Post-Development Hydrology

Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.2

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
2	SCS Runoff	-------	-------	0.057	-------	-------	0.254	0.404	-------	0.636	PRE Sub. 1
3	SCS Runoff	-------	-------	0.001	-------	-------	0.025	0.096	-------	0.262	PRE Sub. 2
4	SCS Runoff	-------	-------	0.003	-------	-------	0.063	0.308	-------	0.895	PRE Sub. 3
5	SCS Runoff	-------	-------	0.001	-------	-------	0.026	0.063	-------	0.143	PRE Sub. 4
6	SCS Runoff	-------	-------	0.000	-------	-------	0.006	0.030	-------	0.129	PRE Sub. 5
8	Combine	2, 3, 4, 5, 6,	-------	0.057	-------	-------	0.267	0.716	-------	1.825	Total Runoff PRE
10	SCS Runoff	-------	-------	0.000	-------	-------	0.000	0.001	-------	0.004	POST Subc. 1A
11	SCS Runoff	-------	-------	0.152	-------	-------	0.716	1.161	-------	1.849	POST Subc. 1B
12	Diversion1	11	-------	0.152	-------	-------	0.716	1.161	-------	1.815	1st Flush
13	Diversion2	11	-------	0.000	-------	-------	0.270	0.934	-------	1.849	Divert to Infil
14	Reservoir	13	-------	0.000	-------	-------	0.000	0.000	-------	0.000	Infil 1
15	Combine	10, 14	-------	0.000	-------	-------	0.000	0.001	-------	0.004	Total SUBC 1 POST
17	SCS Runoff	-------	-------	0.000	-------	-------	0.002	0.008	-------	0.041	POST Subc 2A
18	SCS Runoff	-------	-------	0.508	-------	-------	1.128	1.520	-------	2.085	POST Subc. 2B
19	Diversion1	18	-------	0.508	-------	-------	1.128	1.520	-------	1.264	1st Flush
20	Diversion2	18	-------	0.029	-------	-------	0.598	1.346	-------	2.085	Divert to Infil
21	Reservoir	20	-------	0.000	-------	-------	0.000	0.000	-------	0.000	Infil 2
22	Combine	17, 21	-------	0.000	-------	-------	0.002	0.008	-------	0.041	Total Subc 2 POST
24	SCS Runoff	-------	-------	0.000	-------	-------	0.012	0.047	-------	0.216	POST Subc 3A
25	SCS Runoff	-------	-------	0.000	-------	-------	0.051	0.240	-------	0.876	POST Subc 3B
26	Diversion1	25	-------	0.000	-------	-------	0.051	0.240	-------	0.876	1st Flush
27	Diversion2	25	-------	0.000	-------	-------	0.037	0.127	-------	0.737	Divert to Infil
28	Reservoir	27	-------	0.000	-------	-------	0.000	0.000	-------	0.000	Infil 3
29	Combine	24, 28	-------	0.000	-------	-------	0.012	0.047	-------	0.216	Total Subc 3 POST
31	SCS Runoff	-------	-------	0.000	-------	-------	0.005	0.025	-------	0.075	POST Subc 4A
32	SCS Runoff	-------	-------	0.001	-------	-------	0.020	0.054	-------	0.132	POST Subc 5A
33	Combine	31, 32	-------	0.001	-------	-------	0.022	0.066	-------	0.183	<no description>
35	Combine	10, 17, 24, ~~31, 32,~~		0.001	-------	-------	0.024	0.109	-------	0.403	Uncontrol Runoff POST
36	Combine	15, 22, 29, ~~31, 32,~~		0.001	-------	-------	0.024	0.109	-------	0.403	Total Runoff Post

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.2

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
2	SCS Runoff	0.057	2	738	409	---	------	------	PRE Sub. 1
3	SCS Runoff	0.001	2	1328	19	---	------	------	PRE Sub. 2
4	SCS Runoff	0.003	2	1328	37	---	------	------	PRE Sub. 3
5	SCS Runoff	0.001	2	918	34	---	------	------	PRE Sub. 4
6	SCS Runoff	0.000	2	n/a	0	---	------	------	PRE Sub. 5
8	Combine	0.057	2	738	499	2, 3, 4, 5, 6,	------	------	Total Runoff PRE
10	SCS Runoff	0.000	2	n/a	0	---	------	------	POST Subc. 1A
11	SCS Runoff	0.152	2	740	1,148	---	------	------	POST Subc. 1B
12	Diversion1	0.152	2	740	1,148	11	------	------	1st Flush
13	Diversion2	0.000	2	n/a	0	11	------	------	Divert to Infil
14	Reservoir	0.000	2	n/a	0	13	155.00	0.000	Infil 1
15	Combine	0.000	2	n/a	0	10, 14	------	------	Total SUBC 1 POST
17	SCS Runoff	0.000	2	n/a	0	---	------	------	POST Subc 2A
18	SCS Runoff	0.508	2	728	1,892	---	------	------	POST Subc. 2B
19	Diversion1	0.508	2	728	1,433	18	------	------	1st Flush
20	Diversion2	0.029	2	958	459	18	------	------	Divert to Infil
21	Reservoir	0.000	2	964	0	20	162.00	1.32	Infil 2
22	Combine	0.000	2	964	0	17, 21	------	------	Total Subc 2 POST
24	SCS Runoff	0.000	2	n/a	0	---	------	------	POST Subc 3A
25	SCS Runoff	0.000	2	n/a	0	---	------	------	POST Subc 3B
26	Diversion1	0.000	2	n/a	0	25	------	------	1st Flush
27	Diversion2	0.000	2	n/a	0	25	------	------	Divert to Infil
28	Reservoir	0.000	2	n/a	0	27	175.00	0.000	Infil 3
29	Combine	0.000	2	n/a	0	24, 28	------	------	Total Subc 3 POST
31	SCS Runoff	0.000	2	1326	3	---	------	------	POST Subc 4A
32	SCS Runoff	0.001	2	1324	25	---	------	------	POST Subc 5A
33	Combine	0.001	2	1324	28	31, 32	------	------	<no description>
35	Combine	0.001	2	1324	28	10, 17, 24, 31, 32, ---		------	Uncontrol Runoff POST
36	Combine	0.001	2	1324	28	15, 22, 29, 31, 32, ---		------	Total Runoff Post

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.2

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
2	SCS Runoff	0.254	2	730	1,174	----	------	------	PRE Sub. 1
3	SCS Runoff	0.025	2	752	443	----	------	------	PRE Sub. 2
4	SCS Runoff	0.063	2	754	1,503	----	------	------	PRE Sub. 3
5	SCS Runoff	0.026	2	744	242	----	------	------	PRE Sub. 4
6	SCS Runoff	0.006	2	1330	79	----	------	------	PRE Sub. 5
8	Combine	0.267	2	732	3,441	2, 3, 4, 5, 6,	------	------	Total Runoff PRE
10	SCS Runoff	0.000	2	1324	5	----	------	------	POST Subc. 1A
11	SCS Runoff	0.716	2	732	3,387	----	------	------	POST Subc. 1B
12	Diversion1	0.716	2	732	1,155	11	------	------	1st Flush
13	Diversion2	0.270	2	756	2,232	11	------	------	Divert to Infil
14	Reservoir	0.000	2	806	0	13	155.08	30.7	Infil 1
15	Combine	0.000	2	1324	5	10, 14	------	------	Total SUBC 1 POST
17	SCS Runoff	0.002	2	910	59	----	------	------	POST Subc 2A
18	SCS Runoff	1.128	2	726	3,927	----	------	------	POST Subc. 2B
19	Diversion1	1.128	2	726	1,484	18	------	------	1st Flush
20	Diversion2	0.598	2	738	2,444	18	------	------	Divert to Infil
21	Reservoir	0.000	2	800	0	20	162.29	164	Infil 2
22	Combine	0.002	2	910	59	17, 21	------	------	Total Subc 2 POST
24	SCS Runoff	0.012	2	902	327	----	------	------	POST Subc 3A
25	SCS Runoff	0.051	2	884	1,394	----	------	------	POST Subc 3B
26	Diversion1	0.051	2	884	966	25	------	------	1st Flush
27	Diversion2	0.037	2	1326	428	25	------	------	Divert to Infil
28	Reservoir	0.000	2	n/a	0	27	175.00	2.39	Infil 3
29	Combine	0.012	2	902	327	24, 28	------	------	Total Subc 3 POST
31	SCS Runoff	0.005	2	750	121	----	------	------	POST Subc 4A
32	SCS Runoff	0.020	2	738	176	----	------	------	POST Subc 5A
33	Combine	0.022	2	744	297	31, 32	------	------	<no description>
35	Combine	0.024	2	884	688	10, 17, 24, 31, ~~32,~~	------	------	Uncontrol Runoff POST
36	Combine	0.024	2	884	688	15, 22, 29, 31, ~~32,~~	------	------	Total Runoff Post

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.2

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
2	SCS Runoff	0.636	2	730	2,571	----	------	------	PRE Sub. 1
3	SCS Runoff	0.262	2	736	1,719	----	------	------	PRE Sub. 2
4	SCS Runoff	0.895	2	738	6,231	----	------	------	PRE Sub. 3
5	SCS Runoff	0.143	2	732	750	----	------	------	PRE Sub. 4
6	SCS Runoff	0.129	2	826	3,353	----	------	------	PRE Sub. 5
8	Combine	1.825	2	734	14,623	2, 3, 4, 5, 6,	------	------	Total Runoff PRE
10	SCS Runoff	0.004	2	742	40	----	------	------	POST Subc. 1A
11	SCS Runoff	1.849	2	730	7,528	----	------	------	POST Subc. 1B
12	Diversion1	1.815	2	728	1,333	11	------	------	1st Flush
13	Diversion2	1.849	2	730	6,195	11	------	------	Divert to Infil
14	Reservoir	0.000	2	762	0	13	157.60	1,439	Infil 1
15	Combine	0.004	2	742	40	10, 14	------	------	Total SUBC 1 POST
17	SCS Runoff	0.041	2	742	376	----	------	------	POST Subc 2A
18	SCS Runoff	2.085	2	726	7,123	----	------	------	POST Subc. 2B
19	Diversion1	1.264	2	720	1,451	18	------	------	1st Flush
20	Diversion2	2.085	2	726	5,672	18	------	------	Divert to Infil
21	Reservoir	0.000	2	1042	0	20	163.92	1,570	Infil 2
22	Combine	0.041	2	742	376	17, 21	------	------	Total Subc 2 POST
24	SCS Runoff	0.216	2	740	1,922	----	------	------	POST Subc 3A
25	SCS Runoff	0.876	2	738	7,212	----	------	------	POST Subc 3B
26	Diversion1	0.876	2	738	1,025	25	------	------	1st Flush
27	Diversion2	0.737	2	748	6,187	25	------	------	Divert to Infil
28	Reservoir	0.000	2	n/a	0	27	175.63	330	Infil 3
29	Combine	0.216	2	740	1,922	24, 28	------	------	Total Subc 3 POST
31	SCS Runoff	0.075	2	732	507	----	------	------	POST Subc 4A
32	SCS Runoff	0.132	2	726	542	----	------	------	POST Subc 5A
33	Combine	0.183	2	726	1,049	31, 32	------	------	<no description>
35	Combine	0.403	2	738	3,387	10, 17, 24, 31, ~~32,~~	------	------	Uncontrol Runoff POST
36	Combine	0.403	2	738	3,387	15, 22, 29, 31, ~~32,~~	------	------	Total Runoff Post

Worksheet 2: Runoff curve number and runoff 4810

Project: The Meadow at Acton By BRE Date 04-10-12

Location: 263-265 Great Road, Acton Checked _____ Date _____

Circle one: Present **Developed** Subcatchment 1A

1. Runoff curve number (CN)

Soil name and hydrologic soil group (appendix A)	Cover description (cover type, treatment, and hydrologic condition: percent impervious: unconnected/connected impervious area ratio)	CN Table 2-2	CN Fig. 2-3	CN Fig. 2-4	Area Acres	Product of CN x Area
Hinckley Loamy Sand 253B A	Woods (Good Condition)	30			0.00	0.00
Hinckley Loamy Sand & 253B A	Open Space (Good Condition)	39			0.00	0.00
Merrimac-Urban Land 626B A	Woods (Good Condition)	30			0.01	0.30
Merrimac-Urban Land 626B A	Open Space (Good Condition)	39			0.02	0.78
	Impervious	98			0.00	0.00
						0.00
						0.00
						0.00
				Totals =	0.03	1.08

1/ Use only one CN source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{1.08}{0.03} = 36.00$; Use CN = 36.0

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency.....	yr	2	10	100
Rainfall, P (24-hour).....	in	3.1	4.5	6.4
Runoff, Q..... (Use P and CN with table 2-1, fig. 2-1,) or eqs. 2-3 and 2-4.)	in	0.01	0.05	0.39
Runoff, Q.....	cf	1	5	43

D-2 (210-VI-TR-55, Second Ed., June 1986)

Worksheet 3: Time of Concentration (Tc) or travel time (Tt) 4810

Project: The Meadow at Acton By BRE Date 04-10-12

Location: 263-265 Great Road, Acton Checked _____ Date _____

Circle one: Present **Developed**

Circle one: **Tc** Tt through subarea Subcatchment 1A

Sheet flow (Applicable to Tc only)		Segment ID	A-B			
1. Surface Description (table 3-1)			grass			
2. Mannings roughness coeff., n (table 3-1)			0.24			
3. Flow length, L (total L <= 300 ft)		ft	29			
4. Two-yr 24-hr rainfall, P2		in	3.1			
5. Land Slope, s		ft/ft	0.02			
6. Tt = 0.007 (nL)^0.8 / (P2^0.5 s^0.4)	Compute Tt	hr	0.09			0.09

Shallow concentrated Flow		Segment ID				
7. Surface Description (paved or unpaved)						
8. Flow Length, L		ft				
9. Watercourse slope, s		ft/ft				
10. Average Velocity, V (figure 3-1)		ft/s				
11. Tt = L / 3600V	Compute Tt	hr				0.00

Channel flow		Segment ID				
12. Cross sectional flow area, a		sf				
13. Wetted perimeter, pw		ft				
14. Hydraulic radius, r=a/wp	Compute r	ft				
15. Channel Slope, s		ft/ft				
16. Manning's roughness coeff., n						
17. V = 1.49 r^2/3 s^1/2 / n	Compute V	ft/s				
18. Flow length, L		ft				
19. Tt = L / 3600V	Compute Tt	hr				

20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19) hr 0.10 min 6.0

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 10

POST Subc. 1A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Drainage area	= 0.030 ac	Curve number	= 36
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.0 min
Total precip.	= 3.10 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 10

POST Subc. 1A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 22.07 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Drainage area	= 0.030 ac	Curve number	= 36
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.0 min
Total precip.	= 4.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time -- Outflow (hrs cfs)	
22.07	0.000 <<

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Apr 10, 2012

Hyd. No. 10

POST Subc. 1A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.004 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.37 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Drainage area	= 0.030 ac	Curve number	= 36
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.0 min
Total precip.	= 6.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time -- Outflow (hrs	cfs)
12.33	0.004
12.37	0.004 <<

...End

Worksheet 2: Runoff curve number and runoff

4810

Project: The Meadow at Acton By BRE Date 04-10-12

Location: 263-265 Great Road, Acton Checked _____ Date _____

Circle one: Present **Developed** Subcatchment 1B

1. Runoff curve number (CN)

Soil name and hydrologic soil group (appendix A)	Cover description (cover type, treatment, and hydrologic condition: percent impervious: unconnected/connected impervious area ratio)	CN Table 2-2	CN Fig. 2-3	CN Fig. 2-4	Area Acres	Product of CN x Area
Hinckley Loamy Sand 253B A	Woods (Good Condition)	30			0.03	0.90
Hinckley Loamy Sand & 253B A	Open Space (Good Condition)	39			0.31	12.09
Merrimac-Urban Land 626B A	Woods (Good Condition)	30			0.02	0.60
Merrimac-Urban Land 626B A	Open Space (Good Condition)	39			0.31	12.09
	Impervious	98			0.33	32.34
						0.00
						0.00
						0.00
				Totals =	1	58.02

1/ Use only one CN source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{58.02}{1.00} = 58.02$; Use CN = 58.0

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency.....	yr	2	10	100
Rainfall, P (24-hour).....	in	3.1	4.5	6.4
Runoff, Q..... (Use P and CN with table 2-1, fig. 2-1,) or eqs. 2-3 and 2-4.)	in	0.31	0.91	2.01
Runoff, Q.....	cf	1116	3288	7306

D-2 (210-VI-TR-55, Second Ed., June 1986)

Worksheet 3: Time of Concentration (Tc) or travel time (Tt) 4810

Project: The Meadow at Acton By BRE Date 04-10-12

Location: 263-265 Great Road, Acton Checked _____ Date _____

Circle one: Present **Developed**

Circle one: **Tc** Tt through subarea Subcatchment 1B

Sheet flow (Applicable to Tc only)		Segment ID	A-B			
1. Surface Description (table 3-1)			grass			
2. Mannings roughness coeff., n (table 3-1)			0.24			
3. Flow length, L (total L <= 300 ft)		ft	50			
4. Two-yr 24-hr rainfall, P2		in	3.1			
5. Land Slope, s		ft/ft	0.018			
6. Tt = 0.007 (nL)^0.8 / (P2^0.5 s^0.4)	Compute Tt	hr	0.14			0.14

Shallow concentrated Flow		Segment ID	B-C			
7. Surface Description (paved or unpaved)			unpaved			
8. Flow Length, L		ft	300			
9. Watercourse slope, s		ft/ft	0.04			
10. Average Velocity, V (figure 3-1)		ft/s	3.10			
11. Tt = L / 3600V	Compute Tt	hr	0.03			0.03

Channel flow		Segment ID				
12. Cross sectional flow area, a		sf				
13. Wetted perimeter, pw		ft				
14. Hydraulic radius, r=a/wp	Compute r	ft				
15. Channel Slope, s		ft/ft				
16. Manning's roughness coeff., n						
17. V = 1.49 r^2/3 s^1/2 / n	Compute V	ft/s				
18. Flow length, L		ft				
19. Tt = L / 3600V	Compute Tt	hr				

20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19) hr 0.17 min 10.3

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2

Tuesday, Apr 10, 2012

Hyd. No. 11

POST Subc. 1B

Hydrograph type	= SCS Runoff	Peak discharge	= 0.152 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.33 hrs
Time interval	= 2 min	Hyd. volume	= 1,148 cuft
Drainage area	= 1.000 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.3 min
Total precip.	= 3.10 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time -- (hrs	Outflow cfs)
12.30	0.151
12.33	0.152 <<

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Apr 10, 2012

Hyd. No. 11

POST Subc. 1B

Hydrograph type	= SCS Runoff	Peak discharge	= 0.716 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 1,148 cuft
Drainage area	= 1.000 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.3 min
Total precip.	= 4.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time -- (hrs)	Outflow (cfs)
12.17	0.715
12.20	0.716 <<

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2

Tuesday, Apr 10, 2012

Hyd. No. 11

POST Subc. 1B

Hydrograph type	= SCS Runoff	Peak discharge	= 1.849 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 1,148 cuft
Drainage area	= 1.000 ac	Curve number	= 58
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.3 min
Total precip.	= 6.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time -- (hrs	Outflow cfs)
12.13	1.815
12.17	1.849 <<

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 12

1st Flush

Hydrograph type	= Diversion1	Peak discharge	= 0.152 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.33 hrs
Time interval	= 2 min	Hyd. volume	= 1,148 cuft
Inflow hydrograph	= 11 - POST Subc. 1B	2nd diverted hyd.	= 13
Diversion method	= First Flush Volume	Volume Up To	= 1,150 cuft

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Inflow cfs	2nd Diverted cfs	Outflow cfs
12.30	0.151	0.000 <<	0.151
12.33	0.152 <<	0.000 <<	0.152 <<

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2

Tuesday, Apr 10, 2012

Hyd. No. 12

1st Flush

Hydrograph type	= Diversion1	Peak discharge	= 0.716 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 1,148 cuft
Inflow hydrograph	= 11 - POST Subc. 1B	2nd diverted hyd.	= 13
Diversion method	= First Flush Volume	Volume Up To	= 1,150 cuft

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Inflow cfs	2nd Diverted cfs	Outflow cfs
12.17	0.715	0.000	0.715
12.20	0.716 <<	0.000	0.716 <<

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 12

1st Flush

Hydrograph type	= Diversion1	Peak discharge	= 1.815 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 1,148 cuft
Inflow hydrograph	= 11 - POST Subc. 1B	2nd diverted hyd.	= 13
Diversion method	= First Flush Volume	Volume Up To	= 1,150 cuft

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Inflow cfs	2nd Diverted cfs	Outflow cfs
12.13	1.815	0.000	1.815 <<

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 13

Divert to Infil

Hydrograph type	= Diversion2	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hydrograph	= 11 - POST Subc. 1B	2nd diverted hyd.	= 12
Diversion method	= First Flush Volume	Volume Up To	= 1,150 cuft

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 13

Divert to Infil

Hydrograph type	= Diversion2	Peak discharge	= 0.270 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.60 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hydrograph	= 11 - POST Subc. 1B	2nd diverted hyd.	= 12
Diversion method	= First Flush Volume	Volume Up To	= 1,150 cuft

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Inflow cfs	2nd Diverted cfs	Outflow cfs
12.60	0.270	0.000	0.270 <<

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Apr 10, 2012

Hyd. No. 13

Divert to Infil

Hydrograph type	= Diversion2	Peak discharge	= 1.849 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hydrograph	= 11 - POST Subc. 1B	2nd diverted hyd.	= 12
Diversion method	= First Flush Volume	Volume Up To	= 1,150 cuft

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Inflow cfs	2nd Diverted cfs	Outflow cfs
12.17	1.849 <<	0.000	1.849 <<

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 14

Infil 1

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 13 - Divert to Infil	Reservoir name	= Infil 1
Max. Elevation	= 155.00 ft	Max. Storage	= 0 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Apr 10, 2012

Hyd. No. 14

Infil 1

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 13.43 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 13 - Divert to Infil	Reservoir name	= Infil 1
Max. Elevation	= 155.08 ft	Max. Storage	= 31 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
13.43	0.120	156.44 <<	-----	-----	-----	-----	-----	-----	-----	-----	0.308	0.000 <<
13.70	0.111	156.44 <<	-----	-----	-----	-----	-----	-----	-----	-----	0.308	0.000 <<
13.73	0.110	156.44 <<	-----	-----	-----	-----	-----	-----	-----	-----	0.308	0.000 <<
13.83	0.107	156.44 <<	-----	-----	-----	-----	-----	-----	-----	-----	0.308	0.000 <<
13.87	0.105	156.44 <<	-----	-----	-----	-----	-----	-----	-----	-----	0.308	0.000 <<
14.00	0.100	156.44 <<	-----	-----	-----	-----	-----	-----	-----	-----	0.308	0.000 <<
14.03	0.099	156.44 <<	-----	-----	-----	-----	-----	-----	-----	-----	0.308	0.000 <<
14.07	0.098	156.44 <<	-----	-----	-----	-----	-----	-----	-----	-----	0.308	0.000 <<

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Apr 10, 2012

Hyd. No. 14

Infil 1

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.70 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 13 - Divert to Infil	Reservoir name	= Infil 1
Max. Elevation	= 157.60 ft	Max. Storage	= 1,439 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
12.70	0.420	156.47 <<	-----	-----	-----	-----	-----	-----	-----	-----	0.311	0.000 <<
12.73	0.393	156.47 <<	-----	-----	-----	-----	-----	-----	-----	-----	0.311	0.000 <<
13.03	0.294	156.47 <<	-----	-----	-----	-----	-----	-----	-----	-----	0.311	0.000 <<

...End

Pond Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Apr 10, 2012

Pond No. 1 - Infil 1

Pond Data

UG Chambers - Invert elev. = 155.50 ft, Rise x Span = 1.00 x 3.00 ft, Barrel Len = 35.00 ft, No. Barrels = 6, Slope = 0.00%, Headers = Yes
Encasement - Invert elev. = 155.00 ft, Width = 4.00 ft, Height = 3.00 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	155.00	n/a	0	0
0.30	155.30	n/a	124	124
0.60	155.60	n/a	170	294
0.90	155.90	n/a	258	552
1.20	156.20	n/a	239	792
1.50	156.50	n/a	192	984
1.80	156.80	n/a	124	1,108
2.10	157.10	n/a	124	1,232
2.40	157.40	n/a	124	1,356
2.70	157.70	n/a	124	1,480
3.00	158.00	n/a	124	1,603

Culvert / Orifice Structures

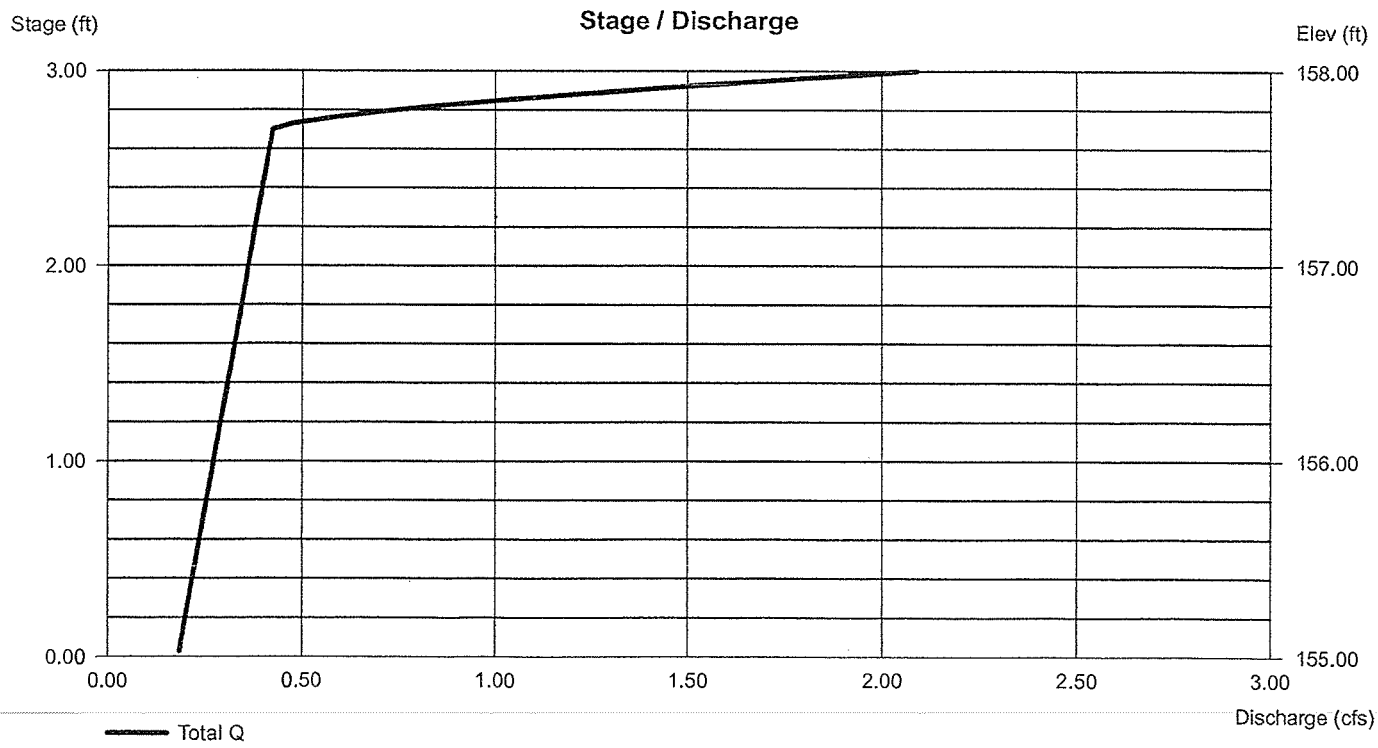
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 8.00	0.00	0.00	0.00
Span (in)	= 8.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 156.00	0.00	0.00	0.00
Length (ft)	= 10.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 3.00	Inactive	Inactive	Inactive
Crest El. (ft)	= 157.70	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 8.270 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Apr 10, 2012

Hyd. No. 15

Total SUBC 1 POST

Hydrograph type	= Combine	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyds.	= 10, 14	Contrib. drain. area	= 0.030 ac

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Apr 10, 2012

Hyd. No. 15

Total SUBC 1 POST

Hydrograph type	= Combine	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 22.07 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyds.	= 10, 14	Contrib. drain. area	= 0.030 ac

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Hyd. 10 + (cfs)	Hyd. 14 = (cfs)	Outflow (cfs)
22.07	0.000 <<	0.000	0.000 <<

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Apr 10, 2012

Hyd. No. 15

Total SUBC 1 POST

Hydrograph type	= Combine	Peak discharge	= 0.004 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.37 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyds.	= 10, 14	Contrib. drain. area	= 0.030 ac

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Hyd. 10 + (cfs)	Hyd. 14 = (cfs)	Outflow (cfs)
12.33	0.004	0.000	0.004
12.37	0.004 <<	0.000	0.004 <<

...End

Worksheet 2: Runoff curve number and runoff SM-4810

Project: The Meadow at Acton By BRE Date 04-10-12

Location: 263-265 Great Road, Acton Checked _____ Date _____

Circle one: Present Developed Subcatchment 2A

1. Runoff curve number (CN)

Soil name and hydrologic soil group (appendix A)	Cover description (cover type, treatment, and hydrologic condition: percent impervious: unconnected/connected impervious area ratio)	CN Table 2-2	CN Fig. 2-3	CN Fig. 2-4	Area Acres	Product of CN x Area
Hinckley Loamy Sand 253B A	Woods (Good Condition)	30			0.04	1.20
Hinckley Loamy Sand & 253B A	Open Space (Good Condition)	39			0.18	7.02
Merrimac-Urban Land 626B A	Woods (Good Condition)	30			0.00	0.00
Merrimac-Urban Land 626B A	Open Space (Good Condition)	39			0.00	0.00
	Impervious	98			0.00	0.00
						0.00
						0.00
						0.00
				Totals =	0.22	8.22

1/ Use only one CN source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{8.22}{0.22} = 37.36$; Use CN = 37.4

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency.....	yr	2	10	100
Rainfall, P (24-hour).....	in	3.1	4.5	6.4
Runoff, Q..... (Use P and CN with table 2-1, fig. 2-1,) or eqs. 2-3 and 2-4.)	in	0.00	0.07	0.47
Runoff, Q.....	cf	3	59	374

D-2 (210-VI-TR-55, Second Ed., June 1986)

Worksheet 3: Time of Concentration (Tc) or travel time (Tt) SM-4810

Project: The Meadow at Acton By BRE Date 04-10-12

Location: 263-265 Great Road, Acton Checked _____ Date _____

Circle one: Present **Developed**

Circle one: **Tc** Tt through Subcatchment 2A subarea

Sheet flow (Applicable to Tc only)		Segment ID	A-B			
1. Surface Description (table 3-1)			grass			
2. Mannings roughness coeff., n (table 3-1)			0.24			
3. Flow length, L (total L <= 300 ft)		ft	50			
4. Two-yr 24-hr rainfall, P2		in	3.1			
5. Land Slope, s		ft/ft	0.02			
6. Tt = 0.007 (nL)^0.8 / (P2^0.5 s^0.4)	Compute Tt	hr	0.14			0.14

Shallow concentrated Flow		Segment ID	B-C			
7. Surface Description (paved or unpaved)			unpaved			
8. Flow Length, L		ft	67			
9. Watercourse slope, s		ft/ft	0.03			
10. Average Velocity, V (figure 3-1)		ft/s	2.79			
11. Tt = L / 3600V	Compute Tt	hr	0.01			0.01

Channel flow		Segment ID				
12. Cross sectional flow area, a		sf				
13. Wetted perimeter, pw		ft				
14. Hydraulic radius, r=a/wp	Compute r	ft				
15. Channel Slope, s		ft/ft				
16. Manning's roughness coeff., n						
17. V = 1.49 r^2/3 s^1/2 / n	Compute V	ft/s				
18. Flow length, L		ft				
19. Tt = L / 3600V	Compute Tt	hr				

20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)	hr	0.15
	min	8.7

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Apr 10, 2012

Hyd. No. 17

POST Subc 2A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Drainage area	= 0.220 ac	Curve number	= 37.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 8.7 min
Total precip.	= 3.10 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Apr 10, 2012

Hyd. No. 17

POST Subc 2A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.002 cfs
Storm frequency	= 10 yrs	Time to peak	= 15.17 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Drainage area	= 0.220 ac	Curve number	= 37.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 8.7 min
Total precip.	= 4.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time -- (hrs	Outflow cfs)
14.83	0.002
14.87	0.002
14.90	0.002
14.93	0.002
14.97	0.002
15.00	0.002
15.03	0.002
15.07	0.002
15.10	0.002
15.13	0.002
15.17	0.002 <<
15.20	0.002
15.23	0.002
15.27	0.002
15.30	0.002
15.33	0.002
15.37	0.002
15.40	0.002
15.43	0.002
15.47	0.002
15.50	0.002
15.53	0.002

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2

Tuesday, Apr 10, 2012

Hyd. No. 17

POST Subc 2A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.041 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.37 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Drainage area	= 0.220 ac	Curve number	= 37.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 8.7 min
Total precip.	= 6.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time -- (hrs	Outflow cfs)
12.33	0.040
12.37	0.041 <<
12.40	0.040

...End

Worksheet 2: Runoff curve number and runoff SM-4810

Project: The Meadow at Acton By BRE Date 04-10-12

Location: 263-265 Great Road, Acton Checked _____ Date _____

Circle one: Present [Developed] Subcatchment 2B

1. Runoff curve number (CN)

Soil name and hydrologic soil group (appendix A)	Cover description (cover type, treatment, and hydrologic condition: percent impervious: unconnected/connected impervious area ratio)	CN Table 2-2	CN Fig. 2-3	CN Fig. 2-4	Area Acres	Product of CN x Area
Hinckley Loamy Sand 253B A	Woods (Good Condition)	30			0.00	0.00
Hinckley Loamy Sand & 253B A	Open Space (Good Condition)	39			0.25	9.75
Merrimac-Urban Land 626B A	Woods (Good Condition)	30			0.00	0.00
Merrimac-Urban Land 626B A	Open Space (Good Condition)	39			0.00	0.00
	Impervious	98			0.33	32.34
						0.00
						0.00
						0.00
				Totals =	0.58	42.09

1/ Use only one CN source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{42.09}{0.58} = 72.57$; Use CN = 72.6

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency.....	yr	2	10	100
Rainfall, P (24-hour).....	in	3.1	4.5	6.4
Runoff, Q..... (Use P and CN with table 2-1, fig. 2-1,) or eqs. 2-3 and 2-4.)	in	0.90	1.86	3.38
Runoff, Q.....	cf	1889	3922	7117

D-2 (210-VI-TR-55, Second Ed., June 1986)

Worksheet 3: Time of Concentration (Tc) or travel time (Tt) **SM-4810**

Project: The Meadow at Acton By BRE Date 04-10-12

Location: 263-265 Great Road, Acton Checked _____ Date _____

Circle one: Present **Developed**

Circle one: **Tc** Tt through subarea Subcatchment 2B

Sheet flow (Applicable to Tc only)		Segment ID	A-B	B-C		
1. Surface Description (table 3-1)			grass	paved		
2. Mannings roughness coeff., n (table 3-1)			0.24	0.011		
3. Flow length, L (total L <= 300 ft)		ft	42	8		
4. Two-yr 24-hr rainfall, P2		in	3.1	3.1		
5. Land Slope, s		ft/ft	0.018	0.018		
6. Tt = 0.007 (nL)^0.8 / (P2^0.5 s^0.4)	Compute Tt	hr	0.13	0.00		0.13

Shallow concentrated Flow		Segment ID	C-D			
7. Surface Description (paved or unpaved)			Paved			
8. Flow Length, L		ft	26			
9. Watercourse slope, s		ft/ft	0.02			
10. Average Velocity, V (figure 3-1)		ft/s	2.73			
11. Tt = L / 3600V	Compute Tt	hr	0.00			0.00

Channel flow		Segment ID				
12. Cross sectional flow area, a		sf				
13. Wetted perimeter, pw		ft				
14. Hydraulic radius, r=a/wp	Compute r	ft				
15. Channel Slope, s		ft/ft				
16. Manning's roughness coeff., n						
17. V = 1.49 r^2/3 s^1/2 / n	Compute V	ft/s				
18. Flow length, L		ft				
19. Tt = L / 3600V	Compute Tt	hr				

20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)	hr	0.13
	min	7.9

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Apr 10, 2012

Hyd. No. 18

POST Subc. 2B

Hydrograph type	= SCS Runoff	Peak discharge	= 0.508 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 1,892 cuft
Drainage area	= 0.580 ac	Curve number	= 72.6
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 7.9 min
Total precip.	= 3.10 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time -- (hrs	Outflow cfs)
12.10	0.506
12.13	0.508 <<

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Apr 10, 2012

Hyd. No. 18

POST Subc. 2B

Hydrograph type	= SCS Runoff	Peak discharge	= 1.128 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 1,892 cuft
Drainage area	= 0.580 ac	Curve number	= 72.6
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 7.9 min
Total precip.	= 4.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Outflow (cfs)
12.10	1.128 <<
12.13	1.109

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Apr 10, 2012

Hyd. No. 18

POST Subc. 2B

Hydrograph type	= SCS Runoff	Peak discharge	= 2.085 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 1,892 cuft
Drainage area	= 0.580 ac	Curve number	= 72.6
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 7.9 min
Total precip.	= 6.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time -- (hrs	Outflow cfs)
12.10	2.085 <<

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 19

1st Flush

Hydrograph type	= Diversion1	Peak discharge	= 0.508 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 1,433 cuft
Inflow hydrograph	= 18 - POST Subc. 2B	2nd diverted hyd.	= 20
Diversion method	= First Flush Volume	Volume Up To	= 1,430 cuft

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Inflow cfs	2nd Diverted cfs	Outflow cfs
12.10	0.506	0.000	0.506
12.13	0.508 <<	0.000	0.508 <<

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 19

1st Flush

Hydrograph type	= Diversion1	Peak discharge	= 1.128 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 1,433 cuft
Inflow hydrograph	= 18 - POST Subc. 2B	2nd diverted hyd.	= 20
Diversion method	= First Flush Volume	Volume Up To	= 1,430 cuft

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Inflow cfs	2nd Diverted cfs	Outflow cfs
12.10	1.128 <<	0.000	1.128 <<
12.13	1.109	0.000	1.109

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 19

1st Flush

Hydrograph type	= Diversion1	Peak discharge	= 1.264 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 1,433 cuft
Inflow hydrograph	= 18 - POST Subc. 2B	2nd diverted hyd.	= 20
Diversion method	= First Flush Volume	Volume Up To	= 1,430 cuft

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Inflow cfs	2nd Diverted cfs	Outflow cfs
12.00	1.264	0.000	1.264 <<

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 20

Divert to Infil

Hydrograph type	= Diversion2	Peak discharge	= 0.029 cfs
Storm frequency	= 2 yrs	Time to peak	= 15.97 hrs
Time interval	= 2 min	Hyd. volume	= 459 cuft
Inflow hydrograph	= 18 - POST Subc. 2B	2nd diverted hyd.	= 19
Diversion method	= First Flush Volume	Volume Up To	= 1,430 cuft

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Inflow cfs	2nd Diverted cfs	Outflow cfs
15.97	0.029	0.000	0.029 <<
16.00	0.028	0.000	0.028

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Apr 10, 2012

Hyd. No. 20

Divert to Infil

Hydrograph type	= Diversion2	Peak discharge	= 0.598 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.30 hrs
Time interval	= 2 min	Hyd. volume	= 459 cuft
Inflow hydrograph	= 18 - POST Subc. 2B	2nd diverted hyd.	= 19
Diversion method	= First Flush Volume	Volume Up To	= 1,430 cuft

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Inflow cfs	2nd Diverted cfs	Outflow cfs
12.30	0.598	0.000	0.598 <<

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 20

Divert to Infil

Hydrograph type	= Diversion2	Peak discharge	= 2.085 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 459 cuft
Inflow hydrograph	= 18 - POST Subc. 2B	2nd diverted hyd.	= 19
Diversion method	= First Flush Volume	Volume Up To	= 1,430 cuft

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Inflow cfs	2nd Diverted cfs	Outflow cfs
12.10	2.085 <<	0.000	2.085 <<

...End

Hydrograph Report

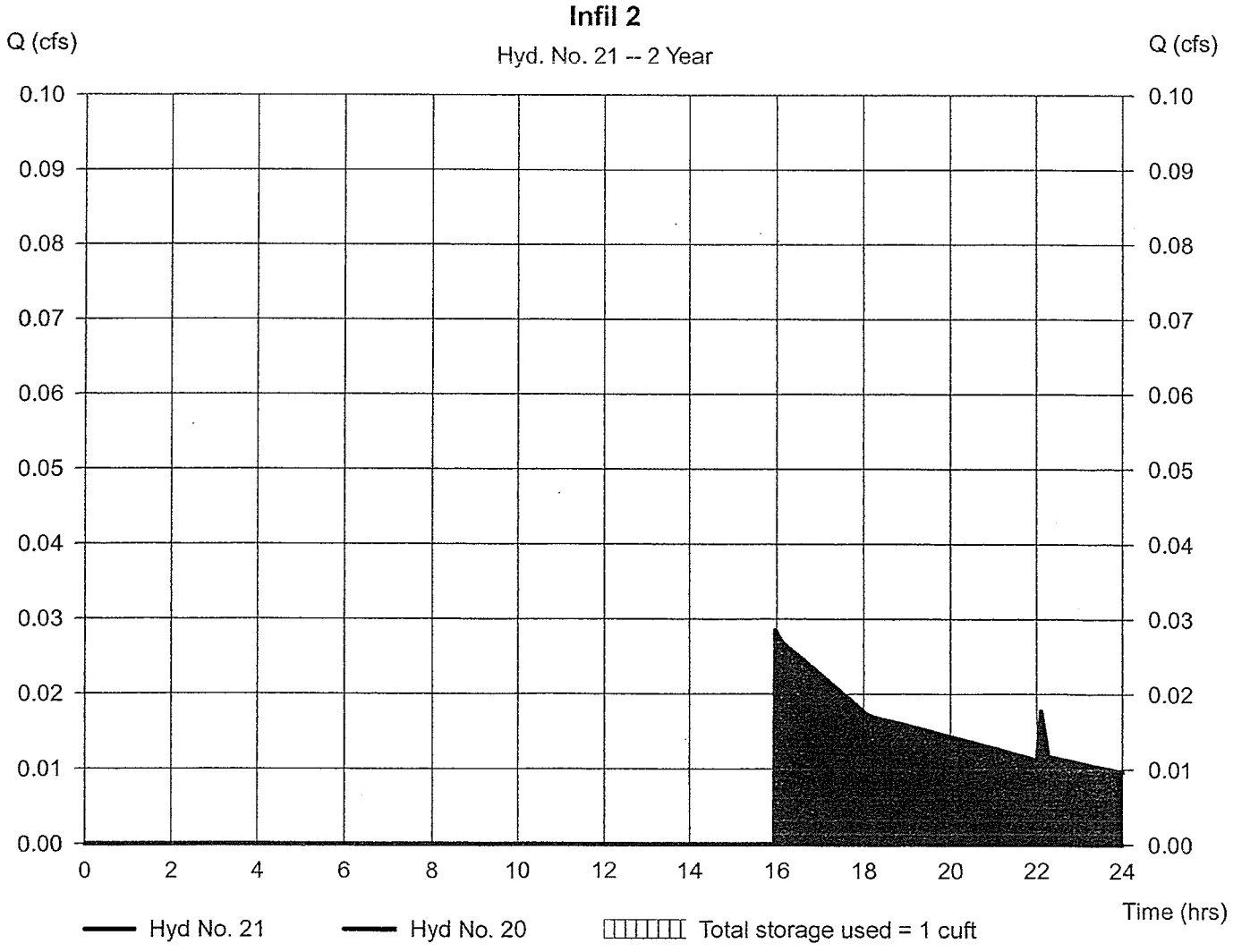
Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Apr 10, 2012

Hyd. No. 21

Infil 2

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 16.07 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 20 - Divert to Infil	Max. Elevation	= 162.00 ft
Reservoir name	= Infil 2	Max. Storage	= 1 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Apr 10, 2012

Pond No. 3 - Infil 2

Pond Data

UG Chambers - Invert elev. = 162.50 ft, Rise x Span = 1.00 x 3.00 ft, Barrel Len = 62.00 ft, No. Barrels = 5, Slope = 0.00%, Headers = Yes
Encasement - Invert elev. = 162.00 ft, Width = 4.00 ft, Height = 2.00 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	162.00	n/a	0	0
0.20	162.20	n/a	112	112
0.40	162.40	n/a	112	224
0.60	162.60	n/a	175	399
0.80	162.80	n/a	235	634
1.00	163.00	n/a	227	861
1.20	163.20	n/a	212	1,074
1.40	163.40	n/a	187	1,261
1.60	163.60	n/a	131	1,391
1.80	163.80	n/a	112	1,503
2.00	164.00	n/a	112	1,615

Culvert / Orifice Structures

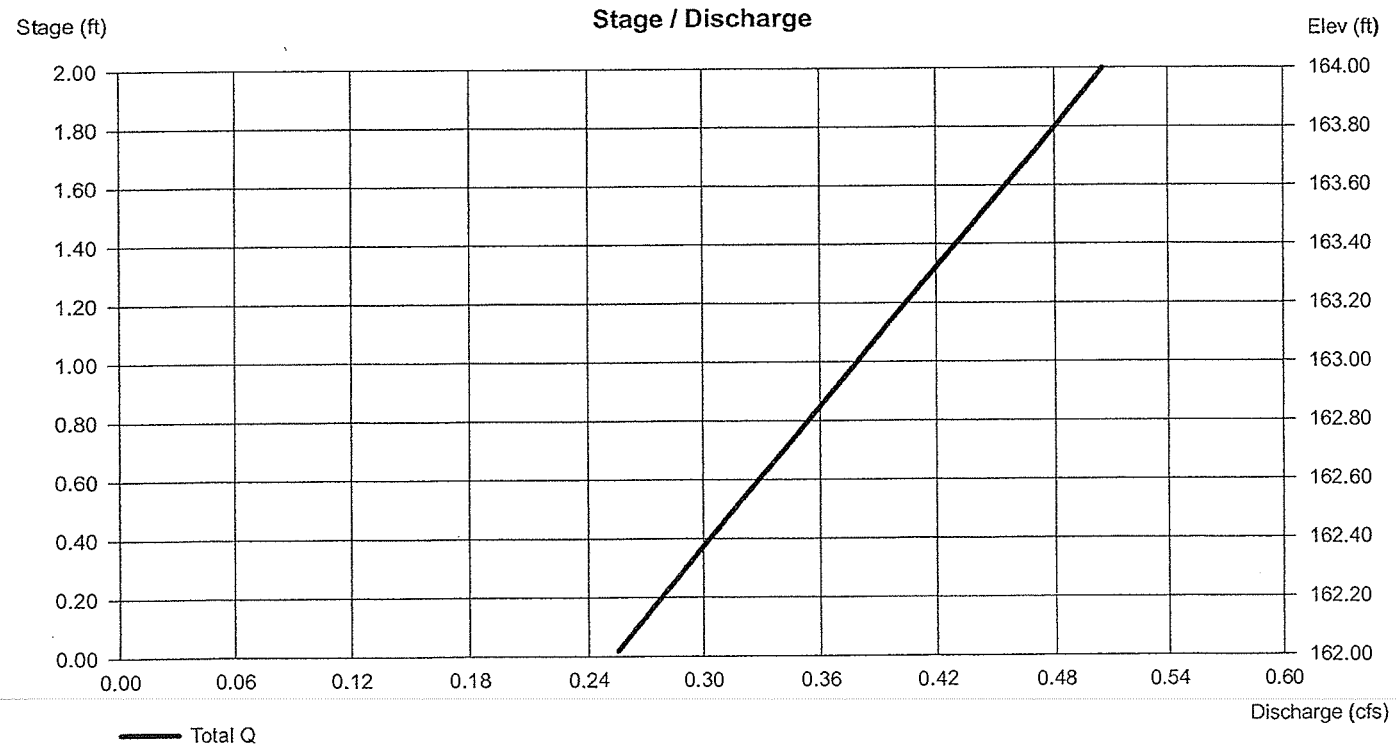
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 164.50	0.00	0.00	0.00
Length (ft)	= 10.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

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

Exfil.(in/hr) = 8.270 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Hydrograph Report

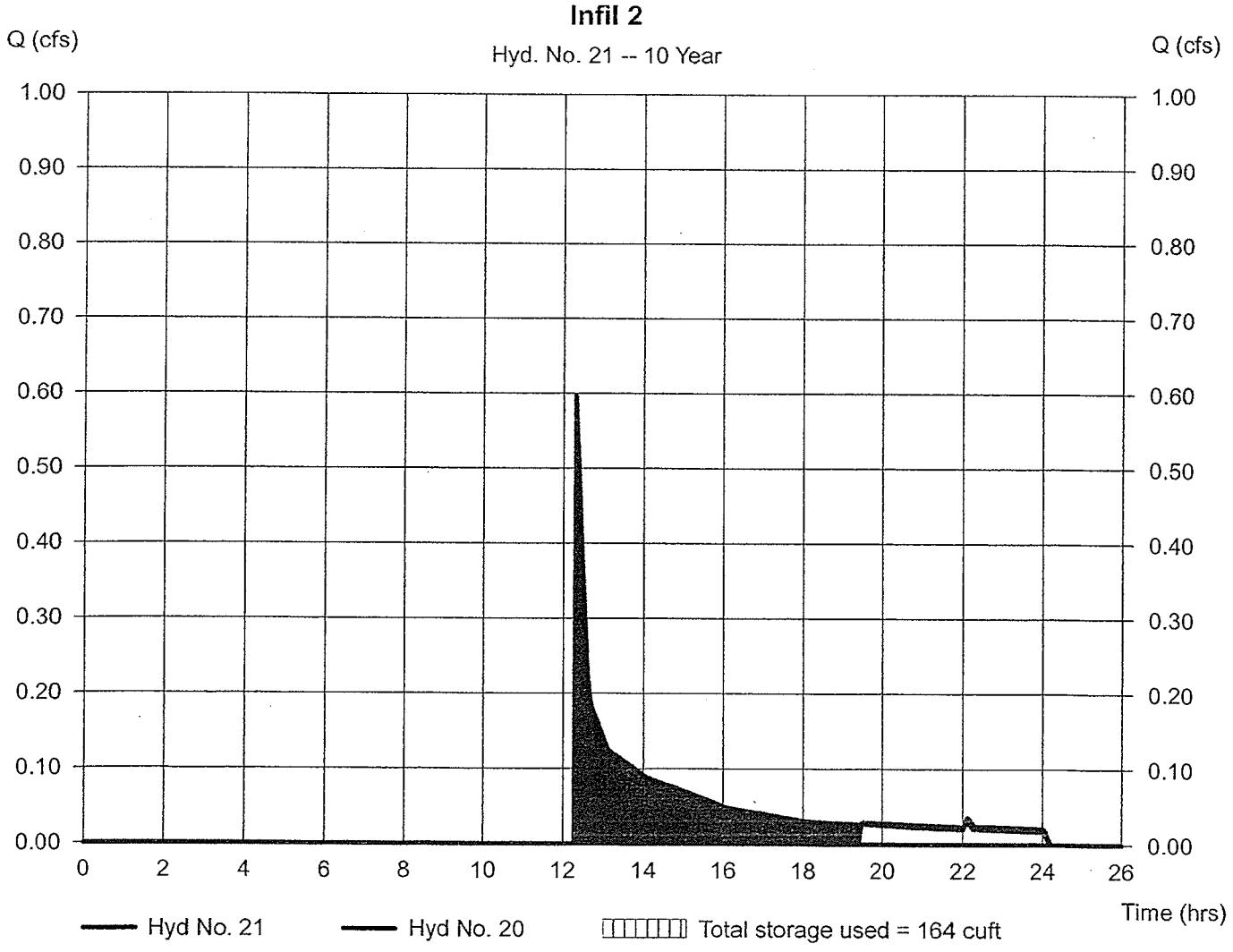
Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Apr 10, 2012

Hyd. No. 21

Infil 2

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 13.33 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 20 - Divert to Infil	Max. Elevation	= 162.29 ft
Reservoir name	= Infil 2	Max. Storage	= 164 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

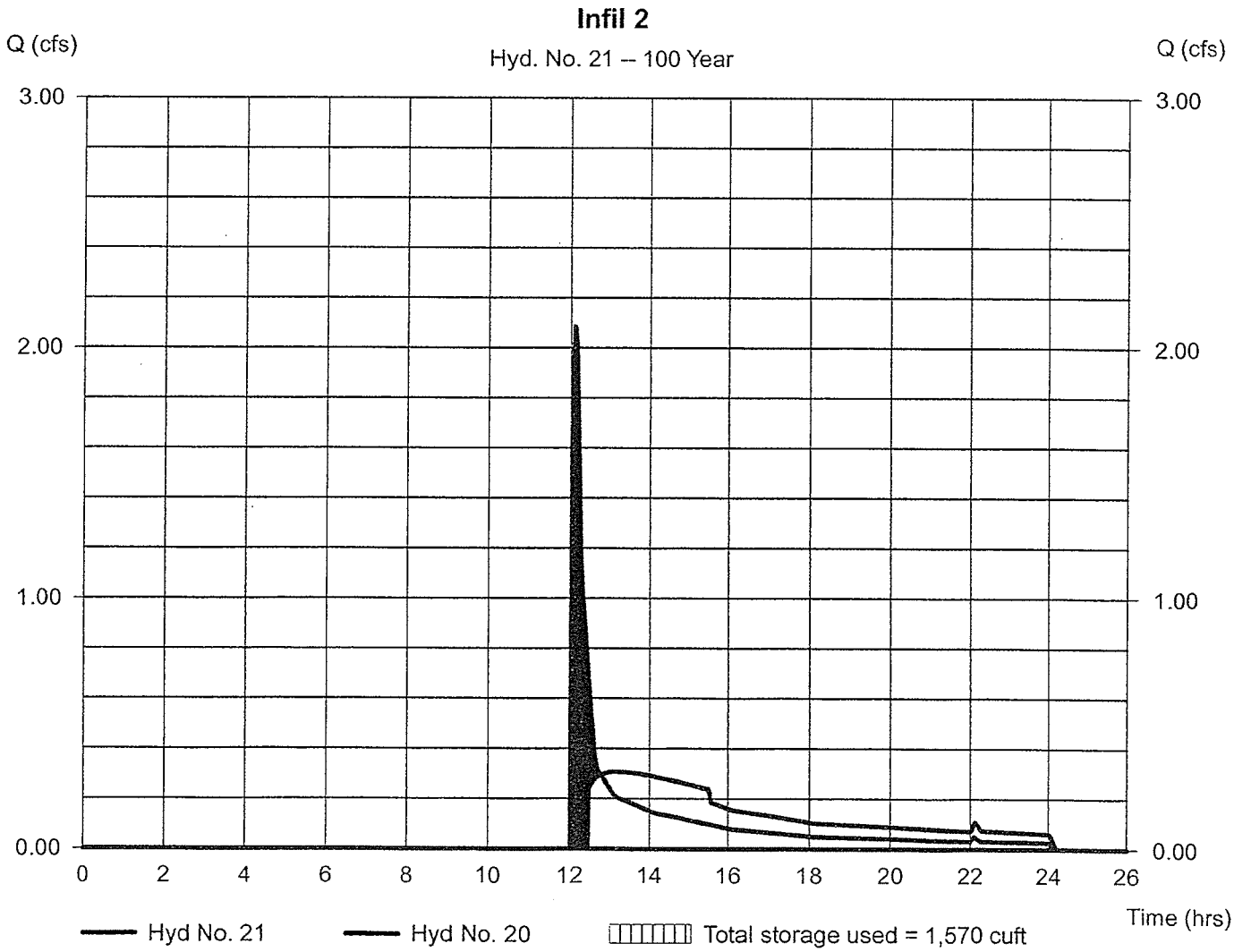
Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Apr 10, 2012

Hyd. No. 21

Infil 2

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= 17.37 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 20 - Divert to Infil	Max. Elevation	= 163.92 ft
Reservoir name	= Infil 2	Max. Storage	= 1,570 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 22

Total Subc 2 POST

Hydrograph type	= Combine	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 16.07 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyds.	= 17, 21	Contrib. drain. area	= 0.220 ac

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Hyd. 17 + (cfs)	Hyd. 21 = (cfs)	Outflow (cfs)
16.07	0.000 <<	0.000 <<	0.000 <<
16.10	0.000 <<	0.000 <<	0.000 <<

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Apr 10, 2012

Hyd. No. 22

Total Subc 2 POST

Hydrograph type	= Combine	Peak discharge	= 0.002 cfs
Storm frequency	= 10 yrs	Time to peak	= 15.17 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyds.	= 17, 21	Contrib. drain. area	= 0.220 ac

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Hyd. 17 + (cfs)	Hyd. 21 = (cfs)	Outflow (cfs)
14.83	0.002	0.000	0.002
14.87	0.002	0.000	0.002
14.90	0.002	0.000	0.002
14.93	0.002	0.000	0.002
14.97	0.002	0.000	0.002
15.00	0.002	0.000	0.002
15.03	0.002	0.000	0.002
15.07	0.002	0.000	0.002
15.10	0.002	0.000	0.002
15.13	0.002	0.000	0.002
15.17	0.002 <<	0.000	0.002 <<
15.20	0.002	0.000	0.002
15.23	0.002	0.000	0.002
15.27	0.002	0.000	0.002
15.30	0.002	0.000	0.002
15.33	0.002	0.000	0.002
15.37	0.002	0.000	0.002
15.40	0.002	0.000	0.002
15.43	0.002	0.000	0.002
15.47	0.002	0.000	0.002
15.50	0.002	0.000	0.002
15.53	0.002	0.000	0.002

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 22

Total Subc 2 POST

Hydrograph type	= Combine	Peak discharge	= 0.041 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.37 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyds.	= 17, 21	Contrib. drain. area	= 0.220 ac

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Hyd. 17 + (cfs)	Hyd. 21 = (cfs)	Outflow (cfs)
12.33	0.040	0.000	0.040
12.37	0.041 <<	0.000	0.041 <<
12.40	0.040	0.000	0.040

...End

Worksheet 2: Runoff curve number and runoff SM-4810

Project: The Meadow at Acton By BRE Date 04-10-12

Location: 263-265 Great Road, Acton Checked _____ Date _____

Circle one: Present Developed Subcatchment 3A

1. Runoff curve number (CN)

Soil name and hydrologic soil group (appendix A)	Cover description (cover type, treatment, and hydrologic condition: percent impervious: unconnected/connected impervious area ratio)	CN Table 2-2	CN Fig. 2-3	CN Fig. 2-4	Area Acres	Product of CN x Area
Hinckley Loamy Sand 253B A	Woods (Good Condition)	30			0.13	3.90
Hinckley Loamy Sand 253B A	Open Space (Good Condition)	39			0.93	36.27
	Impervious	98			0.00	0.00
						0.00
						0.00
						0.00
						0.00
						0.00
				Totals =	1.06	40.17

1/ Use only one CN source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{40.17}{1.06} = 37.90$; Use CN = 37.9

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency.....	yr	2	10	100
Rainfall, P (24-hour).....	in	3.1	4.5	6.4
Runoff, Q..... (Use P and CN with table 2-1, fig. 2-1,) or eqs. 2-3 and 2-4.)	in	0.00	0.08	0.50
Runoff, Q.....	cf	7	327	1923

D-2 (210-VI-TR-55, Second Ed., June 1986)

Worksheet 3: Time of Concentration (Tc) or travel time (Tt) SM-4810

Project: The Meadow at Acton By BRE Date 04-10-12

Location: 263-265 Great Road, Acton Checked _____ Date _____

Circle one: Present Developed
Circle one: Tc Tt through subarea Subcatchment 3A

Sheet flow (Applicable to Tc only)		Segment ID	A-B			
1. Surface Description (table 3-1)			grass			
2. Mannings roughness coeff., n (table 3-1)			0.24			
3. Flow length, L (total L <= 300 ft)		ft	50			
4. Two-yr 24-hr rainfall, P2		in	3.1			
5. Land Slope, s		ft/ft	0.014			
6. Tt = 0.007 (nL)^0.8 / (P2^0.5 s^0.4)	Compute Tt	hr	0.16			0.16

Shallow concentrated Flow		Segment ID	B-C			
7. Surface Description (paved or unpaved)			unpaved			
8. Flow Length, L		ft	7			
9. Watercourse slope, s		ft/ft	0.01			
10. Average Velocity, V (figure 3-1)		ft/s	1.91			
11. Tt = L / 3600V	Compute Tt	hr	0.00			0.00

Channel flow		Segment ID				
12. Cross sectional flow area, a		sf				
13. Wetted perimeter, pw		ft				
14. Hydraulic radius, r=a/wp	Compute r	ft				
15. Channel Slope, s		ft/ft				
16. Manning's roughness coeff., n						
17. V = 1.49 r^2/3 s^1/2 / n	Compute V	ft/s				
18. Flow length, L		ft				
19. Tt = L / 3600V	Compute Tt	hr				

20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19) hr 0.16
min 9.7

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 24

POST Subc 3A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Drainage area	= 1.060 ac	Curve number	= 37.9
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 9.7 min
Total precip.	= 3.10 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Apr 10, 2012

Hyd. No. 24

POST Subc 3A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.012 cfs
Storm frequency	= 10 yrs	Time to peak	= 15.03 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Drainage area	= 1.060 ac	Curve number	= 37.9
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 9.7 min
Total precip.	= 4.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time -- (hrs	Outflow cfs)
14.67	0.012
14.70	0.012
14.73	0.012
14.77	0.012
14.80	0.012
14.83	0.012
14.87	0.012
14.90	0.012
14.93	0.012
14.97	0.012
15.00	0.012
15.03	0.012 <<
15.07	0.012
15.10	0.012
15.13	0.012
15.17	0.012
15.20	0.012
15.23	0.012
15.27	0.012
15.30	0.012
15.33	0.012
15.37	0.012
15.40	0.012

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Apr 10, 2012

Hyd. No. 24

POST Subc 3A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.216 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.33 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Drainage area	= 1.060 ac	Curve number	= 37.9
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 9.7 min
Total precip.	= 6.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time -- (hrs	Outflow cfs)
12.30	0.213
12.33	0.216 <<
12.37	0.216

...End

Worksheet 2: Runoff curve number and runoff SM-4810

Project: The Meadow at Acton By BRE Date 04-09-12

Location: 263-265 Great Road, Acton Checked _____ Date _____

Circle one: Present **Developed** Subcatchment 3B

1. Runoff curve number (CN)

Soil name and hydrologic soil group (appendix A)	Cover description (cover type, treatment, and hydrologic condition: percent impervious: unconnected/connected impervious area ratio)	CN Table 2-2	CN Fig. 2-3	CN Fig. 2-4	Area Acres	Product of CN x Area
Hinckley Loamy Sand 253B A	Woods (Good Condition)	30			0.05	1.50
Hinckley Loamy Sand 253B A	Open Space (Good Condition)	39			0.71	27.69
	Impervious	98			0.37	36.26
Hinckley Loamy Sand 253B A	Woods (Good Condition)-OFFSITE	30			2.42	72.60
						0.00
						0.00
						0.00
						0.00
				Totals =	3.55	138.05

1/ Use only one CN source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{138.05}{3.55} = 38.89$; Use CN = 38.9

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency.....	yr	2	10	100
Rainfall, P (24-hour).....	in	3.1	4.5	6.4
Runoff, Q..... (Use P and CN with table 2-1, fig. 2-1,) or eqs. 2-3 and 2-4.)	in	0.00	0.11	0.56
Runoff, Q.....	cf	2	1390	7205

D-2 (210-VI-TR-55, Second Ed., June 1986)

Worksheet 3: Time of Concentration (Tc) or travel time (Tt) **SM-4810**

Project: The Meadow at Acton By BRE Date 04-10-12

Location: 263-265 Great Road, Acton Checked _____ Date _____

Circle one: Present **Developed**

Circle one: **Tc** Tt through Subcatchment 3B subarea

Sheet flow (Applicable to Tc only)		Segment ID	A-B			
1. Surface Description (table 3-1)			grass			
2. Mannings roughness coeff., n (table 3-1)			0.24			
3. Flow length, L (total L <= 300 ft)		ft	50			
4. Two-yr 24-hr rainfall, P2		in	3.1			
5. Land Slope, s		ft/ft	0.026			
6. Tt = 0.007 (nL)^0.8 / (P2^0.5 s^0.4)	Compute Tt	hr	0.12			0.12

Shallow concentrated Flow		Segment ID	B-C	C-D		
7. Surface Description (paved or unpaved)			unpaved	paved		
8. Flow Length, L		ft	11	141		
9. Watercourse slope, s		ft/ft	0.04	0.03		
10. Average Velocity, V (figure 3-1)		ft/s	3.06	3.69		
11. Tt = L / 3600V	Compute Tt	hr	0.00	0.01		0.01

Channel flow		Segment ID				
12. Cross sectional flow area, a		sf				
13. Wetted perimeter, pw		ft				
14. Hydraulic radius, r=a/wp	Compute r	ft				
15. Channel Slope, s		ft/ft				
16. Manning's roughness coeff., n						
17. V = 1.49 r^2/3 s^1/2 / n	Compute V	ft/s				
18. Flow length, L		ft				
19. Tt = L / 3600V	Compute Tt	hr				

20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)	hr	0.14
	min	8.2

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 25

POST Subc 3B

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Drainage area	= 3.550 ac	Curve number	= 38.9
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 8.2 min
Total precip.	= 3.10 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Apr 10, 2012

Hyd. No. 25

POST Subc 3B

Hydrograph type	= SCS Runoff	Peak discharge	= 0.051 cfs
Storm frequency	= 10 yrs	Time to peak	= 14.73 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Drainage area	= 3.550 ac	Curve number	= 38.9
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 8.2 min
Total precip.	= 4.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time -- (hrs	Outflow cfs)
14.37	0.050
14.40	0.051
14.43	0.051
14.47	0.051
14.50	0.051
14.53	0.051
14.57	0.051
14.60	0.051
14.63	0.051
14.67	0.051
14.70	0.051
14.73	0.051 <<
14.77	0.051
14.80	0.051
14.83	0.051
14.87	0.051
14.90	0.051
14.93	0.051
14.97	0.051
15.00	0.051
15.03	0.051
15.07	0.051
15.10	0.051
15.13	0.050

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 25

POST Subc 3B

Hydrograph type	= SCS Runoff	Peak discharge	= 0.876 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.30 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Drainage area	= 3.550 ac	Curve number	= 38.9
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 8.2 min
Total precip.	= 6.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time -- (hrs	Outflow cfs)
12.27	0.872
12.30	0.876 <<
12.33	0.874
12.37	0.862

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 26

1st Flush

Hydrograph type	= Diversion1	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hydrograph	= 25 - POST Subc 3B	2nd diverted hyd.	= 27
Diversion method	= First Flush Volume	Volume Up To	= 963.00 cuft

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Apr 10, 2012

Hyd. No. 26

1st Flush

Hydrograph type	= Diversion1	Peak discharge	= 0.051 cfs
Storm frequency	= 10 yrs	Time to peak	= 14.73 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hydrograph	= 25 - POST Subc 3B	2nd diverted hyd.	= 27
Diversion method	= First Flush Volume	Volume Up To	= 963.00 cuft

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Inflow cfs	2nd Diverted cfs	Outflow cfs
14.37	0.050	0.000	0.050
14.40	0.051	0.000	0.051
14.43	0.051	0.000	0.051
14.47	0.051	0.000	0.051
14.50	0.051	0.000	0.051
14.53	0.051	0.000	0.051
14.57	0.051	0.000	0.051
14.60	0.051	0.000	0.051
14.63	0.051	0.000	0.051
14.67	0.051	0.000	0.051
14.70	0.051	0.000	0.051
14.73	0.051 <<	0.000	0.051 <<
14.77	0.051	0.000	0.051
14.80	0.051	0.000	0.051
14.83	0.051	0.000	0.051
14.87	0.051	0.000	0.051
14.90	0.051	0.000	0.051
14.93	0.051	0.000	0.051
14.97	0.051	0.000	0.051
15.00	0.051	0.000	0.051
15.03	0.051	0.000	0.051
15.07	0.051	0.000	0.051
15.10	0.051	0.000	0.051
15.13	0.050	0.000	0.050

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 26

1st Flush

Hydrograph type	= Diversion1	Peak discharge	= 0.876 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.30 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hydrograph	= 25 - POST Subc 3B	2nd diverted hyd.	= 27
Diversion method	= First Flush Volume	Volume Up To	= 963.00 cuft

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Inflow cfs	2nd Diverted cfs	Outflow cfs
12.27	0.872	0.000	0.872
12.30	0.876 <<	0.000	0.876 <<
12.33	0.874	0.000	0.874
12.37	0.862	0.000	0.862

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 27

Divert to Infil

Hydrograph type	= Diversion2	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hydrograph	= 25 - POST Subc 3B	2nd diverted hyd.	= 26
Diversion method	= First Flush Volume	Volume Up To	= 963.00 cuft

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 27

Divert to Infil

Hydrograph type	= Diversion2	Peak discharge	= 0.037 cfs
Storm frequency	= 10 yrs	Time to peak	= 22.10 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hydrograph	= 25 - POST Subc 3B	2nd diverted hyd.	= 26
Diversion method	= First Flush Volume	Volume Up To	= 963.00 cuft

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Inflow cfs	2nd Diverted cfs	Outflow cfs
22.10	0.037	0.000	0.037 <<

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Apr 10, 2012

Hyd. No. 27

Divert to Infil

Hydrograph type	= Diversion2	Peak discharge	= 0.737 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.47 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hydrograph	= 25 - POST Subc 3B	2nd diverted hyd.	= 26
Diversion method	= First Flush Volume	Volume Up To	= 963.00 cuft

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Inflow cfs	2nd Diverted cfs	Outflow cfs
12.47	0.737	0.000	0.737 <<

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 28

Infil 3

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 27 - Divert to Infil	Reservoir name	= Infil 3
Max. Elevation	= 175.00 ft	Max. Storage	= 0 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 28

Infil 3

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 27 - Divert to Infil	Reservoir name	= Infil 3
Max. Elevation	= 175.00 ft	Max. Storage	= 2 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 28

Infil 3

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 27 - Divert to Infil	Reservoir name	= Infil 3
Max. Elevation	= 175.63 ft	Max. Storage	= 330 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

...End

Pond Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Apr 10, 2012

Pond No. 5 - Infil 3

Pond Data

UG Chambers - Invert elev. = 176.00 ft, Rise x Span = 1.00 x 3.00 ft, Barrel Len = 47.00 ft, No. Barrels = 6, Slope = 0.00%, Headers = Yes
Encasement - Invert elev. = 175.00 ft, Width = 4.00 ft, Height = 3.00 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	175.00	n/a	0	0
0.30	175.30	n/a	158	158
0.60	175.60	n/a	158	317
0.90	175.90	n/a	158	475
1.20	176.20	n/a	276	752
1.50	176.50	n/a	325	1,076
1.80	176.80	n/a	292	1,369
2.10	177.10	n/a	207	1,576
2.40	177.40	n/a	158	1,734
2.70	177.70	n/a	158	1,892
3.00	178.00	n/a	158	2,051

Culvert / Orifice Structures

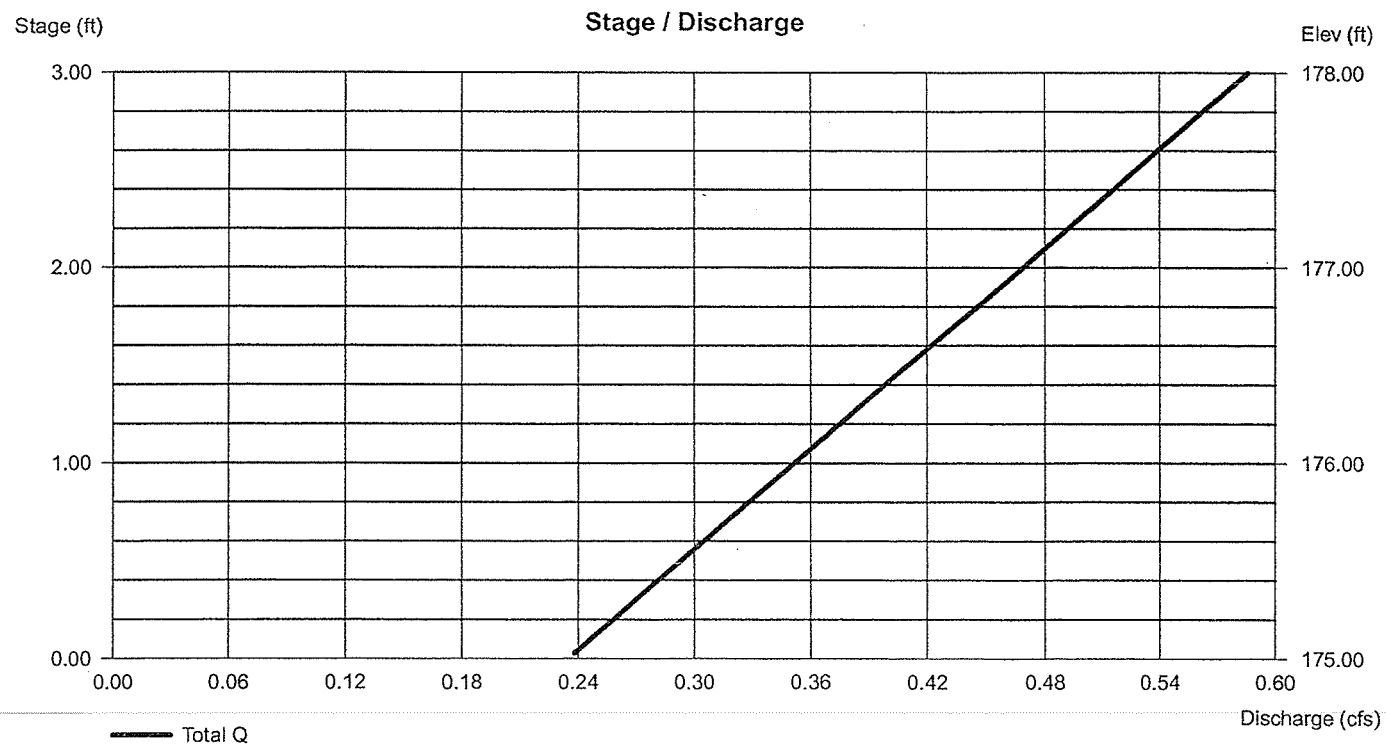
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 177.50	0.00	0.00	0.00
Length (ft)	= 10.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

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

Exfil.(in/hr) = 8.270 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 29

Total Subc 3 POST

Hydrograph type	= Combine	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyds.	= 24, 28	Contrib. drain. area	= 1.060 ac

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Apr 10, 2012

Hyd. No. 29

Total Subc 3 POST

Hydrograph type	= Combine	Peak discharge	= 0.012 cfs
Storm frequency	= 10 yrs	Time to peak	= 15.03 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyds.	= 24, 28	Contrib. drain. area	= 1.060 ac

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Hyd. 24 + (cfs)	Hyd. 28 = (cfs)	Outflow (cfs)
14.67	0.012	0.000 <<	0.012
14.70	0.012	0.000 <<	0.012
14.73	0.012	0.000 <<	0.012
14.77	0.012	0.000 <<	0.012
14.80	0.012	0.000 <<	0.012
14.83	0.012	0.000 <<	0.012
14.87	0.012	0.000 <<	0.012
14.90	0.012	0.000 <<	0.012
14.93	0.012	0.000 <<	0.012
14.97	0.012	0.000 <<	0.012
15.00	0.012	0.000 <<	0.012
15.03	0.012 <<	0.000 <<	0.012 <<
15.07	0.012	0.000 <<	0.012
15.10	0.012	0.000 <<	0.012
15.13	0.012	0.000 <<	0.012
15.17	0.012	0.000 <<	0.012
15.20	0.012	0.000 <<	0.012
15.23	0.012	0.000 <<	0.012
15.27	0.012	0.000 <<	0.012
15.30	0.012	0.000 <<	0.012
15.33	0.012	0.000 <<	0.012
15.37	0.012	0.000 <<	0.012
15.40	0.012	0.000 <<	0.012

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Apr 10, 2012

Hyd. No. 29

Total Subc 3 POST

Hydrograph type	= Combine	Peak discharge	= 0.216 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.33 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyds.	= 24, 28	Contrib. drain. area	= 1.060 ac

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Hyd. 24 + (cfs)	Hyd. 28 = (cfs)	Outflow (cfs)
12.30	0.213	0.000 <<	0.213
12.33	0.216 <<	0.000 <<	0.216 <<
12.37	0.216	0.000 <<	0.216

...End

Worksheet 2: Runoff curve number and runoff

SM-4810

Project: The Meadow at Acton By BRE Date 04-10-12

Location: 263-265 Great Road, Acton Checked _____ Date _____

Circle one: Present Developed Subcatchment 4A

1. Runoff curve number (CN)

Soil name and hydrologic soil group (appendix	Cover description (cover type, treatment, and hydrologic condition: percent impervious: unconnected/connected impervious area ratio)	CN Table 2-2	CN Fig. 2-3	CN Fig. 2-4	Area Acres	Product of CN x Area
ley Loamy 253B A	Woods (Good Condition)	30			0.02	0.60
ley Loamy 253B A	Open Space (Good Condition)	39			0.17	6.63
	Impervious	98			0.01	0.98
						0.00
						0.00
						0.00
						0.00
						0.00
				Totals =	0.2	8.21

1/ Use only one CN source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{8.21}{0.20} = 41.05$; Use CN = 41.1

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency.....	yr	2	10	100
Rainfall, P (24-hour).....	in	3.1	4.5	6.4
Runoff, Q..... (Use P and CN with table 2-1, fig. 2-1,) or eqs. 2-3 and 2-4.)	in	0.00	0.17	0.70
Runoff, Q.....	cf	3	120	505

D-2

(210-VI-TR-55, Second Ed., June 1986)

Worksheet 3: Time of Concentration (Tc) or travel time (Tt) SM-4810

Project: The Meadow at Acton By BRE Date 04-10-12

Location: 263-265 Great Road, Acton Checked _____ Date _____

Circle one: Present Developed
Circle one: Tc Tt through subarea Subcatchment 4A

Sheet flow (Applicable to Tc only)		Segment ID	A-B			
1. Surface Description (table 3-1)			grass			
2. Mannings roughness coeff., n (table 3-1)			0.24			
3. Flow length, L (total L <= 300 ft)		ft	50			
4. Two-yr 24-hr rainfall, P2		in	3.1			
5. Land Slope, s		ft/ft	0.024			
6. Tt = 0.007 (nL)^0.8 / (P2^0.5 s^0.4)	Compute Tt	hr	0.13			0.13

Shallow concentrated Flow		Segment ID	B-C			
7. Surface Description (paved or unpaved)			unpaved			
8. Flow Length, L		ft	77			
9. Watercourse slope, s		ft/ft	0.09			
10. Average Velocity, V (figure 3-1)		ft/s	4.84			
11. Tt = L / 3600V	Compute Tt	hr	0.00			0.00

Channel flow		Segment ID				
12. Cross sectional flow area, a		sf				
13. Wetted perimeter, pw		ft				
14. Hydraulic radius, r=a/wp	Compute r	ft				
15. Channel Slope, s		ft/ft				
16. Manning's roughness coeff., n						
17. V = 1.49 r^2/3 s^1/2 / n	Compute V	ft/s				
18. Flow length, L		ft				
19. Tt = L / 3600V	Compute Tt	hr				

20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19) hr 0.13 min 8.0

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2

Tuesday, Apr 10, 2012

Hyd. No. 31

POST Subc 4A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 22.10 hrs
Time interval	= 2 min	Hyd. volume	= 3 cuft
Drainage area	= 0.200 ac	Curve number	= 41.1
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 8.0 min
Total precip.	= 3.10 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time -- (hrs	Outflow cfs)
22.10	0.000 <<

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Apr 10, 2012

Hyd. No. 31

POST Subc 4A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.005 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.50 hrs
Time interval	= 2 min	Hyd. volume	= 3 cuft
Drainage area	= 0.200 ac	Curve number	= 41.1
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 8.0 min
Total precip.	= 4.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time -- (hrs)	Outflow (cfs)
12.50	0.005 <<
12.53	0.005

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2

Tuesday, Apr 10, 2012

Hyd. No. 31

POST Subc 4A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.075 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 3 cuft
Drainage area	= 0.200 ac	Curve number	= 41.1
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 8.0 min
Total precip.	= 6.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time -- (hrs	Outflow cfs)
12.20	0.075 <<
12.23	0.074

...End

Worksheet 2: Runoff curve number and runoff SM-4810

Project: The Meadow at Acton By BRE Date 04-10-12

Location: 263-265 Great Road, Acton Checked _____ Date _____

Circle one: Present **Developed** Subcatchment 5A

1. Runoff curve number (CN)

Soil name and hydrologic soil group (appendix A)	Cover description (cover type, treatment, and hydrologic condition: percent impervious: unconnected/connected impervious area ratio)	CN Table 2-2	CN Fig. 2-3	CN Fig. 2-4	Area Acres	Product of CN x Area
Hinckley Loamy Sand 253B A	Woods (Good Condition)	30			0.01	0.30
Hinckley Loamy Sand 253B A	Open Space (Good Condition)	39			0.12	4.68
	Impervious	98			0.02	1.96
Hinckley Loamy Sand 253B A	Woods (Good Condition)-OFFSITE					0.00
						0.00
						0.00
						0.00
						0.00
				Totals =	0.15	6.94

1/ Use only one CN source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{6.94}{0.15} = 46.27$; Use CN = 46.3

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency.....	yr	2	10	100
Rainfall, P (24-hour).....	in	3.1	4.5	6.4
Runoff, Q..... (Use P and CN with table 2-1, fig. 2-1,) or eqs. 2-3 and 2-4.)	in	0.05	0.34	1.06
Runoff, Q.....	cf	27	187	577

D-2 (210-VI-TR-55, Second Ed., June 1986)

Worksheet 3: Time of Concentration (Tc) or travel time (Tt) SM-4810

Project: The Meadow at Acton By BRE Date 04-10-12

Location: 263-265 Great Road, Acton Checked _____ Date _____

Circle one: Present **Developed**

Circle one: **Tc** Tt through Subcatchment 5A subarea

Sheet flow (Applicable to Tc only)		Segment ID	A-B			
1. Surface Description (table 3-1)			grass			
2. Mannings roughness coeff., n (table 3-1)			0.24			
3. Flow length, L (total L <= 300 ft)		ft	50			
4. Two-yr 24-hr rainfall, P2		in	3.1			
5. Land Slope, s		ft/ft	0.1			
6. Tt = 0.007 (nL)^0.8 / (P2^0.5 s^0.4)	Compute Tt	hr	0.07			0.07

Shallow concentrated Flow		Segment ID	B-C			
7. Surface Description (paved or unpaved)			unpaved			
8. Flow Length, L		ft	19			
9. Watercourse slope, s		ft/ft	0.07			
10. Average Velocity, V (figure 3-1)		ft/s	4.27			
11. Tt = L / 3600V	Compute Tt	hr	0.00			0.00

Channel flow		Segment ID				
12. Cross sectional flow area, a		sf				
13. Wetted perimeter, pw		ft				
14. Hydraulic radius, r=a/wp	Compute r	ft				
15. Channel Slope, s		ft/ft				
16. Manning's roughness coeff., n						
17. V = 1.49 r^2/3 s^1/2 / n	Compute V	ft/s				
18. Flow length, L		ft				
19. Tt = L / 3600V	Compute Tt	hr				

20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19) hr 0.10 min 6.0

Hydrograph Report

Hyd. No. 32

POST Subc 5A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.001 cfs
Storm frequency	= 2 yrs	Time to peak	= 22.07 hrs
Time interval	= 2 min	Hyd. volume	= 25 cuft
Drainage area	= 0.150 ac	Curve number	= 46.3
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.0 min
Total precip.	= 3.10 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time -- (hrs	Outflow cfs)
22.07	0.001 <<

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 32

POST Subc 5A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.020 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.30 hrs
Time interval	= 2 min	Hyd. volume	= 25 cuft
Drainage area	= 0.150 ac	Curve number	= 46.3
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.0 min
Total precip.	= 4.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time -- (hrs	Outflow cfs)
12.27	0.020
12.30	0.020 <<
12.33	0.020

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 32

POST Subc 5A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.132 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 25 cuft
Drainage area	= 0.150 ac	Curve number	= 46.3
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.0 min
Total precip.	= 6.40 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time -- (hrs	Outflow cfs)
12.10	0.132 <<

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 33

<no description>

Hydrograph type	= Combine	Peak discharge	= 0.001 cfs
Storm frequency	= 2 yrs	Time to peak	= 22.07 hrs
Time interval	= 2 min	Hyd. volume	= 28 cuft
Inflow hyds.	= 31, 32	Contrib. drain. area	= 0.350 ac

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Hyd. 31 + (cfs)	Hyd. 32 = (cfs)	Outflow (cfs)
22.07	0.000	0.001 <<	0.001 <<

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 33

<no description>

Hydrograph type	= Combine	Peak discharge	= 0.022 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.40 hrs
Time interval	= 2 min	Hyd. volume	= 28 cuft
Inflow hyds.	= 31, 32	Contrib. drain. area	= 0.350 ac

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Hyd. 31 + (cfs)	Hyd. 32 = (cfs)	Outflow (cfs)
12.37	0.002	0.019	0.022
12.40	0.003	0.018	0.022 <<
12.43	0.004	0.017	0.021

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Apr 10, 2012

Hyd. No. 33

<no description>

Hydrograph type	= Combine	Peak discharge	= 0.183 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 28 cuft
Inflow hyds.	= 31, 32	Contrib. drain. area	= 0.350 ac

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Hyd. 31 + (cfs)	Hyd. 32 = (cfs)	Outflow (cfs)
12.10	0.052	0.132 <<	0.183 <<
12.13	0.065	0.117	0.182

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 35

Uncontrol Runoff POST

Hydrograph type	= Combine	Peak discharge	= 0.001 cfs
Storm frequency	= 2 yrs	Time to peak	= 22.07 hrs
Time interval	= 2 min	Hyd. volume	= 28 cuft
Inflow hyds.	= 10, 17, 24, 31, 32	Contrib. drain. area	= 1.660 ac

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Hyd. 10 + (cfs)	Hyd. 17 + (cfs)	Hyd. 24 + (cfs)	Hyd. 31 + (cfs)	Hyd. 32 + (cfs)	Outflow (cfs)
22.07	0.000 <<	0.000 <<	0.000 <<	0.000	0.001 <<	0.001 <<

...End

Hydrograph Report

Hydraflow Hydrographs by intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 35

Uncontrol Runoff POST

Hydrograph type	= Combine	Peak discharge	= 0.024 cfs
Storm frequency	= 10 yrs	Time to peak	= 14.73 hrs
Time interval	= 2 min	Hyd. volume	= 28 cuft
Inflow hyds.	= 10, 17, 24, 31, 32	Contrib. drain. area	= 1.660 ac

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Hyd. 10 + (cfs)	Hyd. 17 + (cfs)	Hyd. 24 + (cfs)	Hyd. 31 + (cfs)	Hyd. 32 + (cfs)	Outflow (cfs)
14.33	0.000	0.002	0.011	0.004	0.006	0.023
14.37	0.000	0.002	0.011	0.004	0.006	0.024
14.40	0.000	0.002	0.011	0.004	0.006	0.024
14.43	0.000	0.002	0.011	0.004	0.006	0.024
14.47	0.000	0.002	0.011	0.004	0.006	0.024
14.50	0.000	0.002	0.011	0.004	0.006	0.024
14.53	0.000	0.002	0.011	0.004	0.006	0.024
14.57	0.000	0.002	0.012	0.004	0.006	0.024
14.60	0.000	0.002	0.012	0.004	0.006	0.024
14.63	0.000	0.002	0.012	0.004	0.006	0.024
14.67	0.000	0.002	0.012	0.004	0.006	0.024
14.70	0.000	0.002	0.012	0.004	0.006	0.024
14.73	0.000	0.002	0.012	0.004	0.006	0.024 <<
14.77	0.000	0.002	0.012	0.004	0.006	0.024
14.80	0.000	0.002	0.012	0.004	0.006	0.024
14.83	0.000	0.002	0.012	0.004	0.005	0.024
14.87	0.000	0.002	0.012	0.004	0.005	0.024
14.90	0.000	0.002	0.012	0.004	0.005	0.024
14.93	0.000	0.002	0.012	0.004	0.005	0.024
14.97	0.000	0.002	0.012	0.004	0.005	0.024
15.00	0.000	0.002	0.012	0.004	0.005	0.024
15.03	0.000	0.002	0.012 <<	0.004	0.005	0.024
15.07	0.000	0.002	0.012	0.004	0.005	0.024
15.10	0.000	0.002	0.012	0.004	0.005	0.024
15.13	0.000	0.002	0.012	0.004	0.005	0.023

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Apr 10, 2012

Hyd. No. 35

Uncontrol Runoff POST

Hydrograph type	= Combine	Peak discharge	= 0.403 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.30 hrs
Time interval	= 2 min	Hyd. volume	= 28 cuft
Inflow hyds.	= 10, 17, 24, 31, 32	Contrib. drain. area	= 1.660 ac

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Hyd. 10 + (cfs)	Hyd. 17 + (cfs)	Hyd. 24 + (cfs)	Hyd. 31 + (cfs)	Hyd. 32 + (cfs)	Outflow (cfs)
12.27	0.003	0.037	0.205	0.072	0.082	0.400
12.30	0.004	0.039	0.213	0.070	0.078	0.403 <<
12.33	0.004	0.040	0.216 <<	0.068	0.074	0.402

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 36

Total Runoff Post

Hydrograph type	= Combine	Peak discharge	= 0.001 cfs
Storm frequency	= 2 yrs	Time to peak	= 22.07 hrs
Time interval	= 2 min	Hyd. volume	= 28 cuft
Inflow hyds.	= 15, 22, 29, 31, 32	Contrib. drain. area	= 0.350 ac

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Hyd. 15 + (cfs)	Hyd. 22 + (cfs)	Hyd. 29 + (cfs)	Hyd. 31 + (cfs)	Hyd. 32 + (cfs)	Outflow (cfs)
22.07	0.000 <<	0.000	0.000 <<	0.000	0.001 <<	0.001 <<

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Apr 10, 2012

Hyd. No. 36

Total Runoff Post

Hydrograph type	= Combine	Peak discharge	= 0.024 cfs
Storm frequency	= 10 yrs	Time to peak	= 14.73 hrs
Time interval	= 2 min	Hyd. volume	= 28 cuft
Inflow hyds.	= 15, 22, 29, 31, 32	Contrib. drain. area	= 0.350 ac

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Hyd. 15 + (cfs)	Hyd. 22 + (cfs)	Hyd. 29 + (cfs)	Hyd. 31 + (cfs)	Hyd. 32 + (cfs)	Outflow (cfs)
14.33	0.000	0.002	0.011	0.004	0.006	0.023
14.37	0.000	0.002	0.011	0.004	0.006	0.024
14.40	0.000	0.002	0.011	0.004	0.006	0.024
14.43	0.000	0.002	0.011	0.004	0.006	0.024
14.47	0.000	0.002	0.011	0.004	0.006	0.024
14.50	0.000	0.002	0.011	0.004	0.006	0.024
14.53	0.000	0.002	0.011	0.004	0.006	0.024
14.57	0.000	0.002	0.012	0.004	0.006	0.024
14.60	0.000	0.002	0.012	0.004	0.006	0.024
14.63	0.000	0.002	0.012	0.004	0.006	0.024
14.67	0.000	0.002	0.012	0.004	0.006	0.024
14.70	0.000	0.002	0.012	0.004	0.006	0.024
14.73	0.000	0.002	0.012	0.004	0.006	0.024 <<
14.77	0.000	0.002	0.012	0.004	0.006	0.024
14.80	0.000	0.002	0.012	0.004	0.006	0.024
14.83	0.000	0.002	0.012	0.004	0.005	0.024
14.87	0.000	0.002	0.012	0.004	0.005	0.024
14.90	0.000	0.002	0.012	0.004	0.005	0.024
14.93	0.000	0.002	0.012	0.004	0.005	0.024
14.97	0.000	0.002	0.012	0.004	0.005	0.024
15.00	0.000	0.002	0.012	0.004	0.005	0.024
15.03	0.000	0.002	0.012 <<	0.004	0.005	0.024
15.07	0.000	0.002	0.012	0.004	0.005	0.024
15.10	0.000	0.002	0.012	0.004	0.005	0.024
15.13	0.000	0.002	0.012	0.004	0.005	0.023

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Apr 10, 2012

Hyd. No. 36

Total Runoff Post

Hydrograph type	= Combine	Peak discharge	= 0.403 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.30 hrs
Time interval	= 2 min	Hyd. volume	= 28 cuft
Inflow hyds.	= 15, 22, 29, 31, 32	Contrib. drain. area	= 0.350 ac

Hydrograph Discharge Table

(Printed values >= 98.00% of Qp.)

Time (hrs)	Hyd. 15 + (cfs)	Hyd. 22 + (cfs)	Hyd. 29 + (cfs)	Hyd. 31 + (cfs)	Hyd. 32 + (cfs)	Outflow (cfs)
12.27	0.003	0.037	0.205	0.072	0.082	0.400
12.30	0.004	0.039	0.213	0.070	0.078	0.403 <<
12.33	0.004	0.040	0.216 <<	0.068	0.074	0.402

...End