TR55 Tc Worksheet

Hydraflow Hydrographs by Intelisolve

Hyd. No. 11

Proposed Watershed B-4

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.400	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.40	0.00	0.00	
Land slope (%)	= 8.00	0.00	0.00	
Travel Time (min)	**= 11.97**	**+ 0.00**	**+ 0.00**	**= 11.97**
Shallow Concentrated Flow				
Flow length (ft)	= 630.00	0.00	0.00	
Watercourse slope (%)	= 9.80	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	= 5.05	0.00	0.00	
Travel Time (min)	**= 2.08**	**+ 0.00**	**+ 0.00**	**= 2.08**
Channel Flow				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	= 0.00	0.00	0.00	
Flow length (ft)	= 0.0	0.0	0.0	
Travel Time (min)	**= 0.00**	**+ 0.00**	**+ 0.00**	**= 0.00**

Total Travel Time, Tc ..... **14.04 min**

Project **Chester Development** By **BDH** Date **12/2/2010**

Location **Village of Chester, NY** Checked _____ Date _____

Circle one: Present Developed **Proposed Watershed B-5**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
	Impervious	**98**			**0.12**	**11.76**
C	**Open Space (good)**	**74**			**0.21**	**15.54**
D	**Open Space (good)**	**80**			**0.62**	**49.60**
C	**Woods (fair)**	**73**			**1.02**	**74.46**
D	**Woods (fair)**	**79**			**0.27**	**21.33**
1 Use only one CN source per line				Totals =	**2.24**	**172.69**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{172.69}{2.24} =$ 77.09 Use CN = **77**

TR55 Tc Worksheet

Hydraflow Hydrographs by Intelisolve

Hyd. No. 12

Proposed Watershed B-5

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.40	0.00	0.00	
Land slope (%)	= 9.00	0.00	0.00	
Travel Time (min)	**= 7.59**	**+ 0.00**	**+ 0.00**	**= 7.59**
Shallow Concentrated Flow				
Flow length (ft)	= 81.00	0.00	0.00	
Watercourse slope (%)	= 10.00	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	= 5.10	0.00	0.00	
Travel Time (min)	**= 0.26**	**+ 0.00**	**+ 0.00**	**= 0.26**
Channel Flow				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	= 0.00	0.00	0.00	
Flow length (ft)	= 0.0	0.0	0.0	
Travel Time (min)	**= 0.00**	**+ 0.00**	**+ 0.00**	**= 0.00**

Total Travel Time, Tc ..... 7.85 min

→ USE 10.00min

Project **Chester Development** By **BDH** Date **12/2/2010**

Location **Village of Chester, NY** Checked _____ Date _____

Circle one: Present Developed **Proposed Watershed C**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
	Impervious	**98**			**3.51**	**343.98**
C	**Open Space (good)**	**74**			**5.47**	**404.78**
C	**Pasture/grassland (good)**	**74**			**0.07**	**5.18**

1 Use only one CN source per line

Totals = **9.05** **753.94**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{753.94}{9.05} =$ 83.31 Use CN = **83**

TR55 Tc Worksheet

Hyd. No. 22

Proposed Watershed C

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.40		0.00		0.00		
Land slope (%)	= 4.40		0.00		0.00		
Travel Time (min)	**= 10.10**	**+**	**0.00**	**+**	**0.00**	**=**	**10.10**
Shallow Concentrated Flow							
Flow length (ft)	= 251.00		0.00		0.00		
Watercourse slope (%)	= 7.20		0.00		0.00		
Surface description	= Paved		Paved		Paved		
Average velocity (ft/s)	= 5.45		0.00		0.00		
Travel Time (min)	**= 0.77**	**+**	**0.00**	**+**	**0.00**	**=**	**0.77**
Channel Flow							
X sectional flow area (sqft)	= 1.77		3.14		0.00		
Wetted perimeter (ft)	= 4.71		6.28		0.00		
Channel slope (%)	= 3.85		6.82		0.00		
Manning's n-value	= 0.010		0.010		0.015		
Velocity (ft/s)	= 15.16		24.46		0.00		
Flow length (ft)	= 364.0		572.0		0.0		
Travel Time (min)	**= 0.40**	**+**	**0.39**	**+**	**0.00**	**=**	**0.79**

Total Travel Time, Tc ..... **11.66 min**

Project **Chester Development** By **BDH** Date **12/2/2010**

Location **Village of Chester, NY** Checked _____ Date _____

Circle one: Present Developed **Proposed Watershed D**

1. Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1] Table 2-2	CN [1] Fig. 2-3	CN [1] Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x area
C	**Pasture/grassland (good)**	**74**			**0.35**	**25.90**
				Totals =	**0.35**	**25.90**

1 Use only one CN source per line

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{25.90}{0.35} = 74.00$$ Use CN = **74**

TR55 Tc Worksheet

Hydraflow Hydrographs by Intelisolve

Hyd. No. 26

Proposed Watershed D

Description	A	B	C	Totals
Sheet Flow				
Manning's n-value	= 0.240	0.011	0.011	
Flow length (ft)	= 100.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.40	0.00	0.00	
Land slope (%)	= 4.20	0.00	0.00	
Travel Time (min)	**= 10.29**	**+ 0.00**	**+ 0.00**	**= 10.29**
Shallow Concentrated Flow				
Flow length (ft)	= 76.00	0.00	0.00	
Watercourse slope (%)	= 11.58	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	= 5.49	0.00	0.00	
Travel Time (min)	**= 0.23**	**+ 0.00**	**+ 0.00**	**= 0.23**
Channel Flow				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.00	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	= 0.00	0.00	0.00	
Flow length (ft)	= 0.0	0.0	0.0	
Travel Time (min)	**= 0.00**	**+ 0.00**	**+ 0.00**	**= 0.00**

Total Travel Time, Tc ..... 10.52 min

APPENDIX C

WATER QUALITY CALCULATIONS

Project: Chester Development: Watershed A-1

Purpose: To calculate the first flush runoff flow rate WQv and convert it to a flow in accordance with the New York State Stormwater Design Manual.

Procedure:

1. Compute WQV in watershed inches using the following equation:

$$WQv = (P * Rv * A) / 12$$

where: WQv = water quality volume (ac-ft)
P = 90% Rainfall Event Number per figure 4.1 in NYS SWDM
R = volumetric runoff coefficient = 0.05 + 0.009(I)
I = percent impervious cover, %
A = Contributing area, acres

A (acres)	Percent Imp. (%)	R (calculated)	P (in)	WQV (ac-ft)	WQV (cf)
24.57	37	0.381	1.20	0.94	40,789

2. Compute the NRCS Runoff Curve Number (CN) using the following equation, or graphically using Figure 2-1 from TR-55 (USDA, 1986):

$$CN = 1000 / [10+5P+10Q-10(Q^2+1.25QP)^{1/2}]$$

where: CN = Runoff Curve Number
P = 90% Rainfall Event Number per figure 4.1 in NYS SWDM
Q = runoff volume in inches = WQv / Area

WQV (ac-ft)	Area (acres)	Q (in)	CN
0.936	24.57	0.46	90.0

3. Using computed CN, read initial abstraction (I_a) from Table 4-1 in Chapter 4 of TR-55; alternately compute I_a = (200/CN) -2. Values must be limited between 0.041 and 3.0.

I_a (in)	I_a/P
0.222	0.185

4. Compute the time of concentration (t_c) in hours and the drainage area in square miles. A minimum t_c of 0.1 hours (6 minutes) can be used.

A (acres)	t_c (hr)	A ($miles^2$)
24.57	0.28	0.03839

5. Read the unit peak discharge (q_u) from Exhibit 4-III in Chapter 4 of TR-55 for appropriate t_c for type III rainfall distribution. Limit Ia/P values to those given in Exhibit 4-III.

t_c (hr)	I_a/P	q_u (csm/in)
0.28	0.185	460

6. Substituting WQV (watershed inches) for runoff depth (Q), compute the water quality flow (WQf) from the following equation:

$$WQf = (q_u)*(A)*(Q)$$

where: WQf = Water Quality volume converted to a peak discharge flow (cfs)
q_u = unit peak discharge (cfs/mi^2/inch)
A = drainage area (mi^2)
Q = Water Quality volume in watershed inches = WQv / Area

Q (in)	q_u (csm/in)	A ($miles^2$)	WQf (cfs)
0.46	460	0.03839	8.08

Project: Chester Development: Watershed B-1

Purpose: To calculate the first flush runoff flow rate WQv and convert it to a flow in accordance with the New York State Stormwater Design Manual.

Procedure:

1. Compute WQV in watershed inches using the following equation:

$$WQv = (P * Rv * A) / 12$$

where: WQv = water quality volume (ac-ft)
P = 90% Rainfall Event Number per figure 4.1 in NYS SWDM
R = volumetric runoff coefficient = 0.05 + 0.009(I)
I = percent impervious cover, %
A = Contributing area, acres

A (acres)	Percent Imp. (%)	R (calculated)	P (in)	WQV (ac-ft)	WQV (cf)
19.06	48	0.484	1.20	0.92	40,220

2. Compute the NRCS Runoff Curve Number (CN) using the following equation, or graphically using Figure 2-1 from TR-55 (USDA, 1986):

$$CN = 1000 / [10+5P+10Q-10(Q^2+1.25QP)^{1/2}]$$

where: CN = Runoff Curve Number
P = 90% Rainfall Event Number per figure 4.1 in NYS SWDM
Q = runoff volume in inches = WQv / Area

WQV (ac-ft)	Area (acres)	Q (in)	CN
0.923	19.06	0.58	92.5

3. Using computed CN, read initial abstraction (I_a) from Table 4-1 in Chapter 4 of TR-55; alternately compute I_a = (200/CN) -2. Values must be limited between 0.041 and 3.0.

I_a (in)	I_a/P
0.163	0.136

4. Compute the time of concentration (t_c) in hours and the drainage area in square miles. A minimum t_c of 0.1 hours (6 minutes) can be used.

A (acres)	t_c (hr)	A (miles^2)
19.06	0.33	0.02978

5. Read the unit peak discharge (q_u) from Exhibit 4-III in Chapter 4 of TR-55 for appropriate t_c for type III rainfall distribution. Limit Ia/P values to those given in Exhibit 4-III.

t_c (hr)	I_a/P	q_u (csm/in)
0.33	0.136	450

6. Substituting WQV (watershed inches) for runoff depth (Q), compute the water quality flow (WQf) from the following equation:

$$WQf = (q_u)*(A)*(Q)$$

where: WQf = Water Quality volume converted to a peak discharge flow (cfs)
q_u = unit peak discharge (cfs/mi^2/inch)
A = drainage area (mi^2)
Q = Water Quality volume in watershed inches = WQv / Area

Q (in)	q_u (csm/in)	A (miles^2)	WQf (cfs)
0.58	450	0.02978	7.79

Project: Chester Development: Watershed C

Purpose: To calculate the first flush runoff flow rate WQv and convert it to a flow in accordance with the New York State Stormwater Design Manual.

Procedure:

1. Compute WQV in watershed inches using the following equation:

$$WQv = (P * Rv * A) / 12$$

where: WQv = water quality volume (ac-ft)
P = 90% Rainfall Event Number per figure 4.1 in NYS SWDM
R = volumetric runoff coefficient = 0.05 + 0.009(I)
I = percent impervious cover, %
A = Contributing area, acres

A (acres)	Percent Imp. (%)	R (calculated)	P (in)	WQV (ac-ft)	WQV (cf)
9.05	39	0.400	1.20	0.36	15,773

2. Compute the NRCS Runoff Curve Number (CN) using the following equation, or graphically using Figure 2-1 from TR-55 (USDA, 1986):

$$CN = 1000 / [10+5P+10Q-10(Q^2+1.25QP)^{1/2}]$$

where: CN = Runoff Curve Number
P = 90% Rainfall Event Number per figure 4.1 in NYS SWDM
Q = runoff volume in inches = WQv / Area

WQV (ac-ft)	Area (acres)	Q (in)	CN
0.362	9.05	0.48	90.5

3. Using computed CN, read initial abstraction (I_a) from Table 4-1 in Chapter 4 of TR-55; alternately compute I_a = (200/CN) -2. Values must be limited between 0.041 and 3.0.

I_a (in)	I_a/P
0.210	0.175

4. Compute the time of concentration (t_c) in hours and the drainage area in square miles. A minimum t_c of 0.1 hours (6 minutes) can be used.

A (acres)	t_c (hr)	A (miles^2)
9.05	0.20	0.01414

5. Read the unit peak discharge (q_u) from Exhibit 4-III in Chapter 4 of TR-55 for appropriate t_c for type III rainfall distribution. Limit Ia/P values to those given in Exhibit 4-III.

t_c (hr)	I_a/P	q_u (csm/in)
0.20	0.175	525

6. Substituting WQV (watershed inches) for runoff depth (Q), compute the water quality flow (WQf) from the following equation:

$$WQf = (q_u)*(A)*(Q)$$

where: WQf = Water Quality volume converted to a peak discharge flow (cfs)
q_u = unit peak discharge (cfs/mi^2/inch)
A = drainage area (mi^2)
Q = Water Quality volume in watershed inches = WQv / Area

Q (in)	q_u (csm/in)	A (miles^2)	WQf (cfs)
0.48	525	0.01414	3.56

Pond Report

Hydraflow Hydrographs by Intelisolve — Tuesday, Dec 7 2010, 5:21 PM

Pond No. 3 - Detention Pond A

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	458.00	21,537	0	0
1.00	459.00	25,414	23,476	23,476
2.00	460.00	29,492	27,453	50,929
3.00	461.00	33,771	31,632	82,560
4.00	462.00	38,250	36,011	118,571
5.00	463.00	42,932	40,591	159,162
6.00	464.00	47,814	45,373	204,535
7.00	465.00	53,515	50,665	255,199

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise (in)	= 24.00	3.00	0.00	0.00
Span (in)	= 24.00	3.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 460.00	460.00	0.00	0.00
Length (ft)	= 50.00	0.00	0.00	0.00
Slope (%)	= 2.00	0.00	0.00	0.00
N-Value	= .013	.013	.013	.013
Orif. Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 10.00	0.00	0.00	0.00
Crest El. (ft)	= 464.50	459.40	0.00	0.00
Weir Coeff.	= 3.33	0.88	0.00	3.33
Weir Type	= Riser	65 degV	---	---
Multi-Stage	= Yes	No	No	No

Exfiltration = 0.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control. Weir riser checked for orifice conditions.

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.00	0	458.00	0.00	0.00	---	---	0.00	---	---	---	---	0.00
0.10	2,348	458.10	0.00	0.00	---	---	0.00	---	---	---	---	0.00
0.20	4,695	458.20	0.00	0.00	---	---	0.00	---	---	---	---	0.00
0.30	7,043	458.30	0.00	0.00	---	---	0.00	---	---	---	---	0.00
0.40	9,390	458.40	0.00	0.00	---	---	0.00	---	---	---	---	0.00
0.50	11,738	458.50	0.00	0.00	---	---	0.00	---	---	---	---	0.00
0.60	14,085	458.60	0.00	0.00	---	---	0.00	---	---	---	---	0.00
0.70	16,433	458.70	0.00	0.00	---	---	0.00	---	---	---	---	0.00
0.80	18,780	458.80	0.00	0.00	---	---	0.00	---	---	---	---	0.00
0.90	21,128	458.90	0.00	0.00	---	---	0.00	---	---	---	---	0.00
1.00	23,476	459.00	0.00	0.00	---	---	0.00	---	---	---	---	0.00
1.10	26,221	459.10	0.00	0.00	---	---	0.00	---	---	---	---	0.00
1.20	28,966	459.20	0.00	0.00	---	---	0.00	---	---	---	---	0.00
1.30	31,711	459.30	0.00	0.00	---	---	0.00	---	---	---	---	0.00
1.40	34,457	459.40	0.00	0.00	---	---	0.00	0.00	---	---	---	0.00
1.50	37,202	459.50	0.00	0.00	---	---	0.00	0.00	---	---	---	0.00
1.60	39,947	459.60	0.00	0.00	---	---	0.00	0.02	---	---	---	0.02
1.70	42,693	459.70	0.00	0.00	---	---	0.00	0.04	---	---	---	0.04
1.80	45,438	459.80	0.00	0.00	---	---	0.00	0.09	---	---	---	0.09
1.90	48,183	459.90	0.00	0.00	---	---	0.00	0.16	---	---	---	0.16
2.00	50,929	460.00	0.00	0.00	---	---	0.00	0.25	---	---	---	0.25
2.10	54,092	460.10	0.00	0.02	---	---	0.00	0.36	---	---	---	0.38
2.20	57,255	460.20	0.00	0.06	---	---	0.00	0.50	---	---	---	0.57
2.30	60,418	460.30	0.00	0.10	---	---	0.00	0.68	---	---	---	0.77
2.40	63,581	460.40	0.00	0.12	---	---	0.00	0.88	---	---	---	1.00
2.50	66,744	460.50	0.00	0.14	---	---	0.00	1.12	---	---	---	1.26
2.60	69,907	460.60	0.00	0.16	---	---	0.00	1.39	---	---	---	1.55
2.70	73,071	460.70	0.00	0.18	---	---	0.00	1.69	---	---	---	1.87
2.80	76,234	460.80	0.00	0.19	---	---	0.00	2.04	---	---	---	2.23
2.90	79,397	460.90	0.00	0.21	---	---	0.00	2.42	---	---	---	2.63

Continues on next page...

Detention Pond A

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
3.00	82,560	461.00	0.00	0.22	---	---	0.00	2.85	---	---	---	3.07
3.10	86,161	461.10	0.00	0.23	---	---	0.00	3.31	---	---	---	3.55
3.20	89,762	461.20	0.00	0.25	---	---	0.00	3.82	---	---	---	4.07
3.30	93,363	461.30	0.00	0.26	---	---	0.00	4.37	---	---	---	4.63
3.40	96,964	461.40	0.00	0.27	---	---	0.00	4.97	---	---	---	5.24
3.50	100,565	461.50	0.00	0.28	---	---	0.00	5.62	---	---	---	5.89
3.60	104,166	461.60	0.00	0.29	---	---	0.00	6.31	---	---	---	6.60
3.70	107,767	461.70	0.00	0.30	---	---	0.00	7.05	---	---	---	7.35
3.80	111,368	461.80	0.00	0.31	---	---	0.00	7.84	---	---	---	8.15
3.90	114,969	461.90	0.00	0.31	---	---	0.00	8.69	---	---	---	9.00
4.00	118,571	462.00	0.00	0.32	---	---	0.00	9.58	---	---	---	9.90
4.10	122,630	462.10	0.00	0.33	---	---	0.00	10.53	---	---	---	10.86
4.20	126,689	462.20	0.00	0.34	---	---	0.00	11.53	---	---	---	11.87
4.30	130,748	462.30	0.00	0.35	---	---	0.00	12.59	---	---	---	12.94
4.40	134,807	462.40	0.00	0.36	---	---	0.00	13.70	---	---	---	14.06
4.50	138,866	462.50	0.00	0.36	---	---	0.00	14.87	---	---	---	15.24
4.60	142,925	462.60	0.00	0.37	---	---	0.00	16.10	---	---	---	16.47
4.70	146,984	462.70	0.00	0.38	---	---	0.00	17.39	---	---	---	17.77
4.80	151,043	462.80	0.00	0.39	---	---	0.00	18.74	---	---	---	19.12
4.90	155,102	462.90	0.00	0.39	---	---	0.00	20.15	---	---	---	20.54
5.00	159,162	463.00	0.00	0.40	---	---	0.00	21.61	---	---	---	22.02
5.10	163,699	463.10	0.00	0.41	---	---	0.00	23.15	---	---	---	23.55
5.20	168,236	463.20	0.00	0.41	---	---	0.00	24.74	---	---	---	25.16
5.30	172,773	463.30	0.00	0.42	---	---	0.00	26.40	---	---	---	26.82
5.40	177,311	463.40	0.00	0.43	---	---	0.00	28.13	---	---	---	28.56
5.50	181,848	463.50	0.00	0.43	---	---	0.00	29.92	---	---	---	30.35
5.60	186,385	463.60	0.00	0.44	---	---	0.00	31.78	---	---	---	32.22
5.70	190,923	463.70	0.00	0.45	---	---	0.00	33.70	---	---	---	34.15
5.80	195,460	463.80	0.00	0.45	---	---	0.00	35.70	---	---	---	36.15
5.90	199,997	463.90	0.00	0.46	---	---	0.00	37.76	---	---	---	38.22
6.00	204,535	464.00	0.00	0.47	---	---	0.00	39.89	---	---	---	40.36
6.10	209,601	464.10	0.00	0.47	---	---	0.00	42.10	---	---	---	42.57
6.20	214,667	464.20	0.00	0.48	---	---	0.00	44.37	---	---	---	44.85
6.30	219,734	464.30	0.00	0.48	---	---	0.00	46.72	---	---	---	47.20
6.40	224,800	464.40	0.00	0.49	---	---	0.00	49.14	---	---	---	49.63
6.50	229,867	464.50	0.00	0.49	---	---	0.00	51.63	---	---	---	52.13
6.60	234,933	464.60	1.07	0.50	---	---	1.05	54.20	---	---	---	55.75
6.70	240,000	464.70	3.03	0.51	---	---	2.98	56.84	---	---	---	60.33
6.80	245,066	464.80	5.47	0.51	---	---	5.47	59.56	---	---	---	65.55
6.90	250,133	464.90	8.44	0.52	---	---	8.43	62.36	---	---	---	71.30
7.00	255,199	465.00	11.82	0.52	---	---	11.77	65.23	---	---	---	77.53

...End

Pond Report

Hydraflow Hydrographs by Intelisolve — Tuesday, Dec 7 2010, 5:21 PM

Pond No. 7 - Detention Pond B

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	493.00	21,298	0	0
1.00	494.00	24,657	22,978	22,978
2.00	495.00	28,407	26,532	49,510
3.00	496.00	32,273	30,340	79,850
4.00	497.00	36,341	34,307	114,157
5.00	498.00	40,608	38,475	152,631
6.00	499.00	45,078	42,843	195,474
7.00	500.00	49,868	47,473	242,947

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise (in)	= 24.00	4.00	15.00	0.00
Span (in)	= 24.00	4.00	15.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 494.50	494.50	496.00	0.00
Length (ft)	= 40.00	0.00	0.00	0.00
Slope (%)	= 2.00	0.00	0.00	0.00
N-Value	= .013	.013	.013	.000
Orif. Coeff.	= 0.60	0.60	0.60	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 16.00	0.00	0.00	0.00
Crest El. (ft)	= 498.80	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	0.00	0.00
Weir Type	= Riser	---	---	---
Multi-Stage	= Yes	No	No	No

Exfiltration = 0.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.00	0	493.00	0.00	0.00	0.00	---	0.00	---	---	---	---	0.00
0.10	2,298	493.10	0.00	0.00	0.00	---	0.00	---	---	---	---	0.00
0.20	4,596	493.20	0.00	0.00	0.00	---	0.00	---	---	---	---	0.00
0.30	6,893	493.30	0.00	0.00	0.00	---	0.00	---	---	---	---	0.00
0.40	9,191	493.40	0.00	0.00	0.00	---	0.00	---	---	---	---	0.00
0.50	11,489	493.50	0.00	0.00	0.00	---	0.00	---	---	---	---	0.00
0.60	13,787	493.60	0.00	0.00	0.00	---	0.00	---	---	---	---	0.00
0.70	16,084	493.70	0.00	0.00	0.00	---	0.00	---	---	---	---	0.00
0.80	18,382	493.80	0.00	0.00	0.00	---	0.00	---	---	---	---	0.00
0.90	20,680	493.90	0.00	0.00	0.00	---	0.00	---	---	---	---	0.00
1.00	22,978	494.00	0.00	0.00	0.00	---	0.00	---	---	---	---	0.00
1.10	25,631	494.10	0.00	0.00	0.00	---	0.00	---	---	---	---	0.00
1.20	28,284	494.20	0.00	0.00	0.00	---	0.00	---	---	---	---	0.00
1.30	30,937	494.30	0.00	0.00	0.00	---	0.00	---	---	---	---	0.00
1.40	33,590	494.40	0.00	0.00	0.00	---	0.00	---	---	---	---	0.00
1.50	36,244	494.50	0.00	0.00	0.00	---	0.00	---	---	---	---	0.00
1.60	38,897	494.60	0.00	0.02	0.00	---	0.00	---	---	---	---	0.02
1.70	41,550	494.70	0.00	0.08	0.00	---	0.00	---	---	---	---	0.08
1.80	44,203	494.80	0.00	0.15	0.00	---	0.00	---	---	---	---	0.15
1.90	46,856	494.90	0.00	0.20	0.00	---	0.00	---	---	---	---	0.20
2.00	49,510	495.00	0.00	0.24	0.00	---	0.00	---	---	---	---	0.24
2.10	52,544	495.10	0.00	0.28	0.00	---	0.00	---	---	---	---	0.28
2.20	55,578	495.20	0.00	0.31	0.00	---	0.00	---	---	---	---	0.31
2.30	58,612	495.30	0.00	0.33	0.00	---	0.00	---	---	---	---	0.33
2.40	61,646	495.40	0.00	0.36	0.00	---	0.00	---	---	---	---	0.36
2.50	64,680	495.50	0.00	0.38	0.00	---	0.00	---	---	---	---	0.38
2.60	67,714	495.60	0.00	0.41	0.00	---	0.00	---	---	---	---	0.41
2.70	70,748	495.70	0.00	0.43	0.00	---	0.00	---	---	---	---	0.43
2.80	73,782	495.80	0.00	0.45	0.00	---	0.00	---	---	---	---	0.45
2.90	76,816	495.90	0.00	0.47	0.00	---	0.00	---	---	---	---	0.47

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Detention Pond B

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
3.00	79,850	496.00	0.00	0.49	0.00	---	0.00	---	---	---	---	0.49
3.10	83,280	496.10	0.00	0.50	0.05	---	0.00	---	---	---	---	0.55
3.20	86,711	496.20	0.00	0.52	0.19	---	0.00	---	---	---	---	0.71
3.30	90,142	496.30	0.00	0.54	0.42	---	0.00	---	---	---	---	0.96
3.40	93,572	496.40	0.00	0.55	0.73	---	0.00	---	---	---	---	1.28
3.50	97,003	496.50	0.00	0.57	1.10	---	0.00	---	---	---	---	1.67
3.60	100,434	496.60	0.00	0.58	1.54	---	0.00	---	---	---	---	2.12
3.70	103,864	496.70	0.00	0.60	2.02	---	0.00	---	---	---	---	2.61
3.80	107,295	496.80	0.00	0.61	2.53	---	0.00	---	---	---	---	3.14
3.90	110,726	496.90	0.00	0.63	3.06	---	0.00	---	---	---	---	3.69
4.00	114,157	497.00	0.00	0.64	3.58	---	0.00	---	---	---	---	4.23
4.10	118,004	497.10	0.00	0.66	4.09	---	0.00	---	---	---	---	4.74
4.20	121,851	497.20	0.00	0.67	4.52	---	0.00	---	---	---	---	5.18
4.30	125,699	497.30	0.00	0.68	4.85	---	0.00	---	---	---	---	5.54
4.40	129,546	497.40	0.00	0.69	5.20	---	0.00	---	---	---	---	5.90
4.50	133,394	497.50	0.00	0.71	5.53	---	0.00	---	---	---	---	6.23
4.60	137,241	497.60	0.00	0.72	5.83	---	0.00	---	---	---	---	6.55
4.70	141,089	497.70	0.00	0.73	6.13	---	0.00	---	---	---	---	6.86
4.80	144,936	497.80	0.00	0.74	6.40	---	0.00	---	---	---	---	7.15
4.90	148,784	497.90	0.00	0.76	6.67	---	0.00	---	---	---	---	7.43
5.00	152,631	498.00	0.00	0.77	6.93	---	0.00	---	---	---	---	7.69
5.10	156,915	498.10	0.00	0.78	7.18	---	0.00	---	---	---	---	7.95
5.20	161,200	498.20	0.00	0.79	7.41	---	0.00	---	---	---	---	8.20
5.30	165,484	498.30	0.00	0.80	7.65	---	0.00	---	---	---	---	8.45
5.40	169,768	498.40	0.00	0.81	7.87	---	0.00	---	---	---	---	8.68
5.50	174,053	498.50	0.00	0.82	8.09	---	0.00	---	---	---	---	8.91
5.60	178,337	498.60	0.00	0.83	8.30	---	0.00	---	---	---	---	9.14
5.70	182,621	498.70	0.00	0.84	8.51	---	0.00	---	---	---	---	9.35
5.80	186,905	498.80	0.00	0.85	8.71	---	0.00	---	---	---	---	9.57
5.90	191,190	498.90	1.73	0.86	8.91	---	1.69	---	---	---	---	11.46
6.00	195,474	499.00	4.87	0.87	9.11	---	4.77	---	---	---	---	14.75
6.10	200,221	499.10	8.76	0.88	9.29	---	8.76	---	---	---	---	18.93
6.20	204,969	499.20	13.48	0.89	9.48	---	13.48	---	---	---	---	23.86
6.30	209,716	499.30	18.84	0.90	9.66	---	18.84	---	---	---	---	29.41
6.40	214,463	499.40	24.76	0.91	9.84	---	24.76	---	---	---	---	35.52
6.50	219,211	499.50	28.49	0.92	10.02	---	28.49	---	---	---	---	39.43
6.60	223,958	499.60	29.47	0.93	10.19	---	29.47	---	---	---	---	40.59
6.70	228,705	499.70	30.17	0.94	10.36	---	30.17	---	---	---	---	41.47
6.80	233,452	499.80	30.75	0.95	10.53	---	30.74	---	---	---	---	42.22
6.90	238,200	499.90	31.25	0.96	10.69	---	31.25	---	---	---	---	42.91
7.00	242,947	500.00	31.71	0.97	10.85	---	31.71	---	---	---	---	43.53

...End

Pond Report

Hydraflow Hydrographs by Intelisolve — Tuesday, Dec 7 2010, 5:20 PM

Pond No. 11 - Detention Pond C

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	518.00	2,195	0	0
1.00	519.00	4,025	3,110	3,110
2.00	520.00	6,122	5,074	8,184
3.00	521.00	8,465	7,294	15,477
4.00	522.00	11,035	9,750	25,227
5.00	523.00	13,809	12,422	37,649
6.00	524.00	16,785	15,297	52,946
7.00	525.00	20,005	18,395	71,341

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise (in)	= 24.00	3.50	0.00	0.00
Span (in)	= 24.00	3.50	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 520.00	520.00	0.00	0.00
Length (ft)	= 15.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	0.00
N-Value	= .013	.013	.013	.013
Orif. Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 6.28	20.00	0.00	0.00
Crest El. (ft)	= 523.50	524.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	0.00	0.00
Weir Type	= Riser	Rect	---	---
Multi-Stage	= Yes	No	No	No

Exfiltration = 0.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.00	0	518.00	0.00	0.00	---	---	0.00	0.00	---	---	---	0.00
0.10	311	518.10	0.00	0.00	---	---	0.00	0.00	---	---	---	0.00
0.20	622	518.20	0.00	0.00	---	---	0.00	0.00	---	---	---	0.00
0.30	933	518.30	0.00	0.00	---	---	0.00	0.00	---	---	---	0.00
0.40	1,244	518.40	0.00	0.00	---	---	0.00	0.00	---	---	---	0.00
0.50	1,555	518.50	0.00	0.00	---	---	0.00	0.00	---	---	---	0.00
0.60	1,866	518.60	0.00	0.00	---	---	0.00	0.00	---	---	---	0.00
0.70	2,177	518.70	0.00	0.00	---	---	0.00	0.00	---	---	---	0.00
0.80	2,488	518.80	0.00	0.00	---	---	0.00	0.00	---	---	---	0.00
0.90	2,799	518.90	0.00	0.00	---	---	0.00	0.00	---	---	---	0.00
1.00	3,110	519.00	0.00	0.00	---	---	0.00	0.00	---	---	---	0.00
1.10	3,617	519.10	0.00	0.00	---	---	0.00	0.00	---	---	---	0.00
1.20	4,125	519.20	0.00	0.00	---	---	0.00	0.00	---	---	---	0.00
1.30	4,632	519.30	0.00	0.00	---	---	0.00	0.00	---	---	---	0.00
1.40	5,139	519.40	0.00	0.00	---	---	0.00	0.00	---	---	---	0.00
1.50	5,647	519.50	0.00	0.00	---	---	0.00	0.00	---	---	---	0.00
1.60	6,154	519.60	0.00	0.00	---	---	0.00	0.00	---	---	---	0.00
1.70	6,661	519.70	0.00	0.00	---	---	0.00	0.00	---	---	---	0.00
1.80	7,169	519.80	0.00	0.00	---	---	0.00	0.00	---	---	---	0.00
1.90	7,676	519.90	0.00	0.00	---	---	0.00	0.00	---	---	---	0.00
2.00	8,184	520.00	0.00	0.00	---	---	0.00	0.00	---	---	---	0.00
2.10	8,913	520.10	0.02	0.02	---	---	0.00	0.00	---	---	---	0.02
2.20	9,642	520.20	0.07	0.07	---	---	0.00	0.00	---	---	---	0.07
2.30	10,372	520.30	0.13	0.13	---	---	0.00	0.00	---	---	---	0.13
2.40	11,101	520.40	0.17	0.16	---	---	0.00	0.00	---	---	---	0.16
2.50	11,830	520.50	0.19	0.18	---	---	0.00	0.00	---	---	---	0.18
2.60	12,560	520.60	0.22	0.21	---	---	0.00	0.00	---	---	---	0.21
2.70	13,289	520.70	0.24	0.23	---	---	0.00	0.00	---	---	---	0.23
2.80	14,018	520.80	0.26	0.25	---	---	0.00	0.00	---	---	---	0.25
2.90	14,748	520.90	0.28	0.27	---	---	0.00	0.00	---	---	---	0.27

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Detention Pond C

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
3.00	15,477	521.00	0.30	0.28	---	---	0.00	0.00	---	---	---	0.28
3.10	16,452	521.10	0.30	0.30	---	---	0.00	0.00	---	---	---	0.30
3.20	17,427	521.20	0.32	0.32	---	---	0.00	0.00	---	---	---	0.32
3.30	18,402	521.30	0.35	0.33	---	---	0.00	0.00	---	---	---	0.33
3.40	19,377	521.40	0.35	0.34	---	---	0.00	0.00	---	---	---	0.34
3.50	20,352	521.50	0.37	0.36	---	---	0.00	0.00	---	---	---	0.36
3.60	21,327	521.60	0.37	0.37	---	---	0.00	0.00	---	---	---	0.37
3.70	22,302	521.70	0.40	0.38	---	---	0.00	0.00	---	---	---	0.38
3.80	23,277	521.80	0.42	0.40	---	---	0.00	0.00	---	---	---	0.40
3.90	24,252	521.90	0.42	0.41	---	---	0.00	0.00	---	---	---	0.41
4.00	25,227	522.00	0.42	0.42	---	---	0.00	0.00	---	---	---	0.42
4.10	26,469	522.10	0.45	0.43	---	---	0.00	0.00	---	---	---	0.43
4.20	27,711	522.20	0.45	0.44	---	---	0.00	0.00	---	---	---	0.44
4.30	28,954	522.30	0.48	0.45	---	---	0.00	0.00	---	---	---	0.45
4.40	30,196	522.40	0.48	0.47	---	---	0.00	0.00	---	---	---	0.47
4.50	31,438	522.50	0.48	0.48	---	---	0.00	0.00	---	---	---	0.48
4.60	32,680	522.60	0.51	0.49	---	---	0.00	0.00	---	---	---	0.49
4.70	33,922	522.70	0.51	0.50	---	---	0.00	0.00	---	---	---	0.50
4.80	35,165	522.80	0.53	0.51	---	---	0.00	0.00	---	---	---	0.51
4.90	36,407	522.90	0.53	0.52	---	---	0.00	0.00	---	---	---	0.52
5.00	37,649	523.00	0.53	0.53	---	---	0.00	0.00	---	---	---	0.53
5.10	39,179	523.10	0.53	0.53	---	---	0.00	0.00	---	---	---	0.53
5.20	40,708	523.20	0.57	0.54	---	---	0.00	0.00	---	---	---	0.54
5.30	42,238	523.30	0.57	0.55	---	---	0.00	0.00	---	---	---	0.55
5.40	43,768	523.40	0.57	0.56	---	---	0.00	0.00	---	---	---	0.56
5.50	45,298	523.50	0.60	0.57	---	---	0.00	0.00	---	---	---	0.57
5.60	46,827	523.60	1.26	0.56	---	---	0.66	0.00	---	---	---	1.22
5.70	48,357	523.70	2.44	0.54	---	---	1.87	0.00	---	---	---	2.40
5.80	49,887	523.80	3.97	0.50	---	---	3.43	0.00	---	---	---	3.93
5.90	51,416	523.90	5.73	0.44	---	---	5.29	0.00	---	---	---	5.73
6.00	52,946	524.00	7.84	0.44	---	---	7.39	0.00	---	---	---	7.84
6.10	54,786	524.10	10.16	0.44	---	---	9.72	2.11	---	---	---	12.27
6.20	56,625	524.20	12.68	0.44	---	---	12.25	5.95	---	---	---	18.64
6.30	58,465	524.30	15.39	0.43	---	---	14.96	10.94	---	---	---	26.33
6.40	60,304	524.40	18.26	0.41	---	---	17.85	16.84	---	---	---	35.10
6.50	62,144	524.50	21.29	0.38	---	---	20.91	23.54	---	---	---	44.82
6.60	63,983	524.60	24.28	0.33	---	---	23.95	30.94	---	---	---	55.22
6.70	65,823	524.70	25.70	0.29	---	---	25.41	38.99	---	---	---	64.69
6.80	67,662	524.80	26.75	0.26	---	---	26.48	47.64	---	---	---	74.38
6.90	69,502	524.90	27.61	0.24	---	---	27.36	56.84	---	---	---	84.45
7.00	71,341	525.00	28.35	0.22	---	---	28.12	66.60	---	---	---	94.95

...End

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Prepared By: BDH
Checked By: JJS

For Detention Basin A:

Cpv - 24 Hour Detention of 1 Year-Storm

Performance Criteria Compliance:

CN= 82

$I_a = (200/CN) - 2$

I_a = 0.439

I_a/P= 0.15 P = 2.9 for the 1 Year Storm

T_c= 0.2833 hr

Per Exhibit 4-III of TR-55, q_u = 460 csm/in

Per Figure B.1 in Appendix B in NYS Design Manual for 24 hour storm:

q_o/q_i = 0.040

$V_s/V_r = 0.682-1.43(q_o/q_i)+1.64(q_o/q_i)^2-0.804(q_o/q_i)^3$

V_s/V_r = 0.627

$V_s = Cp_v$ Vr = Volume of Runoff

$$V_s = \frac{(V_s/V_r)QA}{12}$$

A= 24.57 acres

$$Q = \frac{(P-I_a)^2}{P+4I_a}$$

Q= 1.3 inches

V_s = **1.67 ac-ft** V_s= 72,783 cf of overall storage is required.

Average Release Rate over 24 hours:

$$= \frac{(V_s)(43560 \text{ ft/ac})}{(24\text{hr})(3600 \text{ sec/hr})}$$

= **0.84 cfs** 0.84 cfs is the allowable average release rate for the 1 year, 24 hour storm event

Hydrograph Plot

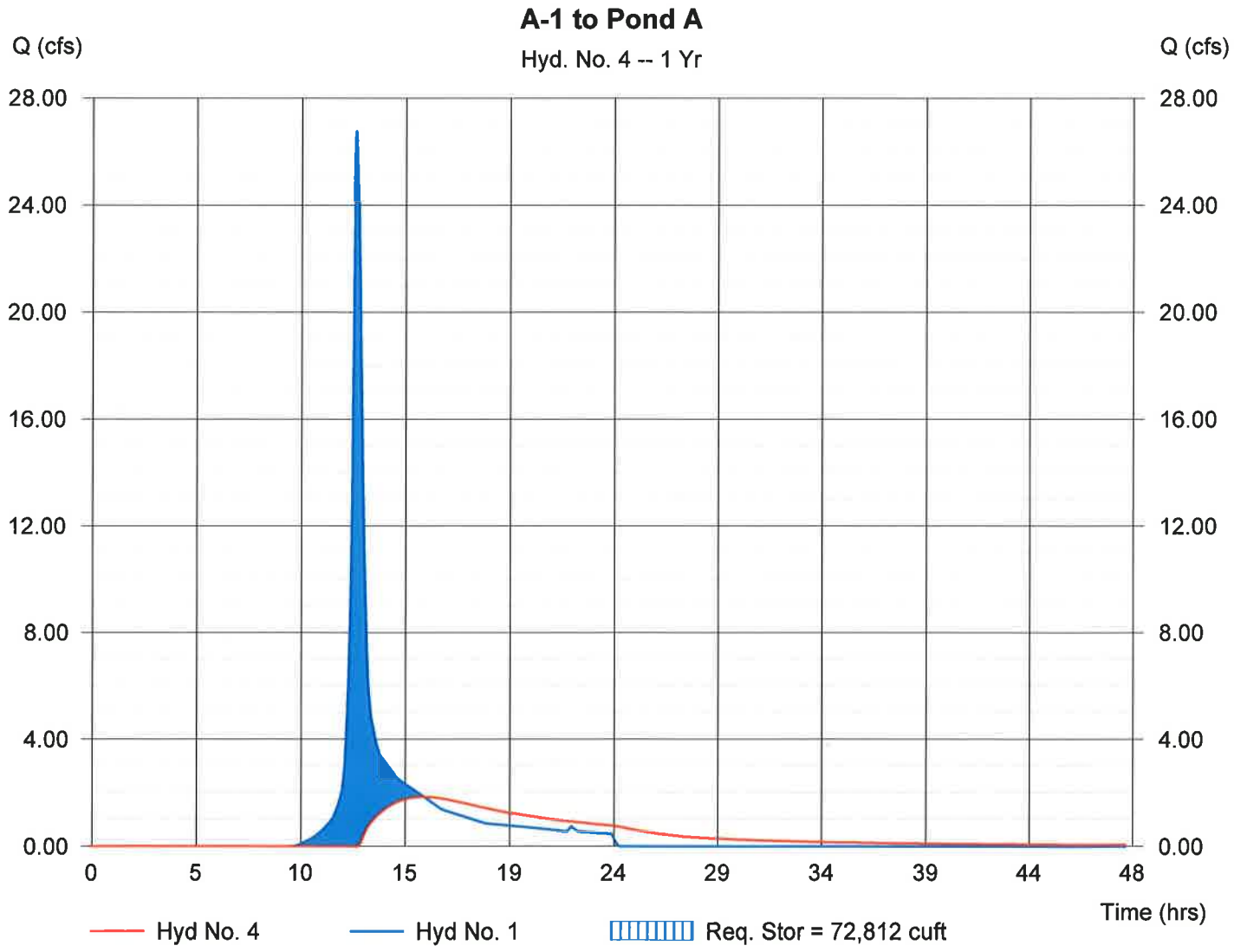
Hydraflow Hydrographs by Intelisolve | Tuesday, Dec 7 2010, 4:37 PM

Hyd. No. 4

A-1 to Pond A

Hydrograph type	= Reservoir	Peak discharge	= 1.85 cfs
Storm frequency	= 1 yrs	Time interval	= 1 min
Inflow hyd. No.	= 1	Max. Elevation	= 460.69 ft
Reservoir name	= Detention Pond A	Max. Storage	= 72,812 cuft

Storage Indication method used. | Hydrograph Volume = 71,197 cuft



Multi-Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Hyd. No. 4

A-1 to Pond A

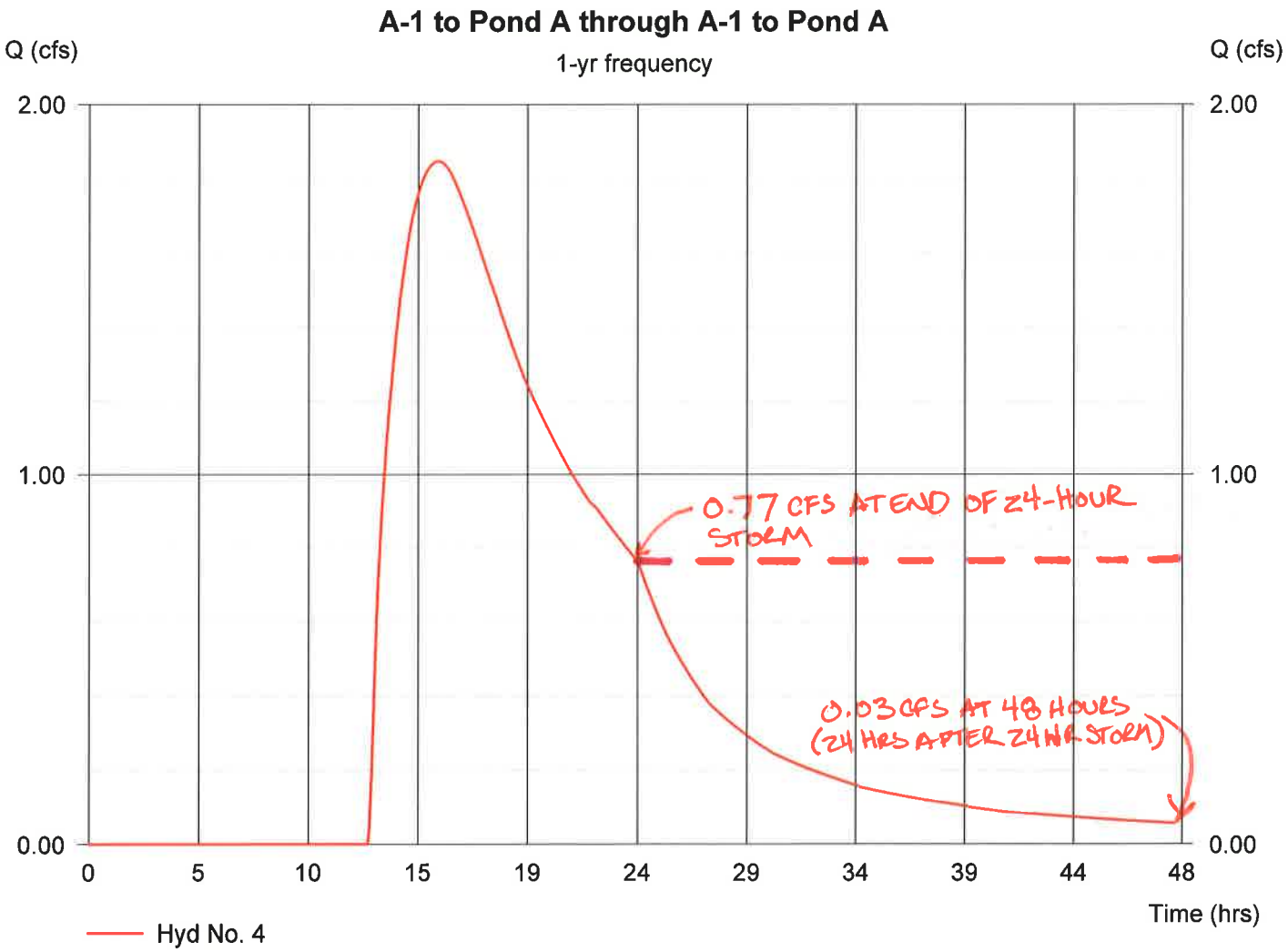
Hydrograph type	=	Reservoir
Peak discharge	=	1.85 cfs
Time to peak	=	15.40 hrs
Hyd. Volume	=	71,197 cuft

Hyd. No. 4

A-1 to Pond A

Hydrograph type	=	Reservoir
Peak discharge	=	1.85 cfs
Time to peak	=	15.40 hrs
Hyd. Volume	=	71,197 cuft

$\frac{0.77 + 0.03}{2}$ = 0.40 CFS AVERAGE RELEASE RATE OVER 24 HOURS < 0.84 CFS PERMITTED



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Prepared By: BDH
Checked By: JJS

For Detention Basin B:

Cpv - 24 Hour Detention of 1 Year-Storm

Performance Criteria Compliance:

CN= 86

$I_a = (200/CN) - 2$

I_a = 0.326

I_a/P= 0.11 P = 2.9 for the 1 Year Storm

T_c= 0.3333 hr

Per Exhibit 4-III of TR-55, q_u = 450 csm/in

Per Figure B.1 in Appendix B in NYS Design Manual for 24 hour storm:

q_o/q_i = 0.041

$V_s/V_r = 0.682-1.43(q_o/q_i)+1.64(q_o/q_i)^2-0.804(q_o/q_i)^3$

V_s/V_r = 0.626

$V_s = Cp_v$ Vr = Volume of Runoff

$$V_s = \frac{(V_s/V_r)QA}{12}$$

A= 19.06 acres

$$Q = \frac{(P-I_a)^2}{P+4I_a}$$

Q= 1.58 inches

V_s = **1.57 ac-ft** V_s= 68,316 cf of overall storage is required.

Average Release Rate over 24 hours:

$$= \frac{(V_s)(43560 \text{ ft/ac})}{(24\text{hr})(3600 \text{ sec/hr})}$$

= **0.79 cfs** 0.79 cfs is the allowable average release rate for the 1 year, 24 hour storm event

Hydrograph Plot

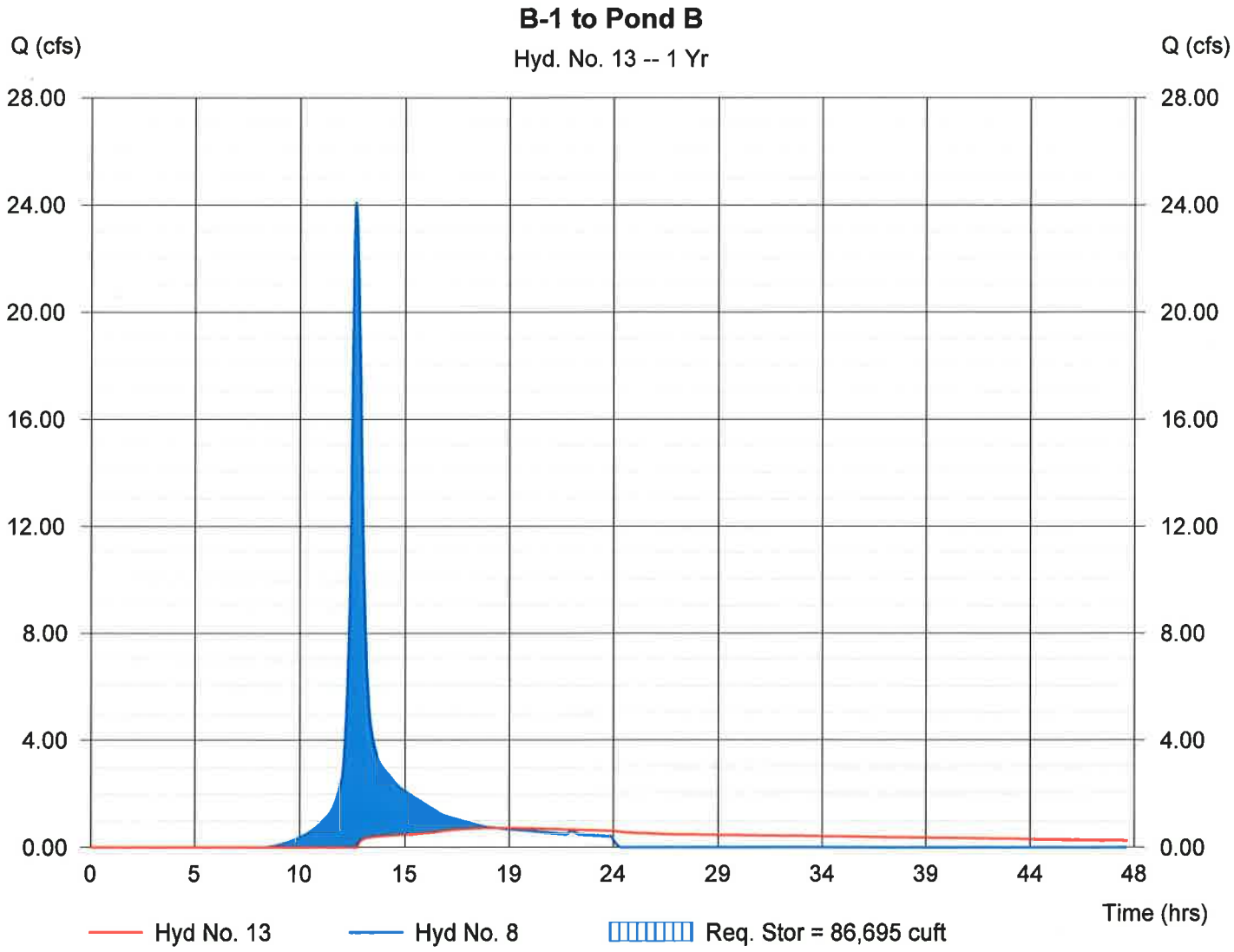
Hydraflow Hydrographs by Intelisolve | Tuesday, Dec 7 2010, 4:10 PM

Hyd. No. 13

B-1 to Pond B

Hydrograph type	= Reservoir	Peak discharge	= 0.71 cfs
Storm frequency	= 1 yrs	Time interval	= 1 min
Inflow hyd. No.	= 8	Max. Elevation	= 496.20 ft
Reservoir name	= Detention Pond B	Max. Storage	= 86,695 cuft

Storage Indication method used. | Hydrograph Volume = 59,044 cuft



Multi-Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Hyd. No. 13

B-1 to Pond B

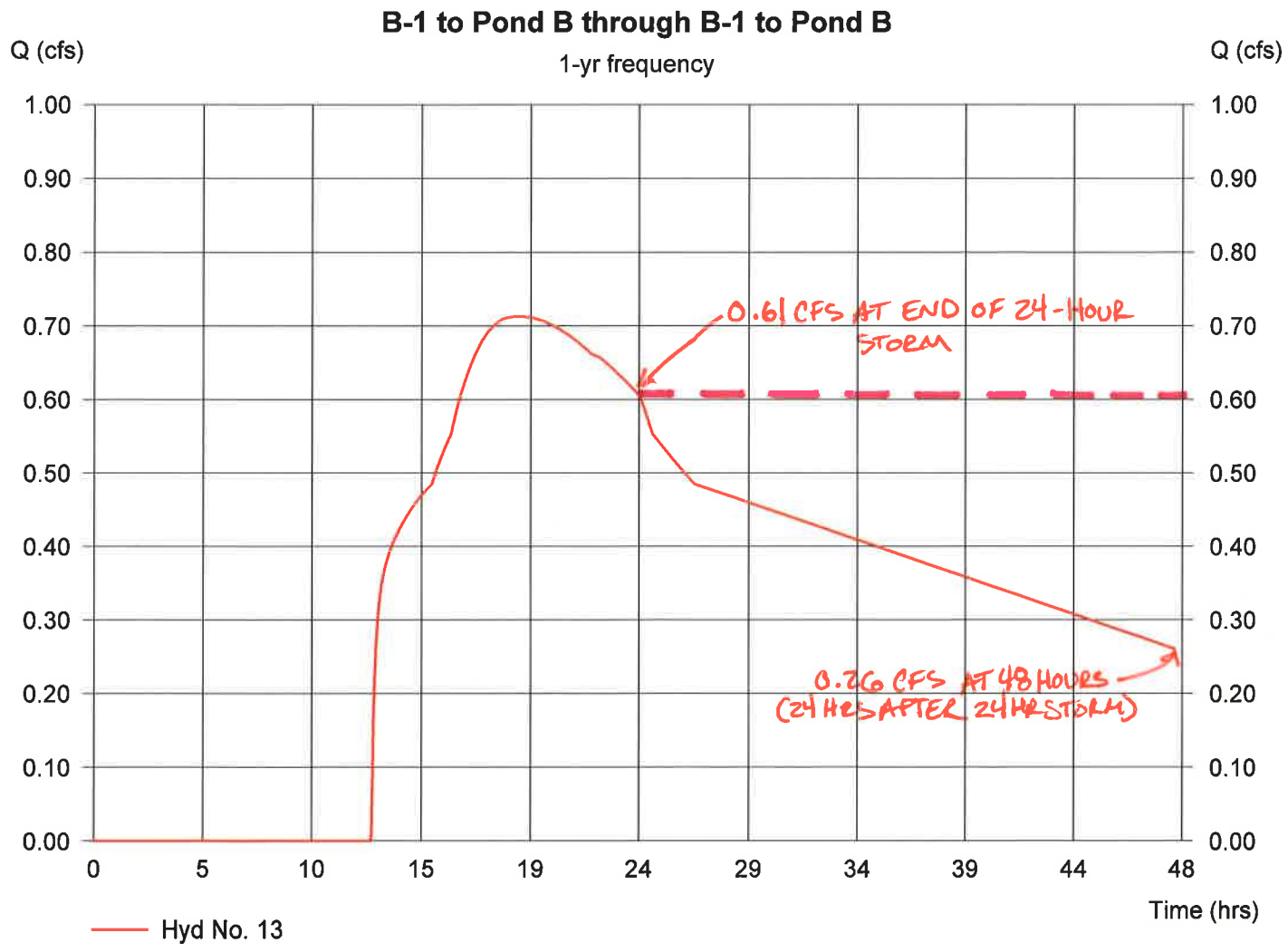
Hydrograph type	=	Reservoir
Peak discharge	=	0.71 cfs
Time to peak	=	18.83 hrs
Hyd. Volume	=	59,044 cuft

Hyd. No. 13

B-1 to Pond B

Hydrograph type	=	Reservoir
Peak discharge	=	0.71 cfs
Time to peak	=	18.83 hrs
Hyd. Volume	=	59,044 cuft

$\frac{0.61 + 0.26}{2}$ = 0.44 CFS AVERAGE RELEASE RATE < 0.79 CFS PERMITTED OVER 24 HOURS



LANGAN
ENGINEERING & ENVIRONMENTAL SERVICES

Prepared By: BDH
Checked By: JJS

For Detention Basin C:

Cpv - 24 Hour Detention of 1 Year-Storm

Performance Criteria Compliance:

CN= 83

$I_a = (200/CN) - 2$

I_a = 0.410

I_a/P= 0.14 P = 2.9 for the 1 Year Storm

T_c= 0.2000 hr

Per Exhibit 4-III of TR-55, q_u = 525 csm/in

Per Figure B.1 in Appendix B in NYS Design Manual for 24 hour storm:

q_o/q_i = 0.033

$V_s/V_r = 0.682-1.43(q_o/q_i)+1.64(q_o/q_i)^2-0.804(q_o/q_i)^3$

V_s/V_r = 0.637

$V_s = Cp_v$ Vr = Volume of Runoff

$$V_s = \frac{(V_s/V_r)QA}{12}$$

A= 9.05 acres

$$Q = \frac{(P-I_a)^2}{P+4I_a}$$

Q= 1.37 inches

V_s = **.66 ac-ft** V_s= 28,576 cf of overall storage is required.

Average Release Rate over 24 hours:

$$= \frac{(V_s)(43560 \text{ ft/ac})}{(24\text{hr})(3600 \text{ sec/hr})}$$

= **0.33 cfs** 0.33 cfs is the allowable average release rate for the 1 year, 24 hour storm event

Hydrograph Plot

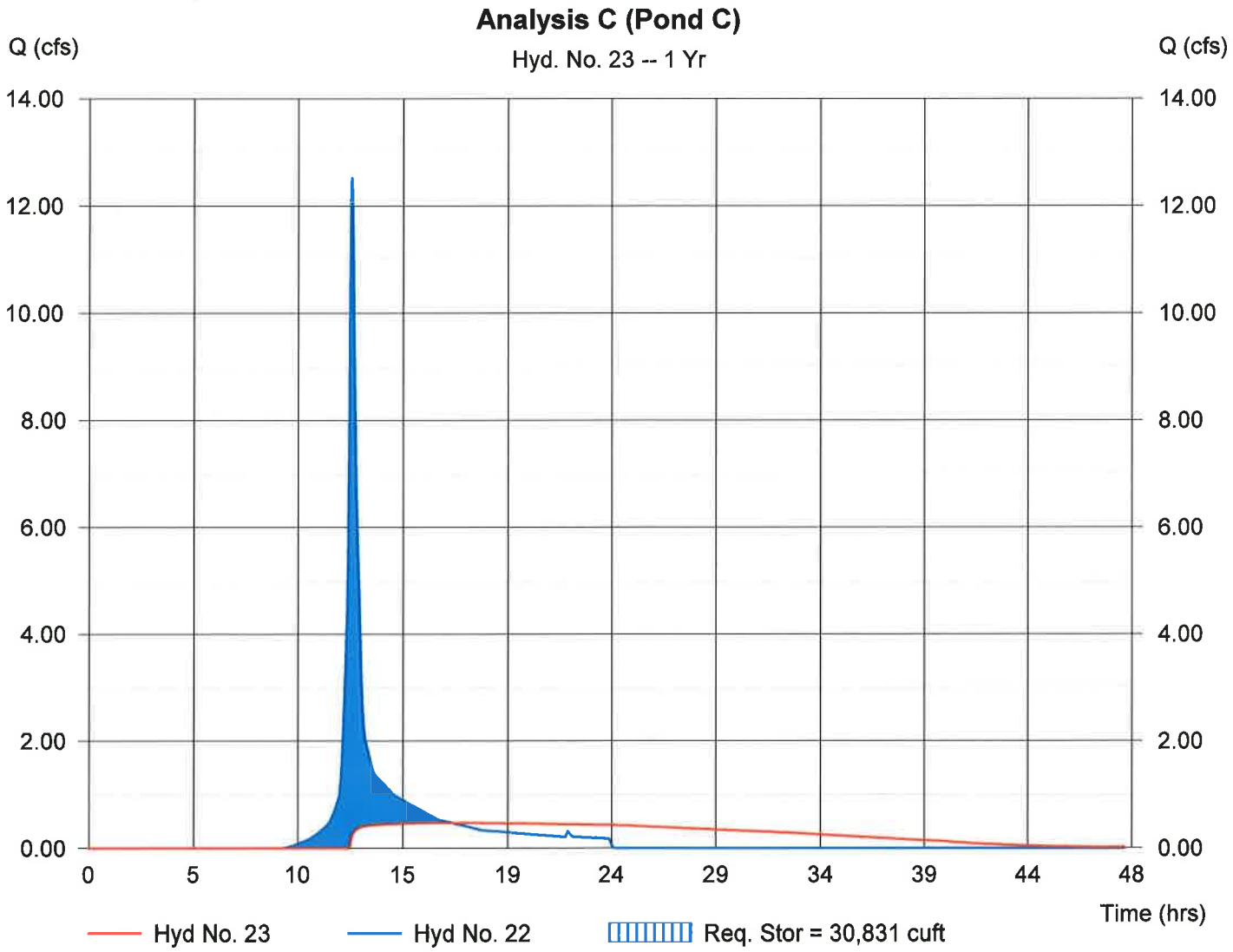
Hydraflow Hydrographs by Intelisolve | Tuesday, Dec 7 2010, 4:10 PM

Hyd. No. 23

Analysis C (Pond C)

Hydrograph type	= Reservoir	Peak discharge	= 0.47 cfs
Storm frequency	= 1 yrs	Time interval	= 1 min
Inflow hyd. No.	= 22	Max. Elevation	= 522.45 ft
Reservoir name	= Detention Pond C	Max. Storage	= 30,831 cuft

Storage Indication method used. | Hydrograph Volume = 36,892 cuft



Multi-Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Hyd. No. 23

Analysis C (Pond C)

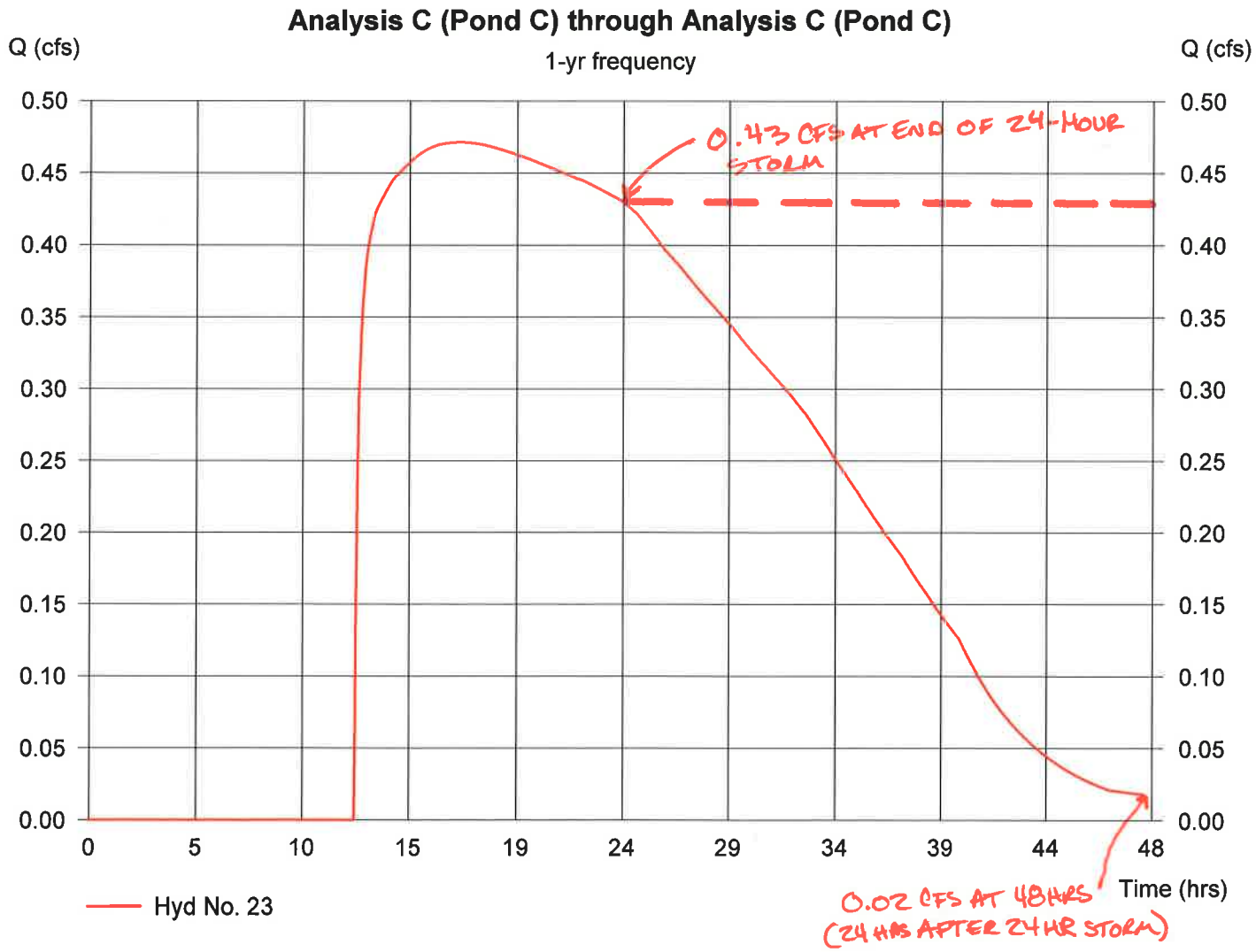
Hydrograph type	=	Reservoir
Peak discharge	=	0.47 cfs
Time to peak	=	16.78 hrs
Hyd. Volume	=	36,892 cuft

Hyd. No. 23

Analysis C (Pond C)

Hydrograph type	=	Reservoir
Peak discharge	=	0.47 cfs
Time to peak	=	16.78 hrs
Hyd. Volume	=	36,892 cuft

$\frac{0.43 + 0.02}{2}$ = 0.22 CFS AVERAGE RELEASE RATE < 0.33 CFS PERMITTED OVER 24 HOURS



APPENDIX D

EXCERPTS FROM THE NEW YORK STATE STORMWATER MANAGEMENT DESIGN MANUAL

Chapter 4: Unified Stormwater Sizing Criteria

Section 4.1 Introduction

This chapter presents a unified approach for sizing green infrastructure for runoff reduction and SMPs to meet pollutant removal goals, reduce channel erosion, prevent overbank flooding, and help control extreme floods. For a summary, please consult Table 4.1 below. The remaining sections describe the sizing criteria in detail and present guidance on how to properly compute and apply the required reduction and storage volumes.

Table 4.1 New York Stormwater Sizing Criteria[1]

Water Quality Volume (WQv)	**90% Rule:** WQ_v(acre-feet) = [(P)(Rv)(A)] /12 Rv = 0.05+0.009(I) I = Impervious Cover (Percent) Minimum Rv = 0.2 if WQv > RRv P(inch) = 90% Rainfall Event Number (See Figure 4.1)[2] A = site area in acres
Runoff Reduction Volume(RRv)	RRv (acre-feet)= Reduction of the total WQv by application of green infrastructure techniques and SMPs to replicate pre-development hydrology. The minimum required RRv is defined as the Specified Reduction Factor (S), provided objective technical justification is documented.
Channel Protection Volume(Cpv)	**Default Criterion:** Cp_v(acre-feet)= 24 hour extended detention of post-developed 1-year, 24-hour storm event; remaining after runoff reduction. Where site conditions allow, Runoff reduction of total CPv , is encouraged **Option for Sites Larger than 50 Acres:** Distributed Runoff Control - geomorphic assessment to determine the bankfull channel characteristics and thresholds for channel stability and bedload movement.
Overbank Flood (Q_p)	Q_p(cfs)=Control the peak discharge from the 10-year storm to 10-year predevelopment rates.
Extreme Storm (Q_f)	Q_f(cfs)=Control the peak discharge from the 100-year storm to 100-year predevelopment rates. Safely pass the 100-year storm event.
Alternative method (WQv):	Design, construct, and maintain systems sized to capture, reduce, reuse, treat, and manage rainfall on-site, and prevent the off-site discharge of the precipitation from all rainfall events less than or equal to the 95th percentile rainfall event, computed by an acceptable continuous simulation model.

[1] *Channel protection, overbank flood, and extreme storm requirements may be waived in some instances if the conditions specified in this chapter are met. For SMPs involving dams, follow Appendix A, Guidelines for Design of Dams for safe passage of the design flood.*

[2] *For required sizing criteria in redevelopment projects and phosphorus limited watersheds refer to Chapters 9 and 10, respectively.*

Section 4.2 Water Quality Volume (WQ_v)

The Water Quality Volume (denoted as the WQ_v) is designed to improve water quality sizing to capture and treat 90% of the average annual stormwater runoff volume. The WQ_v is directly related to the amount of impervious cover created at a site. Contour lines of the 90% rainfall event are presented in Figure 4.1.

The following equation can be used to determine the water quality storage volume WQ_v (in acre-feet of storage):

$$WQ_v = \frac{(P)\,(R_v)(A)}{12}$$

where:
WQ_v = water quality volume (in acre-feet)
P = 90% Rainfall Event Number (see Figure 4.1)
R_v = 0.05 + 0.009(I), where I is percent impervious cover
A = site area in acres (Contributing area)

A minimum Rv of 0.2 will be applied to regulated sites.

Figure 4.1 90% Rainfall in New York State (NYSDEC, 2000)

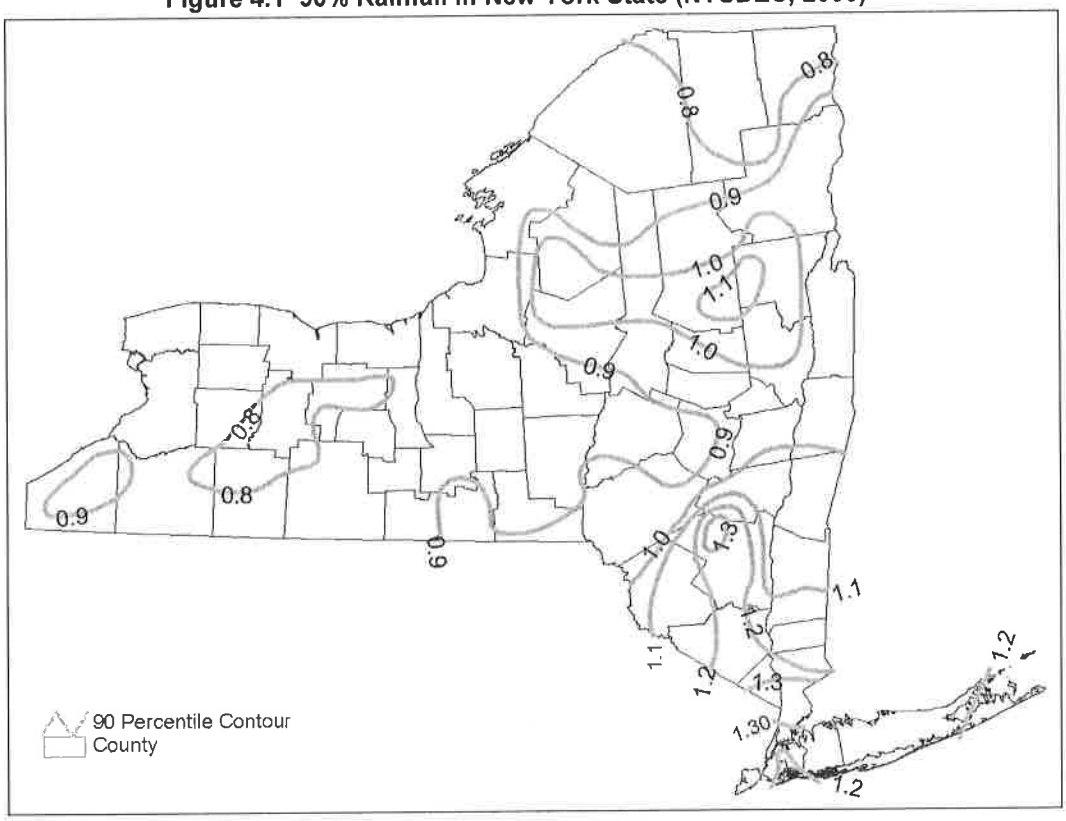
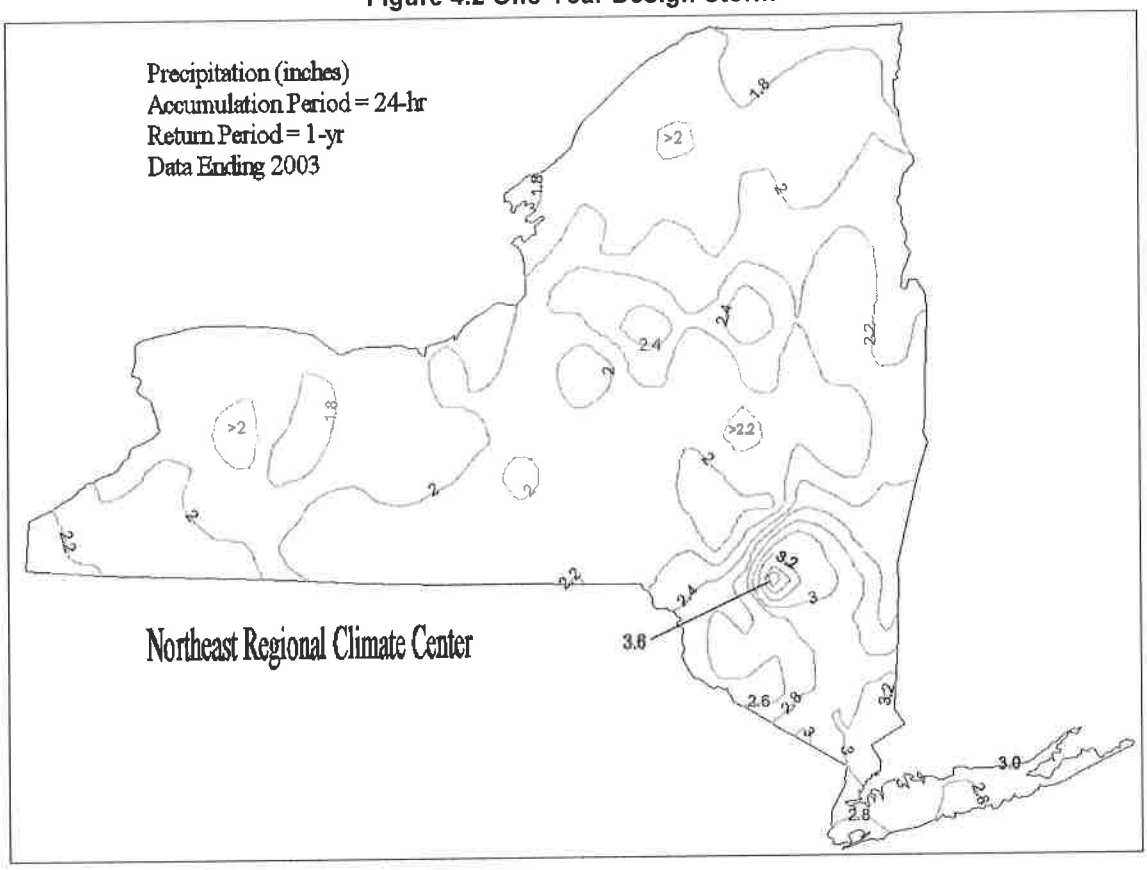


Figure 4.2 One-Year Design Storm



Section 4.5 Overbank Flood Control Criteria (Q_p)

The primary purpose of the overbank flood control sizing criterion is to prevent an increase in the frequency and magnitude of out-of-bank flooding generated by urban development (i.e., flow events that exceed the bankfull capacity of the channel, and therefore must spill over into the floodplain).

Overbank control requires storage to attenuate the post development 10-year, 24-hour peak discharge rate (Q_p) to predevelopment rates.

The overbank flood control requirement (Q_p) does not apply in certain conditions, including:

- The site discharges directly tidal waters or fifth order (fifth downstream) or larger streams. Refer to Section 4.3 for instructions.
- A downstream analysis reveals that overbank control is not needed (see section 4.10).

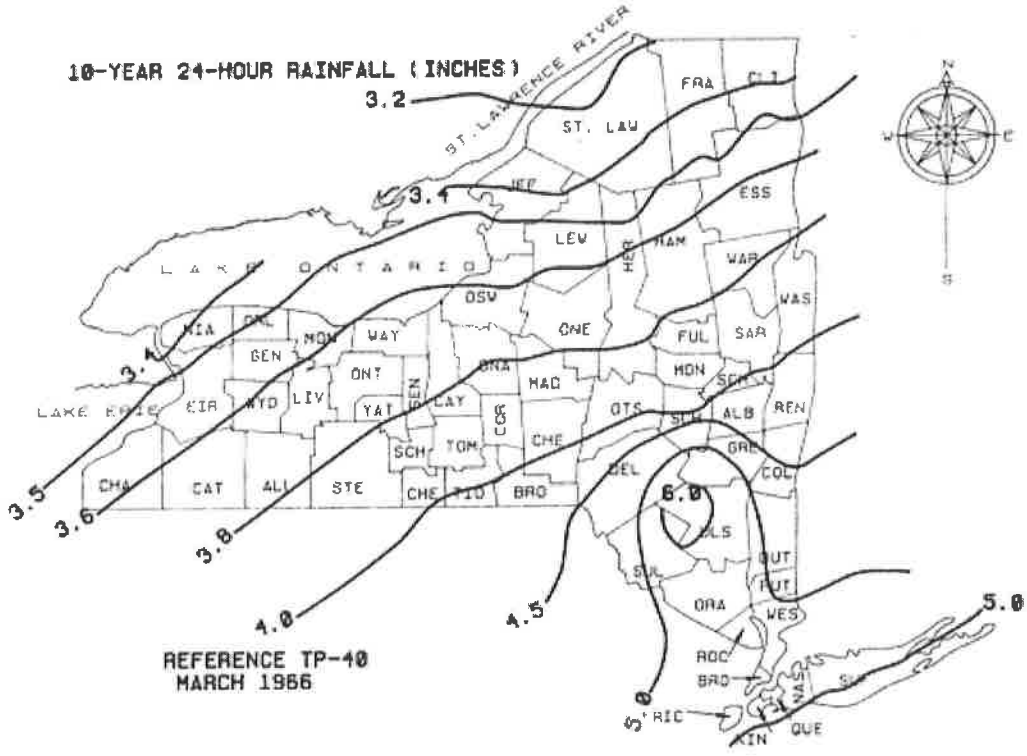
Basis for Design of Overbank Flood Control

When addressing the overbank flooding design criteria, the following represent the minimum basis for design:

- TR-55 and TR-20 (or approved equivalent) will be used to determine peak discharge rates.
- When the predevelopment land use is agriculture, the curve number for the pre-developed condition shall be "taken as meadow".
- Off-site areas should be modeled as "present condition" for the 10-year storm event.
- Figure 4.3 indicates the depth of rainfall (24 hour) associated with the 10-year storm event throughout the State of New York.

  The length of overland flow used in t_c calculations is limited to no more than 150 feet for predevelopment conditions and 100 feet for post development conditions. On areas of extremely flat terrain (<1% average slope), this maximum distance is extended to 250 feet for predevelopment conditions and 150 feet for post development conditions.

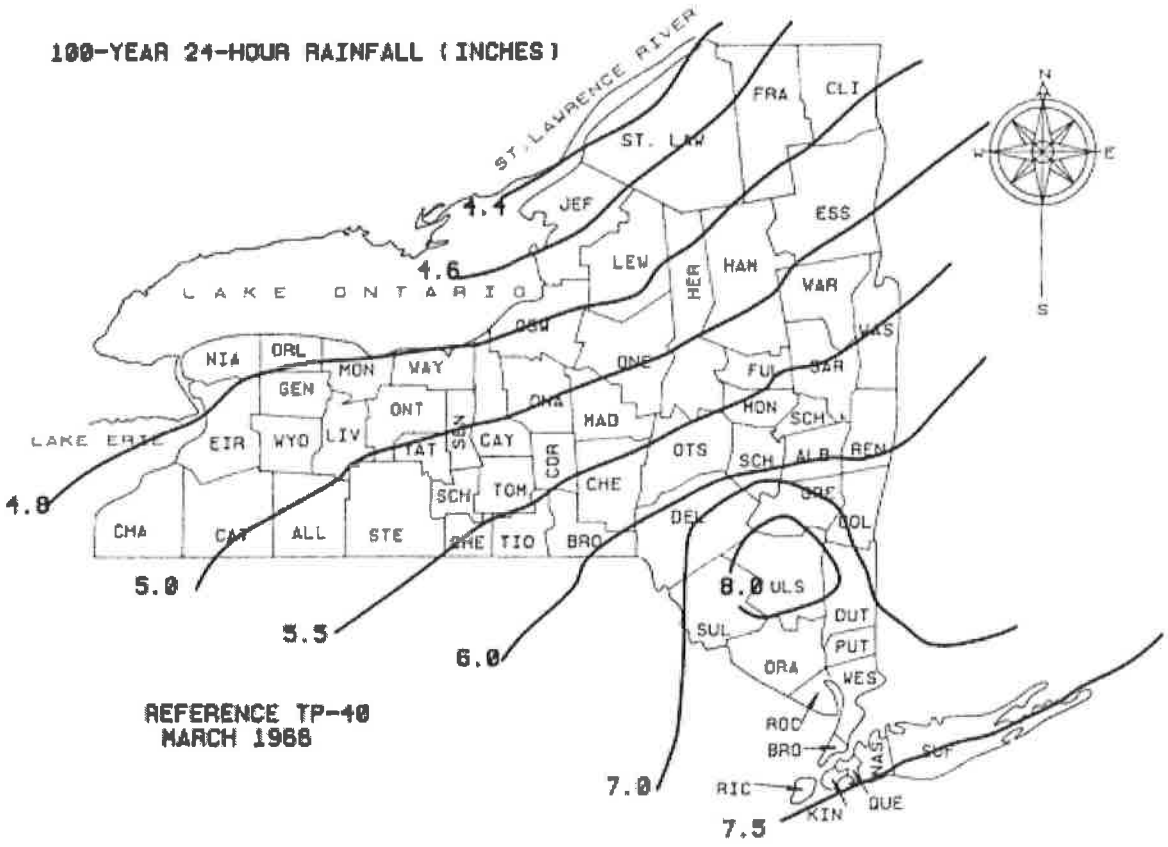
Figure 4.3 10-Year Design Storm



under current conditions.

- When determining storage required to safely pass the 100-year flood, model off-site areas under ultimate conditions.

Figure 4.4 100-Year Design Storm



Section 4.8 Conveyance Criteria

In addition to the stormwater treatment volumes described above, this manual also provides guidance on safe and non-erosive conveyance to, from, and through SMPs. Typically, the targeted storm frequencies for conveyance are the two-year and ten-year events. The two-year event is used to ensure non-erosive flows through roadside swales, overflow channels, pond pilot channels, and over berms within practices. Figure 4.5 presents rainfall depths for the two-year, 24-hour storm event throughout New York State. The 10-year storm is typically used as a target sizing for outfalls, and as a safe conveyance criterion for open channel practices and overflow channels. The 10-year storm is recommended as a minimum sizing criterion for closed conveyance systems. Note that some agencies or municipalities may use a different design storm for this purpose.

Figure 4.5 2-Year Design Storm

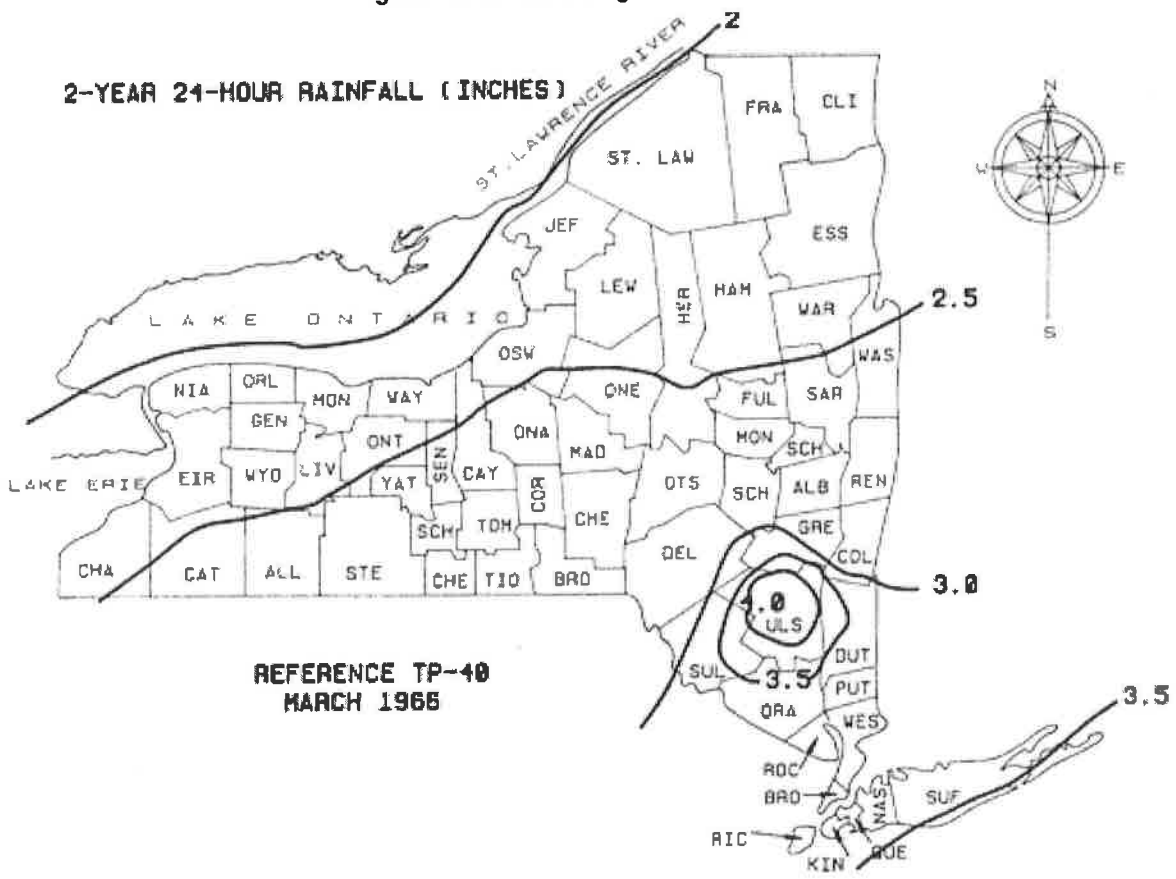


Table 5.7 Green Infrastructure Techniques for Runoff Reduction	
Practice	**Description**
Conservation of Natural Areas	Retain the pre-development hydrologic and water quality characteristics of undisturbed natural areas, stream and wetland buffers by restoring and/or permanently conserving these areas on a site.
Sheetflow to Riparian Buffers or Filter Strips	Undisturbed natural areas such as forested conservation areas and stream buffers or vegetated filter strips and riparian buffers can be used to treat and control stormwater runoff from some areas of a development project.
Vegetated Swale	The natural drainage paths, or properly designed vegetated channels, can be used instead of constructing underground storm sewers or concrete open channels to increase time of concentration, reduce the peak discharge, and provide infiltration.
Tree Planting / Tree Pit	Plant or conserve trees to reduce stormwater runoff, increase nutrient uptake, and provide bank stabilization. Trees can be used for applications such as landscaping, stormwater management practice areas, conservation areas and erosion and sediment control.
Disconnection of Rooftop Runoff	Direct runoff from residential rooftop areas and upland overland runoff flow to designated pervious areas to reduce runoff volumes and rates.
Stream Daylighting	Stream Daylight previously-culverted/piped streams to restore natural habitats, better attenuate runoff by increasing the storage size, promoting infiltration, and help reduce pollutant loads.
Rain Gardens	Manage and treat small volumes of stormwater runoff using a conditioned planting soil bed and planting materials to filter runoff stored within a shallow depression.
Green Roofs	Capture runoff by a layer of vegetation and soil installed on top of a conventional flat or sloped roof. The rooftop vegetation allows evaporation and evapotranspiration processes to reduce volume and discharge rate of runoff entering conveyance system.
Stormwater Planters	Small landscaped stormwater treatment devices that can be designed as infiltration or filtering practices. Stormwater planters use soil infiltration and biogeochemical processes to decrease stormwater quantity and improve water quality.
Rain Barrels and /Cisterns	Capture and store stormwater runoff to be used for irrigation systems or filtered and reused for non-contact activities.
Porous Pavement	Pervious types of pavements that provide an alternative to conventional paved surfaces, designed to infiltrate rainfall through the surface, thereby reducing stormwater runoff from a site and providing some pollutant uptake in the underlying soils. When designed in accordance with the design elements in section 5.3.11, the WQv for the contributing drainage area is applied towards the runoff reduction

Table 3.1 Green Infrastructure Planning General Categories and Specific Practices		
Group	**Practice**	**Description**
Preservation of Natural Resources	Preservation of Undisturbed Areas	Delineate and place into permanent conservation easement undisturbed forests, native vegetated areas, riparian corridors, wetlands, and natural terrain.
	Preservation of Buffers	Define, delineate and place in permanent conservation easement naturally vegetated buffers along perennial streams, rivers, shorelines and wetlands.
	Reduction of Clearing and Grading	Limit clearing and grading to the minimum amount needed for roads, driveways, foundations, utilities and stormwater management facilities.
	Locating Development in Less Sensitive Areas	Avoid sensitive resource areas such as floodplains, steep slopes, erodible soils, wetlands, mature forests and critical habitats by locating development to fit the terrain in areas that will create the least impact.
	Open Space Design	Use clustering, conservation design or open space design to reduce impervious cover, preserve more open space and protect water resources.
	Soil Restoration	Restore the original properties and porosity of the soil by deep till and amendment with compost to reduce the generation of runoff and enhance the runoff reduction performance of practices such as downspout disconnections, grass channels, filter strips, and tree clusters.
Reduction of Impervious Cover	Roadway Reduction	Minimize roadway widths and lengths to reduce site impervious area
	Sidewalk Reduction	Minimize sidewalk lengths and widths to reduce site impervious area
	Driveway Reduction	Minimize driveway lengths and widths to reduce site impervious area
	Cul-de-sac Reduction	Minimize the number of cul-de-sacs and incorporate landscaped areas to reduce their impervious cover.
	Building Footprint Reduction	Reduce the impervious footprint of residences and commercial buildings by using alternate or taller buildings while maintaining the same floor to area ratio.
	Parking Reduction	Reduce imperviousness on parking lots by eliminating unneeded spaces, providing compact car spaces and efficient parking lanes, minimizing stall dimensions, using porous pavement surfaces in overflow parking areas, and using multi-storied parking decks where appropriate.

Table 3.2 Green Infrastructure Techniques Acceptable for Runoff Reduction

Group	Practice	Description
Runoff Reduction Techniques	Conservation of natural areas	Retain the pre-development hydrologic and water quality characteristics of undisturbed natural areas, stream and wetland buffers by restoring and/or permanently conserving these areas on a site.
	Sheetflow to riparian buffers or filter strips	Undisturbed natural areas such as forested conservation areas and stream buffers or vegetated filter strips and riparian buffers can be used to treat and control stormwater runoff from some areas of a development project.
	Vegetated open swale	The natural drainage paths, or properly designed vegetated channels, can be used instead of constructing underground storm sewers or concrete open channels to increase time of concentration, reduce the peak discharge, and provide infiltration.
	Tree planting / tree box	Plant or conserve trees to reduce stormwater runoff, increase nutrient uptake, and provide bank stabilization. Trees can be used for applications such as landscaping, stormwater management practice areas, conservation areas and erosion and sediment control.
	Disconnection of rooftop runoff	Direct runoff from residential rooftop areas and upland overland runoff flow to designated pervious areas to reduce runoff volumes and rates.
	Stream daylighting for redevelopment projects	Stream Daylight previously-culverted/piped streams to restore natural habitats, better attenuate runoff by increasing the storage size, promoting infiltration, and help reduce pollutant loads.
	Rain garden	Manage and treat small volumes of stormwater runoff using a conditioned planting soil bed and planting materials to filter runoff stored within a shallow depression.
	Green roof	Capture runoff by a layer of vegetation and soil installed on top of a conventional flat or sloped roof. The rooftop vegetation allows evaporation and evapotranspiration processes to reduce volume and discharge rate of runoff entering conveyance system.
	Stormwater planter	Small landscaped stormwater treatment devices that can be designed as infiltration or filtering practices. Stormwater planters use soil infiltration and biogeochemical processes to decrease stormwater quantity and improve water quality.
	Rain tank/Cistern	Capture and store stormwater runoff to be used for irrigation systems or filtered and reused for non-contact activities.
	Porous Pavement	Pervious types of pavements that provide an alternative to conventional paved surfaces, designed to infiltrate rainfall through the surface, thereby reducing stormwater runoff from a site and providing some pollutant uptake in the underlying soils.

APPENDIX H

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM FOR CONSTRUCTION ACTIVITIES

CONSTRUCTION SITE LOG BOOK

Table of Contents

Properly completing forms such as those contained in Appendix H meet the inspection requirement of NYS-DEC SPDES GP for Construction Activities. Completed forms shall be kept on site at all times and made available to authorities upon request.

I. PRE-CONSTRUCTION MEETING DOCUMENTS

Project Name _____

Permit No. _____ **Date of Authorization** _____

Name of Operator _____

Prime Contractor _____

a. Preamble to Site Assessment and Inspections

The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified professional[1] conduct an assessment of the site prior to the commencement of construction[2] and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements.

When construction starts, site inspections shall be conducted by the qualified professional at least every 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater (Construction Duration Inspections). The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request. The Operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis (Monthly Summary Report).

The operator shall also prepare a written summary of compliance with this general permit at a minimum frequency of every three months (Operator's Compliance Response Form), while coverage exists. The summary should address the status of achieving each component of the SWPPP.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 "Qualified Professional means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed engineer or someone working under the direction and supervision of a licensed engineer (person must have experience in the principles and practices of erosion and sediment control).

2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.

3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. Operators Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. Further, I hereby certify that the SWPPP meets all Federal, State, and local erosion and sediment control requirements. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law.

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

c. Qualified Professional's Credentials & Certification

"I hereby certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project and that the appropriate erosion and sediment controls described in the SWPPP and as described in the following Pre-construction Site Assessment Checklist have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction."

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

d. Pre-construction Site Assessment Checklist
(NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes No NA

[ ] [ ] [ ] Has a Notice of Intent been filed with the NYS Department of Conservation?
[ ] [ ] [ ] Is the SWPPP on-site? Where?_____
[ ] [ ] [ ] Is the Plan current? What is the latest revision date?_____
[ ] [ ] [ ] Is a copy of the NOI (with brief description) onsite? Where?_____
[ ] [ ] [ ] Have all contractors involved with stormwater related activities signed a contractor's certification?

2. Resource Protection

Yes No NA

[ ] [ ] [ ] Are construction limits clearly flagged or fenced?
[ ] [ ] [ ] Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
[ ] [ ] [ ] Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes No NA

[ ] [ ] [ ] Clean stormwater runoff has been diverted from areas to be disturbed.
[ ] [ ] [ ] Bodies of water located either on site or in the vicinity of the site have been identified and protected.
[ ] [ ] [ ] Appropriate practices to protect on-site or downstream surface water are installed.
[ ] [ ] [ ] Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
[ ] [ ] [ ] Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
[ ] [ ] [ ] Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Perimeter Sediment Controls

Yes No NA

[ ] [ ] [ ] Silt fence material and installation comply with the standard drawing and specifications.
[ ] [ ] [ ] Silt fences are installed at appropriate spacing intervals
[ ] [ ] [ ] Sediment/detention basin was installed as first land disturbing activity.
[ ] [ ] [ ] Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA

[ ] [ ] [ ] The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
[ ] [ ] [ ] The plan is contained in the SWPPP on page _____
[ ] [ ] [ ] Appropriate materials to control spills are onsite. Where? _____

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:
Inspection Forms will be filled out during the entire construction phase of the project.
Required Elements:

(1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

(2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

(3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

(4) Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

(5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass
water; and

(6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

SITE PLAN/SKETCH

_____ _____

Inspector (print name) **Date of Inspection**

_____ _____

Qualified Professional (print name) **Qualified Professional Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality

Yes No NA
[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions?
[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease?
[ ] [ ] [ ] All disturbance is within the limits of the approved plans.
[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions
Yes No NA
[ ] [ ] [ ] Is construction site litter and debris appropriately managed?
[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
[ ] [ ] [ ] Is construction impacting the adjacent property?
[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing
Yes No NA
[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.
[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.
[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?
[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

Runoff Control Practices

1. Excavation Dewatering
Yes No NA
[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

2. Level Spreader
Yes No NA
[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales
Yes No NA
[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.
[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

Runoff Control Practices (continued)

4. Stone Check Dam

Yes No NA

[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes No NA

[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation

Yes No NA

[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control Practices

1. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence

Yes No NA

[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation is ___% of design capacity.

Sediment Control Practices (continued)

3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)

Yes No NA

[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation ___% of design capacity.

4. Temporary Sediment Trap

Yes No NA

[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.

Sediment accumulation is ___% of design capacity.

5. Temporary Sediment Basin

Yes No NA

[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.

Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design.
Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS

b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:
1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
   a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
   b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

III. Monthly Summary of Site Inspection Activities

Name of Permitted Facility:	Today's Date:	Reporting Month:
Location:	Permit Identification #:	
Name and Telephone Number of Site Inspector:		

Date of Inspection	Regular / Rainfall based Inspection	Name of Inspector	Items of Concern

Owner/Operator Certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

Signature of Permittee or Duly Authorized Representative

Name of Permittee or Duly Authorized Representative Date

Duly authorized representatives must have written authorization, submitted to DEC, to sign any permit documents.

Stormwater Pond/Wetland Operation, Maintenance and Management Inspection Checklist

Project _____
Location: _____
Site Status: _____

Date: _____
Time: _____

Inspector: _____

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
1. Embankment and emergency spillway (Annual, After Major Storms)		
1. Vegetation and ground cover adequate		
2. Embankment erosion		
3. Animal burrows		
4. Unauthorized planting		
5. Cracking, bulging, or sliding of dam		
a. Upstream face		
b. Downstream face		
c. At or beyond toe		
downstream		
upstream		
d. Emergency spillway		
6.Pond, toe & chimney drains clear and functioning		
7.Seeps/leaks on downstream face		
8.Slope protection or riprap failure		
9. Vertical/horizontal alignment of top of dam "As-Built"		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
10. Emergency spillway clear of obstructions and debris		
11. Other (specify)		
2. Riser and principal spillway (Annual)		
Type: Reinforced concrete _____ Corrugated pipe _____ Masonry _____ 1. Low flow orifice obstructed		
2. Low flow trash rack. a. Debris removal necessary		
b. Corrosion control		
3. Weir trash rack maintenance a. Debris removal necessary		
b. corrosion control		
4. Excessive sediment accumulation insider riser		
5. Concrete/masonry condition riser and barrels a. cracks or displacement		
b. Minor spalling (<1")		
c. Major spalling (rebars exposed)		
d. Joint failures		
e. Water tightness		
6. Metal pipe condition		
7. Control valve a. Operational/exercised		
b. Chained and locked		
8. Pond drain valve a. Operational/exercised		
b. Chained and locked		
9. Outfall channels functioning		
10. Other (specify)		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
3. Permanent Pool (Wet Ponds) (monthly)		
1. Undesirable vegetative growth		
2. Floating or floatable debris removal required		
3. Visible pollution		
4. Shoreline problem		
5. Other (specify)		
4. Sediment Forebays		
1.Sedimentation noted		
2. Sediment cleanout when depth < 50% design depth		
5. Dry Pond Areas		
1. Vegetation adequate		
2. Undesirable vegetative growth		
3. Undesirable woody vegetation		
4. Low flow channels clear of obstructions		
5. Standing water or wet spots		
6. Sediment and / or trash accumulation		
7. Other (specify)		
6. Condition of Outfalls (Annual , After Major Storms)		
1. Riprap failures		
2. Slope erosion		
3. Storm drain pipes		
4.Endwalls / Headwalls		
5. Other (specify)		
7. Other (Monthly)		
1. Encroachment on pond, wetland or easement area		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
2. Complaints from residents		
3.Aesthetics a. Grass growing required		
b. Graffiti removal needed		
c. Other (specify)		
4. Conditions of maintenance access routes.		
5. Signs of hydrocarbon build-up		
6. Any public hazards (specify)		
8. Wetland Vegetation (Annual)		
1. Vegetation healthy and growing Wetland maintaining 50% surface area coverage of wetland plants after the second growing season. (If unsatisfactory, reinforcement plantings needed)		
2. Dominant wetland plants: Survival of desired wetland plant species Distribution according to landscaping plan?		
3. Evidence of invasive species		
4. Maintenance of adequate water depths for desired wetland plant species		
5. Harvesting of emergent plantings needed		
6. Have sediment accumulations reduced pool volume significantly or are plants "choked" with sediment		
7. Eutrophication level of the wetland.		
8. Other (specify)		

Comments:

Actions to be Taken:

Infiltration Trench Operation, Maintenance, and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Trench surface clear of debris		
Inflow pipes clear of debris		
Overflow spillway clear of debris		
Inlet area clear of debris		
2. Sediment Traps or Forebays (Annual)		
Obviously trapping sediment		
Greater than 50% of storage volume remaining		
3. Dewatering (Monthly)		
Trench dewaters between storms		
4. Sediment Cleanout of Trench (Annual)		
No evidence of sedimentation in trench		
Sediment accumulation doesn't yet require cleanout		
5. Inlets (Annual)		

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
Good condition		
No evidence of erosion		
6. Outlet/Overflow Spillway (Annual)		
Good condition, no need for repair		
No evidence of erosion		
7. Aggregate Repairs (Annual)		
Surface of aggregate clean		
Top layer of stone does not need replacement		
Trench does not need rehabilitation		

Comments:

Actions to be Taken:

Sand/Organic Filter Operation, Maintenance and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Contributing areas clean of debris		
Filtration facility clean of debris		
Inlet and outlets clear of debris		
2. Oil and Grease (Monthly)		
No evidence of filter surface clogging		
Activities in drainage area minimize oil and grease entry		
3. Vegetation (Monthly)		
Contributing drainage area stabilized		
No evidence of erosion		
Area mowed and clipping removed		
4. Water Retention Where Required (Monthly)		
Water holding chambers at normal pool		
No evidence of leakage		
5. Sediment Deposition (Annual)		

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
Filter chamber free of sediments		
Sedimentation chamber not more than half full of sediments		
6. Structural Components (Annual)		
No evidence of structural deterioration		
Any grates are in good condition		
No evidence of spalling or cracking of structural parts		
7. Outlet/Overflow Spillway (Annual)		
Good condition, no need for repairs		
No evidence of erosion (if draining into a natural channel)		
8. Overall Function of Facility (Annual)		
Evidence of flow bypassing facility		
No noticeable odors outside of facility		

Comments:

Actions to be Taken:

Bioretention Operation, Maintenance and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Bioretention and contributing areas clean of debris		
No dumping of yard wastes into practice		
Litter (branches, etc.) have been removed		
2. Vegetation (Monthly)		
Plant height not less than design water depth		
Fertilized per specifications		
Plant composition according to approved plans		
No placement of inappropriate plants		
Grass height not greater than 6 inches		
No evidence of erosion		
3. Check Dams/Energy Dissipaters/Sumps (Annual, After Major Storms)		
No evidence of sediment buildup		

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
Sumps should not be more than 50% full of sediment		
No evidence of erosion at downstream toe of drop structure		
4. Dewatering (Monthly)		
Dewaters between storms		
No evidence of standing water		
5. Sediment Deposition (Annual)		
Swale clean of sediments		
Sediments should not be > 20% of swale design depth		
6. Outlet/Overflow Spillway (Annual, After Major Storms)		
Good condition, no need for repair		
No evidence of erosion		
No evidence of any blockages		
7. Integrity of Filter Bed (Annual)		
Filter bed has not been blocked or filled inappropriately		

Comments:

Actions to be Taken:

Open Channel Operation, Maintenance, and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY/ UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Contributing areas clean of debris		
2. Check Dams or Energy Dissipators (Annual, After Major Storms)		
No evidence of flow going around structures		
No evidence of erosion at downstream toe		
Soil permeability		
Groundwater / bedrock		
3. Vegetation (Monthly)		
Mowing done when needed		
Minimum mowing depth not exceeded		
No evidence of erosion		
Fertilized per specification		
4. Dewatering (Monthly)		
Dewaters between storms		

Section 4.2 Water Quality Volume (WQ_v)

The Water Quality Volume (denoted as the WQ_v) is designed to improve water quality sizing to capture and treat 90% of the average annual stormwater runoff volume. The WQ_v is directly related to the amount of impervious cover created at a site. Contour lines of the 90% rainfall event are presented in Figure 4.1.

The following equation can be used to determine the water quality storage volume WQ_v (in acre-feet of storage):

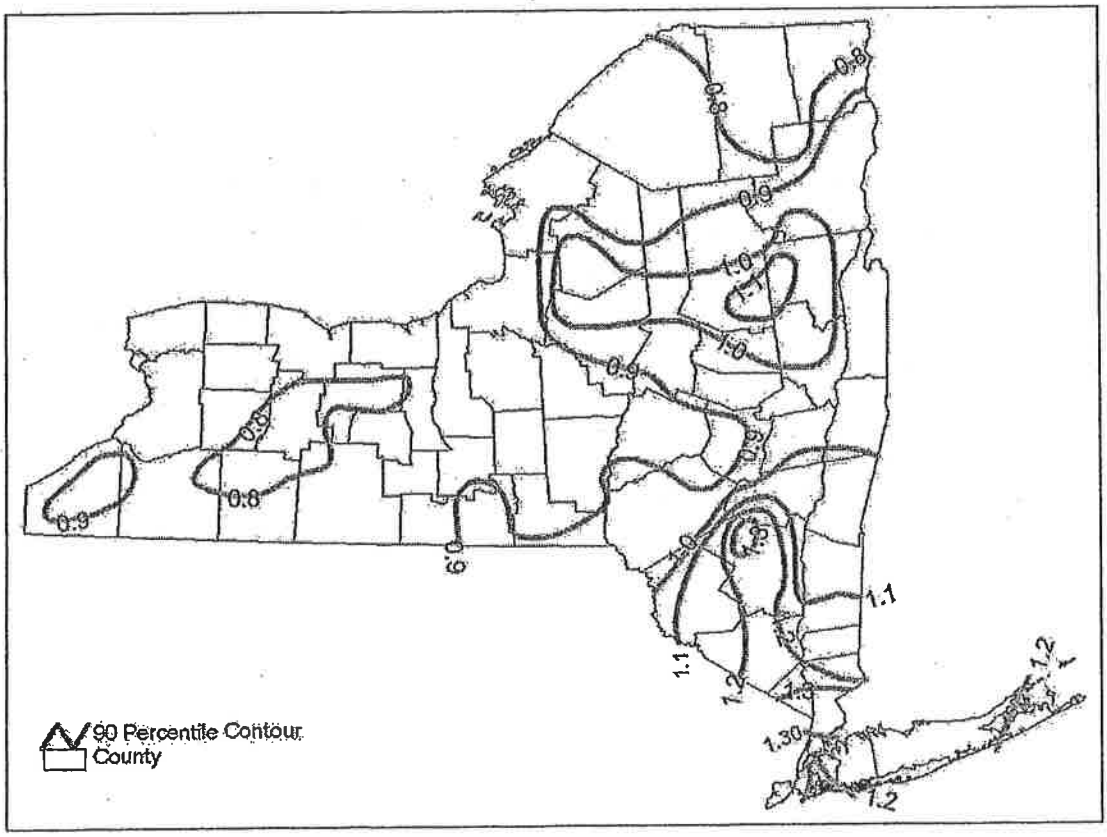
$$WQ_v = \frac{(P)(R_v)(A)}{12}$$

where:

WQ_v	= water quality volume (in acre-feet)
P	= 90% Rainfall Event Number (see Figure 4.1)
R_v	= 0.05 + 0.009(I), where I is percent impervious cover
A	= site area in acres (contributing area)

A minimum Rv of 0.2 will be applied to regulated sites.

Figure 4.1 90% Rainfall in New York State



MAINTENANCE ITEM	SATISFACTORY/ UNSATISFACTORY	COMMENTS
5. Sediment deposition (Annual)		
Clean of sediment		
6. Outlet/Overflow Spillway (Annual)		
Good condition, no need for repairs		
No evidence of erosion		

Comments:

Actions to be Taken:

APPENDIX E

BLANK NOTICE OF INTENT (NOI)

1358331598

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
- ○ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
- ○ OTHER

*note: for gas well drilling, non-high volume hydraulic fractured wells only

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, federal government 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

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? **If Yes, what is the acreage to be disturbed?** ☐☐☐☐.☐ ○ **Yes** ○ **No**

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**

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

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

○ Other

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. [N][Y][R][ ][ ][ ][ ][ ][ ]

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 [ ][ ] / [ ][ ] / [ ][ ][ ][ ]

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

from

CONSTRUCTION ACTIVITY

Permit No. GP-0-10-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70
of the Environmental Conservation Law

Effective Date: January 29, 2010 Expiration Date: January 28, 2015

William R. Adriance
Chief Permit Administrator

William R. Adriance — January 28, 2010
Authorized Signature — Date

Address: NYS DEC
Div. Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York's *State Pollutant Discharge Elimination System ("SPDES")* is a NPDES-approved program with permits issued in accordance with the *Environmental Conservation Law ("ECL")*.

This general permit ("permit") is issued pursuant to Article 17, Titles 7, 8 and Article 70 of the ECL. An *owner or operator* may obtain coverage under this permit by submitting a Notice of Intent ("NOI") to the Department. Copies of this permit and the NOI for New York are available by calling (518) 402-8109 or at any New York State Department of Environmental Conservation ("the Department") regional office (see Appendix G).They are also available on the Department's website at:

http://www.dec.ny.gov/

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a point source and therefore, pursuant to Article 17-0505 of the ECL, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. They cannot wait until there is an actual *discharge* from the construction site to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES

FROM CONSTRUCTION ACTIVITIES

TABLE OF CONTENTS

Part I. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application - This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State.*

3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land.

B. Maintaining Water Quality - It shall be a violation of this permit and the *ECL* for any *discharge* to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

C. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph D. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater discharges from *construction activities*.

(Part I. C)

3. Notwithstanding paragraphs C.1 and C.2 above, the following non-stormwater *discharges* may be authorized by this permit: discharges from fire fighting activities; fire hydrant flushings; waters to which cleansers or other components have not been added that are used to wash vehicles or control dust in accordance with the SWPPP, routine external building washdown which does not use detergents; pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning condensate; uncontaminated groundwater or spring water; uncontaminated discharges from construction site de-watering operations; and foundation or footing drains where flows are not contaminated with process materials such as solvents. For those entities required to obtain coverage under this permit, and who discharge as noted in this paragraph, and with the exception of flows from fire fighting activities, these discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with water quality standards in Part I.B.

D. Activities Which Are Ineligible for Coverage Under This General Permit - All of the following are **not** authorized by this permit:

1. *Discharges* after *construction activities* have been completed and the site has undergone *final stabilization*;

2. *Discharges* that are mixed with sources of non-stormwater other than those expressly authorized under subsection C.3. of this Part and identified in the SWPPP required by this permit;

3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII, subparagraph K of this permit;

4. *Discharges* from *construction activities* that adversely affect a listed, or proposed to be listed, endangered or threatened species, or its critical habitat;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;

6. *Construction activities* for residential, commercial and institutional projects that:

    a. are tributary to waters of the state classified as AA or AA-s; and

(Part I. D. 6)

b. disturb one or more acres of land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey for the County in which the disturbance will occur.

7. *Construction activities* for linear transportation projects and linear utility projects that:
   a. are tributary to waters of the state classified as AA or AA-s; and

   b. disturb two or more acres of land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey for the County in which the disturbance will occur.

8. *Construction activities* that adversely affect a property that is listed or is eligible for listing on the State or National Register of Historic Places (Note: includes Archeological sites), unless there are written agreements in place with the NYS Office of Parks, Recreation and Historic Preservation (OPRHP) or other governmental agencies to mitigate the effects, or there are local land use approvals evidencing the same.

Part II. OBTAINING PERMIT COVERAGE

A. Notice of Intent (NOI) Submittal

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a *regulated, traditional land use control MS4* must first develop a SWPPP in accordance with all applicable requirements of this permit and then submit a completed NOI form to the address below in order to be authorized to *discharge* under this permit. The NOI form shall be one which is associated with this permit, signed in accordance with Part VII.H. of this permit.

   NOTICE OF INTENT
   NYS DEC, Bureau of Water Permits
   625 Broadway, 4th Floor
   Albany, New York 12233-3505

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first develop a SWPPP in accordance with all applicable requirements of this permit and then have its SWPPP reviewed and accepted by the *MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the "MS4 SWPPP Acceptance" form signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4*, or by a duly authorized representative of that person, and then submit that form along with the NOI to the address referenced under "Notice of Intent (NOI) Submittal".

(Part II. A.2)

This requirement does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.E. (Change of Owner or Operator).

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.

4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

B. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.

2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:

    a. project review pursuant to the State Environmental Quality Review Act (SEQRA) have been satisfied, when SEQRA is applicable,

    b. where required, all necessary Department permits subject to the *Uniform Procedures Act (UPA)* (see 6 NYCRR Part 621) have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits must submit a preliminary SWPPP to the appropriate DEC Regional Office in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

    c. the final SWPPP has been prepared, and

    d. an NOI has been submitted to the Department in accordance with the requirements of this permit.

3. An *owner or operator* that has satisfied the requirements of Part II.B.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

(Part II. B. 3)

a. For *construction activities* that are not subject to the requirements of a *regulated, traditional land use control MS4*:

   i. Five (5) business days from the date the Department receives a complete NOI for *construction activities* with a SWPPP that has been prepared in conformance with the technical standards referenced in Parts III.B.1, 2 and/or 3, or

   ii. Sixty (60) business days from the date the Department receives a complete NOI for *construction activities* with a SWPPP that has not been prepared in conformance with the technical standards referenced in Parts III.B.1, 2 or 3.

b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

   i. Five (5) business days from the date the Department receives a complete NOI and signed "MS4 SWPPP Acceptance" form,

4. The Department may suspend or deny an *owner's or operator's* coverage under this permit if the Department determines that the SWPPP does not meet the permit requirements.

5. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department.

C. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination (NOT) has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4.

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-10-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form and inspection reports at the construction site until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department.

(Part II. C. 2)

The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the MS4 (provided the MS4 is not the *owner or operator* of the construction activity). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

    a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

    b. In areas where soil disturbance activity has been temporarily or permanently ceased, temporary and/or permanent soil stabilization measures shall be installed and/or implemented within seven (7) days from the date the soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control.

    c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

    d. The *owner or operator* shall install any additional site specific practices needed to protect water quality.

    e. The *owner or operator* shall include the requirements above in their SWPPP.

4. The Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements.

(Part II. C)

5. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4,* the *owner or operator* shall notify the *MS4* in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *MS4,* the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *MS4* prior to commencing construction of the post-construction stormwater management practice.

D. Permit Coverage for Discharges Authorized Under GP-0-08-001

1. Upon renewal of SPDES General Permit for Stormwater Discharges from Construction Activity (Permit No. GP-0-08-001), a*n owner or operator* of *construction activity* with coverage under GP-0-08-001, as of the effective date of GP-0-10-001, shall be authorized to *discharge* in accordance with GP-0-10-001 unless otherwise notified by the Department.

E. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.A.1.. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

   Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or operator* was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator.*

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity.*

(Part III. A)

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the pollutants in stormwater discharges and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.

3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.

4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP:

    a. whenever the current provisions prove to be ineffective in minimizing pollutants in stormwater *discharges* from the site;

    b. whenever there is a change in design, construction, or operation at the construction site that has or could have an effect on the discharge of pollutants; and

    c. to address issues or deficiencies identified during an inspection by the *qualified inspector,* the Department or other regulatory authority.

5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP.

(Part III. A. 6)

The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor.* The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

> "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 most current version 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. "

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the construction site. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

8. The SWPPP must include documentation supporting the determination of permit eligibility with regard to Part I.D.8. (Historic Places or Archeological Resource). At a minimum, the supporting documentation shall include the following:

(Part III. A. 8)

a. Information on whether the stormwater discharge or *construction activities* would have an effect on a property (historic or archeological resource) that is listed or eligible for listing on the State or National Register of Historic Places;

b. Results of historic resources screening determinations conducted. Information regarding the location of historic places listed, or eligible for listing, on the State or National Registers of Historic Places and areas of archeological sensitivity that may indicate the need for a survey can be obtained online by viewing the New York State Office of Parks, Recreation and Historic Places (OPRHP) online resources located on their web site at: http://nysparks.state.ny.us/shpo/online-tools/ (using The Geographic Information System for Archeology and National Register). OPRHP can also be contacted at: NYS OPRHP, State Historic Preservation Office, Peebles Island Resources Center, P.O. Box 189, Waterford, NY 12188-0189, phone: 518-237-8643;

c. A description of measures necessary to avoid or minimize adverse impacts on places listed, or eligible for listing, on the State or National Register of Historic Places. If the *owner or operator* fails to describe and implement such measures, the stormwater *discharge* is ineligible for coverage under this permit; and

d. Where adverse effects may occur, any written agreements in place with OPRHP or other governmental agency to mitigate those effects, or local land use approvals evidencing the same.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control. Where erosion and sediment control practices are not designed in conformance with this technical standard, the *owner or operator* must demonstrate equivalence to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:

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

(Part III. B. 1)

b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s), wetlands and drainage patterns that could be affected by the construction activity; existing and final slopes; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater discharge(s);

c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);

d. A construction phasing plan and sequence of operations describing the intended order of construction activities, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;

e. A description of the minimum erosion and sediment control practices to be installed or implemented for each construction activity that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;

f. A temporary and permanent soil stabilization plan that meets the requirements of the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of final stabilization;

g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;