File.... C:\Program Files\Haestad\PPKW\PPW\3092 PRDA 3.PPW

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 1443.50 ft
Increment = .10 ft
Max. Elev.= 1447.50 ft

****
OUTLET CONNECTIVITY
****

---> Forward Flow Only (UpStream to DnStream)
<--- Reverse Flow Only (DnStream to UpStream)
<---> Forward and Reverse Both Allowed

Structure	No.		Outfall	E1, ft	E2, ft
Orifice-Circular	2	--->	TW	1445.000	1447.500
Orifice-Circular	1	--->	TW	1443.500	1447.500

TW SETUP, DS Channel

OUTLET STRUCTURE INPUT DATA

Structure ID = 2
Structure Type = Orifice-Circular

# of Openings = 1
Invert Elev. = 1445.00 ft
Diameter = .7500 ft
Orifice Coeff. = .600

Structure ID = 1
Structure Type = Orifice-Circular

# of Openings = 1
Invert Elev. = 1443.50 ft
Diameter = .5000 ft
Orifice Coeff. = .600

Structure ID = TW
Structure Type = TW SETUP, DS Channel

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...
Maximum Iterations= 30
Min. TW tolerance = .01 ft
Max. TW tolerance = .01 ft
Min. HW tolerance = .01 ft
Max. HW tolerance = .01 ft
Min. Q tolerance = .10 cfs
Max. Q tolerance = .10 cfs

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 2 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
DNstream ID = TW (Pond Outfall)

WS Elev, Device Q	Tail Water	Notes

WS Elev. ft	Q cfs	TW Elev ft	Converge +/-ft	Computation Messages
1443.50	.00	Free Outfall		HW & TW below invert
1443.60	.00	Free Outfall		HW & TW below invert
1443.70	.00	Free Outfall		HW & TW below invert
1443.80	.00	Free Outfall		HW & TW below invert
1443.90	.00	Free Outfall		HW & TW below invert
1444.00	.00	Free Outfall		HW & TW below invert
1444.10	.00	Free Outfall		HW & TW below invert
1444.20	.00	Free Outfall		HW & TW below invert
1444.30	.00	Free Outfall		HW & TW below invert
1444.40	.00	Free Outfall		HW & TW below invert
1444.50	.00	Free Outfall		HW & TW below invert
1444.60	.00	Free Outfall		HW & TW below invert
1444.70	.00	Free Outfall		HW & TW below invert
1444.80	.00	Free Outfall		HW & TW below invert
1444.90	.00	Free Outfall		HW & TW below invert
1445.00	.00	Free Outfall		Upstream HW & DNstream TW < Inv.El
1445.10	.03	Free Outfall		CRIT.DEPTH CONTROL Vh= .024ft Dcr= .076ft CRIT.DEPTH
1445.20	.11	Free Outfall		CRIT.DEPTH CONTROL Vh= .053ft Dcr= .146ft CRIT.DEPTH
1445.30	.24	Free Outfall		CRIT.DEPTH CONTROL Vh= .080ft Dcr= .220ft CRIT.DEPTH
1445.40	.42	Free Outfall		CRIT.DEPTH CONTROL Vh= .109ft Dcr= .291ft CRIT.DEPTH
1445.50	.63	Free Outfall		CRIT.DEPTH CONTROL Vh= .140ft Dcr= .360ft CRIT.DEPTH
1445.60	.86	Free Outfall		CRIT.DEPTH CONTROL Vh= .175ft Dcr= .425ft CRIT.DEPTH
1445.70	1.12	Free Outfall		CRIT.DEPTH CONTROL Vh= .212ft Dcr= .488ft CRIT.DEPTH
1445.80	1.39	Free Outfall		H =.43
1445.90	1.54	Free Outfall		H =.53
1446.00	1.68	Free Outfall		H =.63
1446.10	1.81	Free Outfall		H =.72
1446.20	1.93	Free Outfall		H =.82
1446.30	2.05	Free Outfall		H =.93
1446.40	2.15	Free Outfall		H =1.03
1446.50	2.26	Free Outfall		H =1.13
1446.60	2.35	Free Outfall		H =1.22
1446.70	2.45	Free Outfall		H =1.32
1446.80	2.54	Free Outfall		H =1.43

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RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 2 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
DNstream ID = TW (Pond Outfall)

WS Elev, Device Q		Tail Water		Notes
WS Elev. ft	Q cfs	TW Elev ft	Converge +/-ft	Computation Messages
1446.90	2.63	Free Outfall		H =1.53
1447.00	2.71	Free Outfall		H =1.63
1447.10	2.79	Free Outfall		H =1.72
1447.20	2.87	Free Outfall		H =1.82
1447.30	2.95	Free Outfall		H =1.93
1447.40	3.03	Free Outfall		H =2.03
1447.50	3.10	Free Outfall		H =2.13

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RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
DNstream ID = TW (Pond Outfall)

WS Elev,Device Q Tail Water Notes

WS Elev. ft	Q cfs	TW Elev ft	Converge +/-ft	Computation Messages
1443.50	.00	Free Outfall		Upstream HW & DNstream TW < Inv.El
1443.60	.02	Free Outfall		CRIT.DEPTH CONTROL Vh= .022ft Dcr= .078ft CRIT.DEPTH
1443.70	.09	Free Outfall		CRIT.DEPTH CONTROL Vh= .051ft Dcr= .148ft CRIT.DEPTH
1443.80	.19	Free Outfall		CRIT.DEPTH CONTROL Vh= .081ft Dcr= .219ft CRIT.DEPTH
1443.90	.31	Free Outfall		CRIT.DEPTH CONTROL Vh= .116ft Dcr= .283ft CRIT.DEPTH
1444.00	.47	Free Outfall		H =.25
1444.10	.56	Free Outfall		H =.35
1444.20	.63	Free Outfall		H =.45
1444.30	.70	Free Outfall		H =.55
1444.40	.76	Free Outfall		H =.65
1444.50	.82	Free Outfall		H =.75
1444.60	.87	Free Outfall		H =.85
1444.70	.92	Free Outfall		H =.95
1444.80	.97	Free Outfall		H =1.05
1444.90	1.01	Free Outfall		H =1.15
1445.00	1.06	Free Outfall		H =1.25
1445.10	1.10	Free Outfall		H =1.35
1445.20	1.14	Free Outfall		H =1.45
1445.30	1.18	Free Outfall		H =1.55
1445.40	1.21	Free Outfall		H =1.65
1445.50	1.25	Free Outfall		H =1.75
1445.60	1.29	Free Outfall		H =1.85
1445.70	1.32	Free Outfall		H =1.95
1445.80	1.35	Free Outfall		H =2.05
1445.90	1.39	Free Outfall		H =2.15
1446.00	1.42	Free Outfall		H =2.25
1446.10	1.45	Free Outfall		H =2.35
1446.20	1.48	Free Outfall		H =2.45
1446.30	1.51	Free Outfall		H =2.55
1446.40	1.54	Free Outfall		H =2.65
1446.50	1.57	Free Outfall		H =2.75
1446.60	1.60	Free Outfall		H =2.85
1446.70	1.62	Free Outfall		H =2.95
1446.80	1.65	Free Outfall		H =3.05

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RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
DNstream ID = TW (Pond Outfall)

WS Elev, Device Q		Tail Water		Notes
WS Elev. ft	Q cfs	TW Elev ft	Converge +/-ft	Computation Messages
1446.90	1.68	Free Outfall		H =3.15
1447.00	1.70	Free Outfall		H =3.25
1447.10	1.73	Free Outfall		H =3.35
1447.20	1.76	Free Outfall		H =3.45
1447.30	1.78	Free Outfall		H =3.55
1447.40	1.81	Free Outfall		H =3.65
1447.50	1.83	Free Outfall		H =3.75

File.... C:\Program Files\Haestad\PPKW\PPW\3092 PRDA 3.PPW

***** COMPOSITE OUTFLOW SUMMARY ****

WS Elev, Total Q		Notes		
		Converge		
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
1443.50	.00	Free Outfall		None contributing
1443.60	.02	Free Outfall		1
1443.70	.09	Free Outfall		1
1443.80	.19	Free Outfall		1
1443.90	.31	Free Outfall		1
1444.00	.47	Free Outfall		1
1444.10	.56	Free Outfall		1
1444.20	.63	Free Outfall		1
1444.30	.70	Free Outfall		1
1444.40	.76	Free Outfall		1
1444.50	.82	Free Outfall		1
1444.60	.87	Free Outfall		1
1444.70	.92	Free Outfall		1
1444.80	.97	Free Outfall		1
1444.90	1.01	Free Outfall		1
1445.00	1.06	Free Outfall		1
1445.10	1.13	Free Outfall		2 +1
1445.20	1.25	Free Outfall		2 +1
1445.30	1.42	Free Outfall		2 +1
1445.40	1.63	Free Outfall		2 +1
1445.50	1.88	Free Outfall		2 +1
1445.60	2.15	Free Outfall		2 +1
1445.70	2.44	Free Outfall		2 +1
1445.80	2.74	Free Outfall		2 +1
1445.90	2.93	Free Outfall		2 +1
1446.00	3.10	Free Outfall		2 +1
1446.10	3.26	Free Outfall		2 +1
1446.20	3.41	Free Outfall		2 +1
1446.30	3.55	Free Outfall		2 +1
1446.40	3.69	Free Outfall		2 +1
1446.50	3.82	Free Outfall		2 +1
1446.60	3.95	Free Outfall		2 +1
1446.70	4.07	Free Outfall		2 +1
1446.80	4.19	Free Outfall		2 +1
1446.90	4.30	Free Outfall		2 +1
1447.00	4.41	Free Outfall		2 +1
1447.10	4.52	Free Outfall		2 +1
1447.20	4.63	Free Outfall		2 +1

File.... C:\Program Files\Haestad\PPKW\PPW\3092 PRDA 3.PPW

***** COMPOSITE OUTFLOW SUMMARY ****

WS Elev, Total Q		Notes		
		Converge		
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
1447.30	4.73	Free Outfall	2	+1
1447.40	4.83	Free Outfall	2	+1
1447.50	4.93	Free Outfall	2	+1

INFILTRATION RATING TABLE CALCULATIONS

Infilt.(cfs) = (2.0000 (in/hr) * Area) * Ku
Where: Ku = units conversion factor

W.S.Elev ft	Total Area acres	Infilt. cfs
No storage at this elevation... infiltration set to zero.		
1443.50	.0600	.00
1443.60	.0618	.12
1443.70	.0635	.13
1443.80	.0654	.13
1443.90	.0672	.14
1444.00	.0690	.14
1444.10	.0709	.14
1444.20	.0728	.15
1444.30	.0748	.15
1444.40	.0767	.15
1444.50	.0787	.16
1444.60	.0807	.16
1444.70	.0828	.17
1444.80	.0848	.17
1444.90	.0869	.18
1445.00	.0890	.18
1445.10	.0912	.18
1445.20	.0934	.19
1445.30	.0955	.19
1445.40	.0978	.20
1445.50	.1000	.20
1445.60	.1018	.21
1445.70	.1037	.21
1445.80	.1056	.21
1445.90	.1075	.22
1446.00	.1094	.22
1446.10	.1113	.22
1446.20	.1132	.23
1446.30	.1152	.23
1446.40	.1172	.24
1446.50	.1192	.24
1446.60	.1212	.24
1446.70	.1232	.25
1446.80	.1252	.25
1446.90	.1273	.26
1447.00	.1294	.26
1447.10	.1315	.27
1447.20	.1336	.27
1447.30	.1357	.27
1447.40	.1378	.28
1447.50	.1400	.28

LEVEL POOL ROUTING DATA

HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
Inflow HYG file = NONE STORED - POND 1 IN 2 YR
Outflow HYG file = NONE STORED - POND 1 OUT 2 YR

Pond Node Data = POND 1
Pond Volume Data = POND 1
Pond Outlet Data = Outlet 1

Infiltration = 2.0000 in/hr

INITIAL CONDITIONS

Starting WS Elev = 1443.50 ft
Starting Volume = .000 ac-ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = .1000 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
1443.50	.00	.000	.0600	.00	.00	.00
1443.60	.02	.006	.0618	.12	.15	1.62
1443.70	.09	.012	.0635	.13	.22	3.21
1443.80	.19	.019	.0654	.13	.32	4.87
1443.90	.31	.025	.0672	.14	.45	6.60
1444.00	.47	.032	.0690	.14	.61	8.41
1444.10	.56	.039	.0709	.14	.70	10.20
1444.20	.63	.046	.0728	.15	.78	12.01
1444.30	.70	.054	.0748	.15	.85	13.87
1444.40	.76	.061	.0767	.15	.92	15.77
1444.50	.82	.069	.0787	.16	.98	17.71
1444.60	.87	.077	.0807	.16	1.03	19.70
1444.70	.92	.085	.0828	.17	1.09	21.73
1444.80	.97	.094	.0848	.17	1.14	23.81
1444.90	1.01	.102	.0869	.18	1.19	25.94
1445.00	1.06	.111	.0890	.18	1.24	28.12
1445.10	1.13	.120	.0912	.18	1.31	30.37
1445.20	1.25	.129	.0934	.19	1.44	32.73
1445.30	1.42	.139	.0955	.19	1.61	35.19
1445.40	1.63	.148	.0978	.20	1.83	37.75

LEVEL POOL ROUTING DATA

HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
Inflow HYG file = NONE STORED - POND 1 IN 2 YR
Outflow HYG file = NONE STORED - POND 1 OUT 2 YR

Pond Node Data = POND 1
Pond Volume Data = POND 1
Pond Outlet Data = Outlet 1

Infiltration = 2.0000 in/hr

INITIAL CONDITIONS

Starting WS Elev = 1443.50 ft
Starting Volume = .000 ac-ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = .1000 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
1445.50	1.88	.158	.1000	.20	2.08	40.39
1445.60	2.15	.168	.1018	.21	2.36	43.11
1445.70	2.44	.179	.1037	.21	2.65	45.89
1445.80	2.74	.189	.1056	.21	2.95	48.73
1445.90	2.93	.200	.1075	.22	3.14	51.49
1446.00	3.10	.211	.1094	.22	3.32	54.29
1446.10	3.26	.222	.1113	.22	3.48	57.13
1446.20	3.41	.233	.1132	.23	3.64	60.00
1446.30	3.55	.244	.1152	.23	3.79	62.91
1446.40	3.69	.256	.1172	.24	3.93	65.86
1446.50	3.82	.268	.1192	.24	4.06	68.86
1446.60	3.95	.280	.1212	.24	4.19	71.90
1446.70	4.07	.292	.1232	.25	4.32	74.98
1446.80	4.19	.304	.1252	.25	4.44	78.11
1446.90	4.30	.317	.1273	.26	4.56	81.28
1447.00	4.41	.330	.1294	.26	4.68	84.50
1447.10	4.52	.343	.1315	.27	4.79	87.77
1447.20	4.63	.356	.1336	.27	4.90	91.09
1447.30	4.73	.370	.1357	.27	5.00	94.45
1447.40	4.83	.383	.1378	.28	5.11	97.87

Name.... POND 1
File.... C:\Program Files\Haestad\PPKW\PPW\3092 PRDA 3.PPW

LEVEL POOL ROUTING DATA

HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
Inflow HYG file = NONE STORED - POND 1 IN 2 YR
Outflow HYG file = NONE STORED - POND 1 OUT 2 YR

Pond Node Data = POND 1
Pond Volume Data = POND 1
Pond Outlet Data = Outlet 1

Infiltration = 2.0000 in/hr

INITIAL CONDITIONS

Starting WS Elev = 1443.50 ft
Starting Volume = .000 ac-ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = .1000 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
1447.50	4.93	.397	.1400	.28	5.21	101.33

LEVEL POOL ROUTING SUMMARY

HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
Inflow HYG file = NONE STORED - POND 1 IN 2 YR
Outflow HYG file = NONE STORED - POND 1 OUT 2 YR

Pond Node Data = POND 1
Pond Volume Data = POND 1
Pond Outlet Data = Outlet 1

Infiltration = 2.0000 in/hr

INITIAL CONDITIONS

Starting WS Elev	=	1443.50 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.1000 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	1.36 cfs	at	12.1000 hrs
Peak Outflow	=	.43 cfs	at	12.5000 hrs
Peak Infiltration	=	.14 cfs	at	12.5000 hrs

Peak Elevation	=	1443.97 ft
Peak Storage	=	.030 ac-ft

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	.133
- Infiltration	=	.077
- HYG Vol OUT	=	.056
- Retained Vol	=	.000
Unrouted Vol	=	-.000 ac-ft (.000% of Inflow Volume)

File.... C:\Program Files\Haestad\PPKW\PPW\3092 PRDA 4.PPW

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
DNstream ID = TW (Pond Outfall)

WS Elev, ft	Device Q, cfs	Tail Water TW Elev, ft	Converge +/-ft	Notes: Computation Messages
1432.50	.00	Free Outfall		HW & TW below invert
1432.60	.00	Free Outfall		HW & TW below invert
1432.70	.00	Free Outfall		HW & TW below invert
1432.80	.00	Free Outfall		HW & TW below invert
1432.90	.00	Free Outfall		HW & TW below invert
1433.00	.00	Free Outfall		Upstream HW & DNstream TW < Inv.El
1433.10	.02	Free Outfall		CRIT.DEPTH CONTROL Vh= .027ft Dcr= .073ft CRIT.DEPTH
1433.20	.07	Free Outfall		CRIT.DEPTH CONTROL Vh= .054ft Dcr= .146ft CRIT.DEPTH
1433.30	.14	Free Outfall		CRIT.DEPTH CONTROL Vh= .092ft Dcr= .208ft CRIT.DEPTH
1433.40	.20	Free Outfall		H =.23
1433.50	.24	Free Outfall		H =.33
1433.60	.28	Free Outfall		H =.43
1433.70	.31	Free Outfall		H =.53
1433.80	.33	Free Outfall		H =.63
1433.90	.36	Free Outfall		H =.73
1434.00	.38	Free Outfall		H =.83
1434.10	.40	Free Outfall		H =.93
1434.20	.43	Free Outfall		H =1.03
1434.30	.45	Free Outfall		H =1.13
1434.40	.47	Free Outfall		H =1.23
1434.50	.48	Free Outfall		H =1.33
1434.60	.50	Free Outfall		H =1.43
1434.70	.52	Free Outfall		H =1.53
1434.80	.54	Free Outfall		H =1.63
1434.90	.55	Free Outfall		H =1.73
1435.00	.57	Free Outfall		H =1.83
1435.10	.58	Free Outfall		H =1.93
1435.20	.60	Free Outfall		H =2.03

File.... C:\Program Files\Haestad\PPKW\PPW\3092 PRDA 4.PPW

***** COMPOSITE OUTFLOW SUMMARY ****

WS Elev, Total Q		Notes		
		Converge		
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
1432.50	.00	Free Outfall		None contributing
1432.60	.00	Free Outfall		None contributing
1432.70	.00	Free Outfall		None contributing
1432.80	.00	Free Outfall		None contributing
1432.90	.00	Free Outfall		None contributing
1433.00	.00	Free Outfall		None contributing
1433.10	.02	Free Outfall		1
1433.20	.07	Free Outfall		1
1433.30	.14	Free Outfall		1
1433.40	.20	Free Outfall		1
1433.50	.24	Free Outfall		1
1433.60	.28	Free Outfall		1
1433.70	.31	Free Outfall		1
1433.80	.33	Free Outfall		1
1433.90	.36	Free Outfall		1
1434.00	.38	Free Outfall		1
1434.10	.43	Free Outfall		2 +1
1434.20	.53	Free Outfall		2 +1
1434.30	.67	Free Outfall		2 +1
1434.40	.85	Free Outfall		2 +1
1434.50	1.06	Free Outfall		2 +1
1434.60	1.29	Free Outfall		2 +1
1434.70	1.54	Free Outfall		2 +1
1434.80	1.68	Free Outfall		2 +1
1434.90	1.82	Free Outfall		2 +1
1435.00	1.94	Free Outfall		2 +1
1435.10	2.06	Free Outfall		2 +1
1435.20	2.16	Free Outfall		2 +1

Name.... POND 1
File.... C:\Program Files\Haestad\PPKW\PPW\3092 PRDA 4.PPW

INFILTRATION RATING TABLE CALCULATIONS

Infilt.(cfs) = (3.0000 (in/hr) * Area) * Ku
Where: Ku = units conversion factor

W.S.Elev ft	Total Area acres	Infilt. cfs
No storage at this elevation... infiltration set to zero.		
1432.50	.1131	.00
1432.60	.1131	.34
1432.70	.1131	.34
1432.80	.1131	.34
1432.90	.1131	.34
1433.00	.1131	.34
1433.10	.1131	.34
1433.20	.1131	.34
1433.30	.1131	.34
1433.40	.1131	.34
1433.50	.1131	.34
1433.60	.1131	.34
1433.70	.1131	.34
1433.80	.1131	.34
1433.90	.1131	.34
1434.00	.1131	.34
1434.10	.1131	.34
1434.20	.1131	.34
1434.30	.1131	.34
1434.40	.1131	.34
1434.50	.1131	.34
1434.60	.1131	.34
1434.70	.1131	.34
1434.80	.1131	.34
1434.90	.1131	.34
1435.00	.1131	.34
1435.10	.1131	.34
1435.20	.1131	.34

Name.... POND 1
File.... C:\Program Files\Haestad\PPKW\PPW\3092 PRDA 4.PPW

LEVEL POOL ROUTING DATA

HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
Inflow HYG file = NONE STORED - POND 1 IN 2 YR
Outflow HYG file = NONE STORED - POND 1 OUT 2 YR

Pond Node Data = POND 1
Pond Volume Data = POND 1
Pond Outlet Data = Outlet 1

Infiltration = 3.0000 in/hr

INITIAL CONDITIONS

Starting WS Elev = 1432.50 ft
Starting Volume = .000 ac-ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = .1000 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
1432.50	.00	.000	.1131	.00	.00	.00
1432.60	.00	.011	.1131	.34	.34	3.08
1432.70	.00	.023	.1131	.34	.34	5.81
1432.80	.00	.034	.1131	.34	.34	8.55
1432.90	.00	.045	.1131	.34	.34	11.29
1433.00	.00	.057	.1131	.34	.34	14.03
1433.10	.02	.068	.1131	.34	.36	16.78
1433.20	.07	.079	.1131	.34	.41	19.57
1433.30	.14	.090	.1131	.34	.48	22.38
1433.40	.20	.102	.1131	.34	.54	25.18
1433.50	.24	.113	.1131	.34	.58	27.95
1433.60	.28	.124	.1131	.34	.62	30.72
1433.70	.31	.136	.1131	.34	.65	33.49
1433.80	.33	.147	.1131	.34	.68	36.26
1433.90	.36	.158	.1131	.34	.70	39.02
1434.00	.38	.170	.1131	.34	.72	41.78
1434.10	.43	.181	.1131	.34	.77	44.57
1434.20	.53	.192	.1131	.34	.87	47.40
1434.30	.67	.204	.1131	.34	1.02	50.28
1434.40	.85	.215	.1131	.34	1.19	53.20

Name.... POND 1
File.... C:\Program Files\Haestad\PPKW\PPW\3092 PRDA 4.PPW

LEVEL POOL ROUTING DATA

HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
Inflow HYG file = NONE STORED - POND 1 IN 2 YR
Outflow HYG file = NONE STORED - POND 1 OUT 2 YR

Pond Node Data = POND 1
Pond Volume Data = POND 1
Pond Outlet Data = Outlet 1

Infiltration = 3.0000 in/hr

INITIAL CONDITIONS

Starting WS Elev = 1432.50 ft
Starting Volume = .000 ac-ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = .1000 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
1434.50	1.06	.226	.1131	.34	1.40	56.14
1434.60	1.29	.238	.1131	.34	1.63	59.11
1434.70	1.54	.249	.1131	.34	1.88	62.09
1434.80	1.68	.260	.1131	.34	2.03	64.98
1434.90	1.82	.271	.1131	.34	2.16	67.85
1435.00	1.94	.283	.1131	.34	2.28	70.71
1435.10	2.06	.294	.1131	.34	2.40	73.56
1435.20	2.16	.305	.1131	.34	2.51	76.40

LEVEL POOL ROUTING SUMMARY

HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
Inflow HYG file = NONE STORED - POND 1 IN 2 YR
Outflow HYG file = NONE STORED - POND 1 OUT 2 YR

Pond Node Data = POND 1
Pond Volume Data = POND 1
Pond Outlet Data = Outlet 1

Infiltration = 3.0000 in/hr

INITIAL CONDITIONS

Starting WS Elev	= 1432.50	ft
Starting Volume	= .000	ac-ft
Starting Outflow	= .00	cfs
Starting Infiltr.	= .00	cfs
Starting Total Qout	= .00	cfs
Time Increment	= .1000	hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	= 1.14	cfs	at	12.3000 hrs
Peak Outflow	= .00	cfs	at	11.5000 hrs
Peak Infiltration	= .34	cfs	at	12.3000 hrs

Peak Elevation	= 1432.82	ft
Peak Storage	= .036	ac-ft

MASS BALANCE (ac-ft)

+ Initial Vol	= .000	
+ HYG Vol IN	= .142	
- Infiltration	= .142	
- HYG Vol OUT	= .000	
- Retained Vol	= .000	
Unrouted Vol	= .000	ac-ft (.000% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
Inflow HYG file = NONE STORED - POND 1 IN 10 YR
Outflow HYG file = NONE STORED - POND 1 OUT 10 YR

Pond Node Data = POND 1
Pond Volume Data = POND 1
Pond Outlet Data = Outlet 1

Infiltration = 3.0000 in/hr

INITIAL CONDITIONS

Starting WS Elev	=	1432.50 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.1000 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	2.77 cfs	at	12.3000 hrs
Peak Outflow	=	.25 cfs	at	13.1000 hrs
Peak Infiltration	=	.34 cfs	at	12.0000 hrs
Peak Elevation	=	1433.52 ft		
Peak Storage	=	.115 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	.317
- Infiltration	=	.265
- HYG Vol OUT	=	.051
- Retained Vol	=	.000
Unrouted Vol	=	-.000 ac-ft (.000% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
Inflow HYG file = NONE STORED - POND 1 IN 25 YR
Outflow HYG file = NONE STORED - POND 1 OUT 25 YR

Pond Node Data = POND 1
Pond Volume Data = POND 1
Pond Outlet Data = Outlet 1

Infiltration = 3.0000 in/hr

INITIAL CONDITIONS

Starting WS Elev	= 1432.50	ft
Starting Volume	= .000	ac-ft
Starting Outflow	= .00	cfs
Starting Infiltr.	= .00	cfs
Starting Total Qout	= .00	cfs
Time Increment	= .1000	hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	= 3.74	cfs	at	12.3000 hrs
Peak Outflow	= .37	cfs	at	13.0000 hrs
Peak Infiltration	= .34	cfs	at	11.9000 hrs
Peak Elevation	= 1433.95	ft		
Peak Storage	= .164	ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	= .000	
+ HYG Vol IN	= .423	
- Infiltration	= .310	
- HYG Vol OUT	= .114	
- Retained Vol	= .000	
Unrouted Vol	= .000	ac-ft (.000% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
Inflow HYG file = NONE STORED - POND 1 IN 50 YR
Outflow HYG file = NONE STORED - POND 1 OUT 50 YR

Pond Node Data = POND 1
Pond Volume Data = POND 1
Pond Outlet Data = Outlet 1

Infiltration = 3.0000 in/hr

INITIAL CONDITIONS

Starting WS Elev	=	1432.50 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.1000 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	4.63 cfs	at	12.3000 hrs
Peak Outflow	=	.69 cfs	at	13.0000 hrs
Peak Infiltration	=	.34 cfs	at	11.8000 hrs

Peak Elevation	=	1434.31 ft
Peak Storage	=	.205 ac-ft

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	.522
- Infiltration	=	.342
- HYG Vol OUT	=	.180
- Retained Vol	=	.000
Unrouted Vol	=	-.000 ac-ft (.000% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
Inflow HYG file = NONE STORED - POND 1 IN 10 YR
Outflow HYG file = NONE STORED - POND 1 OUT 10 YR

Pond Node Data = POND 1
Pond Volume Data = POND 1
Pond Outlet Data = Outlet 1

Infiltration = 2.0000 in/hr

INITIAL CONDITIONS

Starting WS Elev	= 1443.50	ft
Starting Volume	= .000	ac-ft
Starting Outflow	= .00	cfs
Starting Infiltr.	= .00	cfs
Starting Total Qout	= .00	cfs
Time Increment	= .1000	hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	= 3.38	cfs	at	12.1000 hrs
Peak Outflow	= .92	cfs	at	12.5000 hrs
Peak Infiltration	= .17	cfs	at	12.5000 hrs
Peak Elevation	= 1444.69	ft		
Peak Storage	= .084	ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	= .000	
+ HYG Vol IN	= .297	
- Infiltration	= .116	
- HYG Vol OUT	= .182	
- Retained Vol	= .000	
Unrouted Vol	= -.000	ac-ft (.001% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
Inflow HYG file = NONE STORED - POND 1 IN 25 YR
Outflow HYG file = NONE STORED - POND 1 OUT 25 YR

Pond Node Data = POND 1
Pond Volume Data = POND 1
Pond Outlet Data = Outlet 1

Infiltration = 2.0000 in/hr

INITIAL CONDITIONS

Starting WS Elev	= 1443.50	ft
Starting Volume	= .000	ac-ft
Starting Outflow	= .00	cfs
Starting Infiltr.	= .00	cfs
Starting Total Qout	= .00	cfs
Time Increment	= .1000	hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	= 4.60	cfs	at	12.1000 hrs
Peak Outflow	= 1.15	cfs	at	12.5000 hrs
Peak Infiltration	= .18	cfs	at	12.5000 hrs
Peak Elevation	= 1445.12	ft		
Peak Storage	= .122	ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	= .000	
+ HYG Vol IN	= .397	
- Infiltration	= .135	
- HYG Vol OUT	= .263	
- Retained Vol	= .000	
Unrouted Vol	= -.000	ac-ft (.001% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
Inflow HYG file = NONE STORED - POND 1 IN 50 YR
Outflow HYG file = NONE STORED - POND 1 OUT 50 YR

Pond Node Data = POND 1
Pond Volume Data = POND 1
Pond Outlet Data = Outlet 1

Infiltration = 2.0000 in/hr

INITIAL CONDITIONS

Starting WS Elev	=	1443.50 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.1000 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	5.71 cfs	at	12.1000 hrs
Peak Outflow	=	1.70 cfs	at	12.5000 hrs
Peak Infiltration	=	.20 cfs	at	12.5000 hrs
Peak Elevation	=	1445.43 ft		
Peak Storage	=	.151 ac-ft		

MASS BALANCE (ac-ft)

+	Initial Vol	=	.000
+	HYG Vol IN	=	.490
-	Infiltration	=	.149
-	HYG Vol OUT	=	.341
-	Retained Vol	=	.000
	Unrouted Vol	=	.000 ac-ft (.000% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
Inflow HYG file = NONE STORED - POND 1 IN 100 YR
Outflow HYG file = NONE STORED - POND 1 OUT 100 YR

Pond Node Data = POND 1
Pond Volume Data = POND 1
Pond Outlet Data = Outlet 1

Infiltration = 2.0000 in/hr

INITIAL CONDITIONS

Starting WS Elev	= 1443.50	ft
Starting Volume	= .000	ac-ft
Starting Outflow	= .00	cfs
Starting Infiltr.	= .00	cfs
Starting Total Qout	= .00	cfs
Time Increment	= .1000	hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	= 7.03	cfs	at	12.1000 hrs
Peak Outflow	= 2.47	cfs	at	12.4000 hrs
Peak Infiltration	= .21	cfs	at	12.4000 hrs
Peak Elevation	= 1445.71	ft		
Peak Storage	= .180	ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	= .000	
+ HYG Vol IN	= .600	
- Infiltration	= .163	
- HYG Vol OUT	= .437	
- Retained Vol	= .000	
Unrouted Vol	= -.000	ac-ft (.001% of Inflow Volume)

Index of Starting Page Numbers for ID Names

Existing Flows – DL4

Table of Contents

Table of Contents (continued)

MASTER DESIGN STORM SUMMARY

Network Storm Collection: Litchfield Co.

Return Event	Total Depth in	Rainfall Type	RNF ID
2 YR	3.2000	Synthetic Curve	TypeIII 24hr
10 YR	4.7000	Synthetic Curve	TypeIII 24hr
25 YR	5.5000	Synthetic Curve	TypeIII 24hr
50 YR	6.2000	Synthetic Curve	TypeIII 24hr
100 YR	7.0000	Synthetic Curve	TypeIII 24hr

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
*DP 4	JCT	2	.167		12.5000	.68		
*DP 4	JCT	10	.554		12.3500	3.90		
*DP 4	JCT	25	.823		12.3000	6.44		
*DP 4	JCT	50	1.085		12.3000	8.91		
*DP 4	JCT	100	1.411		12.2500	11.96		
EXDA 4	AREA	2	.167		12.5000	.68		
EXDA 4	AREA	10	.554		12.3500	3.90		
EXDA 4	AREA	25	.823		12.3000	6.44		
EXDA 4	AREA	50	1.085		12.3000	8.91		
EXDA 4	AREA	100	1.411		12.2500	11.96		

File.... C:\Program Files\Haestad\PPKW\PPW\
Title... Project Date: 4/16/2009
Project Engineer: Curtis Jones
Project Title: Watershed
Project Comments:

DESIGN STORMS SUMMARY

Design Storm File,ID = Litchfield Co.

Storm Tag Name = 2 YR

Data Type, File, ID = Synthetic Storm TypeIII 24hr
Storm Frequency = 2 yr
Total Rainfall Depth= 3.2000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 10 YR

Data Type, File, ID = Synthetic Storm TypeIII 24hr
Storm Frequency = 10 yr
Total Rainfall Depth= 4.7000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 25 YR

Data Type, File, ID = Synthetic Storm TypeIII 24hr
Storm Frequency = 25 yr
Total Rainfall Depth= 5.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 50 YR

Data Type, File, ID = Synthetic Storm TypeIII 24hr
Storm Frequency = 50 yr
Total Rainfall Depth= 6.2000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 100 YR

Data Type, File, ID = Synthetic Storm TypeIII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 7.0000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

DESIGN STORMS SUMMARY

Design Storm File,ID = Litchfield Co.

Storm Tag Name = 2 YR

Data Type, File, ID = Synthetic Storm TypeIII 24hr
Storm Frequency = 2 yr
Total Rainfall Depth= 3.2000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 10 YR

Data Type, File, ID = Synthetic Storm TypeIII 24hr
Storm Frequency = 10 yr
Total Rainfall Depth= 4.7000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 25 YR

Data Type, File, ID = Synthetic Storm TypeIII 24hr
Storm Frequency = 25 yr
Total Rainfall Depth= 5.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 50 YR

Data Type, File, ID = Synthetic Storm TypeIII 24hr
Storm Frequency = 50 yr
Total Rainfall Depth= 6.2000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 100 YR

Data Type, File, ID = Synthetic Storm TypeIII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 7.0000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

File.... C:\Program Files\Haestad\PPKW\PPW\3092 EXDA 4.PPW

::
TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: TR-55 Sheet

Mannings n	.4000	
Hydraulic Length	225.00	ft
2yr, 24hr P	3.2000	in
Slope	.132000	ft/ft
Avg.Velocity	.19	ft/sec

Segment #1 Time: .3219 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	365.00	ft
Slope	.082000	ft/ft
Unpaved		
Avg.Velocity	4.62	ft/sec

Segment #2 Time: .0219 hrs

==========
Total Tc: .3438 hrs
==========

File.... C:\Program Files\Haestad\PPKW\PPW\3092 EXDA 4.PPW

Tc Equations used...

==== SCS TR-55 Sheet Flow ==========

Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))

Where: Tc = Time of concentration, hrs
n = Mannings n
Lf = Flow length, ft
P = 2yr, 24hr Rain depth, inches
Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow ==========

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved surface:
V = 20.3282 * (Sf**0.5)

Tc = (Lf / V) / (3600sec/hr)

Where: V = Velocity, ft/sec
Sf = Slope, ft/ft
Tc = Time of concentration, hrs
Lf = Flow length, ft

Type.... Runoff CN-Area
Name.... EXDA 4

File.... C:\Program Files\Haestad\PPKW\PPW\3092 EXDA 4.PPW

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Soil Type B - Wooded	55	7.770			55.00
Soil Type B - Grass/Meadow	60	.200			60.00
COMPOSITE AREA & WEIGHTED CN --->		7.970			55.13 (55)

SCS UNIT HYDROGRAPH METHOD
(Computational Notes)

DEFINITION OF TERMS: ----------

At = Total area (acres): At = Ai+Ap
Ai = Impervious area (acres)
Ap = Pervious area (acres)
CNi = Runoff curve number for impervious area
CNp = Runoff curve number for pervious area
fLoss = f loss constant infiltration (depth/time)
gKs = Saturated Hydraulic Conductivity (depth/time)
Md = Volumetric Moisture Deficit
Psi = Capillary Suction (length)
hK = Horton Infiltration Decay Rate (time^-1)
fo = Initial Infiltration Rate (depth/time)
fc = Ultimate(capacity)Infiltration Rate (depth/time)
Ia = Initial Abstraction (length)
dt = Computational increment (duration of unit excess rainfall)
Default dt is smallest value of 0.1333Tc, rtm, and th
(Smallest dt is then adjusted to match up with Tp)
UDdt = User specified override computational main time increment
(only used if UDdt is => .1333Tc)
D(t) = Point on distribution curve (fraction of P) for time step t

K = 2 / (1 + (Tr/Tp)): default K = 0.75: (for Tr/Tp = 1.67)
Ks = Hydrograph shape factor
= Unit Conversions * K:
= ((1hr/3600sec) * (1ft/12in) * ((5280ft)**2/sq.mi)) * K
Default Ks = 645.333 * 0.75 = 484

Lag = Lag time from center of excess runoff (dt) to Tp: Lag = 0.6Tc
P = Total precipitation depth, inches
Pa(t) = Accumulated rainfall at time step t
Pi(t) = Incremental rainfall at time step t
qp = Peak discharge (cfs) for 1in. runoff, for 1hr, for 1 sq.mi.
= (Ks * A * Q) / Tp (where Q = 1in. runoff, A=sq.mi.)
Qu(t) = Unit hydrograph ordinate (cfs) at time step t
Q(t) = Final hydrograph ordinate (cfs) at time step t
Rai(t)= Accumulated runoff (inches) at time step t for impervious area
Rap(t)= Accumulated runoff (inches) at time step t for pervious area
Rii(t)= Incremental runoff (inches) at time step t for impervious area
Rip(t)= Incremental runoff (inches) at time step t for pervious area
R(t) = Incremental weighted total runoff (inches)
Rtm = Time increment for rainfall table
Si = S for impervious area: Si = (1000/CNi) - 10
Sp = S for pervious area: Sp = (1000/CNp) - 10
t = Time step (row) number
Tc = Time of concentration
Tb = Time (hrs) of entire unit hydrograph: Tb = Tp + Tr
Tp = Time (hrs) to peak of a unit hydrograph: Tp = (dt/2) + Lag
Tr = Time (hrs) of receding limb of unit hydrograph: Tr = ratio of Tp

SCS UNIT HYDROGRAPH METHOD
(Computational Notes)

PRECIPITATION: ----------
Column (1): Time for time step t
Column (2): D(t) = Point on distribution curve for time step t
Column (3): Pi(t) = Pa(t) - Pa(t-1): Col.(4) - Preceding Col.(4)
Column (4): Pa(t) = D(t) x P: Col.(2) x P

PERVIOUS AREA RUNOFF (using SCS Runoff CN Method) ----------
Column (5): Rap(t) = Accumulated pervious runoff for time step t
If (Pa(t) is <= 0.2Sp) then use: Rap(t) = 0.0
If (Pa(t) is > 0.2Sp) then use:

Rap(t) = (Col.(4)-0.2Sp)**2 / (Col.(4)+0.8Sp)

Column (6): Rip(t) = Incremental pervious runoff for time step t
Rip(t) = Rap(t) - Rap(t-1)
Rip(t) = Col.(5) for current row - Col.(5) for preceding row.

IMPERVIOUS AREA RUNOFF ----------
Column (7 & 8)... Did not specify to use impervious areas.

INCREMENTAL WEIGHTED RUNOFF: ----------
Column (9): R(t) = (Ap/At) x Rip(t) + (Ai/At) x Rii(t)
R(t) = (Ap/At) x Col.(6) + (Ai/At) x Col.(8)

SCS UNIT HYDROGRAPH METHOD: ----------
Column (10): Q(t) is computed with the SCS unit hydrograph method
using R() and Qu().

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm
Duration = 24.0000 hrs Rain Depth = 3.2000 in
Rain Dir = C:\Program Files\Haestad\PPKW\PPW\
Rain File -ID = - TypeIII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
HYG File - ID = - EXDA 4 2 YR
Tc = .3438 hrs
Drainage Area = 7.970 acres Runoff CN= 55

==========
Computational Time Increment = .04584 hrs
Computed Peak Time = 12.5150 hrs
Computed Peak Flow = .69 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.5000 hrs
Peak Flow, Interpolated Output = .68 cfs
==========

DRAINAGE AREA

ID:EXDA 4
CN = 55
Area = 7.970 acres
S = 8.1818 in
0.2S = 1.6364 in

Cumulative Runoff

.2509 in
.167 ac-ft

HYG Volume... .167 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .34382 hrs (ID: EXDA 4)
Computational Incr, Tm = .04584 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 26.26 cfs
Unit peak time Tp = .22921 hrs
Unit receding limb, Tr = .91685 hrs
Total unit time, Tb = 1.14607 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 4.7000 in
Rain Dir = C:\Program Files\Haestad\PPKW\PPW\
Rain File -ID = - TypeIII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
HYG File - ID = - EXDA 4 10 YR
Tc = .3438 hrs
Drainage Area = 7.970 acres Runoff CN= 55

==========
Computational Time Increment = .04584 hrs
Computed Peak Time = 12.3317 hrs
Computed Peak Flow = 3.93 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.3500 hrs
Peak Flow, Interpolated Output = 3.90 cfs
==========

DRAINAGE AREA

ID:EXDA 4
CN = 55
Area = 7.970 acres
S = 8.1818 in
0.2S = 1.6364 in

Cumulative Runoff

.8346 in
.554 ac-ft

HYG Volume... .554 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .34382 hrs (ID: EXDA 4)
Computational Incr, Tm = .04584 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 26.26 cfs
Unit peak time Tp = .22921 hrs
Unit receding limb, Tr = .91685 hrs
Total unit time, Tb = 1.14607 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 5.5000 in
Rain Dir = C:\Program Files\Haestad\PPKW\PPW\
Rain File -ID = - TypeIII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
HYG File - ID = - EXDA 4 25 YR
Tc = .3438 hrs
Drainage Area = 7.970 acres Runoff CN= 55

==========
Computational Time Increment = .04584 hrs
Computed Peak Time = 12.2858 hrs
Computed Peak Flow = 6.46 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.3000 hrs
Peak Flow, Interpolated Output = 6.44 cfs
==========

DRAINAGE AREA

ID:EXDA 4
CN = 55
Area = 7.970 acres
S = 8.1818 in
0.2S = 1.6364 in

Cumulative Runoff

1.2393 in
.823 ac-ft

HYG Volume... .823 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .34382 hrs (ID: EXDA 4)
Computational Incr, Tm = .04584 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 26.26 cfs
Unit peak time Tp = .22921 hrs
Unit receding limb, Tr = .91685 hrs
Total unit time, Tb = 1.14607 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 50 year storm
Duration = 24.0000 hrs Rain Depth = 6.2000 in
Rain Dir = C:\Program Files\Haestad\PPKW\PPW\
Rain File -ID = - TypeIII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
HYG File - ID = - EXDA 4 50 YR
Tc = .3438 hrs
Drainage Area = 7.970 acres Runoff CN= 55

==========
Computational Time Increment = .04584 hrs
Computed Peak Time = 12.2858 hrs
Computed Peak Flow = 8.97 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.3000 hrs
Peak Flow, Interpolated Output = 8.91 cfs
==========

DRAINAGE AREA

ID:EXDA 4
CN = 55
Area = 7.970 acres
S = 8.1818 in
0.2S = 1.6364 in

Cumulative Runoff

1.6341 in
1.085 ac-ft

HYG Volume... 1.085 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .34382 hrs (ID: EXDA 4)
Computational Incr, Tm = .04584 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 26.26 cfs
Unit peak time Tp = .22921 hrs
Unit receding limb, Tr = .91685 hrs
Total unit time, Tb = 1.14607 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 7.0000 in
Rain Dir = C:\Program Files\Haestad\PPKW\PPW\
Rain File -ID = - TypeIII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
HYG File - ID = - EXDA 4 100 YR
Tc = .3438 hrs
Drainage Area = 7.970 acres Runoff CN= 55

==========
Computational Time Increment = .04584 hrs
Computed Peak Time = 12.2858 hrs
Computed Peak Flow = 12.06 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.2500 hrs
Peak Flow, Interpolated Output = 11.96 cfs
==========

DRAINAGE AREA

ID:EXDA 4
CN = 55
Area = 7.970 acres
S = 8.1818 in
0.2S = 1.6364 in

Cumulative Runoff

2.1239 in
1.411 ac-ft

HYG Volume... 1.411 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .34382 hrs (ID: EXDA 4)
Computational Incr, Tm = .04584 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 26.26 cfs
Unit peak time Tp = .22921 hrs
Unit receding limb, Tr = .91685 hrs
Total unit time, Tb = 1.14607 hrs

SUMMARY FOR HYDROGRAPH ADDITION
at Node: DP 4

HYG Directory: C:\Program Files\Haestad\PPKW\PPW\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
TO DP 4	EXDA 4		EXDA 4	2 YR

INFLOWS TO: DP 4

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	EXDA 4	2 YR	.167	12.5000	.68

TOTAL FLOW INTO: DP 4

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	DP 4	2 YR	.167	12.5000	.68

TOTAL NODE INFLOW...
HYG file =
HYG ID = DP 4
HYG Tag = 2 YR

Peak Discharge =	.68 cfs
Time to Peak =	12.5000 hrs
HYG Volume =	.167 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
12.0000	.00	.00	.03	.08	.18
12.2500	.31	.43	.54	.62	.67
12.5000	.68	.68	.65	.60	.56
12.7500	.51	.48	.45	.43	.41
13.0000	.39	.37	.36	.35	.34
13.2500	.33	.32	.31	.31	.31
13.5000	.30	.30	.30	.29	.29
13.7500	.29	.29	.28	.28	.28
14.0000	.27	.27	.26	.26	.26
14.2500	.25	.25	.25	.25	.25
14.5000	.24	.24	.24	.24	.24
14.7500	.24	.23	.23	.23	.23
15.0000	.23	.22	.22	.22	.22
15.2500	.22	.21	.21	.21	.21
15.5000	.20	.20	.20	.20	.19
15.7500	.19	.19	.18	.18	.18
16.0000	.18	.17	.17	.17	.17
16.2500	.16	.16	.16	.16	.16
16.5000	.16	.15	.15	.15	.15
16.7500	.15	.15	.15	.15	.14
17.0000	.14	.14	.14	.14	.14
17.2500	.14	.13	.13	.13	.13
17.5000	.13	.13	.13	.13	.12
17.7500	.12	.12	.12	.12	.12
18.0000	.12	.11	.11	.11	.11
18.2500	.11	.11	.11	.11	.11
18.5000	.11	.11	.11	.10	.10
18.7500	.10	.10	.10	.10	.10
19.0000	.10	.10	.10	.10	.10
19.2500	.10	.10	.10	.10	.10
19.5000	.10	.10	.10	.10	.10

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
19.7500	.10	.10	.10	.09	.09
20.0000	.09	.09	.09	.09	.09
20.2500	.09	.09	.09	.09	.09
20.5000	.09	.09	.09	.09	.09
20.7500	.09	.09	.09	.09	.09
21.0000	.09	.09	.09	.09	.09
21.2500	.09	.09	.09	.08	.08
21.5000	.08	.08	.08	.08	.08
21.7500	.08	.08	.08	.08	.08
22.0000	.08	.08	.08	.08	.08
22.2500	.08	.08	.08	.08	.08
22.5000	.08	.08	.08	.08	.08
22.7500	.08	.08	.08	.07	.07
23.0000	.07	.07	.07	.07	.07
23.2500	.07	.07	.07	.07	.07
23.5000	.07	.07	.07	.07	.07
23.7500	.07	.07	.07	.07	.07
24.0000	.07	.06	.06	.05	.04
24.2500	.03	.02	.02	.01	.01
24.5000	.01	.00	.00	.00	.00
24.7500	.00				

SUMMARY FOR HYDROGRAPH ADDITION
at Node: DP 4

HYG Directory: C:\Program Files\Haestad\PPKW\PPW\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
TO DP 4	EXDA 4		EXDA 4	10 YR

INFLOWS TO: DP 4

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	EXDA 4	10 YR	.554	12.3500	3.90

TOTAL FLOW INTO: DP 4

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	DP 4	10 YR	.554	12.3500	3.90

TOTAL NODE INFLOW...
HYG file =
HYG ID = DP 4
HYG Tag = 10 YR

Peak Discharge =	3.90 cfs
Time to Peak =	12.3500 hrs
HYG Volume =	.554 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
11.7500	.00	.01	.03	.10	.25
12.0000	.54	1.02	1.70	2.49	3.20
12.2500	3.68	3.89	3.90	3.78	3.57
12.5000	3.33	3.05	2.74	2.44	2.16
12.7500	1.92	1.73	1.58	1.47	1.37
13.0000	1.29	1.21	1.15	1.10	1.05
13.2500	1.01	.98	.95	.93	.92
13.5000	.90	.89	.87	.86	.85
13.7500	.84	.82	.81	.80	.78
14.0000	.77	.76	.74	.73	.72
14.2500	.71	.70	.69	.68	.68
14.5000	.67	.66	.66	.65	.64
14.7500	.64	.63	.62	.62	.61
15.0000	.60	.60	.59	.58	.58
15.2500	.57	.56	.55	.55	.54
15.5000	.53	.52	.52	.51	.50
15.7500	.49	.49	.48	.47	.46
16.0000	.45	.45	.44	.43	.42
16.2500	.42	.41	.41	.40	.40
16.5000	.39	.39	.39	.38	.38
16.7500	.38	.37	.37	.37	.36
17.0000	.36	.36	.35	.35	.34
17.2500	.34	.34	.33	.33	.33
17.5000	.32	.32	.32	.31	.31
17.7500	.30	.30	.30	.29	.29
18.0000	.29	.28	.28	.27	.27
18.2500	.27	.27	.26	.26	.26
18.5000	.26	.26	.26	.26	.26
18.7500	.25	.25	.25	.25	.25
19.0000	.25	.25	.25	.25	.25
19.2500	.24	.24	.24	.24	.24

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
19.5000	.24	.24	.24	.24	.23
19.7500	.23	.23	.23	.23	.23
20.0000	.23	.23	.23	.22	.22
20.2500	.22	.22	.22	.22	.22
20.5000	.22	.22	.22	.22	.21
20.7500	.21	.21	.21	.21	.21
21.0000	.21	.21	.21	.21	.21
21.2500	.21	.20	.20	.20	.20
21.5000	.20	.20	.20	.20	.20
21.7500	.20	.20	.20	.19	.19
22.0000	.19	.19	.19	.19	.19
22.2500	.19	.19	.19	.19	.18
22.5000	.18	.18	.18	.18	.18
22.7500	.18	.18	.18	.18	.18
23.0000	.17	.17	.17	.17	.17
23.2500	.17	.17	.17	.17	.17
23.5000	.17	.16	.16	.16	.16
23.7500	.16	.16	.16	.16	.16
24.0000	.16	.15	.14	.12	.10
24.2500	.08	.05	.04	.03	.02
24.5000	.01	.01	.01	.00	.00
24.7500	.00	.00	.00		

SUMMARY FOR HYDROGRAPH ADDITION
at Node: DP 4

HYG Directory: C:\Program Files\Haestad\PPKW\PPW\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
TO DP 4	EXDA 4		EXDA 4	25 YR

INFLOWS TO: DP 4

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	EXDA 4	25 YR	.823	12.3000	6.44

TOTAL FLOW INTO: DP 4

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	DP 4	25 YR	.823	12.3000	6.44

TOTAL NODE INFLOW...
HYG file =
HYG ID = DP 4
HYG Tag = 25 YR

Peak Discharge =	6.44 cfs
Time to Peak =	12.3000 hrs
HYG Volume =	.823 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
11.5500	.00	.00	.02	.05	.12
11.8000	.23	.39	.63	1.00	1.57
12.0500	2.41	3.51	4.69	5.70	6.28
12.3000	6.44	6.30	5.97	5.55	5.10
12.5500	4.62	4.12	3.64	3.20	2.83
12.8000	2.54	2.31	2.13	1.98	1.85
13.0500	1.74	1.65	1.56	1.49	1.44
13.3000	1.39	1.35	1.32	1.29	1.27
13.5500	1.25	1.23	1.21	1.19	1.17
13.8000	1.15	1.14	1.12	1.10	1.08
14.0500	1.06	1.04	1.02	1.00	.99
14.3000	.98	.96	.95	.94	.93
14.5500	.92	.91	.90	.89	.88
14.8000	.87	.86	.85	.84	.83
15.0500	.82	.81	.80	.79	.78
15.3000	.77	.76	.75	.74	.73
15.5500	.72	.71	.70	.69	.68
15.8000	.67	.66	.64	.63	.62
16.0500	.61	.60	.59	.58	.57
16.3000	.56	.56	.55	.54	.54
16.5500	.53	.53	.52	.52	.51
16.8000	.51	.50	.50	.49	.49
17.0500	.48	.48	.47	.47	.46
17.3000	.46	.45	.45	.44	.44
17.5500	.43	.43	.42	.42	.41
17.8000	.41	.40	.40	.39	.39
18.0500	.38	.38	.37	.37	.36
18.3000	.36	.36	.36	.35	.35
18.5500	.35	.35	.35	.35	.34
18.8000	.34	.34	.34	.34	.34
19.0500	.34	.33	.33	.33	.33

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
19.3000	.33	.33	.33	.32	.32
19.5500	.32	.32	.32	.32	.31
19.8000	.31	.31	.31	.31	.31
20.0500	.31	.30	.30	.30	.30
20.3000	.30	.30	.30	.30	.29
20.5500	.29	.29	.29	.29	.29
20.8000	.29	.29	.28	.28	.28
21.0500	.28	.28	.28	.28	.28
21.3000	.28	.27	.27	.27	.27
21.5500	.27	.27	.27	.27	.26
21.8000	.26	.26	.26	.26	.26
22.0500	.26	.26	.26	.25	.25
22.3000	.25	.25	.25	.25	.25
22.5500	.25	.24	.24	.24	.24
22.8000	.24	.24	.24	.24	.23
23.0500	.23	.23	.23	.23	.23
23.3000	.23	.23	.22	.22	.22
23.5500	.22	.22	.22	.22	.22
23.8000	.21	.21	.21	.21	.21
24.0500	.20	.19	.16	.13	.10
24.3000	.07	.05	.03	.02	.02
24.5500	.01	.01	.01	.00	.00
24.8000	.00	.00	.00		

SUMMARY FOR HYDROGRAPH ADDITION
at Node: DP 4

HYG Directory: C:\Program Files\Haestad\PPKW\PPW\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
TO DP 4	EXDA 4		EXDA 4	50 YR

INFLOWS TO: DP 4

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	EXDA 4	50 YR	1.085	12.3000	8.91

TOTAL FLOW INTO: DP 4

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	DP 4	50 YR	1.085	12.3000	8.91

TOTAL NODE INFLOW...
HYG file =
HYG ID = DP 4
HYG Tag = 50 YR

Peak Discharge =	8.91 cfs
Time to Peak =	12.3000 hrs
HYG Volume =	1.085 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
11.2000	.00	.00	.00	.01	.02
11.4500	.04	.07	.11	.15	.22
11.7000	.32	.47	.68	.96	1.34
11.9500	1.88	2.69	3.86	5.35	6.89
12.2000	8.15	8.82	8.91	8.61	8.08
12.4500	7.45	6.80	6.12	5.43	4.77
12.7000	4.18	3.69	3.30	2.99	2.74
12.9500	2.55	2.38	2.24	2.11	2.00
13.2000	1.91	1.83	1.77	1.72	1.68
13.4500	1.65	1.62	1.59	1.56	1.54
13.7000	1.51	1.49	1.46	1.44	1.41
13.9500	1.39	1.36	1.34	1.31	1.29
14.2000	1.27	1.25	1.23	1.21	1.20
14.4500	1.19	1.17	1.16	1.15	1.13
14.7000	1.12	1.11	1.10	1.08	1.07
14.9500	1.06	1.05	1.03	1.02	1.01
15.2000	1.00	.98	.97	.96	.94
15.4500	.93	.92	.90	.89	.87
15.7000	.86	.85	.83	.82	.80
15.9500	.79	.78	.76	.75	.74
16.2000	.72	.71	.70	.69	.69
16.4500	.68	.67	.67	.66	.65
16.7000	.65	.64	.63	.63	.62
16.9500	.61	.61	.60	.60	.59
17.2000	.58	.58	.57	.56	.56
17.4500	.55	.55	.54	.53	.53
17.7000	.52	.51	.51	.50	.49
17.9500	.49	.48	.47	.47	.46
18.2000	.46	.45	.45	.44	.44
18.4500	.44	.44	.44	.43	.43
18.7000	.43	.43	.43	.42	.42

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
18.9500	.42	.42	.42	.41	.41
19.2000	.41	.41	.41	.40	.40
19.4500	.40	.40	.40	.40	.39
19.7000	.39	.39	.39	.39	.38
19.9500	.38	.38	.38	.38	.37
20.2000	.37	.37	.37	.37	.37
20.4500	.36	.36	.36	.36	.36
20.7000	.36	.36	.35	.35	.35
20.9500	.35	.35	.35	.35	.34
21.2000	.34	.34	.34	.34	.34
21.4500	.34	.33	.33	.33	.33
21.7000	.33	.33	.32	.32	.32
21.9500	.32	.32	.32	.32	.31
22.2000	.31	.31	.31	.31	.31
22.4500	.31	.30	.30	.30	.30
22.7000	.30	.30	.29	.29	.29
22.9500	.29	.29	.29	.29	.28
23.2000	.28	.28	.28	.28	.28
23.4500	.27	.27	.27	.27	.27
23.7000	.27	.27	.26	.26	.26
23.9500	.26	.26	.25	.23	.20
24.2000	.16	.12	.09	.06	.04
24.4500	.03	.02	.01	.01	.01
24.7000	.00	.00	.00	.00	.00

SUMMARY FOR HYDROGRAPH ADDITION
at Node: DP 4

HYG Directory: C:\Program Files\Haestad\PPKW\PPW\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
TO DP 4	EXDA 4		EXDA 4	100 YR

INFLOWS TO: DP 4

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	EXDA 4	100 YR	1.411	12.2500	11.96

TOTAL FLOW INTO: DP 4

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	DP 4	100 YR	1.411	12.2500	11.96

TOTAL NODE INFLOW...
HYG file =
HYG ID = DP 4
HYG Tag = 100 YR

Peak Discharge =	11.96 cfs
Time to Peak =	12.2500 hrs
HYG Volume =	1.411 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
10.8500	.00	.00	.01	.02	.03
11.1000	.05	.07	.09	.12	.15
11.3500	.19	.23	.28	.33	.39
11.6000	.47	.58	.75	.98	1.30
11.8500	1.72	2.27	3.02	4.13	5.70
12.1000	7.65	9.64	11.20	11.96	11.95
12.3500	11.44	10.65	9.76	8.85	7.93
12.6000	7.01	6.14	5.36	4.72	4.21
12.8500	3.80	3.49	3.23	3.01	2.83
13.1000	2.66	2.52	2.40	2.31	2.23
13.3500	2.16	2.11	2.07	2.03	1.99
13.6000	1.96	1.92	1.89	1.86	1.83
13.8500	1.80	1.76	1.73	1.70	1.67
14.1000	1.64	1.61	1.58	1.55	1.53
14.3500	1.51	1.49	1.48	1.46	1.44
14.6000	1.43	1.41	1.39	1.38	1.36
14.8500	1.35	1.33	1.31	1.30	1.28
15.1000	1.27	1.25	1.23	1.22	1.20
15.3500	1.18	1.17	1.15	1.13	1.12
15.6000	1.10	1.08	1.06	1.05	1.03
15.8500	1.01	.99	.98	.96	.94
16.1000	.92	.91	.89	.88	.87
16.3500	.86	.85	.84	.83	.82
16.6000	.81	.80	.80	.79	.78
16.8500	.77	.77	.76	.75	.74
17.1000	.73	.73	.72	.71	.70
17.3500	.69	.69	.68	.67	.66
17.6000	.66	.65	.64	.63	.62
17.8500	.61	.61	.60	.59	.58
18.1000	.57	.57	.56	.55	.55
18.3500	.55	.54	.54	.54	.53

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
18.6000	.53	.53	.53	.52	.52
18.8500	.52	.52	.51	.51	.51
19.1000	.51	.51	.50	.50	.50
19.3500	.50	.49	.49	.49	.49
19.6000	.48	.48	.48	.48	.47
19.8500	.47	.47	.47	.47	.46
20.1000	.46	.46	.46	.45	.45
20.3500	.45	.45	.45	.44	.44
20.6000	.44	.44	.44	.44	.43
20.8500	.43	.43	.43	.43	.42
21.1000	.42	.42	.42	.42	.42
21.3500	.41	.41	.41	.41	.41
21.6000	.40	.40	.40	.40	.40
21.8500	.40	.39	.39	.39	.39
22.1000	.39	.38	.38	.38	.38
22.3500	.38	.37	.37	.37	.37
22.6000	.37	.37	.36	.36	.36
22.8500	.36	.36	.35	.35	.35
23.1000	.35	.35	.34	.34	.34
23.3500	.34	.34	.34	.33	.33
23.6000	.33	.33	.33	.32	.32
23.8500	.32	.32	.32	.31	.30
24.1000	.28	.25	.20	.15	.11
24.3500	.08	.05	.04	.03	.02
24.6000	.01	.01	.01	.00	.00
24.8500	.00	.00	.00		

Index of Starting Page Numbers for ID Names

Proposed Flows - DL4

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MASTER DESIGN STORM SUMMARY

Network Storm Collection: Litchfield Co.

Return Event	Total Depth in	Rainfall Type	RNF ID
2 YR	3.2000	Synthetic Curve	TypeIII 24hr
10 YR	4.7000	Synthetic Curve	TypeIII 24hr
25 YR	5.5000	Synthetic Curve	TypeIII 24hr
50 YR	6.2000	Synthetic Curve	TypeIII 24hr
100 YR	7.0000	Synthetic Curve	TypeIII 24hr

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
*DP 4	JCT	2	.162		12.5000	.67		
*DP 4	JCT	10	.590		12.3000	3.80		
*DP 4	JCT	25	.913		12.3000	6.39		
*DP 4	JCT	50	1.234		12.3000	8.92		
*DP 4	JCT	100	1.638		12.3000	11.97		
JUNCTION	JCT	2	.162		12.5000	.67		
JUNCTION	JCT	10	.590		12.3000	3.80		
JUNCTION	JCT	25	.913		12.3000	6.39		
JUNCTION	JCT	50	1.234		12.3000	8.92		
JUNCTION	JCT	100	1.638		12.3000	11.97		
POND 1 IN	POND	2	.142		12.3000	1.14		
POND 1 IN	POND	10	.317		12.3000	2.77		
POND 1 IN	POND	25	.423		12.3000	3.74		
POND 1 IN	POND	50	.522		12.3000	4.63		
POND 1 IN	POND	100	.639		12.3000	5.67		

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID		Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
POND 1	OUT	POND	2	.000		11.5000	.00	1432.82	.036
POND 1	OUT	POND	10	.051		13.1000	.25	1433.52	.115
POND 1	OUT	POND	25	.114		13.0000	.37	1433.95	.164
POND 1	OUT	POND	50	.180		13.0000	.69	1434.31	.205
POND 1	OUT	POND	100	.268		12.8000	1.37	1434.63	.241
PRDA 4D		AREA	2	.142		12.3000	1.14		
PRDA 4D		AREA	10	.317		12.3000	2.77		
PRDA 4D		AREA	25	.423		12.3000	3.74		
PRDA 4D		AREA	50	.522		12.3000	4.63		
PRDA 4D		AREA	100	.639		12.3000	5.67		
PRDA 4ND		AREA	2	.162		12.5000	.67		
PRDA 4ND		AREA	10	.538		12.3000	3.80		
PRDA 4ND		AREA	25	.799		12.3000	6.28		
PRDA 4ND		AREA	50	1.054		12.3000	8.68		
PRDA 4ND		AREA	100	1.370		12.3000	11.64		

File.... C:\Program Files\Haestad\PPKW\PPW\
Title... Project Date: 4/16/2009
Project Engineer: Curtis Jones
Project Title: Watershed
Project Comments:

DESIGN STORMS SUMMARY

Design Storm File,ID = Litchfield Co.

Storm Tag Name = 2 YR

Data Type, File, ID = Synthetic Storm TypeIII 24hr
Storm Frequency = 2 yr
Total Rainfall Depth= 3.2000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 10 YR

Data Type, File, ID = Synthetic Storm TypeIII 24hr
Storm Frequency = 10 yr
Total Rainfall Depth= 4.7000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 25 YR

Data Type, File, ID = Synthetic Storm TypeIII 24hr
Storm Frequency = 25 yr
Total Rainfall Depth= 5.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 50 YR

Data Type, File, ID = Synthetic Storm TypeIII 24hr
Storm Frequency = 50 yr
Total Rainfall Depth= 6.2000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 100 YR

Data Type, File, ID = Synthetic Storm TypeIII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 7.0000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

DESIGN STORMS SUMMARY

Design Storm File,ID = Litchfield Co.

Storm Tag Name = 2 YR

Data Type, File, ID = Synthetic Storm TypeIII 24hr
Storm Frequency = 2 yr
Total Rainfall Depth= 3.2000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 10 YR

Data Type, File, ID = Synthetic Storm TypeIII 24hr
Storm Frequency = 10 yr
Total Rainfall Depth= 4.7000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 25 YR

Data Type, File, ID = Synthetic Storm TypeIII 24hr
Storm Frequency = 25 yr
Total Rainfall Depth= 5.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 50 YR

Data Type, File, ID = Synthetic Storm TypeIII 24hr
Storm Frequency = 50 yr
Total Rainfall Depth= 6.2000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 100 YR

Data Type, File, ID = Synthetic Storm TypeIII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 7.0000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

File.... C:\Program Files\Haestad\PPKW\PPW\3092 PRDA 4.PPW

TIME OF CONCENTRATION CALCULATOR

Segment #1: Tc: TR-55 Sheet

Mannings n	.3000	
Hydraulic Length	225.00	ft
2yr, 24hr P	3.2000	in
Slope	.110000	ft/ft
Avg.Velocity	.23	ft/sec

Segment #1 Time: .2750 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	50.00	ft
Slope	.300000	ft/ft
Unpaved		
Avg.Velocity	8.84	ft/sec

Segment #2 Time: .0016 hrs

Segment #3: Tc: TR-55 Channel

Flow Area	2.5000	sq.ft
Wetted Perimeter	5.50	ft
Hydraulic Radius	.45	ft
Slope	.035000	ft/ft
Mannings n	.0400	
Hydraulic Length	1040.00	ft
Avg.Velocity	4.12	ft/sec

Segment #3 Time: .0701 hrs

Total Tc: .3467 hrs

File.... C:\Program Files\Haestad\PPKW\PPW\3092 PRDA 4.PPW

Tc Equations used...

==== SCS TR-55 Sheet Flow ==========

Tc = (.007 * ((n * Lf)**0.8)) / ((P**.5) * (Sf**.4))

Where: Tc = Time of concentration, hrs
n = Mannings n
Lf = Flow length, ft
P = 2yr, 24hr Rain depth, inches
Sf = Slope, %

==== SCS TR-55 Shallow Concentrated Flow ==========

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved surface:
V = 20.3282 * (Sf**0.5)

Tc = (Lf / V) / (3600sec/hr)

Where: V = Velocity, ft/sec
Sf = Slope, ft/ft
Tc = Time of concentration, hrs
Lf = Flow length, ft

File.... C:\Program Files\Haestad\PPKW\PPW\3092 PRDA 4.PPW

==== SCS Channel Flow ==========

R = Aq / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

Tc = (Lf / V) / (3600sec/hr)

Where: R = Hydraulic radius
Aq = Flow area, sq.ft.
Wp = Wetted perimeter, ft
V = Velocity, ft/sec
Sf = Slope, ft/ft
n = Mannings n
Tc = Time of concentration, hrs
Lf = Flow length, ft

File.... C:\Program Files\Haestad\PPKW\PPW\3092 PRDA 4.PPW

Tc Equations used...

==== User Defined ==========

Tc = Value entered by user

Where: Tc = Time of concentration

Name.... PRDA 4D

File.... C:\Program Files\Haestad\PPKW\PPW\3092 PRDA 4.PPW

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Soil Type B - Grass/Meadow	60	1.620			60.00
Soil Type B - Wooded	55	.030			55.00
Impervious Area	98	.530			98.00
COMPOSITE AREA & WEIGHTED CN --->		2.180			69.17 (69)

Name.... PRDA 4ND

File.... C:\Program Files\Haestad\PPKW\PPW\3092 PRDA 4.PPW

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Soil Type B - Wooded	55	7.370			55.00
Soil Type B - Grass/Meadow	60	.320			60.00
Impervious	98	.050			98.00
COMPOSITE AREA & WEIGHTED CN --->		7.740			55.48 (55)

SCS UNIT HYDROGRAPH METHOD
(Computational Notes)

DEFINITION OF TERMS: ----------

At = Total area (acres): At = Ai+Ap
Ai = Impervious area (acres)
Ap = Pervious area (acres)
CNi = Runoff curve number for impervious area
CNp = Runoff curve number for pervious area
fLoss = f loss constant infiltration (depth/time)
gKs = Saturated Hydraulic Conductivity (depth/time)
Md = Volumetric Moisture Deficit
Psi = Capillary Suction (length)
hK = Horton Infiltration Decay Rate (time^-1)
fo = Initial Infiltration Rate (depth/time)
fc = Ultimate(capacity)Infiltration Rate (depth/time)
Ia = Initial Abstraction (length)
dt = Computational increment (duration of unit excess rainfall)
Default dt is smallest value of 0.1333Tc, rtm, and th
(Smallest dt is then adjusted to match up with Tp)
UDdt = User specified override computational main time increment
(only used if UDdt is => .1333Tc)
D(t) = Point on distribution curve (fraction of P) for time step t

K = 2 / (1 + (Tr/Tp)): default K = 0.75: (for Tr/Tp = 1.67)
Ks = Hydrograph shape factor
= Unit Conversions * K:
= ((1hr/3600sec) * (1ft/12in) * ((5280ft)**2/sq.mi)) * K
Default Ks = 645.333 * 0.75 = 484

Lag = Lag time from center of excess runoff (dt) to Tp: Lag = 0.6Tc
P = Total precipitation depth, inches
Pa(t) = Accumulated rainfall at time step t
Pi(t) = Incremental rainfall at time step t
qp = Peak discharge (cfs) for 1in. runoff, for 1hr, for 1 sq.mi.
= (Ks * A * Q) / Tp (where Q = 1in. runoff, A=sq.mi.)
Qu(t) = Unit hydrograph ordinate (cfs) at time step t
Q(t) = Final hydrograph ordinate (cfs) at time step t
Rai(t) = Accumulated runoff (inches) at time step t for impervious area
Rap(t) = Accumulated runoff (inches) at time step t for pervious area
Rii(t) = Incremental runoff (inches) at time step t for impervious area
Rip(t) = Incremental runoff (inches) at time step t for pervious area
R(t) = Incremental weighted total runoff (inches)
Rtm = Time increment for rainfall table
Si = S for impervious area: Si = (1000/CNi) - 10
Sp = S for pervious area: Sp = (1000/CNp) - 10
t = Time step (row) number
Tc = Time of concentration
Tb = Time (hrs) of entire unit hydrograph: Tb = Tp + Tr
Tp = Time (hrs) to peak of a unit hydrograph: Tp = (dt/2) + Lag
Tr = Time (hrs) of receding limb of unit hydrograph: Tr = ratio of Tp

SCS UNIT HYDROGRAPH METHOD
(Computational Notes)

PRECIPITATION: ----------
Column (1): Time for time step t
Column (2): D(t) = Point on distribution curve for time step t
Column (3): Pi(t) = Pa(t) - Pa(t-1): Col.(4) - Preceding Col.(4)
Column (4): Pa(t) = D(t) x P: Col.(2) x P

PERVIOUS AREA RUNOFF (using SCS Runoff CN Method) ----------
Column (5): Rap(t) = Accumulated pervious runoff for time step t
If (Pa(t) is <= 0.2Sp) then use: Rap(t) = 0.0
If (Pa(t) is > 0.2Sp) then use:

$$Rap(t) = \frac{(Col.(4)-0.2Sp)^2}{(Col.(4)+0.8Sp)}$$

Column (6): Rip(t) = Incremental pervious runoff for time step t
Rip(t) = Rap(t) - Rap(t-1)
Rip(t) = Col.(5) for current row - Col.(5) for preceding row.

IMPERVIOUS AREA RUNOFF ----------
Column (7 & 8)... Did not specify to use impervious areas.

INCREMENTAL WEIGHTED RUNOFF: ----------
Column (9): R(t) = (Ap/At) x Rip(t) + (Ai/At) x Rii(t)
R(t) = (Ap/At) x Col.(6) + (Ai/At) x Col.(8)

SCS UNIT HYDROGRAPH METHOD: ----------
Column (10): Q(t) is computed with the SCS unit hydrograph method
using R() and Qu().

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm
Duration = 24.0000 hrs Rain Depth = 3.2000 in
Rain Dir = C:\Program Files\Haestad\PPKW\PPW\
Rain File -ID = - TypeIII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
HYG File - ID = - PRDA 4D 2 YR
Tc = .3467 hrs
Drainage Area = 2.180 acres Runoff CN= 69

==========
Computational Time Increment = .04623 hrs
Computed Peak Time = 12.2978 hrs
Computed Peak Flow = 1.14 cfs

Time Increment for HYG File = .1000 hrs
Peak Time, Interpolated Output = 12.3000 hrs
Peak Flow, Interpolated Output = 1.14 cfs
==========

DRAINAGE AREA

ID:PRDA 4D
CN = 69
Area = 2.180 acres
S = 4.4928 in
0.2S = .8986 in

Cumulative Runoff

.7796 in
.142 ac-ft

HYG Volume... .142 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .34674 hrs (ID: PRDA 4D)
Computational Incr, Tm = .04623 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 7.12 cfs
Unit peak time Tp = .23116 hrs
Unit receding limb, Tr = .92464 hrs
Total unit time, Tb = 1.15581 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 4.7000 in
Rain Dir = C:\Program Files\Haestad\PPKW\PPW\
Rain File -ID = - TypeIII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
HYG File - ID = - PRDA 4D 10 YR
Tc = .3467 hrs
Drainage Area = 2.180 acres Runoff CN= 69

==========
Computational Time Increment = .04623 hrs
Computed Peak Time = 12.2515 hrs
Computed Peak Flow = 2.80 cfs

Time Increment for HYG File = .1000 hrs
Peak Time, Interpolated Output = 12.3000 hrs
Peak Flow, Interpolated Output = 2.77 cfs
==========

DRAINAGE AREA

ID:PRDA 4D
CN = 69
Area = 2.180 acres
S = 4.4928 in
0.2S = .8986 in

Cumulative Runoff

1.7423 in
.317 ac-ft

HYG Volume... .317 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .34674 hrs (ID: PRDA 4D)
Computational Incr, Tm = .04623 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 7.12 cfs
Unit peak time Tp = .23116 hrs
Unit receding limb, Tr = .92464 hrs
Total unit time, Tb = 1.15581 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 5.5000 in
Rain Dir = C:\Program Files\Haestad\PPKW\PPW\
Rain File -ID = - TypeIII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
HYG File - ID = - PRDA 4D 25 YR
Tc = .3467 hrs
Drainage Area = 2.180 acres Runoff CN= 69

==========
Computational Time Increment = .04623 hrs
Computed Peak Time = 12.2515 hrs
Computed Peak Flow = 3.81 cfs

Time Increment for HYG File = .1000 hrs
Peak Time, Interpolated Output = 12.3000 hrs
Peak Flow, Interpolated Output = 3.74 cfs
WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
==========

DRAINAGE AREA

ID:PRDA 4D
CN = 69
Area = 2.180 acres
S = 4.4928 in
0.2S = .8986 in

Cumulative Runoff

2.3282 in
.423 ac-ft

HYG Volume... .423 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .34674 hrs (ID: PRDA 4D)
Computational Incr, Tm = .04623 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 7.12 cfs
Unit peak time Tp = .23116 hrs
Unit receding limb, Tr = .92464 hrs
Total unit time, Tb = 1.15581 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 50 year storm
Duration = 24.0000 hrs Rain Depth = 6.2000 in
Rain Dir = C:\Program Files\Haestad\PPKW\PPW\
Rain File -ID = - TypeIII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
HYG File - ID = - PRDA 4D 50 YR
Tc = .3467 hrs
Drainage Area = 2.180 acres Runoff CN= 69

==========
Computational Time Increment = .04623 hrs
Computed Peak Time = 12.2515 hrs
Computed Peak Flow = 4.73 cfs

Time Increment for HYG File = .1000 hrs
Peak Time, Interpolated Output = 12.3000 hrs
Peak Flow, Interpolated Output = 4.63 cfs
WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
==========

DRAINAGE AREA

ID:PRDA 4D
CN = 69
Area = 2.180 acres
S = 4.4928 in
0.2S = .8986 in

Cumulative Runoff

2.8696 in
.521 ac-ft

HYG Volume... .522 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .34674 hrs (ID: PRDA 4D)
Computational Incr, Tm = .04623 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 7.12 cfs
Unit peak time Tp = .23116 hrs
Unit receding limb, Tr = .92464 hrs
Total unit time, Tb = 1.15581 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 7.0000 in
Rain Dir = C:\Program Files\Haestad\PPKW\PPW\
Rain File -ID = - TypeIII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
HYG File - ID = - PRDA 4D 100 YR
Tc = .3467 hrs
Drainage Area = 2.180 acres Runoff CN= 69

==========
Computational Time Increment = .04623 hrs
Computed Peak Time = 12.2515 hrs
Computed Peak Flow = 5.82 cfs

Time Increment for HYG File = .1000 hrs
Peak Time, Interpolated Output = 12.3000 hrs
Peak Flow, Interpolated Output = 5.67 cfs
WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
==========

DRAINAGE AREA

ID:PRDA 4D
CN = 69
Area = 2.180 acres
S = 4.4928 in
0.2S = .8986 in

Cumulative Runoff

3.5140 in
.638 ac-ft

HYG Volume... .639 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .34674 hrs (ID: PRDA 4D)
Computational Incr, Tm = .04623 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 7.12 cfs
Unit peak time Tp = .23116 hrs
Unit receding limb, Tr = .92464 hrs
Total unit time, Tb = 1.15581 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm
Duration = 24.0000 hrs Rain Depth = 3.2000 in
Rain Dir = C:\Program Files\Haestad\PPKW\PPW\
Rain File -ID = - TypeIII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
HYG File - ID = - PRDA 4ND 2 YR
Tc = .3400 hrs
Drainage Area = 7.740 acres Runoff CN= 55

==========
Computational Time Increment = .04533 hrs
Computed Peak Time = 12.5120 hrs
Computed Peak Flow = .67 cfs

Time Increment for HYG File = .1000 hrs
Peak Time, Interpolated Output = 12.5000 hrs
Peak Flow, Interpolated Output = .67 cfs
==========

DRAINAGE AREA

ID:PRDA 4ND
CN = 55
Area = 7.740 acres
S = 8.1818 in
0.2S = 1.6364 in

Cumulative Runoff

.2509 in
.162 ac-ft

HYG Volume... .162 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .34000 hrs (ID: PRDA 4ND)
Computational Incr, Tm = .04533 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 25.79 cfs
Unit peak time Tp = .22667 hrs
Unit receding limb, Tr = .90667 hrs
Total unit time, Tb = 1.13333 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 4.7000 in
Rain Dir = C:\Program Files\Haestad\PPKW\PPW\
Rain File -ID = - TypeIII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
HYG File - ID = - PRDA 4ND 10 YR
Tc = .3400 hrs
Drainage Area = 7.740 acres Runoff CN= 55

==========
Computational Time Increment = .04533 hrs
Computed Peak Time = 12.3307 hrs
Computed Peak Flow = 3.84 cfs

Time Increment for HYG File = .1000 hrs
Peak Time, Interpolated Output = 12.3000 hrs
Peak Flow, Interpolated Output = 3.80 cfs
==========

DRAINAGE AREA

ID:PRDA 4ND
CN = 55
Area = 7.740 acres
S = 8.1818 in
0.2S = 1.6364 in

Cumulative Runoff

.8346 in
.538 ac-ft

HYG Volume... .538 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .34000 hrs (ID: PRDA 4ND)
Computational Incr, Tm = .04533 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 25.79 cfs
Unit peak time Tp = .22667 hrs
Unit receding limb, Tr = .90667 hrs
Total unit time, Tb = 1.13333 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 5.5000 in
Rain Dir = C:\Program Files\Haestad\PPKW\PPW\
Rain File -ID = - TypeIII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
HYG File - ID = - PRDA 4ND 25 YR
Tc = .3400 hrs
Drainage Area = 7.740 acres Runoff CN= 55

==========

Computational Time Increment	=	.04533 hrs
Computed Peak Time	=	12.2853 hrs
Computed Peak Flow	=	6.30 cfs
Time Increment for HYG File	=	.1000 hrs
Peak Time, Interpolated Output	=	12.3000 hrs
Peak Flow, Interpolated Output	=	6.28 cfs

==========

DRAINAGE AREA

ID:PRDA 4ND
CN = 55
Area = 7.740 acres
S = 8.1818 in
0.2S = 1.6364 in

Cumulative Runoff

1.2393 in
.799 ac-ft

HYG Volume... .799 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .34000 hrs (ID: PRDA 4ND)
Computational Incr, Tm = .04533 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak,	qp =	25.79 cfs
Unit peak time	Tp =	.22667 hrs
Unit receding limb,	Tr =	.90667 hrs
Total unit time,	Tb =	1.13333 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 50 year storm
Duration = 24.0000 hrs Rain Depth = 6.2000 in
Rain Dir = C:\Program Files\Haestad\PPKW\PPW\
Rain File -ID = - TypeIII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
HYG File - ID = - PRDA 4ND 50 YR
Tc = .3400 hrs
Drainage Area = 7.740 acres Runoff CN= 55

==========
Computational Time Increment = .04533 hrs
Computed Peak Time = 12.2853 hrs
Computed Peak Flow = 8.75 cfs

Time Increment for HYG File = .1000 hrs
Peak Time, Interpolated Output = 12.3000 hrs
Peak Flow, Interpolated Output = 8.68 cfs
==========

DRAINAGE AREA

ID:PRDA 4ND
CN = 55
Area = 7.740 acres
S = 8.1818 in
0.2S = 1.6364 in

Cumulative Runoff

1.6341 in
1.054 ac-ft

HYG Volume... 1.054 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .34000 hrs (ID: PRDA 4ND)
Computational Incr, Tm = .04533 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 25.79 cfs
Unit peak time Tp = .22667 hrs
Unit receding limb, Tr = .90667 hrs
Total unit time, Tb = 1.13333 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 7.0000 in
Rain Dir = C:\Program Files\Haestad\PPKW\PPW\
Rain File -ID = - TypeIII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = C:\Program Files\Haestad\PPKW\PPW\
HYG File - ID = - PRDA 4ND 100 YR
Tc = .3400 hrs
Drainage Area = 7.740 acres Runoff CN= 55

==========

Computational Time Increment	=	.04533 hrs
Computed Peak Time	=	12.2853 hrs
Computed Peak Flow	=	11.75 cfs
Time Increment for HYG File	=	.1000 hrs
Peak Time, Interpolated Output	=	12.3000 hrs
Peak Flow, Interpolated Output	=	11.64 cfs

==========

DRAINAGE AREA

ID:PRDA 4ND
CN = 55
Area = 7.740 acres
S = 8.1818 in
0.2S = 1.6364 in

Cumulative Runoff

2.1239 in
1.370 ac-ft

HYG Volume... 1.370 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .34000 hrs (ID: PRDA 4ND)
Computational Incr, Tm = .04533 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak,	qp =	25.79 cfs
Unit peak time	Tp =	.22667 hrs
Unit receding limb,	Tr =	.90667 hrs
Total unit time,	Tb =	1.13333 hrs

SUMMARY FOR HYDROGRAPH ADDITION
at Node: DP 4

HYG Directory: C:\Program Files\Haestad\PPKW\PPW\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
TO DP4	JUNCTION		JUNCTION	2 YR

INFLOWS TO: DP 4

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	JUNCTION	2 YR	.162	12.5000	.67

TOTAL FLOW INTO: DP 4

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	DP 4	2 YR	.162	12.5000	.67

TOTAL NODE INFLOW...
HYG file =
HYG ID = DP 4
HYG Tag = 2 YR

Peak Discharge =	.67 cfs
Time to Peak =	12.5000 hrs
HYG Volume =	.162 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1000 hrs
Time on left represents time for first value in each row.

Time hrs					
12.0000	.00	.02	.18	.43	.61
12.5000	.67	.63	.54	.46	.41
13.0000	.38	.35	.33	.31	.30
13.5000	.29	.29	.28	.28	.27
14.0000	.26	.26	.25	.25	.24
14.5000	.24	.23	.23	.23	.22
15.0000	.22	.22	.21	.21	.20
15.5000	.20	.19	.19	.18	.18
16.0000	.17	.17	.16	.16	.15
16.5000	.15	.15	.15	.14	.14
17.0000	.14	.14	.13	.13	.13
17.5000	.13	.12	.12	.12	.11
18.0000	.11	.11	.11	.10	.10
18.5000	.10	.10	.10	.10	.10
19.0000	.10	.10	.10	.10	.10
19.5000	.10	.09	.09	.09	.09
20.0000	.09	.09	.09	.09	.09
20.5000	.09	.09	.09	.09	.09
21.0000	.08	.08	.08	.08	.08
21.5000	.08	.08	.08	.08	.08
22.0000	.08	.08	.08	.08	.08
22.5000	.08	.07	.07	.07	.07
23.0000	.07	.07	.07	.07	.07
23.5000	.07	.07	.07	.07	.07
24.0000	.06	.06	.04	.02	.01
24.5000	.01	.00	.00	.00	

SUMMARY FOR HYDROGRAPH ADDITION
at Node: DP 4

HYG Directory: C:\Program Files\Haestad\PPKW\PPW\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
TO DP4	JUNCTION		JUNCTION	10 YR

INFLOWS TO: DP 4

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	JUNCTION	10 YR	.590	12.3000	3.80

TOTAL FLOW INTO: DP 4

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	DP 4	10 YR	.590	12.3000	3.80

TOTAL NODE INFLOW...
HYG file =
HYG ID = DP 4
HYG Tag = 10 YR

Peak Discharge =	3.80 cfs
Time to Peak =	12.3000 hrs
HYG Volume =	.590 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1000 hrs
Time on left represents time for first value in each row.

Time hrs					
11.7000	.00	.01	.10	.53	1.68
12.2000	3.15	3.80	3.72	3.37	2.85
12.7000	2.31	1.91	1.66	1.49	1.36
13.2000	1.26	1.19	1.15	1.11	1.08
13.7000	1.05	1.02	.99	.96	.93
14.2000	.90	.87	.84	.82	.80
14.7000	.78	.75	.73	.71	.69
15.2000	.66	.64	.61	.59	.57
15.7000	.55	.52	.50	.48	.46
16.2000	.44	.42	.41	.40	.39
16.7000	.38	.37	.36	.35	.34
17.2000	.33	.33	.32	.31	.31
17.7000	.30	.29	.28	.28	.27
18.2000	.26	.26	.26	.25	.25
18.7000	.25	.25	.24	.24	.24
19.2000	.24	.24	.23	.23	.23
19.7000	.23	.23	.22	.22	.22
20.2000	.22	.22	.21	.21	.21
20.7000	.21	.21	.20	.20	.20
21.2000	.20	.20	.20	.20	.19
21.7000	.19	.19	.19	.19	.19
22.2000	.18	.18	.18	.18	.18
22.7000	.17	.17	.17	.17	.17
23.2000	.17	.16	.16	.16	.16
23.7000	.16	.16	.15	.15	.14
24.2000	.10	.05	.02	.01	.01
24.7000	.00	.00	.00		

SUMMARY FOR HYDROGRAPH ADDITION
at Node: DP 4

HYG Directory: C:\Program Files\Haestad\PPKW\PPW\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
TO DP4	JUNCTION		JUNCTION	25 YR

INFLOWS TO: DP 4

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	JUNCTION	25 YR	.913	12.3000	6.39

TOTAL FLOW INTO: DP 4

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	DP 4	25 YR	.913	12.3000	6.39

TOTAL NODE INFLOW...
HYG file =
HYG ID = DP 4
HYG Tag = 25 YR

Peak Discharge =	6.39 cfs
Time to Peak =	12.3000 hrs
HYG Volume =	.913 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1000 hrs
Time on left represents time for first value in each row.

Time hrs					
11.5000	.00	.00	.05	.22	.62
12.0000	1.55	3.46	5.59	6.39	6.03
12.5000	5.23	4.31	3.43	2.81	2.42
13.0000	2.16	1.96	1.82	1.72	1.65
13.5000	1.60	1.56	1.52	1.48	1.43
14.0000	1.39	1.35	1.31	1.28	1.25
14.5000	1.23	1.20	1.18	1.15	1.13
15.0000	1.10	1.08	1.05	1.02	1.00
15.5000	.97	.94	.91	.88	.85
16.0000	.82	.79	.76	.73	.70
16.5000	.68	.66	.63	.61	.59
17.0000	.57	.55	.52	.51	.49
17.5000	.47	.45	.44	.42	.40
18.0000	.39	.38	.37	.36	.35
18.5000	.34	.34	.34	.33	.33
19.0000	.33	.32	.32	.32	.32
19.5000	.31	.31	.31	.30	.30
20.0000	.30	.30	.29	.29	.29
20.5000	.29	.28	.28	.28	.28
21.0000	.27	.27	.27	.27	.26
21.5000	.26	.26	.26	.26	.25
22.0000	.25	.25	.25	.24	.24
22.5000	.24	.24	.23	.23	.23
23.0000	.23	.23	.22	.22	.22
23.5000	.22	.21	.21	.21	.21
24.0000	.20	.18	.13	.07	.03
24.5000	.02	.01	.00	.00	.00