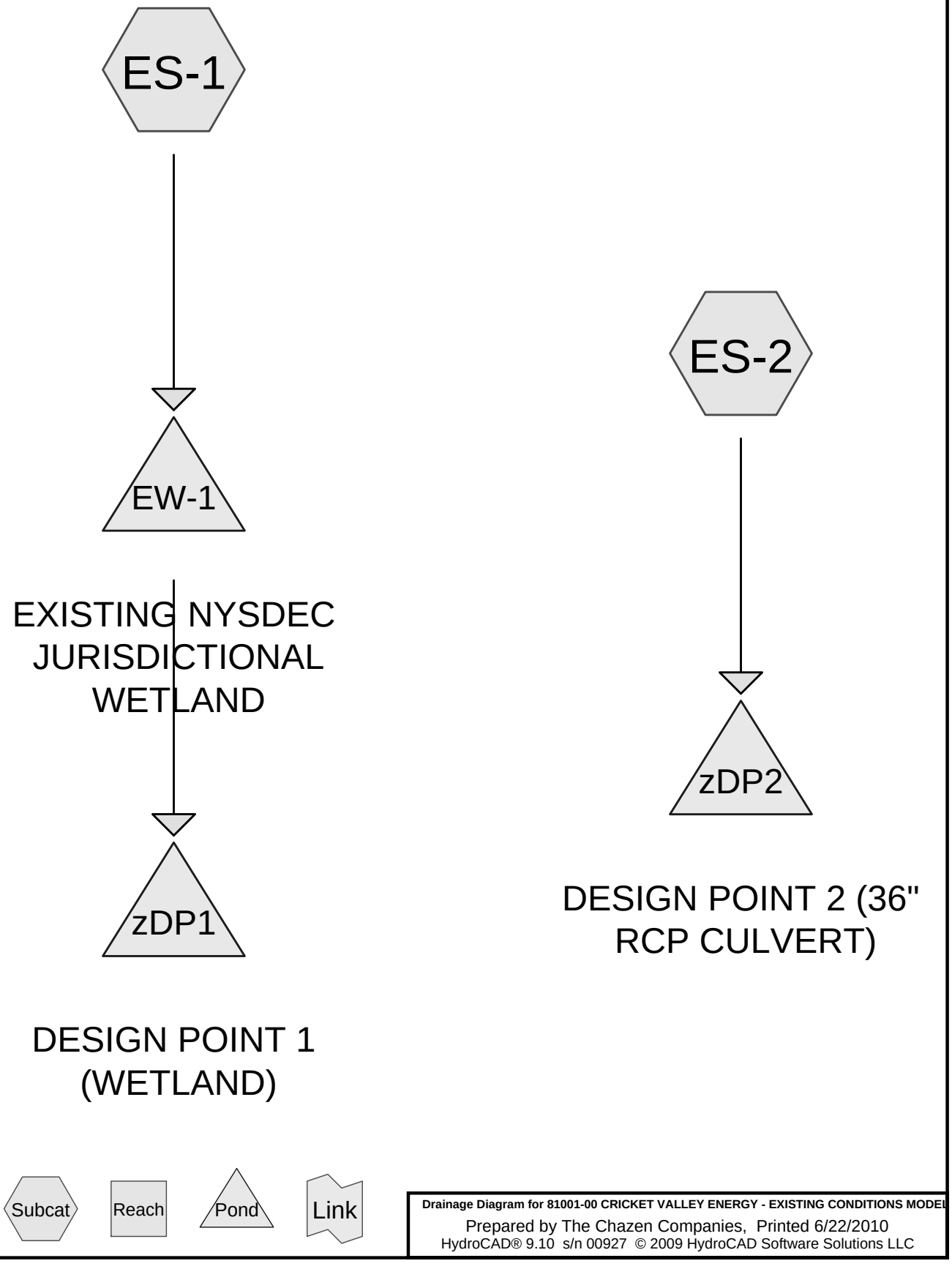
Appendix C:
Pre-Development Stormwater Modeling



Drainage Diagram for 81001-00 CRICKET VALLEY ENERGY - EXISTING CONDITIONS MODEL

Prepared by The Chazen Companies, Printed 6/22/2010

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.120	55	Woods, Good, HSG B (ES-2)
3.442	56	Brush, Fair, HSG B (ES-1, ES-2)
9.805	70	Brush, Fair, HSG C (ES-1, ES-2)
74.464	73	Woods, Fair, HSG C (ES-1, ES-2)
2.002	74	>75% Grass cover, Good, HSG C (ES-1)
4.698	76	Gravel/Brush Mix, HSG B (ES-2)
3.455	76	gravel brush mix (ES-1)
10.097	77	Brush, Fair, HSG D (ES-1)
1.471	77	Woods, Good, HSG D (ES-2)
6.175	79	Woods, Fair, HSG D (ES-1)
4.947	89	Gravel roads, HSG C (ES-1, ES-2)
1.337	91	Gravel roads, HSG D (ES-1, ES-2)
2.481	98	Paved parking and buildings HSG C (ES-2)
4.711	98	Paved parking, HSG C (ES-1)
130.206		**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
9.260	HSG B	ES-1, ES-2
98.410	HSG C	ES-1, ES-2
19.080	HSG D	ES-1, ES-2
3.455	Other	ES-1
130.206		**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment ES-1: Runoff Area=3,975,624 sf 5.16% Impervious Runoff Depth=0.83"
Flow Length=3,203' Tc=57.8 min CN=75 Runoff=32.98 cfs 6.332 af

Subcatchment ES-2: Runoff Area=1,696,141 sf 6.37% Impervious Runoff Depth=0.88"
Flow Length=1,190' Tc=28.1 min CN=76 Runoff=22.00 cfs 2.865 af

Pond EW-1: EXISTING NYSDEC Peak Elev=421.66' Storage=275,804 cf Inflow=32.98 cfs 6.332 af
Outflow=0.00 cfs 0.000 af

Pond zDP1: DESIGN POINT 1 (WETLAND) Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Pond zDP2: DESIGN POINT 2 (36" RCP CULVERT) Inflow=22.00 cfs 2.865 af
Primary=22.00 cfs 2.865 af

Total Runoff Area = 130.206 ac Runoff Volume = 9.196 af Average Runoff Depth = 0.85"
94.48% Pervious = 123.014 ac 5.52% Impervious = 7.192 ac

Summary for Subcatchment ES-1:

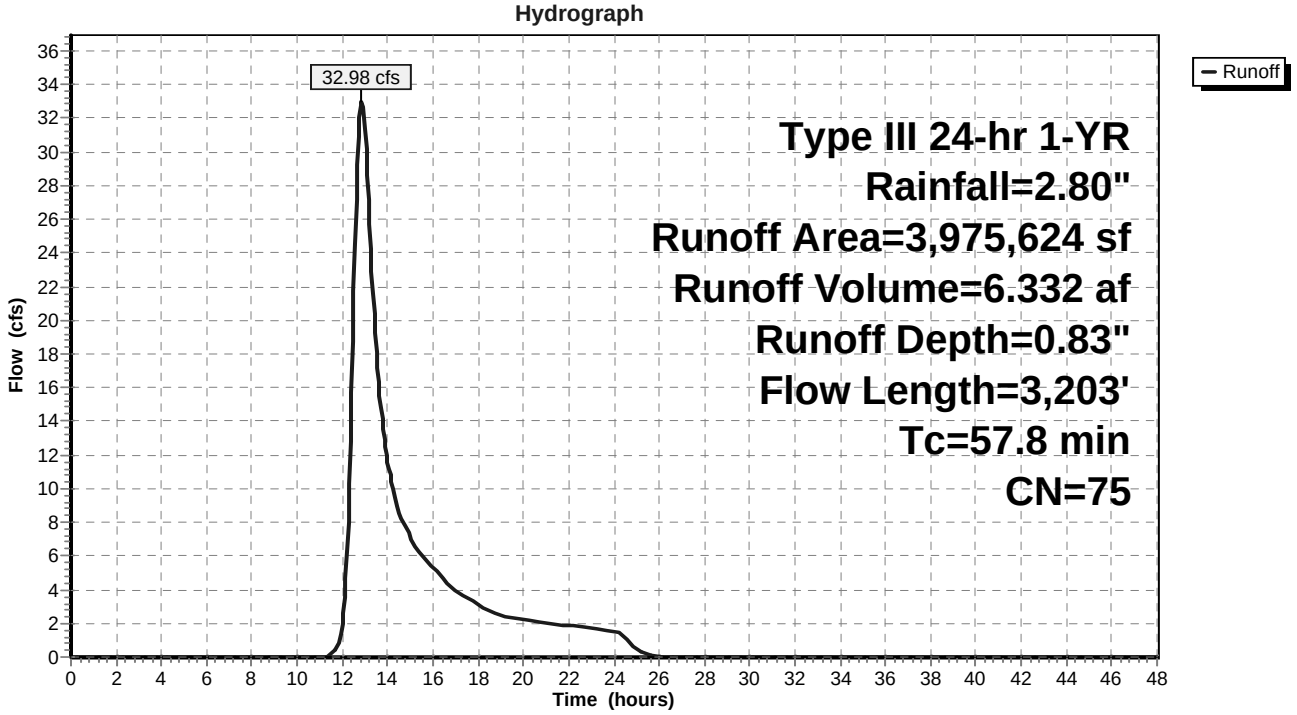
Runoff = 32.98 cfs @ 12.85 hrs, Volume= 6.332 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-YR Rainfall=2.80"

	Area (sf)	CN	Description
	119,851	56	Brush, Fair, HSG B
	413,826	70	Brush, Fair, HSG C
	2,207,540	73	Woods, Fair, HSG C
	87,189	74	>75% Grass cover, Good, HSG C
	30,621	89	Gravel roads, HSG C
	439,846	77	Brush, Fair, HSG D
	52,095	91	Gravel roads, HSG D
	268,973	79	Woods, Fair, HSG D
	205,191	98	Paved parking, HSG C
*	150,492	76	gravel brush mix
	3,975,624	75	Weighted Average
	3,770,433		94.84% Pervious Area
	205,191		5.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0785	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.50"
13.2	1,144	0.0839	1.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	60	0.0167	6.05	19.00	**Pipe Channel, PIPE CULVERT ON Rt. 22** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.020 Corrugated PE, corrugated interior
13.0	753	0.0372	0.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	256	0.0586	1.69		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.1	434	0.0415	1.02		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	456		6.95		**Lake or Reservoir,** Mean Depth= 1.50'
57.8	3,203	Total			

Subcatchment ES-1:



Summary for Subcatchment ES-2:

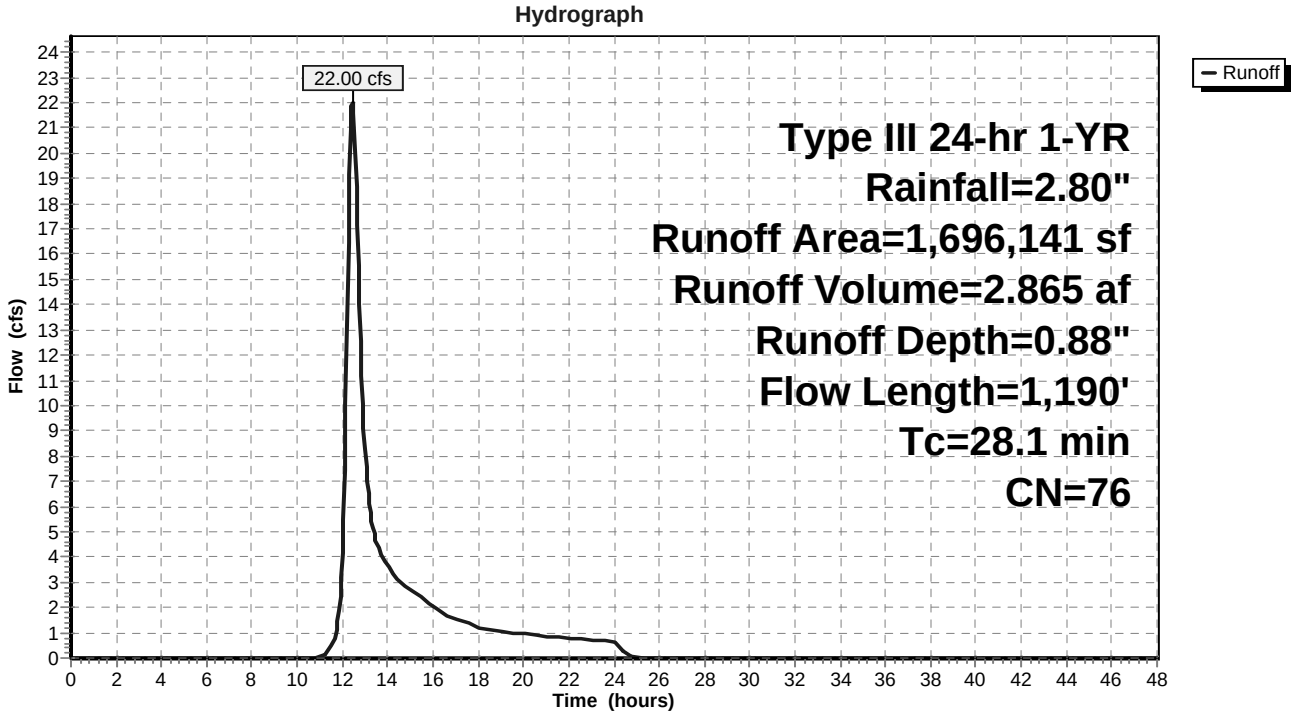
Runoff = 22.00 cfs @ 12.43 hrs, Volume= 2.865 af, Depth= 0.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-YR Rainfall=2.80"

	Area (sf)	CN	Description
	30,081	56	Brush, Fair, HSG B
	48,799	55	Woods, Good, HSG B
	184,886	89	Gravel roads, HSG C
	13,281	70	Brush, Fair, HSG C
	1,036,127	73	Woods, Fair, HSG C
*	108,088	98	Paved parking and buildings HSG C
	64,079	77	Woods, Good, HSG D
*	204,649	76	Gravel/Brush Mix, HSG B
	6,151	91	Gravel roads, HSG D
	1,696,141	76	Weighted Average
	1,588,053		93.63% Pervious Area
	108,088		6.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.5	100	0.1200	0.10		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.50"
2.4	250	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.6	430	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.6	410	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
28.1	1,190	Total			

Subcatchment ES-2:



Summary for Pond EW-1: EXISTING NYSDEC JURISDICTIONAL WETLAND

Inflow Area = 91.268 ac, 5.16% Impervious, Inflow Depth = 0.83" for 1-YR event
Inflow = 32.98 cfs @ 12.85 hrs, Volume= 6.332 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 421.66' @ 27.30 hrs Surf.Area= 266,379 sf Storage= 275,804 cf

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

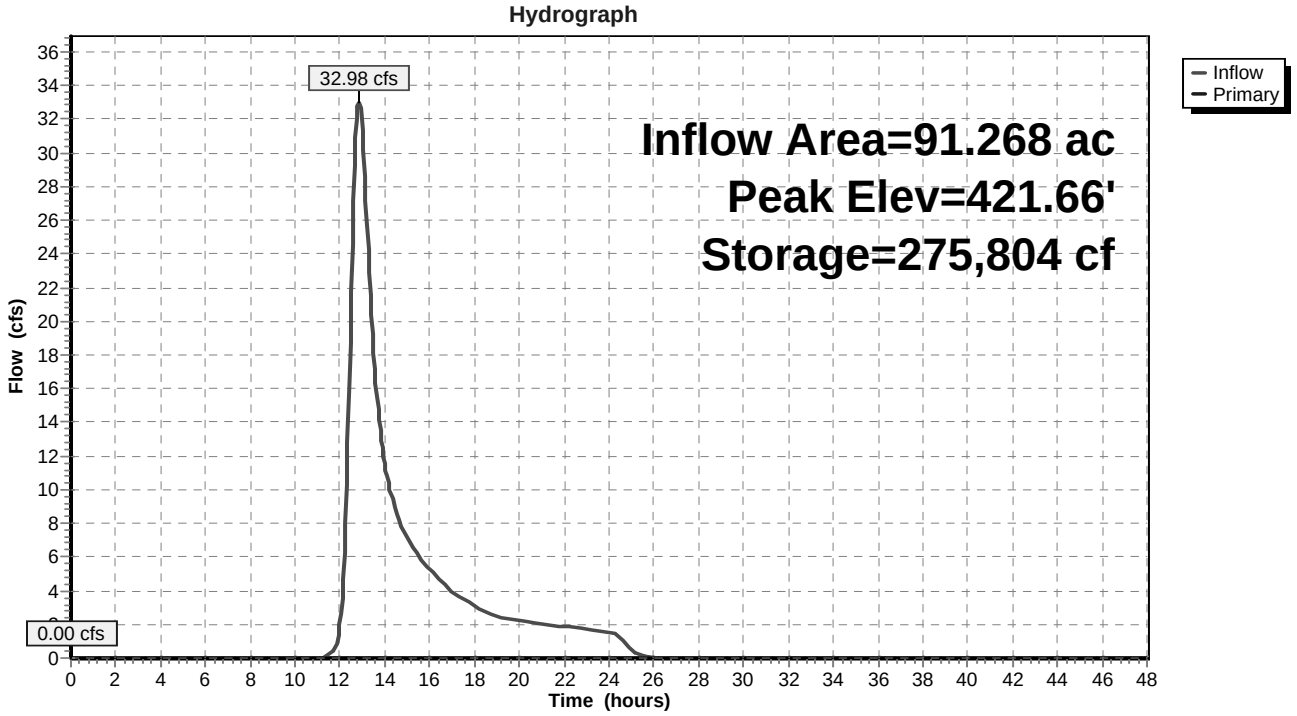
Volume	Invert	Avail.Storage	Storage Description
#1	419.80'	688,314 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
419.80	0	0	0
420.00	64,917	6,492	6,492
421.00	178,530	121,724	128,215
422.00	310,941	244,736	372,951
423.00	319,785	315,363	688,314

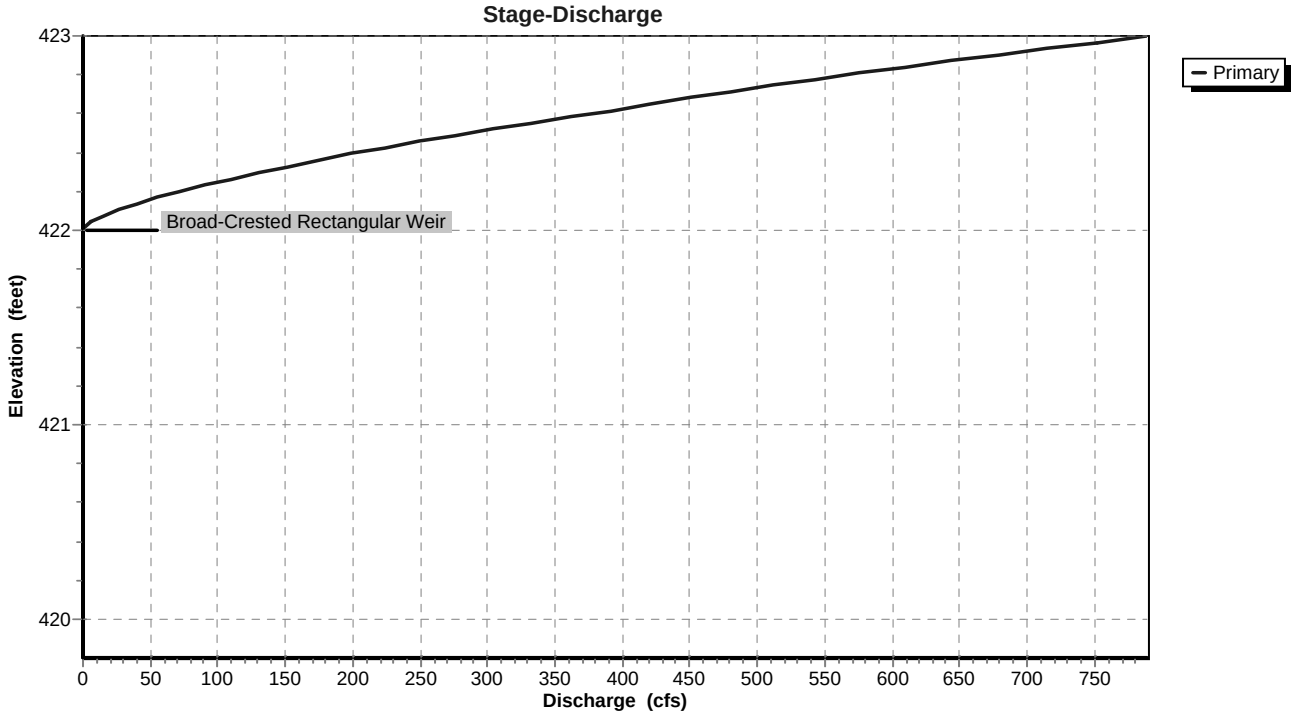
Device	Routing	Invert	Outlet Devices
#1	Primary	422.00'	**300.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=419.80' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond EW-1: EXISTING NYSDEC JURISDICTIONAL WETLAND



Pond EW-1: EXISTING NYSDEC JURISDICTIONAL WETLAND

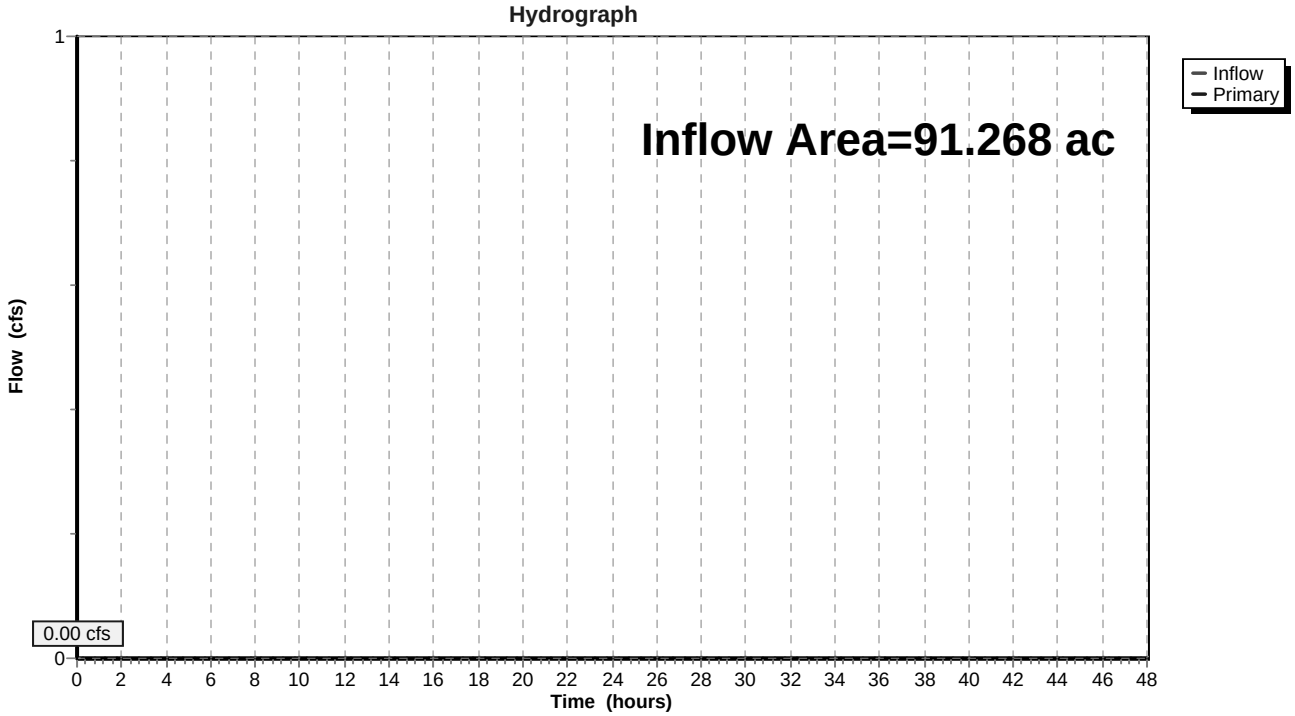


Summary for Pond zDP1: DESIGN POINT 1 (WETLAND)

Inflow Area = 91.268 ac, 5.16% Impervious, Inflow Depth = 0.00" for 1-YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Pond zDP1: DESIGN POINT 1 (WETLAND)

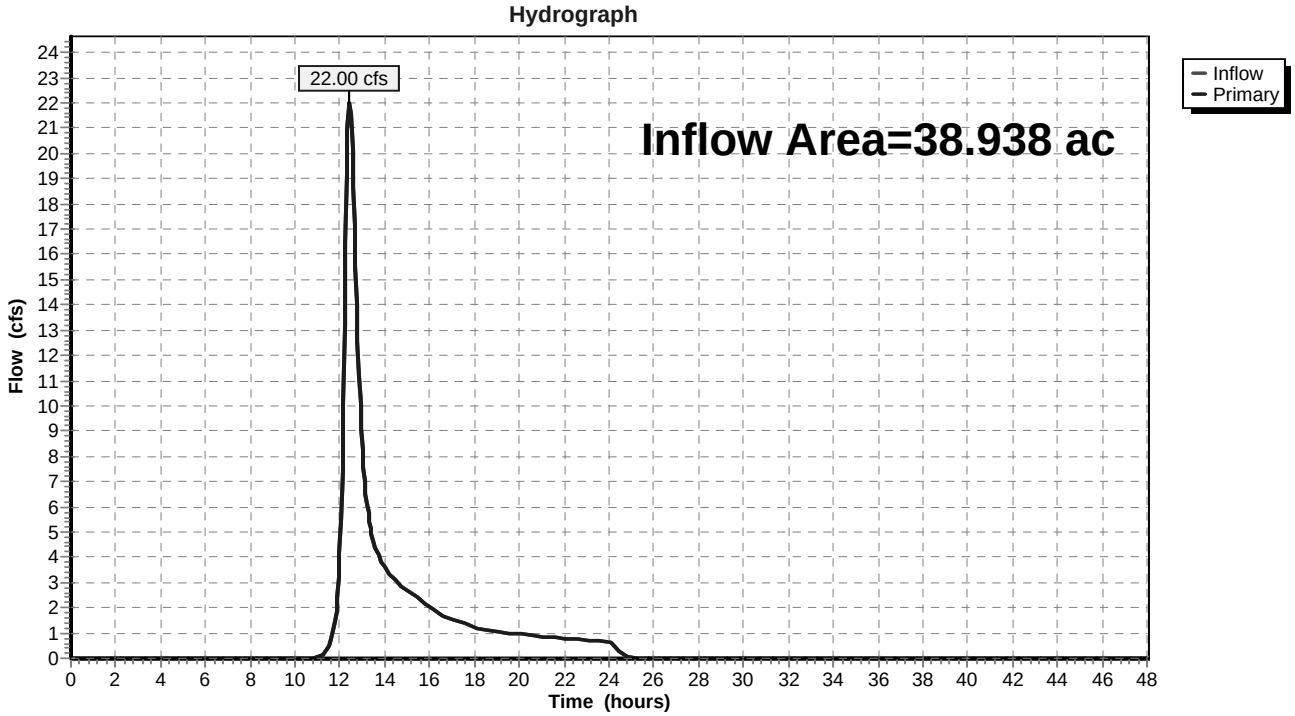


Summary for Pond zDP2: DESIGN POINT 2 (36" RCP CULVERT)

Inflow Area = 38.938 ac, 6.37% Impervious, Inflow Depth = 0.88" for 1-YR event
Inflow = 22.00 cfs @ 12.43 hrs, Volume= 2.865 af
Primary = 22.00 cfs @ 12.43 hrs, Volume= 2.865 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Pond zDP2: DESIGN POINT 2 (36" RCP CULVERT)



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment ES-1: Runoff Area=3,975,624 sf 5.16% Impervious Runoff Depth=2.45"
Flow Length=3,203' Tc=57.8 min CN=75 Runoff=104.88 cfs 18.628 af

Subcatchment ES-2: Runoff Area=1,696,141 sf 6.37% Impervious Runoff Depth=2.54"
Flow Length=1,190' Tc=28.1 min CN=76 Runoff=67.13 cfs 8.227 af

Pond EW-1: EXISTING NYSDEC Peak Elev=422.13' Storage=414,188 cf Inflow=104.88 cfs 18.628 af
Outflow=38.81 cfs 10.067 af

Pond zDP1: DESIGN POINT 1 (WETLAND) Inflow=38.81 cfs 10.067 af
Primary=38.81 cfs 10.067 af

Pond zDP2: DESIGN POINT 2 (36" RCP CULVERT) Inflow=67.13 cfs 8.227 af
Primary=67.13 cfs 8.227 af

Total Runoff Area = 130.206 ac Runoff Volume = 26.856 af Average Runoff Depth = 2.48"
94.48% Pervious = 123.014 ac 5.52% Impervious = 7.192 ac

Summary for Subcatchment ES-1:

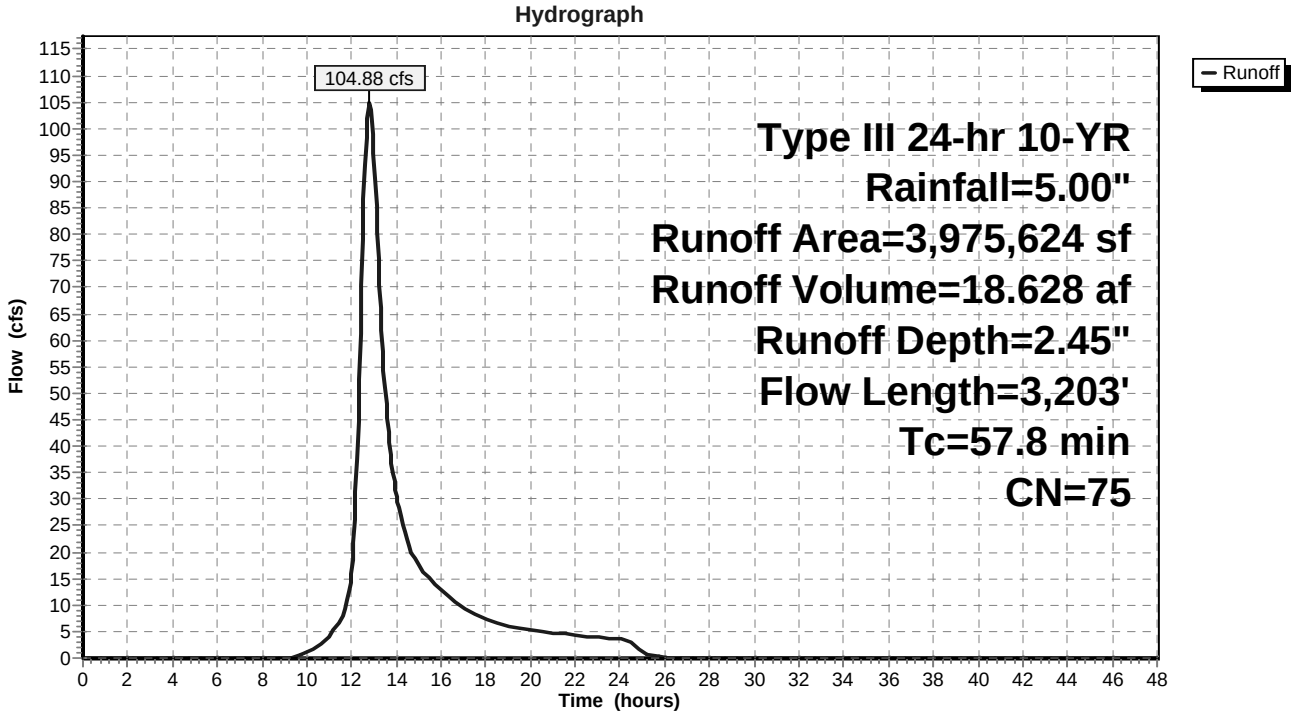
Runoff = 104.88 cfs @ 12.80 hrs, Volume= 18.628 af, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.00"

	Area (sf)	CN	Description
	119,851	56	Brush, Fair, HSG B
	413,826	70	Brush, Fair, HSG C
	2,207,540	73	Woods, Fair, HSG C
	87,189	74	>75% Grass cover, Good, HSG C
	30,621	89	Gravel roads, HSG C
	439,846	77	Brush, Fair, HSG D
	52,095	91	Gravel roads, HSG D
	268,973	79	Woods, Fair, HSG D
	205,191	98	Paved parking, HSG C
*	150,492	76	gravel brush mix
	3,975,624	75	Weighted Average
	3,770,433		94.84% Pervious Area
	205,191		5.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0785	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.50"
13.2	1,144	0.0839	1.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	60	0.0167	6.05	19.00	**Pipe Channel, PIPE CULVERT ON Rt. 22** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.020 Corrugated PE, corrugated interior
13.0	753	0.0372	0.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	256	0.0586	1.69		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.1	434	0.0415	1.02		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	456		6.95		**Lake or Reservoir,** Mean Depth= 1.50'
57.8	3,203	Total			

Subcatchment ES-1:



Summary for Subcatchment ES-2:

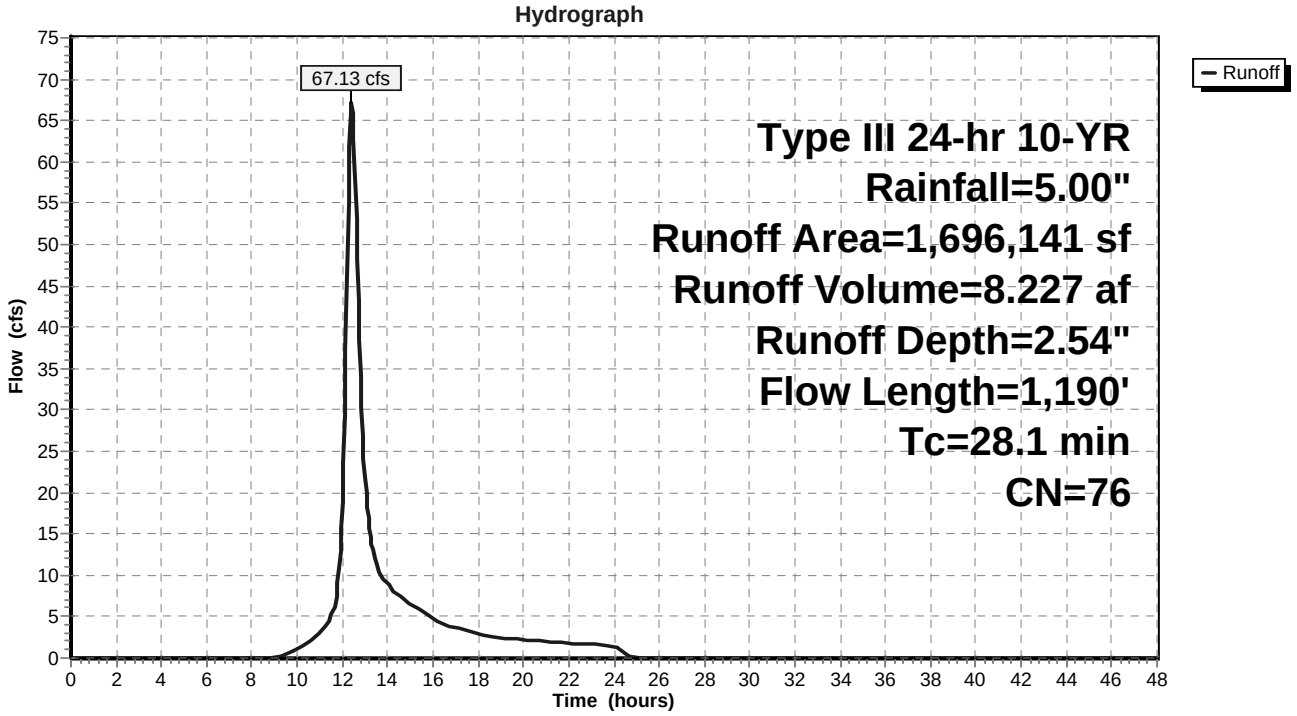
Runoff = 67.13 cfs @ 12.40 hrs, Volume= 8.227 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.00"

	Area (sf)	CN	Description
	30,081	56	Brush, Fair, HSG B
	48,799	55	Woods, Good, HSG B
	184,886	89	Gravel roads, HSG C
	13,281	70	Brush, Fair, HSG C
	1,036,127	73	Woods, Fair, HSG C
*	108,088	98	Paved parking and buildings HSG C
	64,079	77	Woods, Good, HSG D
*	204,649	76	Gravel/Brush Mix, HSG B
	6,151	91	Gravel roads, HSG D
	1,696,141	76	Weighted Average
	1,588,053		93.63% Pervious Area
	108,088		6.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.5	100	0.1200	0.10		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.50"
2.4	250	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.6	430	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.6	410	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
28.1	1,190	Total			

Subcatchment ES-2:



Summary for Pond EW-1: EXISTING NYSDEC JURISDICTIONAL WETLAND

Inflow Area = 91.268 ac, 5.16% Impervious, Inflow Depth = 2.45" for 10-YR event
Inflow = 104.88 cfs @ 12.80 hrs, Volume= 18.628 af
Outflow = 38.81 cfs @ 13.75 hrs, Volume= 10.067 af, Atten= 63%, Lag= 56.8 min
Primary = 38.81 cfs @ 13.75 hrs, Volume= 10.067 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 422.13' @ 13.75 hrs Surf.Area= 312,112 sf Storage= 414,188 cf

Plug-Flow detention time= 252.6 min calculated for 10.067 af (54% of inflow)
Center-of-Mass det. time= 133.3 min (1,016.2 - 882.9)

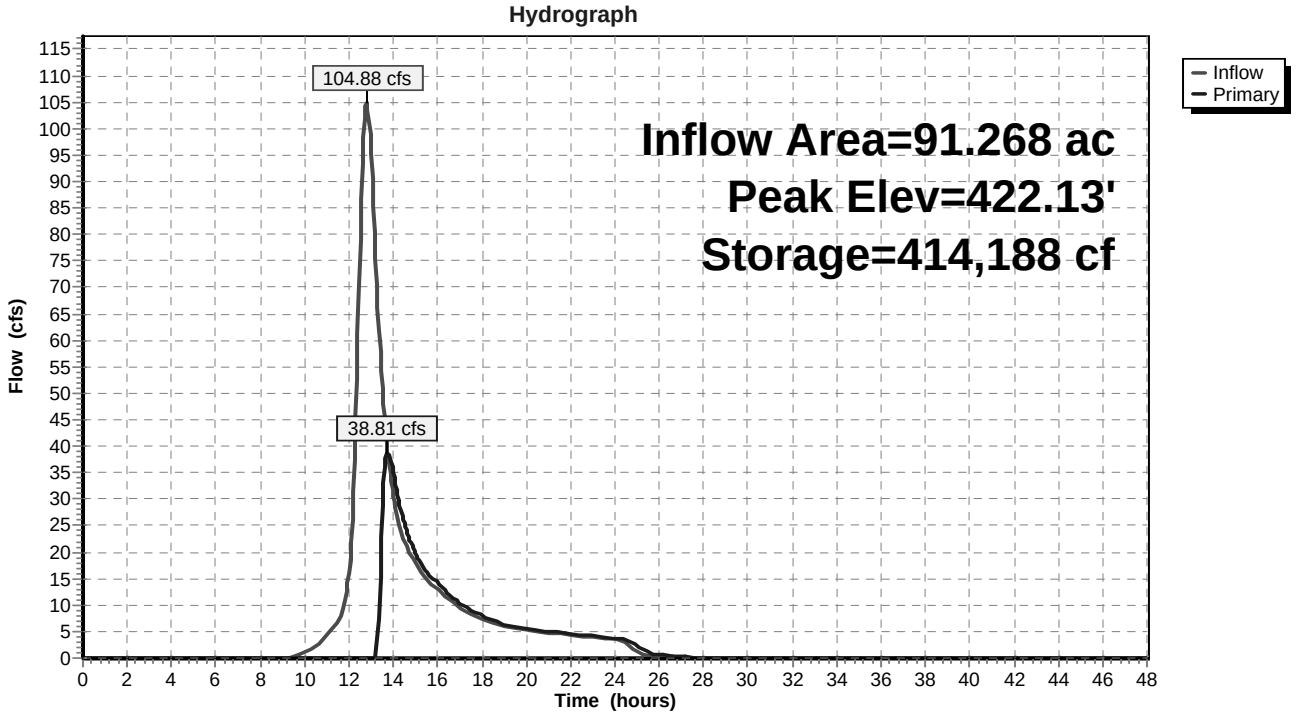
Volume	Invert	Avail.Storage	Storage Description
#1	419.80'	688,314 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
419.80	0	0	0
420.00	64,917	6,492	6,492
421.00	178,530	121,724	128,215
422.00	310,941	244,736	372,951
423.00	319,785	315,363	688,314

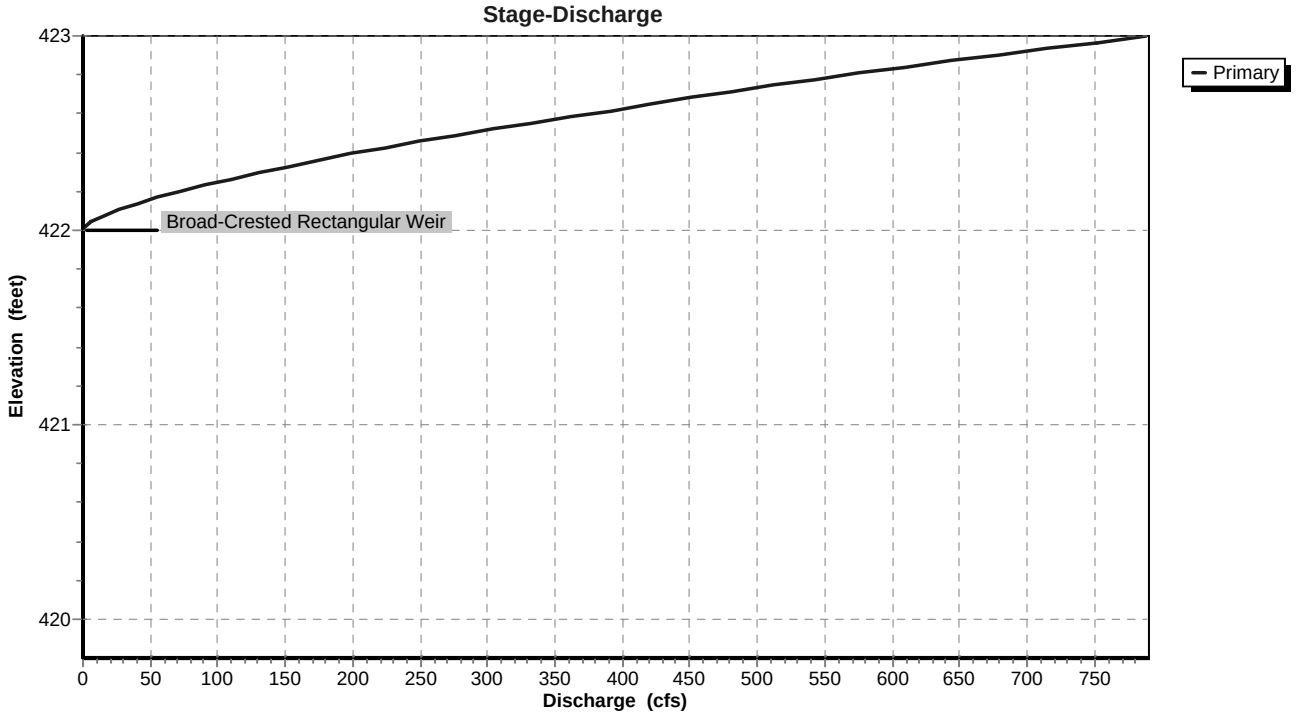
Device	Routing	Invert	Outlet Devices
#1	Primary	422.00'	**300.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=38.70 cfs @ 13.75 hrs HW=422.13' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 38.70 cfs @ 0.97 fps)

Pond EW-1: EXISTING NYSDEC JURISDICTIONAL WETLAND



Pond EW-1: EXISTING NYSDEC JURISDICTIONAL WETLAND

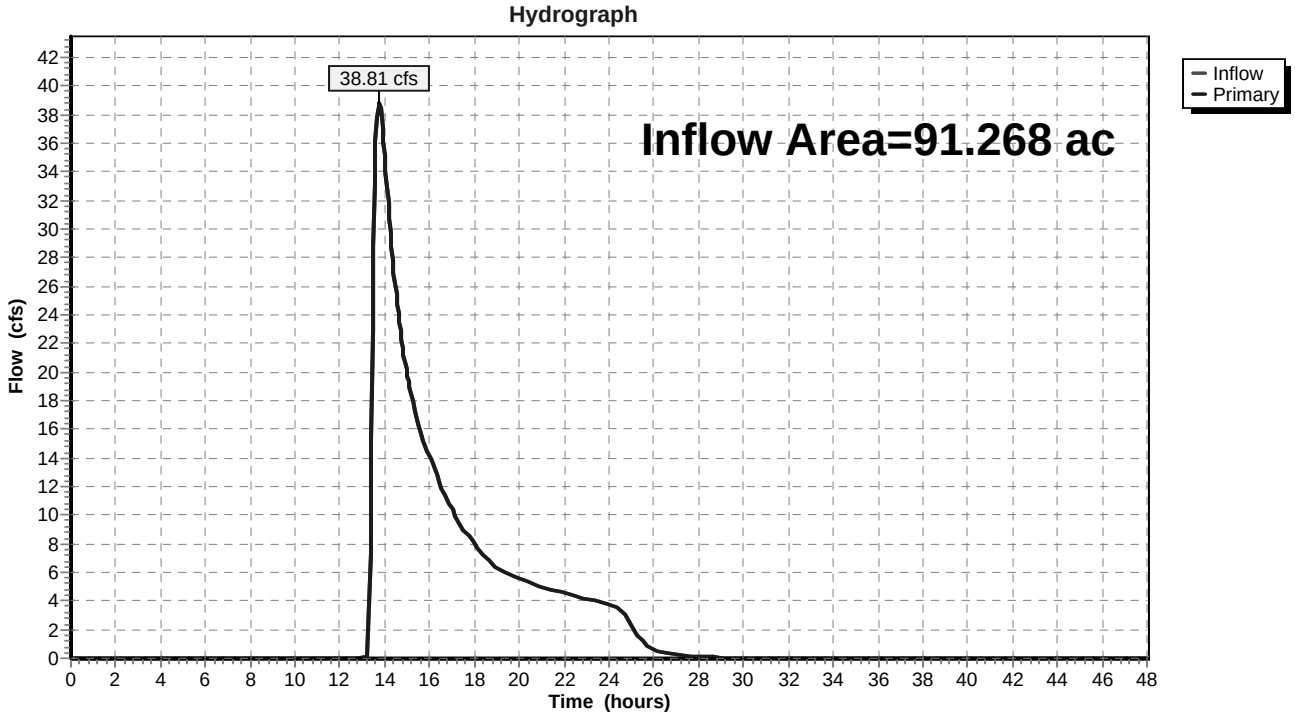


Summary for Pond zDP1: DESIGN POINT 1 (WETLAND)

Inflow Area = 91.268 ac, 5.16% Impervious, Inflow Depth = 1.32" for 10-YR event
Inflow = 38.81 cfs @ 13.75 hrs, Volume= 10.067 af
Primary = 38.81 cfs @ 13.75 hrs, Volume= 10.067 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Pond zDP1: DESIGN POINT 1 (WETLAND)

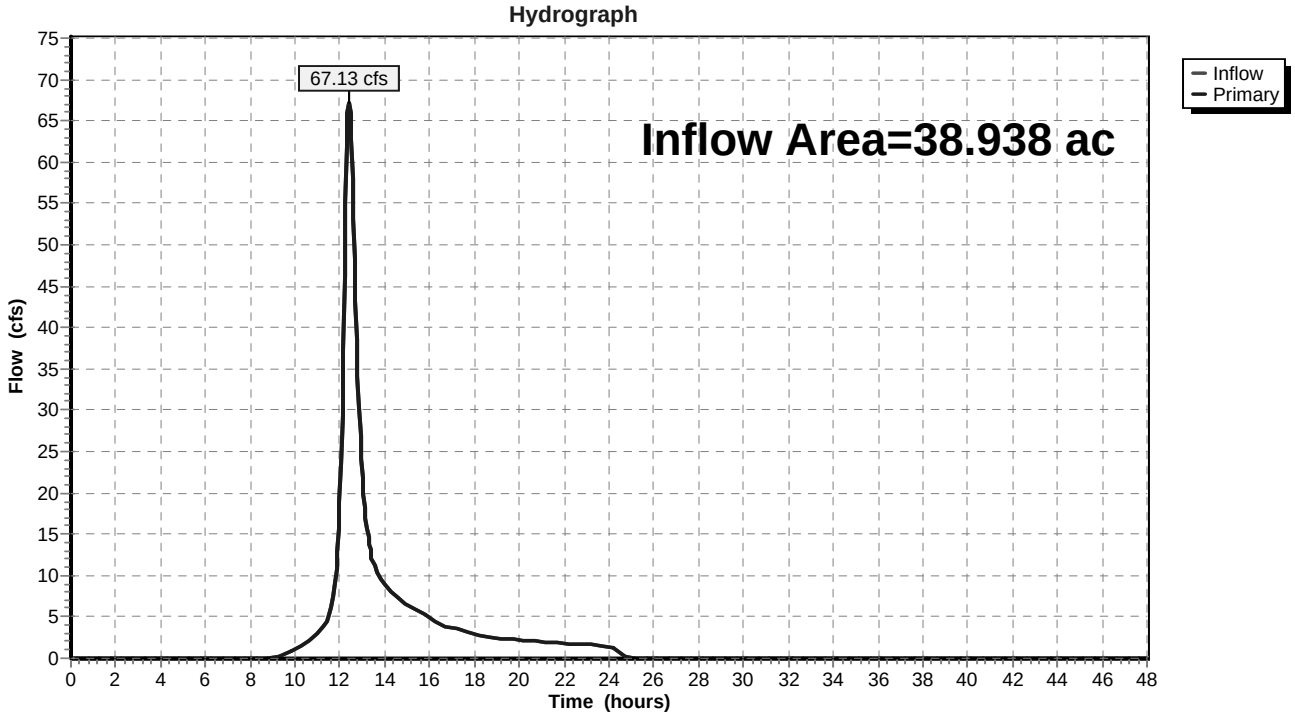


Summary for Pond zDP2: DESIGN POINT 2 (36" RCP CULVERT)

Inflow Area = 38.938 ac, 6.37% Impervious, Inflow Depth = 2.54" for 10-YR event
Inflow = 67.13 cfs @ 12.40 hrs, Volume= 8.227 af
Primary = 67.13 cfs @ 12.40 hrs, Volume= 8.227 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Pond zDP2: DESIGN POINT 2 (36" RCP CULVERT)



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment ES-1: Runoff Area=3,975,624 sf 5.16% Impervious Runoff Depth=5.04"
Flow Length=3,203' Tc=57.8 min CN=75 Runoff=217.02 cfs 38.345 af

Subcatchment ES-2: Runoff Area=1,696,141 sf 6.37% Impervious Runoff Depth=5.16"
Flow Length=1,190' Tc=28.1 min CN=76 Runoff=136.44 cfs 16.737 af

Pond EW-1: EXISTING NYSDEC Peak Elev=422.39' Storage=494,131 cf Inflow=217.02 cfs 38.345 af
Outflow=195.42 cfs 29.783 af

Pond zDP1: DESIGN POINT 1 (WETLAND) Inflow=195.42 cfs 29.783 af
Primary=195.42 cfs 29.783 af

Pond zDP2: DESIGN POINT 2 (36" RCP CULVERT) Inflow=136.44 cfs 16.737 af
Primary=136.44 cfs 16.737 af

Total Runoff Area = 130.206 ac Runoff Volume = 55.082 af Average Runoff Depth = 5.08"
94.48% Pervious = 123.014 ac 5.52% Impervious = 7.192 ac

Summary for Subcatchment ES-1:

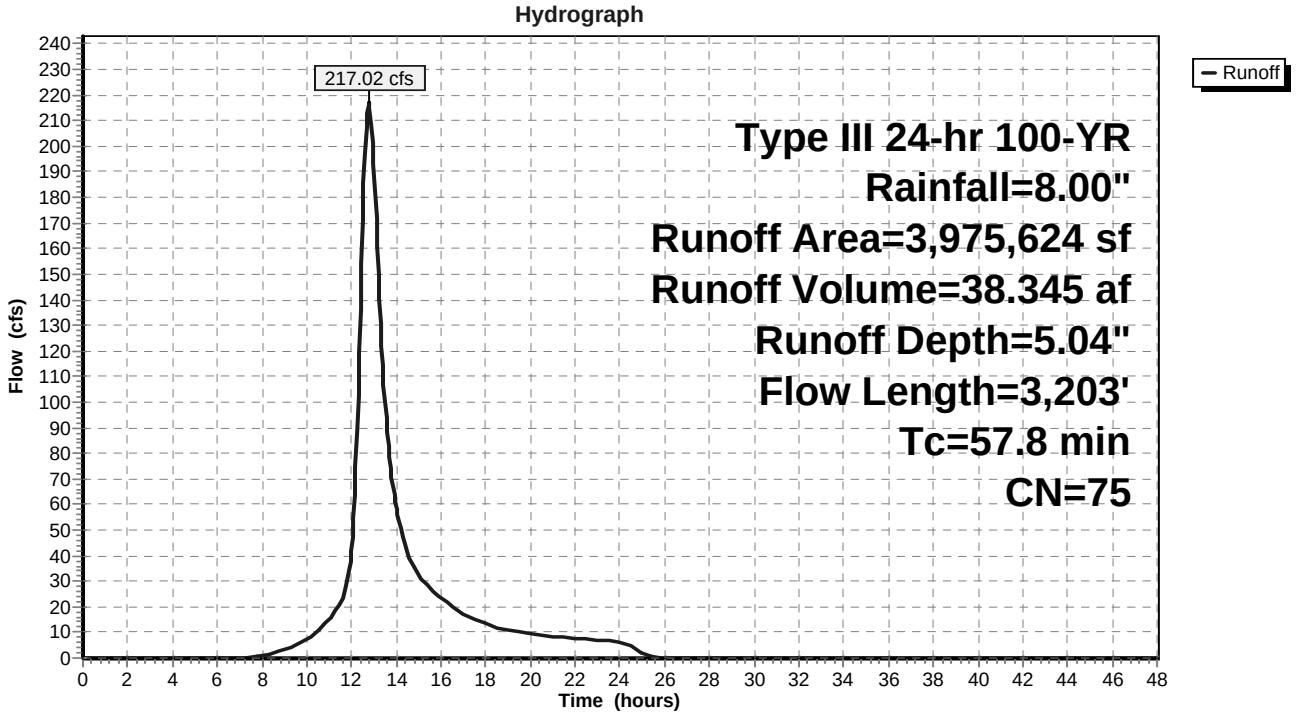
Runoff = 217.02 cfs @ 12.78 hrs, Volume= 38.345 af, Depth= 5.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.00"

	Area (sf)	CN	Description
	119,851	56	Brush, Fair, HSG B
	413,826	70	Brush, Fair, HSG C
	2,207,540	73	Woods, Fair, HSG C
	87,189	74	>75% Grass cover, Good, HSG C
	30,621	89	Gravel roads, HSG C
	439,846	77	Brush, Fair, HSG D
	52,095	91	Gravel roads, HSG D
	268,973	79	Woods, Fair, HSG D
	205,191	98	Paved parking, HSG C
*	150,492	76	gravel brush mix
	3,975,624	75	Weighted Average
	3,770,433		94.84% Pervious Area
	205,191		5.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0785	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.50"
13.2	1,144	0.0839	1.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	60	0.0167	6.05	19.00	**Pipe Channel, PIPE CULVERT ON Rt. 22** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.020 Corrugated PE, corrugated interior
13.0	753	0.0372	0.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	256	0.0586	1.69		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.1	434	0.0415	1.02		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	456		6.95		**Lake or Reservoir,** Mean Depth= 1.50'
57.8	3,203	Total			

Subcatchment ES-1:



Summary for Subcatchment ES-2:

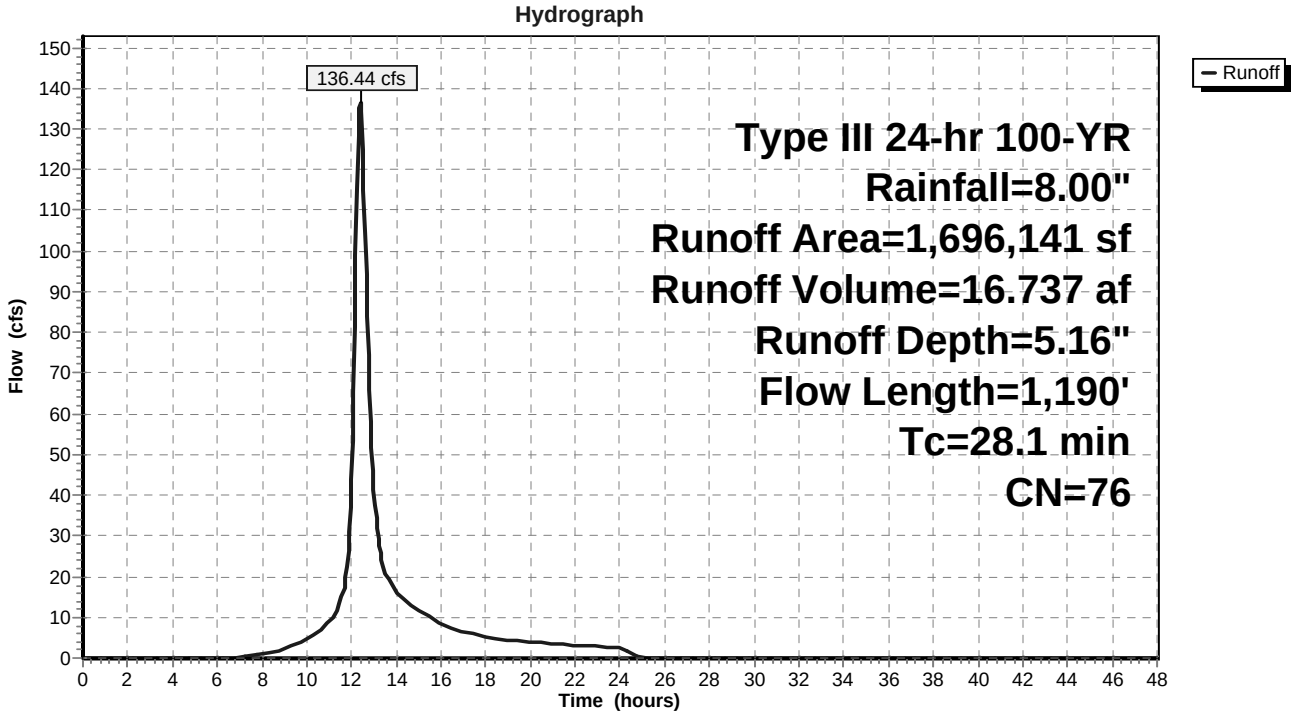
Runoff = 136.44 cfs @ 12.39 hrs, Volume= 16.737 af, Depth= 5.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.00"

	Area (sf)	CN	Description
	30,081	56	Brush, Fair, HSG B
	48,799	55	Woods, Good, HSG B
	184,886	89	Gravel roads, HSG C
	13,281	70	Brush, Fair, HSG C
	1,036,127	73	Woods, Fair, HSG C
*	108,088	98	Paved parking and buildings HSG C
	64,079	77	Woods, Good, HSG D
*	204,649	76	Gravel/Brush Mix, HSG B
	6,151	91	Gravel roads, HSG D
	1,696,141	76	Weighted Average
	1,588,053		93.63% Pervious Area
	108,088		6.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.5	100	0.1200	0.10		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.50"
2.4	250	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.6	430	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.6	410	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
28.1	1,190	Total			

Subcatchment ES-2:



Summary for Pond EW-1: EXISTING NYSDEC JURISDICTIONAL WETLAND

Inflow Area = 91.268 ac, 5.16% Impervious, Inflow Depth = 5.04" for 100-YR event
Inflow = 217.02 cfs @ 12.78 hrs, Volume= 38.345 af
Outflow = 195.42 cfs @ 12.99 hrs, Volume= 29.783 af, Atten= 10%, Lag= 12.6 min
Primary = 195.42 cfs @ 12.99 hrs, Volume= 29.783 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 422.39' @ 12.99 hrs Surf.Area= 314,369 sf Storage= 494,131 cf

Plug-Flow detention time= 143.1 min calculated for 29.752 af (78% of inflow)
Center-of-Mass det. time= 61.9 min (924.0 - 862.2)

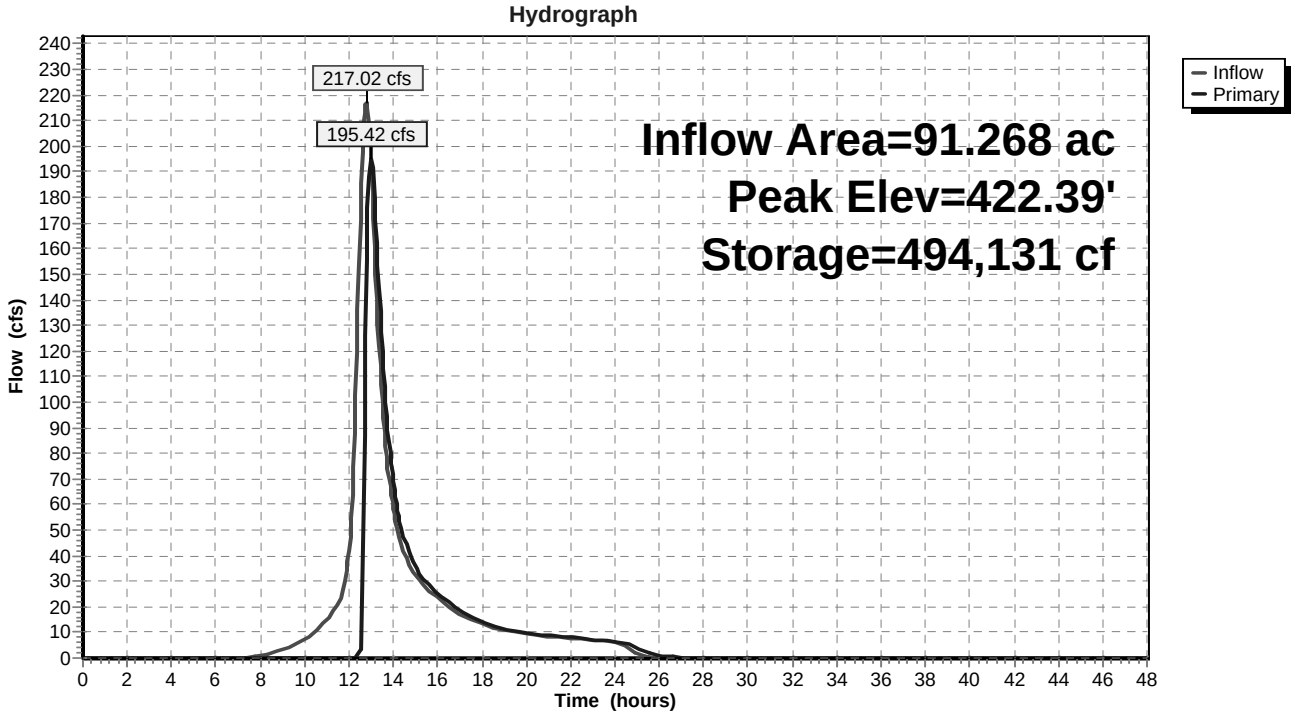
Volume	Invert	Avail.Storage	Storage Description
#1	419.80'	688,314 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
419.80	0	0	0
420.00	64,917	6,492	6,492
421.00	178,530	121,724	128,215
422.00	310,941	244,736	372,951
423.00	319,785	315,363	688,314

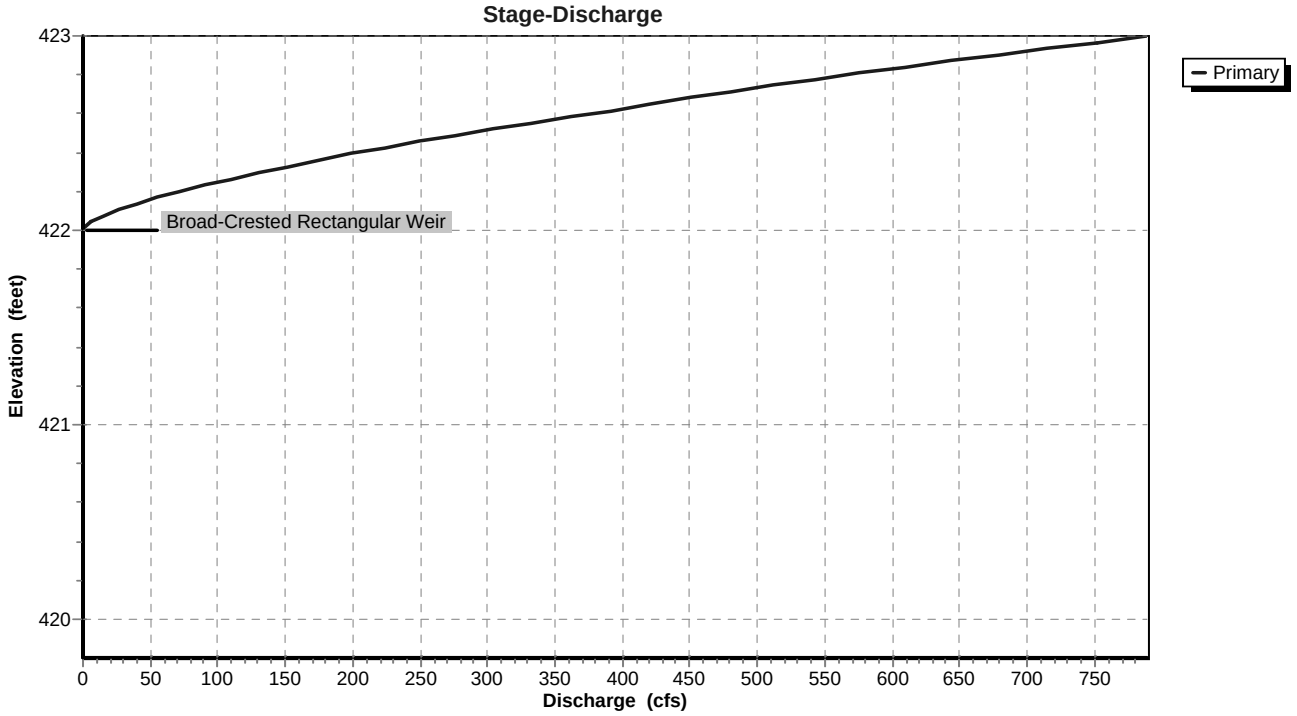
Device	Routing	Invert	Outlet Devices
#1	Primary	422.00'	**300.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=195.04 cfs @ 12.99 hrs HW=422.39' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 195.04 cfs @ 1.68 fps)

Pond EW-1: EXISTING NYSDEC JURISDICTIONAL WETLAND



Pond EW-1: EXISTING NYSDEC JURISDICTIONAL WETLAND

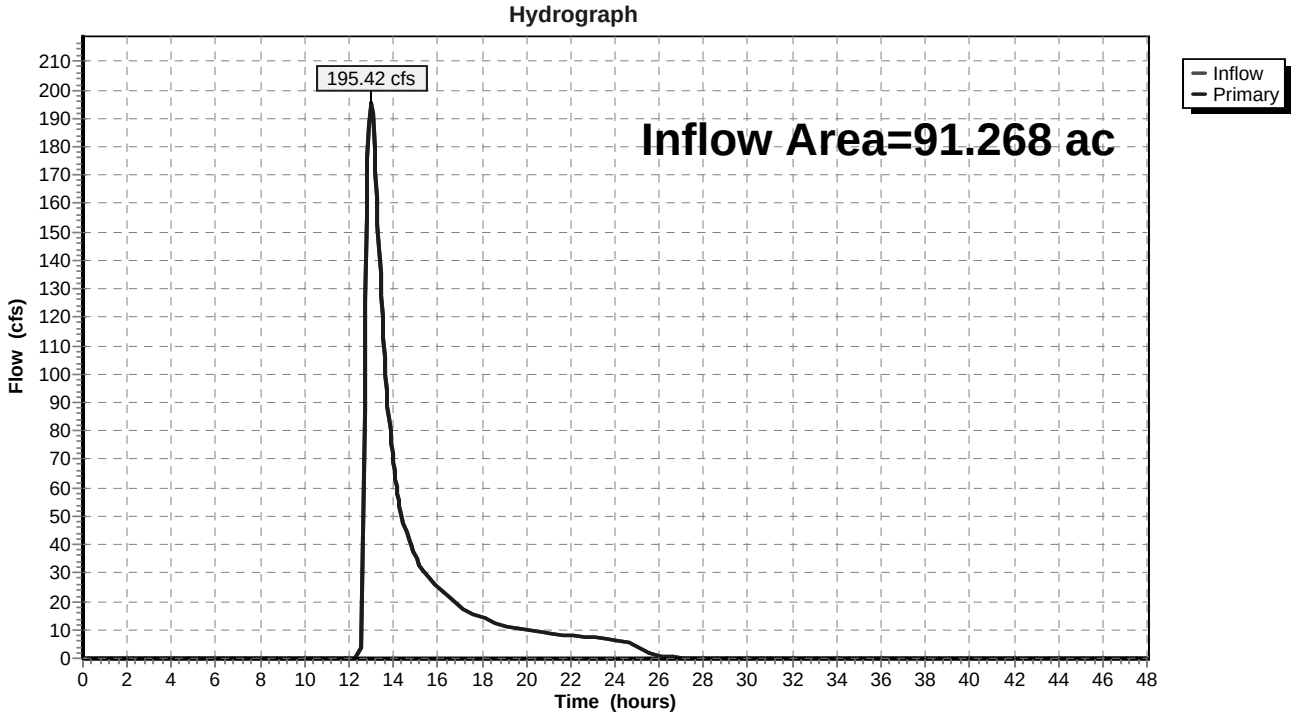


Summary for Pond zDP1: DESIGN POINT 1 (WETLAND)

Inflow Area = 91.268 ac, 5.16% Impervious, Inflow Depth = 3.92" for 100-YR event
Inflow = 195.42 cfs @ 12.99 hrs, Volume= 29.783 af
Primary = 195.42 cfs @ 12.99 hrs, Volume= 29.783 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Pond zDP1: DESIGN POINT 1 (WETLAND)

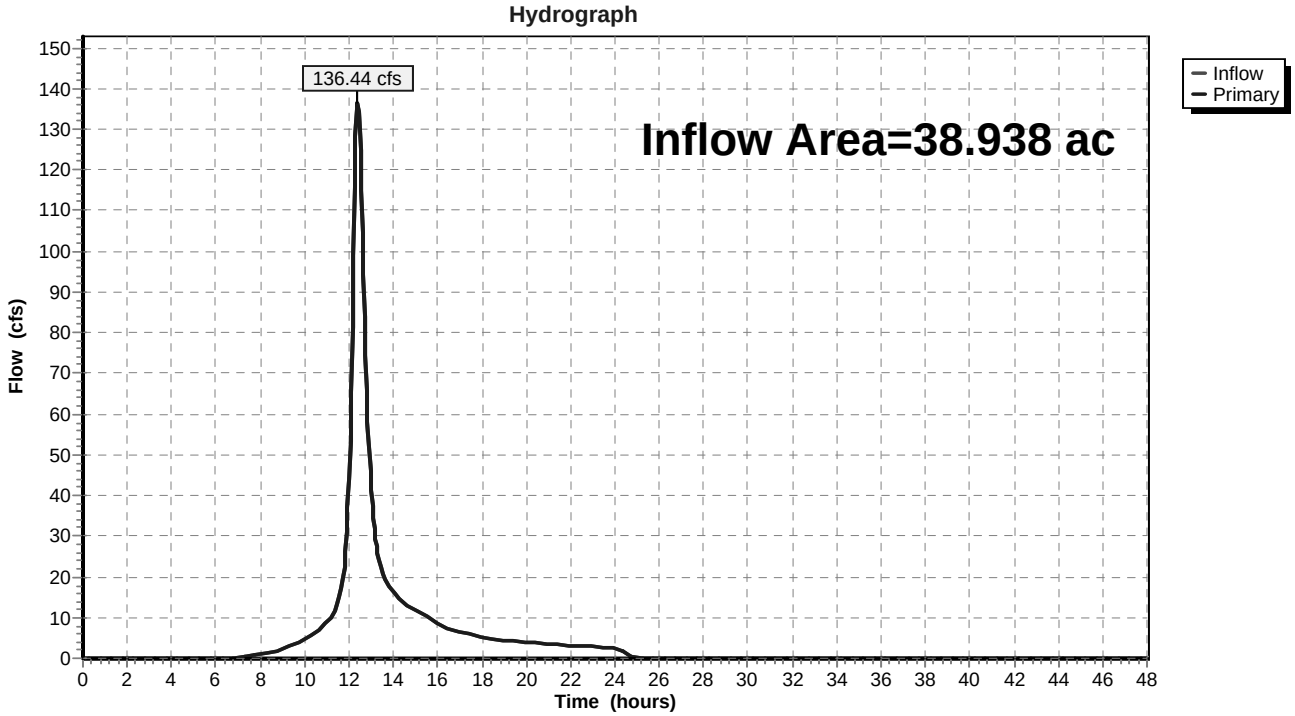


Summary for Pond zDP2: DESIGN POINT 2 (36" RCP CULVERT)

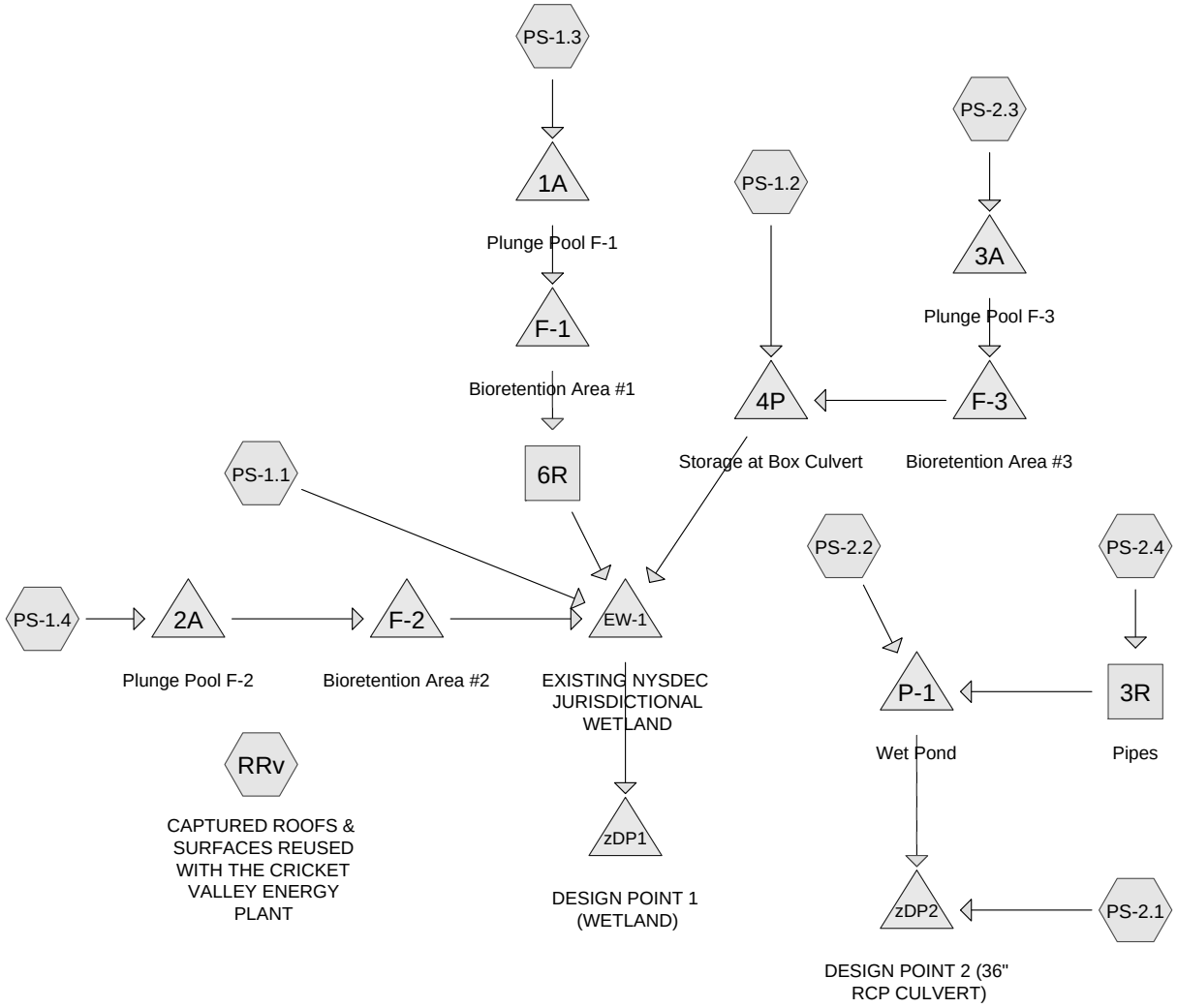
Inflow Area = 38.938 ac, 6.37% Impervious, Inflow Depth = 5.16" for 100-YR event
Inflow = 136.44 cfs @ 12.39 hrs, Volume= 16.737 af
Primary = 136.44 cfs @ 12.39 hrs, Volume= 16.737 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Pond zDP2: DESIGN POINT 2 (36" RCP CULVERT)



Appendix D:
Post-Development Stormwater Modeling



Subcat Reach Pond Link

Drainage Diagram for 81001-00 CRICKET VALLEY ENERGY - PROPOSED CONDITIONS MODEL

Prepared by The Chazen Companies, Printed 7/16/2010

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.070	55	Woods, Good, HSG B (PS-2.1)
0.215	56	Brush, Fair, HSG B (PS-1.1, PS-2.1)
0.744	61	>75% Grass cover, Good, HSG B (PS-1.4, PS-2.1, PS-2.2)
9.449	70	Brush, Fair, HSG C (PS-1.1, PS-1.2, PS-2.1, PS-2.3)
67.052	73	Woods, Fair, HSG C (PS-1.1, PS-1.2, PS-2.1, PS-2.3, PS-2.4)
6.740	74	>75% Grass cover, Good, HSG C (PS-1.1, PS-1.2, PS-1.3, PS-1.4, PS-2.1, PS-2.2, PS-2.3, PS-2.4)
1.217	76	Gravel/Brush Mix, HSG B (PS-2.1)
8.337	77	Brush, Fair, HSG D (PS-1.1, PS-1.2)
0.712	77	Woods, Good, HSG D (PS-2.1)
5.820	79	Woods, Fair, HSG D (PS-1.1, PS-1.2)
0.971	80	>75% Grass cover, Good, HSG D (PS-1.1, PS-1.2, PS-1.4, PS-2.2)
5.933	85	Gravel roads, HSG B (PS-1.4, PS-2.1, PS-2.2)
6.886	89	Gravel roads, HSG C (PS-1.1, PS-1.3, PS-1.4, PS-2.1, PS-2.2, PS-2.3)
1.967	91	Gravel roads, HSG D (PS-1.1, PS-1.4, PS-2.1, PS-2.2)
1.107	98	Paved parking & roofs (PS-1.2)
6.113	98	Paved parking, HSG A (PS-2.2, PS-2.3, RRv)
2.862	98	Paved parking, HSG C (PS-1.1, PS-1.3, PS-1.4, PS-2.1, PS-2.4)
3.293	98	Roofs, HSG A (PS-2.2)
0.704	98	Water Surface, HSG B (PS-2.2)
130.192		**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
9.407	HSG A	PS-2.2, PS-2.3, RRv
8.883	HSG B	PS-1.1, PS-1.4, PS-2.1, PS-2.2
92.988	HSG C	PS-1.1, PS-1.2, PS-1.3, PS-1.4, PS-2.1, PS-2.2, PS-2.3, PS-2.4
17.808	HSG D	PS-1.1, PS-1.2, PS-1.4, PS-2.1, PS-2.2
1.107	Other	PS-1.2
130.192		**TOTAL AREA**

Time span=0.00-500.00 hrs, dt=0.01 hrs, 50001 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PS-1.1: Runoff Area=2,349,900 sf 2.26% Impervious Runoff Depth=0.83"
Flow Length=3,203' Tc=57.8 min CN=75 Runoff=19.51 cfs 3.743 af

Subcatchment PS-1.2: Runoff Area=824,088 sf 5.85% Impervious Runoff Depth=0.78"
Flow Length=1,595' Tc=23.1 min CN=74 Runoff=10.05 cfs 1.236 af

Subcatchment PS-1.3: Runoff Area=35,738 sf 8.88% Impervious Runoff Depth=1.35"
Tc=6.0 min CN=84 Runoff=1.30 cfs 0.093 af

Subcatchment PS-1.4: Runoff Area=81,628 sf 27.04% Impervious Runoff Depth=1.64"
Tc=6.0 min CN=88 Runoff=3.61 cfs 0.256 af

Subcatchment PS-2.1: Runoff Area=1,218,013 sf 2.44% Impervious Runoff Depth=0.93"
Flow Length=1,190' Tc=28.1 min CN=77 Runoff=16.94 cfs 2.178 af

Subcatchment PS-2.2: Runoff Area=653,875 sf 42.26% Impervious Runoff Depth=1.80"
Tc=6.0 min CN=90 Runoff=31.53 cfs 2.253 af

Subcatchment PS-2.3: Runoff Area=254,905 sf 10.88% Impervious Runoff Depth=0.88"
Flow Length=951' Tc=20.3 min CN=76 Runoff=3.80 cfs 0.430 af

Subcatchment PS-2.4: Runoff Area=116,690 sf 14.20% Impervious Runoff Depth=0.93"
Flow Length=575' Tc=15.1 min CN=77 Runoff=2.10 cfs 0.209 af

Subcatchment RRv: CAPTURED ROOFS & Runoff Area=3.130 ac 100.00% Impervious Runoff Depth=2.57"
Tc=0.0 min CN=98 Runoff=10.34 cfs 0.670 af

Reach 3R: Pipes Inflow=2.10 cfs 0.209 af
Outflow=2.10 cfs 0.209 af

Reach 6R: Inflow=0.99 cfs 0.073 af
Outflow=0.99 cfs 0.073 af

Pond 1A: Plunge Pool F-1 Peak Elev=430.64' Storage=997 cf Inflow=1.30 cfs 0.093 af
Outflow=1.28 cfs 0.093 af

Pond 2A: Plunge Pool F-2 Peak Elev=429.02' Storage=3,687 cf Inflow=3.61 cfs 0.256 af
Outflow=3.46 cfs 0.256 af

Pond 3A: Plunge Pool F-3 Peak Elev=439.29' Storage=2,066 cf Inflow=3.80 cfs 0.430 af
Outflow=3.78 cfs 0.391 af

Pond 4P: Storage at Box Culvert Peak Elev=433.60' Storage=680 cf Inflow=11.70 cfs 1.582 af
105.0" x 30.0" Box Culvert x 0.84 n=0.022 L=25.0' S=0.0200 '/' Outflow=11.64 cfs 1.582 af

Pond EW-1: EXISTING NYSDEC Peak Elev=421.55' Storage=246,272 cf Inflow=28.01 cfs 5.654 af
Outflow=0.00 cfs 0.000 af

Pond F-1: Bioretention Area #1 Peak Elev=430.62' Storage=1,083 cf Inflow=1.28 cfs 0.093 af
Outflow=0.99 cfs 0.073 af

Pond F-2: Bioretention Area #2 Peak Elev=428.95' Storage=3,156 cf Inflow=3.46 cfs 0.256 af
Outflow=2.59 cfs 0.256 af

Pond F-3: Bioretention Area #3 Peak Elev=439.24' Storage=2,978 cf Inflow=3.78 cfs 0.391 af
Outflow=2.82 cfs 0.346 af

Pond P-1: Wet Pond Peak Elev=424.25' Storage=155,117 cf Inflow=32.79 cfs 2.462 af
Primary=0.73 cfs 2.462 af Secondary=0.00 cfs 0.000 af Outflow=0.73 cfs 2.462 af

Pond zDP1: DESIGN POINT 1 (WETLAND) Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Pond zDP2: DESIGN POINT 2 (36" RCP CULVERT) Inflow=17.55 cfs 4.640 af
Primary=17.55 cfs 4.640 af

Total Runoff Area = 130.192 ac Runoff Volume = 11.068 af Average Runoff Depth = 1.02"
89.19% Pervious = 116.113 ac 10.81% Impervious = 14.079 ac

Summary for Subcatchment PS-1.1:

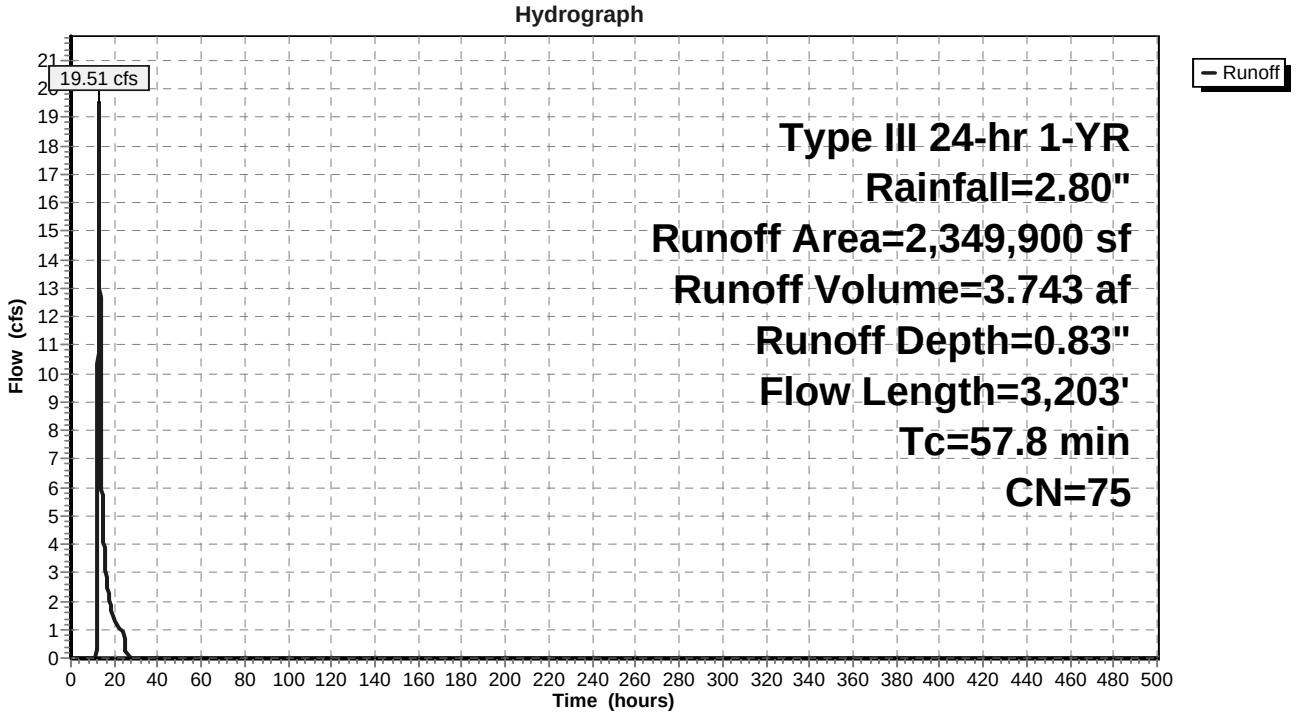
Runoff = 19.51 cfs @ 12.85 hrs, Volume= 3.743 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-YR Rainfall=2.80"

Area (sf)	CN	Description
5,609	56	Brush, Fair, HSG B
219,739	70	Brush, Fair, HSG C
1,378,531	73	Woods, Fair, HSG C
99,805	74	>75% Grass cover, Good, HSG C
14,337	80	>75% Grass cover, Good, HSG D
14,067	89	Gravel roads, HSG C
304,723	77	Brush, Fair, HSG D
16,528	91	Gravel roads, HSG D
243,474	79	Woods, Fair, HSG D
53,087	98	Paved parking, HSG C
2,349,900	75	Weighted Average
2,296,813		97.74% Pervious Area
53,087		2.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0785	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.50"
13.2	1,144	0.0839	1.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	60	0.0167	6.05	19.00	**Pipe Channel, PIPE CULVERT ON Rt. 22** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.020 Corrugated PE, corrugated interior
13.0	753	0.0372	0.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	256	0.0586	1.69		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.1	434	0.0415	1.02		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	456		6.95		**Lake or Reservoir,** Mean Depth= 1.50'
57.8	3,203	Total			

Subcatchment PS-1.1:



Summary for Subcatchment PS-1.2:

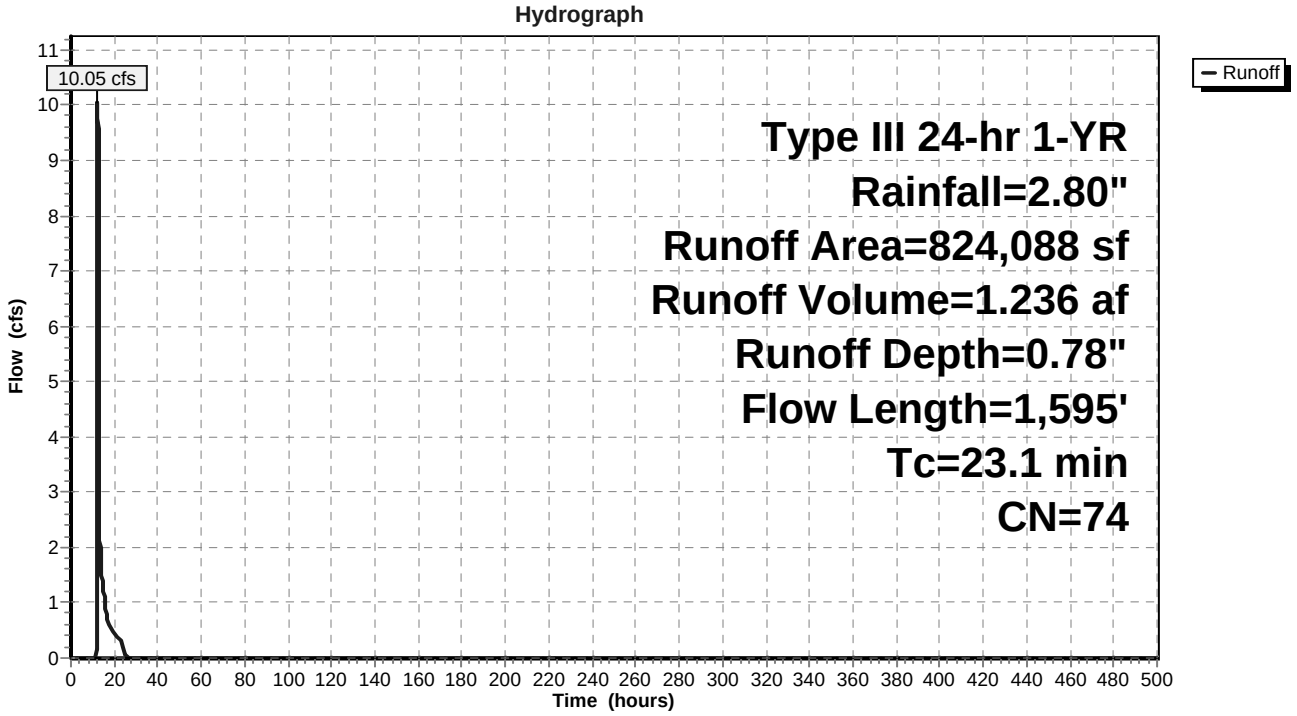
Runoff = 10.05 cfs @ 12.35 hrs, Volume= 1.236 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-YR Rainfall=2.80"

Area (sf)	CN	Description
476,732	73	Woods, Fair, HSG C
167,171	70	Brush, Fair, HSG C
58,454	77	Brush, Fair, HSG D
10,064	79	Woods, Fair, HSG D
57,883	74	>75% Grass cover, Good, HSG C
5,552	80	>75% Grass cover, Good, HSG D
48,232	98	Paved parking & roofs
824,088	74	Weighted Average
775,856		94.15% Pervious Area
48,232		5.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.0560	0.18		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.7	65	0.0560	1.66		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.7	355	0.0626	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	75	0.0050	4.03	4.95	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
0.2	115	0.0260	7.79	103.88	**Parabolic Channel,** W=10.00' D=2.00' Area=13.3 sf Perim=11.0' n= 0.035 Earth, dense weeds
0.1	85	0.0820	10.72	33.69	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.025 Corrugated metal
0.3	310	0.0967	15.03	200.34	**Parabolic Channel,** W=10.00' D=2.00' Area=13.3 sf Perim=11.0' n= 0.035 Earth, dense weeds
5.7	325	0.0184	0.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.1	165	0.0030	1.30	15.21	**Parabolic Channel,** W=35.00' D=0.50' Area=11.7 sf Perim=35.0' n= 0.030 Earth, grassed & winding
23.1	1,595	Total			

Subcatchment PS-1.2:



Summary for Subcatchment PS-1.3:

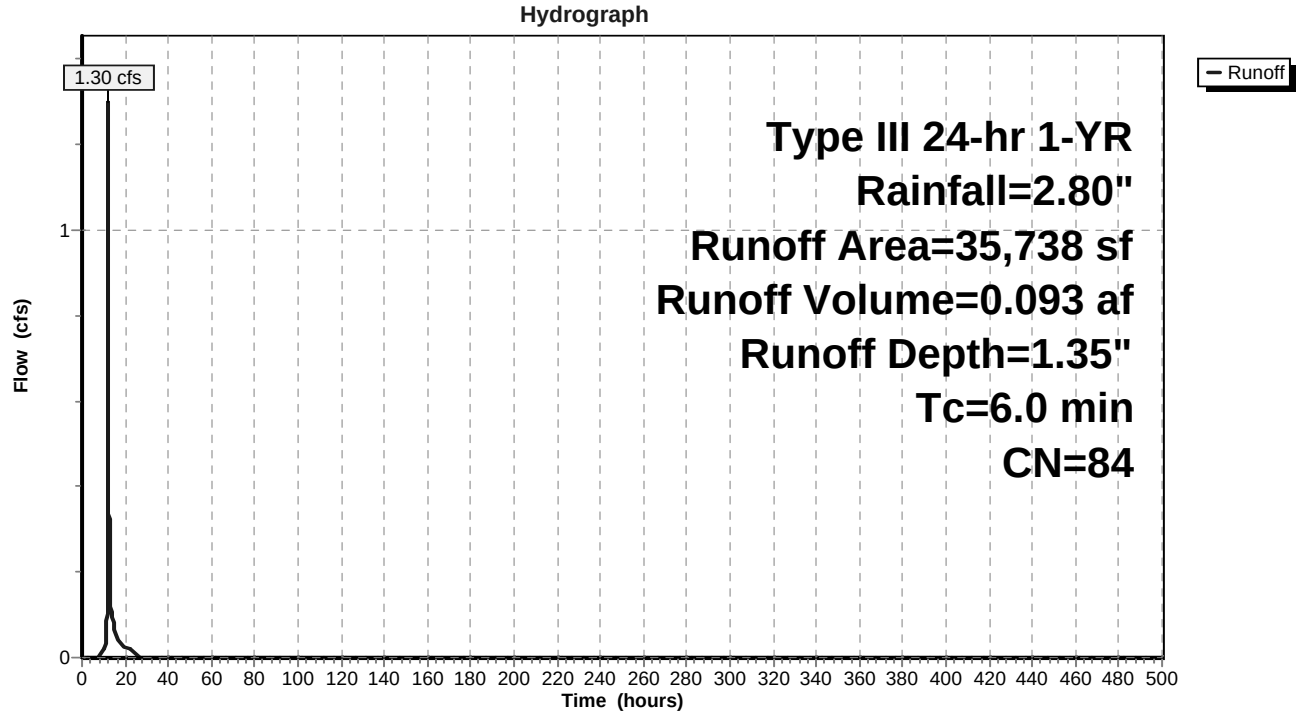
Runoff = 1.30 cfs @ 12.09 hrs, Volume= 0.093 af, Depth= 1.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-YR Rainfall=2.80"

Area (sf)	CN	Description
3,172	98	Paved parking, HSG C
13,366	74	>75% Grass cover, Good, HSG C
19,200	89	Gravel roads, HSG C
35,738	84	Weighted Average
32,566		91.12% Pervious Area
3,172		8.88% Impervious Area

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

Subcatchment PS-1.3:



Summary for Subcatchment PS-1.4:

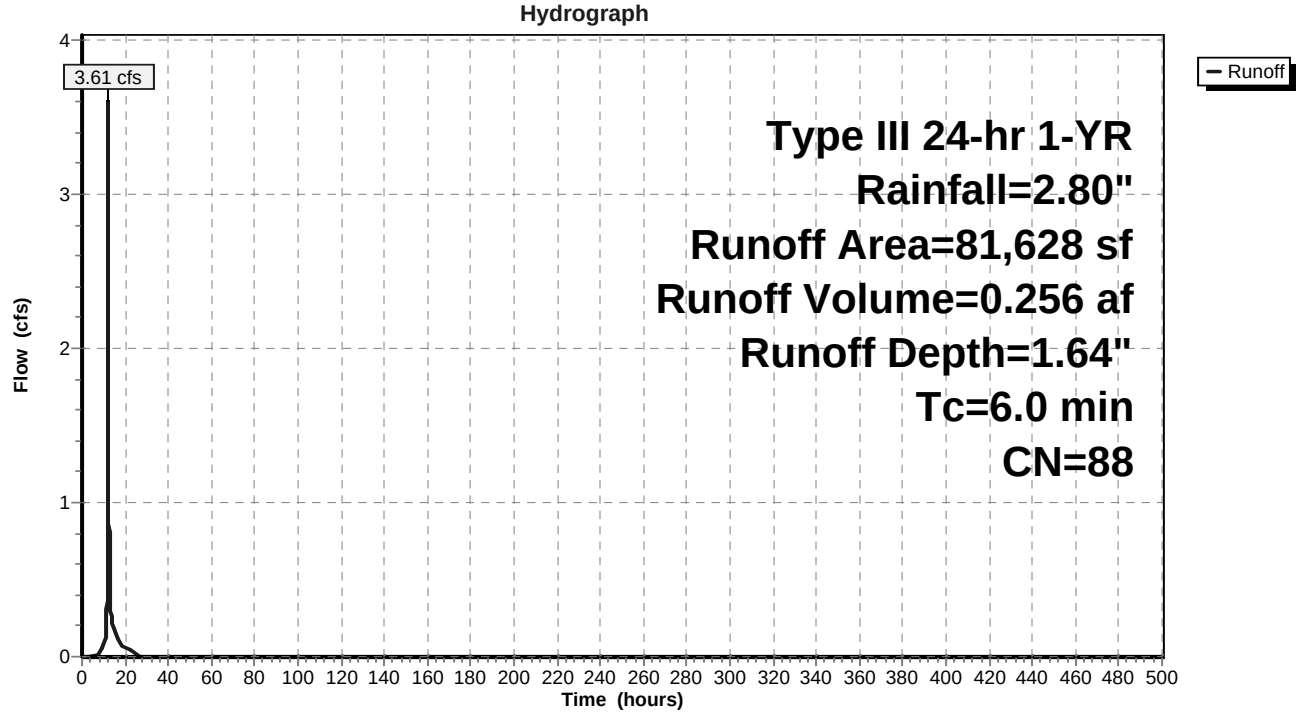
Runoff = 3.61 cfs @ 12.09 hrs, Volume= 0.256 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-YR Rainfall=2.80"

Area (sf)	CN	Description
22,070	98	Paved parking, HSG C
36,079	91	Gravel roads, HSG D
9,940	80	>75% Grass cover, Good, HSG D
2,243	85	Gravel roads, HSG B
8,845	61	>75% Grass cover, Good, HSG B
2,224	74	>75% Grass cover, Good, HSG C
227	89	Gravel roads, HSG C
81,628	88	Weighted Average
59,558		72.96% Pervious Area
22,070		27.04% Impervious Area

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

Subcatchment PS-1.4:



Summary for Subcatchment PS-2.1:

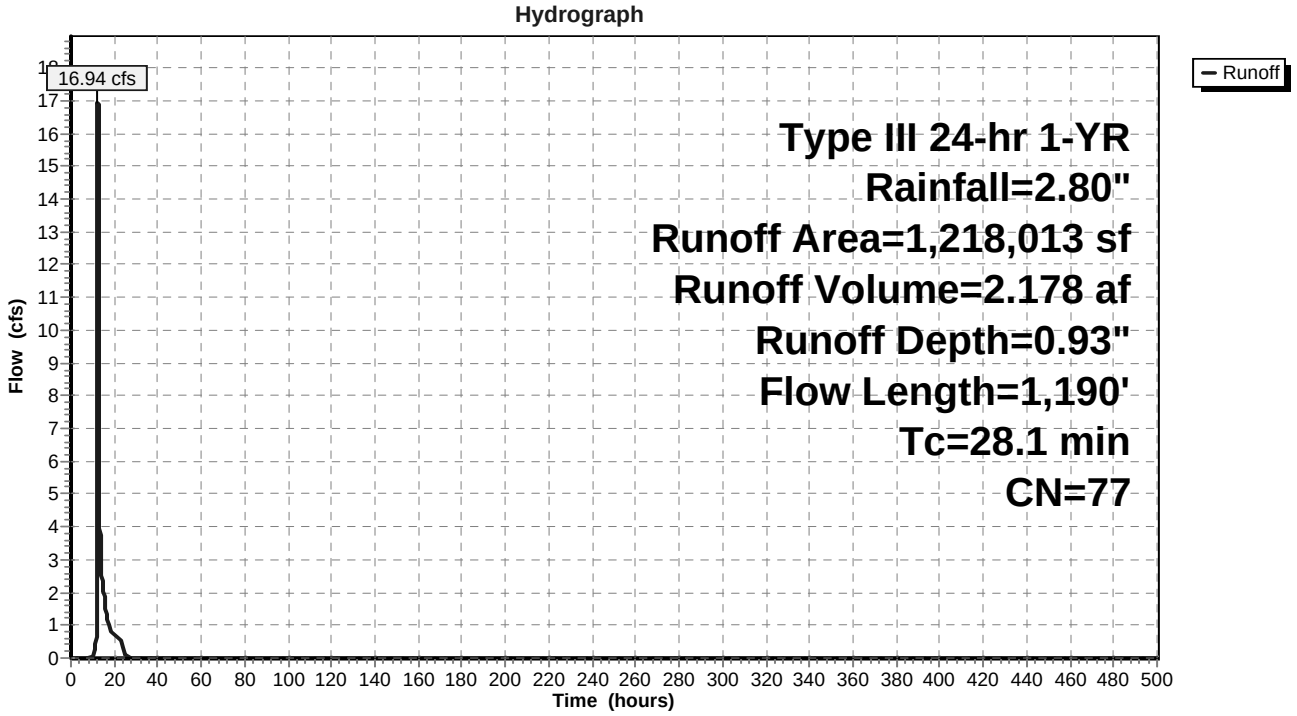
Runoff = 16.94 cfs @ 12.42 hrs, Volume= 2.178 af, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-YR Rainfall=2.80"

	Area (sf)	CN	Description
	3,751	56	Brush, Fair, HSG B
	3,034	55	Woods, Good, HSG B
	192,194	89	Gravel roads, HSG C
	7,372	70	Brush, Fair, HSG C
	858,494	73	Woods, Fair, HSG C
	29,750	98	Paved parking, HSG C
	31,009	77	Woods, Good, HSG D
*	53,016	76	Gravel/Brush Mix, HSG B
	15,977	85	Gravel roads, HSG B
	14,855	91	Gravel roads, HSG D
	3,028	61	>75% Grass cover, Good, HSG B
	5,533	74	>75% Grass cover, Good, HSG C
	1,218,013	77	Weighted Average
	1,188,263		97.56% Pervious Area
	29,750		2.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.5	100	0.1200	0.10		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.50"
2.4	250	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.6	430	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.6	410	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
28.1	1,190	Total			

Subcatchment PS-2.1:



Summary for Subcatchment PS-2.2:

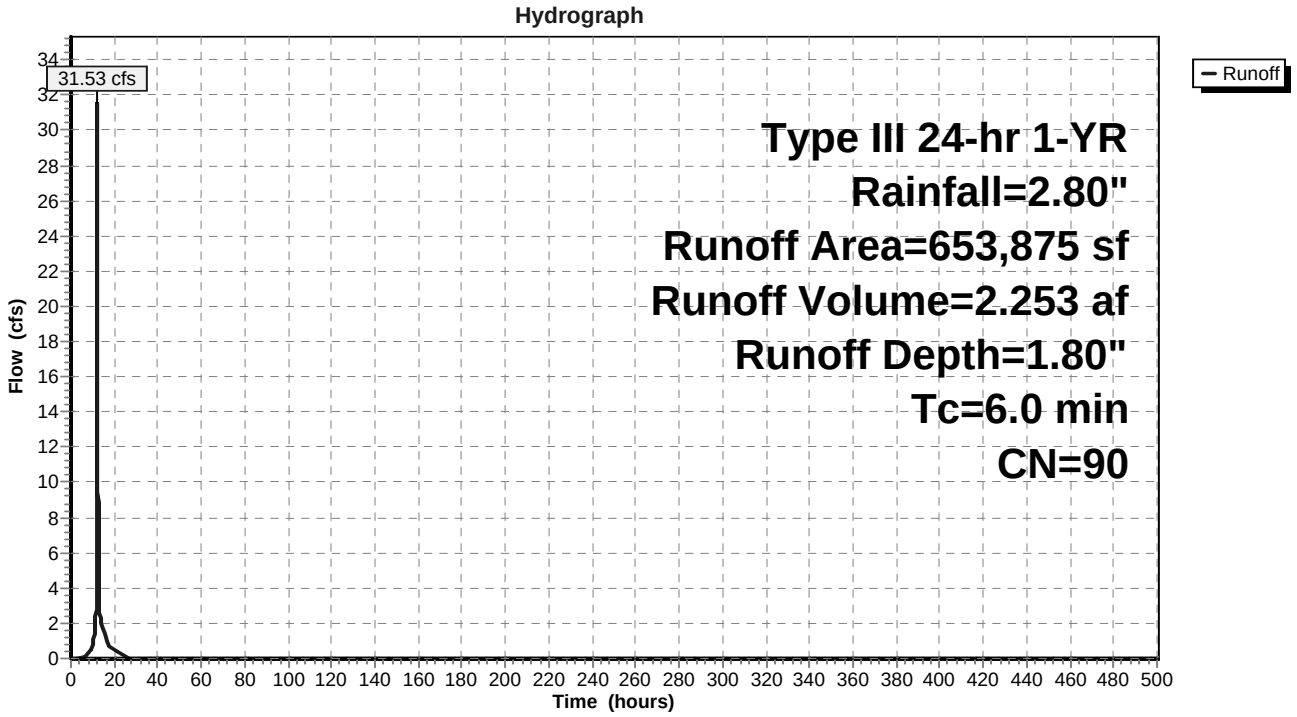
Runoff = 31.53 cfs @ 12.09 hrs, Volume= 2.253 af, Depth= 1.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-YR Rainfall=2.80"

Area (sf)	CN	Description
65,818	89	Gravel roads, HSG C
18,237	91	Gravel roads, HSG D
20,546	61	>75% Grass cover, Good, HSG B
240,237	85	Gravel roads, HSG B
20,235	74	>75% Grass cover, Good, HSG C
30,655	98	Water Surface, HSG B
143,453	98	Roofs, HSG A
102,225	98	Paved parking, HSG A
12,469	80	>75% Grass cover, Good, HSG D
653,875	90	Weighted Average
377,542		57.74% Pervious Area
276,333		42.26% Impervious Area

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

Subcatchment PS-2.2:



Summary for Subcatchment PS-2.3:

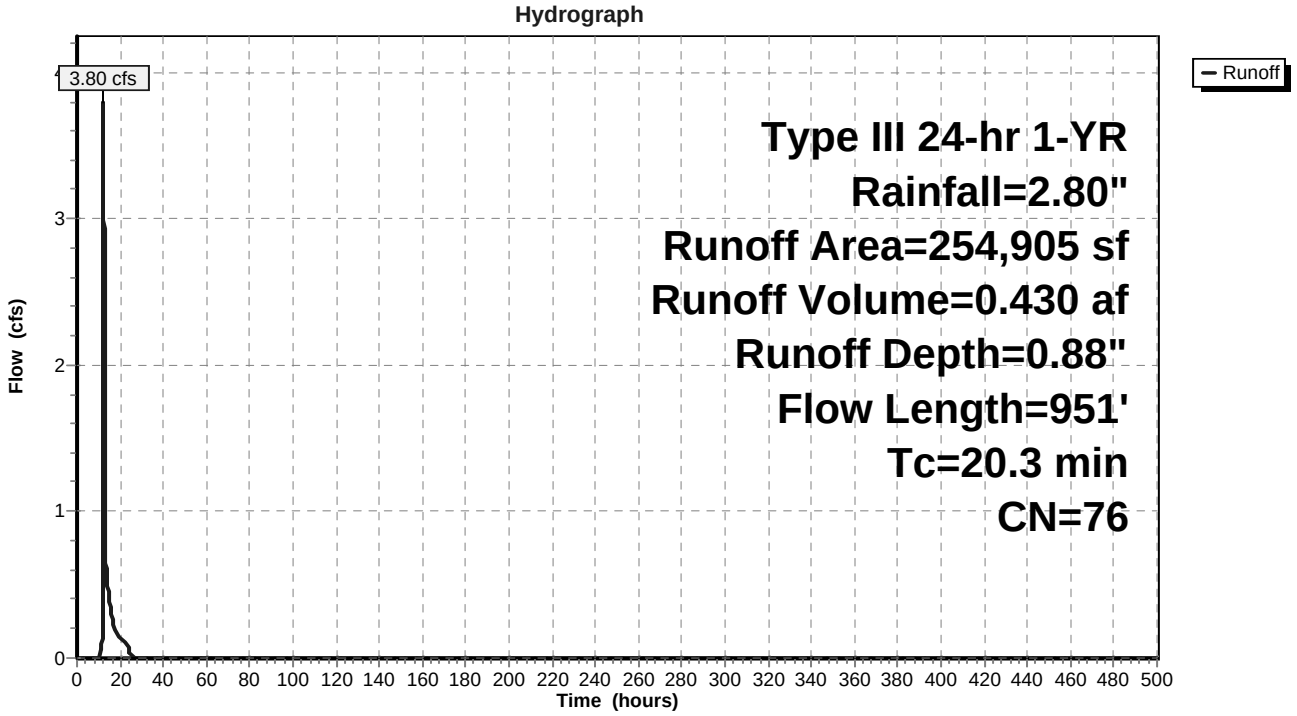
Runoff = 3.80 cfs @ 12.30 hrs, Volume= 0.430 af, Depth= 0.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-YR Rainfall=2.80"

Area (sf)	CN	Description
81,119	74	>75% Grass cover, Good, HSG C
27,727	98	Paved parking, HSG A
120,312	73	Woods, Fair, HSG C
17,305	70	Brush, Fair, HSG C
8,442	89	Gravel roads, HSG C
254,905	76	Weighted Average
227,178		89.12% Pervious Area
27,727		10.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0500	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.2	135	0.1480	1.92		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.0	168	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	95	0.0320	3.63		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	453	0.0730	15.23	203.08	**Parabolic Channel,** W=10.00' D=2.00' Area=13.3 sf Perim=11.0' n= 0.030 Earth, grassed & winding
20.3	951	Total			

Subcatchment PS-2.3:



Summary for Subcatchment PS-2.4:

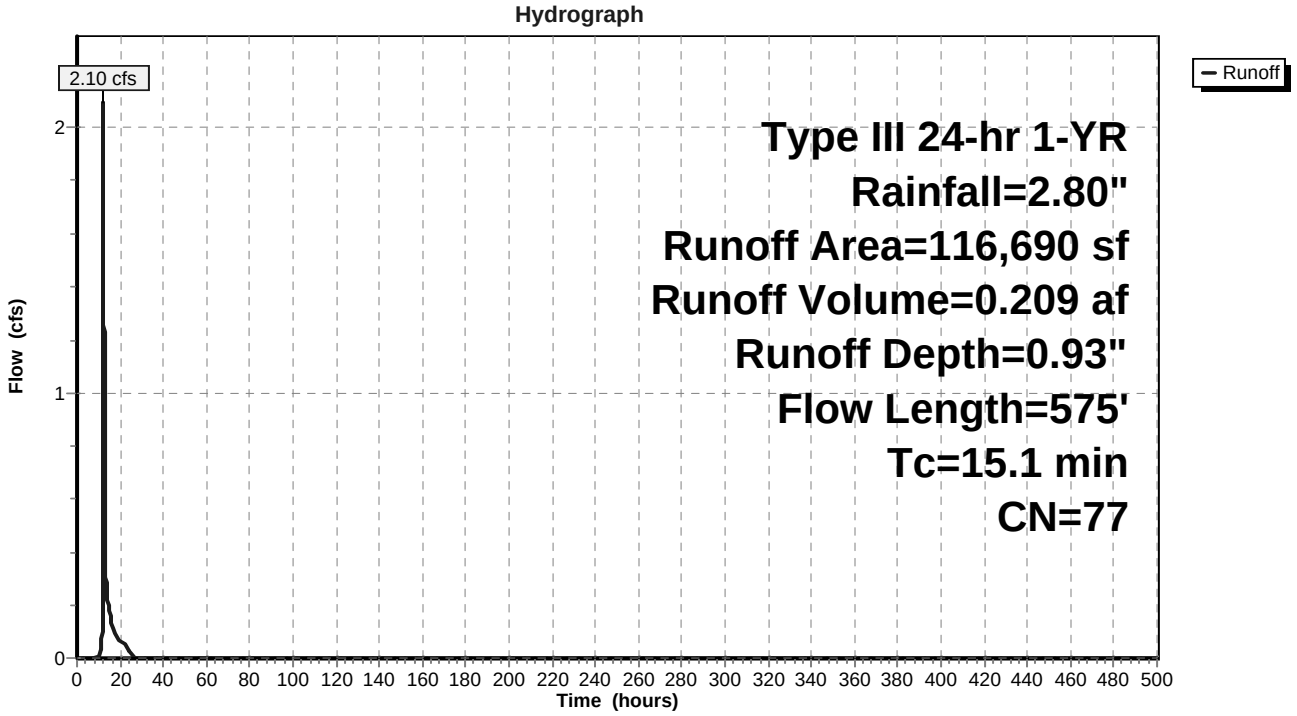
Runoff = 2.10 cfs @ 12.23 hrs, Volume= 0.209 af, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-YR Rainfall=2.80"

Area (sf)	CN	Description
86,696	73	Woods, Fair, HSG C
13,423	74	>75% Grass cover, Good, HSG C
16,571	98	Paved parking, HSG C
116,690	77	Weighted Average
100,119		85.80% Pervious Area
16,571		14.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	1.04		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
10.9	80	0.0625	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
3.8	295	0.0661	1.29		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	180	0.0722	21.12	563.30	**Parabolic Channel,** W=10.00' D=4.00' Area=26.7 sf Perim=13.3' n= 0.030 Earth, grassed & winding
15.1	575	Total			

Subcatchment PS-2.4:



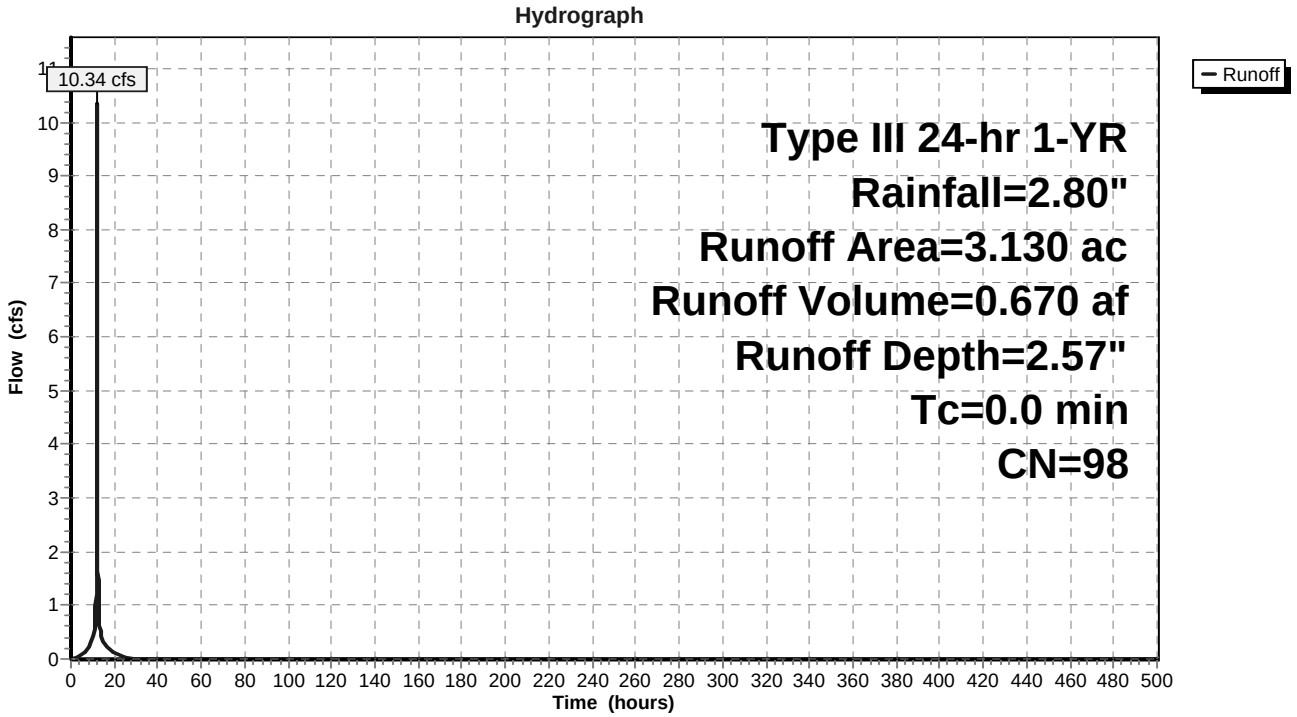
y for Subcatchment RRv: CAPTURED ROOFS & SURFACES REUSED WITH THE CRICKET VALLEY ENE

Runoff = 10.34 cfs @ 12.00 hrs, Volume= 0.670 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-YR Rainfall=2.80"

Area (ac)	CN	Description
3.130	98	Paved parking, HSG A
3.130		100.00% Impervious Area

ubcatchment RRv: CAPTURED ROOFS & SURFACES REUSED WITH THE CRICKET VALLEY ENERGY PI

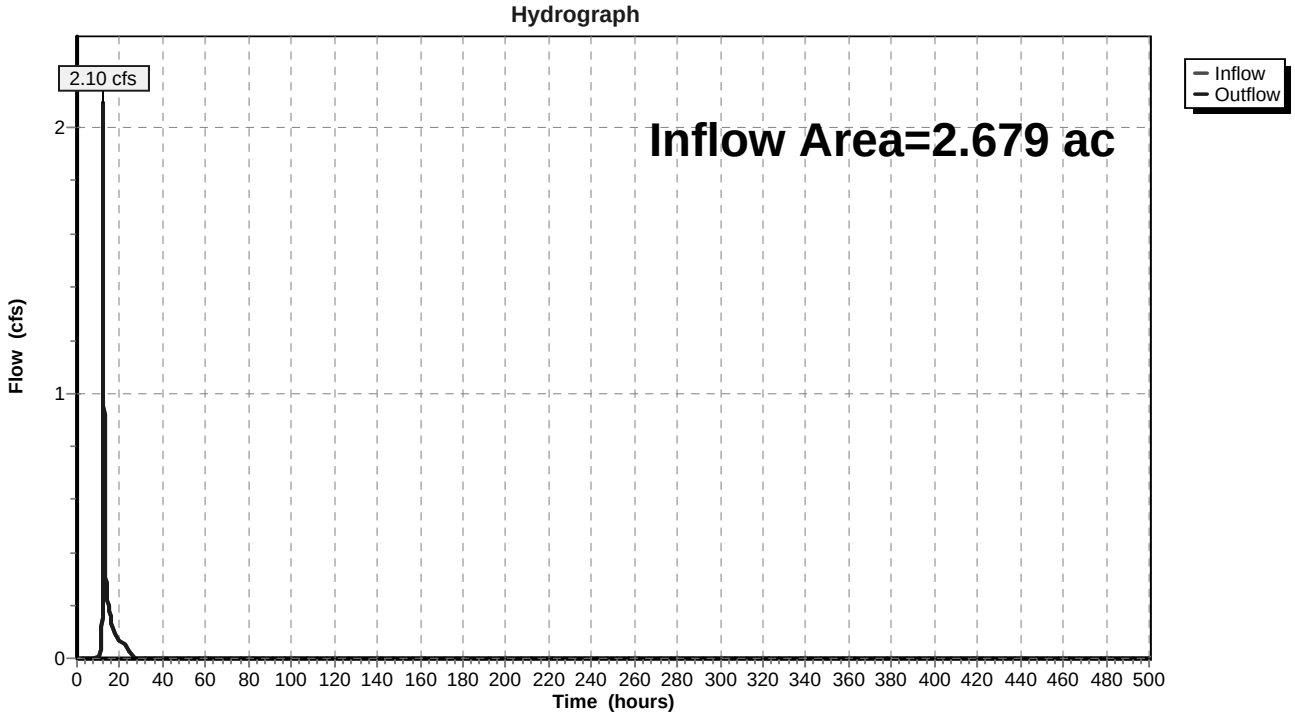


Summary for Reach 3R: Pipes

Inflow Area = 2.679 ac, 14.20% Impervious, Inflow Depth = 0.93" for 1-YR event
Inflow = 2.10 cfs @ 12.23 hrs, Volume= 0.209 af
Outflow = 2.10 cfs @ 12.23 hrs, Volume= 0.209 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs

Reach 3R: Pipes

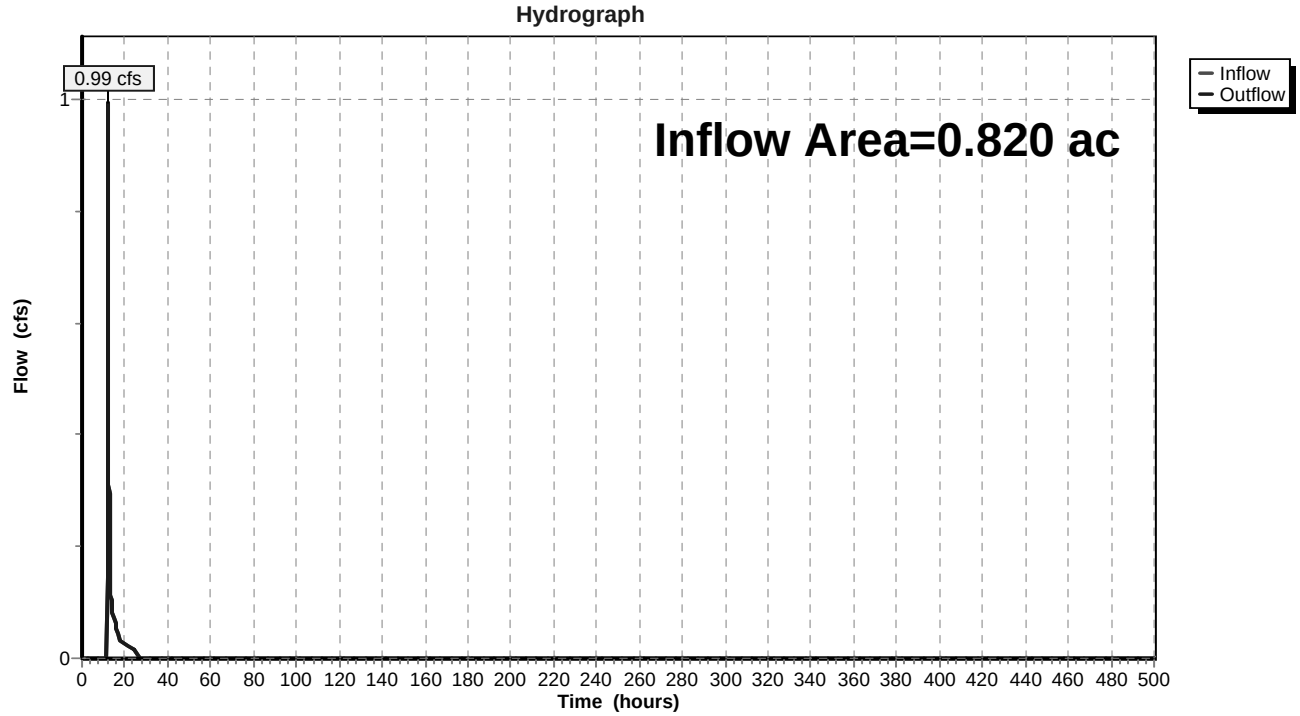


Summary for Reach 6R:

Inflow Area = 0.820 ac, 8.88% Impervious, Inflow Depth = 1.06" for 1-YR event
Inflow = 0.99 cfs @ 12.17 hrs, Volume= 0.073 af
Outflow = 0.99 cfs @ 12.17 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs

Reach 6R:



Summary for Pond 1A: Plunge Pool F-1

Inflow Area = 0.820 ac, 8.88% Impervious, Inflow Depth = 1.35" for 1-YR event
Inflow = 1.30 cfs @ 12.09 hrs, Volume= 0.093 af
Outflow = 1.28 cfs @ 12.11 hrs, Volume= 0.093 af, Atten= 2%, Lag= 0.9 min
Primary = 1.28 cfs @ 12.11 hrs, Volume= 0.093 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Starting Elev= 430.50' Surf.Area= 631 sf Storage= 904 cf
Peak Elev= 430.64' @ 12.11 hrs Surf.Area= 674 sf Storage= 997 cf (94 cf above start)
Flood Elev= 431.50' Surf.Area= 952 sf Storage= 1,690 cf (786 cf above start)

Plug-Flow detention time= 127.0 min calculated for 0.072 af (78% of inflow)
Center-of-Mass det. time= 2.4 min (838.2 - 835.9)

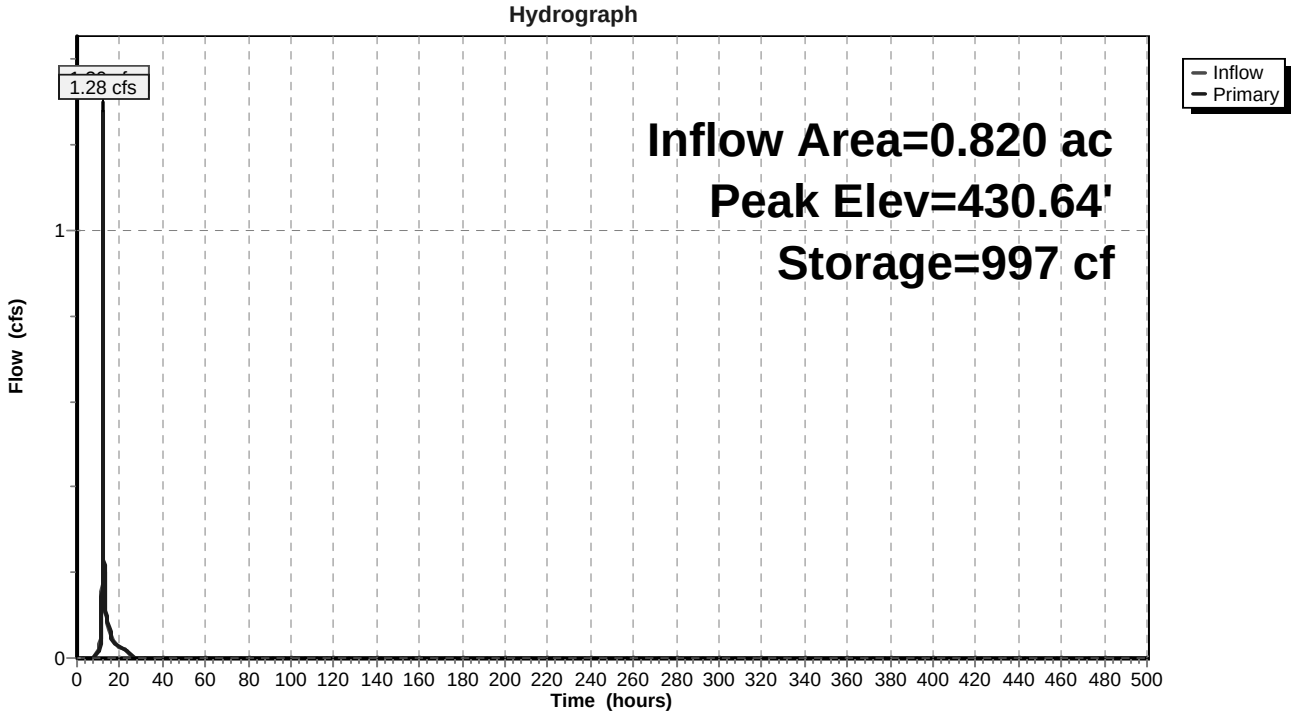
Volume	Invert	Avail.Storage	Storage Description
#1	427.00'	1,690 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
427.00	18	0	0
428.00	106	62	62
429.00	264	185	247
430.00	489	377	624
430.50	631	280	904
431.00	781	353	1,257
431.50	952	433	1,690

Device	Routing	Invert	Outlet Devices
#1	Primary	430.50'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=1.27 cfs @ 12.11 hrs HW=430.64' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 1.27 cfs @ 0.89 fps)

Pond 1A: Plunge Pool F-1



Summary for Pond 2A: Plunge Pool F-2

Inflow Area = 1.874 ac, 27.04% Impervious, Inflow Depth = 1.64" for 1-YR event
Inflow = 3.61 cfs @ 12.09 hrs, Volume= 0.256 af
Outflow = 3.46 cfs @ 12.11 hrs, Volume= 0.256 af, Atten= 4%, Lag= 1.4 min
Primary = 3.46 cfs @ 12.11 hrs, Volume= 0.256 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Starting Elev= 428.75' Surf.Area= 1,593 sf Storage= 3,229 cf
Peak Elev= 429.02' @ 12.11 hrs Surf.Area= 1,741 sf Storage= 3,687 cf (457 cf above start)
Flood Elev= 430.00' Surf.Area= 2,316 sf Storage= 5,666 cf (2,437 cf above start)

Plug-Flow detention time= 152.2 min calculated for 0.182 af (71% of inflow)
Center-of-Mass det. time= 4.0 min (824.6 - 820.7)

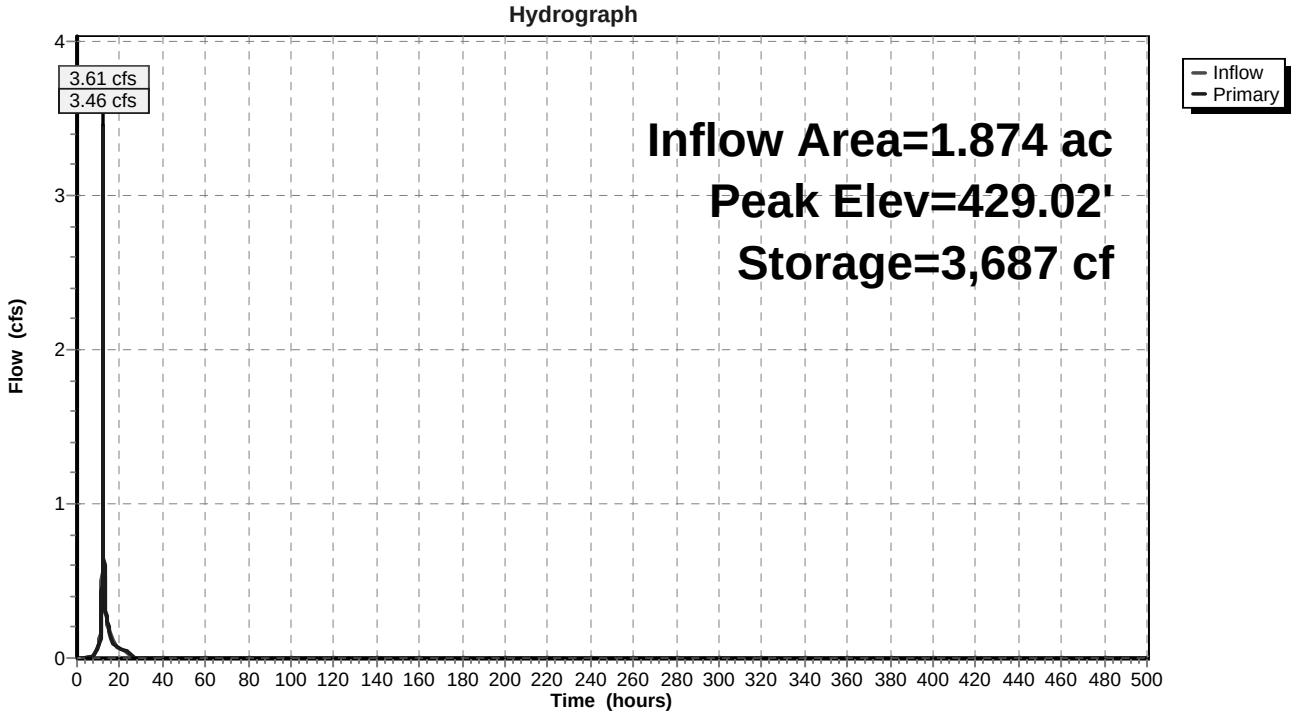
Volume	Invert	Avail.Storage	Storage Description
#1	424.00'	5,666 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
424.00	76	0	0
425.00	234	155	155
426.00	479	357	512
427.00	809	644	1,156
428.00	1,225	1,017	2,173
428.75	1,593	1,057	3,229
429.00	1,727	415	3,644
430.00	2,316	2,022	5,666

Device	Routing	Invert	Outlet Devices
#1	Primary	428.75'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=3.45 cfs @ 12.11 hrs HW=429.02' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 3.45 cfs @ 1.26 fps)

Pond 2A: Plunge Pool F-2



Summary for Pond 3A: Plunge Pool F-3

Inflow Area = 5.852 ac, 10.88% Impervious, Inflow Depth = 0.88" for 1-YR event
Inflow = 3.80 cfs @ 12.30 hrs, Volume= 0.430 af
Outflow = 3.78 cfs @ 12.32 hrs, Volume= 0.391 af, Atten= 0%, Lag= 1.3 min
Primary = 3.78 cfs @ 12.32 hrs, Volume= 0.391 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Peak Elev= 439.29' @ 12.32 hrs Surf.Area= 1,268 sf Storage= 2,066 cf
Flood Elev= 440.00' Surf.Area= 1,631 sf Storage= 3,095 cf

Plug-Flow detention time= 64.0 min calculated for 0.391 af (91% of inflow)
Center-of-Mass det. time= 18.7 min (895.7 - 877.0)

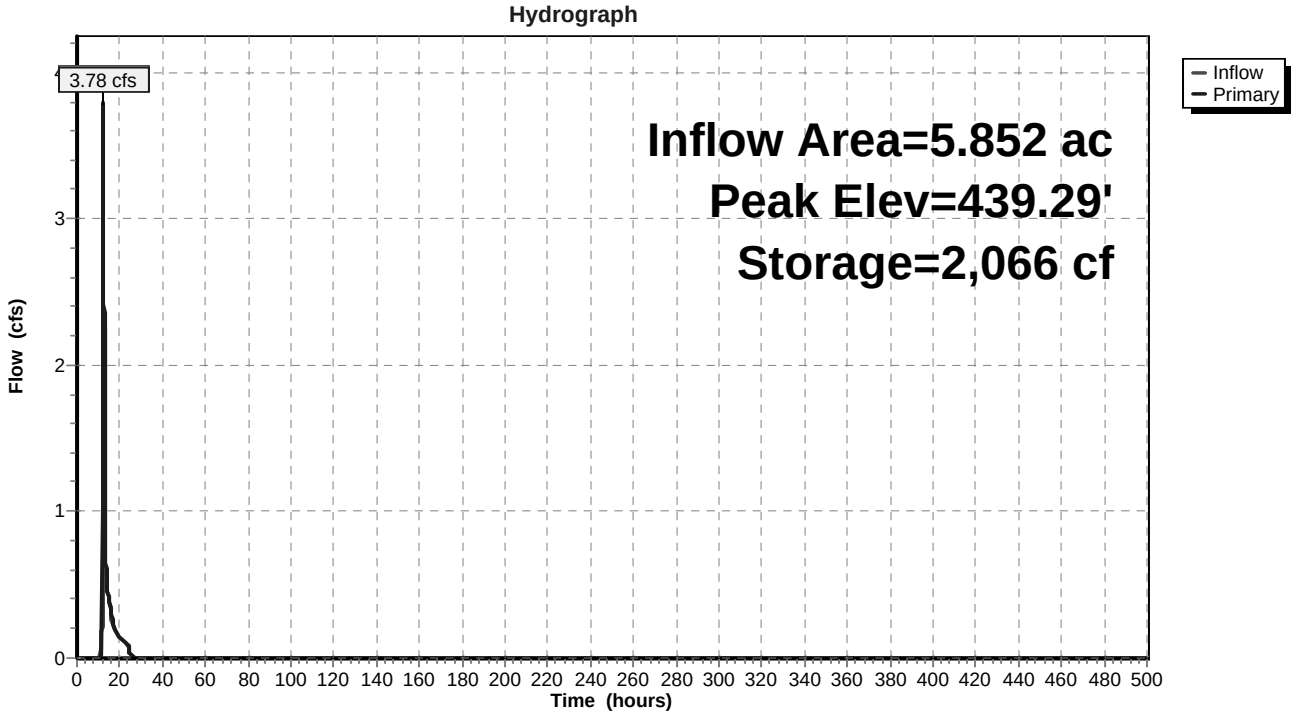
Volume	Invert	Avail.Storage	Storage Description
#1	435.00'	3,095 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
435.00	13	0	0
436.00	115	64	64
437.00	347	231	295
438.00	691	519	814
439.00	1,120	906	1,720
440.00	1,631	1,376	3,095

Device	Routing	Invert	Outlet Devices
#1	Primary	439.00'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=3.77 cfs @ 12.32 hrs HW=439.29' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 3.77 cfs @ 1.30 fps)

Pond 3A: Plunge Pool F-3



Summary for Pond 4P: Storage at Box Culvert

Inflow Area = 24.770 ac, 7.04% Impervious, Inflow Depth = 0.77" for 1-YR event
Inflow = 11.70 cfs @ 12.46 hrs, Volume= 1.582 af
Outflow = 11.64 cfs @ 12.48 hrs, Volume= 1.582 af, Atten= 1%, Lag= 1.5 min
Primary = 11.64 cfs @ 12.48 hrs, Volume= 1.582 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Peak Elev= 433.60' @ 12.48 hrs Surf.Area= 2,280 sf Storage= 680 cf

Plug-Flow detention time= 0.6 min calculated for 1.582 af (100% of inflow)
Center-of-Mass det. time= 0.6 min (896.3 - 895.7)

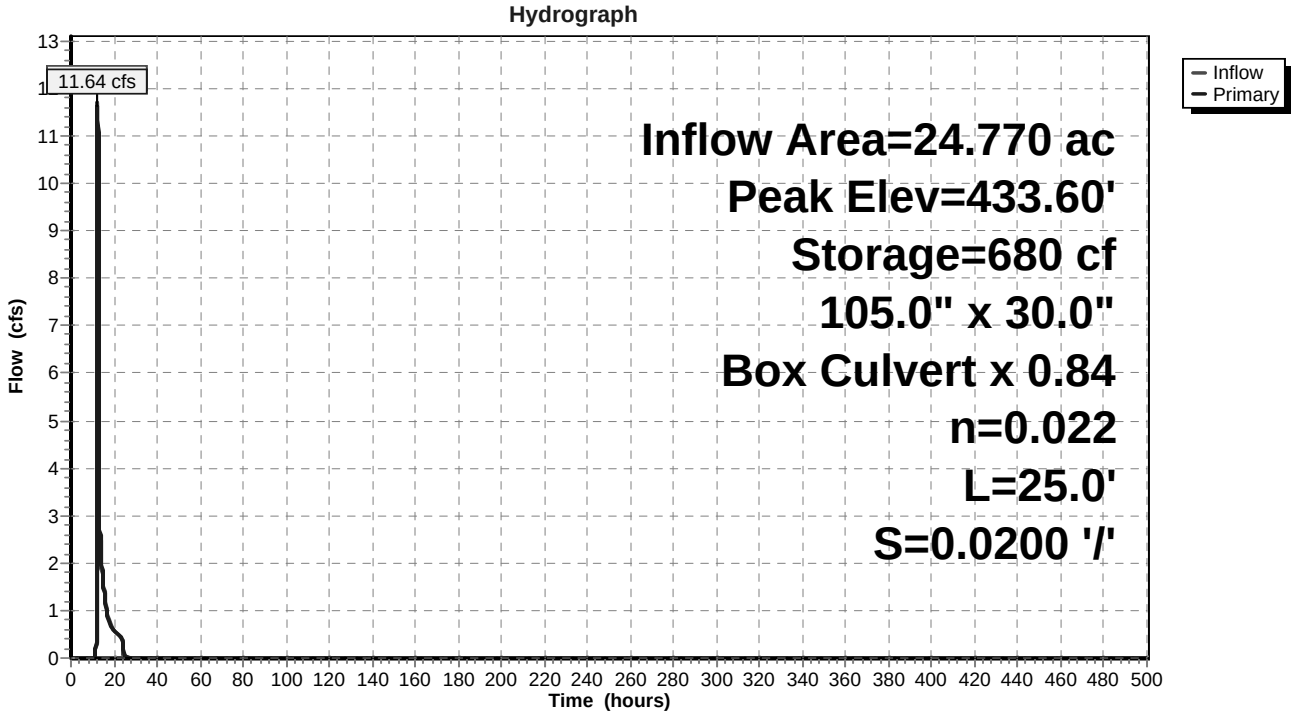
Volume	Invert	Avail.Storage	Storage Description
#1	433.00'	27,483 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
433.00	0	0	0
434.00	3,825	1,913	1,913
435.00	4,835	4,330	6,243
435.50	5,362	2,549	8,792
436.00	69,402	18,691	27,483

Device	Routing	Invert	Outlet Devices
#1	Primary	433.00'	**105.0" W x 30.0" H Box Culvert X 0.84** L= 25.0' Box, 30-75° wingwalls, square crown, Ke= 0.400 Inlet / Outlet Invert= 433.00' / 432.50' S= 0.0200 '/' Cc= 0.900 n= 0.022 Earth, clean & straight

Primary OutFlow Max=11.63 cfs @ 12.48 hrs HW=433.60' (Free Discharge)
1=Culvert (Inlet Controls 11.63 cfs @ 2.23 fps)

Pond 4P: Storage at Box Culvert



Summary for Pond EW-1: EXISTING NYSDEC JURISDICTIONAL WETLAND

Inflow Area = 81.411 ac, 4.35% Impervious, Inflow Depth = 0.83" for 1-YR event
Inflow = 28.01 cfs @ 12.65 hrs, Volume= 5.654 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Peak Elev= 421.55' @ 46.03 hrs Surf.Area= 251,271 sf Storage= 246,272 cf

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

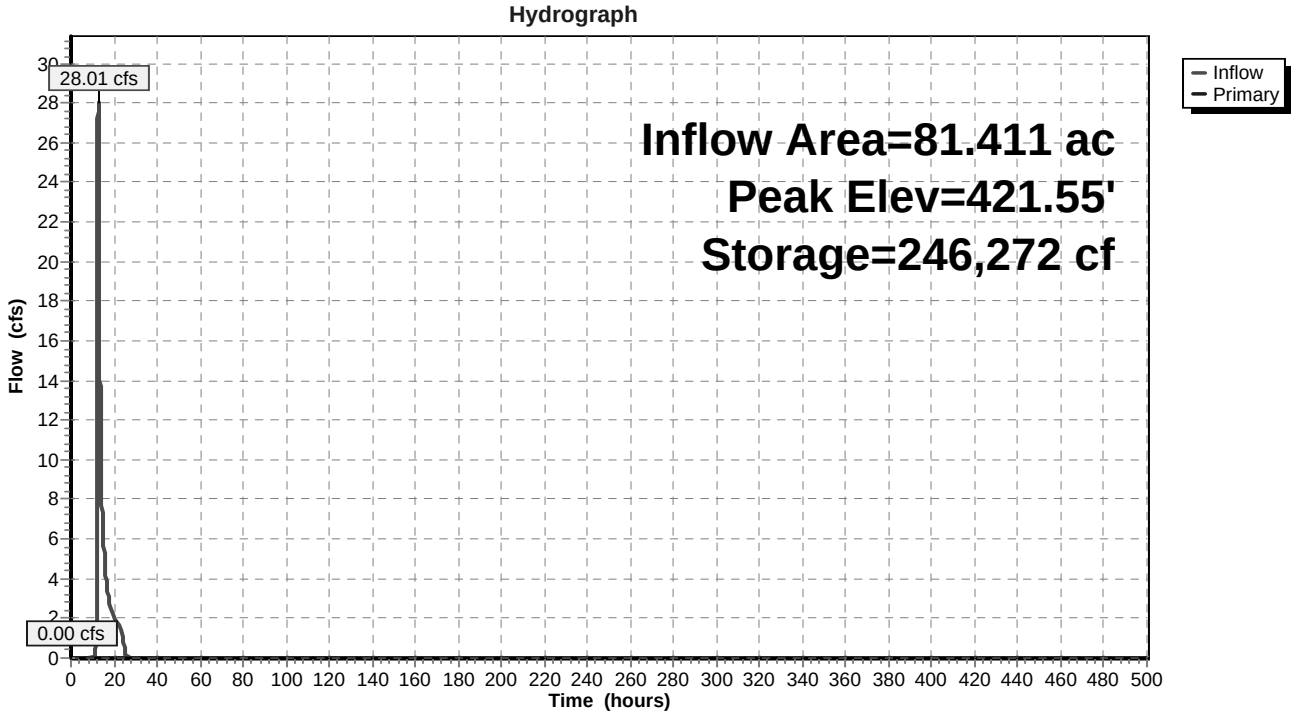
Volume	Invert	Avail.Storage	Storage Description
#1	419.80'	688,314 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
419.80	0	0	0
420.00	64,917	6,492	6,492
421.00	178,530	121,724	128,215
422.00	310,941	244,736	372,951
423.00	319,785	315,363	688,314

Device	Routing	Invert	Outlet Devices
#1	Primary	422.00'	**300.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=419.80' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond EW-1: EXISTING NYSDEC JURISDICTIONAL WETLAND



Summary for Pond F-1: Bioretention Area #1

Inflow Area = 0.820 ac, 8.88% Impervious, Inflow Depth = 1.35" for 1-YR event
Inflow = 1.28 cfs @ 12.11 hrs, Volume= 0.093 af
Outflow = 0.99 cfs @ 12.17 hrs, Volume= 0.073 af, Atten= 22%, Lag= 4.1 min
Secondary = 0.99 cfs @ 12.17 hrs, Volume= 0.073 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Peak Elev= 430.62' @ 12.17 hrs Surf.Area= 1,914 sf Storage= 1,083 cf
Flood Elev= 431.50' Surf.Area= 2,412 sf Storage= 2,987 cf

Plug-Flow detention time= 128.0 min calculated for 0.073 af (79% of inflow)
Center-of-Mass det. time= 45.6 min (883.9 - 838.2)

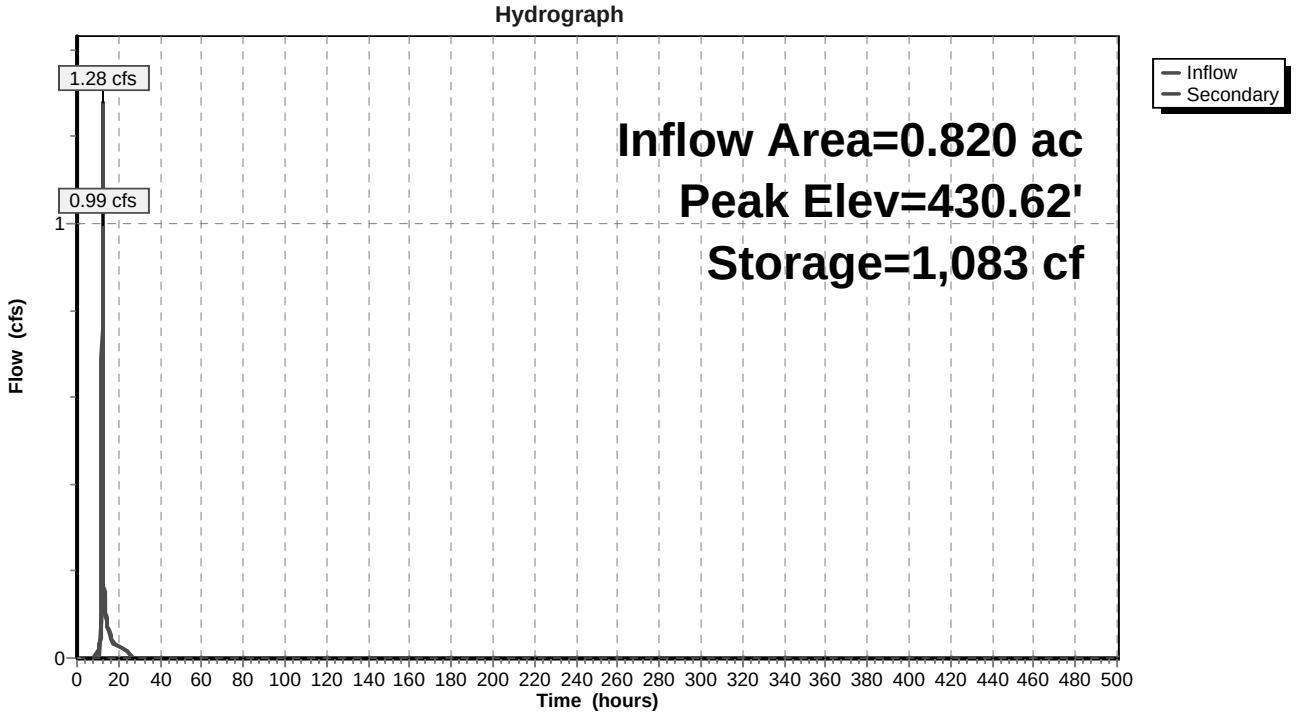
Volume	Invert	Avail.Storage	Storage Description
#1	430.00'	2,987 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
430.00	1,589	0	0
430.50	1,849	860	860
431.00	2,124	993	1,853
431.50	2,412	1,134	2,987

Device	Routing	Invert	Outlet Devices
#1	Secondary	430.50'	**10.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Secondary OutFlow Max=0.99 cfs @ 12.17 hrs HW=430.62' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 0.99 cfs @ 0.84 fps)

Pond F-1: Bioretention Area #1



Summary for Pond F-2: Bioretention Area #2

Inflow Area = 1.874 ac, 27.04% Impervious, Inflow Depth = 1.64" for 1-YR event
Inflow = 3.46 cfs @ 12.11 hrs, Volume= 0.256 af
Outflow = 2.59 cfs @ 12.19 hrs, Volume= 0.256 af, Atten= 25%, Lag= 4.8 min
Primary = 2.59 cfs @ 12.19 hrs, Volume= 0.256 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Starting Elev= 428.75' Surf.Area= 6,983 sf Storage= 1,706 cf
Peak Elev= 428.95' @ 12.19 hrs Surf.Area= 7,245 sf Storage= 3,156 cf (1,450 cf above start)
Flood Elev= 430.00' Surf.Area= 8,314 sf Storage= 11,301 cf (9,595 cf above start)

Plug-Flow detention time= 113.0 min calculated for 0.217 af (85% of inflow)
Center-of-Mass det. time= 18.2 min (842.8 - 824.6)

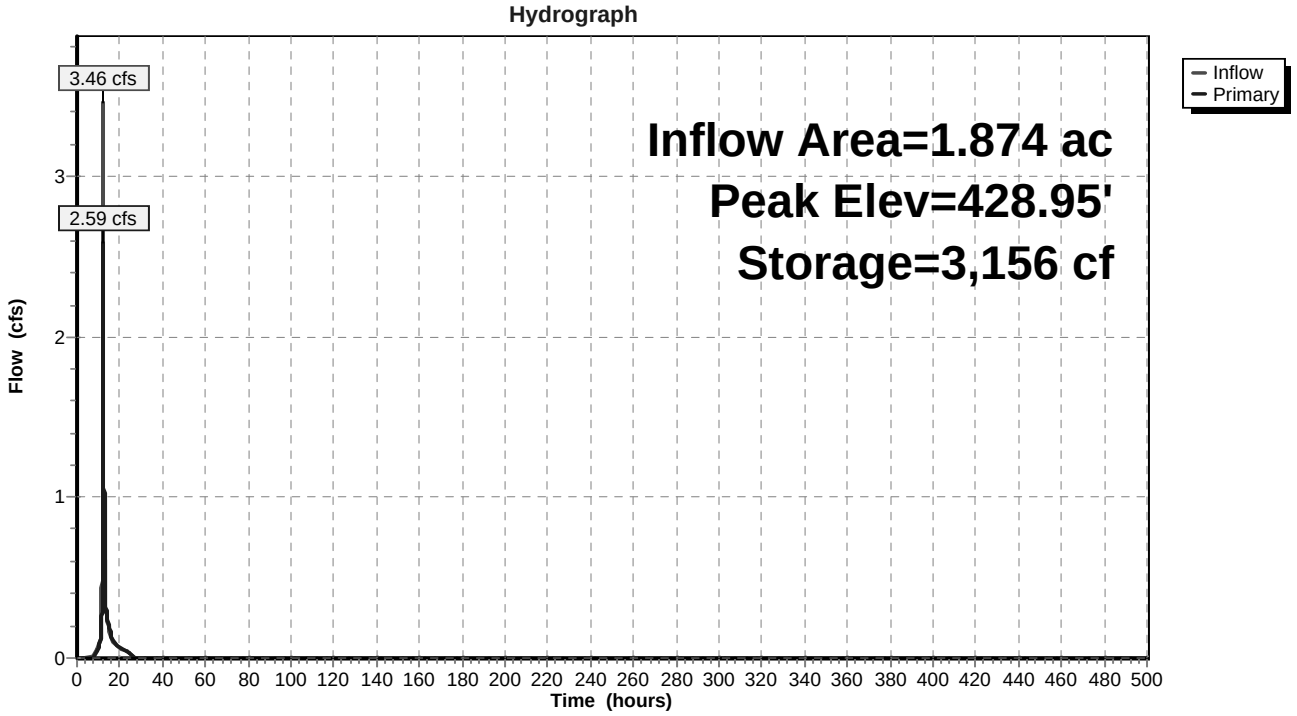
Volume	Invert	Avail.Storage	Storage Description
#1	428.50'	11,301 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
428.50	6,662	0	0
429.00	7,304	3,492	3,492
430.00	8,314	7,809	11,301

Device	Routing	Invert	Outlet Devices
#1	Primary	428.75'	**12.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=2.59 cfs @ 12.19 hrs HW=428.95' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 2.59 cfs @ 1.06 fps)

Pond F-2: Bioretention Area #2



Summary for Pond F-3: Bioretention Area #3

Inflow Area = 5.852 ac, 10.88% Impervious, Inflow Depth = 0.80" for 1-YR event
Inflow = 3.78 cfs @ 12.32 hrs, Volume= 0.391 af
Outflow = 2.82 cfs @ 12.54 hrs, Volume= 0.346 af, Atten= 25%, Lag= 13.1 min
Primary = 2.82 cfs @ 12.54 hrs, Volume= 0.346 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Peak Elev= 439.24' @ 12.54 hrs Surf.Area= 4,498 sf Storage= 2,978 cf
Flood Elev= 440.00' Surf.Area= 5,442 sf Storage= 6,774 cf

Plug-Flow detention time= 85.6 min calculated for 0.346 af (89% of inflow)
Center-of-Mass det. time= 31.5 min (927.3 - 895.7)

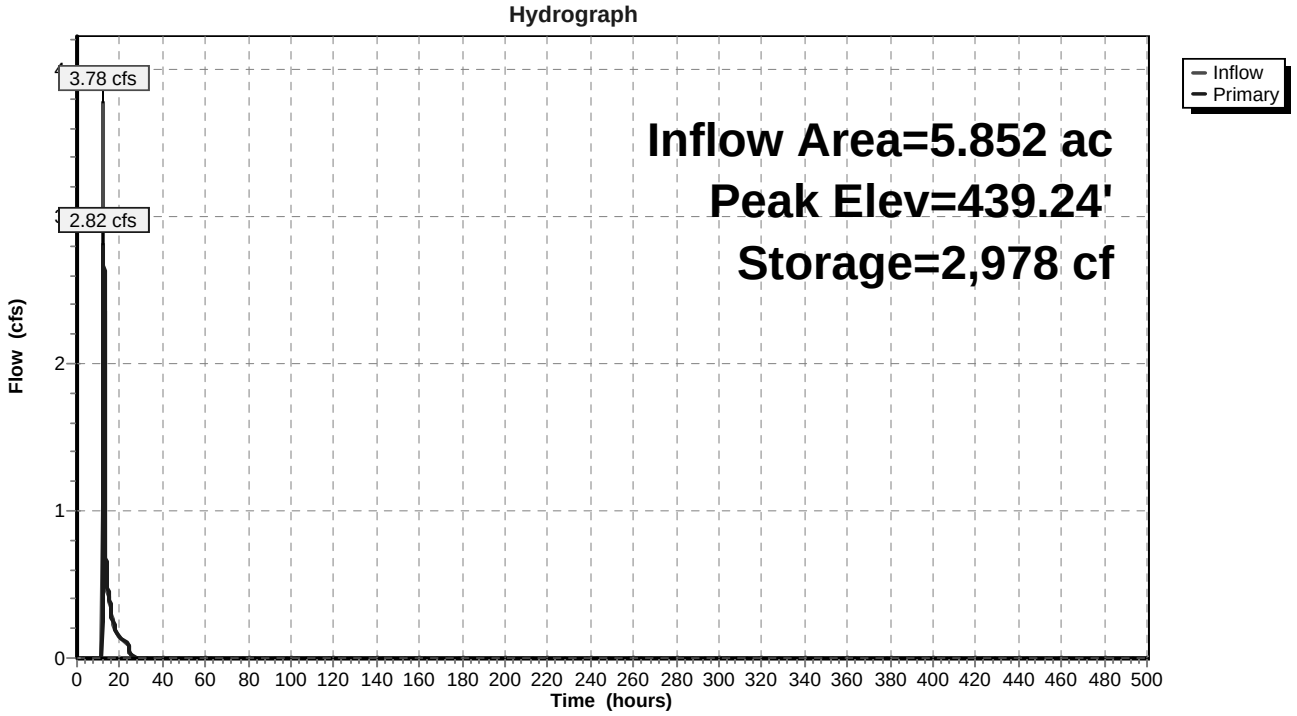
Volume	Invert	Avail.Storage	Storage Description
#1	438.50'	6,774 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
438.50	3,592	0	0
439.00	4,206	1,950	1,950
440.00	5,442	4,824	6,774

Device	Routing	Invert	Outlet Devices
#1	Primary	439.00'	**10.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=2.81 cfs @ 12.54 hrs HW=439.24' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 2.81 cfs @ 1.19 fps)

Pond F-3: Bioretention Area #3



Summary for Pond P-1: Wet Pond

Inflow Area = 17.690 ac, 38.01% Impervious, Inflow Depth = 1.67" for 1-YR event
Inflow = 32.79 cfs @ 12.09 hrs, Volume= 2.462 af
Outflow = 0.73 cfs @ 17.90 hrs, Volume= 2.462 af, Atten= 98%, Lag= 348.4 min
Primary = 0.73 cfs @ 17.90 hrs, Volume= 2.462 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Starting Elev= 422.00' Surf.Area= 30,655 sf Storage= 75,367 cf
Peak Elev= 424.25' @ 17.90 hrs Surf.Area= 40,496 sf Storage= 155,117 cf (79,750 cf above start)
Flood Elev= 429.00' Surf.Area= 59,091 sf Storage= 390,986 cf (315,619 cf above start)

Plug-Flow detention time= 3,181.8 min calculated for 0.732 af (30% of inflow)
Center-of-Mass det. time= 1,470.5 min (2,287.5 - 817.0)

Volume	Invert	Avail.Storage	Storage Description
#1	418.00'	452,178 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

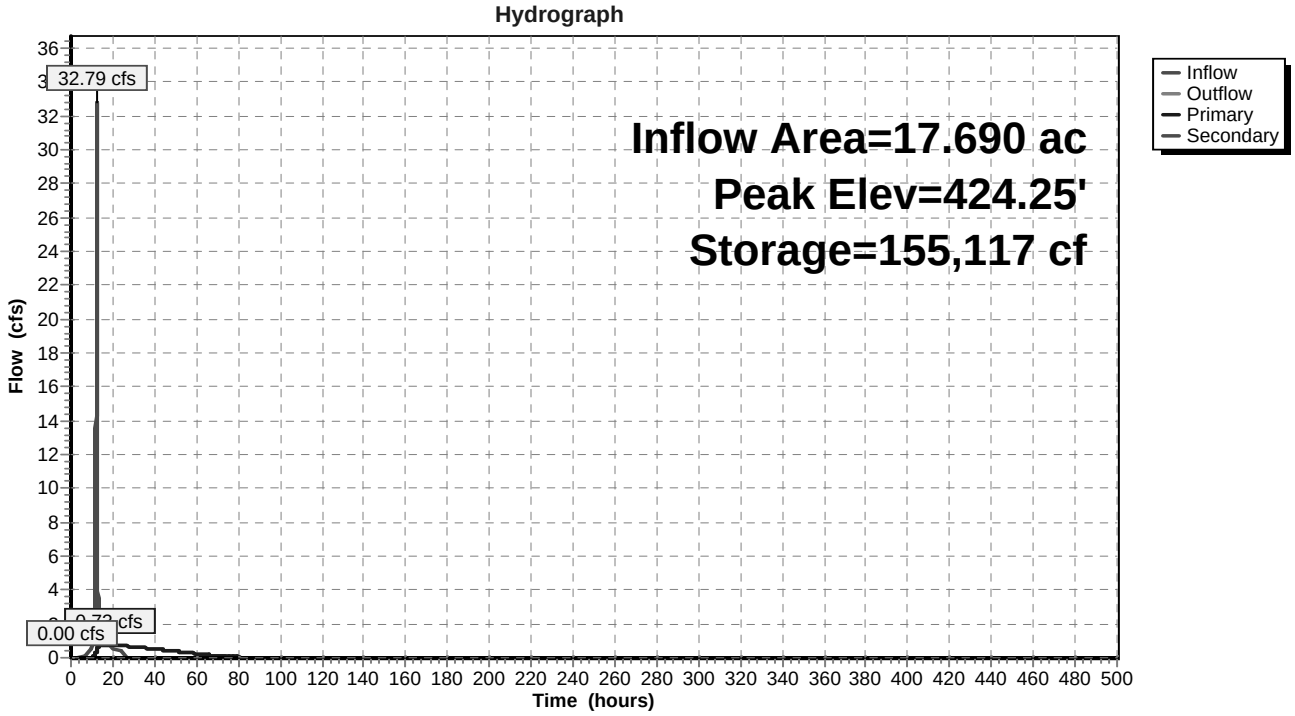
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
418.00	14,212	0	0
420.00	16,608	30,820	30,820
421.00	19,142	17,875	48,695
421.50	28,445	11,897	60,592
422.00	30,655	14,775	75,367
423.00	34,805	32,730	108,097
424.00	39,588	37,197	145,293
425.00	43,288	41,438	186,731
426.00	47,088	45,188	231,919
427.00	50,988	49,038	280,957
428.00	54,989	52,989	333,946
429.00	59,091	57,040	390,986
430.00	63,293	61,192	452,178

Device	Routing	Invert	Outlet Devices
#1	Primary	421.85'	**30.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 421.85' / 421.50' S= 0.0140 '/' Cc= 0.900 n= 0.013
#2	Device 1	422.00'	**4.4" Vert. Orifice/Grate** C= 0.600
#3	Device 1	424.24'	**6.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	426.50'	**2.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Secondary	429.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir X 0.00** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.73 cfs @ 17.90 hrs HW=424.25' (Free Discharge)
└─**1=Culvert** (Passes 0.73 cfs of 20.13 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.73 cfs @ 6.91 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 0.00 cfs @ 0.25 fps)
  └─**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=422.00' (Free Discharge)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P-1: Wet Pond

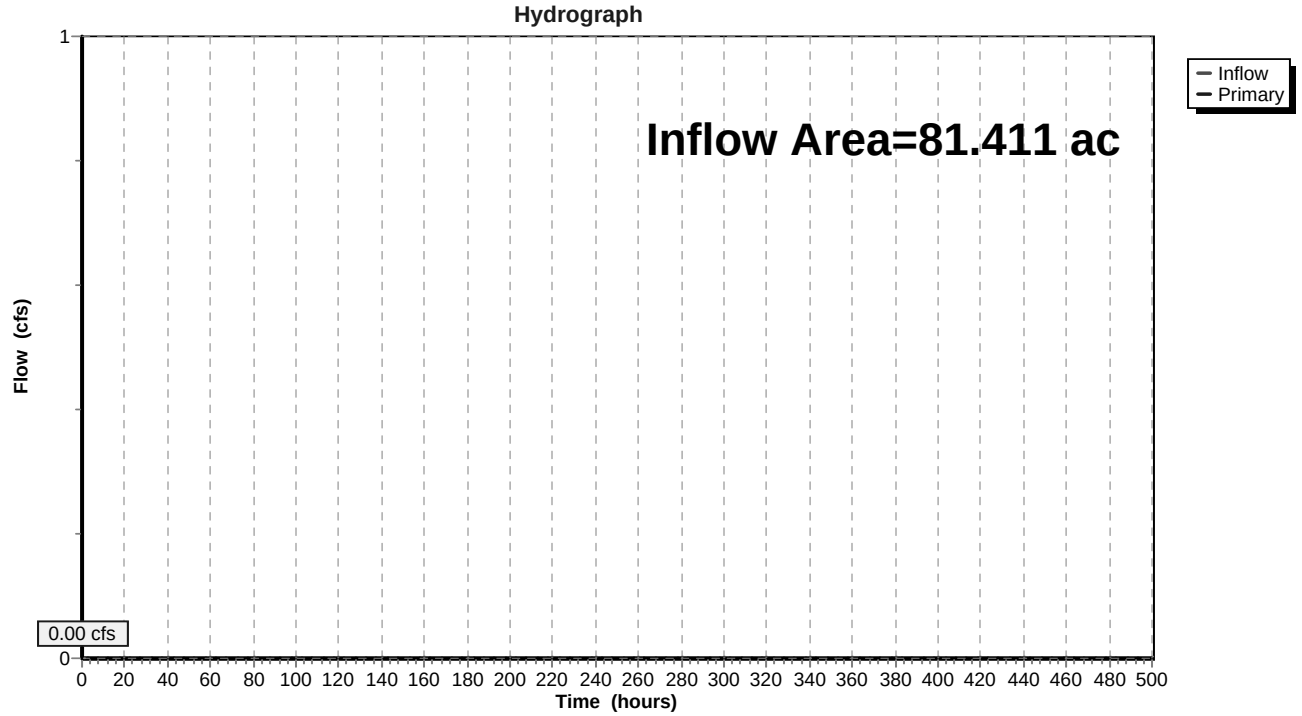


Summary for Pond zDP1: DESIGN POINT 1 (WETLAND)

Inflow Area = 81.411 ac, 4.35% Impervious, Inflow Depth = 0.00" for 1-YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs

Pond zDP1: DESIGN POINT 1 (WETLAND)

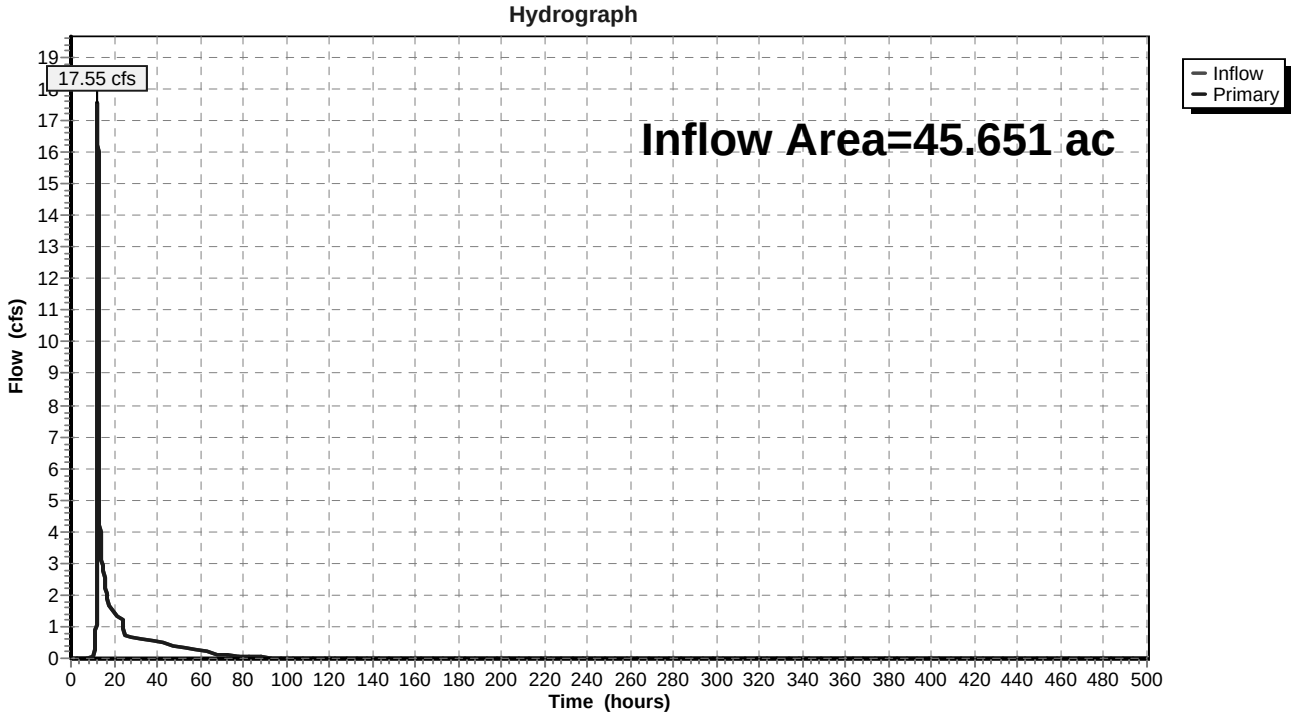


Summary for Pond zDP2: DESIGN POINT 2 (36" RCP CULVERT)

Inflow Area = 45.651 ac, 16.23% Impervious, Inflow Depth = 1.22" for 1-YR event
Inflow = 17.55 cfs @ 12.43 hrs, Volume= 4.640 af
Primary = 17.55 cfs @ 12.43 hrs, Volume= 4.640 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs

Pond zDP2: DESIGN POINT 2 (36" RCP CULVERT)



Time span=0.00-500.00 hrs, dt=0.01 hrs, 50001 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PS-1.1: Runoff Area=2,349,900 sf 2.26% Impervious Runoff Depth=2.45"
Flow Length=3,203' Tc=57.8 min CN=75 Runoff=62.14 cfs 11.011 af

Subcatchment PS-1.2: Runoff Area=824,088 sf 5.85% Impervious Runoff Depth=2.36"
Flow Length=1,595' Tc=23.1 min CN=74 Runoff=32.99 cfs 3.727 af

Subcatchment PS-1.3: Runoff Area=35,738 sf 8.88% Impervious Runoff Depth=3.27"
Tc=6.0 min CN=84 Runoff=3.12 cfs 0.224 af

Subcatchment PS-1.4: Runoff Area=81,628 sf 27.04% Impervious Runoff Depth=3.67"
Tc=6.0 min CN=88 Runoff=7.87 cfs 0.573 af

Subcatchment PS-2.1: Runoff Area=1,218,013 sf 2.44% Impervious Runoff Depth=2.62"
Flow Length=1,190' Tc=28.1 min CN=77 Runoff=50.08 cfs 6.112 af

Subcatchment PS-2.2: Runoff Area=653,875 sf 42.26% Impervious Runoff Depth=3.88"
Tc=6.0 min CN=90 Runoff=65.81 cfs 4.849 af

Subcatchment PS-2.3: Runoff Area=254,905 sf 10.88% Impervious Runoff Depth=2.54"
Flow Length=951' Tc=20.3 min CN=76 Runoff=11.63 cfs 1.236 af

Subcatchment PS-2.4: Runoff Area=116,690 sf 14.20% Impervious Runoff Depth=2.62"
Flow Length=575' Tc=15.1 min CN=77 Runoff=6.21 cfs 0.586 af

Subcatchment RRv: CAPTURED ROOFS & Runoff Area=3.130 ac 100.00% Impervious Runoff Depth=4.76"
Tc=0.0 min CN=98 Runoff=18.68 cfs 1.242 af

Reach 3R: Pipes Inflow=6.21 cfs 0.586 af
Outflow=6.21 cfs 0.586 af

Reach 6R: Inflow=2.93 cfs 0.204 af
Outflow=2.93 cfs 0.204 af

Pond 1A: Plunge Pool F-1 Peak Elev=430.76' Storage=1,075 cf Inflow=3.12 cfs 0.224 af
Outflow=3.10 cfs 0.224 af

Pond 2A: Plunge Pool F-2 Peak Elev=429.20' Storage=4,000 cf Inflow=7.87 cfs 0.573 af
Outflow=7.69 cfs 0.573 af

Pond 3A: Plunge Pool F-3 Peak Elev=439.57' Storage=2,445 cf Inflow=11.63 cfs 1.236 af
Outflow=11.61 cfs 1.197 af

Pond 4P: Storage at Box Culvert Peak Elev=434.45' Storage=3,722 cf Inflow=44.31 cfs 4.880 af
105.0" x 30.0" Box Culvert x 0.84 n=0.022 L=25.0' S=0.0200 '/' Outflow=43.96 cfs 4.880 af

Pond EW-1: EXISTING NYSDEC Peak Elev=422.10' Storage=405,117 cf Inflow=88.73 cfs 16.667 af
Outflow=26.71 cfs 8.105 af

Pond F-1: Bioretention Area #1 Peak Elev=430.74' Storage=1,324 cf Inflow=3.10 cfs 0.224 af
Outflow=2.93 cfs 0.204 af

Pond F-2: Bioretention Area #2 Peak Elev=429.11' Storage=4,284 cf Inflow=7.69 cfs 0.573 af
Outflow=6.33 cfs 0.573 af

Pond F-3: Bioretention Area #3 Peak Elev=439.56' Storage=4,519 cf Inflow=11.61 cfs 1.197 af
Outflow=11.32 cfs 1.152 af

Pond P-1: Wet Pond Peak Elev=426.23' Storage=242,770 cf Inflow=69.93 cfs 5.434 af
Primary=2.27 cfs 5.434 af Secondary=0.00 cfs 0.000 af Outflow=2.27 cfs 5.434 af

Pond zDP1: DESIGN POINT 1 (WETLAND) Inflow=26.71 cfs 8.105 af
Primary=26.71 cfs 8.105 af

Pond zDP2: DESIGN POINT 2 (36" RCP CULVERT) Inflow=51.88 cfs 11.546 af
Primary=51.88 cfs 11.546 af

Total Runoff Area = 130.192 ac Runoff Volume = 29.560 af Average Runoff Depth = 2.72"
89.19% Pervious = 116.113 ac 10.81% Impervious = 14.079 ac

Summary for Subcatchment PS-1.1:

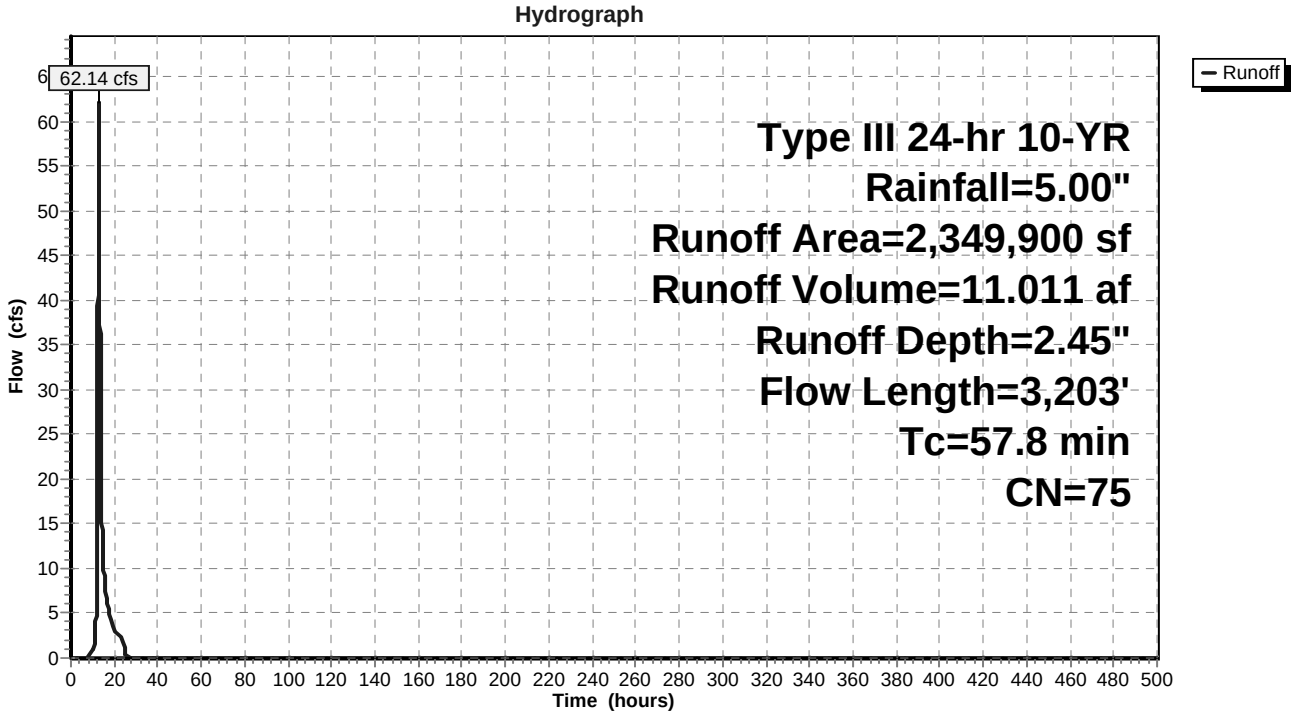
Runoff = 62.14 cfs @ 12.78 hrs, Volume= 11.011 af, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.00"

Area (sf)	CN	Description
5,609	56	Brush, Fair, HSG B
219,739	70	Brush, Fair, HSG C
1,378,531	73	Woods, Fair, HSG C
99,805	74	>75% Grass cover, Good, HSG C
14,337	80	>75% Grass cover, Good, HSG D
14,067	89	Gravel roads, HSG C
304,723	77	Brush, Fair, HSG D
16,528	91	Gravel roads, HSG D
243,474	79	Woods, Fair, HSG D
53,087	98	Paved parking, HSG C
2,349,900	75	Weighted Average
2,296,813		97.74% Pervious Area
53,087		2.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0785	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.50"
13.2	1,144	0.0839	1.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	60	0.0167	6.05	19.00	**Pipe Channel, PIPE CULVERT ON Rt. 22** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.020 Corrugated PE, corrugated interior
13.0	753	0.0372	0.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	256	0.0586	1.69		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.1	434	0.0415	1.02		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	456		6.95		**Lake or Reservoir,** Mean Depth= 1.50'
57.8	3,203	Total			

Subcatchment PS-1.1:



Summary for Subcatchment PS-1.2:

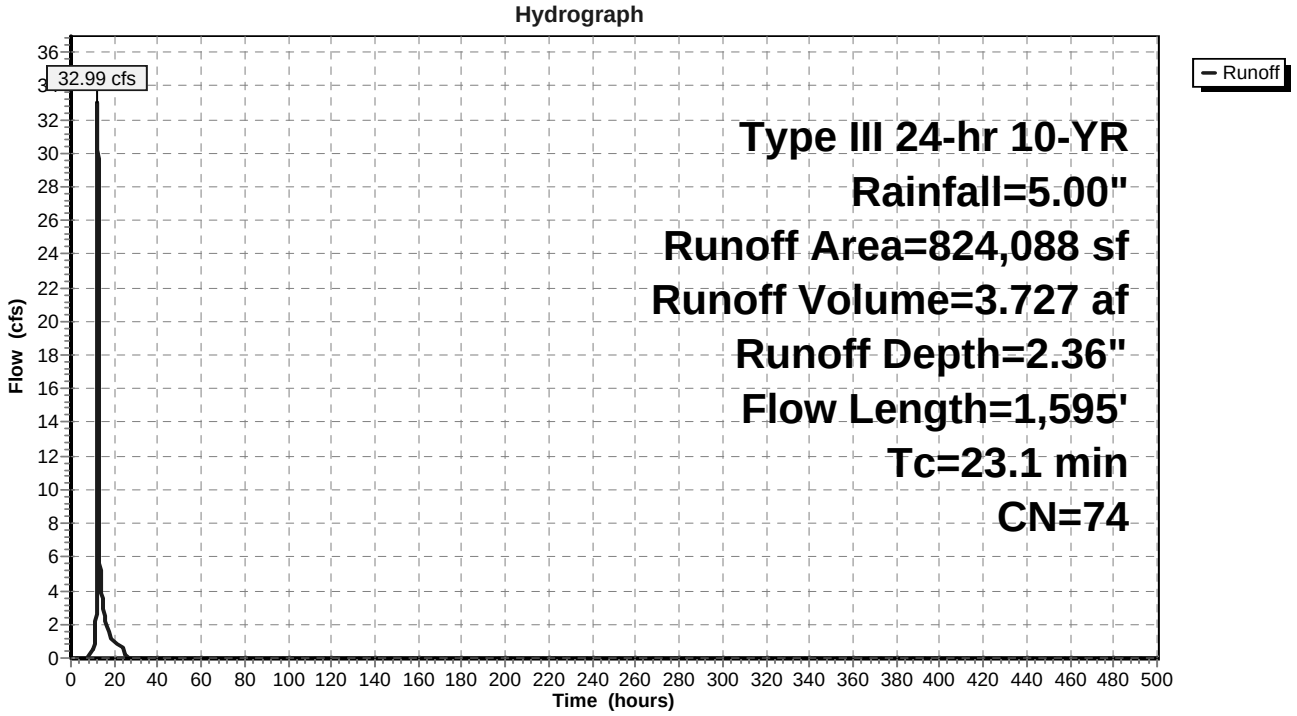
Runoff = 32.99 cfs @ 12.33 hrs, Volume= 3.727 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.00"

Area (sf)	CN	Description
476,732	73	Woods, Fair, HSG C
167,171	70	Brush, Fair, HSG C
58,454	77	Brush, Fair, HSG D
10,064	79	Woods, Fair, HSG D
57,883	74	>75% Grass cover, Good, HSG C
5,552	80	>75% Grass cover, Good, HSG D
48,232	98	Paved parking & roofs
824,088	74	Weighted Average
775,856		94.15% Pervious Area
48,232		5.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.0560	0.18		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.7	65	0.0560	1.66		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.7	355	0.0626	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	75	0.0050	4.03	4.95	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
0.2	115	0.0260	7.79	103.88	**Parabolic Channel,** W=10.00' D=2.00' Area=13.3 sf Perim=11.0' n= 0.035 Earth, dense weeds
0.1	85	0.0820	10.72	33.69	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.025 Corrugated metal
0.3	310	0.0967	15.03	200.34	**Parabolic Channel,** W=10.00' D=2.00' Area=13.3 sf Perim=11.0' n= 0.035 Earth, dense weeds
5.7	325	0.0184	0.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.1	165	0.0030	1.30	15.21	**Parabolic Channel,** W=35.00' D=0.50' Area=11.7 sf Perim=35.0' n= 0.030 Earth, grassed & winding
23.1	1,595	Total			

Subcatchment PS-1.2:



Summary for Subcatchment PS-1.3:

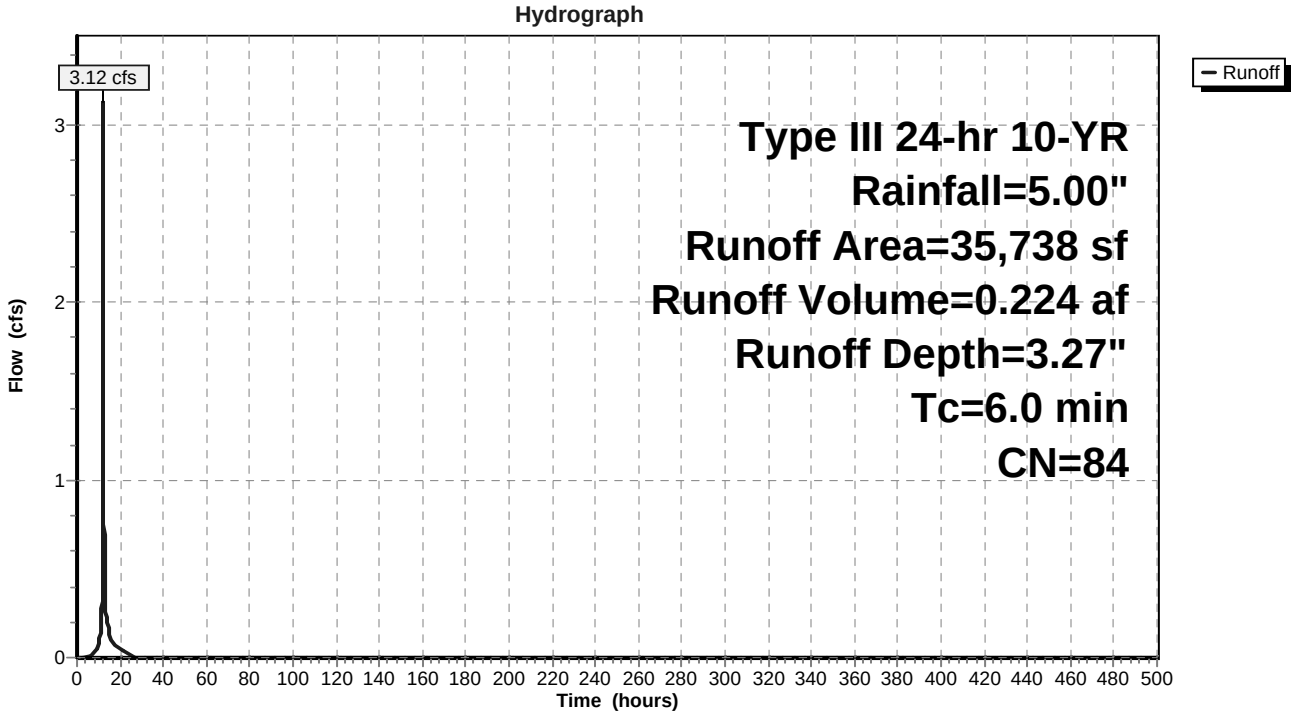
Runoff = 3.12 cfs @ 12.09 hrs, Volume= 0.224 af, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.00"

Area (sf)	CN	Description
3,172	98	Paved parking, HSG C
13,366	74	>75% Grass cover, Good, HSG C
19,200	89	Gravel roads, HSG C
35,738	84	Weighted Average
32,566		91.12% Pervious Area
3,172		8.88% Impervious Area

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

Subcatchment PS-1.3:



Summary for Subcatchment PS-1.4:

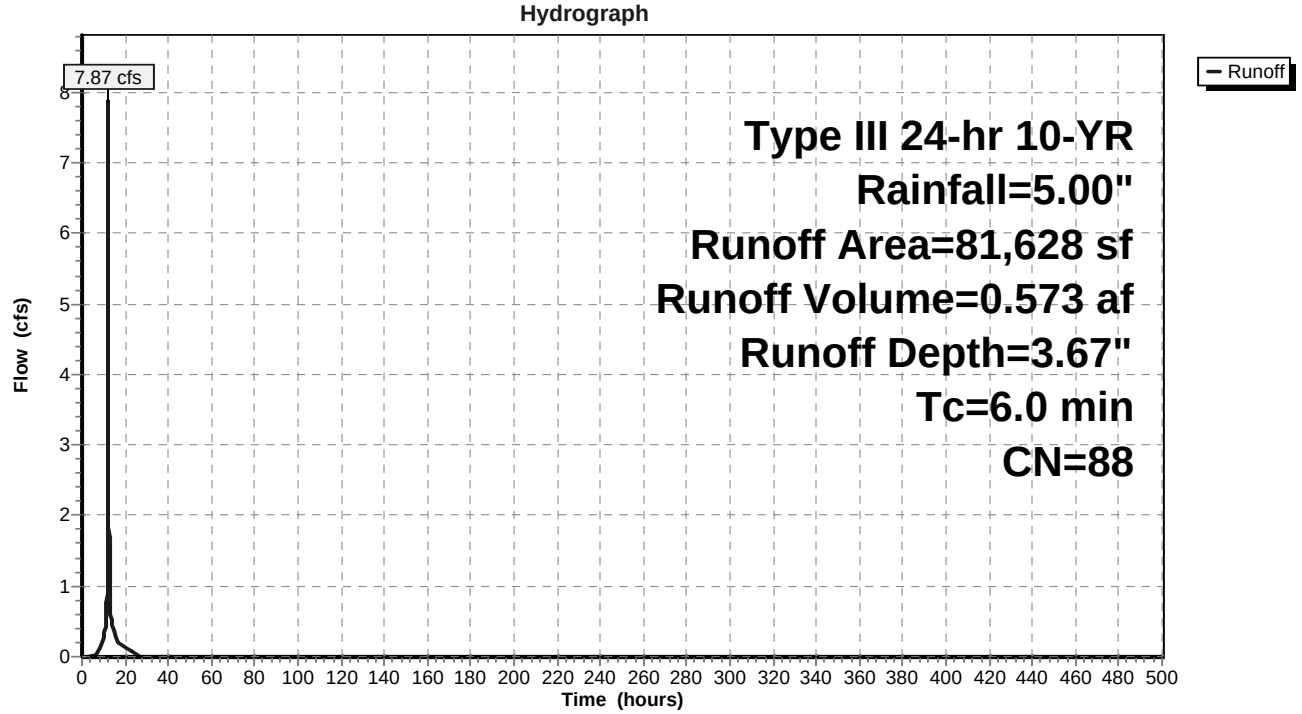
Runoff = 7.87 cfs @ 12.09 hrs, Volume= 0.573 af, Depth= 3.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.00"

Area (sf)	CN	Description
22,070	98	Paved parking, HSG C
36,079	91	Gravel roads, HSG D
9,940	80	>75% Grass cover, Good, HSG D
2,243	85	Gravel roads, HSG B
8,845	61	>75% Grass cover, Good, HSG B
2,224	74	>75% Grass cover, Good, HSG C
227	89	Gravel roads, HSG C
81,628	88	Weighted Average
59,558		72.96% Pervious Area
22,070		27.04% Impervious Area

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

Subcatchment PS-1.4:



Summary for Subcatchment PS-2.1:

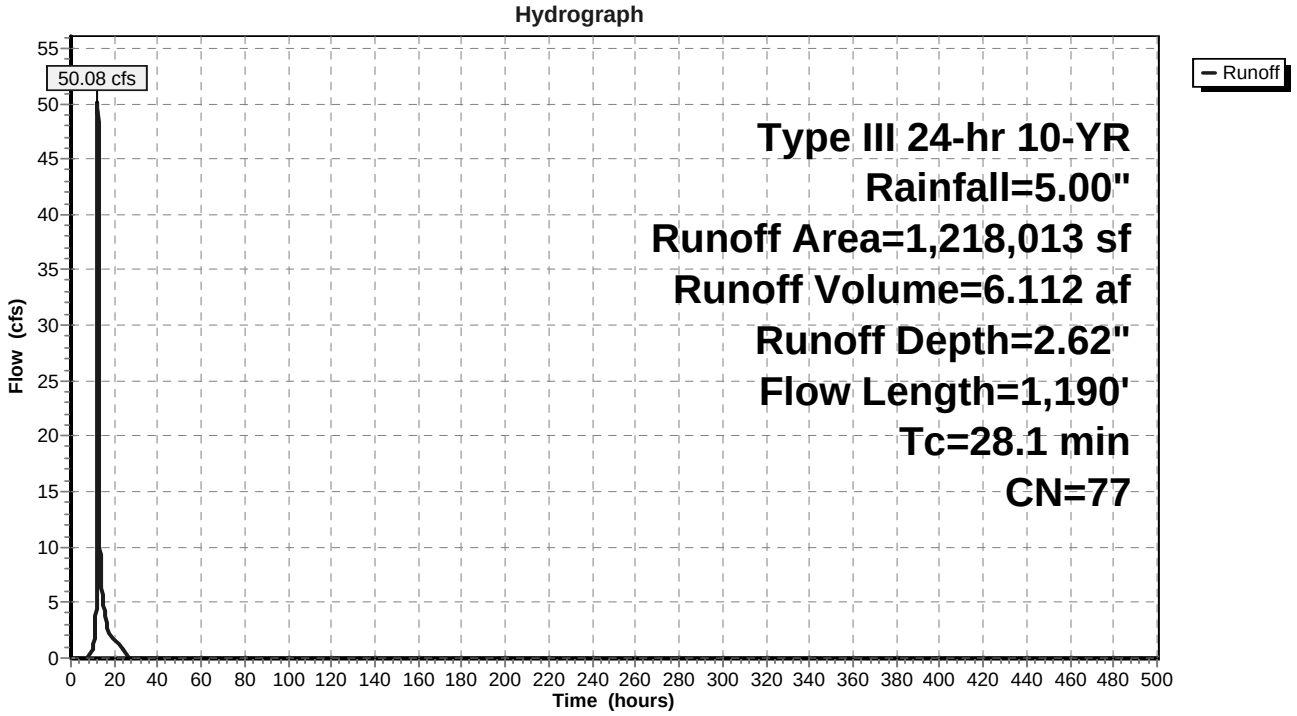
Runoff = 50.08 cfs @ 12.40 hrs, Volume= 6.112 af, Depth= 2.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.00"

	Area (sf)	CN	Description
	3,751	56	Brush, Fair, HSG B
	3,034	55	Woods, Good, HSG B
	192,194	89	Gravel roads, HSG C
	7,372	70	Brush, Fair, HSG C
	858,494	73	Woods, Fair, HSG C
	29,750	98	Paved parking, HSG C
	31,009	77	Woods, Good, HSG D
*	53,016	76	Gravel/Brush Mix, HSG B
	15,977	85	Gravel roads, HSG B
	14,855	91	Gravel roads, HSG D
	3,028	61	>75% Grass cover, Good, HSG B
	5,533	74	>75% Grass cover, Good, HSG C
	1,218,013	77	Weighted Average
	1,188,263		97.56% Pervious Area
	29,750		2.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.5	100	0.1200	0.10		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.50"
2.4	250	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.6	430	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.6	410	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
28.1	1,190	Total			

Subcatchment PS-2.1:



Summary for Subcatchment PS-2.2:

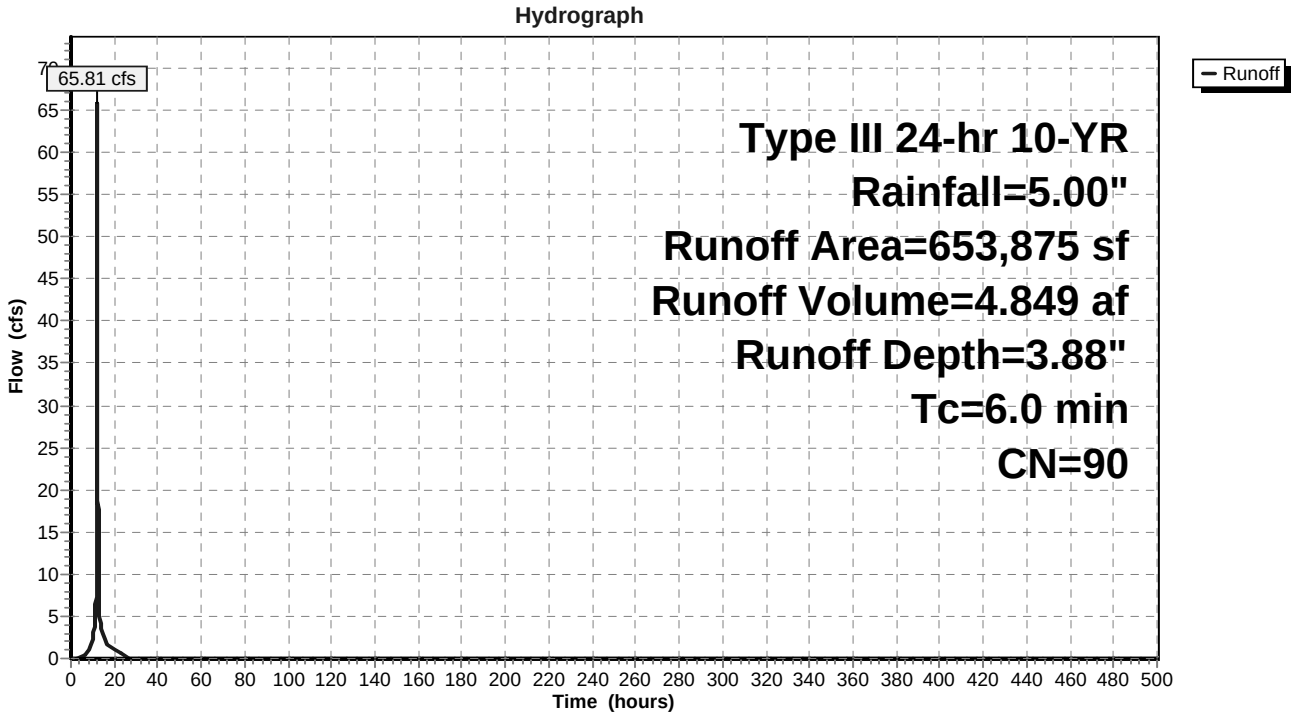
Runoff = 65.81 cfs @ 12.09 hrs, Volume= 4.849 af, Depth= 3.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.00"

Area (sf)	CN	Description
65,818	89	Gravel roads, HSG C
18,237	91	Gravel roads, HSG D
20,546	61	>75% Grass cover, Good, HSG B
240,237	85	Gravel roads, HSG B
20,235	74	>75% Grass cover, Good, HSG C
30,655	98	Water Surface, HSG B
143,453	98	Roofs, HSG A
102,225	98	Paved parking, HSG A
12,469	80	>75% Grass cover, Good, HSG D
653,875	90	Weighted Average
377,542		57.74% Pervious Area
276,333		42.26% Impervious Area

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

Subcatchment PS-2.2:



Summary for Subcatchment PS-2.3:

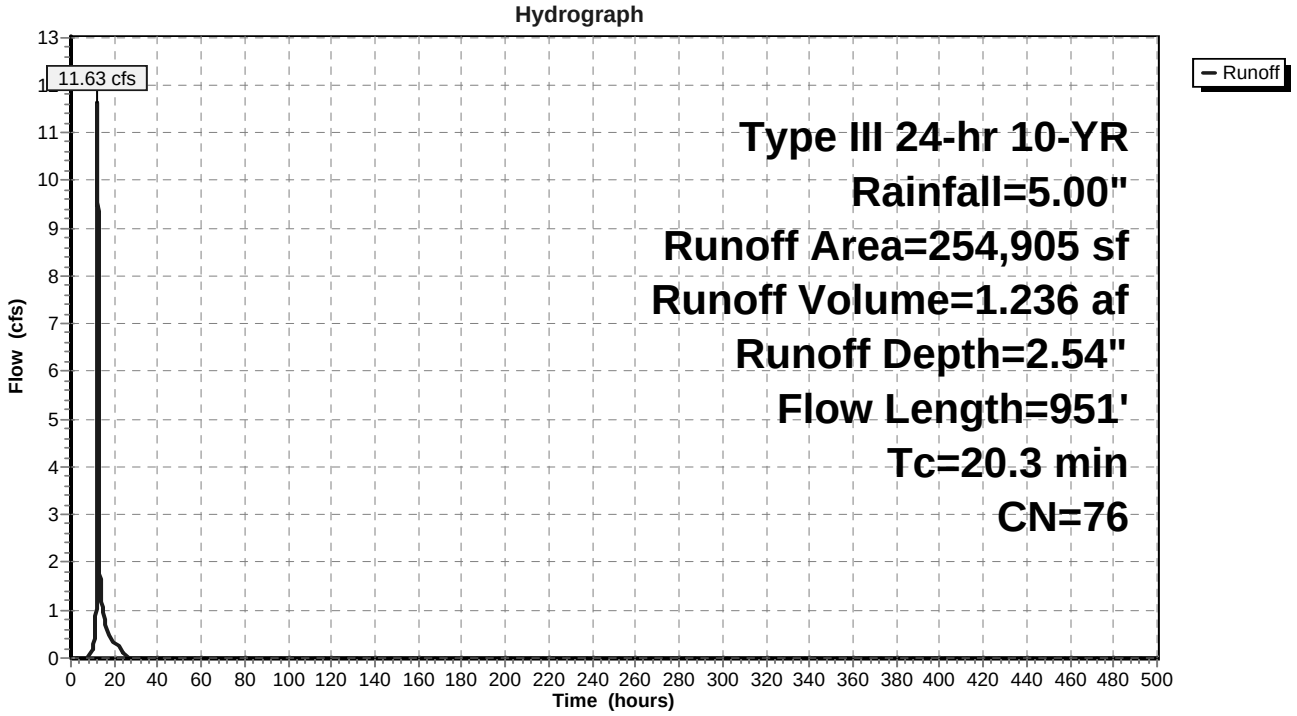
Runoff = 11.63 cfs @ 12.29 hrs, Volume= 1.236 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.00"

Area (sf)	CN	Description
81,119	74	>75% Grass cover, Good, HSG C
27,727	98	Paved parking, HSG A
120,312	73	Woods, Fair, HSG C
17,305	70	Brush, Fair, HSG C
8,442	89	Gravel roads, HSG C
254,905	76	Weighted Average
227,178		89.12% Pervious Area
27,727		10.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0500	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.2	135	0.1480	1.92		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.0	168	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	95	0.0320	3.63		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	453	0.0730	15.23	203.08	**Parabolic Channel,** W=10.00' D=2.00' Area=13.3 sf Perim=11.0' n= 0.030 Earth, grassed & winding
20.3	951	Total			

Subcatchment PS-2.3:



Summary for Subcatchment PS-2.4:

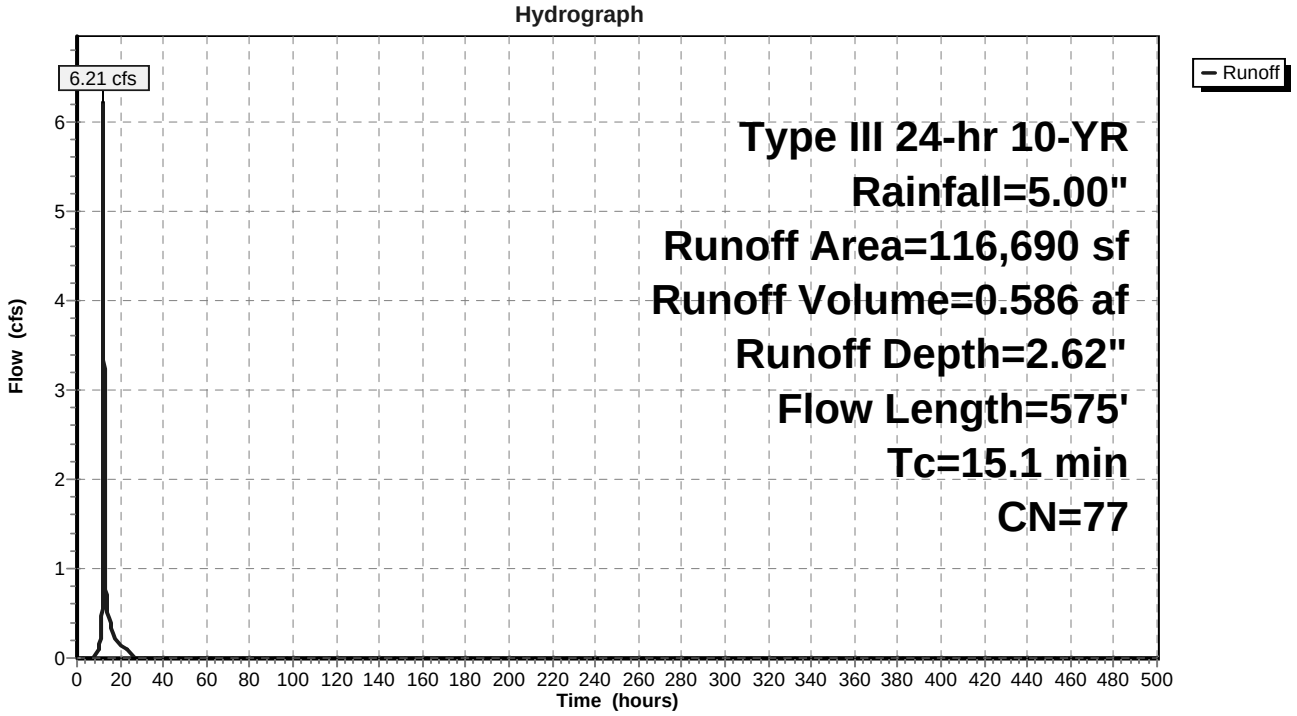
Runoff = 6.21 cfs @ 12.21 hrs, Volume= 0.586 af, Depth= 2.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.00"

Area (sf)	CN	Description
86,696	73	Woods, Fair, HSG C
13,423	74	>75% Grass cover, Good, HSG C
16,571	98	Paved parking, HSG C
116,690	77	Weighted Average
100,119		85.80% Pervious Area
16,571		14.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	1.04		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
10.9	80	0.0625	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
3.8	295	0.0661	1.29		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	180	0.0722	21.12	563.30	**Parabolic Channel,** W=10.00' D=4.00' Area=26.7 sf Perim=13.3' n= 0.030 Earth, grassed & winding
15.1	575	Total			

Subcatchment PS-2.4:



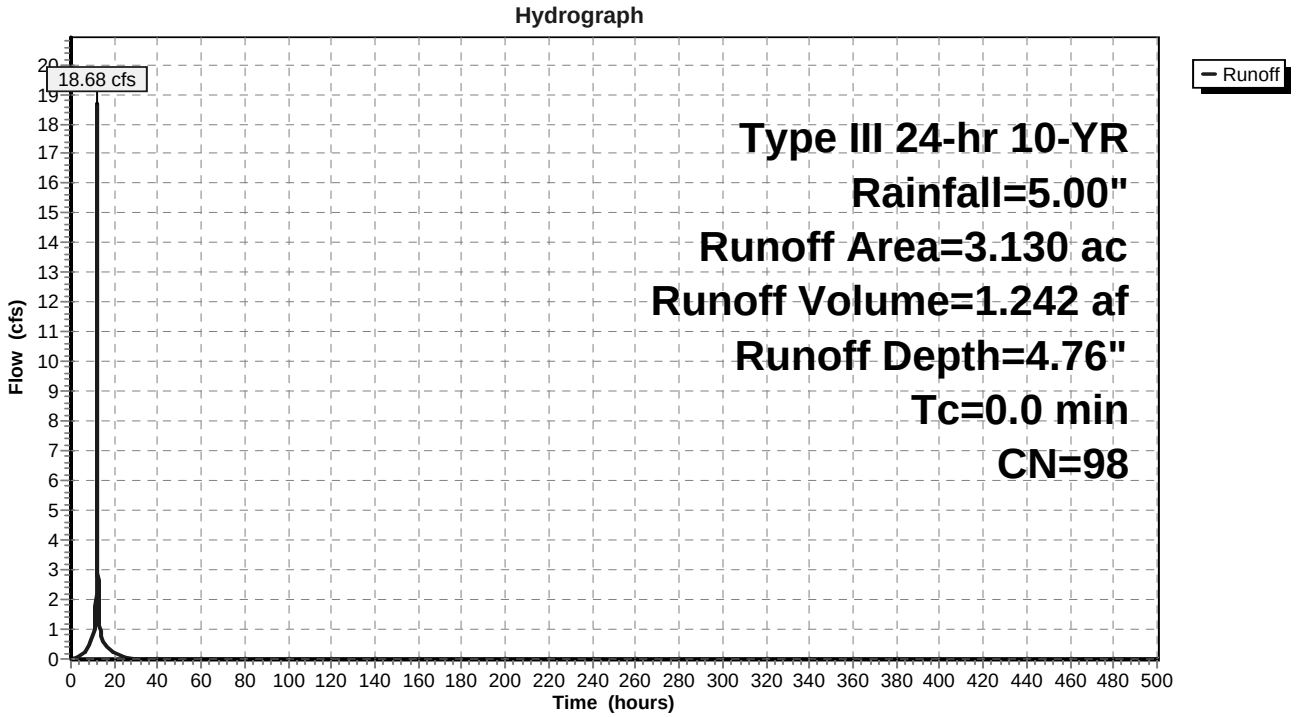
y for Subcatchment RRv: CAPTURED ROOFS & SURFACES REUSED WITH THE CRICKET VALLEY ENE

Runoff = 18.68 cfs @ 12.00 hrs, Volume= 1.242 af, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=5.00"

Area (ac)	CN	Description
3.130	98	Paved parking, HSG A
3.130		100.00% Impervious Area

ubcatchment RRv: CAPTURED ROOFS & SURFACES REUSED WITH THE CRICKET VALLEY ENERGY PI

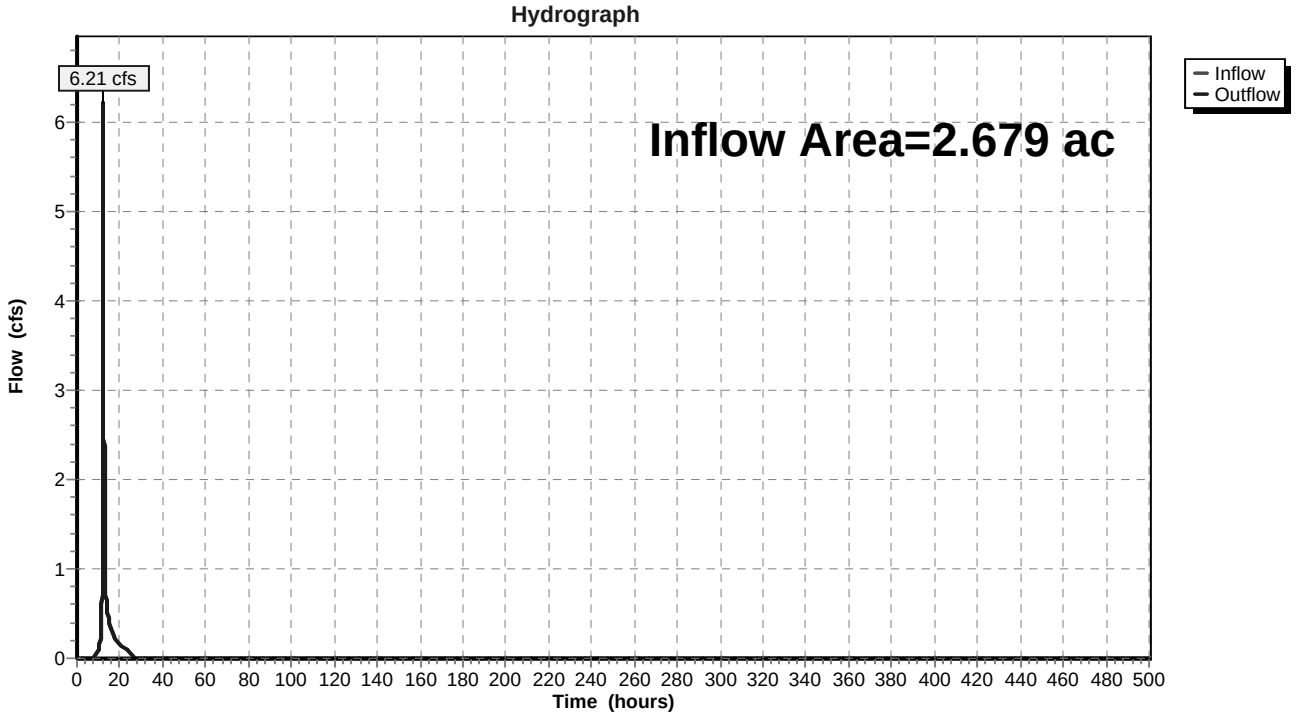


Summary for Reach 3R: Pipes

Inflow Area = 2.679 ac, 14.20% Impervious, Inflow Depth = 2.62" for 10-YR event
Inflow = 6.21 cfs @ 12.21 hrs, Volume= 0.586 af
Outflow = 6.21 cfs @ 12.21 hrs, Volume= 0.586 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs

Reach 3R: Pipes

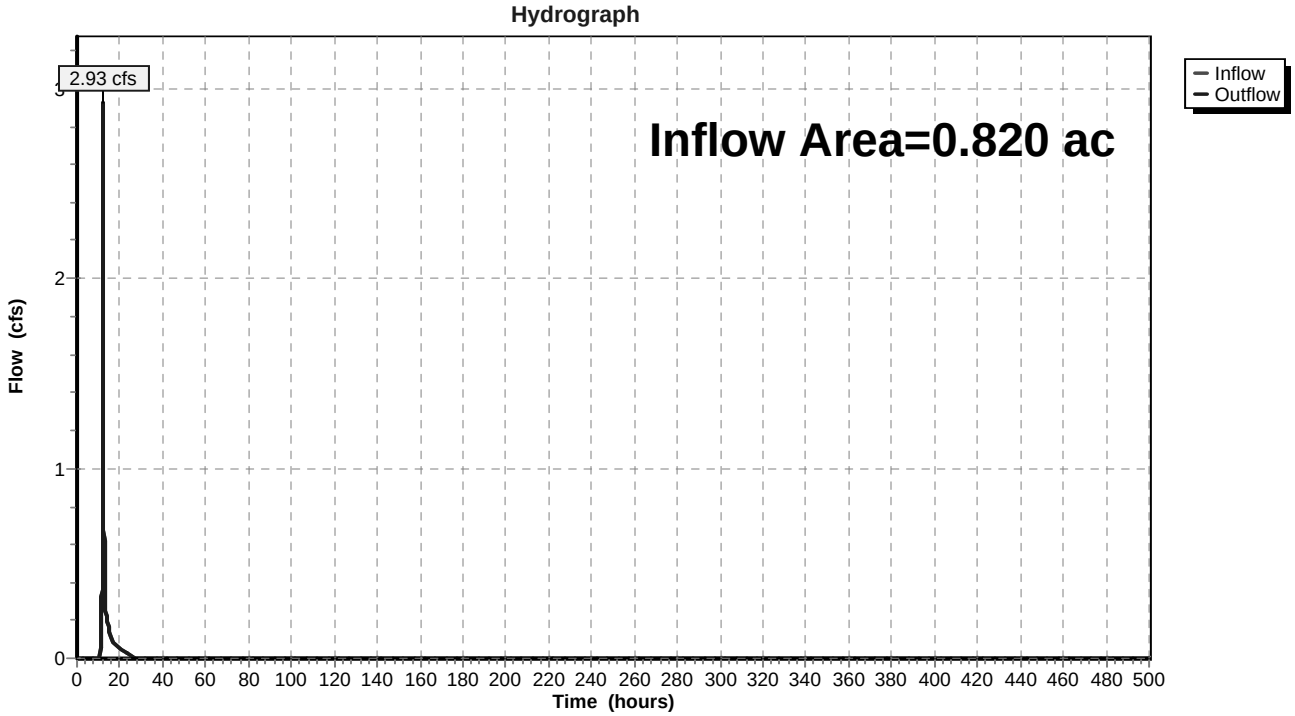


Summary for Reach 6R:

Inflow Area = 0.820 ac, 8.88% Impervious, Inflow Depth = 2.98" for 10-YR event
Inflow = 2.93 cfs @ 12.13 hrs, Volume= 0.204 af
Outflow = 2.93 cfs @ 12.13 hrs, Volume= 0.204 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs

Reach 6R:



Summary for Pond 1A: Plunge Pool F-1

Inflow Area = 0.820 ac, 8.88% Impervious, Inflow Depth = 3.27" for 10-YR event
Inflow = 3.12 cfs @ 12.09 hrs, Volume= 0.224 af
Outflow = 3.10 cfs @ 12.10 hrs, Volume= 0.224 af, Atten= 1%, Lag= 0.6 min
Primary = 3.10 cfs @ 12.10 hrs, Volume= 0.224 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Starting Elev= 430.50' Surf.Area= 631 sf Storage= 904 cf
Peak Elev= 430.76' @ 12.10 hrs Surf.Area= 708 sf Storage= 1,075 cf (171 cf above start)
Flood Elev= 431.50' Surf.Area= 952 sf Storage= 1,690 cf (786 cf above start)

Plug-Flow detention time= 69.0 min calculated for 0.203 af (91% of inflow)
Center-of-Mass det. time= 1.8 min (812.4 - 810.5)

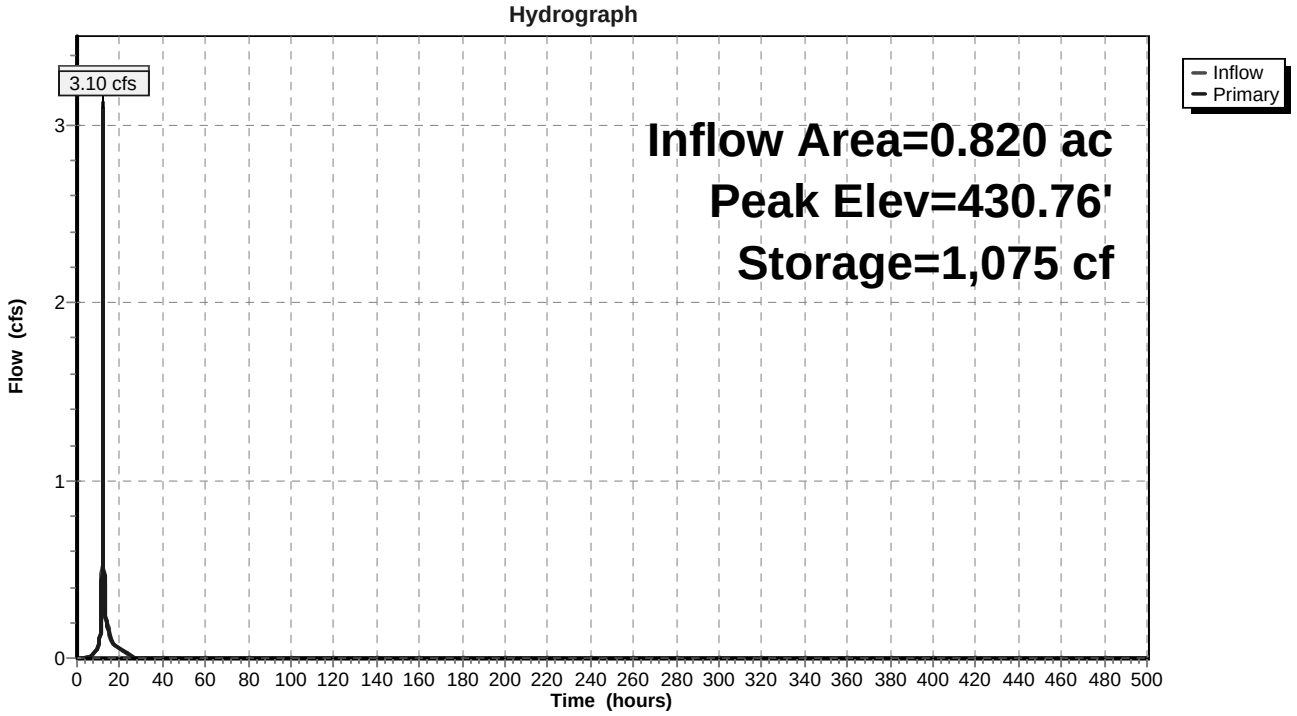
Volume	Invert	Avail.Storage	Storage Description
#1	427.00'	1,690 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
427.00	18	0	0
428.00	106	62	62
429.00	264	185	247
430.00	489	377	624
430.50	631	280	904
431.00	781	353	1,257
431.50	952	433	1,690

Device	Routing	Invert	Outlet Devices
#1	Primary	430.50'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=3.08 cfs @ 12.10 hrs HW=430.76' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 3.08 cfs @ 1.21 fps)

Pond 1A: Plunge Pool F-1



Summary for Pond 2A: Plunge Pool F-2

Inflow Area = 1.874 ac, 27.04% Impervious, Inflow Depth = 3.67" for 10-YR event
Inflow = 7.87 cfs @ 12.09 hrs, Volume= 0.573 af
Outflow = 7.69 cfs @ 12.10 hrs, Volume= 0.573 af, Atten= 2%, Lag= 1.1 min
Primary = 7.69 cfs @ 12.10 hrs, Volume= 0.573 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Starting Elev= 428.75' Surf.Area= 1,593 sf Storage= 3,229 cf
Peak Elev= 429.20' @ 12.10 hrs Surf.Area= 1,844 sf Storage= 4,000 cf (770 cf above start)
Flood Elev= 430.00' Surf.Area= 2,316 sf Storage= 5,666 cf (2,437 cf above start)

Plug-Flow detention time= 92.1 min calculated for 0.499 af (87% of inflow)
Center-of-Mass det. time= 3.4 min (801.3 - 797.9)

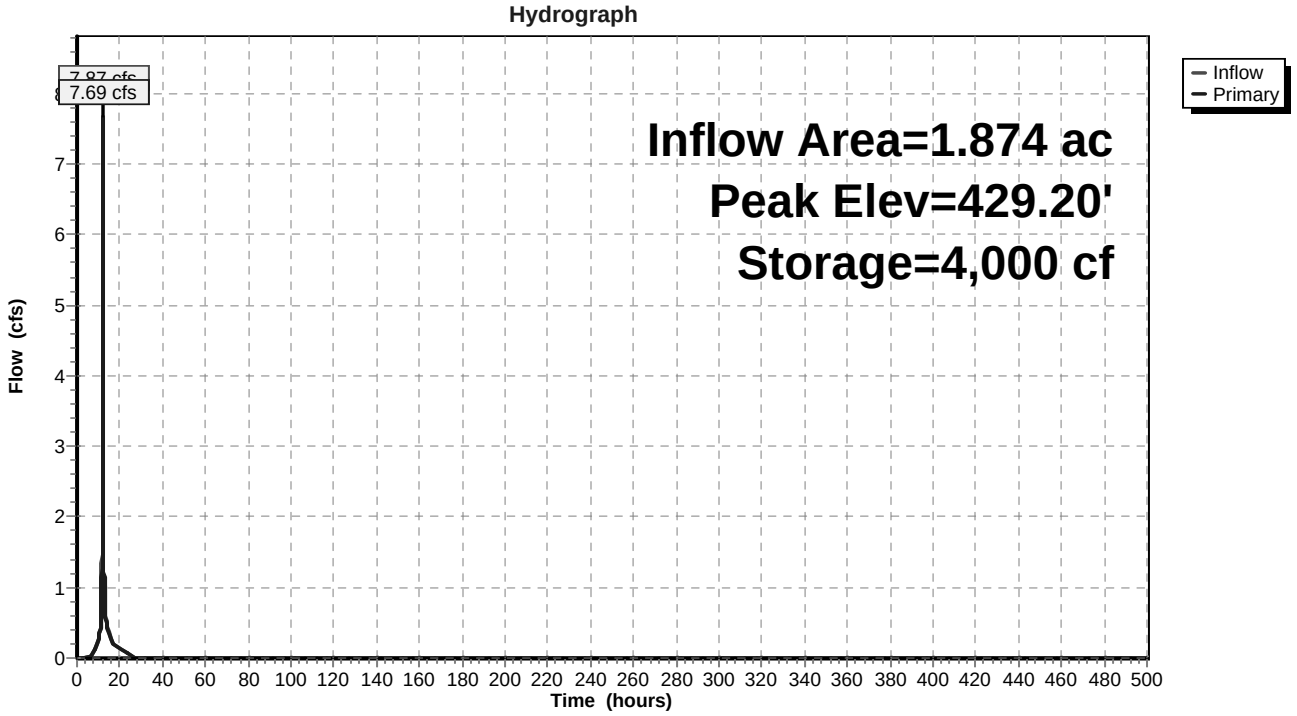
Volume	Invert	Avail.Storage	Storage Description
#1	424.00'	5,666 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
424.00	76	0	0
425.00	234	155	155
426.00	479	357	512
427.00	809	644	1,156
428.00	1,225	1,017	2,173
428.75	1,593	1,057	3,229
429.00	1,727	415	3,644
430.00	2,316	2,022	5,666

Device	Routing	Invert	Outlet Devices
#1	Primary	428.75'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=7.65 cfs @ 12.10 hrs HW=429.20' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 7.65 cfs @ 1.71 fps)

Pond 2A: Plunge Pool F-2



Summary for Pond 3A: Plunge Pool F-3

Inflow Area = 5.852 ac, 10.88% Impervious, Inflow Depth = 2.54" for 10-YR event
Inflow = 11.63 cfs @ 12.29 hrs, Volume= 1.236 af
Outflow = 11.61 cfs @ 12.30 hrs, Volume= 1.197 af, Atten= 0%, Lag= 0.5 min
Primary = 11.61 cfs @ 12.30 hrs, Volume= 1.197 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Peak Elev= 439.57' @ 12.30 hrs Surf.Area= 1,413 sf Storage= 2,445 cf
Flood Elev= 440.00' Surf.Area= 1,631 sf Storage= 3,095 cf

Plug-Flow detention time= 27.3 min calculated for 1.197 af (97% of inflow)
Center-of-Mass det. time= 9.2 min (854.7 - 845.6)

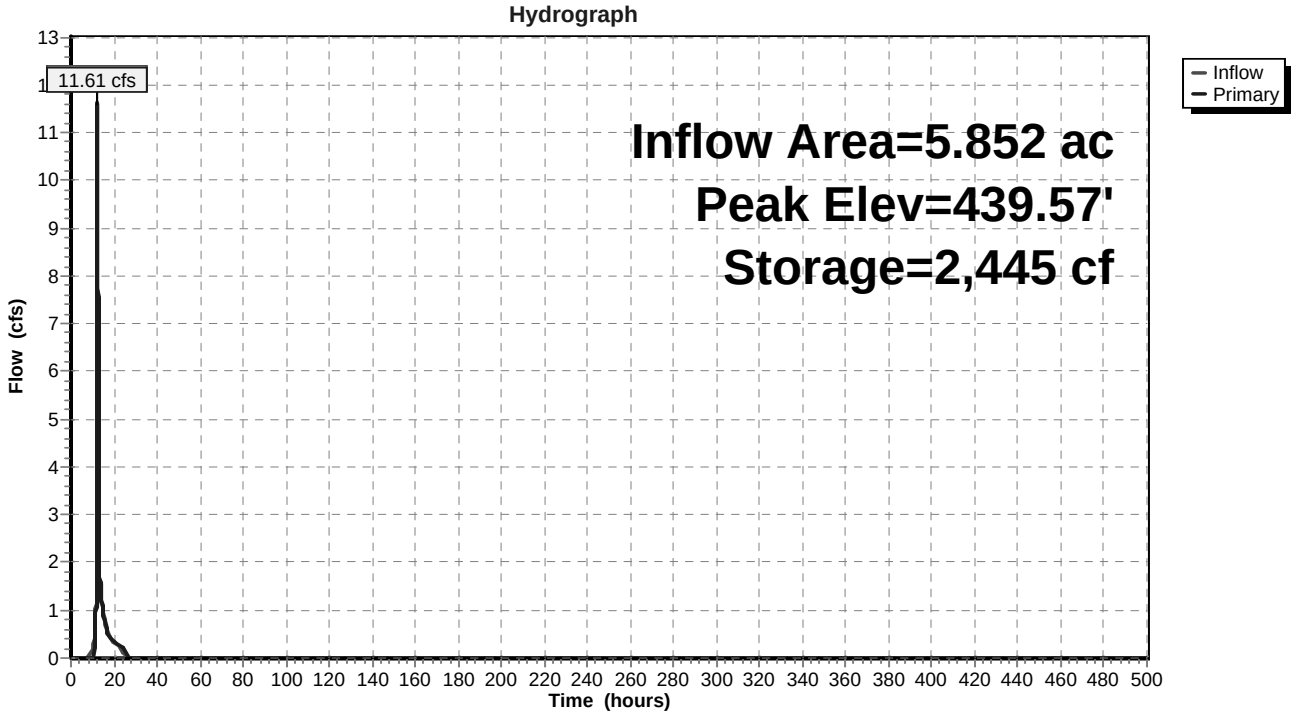
Volume	Invert	Avail.Storage	Storage Description
#1	435.00'	3,095 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
435.00	13	0	0
436.00	115	64	64
437.00	347	231	295
438.00	691	519	814
439.00	1,120	906	1,720
440.00	1,631	1,376	3,095

Device	Routing	Invert	Outlet Devices
#1	Primary	439.00'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=11.59 cfs @ 12.30 hrs HW=439.57' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 11.59 cfs @ 2.02 fps)

Pond 3A: Plunge Pool F-3



Summary for Pond 4P: Storage at Box Culvert

Inflow Area = 24.770 ac, 7.04% Impervious, Inflow Depth = 2.36" for 10-YR event
Inflow = 44.31 cfs @ 12.34 hrs, Volume= 4.880 af
Outflow = 43.96 cfs @ 12.36 hrs, Volume= 4.880 af, Atten= 1%, Lag= 1.4 min
Primary = 43.96 cfs @ 12.36 hrs, Volume= 4.880 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Peak Elev= 434.45' @ 12.36 hrs Surf.Area= 4,276 sf Storage= 3,722 cf

Plug-Flow detention time= 0.9 min calculated for 4.879 af (100% of inflow)
Center-of-Mass det. time= 0.9 min (857.7 - 856.8)

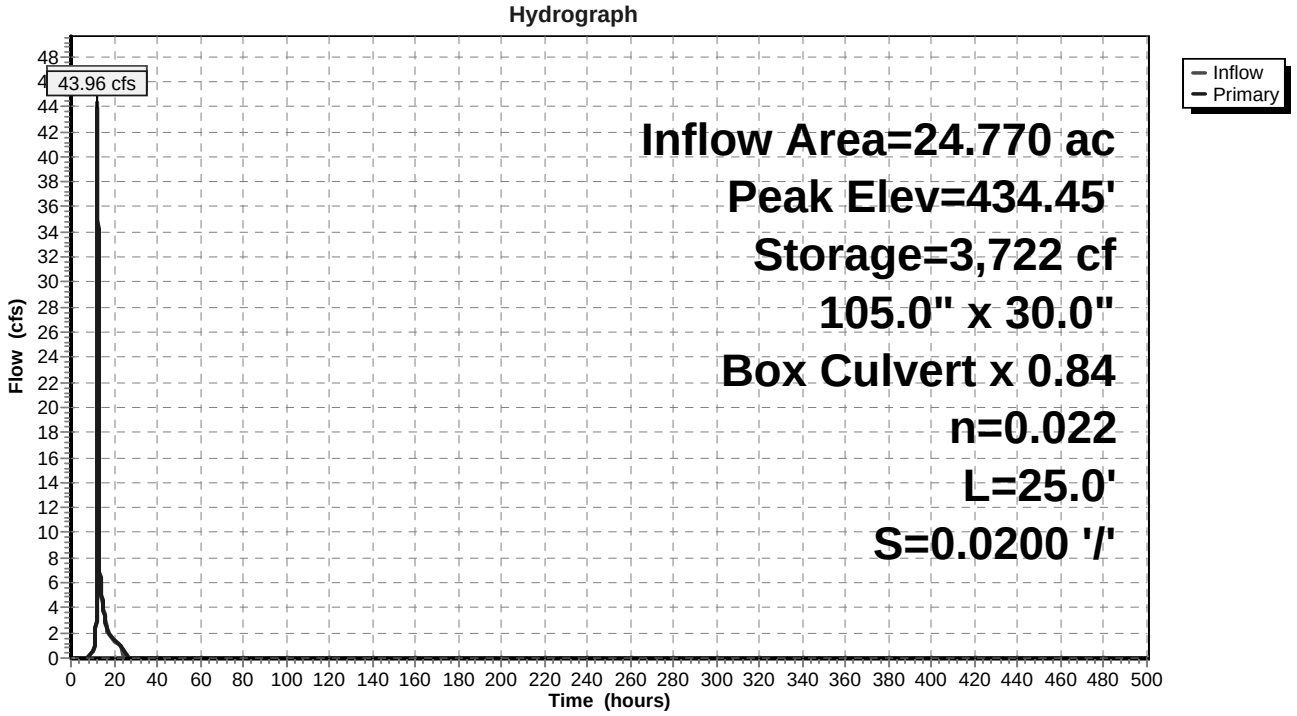
Volume	Invert	Avail.Storage	Storage Description
#1	433.00'	27,483 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
433.00	0	0	0
434.00	3,825	1,913	1,913
435.00	4,835	4,330	6,243
435.50	5,362	2,549	8,792
436.00	69,402	18,691	27,483

Device	Routing	Invert	Outlet Devices
#1	Primary	433.00'	**105.0" W x 30.0" H Box Culvert X 0.84** L= 25.0' Box, 30-75° wingwalls, square crown, Ke= 0.400 Inlet / Outlet Invert= 433.00' / 432.50' S= 0.0200 '/' Cc= 0.900 n= 0.022 Earth, clean & straight

Primary OutFlow Max=43.95 cfs @ 12.36 hrs HW=434.45' (Free Discharge)
1=Culvert (Barrel Controls 43.95 cfs @ 4.63 fps)

Pond 4P: Storage at Box Culvert



Summary for Pond EW-1: EXISTING NYSDEC JURISDICTIONAL WETLAND

Inflow Area = 81.411 ac, 4.35% Impervious, Inflow Depth = 2.46" for 10-YR event
Inflow = 88.73 cfs @ 12.59 hrs, Volume= 16.667 af
Outflow = 26.71 cfs @ 13.86 hrs, Volume= 8.105 af, Atten= 70%, Lag= 76.7 min
Primary = 26.71 cfs @ 13.86 hrs, Volume= 8.105 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Peak Elev= 422.10' @ 13.86 hrs Surf.Area= 311,855 sf Storage= 405,117 cf

Plug-Flow detention time= 280.9 min calculated for 8.105 af (49% of inflow)
Center-of-Mass det. time= 156.5 min (1,029.2 - 872.7)

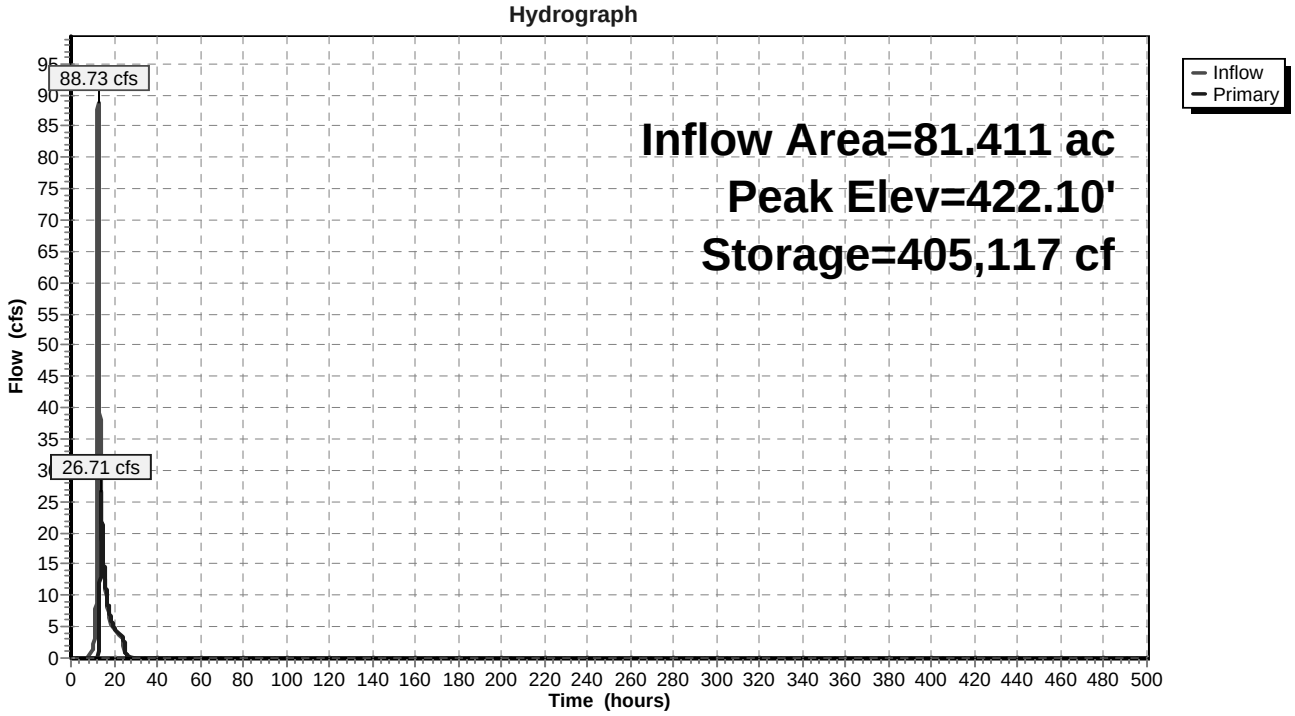
Volume	Invert	Avail.Storage	Storage Description
#1	419.80'	688,314 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
419.80	0	0	0
420.00	64,917	6,492	6,492
421.00	178,530	121,724	128,215
422.00	310,941	244,736	372,951
423.00	319,785	315,363	688,314

Device	Routing	Invert	Outlet Devices
#1	Primary	422.00'	**300.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=26.69 cfs @ 13.86 hrs HW=422.10' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 26.69 cfs @ 0.86 fps)

Pond EW-1: EXISTING NYSDEC JURISDICTIONAL WETLAND



Summary for Pond F-1: Bioretention Area #1

Inflow Area = 0.820 ac, 8.88% Impervious, Inflow Depth = 3.27" for 10-YR event
Inflow = 3.10 cfs @ 12.10 hrs, Volume= 0.224 af
Outflow = 2.93 cfs @ 12.13 hrs, Volume= 0.204 af, Atten= 6%, Lag= 1.7 min
Secondary = 2.93 cfs @ 12.13 hrs, Volume= 0.204 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Peak Elev= 430.74' @ 12.13 hrs Surf.Area= 1,982 sf Storage= 1,324 cf
Flood Elev= 431.50' Surf.Area= 2,412 sf Storage= 2,987 cf

Plug-Flow detention time= 70.1 min calculated for 0.204 af (91% of inflow)
Center-of-Mass det. time= 25.7 min (838.1 - 812.4)

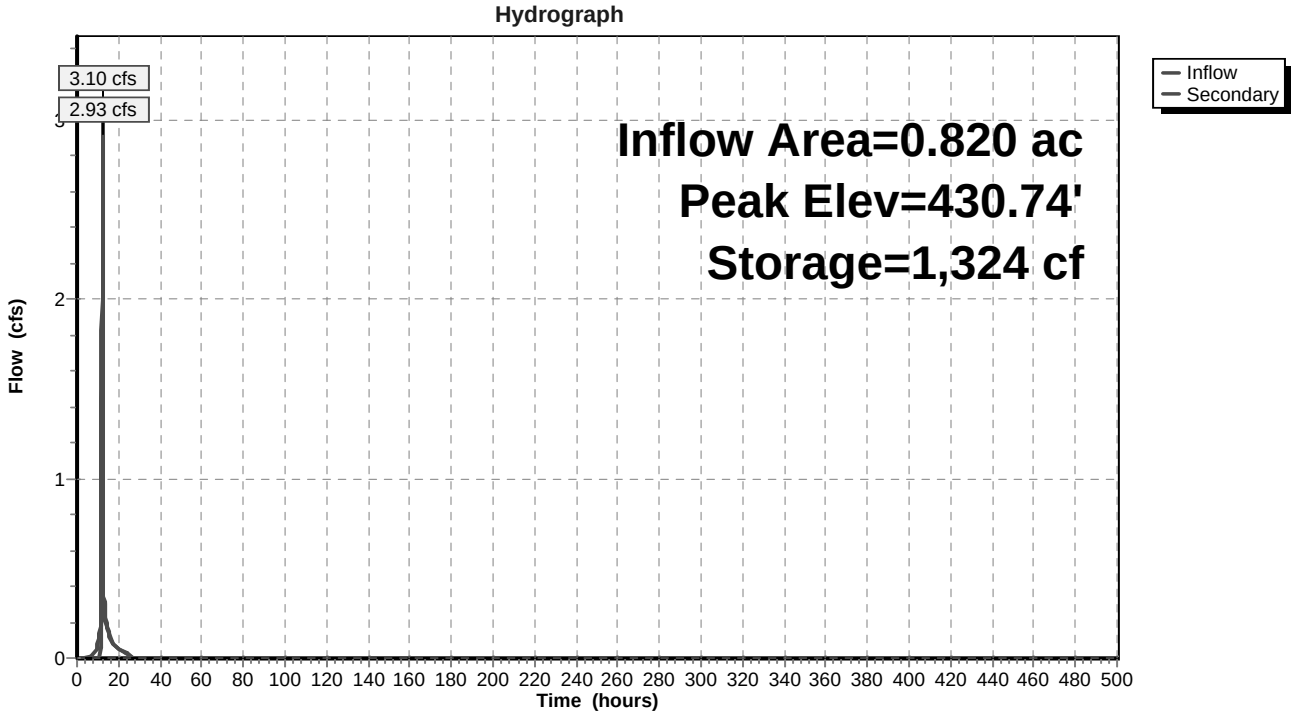
Volume	Invert	Avail.Storage	Storage Description
#1	430.00'	2,987 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
430.00	1,589	0	0
430.50	1,849	860	860
431.00	2,124	993	1,853
431.50	2,412	1,134	2,987

Device	Routing	Invert	Outlet Devices
#1	Secondary	430.50'	**10.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Secondary OutFlow Max=2.92 cfs @ 12.13 hrs HW=430.74' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 2.92 cfs @ 1.21 fps)

Pond F-1: Bioretention Area #1



Summary for Pond F-2: Bioretention Area #2

Inflow Area = 1.874 ac, 27.04% Impervious, Inflow Depth = 3.67" for 10-YR event
Inflow = 7.69 cfs @ 12.10 hrs, Volume= 0.573 af
Outflow = 6.33 cfs @ 12.16 hrs, Volume= 0.573 af, Atten= 18%, Lag= 3.5 min
Primary = 6.33 cfs @ 12.16 hrs, Volume= 0.573 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Starting Elev= 428.75' Surf.Area= 6,983 sf Storage= 1,706 cf
Peak Elev= 429.11' @ 12.16 hrs Surf.Area= 7,413 sf Storage= 4,284 cf (2,579 cf above start)
Flood Elev= 430.00' Surf.Area= 8,314 sf Storage= 11,301 cf (9,595 cf above start)

Plug-Flow detention time= 69.4 min calculated for 0.534 af (93% of inflow)
Center-of-Mass det. time= 14.5 min (815.8 - 801.3)

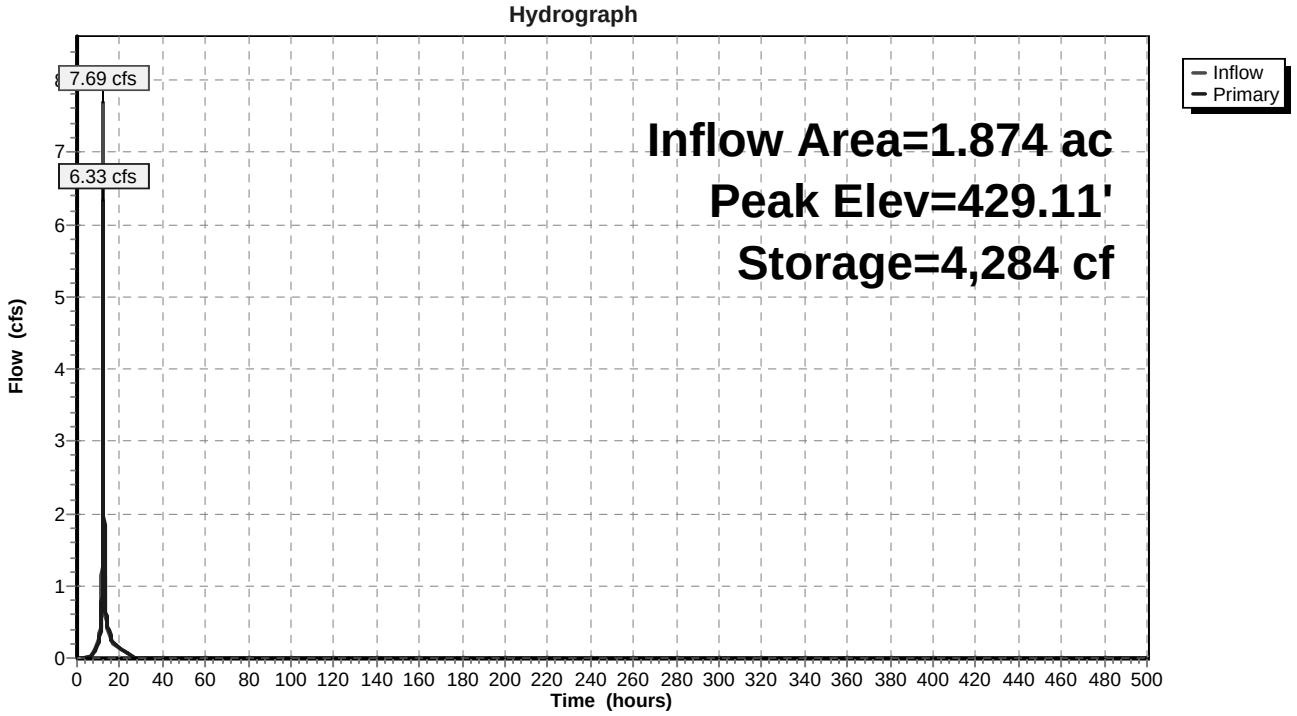
Volume	Invert	Avail.Storage	Storage Description
#1	428.50'	11,301 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
428.50	6,662	0	0
429.00	7,304	3,492	3,492
430.00	8,314	7,809	11,301

Device	Routing	Invert	Outlet Devices
#1	Primary	428.75'	**12.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=6.33 cfs @ 12.16 hrs HW=429.11' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 6.33 cfs @ 1.47 fps)

Pond F-2: Bioretention Area #2



Summary for Pond F-3: Bioretention Area #3

Inflow Area = 5.852 ac, 10.88% Impervious, Inflow Depth = 2.45" for 10-YR event
Inflow = 11.61 cfs @ 12.30 hrs, Volume= 1.197 af
Outflow = 11.32 cfs @ 12.34 hrs, Volume= 1.152 af, Atten= 2%, Lag= 2.6 min
Primary = 11.32 cfs @ 12.34 hrs, Volume= 1.152 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Peak Elev= 439.56' @ 12.34 hrs Surf.Area= 4,903 sf Storage= 4,519 cf
Flood Elev= 440.00' Surf.Area= 5,442 sf Storage= 6,774 cf

Plug-Flow detention time= 34.2 min calculated for 1.152 af (96% of inflow)
Center-of-Mass det. time= 13.4 min (868.1 - 854.7)

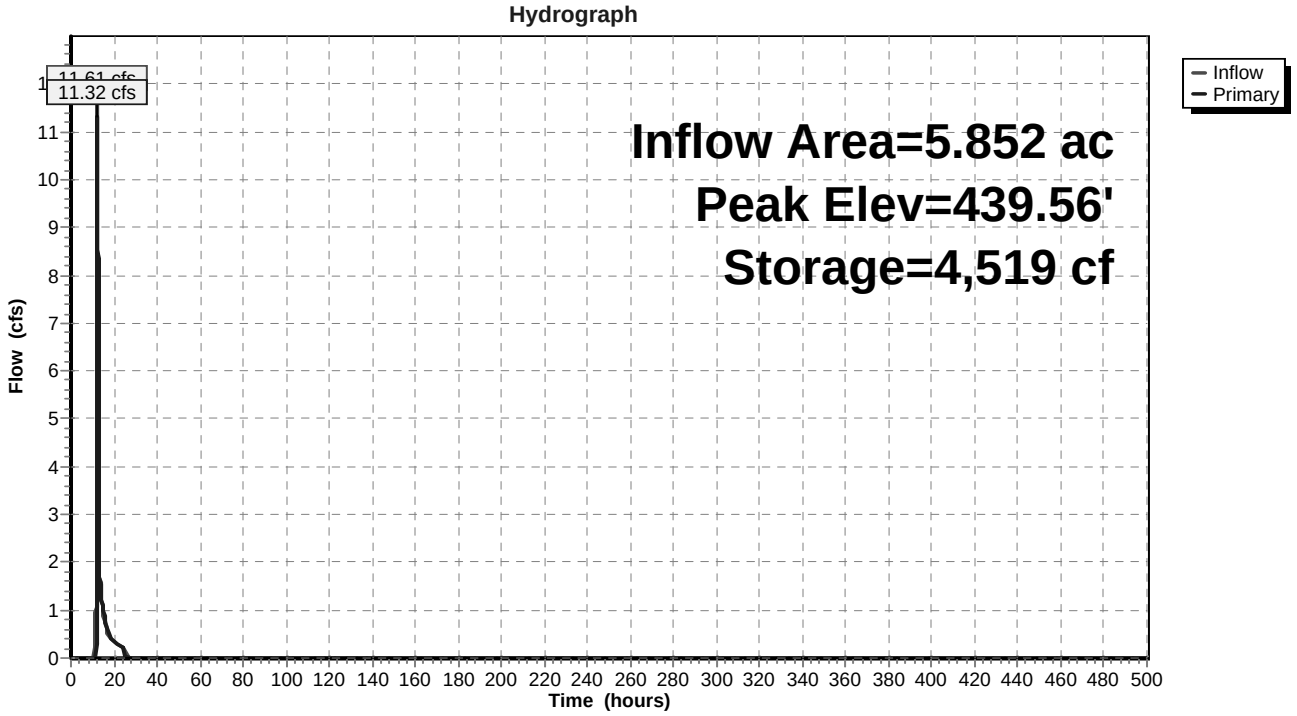
Volume	Invert	Avail.Storage	Storage Description
#1	438.50'	6,774 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
438.50	3,592	0	0
439.00	4,206	1,950	1,950
440.00	5,442	4,824	6,774

Device	Routing	Invert	Outlet Devices
#1	Primary	439.00'	**10.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=11.32 cfs @ 12.34 hrs HW=439.56' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 11.32 cfs @ 2.01 fps)

Pond F-3: Bioretention Area #3



Summary for Pond P-1: Wet Pond

Inflow Area = 17.690 ac, 38.01% Impervious, Inflow Depth = 3.69" for 10-YR event
Inflow = 69.93 cfs @ 12.09 hrs, Volume= 5.434 af
Outflow = 2.27 cfs @ 16.00 hrs, Volume= 5.434 af, Atten= 97%, Lag= 234.9 min
Primary = 2.27 cfs @ 16.00 hrs, Volume= 5.434 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Starting Elev= 422.00' Surf.Area= 30,655 sf Storage= 75,367 cf
Peak Elev= 426.23' @ 16.00 hrs Surf.Area= 47,978 sf Storage= 242,770 cf (167,403 cf above start)
Flood Elev= 429.00' Surf.Area= 59,091 sf Storage= 390,986 cf (315,619 cf above start)

Plug-Flow detention time= 1,913.1 min calculated for 3.704 af (68% of inflow)
Center-of-Mass det. time= 1,298.6 min (2,094.5 - 795.8)

Volume	Invert	Avail.Storage	Storage Description
#1	418.00'	452,178 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

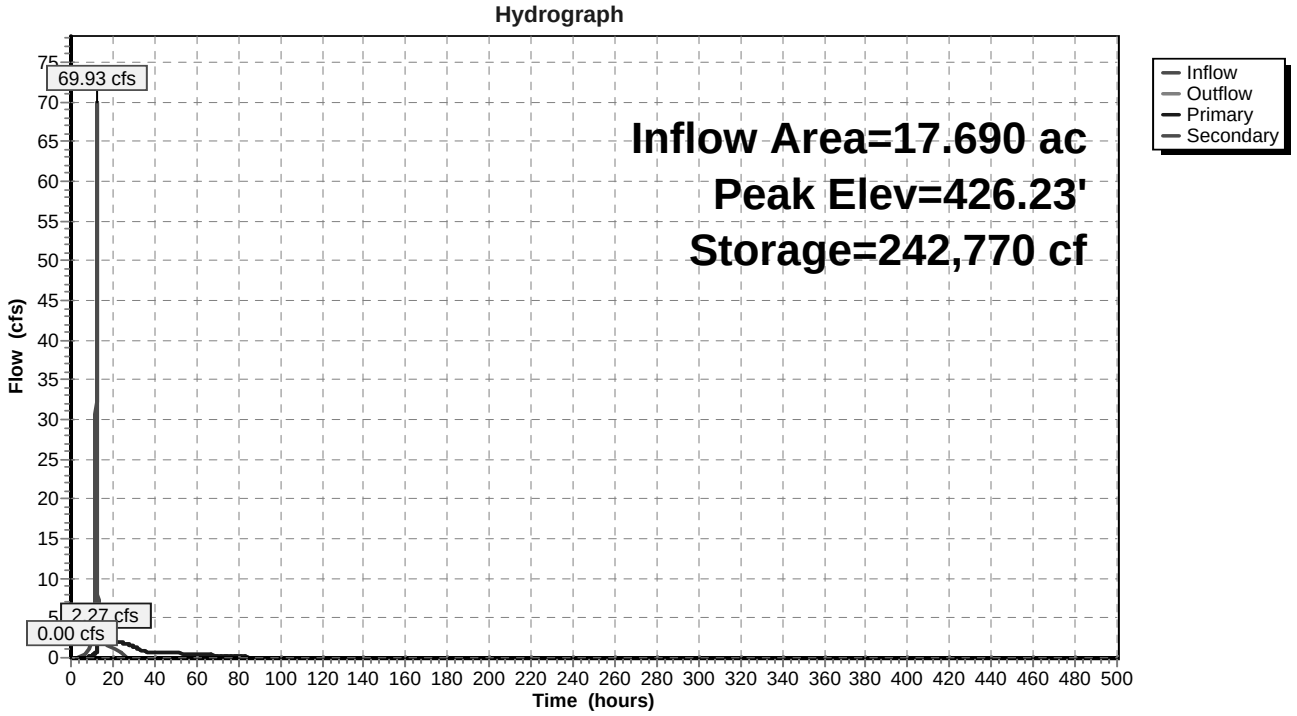
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
418.00	14,212	0	0
420.00	16,608	30,820	30,820
421.00	19,142	17,875	48,695
421.50	28,445	11,897	60,592
422.00	30,655	14,775	75,367
423.00	34,805	32,730	108,097
424.00	39,588	37,197	145,293
425.00	43,288	41,438	186,731
426.00	47,088	45,188	231,919
427.00	50,988	49,038	280,957
428.00	54,989	52,989	333,946
429.00	59,091	57,040	390,986
430.00	63,293	61,192	452,178

Device	Routing	Invert	Outlet Devices
#1	Primary	421.85'	**30.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 421.85' / 421.50' S= 0.0140 '/' Cc= 0.900 n= 0.013
#2	Device 1	422.00'	**4.4" Vert. Orifice/Grate** C= 0.600
#3	Device 1	424.24'	**6.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	426.50'	**2.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Secondary	429.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir X 0.00** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=2.27 cfs @ 16.00 hrs HW=426.23' (Free Discharge)
└─**1=Culvert** (Passes 2.27 cfs of 33.00 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.02 cfs @ 9.68 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 1.25 cfs @ 6.35 fps)
  └─**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=422.00' (Free Discharge)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P-1: Wet Pond

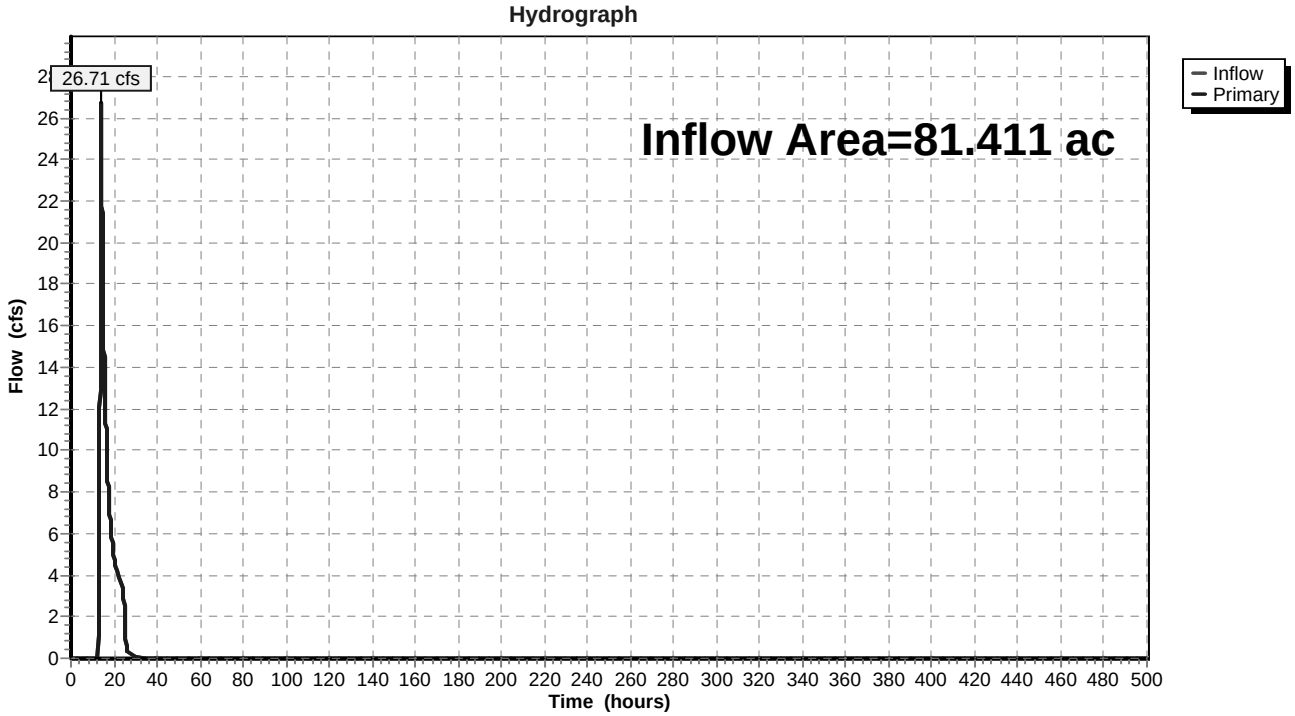


Summary for Pond zDP1: DESIGN POINT 1 (WETLAND)

Inflow Area = 81.411 ac, 4.35% Impervious, Inflow Depth = 1.19" for 10-YR event
Inflow = 26.71 cfs @ 13.86 hrs, Volume= 8.105 af
Primary = 26.71 cfs @ 13.86 hrs, Volume= 8.105 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs

Pond zDP1: DESIGN POINT 1 (WETLAND)

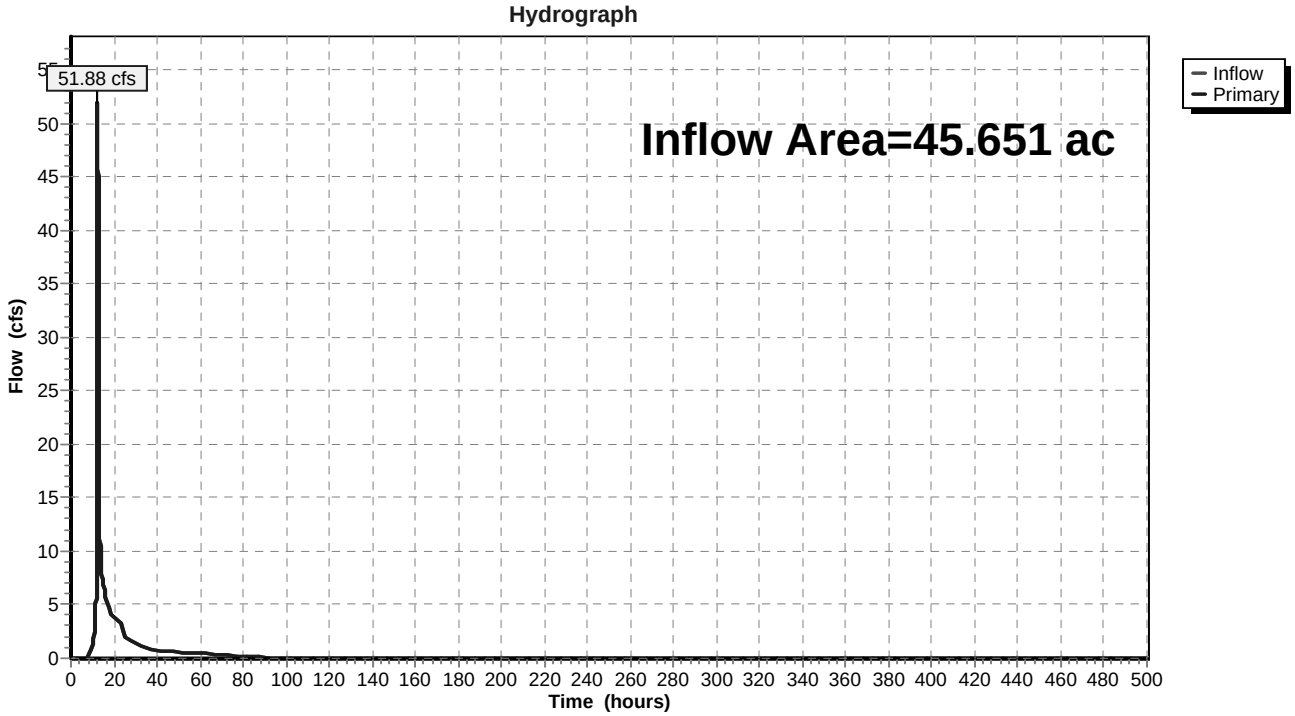


Summary for Pond zDP2: DESIGN POINT 2 (36" RCP CULVERT)

Inflow Area = 45.651 ac, 16.23% Impervious, Inflow Depth = 3.04" for 10-YR event
Inflow = 51.88 cfs @ 12.40 hrs, Volume= 11.546 af
Primary = 51.88 cfs @ 12.40 hrs, Volume= 11.546 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs

Pond zDP2: DESIGN POINT 2 (36" RCP CULVERT)



Time span=0.00-500.00 hrs, dt=0.01 hrs, 50001 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PS-1.1: Runoff Area=2,349,900 sf 2.26% Impervious Runoff Depth=5.04"
Flow Length=3,203' Tc=57.8 min CN=75 Runoff=128.68 cfs 22.665 af

Subcatchment PS-1.2: Runoff Area=824,088 sf 5.85% Impervious Runoff Depth=4.93"
Flow Length=1,595' Tc=23.1 min CN=74 Runoff=69.19 cfs 7.766 af

Subcatchment PS-1.3: Runoff Area=35,738 sf 8.88% Impervious Runoff Depth=6.10"
Tc=6.0 min CN=84 Runoff=5.68 cfs 0.417 af

Subcatchment PS-1.4: Runoff Area=81,628 sf 27.04% Impervious Runoff Depth=6.57"
Tc=6.0 min CN=88 Runoff=13.68 cfs 1.026 af

Subcatchment PS-2.1: Runoff Area=1,218,013 sf 2.44% Impervious Runoff Depth=5.27"
Flow Length=1,190' Tc=28.1 min CN=77 Runoff=100.27 cfs 12.290 af

Subcatchment PS-2.2: Runoff Area=653,875 sf 42.26% Impervious Runoff Depth=6.81"
Tc=6.0 min CN=90 Runoff=111.97 cfs 8.513 af

Subcatchment PS-2.3: Runoff Area=254,905 sf 10.88% Impervious Runoff Depth=5.16"
Flow Length=951' Tc=20.3 min CN=76 Runoff=23.63 cfs 2.515 af

Subcatchment PS-2.4: Runoff Area=116,690 sf 14.20% Impervious Runoff Depth=5.27"
Flow Length=575' Tc=15.1 min CN=77 Runoff=12.45 cfs 1.177 af

Subcatchment RRv: CAPTURED ROOFS & Runoff Area=3.130 ac 100.00% Impervious Runoff Depth=7.76"
Tc=0.0 min CN=98 Runoff=29.99 cfs 2.024 af

Reach 3R: Pipes Inflow=12.45 cfs 1.177 af
Outflow=12.45 cfs 1.177 af

Reach 6R: Inflow=5.43 cfs 0.397 af
Outflow=5.43 cfs 0.397 af

Pond 1A: Plunge Pool F-1 Peak Elev=430.87' Storage=1,160 cf Inflow=5.68 cfs 0.417 af
Outflow=5.65 cfs 0.417 af

Pond 2A: Plunge Pool F-2 Peak Elev=429.38' Storage=4,339 cf Inflow=13.68 cfs 1.026 af
Outflow=13.42 cfs 1.026 af

Pond 3A: Plunge Pool F-3 Peak Elev=439.92' Storage=2,964 cf Inflow=23.63 cfs 2.515 af
Outflow=23.59 cfs 2.476 af

Pond 4P: Storage at Box Culvert Peak Elev=435.50' Storage=8,782 cf Inflow=92.25 cfs 10.197 af
105.0" x 30.0" Box Culvert x 0.84 n=0.022 L=25.0' S=0.0200 '/' Outflow=91.33 cfs 10.197 af

Pond EW-1: EXISTING NYSDEC Peak Elev=422.34' Storage=478,632 cf Inflow=183.79 cfs 34.284 af
Outflow=159.10 cfs 25.722 af

Pond F-1: Bioretention Area #1 Peak Elev=430.86' Storage=1,560 cf Inflow=5.65 cfs 0.417 af
Outflow=5.43 cfs 0.397 af

Pond F-2: Bioretention Area #2 Peak Elev=429.27' Storage=5,485 cf Inflow=13.42 cfs 1.026 af
Outflow=11.71 cfs 1.026 af

Pond F-3: Bioretention Area #3 Peak Elev=439.90' Storage=6,258 cf Inflow=23.59 cfs 2.476 af
Outflow=23.09 cfs 2.431 af

Pond P-1: Wet Pond Peak Elev=427.82' Storage=324,228 cf Inflow=120.54 cfs 9.691 af
Primary=14.05 cfs 9.691 af Secondary=0.00 cfs 0.000 af Outflow=14.05 cfs 9.691 af

Pond zDP1: DESIGN POINT 1 (WETLAND) Inflow=159.10 cfs 25.722 af
Primary=159.10 cfs 25.722 af

Pond zDP2: DESIGN POINT 2 (36" RCP CULVERT) Inflow=111.11 cfs 21.981 af
Primary=111.11 cfs 21.981 af

Total Runoff Area = 130.192 ac Runoff Volume = 58.393 af Average Runoff Depth = 5.38"
89.19% Pervious = 116.113 ac 10.81% Impervious = 14.079 ac

Summary for Subcatchment PS-1.1:

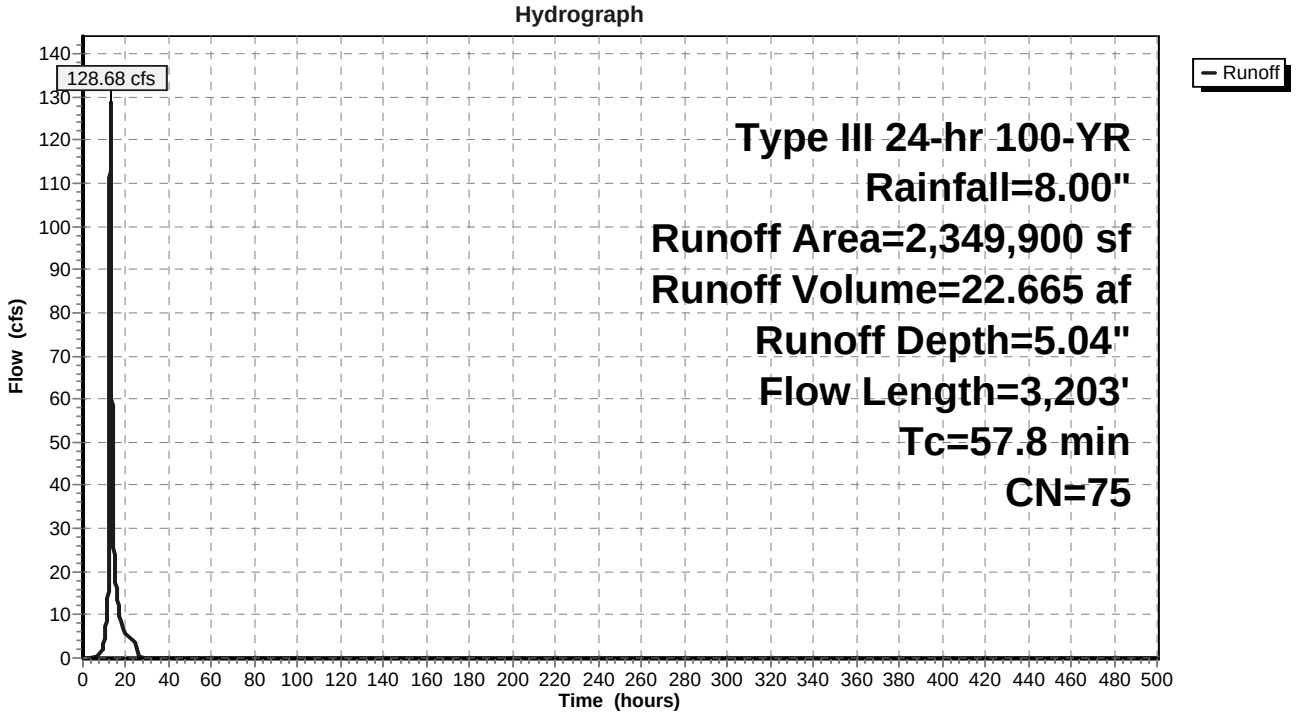
Runoff = 128.68 cfs @ 12.78 hrs, Volume= 22.665 af, Depth= 5.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-YR Rainfall=8.00"

Area (sf)	CN	Description
5,609	56	Brush, Fair, HSG B
219,739	70	Brush, Fair, HSG C
1,378,531	73	Woods, Fair, HSG C
99,805	74	>75% Grass cover, Good, HSG C
14,337	80	>75% Grass cover, Good, HSG D
14,067	89	Gravel roads, HSG C
304,723	77	Brush, Fair, HSG D
16,528	91	Gravel roads, HSG D
243,474	79	Woods, Fair, HSG D
53,087	98	Paved parking, HSG C
2,349,900	75	Weighted Average
2,296,813		97.74% Pervious Area
53,087		2.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0785	0.08		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.50"
13.2	1,144	0.0839	1.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	60	0.0167	6.05	19.00	**Pipe Channel, PIPE CULVERT ON Rt. 22** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.020 Corrugated PE, corrugated interior
13.0	753	0.0372	0.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.5	256	0.0586	1.69		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.1	434	0.0415	1.02		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	456		6.95		**Lake or Reservoir,** Mean Depth= 1.50'
57.8	3,203	Total			

Subcatchment PS-1.1:



Summary for Subcatchment PS-1.2:

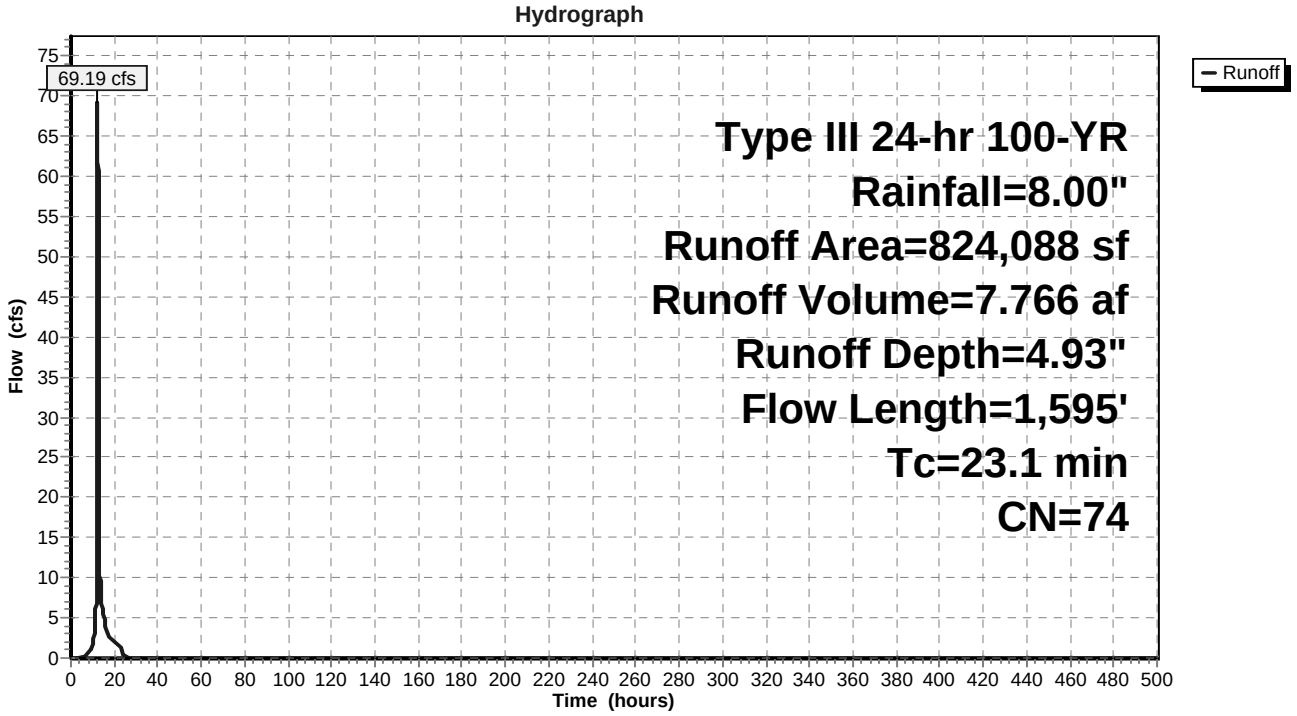
Runoff = 69.19 cfs @ 12.32 hrs, Volume= 7.766 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-YR Rainfall=8.00"

Area (sf)	CN	Description
476,732	73	Woods, Fair, HSG C
167,171	70	Brush, Fair, HSG C
58,454	77	Brush, Fair, HSG D
10,064	79	Woods, Fair, HSG D
57,883	74	>75% Grass cover, Good, HSG C
5,552	80	>75% Grass cover, Good, HSG D
48,232	98	Paved parking & roofs
824,088	74	Weighted Average
775,856		94.15% Pervious Area
48,232		5.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.0560	0.18		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
0.7	65	0.0560	1.66		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.7	355	0.0626	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	75	0.0050	4.03	4.95	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
0.2	115	0.0260	7.79	103.88	**Parabolic Channel,** W=10.00' D=2.00' Area=13.3 sf Perim=11.0' n= 0.035 Earth, dense weeds
0.1	85	0.0820	10.72	33.69	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.025 Corrugated metal
0.3	310	0.0967	15.03	200.34	**Parabolic Channel,** W=10.00' D=2.00' Area=13.3 sf Perim=11.0' n= 0.035 Earth, dense weeds
5.7	325	0.0184	0.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.1	165	0.0030	1.30	15.21	**Parabolic Channel,** W=35.00' D=0.50' Area=11.7 sf Perim=35.0' n= 0.030 Earth, grassed & winding
23.1	1,595	Total			

Subcatchment PS-1.2:



Summary for Subcatchment PS-1.3:

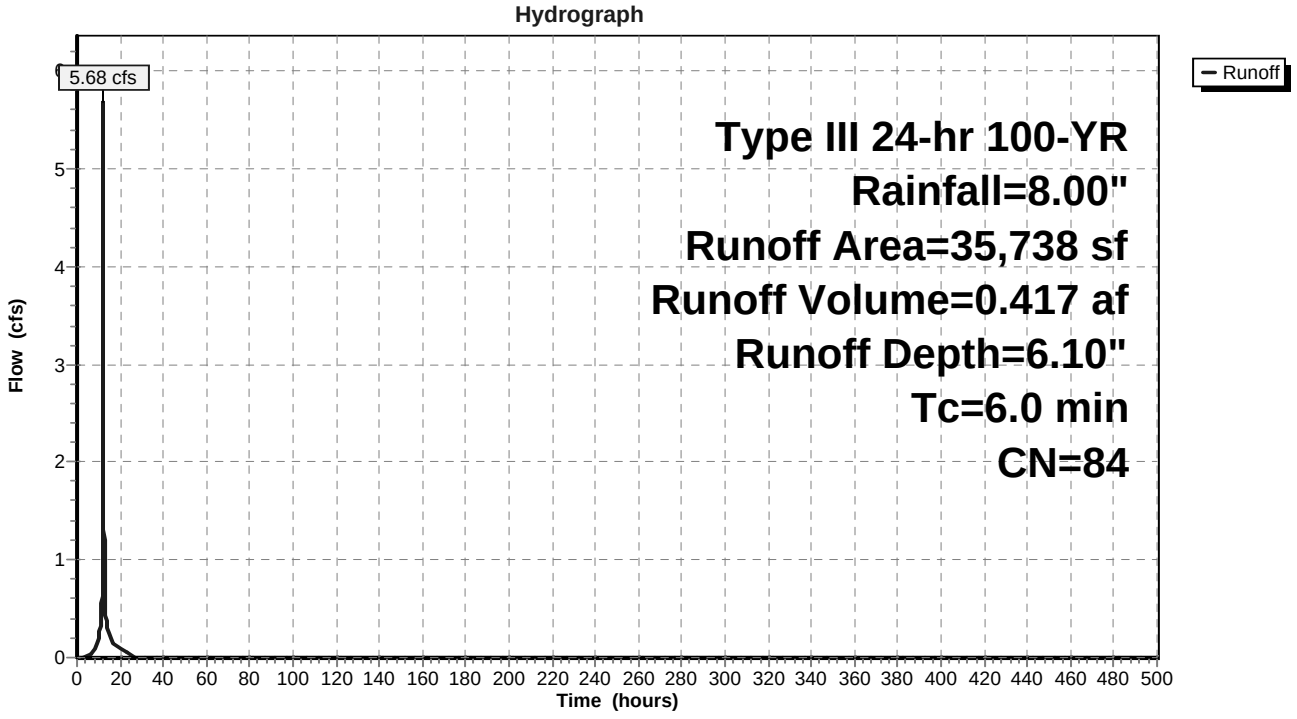
Runoff = 5.68 cfs @ 12.09 hrs, Volume= 0.417 af, Depth= 6.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-YR Rainfall=8.00"

Area (sf)	CN	Description
3,172	98	Paved parking, HSG C
13,366	74	>75% Grass cover, Good, HSG C
19,200	89	Gravel roads, HSG C
35,738	84	Weighted Average
32,566		91.12% Pervious Area
3,172		8.88% Impervious Area

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

Subcatchment PS-1.3:



Summary for Subcatchment PS-1.4:

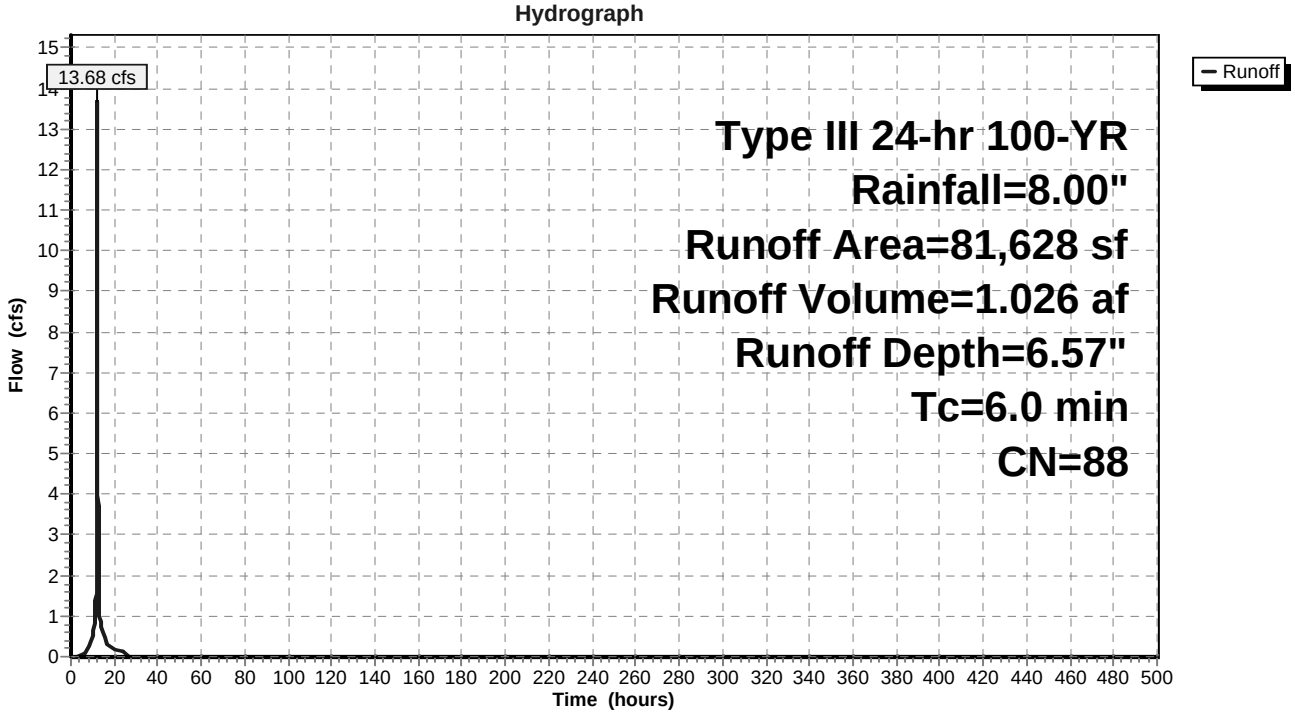
Runoff = 13.68 cfs @ 12.08 hrs, Volume= 1.026 af, Depth= 6.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-YR Rainfall=8.00"

Area (sf)	CN	Description
22,070	98	Paved parking, HSG C
36,079	91	Gravel roads, HSG D
9,940	80	>75% Grass cover, Good, HSG D
2,243	85	Gravel roads, HSG B
8,845	61	>75% Grass cover, Good, HSG B
2,224	74	>75% Grass cover, Good, HSG C
227	89	Gravel roads, HSG C
81,628	88	Weighted Average
59,558		72.96% Pervious Area
22,070		27.04% Impervious Area

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

Subcatchment PS-1.4:



Summary for Subcatchment PS-2.1:

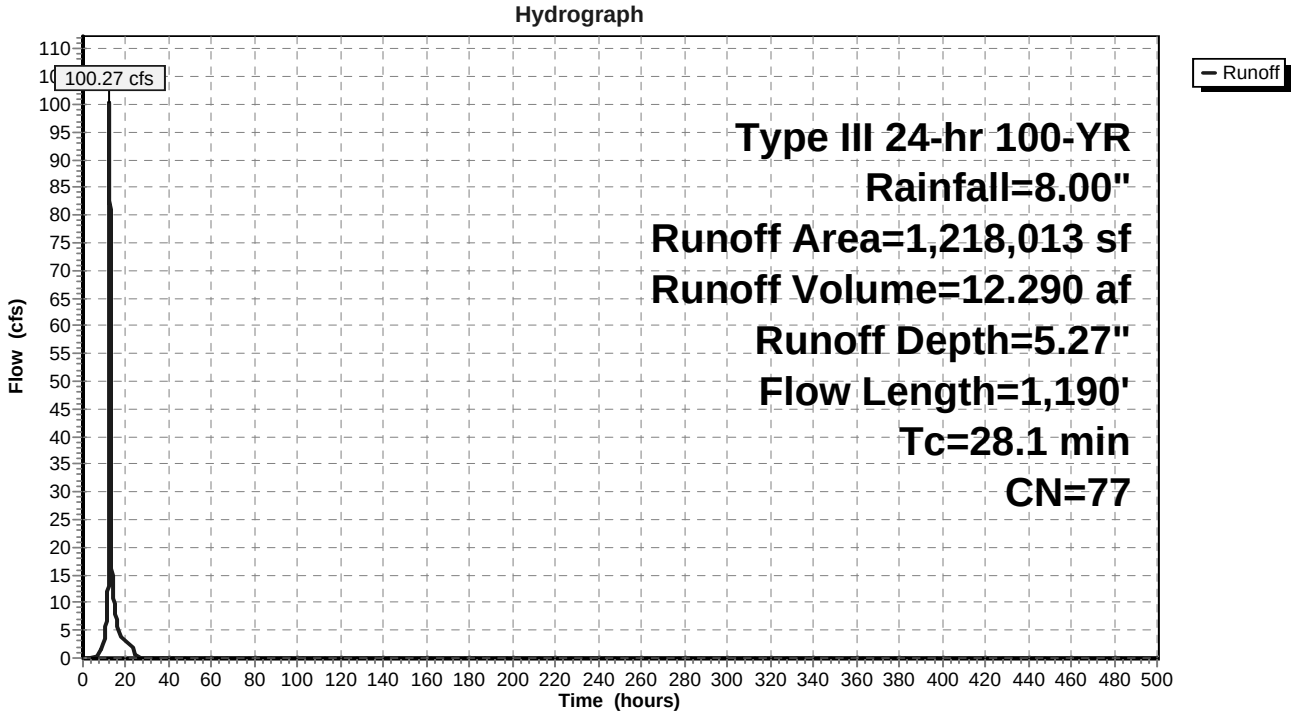
Runoff = 100.27 cfs @ 12.39 hrs, Volume= 12.290 af, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-YR Rainfall=8.00"

	Area (sf)	CN	Description
	3,751	56	Brush, Fair, HSG B
	3,034	55	Woods, Good, HSG B
	192,194	89	Gravel roads, HSG C
	7,372	70	Brush, Fair, HSG C
	858,494	73	Woods, Fair, HSG C
	29,750	98	Paved parking, HSG C
	31,009	77	Woods, Good, HSG D
*	53,016	76	Gravel/Brush Mix, HSG B
	15,977	85	Gravel roads, HSG B
	14,855	91	Gravel roads, HSG D
	3,028	61	>75% Grass cover, Good, HSG B
	5,533	74	>75% Grass cover, Good, HSG C
	1,218,013	77	Weighted Average
	1,188,263		97.56% Pervious Area
	29,750		2.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.5	100	0.1200	0.10		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.50"
2.4	250	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.6	430	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.6	410	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
28.1	1,190	Total			

Subcatchment PS-2.1:



Summary for Subcatchment PS-2.2:

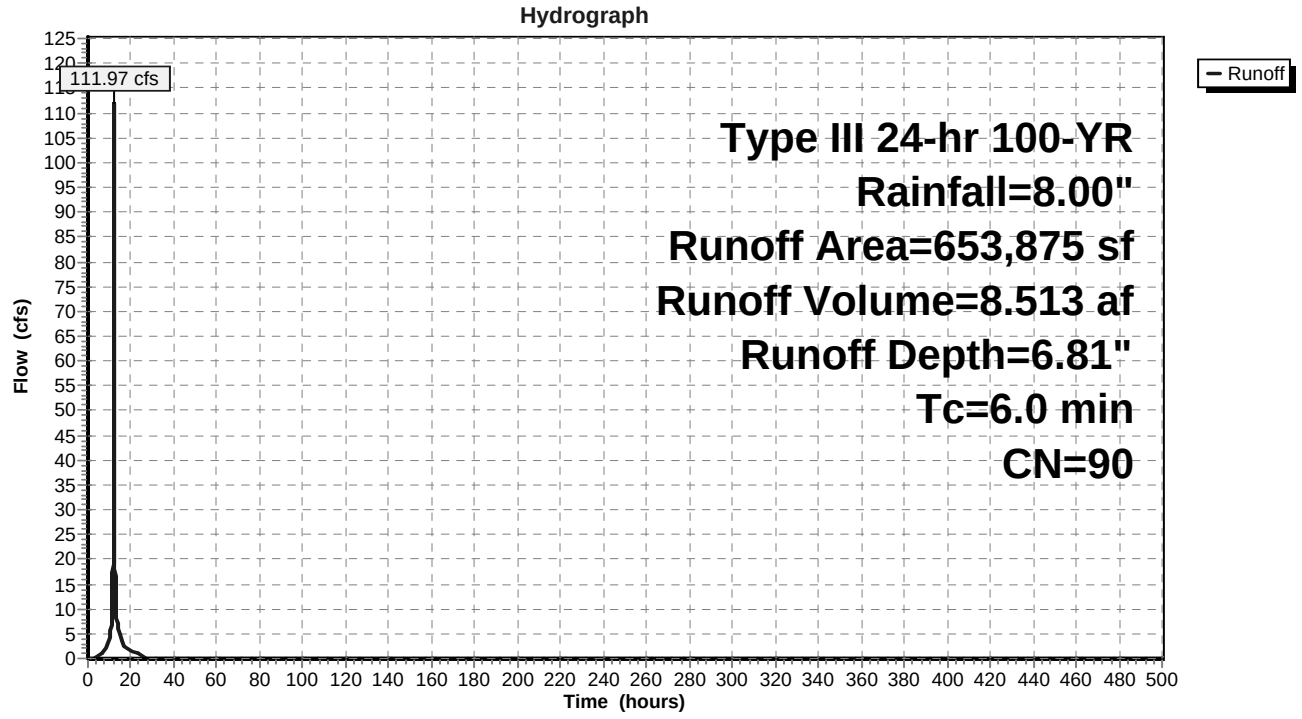
Runoff = 111.97 cfs @ 12.08 hrs, Volume= 8.513 af, Depth= 6.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-YR Rainfall=8.00"

Area (sf)	CN	Description
65,818	89	Gravel roads, HSG C
18,237	91	Gravel roads, HSG D
20,546	61	>75% Grass cover, Good, HSG B
240,237	85	Gravel roads, HSG B
20,235	74	>75% Grass cover, Good, HSG C
30,655	98	Water Surface, HSG B
143,453	98	Roofs, HSG A
102,225	98	Paved parking, HSG A
12,469	80	>75% Grass cover, Good, HSG D
653,875	90	Weighted Average
377,542		57.74% Pervious Area
276,333		42.26% Impervious Area

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

Subcatchment PS-2.2:



Summary for Subcatchment PS-2.3:

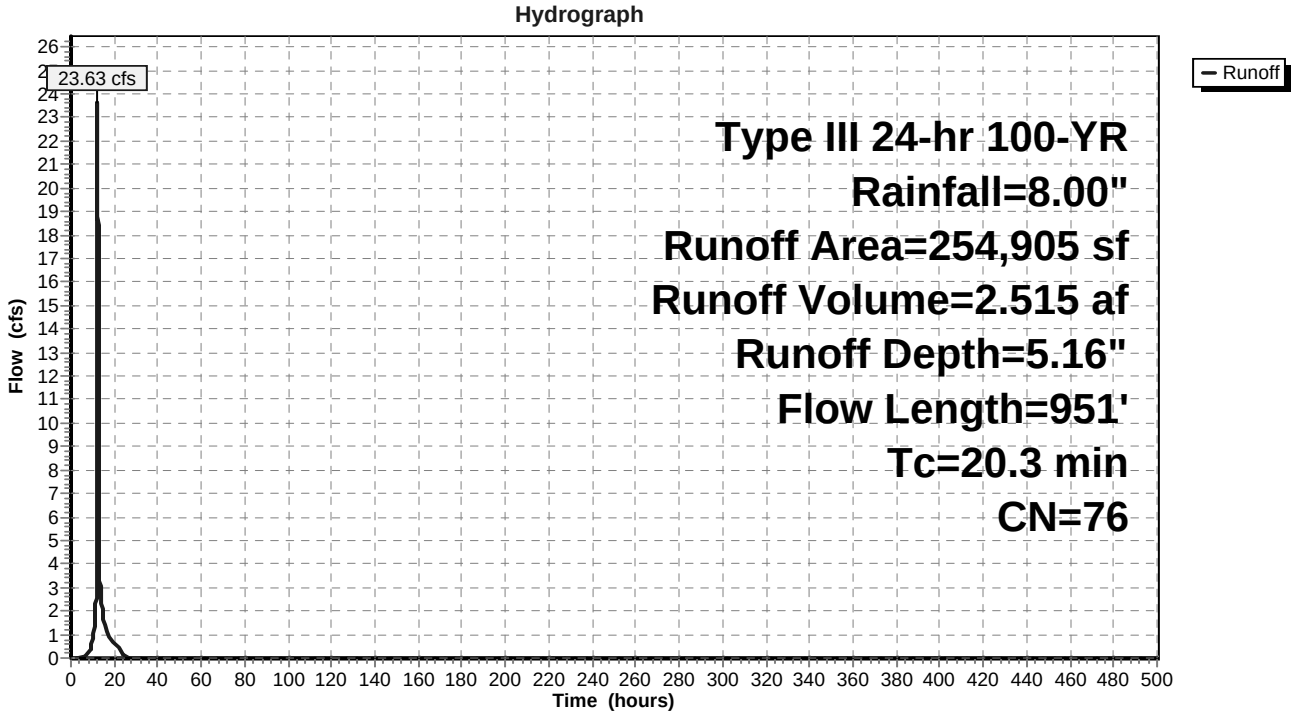
Runoff = 23.63 cfs @ 12.27 hrs, Volume= 2.515 af, Depth= 5.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-YR Rainfall=8.00"

Area (sf)	CN	Description
81,119	74	>75% Grass cover, Good, HSG C
27,727	98	Paved parking, HSG A
120,312	73	Woods, Fair, HSG C
17,305	70	Brush, Fair, HSG C
8,442	89	Gravel roads, HSG C
254,905	76	Weighted Average
227,178		89.12% Pervious Area
27,727		10.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0500	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
1.2	135	0.1480	1.92		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.0	168	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	95	0.0320	3.63		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	453	0.0730	15.23	203.08	**Parabolic Channel,** W=10.00' D=2.00' Area=13.3 sf Perim=11.0' n= 0.030 Earth, grassed & winding
20.3	951	Total			

Subcatchment PS-2.3:



Summary for Subcatchment PS-2.4:

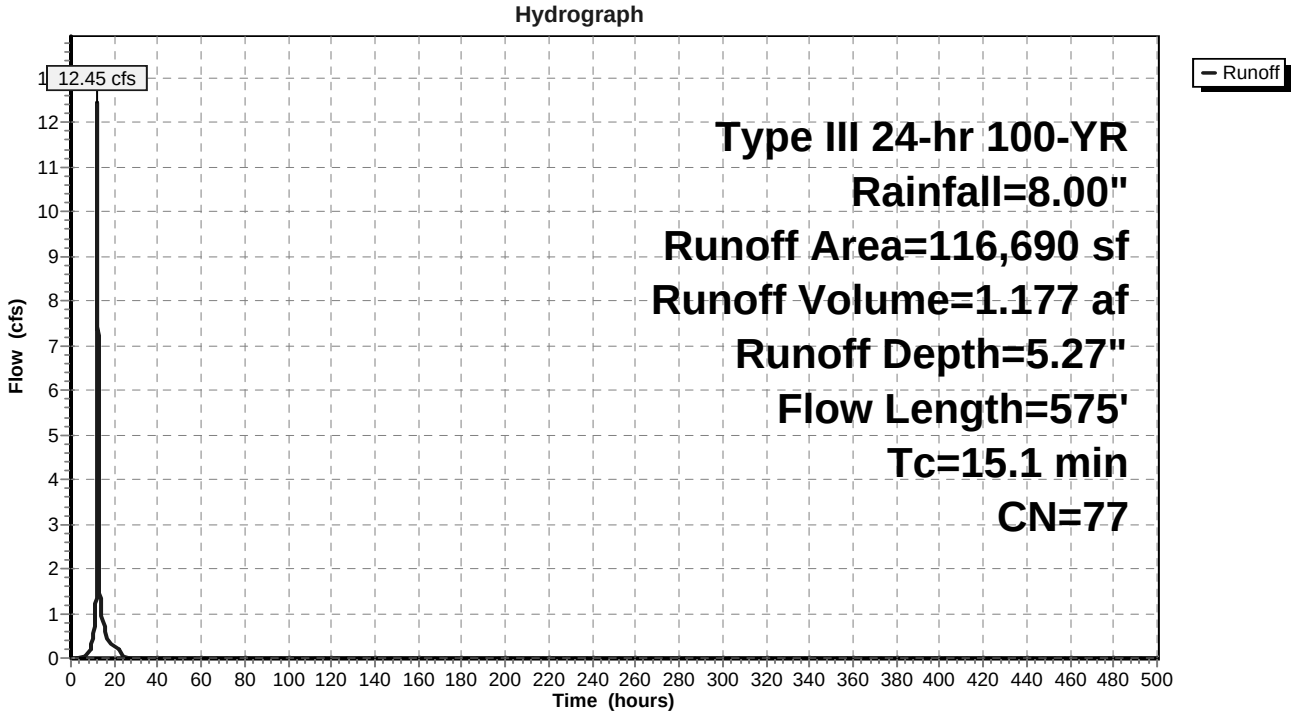
Runoff = 12.45 cfs @ 12.20 hrs, Volume= 1.177 af, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-YR Rainfall=8.00"

Area (sf)	CN	Description
86,696	73	Woods, Fair, HSG C
13,423	74	>75% Grass cover, Good, HSG C
16,571	98	Paved parking, HSG C
116,690	77	Weighted Average
100,119		85.80% Pervious Area
16,571		14.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	1.04		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
10.9	80	0.0625	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
3.8	295	0.0661	1.29		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	180	0.0722	21.12	563.30	**Parabolic Channel,** W=10.00' D=4.00' Area=26.7 sf Perim=13.3' n= 0.030 Earth, grassed & winding
15.1	575	Total			

Subcatchment PS-2.4:



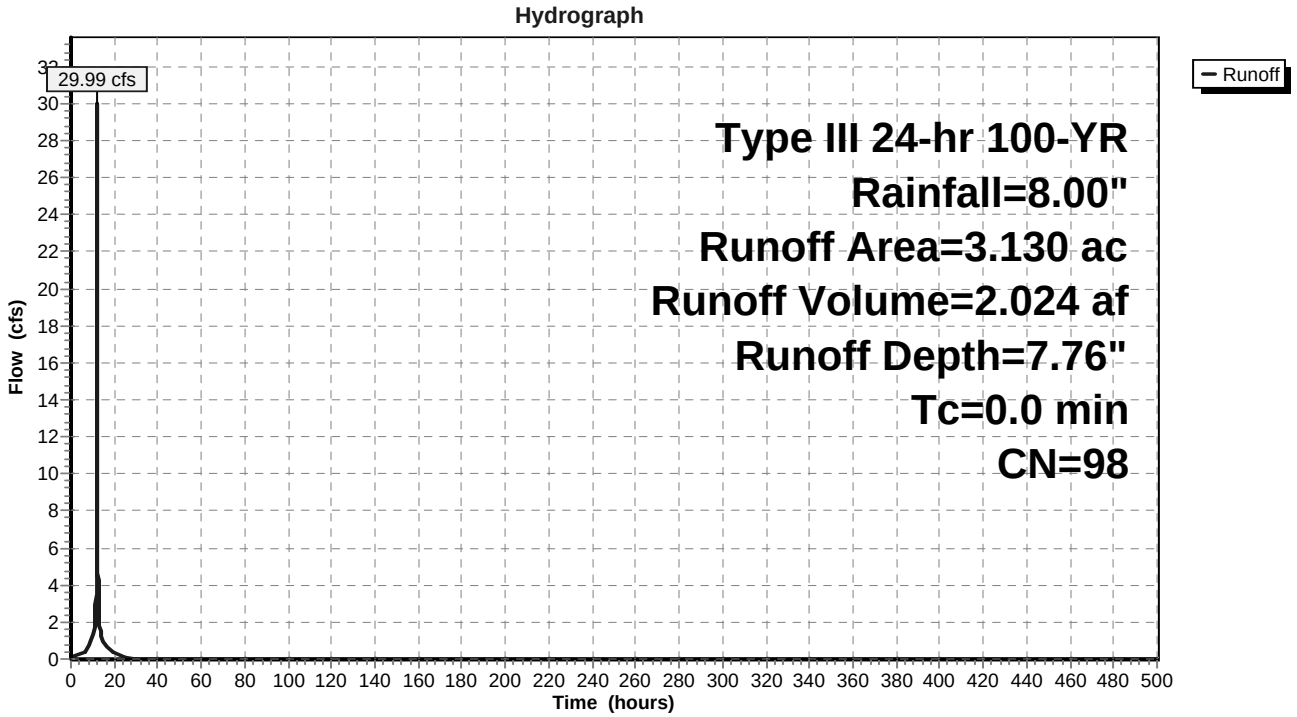
y for Subcatchment RRv: CAPTURED ROOFS & SURFACES REUSED WITH THE CRICKET VALLEY ENE

Runoff = 29.99 cfs @ 12.00 hrs, Volume= 2.024 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-YR Rainfall=8.00"

Area (ac)	CN	Description
3.130	98	Paved parking, HSG A
3.130		100.00% Impervious Area

ubcatchment RRv: CAPTURED ROOFS & SURFACES REUSED WITH THE CRICKET VALLEY ENERGY PI

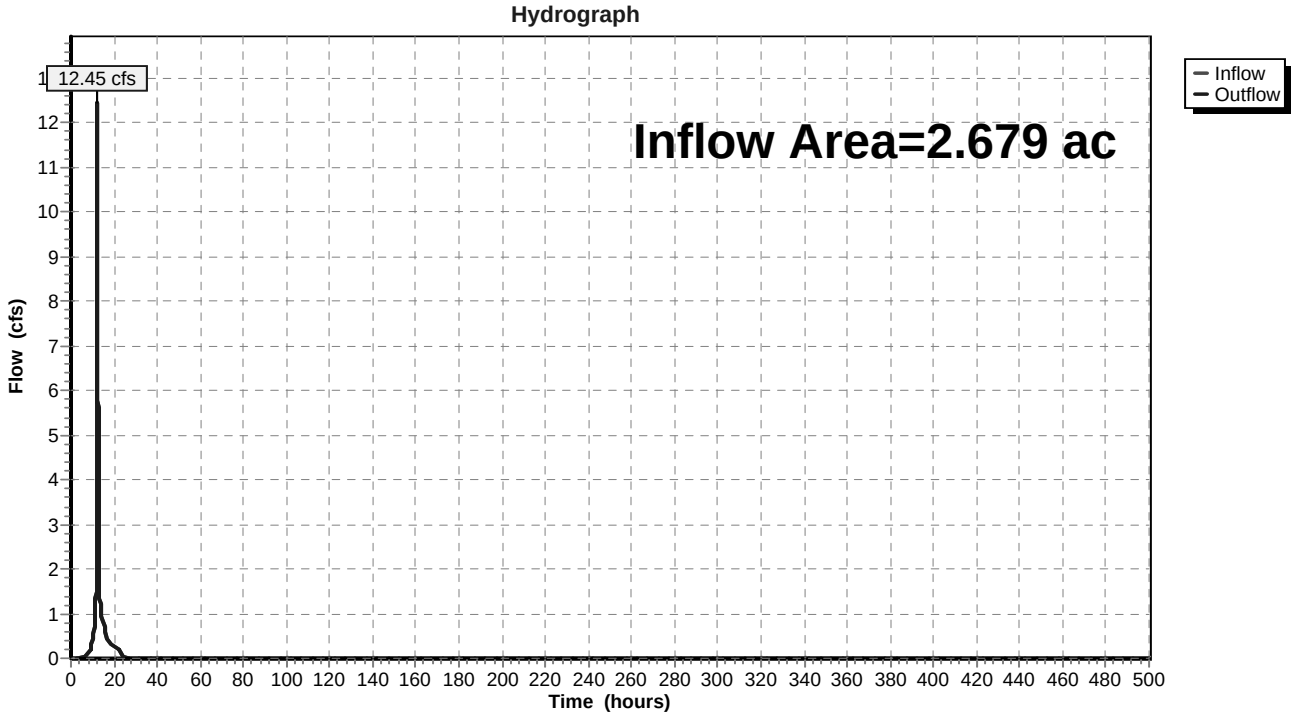


Summary for Reach 3R: Pipes

Inflow Area = 2.679 ac, 14.20% Impervious, Inflow Depth = 5.27" for 100-YR event
Inflow = 12.45 cfs @ 12.20 hrs, Volume= 1.177 af
Outflow = 12.45 cfs @ 12.20 hrs, Volume= 1.177 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs

Reach 3R: Pipes

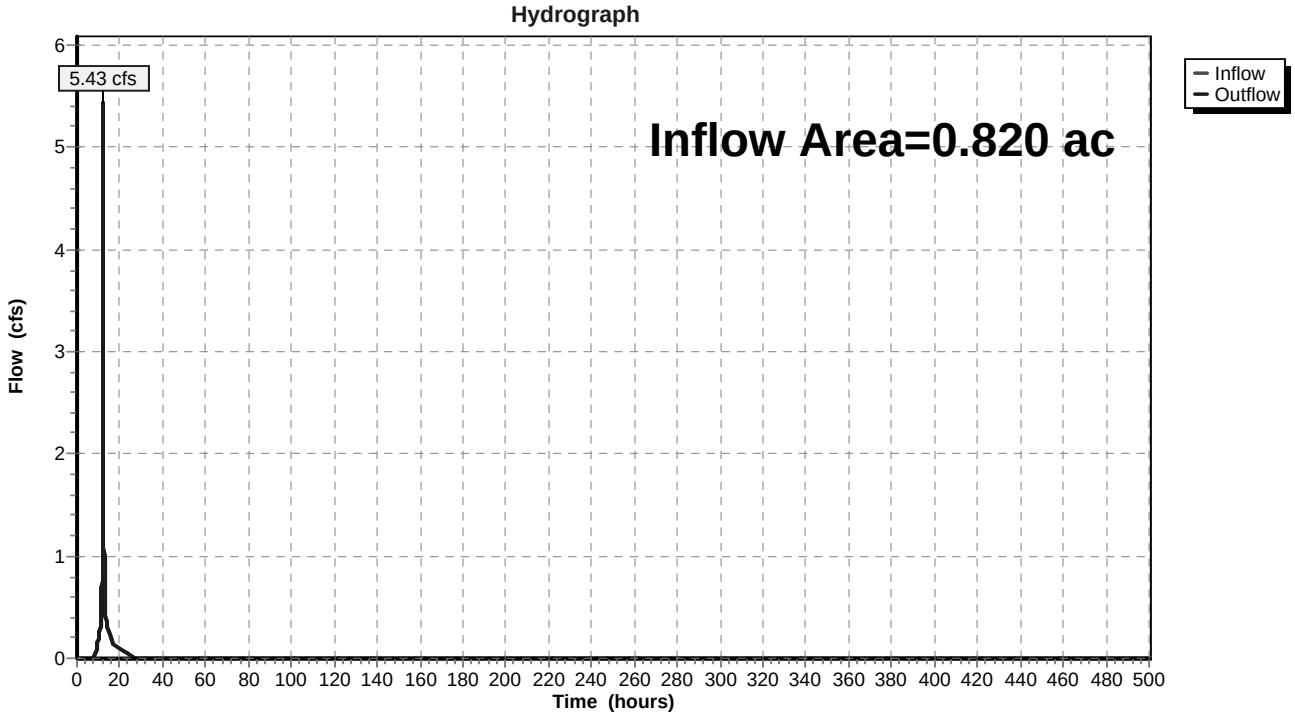


Summary for Reach 6R:

Inflow Area = 0.820 ac, 8.88% Impervious, Inflow Depth = 5.81" for 100-YR event
Inflow = 5.43 cfs @ 12.12 hrs, Volume= 0.397 af
Outflow = 5.43 cfs @ 12.12 hrs, Volume= 0.397 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs

Reach 6R:



Summary for Pond 1A: Plunge Pool F-1

Inflow Area = 0.820 ac, 8.88% Impervious, Inflow Depth = 6.10" for 100-YR event
Inflow = 5.68 cfs @ 12.09 hrs, Volume= 0.417 af
Outflow = 5.65 cfs @ 12.09 hrs, Volume= 0.417 af, Atten= 1%, Lag= 0.5 min
Primary = 5.65 cfs @ 12.09 hrs, Volume= 0.417 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Starting Elev= 430.50' Surf.Area= 631 sf Storage= 904 cf
Peak Elev= 430.87' @ 12.09 hrs Surf.Area= 743 sf Storage= 1,160 cf (256 cf above start)
Flood Elev= 431.50' Surf.Area= 952 sf Storage= 1,690 cf (786 cf above start)

Plug-Flow detention time= 45.2 min calculated for 0.396 af (95% of inflow)
Center-of-Mass det. time= 1.6 min (794.7 - 793.1)

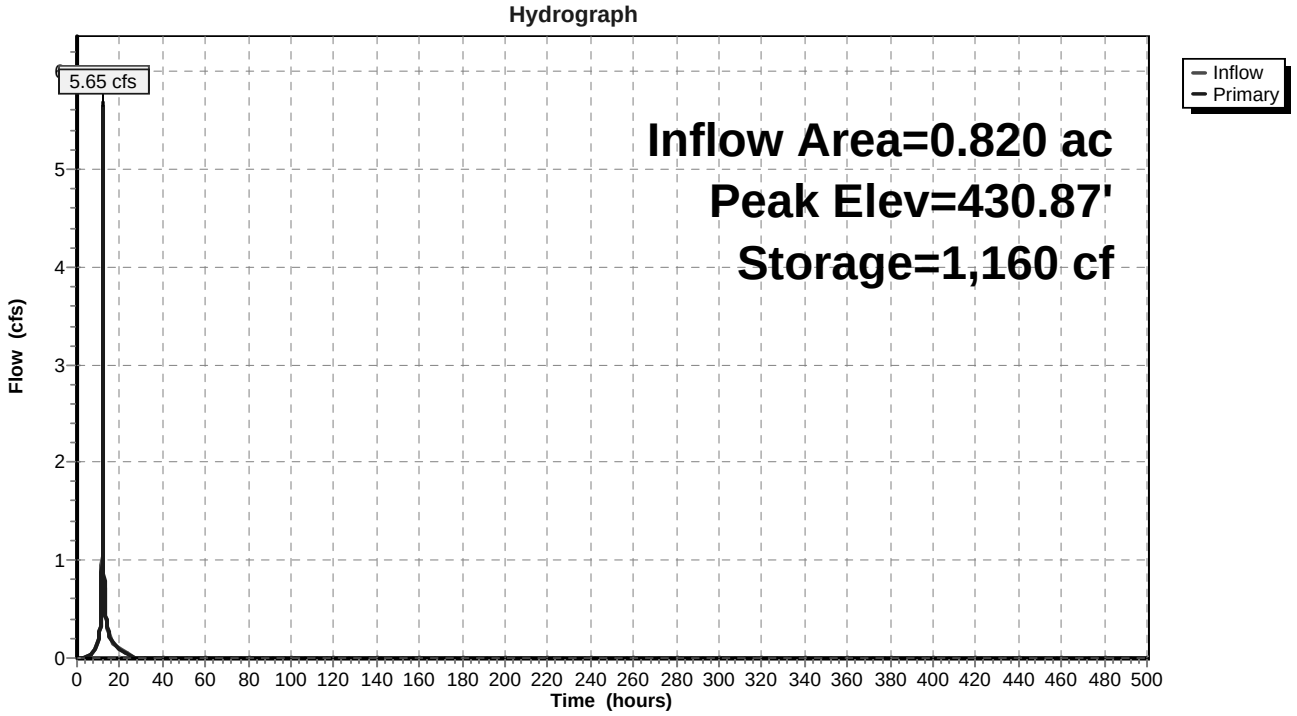
Volume	Invert	Avail.Storage	Storage Description
#1	427.00'	1,690 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
427.00	18	0	0
428.00	106	62	62
429.00	264	185	247
430.00	489	377	624
430.50	631	280	904
431.00	781	353	1,257
431.50	952	433	1,690

Device	Routing	Invert	Outlet Devices
#1	Primary	430.50'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=5.64 cfs @ 12.09 hrs HW=430.87' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 5.64 cfs @ 1.51 fps)

Pond 1A: Plunge Pool F-1



Summary for Pond 2A: Plunge Pool F-2

Inflow Area = 1.874 ac, 27.04% Impervious, Inflow Depth = 6.57" for 100-YR event
Inflow = 13.68 cfs @ 12.08 hrs, Volume= 1.026 af
Outflow = 13.42 cfs @ 12.10 hrs, Volume= 1.026 af, Atten= 2%, Lag= 1.0 min
Primary = 13.42 cfs @ 12.10 hrs, Volume= 1.026 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Starting Elev= 428.75' Surf.Area= 1,593 sf Storage= 3,229 cf
Peak Elev= 429.38' @ 12.10 hrs Surf.Area= 1,950 sf Storage= 4,339 cf (1,110 cf above start)
Flood Elev= 430.00' Surf.Area= 2,316 sf Storage= 5,666 cf (2,437 cf above start)

Plug-Flow detention time= 64.7 min calculated for 0.952 af (93% of inflow)
Center-of-Mass det. time= 3.0 min (785.1 - 782.1)

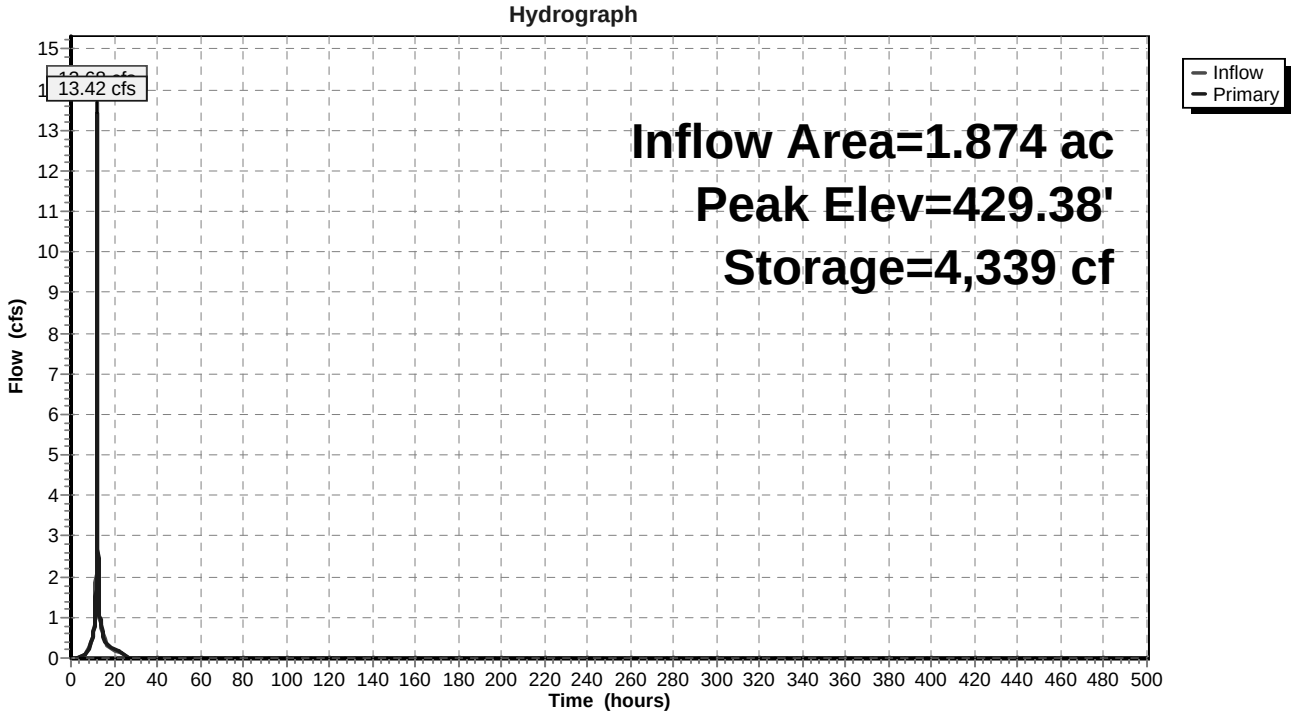
Volume	Invert	Avail.Storage	Storage Description
#1	424.00'	5,666 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
424.00	76	0	0
425.00	234	155	155
426.00	479	357	512
427.00	809	644	1,156
428.00	1,225	1,017	2,173
428.75	1,593	1,057	3,229
429.00	1,727	415	3,644
430.00	2,316	2,022	5,666

Device	Routing	Invert	Outlet Devices
#1	Primary	428.75'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=13.42 cfs @ 12.10 hrs HW=429.38' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 13.42 cfs @ 2.14 fps)

Pond 2A: Plunge Pool F-2



Summary for Pond 3A: Plunge Pool F-3

Inflow Area = 5.852 ac, 10.88% Impervious, Inflow Depth = 5.16" for 100-YR event
Inflow = 23.63 cfs @ 12.27 hrs, Volume= 2.515 af
Outflow = 23.59 cfs @ 12.29 hrs, Volume= 2.476 af, Atten= 0%, Lag= 0.8 min
Primary = 23.59 cfs @ 12.29 hrs, Volume= 2.476 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Peak Elev= 439.92' @ 12.29 hrs Surf.Area= 1,589 sf Storage= 2,964 cf
Flood Elev= 440.00' Surf.Area= 1,631 sf Storage= 3,095 cf

Plug-Flow detention time= 16.0 min calculated for 2.476 af (98% of inflow)
Center-of-Mass det. time= 6.5 min (831.7 - 825.2)

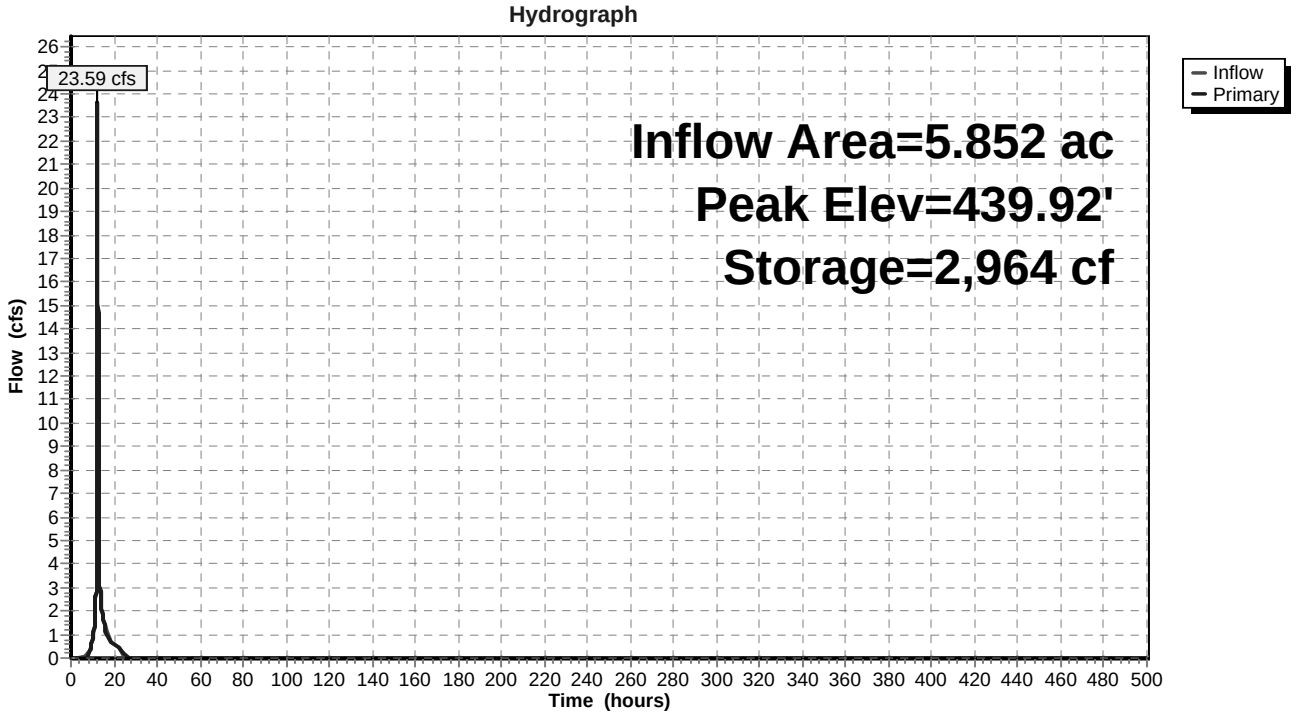
Volume	Invert	Avail.Storage	Storage Description
#1	435.00'	3,095 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
435.00	13	0	0
436.00	115	64	64
437.00	347	231	295
438.00	691	519	814
439.00	1,120	906	1,720
440.00	1,631	1,376	3,095

Device	Routing	Invert	Outlet Devices
#1	Primary	439.00'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=23.58 cfs @ 12.29 hrs HW=439.92' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 23.58 cfs @ 2.57 fps)

Pond 3A: Plunge Pool F-3



Summary for Pond 4P: Storage at Box Culvert

Inflow Area = 24.770 ac, 7.04% Impervious, Inflow Depth = 4.94" for 100-YR event
Inflow = 92.25 cfs @ 12.32 hrs, Volume= 10.197 af
Outflow = 91.33 cfs @ 12.35 hrs, Volume= 10.197 af, Atten= 1%, Lag= 1.9 min
Primary = 91.33 cfs @ 12.35 hrs, Volume= 10.197 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Peak Elev= 435.50' @ 12.35 hrs Surf.Area= 5,360 sf Storage= 8,782 cf

Plug-Flow detention time= 1.1 min calculated for 10.196 af (100% of inflow)
Center-of-Mass det. time= 1.1 min (835.6 - 834.5)

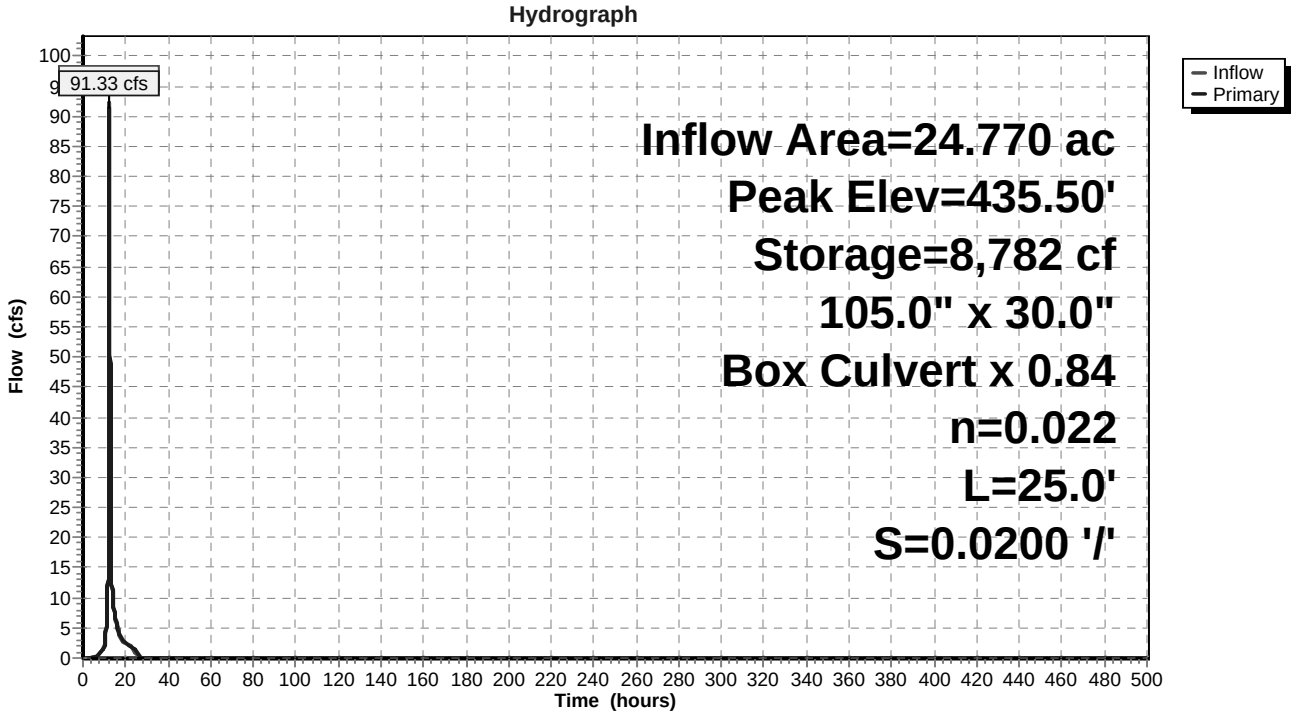
Volume	Invert	Avail.Storage	Storage Description
#1	433.00'	27,483 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
433.00	0	0	0
434.00	3,825	1,913	1,913
435.00	4,835	4,330	6,243
435.50	5,362	2,549	8,792
436.00	69,402	18,691	27,483

Device	Routing	Invert	Outlet Devices
#1	Primary	433.00'	**105.0" W x 30.0" H Box Culvert X 0.84** L= 25.0' Box, 30-75° wingwalls, square crown, Ke= 0.400 Inlet / Outlet Invert= 433.00' / 432.50' S= 0.0200 '/' Cc= 0.900 n= 0.022 Earth, clean & straight

Primary OutFlow Max=91.32 cfs @ 12.35 hrs HW=435.50' (Free Discharge)
1=Culvert (Barrel Controls 91.32 cfs @ 5.57 fps)

Pond 4P: Storage at Box Culvert



Summary for Pond EW-1: EXISTING NYSDEC JURISDICTIONAL WETLAND

Inflow Area = 81.411 ac, 4.35% Impervious, Inflow Depth = 5.05" for 100-YR event
Inflow = 183.79 cfs @ 12.53 hrs, Volume= 34.284 af
Outflow = 159.10 cfs @ 12.86 hrs, Volume= 25.722 af, Atten= 13%, Lag= 19.7 min
Primary = 159.10 cfs @ 12.86 hrs, Volume= 25.722 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Peak Elev= 422.34' @ 12.86 hrs Surf.Area= 313,932 sf Storage= 478,632 cf

Plug-Flow detention time= 155.3 min calculated for 25.722 af (75% of inflow)
Center-of-Mass det. time= 68.2 min (919.9 - 851.8)

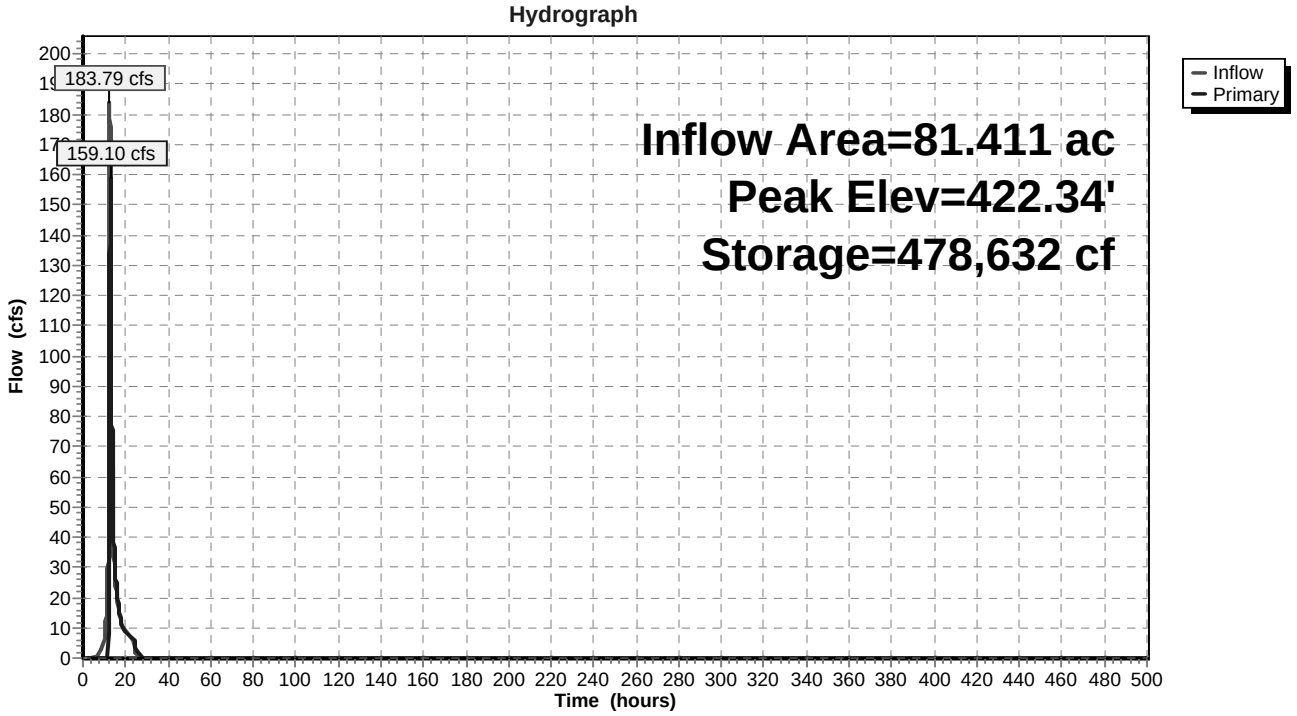
Volume	Invert	Avail.Storage	Storage Description
#1	419.80'	688,314 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
419.80	0	0	0
420.00	64,917	6,492	6,492
421.00	178,530	121,724	128,215
422.00	310,941	244,736	372,951
423.00	319,785	315,363	688,314

Device	Routing	Invert	Outlet Devices
#1	Primary	422.00'	**300.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=158.97 cfs @ 12.86 hrs HW=422.34' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 158.97 cfs @ 1.57 fps)

Pond EW-1: EXISTING NYSDEC JURISDICTIONAL WETLAND



Summary for Pond F-1: Bioretention Area #1

Inflow Area = 0.820 ac, 8.88% Impervious, Inflow Depth = 6.10" for 100-YR event
Inflow = 5.65 cfs @ 12.09 hrs, Volume= 0.417 af
Outflow = 5.43 cfs @ 12.12 hrs, Volume= 0.397 af, Atten= 4%, Lag= 1.4 min
Secondary = 5.43 cfs @ 12.12 hrs, Volume= 0.397 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Peak Elev= 430.86' @ 12.12 hrs Surf.Area= 2,047 sf Storage= 1,560 cf
Flood Elev= 431.50' Surf.Area= 2,412 sf Storage= 2,987 cf

Plug-Flow detention time= 46.5 min calculated for 0.397 af (95% of inflow)
Center-of-Mass det. time= 19.6 min (814.3 - 794.7)

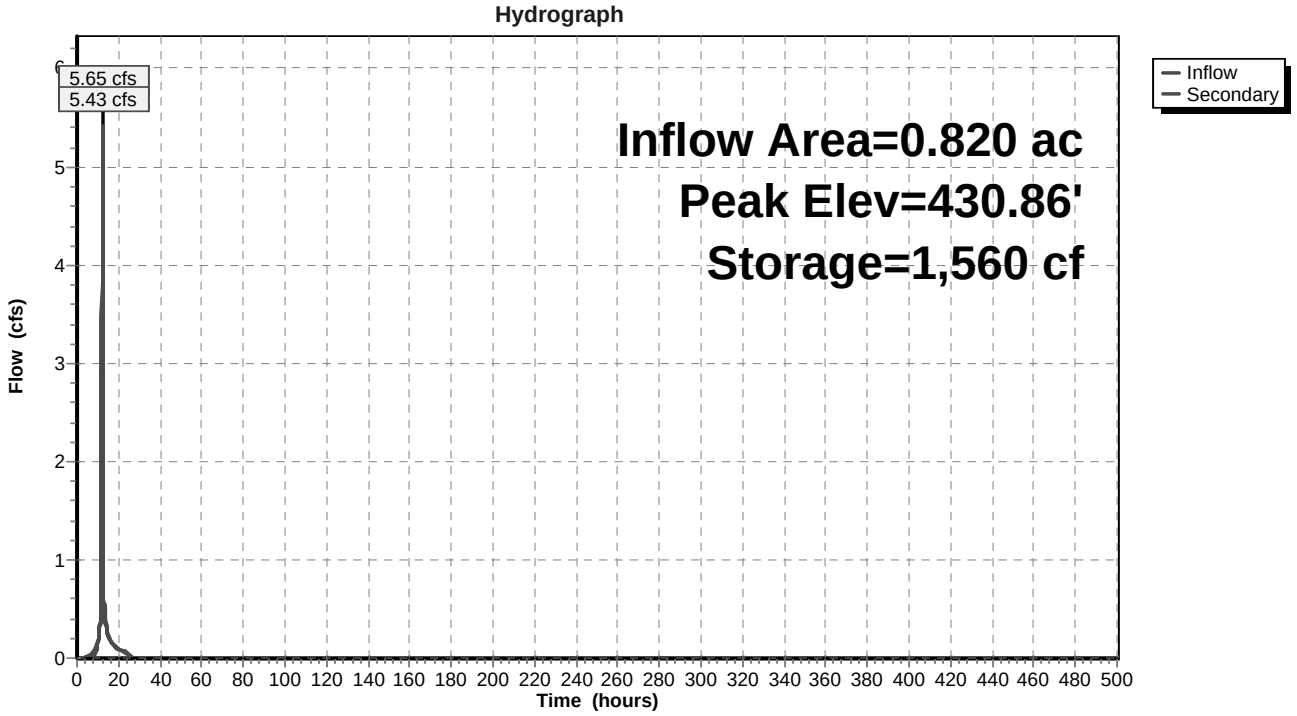
Volume	Invert	Avail.Storage	Storage Description
#1	430.00'	2,987 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
430.00	1,589	0	0
430.50	1,849	860	860
431.00	2,124	993	1,853
431.50	2,412	1,134	2,987

Device	Routing	Invert	Outlet Devices
#1	Secondary	430.50'	**10.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Secondary OutFlow Max=5.42 cfs @ 12.12 hrs HW=430.86' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 5.42 cfs @ 1.51 fps)

Pond F-1: Bioretention Area #1



Summary for Pond F-2: Bioretention Area #2

Inflow Area = 1.874 ac, 27.04% Impervious, Inflow Depth = 6.57" for 100-YR event
Inflow = 13.42 cfs @ 12.10 hrs, Volume= 1.026 af
Outflow = 11.71 cfs @ 12.15 hrs, Volume= 1.026 af, Atten= 13%, Lag= 2.8 min
Primary = 11.71 cfs @ 12.15 hrs, Volume= 1.026 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Starting Elev= 428.75' Surf.Area= 6,983 sf Storage= 1,706 cf
Peak Elev= 429.27' @ 12.15 hrs Surf.Area= 7,575 sf Storage= 5,485 cf (3,779 cf above start)
Flood Elev= 430.00' Surf.Area= 8,314 sf Storage= 11,301 cf (9,595 cf above start)

Plug-Flow detention time= 48.6 min calculated for 0.987 af (96% of inflow)
Center-of-Mass det. time= 12.2 min (797.3 - 785.1)

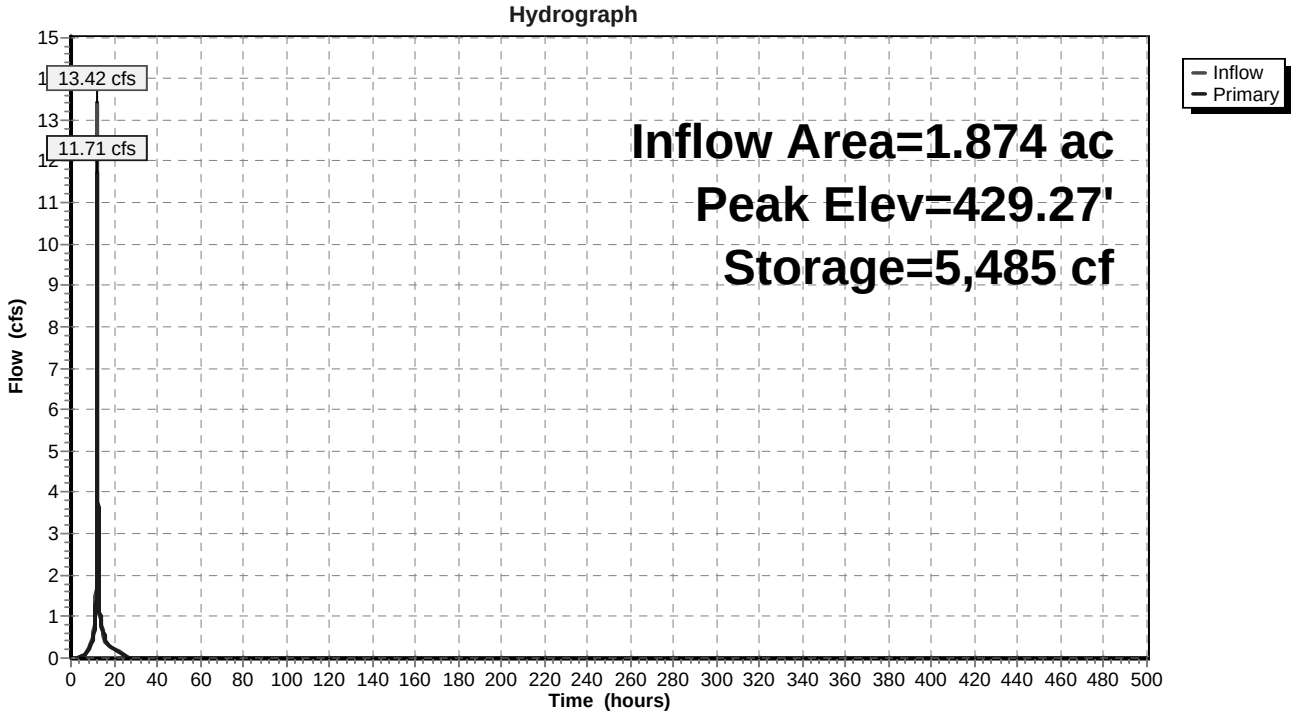
Volume	Invert	Avail.Storage	Storage Description
#1	428.50'	11,301 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
428.50	6,662	0	0
429.00	7,304	3,492	3,492
430.00	8,314	7,809	11,301

Device	Routing	Invert	Outlet Devices
#1	Primary	428.75'	**12.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=11.70 cfs @ 12.15 hrs HW=429.27' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 11.70 cfs @ 1.88 fps)

Pond F-2: Bioretention Area #2



Summary for Pond F-3: Bioretention Area #3

Inflow Area = 5.852 ac, 10.88% Impervious, Inflow Depth = 5.08" for 100-YR event
Inflow = 23.59 cfs @ 12.29 hrs, Volume= 2.476 af
Outflow = 23.09 cfs @ 12.33 hrs, Volume= 2.431 af, Atten= 2%, Lag= 2.4 min
Primary = 23.09 cfs @ 12.33 hrs, Volume= 2.431 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Peak Elev= 439.90' @ 12.33 hrs Surf.Area= 5,324 sf Storage= 6,258 cf
Flood Elev= 440.00' Surf.Area= 5,442 sf Storage= 6,774 cf

Plug-Flow detention time= 21.0 min calculated for 2.431 af (98% of inflow)
Center-of-Mass det. time= 10.2 min (841.9 - 831.7)

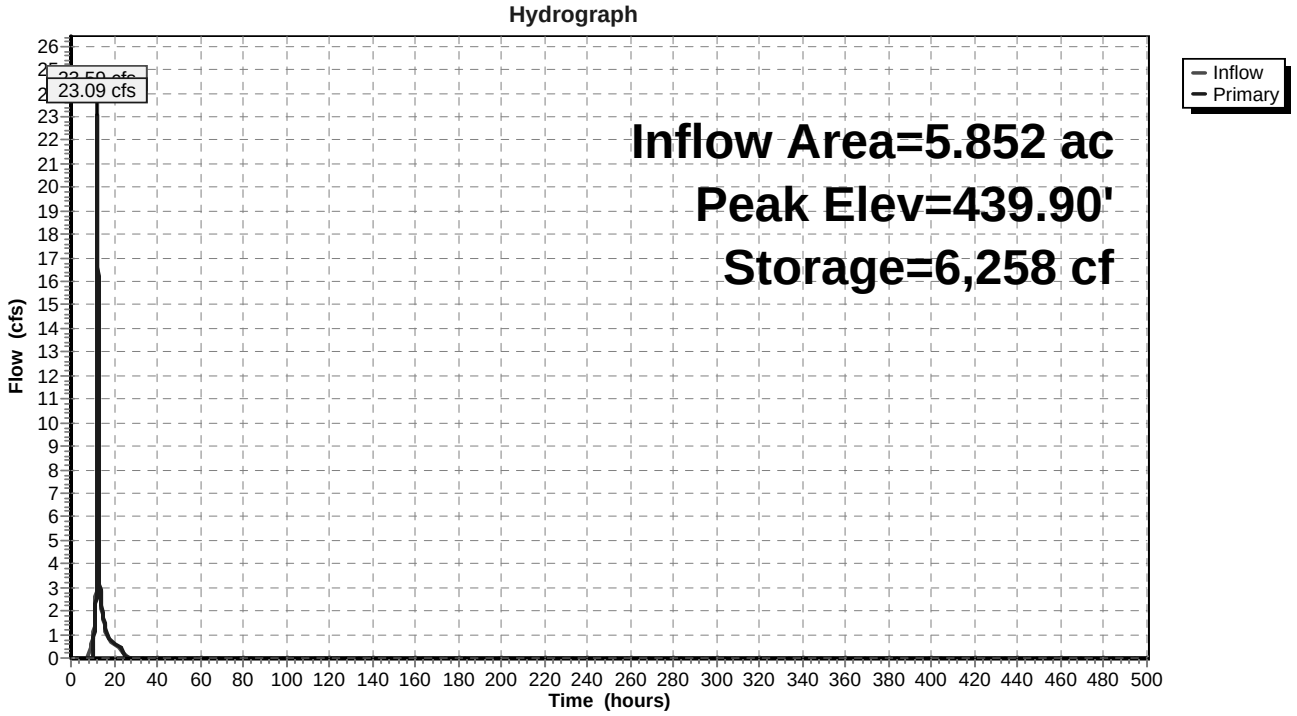
Volume	Invert	Avail.Storage	Storage Description
#1	438.50'	6,774 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
438.50	3,592	0	0
439.00	4,206	1,950	1,950
440.00	5,442	4,824	6,774

Device	Routing	Invert	Outlet Devices
#1	Primary	439.00'	**10.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=23.08 cfs @ 12.33 hrs HW=439.90' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 23.08 cfs @ 2.55 fps)

Pond F-3: Bioretention Area #3



Summary for Pond P-1: Wet Pond

Inflow Area = 17.690 ac, 38.01% Impervious, Inflow Depth = 6.57" for 100-YR event
Inflow = 120.54 cfs @ 12.09 hrs, Volume= 9.691 af
Outflow = 14.05 cfs @ 12.81 hrs, Volume= 9.691 af, Atten= 88%, Lag= 43.4 min
Primary = 14.05 cfs @ 12.81 hrs, Volume= 9.691 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs
Starting Elev= 422.00' Surf.Area= 30,655 sf Storage= 75,367 cf
Peak Elev= 427.82' @ 12.81 hrs Surf.Area= 54,277 sf Storage= 324,228 cf (248,861 cf above start)
Flood Elev= 429.00' Surf.Area= 59,091 sf Storage= 390,986 cf (315,619 cf above start)

Plug-Flow detention time= 1,193.9 min calculated for 7.960 af (82% of inflow)
Center-of-Mass det. time= 918.3 min (1,699.3 - 781.0)

Volume	Invert	Avail.Storage	Storage Description
#1	418.00'	452,178 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

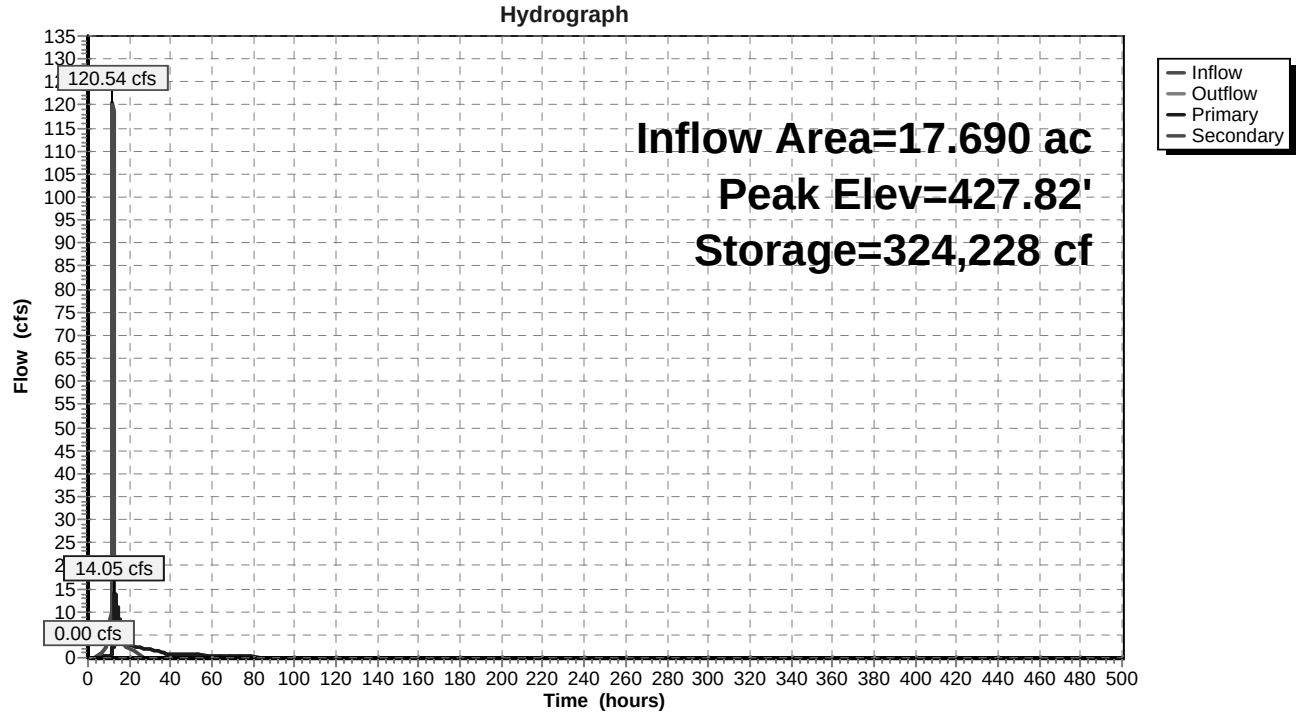
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
418.00	14,212	0	0
420.00	16,608	30,820	30,820
421.00	19,142	17,875	48,695
421.50	28,445	11,897	60,592
422.00	30,655	14,775	75,367
423.00	34,805	32,730	108,097
424.00	39,588	37,197	145,293
425.00	43,288	41,438	186,731
426.00	47,088	45,188	231,919
427.00	50,988	49,038	280,957
428.00	54,989	52,989	333,946
429.00	59,091	57,040	390,986
430.00	63,293	61,192	452,178

Device	Routing	Invert	Outlet Devices
#1	Primary	421.85'	**30.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 421.85' / 421.50' S= 0.0140 '/' Cc= 0.900 n= 0.013
#2	Device 1	422.00'	**4.4" Vert. Orifice/Grate** C= 0.600
#3	Device 1	424.24'	**6.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	426.50'	**2.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Secondary	429.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir X 0.00** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=14.05 cfs @ 12.81 hrs HW=427.82' (Free Discharge)
└─**1=Culvert** (Passes 14.05 cfs of 40.55 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.21 cfs @ 11.43 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 1.73 cfs @ 8.79 fps)
  └─**4=Sharp-Crested Rectangular Weir** (Weir Controls 11.11 cfs @ 3.76 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=422.00' (Free Discharge)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P-1: Wet Pond

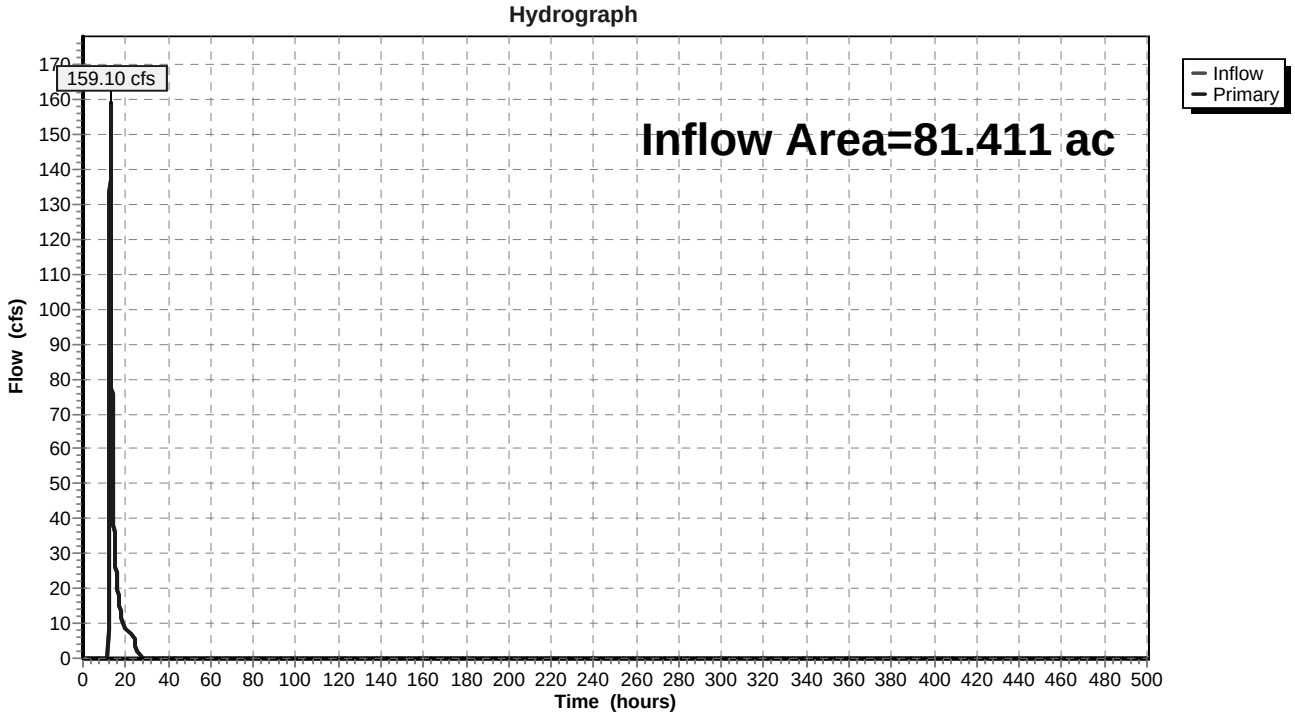


Summary for Pond zDP1: DESIGN POINT 1 (WETLAND)

Inflow Area = 81.411 ac, 4.35% Impervious, Inflow Depth = 3.79" for 100-YR event
Inflow = 159.10 cfs @ 12.86 hrs, Volume= 25.722 af
Primary = 159.10 cfs @ 12.86 hrs, Volume= 25.722 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs

Pond zDP1: DESIGN POINT 1 (WETLAND)

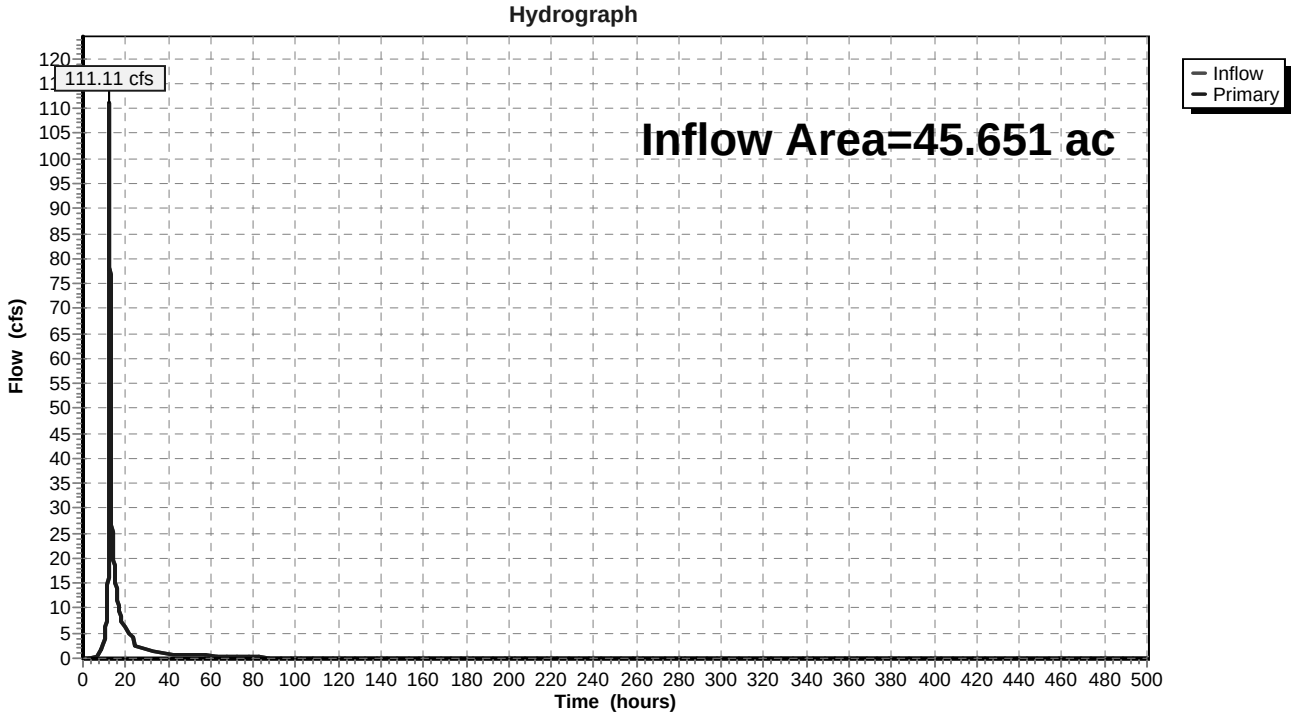


Summary for Pond zDP2: DESIGN POINT 2 (36" RCP CULVERT)

Inflow Area = 45.651 ac, 16.23% Impervious, Inflow Depth = 5.78" for 100-YR event
Inflow = 111.11 cfs @ 12.40 hrs, Volume= 21.981 af
Primary = 111.11 cfs @ 12.40 hrs, Volume= 21.981 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-500.00 hrs, dt= 0.01 hrs

Pond zDP2: DESIGN POINT 2 (36" RCP CULVERT)



Appendix E:
Preliminary Design Calculations

Water Quality Volume

Job:	Cricket Vallet Energy		
Job No.:	81001.00		
Description:	Preliminary Stormwater Quality Volumes		
Prep. By:	MF	Date:	7/16/2010
Check By:	SD	Date:	7/16/2010

Preliminary Stormwater Quality Design:
Stormwater Quality will be accomplished by treating the runoff volume generated by the 90% rainfall of the average annual stormwater runoff volume (August 2003 NYS Stormwater Design Manual).

Volume Generated By 90 % Rule (Using methodology of August 2003 NYS Stormwater Design Manual):

WQv = [P x Rv x A] / 12
WQv = Water quality volume (in acre-feet)
Rv = 0.05+0.009(I) = Minimum Rv = 0.2
I = Impervious Cover (Percentage)
P = 90 % Rainfall Event Number (see F4.1)
A = Site area in acres

Preliminary Water Quality Volume For The Development Conveyed to Treatment Practice

Practice	Total Area (Ac)	Impervious Area (Ac)	Impervious Cover (%)	Rv	P (in)	WQv (ac-ft)	WQv (cf)	Pre-Treatment Required. (%)	Pre-Treatment Required (cf)	Pre-Treatment Provided (cf)
Northeastern Portion of Site - Bioretention #1	0.710	0.514	72	0.70	1.1	0.05	1,989	40	796	904
Northwestern Portion of Site - Bioretention #2	2.110	2.000	95	0.90	1.1	0.17	7,609	40	3,043	3,229
Entrance Road - Bioretention #3	5.855	0.831	14	0.18	1.1	0.10	4,155	40	1,662	1,720
Stormwater Management Basin Wet extended Detention Pond (Type P-3)	15.010	13.820	92	0.88	1.1	1.21	52,662	10	5,266	26,794

Water Quality Distribution For Wet Pond					
Practice	WQv (cf)	Permanent Pool (50% min.)	Permanent Pool (WQv Provided)	Extended Detention (50% WQv max.)	Extended Detention (WQv Provided)
Wet Pond (Type P-3)	52,662	26,331	48,229	26,331	4,433

Water Quality Practice Design

Job:	Cricket Vallet Energy		
Job No.:	81001.00		
Description:	Preliminary Sizing For Recommended Stormwater Quality Practice		
Prep. By:	MMF	Date:	2/19/2010
Check By:	SD	Date:	2/19/2010

Northeastern Portion of Site - Bioretention Area #1

Step 1 - Determine minimum volume of treatment chamber (inlcuding pre-treatment)

Water quality volume = 1,989 cf

As per Section 6.4.4 of NYS Stormwater Management Design Manual, the entire treatment chamber (inlcuding pre-treatment) shall be designed to temporarily hold at least 75 % of the water quality volume.

75 % WQV = 1,492 cf (min)

Pretreatment shall be provided prior to the filer media to at least 40 % of WQv (where sanded)
40 % WQV = 796 cf (min)

Step 2 - Approximate Filter Bed Area

Af = (WQv) (df) / [((k) (hf + df) (tf)]

Af = Surface area of filter bed (sf)
WQv = Water quality volume (cf)
df = Filter bed depth (ft) - minimum of 30"
k = coefficient of permeability of filter media (ft/day) - 0.5 ft/day for bioretention as per Section 6.4.4 of NYS Stormwater Design Manual
hf = Average height of water above filter bed
tf = Design filter bed drain time (days) - 2 days or 48 hours for bioretention as per Section 6.4.4 of NYS Stormwater Design Manual

df =	2.5
k =	0.5
hf =	0.5
tf =	2

Min. Af = 1,657 sf
Provided Area = 1,850 sf

Step 3 - Confirm practice capable holding 75 % WQv

The entire treatment system (including pre-treatment) shall be sized to temporarily hold at least 75 % of the WQv prior to filtration.

Volume within filter bed: Vf = Af (df) (n); n =0.25 for bioretention soils
Vf = 1,156 cf.

Storage above filter bed (6" Ponding layer): Vpond= (hf)(Af)
Vpond = 925 cf.

- Pre-treatment Storage: Vs
Vs (req.) = 796 cf
Vs (prov.) = 1,260 cf

Total Storage = 3,341 cf. > 1,989 cf.

Northwestern Portion of Site - Bio-Retention Area #2

Step 1 - Determine minimum volume of treatment chamber (inlcuding pre-treatment)

Water quality volume = 7,609 cf

As per Section 6.4.4 of NYS Stormwater Management Design Manual, the entire treatment chamber (inlcuding pre-treatment) shall be designed to temporarily hold at least 75 % of the water quality volume.

75 % WQV = 5,706 cf (min)

Pretreatment shall be provided prior to the filer media to at least 40 % of WQv (where sanded)
40 % WQV = 3,043 cf (min)

Step 2 - Approximate Filter Bed Area

Af = (WQv) (df) / [((k) (hf + df) (tf)]

Af = Surface area of filter bed (sf)
WQv = Water quality volume (cf)
df = Filter bed depth (ft) - minimum of 30"
k = coefficient of permeability of filter media (ft/day) - 0.5 ft/day for bioretention as per Section 6.4.4 of NYS Stormwater Design Manual
hf = Average height of water above filter bed
tf = Design filter bed drain time (days) - 2 days or 48 hours for bioretention as per Section 6.4.4 of NYS Stormwater Design Manual

df =	2.5
k =	0.5
hf =	0.5
tf =	2

Min. Af = 6,341 sf
Provided Af = 6,662 sf

Step 3 - Confirm practice capable holding 75 % WQv

The entire treatment system (including pre-treatment) shall be sized to temporarily hold at least 75 % of the WQv prior to filtration.

Volume within filter bed: Vf = Af (df) (n); n =0.25 for bioretention soils
Vf = 4,164 cf.

Storage above filter bed (6" Ponding layer): Vpond= (hf)(Af)
Vpond = 3,331 cf.

- Pre-treatment Storage: Vs
Vs (req.) = 3,043 cf
Vs (prov.) = 3,572 cf

Total Storage = 11,067 cf. > 5,706 cf.

Entrance Road - Bio-Retention Area #3

Step 1 - Determine minimum volume of treatment chamber (inlcuding pre-treatment)

Water quality volume = 4,155 cf

As per Section 6.4.4 of NYS Stormwater Management Design Manual, the entire treatment chamber (inlcuding pre-treatment) shall be designed to temporarily hold at least 75 % of the water quality volume.

75 % WQV = 3,116 cf (min)

Pretreatment shall be provided prior to the filer media to at least 40 % of WQv (where sanded)
40 % WQV = 1,662 cf (min)

Step 2 - Approximate Filter Bed Area

Af = (WQv) (df) / [((k) (hf + df) (tf)]

Af = Surface area of filter bed (sf)
WQv = Water quality volume (cf)
df = Filter bed depth (ft) - minimum of 30"
k = coefficient of permeability of filter media (ft/day) - 0.5 ft/day for bioretention as per Section 6.4.4 of NYS Stormwater Design Manual
hf = Average height of water above filter bed
tf = Design filter bed drain time (days) - 2 days or 48 hours for bioretention as per Section 6.4.4 of NYS Stormwater Design Manual

df =	2.5
k =	0.5
hf =	0.5
tf =	2

Min. Af = 3,463 sf
Provided Af = 3,600 sf

Step 3 - Confirm practice capable holding 75 % WQv

The entire treatment system (including pre-treatment) shall be sized to temporarily hold at least 75 % of the WQv prior to filtration.

Volume within filter bed: Vf = Af (df) (n); n =0.25 for bioretention soils
Vf = 2,250 cf.

Storage above filter bed (6" Ponding layer): Vpond= (hf)(Af)
Vpond = 1,800 cf.

- Pre-treatment Storage: Vs
Vs (req.) = 1,662 cf
Vs (prov.) = 1,720 cf

Total Storage = 5,770 cf. > 3,116 cf.

Runoff Reduction Volume Analysis

Job:	Cricket Vallet Energy		
Job No.:	81001.00		
Description:	Preliminary Sizing For Required Runoff Reduction Volume		
Prep. By:	SD	Date:	6/21/2010
Check By:	CPL	Date:	6/21/2010

Site Statistics		
	Total Area (acres)	Impervious Area (acres)
Pre-Development	130.21	12.7
Post Development	130.21	18.83
Area for Required Runoff Reduction Volume (RRv)=		6.13

Section 4.2 of the NYSDEC Stormwater Management Design Manual (SWMDM) describes the Water Quality Volume equation as:

WQv = (P/12) * Rv * A

where: WQv = Water Quality Volume (acre-feet)
P = 90% Rainfall Event Number (inches) (interpolated from SWMDM Figure 4.1)
Rv = 0.05 + 0.009 (I); min Rv = 0.2
I = Impervious Cover (%) within the drainage area contributing to the SWM practice
A = Drainage area (acres) contributing to the SWM practice

P (inches)	Total Area (acres)	Impervious Cover (acres)	I (%)	Rv	Required RRv (acre-feet)
1.10	6.130	6.130	100	0.95	0.534
				RRv (cf)=	23,261.0

Runoff Reduction Computations

Building #/Area	Building/Area Name	Area Captured (sf)	Percent Impervious	Associated WQv (ac-ft)	Required RRv=Wqv (cu-feet)	Provided RRv (cf)
Containment Areas - Capture and Reuse Stormwater						
1	Steam Turbine Generator / Step Up Transformer	1,072	100	0.002	87.12	87.1
2	Steam Turbine Generator / Step Up Transformer	1,072	100	0.002	87.12	87.1
3	Steam Turbine Generator / Step Up Transformer	1,072	100	0.002	87.12	87.1
4	Gas Turbine Step Up Transformer	1,562	100	0.003	130.68	130.7
5	Gas Turbine Step Up Transformer	1,562	100	0.003	130.68	130.7
6	Gas Turbine Step Up Transformer	1,335	100	0.003	130.68	130.7
7	Closed Cooling Water Pumps	444	100	0.001	43.56	43.6
8	Aqueous Ammonia Storage Area w/Truck Parking Area	1,921	100	0.004	174.24	174.2
9	Blackstart Generator Area	441	100	0.001	43.56	43.6
10	Auxiliary Boiler Area	1,583	100	0.003	130.68	130.7
Total		12,064		0.02	871.2	871.2
Roof Areas - Capture and Reuse Stormwater						
1	GIS Switchyard Bldg	7,199	100	0.014	609.84	609.8
2	Administration Control Room/Maintenance Shop/Warehouse Building	8,465	100	0.017	740.52	740.5
3	Water Treatment Building	10,665	100	0.021	914.76	914.8
4	Turbine Generator Building/Heat Recovery Steam Generator	110,119	100	0.22	9583.2	9,583.2
Total		136,448		0.272	11848.32	11,848.3
Green Infrastrucutre Practices						
1	Bioretention Facility #1	30,928	72.39	0.046	1,989	3,341
2	Bioretention Facility #2	91,912	94.79	0.175	7,609	10,538
3	Bioretention Facility #3	255,043	14.19	0.095	3,403	4,978
Total		377,882		0.316	13,001	18,857
	Total Area (Square Feet)	526,394	WQv (ac-ft)	0.608	RRV Provided	31,577
	Total Area (Acres)	12.08	WQv (cf)	25,721		
	Percentage of RRv Provided=		135.75%			

Post-Development Swale Design

Job: Cricket Valley Energy
Job No.: 81001.00
Description: Grass Lined Channel Design
Prep. By: CPL Date: 2/16/2010
Check By: Date:

- Vegeated channels having turf reinforcement matting, the permissble velocity shall not exceed 8 ft/sec.
- Under Appendix L of NYS Storm Water Management Design Manual, maximum permissible velocities within vegetated channels shall not exceed values shown in Table L.1 "Permissible Velocites for Channels Lined with Vegetation"
- See attached calculations for determining flowrates.

Manning's Flow Calculator For Trapezoidal Channels

$Q = (1.49 / n) * A * R^{2/3} * S^{1/2}$

- Q = Flow Rate (cfs)
- n = Manning's Coefficient
- A = Cross - Sectional Flow Area (ft^2)
- R = Hydraulic Radius (Cross - Sectional Flow Area / Wetted Perimeter)
- S = Slope

$F = V / ((D_h * g)^{1/2})$ (For Non-Rectangular Channels)

- F = Froude Number
- V = Velocity (ft/s)
- D_h = Hydraulic Depth (ft) = Cross - Sectional Area / Width of Flow at Water Surface
- g = Gravitational Constant = 32.2 ft/s

Channel	Mannings n	Side Slope	Side Slope	Bottom Width (ft)	Depth (ft)	Slope (ft / ft)	Area (ft^2)	Wetted Perimeter (ft)	Hydraulic Radius	Actual Flow Rate (cfs)	Calculated Flow Rate (cfs)	Velocity (ft / s)	Velocity * Hydraulic Radius	Froude Number	Allowable Velocity (fps) For Slope (3)	Acceptable Velocity	Vegetative Lining	Erosion Control Matting
PS-2.4	0.078	3	3	3	0.750	0.070	3.938	7.743	0.508	12.00	12.68	3.220	1.637	0.783	4	Yes	(1/3) Reed Canary, (1/3) Tall Fescue, (1/3) Kentuck Bluegrass	NA
PS-2.3	0.056	3	3	4	0.880	0.070	5.843	9.566	0.611	27.00	29.61	5.068	3.096	1.126	5	Yes	(1/3) Reed Canary, (1/3) Tall Fescue, (1/3) Kentuck Bluegrass	Yes

Notes:
1. Mannings Values obtained from Figure L.1 "Manning's Value With Varying Flow Depth" of August 2003 New York State Storm Water Management Design Manual.
2. Flow's based upon 100-year storm.
3. Allowable velocities for vegetated slopes per Table L.1 "Permissible Velocities for Channels Lined with Vegeation" from August 2003 New York State Storm Water Management Design Manual.

Sediment Trap Design

Job:	Advanced Power-Cricket Valley Energy		
Job No.:	81001.01		
Description:	Erosion Control - Sediment Basin/Trap Calculations		
Prep. By:	MMF	Date:	7/16/2010
Check By:	CPL	Date:	7/16/2010

• As per the New York Standards and Specifications For Erosion and Sediment Control, August 2005, the volume of a volume of a sediment trap/basin shall be at least 3,600 cubic feet per acre of drainage area.
• Sediment shall be removed and the trap restored to the original dimensions when the sediment has accumulated to 1/2 of the design depth of the sediment trap/basin.
• All embankments for sediment basins shall not exceed 5 feet in height as measured at the low point of the original ground along the centerline of the embankment. Embankments shall have a minimum 4 foot wide top and side slopes of 2:1 or flatter.

Rip-Rap Outlet Sediment Traps
• Maximum drainage area for rip-rap outlet sediment basin is 15 acres.
• Storage volume available for a rip-rap outlet sediment trap is the volume available behind the outlet structure up to an elevation of 1 foot below the level of the weir crest.

Weir Dimensions - Per Page 5A.37 of NY Guidelines		
Contributing Drainage Area (ac)	**Depth of Channel (ft)**	**Length of Weir (ft)**
0	1.5	4
1	1.5	4
2	1.5	5
3	1.5	6
4	1.5	10
5	1.5	12
6	1.5	14
7	1.5	16
8	2	10
9	2	10
10	2	12
11	2	14
12	2	14
13	2	16
14	2	16
15	2	18
15.99		

SEDIMENT TRAPS					
RIP RAP OUTLET SEDIMENT TRAP	**TYPE OF FACILITY**	**AREA (sf)**	**AREA (AC)**	**VOLUME REQUIRED (cf)**	**CLEANOUT VOLUME (cf)**
1	Rip-Rap	638,154	14.65	52,740	26,370
2	Rip-Rap	122,839	2.82	10,152	5,076
3	Rip-Rap	209,302	4.80	17,280	8,640
4	Rip-Rap	43,996	1.01	3,636	1,818
5	Rip-Rap	41,382	0.95	3,420	1,710

Proposed Rip-Rap Outlet Sediment Trap # 1

• As per the table on page 5A.35 of the New York Guidelines for Urban Erosion and Sediment Control, a contributing drainage area of 14.65 acres requires the following:

- Length of Weir (ft) = 18
- Depth of Channel (ft) = 2
- Weir Crest Elev. = 423
- Top of Channel Elevation = Weir Crest Elevation + Depth of Channel = 425
- Freeboard (ft) = 0.5 x Depth of Channel = 1
- Top of Berm (ft) = Freeboard + Top of Channel Elevation = 426

Areas

Contour	Area (sf)	Cumulative Volume (cf)
420	28,674	0
421	31,932	30,303
422	35,291	63,915

Elevation at Storage Limit (one foot below weir elevation) = 422
Storage Limit (cf) = 63,915 > 52,740
Cleanout Volume (cf) = 26,370
Cleanout Elevation = 420.84

Proposed Rip-Rap Outlet Sediment Trap # 2

• As per the table on page 5A.35 of the New York Guidelines for Urban Erosion and Sediment Control, a contributing drainage area of 2.82 acres requires the following:

- Length of Weir (ft) = 6
- Depth of Channel (ft) = 1.5
- Weir Crest Elev. = 427.75
- Top of Channel Elevation = Weir Crest Elevation + Depth of Channel = 429.25
- Freeboard (ft) = 0.5 x Depth of Channel = 0.75
- Top of Berm (ft) = Freeboard + Top of Channel Elevation = 430

Areas

Contour	Area (sf)	Cumulative Volume (cf)
424	4,203	0
425	5,234	4,719
426	6,387	10,529
426.75	7,309	15,665

Elevation at Storage Limit (one foot below weir elevation) = 426.75
Storage Limit (cf) = 15,665 > 10,152
Cleanout Volume (cf) = 5,076
Cleanout Elevation = 425.08

Proposed Rip-Rap Outlet Sediment Trap # 3

• As per the table on page 5A.35 of the New York Guidelines for Urban Erosion and Sediment Control, a contributing drainage area of 4.80 acres requires the following:

- Length of Weir (ft) = 12
- Depth of Channel (ft) = 1.5
- Weir Crest Elev. = 434.5
- Top of Channel Elevation = Weir Crest Elevation + Depth of Channel = 436
- Freeboard (ft) = 0.5 x Depth of Channel = 0.75
- Top of Berm (ft) = Freeboard + Top of Channel Elevation = 436.75

Areas

Contour	Area (sf)	Cumulative Volume (cf)
429.5	2,187	0
430	3,041	1,307
431	3,978	4,817
432	4,996	9,304
433	6,091	14,847
433.5	6,668	18,037

Elevation at Storage Limit (one foot below weir elevation) = 433.5
Storage Limit (cf) = 18,037 > 17,280
Cleanout Volume (cf) = 8,640
Cleanout Elevation = 431.90

Proposed Rip-Rap Outlet Sediment Trap # 4

• As per the table on page 5A.35 of the New York Guidelines for Urban Erosion and Sediment Control, a contributing drainage area of 1.01 acres requires the following:

- Length of Weir (ft) = 5
- Depth of Channel (ft) = 1.5
- Weir Crest Elev. = 434.5
- Top of Channel Elevation = Weir Crest Elevation + Depth of Channel = 436
- Freeboard (ft) = 0.5 x Depth of Channel = 0.75
- Top of Berm (ft) = Freeboard + Top of Channel Elevation = 436.75

Areas

Contour	Area (sf)	Cumulative Volume (cf)
431	525	0
432	1,197	861
433	2,459	2,689
433.5	3,698	4,228

Elevation at Storage Limit (one foot below weir elevation) =			433.5
Storage Limit (cf) =	4,228	>	3,636
Cleanout Volume (cf) =	1,818		
Cleanout Elevation =	432.49		

Proposed Rip-Rap Outlet Sediment Trap # 5

• As per the table on page 5A.35 of the New York Guidelines for Urban Erosion and Sediment Control, a contributing drainage area of 0.95 acres requires the following:

- Length of Weir (ft) = 4
- Depth of Channel (ft) = 1.5
- Weir Crest Elev. = 429.75
- Top of Channel Elevation = Weir Crest Elevation + Depth of Channel = 431.25
- Freeboard (ft) = 0.5 x Depth of Channel = 0.75
- Top of Berm (ft) = Freeboard + Top of Channel Elevation = 432

Areas

Contour	Area (sf)	Cumulative Volume (cf)
427	1,590	0
428	2,175	1,883
428.75	2,662	3,696

Elevation at Storage Limit (one foot below weir elevation) = 428.75

Storage Limit (cf) = 3,696 > 3,420

Cleanout Volume (cf) = 1,710

Cleanout Elevation = 427.85

Appendix F:
Threatened and Endangered Species Correspondence

Faxed 09/21/2009

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, NY 13045

September 21, 2009

Ms. Lynn Gresock
Environmental Consultant
ARCADIS
Two Executive Drive, Suite 303
Chelmsford, MA 01824

Dear Ms. Gresock:

This is in response to your August 17, 2009, letter regarding the proposed 131.6-acre Cricket Valley Site in the Town of Dover, Dutchess County, New York. The following comments are provided pursuant to the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*). This response does not preclude additional U.S. Fish and Wildlife Service (Service) comments under other legislation.

The Service previously provided initial comments on the potential for listed species to occur at the project area in our July 20, 2009, letter to you. As you are aware, we stated that the Federally-listed threatened and State-listed endangered bog turtle (*Glypemys [=Clemmys] muhlenbergii*) is known to occur within and around the vicinity of the project area. In addition, we noted the potential for the Federally- and State-listed endangered Indiana bat (*Myotis sodalis*) to occur within the proposed project area.

We have reviewed the additional information provided in your August 17, 2009, letter and the above statements continue to represent our general findings of known/potential presence. We offer specific comments and recommendations by species below.

Bog turtle

We understand that Phase 1 bog turtle surveys were conducted in June 2009. While no suitable habitat was found within the property limits, New York State Department of Environmental Conservation (NYSDEC) wetland DP-22 (part of which occurs within the property) contains known occurrences of bog turtles off-site. Therefore, the next step is to determine the potential for impacts to this species. We previously provided you with a list (although not exhaustive) of potential impacts to bog turtles to consider. Given the negative results of the Phase 1 surveys within the project limits, it appears that the focus of the assessment should address potential indirect effects to wetland DP-22.

Indiana bat

We have reviewed the additional details (size of the patches [2.24-4.24 acres], overall acreage of tree removal [9.22 acres], separation of patches, tree description, current developed nature of the portion of the parcel proposed for development, and remaining forested acreage) provided on proposed tree-clearing activities for the project and agree with your conclusion that mist-netting is not warranted to assist with an analysis of impacts to the Indiana bat. Without any additional site-specific bat studies, it is reasonable to assume that Indiana bats are using the project area given its location and natural features of the site. Therefore, similar to the bog turtle, the next step is to determine the potential impacts to this species.

The Service considers the potential for direct and indirect effects to Indiana bats. For example, indirect effects may result from the loss and/or fragmentation of roosting or foraging habitat. In addition, lighting may deter Indiana bats from using areas (Sparks et al. 2005). It appears that tree removal associated with the project is unlikely to result in indirect effects to Indiana bats. However, additional information is necessary to evaluate the potential for other impacts. We offer the following recommended conservation measures for the proposed project and look forward to discussing these with you further. Tree removal should occur between October 1 and March 31 to avoid direct effects to Indiana bats associated with tree clearing. Bright orange fencing/flagging should clearly demarcate trees to be protected compared with those to be cut prior to the initiation of any construction activities at the site. This will help ensure that contractors do not accidently remove more trees than anticipated. To minimize potential impacts to Indiana bats from increased lighting in the area, we recommend limiting the number of lights, including motion sensors or timers, directing the lights towards the ground and buildings, and including shields to direct the light downward. We discourage the use of lighting and chemicals in/around storage detention basins. Finally, we recommend placing a conservation easement on the property west of the railroad tracks. As we continue to further understand the proposed project, we may have additional recommendations for you.

We have no further comments on the New England cottontail (*Sylvilagus transitionalis*) at this time.

As a reminder, the most recent compilation of Federally-listed and proposed endangered and threatened species in New York* is available for your information. Until the proposed project is complete, we recommend that you check our website* every 90 days from the date of this letter, to ensure that the listed species presence/absence information for the proposed project is current. Any additional information regarding the project and its potential to impact listed species should be coordinated with both this office and with the New York State Department of Environmental Conservation (NYSDEC). The NYSDEC contact for the Endangered Species Program is Mr. Peter Nye, Endangered Species Unit, 625 Broadway, Albany, NY 12233 (telephone: [518] 402-8859).

Thank you for your time. If you require additional information please contact Robyn Niver at (607) 753-9334. Future correspondence with us on this project should reference project file 90453.

Sincerely,

David A. Stilwell
Field Supervisor

*Additional information referred to above may be found on our website at: http://www.fws.gov/northeast/nyfo/es/section7.htm

References:

Sparks, D.W., C. M Ritzi, J. E. Duchamp, and J. O. Whitaker, Jr. 2005. Foraging habitat of the Indiana bat (*Myotis sodalis*) at an urban-rural interface. Journal of Mammalogy 86:713-718.

cc: NYSDEC, New Paltz, NY (Attn: L. Masi/A. Ciesluk)
NYSDEC, Albany, NY (Endangered Species; Attn: P. Nye)
COE, New York, NY (Attn: B. Orzel)

ARCADIS
Infrastructure, environment, buildings

ARCADIS
Two Executive Drive
Suite 303
Chelmsford
Massachusetts 01824
Tel 978.937.9999
Fax 978.937.7555
www.arcadis-us.com

U.S. Fish and Wildlife Service
3817 Luker Road
Cortland, NY 13045-9349
Attn: Robyn Niver

Subject:
Advanced Power NA – Cricket Valley Site – Project File Number 90453

Dear Ms. Niver:

This letter is to provide follow-up information regarding the correspondence received from David Stilwell of your office dated July 20, 2009. We appreciate that the information you provided was based on site location only, and that no details of the project had been provided. Since that time, additional efforts on the project have occurred that better characterize the site and project details. We would appreciate your review of the information in this letter, and your response with regard to the conclusions we have reached for each issue. Below, please find additional information with regard to the Federal-listed threatened and State-listed endangered bog turtle (*Glypemys [=Clemmys] muhlenbergii*); the Federal- and State-listed endangered Indiana bat (Myotis sodais); and the candidate species New England cottontail (*Sylvilagus transitionalis*).

Date:
August 17, 2009

Contact:
Lynn Gresock

Phone:
978.937.9999, ext. 320

Email:
lynn.gresock@
arcadis-us.com

Our ref:
CO001447

Bog Turtle

As recommended by New York State Department of Environmental Conservation (NYSDEC) and using an expert from the list provided by the United States Fish and Wildlife Services (USFWS), a Phase I Bog Turtle Survey has been completed for the project site. The report, included with this letter, concludes that suitable bog turtle habitat is not located at the site. We look forward to review of the report by your office and NYSDEC to confirm whether any further actions are recommended in this regard. Note that the report also includes a habitat assessment for timber rattlesnake (*Crotalus horridus*), which was also recommended by NYSDEC; that assessment concluded that this site does not have suitable den habitat and that abundant and more suitable habitat for this species exists more proximate to documented regional den sites.

Indiana Bat

Your correspondence notes the potential for Indiana bat to occur in the project area, with reference to two males captured within 2 miles from the project area and the likelihood of a maternity colony approximately 5 miles away. A mist netting survey was suggested, consistent with USFWS guidelines, which would require completion of the survey between May 15 and August 15. Due to the specific location of the

proposed project and existing buildings, we do not believe a mist netting survey is warranted for the project in order to provide adequate protection for the avoidance and minimization of adverse effects to Indiana bats. Information about the existing condition and location of the proposed project, a general description of project activities, and the area and characteristics for anticipated tree encroachment are provided below to provide additional context for this issue.

Site Location and Condition

As previously provided, the site is located in Dover, Dutchess County (Figure 1). As shown on Figure 1, the site is bounded on the east by Route 22, and the Swamp River flows through the site's westernmost extent. An active railroad line also extends through the site in a north-south direction. The area east of the railroad tracks includes many dilapidated structures that would be removed as part of project development at this previously developed industrial site. The proposed development area will focus on the portion of the site east of the railroad tracks; no work is proposed west of the railroad. The entire parcel optioned by Cricket Valley Energy is 131.6 acres. The proposed development parcel, however, is considerably smaller at approximately 56 acres (the portion of the site east of the railroad tracks on Figure 1).

Figure 2 provides representative photographs showing some of the industrial buildings currently located on the site. The extent of the development area currently disturbed can also be seen on the aerial photograph in Figure 3.

Project Activities and Characteristics

The proposed Cricket Valley Energy project is a 1,000 megawatt natural gas-fired combined-cycle electric generating facility. Figure 4 provides a preliminary site plan for the facility. As shown in that figure, natural gas (the project's sole fuel) and electrical interconnections will be made with existing infrastructure adjacent to the site. The project will utilize air cooling and a zero liquid discharge system in order to minimize water demand and eliminate the need for wastewater discharge (with the exception of septic and stormwater flows).

Project Location and Tree Encroachment

The project's preliminary layout can be overlain onto the aerial photograph to illustrate the degree to which the proposed facility would utilize previously disturbed and developed industrial area. Three separate areas around the perimeters of the

existing developed land are anticipated to require clearing, as shown in Figure 3. A significant priority in the layout of the project has been maintaining trees throughout the site for their benefits that include visual buffer. No work is proposed west of the railroad tracks, where much of the on-site forested habitat and the Swamp River are located.

Area 1, the gas insulated switchgear (GIS) switchyard area, is partially wooded with eastern red cedar, sycamore, black cherry, red maple and cottonwood of diameters ranging from 1 inch to 10 inches. The use of a GIS switchyard has been selected at significant cost to the project in order to greatly minimize the potential for wetland encroachment and tree clearing. It is estimated that approximately 2.24 acres of clearing would occur in this area.

Area 2 includes elements associated with the project that are related to the natural gas and electrical interconnections. Again, a GIS substation has been selected to substantially minimize the footprint. Access and piping estimates have been conservatively located for the assessment of potential impact. The vegetated portions of this area contain relatively small white ash, eastern red cedar, black walnut and black cherry trees. It is estimated that approximately 4.24 acres of clearing would occur in this area.

Area 3 is the detention pond and a portion of one air-cooled condenser. This area supports small (< 6" diameter) cottonwood, aspen, and eastern red cedar trees that recently colonized a formerly open area of the site. Layout elements have avoided wetland impact in this area, and will be further optimized as design work continues for the project. As currently shown, approximately 2.74 acres of clearing would occur in this area.

Summary

Although clearing will occur at the site, relatively small areas of clearing in disparate locations around the perimeter of previously developed area are proposed. Significant forested area will remain, more proximate to the Swamp River and more contiguous forest. The project itself is unlikely to pose a risk to Indiana bat individuals with the potential to utilize the area. We do not believe that additional surveys, such as mist netting, would conclusively determine the use of the area, nor would provide for additional species protection. We look forward to your comments and will be pleased to work with USFWS to address any remaining concerns.

New England Cottontail

Although the New England cottontail is not yet a listed species, we appreciate the information regarding its current proposed status. We understand that the New England cottontail prefers early successional forests, often called thickets, with thick and tangled vegetation. A dense shrub layer allows them to forage more safely from predators. As is the case for the Indiana bat, we believe the selection of a site that utilizes previously developed industrial property and selection of technologies that minimize the footprint limit potential concerns about encroachment on habitat.

We look forward to your additional guidance with regard to species issues at this site. If you have any questions or require additional information, please do not hesitate to contact me. Thank you in advance for your assistance.

Sincerely,

ARCADIS

Lynn Gresock

Lynn Gresock
Environmental Consultant

Copies: C. Hogan, NYSDEC; J.Ahrens, Advanced Power

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, NY 13045

July 20, 2009

Mr. Lynn Gresock
Associate Vice President
ARCADIS
Two Executive Drive, Suite 303
Chelmsford, MA 01824

Dear Mr. Gresock:

This is in response to your June 2, 2009, letter regarding the proposed 131.6-acre Cricket Valley Site in the Town of Dover, Dutchess County, New York. The following comments are provided pursuant to the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*). This response does not preclude additional U.S. Fish and Wildlife Service (Service) comments under other legislation.

Given our understanding of the project site, it appears that the Federally-listed threatened and State-listed endangered bog turtle (*Glypemys [=Clemmys] muhlenbergii*) occurs within and around the vicinity of the project area. Therefore, efforts must be made to avoid direct and indirect effects to the wetlands within and offsite of the proposed project area.

At this time, the Service has no information regarding the plans for the site. However, adverse impacts associated with residential and commercial development could include, but are not limited to, fragmentation of habitat and alterations to bog turtle dispersal routes; introduction of contaminated surface water runoff into the wetland from pesticides, herbicides, fertilizers, road deicers, etc.; alteration of wetland hydrology; introduction of nutrients from septic systems; introduction of yard and other waste materials into wetlands; introduction of people, pets, and recreational vehicles into wetlands; and death/injury of bog turtles that wander onto lawns and roads. Generally, the larger the upland buffer, the lower the risk of many of these potential adverse affects. However, some of the effects may not be adequately addressed by buffers. The Bog Turtle (*Clemmys muhlenbergii*) Northern Population Recovery Plan (U.S. Fish and Wildlife Service 2001) (Appendix A - Bog Turtle Conservation Zones) includes recommendations for minimum buffers for various activities. You can find this document at http://nyfo.fws.gov/es/btconszone.pdf. Please note that the Service generally recommends a minimum of a 300-foot buffer around wetlands with known or likely bog turtle populations. The Recovery Plan recommends avoiding many activities within this area including development, delineation of lot lines, herbicide application, and pesticide or fertilizer application.

In addition to the bog turtle, there is potential for the Federally- and State-listed endangered Indiana bat (*Myotis sodalis*) to occur within the proposed project area. Two males were captured approximately 2 miles from the project area and there is likely a maternity colony approximately

5 miles from the site. The Service recommends that the applicant conduct mist netting between May 15 and August 15. The Service's current mist-netting guidelines are available on our website.* Should any Indiana bats be captured during mist-netting activities, a radio-transmitter should be attached to the bat and the bat should be tracked to determine whether there is roosting, foraging, and/or maternity habitat present within the proposed project area. We encourage the applicant to coordinate with the Service to develop the proposed survey and tracking scope of work. This type of information can greatly assist the Service and any involved Federal agencies with a full analysis of the effects of the proposed activity. We recommend that the applicant provide the requested information to the Service to determine whether additional conservation measures may be needed to avoid or minimize adverse effects to Indiana bats.

In addition, the New England cottontail (*Sylvilagus transitionalis*) is known to occur within 4 miles of the proposed project. The New England cottontail is a candidate species which is being considered by the Service for addition to the Federal List of Endangered and Threatened Wildlife and Plants. Candidate species are species for which the Service has on file sufficient information on the biological vulnerability and threat(s) to support issuance of a proposal to list, but issuance of a proposed rule is currently precluded by higher priority listing actions. Candidate species do not receive substantive or procedural protection under the ESA; however, the Service does encourage Federal agencies and other appropriate parties to consider these species in the project planning process.

Should the New England cottontail be proposed for listing as endangered or threatened prior to completion of this project, conference procedures pursuant to Section 7(a)(4) of the ESA may be necessary if your project involves Federal authorizations. Should this species be listed prior to completion of the project, further coordination or consultation pursuant to the ESA will be required to evaluate potential adverse effects of project implementation on the New England cottontail or its habitat, and to determine if formal consultation is necessary. Please visit our website for more information on New England cottontail.

The most recent compilation of Federally-listed and proposed endangered and threatened species in New York is available for your information. Until the proposed project is complete, we recommend that you check our website every 90 days from the date of this letter to ensure that listed species presence/absence information for the proposed project is current.

As stated above, the Indiana bat and bog turtle are listed as endangered by the State of New York. The New England cottontail is a New York State Species of Special Concern. Any additional information regarding the project and its potential to impact listed species should be coordinated with both this office and with the New York State Department of Environmental Conservation (NYSDEC). The NYSDEC contact for the Endangered Species Program is Mr. Peter Nye, Endangered Species Unit, 625 Broadway, Albany, NY 12233 (telephone: [518] 402-8859).

In summary, we have concerns about potential impacts to Federally-listed species from the proposed project. We recommend additional coordination among the appropriate consulting firms, the NYSDEC, any involved Federal agencies, the applicant, and the Service regarding these potential impacts.

Thank you for your time. If you require additional information please contact Robyn Niver at (607) 753-9334. Future correspondence with us on this project should reference project file 90453.

Sincerely,

David A. Stilwell
Field Supervisor

*Additional information referred to above may be found on our website at: http://www.fws.gov/northeast/nyfo/es/section7.htm

References:

U.S. Fish and Wildlife Service. 2001. Bog Turtle (*Clemmys muhlenbergii*), Northern Population, Recovery Plan. Hadley, Massachusetts. 103 pp.

cc: NYSDEC, New Paltz, NY (Attn: L. Masi/A. Ciesluk)
NYSDEC, Albany, NY (Endangered Species; Attn: P. Nye)
COE, New York, NY (Attn: B. Orzel)

Appendix G:
State Historic Preservation Office (SHPO) Letter

EXHIBIT – 21.0

Cultural Resource Survey/Letters (Historical & Archaeological)

OFFICE OF PARKS·RECREATION·HISTORIC PRESERVATION
NEW YORK STATE

David A. Paterson
Governor

Carol Ash
Commissioner

New York State Office of Parks, Recreation and Historic Preservation

Historic Preservation Field Services Bureau • Peebles Island, PO Box 189, Waterford, New York 12188-0189
518-237-8643
www.nysparks.com

September 25, 2009

Lynn Gresock
Arcadis
Two Executive Drive
Suite 303
Chelmsford, Massachusetts 01824

Re: EPA,CORPS PERMITS,DEC,PSC,SEQRA
Advanced Power NA; Cricket Valley Site
West of NY 22, Dover Furnace
vicinity/DOVER, Dutchess County
09PR04340

Dear Ms. Gresock:

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the project in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the National Environmental Policy Act and/or the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8).

Based upon this review, it is the SHPO's opinion that your project will have No Effect upon cultural resources in or eligible for inclusion in the National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Director

ARCADIS
Infrastructure, environment, buildings

ARCADIS
Two Executive Drive
Suite 303
Chelmsford
Massachusetts 01824
Tel 978.937.9999
Fax 978.937.7555
www.arcadis-us.com

Mr. Kenneth Markunas
New York State Historic Preservation Office
Peebles Island Resource Center
P.O. Box 189
Waterford, NY 12188-0189

Subject:
OPRHP Project Review Number: 09PR04340
Historic and Archaeological Resource Review
Advanced Power NA - Cricket Valley Site

Date:
September 15, 2009

Contact:
Lynn Gresock

Phone:
978.937.9999, ext. 320

Email:
lynn.gresock@
arcadis-us.com

Our ref:
CO001447

Dear Mr. Markunas:

As you know, ARCADIS is requesting information from the Office of Parks, Recreation and Historic Preservation (OPRHP) regarding the presence of archaeological or cultural resources or listings in the National Register of Historic Places associated with the proposed Cricket Valley Energy project located in the Town of Dover, Dutchess County. Mapping has been provided to indicate the location of the site, and the portion of the site that will comprise the development parcel. In response to your request for a site plan showing existing and proposed conditions, this letter provides a preliminary version of the proposed project's grading plan, focused on the approximately 60-acre footprint where development is proposed within the approximately 130-acre site. Because no activities are proposed west of the railroad tracks, details regarding site characteristics have not been provided for that portion of the site.

The preliminary grading plan provided has been highlighted to show in green the extent of the development parcel on this portion of the site. The yellow highlighting at the base of the drawing (to the west) is the location of the existing, active rail line. No project development is proposed west of this feature. Boundaries of wetlands and the preliminary footprint of the project area shown in the black lines on the drawing; the blue lines illustrate existing site contours. As noted in our prior correspondence on August 13, 2009, the site has been in industrial use since 1932, and a significant portion of the proposed project will be located where existing buildings are currently located. The existing structures and roadways on the site have also been highlighted in yellow for ease of comparison with the overall development area and the preliminary footprint. Note that the roughly circular area between the two wetlands located in the northerly portion of the site represents a

slag pile (largely limestone) that is a remnant from the former industrial uses at the site. The development parcel, therefore, consists almost entirely of previously developed industrial area, wetlands, and the easterly steep slopes extending down from Route 22.

We would greatly appreciate it if you could review your files and provide any available information regarding known resources in the area, and let us know whether additional studies are recommended for either historic structures or potential archaeological sensitivity. If you have any questions or require additional information, please do not hesitate to contact me. Thank you in advance for your assistance.

Sincerely,

ARCADIS

Lynn Gresock

Lynn Gresock
Environmental Consultant

Copies: C. Hogan, NYSDEC; J.Ahrens, Advanced Power

Appendix H:
NYSDEC Forms

Notice of Intent
(Sample Form)

0669273036

NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR ☐☐☐☐☐☐
(for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-10-001

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-
RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)

Owner/Operator Contact Person Last Name (NOT CONSULTANT)

Owner/Operator Contact Person First Name

Owner/Operator Mailing Address

City

State ☐☐ Zip ☐☐☐☐☐ - ☐☐☐☐

Phone (Owner/Operator) ☐☐☐ - ☐☐☐ - ☐☐☐☐

Fax (Owner/Operator) ☐☐☐ - ☐☐☐ - ☐☐☐☐

Email (Owner/Operator)

FED TAX ID ☐☐ - ☐☐☐☐☐☐☐ (not required for individuals)

Project Site Information

Project/Site Name

Street Address (NOT P.O. BOX)

Side of Street
○ **North** ○ **South** ○ **East** ○ **West**

City/Town/Village (THAT ISSUES BUILDING PERMIT)

State N Y Zip - County DEC Region

Name of Nearest Cross Street

Distance to Nearest Cross Street (Feet)

Project In Relation to Cross Street
○ **North** ○ **South** ○ **East** ○ **West**

Tax Map Numbers
Section-Block-Parcel

Tax Map Numbers

1. Provide the Geographic Coordinates for the project site in NYTM Units. To do this you **must** go to the NYSDEC Stormwater Interactive Map on the DEC website at:

www.dec.ny.gov/imsmaps/stormwater/viewer.htm

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located your project site, go to the tool boxes on the top and choose "i"(identify). Then click on the center of your site and a new window containing the X, Y coordinates in UTM will pop up. Transcribe these coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)

Y Coordinates (Northing) 4

2. What is the nature of this construction project?

○ **New Construction**

○ **Redevelopment with increase in imperviousness**

○ **Redevelopment with no increase in imperviousness**

3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use

- ○ FOREST
- ○ PASTURE/OPEN LAND
- ○ CULTIVATED LAND
- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY
- ○ PARKING LOT
- ○ OTHER

Post-Development Future Land Use

- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION

Number of Lots

- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ MUNICIPAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY (water, sewer, gas, etc.)
- ○ PARKING LOT
- ○ CLEARING/GRADING ONLY
- ○ DEMOLITION, NO REDEVELOPMENT
- ○ OTHER

4. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law ? ○ **Yes** ○ **No**

5. Is this a project which does not require coverage under the General Permit (e.g. Project done under an Individual SPDES Permit, or department approved remediation)? ○ **Yes** ○ **No**

6. Is this property owned by a state authority, state agency or local government? ○ **Yes** ○ **No**

7. In accordance with the larger common plan of development or sale, enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage)within the disturbed area. Round to the nearest tenth of an acre.

Total Site Acreage	**Acreage To Be Disturbed**	**Existing Impervious Area Within Disturbed**	**Future Impervious Area Within Disturbed**
.	.	.	.

8. Do you plan to disturb more than 5 acres of soil at any one time? ○ **Yes** ○ **No**

9. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	**B**	**C**	**D**
%	%	%	%

10. Is this a phased project? ○ Yes ○ No

11. Enter the planned start and end dates of the disturbance activities. **Start Date** ☐☐/☐☐/☐☐☐☐ - **End Date** ☐☐/☐☐/☐☐☐☐

12. Identify the nearest, natural, surface waterbody(ies) to which construction site runoff will discharge.

Name

12a. Type of waterbody identified in Question 12?

- ○ Wetland / State Jurisdiction On Site (Answer 12b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 12b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ○ Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

12b. How was the wetland identified?

- ○ Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

13. Has the surface waterbody(ies) in question 12 been identified as a 303(d) segment in Appendix E of GP-0-10-001? ○ Yes ○ No

14. Is this project located in one of the Watersheds identified in Appendix C of GP-0-10-001? ○ Yes ○ No

15. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? **If no, skip question 16.** ○ Yes ○ No

16. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ○ Yes ○ No

If Yes, what is the acreage to be disturbed?

				.	
				.	

17. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ○ Yes ○ No

18. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ○ Yes ○ No ○ Unknown

(If No, skip question 19)

19. What is the name of the municipality/entity that owns the separate storm sewer system?

20. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ Yes ○ No ○ Unknown

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book) ? ○ Yes ○ No

22. Does this construction activity require the development of a SWPPP that includes Water Quality and Quantity Control components (Post-Construction Stormwater Management Practices) ○ Yes ○ No

(If No, skip questions 23 and 27-35)

23. Have the Water Quality and Quantity Control components of the SWPPP been developed in comformance with the current NYS Stormwater Management Design Manual ? ○ Yes ○ No

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ○ **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer

Contact Name (Last, Space, First)

Mailing Address

City

State Zip -

Phone - - Fax - -

Email

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-10-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name **MI**

Last Name

Signature

Date / /

25. Has a construction sequence schedule for the planned management practices been prepared? ○ Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ○ Check Dams
- ○ Construction Road Stabilization
- ○ Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ○ Sediment Traps
- ○ Silt Fence
- ○ Stabilized Construction Entrance
- ○ Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ○ Mulching
- ○ Protecting Vegetation
- ○ Recreation Area Improvement
- ○ Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ○ Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ○ Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ○ Rock Outlet Protection
- ○ Streambank Protection

Other

Water Quality and Quantity Control

Important: Completion of Questions 27-35 is not required if response to Question 22 is No.

Post-Construction Stormwater Management Practices

27. Indicate **all** Stormwater Management Practice(s) that will be installed/constructed on this site:

Ponds
- ○ **Micropool Extended Detention (P-1)**
- ○ **Wet Pond (P-2)**
- ○ **Wet Extended Detention (P-3)**
- ○ **Multiple Pond System (P-4)**
- ○ **Pocket Pond (P-5)**

Filtering
- ○ **Surface Sand Filter (F-1)**
- ○ **Underground Sand Filter (F-2)**
- ○ **Perimeter Sand Filter (F-3)**
- ○ **Organic Filter (F-4)**
- ○ **Bioretention (F-5)**
- ○ **Other**

Alternative Practice
- ○ **Rain Garden**
- ○ **Cistern**
- ○ **Green Roof**
- ○ **Stormwater Planters**
- ○ **Permeable Paving (Modular Block)**

Wetlands
- ○ **Shallow Wetland (W-1)**
- ○ **Extended Detention Wetland (W-2)**
- ○ **Pond/Wetland System (W-3)**
- ○ **Pocket Wetland (W-4)**

Infiltration
- ○ **Infiltration Trench (I-1)**
- ○ **Infiltration Basin (I-2)**
- ○ **Dry Well (I-3)**
- ○ **Underground Infiltration System**

Open Channels
- ○ **Dry Swale (O-1)**
- ○ **Wet Swale (O-2)**

Verified Proprietary Practice
- ○ **Hydrodynamic**
- ○ **Wet Vault**
- ○ **Media Filter**

28. Describe other stormwater management practices not listed above or explain any deviations from the technical standards.

29. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? ○ **Yes** ○ **No**

If Yes, Identify the entity responsible for the long term Operation and Maintenance

30. Provide the total water quality volume required and the total provided for the site.

WQv Required ☐☐☐.☐☐☐ **acre-feet**

WQv Provided ☐☐☐.☐☐☐ **acre-feet**

31. Provide the following Unified Stormwater Sizing Criteria for the site.

Total Channel Protection Storage Volume (CPv) - Extended detention of post-developed 1 year, 24 hour storm event

CPv Required ☐☐☐.☐☐☐ **acre-feet**

CPv Provided ☐☐☐.☐☐☐ **acre-feet**

31a. The need to provide for channel protection has been waived because:

○ **Site discharges directly to fourth order stream or larger**

Total Overbank Flood Control Criteria (Qp) - Peak discharge rate for the 10 year storm

Pre-Development ☐☐☐.☐☐☐ **CFS**

Post-development ☐☐☐.☐☐☐ **CFS**

Total Extreme Flood Control Criteria (Qf) - Peak discharge rate for the 100 year storm

Pre-Development ☐☐☐.☐☐☐ **CFS**

Post-development ☐☐☐.☐☐☐ **CFS**

31b. The need to provide for flood control has been waived because:

○ **Site discharges directly to fourth order stream or larger**

○ **Downstream analysis reveals that flood control is not required**

IMPORTANT: For questions 31 and 32, impervious area should be calculated considering the project site and all offsite areas that drain to the post-construction stormwater management practice(s). (Total Drainage Area = Project Site + Offsite areas)

32. Pre-Construction Impervious Area - As a percent of the Total Drainage Area enter the percentage of the existing impervious areas before construction begins. ☐☐☐ %

33. Post-Construction Impervious Area - As a percent of the Total Drainage Area, enter the percentage of the future impervious areas that will be created/remain on the site after completion of construction. ☐☐☐ %

34. Indicate the total number of post-construction stormwater management practices to be installed/constructed. ☐☐

35. Provide the total number of stormwater discharge points from the site. (include discharges to either surface waters or to separate storm sewer systems) ☐☐

36. Identify other DEC permits that are required for this project.

DEC Permits

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Other SPDES
- ○ Solid Waste
- ○ None
- ○ Other
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ○ Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15

37. Does this project require a US Army Corps of Engineers Wetland Permit? ○ **Yes** ○ **No**
If Yes, Indicate Size of Impact. _____.__

38. Is this project subject to the requirements of a regulated, traditional land use control MS4? ○ **Yes** ○ **No**
(If No, skip question 39)

39. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ○ **Yes** ○ **No**

40. If this NOI is being submitted for the purpose of continuing coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. NYR_____

Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name **MI**

Print Last Name

Owner/Operator Signature

Date __ / __ / ____

Notice of Termination
(Sample Form)

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505
(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person: | 4a.Telephone:

5. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. ☐ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP.
***Date final stabilization completed** (month/year): _____

9b. ☐ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ___ ___ ___ ___ ___ ___
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. ☐ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? ☐ yes ☐ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? ☐ yes ☐ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

_____

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? ☐ yes ☐ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

☐ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.

☐ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).

☐ For post-construction stormwater management practices that are privately owned, the deed of record has been modified to include a deed covenant that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

☐ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, college, university), or government agency or authority, policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____ (acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? ☐ yes ☐ no
(If Yes, complete section VI - "MS4 Acceptance" statement

V. Additional Information/Explanation:
(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature:	Date:

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):

I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

IX. Owner or Operator Certification

I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2010)

Appendix I:
Post-Construction Inspections and Maintenance

POST CONSTRUCTION INSPECTIONS AND MAINTENANCE

1. SITE COVER

a. Inspections

Site cover and associated structures and embankments should be inspected periodically for the first few months following construction and then on a biannual basis. Site inspections should also be performed following all major (i.e., intense storms, thunder storms, cloud burst, etc.) storm events. Items to check for include (but are not limited to):

i. Differential settlement of embankments, cracking or erosion.

ii. Lack of vigor and density of grass turf.

iii. Accumulation of sediments or litter on lawn areas, paved areas, or within catch basin sumps.

iv. Accumulation of pollutants, including oils or grease, in catch basin sumps.

v. Damage or fatigue of storm sewer structures or associated components.

b. Mowing and Sweeping

Vegetated areas and landscaping should be maintained to promote vigorous and dense growth. Lawn areas should be mowed at least three times a year (more frequent mowing may be desired for aesthetic reasons). Resultant yard waste shall be collected and disposed of off-site.

Paved areas should be swept at least twice a year. Additional sweeping may be appropriate in the early spring for removal of deicing materials

c. Debris and Litter Removal

Accumulation of litter and debris should be removed during each mowing or sweep operation.

d. Structural Repair or Replacement

Components of the system which require repair or replacement should be addressed immediately following identification.

e. Catch Basins

The frequency for cleanout of catch basin sumps will depend on the efficiency of mowing, sweeping, and debris and litter removal. Sumps should be cleaned when accumulation of sediments are within six inches of the catch basin outlet pipe.

Disposal of material from catch basins sumps, drainage manholes, and trench drains shall be in accordance with local, state, and federal guidelines.

f. Grassed Swales

Swale maintenance will include periodic mowing, occasional spot reseeding and weed control to keep grass cover dense and vigorous. Resultant yard waste shall be collected and disposed of off-site. Application of fertilizers and pesticides should be restricted or limited.

g. Rip-rap Dissipation structures

Rip-rap used to dissipate energy from pipe outfalls shall be cleaned or replaced when it becomes overburdened with silt or sediment.

h. Winter Maintenance

To prevent impacts to storm water management facilities, the following winter maintenance limitations, restrictions, or requirements are recommended:

i. Remove snow and ice from inlet structures, basin inlet and outlet structures and away from culvert end sections.

ii. Snow removed from paved areas should not be piled at inlets/outlets of the storm water management basin.

iii. Use of deicing materials should be limited to sand and "environmentally friendly" chemical products. Use of salt mixtures should be kept to a minimum.

iv. Sand used for deicing should be clean, course material free of fines, silt, and clay.

v. Materials used for deicing should be removed during the early spring by sweeping and/ or vacuuming.

2. SURFACE DETENTION BASIN

a. Inspections

Detention Basin should be inspected periodically for the first few months after construction and then on an annual basis. Detention Basin should be inspected after major storm events to ensure inlets and outlets remain clear. Items to check for include (but are not limited to):

i. Differential settlement of embankments.

ii. Cracking, erosion, or seepage through embankments.

iii. Evidence of clogging at inlets or outlets.

iv. Erosion of the flow path through the detention basin.

v. Brush, shrub, or tree growth on embankments.

vi. Condition of the overflow spillway.

vii. Lack of vigor and density of grass turf on the basin embankments.

b. Mowing

The side slopes, embankments, inlets, and overflow spillways of the detention basin should be mowed at least three times a year and resultant yard wastes collected and disposed of off-site.

c. Debris and Litter Control

Removal of debris and litter should be accomplished during mowing operations. Inlet and outlet structures should be cleared of all debris and litter.

d. Structural repairs and Replacement

Components of the detention basin, which require repair or replacement, should be addressed immediately following identification.

e. Erosion Control

Sources of sedimentation, specifically eroded areas in upland drainage areas, should be stabilized immediately upon identification. Stabilization should be with vegetative practices or other erosion control practices when vegetative measures do not prove effective.

Soil slumpage, erosion of the basin embankment or around inlets/outlets, and cracking should be stabilized and repaired immediately upon identification. Repair, replacement, or addition of rip-rap aprons, channels or embankments should be pursued as required.

f. Sediment removal

Sediments, which accumulate in the detention basin, should be removed periodically to prevent clogging of inlet or outlet structures. A typical clean-out cycle should be between 5 to 10 years with more frequent cleanings near inlet and outlet structures.

3. FOREBAYS AND WET POOL

a. Inspections

Forebays and Wet Pool should be inspected periodically for the first few months after construction and then on an annual basis. Forebays and Wet Pool should be inspected following all major storm events. Items to check for include (but are not limited to):

i. Differential settlement of embankments.

ii. Cracking, erosion, or seepage through embankments.

iii. Erosion of the flow path through the facility.

iv. Brush, shrub, or tree growth on embankments.

v. Condition of the overflow spillway.

vi. Accumulation of sediment.

b. Mowing

Tree and brush growth must be prevented on basin embankments, side slopes, bottoms, and around inlets and the overflow spillway(s). Mowing of the embankments shall be at least three times a year unless more frequent mowing is required to control vegetative growth. Resultant yard waste shall be collected and disposed of off-site.

c. Debris and Litter Removal

Removal of debris and litter shall be accomplished during mowing operations. Inlet structures should be cleared of all debris and litter.

d. Structural Repairs and Replacement

Components of the forebay or wet pool, which require repair or replacement, should be addressed immediately following identification.

e. Erosion Control

Sources of sedimentation, specifically eroded areas in upland drainage areas, should be stabilized immediately upon identification. Stabilization should be with vegetative practices or other erosion control practices when vegetative measures do not prove effective.

Soil slumpage, erosion of the basin embankment or around inlets or overflow outlets, and cracking should be stabilized and repaired immediately upon identification. Repair, replacement or addition of rip-rap aprons, channels or embankments should be pursued as required.

f. Sediment Removal

Cleanout frequency of Forebays and Wet Pool is dependent upon bottom cover, storage capacity, volume of inflow, and sediment load.

Sediment shall be removed from the Forebays and Wet Pool every 5 to 6 years or when accumulations reach 12 inches in depth. Monitoring the depth of sediments can be measured by installing permanent markers in the newly constructed facilities with a mark 12 inches above the permanent water surface. Markers should not be spaced more than 50 feet apart along the flow path through the facility. A log should be kept indicating the date that the facility was inspected and the distance to the bottom.

When sediment removal is required, the original grades depicted on the project drawings should be reestablished by a qualified contractor. If any of the impermeable material used in the construction of the basin bottom is removed it must be replaced with clean material consistent with the original material specifications.

4. AQUATIC BENCHES

a. Inspection

Aquatic Benches should be inspected periodically for the first few months after construction and then on an annual basis. Aquatic Bench should be inspected after all major storm events. Items to check for include (but are not limited to):

i. Checking basin embankments for subsidence, erosion, cracking, tree growth, and the presence of burrowing animals.

ii. Health and vigor of wetland vegetation.

iii. Accumulation of sediment.

b. Mowing

Mowing is not desirable nor allowed in the Aquatic Bench. Trees and shrubs should be removed from around inlet and outlet structures. Removal should be biannual.

c. Debris, Trash and Litter Control

Debris, trash, and litter should be removed from the Aquatic Bench immediately upon discovery.

d. Erosion Control

Soil slumpage, erosion of the Aquatic Bench embankment or around inlets or outlets, and cracking should be stabilized and repaired immediately upon identification.

5. BIO-RETENTION AREAS

a. Inspection

Bio-retention areas should be inspected periodically for the first few months after construction and then on a monthly basis. Bio-retention areas should be inspected after all major storm events. Items to check for include (but are not limited to):

i. Checking embankments for subsidence, erosion, cracking, undesirable tree and shrub growth and the presence of burrowing animals.

ii. Check inlet for erosion.

iii. Evidence of standing water (i.e. does it dewater between storms).

iv. Health and vigor of vegetation (trees, shrubs, grass, flowers, mulch).

v. Accumulation of sediment or yard waste.

vi. Evidence of clogging at inlets or outlets.

vii. Condition of the overflow spillway.

viii. Ensure grass is well established.

ix. Grass height not greater than six inches.

b. Mowing

Mow grass areas within bio-retention facility, so that grass height does not exceed 6-inches. Undesirable trees and shrubs should be removed. Resultant yard wastes shall be collected and disposed of off-site

c. Debris, Trash and Litter Control

Removal of debris and litter shall be accomplished during mowing operations. Inlet structures should be cleared of all debris and litter.

d. Structural Repairs and Replacement

Components of the bio-retention area, which require repair or replacement, should be addressed immediately following identification. This includes treating and or replacing diseased trees and shrub, fertilizing as necessary, replacing tree stakes and wires, replacing mulch where bare spots appear, replacing clogged underdrains, filter beds, and pea gravel diaphragm.

e. Erosion and Sediment Control

Sources of sedimentation, specifically eroded areas in upland drainage areas, should be stabilized immediately upon identification. Stabilization should be with vegetative practices or other erosion control practices when vegetative measures do not prove effective.

Soil slumpage, erosion of the embankments or around inlets/outlets, and cracking should be stabilized and repaired immediately upon identification.

f. Sediment Removal

Sediments which accumulate in the bio-retention area should be removed annually to prevent clogging of inlet or outlet structures. Disposal of material removed from bio-retention area shall be in accordance with local, state, and federal guidelines.

Appendix J:
SWPPP Inspection Report
(Sample Form)

Stormwater Pollution Prevention Plan
Inspection Report

Cricket Valley Energy
NYS Route 22
Town of Dover, Dutchess County, New York

A Qualified Inspector[1] shall prepare an inspection report subsequent to each and every inspection, as required in Part IV.C of the SPDES General Permit GP-0-010-001. All sections of this report are to be completed.

1. Inspection Information

Inspection number: _____

Date and Time of Inspection: _____

Weather Conditions: _____

Soil Conditions (e.g. dry, wet, saturated): _____

2. Inspector Information

Trained Inspector[1]

Printed Name:_____ Date: _____

Signature:_____

Qualified Inspector[1]

Printed Name _____ Date: _____

Signature:_____

3. On the included site plan, provide a sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection. Provide additional descriptions below if necessary.

_____

_____

[1] A Qualified Inspector means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), licensed Landscape Architect, or other Department endorsed individual(s). It also means someone working under the direct supervision of the licensed Professional Engineer or licensed Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control (herein referred to as Trained Inspector." Training in the principles and practices of erosion and sediment control means that an individual performing a site inspection has received four (4) hours of training, endorsed by the Department, from a Soil and Water Conservation District, CPESC, Inc. or other Department endorsed entity in proper erosion and sediment control principles. After receiving the initial training, an individual working under the direct supervision of the licensed Professional Engineer or licensed Landscape Architect shall receive four (4) hours of training every three (3) years. Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

4. In the following table, provide a description of the condition of the runoff at all points of discharge from the construction site, including conveyance systems (pipes, culverts, ditches, etc.) and overland flow. Identify any discharges of sediment from the construction site. Use additional sheets if necessary.

Description of Discharge Point	Condition of Runoff	Sediment Discharge Noted
		yes / no Estimated Quantity:
		yes / no Estimated Quantity:
		yes / no Estimated Quantity:
		yes / no Estimated Quantity:

5. For all erosion and sediment control practices listed in the previous report as "needs repair or maintenance" or "not installed properly", identify those that have been rectified (provide photos)

6. In the following table, provide checkmarks in the appropriate columns to indicate the condition of all erosion and sediment control practices at the site.

Erosion & Sediment Control Practice	Not Applicable	Functioning as designed	Needs repair or maintenance	Not installed properly
Stabilized construction entrance				
Temporary parking areas				
Construction vehicle wash areas				
Silt fence				
Temporary swales and berms				
Stone check dams				
Slope protection measures				
Dewatering operations				
Sediment traps				
Inlet protection measures				
Soil stockpiles				
Dust control measures				
Other:				
Other:				

7. For all erosion and sediment control practices identified in the above table as "needs repair or maintenance" or "not installed properly", provide photos and detailed corrective actions that are required. Use additional sheets if necessary.

8. In the following table, indicate the current phase of construction of all post-construction stormwater management practices and identify all construction that is not in conformance with the SWPPP and technical standards.

SWM Practice	Current Phase of Construction	Items not in conformance with the SWPPP

9. For all post-construction stormwater management practices which are identified in the above table as including "items not in conformance with the SWPPP", provide detailed corrective action(s) that are required to correct the deficiencies. Use additional sheets if necessary.

Appendix K:
Contractor’s Certification Form

Stormwater Pollution Prevention Plan
Contractor or Subcontractor Certification Statement

Cricket Valley Energy
NYS Route 22
Town of Dover, Dutchess County, New York

Each Contractor and Subcontractor that will be responsible for installing, constructing, repairing, inspecting and/or maintaining the erosion and sediment control practices and post-construction stormwater management control practices included in the SWPPP is required to complete and sign this Certification Statement before commencing any construction activity at the site. The completed Certification Statement(s) shall be maintained at the construction site.

Contracting Firm Information

Name: _____

Address: _____

_____

Telephone & Fax: _____

Contractor's Responsibilities Regarding SWPPP Implementation

_____

_____

Trained Contractor(s) Responsible for SWPPP Implementation[1] (Provide name, title, and date of last training)

_____

_____

Contractor or Subcontractor Certification[2]

I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name: _____

Title/Position: _____

Signature: _____ Date: _____

[1] A Trained Contractor means an employee from a contracting (construction) firm that has received four (4) hours of training, which has been endorsed by the NYSDEC, from a Soil and Water Conservation District, CPESC, Inc. or other NYSDEC endorsed entity, in proper erosion and sediment control principles. After receiving initial training, the Trained Contractor shall receive four (4) hours of training every three (3) years. This individual will be responsible for implementation of the SWPPP.

[2] Signatory Requirements:

a. For a corporation, this form shall be signed by (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principle business function, or any other person who performs similar policy or decision-making functions for the corporation; or (ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

b. For a partnership or sole proprietorship, this form shall be signed by a general partner or the proprietor, respectively.

c. For a municipality, State, Federal, or other public agency, this form shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g. Regional Administrators of EPA).

Appendix L:
Record of Stabilization and Construction Activity Dates
(Sample Form)

Site Stabilization & Construction Activities Dates

Cricket Valley Energy
NYS Route 22
Town of Dover, Dutchess County, New York

Note: This form shall be completed by the Contractor and shall remain as part of the Storm Water Pollution Prevention Plan that is to remain at the project site for the duration of construction.

A record of dates when major grading activities occur, when construction activities temporarily or permanently cease on a portion of the site, and when stabilization measures are initiated shall be maintained until final site stabilization is achieved and the Notice of Termination is filed.

MAJOR GRADING ACTIVITIES:

Page ____ of ____

Description of Activity:_____

Contractor:_____

Location:_____

Start Date:_____Finish Date:_____

Description of Activity:_____

Contractor:_____

Location:_____

Start Date:_____Finish Date:_____

Description of Activity:_____

Contractor:_____

Location:_____

Start Date:_____Finish Date:_____

Description of Activity:_____

Contractor:_____

Location:_____

Start Date:_____Finish Date:_____

Description of Activity:_____

Contractor:_____

Location:_____

Start Date:_____Finish Date:_____