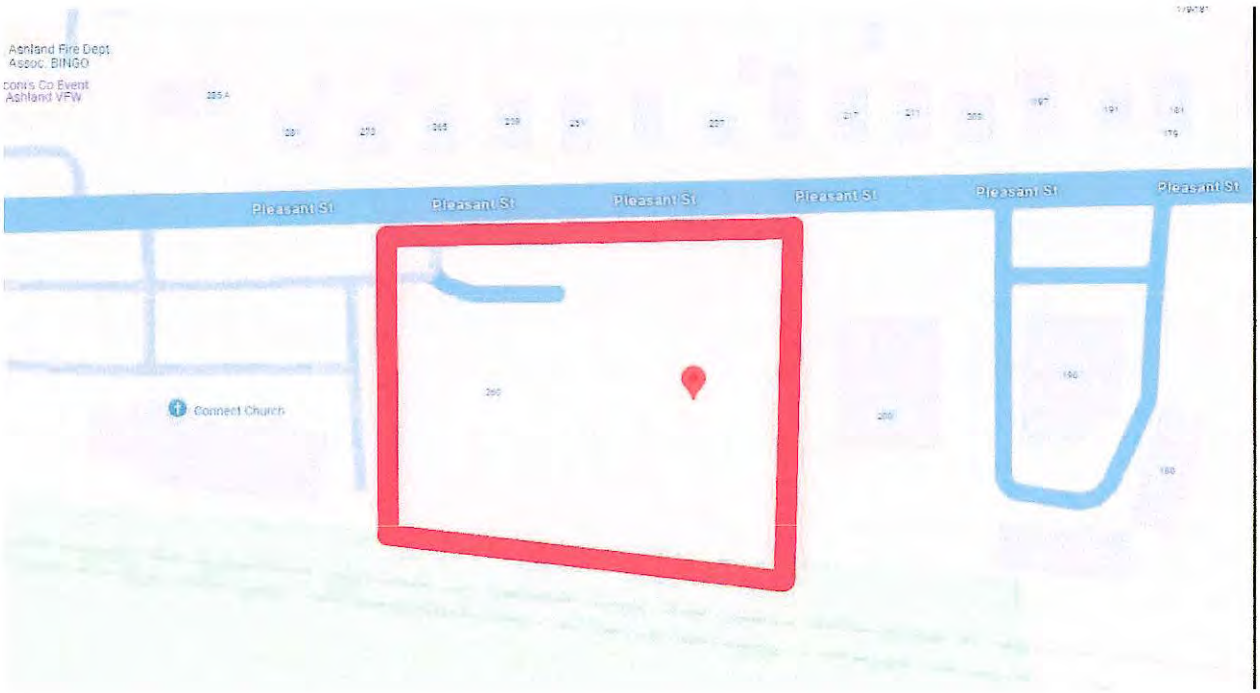
Stormwater Management Report – Addendum III

Date: March 2026

Project: Ashland Rec Facility
240 & 260 Pleasant Street
Ashland, MA

Prepared For: Metrowest Facilities LLC
350 Pleasant Street
Ashland, MA 01721

Locus Map:



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Revised Stormwater quality and quantity calculations have been performed for 240-260 Pleasant Street in Ashland, MA to demonstrate compliance with the MassDEP Stormwater Standards, as enumerated in the Wetland Protection Regulations (310 CMR 10) and Town of Ashland Stormwater Management Bylaw (Chapter 343).

The revised documents in Addendum III include the following:

1. The revised plans and details now include inspection ports for both subsurface infiltration systems to monitor subsurface functionality.
2. The routing diagram has been updated and Subcatchments E 1S and E 4S are now linked. It should be noted that since the proposed Stormwater Management System keeps runoff onsite, this change helped improve the pre- and post- rates and volume marginally.
3. The revised plans and details call for water quality structures, specifically, CDS 2015-4 units sized accordingly to handle the maximum runoff generated from this area. These structures now ensure the 44% pre-treatment requirement for rapid infiltrating soils is met. According to NJCAT (see attached document), these units are allowed to get 50% credit towards TSS removal when performing the treatment train calculations, thereby meeting the 44% pre-treatment requirement for rapid infiltrating soils.
4. Lastly, the O & M plans have been revised to reflect the required maintenance schedules for street/pavement sweeping, catch basin/CDS units, and the synthetic turf field.

The Applicant intends to develop the Property with a recreational facility including a soccer field, a grassed playground area, paved parking area, and associated/ancillary improvements. Due to maintenance concerns with the previously proposed grass playing field, the Applicant is now proposing a synthetic turf field. The HydroCAD analysis models the synthetic turf field as an impervious surface per discussions with the Town and GCG. The synthetic turf field will drain via panel drains underneath the field which will promote recharge.

This Report contains:

~~A) MassDEP Stormwater Management Checklist~~

B) Existing and Proposed Hydrologic Calculations (MassDEP Standards 1 & 2)

C) Water Quality Calculations (MassDEP Standards 3, 4, 5, 6 & 7)

D) Construction Period Pollution Prevention Plan, Long-Term Pollution Prevention Plan, Long-Term Operations & Maintenance Plan, and Illicit Discharge Statement (MassDEP Standards 8, 9 & 10)

~~E) Soils Information~~

~~F) FEMA Flood Map~~

G) Existing Hydrology Map

H) Proposed Hydrology Map

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B) Pre- and Post-Development Hydrologic Calculations (Standards 1 & 2)

Standard 1)

The stormwater system has been designed to mimic existing conditions and infiltrate runoff during the 2-, 10- & 100-year storm events, collecting, treating, and discharging stormwater runoff to groundwater via CDS 2015-4 units as catch basins, pipe conveyances, and subsurface infiltration systems. The proposed drainage system will mitigate water quality and quantity to match the existing conditions in that stormwater will be collected, treated, and discharged to subsurface infiltration systems. As the Project now introduces a paved driveway, there have been some significant upgrades to the stormwater infrastructure which will promote more than adequate groundwater recharge. All runoff from the proposed Project will be handled directly on-site consistent with the previous submittals.

Standard 2)

The Project results in newly graded areas, cover types, and some new impervious surfaces. The proposed stormwater management system has been designed to mitigate stormwater runoff rates for the required storm events (refer to HydroCAD calculations), as summarized below.

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E XY	Existing Conditions Features where “E” designates “Existing”; X designates the area or feature “name”; and Y designates the feature - a sub-catchment “S”, a basin/depression/pond/ “P”, a conveyance/reach “R”, or a point of interest/summation point/link “L”
P XY	Proposed Conditions Features where “P” designates “Proposed”; X designates area or feature “name”; and Y designates the feature - a sub-catchment “S”, a basin/depression/pond/ “P”, a conveyance/reach “R”, or a point of interest/summation point/link “L”

Rates

Point of Interest	Storm Event / Runoff (cubic feet/second)		
	2-Year	10-Year	100-Year
E 1L	0.0	0.4	1.7
E 2L	0.0	0.0	0.1
P 1L	0.0	0.0	0.1
P 2L	0.0	0.0	0.0

Volumes

Point of Interest	Storm Event / Runoff (cubic feet)		
	2-Year	10-Year	100-Year
E 1L	29	2,507	7,953
E 2L	0	44	1,520
P 1L	0	91	226
P 2L	0	0	0

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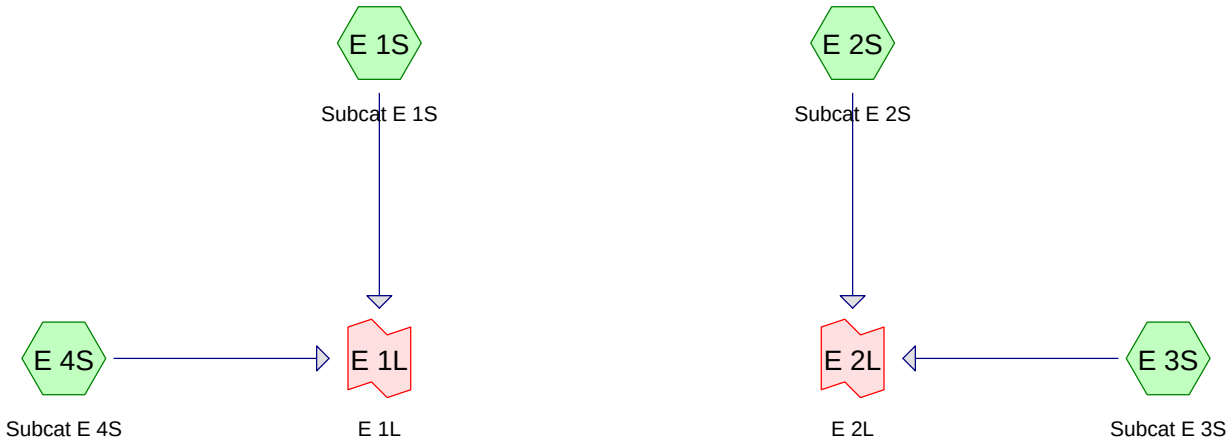
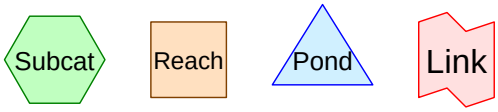




Routing Diagram for 24-0281 - Existing Hydrology
Prepared by Land Design Collaborative

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
765	39	>75% Grass cover, Good, HSG A (E 4S)
10,168	96	Gravel surface, HSG A (E 1S)
1,756	98	Paved parking, HSG A (E 1S, E 4S)
69,276	30	Woods, Good, HSG A (E 1S, E 2S, E 3S, E 4S)
81,965	**40**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
81,965	HSG A	E 1S, E 2S, E 3S, E 4S
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
81,965		**TOTAL AREA**

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 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 E 1S: Subcat E 1S Runoff Area=42,142 sf 3.30% Impervious Runoff Depth=0.12"
Flow Length=255' Tc=15.0 min CN=48 Runoff=0.0 cfs 416 cf

Subcatchment E 2S: Subcat E 2S Runoff Area=8,741 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=97' Tc=19.7 min CN=30 Runoff=0.0 cfs 0 cf

Subcatchment E 3S: Subcat E 3S Runoff Area=29,902 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=245' Tc=26.5 min CN=30 Runoff=0.0 cfs 0 cf

Subcatchment E 4S: Subcat E 4S Runoff Area=1,180 sf 30.85% Impervious Runoff Depth=0.36"
Tc=6.0 min CN=57 Runoff=0.0 cfs 36 cf

Link E 1L: E 1L Inflow=0.0 cfs 452 cf
Primary=0.0 cfs 452 cf

Link E 2L: E 2L Inflow=0.0 cfs 0 cf
Primary=0.0 cfs 0 cf

Total Runoff Area = 81,965 sf Runoff Volume = 452 cf Average Runoff Depth = 0.07"
97.86% Pervious = 80,209 sf 2.14% Impervious = 1,756 sf

Summary for Subcatchment E 1S: Subcat E 1S

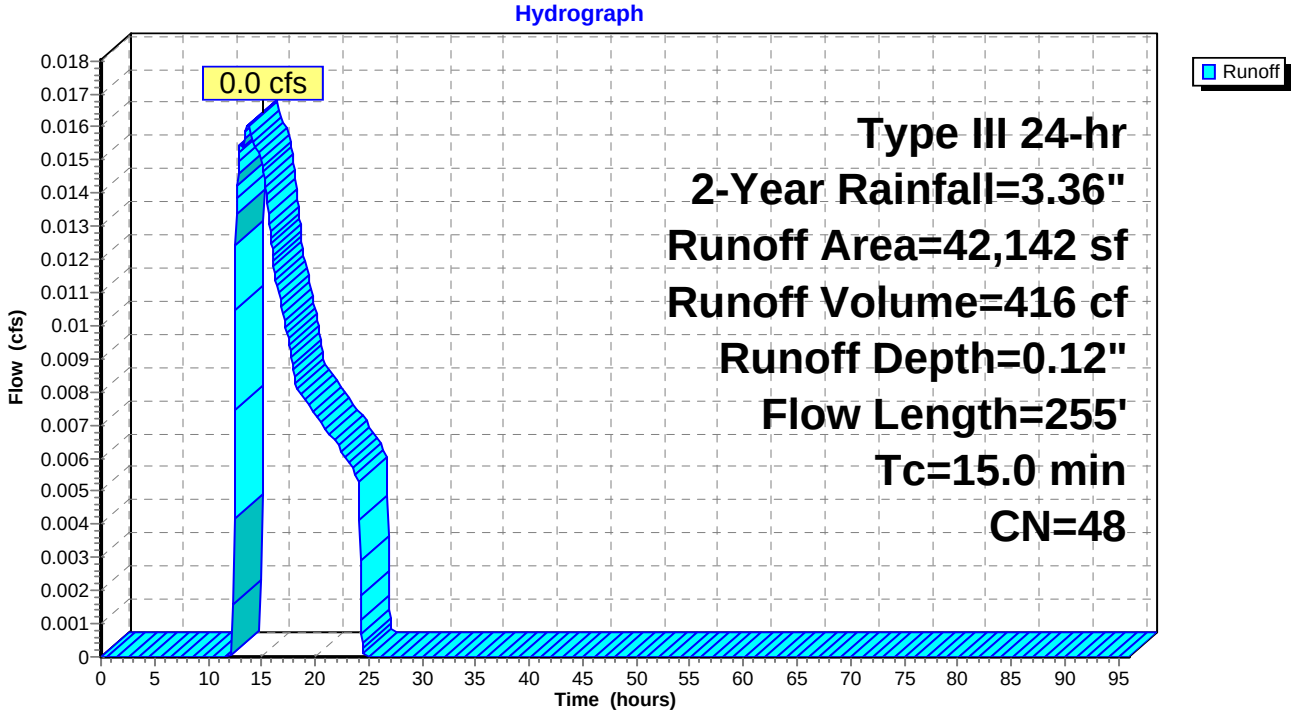
Runoff = 0.0 cfs @ 13.78 hrs, Volume= 416 cf, Depth= 0.12"
Routed to Link E 1L : E 1L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.36"

Area (sf)	CN	Description
1,392	98	Paved parking, HSG A
10,168	96	Gravel surface, HSG A
30,582	30	Woods, Good, HSG A
42,142	48	Weighted Average
40,750		96.70% Pervious Area
1,392		3.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
3.2	103	0.0115	0.54		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	102	0.0070	1.35		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
15.0	255	Total			

Subcatchment E 1S: Subcat E 1S



Summary for Subcatchment E 2S: Subcat E 2S

[45] Hint: Runoff=Zero

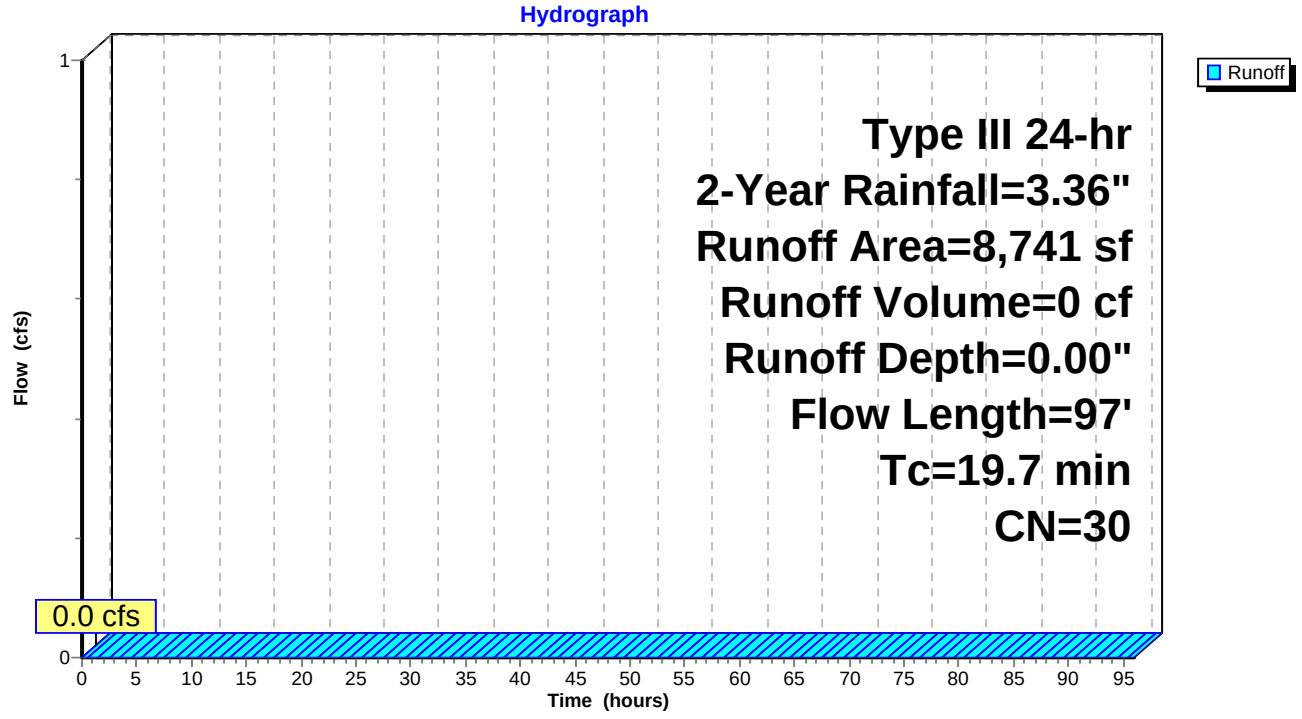
Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Link E 2L : E 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.36"

Area (sf)	CN	Description
8,741	30	Woods, Good, HSG A
8,741		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.3	50	0.0300	0.05		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.20"
1.4	47	0.0128	0.57		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.7	97	Total			

Subcatchment E 2S: Subcat E 2S



Summary for Subcatchment E 3S: Subcat E 3S

[45] Hint: Runoff=Zero

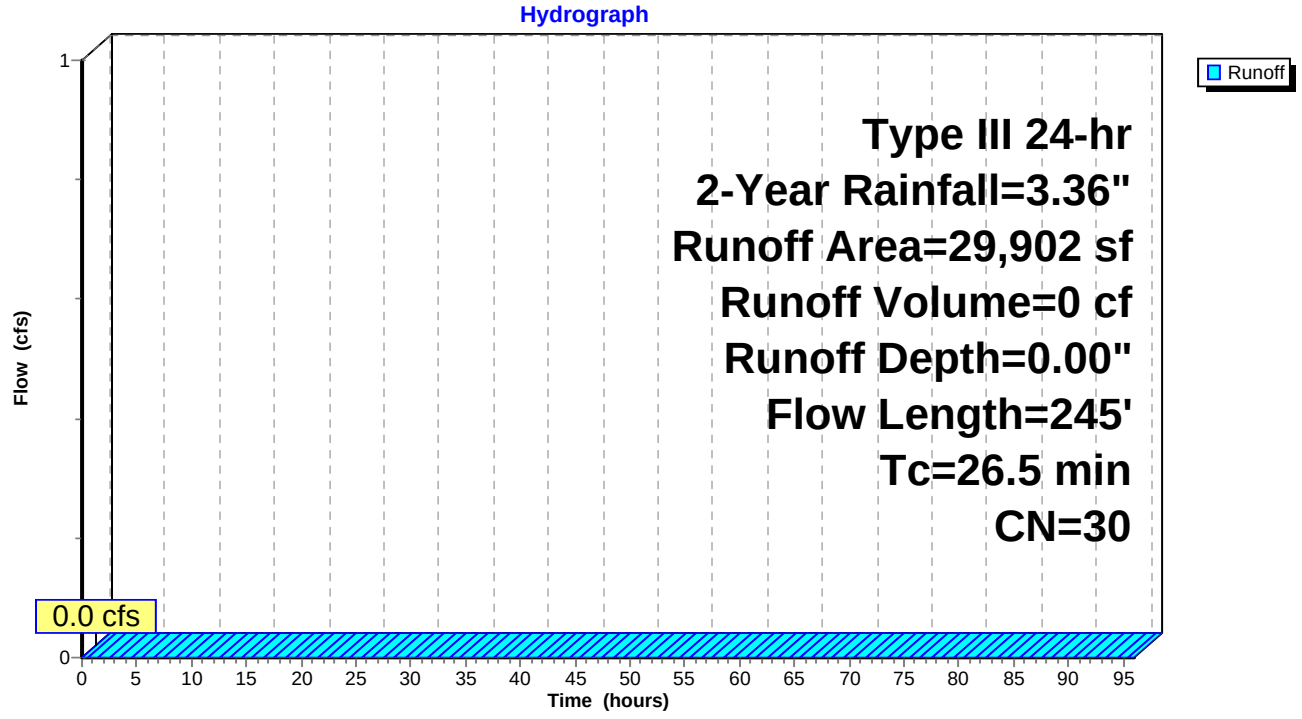
Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Link E 2L : E 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.36"

Area (sf)	CN	Description
29,902	30	Woods, Good, HSG A
29,902		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.6	50	0.0250	0.04		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.20"
6.9	195	0.0090	0.47		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
26.5	245	Total			

Subcatchment E 3S: Subcat E 3S



Summary for Subcatchment E 4S: Subcat E 4S

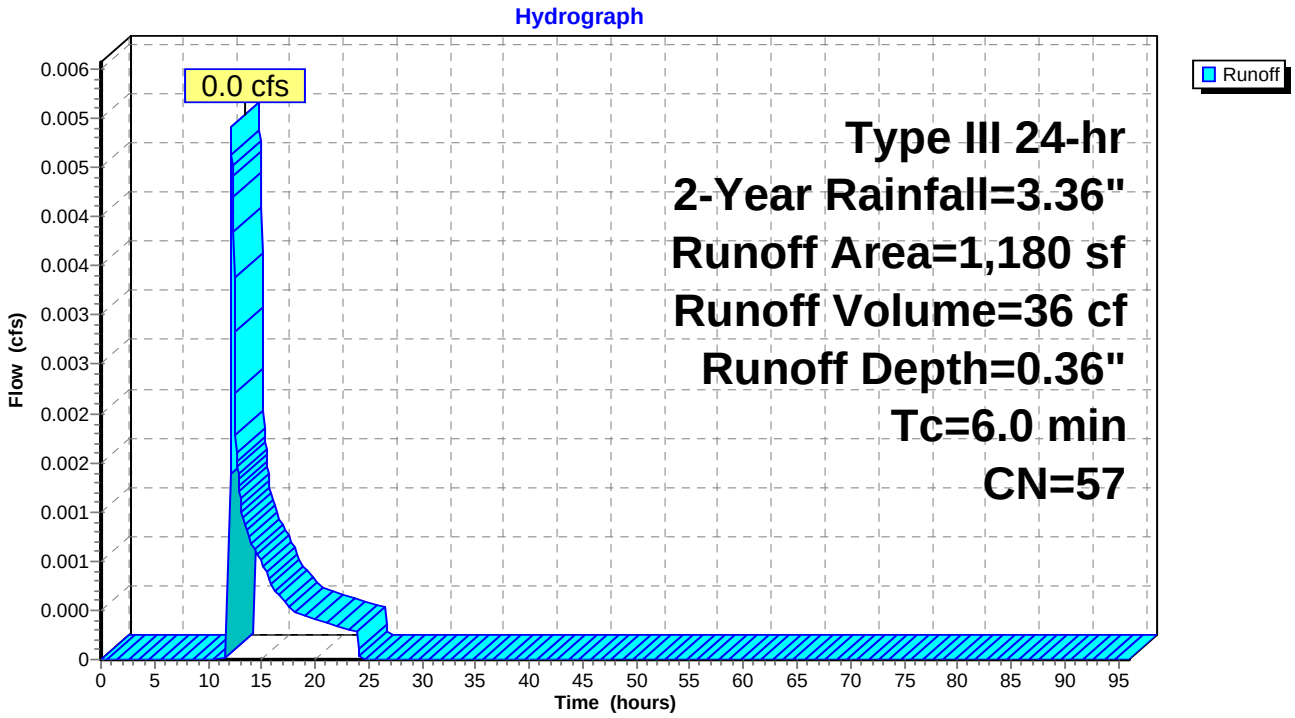
Runoff = 0.0 cfs @ 12.16 hrs, Volume= 36 cf, Depth= 0.36"
Routed to Link E 1L : E 1L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.36"

Area (sf)	CN	Description
364	98	Paved parking, HSG A
765	39	>75% Grass cover, Good, HSG A
51	30	Woods, Good, HSG A
1,180	57	Weighted Average
816		69.15% Pervious Area
364		30.85% Impervious Area

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

Subcatchment E 4S: Subcat E 4S

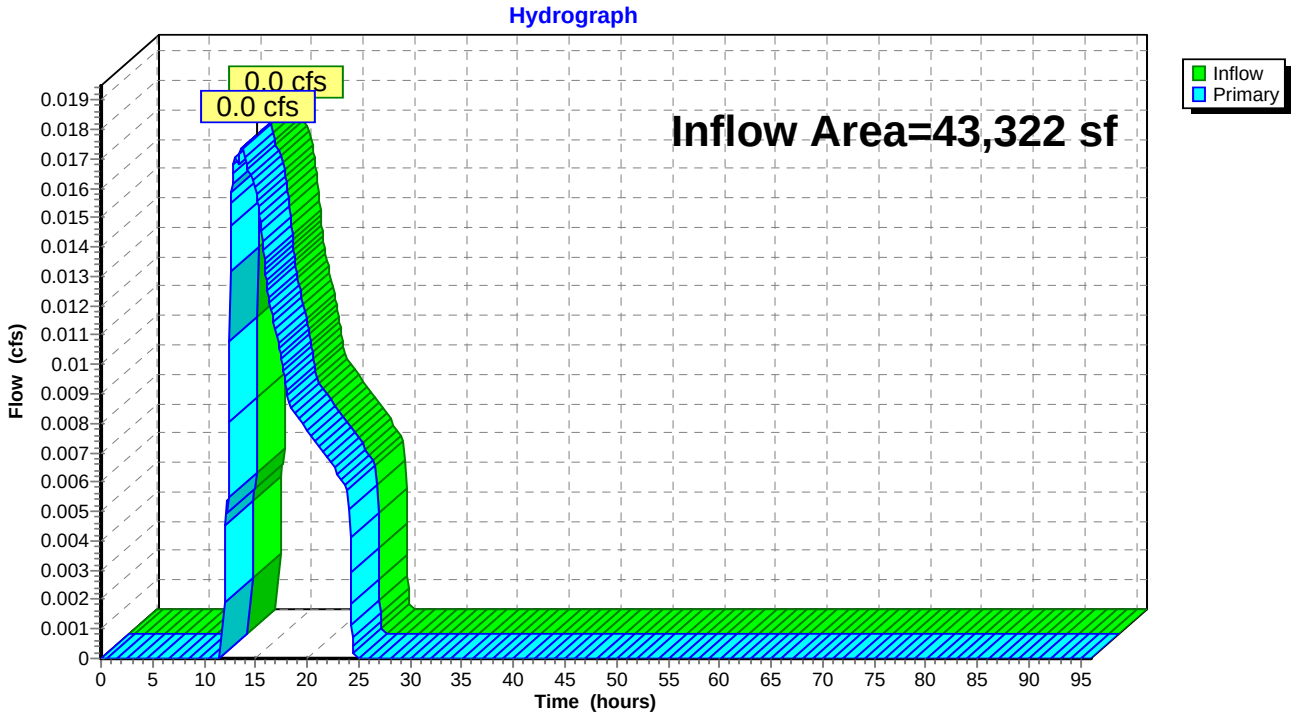


Summary for Link E 1L: E 1L

Inflow Area = 43,322 sf, 4.05% Impervious, Inflow Depth = 0.13" for 2-Year event
Inflow = 0.0 cfs @ 13.72 hrs, Volume= 452 cf
Primary = 0.0 cfs @ 13.72 hrs, Volume= 452 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link E 1L: E 1L

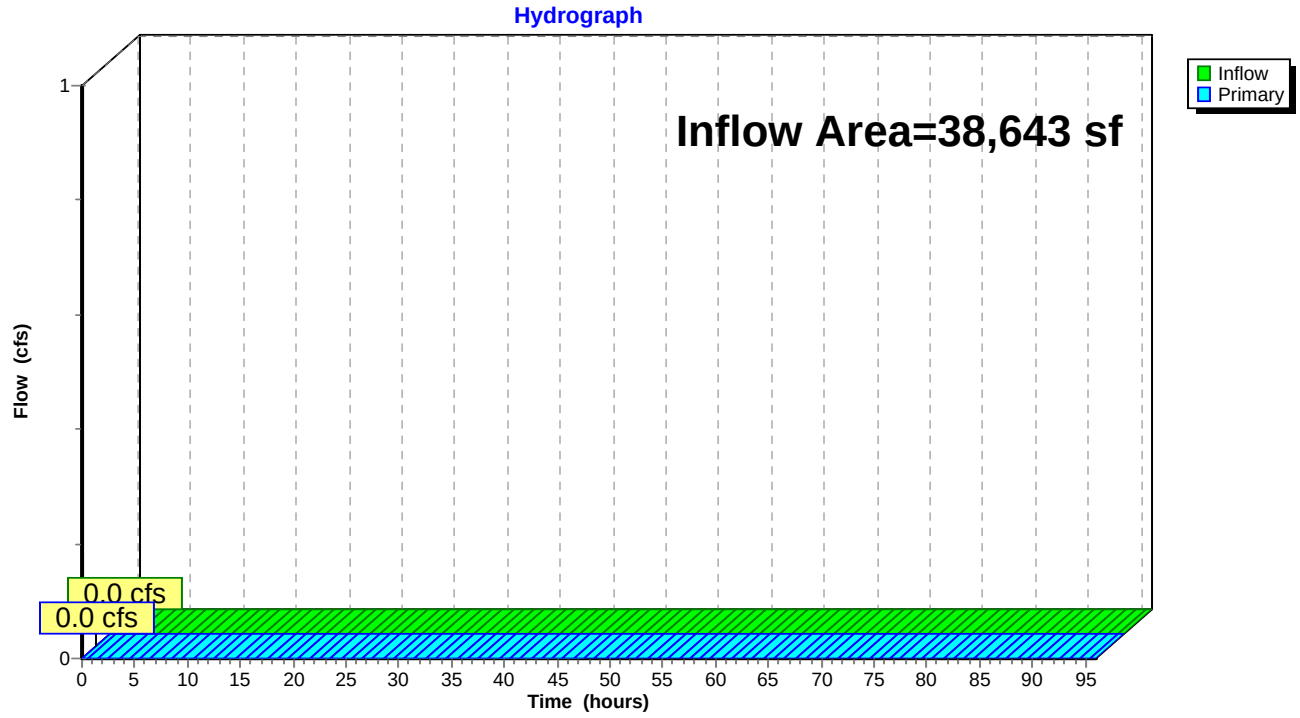


Summary for Link E 2L: E 2L

Inflow Area = 38,643 sf, 0.00% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link E 2L: E 2L



Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 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 E 1S: Subcat E 1S Runoff Area=42,142 sf 3.30% Impervious Runoff Depth=0.68"
Flow Length=255' Tc=15.0 min CN=48 Runoff=0.4 cfs 2,385 cf

Subcatchment E 2S: Subcat E 2S Runoff Area=8,741 sf 0.00% Impervious Runoff Depth=0.01"
Flow Length=97' Tc=19.7 min CN=30 Runoff=0.0 cfs 10 cf

Subcatchment E 3S: Subcat E 3S Runoff Area=29,902 sf 0.00% Impervious Runoff Depth=0.01"
Flow Length=245' Tc=26.5 min CN=30 Runoff=0.0 cfs 34 cf

Subcatchment E 4S: Subcat E 4S Runoff Area=1,180 sf 30.85% Impervious Runoff Depth=1.23"
Tc=6.0 min CN=57 Runoff=0.0 cfs 121 cf

Link E 1L: E 1L Inflow=0.4 cfs 2,507 cf
Primary=0.4 cfs 2,507 cf

Link E 2L: E 2L Inflow=0.0 cfs 44 cf
Primary=0.0 cfs 44 cf

Total Runoff Area = 81,965 sf Runoff Volume = 2,551 cf Average Runoff Depth = 0.37"
97.86% Pervious = 80,209 sf 2.14% Impervious = 1,756 sf

Summary for Subcatchment E 1S: Subcat E 1S

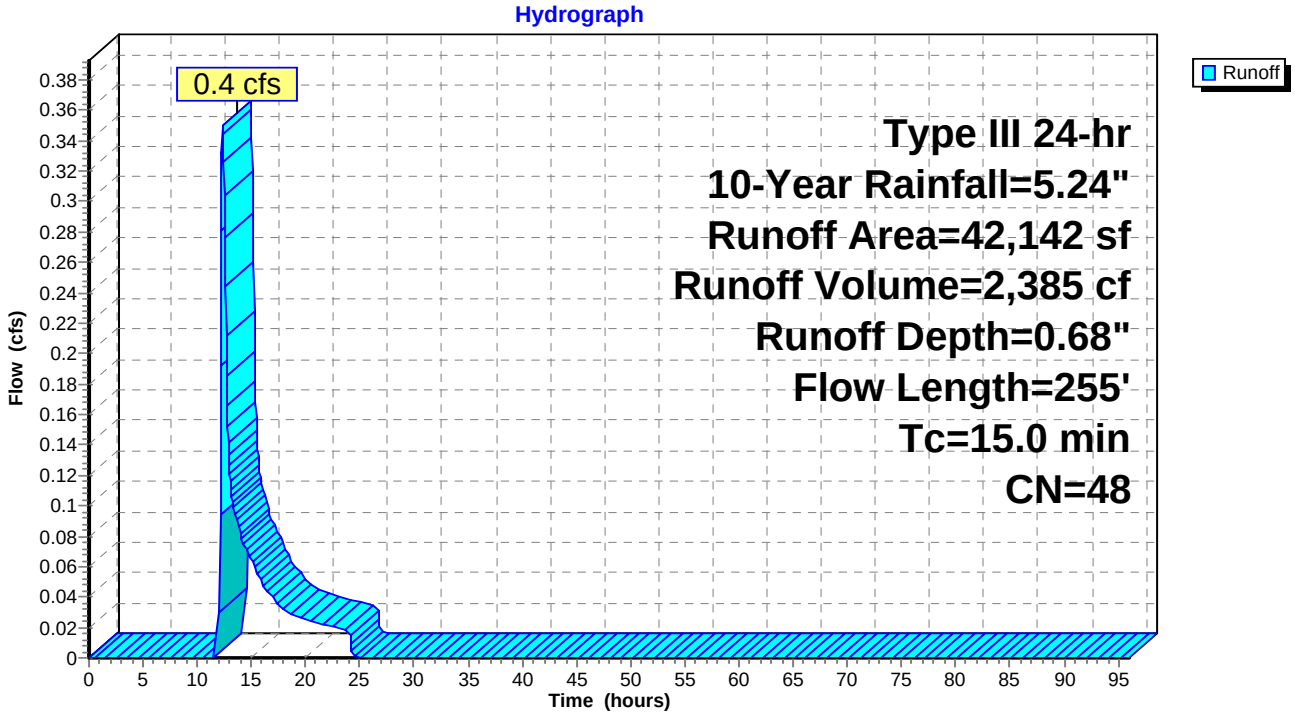
Runoff = 0.4 cfs @ 12.32 hrs, Volume= 2,385 cf, Depth= 0.68"
Routed to Link E 1L : E 1L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.24"

Area (sf)	CN	Description
1,392	98	Paved parking, HSG A
10,168	96	Gravel surface, HSG A
30,582	30	Woods, Good, HSG A
42,142	48	Weighted Average
40,750		96.70% Pervious Area
1,392		3.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
3.2	103	0.0115	0.54		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	102	0.0070	1.35		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
15.0	255	Total			

Subcatchment E 1S: Subcat E 1S



Summary for Subcatchment E 2S: Subcat E 2S

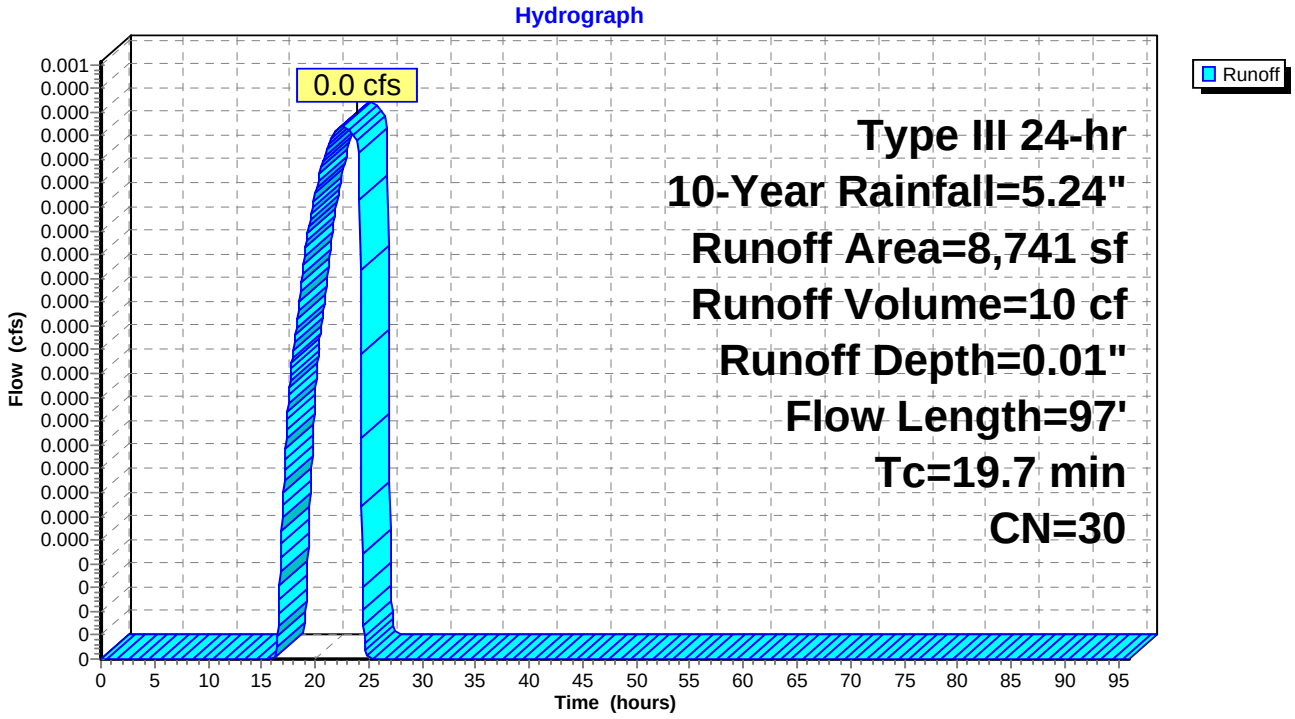
Runoff = 0.0 cfs @ 22.58 hrs, Volume= 10 cf, Depth= 0.01"
Routed to Link E 2L : E 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.24"

Area (sf)	CN	Description
8,741	30	Woods, Good, HSG A
8,741		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.3	50	0.0300	0.05		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.20"
1.4	47	0.0128	0.57		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.7	97	Total			

Subcatchment E 2S: Subcat E 2S



Summary for Subcatchment E 3S: Subcat E 3S

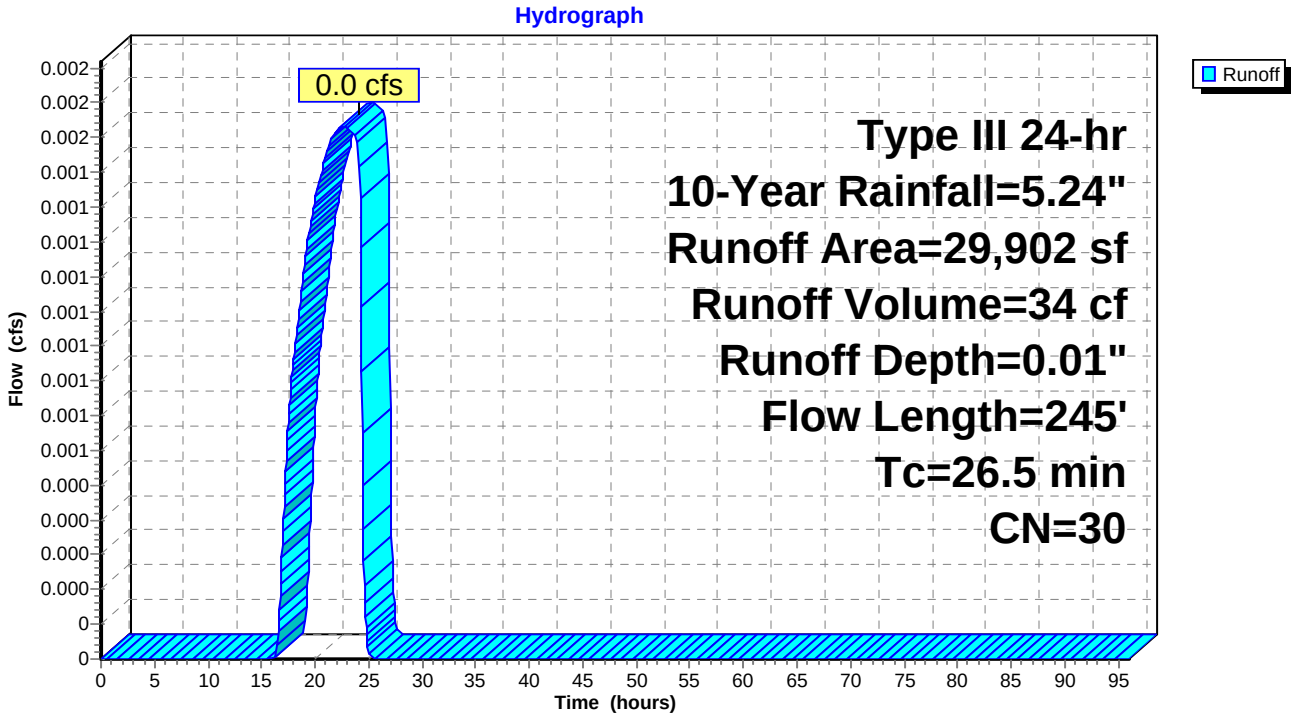
Runoff = 0.0 cfs @ 22.70 hrs, Volume= 34 cf, Depth= 0.01"
Routed to Link E 2L : E 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.24"

Area (sf)	CN	Description
29,902	30	Woods, Good, HSG A
29,902		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.6	50	0.0250	0.04		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.20"
6.9	195	0.0090	0.47		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
26.5	245	Total			

Subcatchment E 3S: Subcat E 3S



Summary for Subcatchment E 4S: Subcat E 4S

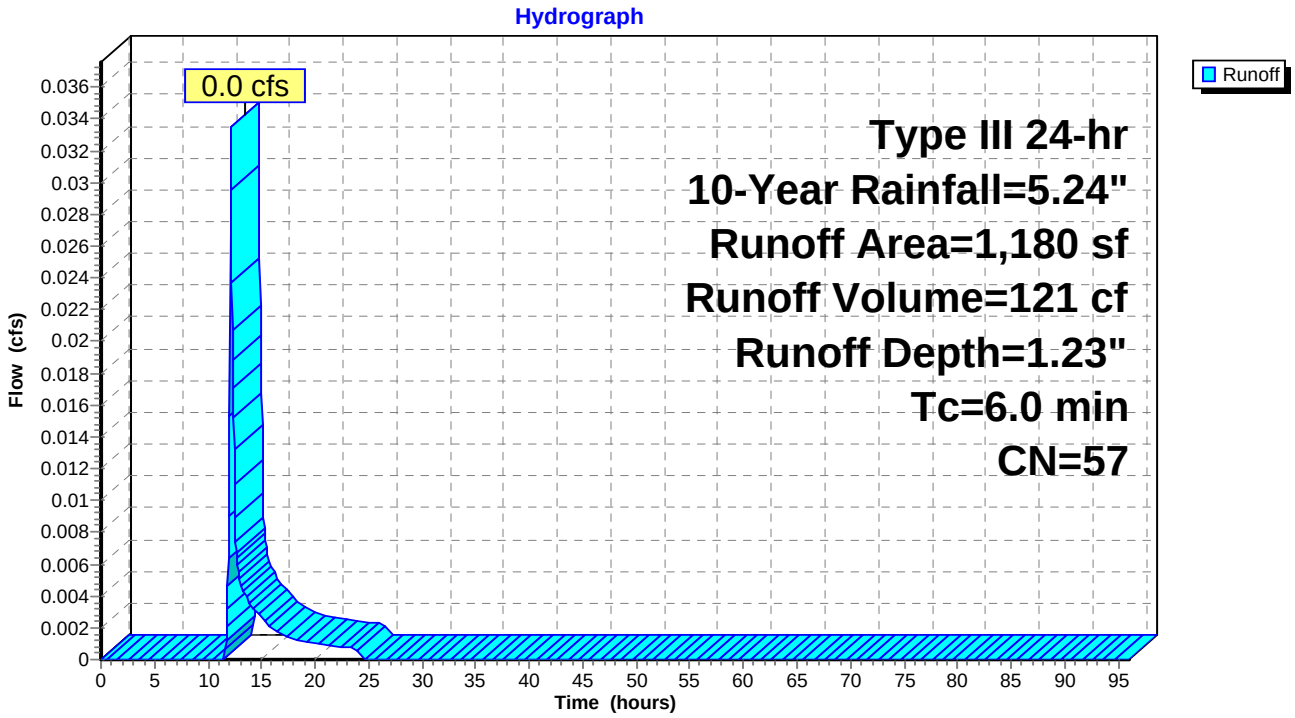
Runoff = 0.0 cfs @ 12.11 hrs, Volume= 121 cf, Depth= 1.23"
Routed to Link E 1L : E 1L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.24"

Area (sf)	CN	Description
364	98	Paved parking, HSG A
765	39	>75% Grass cover, Good, HSG A
51	30	Woods, Good, HSG A
1,180	57	Weighted Average
816		69.15% Pervious Area
364		30.85% Impervious Area

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

Subcatchment E 4S: Subcat E 4S

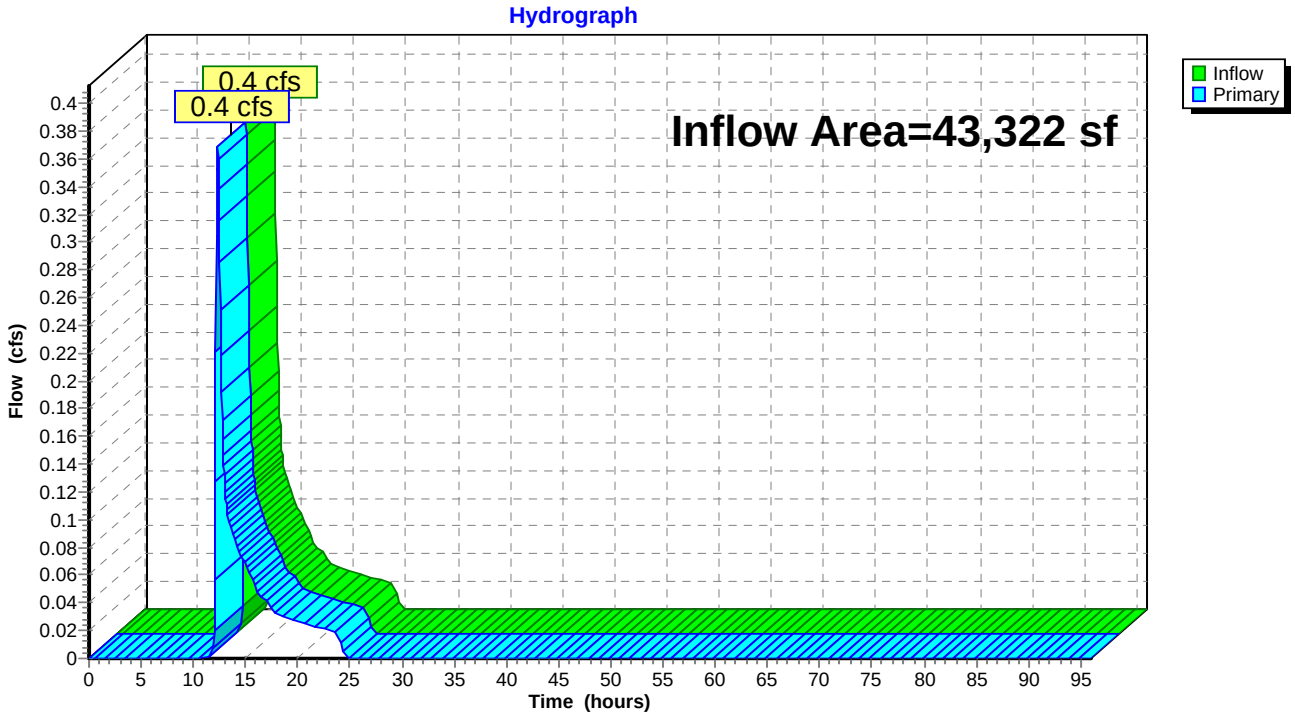


Summary for Link E 1L: E 1L

Inflow Area = 43,322 sf, 4.05% Impervious, Inflow Depth = 0.69" for 10-Year event
Inflow = 0.4 cfs @ 12.32 hrs, Volume= 2,507 cf
Primary = 0.4 cfs @ 12.32 hrs, Volume= 2,507 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link E 1L: E 1L

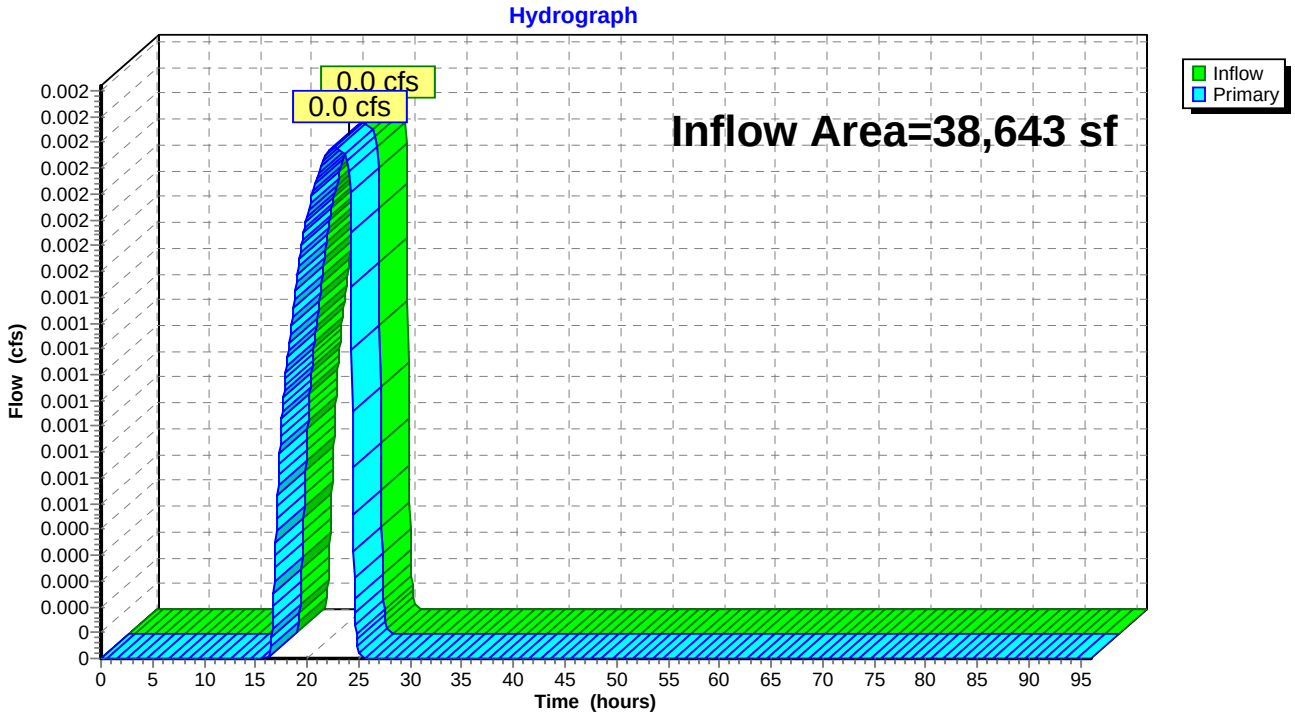


Summary for Link E 2L: E 2L

Inflow Area = 38,643 sf, 0.00% Impervious, Inflow Depth = 0.01" for 10-Year event
Inflow = 0.0 cfs @ 22.69 hrs, Volume= 44 cf
Primary = 0.0 cfs @ 22.69 hrs, Volume= 44 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link E 2L: E 2L



Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 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 E 1S: Subcat E 1S Runoff Area=42,142 sf 3.30% Impervious Runoff Depth=2.18"
Flow Length=255' Tc=15.0 min CN=48 Runoff=1.6 cfs 7,641 cf

Subcatchment E 2S: Subcat E 2S Runoff Area=8,741 sf 0.00% Impervious Runoff Depth=0.47"
Flow Length=97' Tc=19.7 min CN=30 Runoff=0.0 cfs 344 cf

Subcatchment E 3S: Subcat E 3S Runoff Area=29,902 sf 0.00% Impervious Runoff Depth=0.47"
Flow Length=245' Tc=26.5 min CN=30 Runoff=0.1 cfs 1,176 cf

Subcatchment E 4S: Subcat E 4S Runoff Area=1,180 sf 30.85% Impervious Runoff Depth=3.17"
Tc=6.0 min CN=57 Runoff=0.1 cfs 311 cf

Link E 1L: E 1L Inflow=1.7 cfs 7,953 cf
Primary=1.7 cfs 7,953 cf

Link E 2L: E 2L Inflow=0.1 cfs 1,520 cf
Primary=0.1 cfs 1,520 cf

Total Runoff Area = 81,965 sf Runoff Volume = 9,473 cf Average Runoff Depth = 1.39"
97.86% Pervious = 80,209 sf 2.14% Impervious = 1,756 sf

Summary for Subcatchment E 1S: Subcat E 1S

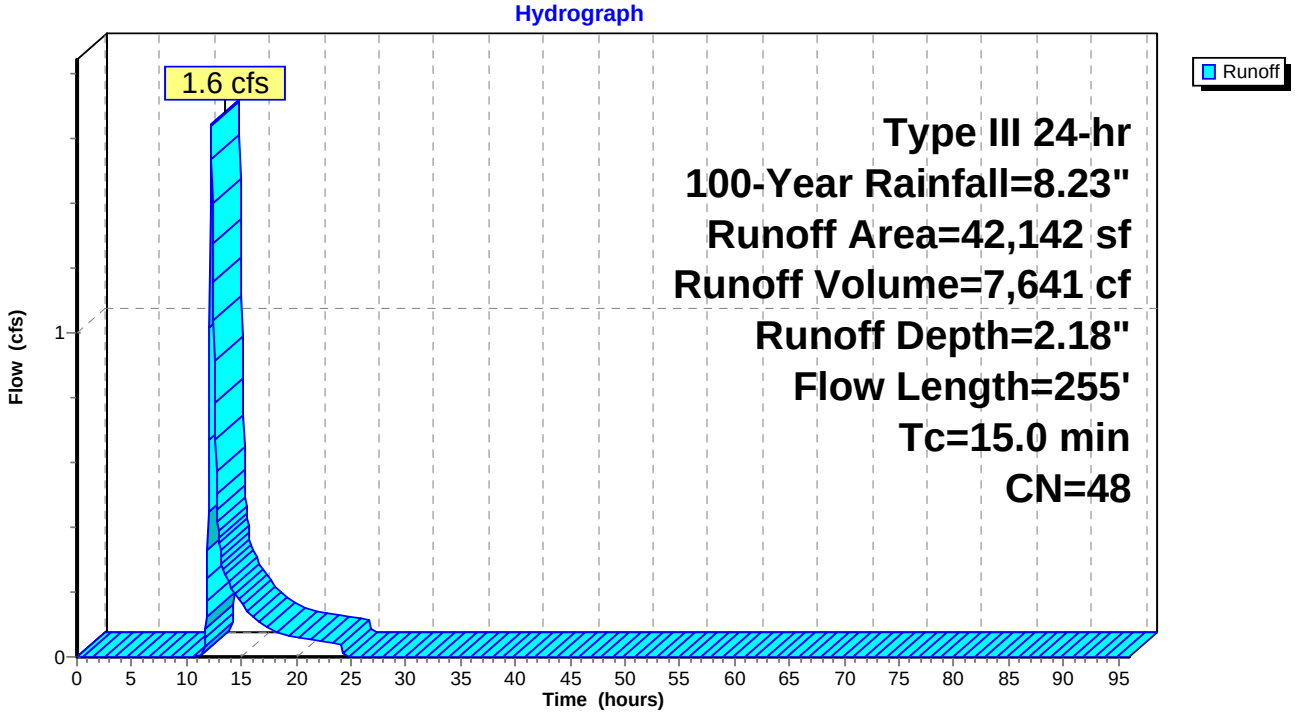
Runoff = 1.6 cfs @ 12.23 hrs, Volume= 7,641 cf, Depth= 2.18"
Routed to Link E 1L : E 1L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.23"

Area (sf)	CN	Description
1,392	98	Paved parking, HSG A
10,168	96	Gravel surface, HSG A
30,582	30	Woods, Good, HSG A
42,142	48	Weighted Average
40,750		96.70% Pervious Area
1,392		3.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
3.2	103	0.0115	0.54		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.3	102	0.0070	1.35		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
15.0	255	Total			

Subcatchment E 1S: Subcat E 1S



Summary for Subcatchment E 2S: Subcat E 2S

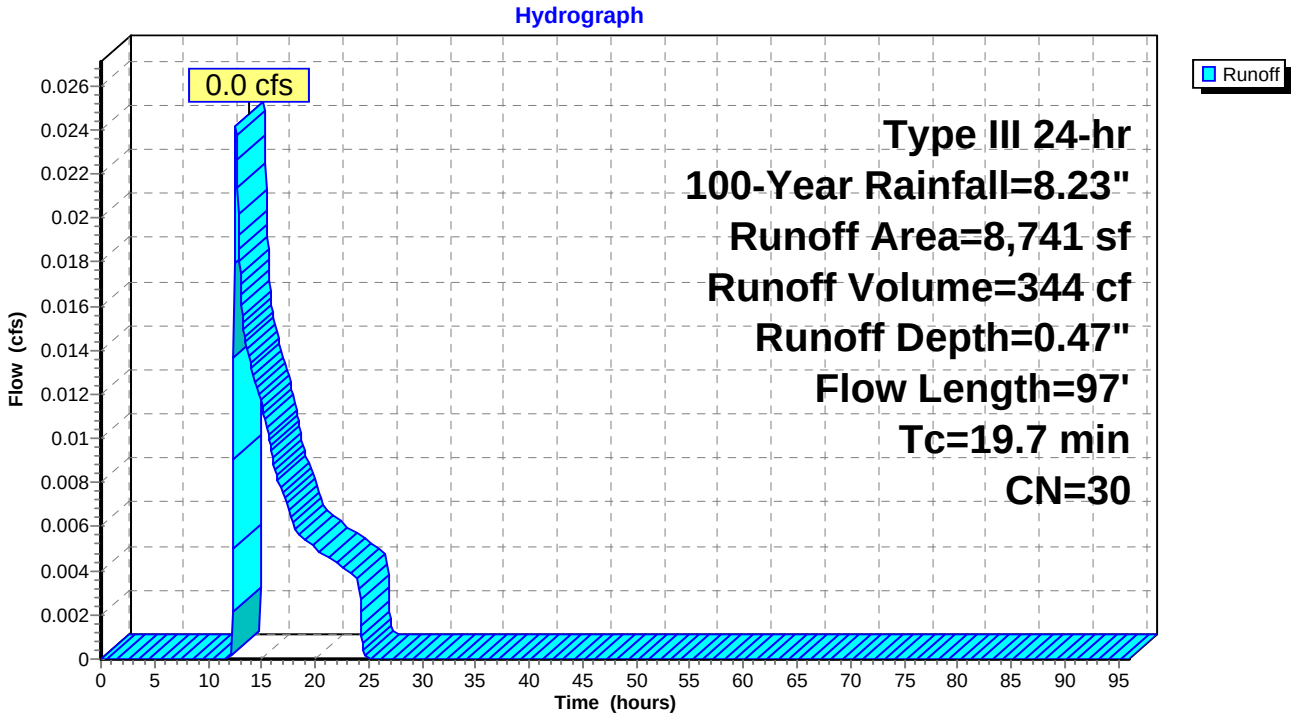
Runoff = 0.0 cfs @ 12.61 hrs, Volume= 344 cf, Depth= 0.47"
Routed to Link E 2L : E 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.23"

Area (sf)	CN	Description
8,741	30	Woods, Good, HSG A
8,741		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.3	50	0.0300	0.05		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.20"
1.4	47	0.0128	0.57		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.7	97	Total			

Subcatchment E 2S: Subcat E 2S



Summary for Subcatchment E 3S: Subcat E 3S

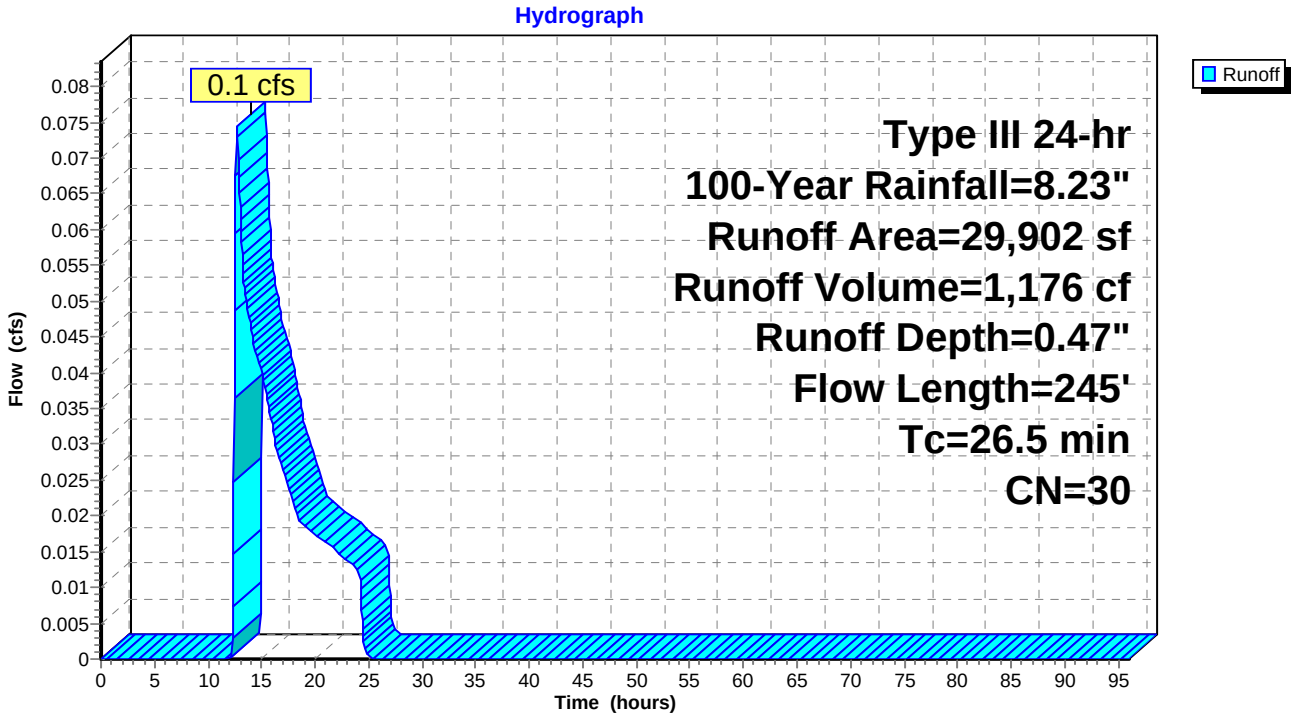
Runoff = 0.1 cfs @ 12.71 hrs, Volume= 1,176 cf, Depth= 0.47"
Routed to Link E 2L : E 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.23"

Area (sf)	CN	Description
29,902	30	Woods, Good, HSG A
29,902		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.6	50	0.0250	0.04		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.20"
6.9	195	0.0090	0.47		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
26.5	245	Total			

Subcatchment E 3S: Subcat E 3S



Summary for Subcatchment E 4S: Subcat E 4S

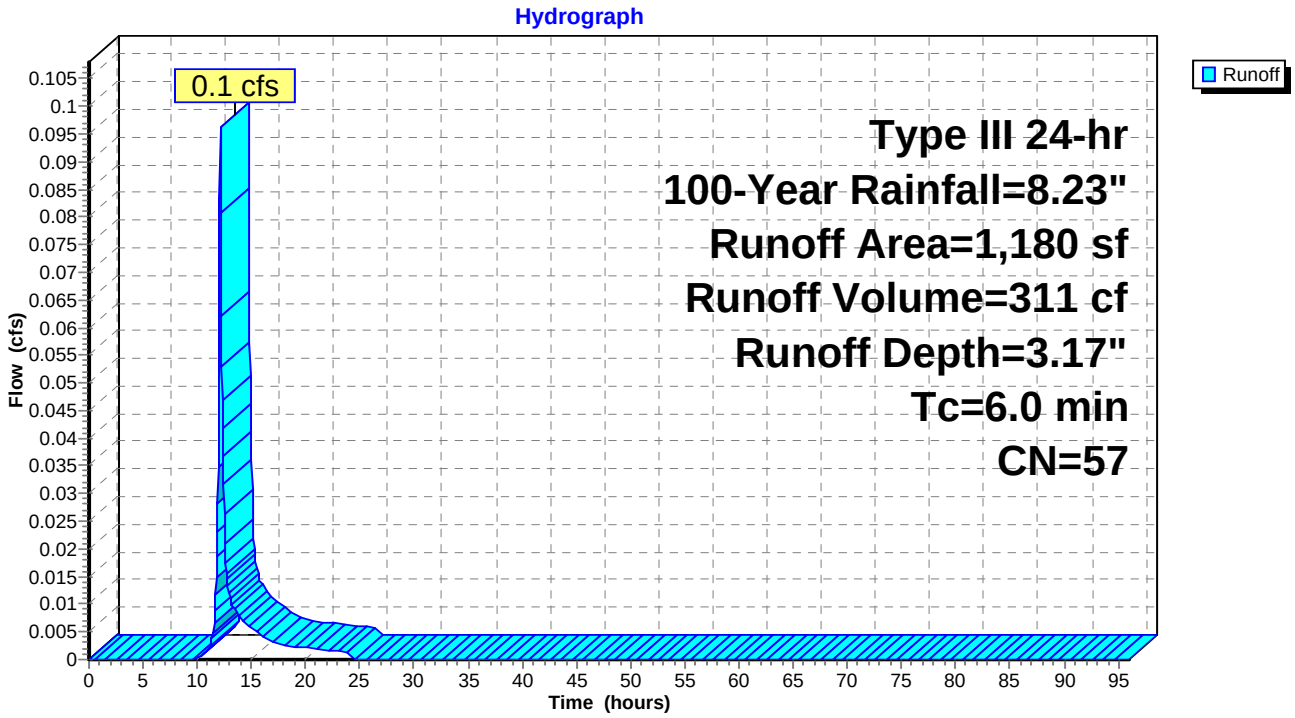
Runoff = 0.1 cfs @ 12.10 hrs, Volume= 311 cf, Depth= 3.17"
Routed to Link E 1L : E 1L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.23"

Area (sf)	CN	Description
364	98	Paved parking, HSG A
765	39	>75% Grass cover, Good, HSG A
51	30	Woods, Good, HSG A
1,180	57	Weighted Average
816		69.15% Pervious Area
364		30.85% Impervious Area

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

Subcatchment E 4S: Subcat E 4S

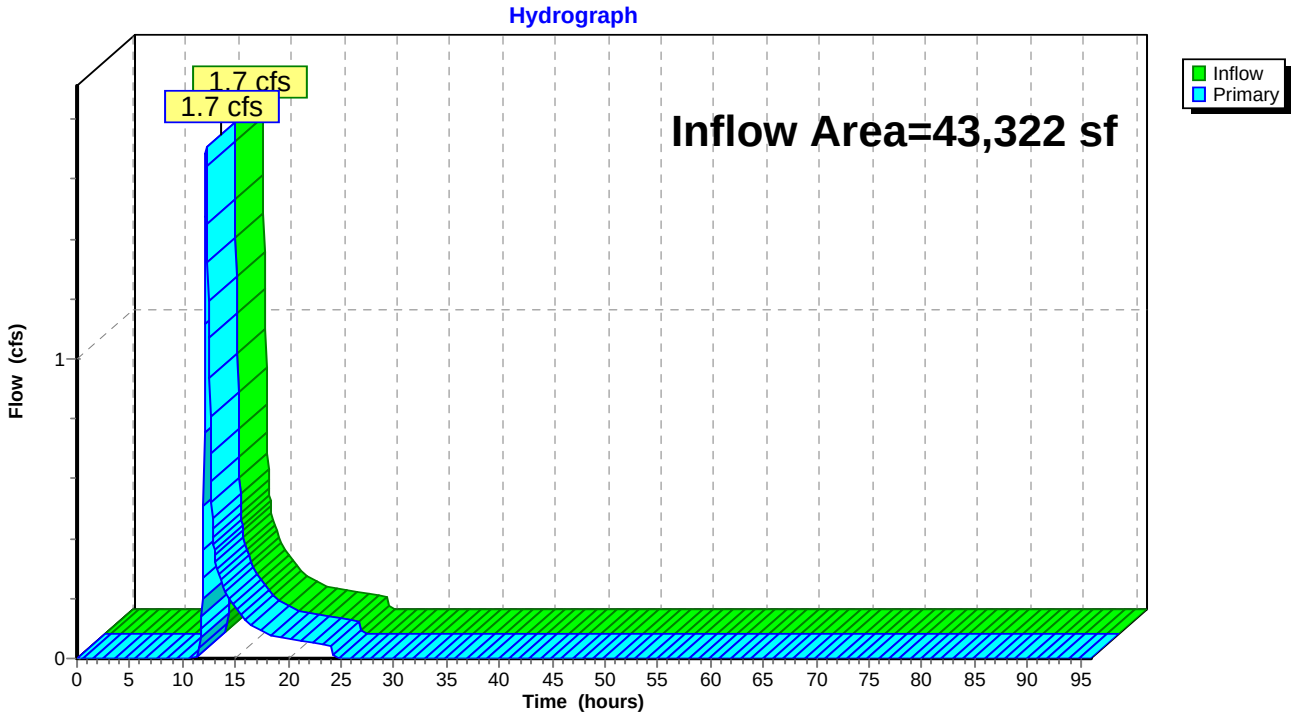


Summary for Link E 1L: E 1L

Inflow Area = 43,322 sf, 4.05% Impervious, Inflow Depth = 2.20" for 100-Year event
Inflow = 1.7 cfs @ 12.23 hrs, Volume= 7,953 cf
Primary = 1.7 cfs @ 12.23 hrs, Volume= 7,953 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link E 1L: E 1L

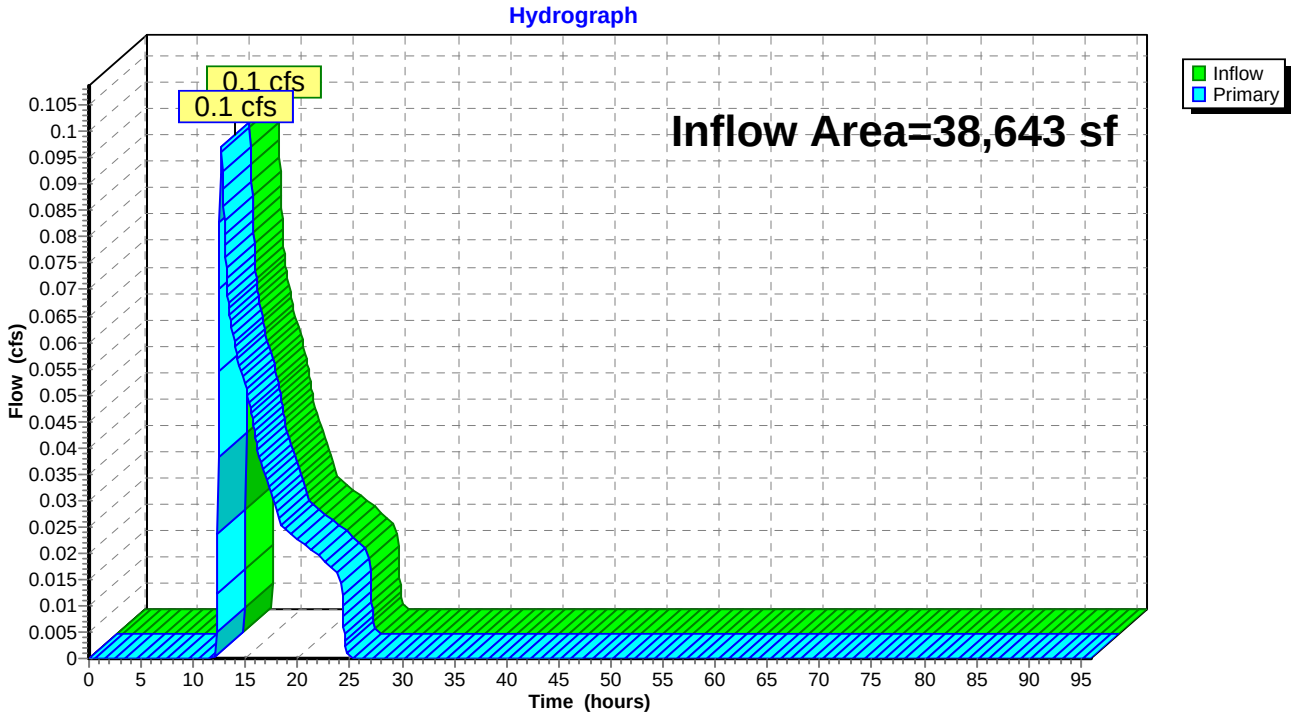


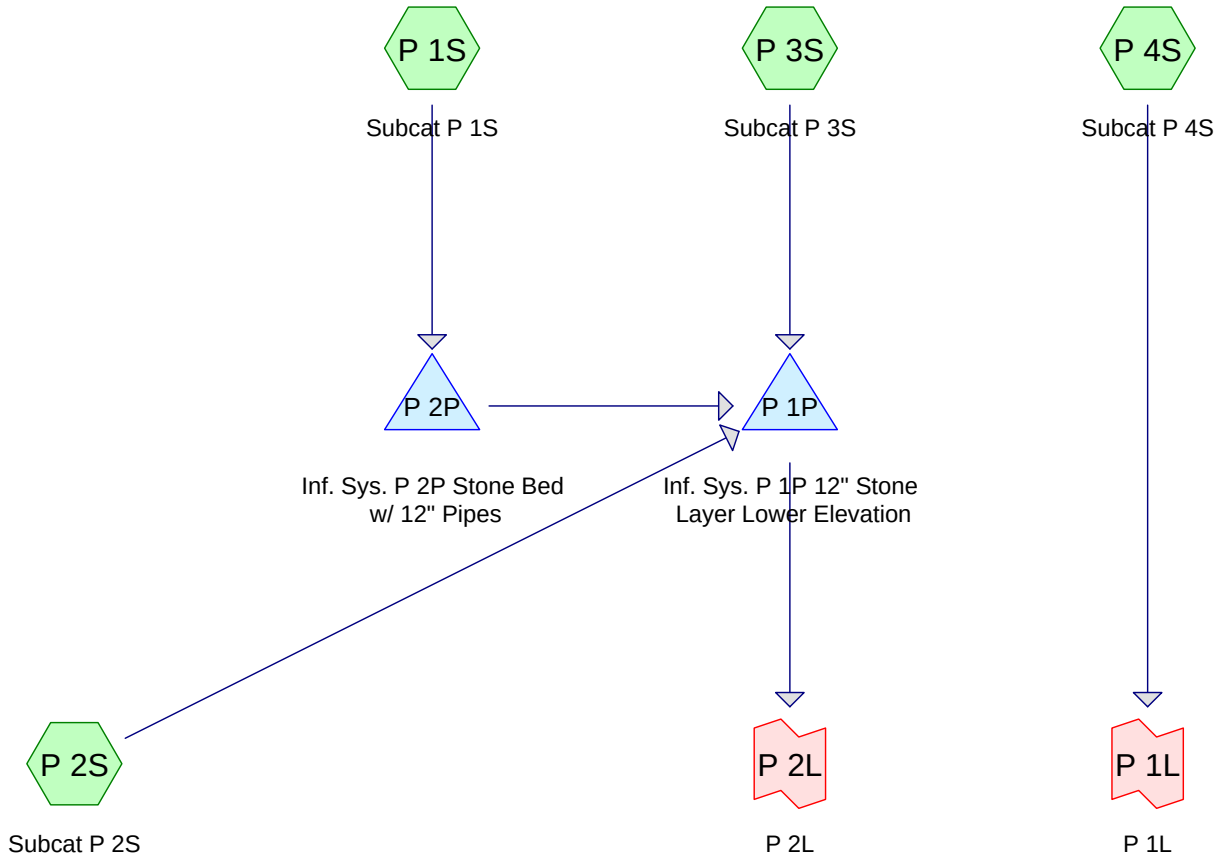
Summary for Link E 2L: E 2L

Inflow Area = 38,643 sf, 0.00% Impervious, Inflow Depth = 0.47" for 100-Year event
Inflow = 0.1 cfs @ 12.69 hrs, Volume= 1,520 cf
Primary = 0.1 cfs @ 12.69 hrs, Volume= 1,520 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link E 2L: E 2L





Subcat Reach Pond Link

Routing Diagram for 24-0281 - Proposed Hydrology
Prepared by Land Design Collaborative

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
14,341	39	>75% Grass cover, Good, HSG A (P 1S, P 2S, P 3S, P 4S)
18,614	98	Paved parking, HSG A (P 1S, P 4S)
35,735	98	Synthetic Turf Field, HSG A (P 3S)
1,090	98	Unconnected pavement, HSG A (P 1S)
12,185	30	Woods, Good, HSG A (P 1S, P 2S, P 3S)
81,965	**78**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
81,965	HSG A	P 1S, P 2S, P 3S, P 4S
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
81,965		**TOTAL AREA**

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 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 P 1S: Subcat P 1S Runoff Area=20,762 sf 93.63% Impervious Runoff Depth=2.70"
Tc=6.0 min CN=94 Runoff=1.4 cfs 4,670 cf

Subcatchment P 2S: Subcat P 2S Runoff Area=7,374 sf 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=32 Runoff=0.0 cfs 0 cf

Subcatchment P 3S: Subcat P 3S Runoff Area=53,031 sf 67.39% Impervious Runoff Depth=1.39"
Tc=6.0 min CN=78 Runoff=1.9 cfs 6,151 cf

Subcatchment P 4S: Subcat P 4S Runoff Area=798 sf 33.21% Impervious Runoff Depth=0.44"
Tc=6.0 min CN=59 Runoff=0.0 cfs 29 cf

Pond P 1P: Inf. Sys. P 1P 12" Stone Layer Lower Elevation Peak Elev=196.03' Storage=337 cf Inflow=1.9 cfs 6,151 cf
Outflow=1.6 cfs 6,151 cf

Pond P 2P: Inf. Sys. P 2P Stone Bed w/ 12" Pipes Peak Elev=195.10' Storage=1,242 cf Inflow=1.4 cfs 4,670 cf
Discarded=0.3 cfs 4,670 cf Primary=0.0 cfs 0 cf Outflow=0.3 cfs 4,670 cf

Link P 1L: P 1L Inflow=0.0 cfs 29 cf
Primary=0.0 cfs 29 cf

Link P 2L: P 2L
Primary=0.0 cfs 0 cf

Total Runoff Area = 81,965 sf Runoff Volume = 10,850 cf Average Runoff Depth = 1.59"
32.36% Pervious = 26,526 sf 67.64% Impervious = 55,439 sf

Summary for Subcatchment P 1S: Subcat P 1S

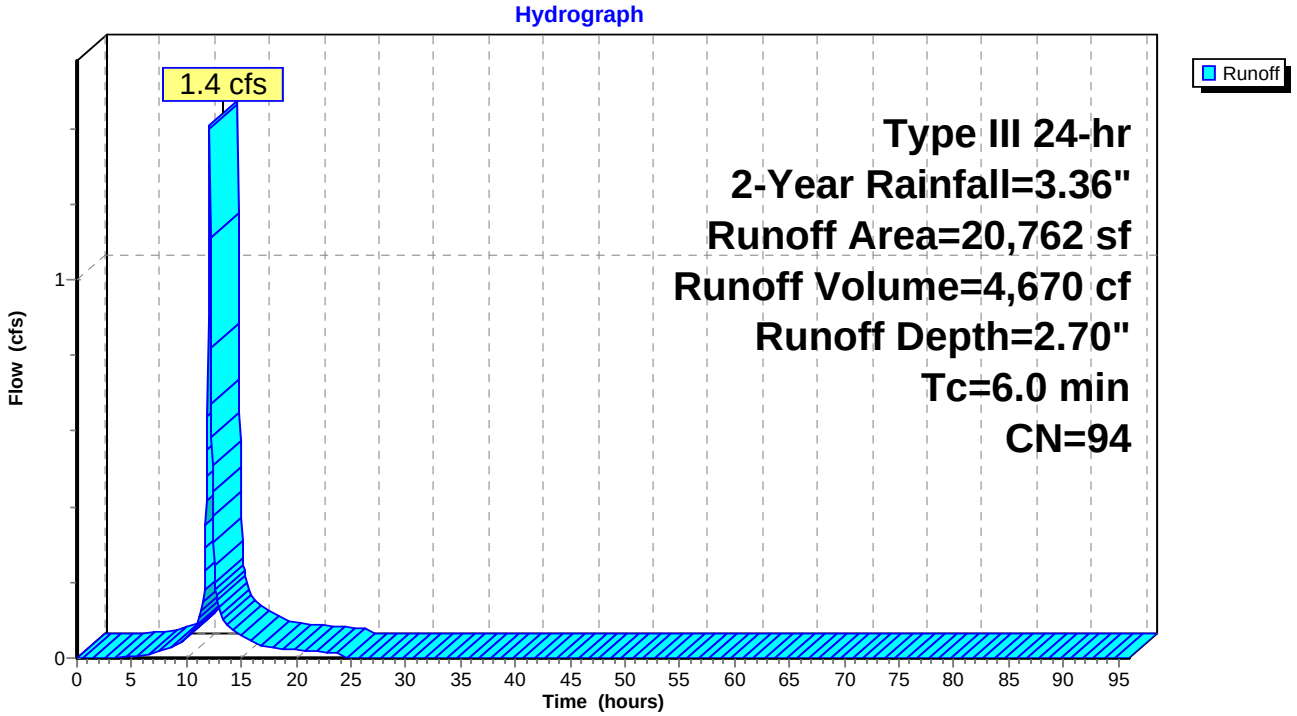
Runoff = 1.4 cfs @ 12.09 hrs, Volume= 4,670 cf, Depth= 2.70"
Routed to Pond P 2P : Inf. Sys. P 2P Stone Bed w/ 12" Pipes

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.36"

Area (sf)	CN	Description
1,045	39	>75% Grass cover, Good, HSG A
2,623	98	Paved parking, HSG A
15,726	98	Paved parking, HSG A
1,090	98	Unconnected pavement, HSG A
278	30	Woods, Good, HSG A
20,762	94	Weighted Average
1,323		6.37% Pervious Area
19,439		93.63% Impervious Area
1,090		5.61% Unconnected

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

Subcatchment P 1S: Subcat P 1S



Summary for Subcatchment P 2S: Subcat P 2S

[45] Hint: Runoff=Zero

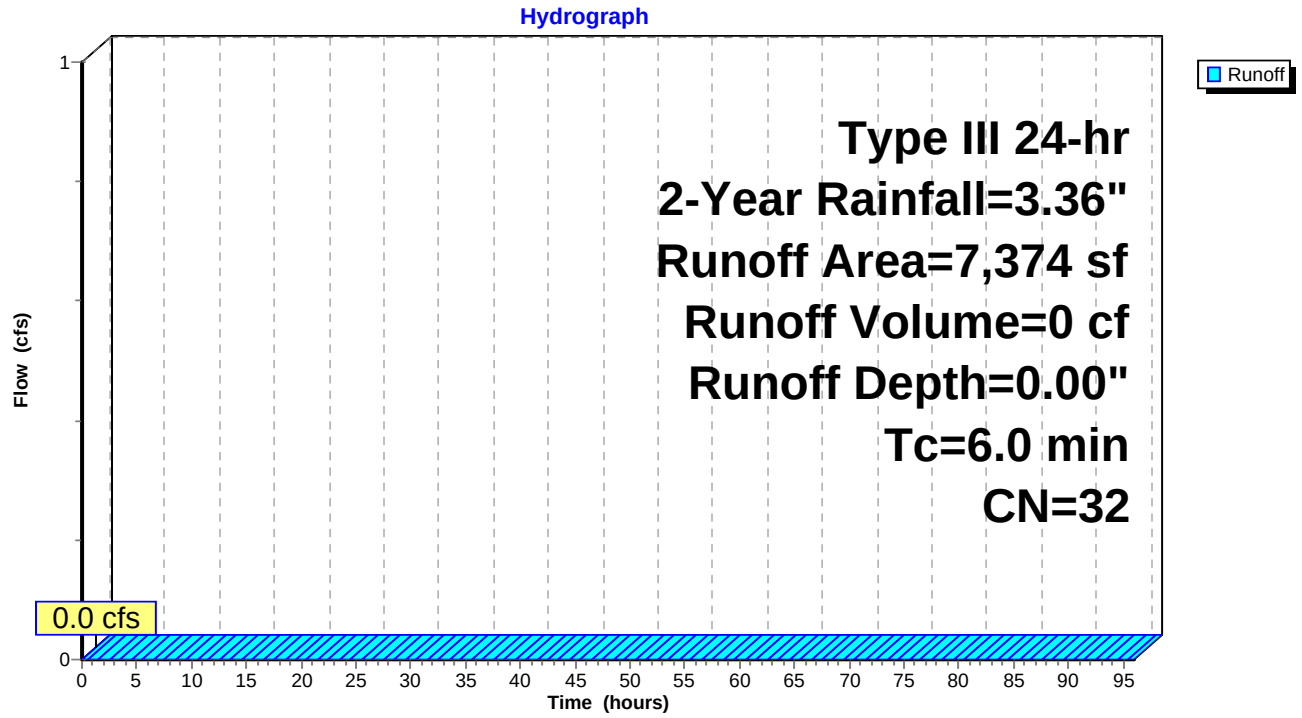
Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Pond P 1P : Inf. Sys. P 1P 12" Stone Layer Lower Elevation

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.36"

Area (sf)	CN	Description
1,374	39	>75% Grass cover, Good, HSG A
6,000	30	Woods, Good, HSG A
7,374	32	Weighted Average
7,374		100.00% Pervious Area

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

Subcatchment P 2S: Subcat P 2S



Summary for Subcatchment P 3S: Subcat P 3S

Note: 'Roofs' were chosen as a way to import and model the soccer field as a seperate entity with a Curve Number (CN) as 98. As there are no buildings proposed for this development, there are no actual 'roof' areas.

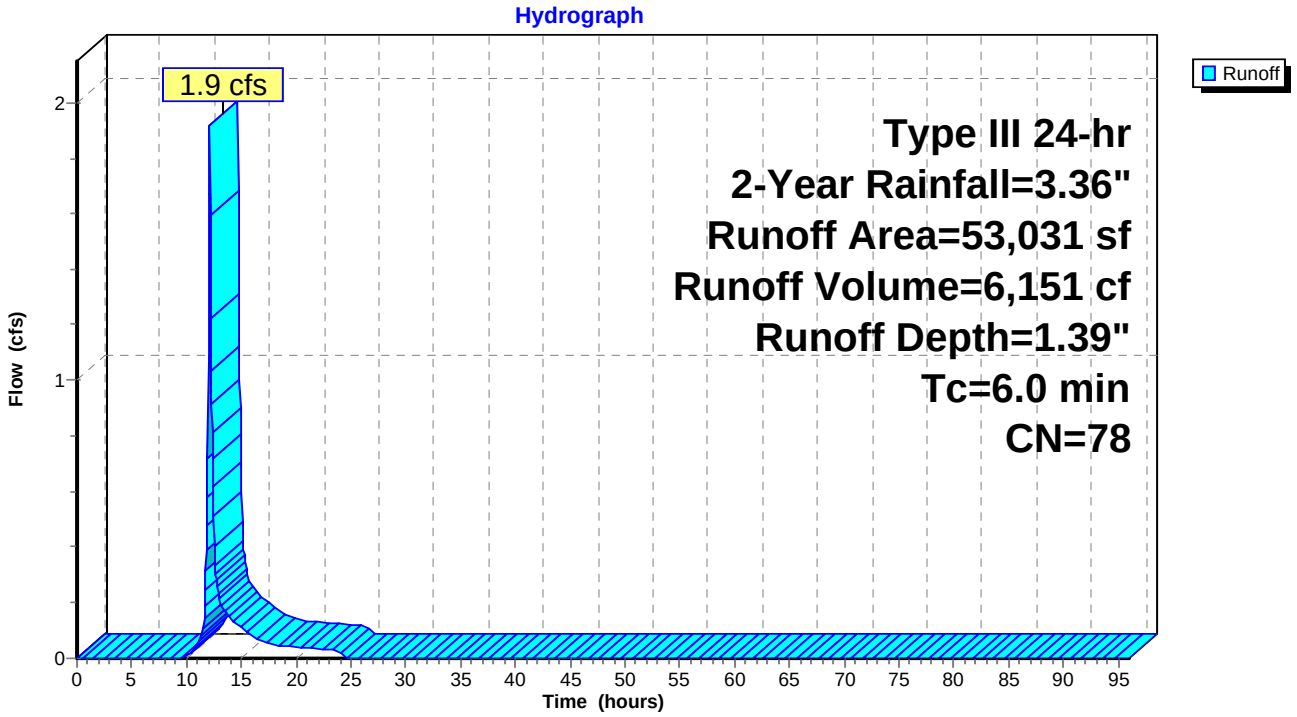
Runoff = 1.9 cfs @ 12.10 hrs, Volume= 6,151 cf, Depth= 1.39"
Routed to Pond P 1P : Inf. Sys. P 1P 12" Stone Layer Lower Elevation

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.36"

	Area (sf)	CN	Description
	8,825	39	>75% Grass cover, Good, HSG A
*	35,735	98	Synthetic Turf Field, HSG A
	2,564	39	>75% Grass cover, Good, HSG A
	5,907	30	Woods, Good, HSG A
	53,031	78	Weighted Average
	17,296		32.61% Pervious Area
	35,735		67.39% Impervious Area

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

Subcatchment P 3S: Subcat P 3S



Summary for Subcatchment P 4S: Subcat P 4S

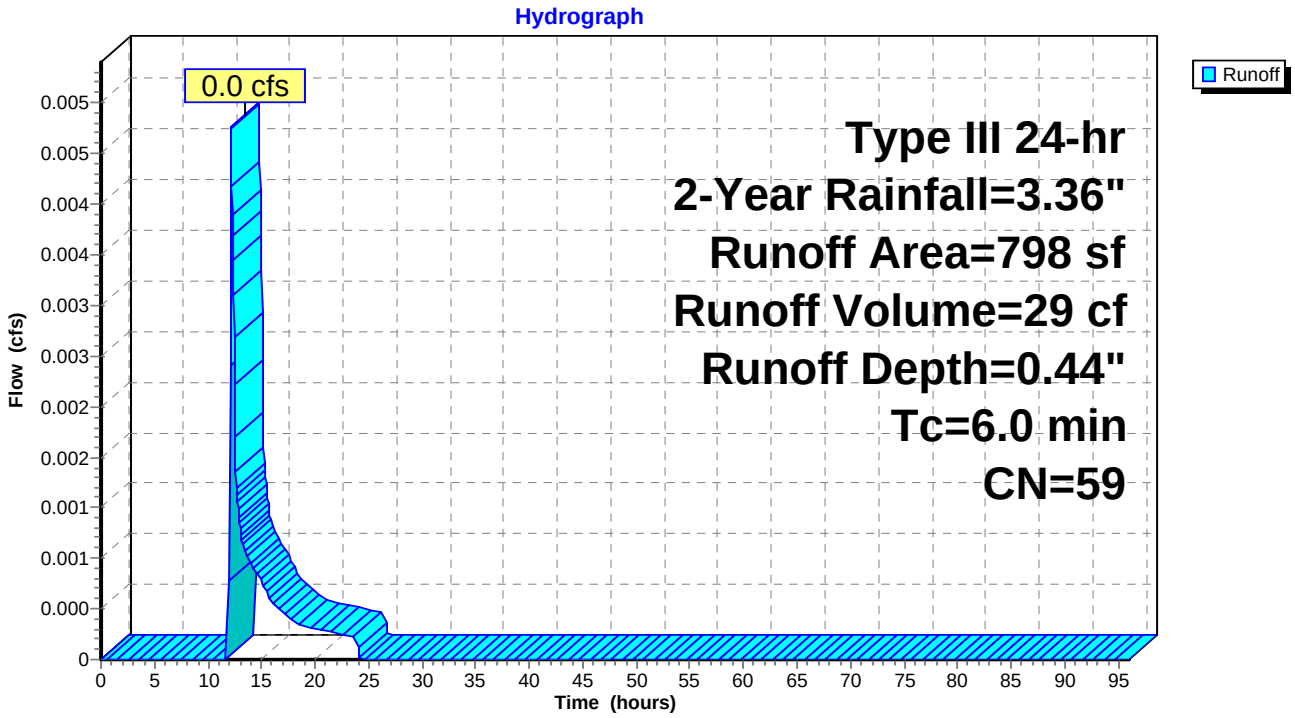
Runoff = 0.0 cfs @ 12.14 hrs, Volume= 29 cf, Depth= 0.44"
Routed to Link P 1L : P 1L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.36"

Area (sf)	CN	Description
265	98	Paved parking, HSG A
4	39	>75% Grass cover, Good, HSG A
529	39	>75% Grass cover, Good, HSG A
798	59	Weighted Average
533		66.79% Pervious Area
265		33.21% Impervious Area

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

Subcatchment P 4S: Subcat P 4S



Summary for Pond P 1P: Inf. Sys. P 1P 12" Stone Layer Lower Elevation

Inflow Area = 81,167 sf, 67.98% Impervious, Inflow Depth = 0.91" for 2-Year event
Inflow = 1.9 cfs @ 12.10 hrs, Volume= 6,151 cf
Outflow = 1.6 cfs @ 12.17 hrs, Volume= 6,151 cf, Atten= 18%, Lag= 4.1 min
Discarded = 1.6 cfs @ 12.17 hrs, Volume= 6,151 cf

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 196.03' @ 12.15 hrs Surf.Area= 28,350 sf Storage= 337 cf

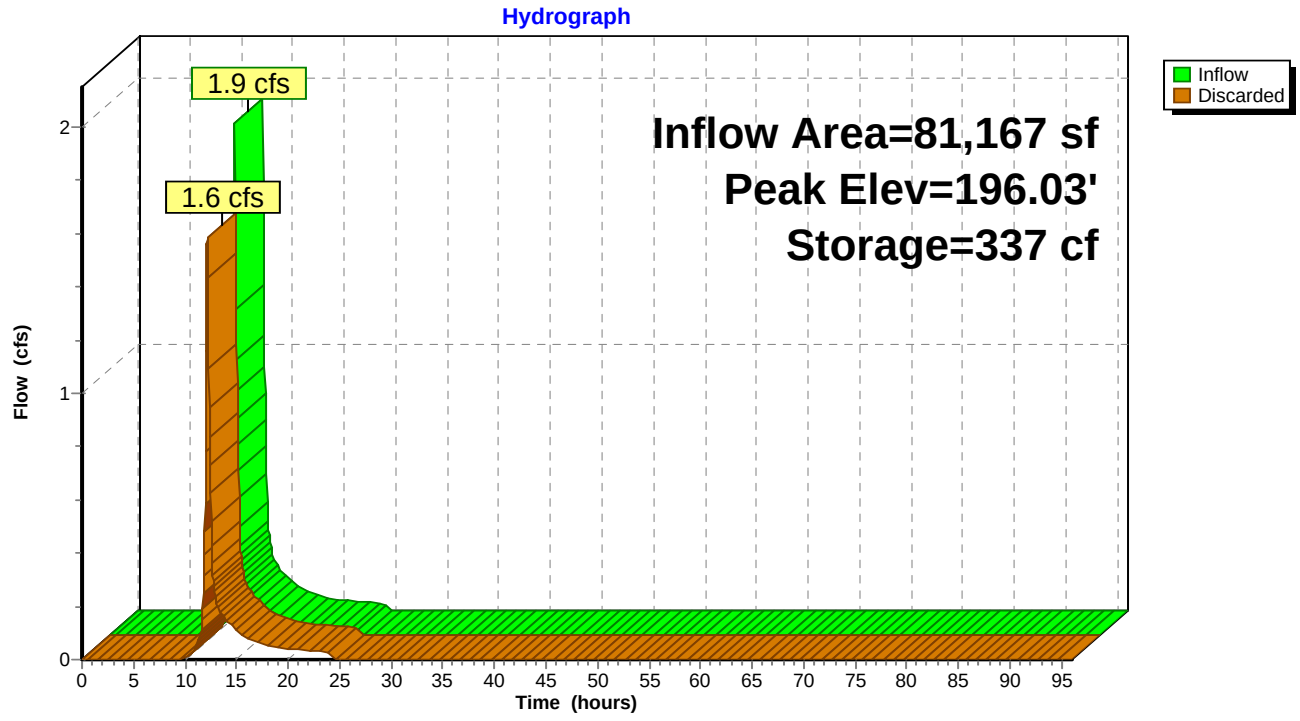
Plug-Flow detention time= 3.3 min calculated for 6,148 cf (100% of inflow)
Center-of-Mass det. time= 3.3 min (849.8 - 846.5)

Volume	Invert	Avail.Storage	Storage Description
#1	197.00'	2,424 cf	**135.00'W x 210.00'L x 1.71'H Prismatoid** 48,479 cf Overall x 5.0% Voids
#2	196.00'	11,340 cf	**135.00'W x 210.00'L x 1.00'H Prismatoid** 28,350 cf Overall x 40.0% Voids
		13,764 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	196.00'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=1.6 cfs @ 12.17 hrs HW=196.03' (Free Discharge)
1=Exfiltration (Exfiltration Controls 1.6 cfs)

Pond P 1P: Inf. Sys. P 1P 12" Stone Layer Lower Elevation



Summary for Pond P 2P: Inf. Sys. P 2P Stone Bed w/ 12" Pipes

Inflow Area = 20,762 sf, 93.63% Impervious, Inflow Depth = 2.70" for 2-Year event
Inflow = 1.4 cfs @ 12.09 hrs, Volume= 4,670 cf
Outflow = 0.3 cfs @ 12.25 hrs, Volume= 4,670 cf, Atten= 80%, Lag= 9.7 min
Discarded = 0.3 cfs @ 12.25 hrs, Volume= 4,670 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond P 1P : Inf. Sys. P 1P 12" Stone Layer Lower Elevation

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 195.10' @ 12.52 hrs Surf.Area= 5,000 sf Storage= 1,242 cf

Plug-Flow detention time= 28.1 min calculated for 4,668 cf (100% of inflow)
Center-of-Mass det. time= 28.1 min (813.6 - 785.5)

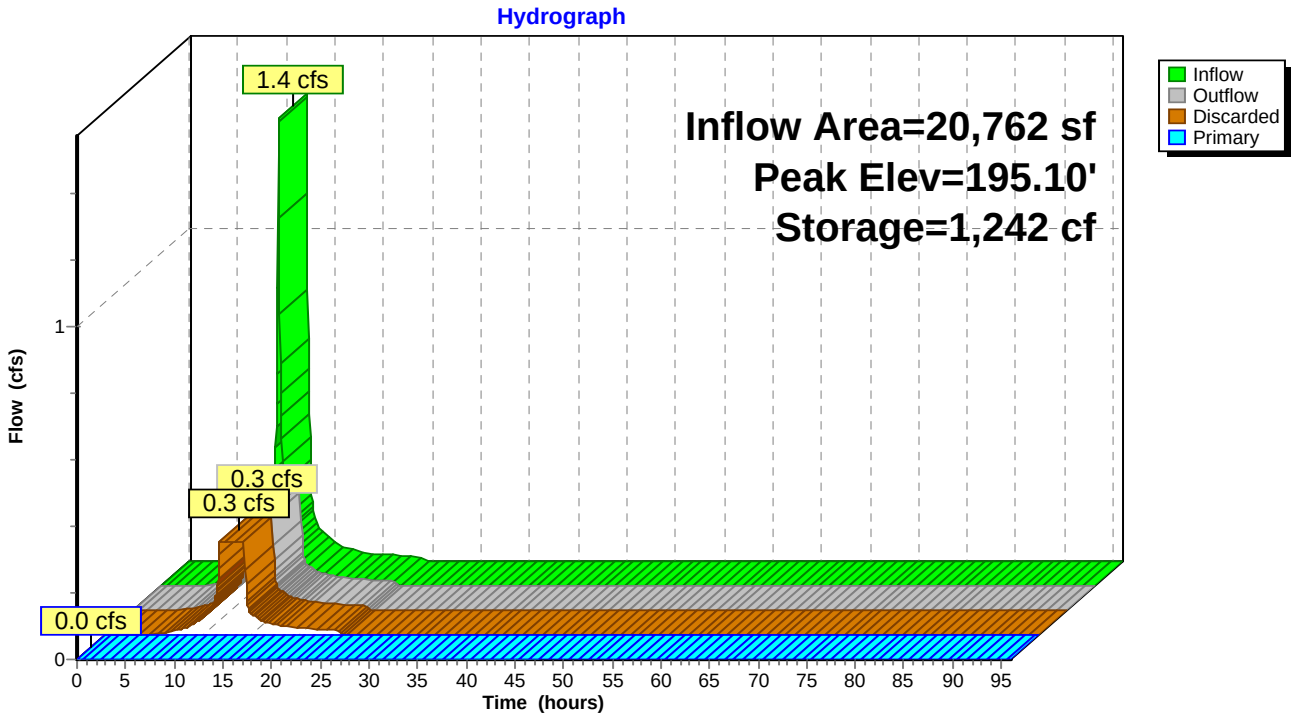
Volume	Invert	Avail.Storage	Storage Description
#1	195.00'	2 cf	**0.50'D x 5.31'H Vertical Cone/Cylinder** x 2
#2	195.00'	75 cf	**12.0" Round Header Pipe Storage** x 2 Inside #4 L= 48.0'
#3	195.00'	1,143 cf	**12.0" Round Pipe Storage** x 15 Inside #4 L= 97.0'
#4	194.50'	3,513 cf	**100.00'W x 50.00'L x 2.00'H Prismatoid** 10,000 cf Overall - 1,218 cf Embedded = 8,782 cf x 40.0% Voids
		4,733 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	200.30'	**4.0" x 4.0" Horiz. Orifice/Grate X 5.00 columns** X 5 rows C= 0.600 in 48.0" x 48.0" Grate (17% open area) Limited to weir flow at low heads
#2	Primary	198.00'	**4.0" x 4.0" Horiz. Orifice/Grate X 5.00 columns** X 5 rows C= 0.600 in 48.0" x 48.0" Grate (17% open area) Limited to weir flow at low heads
#3	Discarded	194.50'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.3 cfs @ 12.25 hrs HW=195.03' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.3 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=194.50' (Free Discharge)
├**1=Orifice/Grate** (Controls 0.0 cfs)
└**2=Orifice/Grate** (Controls 0.0 cfs)

Pond P 2P: Inf. Sys. P 2P Stone Bed w/ 12" Pipes

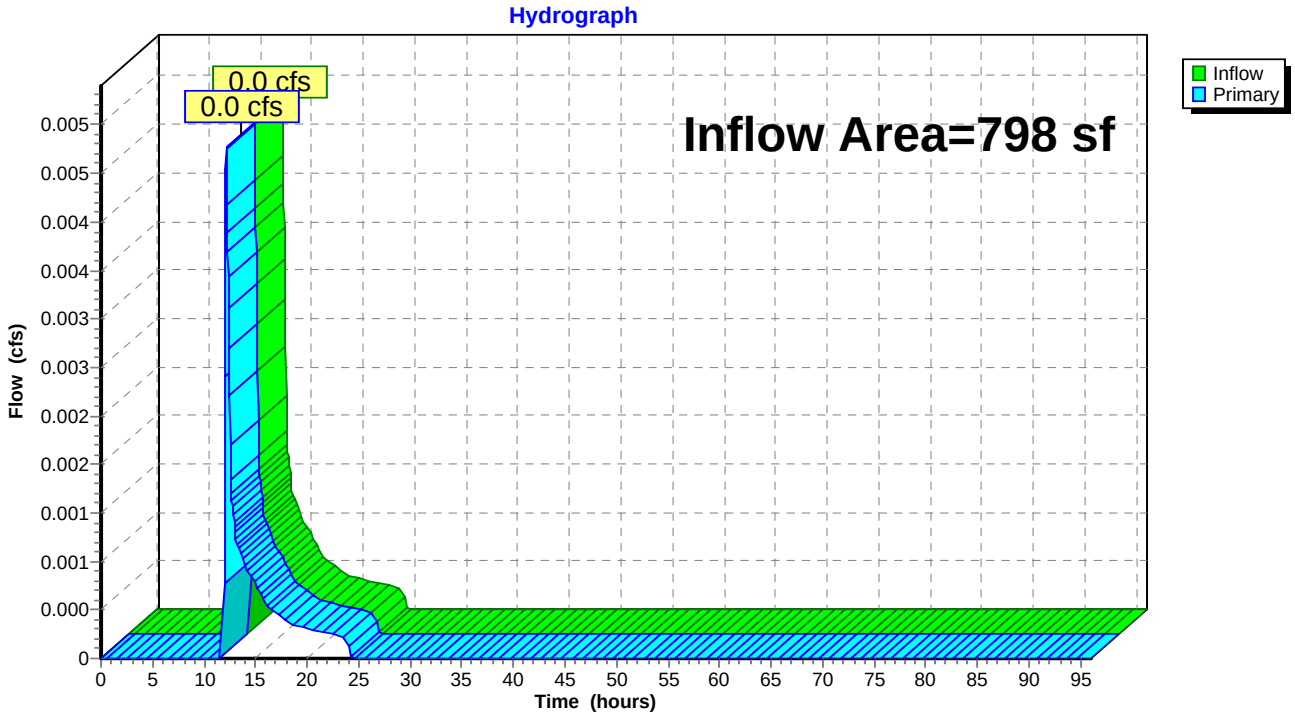


Summary for Link P 1L: P 1L

Inflow Area = 798 sf, 33.21% Impervious, Inflow Depth = 0.44" for 2-Year event
Inflow = 0.0 cfs @ 12.14 hrs, Volume= 29 cf
Primary = 0.0 cfs @ 12.14 hrs, Volume= 29 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link P 1L: P 1L



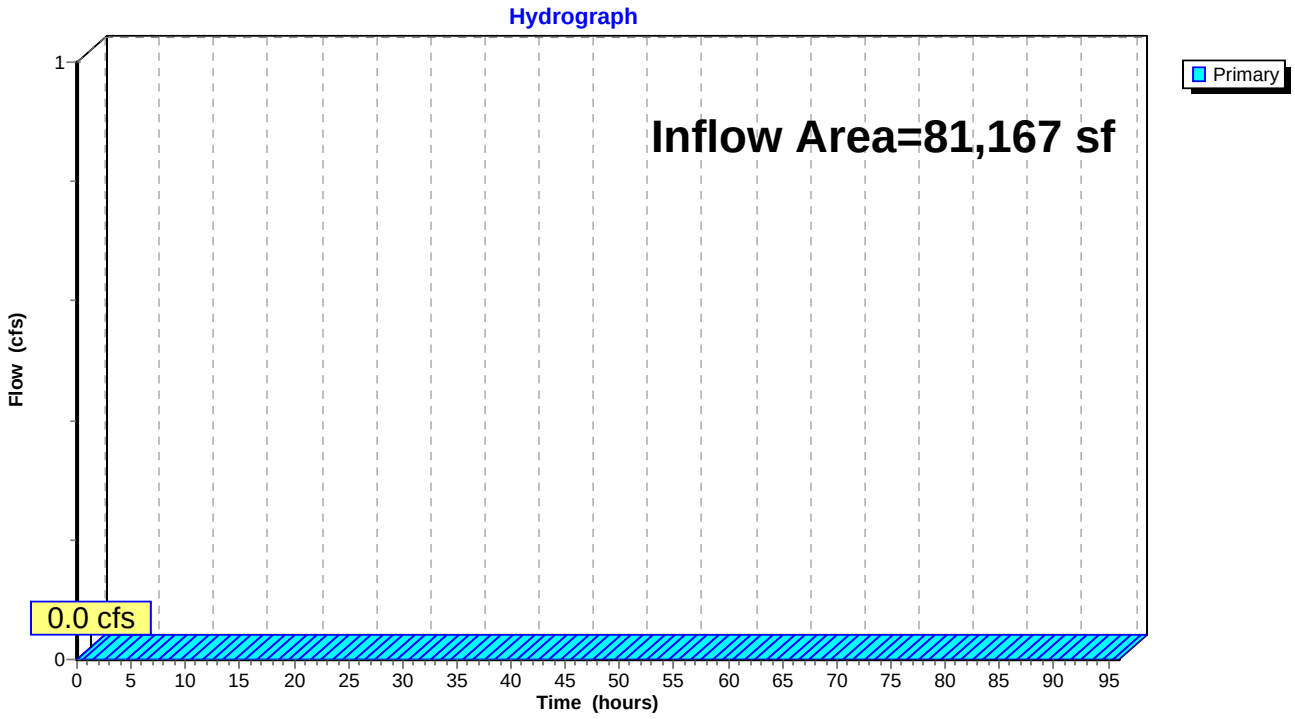
Summary for Link P 2L: P 2L

[43] Hint: Has no inflow (Outflow=Zero)

Inflow Area = 81,167 sf, 67.98% Impervious, Inflow Depth = 0.00" for 2-Year event
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link P 2L: P 2L



Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 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 P 1S: Subcat P 1S Runoff Area=20,762 sf 93.63% Impervious Runoff Depth=4.54"
Tc=6.0 min CN=94 Runoff=2.3 cfs 7,863 cf

Subcatchment P 2S: Subcat P 2S Runoff Area=7,374 sf 0.00% Impervious Runoff Depth=0.04"
Tc=6.0 min CN=32 Runoff=0.0 cfs 27 cf

Subcatchment P 3S: Subcat P 3S Runoff Area=53,031 sf 67.39% Impervious Runoff Depth=2.92"
Tc=6.0 min CN=78 Runoff=4.1 cfs 12,889 cf

Subcatchment P 4S: Subcat P 4S Runoff Area=798 sf 33.21% Impervious Runoff Depth=1.37"
Tc=6.0 min CN=59 Runoff=0.0 cfs 91 cf

Pond P 1P: Inf. Sys. P 1P 12" Stone Layer Lower Elevation Peak Elev=196.17' Storage=1,883 cf Inflow=4.1 cfs 12,916 cf
Outflow=1.6 cfs 12,916 cf

Pond P 2P: Inf. Sys. P 2P Stone Bed w/ 12" Pipes Peak Elev=195.58' Storage=2,589 cf Inflow=2.3 cfs 7,863 cf
Discarded=0.3 cfs 7,864 cf Primary=0.0 cfs 0 cf Outflow=0.3 cfs 7,864 cf

Link P 1L: P 1L Inflow=0.0 cfs 91 cf
Primary=0.0 cfs 91 cf

Link P 2L: P 2L
Primary=0.0 cfs 0 cf

Total Runoff Area = 81,965 sf Runoff Volume = 20,871 cf Average Runoff Depth = 3.06"
32.36% Pervious = 26,526 sf 67.64% Impervious = 55,439 sf

Summary for Subcatchment P 1S: Subcat P 1S

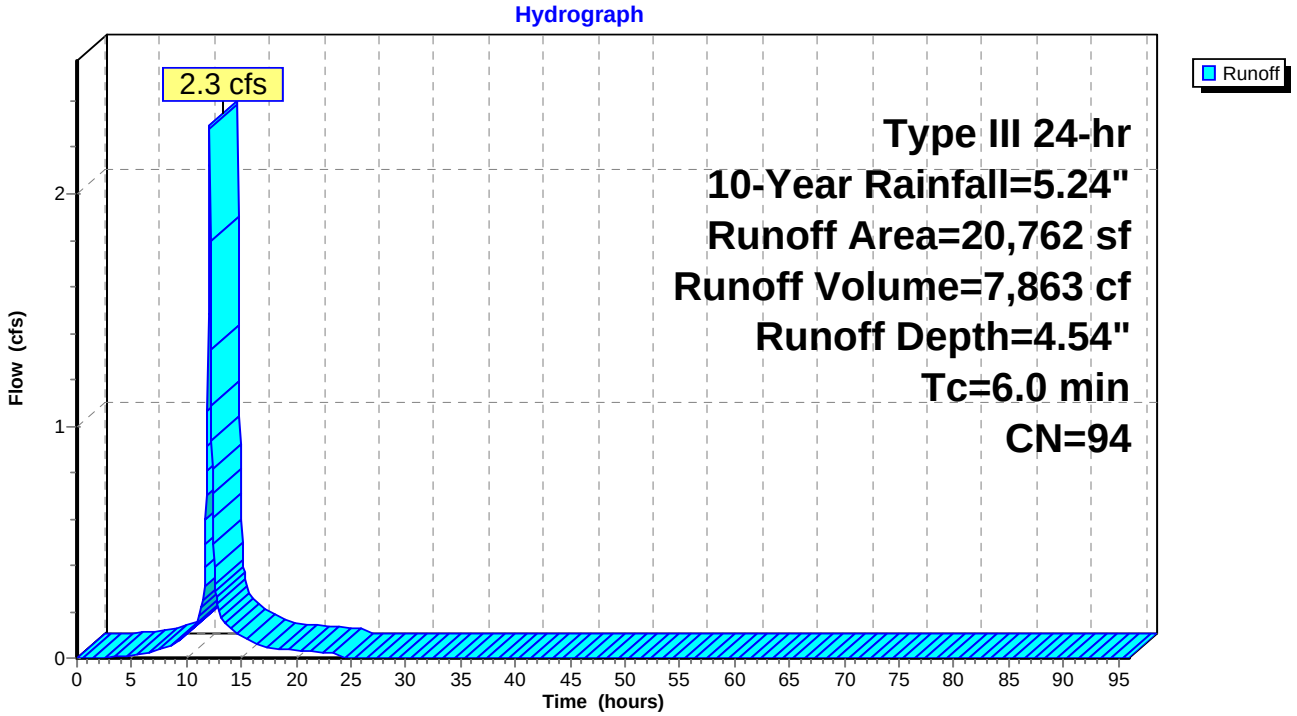
Runoff = 2.3 cfs @ 12.09 hrs, Volume= 7,863 cf, Depth= 4.54"
Routed to Pond P 2P : Inf. Sys. P 2P Stone Bed w/ 12" Pipes

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.24"

Area (sf)	CN	Description
1,045	39	>75% Grass cover, Good, HSG A
2,623	98	Paved parking, HSG A
15,726	98	Paved parking, HSG A
1,090	98	Unconnected pavement, HSG A
278	30	Woods, Good, HSG A
20,762	94	Weighted Average
1,323		6.37% Pervious Area
19,439		93.63% Impervious Area
1,090		5.61% Unconnected

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

Subcatchment P 1S: Subcat P 1S



Summary for Subcatchment P 2S: Subcat P 2S

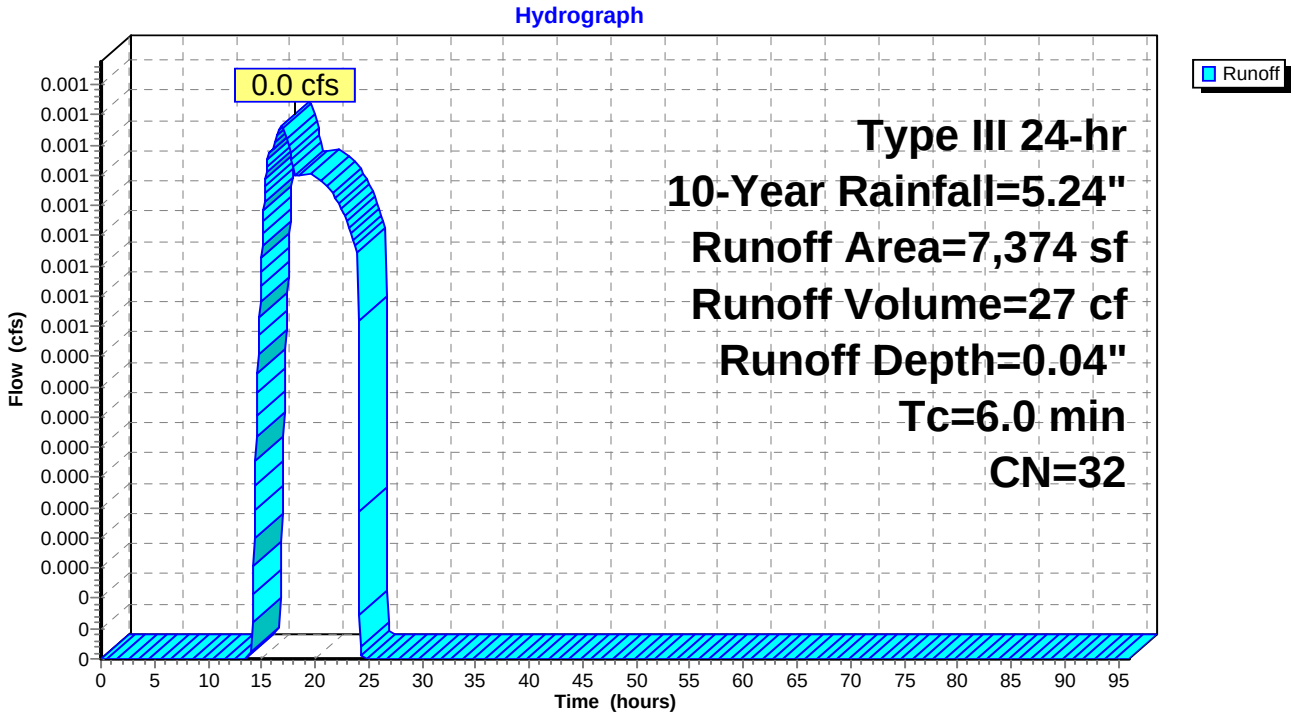
Runoff = 0.0 cfs @ 16.88 hrs, Volume= 27 cf, Depth= 0.04"
Routed to Pond P 1P : Inf. Sys. P 1P 12" Stone Layer Lower Elevation

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.24"

Area (sf)	CN	Description
1,374	39	>75% Grass cover, Good, HSG A
6,000	30	Woods, Good, HSG A
7,374	32	Weighted Average
7,374		100.00% Pervious Area

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

Subcatchment P 2S: Subcat P 2S



Summary for Subcatchment P 3S: Subcat P 3S

Note: 'Roofs' were chosen as a way to import and model the soccer field as a seperate entity with a Curve Number (CN) as 98. As there are no buildings proposed for this development, there are no actual 'roof' areas.

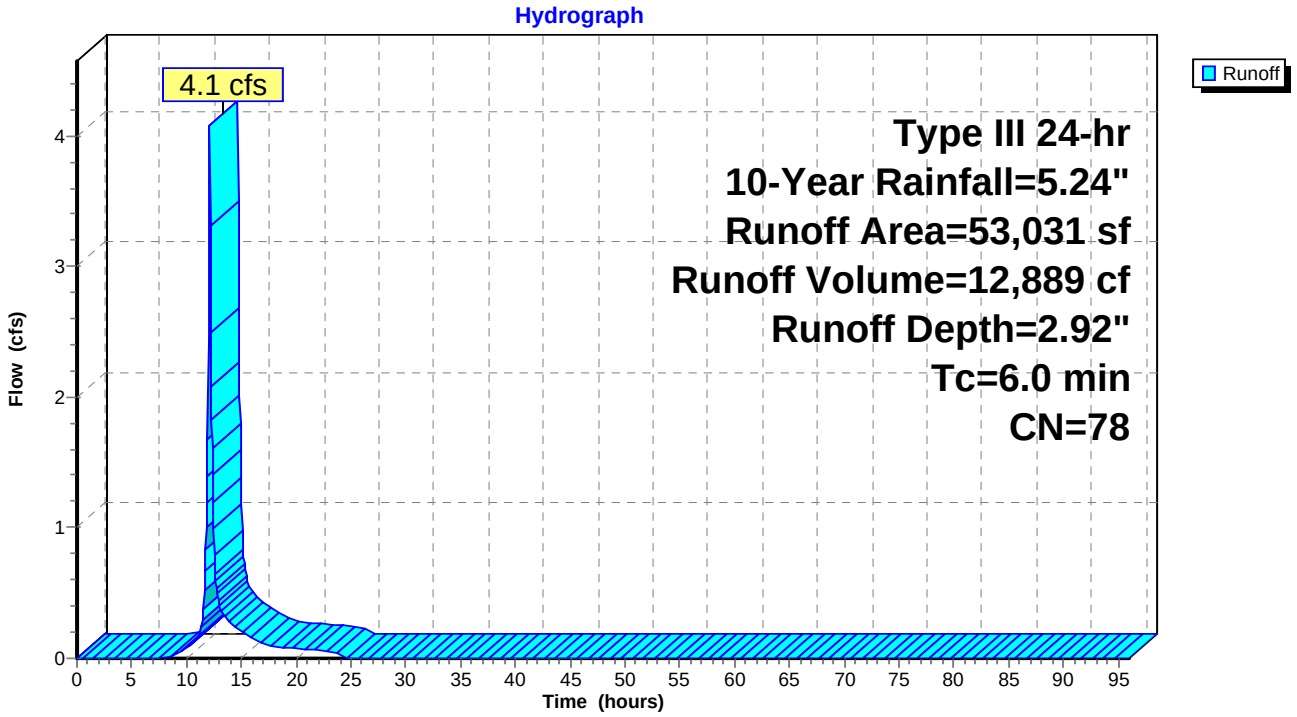
Runoff = 4.1 cfs @ 12.09 hrs, Volume= 12,889 cf, Depth= 2.92"
Routed to Pond P 1P : Inf. Sys. P 1P 12" Stone Layer Lower Elevation

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.24"

	Area (sf)	CN	Description
	8,825	39	>75% Grass cover, Good, HSG A
*	35,735	98	Synthetic Turf Field, HSG A
	2,564	39	>75% Grass cover, Good, HSG A
	5,907	30	Woods, Good, HSG A
	53,031	78	Weighted Average
	17,296		32.61% Pervious Area
	35,735		67.39% Impervious Area

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

Subcatchment P 3S: Subcat P 3S



Summary for Subcatchment P 4S: Subcat P 4S

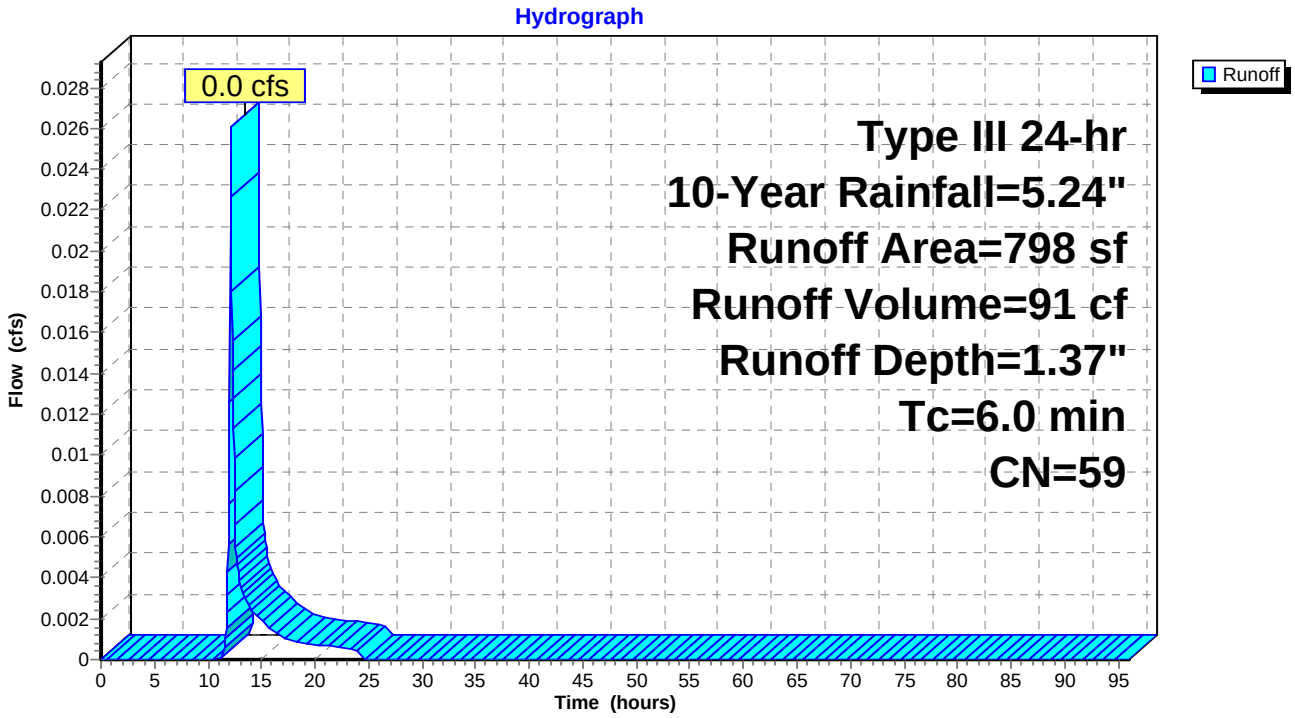
Runoff = 0.0 cfs @ 12.10 hrs, Volume= 91 cf, Depth= 1.37"
Routed to Link P 1L : P 1L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.24"

Area (sf)	CN	Description
265	98	Paved parking, HSG A
4	39	>75% Grass cover, Good, HSG A
529	39	>75% Grass cover, Good, HSG A
798	59	Weighted Average
533		66.79% Pervious Area
265		33.21% Impervious Area

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

Subcatchment P 4S: Subcat P 4S



Summary for Pond P 1P: Inf. Sys. P 1P 12" Stone Layer Lower Elevation

Inflow Area = 81,167 sf, 67.98% Impervious, Inflow Depth = 1.91" for 10-Year event
Inflow = 4.1 cfs @ 12.09 hrs, Volume= 12,916 cf
Outflow = 1.6 cfs @ 12.00 hrs, Volume= 12,916 cf, Atten= 61%, Lag= 0.0 min
Discarded = 1.6 cfs @ 12.00 hrs, Volume= 12,916 cf

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 196.17' @ 12.36 hrs Surf.Area= 28,350 sf Storage= 1,883 cf

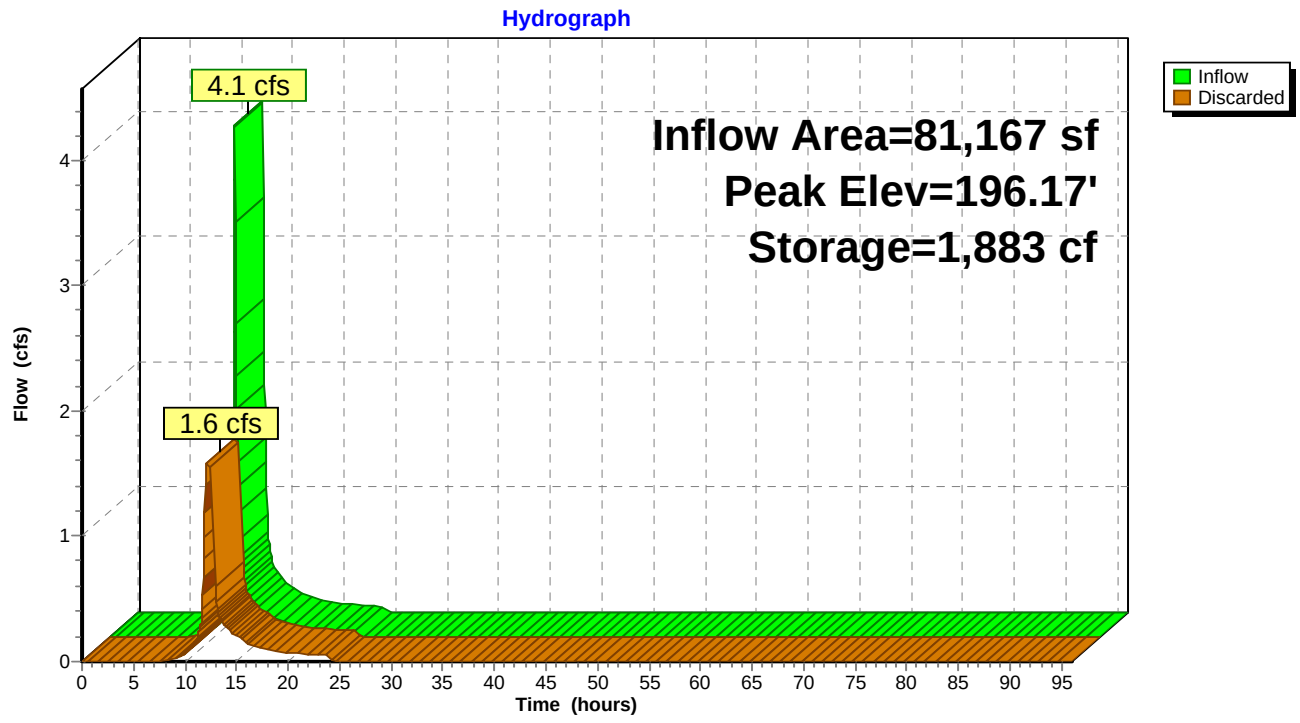
Plug-Flow detention time= 7.5 min calculated for 12,916 cf (100% of inflow)
Center-of-Mass det. time= 7.5 min (833.2 - 825.7)

Volume	Invert	Avail.Storage	Storage Description
#1	197.00'	2,424 cf	**135.00'W x 210.00'L x 1.71'H Prismatoid** 48,479 cf Overall x 5.0% Voids
#2	196.00'	11,340 cf	**135.00'W x 210.00'L x 1.00'H Prismatoid** 28,350 cf Overall x 40.0% Voids
		13,764 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	196.00'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=1.6 cfs @ 12.00 hrs HW=196.03' (Free Discharge)
1=Exfiltration (Exfiltration Controls 1.6 cfs)

Pond P 1P: Inf. Sys. P 1P 12" Stone Layer Lower Elevation



Summary for Pond P 2P: Inf. Sys. P 2P Stone Bed w/ 12" Pipes

Inflow Area = 20,762 sf, 93.63% Impervious, Inflow Depth = 4.54" for 10-Year event
Inflow = 2.3 cfs @ 12.09 hrs, Volume= 7,863 cf
Outflow = 0.3 cfs @ 12.05 hrs, Volume= 7,864 cf, Atten= 88%, Lag= 0.0 min
Discarded = 0.3 cfs @ 12.05 hrs, Volume= 7,864 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond P 1P : Inf. Sys. P 1P 12" Stone Layer Lower Elevation

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 195.58' @ 12.68 hrs Surf.Area= 5,000 sf Storage= 2,589 cf

Plug-Flow detention time= 63.8 min calculated for 7,860 cf (100% of inflow)
Center-of-Mass det. time= 63.8 min (836.0 - 772.2)

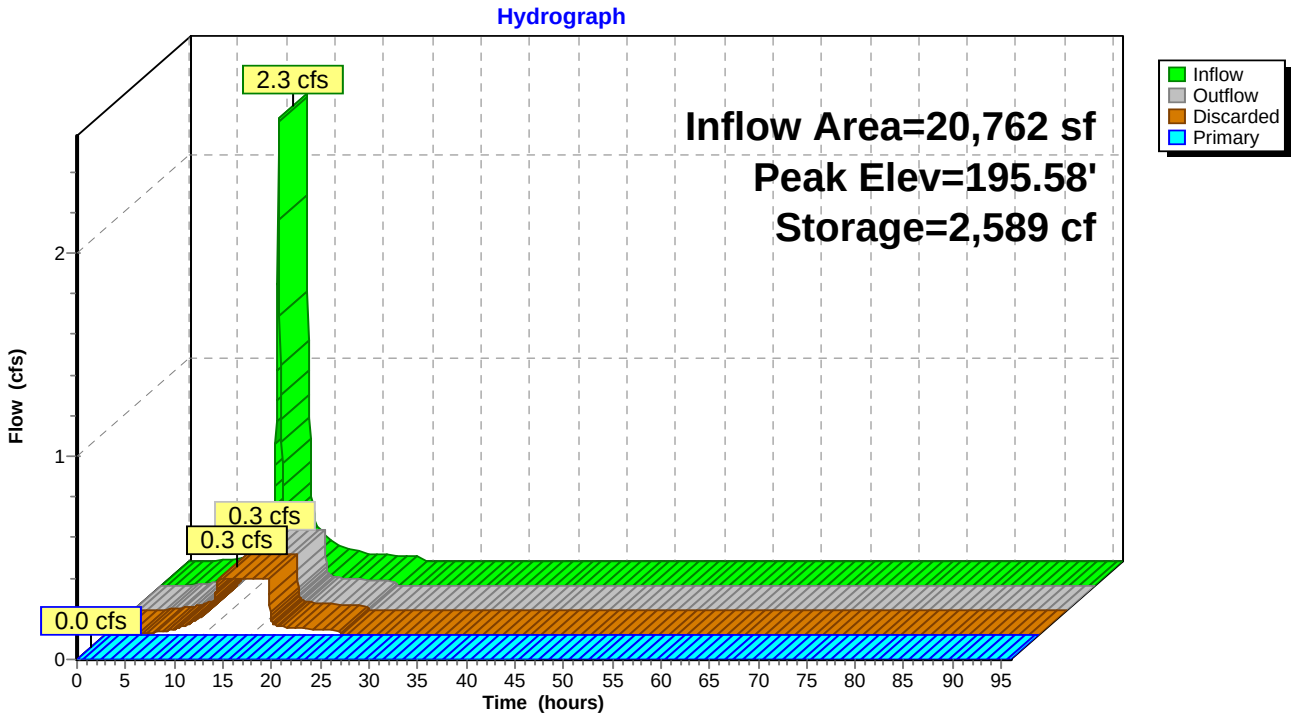
Volume	Invert	Avail.Storage	Storage Description
#1	195.00'	2 cf	**0.50'D x 5.31'H Vertical Cone/Cylinder** x 2
#2	195.00'	75 cf	**12.0" Round Header Pipe Storage** x 2 Inside #4 L= 48.0'
#3	195.00'	1,143 cf	**12.0" Round Pipe Storage** x 15 Inside #4 L= 97.0'
#4	194.50'	3,513 cf	**100.00'W x 50.00'L x 2.00'H Prismatoid** 10,000 cf Overall - 1,218 cf Embedded = 8,782 cf x 40.0% Voids
		4,733 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	200.30'	**4.0" x 4.0" Horiz. Orifice/Grate X 5.00 columns** X 5 rows C= 0.600 in 48.0" x 48.0" Grate (17% open area) Limited to weir flow at low heads
#2	Primary	198.00'	**4.0" x 4.0" Horiz. Orifice/Grate X 5.00 columns** X 5 rows C= 0.600 in 48.0" x 48.0" Grate (17% open area) Limited to weir flow at low heads
#3	Discarded	194.50'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.3 cfs @ 12.05 hrs HW=195.02' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.3 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=194.50' (Free Discharge)
├**1=Orifice/Grate** (Controls 0.0 cfs)
└**2=Orifice/Grate** (Controls 0.0 cfs)

Pond P 2P: Inf. Sys. P 2P Stone Bed w/ 12" Pipes

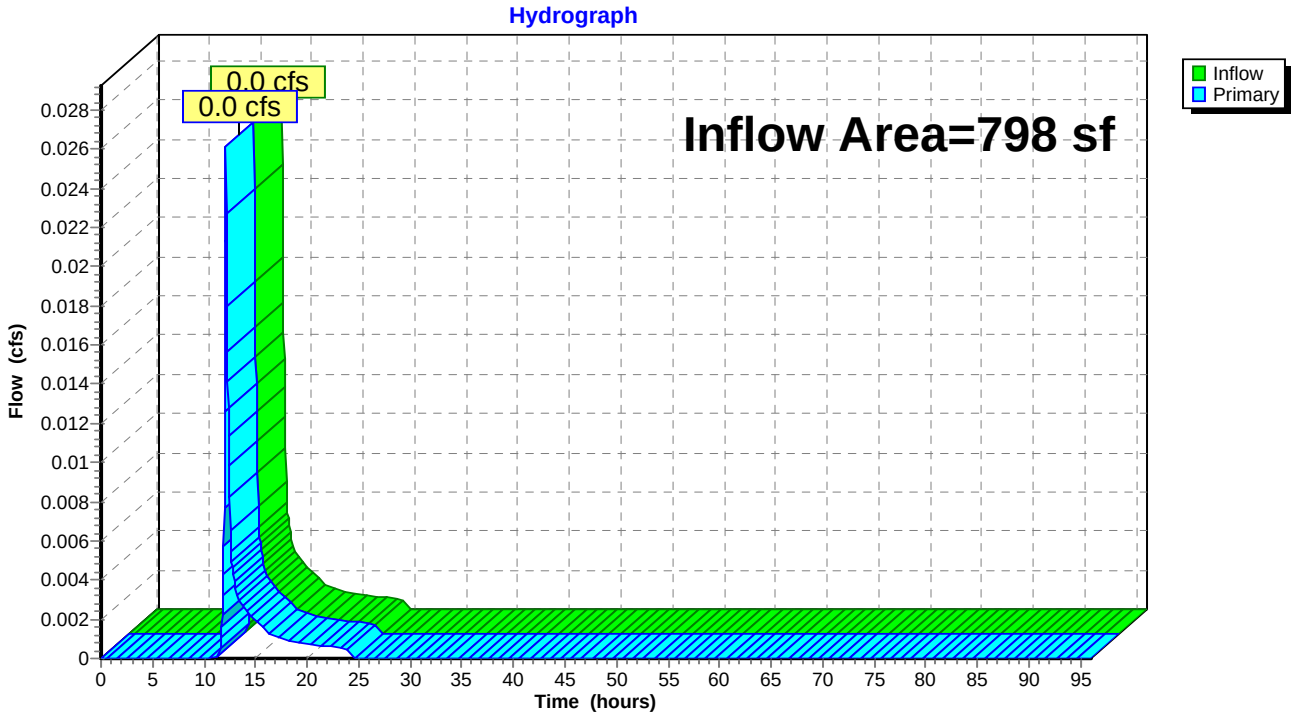


Summary for Link P 1L: P 1L

Inflow Area = 798 sf, 33.21% Impervious, Inflow Depth = 1.37" for 10-Year event
Inflow = 0.0 cfs @ 12.10 hrs, Volume= 91 cf
Primary = 0.0 cfs @ 12.10 hrs, Volume= 91 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link P 1L: P 1L



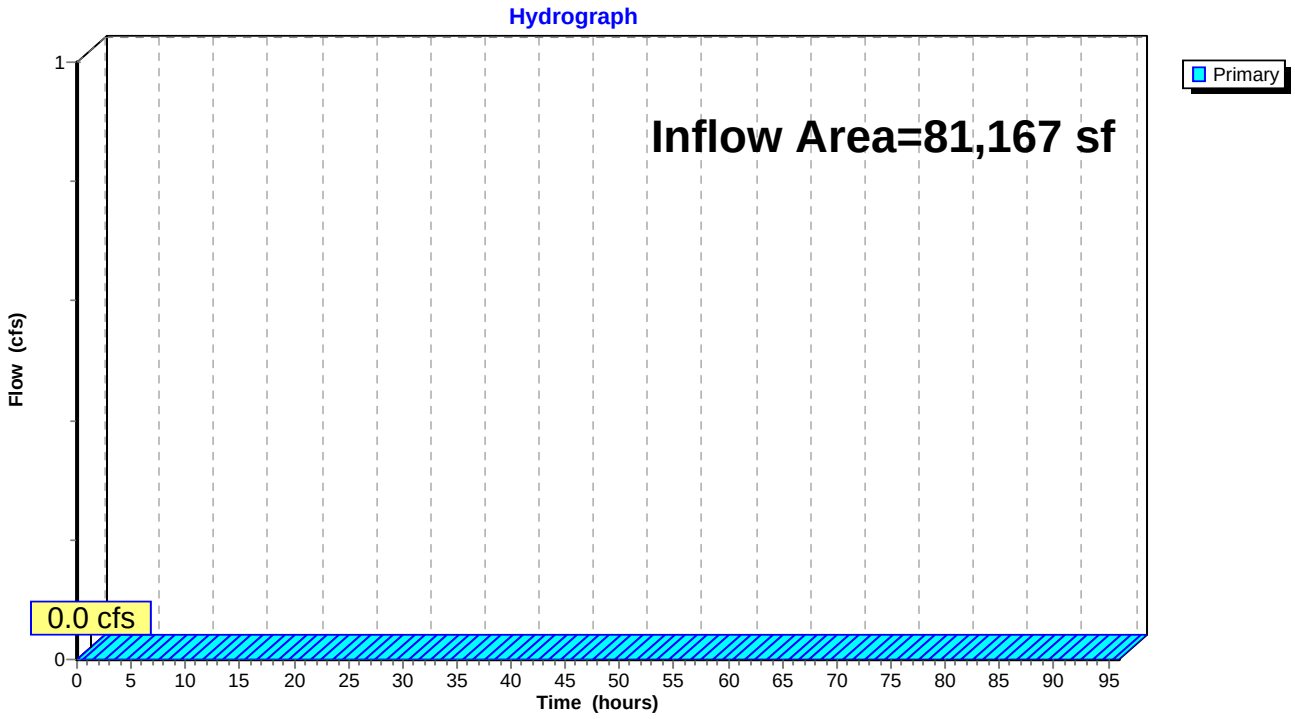
Summary for Link P 2L: P 2L

[43] Hint: Has no inflow (Outflow=Zero)

Inflow Area = 81,167 sf, 67.98% Impervious, Inflow Depth = 0.00" for 10-Year event
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link P 2L: P 2L



Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 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 P 1S: Subcat P 1S Runoff Area=20,762 sf 93.63% Impervious Runoff Depth=7.51"
Tc=6.0 min CN=94 Runoff=3.7 cfs 12,995 cf

Subcatchment P 2S: Subcat P 2S Runoff Area=7,374 sf 0.00% Impervious Runoff Depth=0.63"
Tc=6.0 min CN=32 Runoff=0.0 cfs 386 cf

Subcatchment P 3S: Subcat P 3S Runoff Area=53,031 sf 67.39% Impervious Runoff Depth=5.60"
Tc=6.0 min CN=78 Runoff=7.7 cfs 24,766 cf

Subcatchment P 4S: Subcat P 4S Runoff Area=798 sf 33.21% Impervious Runoff Depth=3.39"
Tc=6.0 min CN=59 Runoff=0.1 cfs 226 cf

Pond P 1P: Inf. Sys. P 1P 12" Stone Layer Lower Elevation Peak Elev=196.57' Storage=6,513 cf Inflow=7.7 cfs 25,253 cf
Outflow=1.6 cfs 25,253 cf

Pond P 2P: Inf. Sys. P 2P Stone Bed w/ 12" Pipes Peak Elev=198.03' Storage=4,732 cf Inflow=3.7 cfs 12,995 cf
Discarded=0.3 cfs 12,673 cf Primary=0.3 cfs 102 cf Outflow=0.6 cfs 12,775 cf

Link P 1L: P 1L Inflow=0.1 cfs 226 cf
Primary=0.1 cfs 226 cf

Link P 2L: P 2L
Primary=0.0 cfs 0 cf

Total Runoff Area = 81,965 sf Runoff Volume = 38,372 cf Average Runoff Depth = 5.62"
32.36% Pervious = 26,526 sf 67.64% Impervious = 55,439 sf

Summary for Subcatchment P 1S: Subcat P 1S

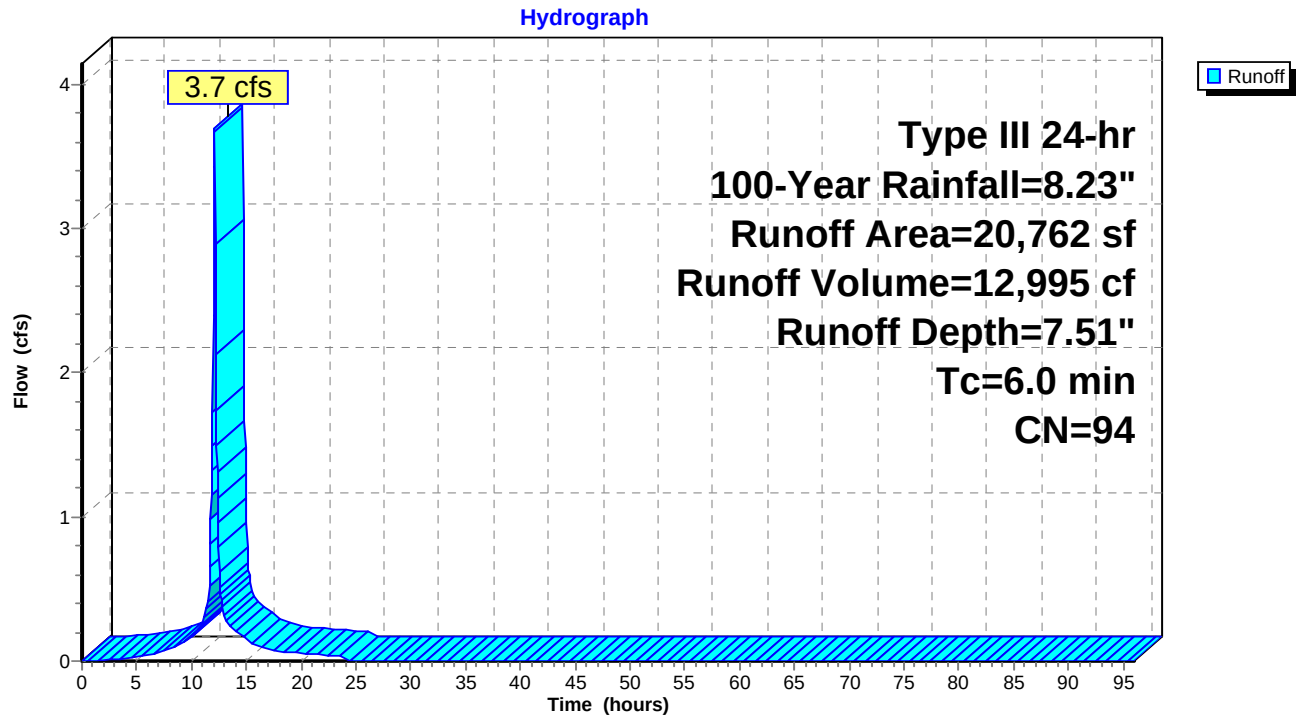
Runoff = 3.7 cfs @ 12.09 hrs, Volume= 12,995 cf, Depth= 7.51"
Routed to Pond P 2P : Inf. Sys. P 2P Stone Bed w/ 12" Pipes

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.23"

Area (sf)	CN	Description
1,045	39	>75% Grass cover, Good, HSG A
2,623	98	Paved parking, HSG A
15,726	98	Paved parking, HSG A
1,090	98	Unconnected pavement, HSG A
278	30	Woods, Good, HSG A
20,762	94	Weighted Average
1,323		6.37% Pervious Area
19,439		93.63% Impervious Area
1,090		5.61% Unconnected

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

Subcatchment P 1S: Subcat P 1S



Summary for Subcatchment P 2S: Subcat P 2S

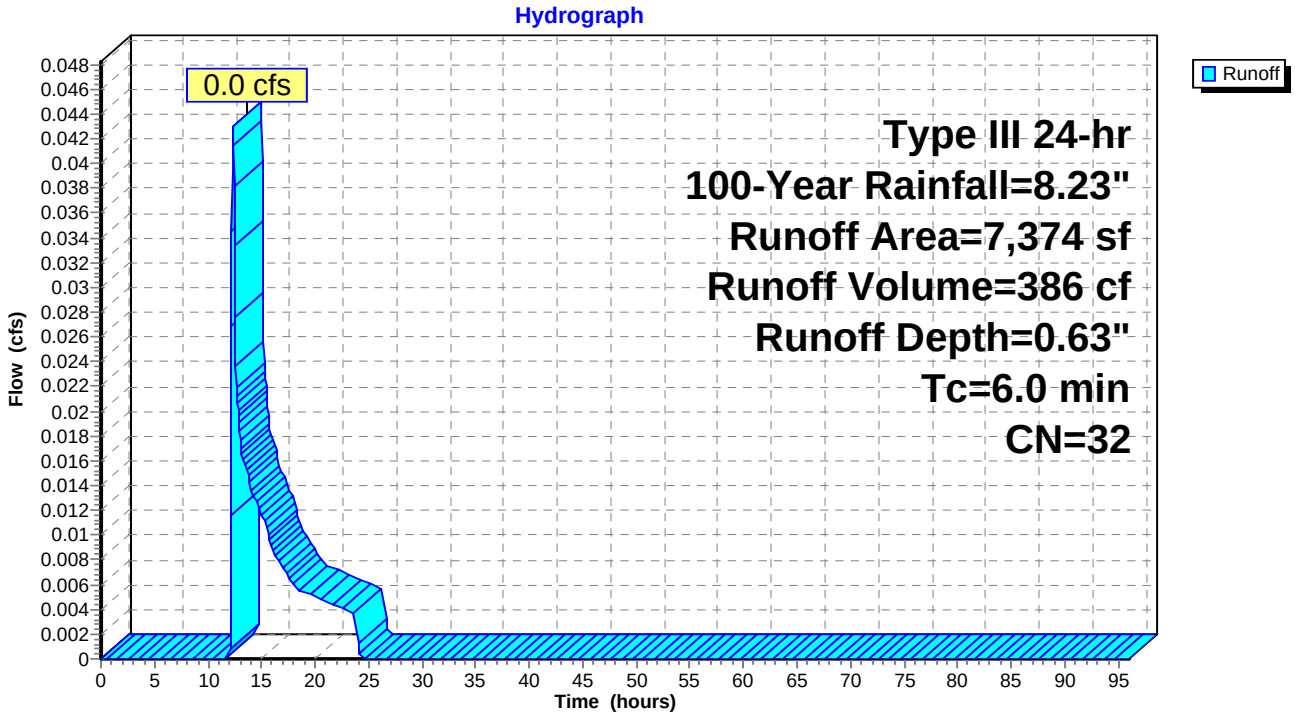
Runoff = 0.0 cfs @ 12.34 hrs, Volume= 386 cf, Depth= 0.63"
Routed to Pond P 1P : Inf. Sys. P 1P 12" Stone Layer Lower Elevation

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.23"

Area (sf)	CN	Description
1,374	39	>75% Grass cover, Good, HSG A
6,000	30	Woods, Good, HSG A
7,374	32	Weighted Average
7,374		100.00% Pervious Area

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

Subcatchment P 2S: Subcat P 2S



Summary for Subcatchment P 3S: Subcat P 3S

Note: 'Roofs' were chosen as a way to import and model the soccer field as a seperate entity with a Curve Number (CN) as 98. As there are no buildings proposed for this development, there are no actual 'roof' areas.

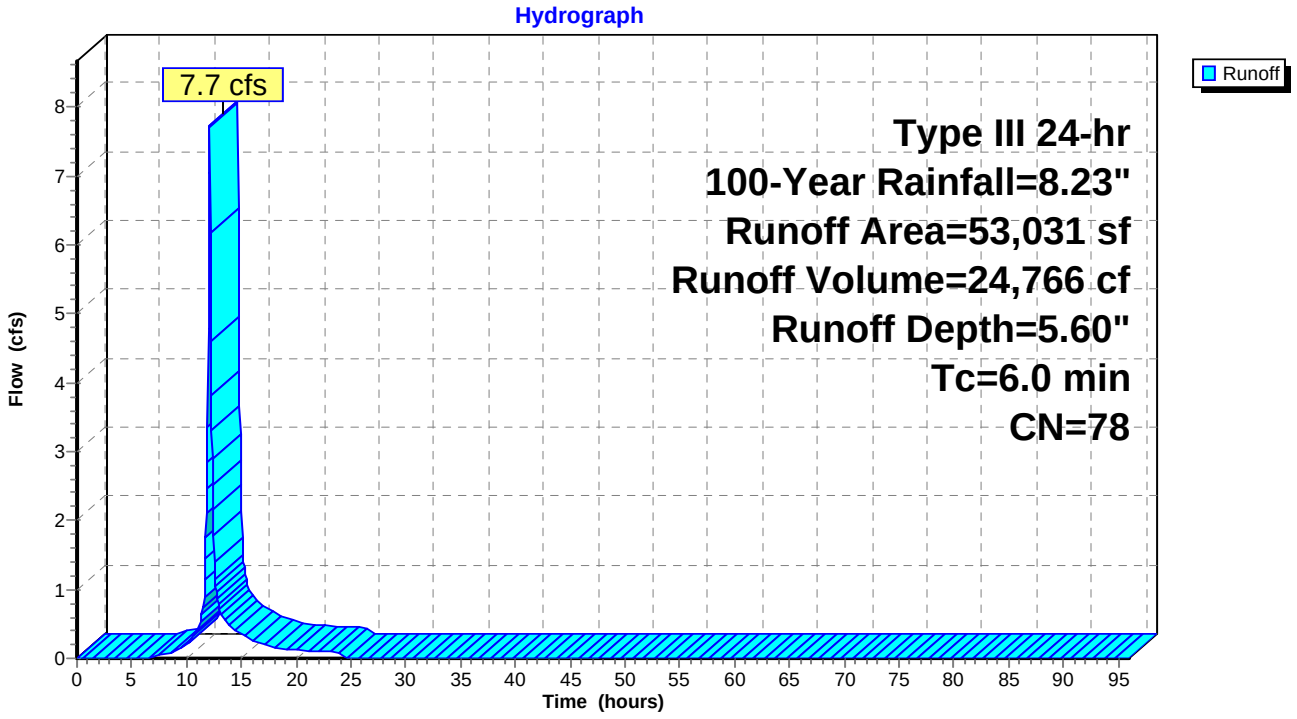
Runoff = 7.7 cfs @ 12.09 hrs, Volume= 24,766 cf, Depth= 5.60"
Routed to Pond P 1P : Inf. Sys. P 1P 12" Stone Layer Lower Elevation

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.23"

	Area (sf)	CN	Description
	8,825	39	>75% Grass cover, Good, HSG A
*	35,735	98	Synthetic Turf Field, HSG A
	2,564	39	>75% Grass cover, Good, HSG A
	5,907	30	Woods, Good, HSG A
	53,031	78	Weighted Average
	17,296		32.61% Pervious Area
	35,735		67.39% Impervious Area

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

Subcatchment P 3S: Subcat P 3S



Summary for Subcatchment P 4S: Subcat P 4S

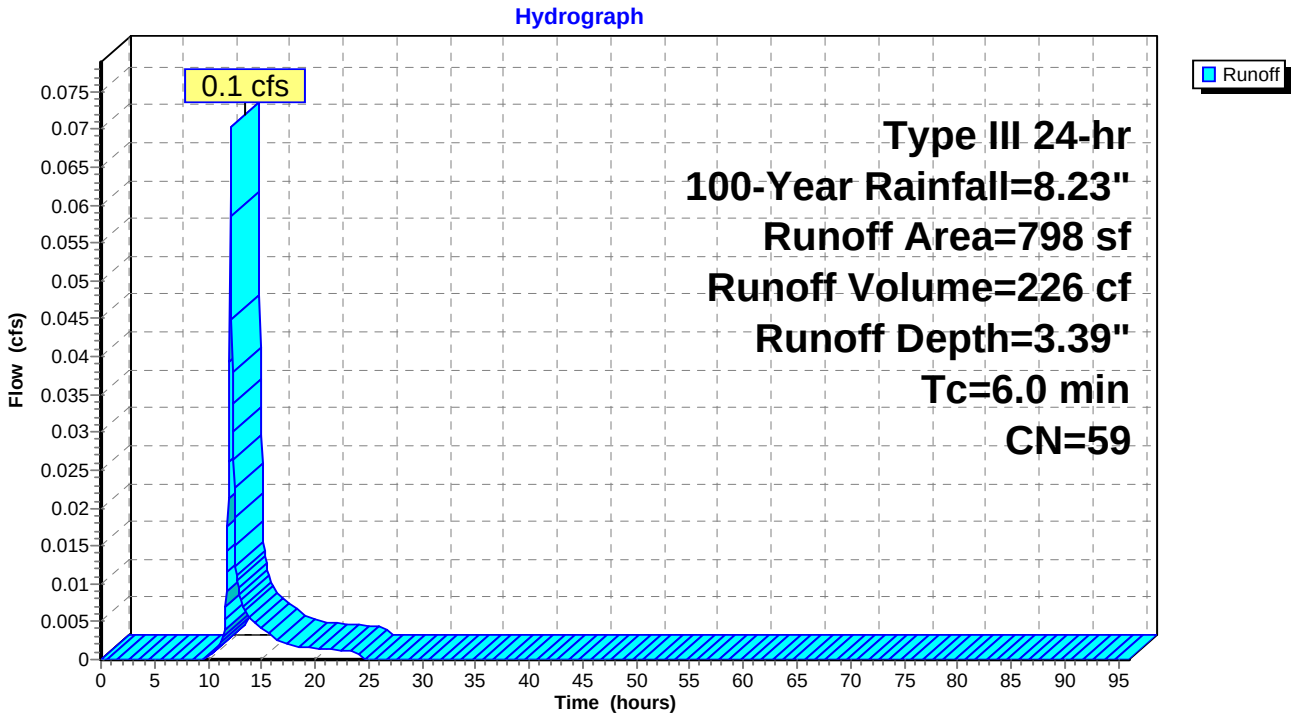
Runoff = 0.1 cfs @ 12.10 hrs, Volume= 226 cf, Depth= 3.39"
Routed to Link P 1L : P 1L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.23"

Area (sf)	CN	Description
265	98	Paved parking, HSG A
4	39	>75% Grass cover, Good, HSG A
529	39	>75% Grass cover, Good, HSG A
798	59	Weighted Average
533		66.79% Pervious Area
265		33.21% Impervious Area

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

Subcatchment P 4S: Subcat P 4S



Summary for Pond P 1P: Inf. Sys. P 1P 12" Stone Layer Lower Elevation

Inflow Area = 81,167 sf, 67.98% Impervious, Inflow Depth = 3.73" for 100-Year event
Inflow = 7.7 cfs @ 12.09 hrs, Volume= 25,253 cf
Outflow = 1.6 cfs @ 11.80 hrs, Volume= 25,253 cf, Atten= 80%, Lag= 0.0 min
Discarded = 1.6 cfs @ 11.80 hrs, Volume= 25,253 cf

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 196.57' @ 12.56 hrs Surf.Area= 28,350 sf Storage= 6,513 cf

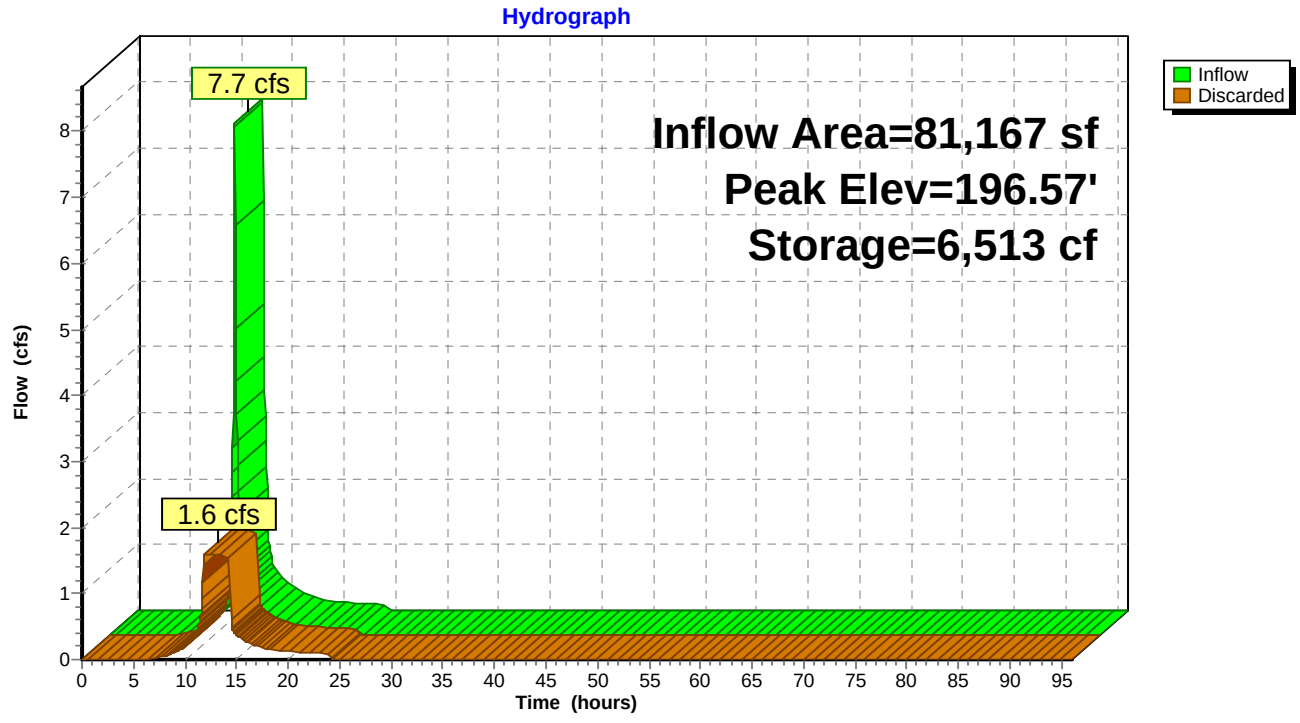
Plug-Flow detention time= 24.9 min calculated for 25,253 cf (100% of inflow)
Center-of-Mass det. time= 24.9 min (833.4 - 808.5)

Volume	Invert	Avail.Storage	Storage Description
#1	197.00'	2,424 cf	**135.00'W x 210.00'L x 1.71'H Prismatoid** 48,479 cf Overall x 5.0% Voids
#2	196.00'	11,340 cf	**135.00'W x 210.00'L x 1.00'H Prismatoid** 28,350 cf Overall x 40.0% Voids
		13,764 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	196.00'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=1.6 cfs @ 11.80 hrs HW=196.03' (Free Discharge)
1=Exfiltration (Exfiltration Controls 1.6 cfs)

Pond P 1P: Inf. Sys. P 1P 12" Stone Layer Lower Elevation



Summary for Pond P 2P: Inf. Sys. P 2P Stone Bed w/ 12" Pipes

Inflow Area = 20,762 sf, 93.63% Impervious, Inflow Depth = 7.51" for 100-Year event
Inflow = 3.7 cfs @ 12.09 hrs, Volume= 12,995 cf
Outflow = 0.6 cfs @ 12.51 hrs, Volume= 12,775 cf, Atten= 83%, Lag= 25.3 min
Discarded = 0.3 cfs @ 11.90 hrs, Volume= 12,673 cf
Primary = 0.3 cfs @ 12.51 hrs, Volume= 102 cf
Routed to Pond P 1P : Inf. Sys. P 1P 12" Stone Layer Lower Elevation

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 198.03' @ 12.50 hrs Surf.Area= 5,000 sf Storage= 4,732 cf

Plug-Flow detention time= 139.5 min calculated for 12,768 cf (98% of inflow)
Center-of-Mass det. time= 128.5 min (889.2 - 760.7)

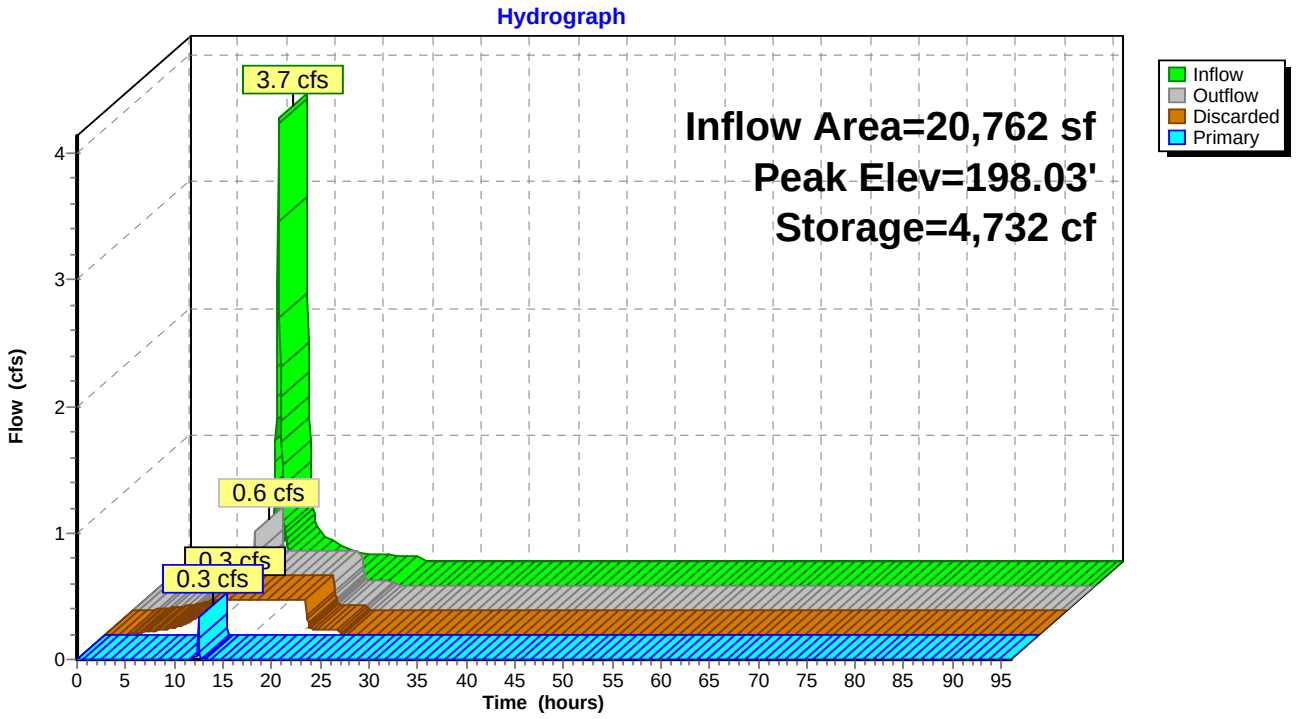
Volume	Invert	Avail.Storage	Storage Description
#1	195.00'	2 cf	**0.50'D x 5.31'H Vertical Cone/Cylinder** x 2
#2	195.00'	75 cf	**12.0" Round Header Pipe Storage** x 2 Inside #4 L= 48.0'
#3	195.00'	1,143 cf	**12.0" Round Pipe Storage** x 15 Inside #4 L= 97.0'
#4	194.50'	3,513 cf	**100.00'W x 50.00'L x 2.00'H Prismatoid** 10,000 cf Overall - 1,218 cf Embedded = 8,782 cf x 40.0% Voids
		4,733 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	200.30'	**4.0" x 4.0" Horiz. Orifice/Grate X 5.00 columns** X 5 rows C= 0.600 in 48.0" x 48.0" Grate (17% open area) Limited to weir flow at low heads
#2	Primary	198.00'	**4.0" x 4.0" Horiz. Orifice/Grate X 5.00 columns** X 5 rows C= 0.600 in 48.0" x 48.0" Grate (17% open area) Limited to weir flow at low heads
#3	Discarded	194.50'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.3 cfs @ 11.90 hrs HW=195.02' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.3 cfs)

Primary OutFlow Max=0.2 cfs @ 12.51 hrs HW=198.03' (Free Discharge)
├**1=Orifice/Grate** (Controls 0.0 cfs)
└**2=Orifice/Grate** (Weir Controls 0.2 cfs @ 0.54 fps)

Pond P 2P: Inf. Sys. P 2P Stone Bed w/ 12" Pipes

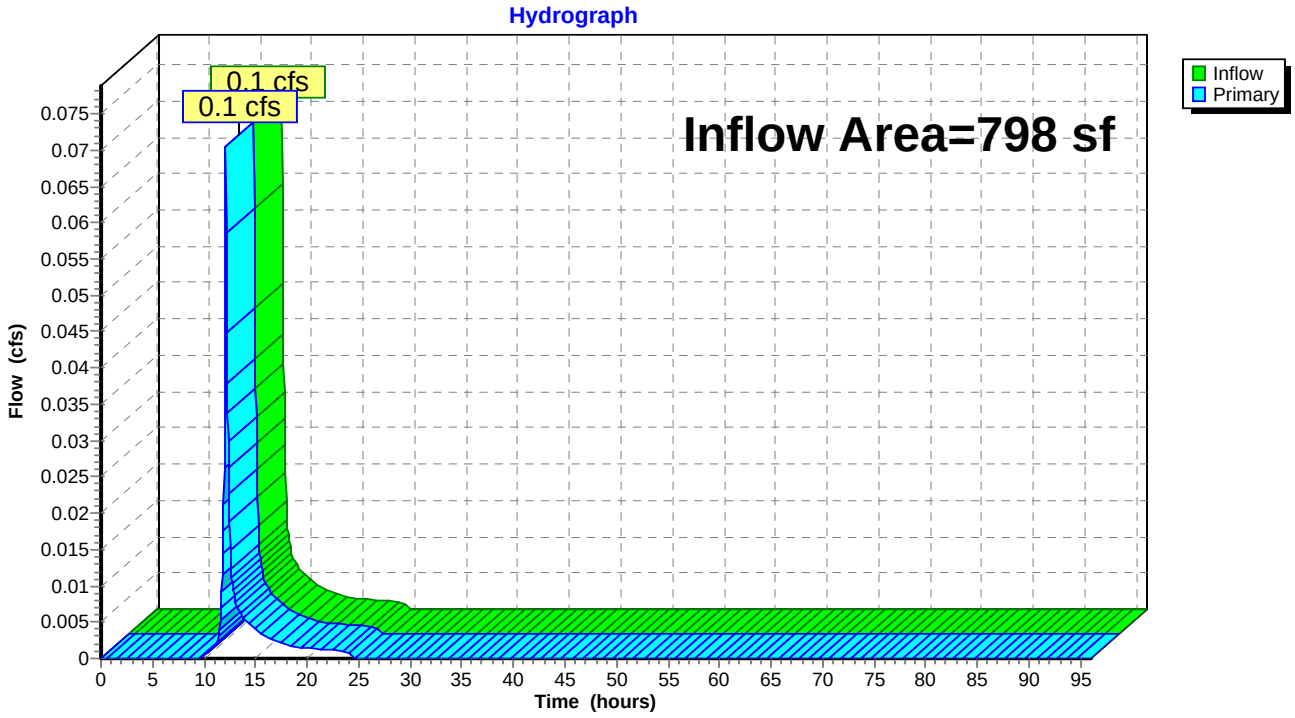


Summary for Link P 1L: P 1L

Inflow Area = 798 sf, 33.21% Impervious, Inflow Depth = 3.39" for 100-Year event
Inflow = 0.1 cfs @ 12.10 hrs, Volume= 226 cf
Primary = 0.1 cfs @ 12.10 hrs, Volume= 226 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link P 1L: P 1L



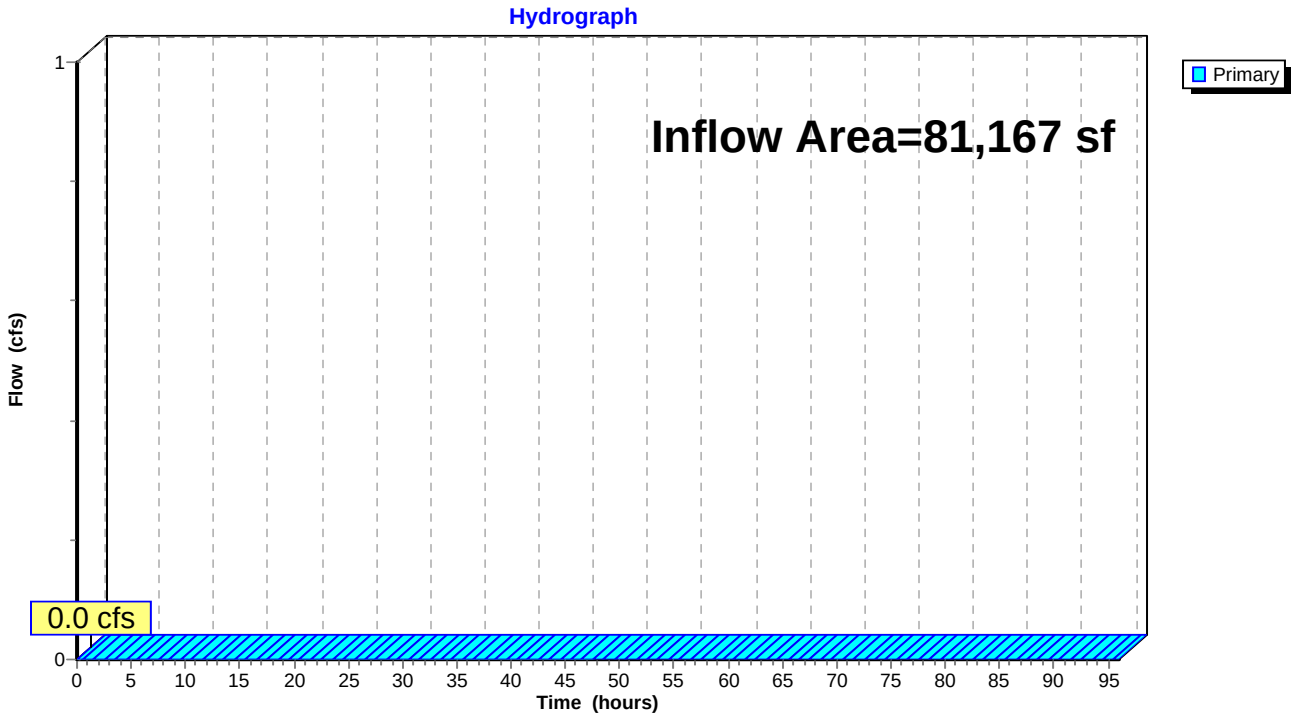
Summary for Link P 2L: P 2L

[43] Hint: Has no inflow (Outflow=Zero)

Inflow Area = 81,167 sf, 67.98% Impervious, Inflow Depth = 0.00" for 100-Year event
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link P 2L: P 2L



No Information on This Page

C) Water Quality Calculations (Standards 3, 4, 5, 6 & 7)

The proposed stormwater management system is comprised of drainage CDS 2015-4 units (as catch basins), structure and pipe conveyances, and subsurface infiltration systems. The proposed stormwater management system utilizes a Low Impact Development (LID) measure by not disturbing any Wetland Resource Areas.

Standard 3)

The Project results in an increase in impervious area of roughly 17,948 s.f. (excluding the turf field from the HydroCAD model); however, accounts for the required recharge volume for the paved access drive and bituminous concrete walkway, thereby meeting the recharge requirements. Specifically, the required capture area adjusted recharge volume is 2,785 c.f. while the proposed design provides 18,482 c.f.; more than satisfying the minimum requirement. Although the synthetic turf field is pervious, the proposed stormwater management design will conservatively provide adequate recharge volume to account for this area as well as a byproduct of mitigating the rates and volumes.

Standard 4)

The Project results in an increase in impervious area of roughly 17,948 s.f. (excluding the turf field from the HydroCAD model); however, proposed TSS removal accounts for a water quality volume for the 19,704 s.f. paved access drive and bituminous concrete walkway, thereby meeting the water quality volume requirements. Specifically, the required water quality volume for the first inch of runoff is 4,620 c.f. while the proposed design provides 18,482 c.f. more than satisfying the minimum requirement. The site stormwater system provides water quality volume in the subsurface infiltration systems both below the parking area as well as underneath the synthetic turf field.

Standard 5)

This standard is not applicable.

Standard 6)

This standard is not applicable.

Standard 7)

Although this Project is a mix of new development and redevelopment, the design fully complies and does not require relief from this Standard.

No Information on This Page

MassDEP Stormwater Standard 3 Project: 240 - 260 Pleasant Street Date: Mar-26
TSS Removal Project No: 24-0281 Page: C-2

Critical Area - Yes or No No

BMP Name	TSS Removal Rate	Starting TSS	Amount Removed	Remaining Load
Catch Basins as CDS Unit	50%	100%	50%	50%
Infiltration	80%	50%	40%	10%
	0%	10%	0%	10%
	0%	10%	0%	10%
	0%	10%	0%	10%
		Total TSS Remaining:	10%	**OK**

No Information on This Page

3. Performance Claims

Per the NJDEP verification procedure document (NJDEP, 2013a), the following are the performance claims made by Contech and/or established via the laboratory testing conducted.

Total Suspended Solids Removal Rate

Based on the laboratory testing conducted, the Contech Continuous Deflective Separation (CDS) Stormwater Treatment Device achieved greater than 50% removal efficiency of suspended solids. In accordance with the NJDEP procedure for obtaining verification of a stormwater manufactured treatment device from NJCAT (NJDEP 2013a) the TSS removal efficiency is rounded down to 50%.

Maximum Treatment Flow Rate (MTFR)

For all of the commercially available model sizes, the hydraulic loading rate used to calculate the MTFR is 33.2 gpm/ft^2.

Maximum sediment storage depth and volume

The maximum sediment storage depth for each CDS model is one foot. One-foot represents 50% of the 2 ft. sediment sump that is part of each CDS standard model. The available volume is dependent on the size of the manhole. The CDS-4 tested (4' diameter manhole) has 25.1 cubic feet of available storage volume.

Effective treatment area

The effective treatment area is dependent on the size of the CDS model used and is the surface area of the CDS model selected.

Detention time and volume

The CDS-4 detention time at the MTFR is 50 seconds and the total wet volume including sediment sump is 50.3 ft^3.

Effective sedimentation area

The effective sedimentation area and effective treatment area for the CDS Stormwater Treatment System are identical.

Online installation

Based on the testing results shown in Section 4.4 the CDS Stormwater Treatment System qualifies for online installation.

4. Supporting Documentation

The NJDEP Procedure (NJDEP, 2013a) for obtaining verification of a stormwater manufactured treatment device (MTD) from the New Jersey Corporation for Advanced Technology (NJCAT) requires that "copies of the laboratory test reports, including all collected and measured data; all

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Required WQV **4,619.9** C.F. (Size for 0.5" of runoff since site is not a critical area)

4. Refer to Figure 1, Ia/P Curve = 0.058
5. Determine unit peak discharge using Figure 1 or 2. Figure 2 is in tabular form so is preferred. Using the tc determined in STEP 3, read the unit peak discharge (qu) from Figure 1 or Table in Figure 2. qu is expressed in the following units: cfs/mi²/watershed inches (csm/in).
6. Compute Q rate using the following equation:

$$Q_{0.5} = (qu)(A)(WQV)$$

Where:

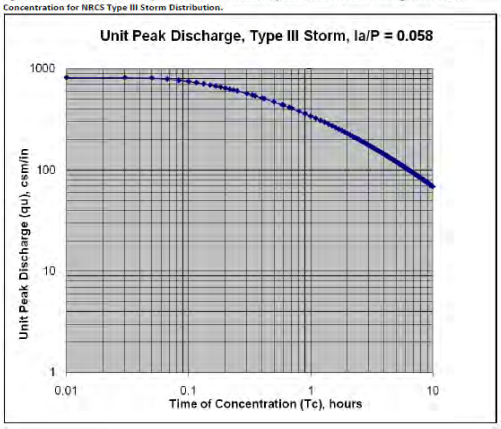
$Q_{0.5}$ = flow rate associated with first ½ -inch of runoff

qu = the unit peak discharge, in csm/in.

A = impervious surface drainage area (in square miles)

WQV = water quality volume in watershed inches (½ -inch in this case)

Figure 1: For First ½-inch Runoff, Ia/P Curve = 0.058, Relationship Between Unit Peak Discharge and Time of Concentration for NRCS Type III Storm Distribution.



Site Impervious Area (sf)	**55,439.0**	sf	Tc (min)	**6 (or 0.1 hrs)**	min
Site Impervious Area (sm)	**0.0019886**	sm	WQV (in)	**0.5**	in

From Above Table Get the [qu value; (csm/in)] **752.0**

From Above Equation Calculate Q(0.5) **0.74771379** cfs

Per Specs from Contech the **CDS 2015-4 Model** can handle a flow rate of 1.4 cfs and was thus the chosen model.

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Product Flow Rates

CASCADE

Model	Treatment Rate (cfs)	Sediment Capacity[1] (CF)
CS-4	2.00	19
CS-5	3.50	29
CS-6	5.60	42
CS-8	12.00	75
CS-10	18.00	118

CDS

Model	Treatment Rate[2] (cfs)	Sediment Capacity[1] (CF)
1515-3	1.00	14
2015-4	1.40	25
2015-5	1.40	39
2015-6	1.40	57
2020-5	2.20	39
2020-6	2.20	57
2025-5	3.20	39
2025-6	3.20	57
3020-6	3.90	57
3025-6	5.00	57
3030-6	5.70	57
3035-6	6.50	57
4030-8	7.50	151
4040-8	9.50	151

VORTECHS

Model	Treatment Rate (cfs)	Sediment Capacity[3] (CF)
1000	1.60	16
2000	2.80	32
3000	4.50	49
4000	6.00	65
5000	8.50	86
7000	11.00	108
9000	14.00	130
11000	17.5	151
16000	25	192

STORMCEPTOR STC

Model	Treatment Rate (cfs)	Sediment Capacity[1] (CF)
STC 450i	0.40	46
STC 900	0.89	89
STC 2400	1.58	205
STC 4800	2.47	543
STC 7200	3.56	839
STC 11000	4.94	1086
STC 16000	7.12	1677

1 Additional sediment storage capacity available – Check with your local representative for information.

2 Treatment Capacity is based on laboratory testing using OK-110 (average D50 particle size of approximately 100 microns) and a 2400 micron screen.

3 Maintenance recommended when sediment depth has accumulated to within 12-18 inches of the dry weather water surface elevation.

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D) Construction Period Pollution Prevention Plan, Long-Term Pollution Prevention Plan, and Long-Term Operations & Maintenance Plan (Standards 8, 9 & 10)

Standards 8 & 9)

David Farmer, of Connect Church, is responsible for implementation of the Construction Period Pollution Prevention Plan, the Long-Term Operation & Maintenance Plan, and the Long-Term Pollution Prevention Plan for 240 – 260 Pleasant Street in Ashland, Massachusetts.

The sitework will result in more than one (1) acre of disturbance, therefore NPDES requirements of the Construction General Permit are applicable and a SWPPP is required. A SWPPP will be prepared prior to the start of construction once a contractor has been selected.

The stormwater management system for 240 – 260 Pleasant Street is comprised of drainage catch basins, structure and pipe conveyances, and subsurface infiltration systems. Only stormwater may be discharged through these facilities. Refer to the following pages for specific requirements to prevent pollution and the maintenance of the stormwater management system.

Standard 10)

No illicit connections to the stormwater management system are known or proposed.

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Best Management Practice	Frequency Of Inspection	Maintenance (Inspect for these items) and Frequency (major storms being ½" of rain or more)	Inspection (Date) Maintenance (Yes/No)	Maintenance Performed (Date and Initial)
Natural Buffer	Daily	These areas are beyond the Limit of Work and are to be protected. Replace Limit of Work demarcation (flagging, berms/dikes, fencing or ECB's) when deteriorated. Should infringement into Natural Buffers occur, take corrective action immediately and implement mitigation measures (seeding, planting of native trees or shrubs) to restore Natural Buffers.		
Erosion Control Barriers (ECB)	Weekly and after major storms	Remove sediment before it has accumulated to one-half of the above-ground height of ECB's. Replace ECB's before they have deteriorated/decomposed to half their original height or every twelve (12) months, whichever comes first. Sediments to be removed and disposed of above the ECB line in an area to be stabilized later. Fabric to be disposed of offsite. Natural liners and wooden stakes may be left to decompose.		
Silt-sacks	Weekly and after major storms	Replace at least twice per year, or when sediment reaches two (2) inches in depth, or if flooding is observed. Dispose of materials offsite.		
Anti-tracking Pad	Daily	Replace at least one per year, or when effectiveness has diminished. Where sediment has been tracked-out offsite onto paved roads, sidewalks, or other paved areas offsite, remove the deposited sediment by the end of the same business day in which the track-out occurs or by the end of the next business day if track-out occurs on a non-business day. Remove the track-out by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. Hosing or sweeping tracked-out sediment into any stormwater conveyance, storm drain inlet, or water of the U.S. (i.e., wetland or stream) is PROHIBITED.		
Equipment Storage and Refueling	Daily	Storage or refueling of construction equipment within one hundred (100) feet of any stormwater conveyance, storm drain inlet, or water of the U.S. (i.e., wetland or stream) is PROHIBITED. Spill kits shall be readily available on site if refueling is to occur. All materials shall be disposed of offsite.		
Soil Stockpiles	Weekly and after major storms	Locate Stockpiles away from stormwater channels and conveyances. Provide ECB or Stone Check Dams around Stockpiles. Stockpiles that will remain unused for more than a month should be seeded with a quick cover crop such as Ryegrass (10-30 lbs./acres).		

Best Management Practice	Frequency Of Inspection	Maintenance (Inspect for these items) and Frequency (major storms being ½" of rain or more)	Inspection (Date) Maintenance (Yes/No)	Maintenance Performed (Date and Initial)
Sediment Basins	Weekly and after major storms	Remove floatables and any accumulated debris or as soon as observed. Remove accumulated sediment to maintain at least one-half of the design capacity and conduct all other appropriate maintenance to ensure the basin or impoundment remains in effective operating condition.		
Dust Control	Daily	Minimizing disturbed areas and rapid seeding/stabilization of disturbed areas is the preferred option. Water or an acceptable Dust Palliative should be used on haul roads to prevent dust from emanating and leaving the site or affecting Natural Buffers.		
Outlet & Channel Protection	Weekly and after major storm events	Observe slopes downgradient of Sediment Basins for stability, integrity, and erosion and repair immediately with seed or Turf Reinforcement Mat (TRM) and seed as necessary.		

Potential Source of Pollution	Protective Measures
Reportable Spill(s)	• David Farmer is obligated to notify appropriate authorities of any spills of hazardous/harmful materials. • Should a spill bypass a containment device – catch basin, water quality structure, berm, etc. – and impact a stormwater detention or retention facility, the Responsible Party shall clean-up, mitigate and/or restore the facility to its original condition.
Lawn/Landscape Maintenance	• Clippings and yard waste shall not be disposed of in stormwater management facilities or wetland resource areas. • Pesticides and fertilizers shall only be stored on site in approved containers within a structure. • Pesticides and fertilizers shall be applied at the proper time of year in the minimal effective quantity/concentration. They should not be applied when severe rainfall events are forecast. • Use drought-tolerant species to limit watering requirements, and mulch and compost to retain soil moisture. Irrigate at appropriate times of day - early morning and late evening – for the minimal period necessary to restore soil moisture. • Pet waste shall not be disposed of in stormwater management facilities or wetland resource areas.
De-icing	• Application rates of de-icing materials shall be the minimum acceptable to adequately treat storm-specific conditions. Multiple treatments are preferred to use of excessive quantities during the initial response. • De-icing materials may not be stored on site. • Non-toxic and inert materials (sand/gravel) are preferable in areas adjacent to stormwater management facilities and wetland resource areas. For general use, calcium magnesium acetate (CMA), calcium chloride and potassium acetate are preferable to sodium chloride.
Snow Removal	• Snow shall be piled in pervious areas where melt water can infiltrate (as designated on the plan). • Snow shall not be piled within one hundred (100) feet of a wetland resource area. • Snow shall not be piled on catch basins, swales, or in stormwater basins. • Management of snow shall not create a nuisance or hazard. The Responsible Party shall remove snow from site if adequate area on site is not available. • Sediments deposited in snow storage areas shall be removed each spring and disposed of offsite.
Good House Keeping (LUHPPL Related)	• Store all chemicals and other potentially harmful/hazardous products in appropriate contains within a designated area in the building. • All automobile washing and/or reconditioning must occur within the building. • Equipment and containers of any hazardous/harmful material must be stored more than one hundred (100) feet from a wetland resource area and in accordance with any Local, State or Federal permit for said equipment and/or containerized storage.

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Responsible Party:

Connect Church, David Farmer, or their assigns are responsible for implementation of the Long-Term Operation & Maintenance Plan and the Long-Term Pollution Prevention Plan for 240-260 Pleasant Street in Ashland, Massachusetts.

System Components:

The stormwater management system for 240-260 Pleasant Street in Ashland, Massachusetts is comprised of pervious areas, catch basins, a subsurface infiltration system (parking area), and a subsurface infiltration system underneath and associated with the field. Only stormwater may be discharged through these facilities, there shall be no connections of floor drains and/or sanitary connections, and nothing shall be dumped into any of the System Components. The stormwater system components are shown on the attached Stormwater Management System Plan.

CDS Units (as Deep Sump Hooded Catch Basins) (2) – the catch basins are fitted with 4' sump and hood and are 2015-4 CDS Structures.

Subsurface Infiltration System (parking area) (1) – meant to capture, retain, and infiltrate stormwater directed to them via the pipe network. Stormwater infiltration systems P 2P consists of 12" perforated pipes in a stone bed that extends 12" in each direction (from the pipes). This system is capped by a header pipe on each end.

Subsurface Infiltration System (underneath and associated with the field) (1) – meant to capture, retain, and infiltrate stormwater directed via the porous turf field surface and subsequent subsurface panel drains. Stormwater infiltration systems P 1P consists of a 12" layer of stone and the aforementioned panel drains.

Pervious Areas – open, vegetated (turf lawns or other grasses) areas over which stormwater runoff flows slowly and in a sheeting manner. These areas are to be kept free of trash and debris. No yard waste and/or landscape maintenance clippings or brush shall be disposed of in these areas. Residents may not store vehicles or other personal items in these areas. No accessory structures are permitted in these areas.

Synthetic Turf Field – turf area over which stormwater runoff flows slowly and in a sheeting manner. This area is to be kept free of trash and debris. No snow, yard waste and/or landscape maintenance clippings or brush shall be disposed of in this area. Residents shall not store vehicles or other personal items in this area. No accessory structures are permitted in this area.

Illicit Connections

No illicit connections to the stormwater management system are proposed or shall be installed during construction. No future connections to the stormwater system shall be allowed without permission of the Ashland Conservation Commission (Stormwater Permit Granting Authority). The proposed Rec Facility will only be served by an underground electric service for site lighting purposes. No other utilities are proposed.

Maintenance Schedule and Forms:

Refer to the following pages for specific requirements to prevent pollution and the maintenance of the stormwater management system.

Snow Storage / Removal:

Snow may not be pushed/stored on stormwater management system. Refer to the following pages for specific requirements on snow storage and removal.

Annual Budget:

Estimated Annual Operation and Maintenance Budget: $4,000 - $5,000 (Quarterly Visits, clean Catch Basins Twice per Year as noted above)

Acknowledgment of Responsible Party

_____

Owner's Printed Name

_____

Owner's Signature & Date

Best Management Practice	Frequency Of Inspection	Maintenance (Inspect for these items) and Frequency	Inspection (Date) Maintenance (Yes/No)	Maintenance Performed (Date and Initial)
Street/Pavement Sweeping	Every Six (6) Months (March-April, September-October)	Twice Annually (March-April, September-October). Paved areas to be swept of sediments, trash, and debris. Sediments to be removed and disposed of off-site.		
Drainage Catch Basins (CDS Units)	Quarterly	At least four times per year, or when sediment reaches six (6) inches in depth, or if flooding is observed. Remove floatables and sediment and dispose of off-site.		
Subsurface Infiltration System (parking area)	Monthly for first three (3) months Annually and after major storm events	Twice per year or after major storm events. Camera inspection may be required. Remove debris and sediment at inlets and outlets by jetting or vactor truck. Observe downgradient slopes for stability, integrity, and erosion and repair immediately.		
Subsurface Infiltration System (beneath and associated with the field)	Monthly for first three (3) months Annually and after major storm events	Twice per year or after major storm events. Remove any accumulated debris and sediment from the synthetic turf field. Observe downgradient slopes for stability, integrity, and erosion and repair immediately.		
Grassed Channel / Pervious Area	Monthly (mowing) Annually	Mow monthly during growing season. Remove sediment annually and re-seed (if necessary). Repair erosion and re-seed when necessary. Turf reinforcement mat (TRM) or rock riprap may be required.		

Best Management Practice	Frequency Of Inspection	Maintenance (Inspect for these items) and Frequency	Inspection (Date) Maintenance (Yes/No)	Maintenance Performed (Date and Initial)
Synthetic Turf Field	Monthly (Bi-weekly during periods of more intensive use)	Field to be regularly inspected and cleared of trash and debris. Routine grooming and brushing are necessary to maintain the turf field and its permeability. • Remove organic debris (i.e., leaves, twigs, etc.) on a weekly basis. • Regularly check and replenish infill levels to ensure they do not become too low, which can cause excessive compaction. • Use magnets weekly to remove broken cleats, staples, or other metal debris that can tear the turf and impede water flow on monthly basis. • Use a GKB Brush or similar equipment monthly to keep fibers upright, prevent compaction, and maintain even infill. • Periodically use specialized, lightweight equipment to break up compacted infill and prevent it from becoming an impermeable layer. • Conduct deep cleaning to remove fine particles and accumulated debris from the base of the turf, ensuring the drainage system remains clear in accordance with the manufacturer's maintenance requirements. • Any additional maintenance requirements shall be in accordance with the manufacturer's maintenance requirements and best management practices.		

*Collected sediment, grit, and debris must be disposed of offsite in accordance with current Federal, State, and Town/City guidelines and regulations.

G) Existing Watershed Map

No Information on This Page

PLEASANT STREET (PUBLIC 50' WIDE)

E 1L (E 1S + E 4S)

E 1S to PLEASANT STREET SPILLWAY

E 4S

E 1S

E 1S to E 3S SPILLWAY

E 3S

E 2S

E 2L (E 2S + E 3S)

E 2S to E 3S SPILLWAY

Tc Path

Tc Path A

Tc Path

LOT C1
AREA =
43,563± S.F.
PARCEL ID: 13-109-00-000

LOT 8
AREA =
38,402± S.F.
PARCEL ID: 13-108-00-000

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Project Title:
Ashland Rec Facility
240 & 260 Pleasant Street
Ashland, MA

Sheet Title:
Existing Hydrology
240 & 260 Pleasant Street
Ashland, MA

Date: March 2026 | Project No.: 24-0281 | Reference Plan No.: C-250 | Drawn By: ESM | Checked By: MJS

0 12.5 25 50 100 150
Scale: 1" = 50'

G-2

No Information on This Page

H) Proposed Watershed Map

No Information on This Page

INF. SYS. P 2P
50.00' x 100.00' x 2.00' DEEP STONE BED
15 - 97' HDPE PERFORATED 12" PIPES, INV.=195.00
TOP OF STONE = 196.50
BOTTOM OF STONE = 194.50

INF. SYS. P 1P
135.00' x 210.00' x 1.00' DEEP STONE BED
TOP OF STONE = 197.00
BOTTOM OF STONE = 196.00

P 1L (P 4S)

CB-01A
RIM=198.00
I=194.74/D-01A

PLEASANT STREET

P 4S

P 1S

Tc Path

P 3S

P 2S

A

Tc Path

ECB-
INLET SEDIMENT CONTROL DEVICE
(TYP)

ECB-
SILT FENCE & STRAW WATTLE
(TYP)

P 2L (P 1S + P 2S + P 3S)

CB-01B
RIM=200.30
I=194.98/D-01B

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240 & 260 Pleasant Street
Ashland, MA

Date: March 2026 | Project No.: 24-0281 | Reference Plan No.: C-260 | Drawn By: ESM | Checked By: MJS

0 12.5 25 50 100 150
Scale: 1" = 50'

H-2

C:\Users\EricMartel\Land Design Collaborative\Land Design Collaborative - Documents_L-datto New\projects (landdesigndatto)\PROJECTS\24-0281 - Ashland, 240 & 260 Pleasant Street\DWG\24-0281-C260 Updated Cover Types.dwg

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