

Appendices

Appendix A

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PondPack Modeling Output

Basin A

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MASTER DESIGN STORM SUMMARY

Network Storm Collection: Tompkins County

Return Event	Total Depth in	Rainfall Type	RNF ID	
1	2.3000	Synthetic Curve	TypeII	24hr
5	3.4000	Synthetic Curve	TypeII	24hr
10	3.9000	Synthetic Curve	TypeII	24hr
25	4.6000	Synthetic Curve	TypeII	24hr
50	4.9000	Synthetic Curve	TypeII	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
A1	AREA	1	.431		12.1500	3.90		
A1	AREA	5	1.156		12.1000	13.66		
A1	AREA	10	1.553		12.1000	19.07		
A1	AREA	25	2.160		12.1000	27.27		
A1	AREA	50	2.435		12.1000	30.96		
A2	AREA	1	.397		12.1500	3.48		
A2	AREA	5	1.065		12.1000	12.17		
A2	AREA	10	1.431		12.1000	17.05		
A2	AREA	25	1.991		12.1000	24.46		
A2	AREA	50	2.245		12.1000	27.79		
A3	AREA	1	.261		12.2000	2.01		
A3	AREA	5	.701		12.1500	7.15		
A3	AREA	10	.942		12.1500	10.03		
A3	AREA	25	1.311		12.1500	14.41		
A3	AREA	50	1.478		12.1500	16.38		

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
A4	AREA	1	.203		12.1500	1.83		
A4	AREA	5	.544		12.1000	6.46		
A4	AREA	10	.732		12.1000	9.02		
A4	AREA	25	1.018		12.1000	12.90		
A4	AREA	50	1.147		12.1000	14.65		
A5	AREA	1	1.371		12.1000	16.75		
A5	AREA	5	2.890		12.1000	37.00		
A5	AREA	10	3.654		12.1000	47.01		
A5	AREA	25	4.776		12.1000	61.51		
A5	AREA	50	5.271		12.1000	67.85		
*CLVRT 4	OUTLET	JCT	1	.203	12.1500	1.81		
*CLVRT 4	OUTLET	JCT	5	.544	12.1500	6.31		
*CLVRT 4	OUTLET	JCT	10	.732	12.1500	8.75		
*CLVRT 4	OUTLET	JCT	25	1.018	12.1000	12.60		
*CLVRT 4	OUTLET	JCT	50	1.147	12.1000	14.33		
CLVRT 5	INLETIN	POND	1	1.371	12.1000	16.75		
CLVRT 5	INLETIN	POND	5	2.890	12.1000	37.00		
CLVRT 5	INLETIN	POND	10	3.654	12.1000	47.01		
CLVRT 5	INLETIN	POND	25	4.776	12.1000	61.51		
CLVRT 5	INLETIN	POND	50	5.271	12.1000	67.85		
+CLVRT 5	INLETOUT	POND	1	1.371	12.1000	16.30	863.49	.018
+CLVRT 5	INLETOUT	POND	5	2.889	12.1000	36.50	865.03	.041
+CLVRT 5	INLETOUT	POND	10	3.654	12.1000	46.53	865.20	.044
+CLVRT 5	INLETOUT	POND	25	4.776	12.1000	61.09	865.41	.048
+CLVRT 5	INLETOUT	POND	50	5.271	12.1000	67.46	865.49	.049
*CLVRT 5	OUTLET	JCT	1	1.371	12.1000	16.30		
*CLVRT 5	OUTLET	JCT	5	2.726	12.1000	25.90		
*CLVRT 5	OUTLET	JCT	10	3.273	12.1000	26.70		
*CLVRT 5	OUTLET	JCT	25	4.015	12.1000	27.66		
*CLVRT 5	OUTLET	JCT	50	4.328	12.1000	28.02		

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
CLVRT1	O-FLOW	JCT	1		.0500	.00		
CLVRT1	O-FLOW	JCT	5		.0500	.00		
CLVRT1	O-FLOW	JCT	10		.0500	.00		
CLVRT1	O-FLOW	JCT	25		.0500	.00		
CLVRT1	O-FLOW	JCT	50		.0500	.00		
*CLVRT1	OUTLET	JCT	1		12.1500	3.84		
*CLVRT1	OUTLET	JCT	5		12.1500	13.36		
*CLVRT1	OUTLET	JCT	10		12.1500	18.55		
*CLVRT1	OUTLET	JCT	25		12.1000	26.63		
*CLVRT1	OUTLET	JCT	50		12.1000	30.30		
CLVRT2	O-FLOW	JCT	1		.0500	.00		
CLVRT2	O-FLOW	JCT	5		.0500	.00		
CLVRT2	O-FLOW	JCT	10		.0500	.00		
CLVRT2	O-FLOW	JCT	25		.0500	.00		
CLVRT2	O-FLOW	JCT	50		.0500	.00		
*CLVRT2	OUTLET	JCT	1		12.1500	3.39		
*CLVRT2	OUTLET	JCT	5		12.1500	12.03		
*CLVRT2	OUTLET	JCT	10		12.1500	16.75		
*CLVRT2	OUTLET	JCT	25		12.1500	23.89		
*CLVRT2	OUTLET	JCT	50		12.1500	27.10		
CLVRT3	O-FLOW	JCT	1		.0500	.00		
CLVRT3	O-FLOW	JCT	5		.0500	.00		
CLVRT3	O-FLOW	JCT	10		.0500	.00		
CLVRT3	O-FLOW	JCT	25		.0500	.00		
CLVRT3	O-FLOW	JCT	50		.0500	.00		
*CLVRT3	OUTLET	JCT	1		12.2000	1.98		
*CLVRT3	OUTLET	JCT	5		12.2000	7.05		
*CLVRT3	OUTLET	JCT	10		12.2000	9.85		
*CLVRT3	OUTLET	JCT	25		12.1500	14.20		
*CLVRT3	OUTLET	JCT	50		12.1500	16.17		

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
CLVRT4	O-FLOW	JCT	1	.000	.0500	.00		
CLVRT4	O-FLOW	JCT	5	.000	.0500	.00		
CLVRT4	O-FLOW	JCT	10	.000	.0500	.00		
CLVRT4	O-FLOW	JCT	25	.000	.0500	.00		
CLVRT4	O-FLOW	JCT	50	.000	.0500	.00		
CLVRT5	OVERFLOW	JCT	1	.000	.0500	.00		
CLVRT5	OVERFLOW	JCT	5	.163	12.1000	10.60		
CLVRT5	OVERFLOW	JCT	10	.381	12.1000	19.83		
CLVRT5	OVERFLOW	JCT	25	.761	12.1000	33.43		
CLVRT5	OVERFLOW	JCT	50	.943	12.1000	39.43		
INLET CLVRT 1IN	POND		1	.431	12.1500	3.90		
INLET CLVRT 1IN	POND		5	1.156	12.1000	13.66		
INLET CLVRT 1IN	POND		10	1.553	12.1000	19.07		
INLET CLVRT 1IN	POND		25	2.160	12.1000	27.27		
INLET CLVRT 1IN	POND		50	2.435	12.1000	30.96		
+INLET CLVRT 1OUT	POND		1	.431	12.1500	3.84	965.06	.004
+INLET CLVRT 1OUT	POND		5	1.156	12.1500	13.36	966.18	.012
+INLET CLVRT 1OUT	POND		10	1.553	12.1500	18.55	966.73	.017
+INLET CLVRT 1OUT	POND		25	2.160	12.1000	26.63	968.18	.041
+INLET CLVRT 1OUT	POND		50	2.435	12.1000	30.30	969.02	.061
INLET CLVRT 2IN	POND		1	.397	12.1500	3.48		
INLET CLVRT 2IN	POND		5	1.065	12.1000	12.17		
INLET CLVRT 2IN	POND		10	1.431	12.1000	17.05		
INLET CLVRT 2IN	POND		25	1.991	12.1000	24.46		
INLET CLVRT 2IN	POND		50	2.245	12.1000	27.79		
+INLET CLVRT 2OUT	POND		1	.397	12.1500	3.39	944.99	.003
+INLET CLVRT 2OUT	POND		5	1.065	12.1500	12.03	946.04	.010
+INLET CLVRT 2OUT	POND		10	1.431	12.1500	16.75	946.53	.015
+INLET CLVRT 2OUT	POND		25	1.991	12.1500	23.89	947.62	.031
+INLET CLVRT 2OUT	POND		50	2.245	12.1500	27.10	948.28	.044

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
INLET CLVRT 3IN	POND	1	.261		12.2000	2.01		
INLET CLVRT 3IN	POND	5	.701		12.1500	7.15		
INLET CLVRT 3IN	POND	10	.942		12.1500	10.03		
INLET CLVRT 3IN	POND	25	1.311		12.1500	14.41		
INLET CLVRT 3IN	POND	50	1.478		12.1500	16.38		
+INLET CLVRT 3OUT	POND	1	.261		12.2000	1.98	918.75	.002
+INLET CLVRT 3OUT	POND	5	.701		12.2000	7.05	919.49	.006
+INLET CLVRT 3OUT	POND	10	.942		12.2000	9.85	919.81	.008
+INLET CLVRT 3OUT	POND	25	1.311		12.1500	14.20	920.27	.012
+INLET CLVRT 3OUT	POND	50	1.478		12.1500	16.17	920.47	.015
INLET CLVRT 4IN	POND	1	.203		12.1500	1.83		
INLET CLVRT 4IN	POND	5	.544		12.1000	6.46		
INLET CLVRT 4IN	POND	10	.732		12.1000	9.02		
INLET CLVRT 4IN	POND	25	1.018		12.1000	12.90		
INLET CLVRT 4IN	POND	50	1.147		12.1000	14.65		
+INLET CLVRT 4OUT	POND	1	.203		12.1500	1.81	903.71	.002
+INLET CLVRT 4OUT	POND	5	.544		12.1500	6.31	904.40	.005
+INLET CLVRT 4OUT	POND	10	.732		12.1500	8.75	904.69	.007
+INLET CLVRT 4OUT	POND	25	1.018		12.1000	12.60	905.10	.011
+INLET CLVRT 4OUT	POND	50	1.147		12.1000	14.34	905.28	.013
*OUT 10	JCT	1	.000		.0500	.00		
*OUT 10	JCT	5	.163		12.1000	10.60		
*OUT 10	JCT	10	.381		12.1000	19.83		
*OUT 10	JCT	25	.761		12.1000	33.43		
*OUT 10	JCT	50	.943		12.1000	39.43		

Type.... Design Storms
Name.... Tompkins County

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

Title... Project Date: 11/19/2008
Project Engineer: BMT
Project Title: Ludlowville Storm Drainage
Project Comments:

DESIGN STORMS SUMMARY

Design Storm File, ID = Tompkins County

Storm Tag Name = 1

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 1 yr
Total Rainfall Depth= 2.3000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 5

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 5 yr
Total Rainfall Depth= 3.4000 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

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 10 yr
Total Rainfall Depth= 3.9000 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

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 25 yr
Total Rainfall Depth= 4.6000 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

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 50 yr
Total Rainfall Depth= 4.9000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Type.... Tc Calcs
Name.... A1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

TIME OF CONCENTRATION CALCULATOR

Segment #1: Tc: TR-55 Sheet

Mannings n .3000
Hydraulic Length 100.00 ft
2yr, 24hr P 2.7000 in
Slope .050000 ft/ft

Avg.Velocity .13 ft/sec

Segment #1 Time: .2145 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length 300.00 ft
Slope .070000 ft/ft
Unpaved

Avg.Velocity 4.27 ft/sec

Segment #2 Time: .0195 hrs

Segment #3: Tc: TR-55 Channel

Flow Area 9.0000 sq.ft
Wetted Perimeter 7.00 ft
Hydraulic Radius 1.29 ft
Slope .010000 ft/ft
Mannings n .0500
Hydraulic Length 1100.00 ft

Avg.Velocity 3.52 ft/sec

Segment #3 Time: .0867 hrs

=====
Total Tc: .3208 hrs
=====

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

==== 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

.....
TIME OF CONCENTRATION CALCULATOR
.....

Segment #1: Tc: TR-55 Sheet

Mannings n .3000
Hydraulic Length 100.00 ft
2yr, 24hr P 2.7000 in
Slope .040000 ft/ft

Avg.Velocity .12 ft/sec

Segment #1 Time: .2346 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length 500.00 ft
Slope .060000 ft/ft
Unpaved

Avg.Velocity 3.95 ft/sec

Segment #2 Time: .0351 hrs

Segment #3: Tc: TR-55 Channel

Flow Area 10.0000 sq.ft
Wetted Perimeter 8.00 ft
Hydraulic Radius 1.25 ft
Slope .018000 ft/ft
Mannings n .0500
Hydraulic Length 1100.00 ft

Avg.Velocity 4.64 ft/sec

Segment #3 Time: .0659 hrs

=====
Total Tc: .3356 hrs
=====

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.... Tc Calcs
Name.... A2

Page 3.06

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

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

$$R = Aq / Wp$$
$$V = (1.49 * (R^{2/3}) * (Sf^{-0.5})) / n$$
$$Tc = (Lf / V) / (3600\text{sec/hr})$$

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

Name.... A3

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

```

:.....:
TIME OF CONCENTRATION CALCULATOR
:.....:

```

Segment #1: Tc: TR-55 Sheet

```

Mannings n      .3000
Hydraulic Length 100.00 ft
2yr, 24hr P     2.7000 in
Slope           .015000 ft/ft

```

Avg.Velocity .08 ft/sec

Segment #1 Time: .3473 hrs

Segment #2: Tc: TR-55 Shallow

```

Hydraulic Length 500.00 ft
Slope            .060000 ft/ft
Unpaved

```

Avg.Velocity 3.95 ft/sec

Segment #2 Time: .0351 hrs

Segment #3: Tc: TR-55 Channel

```

Flow Area        11.0000 sq.ft
Wetted Perimeter 9.00 ft
Hydraulic Radius 1.22 ft
Slope            .030000 ft/ft
Mannings n      .0500
Hydraulic Length 600.00 ft

```

Avg.Velocity 5.90 ft/sec

Segment #3 Time: .0282 hrs

```

=====
Total Tc:      .4107 hrs
=====

```

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

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

$$R = Aq / Wp$$
$$V = (1.49 * (R^{2/3}) * (Sf^{-0.5})) / n$$
$$Tc = (Lf / V) / (3600\text{sec/hr})$$

- 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

.....
TIME OF CONCENTRATION CALCULATOR
.....

Segment #1: Tc: TR-55 Sheet

Mannings n .3000
Hydraulic Length 100.00 ft
2yr, 24hr P 2.7000 in
Slope .030000 ft/ft

Avg.Velocity .11 ft/sec

Segment #1 Time: .2632 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length 580.00 ft
Slope .080000 ft/ft
Unpaved

Avg.Velocity 4.56 ft/sec

Segment #2 Time: .0353 hrs

Segment #3: Tc: TR-55 Channel

Flow Area 11.0000 sq.ft
Wetted Perimeter 9.00 ft
Hydraulic Radius 1.22 ft
Slope .030000 ft/ft
Mannings n .0500
Hydraulic Length 470.00 ft

Avg.Velocity 5.90 ft/sec

Segment #3 Time: .0221 hrs

Total Tc: .3206 hrs

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

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

$$R = Aq / Wp$$

$$V = (1.49 * (R^{2/3}) * (Sf^{-0.5})) / n$$

$$Tc = (Lf / V) / (3600\text{sec/hr})$$

- 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

Type.... Tc Calcs
Name.... A5

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

.....
TIME OF CONCENTRATION CALCULATOR
.....

Segment #1: Tc: TR-55 Sheet

Mannings n .3000
Hydraulic Length 100.00 ft
2yr, 24hr P 2.7000 in
Slope .045000 ft/ft

Avg.Velocity .12 ft/sec

Segment #1 Time: .2238 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length 715.00 ft
Slope .080000 ft/ft
Unpaved

Avg.Velocity 4.56 ft/sec

Segment #2 Time: .0435 hrs

Segment #3: Tc: TR-55 Channel

Flow Area 15.0000 sq.ft
Wetted Perimeter 10.50 ft
Hydraulic Radius 1.43 ft
Slope .030000 ft/ft
Mannings n .0500
Hydraulic Length 1240.00 ft

Avg.Velocity 6.55 ft/sec

Segment #3 Time: .0526 hrs

=====
Total Tc: .3199 hrs
=====

Type.... Tc Calcs
Name.... A5

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.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

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

$$R = Aq / Wp$$

$$V = (1.49 * (R^{2/3}) * (Sf^{-0.5})) / n$$

$$Tc = (Lf / V) / (3600\text{sec/hr})$$

- 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

RUNOFF CURVE NUMBER DATA

.....

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Pasture, grassland, or range - fair	69	15.500			69.00

COMPOSITE AREA & WEIGHTED CN ---> 15.500 69.00 (69)

Type.... Runoff CN-Area
Name.... A2

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

RUNOFF CURVE NUMBER DATA

.....

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Pasture, grassland, or range - fair	69	14.300			69.00

COMPOSITE AREA & WEIGHTED CN ---> 14.300 69.00 (69)

.....

RUNOFF CURVE NUMBER DATA

.....

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Pasture, grassland, or range - fair	69	9.400			69.00

COMPOSITE AREA & WEIGHTED CN ---> 9.400 69.00 (69)

.....

RUNOFF CURVE NUMBER DATA

.....

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Pasture, grassland, or range - fair	69	7.300			69.00

COMPOSITE AREA & WEIGHTED CN ---> 7.300 69.00 (69)

.....

Type.... Runoff CN-Area
Name.... A5

RUNOFF CURVE NUMBER DATA

.....

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Pasture, grassland, or range - fair	79	23.300			79.00

COMPOSITE AREA & WEIGHTED CN ---> 23.300 79.00 (79)
.....

Name.... LNSNGVL 1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\
 Inflow HYG file = NONE STORED - CLVRT1 O-FLOW 1
 Outflow HYG file = NONE STORED - LNSNGVL 1 1

Reach Link Data = LNSNGVL 1
 Reach Length = 1135.00 ft
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)
 Reach Channel = Lnsngvl Dtchl (Chn-Trapz.)
 Overflow Elev. = 969.00 ft
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 965.00 ft
 Starting Volume = .000 ac-ft
 Starting Outflow = .00 cfs
 Starting Infiltr. = .00 cfs
 Starting Total Qout= .00 cfs
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
965.00	.00	.000	.0000	.00	.00	.00
965.01	.00	.001	.0526	.00	.00	.26
965.08	.15	.004	.0563	.00	.15	2.24
965.16	.46	.009	.0604	.00	.46	4.82
965.24	.91	.014	.0646	.00	.91	7.69
965.32	1.47	.019	.0688	.00	1.47	10.84
965.40	2.15	.025	.0730	.00	2.15	14.26
965.48	2.94	.031	.0771	.00	2.94	17.95
965.56	3.84	.037	.0813	.00	3.84	21.91
965.64	4.84	.044	.0855	.00	4.84	26.15
965.72	5.96	.051	.0896	.00	5.96	30.66
965.80	7.19	.058	.0938	.00	7.19	35.44
965.88	8.53	.066	.0980	.00	8.53	40.49
965.96	9.99	.074	.1021	.00	9.99	45.83
966.04	11.57	.082	.1063	.00	11.57	51.44
966.12	13.27	.091	.1105	.00	13.27	57.33
966.20	15.09	.100	.1146	.00	15.09	63.52
966.28	17.03	.109	.1188	.00	17.03	69.98
966.36	19.11	.119	.1230	.00	19.11	76.73
966.44	21.31	.129	.1272	.00	21.31	83.78

Name.... LNSNGVL 1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\
 Inflow HYG file = NONE STORED - CLVRT1 O-FLOW 1
 Outflow HYG file = NONE STORED - LNSNGVL 1 1

Reach Link Data = LNSNGVL 1
 Reach Length = 1135.00 ft
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)
 Reach Channel = Lnsngvl Dtchl (Chn-Trapz.)
 Overflow Elev. = 969.00 ft
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 965.00 ft
 Starting Volume = .000 ac-ft
 Starting Outflow = .00 cfs
 Starting Infiltr. = .00 cfs
 Starting Total Qout= .00 cfs
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
966.52	23.65	.139	.1313	.00	23.65	91.13
966.60	26.12	.150	.1355	.00	26.12	98.76
966.68	28.73	.161	.1397	.00	28.73	106.70
966.76	31.48	.172	.1438	.00	31.48	114.94
966.84	34.37	.184	.1480	.00	34.37	123.48
966.92	37.41	.196	.1522	.00	37.41	132.32
967.00	40.60	.208	.1563	.00	40.60	141.48
967.08	43.93	.221	.1605	.00	43.93	150.96
967.16	47.42	.234	.1647	.00	47.42	160.73
967.24	51.06	.247	.1688	.00	51.06	170.83
967.32	54.86	.261	.1730	.00	54.86	181.26
967.40	58.82	.275	.1772	.00	58.82	192.00
967.48	62.94	.289	.1813	.00	62.94	203.05
967.56	67.23	.304	.1855	.00	67.23	214.45
967.64	71.68	.319	.1897	.00	71.68	226.17
967.72	76.30	.335	.1939	.00	76.30	238.21
967.80	81.10	.350	.1980	.00	81.10	250.59
967.88	86.07	.366	.2022	.00	86.07	263.31
967.96	91.22	.383	.2064	.00	91.22	276.37
968.04	96.54	.399	.2105	.00	96.54	289.76

Name.... LNSNGVL 1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\
 Inflow HYG file = NONE STORED - CLVRT1 O-FLOW 1
 Outflow HYG file = NONE STORED - LNSNGVL 1 1

Reach Link Data = LNSNGVL 1
 Reach Length = 1135.00 ft
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)
 Reach Channel = Lnsngvl Dtchl (Chn-Trapz.)
 Overflow Elev. = 969.00 ft
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 965.00 ft
 Starting Volume = .000 ac-ft
 Starting Outflow = .00 cfs
 Starting Infiltr. = .00 cfs
 Starting Total Qout= .00 cfs
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
968.12	102.04	.416	.2147	.00	102.04	303.50
968.20	107.73	.434	.2189	.00	107.73	317.58
968.28	113.61	.451	.2230	.00	113.61	332.02
968.36	119.67	.469	.2272	.00	119.67	346.79
968.44	125.92	.488	.2314	.00	125.92	361.92
968.52	132.37	.506	.2355	.00	132.37	377.41
968.60	139.00	.525	.2397	.00	139.00	393.24
968.68	145.84	.545	.2439	.00	145.84	409.44
968.76	152.87	.564	.2481	.00	152.87	426.00
968.84	160.11	.584	.2522	.00	160.11	442.92
968.92	167.54	.605	.2564	.00	167.54	460.20
969.00	175.19	.625	.2606	.00	175.19	477.86

Name.... LNSNGVL 2

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\
 Inflow HYG file = NONE STORED - CLVRT2 O-FLOW 1
 Outflow HYG file = NONE STORED - LNSNGVL 2 1

Reach Link Data = LNSNGVL 2
 Reach Length = 650.00 ft
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)
 Reach Channel = Lnsngvl Ditch2 (Chn-Trapz.)
 Overflow Elev. = 949.00 ft
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 945.00 ft
 Starting Volume = .000 ac-ft
 Starting Outflow = .00 cfs
 Starting Infiltr. = .00 cfs
 Starting Total Qout = .00 cfs
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
945.00	.00	.000	.0000	.00	.00	.00
945.01	.01	.000	.0301	.00	.01	.15
945.08	.22	.002	.0322	.00	.22	1.42
945.16	.70	.005	.0346	.00	.70	3.19
945.24	1.37	.008	.0370	.00	1.37	5.25
945.32	2.22	.011	.0394	.00	2.22	7.58
945.40	3.24	.014	.0418	.00	3.24	10.18
945.48	4.43	.018	.0442	.00	4.43	13.03
945.56	5.78	.021	.0466	.00	5.78	16.14
945.64	7.30	.025	.0489	.00	7.30	19.50
945.72	8.98	.029	.0513	.00	8.98	23.13
945.80	10.84	.033	.0537	.00	10.84	27.01
945.88	12.86	.038	.0561	.00	12.86	31.17
945.96	15.06	.042	.0585	.00	15.06	35.59
946.04	17.44	.047	.0609	.00	17.44	40.27
946.12	20.00	.052	.0633	.00	20.00	45.24
946.20	22.75	.057	.0657	.00	22.75	50.48
946.28	25.68	.063	.0680	.00	25.68	56.00
946.36	28.81	.068	.0704	.00	28.81	61.81
946.44	32.13	.074	.0728	.00	32.13	67.91

Name.... LNSNGVL 2

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\
 Inflow HYG file = NONE STORED - CLVRT2 O-FLOW 1
 Outflow HYG file = NONE STORED - LNSNGVL 2 1

Reach Link Data = LNSNGVL 2
 Reach Length = 650.00 ft
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)
 Reach Channel = Lnsngvl Ditch2 (Chn-Trapz.)
 Overflow Elev. = 949.00 ft
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 945.00 ft
 Starting Volume = .000 ac-ft
 Starting Outflow = .00 cfs
 Starting Infiltr. = .00 cfs
 Starting Total Qout= .00 cfs
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
946.52	35.65	.080	.0752	.00	35.65	74.30
946.60	39.38	.086	.0776	.00	39.38	80.98
946.68	43.31	.092	.0800	.00	43.31	87.96
946.76	47.46	.099	.0824	.00	47.46	95.25
946.84	51.82	.105	.0848	.00	51.82	102.85
946.92	56.40	.112	.0871	.00	56.40	110.75
947.00	61.20	.119	.0895	.00	61.20	118.98
947.08	66.23	.127	.0919	.00	66.23	127.52
947.16	71.48	.134	.0943	.00	71.48	136.38
947.24	76.98	.142	.0967	.00	76.98	145.57
947.32	82.71	.150	.0991	.00	82.71	155.09
947.40	88.68	.158	.1015	.00	88.68	164.95
947.48	94.89	.166	.1039	.00	94.89	175.13
947.56	101.35	.174	.1062	.00	101.35	185.66
947.64	108.07	.183	.1086	.00	108.07	196.54
947.72	115.03	.192	.1110	.00	115.03	207.75
947.80	122.26	.201	.1134	.00	122.26	219.33
947.88	129.76	.210	.1158	.00	129.76	231.26
947.96	137.51	.219	.1182	.00	137.51	243.55
948.04	145.54	.229	.1206	.00	145.54	256.19

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\
 Inflow HYG file = NONE STORED - CLVRT2 O-FLOW 1
 Outflow HYG file = NONE STORED - LNSNGVL 2 1

Reach Link Data = LNSNGVL 2
 Reach Length = 650.00 ft
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)
 Reach Channel = Lnsngvl Ditch2 (Chn-Trapz.)
 Overflow Elev. = 949.00 ft
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 945.00 ft
 Starting Volume = .000 ac-ft
 Starting Outflow = .00 cfs
 Starting Infiltr. = .00 cfs
 Starting Total Qout= .00 cfs
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
948.12	153.84	.238	.1230	.00	153.84	269.21
948.20	162.41	.248	.1253	.00	162.41	282.59
948.28	171.27	.258	.1277	.00	171.27	296.35
948.36	180.40	.269	.1301	.00	180.40	310.47
948.44	189.83	.279	.1325	.00	189.83	324.99
948.52	199.55	.290	.1349	.00	199.55	339.88
948.60	209.55	.301	.1373	.00	209.55	355.15
948.68	219.86	.312	.1397	.00	219.86	370.82
948.76	230.46	.323	.1421	.00	230.46	386.88
948.84	241.37	.335	.1444	.00	241.37	403.34
948.92	252.58	.346	.1468	.00	252.58	420.18
949.00	264.11	.358	.1492	.00	264.11	437.44

Name.... LNSNGVL 3

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\
 Inflow HYG file = NONE STORED - CLVRT3 O-FLOW 1
 Outflow HYG file = NONE STORED - LNSNGVL 3 1

Reach Link Data = LNSNGVL 3
 Reach Length = 540.00 ft
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)
 Reach Channel = Lnsngvl Ditch3 (Chn-Trapz.)
 Overflow Elev. = 923.00 ft
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 919.00 ft
 Starting Volume = .000 ac-ft
 Starting Outflow = .00 cfs
 Starting Infiltr. = .00 cfs
 Starting Total Qout= .00 cfs
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
919.00	.00	.000	.0000	.00	.00	.00
919.01	.01	.000	.0253	.00	.01	.13
919.08	.19	.002	.0288	.00	.19	1.23
919.16	.61	.005	.0327	.00	.61	2.84
919.24	1.24	.007	.0367	.00	1.24	4.81
919.32	2.06	.010	.0407	.00	2.06	7.13
919.40	3.09	.014	.0446	.00	3.09	9.81
919.48	4.32	.018	.0486	.00	4.32	12.85
919.56	5.78	.022	.0526	.00	5.78	16.26
919.64	7.45	.026	.0565	.00	7.45	20.05
919.72	9.37	.031	.0605	.00	9.37	24.23
919.80	11.52	.036	.0645	.00	11.52	28.80
919.88	13.93	.041	.0684	.00	13.93	33.78
919.96	16.60	.047	.0724	.00	16.60	39.18
920.04	19.55	.053	.0764	.00	19.55	45.00
920.12	22.77	.059	.0803	.00	22.77	51.26
920.20	26.29	.065	.0843	.00	26.29	57.97
920.28	30.10	.072	.0883	.00	30.10	65.12
920.36	34.22	.080	.0922	.00	34.22	72.74
920.44	38.66	.087	.0962	.00	38.66	80.82

Name.... LNSNGVL 3

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\
 Inflow HYG file = NONE STORED - CLVRT3 O-FLOW 1
 Outflow HYG file = NONE STORED - LNSNGVL 3 1

Reach Link Data = LNSNGVL 3
 Reach Length = 540.00 ft
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)
 Reach Channel = Lnsngvl Ditch3 (Chn-Trapz.)
 Overflow Elev. = 923.00 ft
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 919.00 ft
 Starting Volume = .000 ac-ft
 Starting Outflow = .00 cfs
 Starting Infiltr. = .00 cfs
 Starting Total Qout= .00 cfs
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
920.52	43.42	.095	.1002	.00	43.42	89.39
920.60	48.52	.103	.1041	.00	48.52	98.44
920.68	53.96	.112	.1081	.00	53.96	107.99
920.76	59.75	.120	.1121	.00	59.75	118.05
920.84	65.91	.130	.1160	.00	65.91	128.61
920.92	72.42	.139	.1200	.00	72.42	139.70
921.00	79.32	.149	.1240	.00	79.32	151.32
921.08	86.59	.159	.1279	.00	86.59	163.47
921.16	94.26	.169	.1319	.00	94.26	176.17
921.24	102.33	.180	.1359	.00	102.33	189.42
921.32	110.81	.191	.1398	.00	110.81	203.24
921.40	119.70	.202	.1438	.00	119.70	217.62
921.48	129.01	.214	.1478	.00	129.01	232.57
921.56	138.76	.226	.1517	.00	138.76	248.12
921.64	148.94	.238	.1557	.00	148.94	264.26
921.72	159.57	.251	.1597	.00	159.57	280.99
921.80	170.65	.264	.1636	.00	170.65	298.33
921.88	182.20	.277	.1676	.00	182.20	316.29
921.96	194.21	.291	.1716	.00	194.21	334.87
922.04	206.69	.304	.1755	.00	206.69	354.07

Name.... LNSNGVL 3

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\
 Inflow HYG file = NONE STORED - CLVRT3 O-FLOW 1
 Outflow HYG file = NONE STORED - LNSNGVL 3 1

Reach Link Data = LNSNGVL 3
 Reach Length = 540.00 ft
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)
 Reach Channel = Lnsngvl Ditch3 (Chn-Trapz.)
 Overflow Elev. = 923.00 ft
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 919.00 ft
 Starting Volume = .000 ac-ft
 Starting Outflow = .00 cfs
 Starting Infiltr. = .00 cfs
 Starting Total Qout = .00 cfs
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
922.12	219.66	.319	.1795	.00	219.66	373.91
922.20	233.12	.333	.1835	.00	233.12	394.40
922.28	247.08	.348	.1874	.00	247.08	415.54
922.36	261.53	.363	.1914	.00	261.53	437.32
922.44	276.50	.379	.1954	.00	276.50	459.79
922.52	291.99	.394	.1993	.00	291.99	482.92
922.60	308.00	.411	.2033	.00	308.00	506.71
922.68	324.54	.427	.2073	.00	324.54	531.21
922.76	341.63	.444	.2112	.00	341.63	556.40
922.84	359.26	.461	.2152	.00	359.26	582.29
922.92	377.43	.478	.2192	.00	377.43	608.86
923.00	396.17	.496	.2231	.00	396.17	636.17

Name.... LNSNGVL 4

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\
 Inflow HYG file = NONE STORED - CLVRT4 O-FLOW 1
 Outflow HYG file = NONE STORED - LNSNGVL 4 1

Reach Link Data = LNSNGVL 4
 Reach Length = 1290.00 ft
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)
 Reach Channel = Lnsngvl Ditch4 (Chn-Trapz.)
 Overflow Elev. = 908.00 ft
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 904.00 ft
 Starting Volume = .000 ac-ft
 Starting Outflow = .00 cfs
 Starting Infiltr. = .00 cfs
 Starting Total Qout = .00 cfs
 Time Increment = .0500 hrs

Elevation. ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
904.00	.00	.000	.0000	.00	.00	.00
904.01	.01	.001	.0604	.00	.01	.30
904.08	.20	.005	.0687	.00	.20	2.68
904.16	.65	.011	.0782	.00	.65	5.97
904.24	1.32	.018	.0877	.00	1.32	9.85
904.32	2.21	.025	.0971	.00	2.21	14.31
904.40	3.30	.033	.1066	.00	3.30	19.36
904.48	4.62	.042	.1161	.00	4.62	24.99
904.56	6.18	.052	.1256	.00	6.18	31.22
904.64	7.97	.062	.1350	.00	7.97	38.06
904.72	10.01	.073	.1445	.00	10.01	45.51
904.80	12.32	.085	.1540	.00	12.32	53.60
904.88	14.89	.098	.1635	.00	14.89	62.32
904.96	17.75	.111	.1730	.00	17.75	71.69
905.04	20.90	.126	.1824	.00	20.90	81.71
905.12	24.34	.141	.1919	.00	24.34	92.41
905.20	28.10	.156	.2014	.00	28.10	103.78
905.28	32.18	.173	.2109	.00	32.18	115.84
905.36	36.58	.190	.2203	.00	36.58	128.59
905.44	41.33	.208	.2298	.00	41.33	142.05

Name.... LNSNGVL 4

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\
 Inflow HYG file = NONE STORED - CLVRT4 O-FLOW 1
 Outflow HYG file = NONE STORED - LNSNGVL 4 1

Reach Link Data = LNSNGVL 4
 Reach Length = 1290.00 ft
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)
 Reach Channel = Lnsngvl Ditch4 (Chn-Trapz.)
 Overflow Elev. = 908.00 ft
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 904.00 ft
 Starting Volume = .000 ac-ft
 Starting Outflow = .00 cfs
 Starting Infiltr. = .00 cfs
 Starting Total Qout = .00 cfs
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
905.52	46.42	.227	.2393	.00	46.42	156.23
905.60	51.87	.246	.2488	.00	51.87	171.12
905.68	57.69	.267	.2582	.00	57.69	186.76
905.76	63.88	.288	.2677	.00	63.88	203.13
905.84	70.46	.310	.2772	.00	70.46	220.26
905.92	77.42	.332	.2867	.00	77.42	238.14
906.00	84.79	.355	.2961	.00	84.79	256.79
906.08	92.57	.379	.3056	.00	92.57	276.23
906.16	100.77	.404	.3151	.00	100.77	296.43
906.24	109.40	.430	.3246	.00	109.40	317.45
906.32	118.46	.456	.3341	.00	118.46	339.26
906.40	127.97	.483	.3435	.00	127.97	361.89
906.48	137.92	.511	.3530	.00	137.92	385.32
906.56	148.34	.540	.3625	.00	148.34	409.60
906.64	159.23	.569	.3720	.00	159.23	434.71
906.72	170.59	.599	.3814	.00	170.59	460.64
906.80	182.43	.630	.3909	.00	182.43	487.45
906.88	194.78	.662	.4004	.00	194.78	515.11
906.96	207.62	.694	.4099	.00	207.62	543.64
907.04	220.96	.727	.4193	.00	220.96	573.03

Name.... LNSNGVL 4

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

MODIFIED PULS REACH DATA

HYG Dir = C:\Documents and Settings\drh\Desktop\Ludlowville\
 Inflow HYG file = NONE STORED - CLVRT4 O-FLOW 1
 Outflow HYG file = NONE STORED - LNSNGVL 4 1

Reach Link Data = LNSNGVL 4
 Reach Length = 1290.00 ft
 Approx. Total Tt = .0000 hrs (based on Wtd.Q = .00 cfs)
 Reach Channel = Lnsngvl Ditch4 (Chn-Trapz.)
 Overflow Elev. = 908.00 ft
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

 Starting WS Elev = 904.00 ft
 Starting Volume = .000 ac-ft
 Starting Outflow = .00 cfs
 Starting Infiltr. = .00 cfs
 Starting Total Qout = .00 cfs
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infiltr. cfs	Q Total cfs	2S/t + O cfs
907.12	234.83	.761	.4288	.00	234.83	603.32
907.20	249.22	.796	.4383	.00	249.22	634.50
907.28	264.14	.831	.4478	.00	264.14	666.58
907.36	279.59	.868	.4572	.00	279.59	699.54
907.44	295.59	.905	.4667	.00	295.59	733.44
907.52	312.15	.942	.4762	.00	312.15	768.26
907.60	329.26	.981	.4857	.00	329.26	803.97
907.68	346.95	1.020	.4952	.00	346.95	840.66
907.76	365.21	1.060	.5046	.00	365.21	878.28
907.84	384.06	1.101	.5141	.00	384.06	916.86
907.92	403.49	1.142	.5236	.00	403.49	956.36
908.00	423.52	1.185	.5331	.00	423.52	996.85

Name.... Clvrt 1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 964.00 ft
 Increment = .10 ft
 Max. Elev.= 971.00 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
Culvert-Circular TW SETUP, DS Channel	C0	---> TW	964.000	971.000

OUTLET STRUCTURE INPUT DATA

Structure ID = C0
Structure Type = Culvert-Circular

No. Barrels = 1
Barrel Diameter = 2.0000 ft
Upstream Invert = 964.00 ft
Dnstream Invert = 963.00 ft
Horiz. Length = 50.00 ft
Barrel Length = 50.01 ft
Barrel Slope = .02000 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0160
Ke = .5000 (forward entrance loss)
Kb = .018800 (per ft of full flow)
Kr = .5000 (reverse entrance loss)
HW Convergence = .001 +/- ft

INLET CONTROL DATA...

Equation form = 1
Inlet Control K = .0098
Inlet Control M = 2.0000
Inlet Control c = .03980
Inlet Control Y = .6700
T1 ratio (HW/D) = 1.150
T2 ratio (HW/D) = 1.297
Slope Factor = -.500

Use unsubmerged inlet control Form 1 equ. below T1 elev.
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

At T1 Elev = 966.30 ft ---> Flow = 15.55 cfs
At T2 Elev = 966.59 ft ---> Flow = 17.77 cfs

OUTLET STRUCTURE INPUT DATA

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

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...

Maximum Iterations= 40
Min. TW tolerance = .01 ft
Max. TW tolerance = .01 ft
Min. HW tolerance = .01 ft
Max. HW tolerance = .01 ft
Min. Q tolerance = .00 cfs
Max. Q tolerance = .00 cfs

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 918.00 ft
 Increment = .10 ft
 Max. Elev.= 924.00 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
Culvert-Circular TW SETUP, DS Channel	C0	---> TW	918.000	924.000

Name.... Clvrt 3

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

OUTLET STRUCTURE INPUT DATA

Structure ID = C0
 Structure Type = Culvert-Circular

 No. Barrels = 1
 Barrel Diameter = 2.0000 ft
 Upstream Invert = 918.00 ft
 Dnstream Invert = 917.00 ft
 Horiz. Length = 50.00 ft
 Barrel Length = 50.01 ft
 Barrel Slope = .02000 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0160
 Ke = .5000 (forward entrance loss)
 Kb = .018800 (per ft of full flow)
 Kr = .5000 (reverse entrance loss)
 HW Convergence = .001 +/- ft

INLET CONTROL DATA...

Equation form = 1
 Inlet Control K = .0098
 Inlet Control M = 2.0000
 Inlet Control c = .03980
 Inlet Control Y = .6700
 T1 ratio (HW/D) = 1.150
 T2 ratio (HW/D) = 1.297
 Slope Factor = -.500

Use unsubmerged inlet control Form 1 equ. below T1 elev.
 Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,
 interpolate between flows at T1 & T2...

At T1 Elev = 920.30 ft ---> Flow = 15.55 cfs
 At T2 Elev = 920.59 ft ---> Flow = 17.77 cfs

Type.... Outlet Input Data
Name.... Clvrt 3

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File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

OUTLET STRUCTURE INPUT DATA

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

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...

Maximum Iterations= 40
Min. TW tolerance = .01 ft
Max. TW tolerance = .01 ft
Min. HW tolerance = .01 ft
Max. HW tolerance = .01 ft
Min. Q tolerance = .00 cfs
Max. Q tolerance = .00 cfs

Name.... Clvrt 4

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 903.00 ft
 Increment = .10 ft
 Max. Elev.= 909.00 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
Culvert-Circular TW SETUP, DS Channel	CO	---> TW	903.000	909.000

OUTLET STRUCTURE INPUT DATA

Structure ID = C0
Structure Type = Culvert-Circular

No. Barrels = 1
Barrel Diameter = 2.0000 ft
Upstream Invert = 903.00 ft
Dnstream Invert = 902.00 ft
Horiz. Length = 50.00 ft
Barrel Length = 50.01 ft
Barrel Slope = .02000 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0160
Ke = .5000 (forward entrance loss)
Kb = .018800 (per ft of full flow)
Kr = .5000 (reverse entrance loss)
HW Convergence = .001 +/- ft

INLET CONTROL DATA...

Equation form = 1
Inlet Control K = .0098
Inlet Control M = 2.0000
Inlet Control c = .03980
Inlet Control Y = .6700
T1 ratio (HW/D) = 1.150
T2 ratio (HW/D) = 1.297
Slope Factor = -.500

Use unsubmerged inlet control Form 1 equ. below T1 elev.
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

At T1 Elev = 905.30 ft ---> Flow = 15.55 cfs
At T2 Elev = 905.59 ft ---> Flow = 17.77 cfs

Type.... Outlet Input Data
Name.... Clvrt 4

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

OUTLET STRUCTURE INPUT DATA

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

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...

Maximum Iterations= 40
Min. TW tolerance = .01 ft
Max. TW tolerance = .01 ft
Min. HW tolerance = .01 ft
Max. HW tolerance = .01 ft
Min. Q tolerance = .00 cfs
Max. Q tolerance = .00 cfs

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 861.00 ft
 Increment = .10 ft
 Max. Elev.= 868.00 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
Culvert-Circular TW SETUP, DS Channel	C0	---> TW	861.000	868.000

OUTLET STRUCTURE INPUT DATA

Structure ID = C0
Structure Type = Culvert-Circular

No. Barrels = 1
Barrel Diameter = 2.0000 ft
Upstream Invert = 861.00 ft
Dnstream Invert = 860.20 ft
Horiz. Length = 50.00 ft
Barrel Length = 50.01 ft
Barrel Slope = .01600 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0160
Ke = .5000 (forward entrance loss)
Kb = .018800 (per ft of full flow)
Kr = .5000 (reverse entrance loss)
HW Convergence = .001 +/- ft

INLET CONTROL DATA...

Equation form = 1
Inlet Control K = .0098
Inlet Control M = 2.0000
Inlet Control c = .03980
Inlet Control Y = .6700
T1 ratio (HW/D) = .000
T2 ratio (HW/D) = 1.299
Slope Factor = -.500

Use unsubmerged inlet control Form 1 equ. below T1 elev.
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

At T1 Elev = 861.00 ft ---> Flow = 15.55 cfs
At T2 Elev = 863.60 ft ---> Flow = 17.77 cfs

OUTLET STRUCTURE INPUT DATA

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

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...

Maximum Iterations= 40
Min. TW tolerance = .01 ft
Max. TW tolerance = .01 ft
Min. HW tolerance = .01 ft
Max. HW tolerance = .01 ft
Min. Q tolerance = .00 cfs
Max. Q tolerance = .00 cfs

Type.... Outlet Input Data
Name.... Clvrt2

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 944.00 ft
Increment = .10 ft
Max. Elev.= 950.00 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
Culvert-Circular	CO	---> TW	944.000	950.000
TW SETUP, DS Channel				

Name.... Clvrt2

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

OUTLET STRUCTURE INPUT DATA

Structure ID = C0
 Structure Type = Culvert-Circular

 No. Barrels = 1
 Barrel Diameter = 2.0000 ft
 Upstream Invert = 944.00 ft
 Dnstream Invert = 943.00 ft
 Horiz. Length = 50.00 ft
 Barrel Length = 50.01 ft
 Barrel Slope = .02000 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0160
 Ke = .5000 (forward entrance loss)
 Kb = .018800 (per ft of full flow)
 Kr = .5000 (reverse entrance loss)
 HW Convergence = .001 +/- ft

INLET CONTROL DATA...

Equation form = 1
 Inlet Control K = .0098
 Inlet Control M = 2.0000
 Inlet Control c = .03980
 Inlet Control Y = .6700
 T1 ratio (HW/D) = 1.150
 T2 ratio (HW/D) = 1.297
 Slope Factor = -.500

Use unsubmerged inlet control Form 1 equ. below T1 elev.

Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,
 interpolate between flows at T1 & T2...

At T1 Elev = 946.30 ft ---> Flow = 15.55 cfs

At T2 Elev = 946.59 ft ---> Flow = 17.77 cfs

Type.... Outlet Input Data
Name.... Clvrt2

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

OUTLET STRUCTURE INPUT DATA

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

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...
Maximum Iterations= 40
Min. TW tolerance = .01 ft
Max. TW tolerance = .01 ft
Min. HW tolerance = .01 ft
Max. HW tolerance = .01 ft
Min. Q tolerance = .00 cfs
Max. Q tolerance = .00 cfs

Type.... Outlet Input Data
Name.... Weir 3

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 918.00 ft
Increment = .10 ft
Max. Elev.= 924.00 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
-----	-----	-----	-----	-----
Weir-Rectangular	W0	---> TW	922.000	890.000
TW SETUP, DS Channel				

Type.... Outlet Input Data
Name.... Weir 3

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

OUTLET STRUCTURE INPUT DATA

Structure ID = W0
Structure Type = Weir-Rectangular

of Openings = 1
Crest Elev. = 922.00 ft
Weir Length = 25.00 ft
Weir Coeff. = 2.800000

Weir TW effects (Use adjustment equation)

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

Name.... Weir 4

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 903.00 ft
 Increment = .10 ft
 Max. Elev.= 909.00 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
Weir-Rectangular	W0	---> TW	907.000	890.000
TW SETUP, DS Channel				

Name.... Weir 4

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

OUTLET STRUCTURE INPUT DATA

Structure ID = W0
Structure Type = Weir-Rectangular

of Openings = 1
Crest Elev. = 907.00 ft
Weir Length = 10.00 ft
Weir Coeff. = 2.800000

Weir TW effects (Use adjustment equation)

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

Type.... Outlet Input Data
Name.... Weir1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 964.00 ft
Increment = .10 ft
Max. Elev.= 971.00 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
----- Weir-Rectangular TW SETUP, DS Channel	W0	---> TW	968.000	890.000

Name.... Weir1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

OUTLET STRUCTURE INPUT DATA

Structure ID = W0
 Structure Type = Weir-Rectangular

 # of Openings = 1
 Crest Elev. = 968.00 ft
 Weir Length = 25.00 ft
 Weir Coeff. = 2.800000

 Weir TW effects (Use adjustment equation)

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

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 944.00 ft
Increment = .10 ft
Max. Elev.= 950.00 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
Weir-Rectangular TW SETUP, DS Channel	W0	---> TW	948.000	890.000

Type.... Outlet Input Data
Name.... Weir2

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

OUTLET STRUCTURE INPUT DATA

Structure ID = W0
Structure Type = Weir-Rectangular

of Openings = 1
Crest Elev. = 948.00 ft
Weir Length = 25.00 ft
Weir Coeff. = 2.800000

Weir TW effects (Use adjustment equation)

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

Name.... Weir5

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinA.ppw

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 861.00 ft
 Increment = .10 ft
 Max. Elev.= 868.00 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
Weir-Rectangular	W0	---> TW	864.700	890.000
TW SETUP, DS Channel				

Name.... Weir5

OUTLET STRUCTURE INPUT DATA

Structure ID = W0
Structure Type = Weir-Rectangular

of Openings = 1
Crest Elev. = 864.70 ft
Weir Length = 20.00 ft
Weir Coeff. = 2.800000

Weir TW effects (Use adjustment equation)

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

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PondPack Modeling Output

Basin B

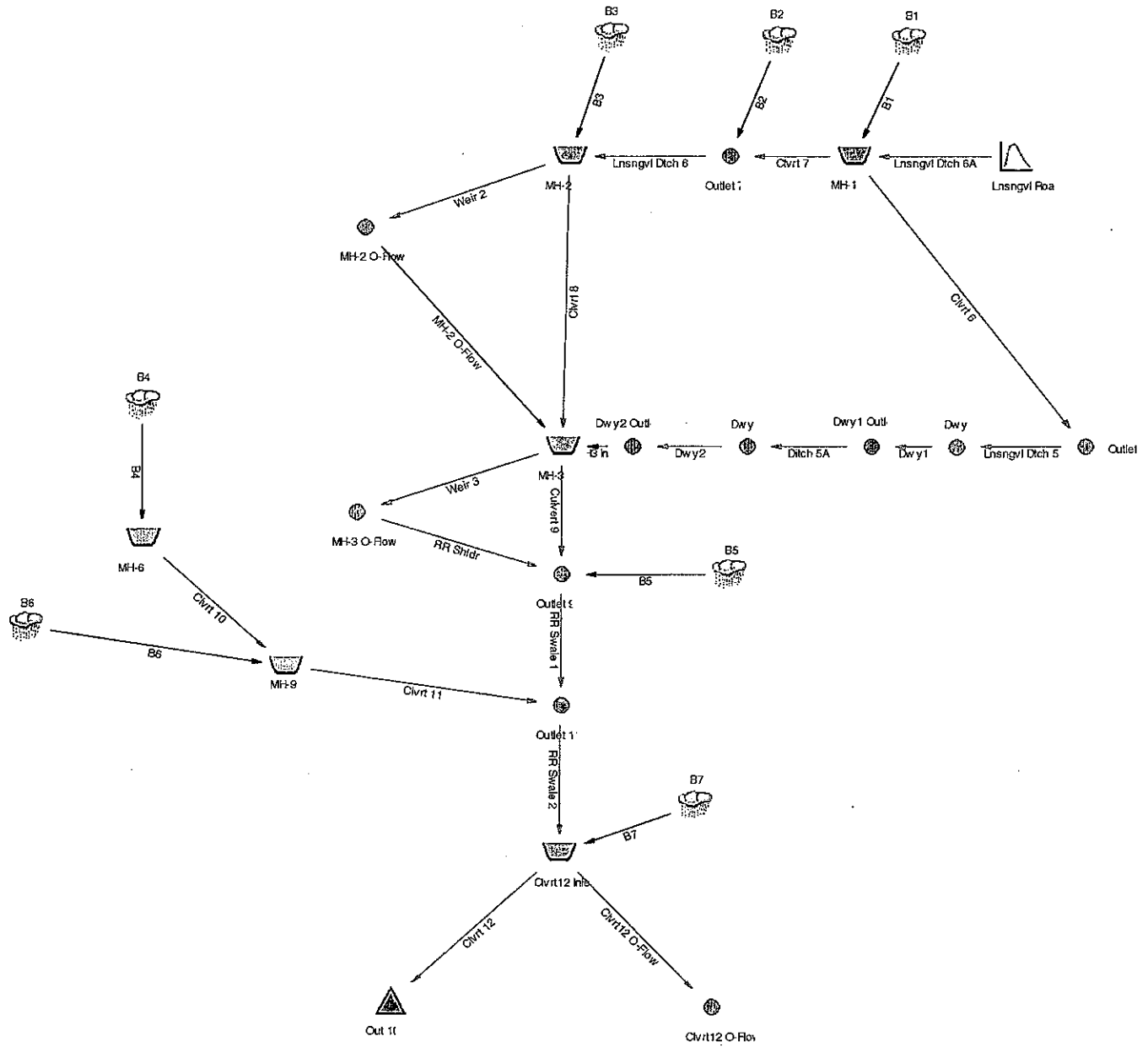


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Tompkins County Design Storms 2.01

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MASTER DESIGN STORM SUMMARY

Network Storm Collection: Tompkins County

Return Event	Total Depth in	Rainfall Type	RNF ID
1	2.3000	Synthetic Curve	TypeII 24hr
5	3.4000	Synthetic Curve	TypeII 24hr
10	3.9000	Synthetic Curve	TypeII 24hr
25	4.6000	Synthetic Curve	TypeII 24hr
50	4.9000	Synthetic Curve	TypeII 24hr

MASTER NETWORK SUMMARY
 SCS Unit Hydrograph Method
 Hydrograph File Import Option Used For 1 node(s)

(*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
B1	AREA	1	.900		12.1000	8.55		
B1	AREA	5	2.416		12.1000	29.86		
B1	AREA	10	3.246		12.1000	41.44		
B1	AREA	25	4.515		12.1000	58.94		
B1	AREA	50	5.090		12.1000	66.81		
B2	AREA	1	1.348		12.1000	15.35		
B2	AREA	5	3.163		12.1000	40.38		
B2	AREA	10	4.113		12.1000	53.27		
B2	AREA	25	5.534		12.1000	72.33		
B2	AREA	50	6.169		12.1000	80.77		

MASTER NETWORK SUMMARY
 SCS Unit Hydrograph Method
 Hydrograph File Import Option Used For 1 node(s)

(*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
B3	AREA	1	.801		12.1000	9.54		
B3	AREA	5	1.837		12.1000	23.89		
B3	AREA	10	2.375		12.1000	31.21		
B3	AREA	25	3.176		12.0500	42.22		
B3	AREA	50	3.533		12.0500	47.14		
B4	AREA	1	.348		12.0000	5.63		
B4	AREA	5	.680		12.0000	11.11		
B4	AREA	10	.843		12.0000	13.73		
B4	AREA	25	1.079		12.0000	17.46		
B4	AREA	50	1.182		12.0000	19.07		
B5	AREA	1	.132		12.0000	2.03		
B5	AREA	5	.262		12.0000	4.14		
B5	AREA	10	.326		12.0000	5.16		
B5	AREA	25	.420		12.0000	6.62		
B5	AREA	50	.461		12.0000	7.25		
B6	AREA	1	.339		12.0500	4.96		
B6	AREA	5	.701		12.0500	10.48		
B6	AREA	10	.882		12.0500	13.18		
B6	AREA	25	1.146		12.0500	17.07		
B6	AREA	50	1.263		12.0500	18.75		
B7	AREA	1	.149		11.9500	2.69		
B7	AREA	5	.298		11.9500	5.37		
B7	AREA	10	.371		11.9000	6.69		
B7	AREA	25	.477		11.9000	8.63		
B7	AREA	50	.523		11.9000	9.47		
CLVRT12	INLETIN	POND	1		12.2000	38.18		
CLVRT12	INLETIN	POND	5		12.2000	106.59		
CLVRT12	INLETIN	POND	10		12.2000	140.67		
CLVRT12	INLETIN	POND	25		12.2500	196.91		
CLVRT12	INLETIN	POND	50		12.2500	236.56		

MASTER NETWORK SUMMARY
 SCS Unit Hydrograph Method
 Hydrograph File Import Option Used For 1 node(s)

(*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
+CLVRT12	INLETOUT	POND	1		12.2000	37.49	668.88	.004
+CLVRT12	INLETOUT	POND	5		12.2000	104.83	670.67	.007
+CLVRT12	INLETOUT	POND	10		12.2500	140.51	670.83	.008
+CLVRT12	INLETOUT	POND	25		12.2500	196.16	671.01	.008
+CLVRT12	INLETOUT	POND	50		12.3000	234.63	671.12	.008
*CLVRT12	O-FLOW	JCT	1		.0500	.00		
*CLVRT12	O-FLOW	JCT	5		12.2000	20.83		
*CLVRT12	O-FLOW	JCT	10		12.2500	52.37		
*CLVRT12	O-FLOW	JCT	25		12.2500	102.95		
*CLVRT12	O-FLOW	JCT	50		12.3000	138.39		
DWY1		JCT	1		.0500	.00		
DWY1		JCT	5		12.1500	.76		
DWY1		JCT	10		12.1500	6.00		
DWY1		JCT	25		12.1500	21.03		
DWY1		JCT	50		12.1500	29.01		
DWY1	OUTLET	JCT	1		.0500	.00		
DWY1	OUTLET	JCT	5		12.2000	.75		
DWY1	OUTLET	JCT	10		12.2000	5.87		
DWY1	OUTLET	JCT	25		12.2000	20.25		
DWY1	OUTLET	JCT	50		12.1500	49.76		
DWY2		JCT	1		.0500	.00		
DWY2		JCT	5		12.2000	.64		
DWY2		JCT	10		12.2000	5.45		
DWY2		JCT	25		12.2000	19.58		
DWY2		JCT	50		12.2000	41.24		
DWY2	OUTLET	JCT	1		.0500	.00		
DWY2	OUTLET	JCT	5		12.2500	.64		
DWY2	OUTLET	JCT	10		12.2500	5.37		
DWY2	OUTLET	JCT	25		12.2500	19.00		
DWY2	OUTLET	JCT	50		12.2000	69.95		

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method
Hydrograph File Import Option Used For 1 node(s)

(*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
LNSNGVL ROAD	HYG	1	.000		11.9000	.00		
LNSNGVL ROAD	HYG	5	.163		12.1000	10.60		
LNSNGVL ROAD	HYG	10	.381		12.1000	19.83		
LNSNGVL ROAD	HYG	25	.761		12.1000	33.43		
LNSNGVL ROAD	HYG	50	.942	R	12.1000	39.43		
MH-1	IN POND	1	.900		12.1000	8.55		
MH-1	IN POND	5	2.579		12.1000	36.26		
MH-1	IN POND	10	3.627		12.1000	56.93		
MH-1	IN POND	25	5.276		12.1000	88.24		
MH-1	IN POND	50	6.032		12.1000	102.18		
+MH-1	OUT POND	1	.900		12.1500	8.44	804.81	.001
+MH-1	OUT POND	5	2.579		12.1500	36.12	806.58	.003
+MH-1	OUT POND	10	3.627		12.1500	56.22	807.41	.003
+MH-1	OUT POND	25	5.276		12.1500	86.32	808.70	.004
+MH-1	OUT POND	50	6.032		12.1500	99.68	809.29	.005
MH-2	IN POND	1	3.049		12.1500	32.00		
MH-2	IN POND	5	7.570		12.1500	94.31		
MH-2	IN POND	10	10.020		12.1000	128.35		
MH-2	IN POND	25	13.595		12.1000	174.62		
MH-2	IN POND	50	15.160		12.1000	193.60		
+MH-2	OUT POND	1	3.048		12.1500	31.69	772.79	.002
+MH-2	OUT POND	5	7.570		12.1500	94.17	775.91	.005
+MH-2	OUT POND	10	10.020		12.1500	127.93	776.22	.005
+MH-2	OUT POND	25	13.595		12.1500	172.42	776.40	.005
+MH-2	OUT POND	50	15.159		12.1500	190.75	776.46	.005
MH-2 O-FLOW	JCT	1	.000		.0500	.00		
MH-2 O-FLOW	JCT	5	.000		.0500	.00		
MH-2 O-FLOW	JCT	10	.387		12.1500	28.83		
MH-2 O-FLOW	JCT	25	1.369		12.1500	70.49		
MH-2 O-FLOW	JCT	50	1.865		12.1500	87.87		

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method
Hydrograph File Import Option Used For 1 node(s)

(*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
MH-3	IN	POND	1		12.1500	31.69		
MH-3	IN	POND	5		12.1500	94.38		
MH-3	IN	POND	10		12.1500	130.79		
MH-3	IN	POND	25		12.1500	185.18		
MH-3	IN	POND	50		12.2000	248.24		
+MH-3	OUT	POND	1		12.2000	31.14	766.97	.002
+MH-3	OUT	POND	5		12.2000	92.49	770.01	.004
+MH-3	OUT	POND	10		12.2000	128.53	770.70	.005
+MH-3	OUT	POND	25		12.2000	182.36	770.92	.005
+MH-3	OUT	POND	50		12.2000	231.85	771.08	.005
MH-3	O-FLOW	JCT	1		.0500	.00		
MH-3	O-FLOW	JCT	5		.0500	.00		
MH-3	O-FLOW	JCT	10		12.2000	25.05		
MH-3	O-FLOW	JCT	25		12.2000	75.60		
MH-3	O-FLOW	JCT	50		12.2000	122.73		
MH-6	IN	POND	1		12.0000	5.63		
MH-6	IN	POND	5		12.0000	11.11		
MH-6	IN	POND	10		12.0000	13.73		
MH-6	IN	POND	25		12.0000	17.46		
MH-6	IN	POND	50		12.0000	19.07		
MH-6	OUT	POND	1		12.0500	5.48	733.52	.001
MH-6	OUT	POND	5		12.0000	10.78	734.01	.001
MH-6	OUT	POND	10		12.0000	13.37	734.21	.001
MH-6	OUT	POND	25		12.0000	17.07	734.48	.002
MH-6	OUT	POND	50		12.0000	18.68	734.58	.002
MH-9	IN	POND	1		12.0500	10.44		
MH-9	IN	POND	5		12.0500	21.17		
MH-9	IN	POND	10		12.0000	26.40		
MH-9	IN	POND	25		12.0000	34.07		
MH-9	IN	POND	50		12.0000	37.40		

Name.... Watershed

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method
Hydrograph File Import Option Used For 1 node(s)

(*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
MH-9	OUT	POND	1		12.0500	10.27	704.97	.001
MH-9	OUT	POND	5		12.0500	21.11	705.74	.002
MH-9	OUT	POND	10		12.0500	26.37	706.07	.002
MH-9	OUT	POND	25		12.0500	33.91	706.51	.002
MH-9	OUT	POND	50		12.0500	37.18	706.69	.003
*OUT 10	JCT		1		12.2000	37.49		
*OUT 10	JCT		5		12.2000	84.00		
*OUT 10	JCT		10		12.2500	88.14		
*OUT 10	JCT		25		12.2500	93.21		
*OUT 10	JCT		50		12.3000	96.24		
OUTLET 11	JCT		1		12.1500	37.75		
OUTLET 11	JCT		5		12.1500	105.81		
OUTLET 11	JCT		10		12.2000	141.22		
OUTLET 11	JCT		25		12.2000	197.73		
OUTLET 11	JCT		50		12.2500	239.29		
OUTLET 6	JCT		1		.0500	.00		
OUTLET 6	JCT		5		12.1500	.96		
OUTLET 6	JCT		10		12.1500	6.50		
OUTLET 6	JCT		25		12.1500	21.71		
OUTLET 6	JCT		50		12.1500	29.60		
OUTLET 7	JCT		1		12.1000	23.28		
OUTLET 7	JCT		5		12.1000	73.49		
OUTLET 7	JCT		10		12.1000	101.06		
OUTLET 7	JCT		25		12.1000	135.94		
OUTLET 7	JCT		50		12.1000	150.08		
OUTLET 9	JCT		1		12.2000	31.96		
OUTLET 9	JCT		5		12.1500	94.07		
OUTLET 9	JCT		10		12.2000	129.83		
OUTLET 9	JCT		25		12.2000	183.76		
OUTLET 9	JCT		50		12.2500	228.12		

Type.... Design Storms
Name.... Tompkins County

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

Title... Project Date: 11/19/2008
Project Engineer: BMT
Project Title: Ludlowville Storm Drainage
Project Comments:

DESIGN STORMS SUMMARY

Design Storm File, ID = Tompkins County

Storm Tag Name = 1

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 1 yr
Total Rainfall Depth= 2.3000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 5

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 5 yr
Total Rainfall Depth= 3.4000 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

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 10 yr
Total Rainfall Depth= 3.9000 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

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 25 yr
Total Rainfall Depth= 4.6000 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

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 50 yr
Total Rainfall Depth= 4.9000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Type.... Tc Calcs
Name.... B1

File.... C:\Documents and Settings\drh\Desktop\Ludlowville\BasinB.ppw

.....
TIME OF CONCENTRATION CALCULATOR
.....

Segment #1: Tc: TR-55 Sheet

Mannings n .3000
Hydraulic Length 100.00 ft
2yr, 24hr P 2.7000 in
Slope .100000 ft/ft

Avg.Velocity .17 ft/sec

Segment #1 Time: .1626 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length 1230.00 ft
Slope .052000 ft/ft
Unpaved

Avg.Velocity 3.68 ft/sec

Segment #2 Time: .0929 hrs

Segment #3: Tc: TR-55 Channel

Flow Area 15.0000 sq.ft
Wetted Perimeter 10.50 ft
Hydraulic Radius 1.43 ft
Slope .022000 ft/ft
Mannings n .0300
Hydraulic Length 1350.00 ft

Avg.Velocity 9.34 ft/sec

Segment #3 Time: .0401 hrs

=====
Total Tc: .2956 hrs
=====

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

==== 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

::
 TIME OF CONCENTRATION CALCULATOR
 ::

Segment #1: Tc: TR-55 Sheet

Mannings n .3000
 Hydraulic Length 100.00 ft
 2yr, 24hr P 2.7000 in
 Slope .100000 ft/ft

Avg.Velocity .17 ft/sec

Segment #1 Time: .1626 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length 1900.00 ft
 Slope .052000 ft/ft
 Unpaved

Avg.Velocity 3.68 ft/sec

Segment #2 Time: .1434 hrs

=====
 Total Tc: .3060 hrs
 =====