Kousidis Engineering, LLC
Land Development Consultants & Site Design

DRAINAGE ANALYSIS

LOCATED AT
16 MANITOU ROAD
WESTPORT, CONNECTICUT

PREPARED FOR
JJ Fuscaldo, Inc

March 12, 2020

Jim Kousidis, P.E.
CT License No. 26830

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1. EXISTING CONDITIONS

This 48,750-sq. ft. residential property is currently developed with a single-family residence, attached garage and driveway. Test pits at the site indicate highly pervious soils that are adequate to accept a subsurface storm drain system. The topography of the property slopes to the east. There are no evident wetlands or watercourse on the subject property. According to the Web Soil Survey website (map and soil table attached) the soils in the subject area consist of Agawam fine sandy loam, 3 to 8 percent slopes, a well-drained soil with a Hydrologic Soil Group "B".

2. PROPOSED CONDITIONS

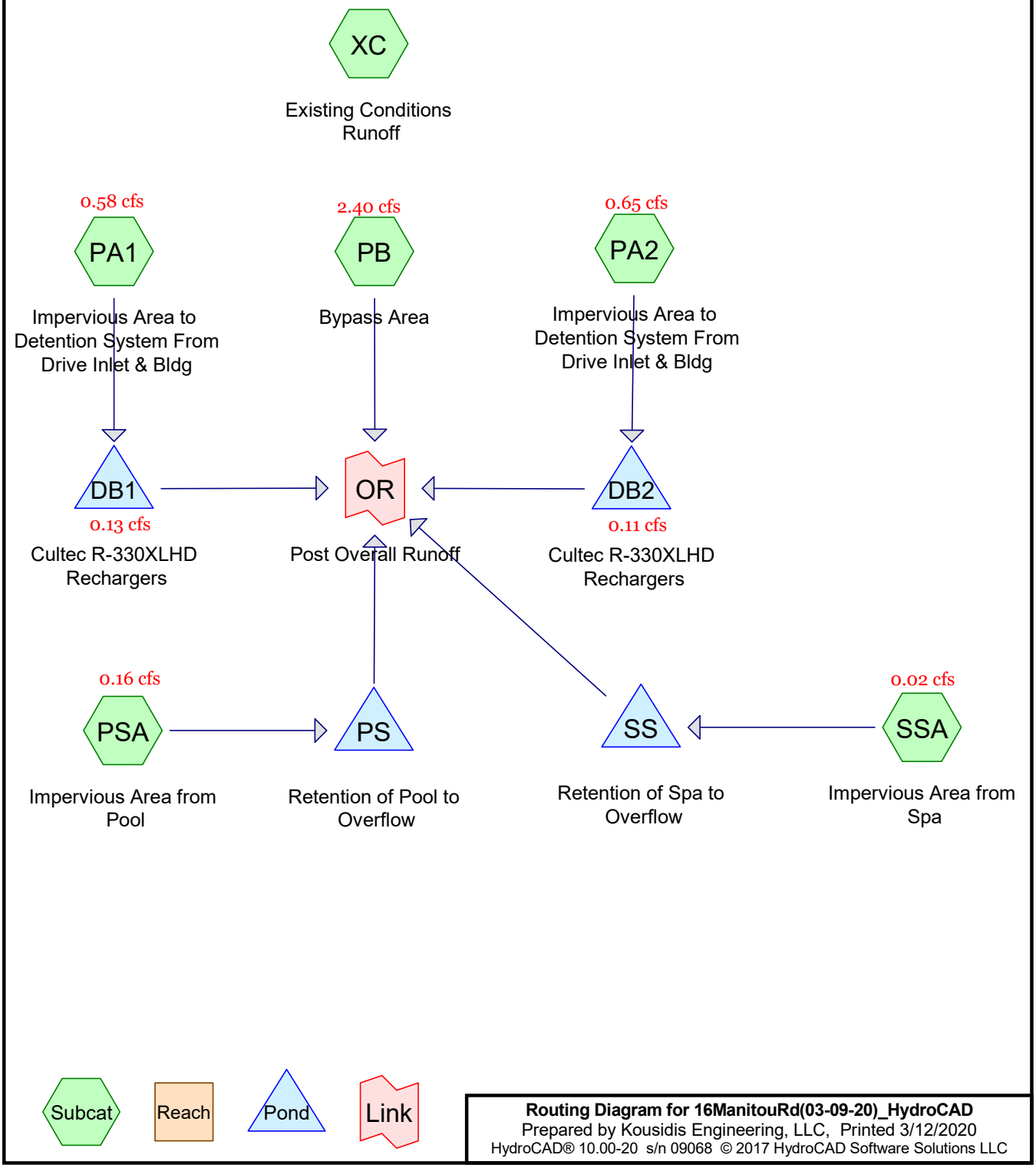
A new detached garage, septic system, driveway expansion, and adjustments to the drainage system are being proposed for the subject property. The owner has currently obtained permits for the construction of a new single-family residence with an attached garage, a new driveway, pool and cabana with associated site improvements. The total proposed impervious surface is 12,800 sq.ft. A stormwater retention system will be installed to satisfy the Town of Westport's requirements of zero increase in runoff for a 24-hour, type III rainfall, 25-year storm event. The new roof area and the driveway drain must be directed to the proposed retention systems as depicted on the Site Development Plan provided by Kousidis Engineering, LLC dated March 12, 2020.

3. DRAINAGE

Under existing conditions, the peak runoff from the site is 2.48 cfs for the 25-year storm. The Town's requirement for zero increase in runoff is satisfied by collecting the entire roof area of the main residence and detached garage, and the majority of the proposed driveway. The runoff from the impervious surface directed to detention basin #1 generates a peak 25-year flow of 0.58 cfs (PA1). The runoff from the impervious surface directed to detention basin #2 generates a peak 25-year flow of 0.65 cfs (PA2). The sub-catchment area bypassing the drainage system generates a peak runoff of 2.30 cfs. The overall post-conditions runoff is 2.41 cfs. Subsurface drainage system #1 consists of 84 LF (12 units) of Cultec R-330XLHD Rechargers surrounded by 1 foot of clean crushed stone (DB1). Subsurface drainage system #2 consists of 56 LF (8 units) of Cultec R-330XLHD Rechargers surrounded by 1 foot of clean crushed stone (DB2). In addition to the above, the drainage system was checked for the capacity to hold the first flush from all the new impervious surfaces. The runoff volume from 1" of rainfall is (12,800 sq. ft. x 1"/12"/ft. = 1,067 cu. ft.). The holding capacity of the Cultec units is 1,733 cu.ft. which well exceeds the 1" minimum requirement of pure storage volume.

4. CONCLUSION

The proposed development will increase the amount of impervious area to this site, resulting in higher peak runoff rates. However, with the installation of the proposed stormwater retention systems, the original flow patterns will be maintained and there will be no increase in peak runoff for the 25-year storm event. In addition to controlling stormwater peak runoff, the proposed design incorporates stormwater treatment to control pollution and provide groundwater recharge capacity. The implementation of these techniques and the overall site design layout will result in a finished project that will minimize sediment and erosion impacts during construction and will have no adverse impacts to adjoining properties upon completion.



Routing Diagram for 16ManitouRd(03-09-20)_HydroCAD
Prepared by Kousidis Engineering, LLC, Printed 3/12/2020
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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PA1: Impervious Area to Runoff Area=3,750 sf 100.00% Impervious Runoff Depth>6.16"
Tc=3.0 min CN=98 Runoff=0.58 cfs 1,925 cf

Subcatchment PA2: Impervious Area to Runoff Area=4,150 sf 100.00% Impervious Runoff Depth>6.16"
Tc=3.0 min CN=98 Runoff=0.65 cfs 2,130 cf

Subcatchment PB: Bypass Area Runoff Area=39,750 sf 9.56% Impervious Runoff Depth>2.64"
Tc=10.0 min CN=65 Runoff=2.40 cfs 8,748 cf

Subcatchment PSA: Impervious Area from Runoff Area=1,000 sf 100.00% Impervious Runoff Depth>6.16"
Tc=3.0 min CN=98 Runoff=0.16 cfs 513 cf

Subcatchment SSA: Impervious Area from Runoff Area=100 sf 100.00% Impervious Runoff Depth>6.16"
Tc=3.0 min CN=98 Runoff=0.02 cfs 51 cf

Subcatchment XC: Existing Conditions Runoff Area=48,750 sf 0.00% Impervious Runoff Depth>2.27"
Tc=10.0 min CN=61 Runoff=2.48 cfs 9,233 cf

Pond DB1: Cultec R-330XLHD Rechargers Peak Elev=9.23' Storage=1,030 cf Inflow=0.63 cfs 6,254 cf
Discarded=0.10 cfs 5,705 cf Primary=0.18 cfs 142 cf Outflow=0.29 cfs 5,846 cf

Pond DB2: Cultec R-330XLHD Rechargers Peak Elev=11.78' Storage=696 cf Inflow=0.65 cfs 2,130 cf
Discarded=0.07 cfs 2,025 cf Primary=0.17 cfs 104 cf Outflow=0.24 cfs 2,129 cf

Pond PS: Retention of Pool to Overflow Peak Elev=15.00' Storage=331 cf Inflow=0.16 cfs 513 cf
Outflow=0.05 cfs 183 cf

Pond SS: Retention of Spa to Overflow Peak Elev=15.00' Storage=33 cf Inflow=0.02 cfs 51 cf
Outflow=0.00 cfs 18 cf

Link OR: Post Overall Runoff Inflow=2.41 cfs 9,195 cf
Primary=2.41 cfs 9,195 cf

Summary for Subcatchment PA1: Impervious Area to Detention System From Drive Inlet & Bldg

Runoff = 0.58 cfs @ 12.05 hrs, Volume= 1,925 cf, Depth> 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.40"

	Area (sf)	CN	Description
*	600	98	Garage
*	3,150	98	Drive
	3,750	98	Weighted Average
	3,750		100.00% Impervious Area

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

Summary for Subcatchment PA2: Impervious Area to Detention System From Drive Inlet & Bldg

Runoff = 0.65 cfs @ 12.05 hrs, Volume= 2,130 cf, Depth> 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.40"

	Area (sf)	CN	Description
*	4,150	98	Building
*	0	98	Drive
	4,150	98	Weighted Average
	4,150		100.00% Impervious Area

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

Summary for Subcatchment PB: Bypass Area

Runoff = 2.40 cfs @ 12.15 hrs, Volume= 8,748 cf, Depth> 2.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.40"

	Area (sf)	CN	Description
*	2,750	98	Patio/Walks
	35,950	61	>75% Grass cover, Good, HSG B
*	450	98	Driveway
*	600	98	Cabana
	39,750	65	Weighted Average
	35,950		90.44% Pervious Area
	3,800		9.56% Impervious Area

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

Summary for Subcatchment PSA: Impervious Area from Pool

Runoff = 0.16 cfs @ 12.05 hrs, Volume= 513 cf, Depth> 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.40"

	Area (sf)	CN	Description
*	1,000	98	Pool Area
	1,000		100.00% Impervious Area

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

Summary for Subcatchment SSA: Impervious Area from Spa

Runoff = 0.02 cfs @ 12.05 hrs, Volume= 51 cf, Depth> 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.40"

	Area (sf)	CN	Description
*	100	98	Pool Area
	100		100.00% Impervious Area

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

Summary for Subcatchment XC: Existing Conditions Runoff

Runoff = 2.48 cfs @ 12.15 hrs, Volume= 9,233 cf, Depth> 2.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 yr Rainfall=6.40"

Area (sf)	CN	Description
48,750	61	>75% Grass cover, Good, HSG B
48,750		100.00% Pervious Area

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

Summary for Pond DB1: Cultec R-330XLHD Rechargers

Inflow Area =	3,750 sf,100.00% Impervious,	Inflow Depth > 20.01"	for 25 yr event		
Inflow =	0.63 cfs @	12.05 hrs,	Volume=	6,254 cf,	Incl. 0.05 cfs Base Flow
Outflow =	0.29 cfs @	12.24 hrs,	Volume=	5,846 cf,	Atten= 55%, Lag= 11.4 min
Discarded =	0.10 cfs @	12.25 hrs,	Volume=	5,705 cf	
Primary =	0.18 cfs @	12.24 hrs,	Volume=	142 cf	

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 9.23' @ 12.25 hrs Surf.Area= 508 sf Storage= 1,030 cf

Plug-Flow detention time= 109.8 min calculated for 5,831 cf (93% of inflow)
Center-of-Mass det. time= 63.4 min (790.0 - 726.6)

Volume	Invert	Avail.Storage	Storage Description
#1	6.00'	361 cf	**6.00'W x 7.00'L x 3.10'H Stone Bed** x 12 1,562 cf Overall - 659 cf Embedded = 903 cf x 40.0% Voids
#2	6.50'	659 cf	**Cultec R-330XLHD** x 12 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 3 rows
#3	7.00'	16 cf	**2.00'W x 2.00'L x 4.00'H Yard Drain Storage**
		1,037 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	6.00'	**3.000 in/hr Exfiltration over Wetted area**
#2	Primary	9.20'	**8.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=0.10 cfs @ 12.25 hrs HW=9.23' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=0.13 cfs @ 12.24 hrs HW=9.23' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.13 cfs @ 0.56 fps)

Stage-Area-Storage for Pond DB1: Cultec R-330XLHD Rechargers

Elevation (feet)	Wetted (sq-ft)	Storage (cubic-feet)
6.00	504	0
6.05	520	10
6.10	535	20
6.15	551	30
6.20	566	40
6.25	582	50
6.30	598	60
6.35	613	71
6.40	629	81
6.45	644	91
6.50	660	101
6.55	676	121
6.60	691	142
6.65	707	163
6.70	722	183
6.75	738	203
6.80	754	224
6.85	769	244
6.90	785	265
6.95	800	285
7.00	820	305
7.05	836	326
7.10	852	346
7.15	868	366
7.20	884	387
7.25	900	407
7.30	916	427
7.35	932	447
7.40	948	466
7.45	964	486
7.50	980	506
7.55	996	526
7.60	1,012	546
7.65	1,028	566
7.70	1,044	585
7.75	1,060	605
7.80	1,076	624
7.85	1,092	643
7.90	1,108	662
7.95	1,124	681
8.00	1,140	700
8.05	1,156	718
8.10	1,172	736
8.15	1,188	754
8.20	1,204	772
8.25	1,220	790
8.30	1,236	807
8.35	1,252	824
8.40	1,268	841
8.45	1,284	858
8.50	1,300	874
8.55	1,316	890
8.60	1,332	905
8.65	1,348	920
8.70	1,364	935
8.75	1,380	949
8.80	1,396	962
8.85	1,412	975
8.90	1,428	986
8.95	1,444	998
9.00	1,460	1,008
9.05	1,476	1,019
9.10	1,492	1,029
9.15	1,492	1,029
9.20	1,493	1,029
9.25	1,493	1,030
9.30	1,494	1,030
9.35	1,494	1,030
9.40	1,494	1,030
9.45	1,495	1,030
9.50	1,495	1,031
9.55	1,496	1,031
9.60	1,496	1,031
9.65	1,496	1,031
9.70	1,497	1,031
9.75	1,497	1,032
9.80	1,498	1,032
9.85	1,498	1,032
9.90	1,498	1,032
9.95	1,499	1,032
10.00	1,499	1,033
10.05	1,500	1,033
10.10	1,500	1,033
10.15	1,500	1,033
10.20	1,501	1,033
10.25	1,501	1,034
10.30	1,502	1,034
10.35	1,502	1,034
10.40	1,502	1,034
10.45	1,503	1,034
10.50	1,503	1,035
10.55	1,504	1,035
10.60	1,504	1,035
10.65	1,504	1,035
10.70	1,505	1,035
10.75	1,505	1,036
10.80	1,506	1,036
10.85	1,506	1,036
10.90	1,506	1,036
10.95	1,507	1,036
11.00	**1,507**	**1,037**

Summary for Pond DB2: Cultec R-330XLHD Rechargers

Inflow Area =	4,150 sf,100.00% Impervious,	Inflow Depth >	6.16"	for	25 yr event
Inflow =	0.65 cfs @	12.05 hrs,	Volume=	2,130 cf	
Outflow =	0.24 cfs @	12.27 hrs,	Volume=	2,129 cf,	Atten= 62%, Lag= 13.4 min
Discarded =	0.07 cfs @	12.25 hrs,	Volume=	2,025 cf	
Primary =	0.17 cfs @	12.27 hrs,	Volume=	104 cf	

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 11.78' @ 12.25 hrs Surf.Area= 340 sf Storage= 696 cf

Plug-Flow detention time= 88.3 min calculated for 2,125 cf (100% of inflow)
Center-of-Mass det. time= 87.6 min (828.9 - 741.3)

Volume	Invert	Avail.Storage	Storage Description
#1	7.00'	241 cf	**6.00'W x 7.00'L x 3.10'H Stone Bed** x 8 1,042 cf Overall - 440 cf Embedded = 602 cf x 40.0% Voids
#2	7.50'	440 cf	**Cultec R-330XLHD** x 8 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 2 rows
#3	8.00'	16 cf	**2.00'W x 2.00'L x 4.00'H Yard Drain Storage**
		696 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	7.00'	**3.000 in/hr Exfiltration over Wetted area**
#2	Primary	11.75'	**8.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=0.07 cfs @ 12.25 hrs HW=11.78' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.11 cfs @ 12.27 hrs HW=11.78' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.11 cfs @ 0.53 fps)

Stage-Area-Storage for Pond DB2: Cultec R-330XLHD Rechargers

Elevation (feet)	Wetted (sq-ft)	Storage (cubic-feet)
7.00	336	0
7.05	346	7
7.10	357	13
7.15	367	20
7.20	378	27
7.25	388	34
7.30	398	40
7.35	409	47
7.40	419	54
7.45	430	60
7.50	440	67
7.55	450	81
7.60	461	95
7.65	471	108
7.70	482	122
7.75	492	136
7.80	502	149
7.85	513	163
7.90	523	176
7.95	534	190
8.00	548	204
8.05	559	217
8.10	570	231
8.15	580	244
8.20	591	258
8.25	602	271
8.30	613	285
8.35	624	298
8.40	634	312
8.45	645	325
8.50	656	338
8.55	667	351
8.60	678	365
8.65	688	378
8.70	699	391
8.75	710	404
8.80	721	417
8.85	732	430
8.90	742	443
8.95	753	455
9.00	764	468
9.05	775	480
9.10	786	492
9.15	796	504
9.20	807	516
9.25	818	528
9.30	829	540
9.35	840	551
9.40	850	563
9.45	861	574
9.50	872	585
9.55	883	595
9.60	894	606
9.65	904	616
9.70	915	626
9.75	926	635
9.80	937	644
9.85	948	652
9.90	958	660
9.95	969	668
10.00	980	675
10.05	991	682
10.10	1,002	689
10.15	1,002	689
10.20	1,002	689
10.25	1,003	689
10.30	1,003	690
10.35	1,004	690
10.40	1,004	690
10.45	1,004	690
10.50	1,005	690
10.55	1,005	691
10.60	1,006	691
10.65	1,006	691
10.70	1,006	691
10.75	1,007	691
10.80	1,007	692
10.85	1,008	692
10.90	1,008	692
10.95	1,008	692
11.00	1,009	692
11.05	1,009	693
11.10	1,010	693
11.15	1,010	693
11.20	1,010	693
11.25	1,011	693
11.30	1,011	694
11.35	1,012	694
11.40	1,012	694
11.45	1,012	694
11.50	1,013	694
11.55	1,013	695
11.60	1,014	695
11.65	1,014	695
11.70	1,014	695
11.75	1,015	695
11.80	1,015	696
11.85	1,016	696
11.90	1,016	696
11.95	1,016	696
12.00	**1,017**	**696**

Summary for Pond PS: Retention of Pool to Overflow

Inflow Area = 1,000 sf,100.00% Impervious, Inflow Depth > 6.16" for 25 yr event
Inflow = 0.16 cfs @ 12.05 hrs, Volume= 513 cf
Outflow = 0.05 cfs @ 12.40 hrs, Volume= 183 cf, Atten= 69%, Lag= 21.1 min
Primary = 0.05 cfs @ 12.40 hrs, Volume= 183 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 15.00' @ 12.40 hrs Surf.Area= 1,000 sf Storage= 331 cf

Plug-Flow detention time= 363.3 min calculated for 183 cf (36% of inflow)
Center-of-Mass det. time= 189.2 min (930.5 - 741.3)

Volume	Invert	Avail.Storage	Storage Description
#1	14.67'	1,000 cf	**Pool Storage Below Overflow (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.67	1,000	0	0
15.67	1,000	1,000	1,000

Device	Routing	Invert	Outlet Devices
#1	Primary	15.00'	**140.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.02 cfs @ 12.40 hrs HW=15.00' (Free Discharge)
└**1=Sharp-Crested Rectangular Weir** (Weir Controls 0.02 cfs @ 0.11 fps)

Stage-Area-Storage for Pond PS: Retention of Pool to Overflow

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
14.67	**1,000**	0
14.68	1,000	10
14.69	1,000	20
14.70	1,000	30
14.71	1,000	40
14.72	1,000	50
14.73	1,000	60
14.74	1,000	70
14.75	1,000	80
14.76	1,000	90
14.77	1,000	100
14.78	1,000	110
14.79	1,000	120
14.80	1,000	130
14.81	1,000	140
14.82	1,000	150
14.83	1,000	160
14.84	1,000	170
14.85	1,000	180
14.86	1,000	190
14.87	1,000	200
14.88	1,000	210
14.89	1,000	220
14.90	1,000	230
14.91	1,000	240
14.92	1,000	250
14.93	1,000	260
14.94	1,000	270
14.95	1,000	280
14.96	1,000	290
14.97	1,000	300
14.98	1,000	310
14.99	1,000	320
15.00	1,000	330
15.01	1,000	340
15.02	1,000	350
15.03	1,000	360
15.04	1,000	370
15.05	1,000	380
15.06	1,000	390
15.07	1,000	400
15.08	1,000	410
15.09	1,000	420
15.10	1,000	430
15.11	1,000	440
15.12	1,000	450
15.13	1,000	460
15.14	1,000	470
15.15	1,000	480
15.16	1,000	490
15.17	1,000	500
15.18	1,000	510
15.19	1,000	520
15.20	1,000	530
15.21	1,000	540
15.22	1,000	550
15.23	1,000	560
15.24	1,000	570
15.25	1,000	580
15.26	1,000	590
15.27	1,000	600
15.28	1,000	610
15.29	1,000	620
15.30	1,000	630
15.31	1,000	640
15.32	1,000	650
15.33	1,000	660
15.34	1,000	670
15.35	1,000	680
15.36	1,000	690
15.37	1,000	700
15.38	1,000	710
15.39	1,000	720
15.40	1,000	730
15.41	1,000	740
15.42	1,000	750
15.43	1,000	760
15.44	1,000	770
15.45	1,000	780
15.46	1,000	790
15.47	1,000	800
15.48	1,000	810
15.49	1,000	820
15.50	1,000	830
15.51	1,000	840
15.52	1,000	850
15.53	1,000	860
15.54	1,000	870
15.55	1,000	880
15.56	1,000	890
15.57	1,000	900
15.58	1,000	910
15.59	1,000	920
15.60	1,000	930
15.61	1,000	940
15.62	1,000	950
15.63	1,000	960
15.64	1,000	970
15.65	1,000	980
15.66	1,000	990
15.67	1,000	**1,000**

Summary for Pond SS: Retention of Spa to Overflow

Inflow Area = 100 sf,100.00% Impervious, Inflow Depth > 6.16" for 25 yr event
Inflow = 0.02 cfs @ 12.05 hrs, Volume= 51 cf
Outflow = 0.00 cfs @ 12.39 hrs, Volume= 18 cf, Atten= 69%, Lag= 20.9 min
Primary = 0.00 cfs @ 12.39 hrs, Volume= 18 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 15.00' @ 12.40 hrs Surf.Area= 100 sf Storage= 33 cf

Plug-Flow detention time= 363.1 min calculated for 18 cf (36% of inflow)
Center-of-Mass det. time= 189.0 min (930.3 - 741.3)

Volume	Invert	Avail.Storage	Storage Description
#1	14.67'	100 cf	**Pool Storage Below Overflow (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.67	100	0	0
15.67	100	100	100

Device	Routing	Invert	Outlet Devices
#1	Primary	15.00'	**40.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.00 cfs @ 12.39 hrs HW=15.00' (Free Discharge)
└**1=Sharp-Crested Rectangular Weir** (Weir Controls 0.00 cfs @ 0.06 fps)

Stage-Area-Storage for Pond SS: Retention of Spa to Overflow

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
14.67	**100**	0
14.68	100	1
14.69	100	2
14.70	100	3
14.71	100	4
14.72	100	5
14.73	100	6
14.74	100	7
14.75	100	8
14.76	100	9
14.77	100	10
14.78	100	11
14.79	100	12
14.80	100	13
14.81	100	14
14.82	100	15
14.83	100	16
14.84	100	17
14.85	100	18
14.86	100	19
14.87	100	20
14.88	100	21
14.89	100	22
14.90	100	23
14.91	100	24
14.92	100	25
14.93	100	26
14.94	100	27
14.95	100	28
14.96	100	29
14.97	100	30
14.98	100	31
14.99	100	32
15.00	100	33
15.01	100	34
15.02	100	35
15.03	100	36
15.04	100	37
15.05	100	38
15.06	100	39
15.07	100	40
15.08	100	41
15.09	100	42
15.10	100	43
15.11	100	44
15.12	100	45
15.13	100	46
15.14	100	47
15.15	100	48
15.16	100	49
15.17	100	50
15.18	100	51
15.19	100	52
15.20	100	53
15.21	100	54
15.22	100	55
15.23	100	56
15.24	100	57
15.25	100	58
15.26	100	59
15.27	100	60
15.28	100	61
15.29	100	62
15.30	100	63
15.31	100	64
15.32	100	65
15.33	100	66
15.34	100	67
15.35	100	68
15.36	100	69
15.37	100	70
15.38	100	71
15.39	100	72
15.40	100	73
15.41	100	74
15.42	100	75
15.43	100	76
15.44	100	77
15.45	100	78
15.46	100	79
15.47	100	80
15.48	100	81
15.49	100	82
15.50	100	83
15.51	100	84
15.52	100	85
15.53	100	86
15.54	100	87
15.55	100	88
15.56	100	89
15.57	100	90
15.58	100	91
15.59	100	92
15.60	100	93
15.61	100	94
15.62	100	95
15.63	100	96
15.64	100	97
15.65	100	98
15.66	100	99
15.67	100	**100**

Summary for Link OR: Post Overall Runoff

Inflow Area = 48,750 sf, 26.26% Impervious, Inflow Depth > 2.26" for 25 yr event
Inflow = 2.41 cfs @ 12.16 hrs, Volume= 9,195 cf
Primary = 2.41 cfs @ 12.16 hrs, Volume= 9,195 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Hydrologic Soil Group—State of Connecticut
(16 Manitou Road, Westport, CT)

Map Scale: 1:4,160 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — State of Connecticut (CT600)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
21A	Ninigret and Tisbury soils, 0 to 5 percent slopes	C	0.1	0.1%
29B	Agawam fine sandy loam, 3 to 8 percent slopes	B	17.4	24.7%
38C	Hinckley loamy sand, 3 to 15 percent slopes	A	0.0	0.1%
38E	Hinckley loamy sand, 15 to 45 percent slopes	A	1.1	1.5%
50B	Sutton fine sandy loam, 3 to 8 percent slopes	B	0.4	0.6%
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	B	0.0	0.0%
73E	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	B	1.7	2.3%
75C	Hollis-Chatfield-Rock outcrop complex, 3 to 15 percent slopes	D	11.8	16.7%
75E	Hollis-Chatfield-Rock outcrop complex, 15 to 45 percent slopes	D	11.0	15.6%
229B	Agawam-Urban land complex, 0 to 8 percent slopes	B	15.8	22.4%
250B	Sutton-Urban land complex, 0 to 8 percent slopes	B	0.7	0.9%
260B	Charlton-Urban land complex, 3 to 8 percent slopes	B	9.7	13.7%
308	Udorthents, smoothed	C	0.8	1.1%
W	Water		0.2	0.2%
Totals for Area of Interest			**70.7**	**100.0%**