primary	508.50'	15.0" x 15.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.01 cfs @ 10.82 hrs HW=506.03' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=506.00' (Free Discharge)

↑ **3=Orifice/Grate** (Controls 0.00 cfs)

↑ **2=Culvert** (Controls 0.00 cfs)

Pond 13P: Chambers - Chamber Wizard Field A

Chamber Model = Cultec R-280HD (Cultec Recharger® 280HD)

Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf

Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap

Row Length Adjustment= +1.00' x 6.07 sf x 1 rows

8 Chambers/Row x 7.00' Long +1.00' Row Adjustment = 57.00' Row Length +12.0" End Stone x 2 = 59.00' Base Length

1 Rows x 47.0" Wide + 12.0" Side Stone x 2 = 5.92' Base Width

6.0" Stone Base + 26.5" Chamber Height + 6.0" Stone Cover = 3.21' Field Height

8 Chambers x 42.5 cf +1.00' Row Adjustment x 6.07 sf x 1 Rows = 346.1 cf Chamber Storage

1,120.0 cf Field - 346.1 cf Chambers = 773.9 cf Stone x 40.0% Voids = 309.6 cf Stone Storage

Chamber Storage + Stone Storage = 655.6 cf = 0.015 af

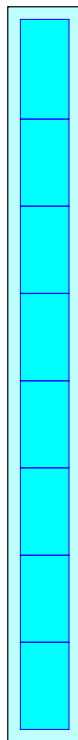
Overall Storage Efficiency = 58.5%

Overall System Size = 59.00' x 5.92' x 3.21'

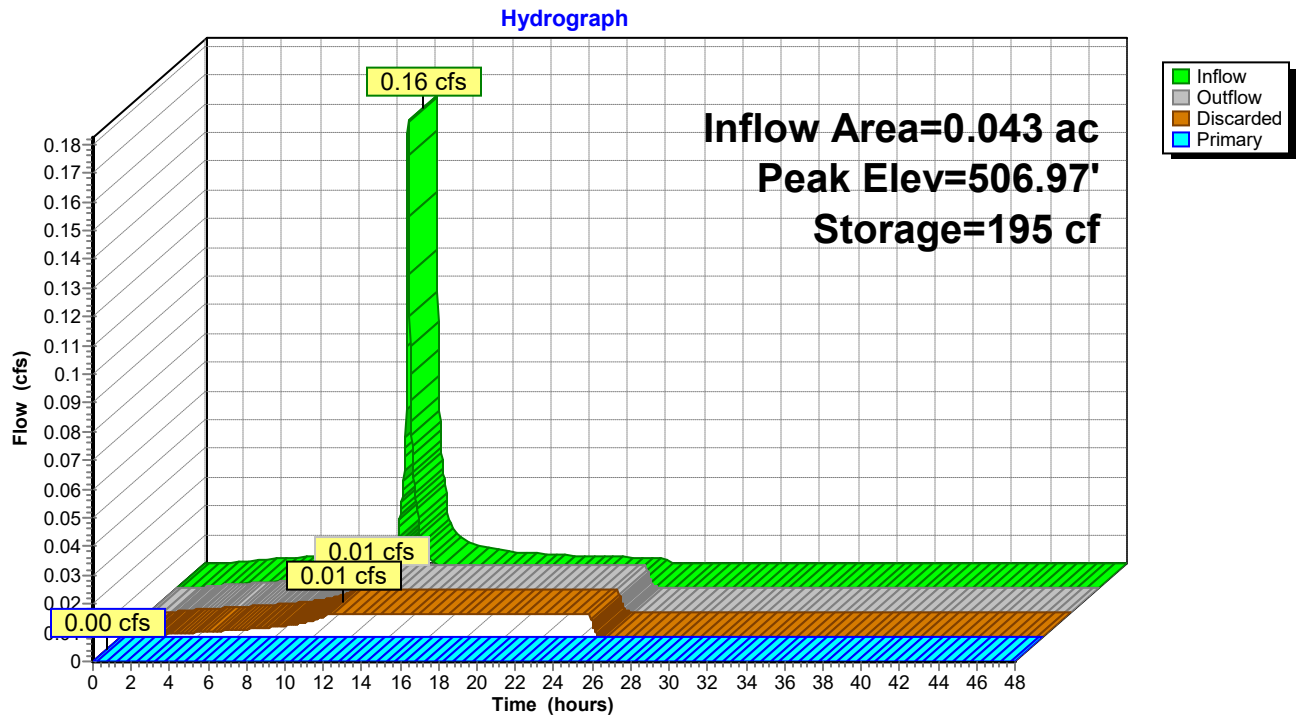
8 Chambers

41.5 cy Field

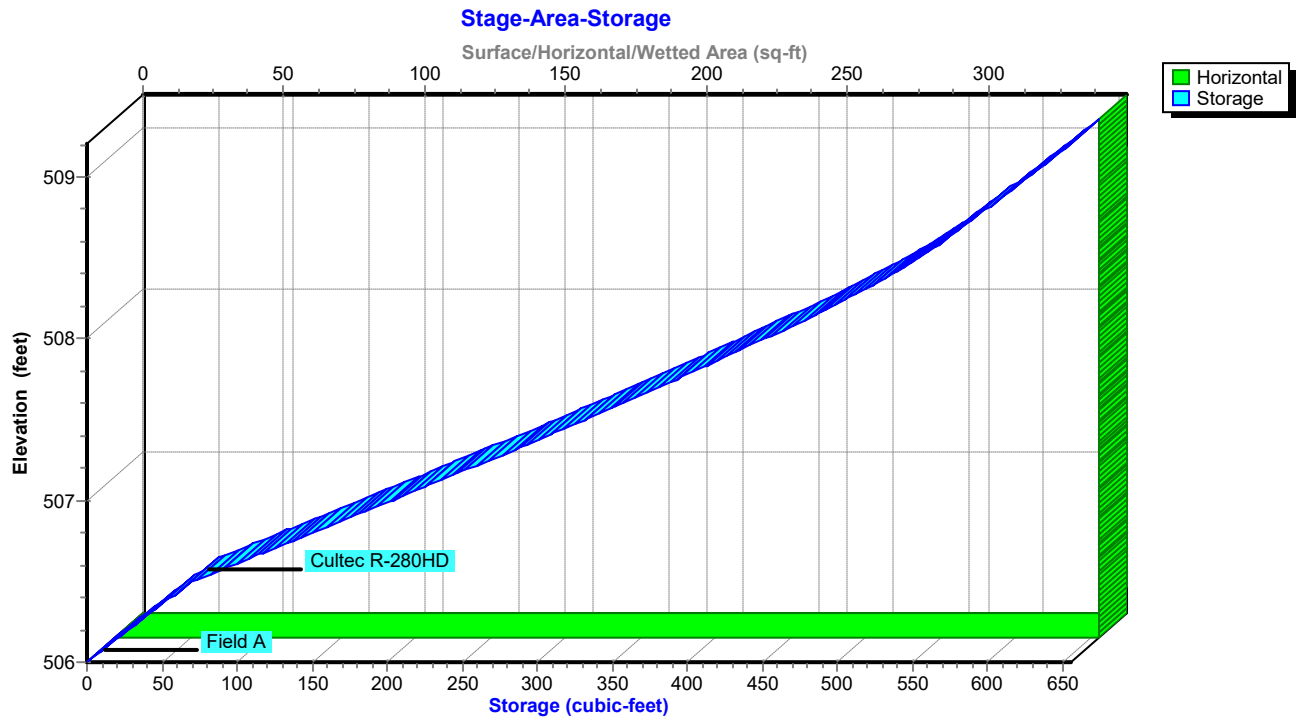
28.7 cy Stone



Pond 13P: Chambers



Pond 13P: Chambers

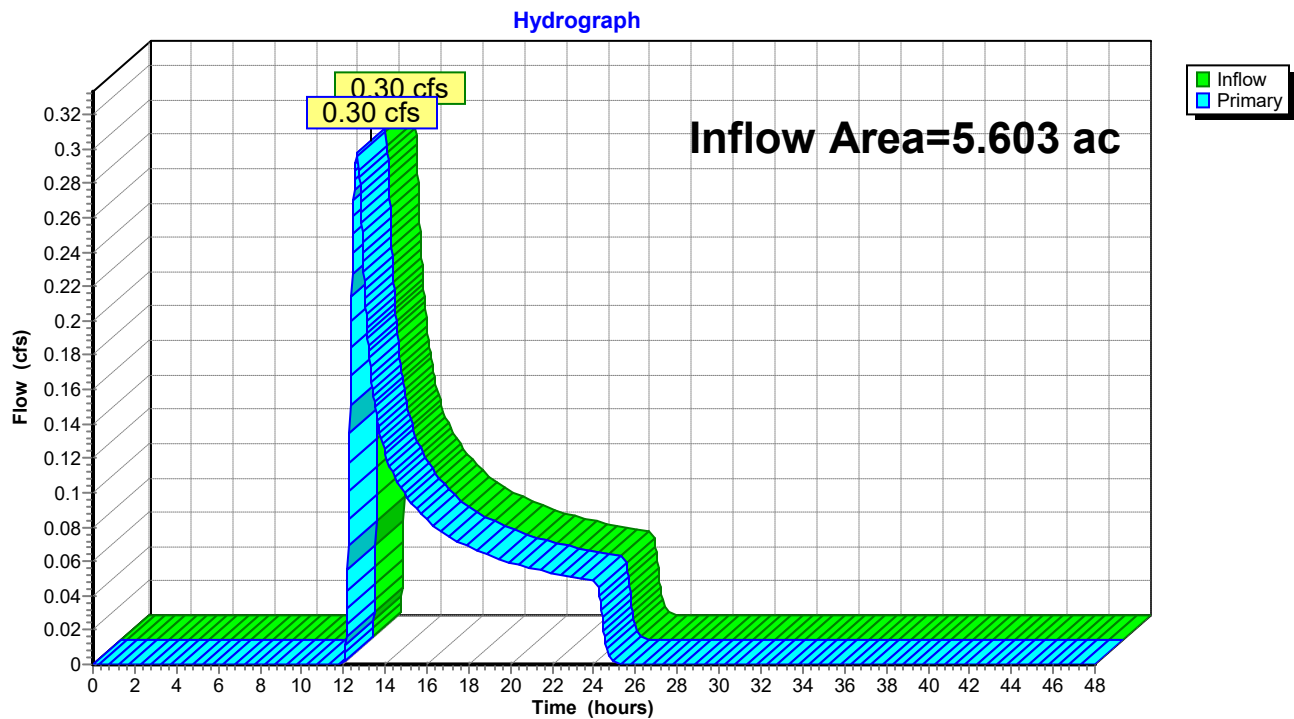


Summary for Link 1L: DESIGN LINE 1

Inflow Area = 5.603 ac, 9.52% Impervious, Inflow Depth = 0.19" for 2-yr event
Inflow = 0.30 cfs @ 12.65 hrs, Volume= 0.088 af
Primary = 0.30 cfs @ 12.65 hrs, Volume= 0.088 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link 1L: DESIGN LINE 1

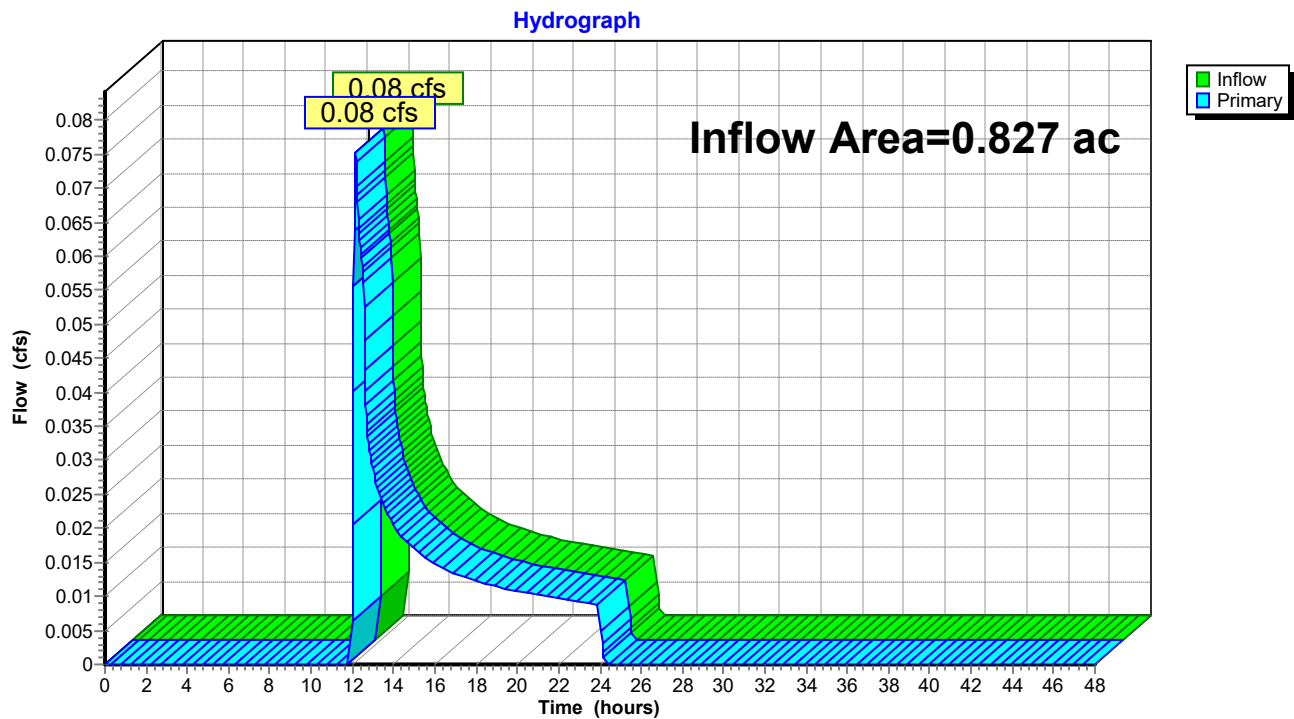


Summary for Link 2L: DESIGN LINE 2

Inflow Area = 0.827 ac, 6.69% Impervious, Inflow Depth = 0.24" for 2-yr event
Inflow = 0.08 cfs @ 12.15 hrs, Volume= 0.016 af
Primary = 0.08 cfs @ 12.15 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link 2L: DESIGN LINE 2



94 Somerstown Rd SW Plan_08-01-2025 NY-94 Somerstown Rd 24-hr S1 10-yr Rainfall=5.14"

Prepared by ALP Engineering & Land Arch

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Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: XDA-1 TO DESIGN LINE Runoff Area=244,614 sf 0.00% Impervious Runoff Depth=1.05"
Flow Length=1,074' Tc=33.3 min CN=55 Runoff=2.59 cfs 0.492 af

Subcatchment 2S: XDA-2 TO DESIGN LINE 2 Runoff Area=37,786 sf 0.00% Impervious Runoff Depth=1.05"
Tc=6.0 min CN=55 Runoff=0.82 cfs 0.076 af

Subcatchment 3S: FDA-1 Runoff Area=6,154 sf 60.32% Impervious Runoff Depth=3.30"
Tc=6.0 min CN=83 Runoff=0.54 cfs 0.039 af

Subcatchment 4S: FDA-2 Runoff Area=9,134 sf 26.36% Impervious Runoff Depth=2.22"
Tc=6.0 min CN=71 Runoff=0.53 cfs 0.039 af

Subcatchment 5S: FDA-3 Runoff Area=4,292 sf 86.84% Impervious Runoff Depth=4.34"
Tc=6.0 min CN=93 Runoff=0.47 cfs 0.036 af

Subcatchment 6S: FDA-4 Runoff Area=86,571 sf 16.06% Impervious Runoff Depth=1.75"
Tc=10.0 min CN=65 Runoff=3.14 cfs 0.289 af

Subcatchment 7S: FDA-5 TO DESIGN LINE Runoff Area=145,156 sf 0.00% Impervious Runoff Depth=1.05"
Tc=30.0 min CN=55 Runoff=1.61 cfs 0.292 af

Subcatchment 8S: FDA-6 Runoff Area=26,879 sf 0.00% Impervious Runoff Depth=1.05"
Tc=6.0 min CN=55 Runoff=0.58 cfs 0.054 af

Subcatchment 9S: FDA-4.1 Runoff Area=1,888 sf 100.00% Impervious Runoff Depth=4.90"
Tc=6.0 min CN=98 Runoff=0.22 cfs 0.018 af

Pond 9P: RAIN GARDEN 1 Peak Elev=549.68' Storage=597 cf Inflow=0.54 cfs 0.039 af
Discarded=0.04 cfs 0.039 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.039 af

Pond 10P: RAIN GARDEN 3 Peak Elev=520.16' Storage=513 cf Inflow=0.47 cfs 0.036 af
Discarded=0.02 cfs 0.028 af Primary=0.17 cfs 0.008 af Outflow=0.19 cfs 0.036 af

Pond 11P: RAIN GARDEN 2 Peak Elev=557.45' Storage=709 cf Inflow=0.53 cfs 0.039 af
Discarded=0.04 cfs 0.039 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.039 af

Pond 12P: EXTENDED DETENTION BASIN Peak Elev=511.89' Storage=5,373 cf Inflow=3.24 cfs 0.297 af
Discarded=0.10 cfs 0.166 af Primary=0.31 cfs 0.130 af Outflow=0.41 cfs 0.296 af

Pond 13P: Chambers Peak Elev=507.54' Storage=341 cf Inflow=0.22 cfs 0.018 af
Discarded=0.01 cfs 0.018 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.018 af

Link 1L: DESIGN LINE 1 Inflow=1.79 cfs 0.422 af
Primary=1.79 cfs 0.422 af

Link 2L: DESIGN LINE 2 Inflow=0.58 cfs 0.054 af
Primary=0.58 cfs 0.054 af

Total Runoff Area = 12.913 ac Runoff Volume = 1.334 af Average Runoff Depth = 1.24"
95.44% Pervious = 12.324 ac 4.56% Impervious = 0.589 ac

Summary for Subcatchment 1S: XDA-1 TO DESIGN LINE 1

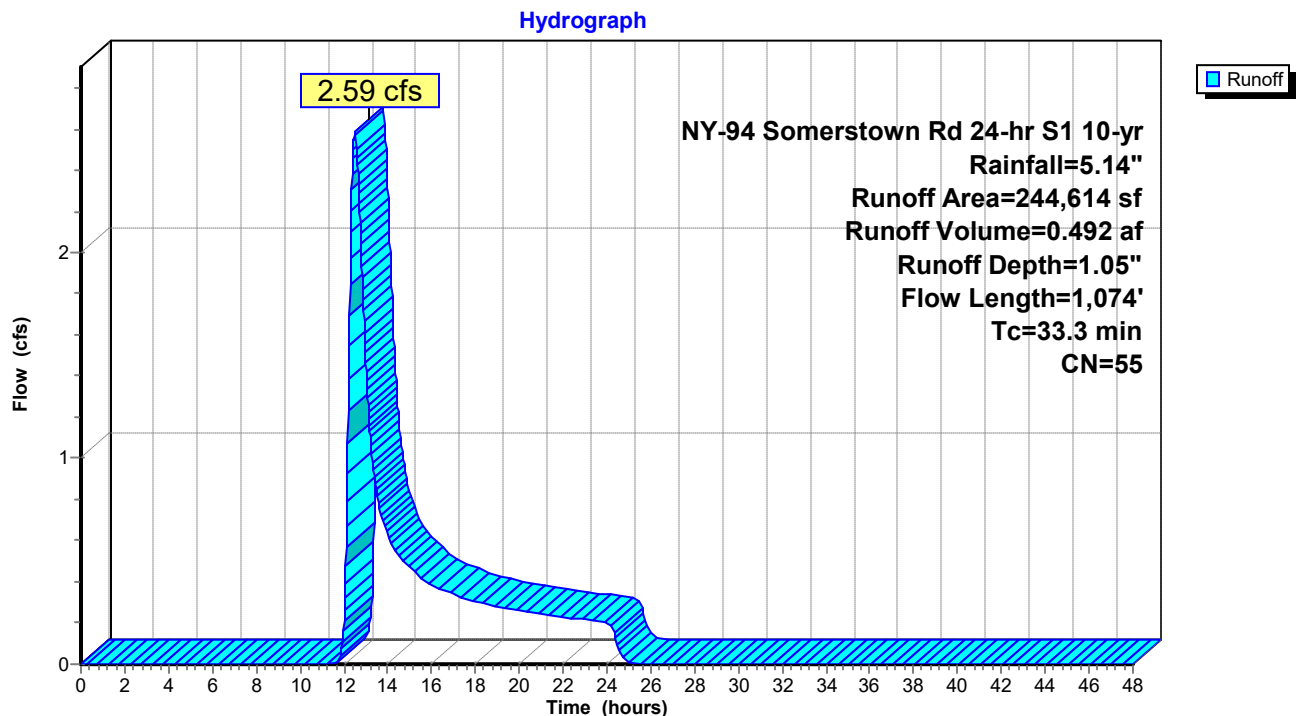
Runoff = 2.59 cfs @ 12.49 hrs, Volume= 0.492 af, Depth= 1.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NY-94 Somerstown Rd 24-hr S1 10-yr Rainfall=5.14"

Area (sf)	CN	Description
244,614	55	Woods, Good, HSG B
244,614		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	56	0.1071	0.14		Sheet Flow, A-B
					Woods: Light underbrush n= 0.400 P2= 3.41"
0.9	131	0.2328	2.41		Shallow Concentrated Flow, B-C
					Woodland Kv= 5.0 fps
4.3	280	0.0482	1.10		Shallow Concentrated Flow, C-D
					Woodland Kv= 5.0 fps
2.1	143	0.0524	1.14		Shallow Concentrated Flow, D-E
					Woodland Kv= 5.0 fps
19.3	464	0.0064	0.40		Shallow Concentrated Flow, E-F
					Woodland Kv= 5.0 fps
33.3	1,074	Total			

Subcatchment 1S: XDA-1 TO DESIGN LINE 1



Summary for Subcatchment 2S: XDA-2 TO DESIGN LINE 2

Runoff = 0.82 cfs @ 12.05 hrs, Volume= 0.076 af, Depth= 1.05"

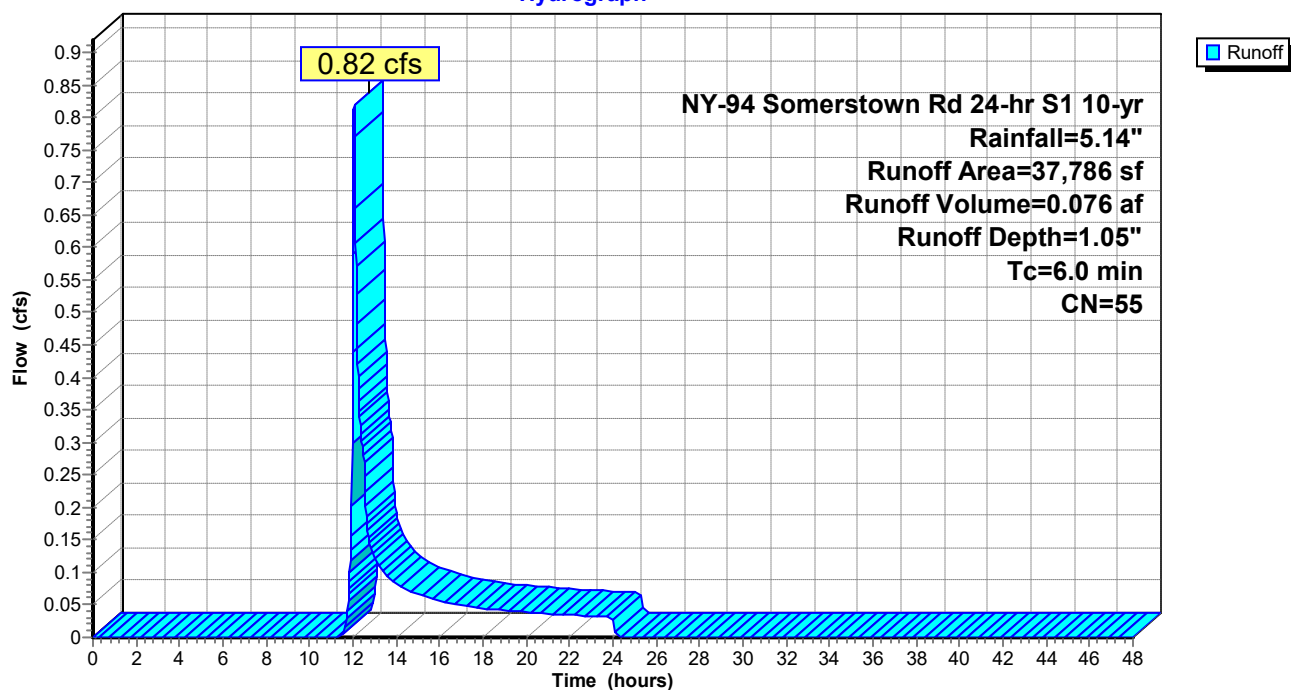
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NY-94 Somerstown Rd 24-hr S1 10-yr Rainfall=5.14"

Area (sf)	CN	Description
37,786	55	Woods, Good, HSG B
37,786		100.00% Pervious Area

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

Subcatchment 2S: XDA-2 TO DESIGN LINE 2

Hydrograph



Summary for Subcatchment 3S: FDA-1

Runoff = 0.54 cfs @ 12.04 hrs, Volume= 0.039 af, Depth= 3.30"
 Routed to Pond 9P : RAIN GARDEN 1

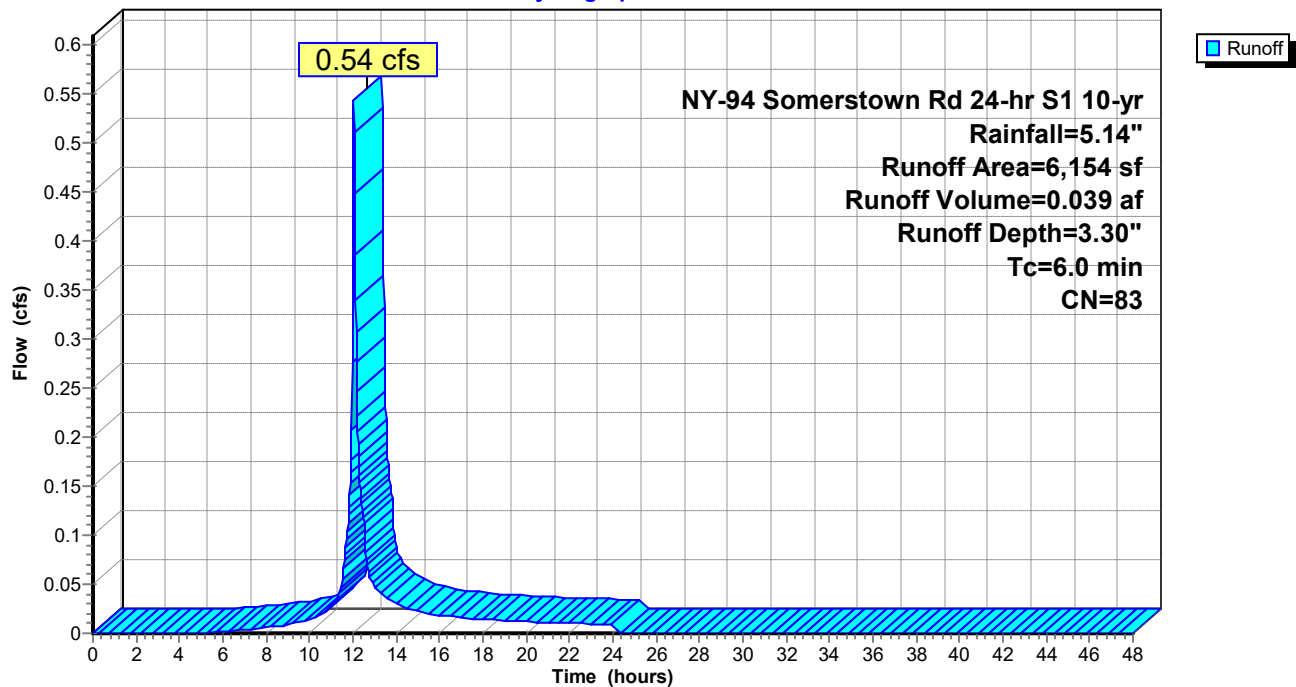
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 NY-94 Somerstown Rd 24-hr S1 10-yr Rainfall=5.14"

	Area (sf)	CN	Description
*	3,712	98	Impervious surfaces, HSG B
	2,442	61	>75% Grass cover, Good, HSG B
	6,154	83	Weighted Average
	2,442		39.68% Pervious Area
	3,712		60.32% Impervious Area

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

Subcatchment 3S: FDA-1

Hydrograph



Summary for Subcatchment 4S: FDA-2

Runoff = 0.53 cfs @ 12.04 hrs, Volume= 0.039 af, Depth= 2.22"
 Routed to Pond 11P : RAIN GARDEN 2

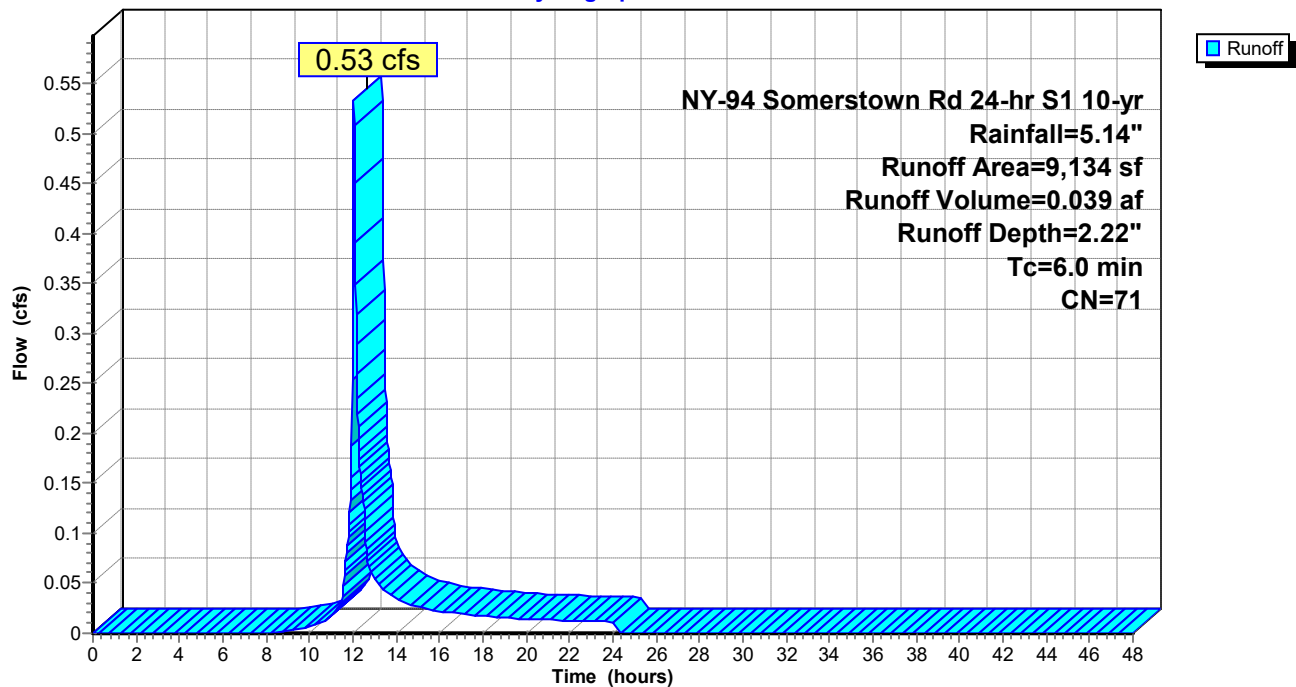
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 NY-94 Somerstown Rd 24-hr S1 10-yr Rainfall=5.14"

Area (sf)	CN	Description
2,408	98	Roofs, HSG B
6,726	61	>75% Grass cover, Good, HSG B
9,134	71	Weighted Average
6,726		73.64% Pervious Area
2,408		26.36% Impervious Area

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

Subcatchment 4S: FDA-2

Hydrograph



Summary for Subcatchment 5S: FDA-3

Runoff = 0.47 cfs @ 12.04 hrs, Volume= 0.036 af, Depth= 4.34"
Routed to Pond 10P : RAIN GARDEN 3

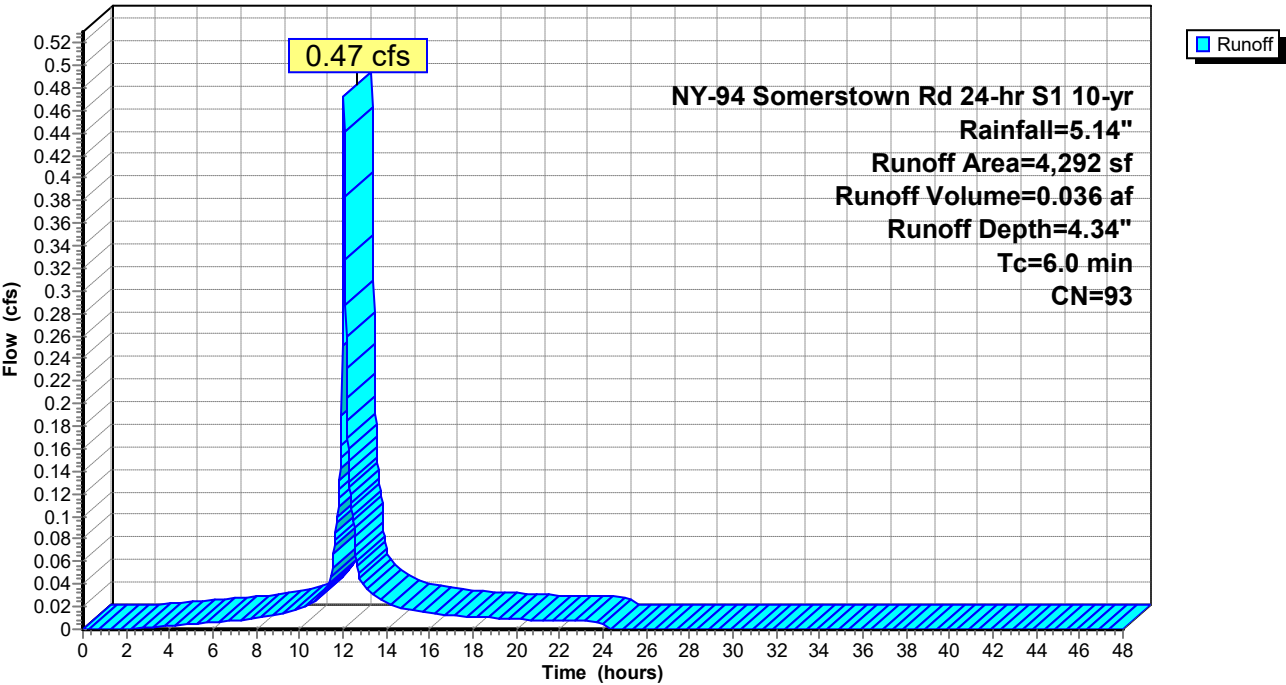
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NY-94 Somerstown Rd 24-hr S1 10-yr Rainfall=5.14"

	Area (sf)	CN	Description
*	3,727	98	Impervious surfaces, HSG B
	565	61	>75% Grass cover, Good, HSG B
	4,292	93	Weighted Average
	565		13.16% Pervious Area
	3,727		86.84% Impervious Area

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

Subcatchment 5S: FDA-3

Hydrograph



Summary for Subcatchment 6S: FDA-4

Runoff = 3.14 cfs @ 12.09 hrs, Volume= 0.289 af, Depth= 1.75"

Routed to Pond 12P : EXTENDED DETENTION BASIN

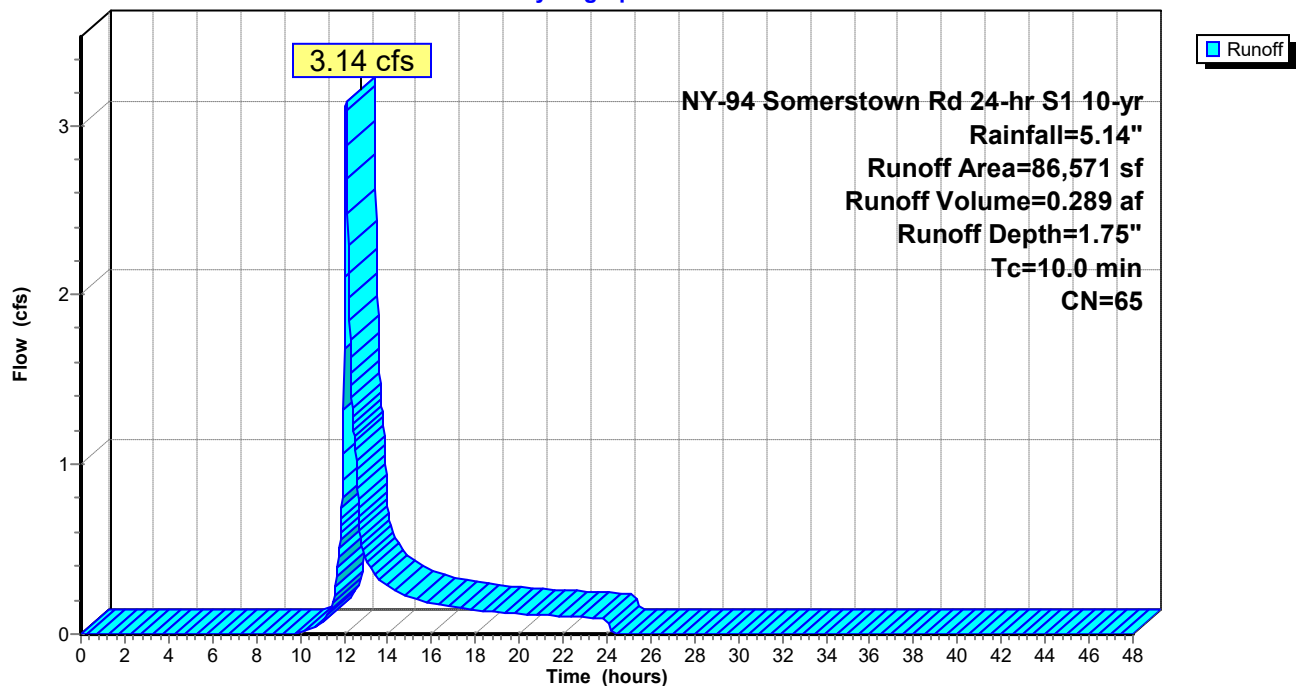
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NY-94 Somerstown Rd 24-hr S1 10-yr Rainfall=5.14"

	Area (sf)	CN	Description
*	13,904	98	Impervious Surfaces & Roofs, HSG B
	44,003	61	>75% Grass cover, Good, HSG B
	25,342	55	Woods, Good, HSG B
	3,322	58	Meadow, non-grazed, HSG B
	86,571	65	Weighted Average
	72,667		83.94% Pervious Area
	13,904		16.06% Impervious Area

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

Subcatchment 6S: FDA-4

Hydrograph



Summary for Subcatchment 7S: FDA-5 TO DESIGN LINE 1

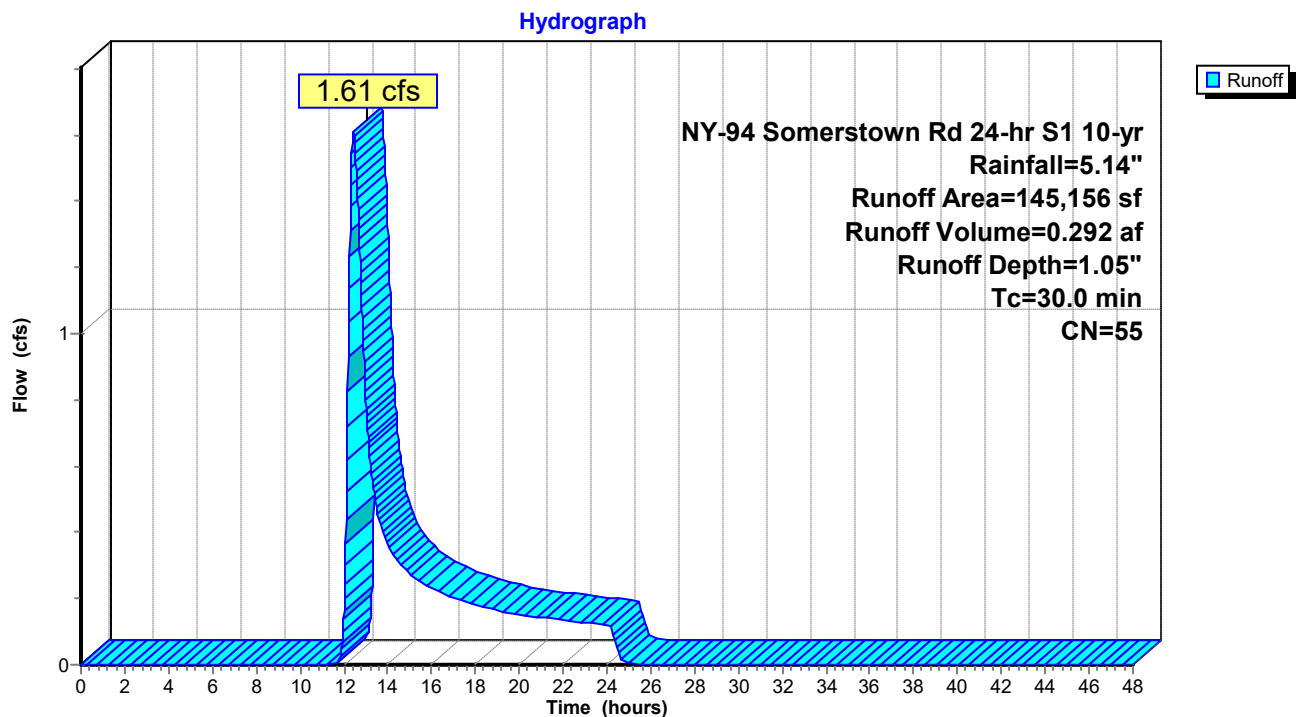
Runoff = 1.61 cfs @ 12.44 hrs, Volume= 0.292 af, Depth= 1.05"
Routed to Link 1L : DESIGN LINE 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NY-94 Somerstown Rd 24-hr S1 10-yr Rainfall=5.14"

Area (sf)	CN	Description
156	61	>75% Grass cover, Good, HSG B
145,000	55	Woods, Good, HSG B
145,156	55	Weighted Average
145,156		100.00% Pervious Area

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

Subcatchment 7S: FDA-5 TO DESIGN LINE 1



Summary for Subcatchment 8S: FDA-6

Runoff = 0.58 cfs @ 12.05 hrs, Volume= 0.054 af, Depth= 1.05"
 Routed to Link 2L : DESIGN LINE 2

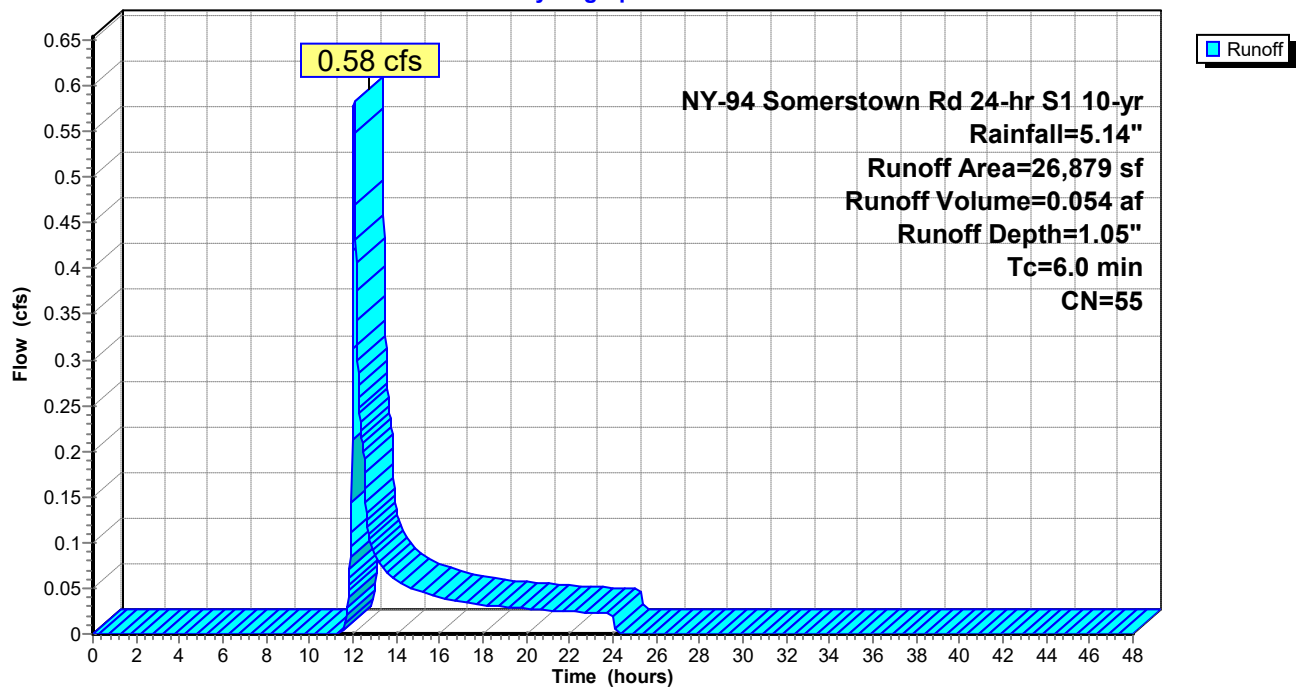
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 NY-94 Somerstown Rd 24-hr S1 10-yr Rainfall=5.14"

Area (sf)	CN	Description
26,879	55	Woods, Good, HSG B
26,879		100.00% Pervious Area

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

Subcatchment 8S: FDA-6

Hydrograph



Summary for Subcatchment 9S: FDA-4.1

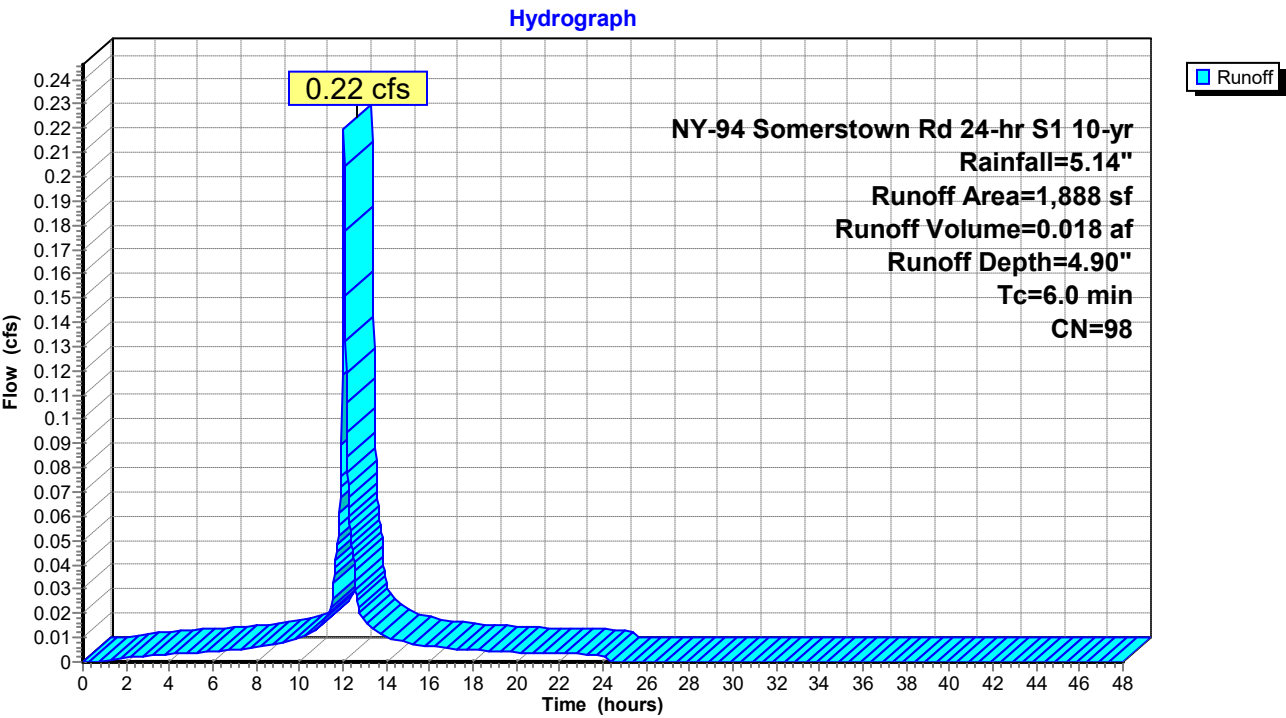
Runoff = 0.22 cfs @ 12.04 hrs, Volume= 0.018 af, Depth= 4.90"
Routed to Pond 13P : Chambers

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NY-94 Somerstown Rd 24-hr S1 10-yr Rainfall=5.14"

Area (sf)	CN	Description
1,888	98	Paved parking, HSG B
1,888		100.00% Impervious Area

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

Subcatchment 9S: FDA-4.1



Summary for Pond 9P: RAIN GARDEN 1

Inflow Area = 0.141 ac, 60.32% Impervious, Inflow Depth = 3.30" for 10-yr event
 Inflow = 0.54 cfs @ 12.04 hrs, Volume= 0.039 af
 Outflow = 0.04 cfs @ 13.10 hrs, Volume= 0.039 af, Atten= 92%, Lag= 63.5 min
 Discarded = 0.04 cfs @ 13.10 hrs, Volume= 0.039 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routed to Pond 12P : EXTENDED DETENTION BASIN

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 549.68' @ 13.10 hrs Surf.Area= 961 sf Storage= 597 cf

Plug-Flow detention time= 111.8 min calculated for 0.039 af (100% of inflow)

Center-of-Mass det. time= 111.7 min (940.1 - 828.4)

Volume	Invert	Avail.Storage	Storage Description
#1	549.00'	1,555 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
549.00	800	0	0
549.50	910	428	428
550.00	1,050	490	918
550.50	1,500	638	1,555

Device	Routing	Invert	Outlet Devices
#1	Primary	550.00'	4.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Discarded	549.00'	2.000 in/hr Exfiltration over Horizontal area
#3	Primary	550.35'	3.0' long (Profile 6) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 3.12 3.41 3.59

Discarded OutFlow Max=0.04 cfs @ 13.10 hrs HW=549.68' (Free Discharge)

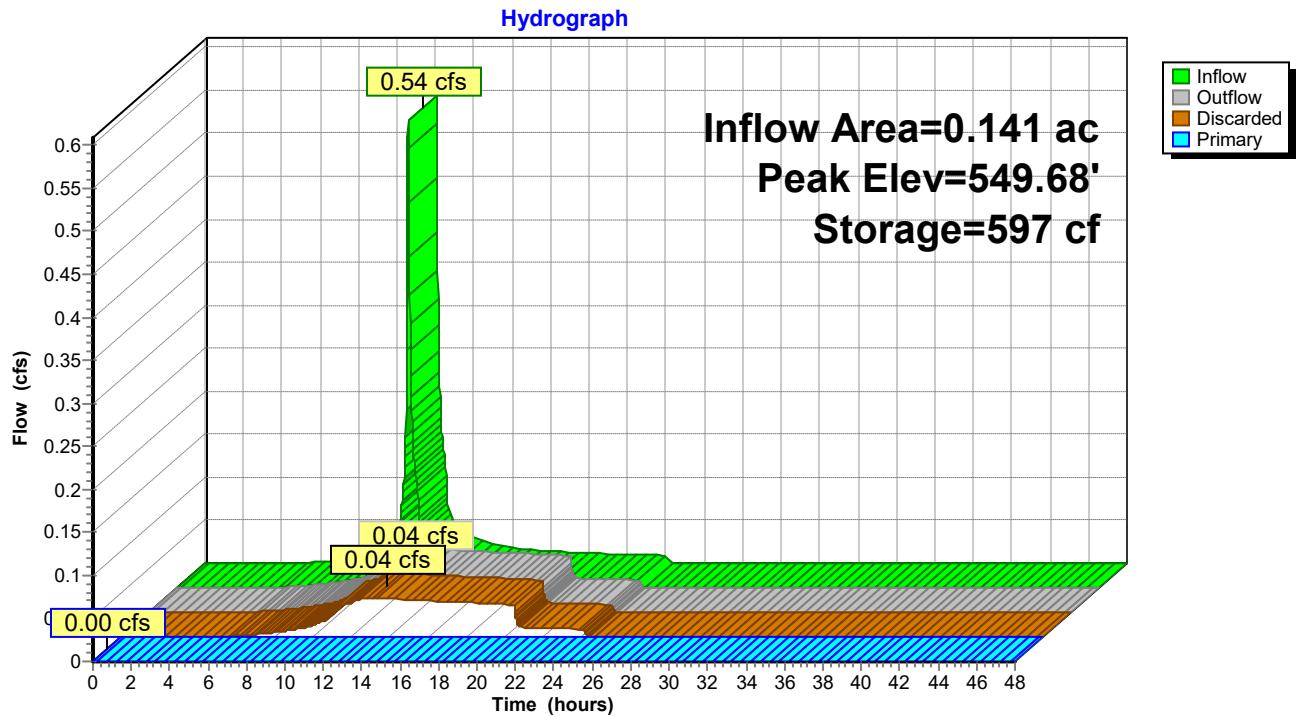
↑ **2=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=549.00' (Free Discharge)

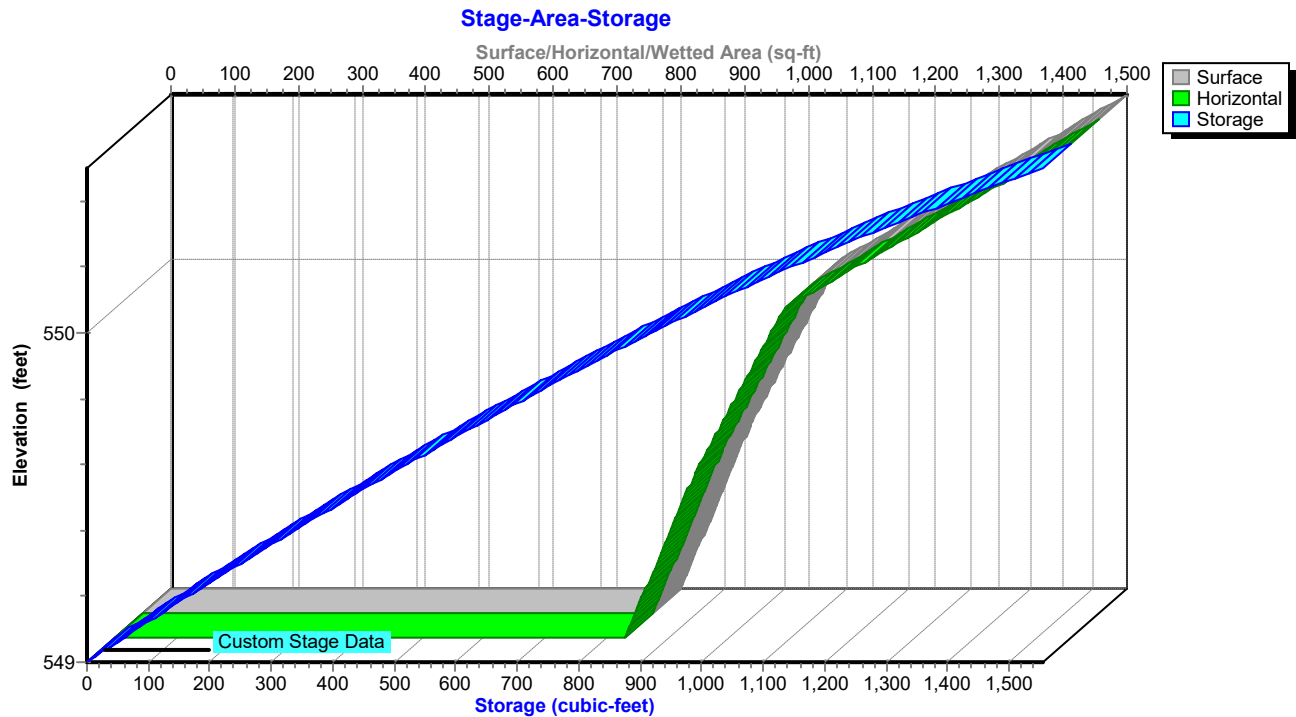
↑ **1=Orifice/Grate** (Controls 0.00 cfs)

↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 9P: RAIN GARDEN 1



Pond 9P: RAIN GARDEN 1



Summary for Pond 10P: RAIN GARDEN 3

Inflow Area = 0.099 ac, 86.84% Impervious, Inflow Depth = 4.34" for 10-yr event
 Inflow = 0.47 cfs @ 12.04 hrs, Volume= 0.036 af
 Outflow = 0.19 cfs @ 12.20 hrs, Volume= 0.036 af, Atten= 60%, Lag= 9.8 min
 Discarded = 0.02 cfs @ 12.20 hrs, Volume= 0.028 af
 Primary = 0.17 cfs @ 12.20 hrs, Volume= 0.008 af
 Routed to Pond 12P : EXTENDED DETENTION BASIN

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 520.16' @ 12.20 hrs Surf.Area= 414 sf Storage= 513 cf

Plug-Flow detention time= 223.4 min calculated for 0.036 af (100% of inflow)
 Center-of-Mass det. time= 223.4 min (1,007.8 - 784.4)

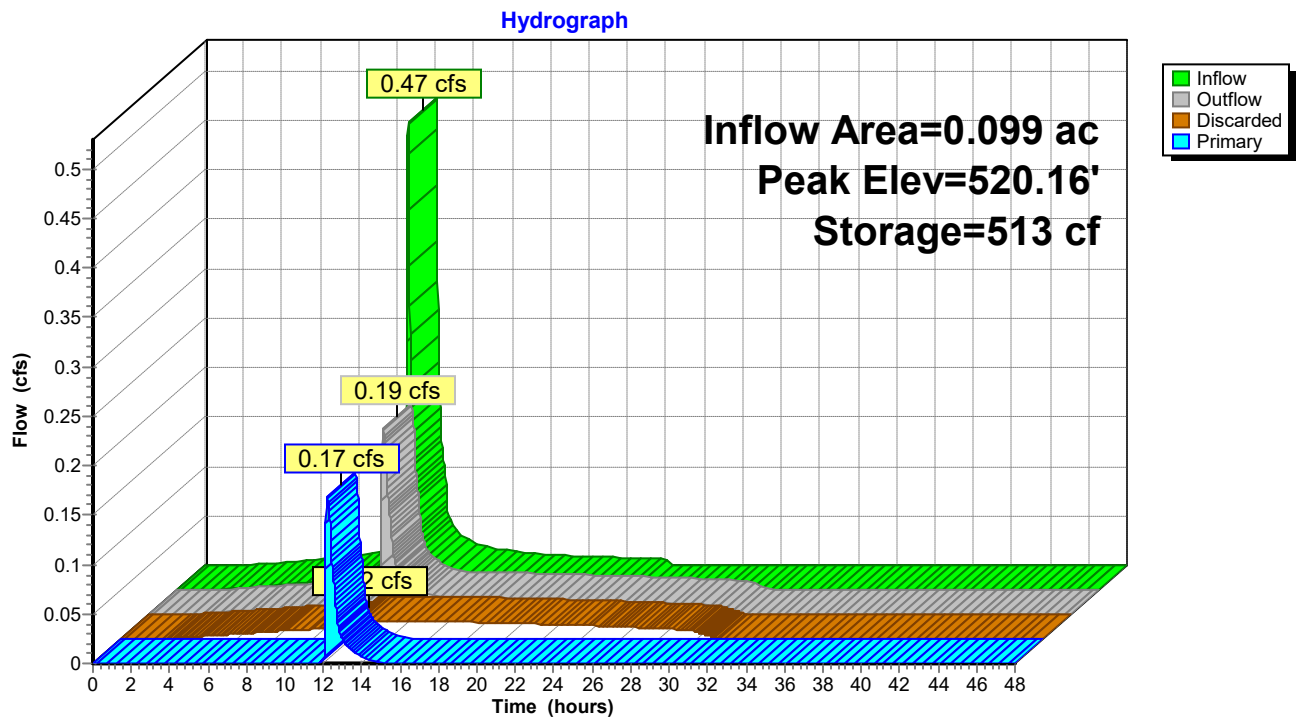
Volume	Invert	Avail.Storage	Storage Description
#1	518.25'	664 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
518.25	0	0	0
518.50	197	25	25
519.50	306	252	276
520.00	386	173	449
520.50	475	215	664

Device	Routing	Invert	Outlet Devices
#1	Primary	520.00'	4.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Discarded	518.25'	2.000 in/hr Exfiltration over Horizontal area
#3	Primary	520.25'	3.0' long (Profile 6) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 3.12 3.41 3.59

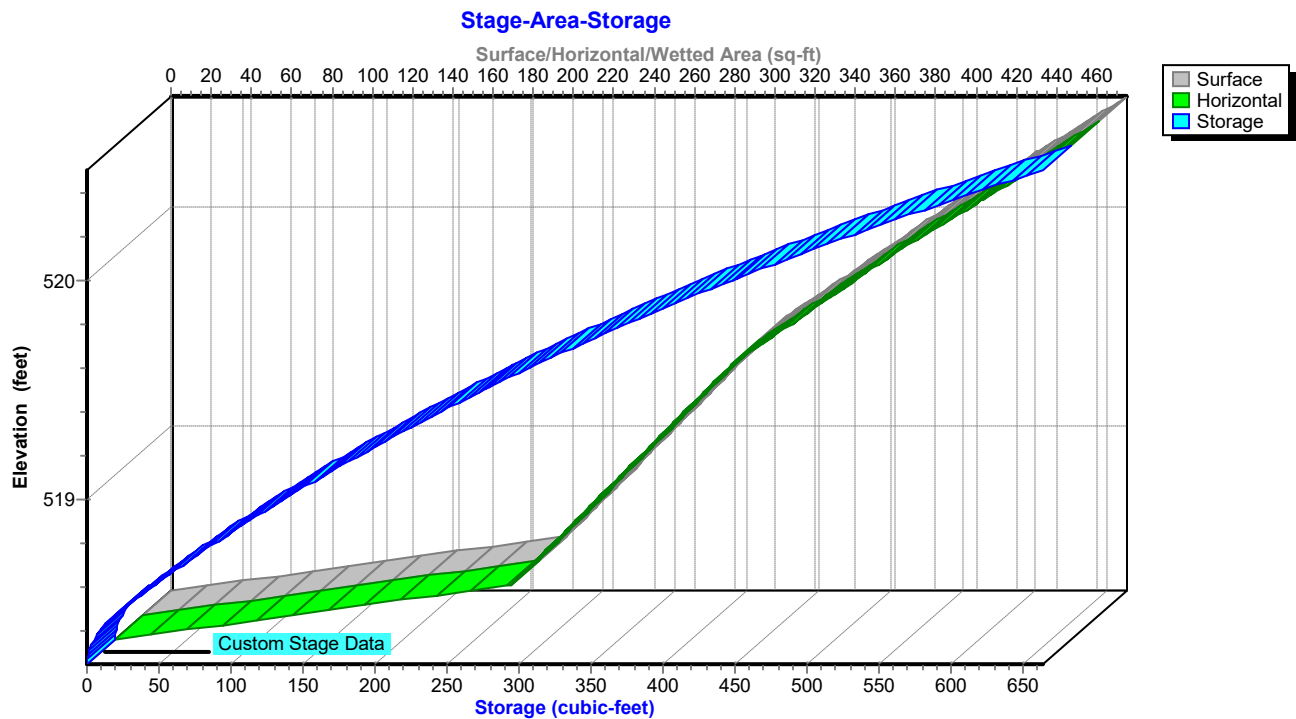
Discarded OutFlow Max=0.02 cfs @ 12.20 hrs HW=520.16' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.17 cfs @ 12.20 hrs HW=520.16' (Free Discharge)
 ↑ **1=Orifice/Grate** (Orifice Controls 0.17 cfs @ 1.92 fps)
 ↓ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10P: RAIN GARDEN 3



Pond 10P: RAIN GARDEN 3



Summary for Pond 11P: RAIN GARDEN 2

Inflow Area = 0.210 ac, 26.36% Impervious, Inflow Depth = 2.22" for 10-yr event
 Inflow = 0.53 cfs @ 12.04 hrs, Volume= 0.039 af
 Outflow = 0.04 cfs @ 13.72 hrs, Volume= 0.039 af, Atten= 93%, Lag= 100.9 min
 Discarded = 0.04 cfs @ 13.72 hrs, Volume= 0.039 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Link 2L : DESIGN LINE 2

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 557.45' @ 13.72 hrs Surf.Area= 820 sf Storage= 709 cf

Plug-Flow detention time= 212.6 min calculated for 0.039 af (100% of inflow)
 Center-of-Mass det. time= 212.6 min (1,080.4 - 867.8)

Volume	Invert	Avail.Storage	Storage Description
#1	556.00'	1,832 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

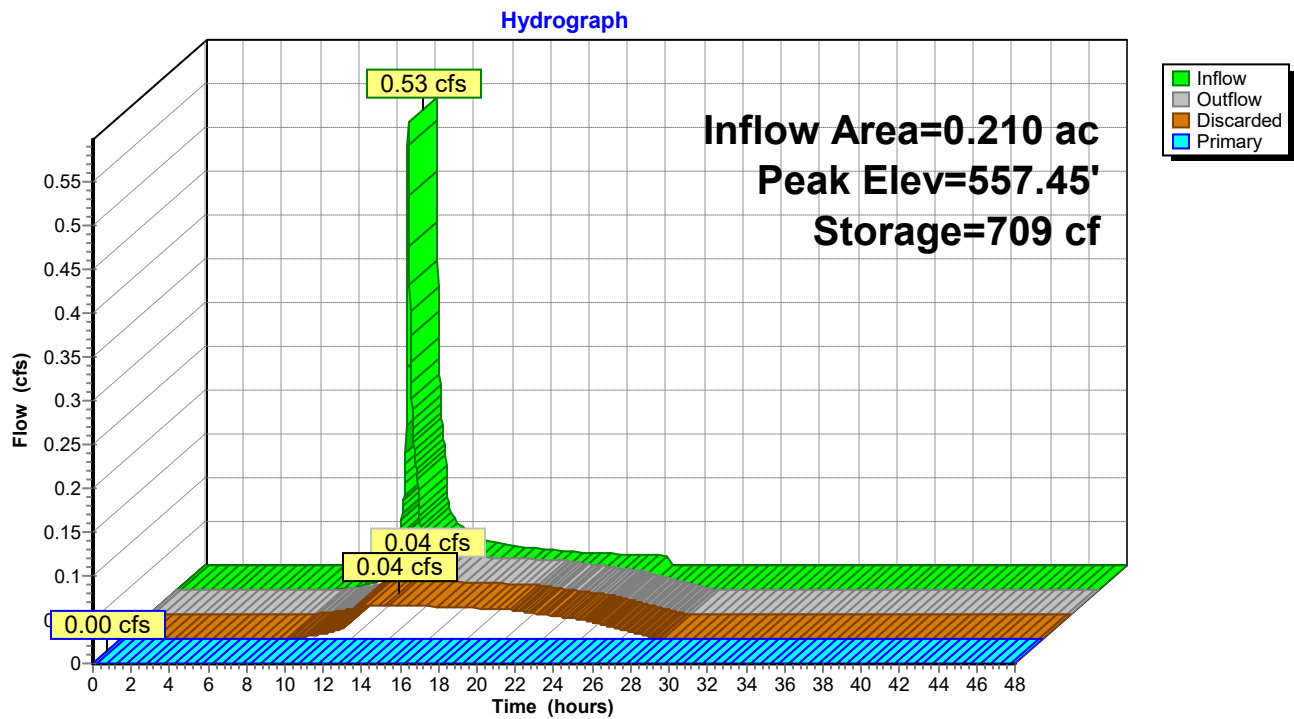
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
556.00	0	0	0
557.00	722	361	361
557.75	885	603	964
558.00	1,001	236	1,199
558.50	1,528	632	1,832

Device	Routing	Invert	Outlet Devices
#1	Primary	558.00'	4.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Discarded	556.00'	2.000 in/hr Exfiltration over Horizontal area
#3	Primary	558.25'	3.0' long (Profile 6) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 3.12 3.41 3.59

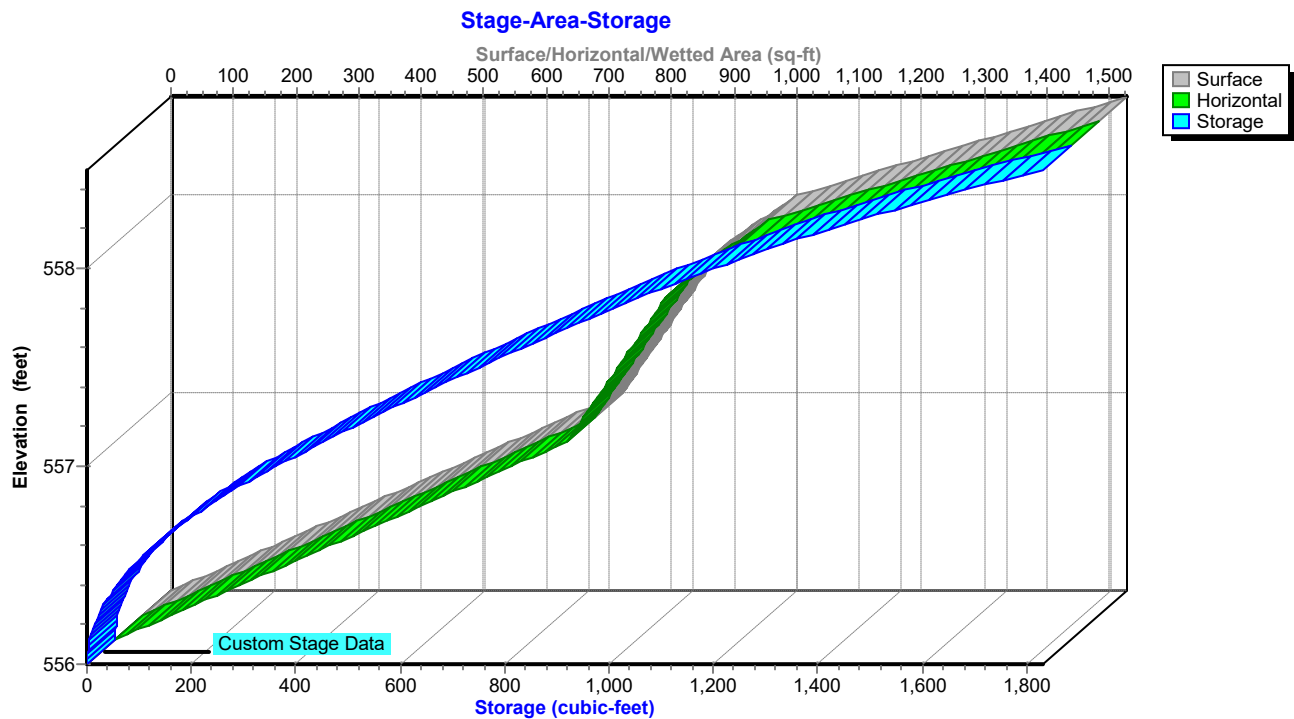
Discarded OutFlow Max=0.04 cfs @ 13.72 hrs HW=557.45' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=556.00' (Free Discharge)
 ↑ **1=Orifice/Grate** (Controls 0.00 cfs)
 ↓ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 11P: RAIN GARDEN 2



Pond 11P: RAIN GARDEN 2



Summary for Pond 12P: EXTENDED DETENTION BASIN

Inflow Area = 2.227 ac, 22.00% Impervious, Inflow Depth = 1.60" for 10-yr event
 Inflow = 3.24 cfs @ 12.10 hrs, Volume= 0.297 af
 Outflow = 0.41 cfs @ 13.21 hrs, Volume= 0.296 af, Atten= 87%, Lag= 66.6 min
 Discarded = 0.10 cfs @ 13.21 hrs, Volume= 0.166 af
 Primary = 0.31 cfs @ 13.21 hrs, Volume= 0.130 af
 Routed to Link 1L : DESIGN LINE 1

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 511.89' @ 13.21 hrs Surf.Area= 2,112 sf Storage= 5,373 cf

Plug-Flow detention time= 332.3 min calculated for 0.296 af (100% of inflow)
 Center-of-Mass det. time= 329.7 min (1,216.8 - 887.1)

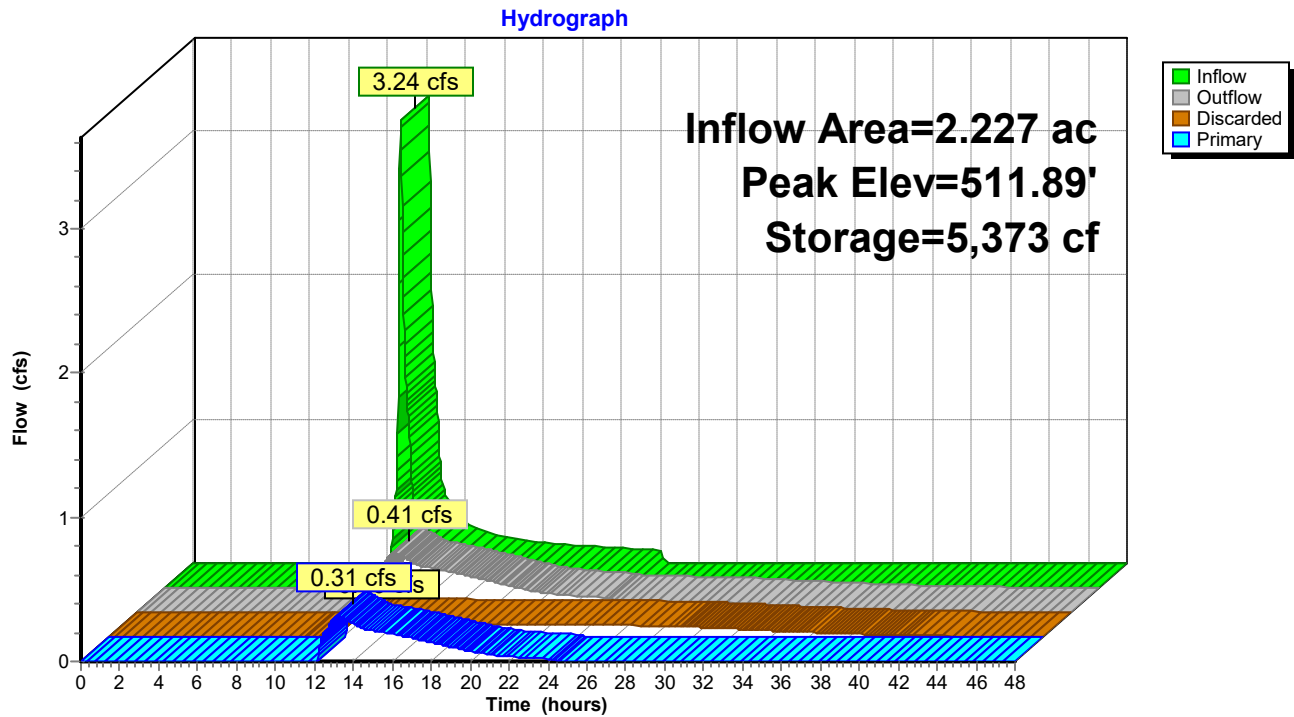
Volume	Invert	Avail.Storage	Storage Description
#1	506.00'	17,768 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
506.00	50	0	0
507.00	98	74	74
508.00	146	122	196
509.00	779	463	659
510.00	1,609	1,194	1,853
512.00	2,141	3,750	5,603
514.00	2,608	4,749	10,352
516.00	3,087	5,695	16,047
516.50	3,800	1,722	17,768

Device	Routing	Invert	Outlet Devices
#1	Primary	510.75'	3.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	511.75'	8.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	515.50'	5.0' long (Profile 6) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 3.12 3.41 3.59
#4	Discarded	506.00'	2.000 in/hr Exfiltration over Horizontal area

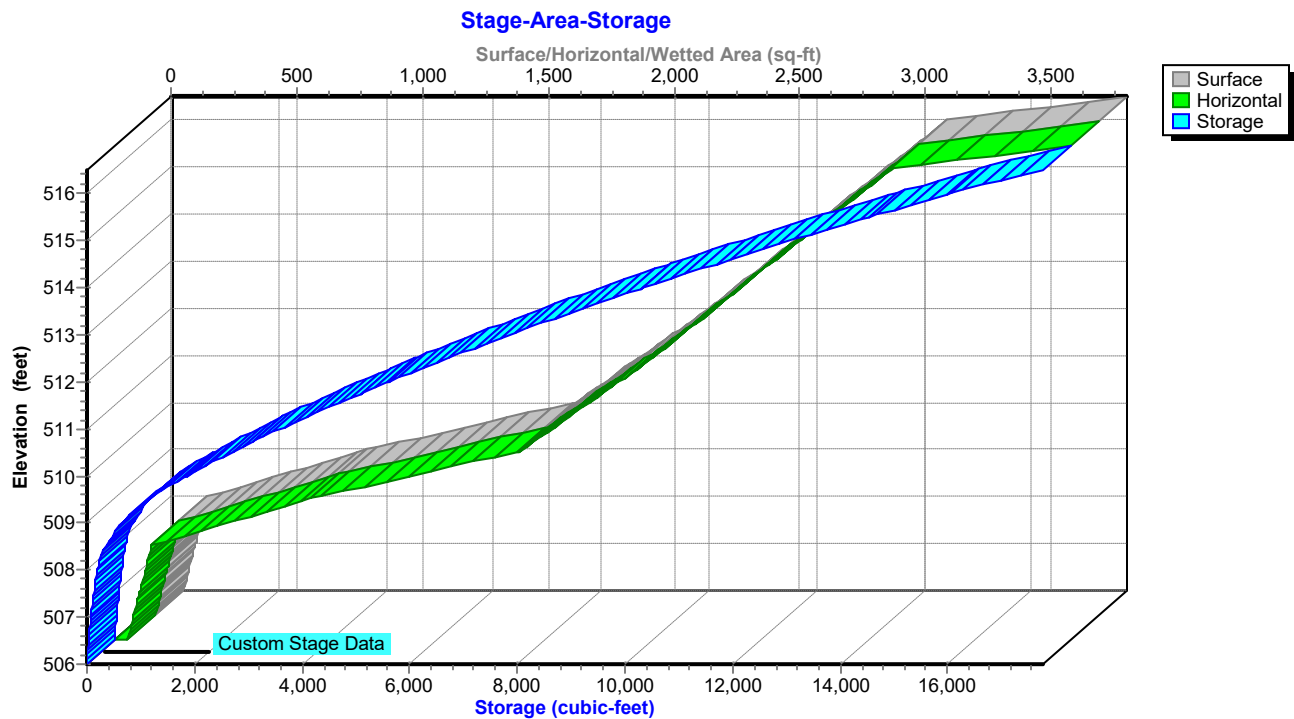
Discarded OutFlow Max=0.10 cfs @ 13.21 hrs HW=511.89' (Free Discharge)
 ↑ **4=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=0.31 cfs @ 13.21 hrs HW=511.89' (Free Discharge)
 ↑ **1=Orifice/Grate** (Orifice Controls 0.24 cfs @ 4.86 fps)
 ↓ **2=Orifice/Grate** (Orifice Controls 0.07 cfs @ 1.28 fps)
 ↓ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 12P: EXTENDED DETENTION BASIN



Pond 12P: EXTENDED DETENTION BASIN



Summary for Pond 13P: Chambers

Inflow Area = 0.043 ac, 100.00% Impervious, Inflow Depth = 4.90" for 10-yr event
 Inflow = 0.22 cfs @ 12.04 hrs, Volume= 0.018 af
 Outflow = 0.01 cfs @ 9.54 hrs, Volume= 0.018 af, Atten= 96%, Lag= 0.0 min
 Discarded = 0.01 cfs @ 9.54 hrs, Volume= 0.018 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Link 1L : DESIGN LINE 1

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs / 2
 Peak Elev= 507.54' @ 14.88 hrs Surf.Area= 349 sf Storage= 341 cf

Plug-Flow detention time= 356.0 min calculated for 0.018 af (100% of inflow)
 Center-of-Mass det. time= 356.0 min (1,104.7 - 748.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	506.00'	310 cf	5.92'W x 59.00'L x 3.21'H Field A 1,120 cf Overall - 346 cf Embedded = 774 cf x 40.0% Voids
#2A	506.50'	346 cf	Cultec R-280HD x 8 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 1 rows
		656 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	506.00'	1.000 in/hr Exfiltration over Horizontal area
#2	Device 3	506.75'	4.0" Round Culvert L= 32.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 506.75' / 506.50' S= 0.0078 '/' Cc= 0.900 n= 0.012, Flow Area= 0.09 sf
#3	Primary	508.50'	15.0" x 15.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.01 cfs @ 9.54 hrs HW=506.03' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=506.00' (Free Discharge)

↑ **3=Orifice/Grate** (Controls 0.00 cfs)

↑ **2=Culvert** (Controls 0.00 cfs)

Pond 13P: Chambers - Chamber Wizard Field A

Chamber Model = Cultec R-280HD (Cultec Recharger® 280HD)

Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf

Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap

Row Length Adjustment= +1.00' x 6.07 sf x 1 rows

8 Chambers/Row x 7.00' Long +1.00' Row Adjustment = 57.00' Row Length +12.0" End Stone x 2 = 59.00' Base Length

1 Rows x 47.0" Wide + 12.0" Side Stone x 2 = 5.92' Base Width

6.0" Stone Base + 26.5" Chamber Height + 6.0" Stone Cover = 3.21' Field Height

8 Chambers x 42.5 cf +1.00' Row Adjustment x 6.07 sf x 1 Rows = 346.1 cf Chamber Storage

1,120.0 cf Field - 346.1 cf Chambers = 773.9 cf Stone x 40.0% Voids = 309.6 cf Stone Storage

Chamber Storage + Stone Storage = 655.6 cf = 0.015 af

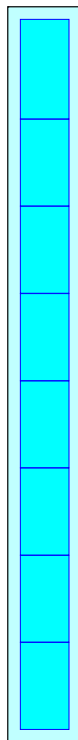
Overall Storage Efficiency = 58.5%

Overall System Size = 59.00' x 5.92' x 3.21'

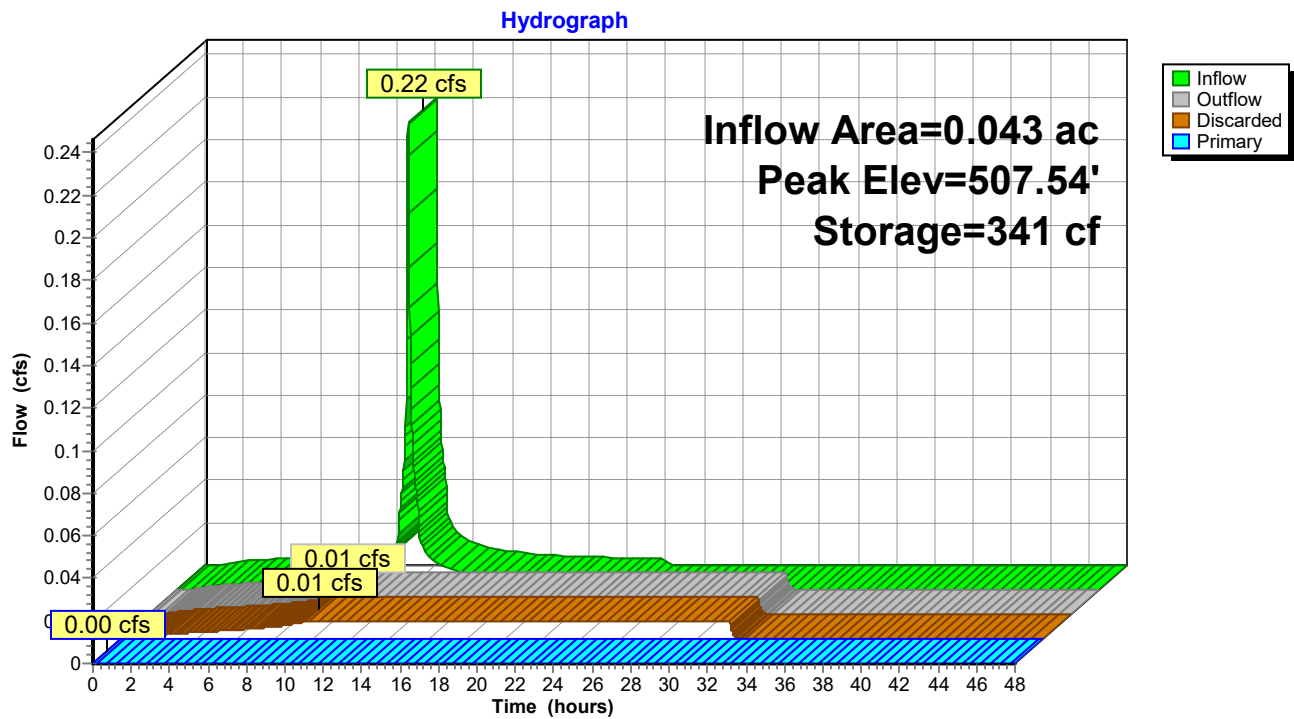
8 Chambers

41.5 cy Field

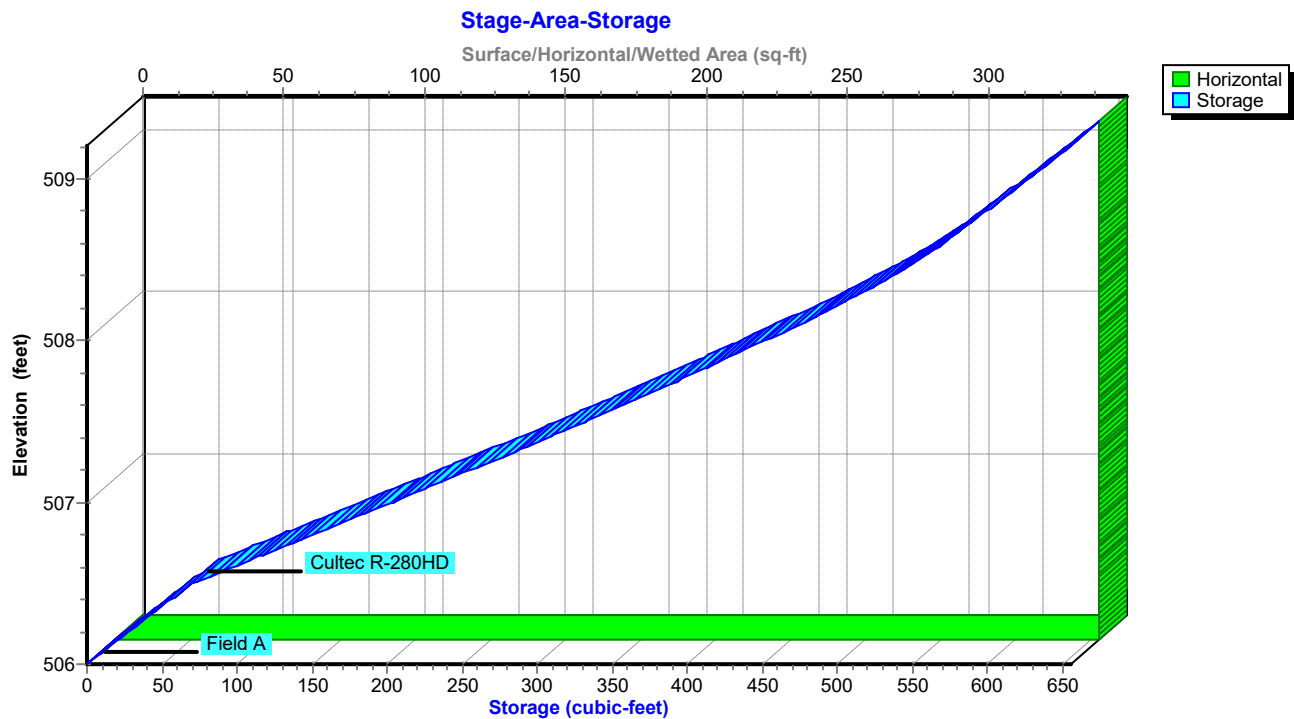
28.7 cy Stone



Pond 13P: Chambers



Pond 13P: Chambers

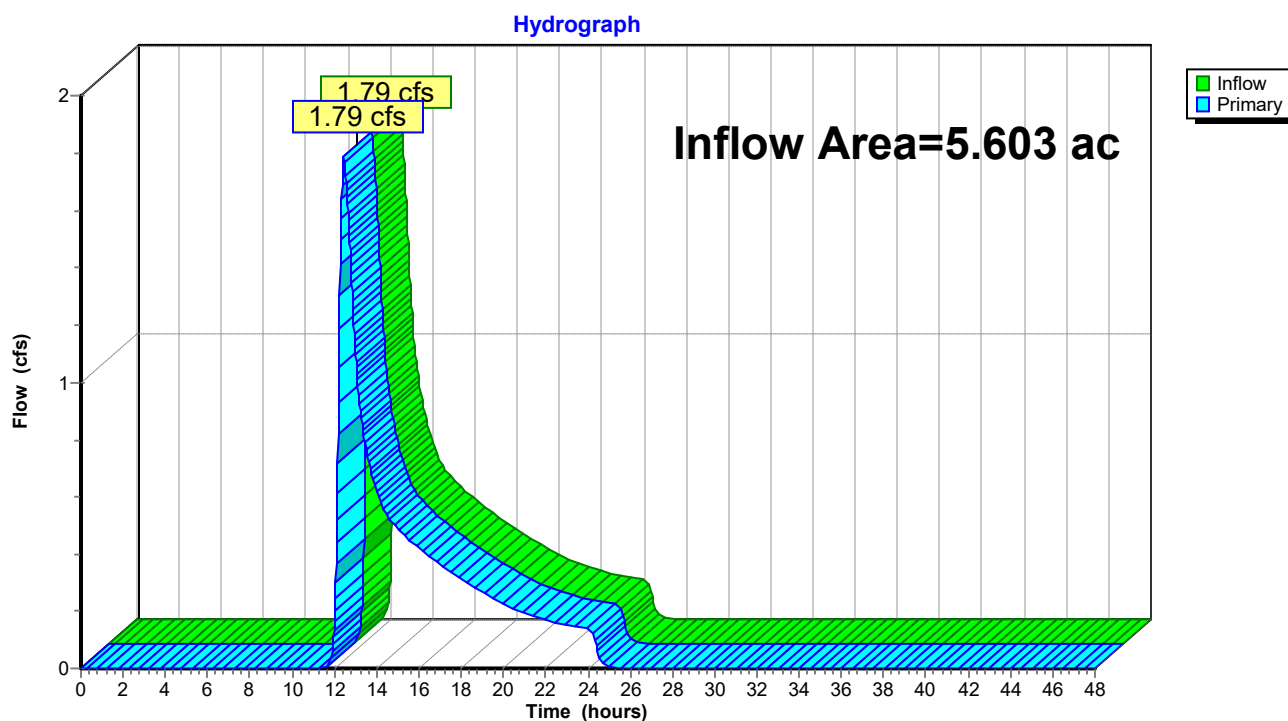


Summary for Link 1L: DESIGN LINE 1

Inflow Area = 5.603 ac, 9.52% Impervious, Inflow Depth = 0.90" for 10-yr event
Inflow = 1.79 cfs @ 12.45 hrs, Volume= 0.422 af
Primary = 1.79 cfs @ 12.45 hrs, Volume= 0.422 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link 1L: DESIGN LINE 1

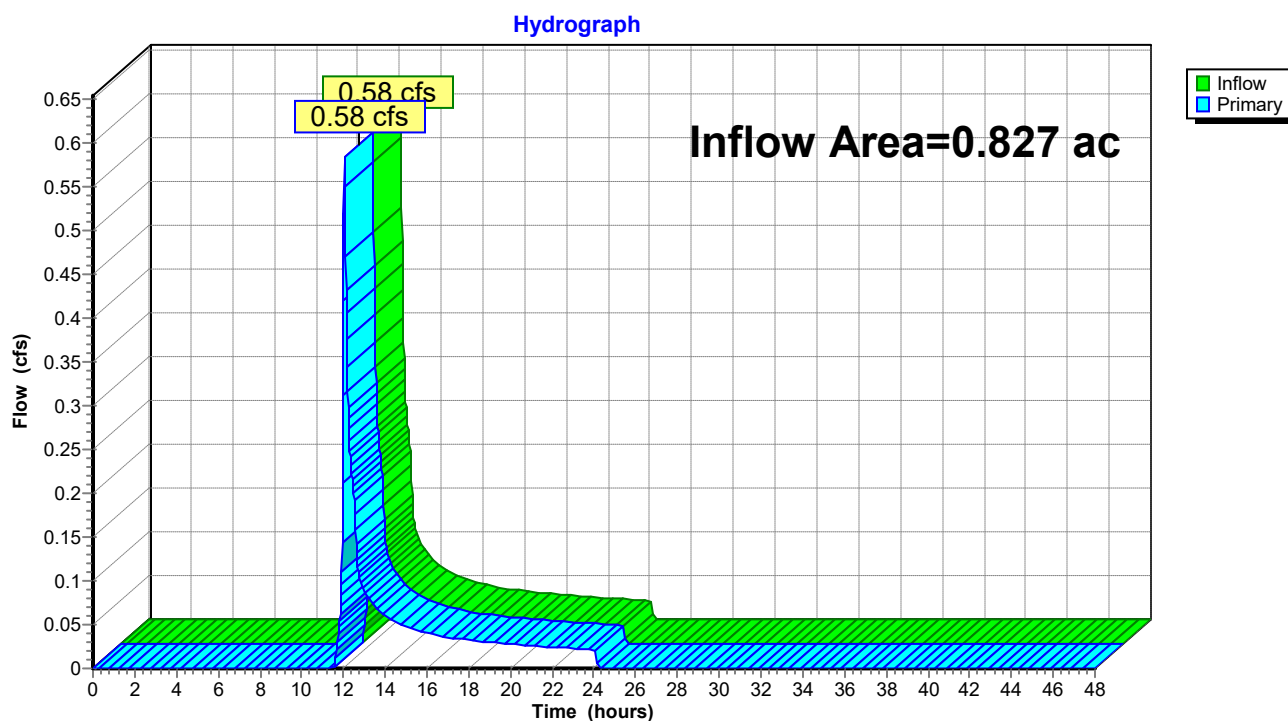


Summary for Link 2L: DESIGN LINE 2

Inflow Area = 0.827 ac, 6.69% Impervious, Inflow Depth = 0.78" for 10-yr event
Inflow = 0.58 cfs @ 12.05 hrs, Volume= 0.054 af
Primary = 0.58 cfs @ 12.05 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link 2L: DESIGN LINE 2



94 Somerstown Rd SW Plan_08-01-202 NY-94 Somerstown Rd 24-hr S1 100-yr Rainfall=9.29"

Prepared by ALP Engineering & Land Arch

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Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: XDA-1 TO DESIGN LINE Runoff Area=244,614 sf 0.00% Impervious Runoff Depth=3.70"
Flow Length=1,074' Tc=33.3 min CN=55 Runoff=10.14 cfs 1.731 af

Subcatchment 2S: XDA-2 TO DESIGN LINE 2 Runoff Area=37,786 sf 0.00% Impervious Runoff Depth=3.70"
Tc=6.0 min CN=55 Runoff=3.15 cfs 0.267 af

Subcatchment 3S: FDA-1 Runoff Area=6,154 sf 60.32% Impervious Runoff Depth=7.22"
Tc=6.0 min CN=83 Runoff=1.00 cfs 0.085 af

Subcatchment 4S: FDA-2 Runoff Area=9,134 sf 26.36% Impervious Runoff Depth=5.72"
Tc=6.0 min CN=71 Runoff=1.21 cfs 0.100 af

Subcatchment 5S: FDA-3 Runoff Area=4,292 sf 86.84% Impervious Runoff Depth=8.44"
Tc=6.0 min CN=93 Runoff=0.77 cfs 0.069 af

Subcatchment 6S: FDA-4 Runoff Area=86,571 sf 16.06% Impervious Runoff Depth=4.96"
Tc=10.0 min CN=65 Runoff=8.39 cfs 0.822 af

Subcatchment 7S: FDA-5 TO DESIGN LINE Runoff Area=145,156 sf 0.00% Impervious Runoff Depth=3.70"
Tc=30.0 min CN=55 Runoff=6.32 cfs 1.027 af

Subcatchment 8S: FDA-6 Runoff Area=26,879 sf 0.00% Impervious Runoff Depth=3.70"
Tc=6.0 min CN=55 Runoff=2.24 cfs 0.190 af

Subcatchment 9S: FDA-4.1 Runoff Area=1,888 sf 100.00% Impervious Runoff Depth=9.05"
Tc=6.0 min CN=98 Runoff=0.35 cfs 0.033 af

Pond 9P: RAIN GARDEN 1 Peak Elev=550.19' Storage=1,138 cf Inflow=1.00 cfs 0.085 af
Discarded=0.06 cfs 0.070 af Primary=0.19 cfs 0.015 af Outflow=0.24 cfs 0.085 af

Pond 10P: RAIN GARDEN 3 Peak Elev=520.38' Storage=609 cf Inflow=0.77 cfs 0.069 af
Discarded=0.02 cfs 0.036 af Primary=0.70 cfs 0.033 af Outflow=0.72 cfs 0.069 af

Pond 11P: RAIN GARDEN 2 Peak Elev=558.27' Storage=1,513 cf Inflow=1.21 cfs 0.100 af
Discarded=0.06 cfs 0.075 af Primary=0.26 cfs 0.025 af Outflow=0.31 cfs 0.100 af

Pond 12P: EXTENDED DETENTION BASIN Peak Elev=514.49' Storage=11,661 cf Inflow=9.04 cfs 0.870 af
Discarded=0.13 cfs 0.203 af Primary=3.06 cfs 0.665 af Outflow=3.18 cfs 0.868 af

Pond 13P: Chambers Peak Elev=508.56' Storage=564 cf Inflow=0.35 cfs 0.033 af
Discarded=0.01 cfs 0.027 af Primary=0.07 cfs 0.006 af Outflow=0.08 cfs 0.033 af

Link 1L: DESIGN LINE 1 Inflow=9.42 cfs 1.698 af
Primary=9.42 cfs 1.698 af

Link 2L: DESIGN LINE 2 Inflow=2.24 cfs 0.215 af
Primary=2.24 cfs 0.215 af

94 Somerstown Rd SW Plan_08-01-202 *NY-94 Somerstown Rd 24-hr S1 100-yr Rainfall=9.29"*

Prepared by ALP Engineering & Land Arch

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Total Runoff Area = 12.913 ac Runoff Volume = 4.324 af Average Runoff Depth = 4.02"
95.44% Pervious = 12.324 ac 4.56% Impervious = 0.589 ac

Summary for Subcatchment 1S: XDA-1 TO DESIGN LINE 1

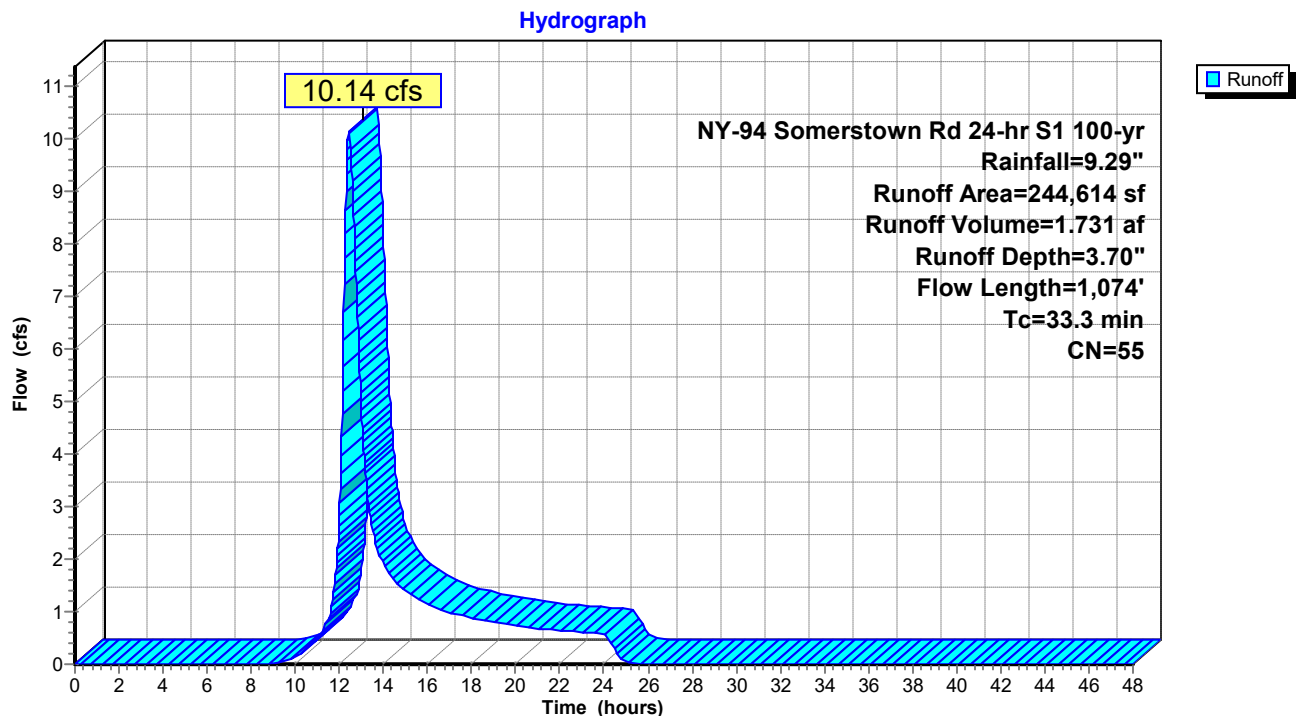
Runoff = 10.14 cfs @ 12.44 hrs, Volume= 1.731 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NY-94 Somerstown Rd 24-hr S1 100-yr Rainfall=9.29"

Area (sf)	CN	Description
244,614	55	Woods, Good, HSG B
244,614		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	56	0.1071	0.14		Sheet Flow, A-B
					Woods: Light underbrush n= 0.400 P2= 3.41"
0.9	131	0.2328	2.41		Shallow Concentrated Flow, B-C
					Woodland Kv= 5.0 fps
4.3	280	0.0482	1.10		Shallow Concentrated Flow, C-D
					Woodland Kv= 5.0 fps
2.1	143	0.0524	1.14		Shallow Concentrated Flow, D-E
					Woodland Kv= 5.0 fps
19.3	464	0.0064	0.40		Shallow Concentrated Flow, E-F
					Woodland Kv= 5.0 fps
33.3	1,074	Total			

Subcatchment 1S: XDA-1 TO DESIGN LINE 1



Summary for Subcatchment 2S: XDA-2 TO DESIGN LINE 2

Runoff = 3.15 cfs @ 12.04 hrs, Volume= 0.267 af, Depth= 3.70"

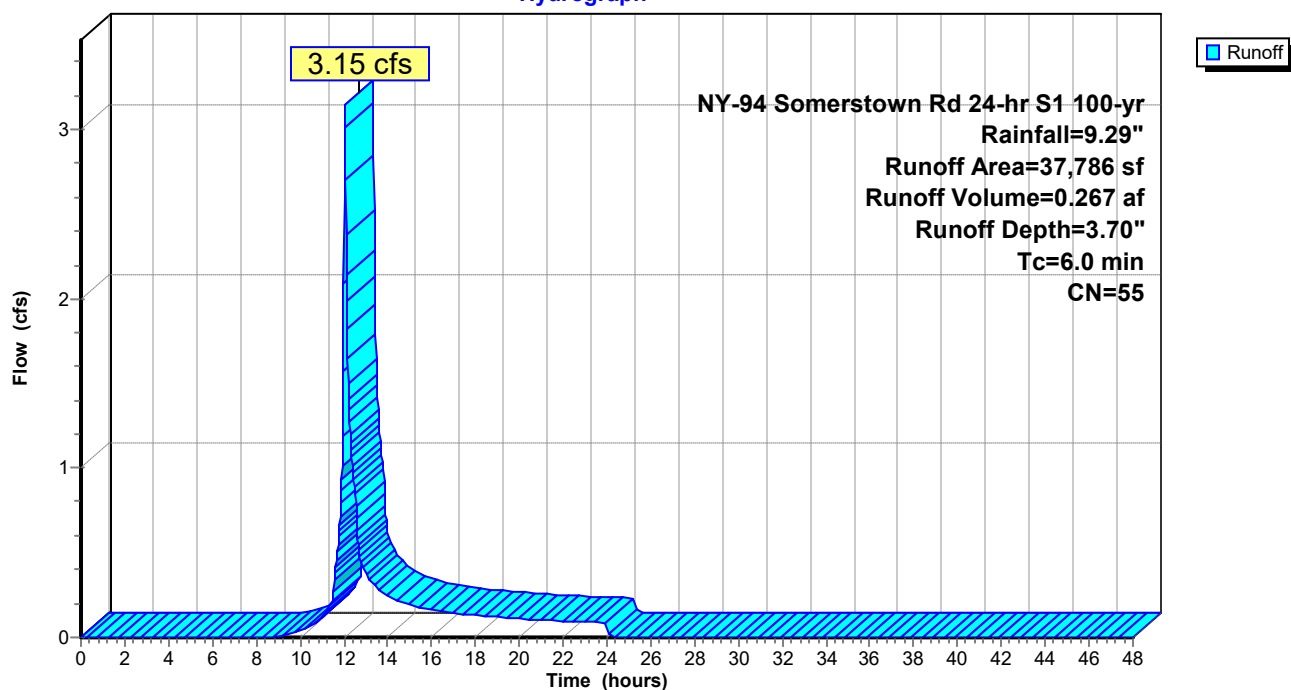
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NY-94 Somerstown Rd 24-hr S1 100-yr Rainfall=9.29"

Area (sf)	CN	Description
37,786	55	Woods, Good, HSG B
37,786		100.00% Pervious Area

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

Subcatchment 2S: XDA-2 TO DESIGN LINE 2

Hydrograph



Summary for Subcatchment 3S: FDA-1

Runoff = 1.00 cfs @ 12.04 hrs, Volume= 0.085 af, Depth= 7.22"
Routed to Pond 9P : RAIN GARDEN 1

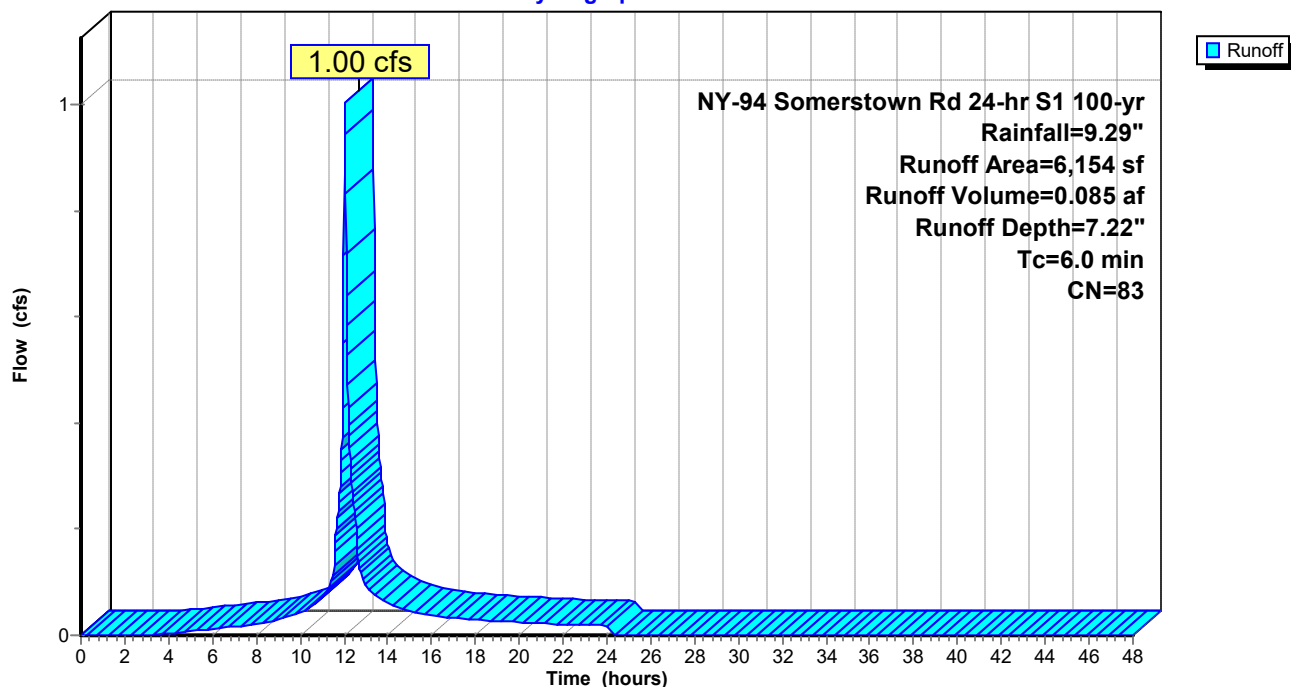
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NY-94 Somerstown Rd 24-hr S1 100-yr Rainfall=9.29"

	Area (sf)	CN	Description
*	3,712	98	Impervious surfaces, HSG B
	2,442	61	>75% Grass cover, Good, HSG B
	6,154	83	Weighted Average
	2,442		39.68% Pervious Area
	3,712		60.32% Impervious Area

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

Subcatchment 3S: FDA-1

Hydrograph



Summary for Subcatchment 4S: FDA-2

Runoff = 1.21 cfs @ 12.04 hrs, Volume= 0.100 af, Depth= 5.72"
Routed to Pond 11P : RAIN GARDEN 2

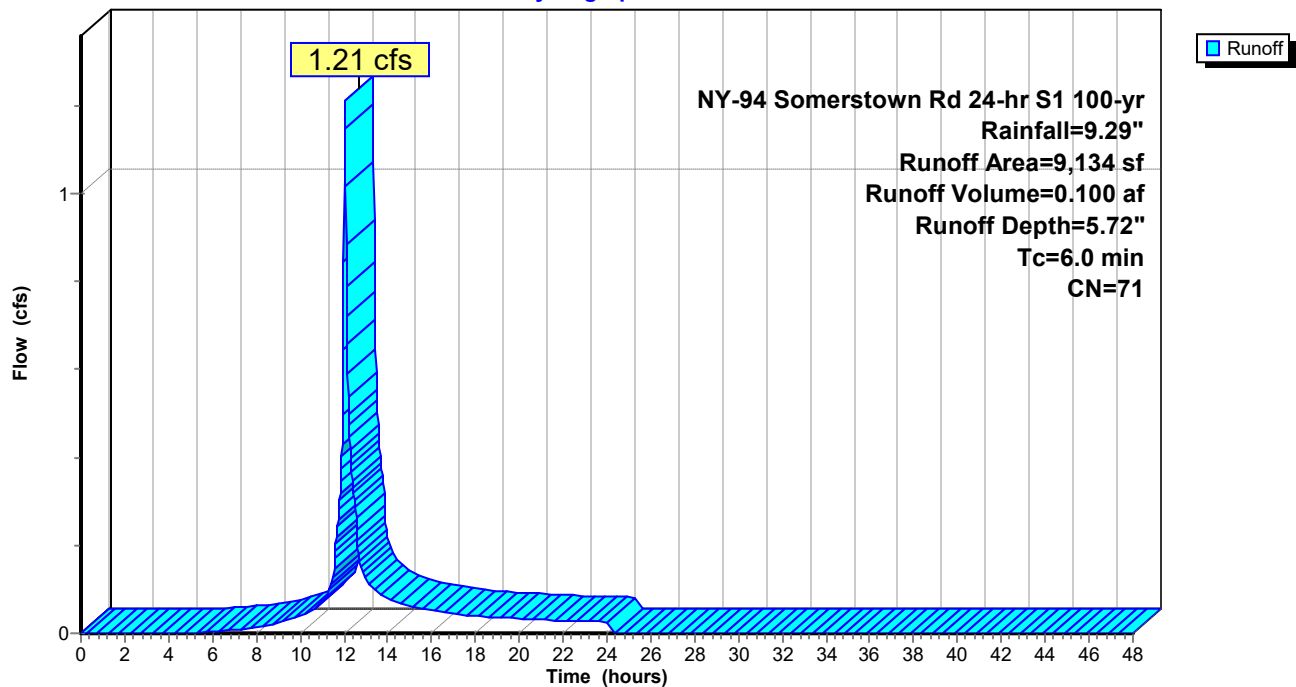
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NY-94 Somerstown Rd 24-hr S1 100-yr Rainfall=9.29"

Area (sf)	CN	Description
2,408	98	Roofs, HSG B
6,726	61	>75% Grass cover, Good, HSG B
9,134	71	Weighted Average
6,726		73.64% Pervious Area
2,408		26.36% Impervious Area

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

Subcatchment 4S: FDA-2

Hydrograph



Summary for Subcatchment 5S: FDA-3

Runoff = 0.77 cfs @ 12.04 hrs, Volume= 0.069 af, Depth= 8.44"
 Routed to Pond 10P : RAIN GARDEN 3

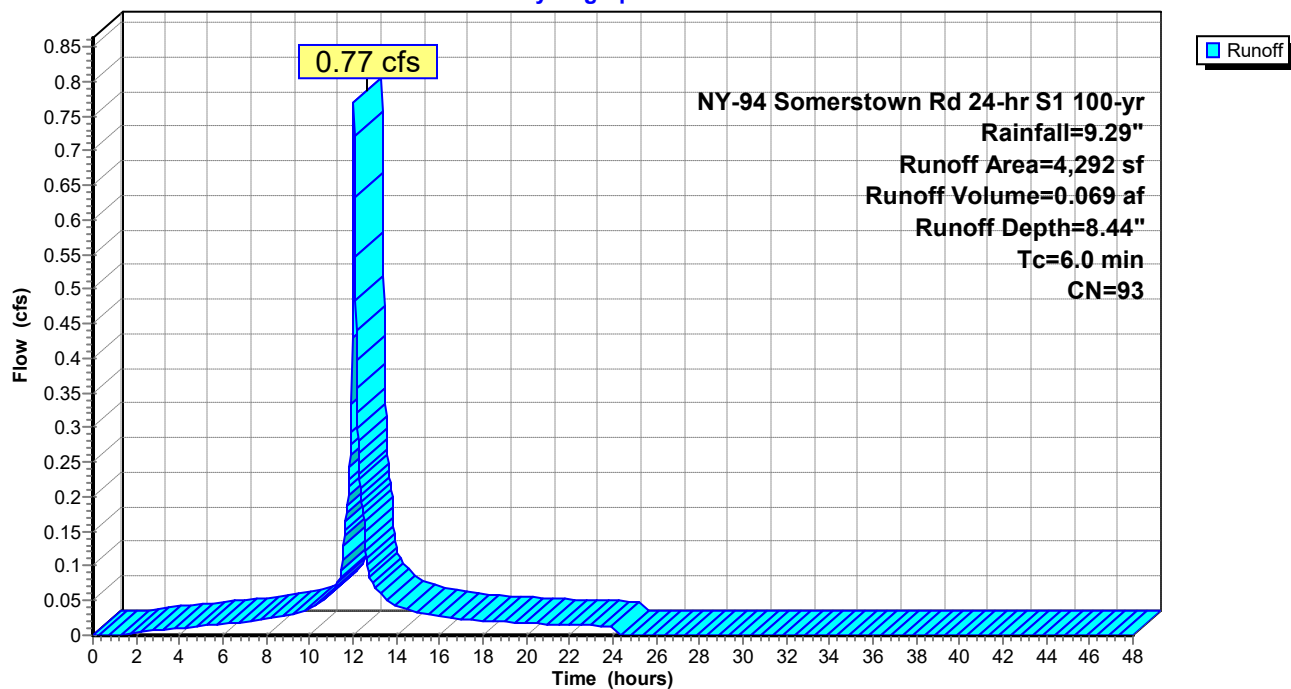
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 NY-94 Somerstown Rd 24-hr S1 100-yr Rainfall=9.29"

	Area (sf)	CN	Description
*	3,727	98	Impervious surfaces, HSG B
	565	61	>75% Grass cover, Good, HSG B
	4,292	93	Weighted Average
	565		13.16% Pervious Area
	3,727		86.84% Impervious Area

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

Subcatchment 5S: FDA-3

Hydrograph



Summary for Subcatchment 6S: FDA-4

Runoff = 8.39 cfs @ 12.09 hrs, Volume= 0.822 af, Depth= 4.96"

Routed to Pond 12P : EXTENDED DETENTION BASIN

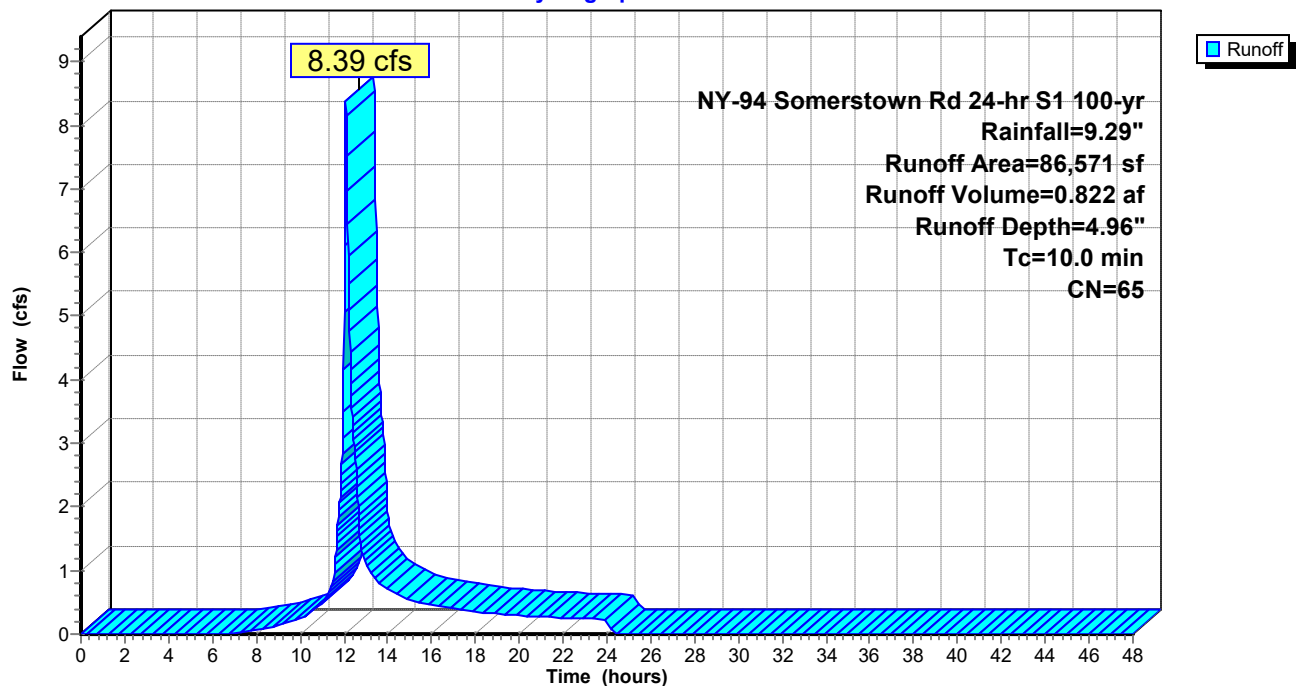
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NY-94 Somerstown Rd 24-hr S1 100-yr Rainfall=9.29"

	Area (sf)	CN	Description
*	13,904	98	Impervious Surfaces & Roofs, HSG B
	44,003	61	>75% Grass cover, Good, HSG B
	25,342	55	Woods, Good, HSG B
	3,322	58	Meadow, non-grazed, HSG B
	86,571	65	Weighted Average
	72,667		83.94% Pervious Area
	13,904		16.06% Impervious Area

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

Subcatchment 6S: FDA-4

Hydrograph



Summary for Subcatchment 7S: FDA-5 TO DESIGN LINE 1

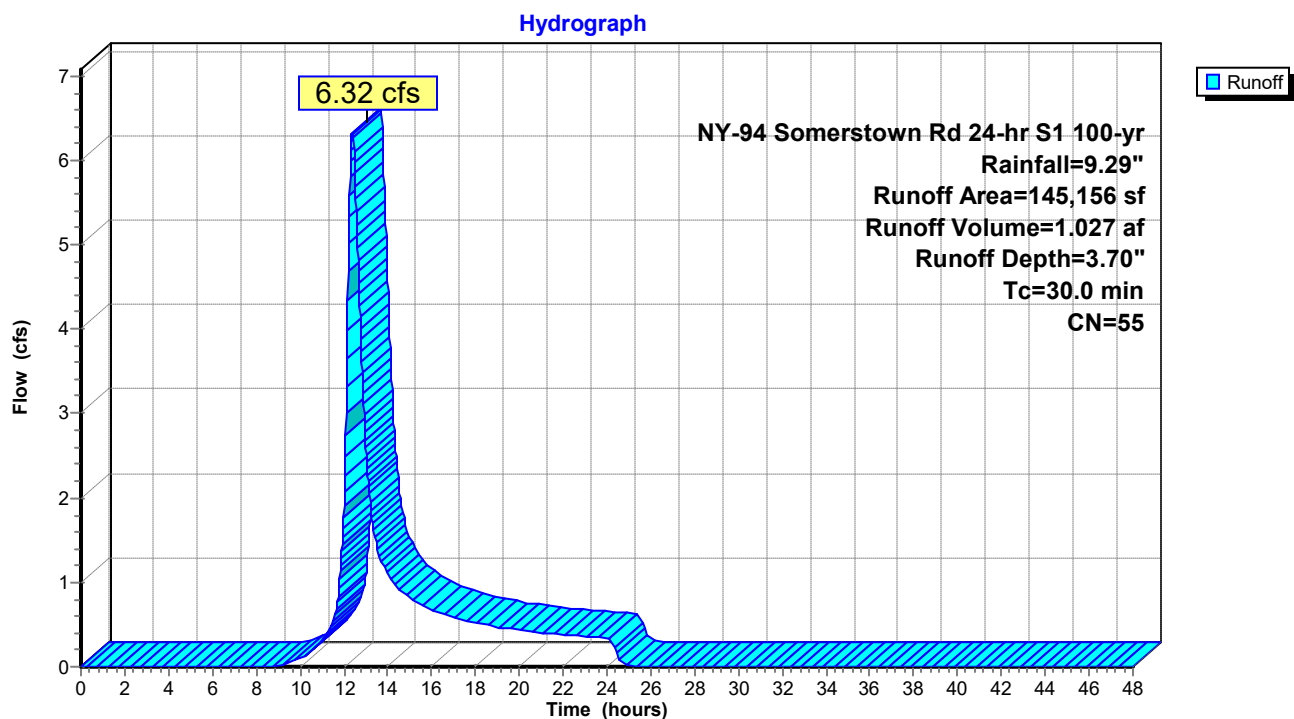
Runoff = 6.32 cfs @ 12.38 hrs, Volume= 1.027 af, Depth= 3.70"
 Routed to Link 1L : DESIGN LINE 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 NY-94 Somerstown Rd 24-hr S1 100-yr Rainfall=9.29"

Area (sf)	CN	Description
156	61	>75% Grass cover, Good, HSG B
145,000	55	Woods, Good, HSG B
145,156	55	Weighted Average
145,156		100.00% Pervious Area

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

Subcatchment 7S: FDA-5 TO DESIGN LINE 1



Summary for Subcatchment 8S: FDA-6

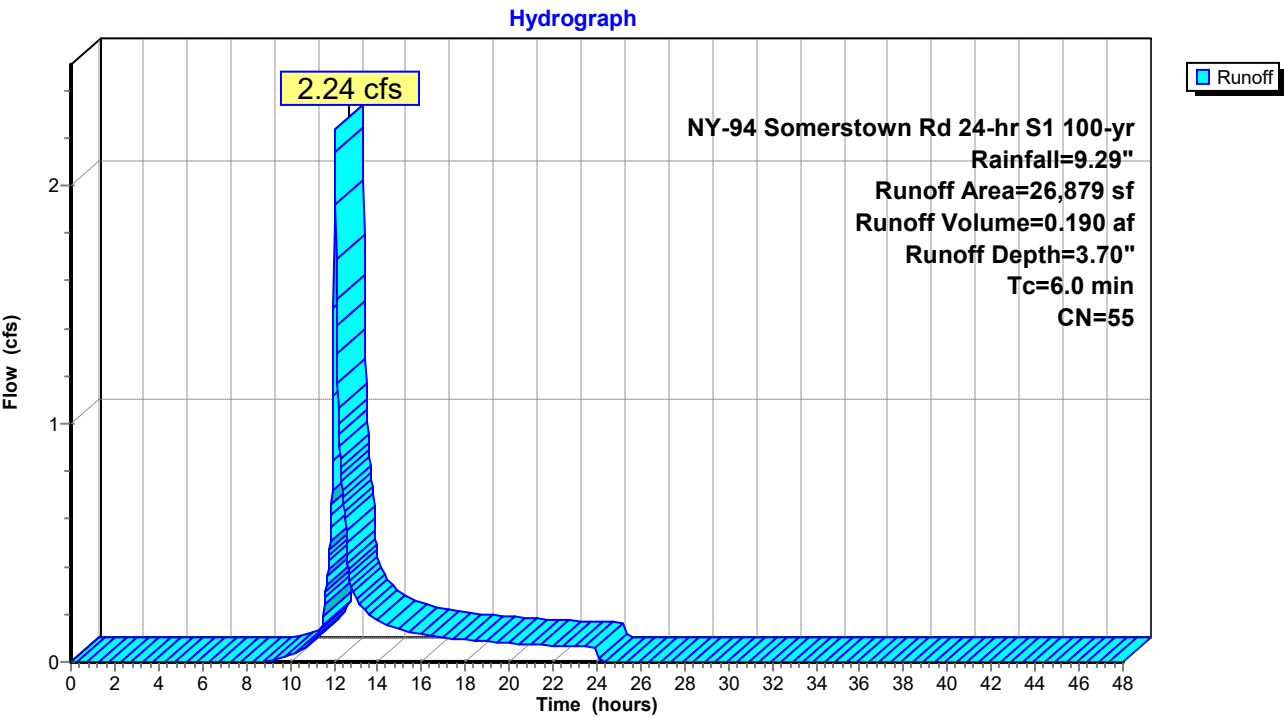
Runoff = 2.24 cfs @ 12.04 hrs, Volume= 0.190 af, Depth= 3.70"
Routed to Link 2L : DESIGN LINE 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NY-94 Somerstown Rd 24-hr S1 100-yr Rainfall=9.29"

Area (sf)	CN	Description
26,879	55	Woods, Good, HSG B
26,879		100.00% Pervious Area

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

Subcatchment 8S: FDA-6



Summary for Subcatchment 9S: FDA-4.1

Runoff = 0.35 cfs @ 12.04 hrs, Volume= 0.033 af, Depth= 9.05"
Routed to Pond 13P : Chambers

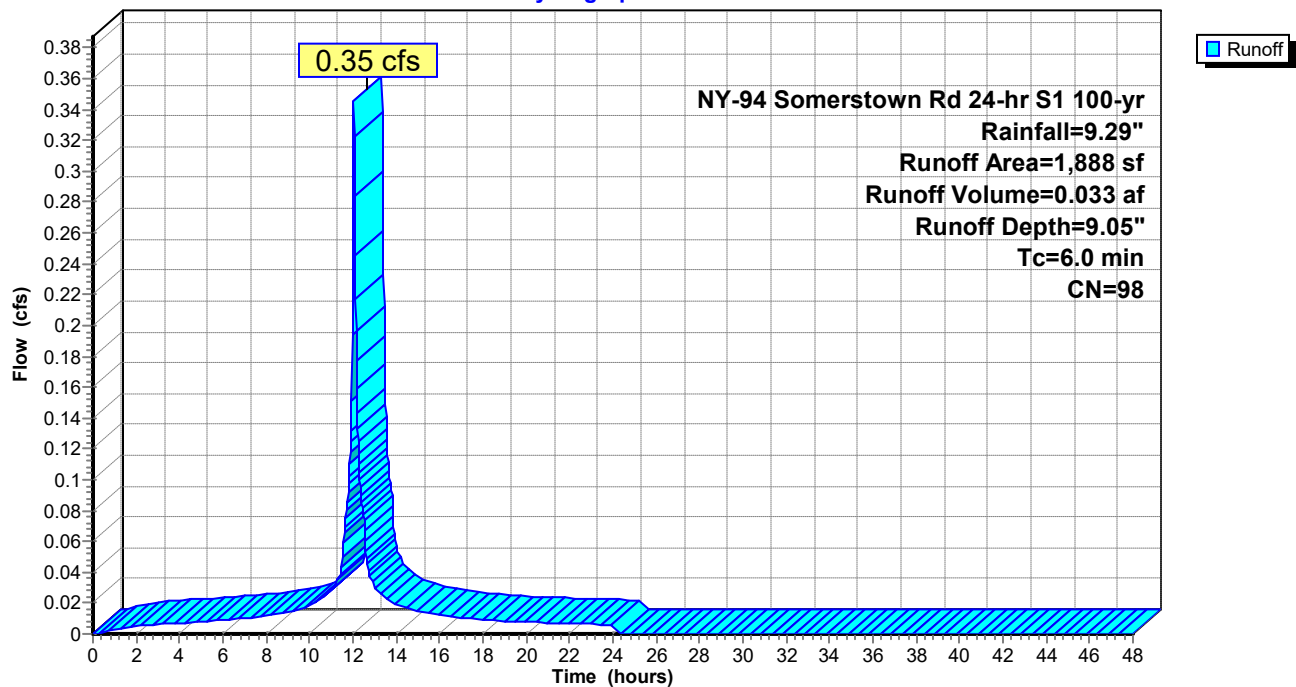
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
NY-94 Somerstown Rd 24-hr S1 100-yr Rainfall=9.29"

Area (sf)	CN	Description
1,888	98	Paved parking, HSG B
1,888		100.00% Impervious Area

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

Subcatchment 9S: FDA-4.1

Hydrograph



Summary for Pond 9P: RAIN GARDEN 1

Inflow Area = 0.141 ac, 60.32% Impervious, Inflow Depth = 7.22" for 100-yr event
 Inflow = 1.00 cfs @ 12.04 hrs, Volume= 0.085 af
 Outflow = 0.24 cfs @ 12.47 hrs, Volume= 0.085 af, Atten= 76%, Lag= 25.8 min
 Discarded = 0.06 cfs @ 12.47 hrs, Volume= 0.070 af
 Primary = 0.19 cfs @ 12.47 hrs, Volume= 0.015 af
 Routed to Pond 12P : EXTENDED DETENTION BASIN

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 550.19' @ 12.47 hrs Surf.Area= 1,225 sf Storage= 1,138 cf

Plug-Flow detention time= 157.0 min calculated for 0.085 af (100% of inflow)
 Center-of-Mass det. time= 157.0 min (960.2 - 803.2)

Volume	Invert	Avail.Storage	Storage Description
#1	549.00'	1,555 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

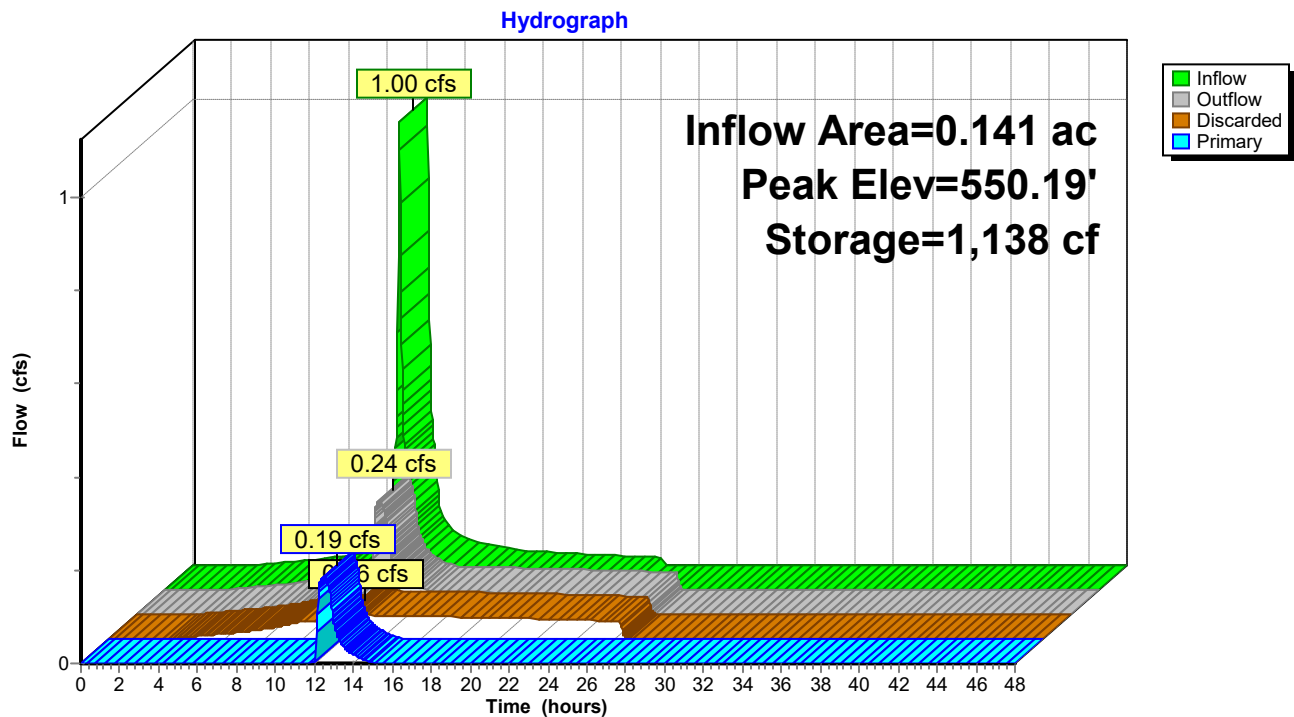
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
549.00	800	0	0
549.50	910	428	428
550.00	1,050	490	918
550.50	1,500	638	1,555

Device	Routing	Invert	Outlet Devices
#1	Primary	550.00'	4.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Discarded	549.00'	2.000 in/hr Exfiltration over Horizontal area
#3	Primary	550.35'	3.0' long (Profile 6) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 3.12 3.41 3.59

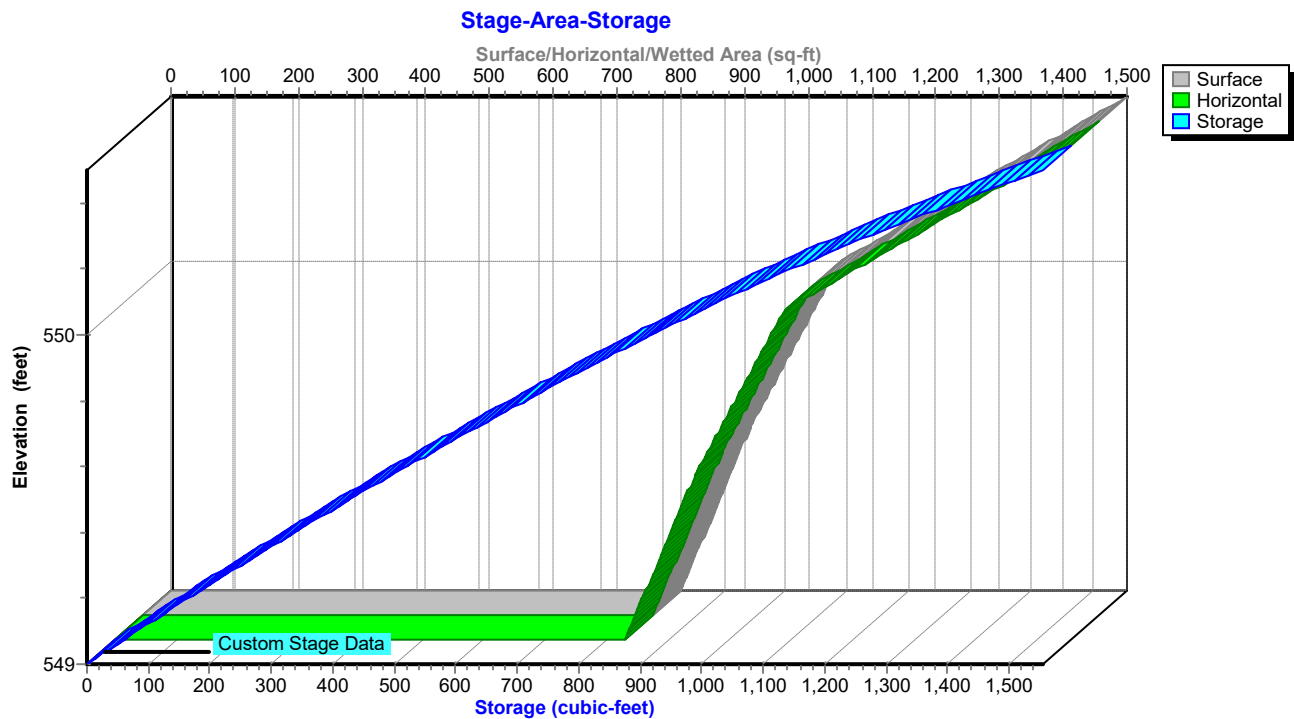
Discarded OutFlow Max=0.06 cfs @ 12.47 hrs HW=550.19' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.19 cfs @ 12.47 hrs HW=550.19' (Free Discharge)
 ↑ **1=Orifice/Grate** (Orifice Controls 0.19 cfs @ 2.12 fps)
 ↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 9P: RAIN GARDEN 1



Pond 9P: RAIN GARDEN 1



Summary for Pond 10P: RAIN GARDEN 3

Inflow Area = 0.099 ac, 86.84% Impervious, Inflow Depth = 8.44" for 100-yr event
 Inflow = 0.77 cfs @ 12.04 hrs, Volume= 0.069 af
 Outflow = 0.72 cfs @ 12.06 hrs, Volume= 0.069 af, Atten= 6%, Lag= 1.5 min
 Discarded = 0.02 cfs @ 12.06 hrs, Volume= 0.036 af
 Primary = 0.70 cfs @ 12.06 hrs, Volume= 0.033 af

Routed to Pond 12P : EXTENDED DETENTION BASIN

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 520.38' @ 12.06 hrs Surf.Area= 454 sf Storage= 609 cf

Plug-Flow detention time= 169.3 min calculated for 0.069 af (100% of inflow)

Center-of-Mass det. time= 169.5 min (935.7 - 766.2)

Volume	Invert	Avail.Storage	Storage Description
#1	518.25'	664 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
518.25	0	0	0
518.50	197	25	25
519.50	306	252	276
520.00	386	173	449
520.50	475	215	664

Device	Routing	Invert	Outlet Devices
#1	Primary	520.00'	4.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Discarded	518.25'	2.000 in/hr Exfiltration over Horizontal area
#3	Primary	520.25'	3.0' long (Profile 6) Broad-Crested Rectangular Weir
			Head (feet) 0.49 0.98 1.48
			Coef. (English) 3.12 3.41 3.59

Discarded OutFlow Max=0.02 cfs @ 12.06 hrs HW=520.38' (Free Discharge)

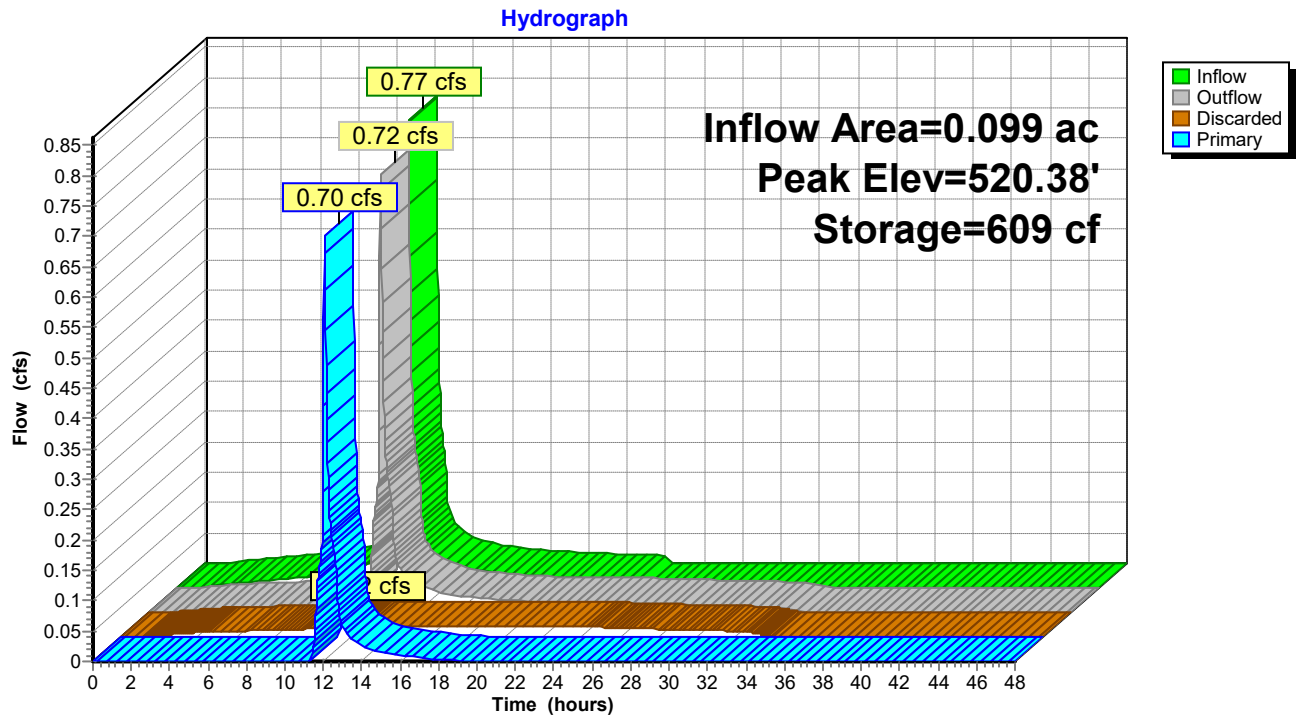
↑ **2=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.70 cfs @ 12.06 hrs HW=520.38' (Free Discharge)

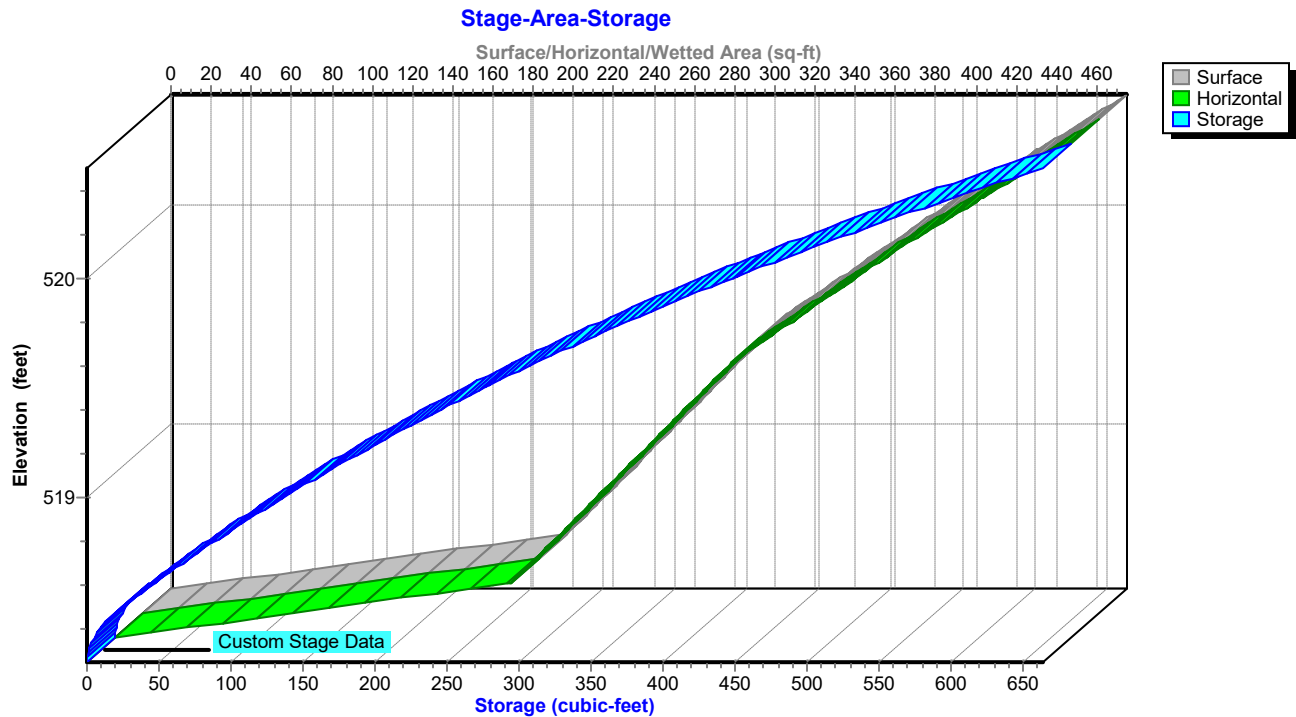
↑ **1=Orifice/Grate** (Orifice Controls 0.26 cfs @ 2.97 fps)

↑ **3=Broad-Crested Rectangular Weir** (Weir Controls 0.44 cfs @ 1.12 fps)

Pond 10P: RAIN GARDEN 3



Pond 10P: RAIN GARDEN 3



Summary for Pond 11P: RAIN GARDEN 2

Inflow Area = 0.210 ac, 26.36% Impervious, Inflow Depth = 5.72" for 100-yr event
 Inflow = 1.21 cfs @ 12.04 hrs, Volume= 0.100 af
 Outflow = 0.31 cfs @ 12.46 hrs, Volume= 0.100 af, Atten= 74%, Lag= 25.2 min
 Discarded = 0.06 cfs @ 12.46 hrs, Volume= 0.075 af
 Primary = 0.26 cfs @ 12.46 hrs, Volume= 0.025 af
 Routed to Link 2L : DESIGN LINE 2

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 558.27' @ 12.46 hrs Surf.Area= 1,290 sf Storage= 1,513 cf

Plug-Flow detention time= 249.0 min calculated for 0.100 af (100% of inflow)
 Center-of-Mass det. time= 249.2 min (1,087.0 - 837.9)

Volume	Invert	Avail.Storage	Storage Description
#1	556.00'	1,832 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

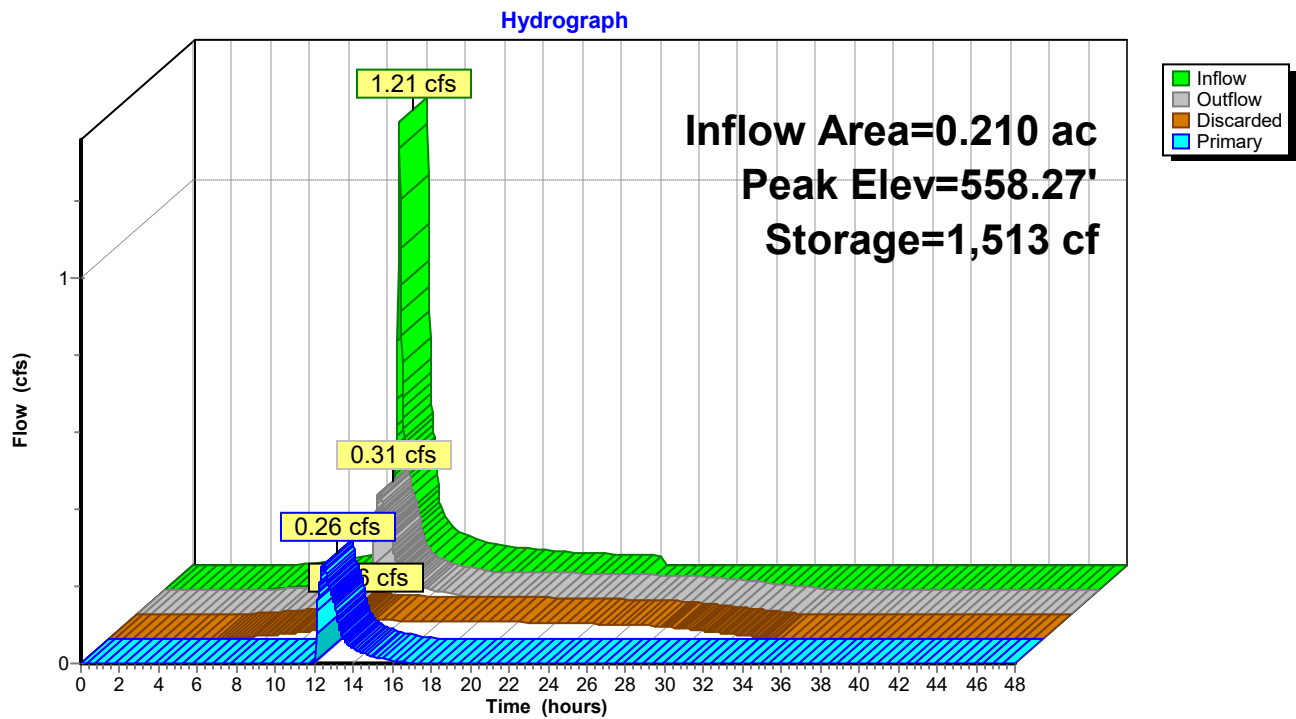
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
556.00	0	0	0
557.00	722	361	361
557.75	885	603	964
558.00	1,001	236	1,199
558.50	1,528	632	1,832

Device	Routing	Invert	Outlet Devices
#1	Primary	558.00'	4.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Discarded	556.00'	2.000 in/hr Exfiltration over Horizontal area
#3	Primary	558.25'	3.0' long (Profile 6) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 3.12 3.41 3.59

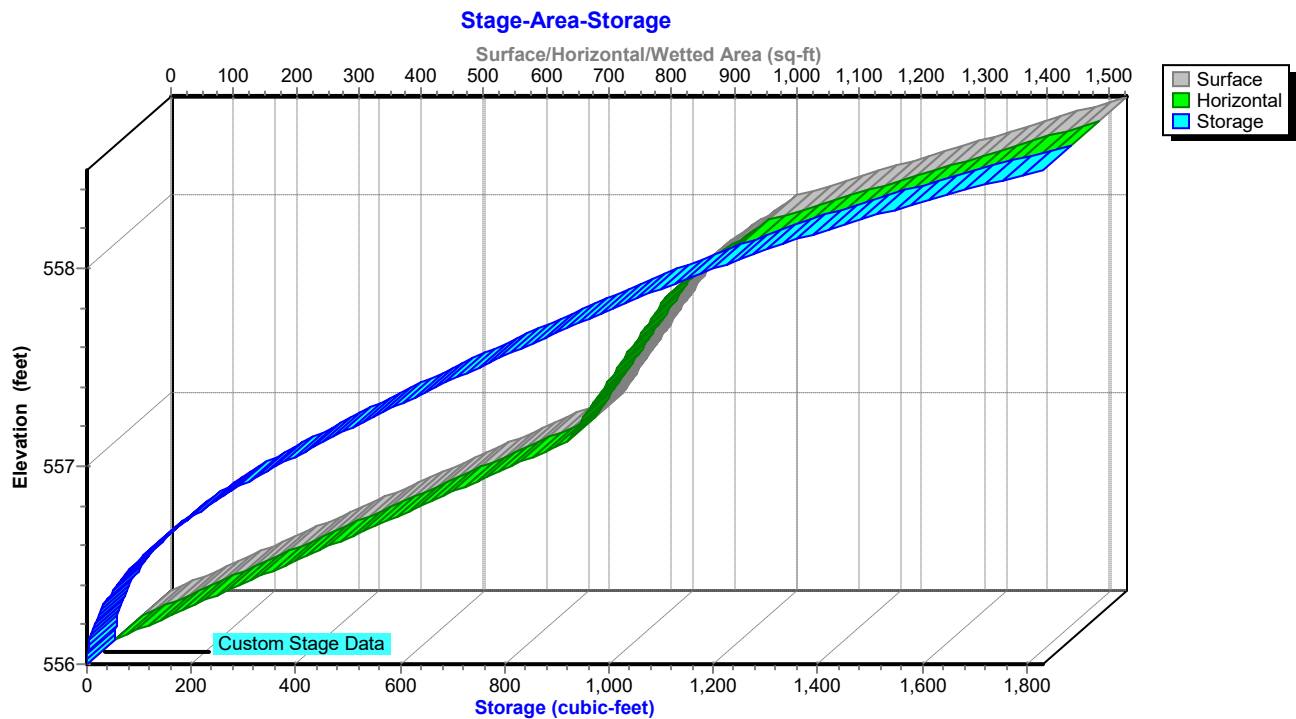
Discarded OutFlow Max=0.06 cfs @ 12.46 hrs HW=558.27' (Free Discharge)
 ↑ **2=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.25 cfs @ 12.46 hrs HW=558.27' (Free Discharge)
 ↑ **1=Orifice/Grate** (Orifice Controls 0.22 cfs @ 2.52 fps)
 ↓ **3=Broad-Crested Rectangular Weir** (Weir Controls 0.03 cfs @ 0.48 fps)

Pond 11P: RAIN GARDEN 2



Pond 11P: RAIN GARDEN 2



Summary for Pond 12P: EXTENDED DETENTION BASIN

Inflow Area = 2.227 ac, 22.00% Impervious, Inflow Depth = 4.69" for 100-yr event
 Inflow = 9.04 cfs @ 12.09 hrs, Volume= 0.870 af
 Outflow = 3.18 cfs @ 12.50 hrs, Volume= 0.868 af, Atten= 65%, Lag= 24.6 min
 Discarded = 0.13 cfs @ 12.50 hrs, Volume= 0.203 af
 Primary = 3.06 cfs @ 12.50 hrs, Volume= 0.665 af
 Routed to Link 1L : DESIGN LINE 1

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 514.49' @ 12.50 hrs Surf.Area= 2,726 sf Storage= 11,661 cf

Plug-Flow detention time= 164.7 min calculated for 0.868 af (100% of inflow)
 Center-of-Mass det. time= 163.8 min (1,016.5 - 852.6)

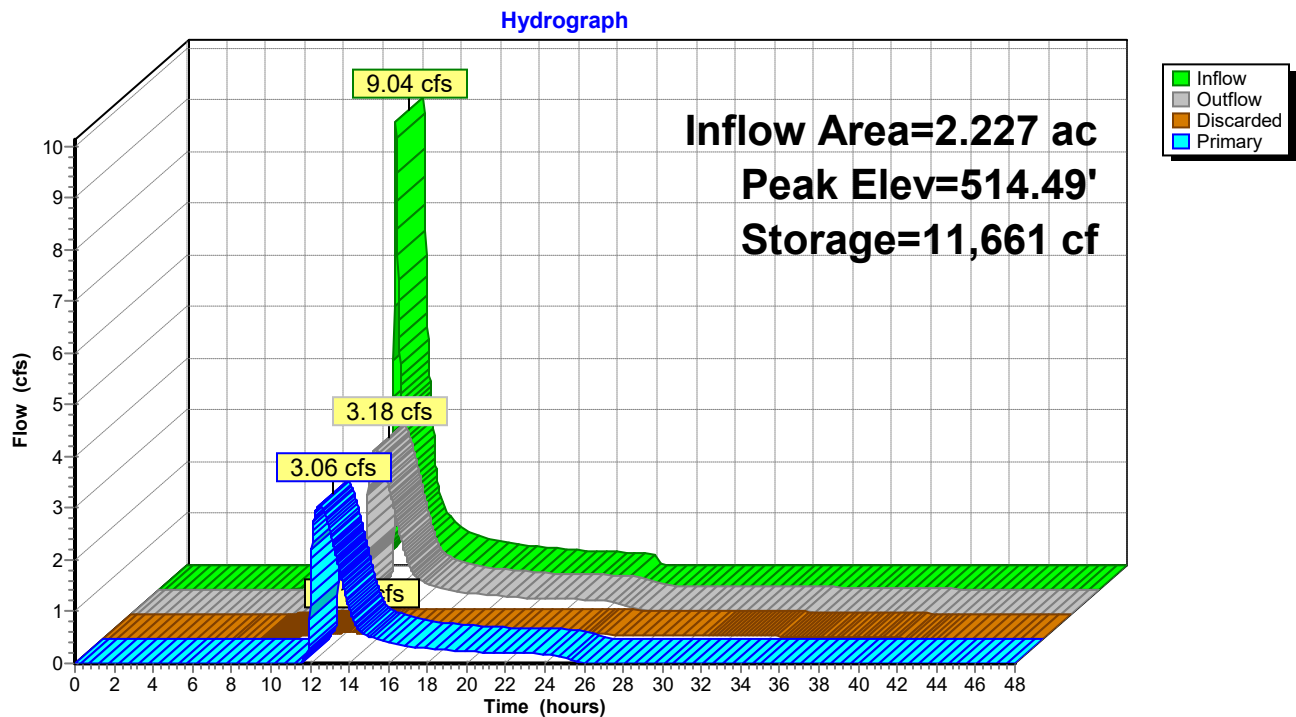
Volume	Invert	Avail.Storage	Storage Description
#1	506.00'	17,768 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
506.00	50	0	0
507.00	98	74	74
508.00	146	122	196
509.00	779	463	659
510.00	1,609	1,194	1,853
512.00	2,141	3,750	5,603
514.00	2,608	4,749	10,352
516.00	3,087	5,695	16,047
516.50	3,800	1,722	17,768

Device	Routing	Invert	Outlet Devices
#1	Primary	510.75'	3.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	511.75'	8.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	515.50'	5.0' long (Profile 6) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 3.12 3.41 3.59
#4	Discarded	506.00'	2.000 in/hr Exfiltration over Horizontal area

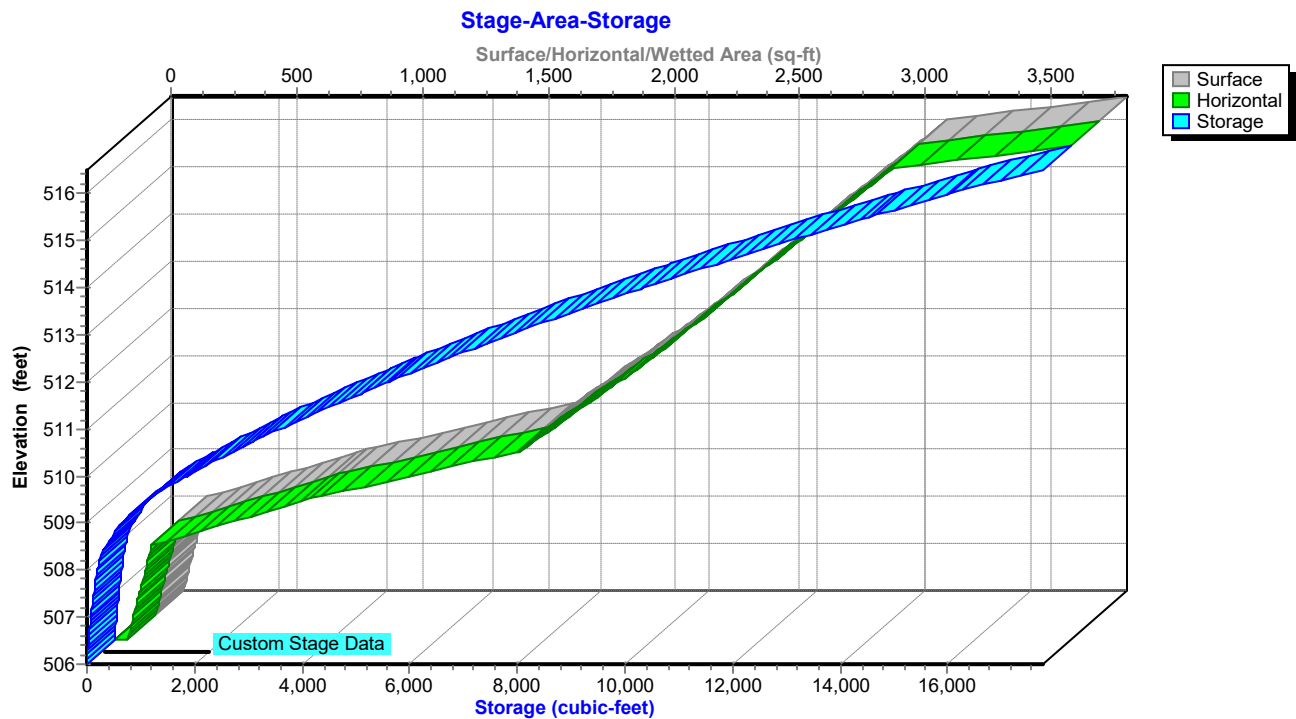
Discarded OutFlow Max=0.13 cfs @ 12.50 hrs HW=514.49' (Free Discharge)
 ↑ **4=Exfiltration** (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=3.06 cfs @ 12.50 hrs HW=514.49' (Free Discharge)
 ↑ **1=Orifice/Grate** (Orifice Controls 0.45 cfs @ 9.16 fps)
 ↓ **2=Orifice/Grate** (Orifice Controls 2.61 cfs @ 7.47 fps)
 ↓ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 12P: EXTENDED DETENTION BASIN



Pond 12P: EXTENDED DETENTION BASIN



Summary for Pond 13P: Chambers

Inflow Area = 0.043 ac, 100.00% Impervious, Inflow Depth = 9.05" for 100-yr event
 Inflow = 0.35 cfs @ 12.04 hrs, Volume= 0.033 af
 Outflow = 0.08 cfs @ 12.44 hrs, Volume= 0.033 af, Atten= 76%, Lag= 24.2 min
 Discarded = 0.01 cfs @ 5.32 hrs, Volume= 0.027 af
 Primary = 0.07 cfs @ 12.44 hrs, Volume= 0.006 af
 Routed to Link 1L : DESIGN LINE 1

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs / 2
 Peak Elev= 508.56' @ 12.44 hrs Surf.Area= 349 sf Storage= 564 cf

Plug-Flow detention time= 502.6 min calculated for 0.033 af (100% of inflow)
 Center-of-Mass det. time= 503.0 min (1,242.7 - 739.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	506.00'	310 cf	5.92'W x 59.00'L x 3.21'H Field A 1,120 cf Overall - 346 cf Embedded = 774 cf x 40.0% Voids
#2A	506.50'	346 cf	Cultec R-280HD x 8 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 1 rows
		656 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	506.00'	1.000 in/hr Exfiltration over Horizontal area
#2	Device 3	506.75'	4.0" Round Culvert L= 32.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 506.75' / 506.50' S= 0.0078 '/' Cc= 0.900 n= 0.012, Flow Area= 0.09 sf
#3	Primary	508.50'	15.0" x 15.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.01 cfs @ 5.32 hrs HW=506.03' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.08 cfs @ 12.44 hrs HW=508.56' (Free Discharge)

↑ **3=Orifice/Grate** (Passes 0.08 cfs of 0.24 cfs potential flow)

↑ **2=Culvert** (Outlet Controls 0.08 cfs @ 0.86 fps)

Pond 13P: Chambers - Chamber Wizard Field A

Chamber Model = Cultec R-280HD (Cultec Recharger® 280HD)

Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf

Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap

Row Length Adjustment= +1.00' x 6.07 sf x 1 rows

8 Chambers/Row x 7.00' Long +1.00' Row Adjustment = 57.00' Row Length +12.0" End Stone x 2 = 59.00' Base Length

1 Rows x 47.0" Wide + 12.0" Side Stone x 2 = 5.92' Base Width

6.0" Stone Base + 26.5" Chamber Height + 6.0" Stone Cover = 3.21' Field Height

8 Chambers x 42.5 cf +1.00' Row Adjustment x 6.07 sf x 1 Rows = 346.1 cf Chamber Storage

1,120.0 cf Field - 346.1 cf Chambers = 773.9 cf Stone x 40.0% Voids = 309.6 cf Stone Storage

Chamber Storage + Stone Storage = 655.6 cf = 0.015 af

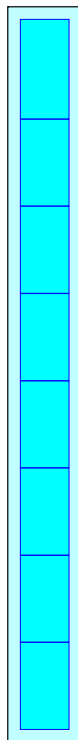
Overall Storage Efficiency = 58.5%

Overall System Size = 59.00' x 5.92' x 3.21'

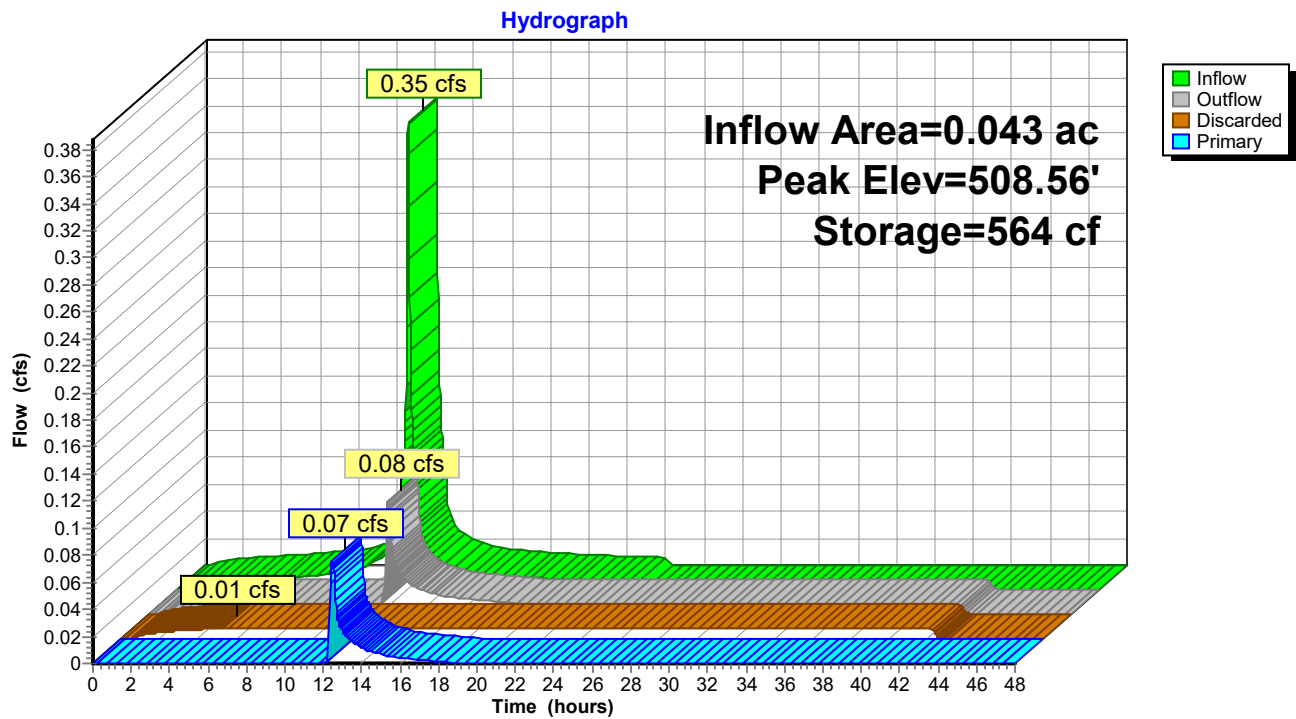
8 Chambers

41.5 cy Field

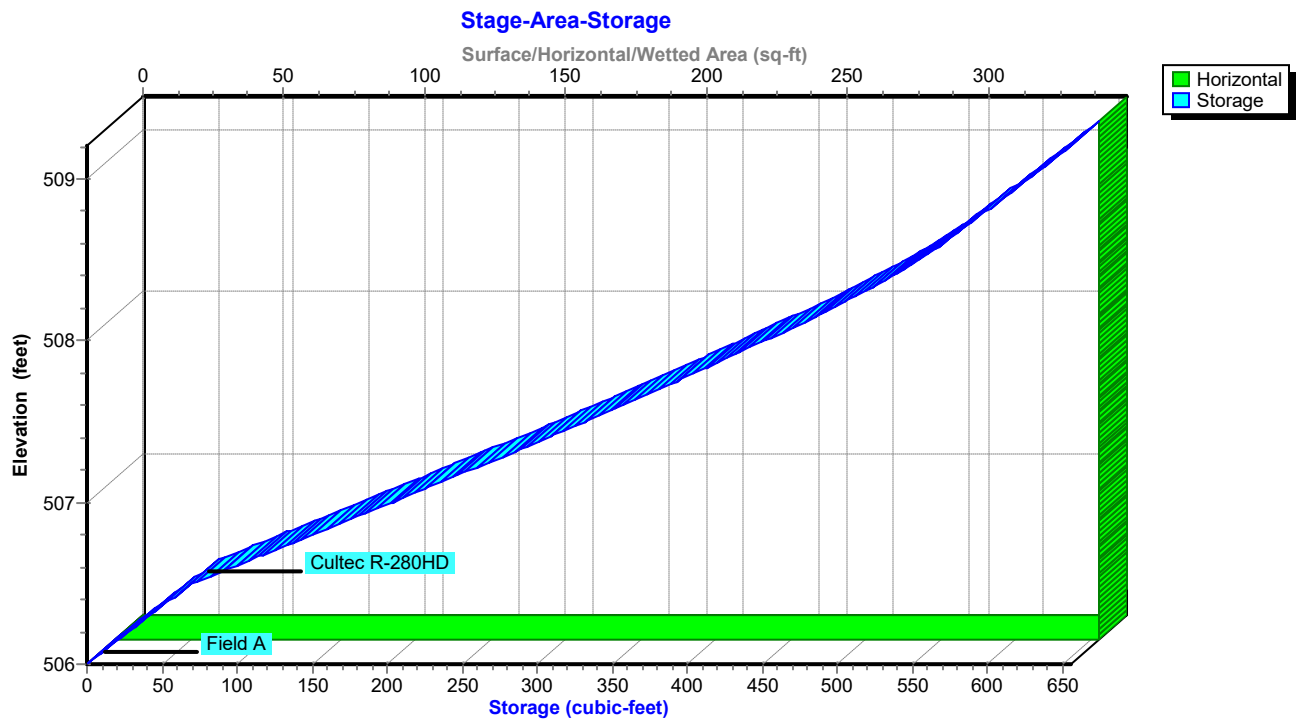
28.7 cy Stone



Pond 13P: Chambers



Pond 13P: Chambers

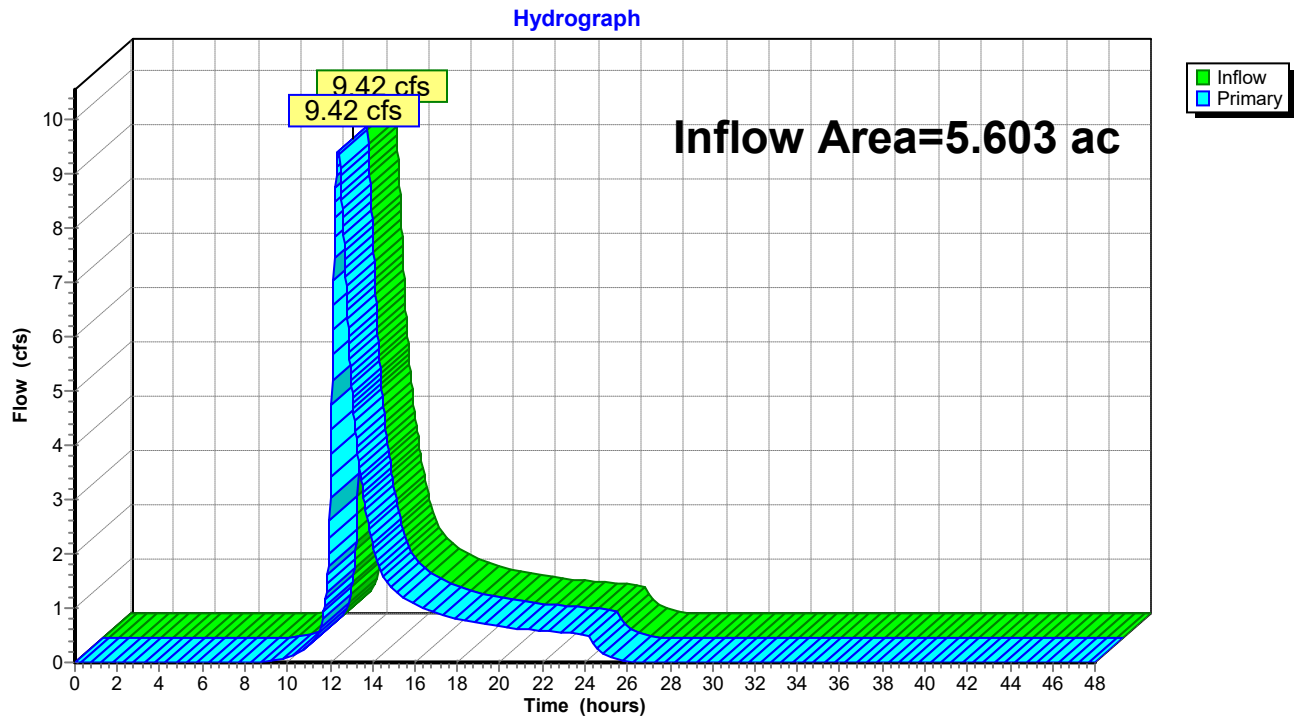


Summary for Link 1L: DESIGN LINE 1

Inflow Area = 5.603 ac, 9.52% Impervious, Inflow Depth = 3.64" for 100-yr event
Inflow = 9.42 cfs @ 12.39 hrs, Volume= 1.698 af
Primary = 9.42 cfs @ 12.39 hrs, Volume= 1.698 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link 1L: DESIGN LINE 1

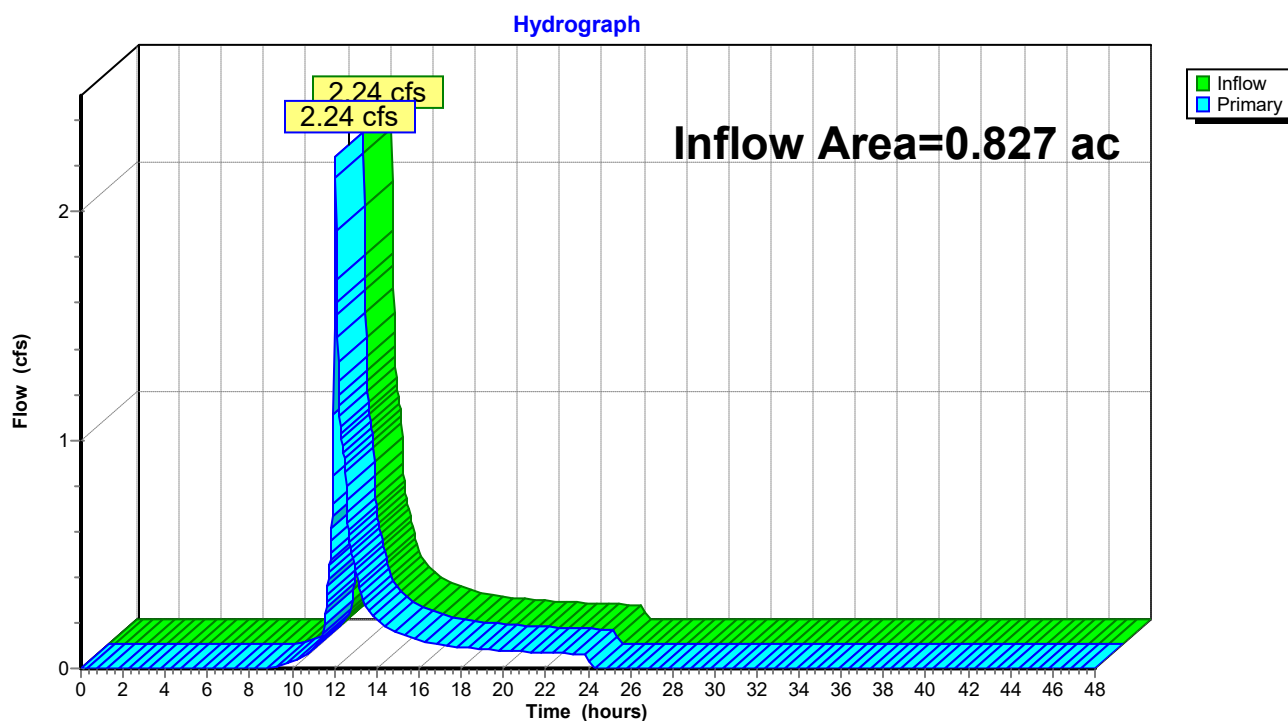


Summary for Link 2L: DESIGN LINE 2

Inflow Area = 0.827 ac, 6.69% Impervious, Inflow Depth = 3.13" for 100-yr event
Inflow = 2.24 cfs @ 12.04 hrs, Volume= 0.215 af
Primary = 2.24 cfs @ 12.04 hrs, Volume= 0.215 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link 2L: DESIGN LINE 2



Appendix B

***Construction Sequence
Narrative***

CONSTRUCTION SEQUENCE NARRATIVE

All erosion and sedimentation control measures and procedures shall comply with the New York State Department of Environmental Conservation publication Standards and Specifications for Erosion and Sediment Control, 2016 edition. Erosion control measures shall be installed prior to the start of construction and maintained in effective condition throughout the construction period.

Land disturbance shall be kept to a minimum. Restabilization shall be scheduled as soon as practicable.

Notify all appropriate authorities (i.e., Town of Ossining Building Department - Telephone: 914-762-8419 and/or bldgdept@townofossining.com) at least 48 hours prior to the commencement of site work.

Verify all existing underground and overhead utilities prior to any construction activity by calling Dig Safely New York (dial 811 or on the internet at <http://www.digsafelyny.com/>) and conducting one's own due diligence.

All erosion control measures shall be installed prior to any construction activity, and periodically monitored throughout all phases of construction for proper function and structural integrity. Perform maintenance and repairs as necessary.

The construction sequence is as follows:

- 1) Identify Disturbance Limits - Identify the limits of the areas to be disturbed within the property in accordance with the drawings. The limits of disturbance may be referenced on drawing C-103.
- 2) Install Construction Fence/Tree Protection Fence where indicated on the plans to protect existing trees to remain and prevent compaction of soils. Take care to ensure that for trees to remain, the roots below the drip line are not compacted.
- 3) Install the Erosion and Sediment Control Measures - In accordance with the plans, install:
 - Silt fence in the locations shown on the drawings and installed as per the instructions of the manufacturer and as shown on the construction details.
 - Stabilized construction entrance into the property.
 - Construction materials storage area shall be set up where indicated on the drawings. The construction materials storage area shall be encompassed with a construction fence as a containment.
 - Construction Fencing and Tree Protection - where indicated on the plans, especially to protect the future septic system areas.

Silt fence is to be installed as shown on the drawings. Silt fence shall be installed, in general, parallel to the contour. Where one length of silt fence ends and another begins, provide a minimum 10 foot overlap. Additional silt fence may be placed in the field at the discretion of representatives of the approving authorities. Silt fence shall be maintained in operable condition and shall not be removed until disturbed areas are thoroughly stabilized.

- 4) Driveway / Construction Road Installation – Following the installation of the soil erosion and sediment controls measures, construct the driveway which will serve as a construction road during the construction of the houses. Grade the driveway / construction road to achieve the subbase elevation and place aggregate on the surface to provide a non-erosive surface. Stabilize the side slopes of the driveway with temporary seeding.
- 5) House Construction - Construct each of the houses in accordance with the architect's plans. Stockpile soil and soil/rock removed during excavation and protect the stockpile in the location(s) shown on the drawings and in accordance with the detail. Grade the perimeter of the house and establish the grades in the driveway in accordance with Drawing C-102.
- 6) Install Storm Drainage Facilities – Construct the stormwater management/detention basin and the proposed rain gardens in the locations and to the elevations depicted in the plans. Install the proposed drainage system from the lowest (i.e., the stormwater management/detention basin and the proposed rain gardens) to the highest elevations (the roof drain leaders of the house and catch basins in the new driveway). Connect the house roof drain leaders to the storm drainage system. Install the catch basins in accordance with the plans. At each catch basin, install the inlet protection to prevent sediment from disturbed areas being conveyed into the storm drainage system.

Do not permit runoff to enter the rain gardens until such time as the ground surface that drains to them have achieved final stabilization.

- 7) Prepare the Disturbed Areas for Final Stabilization - Clean up all residual site debris and litter and prepare all disturbed areas not to be hard surfaced for topsoiling and seeding and/or planting. All disturbed areas are to be seeded with the permanent grass seed mix noted in the specifications. Install the plant materials, including in the rain garden and bioretention facilities, in accordance with the Mitigation Planting Plan (see Drawing C-104).
- 8) Restore the permeability of the soil by following the Soil Restoration steps in accordance with the New York State *Stormwater Management Design Manual*, as follows:
 - Apply 3 inches of compost over subsoil.

- Till compost into subsoil to a depth of at least 12 inches using a cat-mounted ripper, tractor-mounted disc, or tiller, mixing, and circulating air and compost into subsoils.
- Rock-pick until uplifted stone/rock materials of four inches and larger size are cleaned off the site.
- Apply topsoil to a depth of 6 inches.
- Vegetate as required by approved plan.
- Provide straw mulch cover over seeded areas.

9) Remove the erosion control measures only after full vegetative stabilization occurs on the site.

EROSION AND SEDIMENT CONTROL MAINTENANCE SCHEDULE

Silt Fence: Maintenance shall be performed as needed and material removed when bulges develop in the silt fence. Inspection for physical damage to the silt fence material shall be made during the weekly inspection. If filter fabric shows signs of decomposing or is damaged, it shall be repaired immediately. Typically, this entails installing a new line of silt fence adjacent to the damaged line.

Stabilized Construction Entrance: The effective life of a stabilized construction entrance may be limited by excessive sediment deposition, unless additional aggregate is added periodically to renew the surface. Maintenance includes periodic top dressing with additional aggregate. All sediment spilled, dropped or washed into the public right-of-way must be removed immediately.

Periodic inspection of the stabilized construction entrance and road shall be performed within 24 hours of the end of a storm event of 0.5 inches or greater and following periods of heavy use.

Tree Protection: Check on at least a weekly basis that the construction fence and/or tree protection has not been damaged by construction activities.

Soil Stockpiling: Perimeter sediment controls around each stockpile is to consist of silt fence installed in accordance with the standards delineated above. The silt fence shall be maintained as noted above. Stockpiles and fill area shall be inspected at least weekly for signs of erosion or problems with plant establishment.