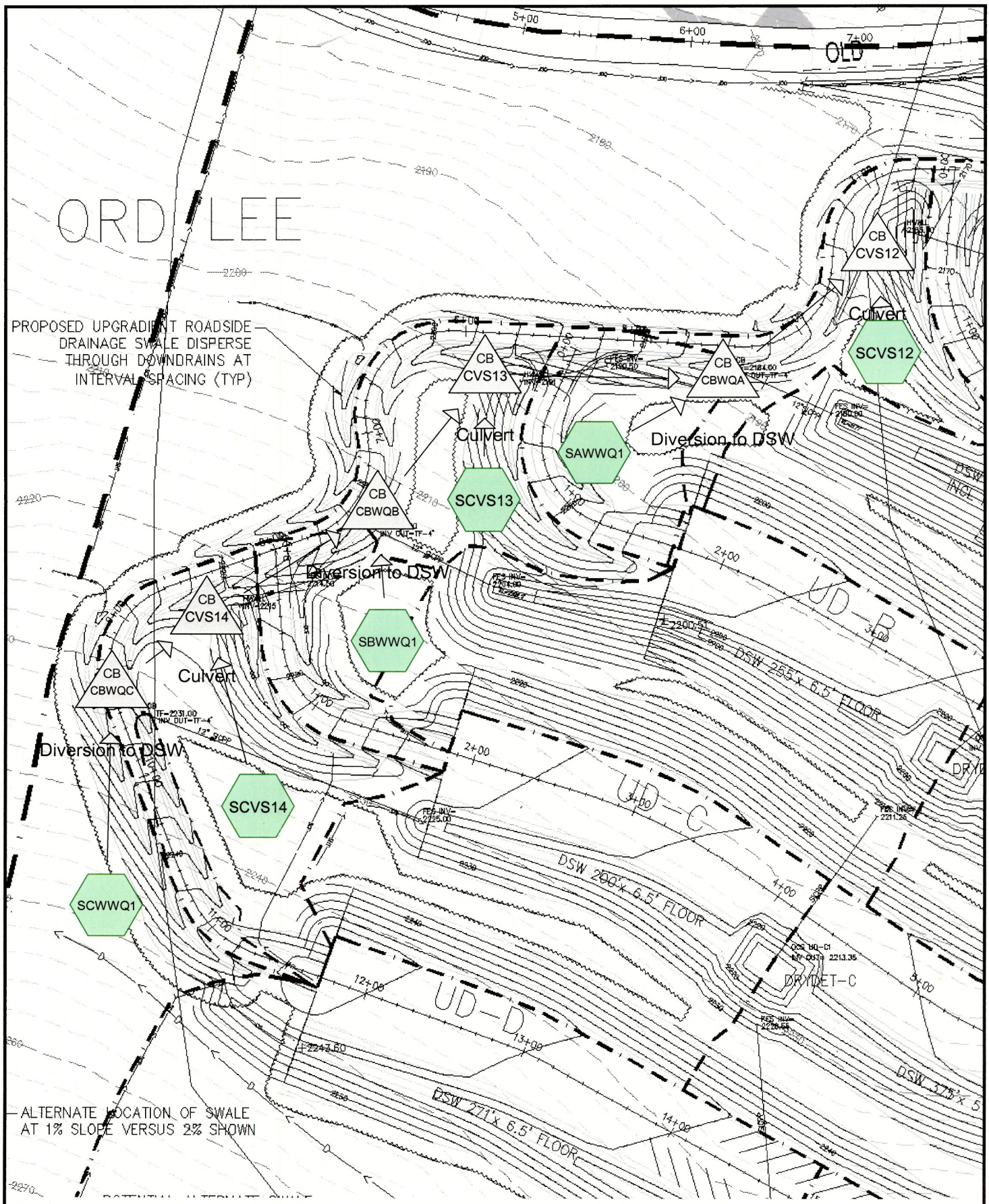

Subcat Reach Pond Link

Drainage Diagram for PR Upper Discovery Parking TIER A-D 1Aof3

Prepared by NYSDEC DOP BD&C, Printed 3/23/2011

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.300	70	Woods, Good, HSG C (SAWWQ1,SBWWQ1,SCVS12,SCVS13,SCVS14)
1.162	74	grassland, good (SAWWQ1,SBWWQ1,SCVS12,SCVS13,SCVS14,SCWWQ1)
0.158	98	Paved parking & roofs (SAWWQ1,SCVS12,SCWWQ1)
0.183	98	Paved parking 60x280 (SBWWQ1,SCVS13,SCVS14)
1.802		**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Goup	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.300	HSG C	SAWWQ1, SBWWQ1, SCVS12, SCVS13, SCVS14
0.000	HSG D	
1.503	Other	SAWWQ1, SBWWQ1, SCVS12, SCVS13, SCVS14, SCWWQ1
1.802		**TOTAL AREA**

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment SAWWQ1: Runoff Area=14,274 sf 18.52% Impervious Runoff Depth=3.58"
Flow Length=66' Tc=9.2 min CN=78 Runoff=1.84 cfs 0.098 af

Subcatchment SBWWQ1: Runoff Area=10,502 sf 29.85% Impervious Runoff Depth=3.78"
Flow Length=210' Tc=19.3 min CN=80 Runoff=1.03 cfs 0.076 af

Subcatchment SCVS12: Runoff Area=14,273 sf 18.52% Impervious Runoff Depth=3.58"
Flow Length=107' Tc=7.1 min CN=78 Runoff=1.99 cfs 0.098 af

Subcatchment SCVS13: Runoff Area=15,650 sf 15.02% Impervious Runoff Depth=3.48"
Flow Length=124' Tc=16.3 min CN=77 Runoff=1.55 cfs 0.104 af

Subcatchment SCVS14: Runoff Area=20,664 sf 12.09% Impervious Runoff Depth=3.38"
Flow Length=198' Tc=12.6 min CN=76 Runoff=2.25 cfs 0.134 af

Subcatchment SCWWQ1: Runoff Area=3,149 sf 50.56% Impervious Runoff Depth=4.41"
Flow Length=206' Tc=1.3 min CN=86 Runoff=0.63 cfs 0.027 af

Pond CBWQA: Diversion to DSW Peak Elev=2,184.91' Inflow=5.17 cfs 0.243 af
Primary=4.02 cfs 0.078 af Secondary=1.16 cfs 0.166 af Outflow=5.17 cfs 0.243 af

Pond CBWQB: Diversion to DSW Peak Elev=2,210.77' Inflow=3.18 cfs 0.213 af
Primary=2.04 cfs 0.041 af Secondary=1.14 cfs 0.171 af Outflow=3.18 cfs 0.213 af

Pond CBWQC: Diversion to DSW Peak Elev=2,231.59' Inflow=0.63 cfs 0.027 af
Primary=0.36 cfs 0.003 af Secondary=0.27 cfs 0.023 af Outflow=0.63 cfs 0.027 af

Pond CVS12: Culvert Peak Elev=2,167.05' Inflow=5.68 cfs 0.175 af
Outflow=5.68 cfs 0.175 af

Pond CVS13: Culvert Peak Elev=2,191.94' Inflow=3.56 cfs 0.146 af
Outflow=3.56 cfs 0.146 af

Pond CVS14: Culvert Peak Elev=2,215.93' Inflow=2.25 cfs 0.137 af
Outflow=2.25 cfs 0.137 af

Total Runoff Area = 1.802 ac Runoff Volume = 0.536 af Average Runoff Depth = 3.57"
81.07% Pervious = 1.461 ac 18.93% Impervious = 0.341 ac

Summary for Subcatchment SAWWQ1:

Runoff = 1.84 cfs @ 12.01 hrs, Volume= 0.098 af, Depth= 3.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr Q10 Rainfall=6.00"

	Area (sf)	CN	Description
	2,644	98	Paved parking & roofs
*	9,641	74	grassland, good
	1,989	70	Woods, Good, HSG C
	14,274	78	Weighted Average
	11,630		Pervious Area
	2,644		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	43	0.1395	0.09		**Sheet Flow, SHT** Woods: Dense underbrush n= 0.800 P2= 4.00"
1.4	23	0.2609	0.27		**Sheet Flow, SHT** Grass: Dense n= 0.240 P2= 4.00"
9.2	66	Total			

Summary for Subcatchment SBWWQ1:

Runoff = 1.03 cfs @ 12.12 hrs, Volume= 0.076 af, Depth= 3.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr Q10 Rainfall=6.00"

	Area (sf)	CN	Description
*	3,135	98	Paved parking 60x280
*	5,199	74	grassland, good
	2,168	70	Woods, Good, HSG C
	10,502	80	Weighted Average
	7,367		Pervious Area
	3,135		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	100	0.0800	0.09		**Sheet Flow, SHT** Woods: Dense underbrush n= 0.800 P2= 4.00"
0.1	110	0.1000	12.23	73.36	**Channel Flow, OCF** Area= 6.0 sf Perim= 8.7' r= 0.69' n= 0.030 Earth, grassed & winding
19.3	210	Total			

Summary for Subcatchment SCVS12:

Runoff = 1.99 cfs @ 11.98 hrs, Volume= 0.098 af, Depth= 3.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr Q10 Rainfall=6.00"

	Area (sf)	CN	Description
	2,644	98	Paved parking & roofs
*	9,640	74	grassland, good
	1,989	70	Woods, Good, HSG C
	14,273	78	Weighted Average
	11,629		Pervious Area
	2,644		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	29	0.1379	0.08		**Sheet Flow, SHT** Woods: Dense underbrush n= 0.800 P2= 4.00"
1.3	23	0.3478	0.31		**Sheet Flow, SHT** Grass: Dense n= 0.240 P2= 4.00"
0.1	55	0.1100	12.82	76.94	**Channel Flow, OCF** Area= 6.0 sf Perim= 8.7' r= 0.69' n= 0.030 Earth, grassed & winding
7.1	107	Total			

Summary for Subcatchment SCVS13:

Runoff = 1.55 cfs @ 12.08 hrs, Volume= 0.104 af, Depth= 3.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr Q10 Rainfall=6.00"

	Area (sf)	CN	Description
*	2,351	98	Paved parking 60x280
*	10,827	74	grassland, good
	2,472	70	Woods, Good, HSG C
	15,650	77	Weighted Average
	13,299		Pervious Area
	2,351		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	91	0.1319	0.10		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 4.00"
1.7	33	0.3330	0.32		**Sheet Flow,** Grass: Dense n= 0.240 P2= 4.00"
16.3	124	Total			

Summary for Subcatchment SCVS14:

Runoff = 2.25 cfs @ 12.05 hrs, Volume= 0.134 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr Q10 Rainfall=6.00"

	Area (sf)	CN	Description
*	2,499	98	Paved parking 60x280
*	13,732	74	grassland, good
	4,433	70	Woods, Good, HSG C
	20,664	76	Weighted Average
	18,165		Pervious Area
	2,499		Impervious Area

Primary OutFlow Max=4.01 cfs @ 12.04 hrs HW=2,184.91' (Free Discharge)
└─**3=Weir in Channel** (Weir Controls 4.01 cfs @ 2.03 fps)

Secondary OutFlow Max=1.16 cfs @ 12.04 hrs HW=2,184.91' (Free Discharge)
└─**1=Culvert** (Passes 1.16 cfs of 7.03 cfs potential flow)
└─**2=Vert Orifice** (Orifice Controls 1.16 cfs @ 10.46 fps)

Summary for Pond CBWQB: Diversion to DSW

Inflow Area =	0.788 ac,	21.06% Impervious,	Inflow Depth =	3.24"	for Q10 event
Inflow =	3.18 cfs @	12.06 hrs, Volume=	0.213 af		
Outflow =	3.18 cfs @	12.06 hrs, Volume=	0.213 af,	Atten= 0%,	Lag= 0.0 min
Primary =	2.04 cfs @	12.06 hrs, Volume=	0.041 af		
Secondary =	1.14 cfs @	12.06 hrs, Volume=	0.171 af		

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 2,210.77' @ 12.06 hrs
Flood Elev= 2,211.50'

Device	Routing	Invert	Outlet Devices
#1	Secondary	2,206.00'	**12.0" x 81.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 2,204.00' S= 0.0247 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	2,206.00'	**4.5" Vert. Vert Orifice** C= 0.600
#3	Primary	2,210.50'	**Weir in Channel, C= 2.62** Head (feet) 0.00 1.50 Width (feet) 4.00 10.00

Primary OutFlow Max=2.02 cfs @ 12.06 hrs HW=2,210.77' (Free Discharge)
└─**3=Weir in Channel** (Weir Controls 2.02 cfs @ 1.66 fps)

Secondary OutFlow Max=1.14 cfs @ 12.06 hrs HW=2,210.77' (Free Discharge)
└─**1=Culvert** (Passes 1.14 cfs of 7.53 cfs potential flow)
└─**2=Vert Orifice** (Orifice Controls 1.14 cfs @ 10.31 fps)

Summary for Pond CBWQC: Diversion to DSW

Inflow Area =	0.072 ac,	50.56% Impervious,	Inflow Depth =	4.41"	for Q10 event
Inflow =	0.63 cfs @	11.92 hrs, Volume=	0.027 af		
Outflow =	0.63 cfs @	11.92 hrs, Volume=	0.027 af,	Atten= 0%,	Lag= 0.0 min
Primary =	0.36 cfs @	11.92 hrs, Volume=	0.003 af		
Secondary =	0.27 cfs @	11.92 hrs, Volume=	0.023 af		

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 2,231.59' @ 11.92 hrs
Flood Elev= 2,232.50'

Device	Routing	Invert	Outlet Devices
#1	Secondary	2,227.00'	**12.0" x 175.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 2,225.00' S= 0.0114 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	2,227.00'	**2.2" Vert. Vert Orifice** C= 0.600
#3	Primary	2,231.50'	**Weir in Channel, C= 2.62** Head (feet) 0.00 1.50 Width (feet) 4.00 10.00

Primary OutFlow Max=0.34 cfs @ 11.92 hrs HW=2,231.59' (Free Discharge)
└─**3=Weir in Channel** (Weir Controls 0.34 cfs @ 0.95 fps)

Secondary OutFlow Max=0.27 cfs @ 11.92 hrs HW=2,231.59' (Free Discharge)
└─**1=Culvert** (Passes 0.27 cfs of 5.63 cfs potential flow)
└─**2=Vert Orifice** (Orifice Controls 0.27 cfs @ 10.21 fps)

Summary for Pond CVS12: Culvert

Inflow Area =	1.802 ac, 18.93% Impervious, Inflow Depth = 1.17" for Q10 event				
Inflow =	5.68 cfs @ 12.02 hrs, Volume=	0.175 af			
Outflow =	5.68 cfs @ 12.02 hrs, Volume=	0.175 af, Atten= 0%, Lag= 0.0 min			
Primary =	5.68 cfs @ 12.02 hrs, Volume=	0.175 af			

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 2,167.05' @ 12.02 hrs
Flood Elev= 2,170.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,165.50'	**15.0" x 122.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 2,164.50' S= 0.0082 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Primary	2,170.00'	**Custom Weir/Orifice, C= 2.62** Head (feet) 0.00 2.00 Width (feet) 10.00 76.00

Primary OutFlow Max=5.68 cfs @ 12.02 hrs HW=2,167.05' (Free Discharge)
├─**1=Culvert** (Inlet Controls 5.68 cfs @ 4.63 fps)
└─**2=Custom Weir/Orifice** (Controls 0.00 cfs)

Summary for Pond CVS13: Culvert

Inflow Area =	1.147 ac, 19.17% Impervious, Inflow Depth = 1.52" for Q10 event				
Inflow =	3.56 cfs @ 12.07 hrs, Volume=	0.146 af			
Outflow =	3.56 cfs @ 12.07 hrs, Volume=	0.146 af, Atten= 0%, Lag= 0.0 min			
Primary =	3.56 cfs @ 12.07 hrs, Volume=	0.146 af			

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 2,191.94' @ 12.07 hrs
Flood Elev= 2,194.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,191.00'	**18.0" x 52.0' long Culvert** CMP, square edge headwall, Ke= 0.500 Outlet Invert= 2,190.50' S= 0.0096 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Primary	2,194.00'	**Custom Weir/Orifice, C= 2.62** Head (feet) 0.00 2.00 Width (feet) 30.00 56.00

Primary OutFlow Max=3.56 cfs @ 12.07 hrs HW=2,191.94' (Free Discharge)
├─**1=Culvert** (Barrel Controls 3.56 cfs @ 4.35 fps)
└─**2=Custom Weir/Orifice** (Controls 0.00 cfs)

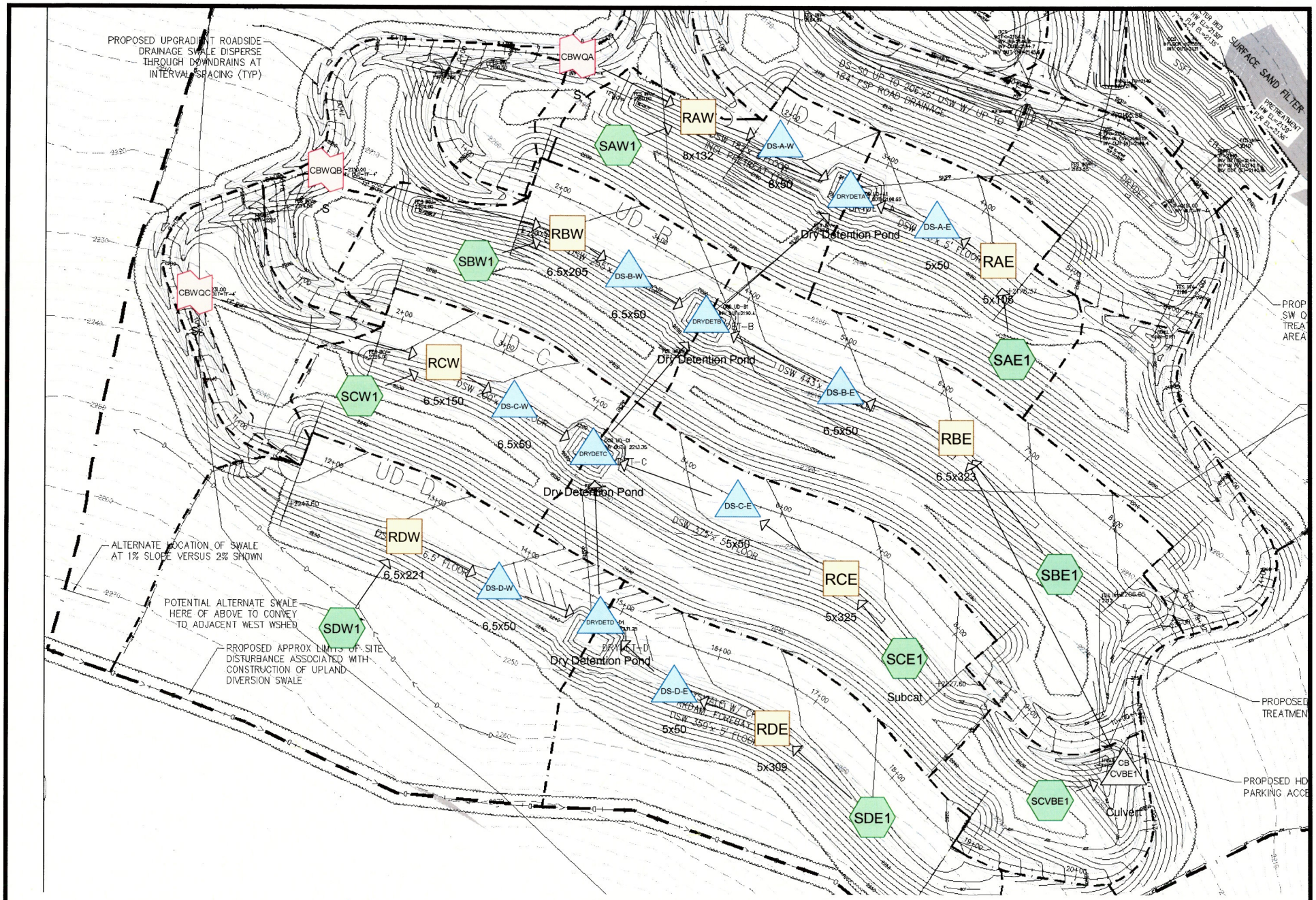
Summary for Pond CVS14: Culvert

Inflow Area = 0.547 ac, 17.18% Impervious, Inflow Depth = 3.00" for Q10 event
Inflow = 2.25 cfs @ 12.05 hrs, Volume= 0.137 af
Outflow = 2.25 cfs @ 12.05 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.0 min
Primary = 2.25 cfs @ 12.05 hrs, Volume= 0.137 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 2,215.93' @ 12.05 hrs
Flood Elev= 2,218.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	2,215.00'	**15.0" x 40.0' long Culvert** CMP, square edge headwall, Ke= 0.500 Outlet Invert= 2,214.50' S= 0.0125 '/' Cc= 0.900 n= 0.025 Corrugated metal
#2	Primary	2,218.00'	**Custom Weir/Orifice, C= 2.62** Head (feet) 0.00 2.00 Width (feet) 30.00 61.00

Primary OutFlow Max=2.25 cfs @ 12.05 hrs HW=2,215.93' (Free Discharge)
└─**1=Culvert** (Barrel Controls 2.25 cfs @ 3.18 fps)
└─**2=Custom Weir/Orifice** (Controls 0.00 cfs)



Drainage Diagram for PR Upper Discovery Parking TIER A-D 1Bof3

Prepared by NYSDEC DOP BD&C, Printed 3/23/2011

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	67	0.1493	0.10		**Sheet Flow, SHT** Woods: Dense underbrush n= 0.800 P2= 4.00"
1.5	26	0.3077	0.30		**Sheet Flow,** Grass: Dense n= 0.240 P2= 4.00"
0.2	105	0.0800	10.94	65.62	**Channel Flow,** Area= 6.0 sf Perim= 8.7' r= 0.69' n= 0.030 Earth, grassed & winding
12.6	198	Total			

Summary for Subcatchment SCWWQ1:

Runoff = 0.63 cfs @ 11.92 hrs, Volume= 0.027 af, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr Q10 Rainfall=6.00"

	Area (sf)	CN	Description
	1,592	98	Paved parking & roofs
*	1,557	74	grassland, good
	0	70	Woods, Good, HSG C
	3,149	86	Weighted Average
	1,557		Pervious Area
	1,592		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	149	0.0738	2.81		**Sheet Flow, SHT** Smooth surfaces n= 0.011 P2= 4.00"
0.4	57	0.1053	2.27		**Shallow Concentrated Flow, SCF** Short Grass Pasture Kv= 7.0 fps
1.3	206	Total			

Summary for Pond CBWQA: Diversion to DSW

Inflow Area = 1.475 ac, 19.02% Impervious, Inflow Depth = 1.98" for Q10 event
Inflow = 5.17 cfs @ 12.04 hrs, Volume= 0.243 af
Outflow = 5.17 cfs @ 12.04 hrs, Volume= 0.243 af, Atten= 0%, Lag= 0.0 min
Primary = 4.02 cfs @ 12.04 hrs, Volume= 0.078 af
Secondary = 1.16 cfs @ 12.04 hrs, Volume= 0.166 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 2,184.91' @ 12.04 hrs
Flood Elev= 2,185.50'

Device	Routing	Invert	Outlet Devices
#1	Secondary	2,180.00'	**12.0" x 65.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 2,179.50' S= 0.0077 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	2,180.00'	**4.5" Vert. Vert Orifice** C= 0.600
#3	Primary	2,184.50'	**Weir in Channel, C= 2.62** Head (feet) 0.00 1.50 Width (feet) 4.00 10.00