THE KLEINGERS GROUP

CINCINNATI
COLUMBUS
DAYTON

350 Worthington Rd, Suite B
Westerville, OH 43082
phone 614.882.4311
fax 614.882.4479
www.kleingers.com

STORMWATER MANAGEMENT REPORT

For

Butler County

RECEIVED
SEP 27 2016
BY:

StoryPoint of Fairfield

Fairfield Township

September 26, 2016

JOB #: 150588.000

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SEP 27 2016
BY:

THE KLEINGERS GROUP

StoryPoint of Fairfield

STORMWATER MANAGEMENT PLAN

Site Description

The proposed project will consist of the construction of StoryPoint of Fairfield, an assisted living facility on Gilmore Road between Hamilton-Mason Road and SR 129. The proposed construction will consist of a new building, associated utilities, parking lots and stormwater management facilities. The current site drains to two separate outlets. The northwestern portion of the site drains to the northwest to a swale that outlets to a ditch along State Route 129 and is tributary to Crawford Run, ultimately draining to the Great Miami River. The remainder of the site drains south to a wetland area between the proposed site and Hamilton-Mason Road, that is tributary to Pleasant Run and also ultimately the Great Miami River.

Hydrologic Methodologies

The stormwater detention calculations contained in this report were performed by using the SCS Unit Hydrograph hydrologic method in Bentley's PondPack, Version 10.1 software. Pre-developed and post-developed condition hydrographs were generated for storm frequencies of 1, 2, 5, 10, 25, 50, and 100 year 24-hour storm events using an SCS Type II distribution. Please refer to the drainage maps at the back of this report for a delineation of the drainage areas.

The County requires projects to adhere to the stormwater management requirements provided in the Butler County Subdivision Regulations. These regulations stipulate a critical year storm method where the percent increase in runoff from the 1 year, 24-hour storm frequency determines the critical storm event. The post-developed runoff must be controlled for storms of a frequency between one year and the critical storm so that the rate of runoff does not exceed the peak rate of runoff for a pre-developed, 24-hour, 1 year frequency storm. All storm events greater than the critical year must be controlled such the post-developed runoff rate does not exceed the pre-developed runoff rate for the previous storm event frequency.

The 1 year pre-developed hydrologic volume for the southern watershed (PRE SOUTH) is 0.731 ac-ft. The 1 year post-developed hydrologic volume (POST SOUTH A plus POST SOUTH B plus POST SOUTH UNDET) is 1.594 ac-ft. The difference between the two volumes represents an increase in stormwater runoff of 118%, which corresponds to a 25 year critical storm.

The 1 year pre-developed hydrologic volume for the northern watershed (PRE NORTH) is 0.149 ac-ft. The 1 year post-developed hydrologic volume (POST NORTH) is 0.042 ac-ft. The difference between the two volumes represents a decrease in stormwater runoff of 72%, which corresponds to a 1 year critical storm.

TABLE 1 - Existing Hydrologic Conditions

Tributary Area Name	Area (ac)	CN	Tc (hr)	Q1 (cfs)	Q2 (cfs)	Q5 (cfs)	Q10 (cfs)	Q25 (cfs)	Q50 (cfs)	Q100 (cfs)
PRE NORTH	3.390	72	0.3389	1.57	2.39	4.03	5.30	6.92	8.32	9.47
PRE SOUTH	13.494	75	0.4333	7.11	10.28	16.45	21.20	27.14	32.26	36.43

TABLE 2 - Proposed Hydrologic Conditions

Tributary Area Name	Area (ac)	CN	Tc (hr)	Q1 (cfs)	Q2 (cfs)	Q5 (cfs)	Q10 (cfs)	Q25 (cfs)	Q50 (cfs)	Q100 (cfs)
POST NORTH	0.822	74	0.1667	0.63	0.91	1.45	1.87	2.39	2.84	3.21
POST SOUTH A	10.047	86	0.1667	17.10	21.64	29.77	35.66	42.76	48.68	53.42
POST SOUTH B	4.694	86	0.1667	7.99	10.11	13.91	16.66	19.98	22.75	24.96
POST SOUTH UNDET	1.318	74	0.1667	1.00	1.46	2.33	3.00	3.84	4.56	5.14

Applicable Permits

The Ohio Environmental Protection Agency (OEPA) requires projects to capture and treat stormwater for a storm event of 0.75" or less.

The required water quality volume is calculated by the equation:

$$WQ_v = \frac{CPA}{12}$$

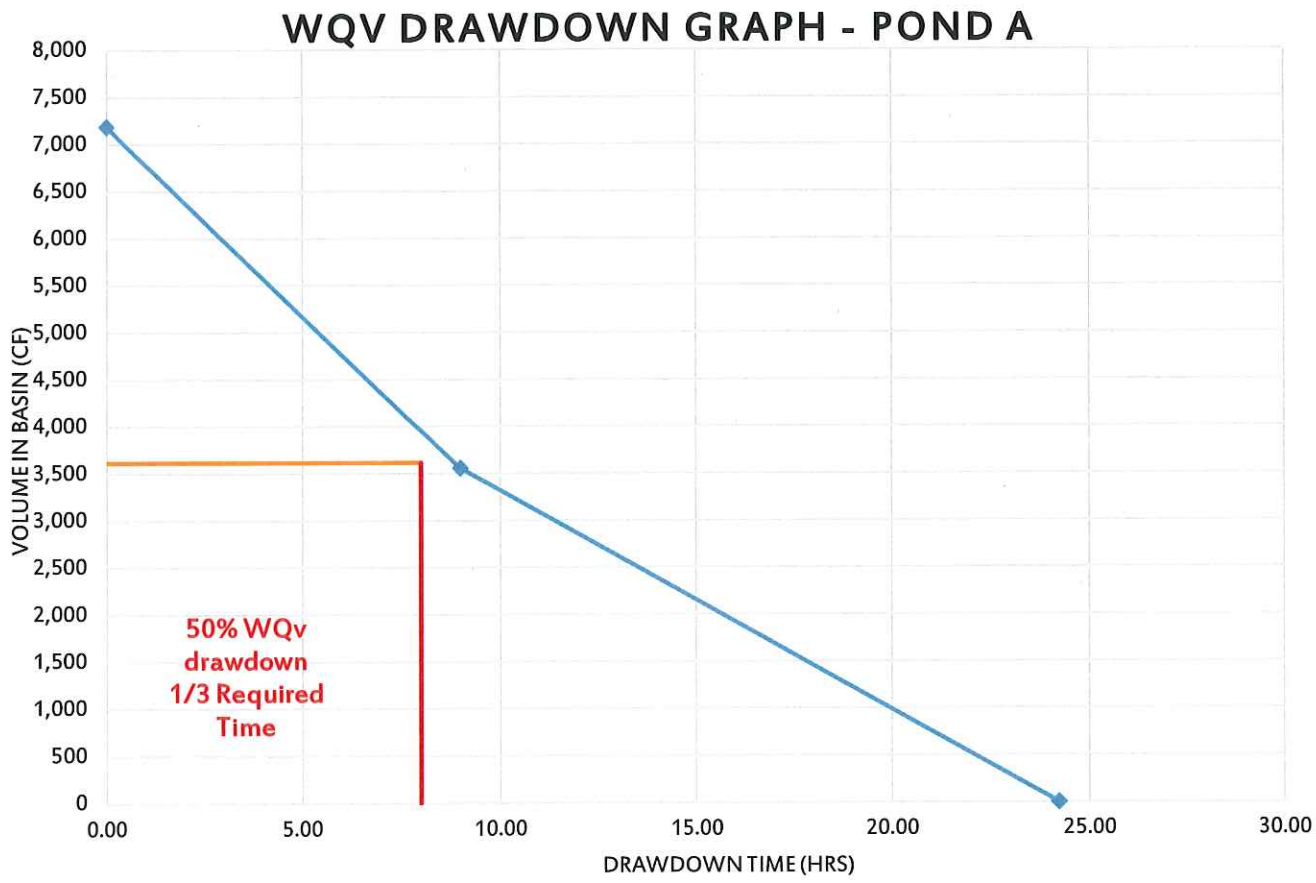
Where WQ_v = water quality volume in acre-feet
C = runoff coefficient, $0.858i^3-0.78i^2+0.774i+0.04$, i = fraction of post-construction impervious surface
P = 0.75 in precipitation depth
A = area draining into the BMP in acres

Retention Pond A

$$WQ_v = \frac{(0.35)(0.75)(10.047)}{12} = 0.221\ acre - feet$$

As permitted by the OEPA, 75% of the calculated WQv storage will be provided for wet retention basins, therefore the required WQv is 0.166 ac-ft.

A 3" circular orifice will be used to obtain the required minimum drawdown time of 24. The orifice will be at inv=743.75 and the water quality elevation is 744.05. The orifice provides a 24.25 hour drawdown time for the WQv volume.

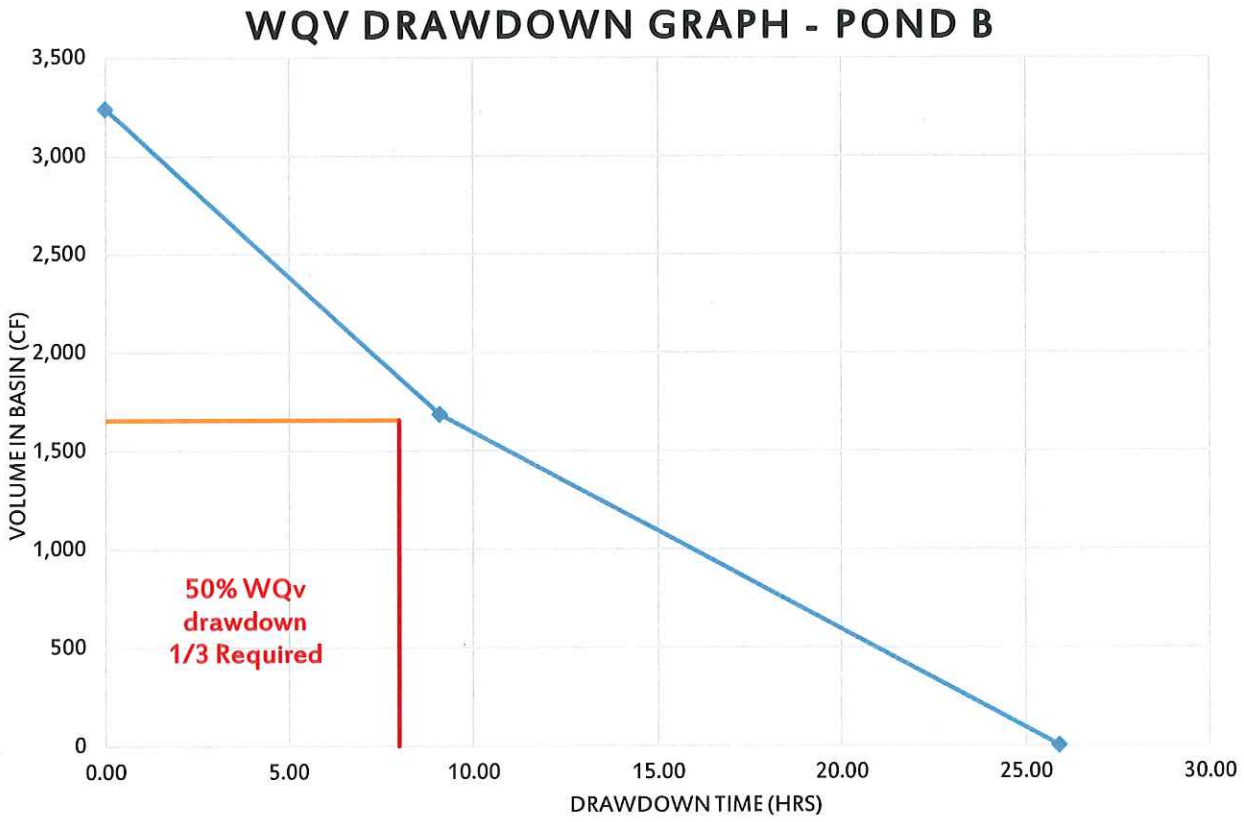


Retention Pond B

$$WQ_v = \frac{(0.35)(0.75)(4.694)}{12} = 0.101\ acre - feet$$

As permitted by the OEPA, 75% of the calculated WQv storage will be provided for wet retention basins, therefore the required WQv is 0.076 ac-ft.

A 2-1/8" circular orifice will be used to obtain the required minimum drawdown time of 24. The orifice will be at inv=743.75 and the water quality elevation is 743.96. The orifice provides a 25.92 hour drawdown time for the WQv volume.



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Stormwater Management Plan

Stormwater management for the southern watershed (POST SOUTH OUT) will be achieved through detention in 2 retention basins (POND A and POND B), each having a separate tributary area.

The outlet control for POND A will be a 2x3 catch basin (structure 201). The catch basin will have an 8" reverse flow pipe that enters the structure at 742.25. Once inside the structure, the 8" pipe will turn up and be capped at 745.25. A 3" diameter orifice will be drilled into the 8" pipe at inv=743.75 for water quality drawdown. A 15"Wx3"H window will be cut into the north side of the structure at inv=744.05 for control of larger storm events. The grate will be set at 746.00 and will be activated in the 10-year and larger storm events. The 100-year ponding elevation is 746.72. An emergency spillway is provided at elevation 746.75 and the top of bank elevation is 747.75. The spillway will have a 15' bottom with 4:1 side slopes and a berm width of 6'.

The outlet control for POND B will be a 2x3 catch basin (structure 101). The catch basin will have an 8" reverse flow pipe that enters the structure at 742.25. Once inside the structure, the 8" pipe will turn up and be capped at 745.25. A 2-1/8" diameter orifice will be drilled into the 8" pipe at inv=743.75 for water quality drawdown. A 12"Wx3"H window will be cut into the north side of the structure at inv=743.96 for control of larger storm events. The grate will be set at 746.00. The 100 year ponding elevation is 746.02. An emergency spillway is provided at elevation 746.00 and the top of bank elevation is 747.75. The spillway will have a 15' bottom with 4:1 side slopes and a berm width of 6'.

TABLE 3.1 – POND A Detention Summary

Storm Event	Peak Water Surface Elevation (ft)	Detention Storage Volume (ac-ft)	Peak Flow (cfs)
WQv	744.05	0.166	0.08
1-yr	744.96	0.546	1.09
2-yr	745.23	0.716	1.28
5-yr	745.70	1.035	1.58
10-yr	746.01	1.258	2.27
25-yr	746.21	1.399	4.79
50-yr	746.49	1.614	5.16
100-yr	746.72	1.789	5.44

1.623

- later in report @ 746.0 = 1.249 ac-ft w/ 744.05 @ 0

TABLE 3.2 – POND B Detention Summary

Storm Event	Peak Water Surface Elevation (ft)	Detention Storage Volume (ac-ft)	Peak Flow (cfs)
WQv	743.96	0.076	0.04
1-yr	744.59	0.235	0.72
2-yr	744.78	0.308	0.85
5-yr	745.12	0.446	1.06
10-yr	745.37	0.549	1.19
25-yr	745.66	0.676	1.35
50-yr	745.91	0.786	1.46
100-yr	746.02	0.835	3.07

0.759

Results Summary

The northern and southern tributary areas will be detained and adhere to the release rates specified in the Butler County Subdivision Regulations. A summary of the peak flows from each area is presented below for reference.

TABLE 4 – Southern Tributary Area (POST SOUTH A + POST SOUTH B + POST SOUTH UNDET)

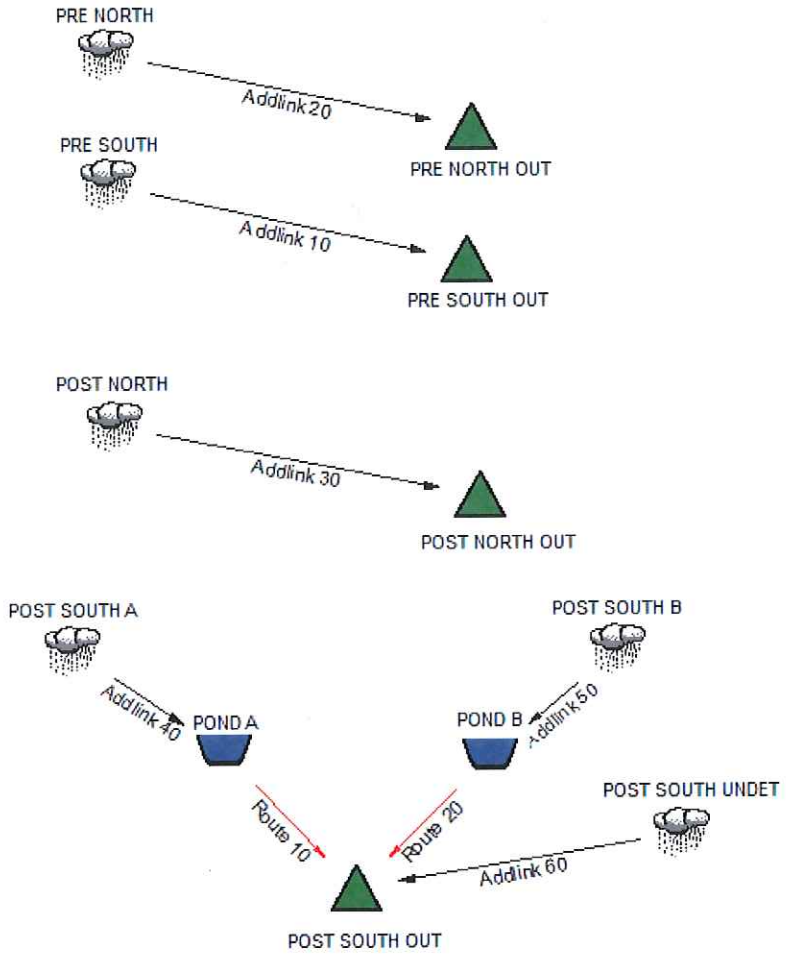
Storm Event	PRE-DEVELOPED RELEASE RATES (cfs) (PRE SOUTH)	ALLOWABLE RELEASE RATE (cfs)	POST-DEVELOPED RELEASE RATES (cfs) (POST SOUTH OUT)
1-yr	7.11	7.11	2.42
2-yr	10.28	7.11	3.10
5-yr	16.45	7.11	4.33
10-yr	21.20	7.11	5.21
25-yr	27.14	7.11	7.07*
50-yr	32.26	27.14	9.21
100-yr	36.43	32.26	10.78

*denotes critical year storm

TABLE 5 – Northern Tributary Area

Storm Event	PRE-DEVELOPED RELEASE RATES (cfs) (PRE NORTH)	ALLOWABLE RELEASE RATE (cfs)	POST-DEVELOPED RELEASE RATES (cfs) (POST NORTH)
1-yr	1.57	1.57	0.63*
2-yr	2.39	1.57	0.91
5-yr	4.03	2.39	1.45
10-yr	5.30	4.03	1.87
25-yr	6.92	5.30	2.39
50-yr	8.32	6.92	2.84
100-yr	9.47	8.32	3.21

*denotes critical year storm


PRE NORTH
Addlink 20
PRE NORTH OUT
PRE SOUTH
Addlink 10
PRE SOUTH OUT
POST NORTH
Addlink 30
POST NORTH OUT
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MASTER DESIGN STORM SUMMARY

Network Storm Collection: BUTLER

Return Event	Total Depth in	Rainfall Type	RNF ID
1	2.5000	Synthetic Curve	TypeII 24hr
2	2.9000	Synthetic Curve	TypeII 24hr
5	3.6000	Synthetic Curve	TypeII 24hr
10	4.1000	Synthetic Curve	TypeII 24hr
25	4.7000	Synthetic Curve	TypeII 24hr
50	5.2000	Synthetic Curve	TypeII 24hr
100	5.6000	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
POND A	IN	POND 1	1.041		12.0000	17.10		
POND A	IN	POND 2	1.320		12.0000	21.64		
POND A	IN	POND 5	1.831		12.0000	29.77		
POND A	IN	POND 10	2.208		12.0000	35.66		
POND A	IN	POND 25	2.669		12.0000	42.76		
POND A	IN	POND 50	3.059		12.0000	48.68		
POND A	IN	POND 100	3.374		12.0000	53.42		
POND A	OUT	POND 1	1.040		13.0000	1.09	744.96	.546
POND A	OUT	POND 2	1.320		13.0500	1.28	745.23	.716
POND A	OUT	POND 5	1.830		13.3000	1.58	745.70	1.035
POND A	OUT	POND 10	2.207		13.1000	2.27	746.01	1.258
POND A	OUT	POND 25	2.668		12.5000	4.79	746.21	1.399
POND A	OUT	POND 50	3.059		12.5000	5.16	746.49	1.614
POND A	OUT	POND 100	3.374		12.5000	5.44	746.72	1.789

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 B IN	POND	1	.486		12.0000	7.99		
POND B IN	POND	2	.617		12.0000	10.11		
POND B IN	POND	5	.856		12.0000	13.91		
POND B IN	POND	10	1.032		12.0000	16.66		
POND B IN	POND	25	1.247		12.0000	19.98		
POND B IN	POND	50	1.429		12.0000	22.75		
POND B IN	POND	100	1.577		12.0000	24.96		
POND B OUT	POND	1	.486		12.5500	.72	744.59	.235
POND B OUT	POND	2	.616		12.6000	.85	744.78	.308
POND B OUT	POND	5	.855		12.7000	1.06	745.12	.446
POND B OUT	POND	10	1.031		12.7000	1.19	745.37	.549
POND B OUT	POND	25	1.246		12.8500	1.35	745.66	.676
POND B OUT	POND	50	1.429		12.8000	1.46	745.91	.786
POND B OUT	POND	100	1.576		12.4500	3.07	746.02	.835
POST NORTH	AREA	1	.042		12.0000	.63		
POST NORTH	AREA	2	.058		12.0000	.91		
POST NORTH	AREA	5	.090		12.0000	1.45		
POST NORTH	AREA	10	.114		12.0000	1.87		
POST NORTH	AREA	25	.146		12.0000	2.39		
POST NORTH	AREA	50	.173		12.0000	2.84		
POST NORTH	AREA	100	.195		12.0000	3.21		
*POST NORTH OUT	JCT	1	.042		12.0000	.63		
*POST NORTH OUT	JCT	2	.058		12.0000	.91		
*POST NORTH OUT	JCT	5	.090		12.0000	1.45		
*POST NORTH OUT	JCT	10	.114		12.0000	1.87		
*POST NORTH OUT	JCT	25	.146		12.0000	2.39		
*POST NORTH OUT	JCT	50	.173		12.0000	2.84		
*POST NORTH OUT	JCT	100	.195		12.0000	3.21		

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
POST SOUTH A	AREA	1	1.041		12.0000	17.10		
POST SOUTH A	AREA	2	1.320		12.0000	21.64		
POST SOUTH A	AREA	5	1.831		12.0000	29.77		
POST SOUTH A	AREA	10	2.208		12.0000	35.66		
POST SOUTH A	AREA	25	2.669		12.0000	42.76		
POST SOUTH A	AREA	50	3.059		12.0000	48.68		
POST SOUTH A	AREA	100	3.374		12.0000	53.42		
POST SOUTH B	AREA	1	.486		12.0000	7.99		
POST SOUTH B	AREA	2	.617		12.0000	10.11		
POST SOUTH B	AREA	5	.856		12.0000	13.91		
POST SOUTH B	AREA	10	1.032		12.0000	16.66		
POST SOUTH B	AREA	25	1.247		12.0000	19.98		
POST SOUTH B	AREA	50	1.429		12.0000	22.75		
POST SOUTH B	AREA	100	1.577		12.0000	24.96		
*POST SOUTH OUT	JCT	1	1.593		12.0500	2.42		
*POST SOUTH OUT	JCT	2	2.029		12.0500	3.10		
*POST SOUTH OUT	JCT	5	2.829		12.0500	4.33		
*POST SOUTH OUT	JCT	10	3.421		12.0500	5.21		
*POST SOUTH OUT	JCT	25	4.148		12.2000	7.07		
*POST SOUTH OUT	JCT	50	4.765		12.1000	9.21		
*POST SOUTH OUT	JCT	100	5.263		12.0500	10.78		
POST SOUTH UNDET	AREA	1	.067		12.0000	1.00		
POST SOUTH UNDET	AREA	2	.093		12.0000	1.46		
POST SOUTH UNDET	AREA	5	.144		12.0000	2.33		
POST SOUTH UNDET	AREA	10	.183		12.0000	3.00		
POST SOUTH UNDET	AREA	25	.234		12.0000	3.84		
POST SOUTH UNDET	AREA	50	.277		12.0000	4.56		
POST SOUTH UNDET	AREA	100	.313		12.0000	5.14		

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
PRE NORTH	AREA	1	.149		12.1500	1.57		
PRE NORTH	AREA	2	.212		12.1000	2.39		
PRE NORTH	AREA	5	.335		12.1000	4.03		
PRE NORTH	AREA	10	.432		12.1000	5.30		
PRE NORTH	AREA	25	.556		12.1000	6.92		
PRE NORTH	AREA	50	.665		12.1000	8.32		
PRE NORTH	AREA	100	.754		12.1000	9.47		
*PRE NORTH OUT	JCT	1	.149		12.1500	1.57		
*PRE NORTH OUT	JCT	2	.212		12.1000	2.39		
*PRE NORTH OUT	JCT	5	.335		12.1000	4.03		
*PRE NORTH OUT	JCT	10	.432		12.1000	5.30		
*PRE NORTH OUT	JCT	25	.556		12.1000	6.92		
*PRE NORTH OUT	JCT	50	.665		12.1000	8.32		
*PRE NORTH OUT	JCT	100	.754		12.1000	9.47		
PRE SOUTH	AREA	1	.731		12.2000	7.11		
PRE SOUTH	AREA	2	1.007		12.1500	10.28		
PRE SOUTH	AREA	5	1.544		12.1500	16.45		
PRE SOUTH	AREA	10	1.958		12.1500	21.20		
PRE SOUTH	AREA	25	2.483		12.1500	27.14		
PRE SOUTH	AREA	50	2.937		12.1500	32.26		
PRE SOUTH	AREA	100	3.310		12.1500	36.43		
*PRE SOUTH OUT	JCT	1	.731		12.2000	7.11		
*PRE SOUTH OUT	JCT	2	1.007		12.1500	10.28		
*PRE SOUTH OUT	JCT	5	1.544		12.1500	16.45		
*PRE SOUTH OUT	JCT	10	1.958		12.1500	21.20		
*PRE SOUTH OUT	JCT	25	2.483		12.1500	27.14		
*PRE SOUTH OUT	JCT	50	2.937		12.1500	32.26		
*PRE SOUTH OUT	JCT	100	3.310		12.1500	36.43		

Title... Project Date: 5/9/2016
Project Engineer: masonm
Project Title: 150588 StoryPoint Fairfield
Project Comments:

DESIGN STORMS SUMMARY

Design Storm File,ID = BUTLER

Storm Tag Name = 1

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 1 yr
Total Rainfall Depth= 2.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 2

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 2 yr
Total Rainfall Depth= 2.9000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 5

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 5 yr
Total Rainfall Depth= 3.6000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 10

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 10 yr
Total Rainfall Depth= 4.1000 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= 4.7000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Title... Project Date: 5/9/2016
Project Engineer: masonm
Project Title: 150588 StoryPoint Fairfield
Project Comments:

DESIGN STORMS SUMMARY

Design Storm File,ID = BUTLER

Storm Tag Name = 50

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 50 yr
Total Rainfall Depth= 5.2000 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

Data Type, File, ID = Synthetic Storm TypeII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 5.6000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

::
TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: User Defined

Segment #1 Time: .1667 hrs

Total Tc: .1667 hrs

Tc Equations used...

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

Tc = Value entered by user

Where: Tc = Time of concentration

::
TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: User Defined

Segment #1 Time: .1667 hrs

==========
Total Tc: .1667 hrs
==========

Tc Equations used...

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

Tc = Value entered by user

Where: Tc = Time of concentration

::
TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: User Defined

Segment #1 Time: .1667 hrs

==========
Total Tc: .1667 hrs
==========

Tc Equations used...

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

Tc = Value entered by user

Where: Tc = Time of concentration

::
TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: User Defined

Segment #1 Time: .1667 hrs

==========
Total Tc: .1667 hrs
==========

Tc Equations used...

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

Tc = Value entered by user

Where: Tc = Time of concentration

::
TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: TR-55 Sheet

Mannings n	.4000	
Hydraulic Length	100.00	ft
2yr, 24hr P	2.9000	in
Slope	.030000	ft/ft
Avg.Velocity	.09	ft/sec

Segment #1 Time: .3197 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	236.00	ft
Slope	.044500	ft/ft
Unpaved		
Avg.Velocity	3.40	ft/sec

Segment #2 Time: .0193 hrs

==========
Total Tc: .3389 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

::
TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: TR-55 Sheet

Mannings n	.4000	
Hydraulic Length	100.00	ft
2yr, 24hr P	2.9000	in
Slope	.030800	ft/ft
Avg.Velocity	.09	ft/sec

Segment #1 Time: .3163 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length	821.00	ft
Slope	.014600	ft/ft
Unpaved		
Avg.Velocity	1.95	ft/sec

Segment #2 Time: .1170 hrs

==========
Total Tc: .4333 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

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	Impervious Adjustment %UC	Adjusted CN
Open space (Lawns,parks etc.) - Goo	74	.822			74.00
COMPOSITE AREA & WEIGHTED CN --->		.822			74.00 (74)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Open space (Lawns,parks etc.) - Goo	74	4.845			74.00
Impervious Areas - Paved parking lo	98	5.202			98.00
COMPOSITE AREA & WEIGHTED CN --->		10.047			86.43 (86)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Open space (Lawns,parks etc.) - Goo	74	2.309			74.00
Impervious Areas - Paved parking lo	98	2.385			98.00
COMPOSITE AREA & WEIGHTED CN --->		4.694			86.19 (86)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	Impervious Adjustment %UC	Adjusted CN
Open space (Lawns,parks etc.) - Goo	74	1.318			74.00
COMPOSITE AREA & WEIGHTED CN --->		1.318			74.00 (74)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Woods - grass combination - good	72	3.390			72.00
COMPOSITE AREA & WEIGHTED CN --->		3.390			72.00 (72)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Woods - grass combination - good	72	10.519			72.00
Row crops - Straight row (SR), good	85	2.975			85.00
COMPOSITE AREA & WEIGHTED CN --->		13.494			74.87 (75)

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 1 year storm
Duration = 24.0000 hrs Rain Depth = 2.5000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST NORTH 1
Tc = .1667 hrs
Drainage Area = .822 acres Runoff CN= 74

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 12.0246 hrs
Computed Peak Flow = .64 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = .63 cfs
WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
==========

DRAINAGE AREA

ID:POST NORTH
CN = 74
Area = .822 acres
S = 3.5135 in
0.2S = .7027 in

Cumulative Runoff

.6082 in
.042 ac-ft

HYG Volume... .042 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST NORTH)
Computational Incr, Tm = .02223 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 = 5.59 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm
Duration = 24.0000 hrs Rain Depth = 2.9000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST NORTH 2
Tc = .1667 hrs
Drainage Area = .822 acres Runoff CN= 74

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 12.0246 hrs
Computed Peak Flow = .92 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = .91 cfs
==========

DRAINAGE AREA

ID:POST NORTH
CN = 74
Area = .822 acres
S = 3.5135 in
0.2S = .7027 in

Cumulative Runoff

.8454 in
.058 ac-ft

HYG Volume... .058 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST NORTH)
Computational Incr, Tm = .02223 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 = 5.59 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 5 year storm
Duration = 24.0000 hrs Rain Depth = 3.6000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST NORTH 5
Tc = .1667 hrs
Drainage Area = .822 acres Runoff CN= 74

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 12.0024 hrs
Computed Peak Flow = 1.46 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 1.45 cfs
==========

DRAINAGE AREA

ID:POST NORTH
CN = 74
Area = .822 acres
S = 3.5135 in
0.2S = .7027 in

Cumulative Runoff

1.3094 in
.090 ac-ft

HYG Volume... .090 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST NORTH)
Computational Incr, Tm = .02223 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 = 5.59 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 4.1000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST NORTH 10
Tc = .1667 hrs
Drainage Area = .822 acres Runoff CN= 74

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 12.0024 hrs
Computed Peak Flow = 1.87 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 1.87 cfs
==========

DRAINAGE AREA

ID:POST NORTH
CN = 74
Area = .822 acres
S = 3.5135 in
0.2S = .7027 in

Cumulative Runoff

1.6701 in
.114 ac-ft

HYG Volume... .114 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST NORTH)
Computational Incr, Tm = .02223 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 = 5.59 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 4.7000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST NORTH 25
Tc = .1667 hrs
Drainage Area = .822 acres Runoff CN= 74

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 12.0024 hrs
Computed Peak Flow = 2.39 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 2.39 cfs
==========

DRAINAGE AREA

ID:POST NORTH
CN = 74
Area = .822 acres
S = 3.5135 in
0.2S = .7027 in

Cumulative Runoff

2.1274 in
.146 ac-ft

HYG Volume... .146 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST NORTH)
Computational Incr, Tm = .02223 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 = 5.59 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 1 year storm
Duration = 24.0000 hrs Rain Depth = 2.5000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST SOUTH A 1
Tc = .1667 hrs
Drainage Area = 10.047 acres Runoff CN= 86

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 12.0024 hrs
Computed Peak Flow = 17.11 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 17.10 cfs
==========

DRAINAGE AREA

ID:POST SOUTH A
CN = 86
Area = 10.047 acres
S = 1.6279 in
0.2S = .3256 in

Cumulative Runoff

1.2435 in
1.041 ac-ft

HYG Volume... 1.041 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST SOUTH A)
Computational Incr, Tm = .02223 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 = 68.29 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm
Duration = 24.0000 hrs Rain Depth = 2.9000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST SOUTH A 2
Tc = .1667 hrs
Drainage Area = 10.047 acres Runoff CN= 86

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 12.0024 hrs
Computed Peak Flow = 21.64 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 21.64 cfs
==========

DRAINAGE AREA

ID:POST SOUTH A
CN = 86
Area = 10.047 acres
S = 1.6279 in
0.2S = .3256 in

Cumulative Runoff

1.5771 in
1.320 ac-ft

HYG Volume... 1.320 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST SOUTH A)
Computational Incr, Tm = .02223 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 = 68.29 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 5 year storm
Duration = 24.0000 hrs Rain Depth = 3.6000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST SOUTH A 5
Tc = .1667 hrs
Drainage Area = 10.047 acres Runoff CN= 86

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 11.9802 hrs
Computed Peak Flow = 29.89 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 29.77 cfs
==========

DRAINAGE AREA

ID:POST SOUTH A
CN = 86
Area = 10.047 acres
S = 1.6279 in
0.2S = .3256 in

Cumulative Runoff

2.1871 in
1.831 ac-ft

HYG Volume... 1.831 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST SOUTH A)
Computational Incr, Tm = .02223 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 = 68.29 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 4.1000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST SOUTH A 10
Tc = .1667 hrs
Drainage Area = 10.047 acres Runoff CN= 86

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 11.9802 hrs
Computed Peak Flow = 35.88 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 35.66 cfs
==========

DRAINAGE AREA

ID:POST SOUTH A
CN = 86
Area = 10.047 acres
S = 1.6279 in
0.2S = .3256 in

Cumulative Runoff

2.6371 in
2.208 ac-ft

HYG Volume... 2.208 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST SOUTH A)
Computational Incr, Tm = .02223 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 = 68.29 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 4.7000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST SOUTH A 25
Tc = .1667 hrs
Drainage Area = 10.047 acres Runoff CN= 86

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 11.9802 hrs
Computed Peak Flow = 43.10 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 42.76 cfs
==========

DRAINAGE AREA

ID:POST SOUTH A
CN = 86
Area = 10.047 acres
S = 1.6279 in
0.2S = .3256 in

Cumulative Runoff

3.1880 in
2.669 ac-ft

HYG Volume... 2.669 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST SOUTH A)
Computational Incr, Tm = .02223 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 = 68.29 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 50 year storm
Duration = 24.0000 hrs Rain Depth = 5.2000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST SOUTH A 50
Tc = .1667 hrs
Drainage Area = 10.047 acres Runoff CN= 86

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 11.9802 hrs
Computed Peak Flow = 49.14 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 48.68 cfs
==========

DRAINAGE AREA

ID:POST SOUTH A
CN = 86
Area = 10.047 acres
S = 1.6279 in
0.2S = .3256 in

Cumulative Runoff

3.6541 in
3.059 ac-ft

HYG Volume... 3.059 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST SOUTH A)
Computational Incr, Tm = .02223 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 = 68.29 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 5.6000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST SOUTH A 100
Tc = .1667 hrs
Drainage Area = 10.047 acres Runoff CN= 86

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 11.9802 hrs
Computed Peak Flow = 53.97 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 53.42 cfs
==========

DRAINAGE AREA

ID:POST SOUTH A
CN = 86
Area = 10.047 acres
S = 1.6279 in
0.2S = .3256 in

Cumulative Runoff

4.0305 in
3.374 ac-ft

HYG Volume... 3.374 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST SOUTH A)
Computational Incr, Tm = .02223 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 = 68.29 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 1 year storm
Duration = 24.0000 hrs Rain Depth = 2.5000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST SOUTH B 1
Tc = .1667 hrs
Drainage Area = 4.694 acres Runoff CN= 86

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 12.0024 hrs
Computed Peak Flow = 7.99 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 7.99 cfs
==========

DRAINAGE AREA

ID:POST SOUTH B
CN = 86
Area = 4.694 acres
S = 1.6279 in
0.2S = .3256 in

Cumulative Runoff

1.2435 in
.486 ac-ft

HYG Volume... .486 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST SOUTH B)
Computational Incr, Tm = .02223 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 = 31.90 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm
Duration = 24.0000 hrs Rain Depth = 2.9000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST SOUTH B 2
Tc = .1667 hrs
Drainage Area = 4.694 acres Runoff CN= 86

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 12.0024 hrs
Computed Peak Flow = 10.11 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 10.11 cfs
==========

DRAINAGE AREA

ID:POST SOUTH B
CN = 86
Area = 4.694 acres
S = 1.6279 in
0.2S = .3256 in

Cumulative Runoff

1.5771 in
.617 ac-ft

HYG Volume... .617 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST SOUTH B)
Computational Incr, Tm = .02223 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 = 31.90 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 5 year storm
Duration = 24.0000 hrs Rain Depth = 3.6000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST SOUTH B 5
Tc = .1667 hrs
Drainage Area = 4.694 acres Runoff CN= 86

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 11.9802 hrs
Computed Peak Flow = 13.97 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 13.91 cfs
==========

DRAINAGE AREA

ID:POST SOUTH B
CN = 86
Area = 4.694 acres
S = 1.6279 in
0.2S = .3256 in

Cumulative Runoff

2.1871 in
.856 ac-ft

HYG Volume... .856 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST SOUTH B)
Computational Incr, Tm = .02223 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 = 31.90 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 4.1000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST SOUTH B 10
Tc = .1667 hrs
Drainage Area = 4.694 acres Runoff CN= 86

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 11.9802 hrs
Computed Peak Flow = 16.76 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 16.66 cfs
==========

DRAINAGE AREA

ID:POST SOUTH B
CN = 86
Area = 4.694 acres
S = 1.6279 in
0.2S = .3256 in

Cumulative Runoff

2.6371 in
1.032 ac-ft

HYG Volume... 1.032 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST SOUTH B)
Computational Incr, Tm = .02223 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 = 31.90 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 4.7000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST SOUTH B 25
Tc = .1667 hrs
Drainage Area = 4.694 acres Runoff CN= 86

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 11.9802 hrs
Computed Peak Flow = 20.14 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 19.98 cfs
==========

DRAINAGE AREA

ID:POST SOUTH B
CN = 86
Area = 4.694 acres
S = 1.6279 in
0.2S = .3256 in

Cumulative Runoff

3.1880 in
1.247 ac-ft

HYG Volume... 1.247 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST SOUTH B)
Computational Incr, Tm = .02223 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 = 31.90 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 50 year storm
Duration = 24.0000 hrs Rain Depth = 5.2000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST SOUTH B 50
Tc = .1667 hrs
Drainage Area = 4.694 acres Runoff CN= 86

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 11.9802 hrs
Computed Peak Flow = 22.96 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 22.75 cfs
==========

DRAINAGE AREA

ID:POST SOUTH B
CN = 86
Area = 4.694 acres
S = 1.6279 in
0.2S = .3256 in

Cumulative Runoff

3.6541 in
1.429 ac-ft

HYG Volume... 1.429 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST SOUTH B)
Computational Incr, Tm = .02223 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 = 31.90 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 5.6000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST SOUTH B 100
Tc = .1667 hrs
Drainage Area = 4.694 acres Runoff CN= 86

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 11.9802 hrs
Computed Peak Flow = 25.22 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 24.96 cfs
==========

DRAINAGE AREA

ID:POST SOUTH B
CN = 86
Area = 4.694 acres
S = 1.6279 in
0.2S = .3256 in

Cumulative Runoff

4.0305 in
1.577 ac-ft

HYG Volume... 1.577 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST SOUTH B)
Computational Incr, Tm = .02223 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 = 31.90 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 1 year storm
Duration = 24.0000 hrs Rain Depth = 2.5000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST SOUTH UNDET 1
Tc = .1667 hrs
Drainage Area = 1.318 acres Runoff CN= 74

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 12.0246 hrs
Computed Peak Flow = 1.03 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 1.00 cfs
WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
==========

DRAINAGE AREA

ID:POST SOUTH UNDET
CN = 74
Area = 1.318 acres
S = 3.5135 in
0.2S = .7027 in

Cumulative Runoff

.6082 in
.067 ac-ft

HYG Volume... .067 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST SOUTH UNDET)
Computational Incr, Tm = .02223 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 = 8.96 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm
Duration = 24.0000 hrs Rain Depth = 2.9000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST SOUTH UNDET 2
Tc = .1667 hrs
Drainage Area = 1.318 acres Runoff CN= 74

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 12.0246 hrs
Computed Peak Flow = 1.47 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 1.46 cfs
==========

DRAINAGE AREA

ID:POST SOUTH UNDET
CN = 74
Area = 1.318 acres
S = 3.5135 in
0.2S = .7027 in

Cumulative Runoff

.8454 in
.093 ac-ft

HYG Volume... .093 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST SOUTH UNDET)
Computational Incr, Tm = .02223 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 = 8.96 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 5 year storm
Duration = 24.0000 hrs Rain Depth = 3.6000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST SOUTH UNDET 5
Tc = .1667 hrs
Drainage Area = 1.318 acres Runoff CN= 74

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 12.0024 hrs
Computed Peak Flow = 2.33 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 2.33 cfs
==========

DRAINAGE AREA

ID:POST SOUTH UNDET
CN = 74
Area = 1.318 acres
S = 3.5135 in
0.2S = .7027 in

Cumulative Runoff

1.3094 in
.144 ac-ft

HYG Volume... .144 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST SOUTH UNDET)
Computational Incr, Tm = .02223 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 = 8.96 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 4.1000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST SOUTH UNDET 10
Tc = .1667 hrs
Drainage Area = 1.318 acres Runoff CN= 74

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 12.0024 hrs
Computed Peak Flow = 3.00 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 3.00 cfs
==========

DRAINAGE AREA

ID:POST SOUTH UNDET
CN = 74
Area = 1.318 acres
S = 3.5135 in
0.2S = .7027 in

Cumulative Runoff

1.6701 in
.183 ac-ft

HYG Volume... .183 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST SOUTH UNDET)
Computational Incr, Tm = .02223 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 = 8.96 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 4.7000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST SOUTH UNDET 25
Tc = .1667 hrs
Drainage Area = 1.318 acres Runoff CN= 74

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 12.0024 hrs
Computed Peak Flow = 3.84 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 3.84 cfs
==========

DRAINAGE AREA

ID:POST SOUTH UNDET
CN = 74
Area = 1.318 acres
S = 3.5135 in
0.2S = .7027 in

Cumulative Runoff

2.1274 in
.234 ac-ft

HYG Volume... .234 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST SOUTH UNDET)
Computational Incr, Tm = .02223 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 = 8.96 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 50 year storm
Duration = 24.0000 hrs Rain Depth = 5.2000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST SOUTH UNDET 50
Tc = .1667 hrs
Drainage Area = 1.318 acres Runoff CN= 74

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 12.0024 hrs
Computed Peak Flow = 4.56 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 4.56 cfs
==========

DRAINAGE AREA

ID:POST SOUTH UNDET
CN = 74
Area = 1.318 acres
S = 3.5135 in
0.2S = .7027 in

Cumulative Runoff

2.5248 in
.277 ac-ft

HYG Volume... .277 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST SOUTH UNDET)
Computational Incr, Tm = .02223 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 = 8.96 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 5.6000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - POST SOUTH UNDET 100
Tc = .1667 hrs
Drainage Area = 1.318 acres Runoff CN= 74

==========
Computational Time Increment = .02223 hrs
Computed Peak Time = 12.0024 hrs
Computed Peak Flow = 5.15 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0000 hrs
Peak Flow, Interpolated Output = 5.14 cfs
==========

DRAINAGE AREA

ID:POST SOUTH UNDET
CN = 74
Area = 1.318 acres
S = 3.5135 in
0.2S = .7027 in

Cumulative Runoff

2.8515 in
.313 ac-ft

HYG Volume... .313 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .16670 hrs (ID: POST SOUTH UNDET)
Computational Incr, Tm = .02223 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 = 8.96 cfs
Unit peak time Tp = .11113 hrs
Unit receding limb, Tr = .44453 hrs
Total unit time, Tb = .55567 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 1 year storm
Duration = 24.0000 hrs Rain Depth = 2.5000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - PRE NORTH 1
Tc = .3389 hrs
Drainage Area = 3.390 acres Runoff CN= 72

==========
Computational Time Increment = .04519 hrs
Computed Peak Time = 12.1110 hrs
Computed Peak Flow = 1.59 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.1500 hrs
Peak Flow, Interpolated Output = 1.57 cfs
==========

DRAINAGE AREA

ID:PRE NORTH
CN = 72
Area = 3.390 acres
S = 3.8889 in
0.2S = .7778 in

Cumulative Runoff

.5286 in
.149 ac-ft

HYG Volume... .149 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .33893 hrs (ID: PRE NORTH)
Computational Incr, Tm = .04519 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 = 11.33 cfs
Unit peak time Tp = .22595 hrs
Unit receding limb, Tr = .90381 hrs
Total unit time, Tb = 1.12976 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm
Duration = 24.0000 hrs Rain Depth = 2.9000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - PRE NORTH 2
Tc = .3389 hrs
Drainage Area = 3.390 acres Runoff CN= 72

==========
Computational Time Increment = .04519 hrs
Computed Peak Time = 12.1110 hrs
Computed Peak Flow = 2.42 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.1000 hrs
Peak Flow, Interpolated Output = 2.39 cfs
==========

DRAINAGE AREA

ID:PRE NORTH
CN = 72
Area = 3.390 acres
S = 3.8889 in
0.2S = .7778 in

Cumulative Runoff

.7493 in
.212 ac-ft

HYG Volume... .212 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .33893 hrs (ID: PRE NORTH)
Computational Incr, Tm = .04519 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 = 11.33 cfs
Unit peak time Tp = .22595 hrs
Unit receding limb, Tr = .90381 hrs
Total unit time, Tb = 1.12976 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 5 year storm
Duration = 24.0000 hrs Rain Depth = 3.6000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - PRE NORTH 5
Tc = .3389 hrs
Drainage Area = 3.390 acres Runoff CN= 72

==========
Computational Time Increment = .04519 hrs
Computed Peak Time = 12.1110 hrs
Computed Peak Flow = 4.06 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.1000 hrs
Peak Flow, Interpolated Output = 4.03 cfs
==========

DRAINAGE AREA

ID:PRE NORTH
CN = 72
Area = 3.390 acres
S = 3.8889 in
0.2S = .7778 in

Cumulative Runoff

1.1868 in
.335 ac-ft

HYG Volume... .335 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .33893 hrs (ID: PRE NORTH)
Computational Incr, Tm = .04519 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 = 11.33 cfs
Unit peak time Tp = .22595 hrs
Unit receding limb, Tr = .90381 hrs
Total unit time, Tb = 1.12976 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 4.1000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - PRE NORTH 10
Tc = .3389 hrs
Drainage Area = 3.390 acres Runoff CN= 72

==========
Computational Time Increment = .04519 hrs
Computed Peak Time = 12.1110 hrs
Computed Peak Flow = 5.34 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.1000 hrs
Peak Flow, Interpolated Output = 5.30 cfs
==========

DRAINAGE AREA

ID:PRE NORTH
CN = 72
Area = 3.390 acres
S = 3.8889 in
0.2S = .7778 in

Cumulative Runoff

1.5306 in
.432 ac-ft

HYG Volume... .432 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .33893 hrs (ID: PRE NORTH)
Computational Incr, Tm = .04519 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 = 11.33 cfs
Unit peak time Tp = .22595 hrs
Unit receding limb, Tr = .90381 hrs
Total unit time, Tb = 1.12976 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 4.7000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - PRE NORTH 25
Tc = .3389 hrs
Drainage Area = 3.390 acres Runoff CN= 72

==========
Computational Time Increment = .04519 hrs
Computed Peak Time = 12.1110 hrs
Computed Peak Flow = 6.96 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.1000 hrs
Peak Flow, Interpolated Output = 6.92 cfs
==========

DRAINAGE AREA

ID:PRE NORTH
CN = 72
Area = 3.390 acres
S = 3.8889 in
0.2S = .7778 in

Cumulative Runoff

1.9695 in
.556 ac-ft

HYG Volume... .556 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .33893 hrs (ID: PRE NORTH)
Computational Incr, Tm = .04519 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 = 11.33 cfs
Unit peak time Tp = .22595 hrs
Unit receding limb, Tr = .90381 hrs
Total unit time, Tb = 1.12976 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 50 year storm
Duration = 24.0000 hrs Rain Depth = 5.2000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - PRE NORTH 50
Tc = .3389 hrs
Drainage Area = 3.390 acres Runoff CN= 72

==========
Computational Time Increment = .04519 hrs
Computed Peak Time = 12.1110 hrs
Computed Peak Flow = 8.36 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.1000 hrs
Peak Flow, Interpolated Output = 8.32 cfs
==========

DRAINAGE AREA

ID:PRE NORTH
CN = 72
Area = 3.390 acres
S = 3.8889 in
0.2S = .7778 in

Cumulative Runoff

2.3530 in
.665 ac-ft

HYG Volume... .665 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .33893 hrs (ID: PRE NORTH)
Computational Incr, Tm = .04519 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 = 11.33 cfs
Unit peak time Tp = .22595 hrs
Unit receding limb, Tr = .90381 hrs
Total unit time, Tb = 1.12976 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 5.6000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - PRE NORTH 100
Tc = .3389 hrs
Drainage Area = 3.390 acres Runoff CN= 72

==========
Computational Time Increment = .04519 hrs
Computed Peak Time = 12.1110 hrs
Computed Peak Flow = 9.51 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.1000 hrs
Peak Flow, Interpolated Output = 9.47 cfs
==========

DRAINAGE AREA

ID:PRE NORTH
CN = 72
Area = 3.390 acres
S = 3.8889 in
0.2S = .7778 in

Cumulative Runoff

2.6694 in
.754 ac-ft

HYG Volume... .754 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .33893 hrs (ID: PRE NORTH)
Computational Incr, Tm = .04519 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 = 11.33 cfs
Unit peak time Tp = .22595 hrs
Unit receding limb, Tr = .90381 hrs
Total unit time, Tb = 1.12976 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 1 year storm
Duration = 24.0000 hrs Rain Depth = 2.5000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - PRE SOUTH 1
Tc = .4333 hrs
Drainage Area = 13.494 acres Runoff CN= 75

==========
Computational Time Increment = .05777 hrs
Computed Peak Time = 12.1902 hrs
Computed Peak Flow = 7.19 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.2000 hrs
Peak Flow, Interpolated Output = 7.11 cfs
==========

DRAINAGE AREA

ID:PRE SOUTH
CN = 75
Area = 13.494 acres
S = 3.3333 in
0.2S = .6667 in

Cumulative Runoff

.6505 in
.732 ac-ft

HYG Volume... .731 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .43330 hrs (ID: PRE SOUTH)
Computational Incr, Tm = .05777 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 = 35.29 cfs
Unit peak time Tp = .28887 hrs
Unit receding limb, Tr = 1.15547 hrs
Total unit time, Tb = 1.44433 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm
Duration = 24.0000 hrs Rain Depth = 2.9000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - PRE SOUTH 2
Tc = .4333 hrs
Drainage Area = 13.494 acres Runoff CN= 75

==========
Computational Time Increment = .05777 hrs
Computed Peak Time = 12.1902 hrs
Computed Peak Flow = 10.34 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.1500 hrs
Peak Flow, Interpolated Output = 10.28 cfs
==========

DRAINAGE AREA

ID:PRE SOUTH
CN = 75
Area = 13.494 acres
S = 3.3333 in
0.2S = .6667 in

Cumulative Runoff

.8960 in
1.008 ac-ft

HYG Volume... 1.007 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .43330 hrs (ID: PRE SOUTH)
Computational Incr, Tm = .05777 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 = 35.29 cfs
Unit peak time Tp = .28887 hrs
Unit receding limb, Tr = 1.15547 hrs
Total unit time, Tb = 1.44433 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 5 year storm
Duration = 24.0000 hrs Rain Depth = 3.6000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - PRE SOUTH 5
Tc = .4333 hrs
Drainage Area = 13.494 acres Runoff CN= 75

==========
Computational Time Increment = .05777 hrs
Computed Peak Time = 12.1324 hrs
Computed Peak Flow = 16.49 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.1500 hrs
Peak Flow, Interpolated Output = 16.45 cfs
==========

DRAINAGE AREA

ID:PRE SOUTH
CN = 75
Area = 13.494 acres
S = 3.3333 in
0.2S = .6667 in

Cumulative Runoff

1.3730 in
1.544 ac-ft

HYG Volume... 1.544 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .43330 hrs (ID: PRE SOUTH)
Computational Incr, Tm = .05777 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 = 35.29 cfs
Unit peak time Tp = .28887 hrs
Unit receding limb, Tr = 1.15547 hrs
Total unit time, Tb = 1.44433 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 4.1000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - PRE SOUTH 10
Tc = .4333 hrs
Drainage Area = 13.494 acres Runoff CN= 75

==========
Computational Time Increment = .05777 hrs
Computed Peak Time = 12.1324 hrs
Computed Peak Flow = 21.28 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.1500 hrs
Peak Flow, Interpolated Output = 21.20 cfs
==========

DRAINAGE AREA

ID:PRE SOUTH
CN = 75
Area = 13.494 acres
S = 3.3333 in
0.2S = .6667 in

Cumulative Runoff

1.7420 in
1.959 ac-ft

HYG Volume... 1.958 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .43330 hrs (ID: PRE SOUTH)
Computational Incr, Tm = .05777 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 = 35.29 cfs
Unit peak time Tp = .28887 hrs
Unit receding limb, Tr = 1.15547 hrs
Total unit time, Tb = 1.44433 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 4.7000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - PRE SOUTH 25
Tc = .4333 hrs
Drainage Area = 13.494 acres Runoff CN= 75

==========
Computational Time Increment = .05777 hrs
Computed Peak Time = 12.1324 hrs
Computed Peak Flow = 27.30 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.1500 hrs
Peak Flow, Interpolated Output = 27.14 cfs
==========

DRAINAGE AREA

ID:PRE SOUTH
CN = 75
Area = 13.494 acres
S = 3.3333 in
0.2S = .6667 in

Cumulative Runoff

2.2083 in
2.483 ac-ft

HYG Volume... 2.483 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .43330 hrs (ID: PRE SOUTH)
Computational Incr, Tm = .05777 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 = 35.29 cfs
Unit peak time Tp = .28887 hrs
Unit receding limb, Tr = 1.15547 hrs
Total unit time, Tb = 1.44433 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 50 year storm
Duration = 24.0000 hrs Rain Depth = 5.2000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - PRE SOUTH 50
Tc = .4333 hrs
Drainage Area = 13.494 acres Runoff CN= 75

==========
Computational Time Increment = .05777 hrs
Computed Peak Time = 12.1324 hrs
Computed Peak Flow = 32.48 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.1500 hrs
Peak Flow, Interpolated Output = 32.26 cfs
==========

DRAINAGE AREA

ID:PRE SOUTH
CN = 75
Area = 13.494 acres
S = 3.3333 in
0.2S = .6667 in

Cumulative Runoff

2.6124 in
2.938 ac-ft

HYG Volume... 2.937 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .43330 hrs (ID: PRE SOUTH)
Computational Incr, Tm = .05777 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 = 35.29 cfs
Unit peak time Tp = .28887 hrs
Unit receding limb, Tr = 1.15547 hrs
Total unit time, Tb = 1.44433 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 5.6000 in
Rain Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Rain File -ID = - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
HYG File - ID = - PRE SOUTH 100
Tc = .4333 hrs
Drainage Area = 13.494 acres Runoff CN= 75

==========
Computational Time Increment = .05777 hrs
Computed Peak Time = 12.1324 hrs
Computed Peak Flow = 36.71 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.1500 hrs
Peak Flow, Interpolated Output = 36.43 cfs
==========

DRAINAGE AREA

ID:PRE SOUTH
CN = 75
Area = 13.494 acres
S = 3.3333 in
0.2S = .6667 in

Cumulative Runoff

2.9441 in
3.311 ac-ft

HYG Volume... 3.310 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .43330 hrs (ID: PRE SOUTH)
Computational Incr, Tm = .05777 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 = 35.29 cfs
Unit peak time Tp = .28887 hrs
Unit receding limb, Tr = 1.15547 hrs
Total unit time, Tb = 1.44433 hrs

Elevation (ft)	Planimeter (sq.in)	Area (sq.ft)	A1+A2+sqr(A1*A2) (sq.ft)	Volume (ac-ft)	Volume Sum (ac-ft)
744.05	-----	24472	0	.000	.000
745.00	-----	27805	78362	.570	.570
746.00	-----	31419	88781	.679	1.249
747.00	-----	35130	99772	.763	2.013
747.75	-----	37980	109637	.629	2.642

spillway = 746.75

POND VOLUME EQUATIONS

* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

Elevation (ft)	Planimeter (sq.in)	Area (sq.ft)	A1+A2+sqr(A1*A2) (sq.ft)	Volume (ac-ft)	Volume Sum (ac-ft)
743.96	-----	15616	0	.000	.000
744.00	-----	15692	46962	.014	.014
745.00	-----	17657	49995	.383	.397
746.00	-----	19750	56081	.429	.826
746.50	-----	20848	60890	.233	1.059
747.75	-----	23541	66543	.637	1.696

spillway @ 746.0

POND VOLUME EQUATIONS

* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 744.05 ft
Increment = .05 ft
Max. Elev.= 747.75 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-Area	O1	--->	C0	744.050	747.750
Orifice-Area	O2	--->	C0	746.000	747.750
Culvert-Circular	C0	--->	TW	743.750	747.750
Weir-XY Points	W0	--->	TW	746.750	747.750

TW SETUP, DS Channel

OUTLET STRUCTURE INPUT DATA

Structure ID = O1
Structure Type = Orifice-Area

# of Openings	=	1
Invert Elev.	=	744.05 ft
Area	=	.3125 sq.ft
Top of Orifice	=	744.30 ft
Datum Elev.	=	744.18 ft
Orifice Coeff.	=	.600

Structure ID = O2
Structure Type = Orifice-Area

# of Openings	=	8
Invert Elev.	=	746.00 ft
Area	=	.3194 sq.ft
Top of Orifice	=	.00 ft
Datum Elev.	=	746.00 ft
Orifice Coeff.	=	.600

OUTLET STRUCTURE INPUT DATA

```
Structure ID      = C0
Structure Type    = Culvert-Circular
-------------------------------------
No. Barrels       =         1
Barrel Diameter   =    1.0000 ft
Upstream Invert   =    743.75 ft
Dnstream Invert   =    743.54 ft
Horiz. Length     =     46.55 ft
Barrel Length     =     46.55 ft
Barrel Slope      =    .00451 ft/ft

OUTLET CONTROL DATA...
Mannings n        =     .0120
Ke                =     .5000  (forward entrance loss)
Kb                =   .026647  (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)   =     1.158
T2 ratio (HW/D)   =     1.305
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 =    744.91 ft  --->  Flow =      2.75 cfs
At T2 Elev =    745.05 ft  --->  Flow =      3.14 cfs
```

OUTLET STRUCTURE INPUT DATA

Structure ID = W0
Structure Type = Weir-XY Points

# of Openings = 1
WEIR X-Y GROUND POINTS

X, ft	Elev, ft
.00	747.75
4.00	746.75
19.00	746.75
23.00	747.75

Lowest Elev. = 746.75 ft

Weir Coeff. = 3.000000

Weir TW effects (Use adjustment equation)

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.= 743.96 ft
Increment = .05 ft
Max. Elev.= 747.75 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-Area	O1	--->	C0	743.960	747.750
Orifice-Area	O2	--->	C0	746.000	747.750
Culvert-Circular	C0	--->	TW	743.750	747.750
Weir-XY Points	W0	--->	TW	746.000	747.750

TW SETUP, DS Channel

OUTLET STRUCTURE INPUT DATA

Structure ID	= O1	
Structure Type	= Orifice-Area	
# of Openings	= 1	
Invert Elev.	= 743.96	ft
Area	= .2500	sq.ft
Top of Orifice	= 744.21	ft
Datum Elev.	= 744.09	ft
Orifice Coeff.	= .600	

Structure ID	= O2	
Structure Type	= Orifice-Area	
# of Openings	= 8	
Invert Elev.	= 746.00	ft
Area	= .3194	sq.ft
Top of Orifice	= .00	ft
Datum Elev.	= 746.00	ft
Orifice Coeff.	= .600	

OUTLET STRUCTURE INPUT DATA

Structure ID = C0
Structure Type = Culvert-Circular

No. Barrels	=	1
Barrel Diameter	=	1.5000 ft
Upstream Invert	=	743.75 ft
Dnstream Invert	=	743.50 ft
Horiz. Length	=	73.50 ft
Barrel Length	=	73.50 ft
Barrel Slope	=	.00340 ft/ft

OUTLET CONTROL DATA...

Mannings n	=	.0120	
Ke	=	.5000	(forward entrance loss)
Kb	=	.015519	(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)	=	1.159
T2 ratio (HW/D)	=	1.305
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 = 745.49 ft ---> Flow = 7.58 cfs
At T2 Elev = 745.71 ft ---> Flow = 8.66 cfs

OUTLET STRUCTURE INPUT DATA

Structure ID = W0
Structure Type = Weir-XY Points

# of Openings = 1
WEIR X-Y GROUND POINTS

X, ft	Elev, ft
.00	747.75
7.00	746.00
22.00	746.00
29.00	747.75

Lowest Elev. = 746.00 ft

Weir Coeff. = 3.000000

Weir TW effects (Use adjustment equation)

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

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Inflow HYG file = NONE STORED - POND A IN 1
Outflow HYG file = NONE STORED - POND A OUT 1

Pond Node Data = POND A
Pond Volume Data = POND A
Pond Outlet Data = Outlet A

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	744.05 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	17.10 cfs	at	12.0000 hrs
Peak Outflow	=	1.09 cfs	at	13.0000 hrs
Peak Elevation	=	744.96 ft		
Peak Storage	=	.546 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	1.041
- Infiltration	=	.000
- HYG Vol OUT	=	1.040
- Retained Vol	=	.001
Unrouted Vol	=	-.000 ac-ft (.002% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Inflow HYG file = NONE STORED - POND A IN 2
Outflow HYG file = NONE STORED - POND A OUT 2

Pond Node Data = POND A
Pond Volume Data = POND A
Pond Outlet Data = Outlet A

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	744.05 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	21.64 cfs	at	12.0000 hrs
Peak Outflow	=	1.28 cfs	at	13.0500 hrs
Peak Elevation	=	745.23 ft		
Peak Storage	=	.716 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	1.320
- Infiltration	=	.000
- HYG Vol OUT	=	1.320
- Retained Vol	=	.001
Unrouted Vol	=	.000 ac-ft (.001% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Inflow HYG file = NONE STORED - POND A IN 5
Outflow HYG file = NONE STORED - POND A OUT 5

Pond Node Data = POND A
Pond Volume Data = POND A
Pond Outlet Data = Outlet A

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	744.05 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	29.77 cfs	at	12.0000 hrs
Peak Outflow	=	1.58 cfs	at	13.3000 hrs
Peak Elevation	=	745.70 ft		
Peak Storage	=	1.035 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	1.831
- Infiltration	=	.000
- HYG Vol OUT	=	1.830
- Retained Vol	=	.001
Unrouted Vol	=	.000 ac-ft (.001% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Inflow HYG file = NONE STORED - POND A IN 10
Outflow HYG file = NONE STORED - POND A OUT 10

Pond Node Data = POND A
Pond Volume Data = POND A
Pond Outlet Data = Outlet A

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	744.05 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	35.66 cfs	at	12.0000 hrs
Peak Outflow	=	2.27 cfs	at	13.1000 hrs
Peak Elevation	=	746.01 ft		
Peak Storage	=	1.258 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	2.208
- Infiltration	=	.000
- HYG Vol OUT	=	2.207
- Retained Vol	=	.001
Unrouted Vol	=	-.000 ac-ft (.001% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Inflow HYG file = NONE STORED - POND A IN 25
Outflow HYG file = NONE STORED - POND A OUT 25

Pond Node Data = POND A
Pond Volume Data = POND A
Pond Outlet Data = Outlet A

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	744.05 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	42.76 cfs	at	12.0000 hrs
Peak Outflow	=	4.79 cfs	at	12.5000 hrs
Peak Elevation	=	746.21 ft		
Peak Storage	=	1.399 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	2.669
- Infiltration	=	.000
- HYG Vol OUT	=	2.668
- Retained Vol	=	.001
Unrouted Vol	=	.000 ac-ft (.000% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Inflow HYG file = NONE STORED - POND A IN 50
Outflow HYG file = NONE STORED - POND A OUT 50

Pond Node Data = POND A
Pond Volume Data = POND A
Pond Outlet Data = Outlet A

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	744.05 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	48.68 cfs	at	12.0000 hrs
Peak Outflow	=	5.16 cfs	at	12.5000 hrs
Peak Elevation	=	746.49 ft		
Peak Storage	=	1.614 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	3.059
- Infiltration	=	.000
- HYG Vol OUT	=	3.059
- Retained Vol	=	.001
Unrouted Vol	=	.000 ac-ft (.000% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Inflow HYG file = NONE STORED - POND A IN 100
Outflow HYG file = NONE STORED - POND A OUT 100

Pond Node Data = POND A
Pond Volume Data = POND A
Pond Outlet Data = Outlet A

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	744.05 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	53.42 cfs	at	12.0000 hrs
Peak Outflow	=	5.44 cfs	at	12.5000 hrs
Peak Elevation	=	746.72 ft		
Peak Storage	=	1.789 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	3.374
- Infiltration	=	.000
- HYG Vol OUT	=	3.374
- Retained Vol	=	.001
Unrouted Vol	=	.000 ac-ft (.000% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Inflow HYG file = NONE STORED - POND B IN 1
Outflow HYG file = NONE STORED - POND B OUT 1

Pond Node Data = POND B
Pond Volume Data = POND B
Pond Outlet Data = Outlet B

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	743.96 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	7.99 cfs	at	12.0000 hrs
Peak Outflow	=	.73 cfs	at	12.5500 hrs
Peak Elevation	=	744.59 ft		
Peak Storage	=	.235 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	.486
- Infiltration	=	.000
- HYG Vol OUT	=	.486
- Retained Vol	=	.001
Unrouted Vol	=	-.000 ac-ft (.001% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Inflow HYG file = NONE STORED - POND B IN 2
Outflow HYG file = NONE STORED - POND B OUT 2

Pond Node Data = POND B
Pond Volume Data = POND B
Pond Outlet Data = Outlet B

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	743.96 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	10.11 cfs	at	12.0000 hrs
Peak Outflow	=	.86 cfs	at	12.6000 hrs
Peak Elevation	=	744.78 ft		
Peak Storage	=	.308 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	.617
- Infiltration	=	.000
- HYG Vol OUT	=	.616
- Retained Vol	=	.001
Unrouted Vol	=	-.000 ac-ft (.002% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Inflow HYG file = NONE STORED - POND B IN 5
Outflow HYG file = NONE STORED - POND B OUT 5

Pond Node Data = POND B
Pond Volume Data = POND B
Pond Outlet Data = Outlet B

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	743.96 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	13.91 cfs	at	12.0000 hrs
Peak Outflow	=	1.06 cfs	at	12.7000 hrs
Peak Elevation	=	745.12 ft		
Peak Storage	=	.446 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	.856
- Infiltration	=	.000
- HYG Vol OUT	=	.855
- Retained Vol	=	.001
Unrouted Vol	=	-.000 ac-ft (.001% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Inflow HYG file = NONE STORED - POND B IN 10
Outflow HYG file = NONE STORED - POND B OUT 10

Pond Node Data = POND B
Pond Volume Data = POND B
Pond Outlet Data = Outlet B

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	743.96 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	16.66 cfs	at	12.0000 hrs
Peak Outflow	=	1.20 cfs	at	12.7000 hrs
Peak Elevation	=	745.37 ft		
Peak Storage	=	.549 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	1.032
- Infiltration	=	.000
- HYG Vol OUT	=	1.031
- Retained Vol	=	.001
Unrouted Vol	=	-.000 ac-ft (.000% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Inflow HYG file = NONE STORED - POND B IN 25
Outflow HYG file = NONE STORED - POND B OUT 25

Pond Node Data = POND B
Pond Volume Data = POND B
Pond Outlet Data = Outlet B

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	743.96 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	19.98 cfs	at	12.0000 hrs
Peak Outflow	=	1.35 cfs	at	12.8500 hrs
Peak Elevation	=	745.66 ft		
Peak Storage	=	.676 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	1.247
- Infiltration	=	.000
- HYG Vol OUT	=	1.246
- Retained Vol	=	.001
Unrouted Vol	=	-.000 ac-ft (.001% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Inflow HYG file = NONE STORED - POND B IN 50
Outflow HYG file = NONE STORED - POND B OUT 50

Pond Node Data = POND B
Pond Volume Data = POND B
Pond Outlet Data = Outlet B

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	743.96 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	22.75 cfs	at	12.0000 hrs
Peak Outflow	=	1.46 cfs	at	12.8000 hrs
Peak Elevation	=	745.91 ft		
Peak Storage	=	.786 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	1.429
- Infiltration	=	.000
- HYG Vol OUT	=	1.429
- Retained Vol	=	.001
Unrouted Vol	=	-.000 ac-ft (.001% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\Columbus\P\150588\Design\Storm Drainage\
Inflow HYG file = NONE STORED - POND B IN 100
Outflow HYG file = NONE STORED - POND B OUT 100

Pond Node Data = POND B
Pond Volume Data = POND B
Pond Outlet Data = Outlet B

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	743.96 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	24.96 cfs	at	12.0000 hrs
Peak Outflow	=	3.07 cfs	at	12.4500 hrs
Peak Elevation	=	746.02 ft		
Peak Storage	=	.835 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	1.577
- Infiltration	=	.000
- HYG Vol OUT	=	1.576
- Retained Vol	=	.001
Unrouted Vol	=	-.000 ac-ft (.001% of Inflow Volume)

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