

# Cole and ASSOCIATES INCORPORATED

## Storm Water Detention Report

### Preston Woods Phase II



Prepared For: The Jones Company  
16640 Chesterfield Grove  
Suite 200  
Chesterfield, MO 63005

Prepared By: Cole & Associates Inc.  
10777 Sunset Office Drive  
St. Louis, MO 63127

Date: June 22, 2007  
Revised: August 30, 2007

Job #: 07-0041

## I. Executive Summary

The purpose of this report is to present the hydraulic analysis for the 2-year, 10-year and 100-year 24 hour storm events as required by the St. Charles County, Missouri. The calculations for time of concentration, detention volume, rainfall discharge, and routing were all performed with the computer software program "Pondpack," V9, by Haested Methods.

## II. Method of Analysis

The subject site is approximately 168.5 acres which is located at Highway N and Rhodes Road. The development is being divided into phases. This report is for a drainage area of approximately 54 acres at the central portion of the site designated as Phase II, and if is designed to include the original 38 acres for Phase I.

The current use of the site is a homestead used for raising livestock. A copy of the existing conditions, time of concentration routing, and CN values used for analyzing the 2-year and 10-year storms are provided in Exhibit A. The information was input into Pondpack to determine the allowable release rates for the site. A copy of the Pondpack report for the existing conditions is provided in Exhibit B.

The proposed use of the site is single family residences. A copy of the proposed conditions, time of concentration routing, and CN values is provided in Exhibit C. Detention is being provided by a single detention basin near the discharge point of the site, and the redesign of Basin A used in the Phase I design. The outlet structure for Basin A is being adjusted with a 3ft wide x 1ft high low flow orifice at 601.00, a 2.5ft wide weir at elevation 604.75, and the overflow riser (6ft by 6ft) at elevation 606.75. The top of the dam is set at elevation 609.50. Outlet structure A discharges into a 54 inch RCP outlet pipe. Basin B discharge is controlled by an outlet structure with a 2.5ft wide by 2ft high low flow opening at elevation 566.0; a 6ft wide weir at elevation 570.0, and an overflow riser (6ft by 6ft) at elevation 571.0. Outlet structure B discharges into a 48inch RCP outlet pipe. A copy of the Pondpack report for the proposed conditions is provided in Exhibit D.

## III. Report Summary

Allowable Release Rate (Point of Interest):

2-Year Peak Discharge	=	86.35cfs @ 12.20 hrs
10-Year Peak Discharge	=	162.28cfs @ 12.20 hrs

Proposed Conditions:

Basin A:

2-Year Peak Discharge	=	23.37cfs @ 12.30hrs
2-Year High Water Elevation	=	604.12
10-Year Peak Discharge	=	33.74cfs @ 12.30hrs
10-Year High Water Elevation	=	605.52
100-Year Peak Discharge	=	71.04cfs @ 12.25hrs
100-Year High Water Elevation	=	607.08

Basin B:

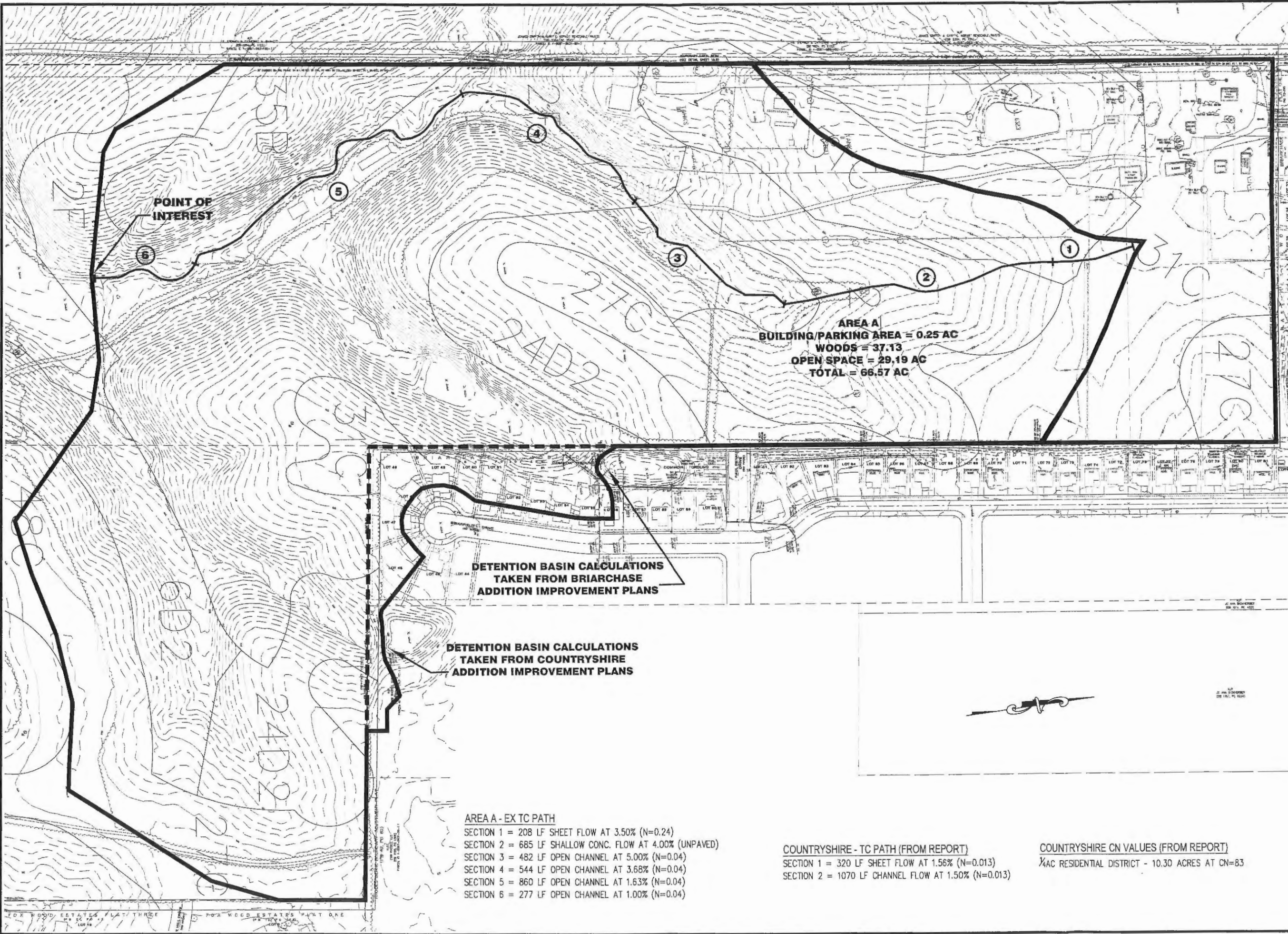
2-Year Peak Discharge	=	41.27cfs @ 12.40hrs
2-Year High Water Elevation	=	569.94
10-Year Peak Discharge	=	86.26cfs @ 12.30hrs
10-Year High Water Elevation	=	571.28
100-Year Peak Discharge	=	179.81cfs @ 12.20hrs
100-Year High Water Elevation	=	572.14

Point of Interest:

2-Year Peak Discharge	=	86.37cfs @ 12.10hrs
10-Year Peak Discharge	=	140.40cfs @ 12.30hrs



USER: I:\proj\146 - EXISTING OVERFALL  
 DRAWING: S:\proj\146\146-001\146-001.dwg  
 USER: I:\proj\146 - EXISTING OVERFALL  
 DRAWING: S:\proj\146\146-001\146-001.dwg



**AREA A**  
 BUILDING/PARKING AREA = 0.25 AC  
 WOODS = 37.13  
 OPEN SPACE = 29.19 AC  
 TOTAL = 66.57 AC

**DETENTION BASIN CALCULATIONS  
 TAKEN FROM BRIARCHASE  
 ADDITION IMPROVEMENT PLANS**

**DETENTION BASIN CALCULATIONS  
 TAKEN FROM COUNTRYSHIRE  
 ADDITION IMPROVEMENT PLANS**

**AREA A - EX TC PATH**  
 SECTION 1 = 208 LF SHEET FLOW AT 3.50% (N=0.24)  
 SECTION 2 = 685 LF SHALLOW CONC. FLOW AT 4.00% (UNPAVED)  
 SECTION 3 = 482 LF OPEN CHANNEL AT 5.00% (N=0.04)  
 SECTION 4 = 544 LF OPEN CHANNEL AT 3.68% (N=0.04)  
 SECTION 5 = 860 LF OPEN CHANNEL AT 1.63% (N=0.04)  
 SECTION 6 = 277 LF OPEN CHANNEL AT 1.00% (N=0.04)

**COUNTRYSHIRE - TC PATH (FROM REPORT)**  
 SECTION 1 = 320 LF SHEET FLOW AT 1.56% (N=0.013)  
 SECTION 2 = 1070 LF CHANNEL FLOW AT 1.50% (N=0.013)

**COUNTRYSHIRE CN VALUES (FROM REPORT)**  
 1/4 AC RESIDENTIAL DISTRICT - 10.30 ACRES AT CN=83

<b>REVISIONS</b> DATE _____ DESC. _____	
DEVELOPER/OWNER: <b>THE JONES COMPANY HOMES, L.L.C.</b> 16640 CHESTERFIELD GROVE, SUITE 200 CHESTERFIELD, MO 63005 PHONE: (636) 537-7182	
THE PROFESSIONAL ENGINEER'S SEAL AND SIGNATURE SHALL APPEAR HEREIN. THIS DOCUMENT IS THE PROPERTY OF COLE AND ASSOCIATES, INC. AND IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED HEREIN. ANY REUSE OF THIS DOCUMENT FOR ANY OTHER PROJECT WITHOUT THE WRITTEN PERMISSION OF COLE AND ASSOCIATES, INC. IS STRICTLY PROHIBITED.	
<b>PRESTON WOODS - PHASE II</b> IMPROVEMENT PLANS RHODES LANE ST. CHARLES, MO. 63366	
<b>EXISTING CONDITIONS</b>	
planning • engineering • surveying • landscape architecture <b>Cole and ASSOCIATES</b> INCORPORATED 10777 sunset office dr. saint louis, missouri 63127 p: 314 964 9887 f: 314 984 0587	
DESIGNED BY JKW	
DRAWN BY KDK	
CHECKED BY JFH	
DATE 6/14/07	
Job Number <b>07-0041</b>	
Sheet Number <b>EX</b>	

Job File: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW  
Rain Dir: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\

=====  
JOB TITLE  
=====

Project Date: 12/16/2005  
Project Engineer: Cole and Associates  
Project Title: Preston Woods Phase 1  
Project Comments:  
Existing Conditions

Table of Contents

\*\*\*\*\* WARNING MSG \*\*\*\*\*

WARNING..... WARNING MESSAGES ..... 1.01

\*\*\*\*\* MASTER SUMMARY \*\*\*\*\*

Watershed..... Master Network Summary ..... 2.01

\*\*\*\*\* NETWORK SUMMARIES (DETAILED) \*\*\*\*\*

Watershed..... 2 YR  
 Executive Summary (Nodes) ..... 3.01  
 Executive Summary (Links) ..... 3.02

Watershed..... 10 YR  
 Executive Summary (Nodes) ..... 3.03  
 Executive Summary (Links) ..... 3.04

Watershed..... 100 YR  
 Executive Summary (Nodes) ..... 3.05  
 Executive Summary (Links) ..... 3.06  
 Network Calcs Sequence ..... 3.07

\*\*\*\*\* DESIGN STORMS SUMMARY \*\*\*\*\*

ST. CHARLES COUN Design Storms ..... 4.01

ST. CHARLES COUN 2 YR  
 Design Storms ..... 4.02

\*\*\*\*\* TC CALCULATIONS \*\*\*\*\*

AREA A..... Tc Calcs ..... 5.01

Table of Contents (continued)

CS AREA 3..... Tc Calcs ..... 5.05

\*\*\*\*\* CN CALCULATIONS \*\*\*\*\*

AREA A..... Runoff CN-Area ..... 6.01

CS AREA 3..... Runoff CN-Area ..... 6.02

\*\*\*\*\* RUNOFF HYDROGRAPHS \*\*\*\*\*

Unit Hyd. Equations ..... 7.01

AREA A..... 2 YR

Unit Hyd. Summary ..... 7.03

Unit Hyd. (HYG output) ..... 7.04

AREA A..... 10 YR

Unit Hyd. Summary ..... 7.06

Unit Hyd. (HYG output) ..... 7.07

AREA A..... 100 YR

Unit Hyd. Summary ..... 7.09

Unit Hyd. (HYG output) ..... 7.10

CS AREA 3..... 2 YR

Unit Hyd. Summary ..... 7.13

Unit Hyd. (HYG output) ..... 7.14

CS AREA 3..... 10 YR

Unit Hyd. Summary ..... 7.16

Unit Hyd. (HYG output) ..... 7.17

CS AREA 3..... 100 YR

Unit Hyd. Summary ..... 7.19

Unit Hyd. (HYG output) ..... 7.20

\*\*\*\*\* CHANNEL ANALYSES \*\*\*\*\*

CHN-TRAPZ - 2... Chn-Trapz. .... 8.01

Table of Contents (continued)

Channel Equations ..... 8.03

\*\*\*\*\* REACH ROUTING \*\*\*\*\*

REACH 10..... Reach E-V-Q Table ..... 9.01

REACH 10..... 2 YR  
 Reach Routing Summary ..... 9.04  
 Reach Routing (HYG output) ..... 9.05

REACH 10..... 10 YR  
 Reach Routing Summary ..... 9.07  
 Reach Routing (HYG output) ..... 9.08

REACH 10..... 100 YR  
 Reach Routing Summary ..... 9.11  
 Reach Routing (HYG output) ..... 9.12

\*\*\*\*\* HYG ADDITION \*\*\*\*\*

JUNC 10..... 2 YR  
 Node: Addition Summary ..... 10.01

JUNC 10..... 10 YR  
 Node: Addition Summary ..... 10.04

JUNC 10..... 100 YR  
 Node: Addition Summary ..... 10.07

OUTLET A..... 2 YR  
 Node: Addition Summary ..... 10.11

OUTLET A..... 10 YR  
 Node: Addition Summary ..... 10.14

OUTLET A..... 100 YR  
 Node: Addition Summary ..... 10.18

\*\*\*\*\* POND VOLUMES \*\*\*\*\*

EX. BASIN 1..... Vol: Elev-Area ..... 11.01



Table of Contents (continued)

\*\*\*\*\* OUTLET STRUCTURES \*\*\*\*\*

Countryshire 3.. Outlet Input Data ..... 12.01  
                   Individual Outlet Curves ..... 12.04  
                   Composite Rating Curve ..... 12.11

\*\*\*\*\* POND ROUTING \*\*\*\*\*

EX. BASIN 1.... Pond E-V-Q Table ..... 13.01  
 EX. BASIN 1 IN 2 YR  
                   Node: Pond Inflow Summary ..... 13.03  
 EX. BASIN 1 IN 10 YR  
                   Node: Pond Inflow Summary ..... 13.06  
 EX. BASIN 1 IN 100 YR  
                   Node: Pond Inflow Summary ..... 13.09  
 EX. BASIN 1 OUT 2 YR  
                   Pond Routing Summary ..... 13.13  
                   Pond Routed HYG (total out) ..... 13.14  
 EX. BASIN 1 OUT 10 YR  
                   Pond Routing Summary ..... 13.16  
                   Pond Routed HYG (total out) ..... 13.17  
 EX. BASIN 1 OUT 100 YR  
                   Pond Routing Summary ..... 13.19  
                   Pond Routed HYG (total out) ..... 13.20

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW

WARNING: Relaxed HW convergence for conditions below.  
HW elev= 605.75ft TW elev= free outfall Q = .19cfs  
Convergence: HW +/- .002ft; Q +/- .0017cfs  
Check data for..... Type: Outlet Input Data Name: Countryshire 3

WARNING: TR-55 Sheet Flow Length > 300.00 ft  
Check Sheet Flow input for Tc data: CS AREA 3

WARNING: The difference between calculated peak flow  
and interpolated peak flow is greater than 1.50%  
Computed peak flow = 29.42 cfs  
Interp. peak flow = 28.78 cfs (2.17% difference)

Check SCS UH data for: Unit Hyd. CS AREA 3  
Output increment for this subarea may be too large.  
Use Tools --> Options --> Project Options to change increment for entire project,  
or if you are running a watershed network analysis,  
use the GO button to change output increment.

WARNING: The difference between calculated peak flow  
and interpolated peak flow is greater than 1.50%  
Computed peak flow = 49.75 cfs  
Interp. peak flow = 48.38 cfs (2.74% difference)

Check SCS UH data for: Unit Hyd. CS AREA 3  
Output increment for this subarea may be too large.  
Use Tools --> Options --> Project Options to change increment for entire project,  
or if you are running a watershed network analysis,  
use the GO button to change output increment.

Type... WARNING MESSAGES

Page 1.02

Name... WARNING

Event: 100 yr

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW

WARNING: The difference between calculated peak flow  
and interpolated peak flow is greater than 1.50%  
Computed peak flow = 80.38 cfs  
Interp. peak flow = 77.58 cfs (3.49% difference)

Check SCS UH data for: Unit Hyd. CS AREA 3  
Output increment for this subarea may be too large.  
Use Tools --> Options --> Project Options to change increment for entire project,  
or if you are running a watershed network analysis,  
use the GO button to change output increment.

MASTER DESIGN STORM SUMMARY

Network Storm Collection: ST. CHARLES COUN

Return Event	Total Depth in	Rainfall Type	RNF ID	
2 YR	3.5000	Synthetic Curve	TypeII	24hr
10 YR	5.0000	Synthetic Curve	TypeII	24hr
100 YR	7.2000	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 cu.ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage cu.ft
AREA A	AREA	2	345676		12.2000	78.52		
AREA A	AREA	10	633840		12.2000	147.14		
AREA A	AREA	100	1098531		12.2000	254.85		
CS AREA 3	AREA	2	69475		11.9500	28.78		
CS AREA 3	AREA	10	118654		11.9500	48.38		
CS AREA 3	AREA	100	195019		11.9500	77.58		
EX. BASIN 1	IN POND	2	69475		11.9500	28.78		
EX. BASIN 1	IN POND	10	118654		11.9500	48.38		
EX. BASIN 1	IN POND	100	195019		11.9500	77.58		
EX. BASIN 1	OUT POND	2	69475		12.1000	7.93	610.37	19529
EX. BASIN 1	OUT POND	10	118654		12.1000	18.99	612.38	37025
EX. BASIN 1	OUT POND	100	195019		12.0000	59.19	613.26	46222
JUNC 10	JCT	2	69475		12.1000	7.93		
JUNC 10	JCT	10	118654		12.1000	18.99		
JUNC 10	JCT	100	195019		12.0000	59.19		

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 cu.ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage cu.ft
*OUTLET A	JCT	2	415139		12.2000	86.35		
*OUTLET A	JCT	10	752483		12.2000	162.28		
*OUTLET A	JCT	100	1293539		12.1500	295.88		



NETWORK SUMMARY -- NODES  
 (Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File, ID = ST. CHARLES COUN

Storm Tag Name = 2 YR

-----  
 Data Type, File, ID = Synthetic Storm TypeII 24hr  
 Storm Frequency = 2 yr  
 Total Rainfall Depth= 3.5000 in  
 Duration Multiplier = 1  
 Resulting Duration = 24.0000 hrs  
 Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol cu.ft	Qpeak Trun. hrs	Qpeak cfs	Max WSEL ft
AREA A	AREA	345676	12.2000	78.52	
CS AREA 3	AREA	69475	11.9500	28.78	
EX. BASIN 1 IN	POND	69475	11.9500	28.78	
EX. BASIN 1 OUT	POND	69475	12.1000	7.93	610.37
JUNC 10	JCT	69475	12.1000	7.93	
Outfall OUTLET A	JCT	415139	12.2000	86.35	

NETWORK SUMMARY -- LINKS  
 (UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)  
 (Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File, ID = ST. CHARLES COUN

Storm Tag Name = 2 YR

-----  
 Data Type, File, ID = Synthetic Storm TypeII 24hr  
 Storm Frequency = 2 yr  
 Total Rainfall Depth= 3.5000 in  
 Duration Multiplier = 1  
 Resulting Duration = 24.0000 hrs  
 Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Link ID	Type		HYG Vol cu.ft	Trun.	Peak Time hrs	Peak Q cfs	End Points
ADDLINK 10	ADD	UN	69475		11.9500	28.78	CS AREA 3
		DL	69475		11.9500	28.78	
		DN	69475		11.9500	28.78	EX. BASIN 1 IN
ADDLINK 20	ADD	UN	345676		12.2000	78.52	AREA A
		DL	345676		12.2000	78.52	
		DN	415139		12.2000	86.35	OUTLET A
REACH 10	REACH	UN	69475		12.1000	7.93	JUNC 10
		DL	69463		12.2500	7.83	
		DN	415139		12.2000	86.35	OUTLET A
ROUTE 10	PONDrt	UN	69475		11.9500	28.78	EX. BASIN 1 IN
ROUTE 10			69475		12.1000	7.93	EX. BASIN 1 OUT
		DL	69475		12.1000	7.93	
		DN	69475		12.1000	7.93	JUNC 10

NETWORK SUMMARY -- NODES  
 (Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File, ID = ST. CHARLES COUN

Storm Tag Name = 10 YR

-----  
 Data Type, File, ID = Synthetic Storm TypeII 24hr  
 Storm Frequency = 10 yr  
 Total Rainfall Depth= 5.0000 in  
 Duration Multiplier = 1  
 Resulting Duration = 24.0000 hrs  
 Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol cu.ft	Qpeak Trun. hrs	Qpeak cfs	Max WSEL ft
AREA A	AREA	633840	12.2000	147.14	
CS AREA 3	AREA	118654	11.9500	48.38	
EX. BASIN 1 IN	POND	118654	11.9500	48.38	
EX. BASIN 1 OUT	POND	118654	12.1000	18.99	612.38
JUNC 10	JCT	118654	12.1000	18.99	
Outfall OUTLET A	JCT	752483	12.2000	162.28	

NETWORK SUMMARY -- LINKS  
 (UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)  
 (Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File, ID = ST. CHARLES COUN

Storm Tag Name = 10 YR

-----  
 Data Type, File, ID = Synthetic Storm TypeII 24hr  
 Storm Frequency = 10 yr  
 Total Rainfall Depth= 5.0000 in  
 Duration Multiplier = 1  
 Resulting Duration = 24.0000 hrs  
 Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Link ID	Type		HYG Vol cu.ft	Trun.	Peak Time hrs	Peak Q cfs	End Points
ADDLINK 10	ADD	UN	118654		11.9500	48.38	CS AREA 3
		DL	118654		11.9500	48.38	
		DN	118654		11.9500	48.38	EX. BASIN 1 IN
ADDLINK 20	ADD	UN	633840		12.2000	147.14	AREA A
		DL	633840		12.2000	147.14	
		DN	752483		12.2000	162.28	OUTLET A
REACH 10	REACH	UN	118654		12.1000	18.99	JUNC 10
		DL	118643		12.1500	16.08	
		DN	752483		12.2000	162.28	OUTLET A
ROUTE 10	PONDrt	UN	118654		11.9500	48.38	EX. BASIN 1 IN
ROUTE 10			118654		12.1000	18.99	EX. BASIN 1 OUT
		DL	118654		12.1000	18.99	
		DN	118654		12.1000	18.99	JUNC 10

NETWORK SUMMARY -- NODES  
 (Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File, ID = ST. CHARLES COUN

Storm Tag Name = 100 YR

-----  
 Data Type, File, ID = Synthetic Storm TypeII 24hr  
 Storm Frequency = 100 yr  
 Total Rainfall Depth= 7.2000 in  
 Duration Multiplier = 1  
 Resulting Duration = 24.0000 hrs  
 Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol cu.ft	Qpeak Trun. hrs	Qpeak cfs	Max WSEL ft
AREA A	AREA	1098531	12.2000	254.85	
CS AREA 3	AREA	195019	11.9500	77.58	
EX. BASIN 1 IN	POND	195019	11.9500	77.58	
EX. BASIN 1 OUT	POND	195019	12.0000	59.19	613.26
JUNC 10	JCT	195019	12.0000	59.19	
Outfall OUTLET A	JCT	1293539	12.1500	295.88	



NETWORK SUMMARY -- LINKS  
 (UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)  
 (Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File, ID = ST. CHARLES COUN

Storm Tag Name = 100 YR

-----  
 Data Type, File, ID = Synthetic Storm TypeII 24hr  
 Storm Frequency = 100 yr  
 Total Rainfall Depth= 7.2000 in  
 Duration Multiplier = 1  
 Resulting Duration = 24.0000 hrs  
 Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Link ID	Type		HYG Vol cu.ft	Trun.	Peak Time hrs	Peak Q cfs	End Points
ADDLINK 10	ADD	UN	195019		11.9500	77.58	CS AREA 3
		DL	195019		11.9500	77.58	
		DN	195019		11.9500	77.58	EX. BASIN 1 IN
ADDLINK 20	ADD	UN	1098531		12.2000	254.85	AREA A
		DL	1098531		12.2000	254.85	
		DN	1293539		12.1500	295.88	OUTLET A
REACH 10	REACH	UN	195019		12.0000	59.19	JUNC 10
		DL	195008		12.0500	54.41	
		DN	1293539		12.1500	295.88	OUTLET A
ROUTE 10	PONDrt	UN	195019		11.9500	77.58	EX. BASIN 1 IN
ROUTE 10			195019		12.0000	59.19	EX. BASIN 1 OUT
		DL	195019		12.0000	59.19	
		DN	195019		12.0000	59.19	JUNC 10

NETWORK RUNOFF NODE SEQUENCE

```

=====
Runoff Data          Apply to Node          Receiving Link
=====
SCS UH  AREA A      Subarea  AREA A      Add Hyd  AREA A
SCS UH  CS AREA 3   Subarea  CS AREA 3   Add Hyd  CS AREA 3
=====

```

NETWORK ROUTING SEQUENCE

```

=====
Link Operation          UPstream Node          DNstream Node
=====
Add Hyd ADDLINK 10     Subarea CS AREA 3     Pond    EX. BASIN 1  IN

POND ROUTE TOTAL OUTFLOW...
Total Pond Outflow     Pond    EX. BASIN 1  IN  Outflow EX. BASIN 1  OUT

SET POND ROUTING LINK TO TOTAL POND OUTFLOW...
Outlet ROUTE 10        Outflow EX. BASIN 1  OUT  Jct    JUNC 10

Add Hyd ADDLINK 20     Subarea AREA A        Jct    OUTLET A
Reach REACH 10         Jct    JUNC 10          Jct    OUTLET A
  
```

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
Title... Project Date: 12/16/2005  
Project Engineer: Cole and Associates  
Project Title: Preston Woods Phase 1  
Project Comments:  
Existing Conditions

DESIGN STORMS SUMMARY

Design Storm File, ID = ST. CHARLES COUN

Storm Tag Name = 2 YR

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 2 yr  
Total Rainfall Depth= 3.5000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 10 YR

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 10 yr  
Total Rainfall Depth= 5.0000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 100 YR

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 100 yr  
Total Rainfall Depth= 7.2000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Type... Design Storms Page 4.02  
Name... ST. CHARLES COUN Event: 2 yr  
File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
Storm... TypeII 24hr Tag: 2 YR

DESIGN STORMS SUMMARY

Design Storm File, ID = ST. CHARLES COUN

Storm Tag Name = 2 YR

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 2 yr  
Total Rainfall Depth= 3.5000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 10 YR

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 10 yr  
Total Rainfall Depth= 5.0000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 100 YR

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 100 yr  
Total Rainfall Depth= 7.2000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs



File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW

TIME OF CONCENTRATION CALCULATOR

Segment #1: Tc: TR-55 Sheet

Mannings n .2400  
Hydraulic Length 208.00 ft  
2yr, 24hr P 3.5000 in  
Slope .035000 ft/ft  
Avg.Velocity .18 ft/sec

Segment #1 Time: .3266 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length 685.00 ft  
Slope .040000 ft/ft  
Unpaved  
Avg.Velocity 3.23 ft/sec

Segment #2 Time: .0590 hrs

Segment #3: Tc: TR-55 Channel

Flow Area 7.8200 sq.ft  
Wetted Perimeter 13.82 ft  
Hydraulic Radius .57 ft  
Slope .050000 ft/ft  
Mannings n .0400  
Hydraulic Length 482.00 ft  
Avg.Velocity 5.70 ft/sec

Segment #3 Time: .0235 hrs

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW

Segment #4: Tc: TR-55 Channel

Flow Area 7.8200 sq.ft  
Wetted Perimeter 13.82 ft  
Hydraulic Radius .57 ft  
Slope .036800 ft/ft  
Mannings n .0400  
Hydraulic Length 544.00 ft  
  
Avg.Velocity 4.89 ft/sec

Segment #4 Time: .0309 hrs

Segment #5: Tc: TR-55 Channel

Flow Area 23.3000 sq.ft  
Wetted Perimeter 20.20 ft  
Hydraulic Radius 1.15 ft  
Slope .016300 ft/ft  
Mannings n .0400  
Hydraulic Length 860.00 ft  
  
Avg.Velocity 5.23 ft/sec

Segment #5 Time: .0457 hrs

Segment #6: Tc: TR-55 Channel

Flow Area 35.1000 sq.ft  
Wetted Perimeter 19.20 ft  
Hydraulic Radius 1.83 ft  
Slope .010000 ft/ft  
Mannings n .0400  
Hydraulic Length 277.00 ft  
  
Avg.Velocity 5.57 ft/sec

Segment #6 Time: .0138 hrs

=====  
Total Tc: .4995 hrs  
=====

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW

-----  
Tc Equations used...  
-----

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

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

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

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

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

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

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

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

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW

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

-----

Segment #1: Tc: TR-55 Sheet

Mannings n           .0130  
Hydraulic Length    320.00 ft  
2yr, 24hr P         3.5000 in  
Slope                .015600 ft/ft

Avg.Velocity         1.44 ft/sec

Segment #1 Time:     .0618 hrs

-----

Segment #2: Tc: TR-55 Channel

Flow Area            3.1400 sq.ft  
Wetted Perimeter     6.28 ft  
Hydraulic Radius     .50 ft  
Slope                 .015000 ft/ft  
Mannings n           .0130  
Hydraulic Length    1070.00 ft

Avg.Velocity         8.84 ft/sec

Segment #2 Time:     .0336 hrs

-----

=====  
Total Tc:            .0954 hrs  
=====

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW

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

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

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



File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PFW

-----  
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 Channel Flow =====

$$R = Aq / Wp$$
$$V = (1.49 * (R**(2/3)) * (Sf**-.0.5)) / n$$
$$Tc = (Lf / V) / (3600sec/hr)$$

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

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW

RUNOFF CURVE NUMBER DATA

.....

-----

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Pasture, grassland, or range - fair	79	29.190			79.00
Woods - grass combination - fair	76	37.130			76.00
Impervious Areas - Paved parking lo	98	.250			98.00

COMPOSITE AREA & WEIGHTED CN --->                    66.570                    77.40 (77)

.....

Type... Runoff CN-Area  
Name... CS AREA 3

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW

RUNOFF CURVE NUMBER DATA

.....

-----

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Residential Districts - 1/4 acre	83	10.300			83.00

COMPOSITE AREA & WEIGHTED CN --->                    10.300                    83.00 (83)

.....

Name....

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW

SCS UNIT HYDROGRAPH METHOD  
(Computational Notes)

DEFINITION OF TERMS: -----

$A_t$  = Total area (acres):  $A_t = A_i + A_p$   
 $A_i$  = Impervious area (acres)  
 $A_p$  = Pervious area (acres)  
 $CN_i$  = Runoff curve number for impervious area  
 $CN_p$  = Runoff curve number for pervious area  
 $f_{Loss}$  = f loss constant infiltration (depth/time)  
 $gK_s$  = Saturated Hydraulic Conductivity (depth/time)  
 $M_d$  = Volumetric Moisture Deficit  
 $\Psi$  = Capillary Suction (length)  
 $hK$  = Horton Infiltration Decay Rate (time<sup>-1</sup>)  
 $f_o$  = Initial Infiltration Rate (depth/time)  
 $f_c$  = Ultimate (capacity) Infiltration Rate (depth/time)  
 $I_a$  = Initial Abstraction (length)  
 $dt$  = Computational increment (duration of unit excess rainfall)  
 Default  $dt$  is smallest value of  $0.1333T_c$ ,  $r_{tm}$ , and  $t_h$   
 (Smallest  $dt$  is then adjusted to match up with  $T_p$ )  
 $UDdt$  = User specified override computational main time increment  
 (only used if  $UDdt$  is =>  $.1333T_c$ )  
 $D(t)$  = Point on distribution curve (fraction of P) for time step t  
  
 $K$  =  $2 / (1 + (T_r/T_p))$ : default  $K = 0.75$ : (for  $T_r/T_p = 1.67$ )  
 $K_s$  = Hydrograph shape factor  
 = Unit Conversions \* K:  
 =  $((1hr/3600sec) * (1ft/12in) * ((5280ft)**2/sq.mi)) * K$   
 Default  $K_s = 645.333 * 0.75 = 484$   
  
 $Lag$  = Lag time from center of excess runoff ( $dt$ ) to  $T_p$ :  $Lag = 0.6T_c$   
 $P$  = Total precipitation depth, inches  
 $P_a(t)$  = Accumulated rainfall at time step t  
 $P_i(t)$  = Incremental rainfall at time step t  
 $q_p$  = Peak discharge (cfs) for lin. runoff, for 1hr, for 1 sq.mi.  
 =  $(K_s * A * Q) / T_p$  (where  $Q = \text{lin. runoff, } A = \text{sq.mi.}$ )  
 $Q_u(t)$  = Unit hydrograph ordinate (cfs) at time step t  
 $Q(t)$  = Final hydrograph ordinate (cfs) at time step t  
 $R_{ai}(t)$  = Accumulated runoff (inches) at time step t for impervious area  
 $R_{ap}(t)$  = Accumulated runoff (inches) at time step t for pervious area  
 $R_{ii}(t)$  = Incremental runoff (inches) at time step t for impervious area  
 $R_{ip}(t)$  = Incremental runoff (inches) at time step t for pervious area  
 $R(t)$  = Incremental weighted total runoff (inches)  
 $R_{tm}$  = Time increment for rainfall table  
 $S_i$  = S for impervious area:  $S_i = (1000/CN_i) - 10$   
 $S_p$  = S for pervious area:  $S_p = (1000/CN_p) - 10$   
 $t$  = Time step (row) number  
 $T_c$  = Time of concentration  
 $T_b$  = Time (hrs) of entire unit hydrograph:  $T_b = T_p + T_r$   
 $T_p$  = Time (hrs) to peak of a unit hydrograph:  $T_p = (dt/2) + Lag$   
 $T_r$  = Time (hrs) of receding limb of unit hydrograph:  $T_r = \text{ratio of } T_p$

Name....

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW

SCS UNIT HYDROGRAPH METHOD  
(Computational Notes)

PRECIPITATION: -----

Column (1): Time for time step t  
 Column (2):  $D(t)$  = Point on distribution curve for time step t  
 Column (3):  $P_i(t) = P_a(t) - P_a(t-1)$ : Col.(4) - Preceding Col.(4)  
 Column (4):  $P_a(t) = D(t) \times P$ : Col.(2)  $\times$  P

PERVIOUS AREA RUNOFF (using SCS Runoff CN Method) -----

Column (5):  $R_{ap}(t)$  = Accumulated pervious runoff for time step t  
 If  $(P_a(t) \leq 0.2Sp)$  then use:  $R_{ap}(t) = 0.0$   
 If  $(P_a(t) > 0.2Sp)$  then use:

$$R_{ap}(t) = (Col.(4) - 0.2Sp) ** 2 / (Col.(4) + 0.8Sp)$$

Column (6):  $R_{ip}(t)$  = Incremental pervious runoff for time step t  
 $R_{ip}(t) = R_{ap}(t) - R_{ap}(t-1)$   
 $R_{ip}(t) = Col.(5)$  for current row -  $Col.(5)$  for preceding row.

IMPERVIOUS AREA RUNOFF -----

Column (7 & 8)... Did not specify to use impervious areas.

INCREMENTAL WEIGHTED RUNOFF: -----

Column (9):  $R(t) = (A_p/A_t) \times R_{ip}(t) + (A_i/A_t) \times R_{ii}(t)$   
 $R(t) = (A_p/A_t) \times Col.(6) + (A_i/A_t) \times Col.(8)$

SCS UNIT HYDROGRAPH METHOD: -----

Column (10):  $Q(t)$  is computed with the SCS unit hydrograph method  
 using  $R(t)$  and  $Q_u(t)$ .

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm  
 Duration = 24.0000 hrs Rain Depth = 3.5000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
 HYG File - ID = - AREA A 2 YR  
 Tc = .4995 hrs  
 Drainage Area = 66.570 acres Runoff CN= 77

=====  
 Computational Time Increment = .06660 hrs  
 Computed Peak Time = 12.1876 hrs  
 Computed Peak Flow = 79.08 cfs

Time Increment for HYG File = .0500 hrs  
 Peak Time, Interpolated Output = 12.2000 hrs  
 Peak Flow, Interpolated Output = 78.52 cfs  
 =====

DRAINAGE AREA

-----  
 ID:AREA A  
 CN = 77  
 Area = 66.570 acres  
 S = 2.9870 in  
 0.2S = .5974 in

Cumulative Runoff

-----  
 1.4305 in  
 345678 cu.ft

HYG Volume... 345676 cu.ft (area under HYG curve)

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

Time Concentration, Tc = .49949 hrs (ID: AREA A)  
 Computational Incr, Tm = .06660 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 = 151.01 cfs  
 Unit peak time Tp = .33299 hrs  
 Unit receding limb, Tr = 1.33198 hrs  
 Total unit time, Tb = 1.66497 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm  
 Duration = 24.0000 hrs Rain Depth = 3.5000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
 HYG File - ID = - AREA A 2 YR  
 Tc = .4995 hrs  
 Drainage Area = 66.570 acres Runoff CN= 77  
 Calc.Increment= .06660 hrs Out.Incr.= .0500 hrs  
 HYG Volume = 345676 cu.ft

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs					
9.8000	.00	.00	.01	.01	.02
10.0500	.04	.06	.08	.11	.14
10.3000	.18	.22	.27	.32	.37
10.5500	.43	.49	.56	.63	.71
10.8000	.79	.88	.98	1.09	1.20
11.0500	1.32	1.45	1.60	1.75	1.93
11.3000	2.13	2.35	2.59	2.86	3.18
11.5500	3.58	4.13	4.97	6.49	8.85
11.8000	12.33	17.55	25.63	35.90	47.77
12.0500	60.30	70.15	76.31	78.52	76.30
12.3000	70.44	63.31	55.60	48.12	42.04
12.5500	36.89	32.53	28.87	25.83	23.19
12.8000	20.92	19.01	17.48	16.17	15.04
13.0500	14.08	13.28	12.56	11.93	11.37
13.3000	10.88	10.43	10.02	9.64	9.31
13.5500	9.01	8.75	8.50	8.28	8.07
13.8000	7.87	7.67	7.49	7.32	7.15
14.0500	6.98	6.82	6.67	6.53	6.39
14.3000	6.27	6.16	6.06	5.97	5.89
14.5500	5.82	5.75	5.69	5.63	5.57
14.8000	5.51	5.45	5.40	5.34	5.29
15.0500	5.24	5.18	5.13	5.08	5.03
15.3000	4.97	4.92	4.87	4.82	4.76
15.5500	4.71	4.66	4.60	4.55	4.50
15.8000	4.44	4.39	4.33	4.28	4.23
16.0500	4.17	4.12	4.07	4.02	3.97
16.3000	3.93	3.89	3.85	3.82	3.79
16.5500	3.76	3.74	3.72	3.69	3.67
16.8000	3.65	3.63	3.61	3.59	3.57
17.0500	3.55	3.53	3.51	3.49	3.47

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

---

Time hrs					
17.3000	3.46	3.44	3.42	3.40	3.38
17.5500	3.36	3.34	3.32	3.30	3.28
17.8000	3.26	3.24	3.23	3.21	3.19
18.0500	3.17	3.15	3.13	3.11	3.09
18.3000	3.07	3.05	3.03	3.01	2.99
18.5500	2.97	2.95	2.93	2.91	2.89
18.8000	2.87	2.85	2.83	2.81	2.79
19.0500	2.77	2.75	2.73	2.71	2.69
19.3000	2.67	2.65	2.63	2.61	2.59
19.5500	2.57	2.55	2.53	2.51	2.49
19.8000	2.47	2.45	2.43	2.41	2.39
20.0500	2.36	2.34	2.33	2.31	2.29
20.3000	2.28	2.26	2.25	2.24	2.23
20.5500	2.22	2.22	2.21	2.21	2.20
20.8000	2.20	2.19	2.19	2.18	2.18
21.0500	2.18	2.17	2.17	2.16	2.16
21.3000	2.16	2.15	2.15	2.14	2.14
21.5500	2.14	2.13	2.13	2.13	2.12
21.8000	2.12	2.11	2.11	2.11	2.10
22.0500	2.10	2.10	2.09	2.09	2.08
22.3000	2.08	2.08	2.07	2.07	2.07
22.5500	2.06	2.06	2.05	2.05	2.05
22.8000	2.04	2.04	2.04	2.03	2.03
23.0500	2.02	2.02	2.02	2.01	2.01
23.3000	2.00	2.00	2.00	1.99	1.99
23.5500	1.99	1.98	1.98	1.97	1.97
23.8000	1.97	1.96	1.96	1.95	1.94
24.0500	1.92	1.87	1.76	1.61	1.42
24.3000	1.21	1.00	.80	.63	.49
24.5500	.38	.30	.23	.18	.14
24.8000	.11	.09	.07	.05	.04
25.0500	.03	.02	.02	.01	.01
25.3000	.01	.01	.00	.00	.00
25.5500	.00				



SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm  
Duration = 24.0000 hrs Rain Depth = 5.0000 in  
Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
Rain File -ID = - TypeII 24hr  
Unit Hyd Type = Default Curvilinear  
HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
HYG File - ID = - AREA A 10 YR  
Tc = .4995 hrs  
Drainage Area = 66.570 acres Runoff CN= 77

=====  
Computational Time Increment = .06660 hrs  
Computed Peak Time = 12.1876 hrs  
Computed Peak Flow = 148.53 cfs  
  
Time Increment for HYG File = .0500 hrs  
Peak Time, Interpolated Output = 12.2000 hrs  
Peak Flow, Interpolated Output = 147.14 cfs  
=====

DRAINAGE AREA

-----  
ID:AREA A  
CN = 77  
Area = 66.570 acres  
S = 2.9870 in  
0.2S = .5974 in

Cumulative Runoff

-----  
2.6230 in  
633843 cu.ft

HYG Volume... 633840 cu.ft (area under HYG curve)

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

Time Concentration, Tc = .49949 hrs (ID: AREA A)  
Computational Incr, Tm = .06660 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 = 151.01 cfs  
Unit peak time Tp = .33299 hrs  
Unit receding limb, Tr = 1.33198 hrs  
Total unit time, Tb = 1.66497 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm  
 Duration = 24.0000 hrs Rain Depth = 5.0000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
 HYG File - ID = - AREA A 10 YR  
 Tc = .4995 hrs  
 Drainage Area = 66.570 acres Runoff CN= 77  
 Calc.Increment= .06660 hrs Out.Incr.= .0500 hrs  
 HYG Volume = 633840 cu.ft

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

Time hrs					
8.0500	.00	.00	.00	.01	.02
8.3000	.03	.04	.06	.08	.11
8.5500	.14	.17	.20	.24	.27
8.8000	.31	.36	.40	.45	.49
9.0500	.54	.60	.65	.70	.76
9.3000	.81	.86	.92	.97	1.02
9.5500	1.07	1.12	1.17	1.23	1.28
9.8000	1.35	1.41	1.48	1.56	1.64
10.0500	1.72	1.82	1.91	2.01	2.12
10.3000	2.24	2.36	2.48	2.62	2.76
10.5500	2.91	3.07	3.24	3.42	3.61
10.8000	3.81	4.03	4.26	4.51	4.77
11.0500	5.05	5.35	5.68	6.03	6.43
11.3000	6.88	7.37	7.92	8.51	9.21
11.5500	10.10	11.32	13.17	16.51	21.56
11.8000	28.82	39.40	55.03	74.31	96.05
12.0500	118.34	135.02	144.73	147.14	141.58
12.3000	129.67	115.71	100.94	86.86	75.50
12.5500	65.90	57.81	51.03	45.44	40.61
12.8000	36.47	33.00	30.23	27.86	25.83
13.0500	24.11	22.67	21.40	20.27	19.27
13.3000	18.40	17.61	16.89	16.22	15.65
13.5500	15.13	14.67	14.25	13.87	13.51
13.8000	13.16	12.83	12.52	12.21	11.92
14.0500	11.64	11.38	11.12	10.87	10.64
14.3000	10.44	10.25	10.08	9.93	9.79
14.5500	9.66	9.55	9.43	9.33	9.23
14.8000	9.13	9.03	8.94	8.85	8.75
15.0500	8.66	8.57	8.48	8.39	8.30
15.3000	8.21	8.12	8.03	7.94	7.85

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

---

Time hrs					
15.5500	7.77	7.68	7.59	7.50	7.40
15.8000	7.31	7.22	7.13	7.04	6.95
16.0500	6.86	6.77	6.68	6.60	6.52
16.3000	6.45	6.38	6.32	6.27	6.22
16.5500	6.18	6.13	6.09	6.06	6.02
16.8000	5.98	5.95	5.91	5.88	5.85
17.0500	5.81	5.78	5.75	5.72	5.68
17.3000	5.65	5.62	5.59	5.56	5.52
17.5500	5.49	5.46	5.43	5.39	5.36
17.8000	5.33	5.30	5.26	5.23	5.20
18.0500	5.17	5.13	5.10	5.07	5.04
18.3000	5.00	4.97	4.94	4.90	4.87
18.5500	4.84	4.81	4.77	4.74	4.71
18.8000	4.67	4.64	4.61	4.57	4.54
19.0500	4.51	4.47	4.44	4.41	4.37
19.3000	4.34	4.31	4.27	4.24	4.21
19.5500	4.17	4.14	4.11	4.07	4.04
19.8000	4.00	3.97	3.94	3.90	3.87
20.0500	3.84	3.80	3.77	3.74	3.71
20.3000	3.69	3.67	3.65	3.63	3.62
20.5500	3.60	3.59	3.58	3.57	3.57
20.8000	3.56	3.55	3.54	3.53	3.53
21.0500	3.52	3.51	3.51	3.50	3.49
21.3000	3.49	3.48	3.48	3.47	3.46
21.5500	3.46	3.45	3.44	3.44	3.43
21.8000	3.42	3.42	3.41	3.41	3.40
22.0500	3.39	3.39	3.38	3.37	3.37
22.3000	3.36	3.35	3.35	3.34	3.34
22.5500	3.33	3.32	3.32	3.31	3.30
22.8000	3.30	3.29	3.28	3.28	3.27
23.0500	3.26	3.26	3.25	3.24	3.24
23.3000	3.23	3.23	3.22	3.21	3.21
23.5500	3.20	3.19	3.19	3.18	3.17
23.8000	3.17	3.16	3.15	3.15	3.13
24.0500	3.09	3.00	2.83	2.59	2.29
24.3000	1.94	1.61	1.29	1.01	.79
24.5500	.62	.48	.37	.29	.23
24.8000	.18	.14	.11	.08	.06
25.0500	.05	.04	.03	.02	.02
25.3000	.01	.01	.01	.00	.00
25.5500	.00				

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm  
 Duration = 24.0000 hrs Rain Depth = 7.2000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
 HYG File - ID = - AREA A 100 YR  
 Tc = .4995 hrs  
 Drainage Area = 66.570 acres Runoff CN= 77

```

=====
Computational Time Increment = .06660 hrs
Computed Peak Time          = 12.1876 hrs
Computed Peak Flow          = 257.67 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.2000 hrs
Peak Flow, Interpolated Output = 254.85 cfs
=====
  
```

DRAINAGE AREA

```

-----
ID:AREA A
CN = 77
Area = 66.570 acres
S = 2.9870 in
0.2S = .5974 in
  
```

Cumulative Runoff

```

-----
4.5460 in
1098535 cu.ft
  
```

HYG Volume... 1098531 cu.ft (area under HYG curve)

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

Time Concentration, Tc = .49949 hrs (ID: AREA A)  
 Computational Incr, Tm = .06660 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 = 151.01 cfs  
 Unit peak time Tp = .33299 hrs  
 Unit receding limb, Tr = 1.33198 hrs  
 Total unit time, Tb = 1.66497 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm  
 Duration = 24.0000 hrs Rain Depth = 7.2000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
 HYG File - ID = - AREA A 100 YR  
 Tc = .4995 hrs  
 Drainage Area = 66.570 acres Runoff CN= 77  
 Calc.Increment= .06660 hrs Out.Incr.= .0500 hrs  
 HYG Volume = 1098531 cu.ft

HYDROGRAPH ORDINATES (cfs)  
 Output Time increment = .0500 hrs

Time | Time on left represents time for first value in each row.

---

Time hrs	0.00	0.05	0.10	0.15	0.20
6.2500	.00	.00	.01	.01	.03
6.5000	.04	.06	.09	.12	.15
6.7500	.18	.21	.25	.29	.33
7.0000	.37	.41	.45	.49	.54
7.2500	.58	.62	.67	.71	.76
7.5000	.80	.85	.90	.94	.99
7.7500	1.04	1.08	1.13	1.18	1.23
8.0000	1.28	1.33	1.38	1.43	1.48
8.2500	1.54	1.60	1.67	1.74	1.81
8.5000	1.90	1.98	2.07	2.16	2.25
8.7500	2.35	2.45	2.56	2.66	2.77
9.0000	2.89	3.00	3.12	3.24	3.35
9.2500	3.47	3.57	3.68	3.78	3.87
9.5000	3.96	4.05	4.14	4.23	4.32
9.7500	4.43	4.54	4.67	4.81	4.97
10.0000	5.13	5.31	5.50	5.70	5.91
10.2500	6.13	6.37	6.62	6.89	7.17
10.5000	7.46	7.77	8.09	8.43	8.79
10.7500	9.17	9.58	10.02	10.48	10.98
11.0000	11.49	12.04	12.63	13.27	13.95
11.2500	14.72	15.59	16.55	17.59	18.73
11.5000	20.07	21.77	24.10	27.67	34.03
11.7500	43.54	57.01	76.25	103.88	137.25
12.0000	174.27	211.38	238.12	252.73	254.85
12.2500	243.56	221.86	197.01	171.08	146.63
12.5000	126.99	110.42	96.50	84.87	75.33
12.7500	67.09	60.06	54.18	49.50	45.49
13.0000	42.07	39.17	36.77	34.63	32.74
13.2500	31.08	29.64	28.33	27.12	26.03
13.5000	25.08	24.24	23.48	22.80	22.18

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

---

Time hrs	21.59	21.02	20.48	19.97	19.49
13.7500	21.59	21.02	20.48	19.97	19.49
14.0000	19.02	18.56	18.13	17.71	17.32
14.2500	16.94	16.61	16.31	16.03	15.78
14.5000	15.56	15.36	15.16	14.98	14.81
14.7500	14.65	14.49	14.33	14.18	14.03
15.0000	13.88	13.73	13.58	13.44	13.29
15.2500	13.15	13.00	12.86	12.71	12.57
15.5000	12.42	12.28	12.13	11.99	11.84
15.7500	11.70	11.55	11.41	11.26	11.12
16.0000	10.97	10.83	10.68	10.55	10.41
16.2500	10.28	10.17	10.07	9.97	9.88
16.5000	9.80	9.73	9.66	9.60	9.54
16.7500	9.48	9.42	9.37	9.31	9.26
17.0000	9.20	9.15	9.10	9.04	8.99
17.2500	8.94	8.89	8.84	8.78	8.73
17.5000	8.68	8.63	8.58	8.52	8.47
17.7500	8.42	8.37	8.32	8.26	8.21
18.0000	8.16	8.11	8.06	8.00	7.95
18.2500	7.90	7.85	7.79	7.74	7.69
18.5000	7.64	7.58	7.53	7.48	7.43
18.7500	7.37	7.32	7.27	7.22	7.16
19.0000	7.11	7.06	7.00	6.95	6.90
19.2500	6.85	6.79	6.74	6.69	6.63
19.5000	6.58	6.53	6.48	6.42	6.37
19.7500	6.32	6.26	6.21	6.16	6.10
20.0000	6.05	6.00	5.95	5.90	5.85
20.2500	5.80	5.76	5.73	5.70	5.67
20.5000	5.65	5.63	5.61	5.60	5.58
20.7500	5.57	5.55	5.54	5.53	5.52
21.0000	5.51	5.50	5.49	5.47	5.46
21.2500	5.45	5.44	5.43	5.42	5.41
21.5000	5.40	5.39	5.38	5.37	5.36
21.7500	5.35	5.34	5.33	5.32	5.31
22.0000	5.30	5.29	5.28	5.27	5.26
22.2500	5.25	5.24	5.23	5.22	5.21
22.5000	5.20	5.19	5.17	5.16	5.15
22.7500	5.14	5.13	5.12	5.11	5.10
23.0000	5.09	5.08	5.07	5.06	5.05
23.2500	5.04	5.03	5.02	5.01	5.00
23.5000	4.99	4.98	4.97	4.96	4.95
23.7500	4.94	4.93	4.91	4.90	4.89
24.0000	4.87	4.81	4.67	4.40	4.03
24.2500	3.56	3.02	2.50	2.01	1.57
24.5000	1.22	.96	.75	.58	.45
24.7500	.36	.28	.21	.17	.13

Type... Unit Hyd. (HYG output) Page 7.12  
 Name... AREA A Tag: 100 YR Event: 100 yr  
 File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW  
 Storm... TypeII 24hr Tag: 100 YR

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

---

Time hrs					
25.0000	.10	.08	.06	.05	.03
25.2500	.03	.02	.01	.01	.01
25.5000	.00	.00	.00		

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm  
Duration = 24.0000 hrs Rain Depth = 3.5000 in  
Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
Rain File -ID = - TypeII 24hr  
Unit Hyd Type = Default Curvilinear  
HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
HYG File - ID = - CS AREA 3 2 YR  
Tc = .0954 hrs  
Drainage Area = 10.300 acres Runoff CN= 83

=====  
Computational Time Increment = .01272 hrs  
Computed Peak Time = 11.9345 hrs  
Computed Peak Flow = 29.42 cfs

Time Increment for HYG File = .0500 hrs  
Peak Time, Interpolated Output = 11.9500 hrs  
Peak Flow, Interpolated Output = 28.78 cfs  
WARNING: The difference between calculated peak flow  
and interpolated peak flow is greater than 1.50%  
=====

DRAINAGE AREA

-----  
ID:CS AREA 3  
CN = 83  
Area = 10.300 acres  
S = 2.0482 in  
0.2S = .4096 in

Cumulative Runoff

-----  
1.8586 in  
69490 cu.ft

HYG Volume... 69475 cu.ft (area under HYG curve)

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

Time Concentration, Tc = .09543 hrs (ID: CS AREA 3)  
Computational Incr, Tm = .01272 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 = 122.30 cfs  
Unit peak time Tp = .06362 hrs  
Unit receding limb, Tr = .25447 hrs  
Total unit time, Tb = .31808 hrs



SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm  
 Duration = 24.0000 hrs Rain Depth = 3.5000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
 HYG File - ID = - CS AREA 3 2 YR  
 Tc = .0954 hrs  
 Drainage Area = 10.300 acres Runoff CN= 83  
 Calc.Increment= .01272 hrs Out.Incr.= .0500 hrs  
 HYG Volume = 69475 cu.ft

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs					
7.9000	.00	.00	.00	.01	.01
8.1500	.01	.02	.02	.02	.03
8.4000	.03	.04	.04	.05	.05
8.6500	.06	.06	.07	.07	.08
8.9000	.09	.09	.10	.11	.11
9.1500	.12	.12	.13	.13	.14
9.4000	.15	.15	.16	.16	.17
9.6500	.18	.19	.20	.21	.22
9.9000	.23	.24	.25	.27	.28
10.1500	.30	.31	.33	.35	.37
10.4000	.39	.41	.43	.45	.47
10.6500	.50	.53	.56	.60	.63
10.9000	.67	.71	.75	.79	.85
11.1500	.92	1.00	1.08	1.17	1.26
11.4000	1.35	1.45	1.56	2.14	3.12
11.6500	4.66	6.93	9.63	13.24	19.05
11.9000	27.42	28.78	25.85	19.43	9.57
12.1500	6.15	4.96	4.45	4.07	3.80
12.4000	3.48	3.20	2.87	2.65	2.44
12.6500	2.33	2.25	2.18	2.11	2.04
12.9000	1.97	1.90	1.83	1.77	1.71
13.1500	1.67	1.63	1.59	1.55	1.52
13.4000	1.48	1.44	1.40	1.37	1.33
13.6500	1.31	1.28	1.25	1.22	1.19
13.9000	1.16	1.14	1.11	1.09	1.07
14.1500	1.06	1.04	1.03	1.03	1.02
14.4000	1.01	1.00	.99	.98	.97
14.6500	.96	.95	.94	.93	.92
14.9000	.91	.90	.89	.88	.87
15.1500	.86	.85	.84	.83	.82

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

---

Time hrs					
15.4000	.81	.80	.79	.78	.77
15.6500	.76	.75	.74	.73	.72
15.9000	.71	.70	.69	.69	.68
16.1500	.67	.67	.67	.66	.66
16.4000	.66	.65	.65	.65	.64
16.6500	.64	.64	.63	.63	.62
16.9000	.62	.62	.61	.61	.61
17.1500	.60	.60	.60	.59	.59
17.4000	.59	.58	.58	.58	.57
17.6500	.57	.57	.56	.56	.55
17.9000	.55	.55	.54	.54	.54
18.1500	.53	.53	.53	.52	.52
18.4000	.51	.51	.51	.50	.50
18.6500	.50	.49	.49	.49	.48
18.9000	.48	.48	.47	.47	.46
19.1500	.46	.46	.45	.45	.45
19.4000	.44	.44	.44	.43	.43
19.6500	.42	.42	.42	.41	.41
19.9000	.41	.40	.40	.40	.39
20.1500	.39	.39	.39	.39	.39
20.4000	.39	.39	.39	.39	.38
20.6500	.38	.38	.38	.38	.38
20.9000	.38	.38	.38	.38	.38
21.1500	.38	.38	.38	.38	.38
21.4000	.37	.37	.37	.37	.37
21.6500	.37	.37	.37	.37	.37
21.9000	.37	.37	.37	.36	.36
22.1500	.36	.36	.36	.36	.36
22.4000	.36	.36	.36	.36	.36
22.6500	.36	.36	.36	.35	.35
22.9000	.35	.35	.35	.35	.35
23.1500	.35	.35	.35	.35	.35
23.4000	.35	.35	.34	.34	.34
23.6500	.34	.34	.34	.34	.34
23.9000	.34	.34	.34	.24	.08
24.1500	.02	.01	.00	.00	

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm  
Duration = 24.0000 hrs Rain Depth = 5.0000 in  
Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
Rain File -ID = - TypeII 24hr  
Unit Hyd Type = Default Curvilinear  
HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
HYG File - ID = - CS AREA 3 10 YR  
Tc = .0954 hrs  
Drainage Area = 10.300 acres Runoff CN= 83

=====  
Computational Time Increment = .01272 hrs  
Computed Peak Time = 11.9345 hrs  
Computed Peak Flow = 49.75 cfs

Time Increment for HYG File = .0500 hrs  
Peak Time, Interpolated Output = 11.9500 hrs  
Peak Flow, Interpolated Output = 48.38 cfs  
WARNING: The difference between calculated peak flow  
and interpolated peak flow is greater than 1.50%  
=====

DRAINAGE AREA

-----  
ID:CS AREA 3  
CN = 83  
Area = 10.300 acres  
S = 2.0482 in  
0.2S = .4096 in

Cumulative Runoff

-----  
3.1741 in  
118676 cu.ft

HYG Volume... 118654 cu.ft (area under HYG curve)

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

Time Concentration, Tc = .09543 hrs (ID: CS AREA 3)  
Computational Incr, Tm = .01272 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 = 122.30 cfs  
Unit peak time, Tp = .06362 hrs  
Unit receding limb, Tr = .25447 hrs  
Total unit time, Tb = .31808 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm  
 Duration = 24.0000 hrs Rain Depth = 5.0000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
 HYG File - ID = - CS AREA 3 10 YR  
 Tc = .0954 hrs  
 Drainage Area = 10.300 acres Runoff CN= 83  
 Calc.Increment= .01272 hrs Out.Incr.= .0500 hrs  
 HYG Volume = 118654 cu.ft

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs  
 Time on left represents time for first value in each row.

Time hrs					
6.1500	.00	.00	.01	.01	.01
6.4000	.02	.02	.03	.03	.04
6.6500	.04	.05	.05	.06	.06
6.9000	.06	.07	.07	.08	.08
7.1500	.09	.09	.10	.10	.11
7.4000	.11	.12	.12	.13	.13
7.6500	.14	.15	.15	.16	.16
7.9000	.17	.17	.18	.18	.19
8.1500	.20	.21	.22	.23	.24
8.4000	.25	.26	.27	.28	.30
8.6500	.31	.32	.33	.35	.36
8.9000	.37	.39	.40	.41	.43
9.1500	.44	.44	.45	.46	.47
9.4000	.48	.48	.49	.50	.52
9.6500	.53	.56	.58	.60	.62
9.9000	.65	.67	.69	.72	.75
10.1500	.78	.82	.85	.89	.92
10.4000	.96	1.00	1.04	1.08	1.13
10.6500	1.19	1.25	1.31	1.38	1.44
10.9000	1.51	1.58	1.65	1.74	1.85
11.1500	1.98	2.13	2.28	2.45	2.61
11.4000	2.79	2.96	3.16	4.29	6.17
11.6500	9.06	13.20	17.89	24.02	33.60
11.9000	47.10	48.38	42.73	31.77	15.56
12.1500	9.94	7.99	7.16	6.53	6.08
12.4000	5.56	5.11	4.58	4.23	3.89
12.6500	3.71	3.57	3.47	3.35	3.24
12.9000	3.12	3.02	2.90	2.81	2.71
13.1500	2.64	2.58	2.52	2.45	2.40
13.4000	2.33	2.27	2.21	2.16	2.10

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

Time hrs					
13.6500	2.06	2.01	1.97	1.92	1.88
13.9000	1.83	1.79	1.74	1.71	1.68
14.1500	1.66	1.64	1.62	1.61	1.59
14.4000	1.58	1.56	1.55	1.53	1.52
14.6500	1.50	1.49	1.47	1.45	1.44
14.9000	1.43	1.41	1.39	1.38	1.36
15.1500	1.35	1.33	1.32	1.30	1.29
15.4000	1.27	1.25	1.24	1.22	1.20
15.6500	1.19	1.18	1.16	1.14	1.13
15.9000	1.11	1.10	1.08	1.07	1.06
16.1500	1.05	1.04	1.04	1.03	1.03
16.4000	1.02	1.02	1.01	1.01	1.00
16.6500	.99	.99	.98	.98	.97
16.9000	.97	.96	.95	.95	.94
17.1500	.94	.93	.93	.92	.92
17.4000	.91	.90	.90	.89	.89
17.6500	.88	.88	.87	.86	.86
17.9000	.85	.85	.84	.84	.83
18.1500	.83	.82	.81	.81	.80
18.4000	.80	.79	.79	.78	.77
18.6500	.77	.76	.76	.75	.75
18.9000	.74	.74	.73	.72	.72
19.1500	.71	.71	.70	.70	.69
19.4000	.68	.68	.67	.67	.66
19.6500	.65	.65	.64	.64	.63
19.9000	.63	.62	.61	.61	.61
20.1500	.60	.60	.60	.60	.60
20.4000	.60	.60	.60	.60	.59
20.6500	.59	.59	.59	.59	.59
20.9000	.59	.59	.58	.58	.58
21.1500	.58	.58	.58	.58	.58
21.4000	.58	.58	.58	.57	.57
21.6500	.57	.57	.57	.57	.57
21.9000	.57	.56	.56	.56	.56
22.1500	.56	.56	.56	.56	.56
22.4000	.55	.55	.55	.55	.55
22.6500	.55	.55	.55	.54	.54
22.9000	.54	.54	.54	.54	.54
23.1500	.54	.54	.54	.53	.53
23.4000	.53	.53	.53	.53	.53
23.6500	.53	.53	.52	.52	.52
23.9000	.52	.52	.52	.37	.12
24.1500	.03	.01	.00	.00	

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm  
Duration = 24.0000 hrs Rain Depth = 7.2000 in  
Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
Rain File -ID = - TypeII 24hr  
Unit Hyd Type = Default Curvilinear  
HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
HYG File - ID = - CS AREA 3 100 YR  
Tc = .0954 hrs  
Drainage Area = 10.300 acres Runoff CN= 83

=====  
Computational Time Increment = .01272 hrs  
Computed Peak Time = 11.9218 hrs  
Computed Peak Flow = 80.38 cfs

Time Increment for HYG File = .0500 hrs  
Peak Time, Interpolated Output = 11.9500 hrs  
Peak Flow, Interpolated Output = 77.58 cfs  
WARNING: The difference between calculated peak flow  
and interpolated peak flow is greater than 1.50%  
=====

DRAINAGE AREA

-----  
ID:CS AREA 3  
CN = 83  
Area = 10.300 acres  
S = 2.0482 in  
0.2S = .4096 in

Cumulative Runoff

-----  
5.2168 in  
195051 cu.ft

HYG Volume... 195019 cu.ft (area under HYG curve)

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

Time Concentration, Tc = .09543 hrs (ID: CS AREA 3)  
Computational Incr, Tm = .01272 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 = 122.30 cfs  
Unit peak time Tp = .06362 hrs  
Unit receding limb, Tr = .25447 hrs  
Total unit time, Tb = .31808 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm  
 Duration = 24.0000 hrs Rain Depth = 7.2000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
 HYG File - ID = - CS AREA 3 100 YR  
 Tc = .0954 hrs  
 Drainage Area = 10.300 acres Runoff CN= 83  
 Calc.Increment= .01272 hrs Out.Incr.= .0500 hrs  
 HYG Volume = 195019 cu.ft

HYDROGRAPH ORDINATES (cfs)  
 Output Time increment = .0500 hrs

Time |  
 hrs | Time on left represents time for first value in each row.

---

4.6500	.00	.00	.01	.01	.02
4.9000	.03	.03	.04	.05	.05
5.1500	.06	.07	.07	.08	.09
5.4000	.09	.10	.11	.12	.12
5.6500	.13	.14	.14	.15	.16
5.9000	.17	.18	.18	.19	.20
6.1500	.21	.21	.22	.23	.24
6.4000	.25	.25	.26	.27	.28
6.6500	.29	.30	.30	.31	.32
6.9000	.33	.34	.35	.36	.37
7.1500	.37	.38	.39	.40	.41
7.4000	.42	.43	.44	.45	.45
7.6500	.46	.47	.48	.49	.50
7.9000	.51	.52	.53	.54	.56
8.1500	.57	.59	.61	.63	.66
8.4000	.68	.70	.72	.74	.77
8.6500	.79	.82	.84	.87	.89
8.9000	.92	.94	.97	.99	1.01
9.1500	1.03	1.04	1.05	1.06	1.08
9.4000	1.09	1.10	1.11	1.13	1.15
9.6500	1.18	1.22	1.26	1.30	1.34
9.9000	1.39	1.43	1.48	1.52	1.58
10.1500	1.63	1.70	1.76	1.83	1.89
10.4000	1.96	2.02	2.10	2.17	2.26
10.6500	2.36	2.47	2.58	2.69	2.80
10.9000	2.93	3.04	3.17	3.32	3.52
11.1500	3.74	4.01	4.27	4.56	4.83
11.4000	5.14	5.41	5.74	7.75	11.05
11.6500	16.04	23.07	30.78	40.64	55.75
11.9000	76.69	77.58	67.68	49.93	24.36

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs	15.50	12.42	11.11	10.13	9.42
12.1500	15.50	12.42	11.11	10.13	9.42
12.4000	8.61	7.90	7.08	6.53	6.00
12.6500	5.73	5.51	5.34	5.15	4.99
12.9000	4.80	4.64	4.45	4.31	4.16
13.1500	4.06	3.96	3.87	3.77	3.68
13.4000	3.58	3.49	3.39	3.30	3.22
13.6500	3.15	3.07	3.01	2.94	2.87
13.9000	2.80	2.74	2.66	2.61	2.56
14.1500	2.53	2.50	2.48	2.46	2.44
14.4000	2.41	2.39	2.36	2.34	2.31
14.6500	2.29	2.27	2.25	2.22	2.20
14.9000	2.17	2.15	2.12	2.10	2.08
15.1500	2.05	2.03	2.00	1.98	1.96
15.4000	1.93	1.91	1.89	1.86	1.83
15.6500	1.81	1.79	1.77	1.74	1.72
15.9000	1.69	1.67	1.64	1.62	1.61
16.1500	1.60	1.58	1.58	1.57	1.56
16.4000	1.55	1.54	1.53	1.53	1.52
16.6500	1.51	1.50	1.49	1.48	1.47
16.9000	1.47	1.46	1.45	1.44	1.43
17.1500	1.42	1.41	1.41	1.40	1.39
17.4000	1.38	1.37	1.36	1.35	1.34
17.6500	1.34	1.33	1.32	1.31	1.30
17.9000	1.29	1.29	1.28	1.27	1.26
18.1500	1.25	1.24	1.23	1.23	1.22
18.4000	1.21	1.20	1.19	1.18	1.17
18.6500	1.16	1.16	1.15	1.14	1.13
18.9000	1.12	1.11	1.10	1.09	1.09
19.1500	1.08	1.07	1.06	1.05	1.04
19.4000	1.03	1.02	1.02	1.01	1.00
19.6500	.99	.98	.97	.96	.95
19.9000	.95	.94	.93	.92	.92
20.1500	.91	.91	.91	.91	.91
20.4000	.90	.90	.90	.90	.90
20.6500	.90	.90	.89	.89	.89
20.9000	.89	.89	.88	.88	.88
21.1500	.88	.88	.88	.87	.87
21.4000	.87	.87	.87	.87	.86
21.6500	.86	.86	.86	.86	.85
21.9000	.85	.85	.85	.85	.85
22.1500	.85	.84	.84	.84	.84
22.4000	.84	.83	.83	.83	.83
22.6500	.83	.83	.82	.82	.82
22.9000	.82	.82	.81	.81	.81
23.1500	.81	.81	.81	.81	.80



Type... Unit Hyd. (HYG output) Page 7.22  
 Name... CS AREA 3 Tag: 100 YR Event: 100 yr  
 File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW  
 Storm... TypeII 24hr Tag: 100 YR

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

---

Time hrs					
23.4000	.80	.80	.80	.80	.79
23.6500	.79	.79	.79	.79	.79
23.9000	.79	.78	.78	.55	.18
24.1500	.05	.01	.00	.00	

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW

Solution to Mannings Open Channel Flow Equation  
 (Computed values are based on normal depth.)

TRAPEZOIDAL CROSS SECTION

Slope = .034000 ft/ft  
 Mannings n = 0.04000  
 Invert Elev. = 602.00 ft  
 Top of Channel = 605.00 ft  
 Base width = 2.00 ft  
 Rt Side slope = 3.000 horizontal :1 vert.  
 Lt Side slope = 3.000 horizontal :1 vert.

Elev. (ft)	Depth (ft)	Flow (cfs)	Vel. (ft/sec)	Area (sq.ft)	Top W. (ft)	Wet.P. (ft)	Hd (ft)	Froude No.
602.000	.00	.00	.00	.0000	.00	.00	.00	0.00
602.010	.01	.01	.31	.0203	2.06	2.06	.01	0.56
602.060	.06	.13	.99	.1308	2.36	2.38	.06	0.74
602.120	.12	.43	1.50	.2832	2.72	2.76	.10	0.82
602.180	.18	.87	1.90	.4572	3.08	3.14	.15	0.87
602.240	.24	1.45	2.23	.6528	3.44	3.52	.19	0.90
602.300	.30	2.19	2.52	.8700	3.80	3.90	.23	0.93
602.360	.36	3.09	2.78	1.1087	4.16	4.28	.27	0.95
602.420	.42	4.15	3.03	1.3691	4.52	4.66	.30	0.97
602.480	.48	5.38	3.26	1.6511	4.88	5.04	.34	0.99
602.540	.54	6.79	3.47	1.9547	5.24	5.42	.37	1.00
602.600	.60	8.39	3.68	2.2799	5.60	5.79	.41	1.02
602.660	.66	10.18	3.87	2.6266	5.96	6.17	.44	1.03
602.720	.72	12.17	4.06	2.9950	6.32	6.55	.47	1.04
602.780	.78	14.38	4.25	3.3854	6.68	6.93	.51	1.05
602.840	.84	16.80	4.42	3.7970	7.04	7.31	.54	1.06
602.900	.90	19.45	4.60	4.2302	7.40	7.69	.57	1.07
602.960	.96	22.33	4.77	4.6850	7.76	8.07	.60	1.08
603.020	1.02	25.45	4.93	5.1614	8.12	8.45	.64	1.09
603.080	1.08	28.82	5.09	5.6593	8.48	8.83	.67	1.10
603.140	1.14	32.44	5.25	6.1789	8.84	9.21	.70	1.11
603.200	1.20	36.32	5.40	6.7201	9.20	9.59	.73	1.11
603.260	1.26	40.47	5.56	7.2829	9.56	9.97	.76	1.12
603.320	1.32	44.89	5.71	7.8673	9.92	10.35	.79	1.13
603.380	1.38	49.59	5.85	8.4733	10.28	10.73	.82	1.14
603.440	1.44	54.58	6.00	9.1008	10.64	11.11	.86	1.14
603.500	1.50	59.87	6.14	9.7500	11.00	11.49	.89	1.15
603.560	1.56	65.46	6.28	10.4208	11.36	11.87	.92	1.16
603.620	1.62	71.35	6.42	11.1131	11.72	12.25	.95	1.16
603.680	1.68	77.56	6.56	11.8271	12.08	12.63	.98	1.17
603.740	1.74	84.09	6.69	12.5627	12.44	13.00	1.01	1.17
603.800	1.80	90.95	6.83	13.3198	12.80	13.38	1.04	1.18
603.860	1.86	98.13	6.96	14.0986	13.16	13.76	1.07	1.19
603.920	1.92	105.66	7.09	14.8990	13.52	14.14	1.10	1.19
603.980	1.98	113.53	7.22	15.7209	13.88	14.52	1.13	1.20

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW

Solution to Mannings Open Channel Flow Equation  
 (Computed values are based on normal depth.)

TRAPEZOIDAL CROSS SECTION

Slope = .034000 ft/ft  
 Mannings n = 0.04000  
 Invert Elev. = 602.00 ft  
 Top of Channel = 605.00 ft  
 Base width = 2.00 ft  
 Rt Side slope = 3.000 horizontal :1 vert.  
 Lt Side slope = 3.000 horizontal :1 vert.

Elev. (ft)	Depth (ft)	Flow (cfs)	Vel. (ft/sec)	Area (sq.ft)	Top W. (ft)	Wet.P. (ft)	Hd (ft)	Froude No.
604.040	2.04	121.75	7.35	16.5645	14.24	14.90	1.16	1.20
604.100	2.10	130.33	7.48	17.4296	14.60	15.28	1.19	1.21
604.160	2.16	139.27	7.60	18.3164	14.96	15.66	1.22	1.21
604.220	2.22	148.58	7.73	19.2248	15.32	16.04	1.25	1.22
604.280	2.28	158.28	7.85	20.1557	15.68	16.42	1.29	1.22
604.340	2.34	168.34	7.98	21.1072	16.04	16.80	1.32	1.23
604.400	2.40	178.79	8.10	22.0804	16.40	17.18	1.35	1.23
604.460	2.46	189.64	8.22	23.0752	16.76	17.56	1.38	1.23
604.520	2.52	200.88	8.34	24.0915	17.12	17.94	1.41	1.24
604.580	2.58	212.52	8.46	25.1295	17.48	18.32	1.44	1.24
604.640	2.64	224.57	8.58	26.1891	17.84	18.70	1.47	1.25
604.700	2.70	237.04	8.69	27.2702	18.20	19.08	1.50	1.25
604.760	2.76	249.93	8.81	28.3730	18.56	19.46	1.53	1.26
604.820	2.82	263.24	8.92	29.4973	18.92	19.84	1.56	1.26
604.880	2.88	276.98	9.04	30.6433	19.28	20.21	1.59	1.26
604.940	2.94	291.16	9.15	31.8109	19.64	20.59	1.62	1.27
605.000	3.00	305.78	9.27	33.0000	20.00	20.97	1.65	1.27

SOLUTION TO MANNINGS OPEN CHANNEL FLOW EQUATION  
(Computed values are based on normal depth.)

$$Q = (k/n) * A * (R^{2/3}) * (S^{1/2})$$

where:	English Units	SI units
Q = Channel flow	cfs	cms
k = Mannings constant	1.485919	1.0
n = Mannings n	no units	no units
R = Hydraulic radius, A/WP	ft	m
A = X-section flow area	sq.ft.	sq.m.
WP = Wetted perimeter	ft	m
S = Slope	ft/ft	m/m

ADDITIONAL OUTPUT VARIABLES:

Vel= Q/A  
Hd = A/TpW  
F = Vel / (g \* Hd)\*\*1/2

where:	English Units	SI units
Vel= Velocity	ft/sec	m/sec
Q = Channel flow	cfs	cms
A = X-section flow area	sq.ft.	sq.m.
Hd = Hydraulic depth	ft	m
TpW= Top width for flow area	ft	m
g = Acceleration of gravity	ft/sec**2	m/sec**2
F = Froude No.	no units	no units

(Subcritical: F < 1; Critical: F = 1; Supercritical: F > 1)

Name... REACH 10

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW

MODIFIED PULS REACH DATA

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
 Inflow HYG file = NONE STORED - JUNC 10 2 YR  
 Outflow HYG file = NONE STORED - REACH 10 2 YR

Reach Link Data = REACH 10  
 Reach Length = 1210.00 ft  
 Approx. Total Tt = .1104 hrs (based on Wtd.Q = 4.21 cfs)  
 Reach Channel = Chn-Trapz - 2 (Chn-Trapz.)  
 Overflow Elev. = 605.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 602.00 ft  
 Starting Volume = 0 cu.ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infiltr. cfs	Q Total cfs	2S/t + O cfs
602.00	.00	0	0	.00	.00	.00
602.01	.01	25	2493	.00	.01	.28
602.06	.13	158	2856	.00	.13	1.89
602.12	.43	343	3291	.00	.43	4.23
602.18	.87	553	3727	.00	.87	7.01
602.24	1.45	790	4162	.00	1.45	10.23
602.30	2.19	1053	4598	.00	2.19	13.89
602.36	3.09	1342	5033	.00	3.09	17.99
602.42	4.15	1657	5469	.00	4.15	22.55
602.48	5.38	1998	5905	.00	5.38	27.58
602.54	6.79	2365	6340	.00	6.79	33.07
602.60	8.39	2759	6776	.00	8.39	39.04
602.66	10.18	3178	7211	.00	10.18	45.49
602.72	12.17	3624	7647	.00	12.17	52.44
602.78	14.38	4096	8083	.00	14.38	59.89
602.84	16.80	4594	8519	.00	16.80	67.85
602.90	19.45	5119	8954	.00	19.45	76.32
602.96	22.33	5669	9390	.00	22.33	85.32
603.02	25.45	6245	9825	.00	25.45	94.84
603.08	28.82	6848	10261	.00	28.82	104.90

MODIFIED PULS REACH DATA

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
 Inflow HYG file = NONE STORED - JUNC 10 2 YR  
 Outflow HYG file = NONE STORED - REACH 10 2 YR  
  
 Reach Link Data = REACH 10  
 Reach Length = 1210.00 ft  
 Approx. Total Tt = .1104 hrs (based on Wtd.Q = 4.21 cfs)  
 Reach Channel = Chn-Trapz - 2 (Chn-Trapz.)  
 Overflow Elev. = 605.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 602.00 ft  
 Starting Volume = 0 cu.ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
603.14	32.44	7477	10697	.00	32.44	115.51
603.20	36.32	8131	11132	.00	36.32	126.66
603.26	40.47	8812	11568	.00	40.47	138.38
603.32	44.89	9519	12003	.00	44.89	150.66
603.38	49.59	10253	12439	.00	49.59	163.51
603.44	54.58	11012	12874	.00	54.58	176.94
603.50	59.87	11798	13310	.00	59.87	190.95
603.56	65.46	12609	13746	.00	65.46	205.56
603.62	71.35	13447	14181	.00	71.35	220.76
603.68	77.56	14311	14617	.00	77.56	236.57
603.74	84.09	15201	15052	.00	84.09	252.99
603.80	90.95	16117	15488	.00	90.95	270.02
603.86	98.13	17059	15923	.00	98.13	287.68
603.92	105.66	18028	16359	.00	105.66	305.97
603.98	113.53	19022	16795	.00	113.53	324.89
604.04	121.75	20043	17230	.00	121.75	344.45
604.10	130.33	21090	17666	.00	130.33	364.66
604.16	139.27	22163	18101	.00	139.27	385.53
604.22	148.58	23262	18537	.00	148.58	407.05
604.28	158.28	24388	18973	.00	158.28	429.26

MODIFIED PULS REACH DATA

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
 Inflow HYG file = NONE STORED - JUNC 10 2 YR  
 Outflow HYG file = NONE STORED - REACH 10 2 YR  
  
 Reach Link Data = REACH 10  
 Reach Length = 1210.00 ft  
 Approx. Total Tt = .1104 hrs (based on Wtd.Q = 4.21 cfs)  
 Reach Channel = Chn-Trapz - 2 (Chn-Trapz.)  
 Overflow Elev. = 605.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 602.00 ft  
 Starting Volume = 0 cu.ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infiltr. cfs	Q Total cfs	2S/t + O cfs
604.34	168.34	25540	19409	.00	168.34	452.12
604.40	178.79	26717	19844	.00	178.79	475.65
604.46	189.64	27921	20280	.00	189.64	499.87
604.52	200.88	29151	20715	.00	200.88	524.78
604.58	212.52	30407	21151	.00	212.52	550.37
604.64	224.57	31689	21587	.00	224.57	576.67
604.70	237.04	32997	22022	.00	237.04	603.67
604.76	249.93	34331	22458	.00	249.93	631.39
604.82	263.24	35692	22893	.00	263.24	659.82
604.88	276.98	37078	23329	.00	276.98	688.97
604.94	291.16	38491	23764	.00	291.16	718.84
605.00	305.78	39930	24200	.00	305.78	749.45

MODIFIED PULS REACH ROUTING SUMMARY

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
Inflow HYG file = NONE STORED - JUNC 10 2 YR  
Outflow HYG file = NONE STORED - REACH 10 2 YR

Reach Link Data = REACH 10  
Reach Length = 1210.00 ft  
Approx. Total Tt = .1104 hrs (based on Wtd.Q = 4.21 cfs)  
Reach Channel = Chn-Trapz - 2 (Chn-Trapz.)  
Overflow Elev. = 605.00 ft  
Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
Starting WS Elev = 602.00 ft  
Starting Volume = 0 cu.ft  
Starting Outflow = .00 cfs  
Starting Infiltr. = .00 cfs  
Starting Total Qout = .00 cfs  
Time Increment = .0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

=====  
Peak Inflow = 7.93 cfs at 12.1000 hrs  
Peak Outflow = 7.83 cfs at 12.2500 hrs  
=====

MASS BALANCE (cu.ft)

-----  
+ Initial Vol = 0  
+ HYG Vol IN = 69475  
- Infiltration = 0  
- HYG Vol OUT = 69463  
- Retained Vol = 11  
-----  
Unrouted Vol = 0 cu.ft (.000% of Inflow Volume)



POND ROUTED TOTAL OUTFLOW HYG...

HYG file =  
 HYG ID = REACH 10  
 HYG Tag = 2 YR

-----  
 Peak Discharge = 7.83 cfs  
 Time to Peak = 12.2500 hrs  
 HYG Volume = 69463 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs					
7.9500	.00	.00	.00	.00	.00
8.2000	.00	.00	.00	.00	.01
8.4500	.01	.01	.02	.02	.03
8.7000	.03	.04	.04	.05	.05
8.9500	.06	.06	.07	.07	.08
9.2000	.09	.09	.10	.10	.11
9.4500	.11	.12	.13	.13	.14
9.7000	.15	.16	.17	.18	.19
9.9500	.20	.21	.22	.23	.25
10.2000	.26	.27	.29	.30	.32
10.4500	.34	.35	.37	.39	.41
10.7000	.44	.47	.50	.53	.56
10.9500	.60	.63	.67	.71	.75
11.2000	.81	.86	.93	1.01	1.09
11.4500	1.17	1.26	1.38	1.60	1.99
11.7000	2.57	3.22	3.86	4.48	5.14
11.9500	5.84	6.52	7.09	7.50	7.73
12.2000	7.82	7.83	7.80	7.74	7.66
12.4500	7.58	7.48	7.37	7.26	7.14
12.7000	7.01	6.88	6.74	6.61	6.46
12.9500	6.31	6.16	6.00	5.84	5.67
13.2000	5.50	5.32	5.14	4.93	4.71
13.4500	4.46	4.15	3.73	3.19	2.66
13.7000	2.20	1.88	1.64	1.48	1.38
13.9500	1.30	1.25	1.20	1.16	1.13
14.2000	1.11	1.08	1.07	1.05	1.04
14.4500	1.03	1.02	1.01	1.00	.99
14.7000	.98	.97	.96	.95	.94
14.9500	.93	.92	.91	.90	.89
15.2000	.88	.87	.86	.85	.84
15.4500	.83	.82	.81	.80	.79

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs					
15.7000	.78	.77	.77	.75	.74
15.9500	.74	.73	.72	.71	.70
16.2000	.69	.68	.68	.67	.67
16.4500	.66	.66	.66	.65	.65
16.7000	.65	.64	.64	.64	.63
16.9500	.63	.63	.62	.62	.62
17.2000	.61	.61	.60	.60	.60
17.4500	.59	.59	.59	.58	.58
17.7000	.58	.57	.57	.57	.56
17.9500	.56	.55	.55	.55	.54
18.2000	.54	.54	.53	.53	.53
18.4500	.52	.52	.52	.51	.51
18.7000	.50	.50	.50	.49	.49
18.9500	.49	.48	.48	.48	.47
19.2000	.47	.46	.46	.46	.45
19.4500	.45	.45	.44	.44	.44
19.7000	.43	.43	.42	.42	.42
19.9500	.42	.41	.41	.40	.40
20.2000	.40	.40	.40	.39	.39
20.4500	.39	.39	.39	.39	.39
20.7000	.39	.39	.39	.38	.38
20.9500	.38	.38	.38	.38	.38
21.2000	.38	.38	.38	.38	.38
21.4500	.38	.38	.37	.37	.37
21.7000	.37	.37	.37	.37	.37
21.9500	.37	.37	.37	.37	.37
22.2000	.37	.36	.36	.36	.36
22.4500	.36	.36	.36	.36	.36
22.7000	.36	.36	.36	.36	.36
22.9500	.36	.35	.35	.35	.35
23.2000	.35	.35	.35	.35	.35
23.4500	.35	.35	.35	.35	.35
23.7000	.34	.34	.34	.34	.34
23.9500	.34	.34	.33	.31	.25
24.2000	.20	.15	.12	.10	.09
24.4500	.07	.06	.05	.04	.04
24.7000	.03	.03	.02	.02	.02
24.9500	.01	.01	.01	.01	.01
25.2000	.01	.01	.01	.01	.01
25.4500	.00	.00	.00	.00	.00
25.7000	.00	.00	.00	.00	.00
25.9500	.00	.00			

MODIFIED PULS REACH ROUTING SUMMARY

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
 Inflow HYG file = NONE STORED - JUNC 10 10 YR  
 Outflow HYG file = NONE STORED - REACH 10 10 YR

Reach Link Data = REACH 10  
 Reach Length = 1210.00 ft  
 Approx. Total Tt = .0995 hrs (based on Wtd.Q = 6.10 cfs)  
 Reach Channel = Chn-Trapz - 2 (Chn-Trapz.)  
 Overflow Elev. = 605.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 602.00 ft  
 Starting Volume = 0 cu.ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

=====  
 Peak Inflow = 18.99 cfs at 12.1000 hrs  
 Peak Outflow = 16.08 cfs at 12.1500 hrs  
 =====

MASS BALANCE (cu.ft)

-----  
 + Initial Vol = 0  
 + HYG Vol IN = 118654  
 - Infiltration = 0  
 - HYG Vol OUT = 118643  
 - Retained Vol = 11  
 -----  
 Unrouted Vol = - cu.ft (.000% of Inflow Volume)

POND ROUTED TOTAL OUTFLOW HYG...

HYG file =  
 HYG ID = REACH 10  
 HYG Tag = 10 YR

-----  
 Peak Discharge = 16.08 cfs  
 Time to Peak = 12.1500 hrs  
 HYG Volume = 118643 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)  
 Output Time increment = .0500 hrs

Time |  
 hrs | Time on left represents time for first value in each row.

-----

6.1500	.00	.00	.00	.00	.00
6.4000	.00	.00	.00	.00	.01
6.6500	.01	.01	.02	.02	.03
6.9000	.03	.04	.04	.05	.05
7.1500	.06	.06	.07	.07	.08
7.4000	.08	.09	.09	.10	.10
7.6500	.11	.11	.12	.12	.13
7.9000	.13	.14	.15	.16	.16
8.1500	.17	.18	.19	.19	.20
8.4000	.21	.22	.23	.24	.25
8.6500	.26	.27	.29	.30	.31
8.9000	.32	.34	.35	.36	.38
9.1500	.39	.40	.41	.42	.43
9.4000	.44	.45	.46	.47	.48
9.6500	.49	.51	.52	.54	.56
9.9000	.58	.60	.62	.64	.67
10.1500	.69	.72	.75	.78	.82
10.4000	.85	.88	.92	.96	1.00
10.6500	1.04	1.09	1.14	1.19	1.25
10.9000	1.31	1.37	1.43	1.50	1.57
11.1500	1.66	1.75	1.86	1.99	2.12
11.4000	2.26	2.41	2.55	2.75	3.06
11.6500	3.48	3.96	4.51	5.10	5.77
11.9000	6.52	7.34	8.12	10.14	13.98
12.1500	16.08	15.13	13.41	11.79	10.54
12.4000	9.80	9.46	9.27	9.15	9.05
12.6500	8.96	8.88	8.79	8.70	8.61
12.9000	8.51	8.42	8.32	8.22	8.11
13.1500	8.01	7.90	7.78	7.66	7.54
13.4000	7.42	7.29	7.16	7.03	6.89
13.6500	6.75	6.62	6.47	6.32	6.17

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

Time hrs					
13.9000	6.01	5.85	5.68	5.52	5.34
14.1500	5.16	4.97	4.75	4.52	4.25
14.4000	3.91	3.46	2.95	2.51	2.16
14.6500	1.93	1.78	1.67	1.60	1.55
14.9000	1.51	1.48	1.45	1.43	1.42
15.1500	1.40	1.38	1.37	1.35	1.33
15.4000	1.32	1.30	1.29	1.27	1.26
15.6500	1.24	1.22	1.21	1.19	1.18
15.9000	1.16	1.15	1.13	1.11	1.10
16.1500	1.09	1.07	1.06	1.05	1.05
16.4000	1.04	1.03	1.03	1.02	1.02
16.6500	1.01	1.01	1.00	.99	.99
16.9000	.98	.98	.97	.97	.96
17.1500	.96	.95	.94	.94	.93
17.4000	.93	.92	.92	.91	.90
17.6500	.90	.89	.89	.88	.87
17.9000	.87	.86	.86	.85	.85
18.1500	.84	.84	.83	.83	.82
18.4000	.82	.81	.80	.80	.79
18.6500	.79	.78	.78	.77	.76
18.9000	.76	.75	.75	.74	.74
19.1500	.73	.72	.72	.71	.71
19.4000	.70	.70	.69	.68	.68
19.6500	.67	.67	.66	.66	.65
19.9000	.64	.64	.63	.63	.62
20.1500	.62	.61	.61	.61	.61
20.4000	.60	.60	.60	.60	.60
20.6500	.60	.60	.59	.59	.59
20.9000	.59	.59	.59	.59	.59
21.1500	.59	.58	.58	.58	.58
21.4000	.58	.58	.58	.58	.58
21.6500	.57	.57	.57	.57	.57
21.9000	.57	.57	.57	.57	.56
22.1500	.56	.56	.56	.56	.56
22.4000	.56	.56	.56	.55	.55
22.6500	.55	.55	.55	.55	.55
22.9000	.55	.55	.54	.54	.54
23.1500	.54	.54	.54	.54	.54
23.4000	.54	.53	.53	.53	.53
23.6500	.53	.53	.53	.53	.53
23.9000	.52	.52	.52	.51	.46
24.1500	.37	.29	.22	.17	.13
24.4000	.11	.09	.08	.06	.06
24.6500	.05	.04	.03	.03	.02
24.9000	.02	.02	.01	.01	.01

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs					
25.1500	.01	.01	.01	.01	.01
25.4000	.01	.01	.01	.00	.00
25.6500	.00	.00	.00	.00	.00
25.9000	.00	.00	.00	.00	.00

MODIFIED PULS REACH ROUTING SUMMARY

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
Inflow HYG file = NONE STORED - JUNC 10 100 YR  
Outflow HYG file = NONE STORED - REACH 10 100 YR

Reach Link Data = REACH 10  
Reach Length = 1210.00 ft  
Approx. Total Tt = .0777 hrs (based on Wtd.Q = 15.36 cfs)  
Reach Channel = Chn-Trapz - 2 (Chn-Trapz.)  
Overflow Elev. = 605.00 ft  
Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
Starting WS Elev = 602.00 ft  
Starting Volume = 0 cu.ft  
Starting Outflow = .00 cfs  
Starting Infiltr. = .00 cfs  
Starting Total Qout = .00 cfs  
Time Increment = .0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

=====  
Peak Inflow = 59.19 cfs at 12.0000 hrs  
Peak Outflow = 54.41 cfs at 12.0500 hrs  
=====

MASS BALANCE (cu.ft)

-----  
+ Initial Vol = 0  
+ HYG Vol IN = 195019  
- Infiltration = 0  
- HYG Vol OUT = 195008  
- Retained Vol = 11  
-----  
Unrouted Vol = 0 cu.ft (.000% of Inflow Volume)

POND ROUTED TOTAL OUTFLOW HYG...

HYG file =  
 HYG ID = REACH 10  
 HYG Tag = 100 YR

-----  
 Peak Discharge = 54.41 cfs  
 Time to Peak = 12.0500 hrs  
 HYG Volume = 195008 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)  
 Output Time increment = .0500 hrs

Time |  
 hrs | Time on left represents time for first value in each row.

---

4.6500	.00	.00	.00	.00	.00
4.9000	.00	.00	.00	.01	.01
5.1500	.02	.02	.03	.04	.04
5.4000	.05	.06	.06	.07	.08
5.6500	.08	.09	.10	.11	.11
5.9000	.12	.13	.14	.15	.16
6.1500	.17	.18	.19	.20	.20
6.4000	.21	.22	.23	.24	.25
6.6500	.25	.26	.27	.28	.29
6.9000	.30	.31	.31	.32	.33
7.1500	.34	.35	.36	.37	.37
7.4000	.38	.39	.40	.41	.42
7.6500	.43	.44	.45	.46	.47
7.9000	.48	.49	.50	.51	.52
8.1500	.53	.54	.56	.58	.60
8.4000	.61	.63	.66	.68	.70
8.6500	.72	.74	.77	.79	.82
8.9000	.84	.86	.89	.92	.94
9.1500	.97	.99	1.00	1.02	1.04
9.4000	1.05	1.06	1.07	1.08	1.10
9.6500	1.12	1.14	1.16	1.20	1.23
9.9000	1.27	1.31	1.35	1.39	1.43
10.1500	1.47	1.52	1.57	1.63	1.69
10.4000	1.75	1.81	1.88	1.94	2.01
10.6500	2.09	2.17	2.26	2.35	2.44
10.9000	2.53	2.64	2.74	2.86	2.98
11.1500	3.11	3.25	3.38	3.53	3.70
11.4000	3.86	3.99	4.12	4.28	4.49
11.6500	4.80	5.22	5.78	6.45	7.21
11.9000	8.16	19.40	41.49	54.41	53.94
12.1500	43.15	30.77	22.77	17.93	15.02



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

Time hrs					
12.4000	13.22	11.88	10.78	9.98	9.57
12.6500	9.35	9.23	9.15	9.08	9.01
12.9000	8.95	8.88	8.81	8.74	8.67
13.1500	8.59	8.51	8.43	8.35	8.26
13.4000	8.18	8.09	7.99	7.90	7.80
13.6500	7.70	7.60	7.49	7.38	7.27
13.9000	7.16	7.04	6.92	6.80	6.68
14.1500	6.55	6.42	6.29	6.16	6.02
14.4000	5.88	5.74	5.60	5.46	5.31
14.6500	5.17	5.01	4.84	4.66	4.47
14.9000	4.28	4.04	3.73	3.38	3.03
15.1500	2.75	2.52	2.34	2.22	2.13
15.4000	2.07	2.02	1.98	1.95	1.92
15.6500	1.90	1.87	1.84	1.82	1.79
15.9000	1.77	1.75	1.72	1.70	1.67
16.1500	1.65	1.63	1.62	1.60	1.59
16.4000	1.58	1.57	1.56	1.55	1.55
16.6500	1.54	1.53	1.52	1.51	1.50
16.9000	1.49	1.49	1.48	1.47	1.46
17.1500	1.45	1.44	1.43	1.42	1.42
17.4000	1.41	1.40	1.39	1.38	1.37
17.6500	1.36	1.35	1.35	1.34	1.33
17.9000	1.32	1.31	1.30	1.29	1.29
18.1500	1.28	1.27	1.26	1.25	1.24
18.4000	1.23	1.23	1.22	1.21	1.20
18.6500	1.19	1.18	1.17	1.16	1.16
18.9000	1.15	1.14	1.13	1.12	1.11
19.1500	1.10	1.10	1.09	1.08	1.07
19.4000	1.06	1.05	1.04	1.03	1.03
19.6500	1.02	1.01	1.00	.99	.98
19.9000	.97	.96	.96	.95	.94
20.1500	.93	.93	.92	.92	.91
20.4000	.91	.91	.91	.90	.90
20.6500	.90	.90	.90	.90	.89
20.9000	.89	.89	.89	.89	.89
21.1500	.88	.88	.88	.88	.88
21.4000	.88	.87	.87	.87	.87
21.6500	.87	.86	.86	.86	.86
21.9000	.86	.86	.86	.85	.85
22.1500	.85	.85	.85	.84	.84
22.4000	.84	.84	.84	.84	.83
22.6500	.83	.83	.83	.83	.83
22.9000	.82	.82	.82	.82	.82
23.1500	.82	.81	.81	.81	.81
23.4000	.81	.81	.80	.80	.80

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

---

Time hrs					
23.6500		.80	.80	.80	.79
23.9000		.79	.79	.79	.77
24.1500		.54	.40	.30	.23
24.4000		.13	.11	.09	.08
24.6500		.06	.05	.04	.03
24.9000		.02	.02	.02	.01
25.1500		.01	.01	.01	.01
25.4000		.01	.01	.01	.01
25.6500		.00	.00	.00	.00
25.9000		.00	.00	.00	.00
26.1500		.00			

SUMMARY FOR HYDROGRAPH ADDITION  
 at Node: JUNC 10

HYG Directory: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\

```

=====
Upstream Link ID  Upstream Node ID  HYG file      HYG ID        HYG tag
-----
ROUTE 10          EX. BASIN 1  IN              ROUTE 10      2 YR
=====
  
```

INFLOWS TO: JUNC 10

```

-----
HYG file      HYG ID        HYG tag      Volume      Peak Time     Peak Flow
              HYG ID        HYG tag      cu.ft       hrs           cfs
-----
              ROUTE 10      2 YR         69475       12.1000      7.93
-----
  
```

TOTAL FLOW INTO: JUNC 10

```

-----
HYG file      HYG ID        HYG tag      Volume      Peak Time     Peak Flow
              HYG ID        HYG tag      cu.ft       hrs           cfs
-----
              JUNC 10      2 YR         69475       12.1000      7.93
-----
  
```

TOTAL NODE INFLOW...

HYG file =  
 HYG ID = JUNC 10  
 HYG Tag = 2 YR

-----  
 Peak Discharge = 7.93 cfs  
 Time to Peak = 12.1000 hrs  
 HYG Volume = 69475 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs  
 Time on left represents time for first value in each row.

Time hrs					
7.9500	.00	.00	.01	.01	.01
8.2000	.01	.02	.02	.03	.03
8.4500	.03	.04	.04	.05	.05
8.7000	.06	.07	.07	.08	.08
8.9500	.09	.10	.10	.11	.12
9.2000	.12	.13	.13	.14	.14
9.4500	.15	.15	.16	.17	.17
9.7000	.18	.19	.20	.21	.22
9.9500	.24	.25	.26	.27	.29
10.2000	.30	.32	.34	.36	.38
10.4500	.40	.42	.44	.46	.49
10.7000	.52	.55	.58	.62	.65
10.9500	.69	.73	.77	.82	.88
11.2000	.95	1.02	1.10	1.18	1.27
11.4500	1.37	1.46	1.68	2.22	2.94
11.7000	3.75	4.33	4.86	5.46	6.18
11.9500	6.89	7.43	7.79	7.93	7.93
12.2000	7.88	7.81	7.73	7.64	7.55
12.4500	7.45	7.34	7.22	7.10	6.96
12.7000	6.83	6.69	6.55	6.40	6.25
12.9500	6.10	5.93	5.77	5.60	5.43
13.2000	5.24	5.05	4.83	4.60	4.35
13.4500	4.07	3.58	2.91	2.24	1.72
13.7000	1.48	1.33	1.26	1.22	1.19
13.9500	1.16	1.13	1.11	1.09	1.07
14.2000	1.05	1.04	1.03	1.02	1.01
14.4500	1.00	1.00	.99	.98	.97
14.7000	.96	.95	.94	.93	.92
14.9500	.91	.90	.89	.88	.87
15.2000	.86	.85	.84	.83	.82
15.4500	.81	.80	.79	.78	.77

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

Time hrs					
15.7000	.76	.75	.74	.73	.72
15.9500	.71	.70	.69	.68	.68
16.2000	.67	.67	.66	.66	.66
16.4500	.65	.65	.65	.64	.64
16.7000	.64	.63	.63	.63	.62
16.9500	.62	.62	.61	.61	.61
17.2000	.60	.60	.60	.59	.59
17.4500	.58	.58	.58	.57	.57
17.7000	.57	.56	.56	.56	.55
17.9500	.55	.55	.54	.54	.53
18.2000	.53	.53	.52	.52	.52
18.4500	.51	.51	.51	.50	.50
18.7000	.50	.49	.49	.48	.48
18.9500	.48	.47	.47	.47	.46
19.2000	.46	.45	.45	.45	.44
19.4500	.44	.44	.43	.43	.43
19.7000	.42	.42	.41	.41	.41
19.9500	.40	.40	.40	.39	.39
20.2000	.39	.39	.39	.39	.39
20.4500	.39	.39	.39	.39	.38
20.7000	.38	.38	.38	.38	.38
20.9500	.38	.38	.38	.38	.38
21.2000	.38	.38	.38	.38	.37
21.4500	.37	.37	.37	.37	.37
21.7000	.37	.37	.37	.37	.37
21.9500	.37	.37	.37	.36	.36
22.2000	.36	.36	.36	.36	.36
22.4500	.36	.36	.36	.36	.36
22.7000	.36	.36	.35	.35	.35
22.9500	.35	.35	.35	.35	.35
23.2000	.35	.35	.35	.35	.35
23.4500	.35	.35	.34	.34	.34
23.7000	.34	.34	.34	.34	.34
23.9500	.34	.34	.29	.16	.05
24.2000	.01	.00	.00		

SUMMARY FOR HYDROGRAPH ADDITION  
 at Node: JUNC 10

HYG Directory: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\

```

=====
Upstream Link ID  Upstream Node ID  HYG file      HYG ID        HYG tag
-----
ROUTE 10          EX. BASIN 1  IN              ROUTE 10      10 YR
=====
  
```

INFLOWS TO: JUNC 10

```

-----
HYG file          HYG ID        HYG tag        Volume      Peak Time     Peak Flow
                   cu.ft         hrs            cfs
-----
                ROUTE 10          10 YR          118654      12.1000      18.99
  
```

TOTAL FLOW INTO: JUNC 10

```

-----
HYG file          HYG ID        HYG tag        Volume      Peak Time     Peak Flow
                   cu.ft         hrs            cfs
-----
                JUNC 10          10 YR          118654      12.1000      18.99
  
```

TOTAL NODE INFLOW...

HYG file =  
 HYG ID = JUNC 10  
 HYG Tag = 10 YR

-----  
 Peak Discharge = 18.99 cfs  
 Time to Peak = 12.1000 hrs  
 HYG Volume = 118654 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs					
6.1500	.00	.00	.00	.01	.01
6.4000	.02	.02	.03	.03	.03
6.6500	.04	.04	.05	.05	.06
6.9000	.06	.07	.07	.08	.08
7.1500	.09	.09	.10	.10	.11
7.4000	.11	.12	.12	.13	.13
7.6500	.14	.14	.15	.15	.16
7.9000	.16	.17	.17	.18	.19
8.1500	.20	.20	.21	.22	.23
8.4000	.24	.26	.27	.28	.29
8.6500	.30	.31	.33	.34	.35
8.9000	.37	.38	.40	.41	.42
9.1500	.43	.44	.45	.46	.46
9.4000	.47	.48	.49	.50	.51
9.6500	.53	.55	.57	.59	.61
9.9000	.63	.66	.68	.71	.73
10.1500	.76	.80	.83	.87	.90
10.4000	.93	.97	1.00	1.05	1.09
10.6500	1.14	1.20	1.26	1.32	1.39
10.9000	1.45	1.50	1.56	1.64	1.73
11.1500	1.83	1.96	2.10	2.25	2.39
11.4000	2.52	2.66	2.83	3.19	3.70
11.6500	4.24	4.80	5.40	6.04	6.80
11.9000	7.67	8.49	9.11	14.46	18.99
12.1500	15.92	13.14	11.38	9.94	9.26
12.4000	9.21	9.15	9.09	9.01	8.93
12.6500	8.85	8.76	8.68	8.58	8.49
12.9000	8.39	8.29	8.19	8.08	7.97
13.1500	7.86	7.74	7.62	7.50	7.38
13.4000	7.25	7.12	6.98	6.85	6.70
13.6500	6.56	6.41	6.26	6.10	5.94

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs  
Time on left represents time for first value in each row.

Time hrs	5.78	5.61	5.45	5.26	5.08
13.9000	5.78	5.61	5.45	5.26	5.08
14.1500	4.87	4.65	4.41	4.15	3.79
14.4000	3.29	2.58	2.09	1.78	1.64
14.6500	1.56	1.52	1.50	1.48	1.46
14.9000	1.44	1.42	1.41	1.39	1.38
15.1500	1.36	1.34	1.33	1.31	1.30
15.4000	1.28	1.27	1.25	1.24	1.22
15.6500	1.20	1.19	1.17	1.16	1.14
15.9000	1.13	1.11	1.09	1.08	1.07
16.1500	1.06	1.05	1.04	1.04	1.03
16.4000	1.03	1.02	1.01	1.01	1.00
16.6500	1.00	.99	.99	.98	.98
16.9000	.97	.97	.96	.95	.95
17.1500	.94	.94	.93	.93	.92
17.4000	.91	.91	.90	.90	.89
17.6500	.88	.88	.87	.87	.86
17.9000	.86	.85	.85	.84	.83
18.1500	.83	.82	.82	.81	.81
18.4000	.80	.79	.79	.78	.78
18.6500	.77	.77	.76	.75	.75
18.9000	.74	.74	.73	.73	.72
19.1500	.72	.71	.70	.70	.69
19.4000	.69	.68	.68	.67	.66
19.6500	.66	.65	.65	.64	.63
19.9000	.63	.62	.62	.61	.61
20.1500	.61	.60	.60	.60	.60
20.4000	.60	.60	.60	.60	.59
20.6500	.59	.59	.59	.59	.59
20.9000	.59	.59	.59	.58	.58
21.1500	.58	.58	.58	.58	.58
21.4000	.58	.58	.58	.57	.57
21.6500	.57	.57	.57	.57	.57
21.9000	.57	.57	.56	.56	.56
22.1500	.56	.56	.56	.56	.56
22.4000	.55	.55	.55	.55	.55
22.6500	.55	.55	.55	.55	.54
22.9000	.54	.54	.54	.54	.54
23.1500	.54	.54	.54	.54	.53
23.4000	.53	.53	.53	.53	.53
23.6500	.53	.53	.53	.52	.52
23.9000	.52	.52	.52	.44	.24
24.1500	.07	.02	.01	.00	



Type... Node: Addition Summary Page 10.07  
 Name... JUNC 10 Event: 100 yr  
 File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW  
 Storm... TypeII 24hr Tag: 100 YR

SUMMARY FOR HYDROGRAPH ADDITION  
 at Node: JUNC 10

HYG Directory: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\

```

=====
Upstream Link ID  Upstream Node ID  HYG file      HYG ID        HYG tag
-----
ROUTE 10          EX. BASIN 1  IN              ROUTE 10      100 YR
=====
  
```

INFLOWS TO: JUNC 10

```

-----
HYG file      HYG ID        HYG tag      Volume      Peak Time    Peak Flow
-----
                ROUTE 10      100 YR      195019      12.0000      59.19
-----
  
```

TOTAL FLOW INTO: JUNC 10

```

-----
HYG file      HYG ID        HYG tag      Volume      Peak Time    Peak Flow
-----
                JUNC 10      100 YR      195019      12.0000      59.19
-----
  
```

TOTAL NODE INFLOW...  
 HYG file =  
 HYG ID = JUNC 10  
 HYG Tag = 100 YR

-----  
 Peak Discharge = 59.19 cfs  
 Time to Peak = 12.0000 hrs  
 HYG Volume = 195019 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)  
 Output Time increment = .0500 hrs

Time |  
 hrs | Time on left represents time for first value in each row.

4.6500	.00	.00	.01	.01	.02
4.9000	.02	.03	.04	.04	.05
5.1500	.06	.06	.07	.08	.08
5.4000	.09	.10	.10	.11	.12
5.6500	.13	.13	.14	.15	.16
5.9000	.16	.17	.18	.19	.19
6.1500	.20	.21	.22	.23	.23
6.4000	.24	.25	.26	.27	.28
6.6500	.28	.29	.30	.31	.32
6.9000	.33	.33	.34	.35	.36
7.1500	.37	.38	.39	.40	.40
7.4000	.41	.42	.43	.44	.45
7.6500	.46	.47	.48	.49	.50
7.9000	.51	.51	.52	.54	.55
8.1500	.56	.58	.60	.62	.64
8.4000	.67	.69	.71	.73	.76
8.6500	.78	.80	.83	.85	.88
8.9000	.91	.93	.95	.97	1.00
9.1500	1.02	1.03	1.04	1.05	1.07
9.4000	1.08	1.09	1.10	1.11	1.13
9.6500	1.16	1.19	1.23	1.27	1.31
9.9000	1.35	1.39	1.44	1.47	1.52
10.1500	1.57	1.62	1.68	1.74	1.81
10.4000	1.87	1.94	2.01	2.08	2.16
10.6500	2.24	2.34	2.42	2.51	2.61
10.9000	2.71	2.82	2.94	3.06	3.21
11.1500	3.34	3.46	3.62	3.80	3.99
11.4000	4.09	4.20	4.34	4.54	4.88
11.6500	5.36	5.96	6.68	7.47	8.34
11.9000	9.62	44.68	59.19	59.04	48.51
12.1500	30.01	21.09	16.49	13.85	12.56

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

Time hrs					
12.4000	11.44	10.43	9.50	9.25	9.21
12.6500	9.16	9.11	9.05	8.99	8.93
12.9000	8.86	8.79	8.72	8.65	8.57
13.1500	8.49	8.41	8.32	8.24	8.15
13.4000	8.06	7.96	7.86	7.77	7.66
13.6500	7.56	7.45	7.34	7.23	7.12
13.9000	7.00	6.88	6.75	6.63	6.50
14.1500	6.37	6.23	6.10	5.96	5.82
14.4000	5.68	5.54	5.40	5.25	5.10
14.6500	4.93	4.76	4.57	4.38	4.18
14.9000	3.98	3.57	3.20	2.75	2.48
15.1500	2.30	2.15	2.07	2.03	2.00
15.4000	1.97	1.94	1.92	1.89	1.87
15.6500	1.84	1.82	1.80	1.77	1.75
15.9000	1.72	1.70	1.67	1.65	1.63
16.1500	1.61	1.60	1.59	1.58	1.57
16.4000	1.56	1.55	1.55	1.54	1.53
16.6500	1.52	1.51	1.50	1.49	1.48
16.9000	1.48	1.47	1.46	1.45	1.44
17.1500	1.43	1.42	1.41	1.40	1.40
17.4000	1.39	1.38	1.37	1.36	1.35
17.6500	1.34	1.34	1.33	1.32	1.31
17.9000	1.30	1.29	1.28	1.27	1.27
18.1500	1.26	1.25	1.24	1.23	1.22
18.4000	1.21	1.21	1.20	1.19	1.18
18.6500	1.17	1.16	1.15	1.15	1.14
18.9000	1.13	1.12	1.11	1.10	1.09
19.1500	1.08	1.08	1.07	1.06	1.05
19.4000	1.04	1.03	1.02	1.02	1.01
19.6500	1.00	.99	.98	.97	.96
19.9000	.95	.95	.94	.93	.92
20.1500	.92	.91	.91	.91	.91
20.4000	.91	.90	.90	.90	.90
20.6500	.90	.90	.89	.89	.89
20.9000	.89	.89	.88	.88	.88
21.1500	.88	.88	.88	.87	.87
21.4000	.87	.87	.87	.87	.86
21.6500	.86	.86	.86	.86	.86
21.9000	.85	.85	.85	.85	.85
22.1500	.85	.84	.84	.84	.84
22.4000	.84	.83	.83	.83	.83
22.6500	.83	.83	.83	.82	.82
22.9000	.82	.82	.82	.81	.81
23.1500	.81	.81	.81	.81	.81
23.4000	.80	.80	.80	.80	.80

HYDROGRAPH ORDINATES (cfs)

Time hrs	Output Time increment = .0500 hrs				
	Time on left represents time for first value in each row.				
23.6500	.79	.79	.79	.79	.79
23.9000	.79	.78	.78	.66	.36
24.1500	.11	.03	.01	.00	

SUMMARY FOR HYDROGRAPH ADDITION  
 at Node: OUTLET A

HYG Directory: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\

```

=====
Upstream Link ID  Upstream Node ID  HYG file      HYG ID        HYG tag
-----
ADDLINK 20        AREA A                AREA A        2 YR
REACH 10          JUNC 10              REACH 10     2 YR
=====
  
```

INFLOWS TO: OUTLET A

```

----- Volume      Peak Time      Peak Flow
HYG file  HYG ID        HYG tag        cu.ft         hrs           cfs
-----
          AREA A          2 YR          345676        12.2000       78.52
          REACH 10        2 YR           69463        12.2500        7.83
  
```

TOTAL FLOW INTO: OUTLET A

```

----- Volume      Peak Time      Peak Flow
HYG file  HYG ID        HYG tag        cu.ft         hrs           cfs
-----
          OUTLET A          2 YR          415139        12.2000       86.35
  
```

TOTAL NODE INFLOW...

HYG file =  
 HYG ID = OUTLET A  
 HYG Tag = 2 YR

-----  
 Peak Discharge = 86.35 cfs  
 Time to Peak = 12.2000 hrs  
 HYG Volume = 415139 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs  
 Time on left represents time for first value in each row.

Time hrs					
8.1500	.00	.00	.00	.00	.00
8.4000	.01	.01	.01	.02	.02
8.6500	.03	.03	.04	.04	.05
8.9000	.05	.06	.06	.07	.07
9.1500	.08	.09	.09	.10	.10
9.4000	.11	.11	.12	.13	.13
9.6500	.14	.15	.16	.17	.18
9.9000	.19	.21	.23	.26	.29
10.1500	.33	.37	.41	.47	.53
10.4000	.59	.65	.73	.80	.88
10.6500	.97	1.07	1.18	1.29	1.42
10.9000	1.55	1.69	1.83	1.99	2.16
11.1500	2.35	2.56	2.79	3.06	3.36
11.4000	3.68	4.03	4.44	4.96	5.73
11.6500	6.96	9.06	12.06	16.18	22.03
11.9000	30.77	41.74	54.29	67.39	77.65
12.1500	84.04	86.35	84.14	78.24	71.05
12.4000	63.26	55.69	49.52	44.26	39.79
12.6500	36.01	32.84	30.06	27.66	25.61
12.9000	23.94	22.48	21.20	20.08	19.12
13.1500	18.24	17.43	16.69	16.02	15.36
13.4000	14.73	14.11	13.46	12.74	11.94
13.6500	11.16	10.48	9.95	9.51	9.15
13.9000	8.87	8.62	8.39	8.18	7.99
14.1500	7.80	7.63	7.48	7.34	7.22
14.4000	7.11	7.00	6.91	6.83	6.75
14.6500	6.68	6.60	6.54	6.47	6.40
14.9000	6.34	6.27	6.21	6.15	6.08
15.1500	6.02	5.96	5.90	5.83	5.77
15.4000	5.71	5.65	5.59	5.52	5.46
15.6500	5.40	5.33	5.27	5.21	5.14

Type... Node: Addition Summary  
 Name... OUTLET A  
 File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW  
 Storm... TypeII 24hr Tag: 2 YR

Page 10.13  
 Event: 2 yr

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

---

Time hrs					
15.9000	5.08	5.02	4.95	4.89	4.82
16.1500	4.76	4.71	4.65	4.60	4.56
16.4000	4.52	4.48	4.45	4.42	4.39
16.6500	4.37	4.34	4.32	4.29	4.27
16.9000	4.24	4.22	4.20	4.17	4.15
17.1500	4.13	4.11	4.08	4.06	4.04
17.4000	4.01	3.99	3.97	3.95	3.92
17.6500	3.90	3.88	3.86	3.83	3.81
17.9000	3.79	3.76	3.74	3.72	3.69
18.1500	3.67	3.65	3.63	3.60	3.58
18.4000	3.56	3.53	3.51	3.49	3.46
18.6500	3.44	3.42	3.39	3.37	3.34
18.9000	3.32	3.30	3.27	3.25	3.23
19.1500	3.20	3.18	3.16	3.13	3.11
19.4000	3.08	3.06	3.04	3.01	2.99
19.6500	2.96	2.94	2.92	2.89	2.87
19.9000	2.84	2.82	2.80	2.77	2.75
20.1500	2.73	2.71	2.69	2.67	2.66
20.4000	2.64	2.63	2.62	2.61	2.61
20.6500	2.60	2.59	2.59	2.58	2.58
20.9000	2.57	2.57	2.56	2.56	2.55
21.1500	2.55	2.54	2.54	2.53	2.53
21.4000	2.53	2.52	2.52	2.51	2.51
21.6500	2.50	2.50	2.49	2.49	2.49
21.9000	2.48	2.48	2.47	2.47	2.46
22.1500	2.46	2.45	2.45	2.45	2.44
22.4000	2.44	2.43	2.43	2.42	2.42
22.6500	2.41	2.41	2.40	2.40	2.40
22.9000	2.39	2.39	2.38	2.38	2.37
23.1500	2.37	2.36	2.36	2.36	2.35
23.4000	2.35	2.34	2.34	2.33	2.33
23.6500	2.32	2.32	2.31	2.31	2.30
23.9000	2.30	2.30	2.28	2.25	2.17
24.1500	2.01	1.81	1.57	1.33	1.10
24.4000	.89	.70	.55	.44	.34
24.6500	.27	.21	.17	.13	.10
24.9000	.08	.07	.05	.04	.03
25.1500	.03	.02	.02	.01	.01
25.4000	.01	.01	.01	.01	.00
25.6500	.00	.00	.00	.00	.00
25.9000	.00	.00	.00		

SUMMARY FOR HYDROGRAPH ADDITION  
 at Node: OUTLET A

HYG Directory: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\

```

=====
Upstream Link ID  Upstream Node ID  HYG file      HYG ID        HYG tag
-----
ADDLINK 20        AREA A                AREA A        10 YR
REACH 10          JUNC 10              REACH 10      10 YR
=====
  
```

INFLOWS TO: OUTLET A

```

-----
HYG file          HYG ID          HYG tag        Volume      Peak Time     Peak Flow
                   cu.ft          hrs            cfs
-----
                AREA A          10 YR          633840      12.2000      147.14
                REACH 10       10 YR          118643      12.1500      16.08
  
```

TOTAL FLOW INTO: OUTLET A

```

-----
HYG file          HYG ID          HYG tag        Volume      Peak Time     Peak Flow
                   cu.ft          hrs            cfs
-----
                OUTLET A        10 YR          752483      12.2000      162.28
  
```



TOTAL NODE INFLOW...

HYG file =  
 HYG ID = OUTLET A  
 HYG Tag = 10 YR

-----  
 Peak Discharge = 162.28 cfs  
 Time to Peak = 12.2000 hrs  
 HYG Volume = 752483 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time | Time on left represents time for first value in each row.

Time hrs					
6.3500	.00	.00	.00	.00	.00
6.6000	.01	.01	.01	.02	.02
6.8500	.03	.03	.04	.04	.05
7.1000	.05	.06	.06	.07	.07
7.3500	.08	.08	.09	.09	.10
7.6000	.10	.11	.11	.12	.12
7.8500	.13	.13	.14	.15	.16
8.1000	.17	.18	.19	.20	.22
8.3500	.25	.27	.31	.34	.38
8.6000	.42	.46	.51	.56	.61
8.8500	.67	.72	.78	.84	.91
9.1000	.97	1.04	1.10	1.17	1.23
9.3500	1.30	1.36	1.42	1.48	1.54
9.6000	1.60	1.67	1.73	1.81	1.89
9.8500	1.97	2.06	2.16	2.26	2.37
10.1000	2.48	2.61	2.73	2.87	3.02
10.3500	3.17	3.33	3.50	3.68	3.87
10.6000	4.07	4.28	4.50	4.75	5.00
10.8500	5.28	5.57	5.88	6.20	6.55
11.1000	6.93	7.34	7.79	8.29	8.87
11.3500	9.50	10.18	10.92	11.77	12.85
11.6000	14.37	16.65	20.47	26.07	33.92
11.8500	45.17	61.55	81.65	104.17	128.48
12.1000	149.00	160.81	162.28	154.99	141.46
12.3500	126.25	110.75	96.32	84.77	75.04
12.6000	66.86	60.00	54.32	49.40	45.17
12.8500	41.61	38.75	36.28	34.15	32.33
13.1000	30.79	29.40	28.16	27.05	26.07
13.3500	25.16	24.31	23.52	22.81	22.16
13.6000	21.56	21.01	20.49	19.98	19.48
13.8500	19.00	18.53	18.06	17.61	17.16

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

Time hrs					
14.1000	16.72	16.28	15.84	15.40	14.96
14.3500	14.50	14.00	13.39	12.74	12.17
14.6000	11.71	11.37	11.11	10.90	10.73
14.8500	10.58	10.45	10.32	10.21	10.10
15.1000	9.99	9.88	9.77	9.67	9.56
15.3500	9.46	9.35	9.25	9.14	9.04
15.6000	8.93	8.82	8.72	8.61	8.51
15.8500	8.40	8.29	8.19	8.08	7.97
16.1000	7.87	7.77	7.67	7.58	7.50
16.3500	7.43	7.36	7.30	7.25	7.20
16.6000	7.15	7.10	7.06	7.02	6.98
16.8500	6.94	6.90	6.86	6.82	6.78
17.1000	6.74	6.70	6.67	6.63	6.59
17.3500	6.55	6.52	6.48	6.44	6.40
17.6000	6.36	6.32	6.29	6.25	6.21
17.8500	6.17	6.13	6.10	6.06	6.02
18.1000	5.98	5.94	5.91	5.87	5.83
18.3500	5.79	5.75	5.71	5.67	5.64
18.6000	5.60	5.56	5.52	5.48	5.44
18.8500	5.40	5.36	5.33	5.29	5.25
19.1000	5.21	5.17	5.13	5.09	5.05
19.3500	5.01	4.97	4.94	4.90	4.86
19.6000	4.82	4.78	4.74	4.70	4.66
19.8500	4.62	4.58	4.54	4.50	4.46
20.1000	4.43	4.39	4.35	4.32	4.30
20.3500	4.27	4.25	4.23	4.22	4.20
20.6000	4.19	4.18	4.17	4.16	4.15
20.8500	4.14	4.13	4.13	4.12	4.11
21.1000	4.10	4.09	4.09	4.08	4.07
21.3500	4.06	4.06	4.05	4.04	4.03
21.6000	4.03	4.02	4.01	4.00	4.00
21.8500	3.99	3.98	3.97	3.97	3.96
22.1000	3.95	3.94	3.94	3.93	3.92
22.3500	3.91	3.91	3.90	3.89	3.88
22.6000	3.88	3.87	3.86	3.85	3.85
22.8500	3.84	3.83	3.82	3.82	3.81
23.1000	3.80	3.79	3.78	3.78	3.77
23.3500	3.76	3.75	3.75	3.74	3.73
23.6000	3.72	3.72	3.71	3.70	3.69
23.8500	3.69	3.68	3.67	3.65	3.60
24.1000	3.46	3.21	2.88	2.51	2.11
24.3500	1.73	1.40	1.10	.86	.68
24.6000	.54	.42	.33	.26	.21
24.8500	.16	.13	.10	.08	.06
25.1000	.05	.04	.03	.02	.02

HYDROGRAPH ORDINATES (cfs)  
Output Time increment = .0500 hrs

Time |  
hrs | Time on left represents time for first value in each row.

---

25.3500	.01	.01	.01	.01	.01
25.6000	.00	.00	.00	.00	.00
25.8500	.00	.00	.00	.00	.00
26.1000	.00				

SUMMARY FOR HYDROGRAPH ADDITION  
 at Node: OUTLET A

HYG Directory: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\

```

=====
Upstream Link ID  Upstream Node ID  HYG file      HYG ID        HYG tag
-----
ADDLINK 20        AREA A                AREA A        100 YR
REACH 10          JUNC 10              REACH 10     100 YR
=====
  
```

INFLOWS TO: OUTLET A

```

-----
HYG file          HYG ID          HYG tag        Volume      Peak Time     Peak Flow
                   cu.ft          hrs            cfs
-----
                AREA A          100 YR        1098531     12.2000      254.85
                REACH 10        100 YR        195008     12.0500      54.41
  
```

TOTAL FLOW INTO: OUTLET A

```

-----
HYG file          HYG ID          HYG tag        Volume      Peak Time     Peak Flow
                   cu.ft          hrs            cfs
-----
                OUTLET A          100 YR        1293539     12.1500      295.88
  
```

TOTAL NODE INFLOW...

HYG file =  
HYG ID = OUTLET A  
HYG Tag = 100 YR

-----  
Peak Discharge = 295.88 cfs  
Time to Peak = 12.1500 hrs  
HYG Volume = 1293539 cu.ft  
-----

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time hrs	Time on left represents time for first value in each row.				
4.8000	.00	.00	.00	.00	.00
5.0500	.01	.01	.02	.02	.03
5.3000	.04	.04	.05	.06	.06
5.5500	.07	.08	.08	.09	.10
5.8000	.11	.11	.12	.13	.14
6.0500	.15	.16	.17	.18	.19
6.3000	.20	.21	.23	.25	.27
6.5500	.30	.33	.37	.41	.45
6.8000	.49	.54	.59	.63	.68
7.0500	.73	.78	.83	.88	.94
7.3000	.99	1.04	1.10	1.15	1.20
7.5500	1.26	1.31	1.37	1.43	1.49
7.8000	1.54	1.60	1.66	1.72	1.78
8.0500	1.84	1.90	1.96	2.03	2.10
8.3000	2.18	2.26	2.35	2.45	2.55
8.5500	2.66	2.76	2.88	3.00	3.12
8.8000	3.24	3.37	3.50	3.64	3.78
9.0500	3.92	4.06	4.20	4.34	4.47
9.3000	4.60	4.71	4.83	4.93	5.04
9.5500	5.14	5.24	5.34	5.46	5.59
9.8000	5.74	5.90	6.08	6.27	6.48
10.0500	6.69	6.92	7.17	7.43	7.70
10.3000	8.00	8.31	8.64	8.98	9.34
10.5500	9.71	10.10	10.52	10.96	11.43
10.8000	11.93	12.45	13.02	13.61	14.24
11.0500	14.90	15.61	16.37	17.20	18.10
11.3000	19.12	20.25	21.45	22.72	24.20
11.5500	26.04	28.58	32.46	39.25	49.32
11.8000	63.45	83.47	112.04	156.66	215.76
12.0500	265.80	292.06	295.88	285.62	266.33
12.3000	239.80	212.03	184.29	158.50	137.77

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs					
12.5500	120.40	106.06	94.23	84.56	76.24
12.8000	69.14	63.19	58.45	54.37	50.88
13.0500	47.91	45.43	43.22	41.25	39.51
13.3000	37.99	36.59	35.30	34.11	33.07
13.5500	32.13	31.28	30.50	29.78	29.08
13.8000	28.40	27.75	27.13	26.53	25.93
14.0500	25.36	24.80	24.26	23.74	23.24
14.3000	22.77	22.33	21.91	21.52	21.16
14.5500	20.82	20.48	20.15	19.82	19.49
14.8000	19.15	18.80	18.46	18.06	17.61
15.0500	17.11	16.61	16.19	15.81	15.49
15.3000	15.22	14.99	14.78	14.59	14.41
15.5500	14.23	14.06	13.88	13.71	13.54
15.8000	13.37	13.20	13.03	12.86	12.69
16.0500	12.53	12.36	12.20	12.05	11.90
16.3000	11.78	11.66	11.55	11.45	11.37
16.5500	11.29	11.21	11.14	11.07	11.00
16.8000	10.93	10.87	10.80	10.74	10.68
17.0500	10.62	10.56	10.49	10.43	10.37
17.3000	10.31	10.25	10.19	10.13	10.07
17.5500	10.01	9.95	9.89	9.83	9.77
17.8000	9.71	9.65	9.58	9.52	9.46
18.0500	9.40	9.34	9.28	9.22	9.16
18.3000	9.10	9.04	8.98	8.91	8.85
18.5500	8.79	8.73	8.67	8.61	8.55
18.8000	8.49	8.42	8.36	8.30	8.24
19.0500	8.18	8.12	8.06	7.99	7.93
19.3000	7.87	7.81	7.75	7.69	7.62
19.5500	7.56	7.50	7.44	7.38	7.32
19.8000	7.25	7.19	7.13	7.07	7.01
20.0500	6.94	6.88	6.83	6.77	6.72
20.3000	6.68	6.64	6.61	6.58	6.56
20.5500	6.53	6.52	6.50	6.48	6.46
20.8000	6.45	6.44	6.42	6.41	6.40
21.0500	6.38	6.37	6.36	6.35	6.33
21.3000	6.32	6.31	6.30	6.29	6.27
21.5500	6.26	6.25	6.24	6.23	6.21
21.8000	6.20	6.19	6.18	6.17	6.15
22.0500	6.14	6.13	6.12	6.11	6.09
22.3000	6.08	6.07	6.06	6.05	6.03
22.5500	6.02	6.01	6.00	5.99	5.97
22.8000	5.96	5.95	5.94	5.92	5.91
23.0500	5.90	5.89	5.88	5.86	5.85
23.3000	5.84	5.83	5.82	5.80	5.79
23.5500	5.78	5.77	5.76	5.74	5.73

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

Time hrs					
23.8000	5.72	5.71	5.69	5.68	5.65
24.0500	5.57	5.36	4.95	4.43	3.86
24.3000	3.25	2.67	2.14	1.68	1.32
24.5500	1.04	.82	.64	.50	.40
24.8000	.31	.24	.19	.15	.12
25.0500	.09	.07	.06	.04	.03
25.3000	.02	.02	.01	.01	.01
25.5500	.01	.01	.00	.00	.00
25.8000	.00	.00	.00	.00	.00
26.0500	.00	.00	.00	.00	.00

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW

Elevation (ft)	Planimeter (sq.in)	Area (sq.ft)	A1+A2+sqrt(A1*A2) (sq.ft)	Volume (cu.ft)	Volume Sum (cu.ft)
605.50	-----	0	0	0	0
606.00	-----	300	300	50	50
607.00	-----	2273	3399	1133	1183
608.00	-----	4950	10577	3526	4709
610.00	-----	7175	18085	12056	16765
612.00	-----	9452	24862	16575	33340
614.00	-----	11956	32039	21359	54699

POND VOLUME EQUATIONS

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

$$\text{Volume} = (1/3) * (\text{EL2}-\text{EL1}) * (\text{Area1} + \text{Area2} + \text{sq.rt.}(\text{Area1}*\text{Area2}))$$

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.= 605.50 ft  
Increment = .25 ft  
Max. Elev.= 614.00 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
Orifice-Area	3	----> TW	613.000	614.000
Weir-Rectangular	2	----> TW	612.000	613.000
Culvert-Circular	1	----> TW	605.500	614.000

TW SETUP, DS Channel

OUTLET STRUCTURE INPUT DATA

Structure ID = 3  
Structure Type = Orifice-Area  
-----  
# of Openings = 1  
Invert Elev. = 612.00 ft  
Area = 11.6700 sq.ft  
Top of Orifice = 613.00 ft  
Datum Elev. = 612.50 ft  
Orifice Coeff. = .600

Structure ID = 2  
Structure Type = Weir-Rectangular  
-----  
# of Openings = 1  
Crest Elev. = 612.00 ft  
Weir Length = 11.67 ft  
Weir Coeff. = 3.300000  
  
Weir TW effects (Use adjustment equation)

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID = 1  
Structure Type = Culvert-Circular  
-----  
No. Barrels = 1  
Barrel Diameter = 1.0000 ft  
Upstream Invert = 605.50 ft  
Dnstream Invert = 605.00 ft  
Horiz. Length = 50.00 ft  
Barrel Length = 50.00 ft  
Barrel Slope = .01000 ft/ft

OUTLET CONTROL DATA...  
Mannings n = .0130  
Ke = .2000 (forward entrance loss)  
Kb = .031274 (per ft of full flow)  
Kr = .2000 (reverse entrance loss)  
HW Convergence = .001 +/- ft

INLET CONTROL DATA...  
Equation form = 1  
Inlet Control K = .0045  
Inlet Control M = 2.0000  
Inlet Control c = .03170  
Inlet Control Y = .6900  
T1 ratio (HW/D) = 1.090  
T2 ratio (HW/D) = 1.192  
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 = 606.59 ft ---> Flow = 2.75 cfs  
At T2 Elev = 606.69 ft ---> Flow = 3.14 cfs

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

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 3 (Orifice-Area)  
 -----  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = TW (Pond Outfall)

WS Elev, Device Q		Tail Water		Notes	
WS Elev.	Q	TW Elev	Converge	Computation Messages	
ft	cfs	ft	+/-ft		
605.50	.00	Free Outfall	E < E1=	613.000	
605.75	.00	Free Outfall	E < E1=	613.000	
606.00	.00	Free Outfall	E < E1=	613.000	
606.25	.00	Free Outfall	E < E1=	613.000	
606.50	.00	Free Outfall	E < E1=	613.000	
606.75	.00	Free Outfall	E < E1=	613.000	
607.00	.00	Free Outfall	E < E1=	613.000	
607.25	.00	Free Outfall	E < E1=	613.000	
607.50	.00	Free Outfall	E < E1=	613.000	
607.75	.00	Free Outfall	E < E1=	613.000	
608.00	.00	Free Outfall	E < E1=	613.000	
608.25	.00	Free Outfall	E < E1=	613.000	
608.50	.00	Free Outfall	E < E1=	613.000	
608.75	.00	Free Outfall	E < E1=	613.000	
609.00	.00	Free Outfall	E < E1=	613.000	
609.25	.00	Free Outfall	E < E1=	613.000	
609.50	.00	Free Outfall	E < E1=	613.000	
609.75	.00	Free Outfall	E < E1=	613.000	
610.00	.00	Free Outfall	E < E1=	613.000	
610.25	.00	Free Outfall	E < E1=	613.000	
610.50	.00	Free Outfall	E < E1=	613.000	
610.75	.00	Free Outfall	E < E1=	613.000	
611.00	.00	Free Outfall	E < E1=	613.000	
611.25	.00	Free Outfall	E < E1=	613.000	
611.50	.00	Free Outfall	E < E1=	613.000	
611.75	.00	Free Outfall	E < E1=	613.000	
612.00	.00	Free Outfall	E < E1=	613.000	
612.25	.00	Free Outfall	E < E1=	613.000	
612.50	.00	Free Outfall	E < E1=	613.000	
612.75	.00	Free Outfall	E < E1=	613.000	
613.00	39.72	Free Outfall	H =.50		
613.25	48.64	Free Outfall	H =.75		
613.50	56.17	Free Outfall	H =1.00		
613.75	62.80	Free Outfall	H =1.25		

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 3 (Orifice-Area)  
-----  
Upstream ID = (Pond Water Surface)  
DNstream ID = TW (Pond Outfall)

WS Elev, Device	Q	Tail Water	Notes	
WS Elev.	Q	TW Elev	Converge	Computation Messages
ft	cfs	ft	+/-ft	
614.00	68.79	Free Outfall	H =1.50	

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 2 (Weir-Rectangular)  
 -----  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = TW (Pond Outfall)

WS Elev, Device Q		Tail Water		Notes
WS Elev.	Q	TW Elev	Converge	Computation Messages
ft	cfs	ft	+/-ft	
605.50	.00	Free Outfall		HW & TW below Inv.El.=612.000
605.75	.00	Free Outfall		HW & TW below Inv.El.=612.000
606.00	.00	Free Outfall		HW & TW below Inv.El.=612.000
606.25	.00	Free Outfall		HW & TW below Inv.El.=612.000
606.50	.00	Free Outfall		HW & TW below Inv.El.=612.000
606.75	.00	Free Outfall		HW & TW below Inv.El.=612.000
607.00	.00	Free Outfall		HW & TW below Inv.El.=612.000
607.25	.00	Free Outfall		HW & TW below Inv.El.=612.000
607.50	.00	Free Outfall		HW & TW below Inv.El.=612.000
607.75	.00	Free Outfall		HW & TW below Inv.El.=612.000
608.00	.00	Free Outfall		HW & TW below Inv.El.=612.000
608.25	.00	Free Outfall		HW & TW below Inv.El.=612.000
608.50	.00	Free Outfall		HW & TW below Inv.El.=612.000
608.75	.00	Free Outfall		HW & TW below Inv.El.=612.000
609.00	.00	Free Outfall		HW & TW below Inv.El.=612.000
609.25	.00	Free Outfall		HW & TW below Inv.El.=612.000
609.50	.00	Free Outfall		HW & TW below Inv.El.=612.000
609.75	.00	Free Outfall		HW & TW below Inv.El.=612.000
610.00	.00	Free Outfall		HW & TW below Inv.El.=612.000
610.25	.00	Free Outfall		HW & TW below Inv.El.=612.000
610.50	.00	Free Outfall		HW & TW below Inv.El.=612.000
610.75	.00	Free Outfall		HW & TW below Inv.El.=612.000
611.00	.00	Free Outfall		HW & TW below Inv.El.=612.000
611.25	.00	Free Outfall		HW & TW below Inv.El.=612.000
611.50	.00	Free Outfall		HW & TW below Inv.El.=612.000
611.75	.00	Free Outfall		HW & TW below Inv.El.=612.000
612.00	.00	Free Outfall		H=.00; Htw=.00; Qfree=.00;
612.25	4.81	Free Outfall		H=.25; Htw=.00; Qfree=4.81;
612.50	13.62	Free Outfall		H=.50; Htw=.00; Qfree=13.62;
612.75	25.01	Free Outfall		H=.75; Htw=.00; Qfree=25.01;
613.00	.00	Free Outfall		E = or > E2= 613.000
613.25	.00	Free Outfall		E = or > E2= 613.000
613.50	.00	Free Outfall		E = or > E2= 613.000
613.75	.00	Free Outfall		E = or > E2= 613.000

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 2 (Weir-Rectangular)  
-----  
Upstream ID = (Pond Water Surface)  
DNstream ID = TW (Pond Outfall)

WS Elev, Device	Q	Tail Water	Notes	
WS Elev.	Q	TW Elev	Converge	Computation Messages
ft	cfs	ft	+/-ft	
614.00	.00	Free Outfall	E = or > E2=	613.000

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 1 (Culvert-Circular)  
 -----  
 Mannings open channel maximum capacity: 3.83 cfs  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = TW (Pond Outfall)

WS Elev, Device	Q	Tail Water	Notes	
WS Elev. ft	Q cfs	TW Elev ft	Converge +/-ft	Computation Messages
605.50	.00	Free Outfall		
605.75	.19	Free Outfall		Upstream HW & DNstream TW < Inv.El
606.00	.70	Free Outfall		RELAXED CONVERGENCE: HW +/- .002ft; Q +/- .0017cfs
606.25	1.45	Free Outfall		CRIT.DEPTH CONTROL Vh= .127ft Dcr= .347ft CRIT.DEPTH
606.50	2.35	Free Outfall		CRIT.DEPTH CONTROL Vh= .201ft Dcr= .510ft CRIT.DEPTH
606.75	3.30	Free Outfall		CRIT.DEPTH CONTROL Vh= .287ft Dcr= .656ft CRIT.DEPTH
607.00	3.98	Free Outfall		CRIT.DEPTH CONTROL Vh= .394ft Dcr= .777ft CRIT.DEPTH
607.25	4.35	Free Outfall		INLET CONTROL... Submerged: HW =1.50
607.50	4.72	Free Outfall		FULL FLOW...Lfull=36.40ft Vh=.477ft HL=1.114ft
607.75	5.06	Free Outfall		FULL FLOW...Lfull=43.43ft Vh=.561ft HL=1.434ft
608.00	5.40	Free Outfall		FULL FLOW...Lfull=46.55ft Vh=.646ft HL=1.716ft
608.25	5.71	Free Outfall		FULL FLOW...Lfull=47.91ft Vh=.733ft HL=1.979ft
608.50	6.01	Free Outfall		FULL FLOW...Lfull=48.84ft Vh=.821ft HL=2.238ft
608.75	6.30	Free Outfall		FULL FLOW...Lfull=49.07ft Vh=.911ft HL=2.491ft
609.00	6.58	Free Outfall		FULL FLOW...Lfull=49.34ft Vh=1.000ft HL=2.743ft
609.25	6.84	Free Outfall		FULL FLOW...Lfull=49.53ft Vh=1.089ft HL=2.995ft
609.50	7.10	Free Outfall		FULL FLOW...Lfull=49.73ft Vh=1.179ft HL=3.247ft
				FULL FLOW...Lfull=49.76ft Vh=1.269ft HL=3.497ft



RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 1 (Culvert-Circular)  
 -----  
 Mannings open channel maximum capacity: 3.83 cfs  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = TW (Pond Outfall)

WS Elev, Device Q	Tail Water	Notes
WS Elev. ft	Q cfs	TW Elev Converge ft +/-ft
-----		
Computation Messages		
-----		
609.75	7.35	Free Outfall
		FULL FLOW...Lfull=49.79ft Vh=1.359ft HL=3.748ft
610.00	7.59	Free Outfall
		FULL FLOW...Lfull=49.81ft Vh=1.449ft HL=3.997ft
610.25	7.82	Free Outfall
		FULL FLOW...Lfull=49.86ft Vh=1.540ft HL=4.249ft
610.50	8.04	Free Outfall
		FULL FLOW...Lfull=49.87ft Vh=1.630ft HL=4.498ft
610.75	8.26	Free Outfall
		FULL FLOW...Lfull=49.90ft Vh=1.720ft HL=4.749ft
611.00	8.48	Free Outfall
		FULL FLOW...Lfull=49.91ft Vh=1.810ft HL=4.998ft
611.25	8.69	Free Outfall
		FULL FLOW...Lfull=49.94ft Vh=1.901ft HL=5.250ft
611.50	8.89	Free Outfall
		FULL FLOW...Lfull=49.95ft Vh=1.991ft HL=5.500ft
611.75	9.09	Free Outfall
		FULL FLOW...Lfull=49.95ft Vh=2.081ft HL=5.749ft
612.00	9.28	Free Outfall
		FULL FLOW...Lfull=49.96ft Vh=2.172ft HL=5.999ft
612.25	9.48	Free Outfall
		FULL FLOW...Lfull=49.96ft Vh=2.262ft HL=6.249ft
612.50	9.66	Free Outfall
		FULL FLOW...Lfull=49.96ft Vh=2.353ft HL=6.500ft
612.75	9.85	Free Outfall
		FULL FLOW...Lfull=49.98ft Vh=2.443ft HL=6.750ft
613.00	10.03	Free Outfall
		FULL FLOW...Lfull=49.98ft Vh=2.533ft HL=6.999ft
613.25	10.21	Free Outfall
		FULL FLOW...Lfull=49.98ft Vh=2.624ft HL=7.250ft
613.50	10.38	Free Outfall
		FULL FLOW...Lfull=49.98ft Vh=2.715ft HL=7.501ft
613.75	10.55	Free Outfall
		FULL FLOW...Lfull=49.98ft Vh=2.805ft HL=7.749ft

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 1 (Culvert-Circular)

Mannings open channel maximum capacity: 3.83 cfs

Upstream ID = (Pond Water Surface)

DNstream ID = TW (Pond Outfall)

WS Elev, Device	Q	Tail Water		Notes
ft	cfs	ft	+/-ft	Computation Messages
614.00	10.72	Free Outfall		
FULL FLOW...Lfull=49.98ft Vh=2.895ft HL=8.000ft				

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
605.50	.00	Free Outfall		None contributing
605.75	.19	Free Outfall	1	
606.00	.70	Free Outfall	1	
606.25	1.45	Free Outfall	1	
606.50	2.35	Free Outfall	1	
606.75	3.30	Free Outfall	1	
607.00	3.98	Free Outfall	1	
607.25	4.35	Free Outfall	1	
607.50	4.72	Free Outfall	1	
607.75	5.06	Free Outfall	1	
608.00	5.40	Free Outfall	1	
608.25	5.71	Free Outfall	1	
608.50	6.01	Free Outfall	1	
608.75	6.30	Free Outfall	1	
609.00	6.58	Free Outfall	1	
609.25	6.84	Free Outfall	1	
609.50	7.10	Free Outfall	1	
609.75	7.35	Free Outfall	1	
610.00	7.59	Free Outfall	1	
610.25	7.82	Free Outfall	1	
610.50	8.04	Free Outfall	1	
610.75	8.26	Free Outfall	1	
611.00	8.48	Free Outfall	1	
611.25	8.69	Free Outfall	1	
611.50	8.89	Free Outfall	1	
611.75	9.09	Free Outfall	1	
612.00	9.28	Free Outfall	2 +1	
612.25	14.29	Free Outfall	2 +1	
612.50	23.28	Free Outfall	2 +1	
612.75	34.86	Free Outfall	2 +1	
613.00	49.74	Free Outfall	3 +1	
613.25	58.85	Free Outfall	3 +1	
613.50	66.55	Free Outfall	3 +1	
613.75	73.35	Free Outfall	3 +1	
614.00	79.51	Free Outfall	3 +1	

LEVEL POOL ROUTING DATA

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
Inflow HYG file = NONE STORED - EX. BASIN 1 IN 2 YR  
Outflow HYG file = NONE STORED - EX. BASIN 1 OUT 2 YR

Pond Node Data = EX. BASIN 1  
Pond Volume Data = EX. BASIN 1  
Pond Outlet Data = Countryshire 3

No Infiltration

INITIAL CONDITIONS

-----  
Starting WS Elev = 605.50 ft  
Starting Volume = 0 cu.ft  
Starting Outflow = .00 cfs  
Starting Infiltr. = .00 cfs  
Starting Total Qout= .00 cfs  
Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infiltr. cfs	Q Total cfs	2S/t + O cfs
605.50	.00	0	0	.00	.00	.00
605.75	.19	6	75	.00	.19	.26
606.00	.70	50	300	.00	.70	1.25
606.25	1.45	163	620	.00	1.45	3.25
606.50	2.35	370	1056	.00	2.35	6.46
606.75	3.30	700	1607	.00	3.30	11.08
607.00	3.98	1183	2273	.00	3.98	17.13
607.25	4.35	1821	2846	.00	4.35	24.59
607.50	4.72	2611	3483	.00	4.72	33.73
607.75	5.06	3568	4184	.00	5.06	44.71
608.00	5.40	4709	4950	.00	5.40	57.71
608.25	5.71	5978	5206	.00	5.71	72.13
608.50	6.01	7312	5468	.00	6.01	87.26
608.75	6.30	8712	5736	.00	6.30	103.10
609.00	6.58	10181	6011	.00	6.58	119.69
609.25	6.84	11718	6292	.00	6.84	137.04
609.50	7.10	13327	6580	.00	7.10	155.18
609.75	7.35	15009	6874	.00	7.35	174.11
610.00	7.59	16765	7175	.00	7.59	193.86
610.25	7.82	18592	7442	.00	7.82	214.40

Name... EX. BASIN 1

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW

LEVEL POOL ROUTING DATA

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
 Inflow HYG file = NONE STORED - EX. BASIN 1 IN 2 YR  
 Outflow HYG file = NONE STORED - EX. BASIN 1 OUT 2 YR

Pond Node Data = EX. BASIN 1  
 Pond Volume Data = EX. BASIN 1  
 Pond Outlet Data = Countryshire 3

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 605.50 ft  
 Starting Volume = 0 cu.ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infiltr. cfs	Q Total cfs	2S/t + O cfs
610.50	8.04	20487	7715	.00	8.04	235.67
610.75	8.26	22450	7992	.00	8.26	257.71
611.00	8.48	24483	8274	.00	8.48	280.51
611.25	8.69	26588	8561	.00	8.69	304.10
611.50	8.89	28764	8853	.00	8.89	328.49
611.75	9.09	31015	9150	.00	9.09	353.70
612.00	9.28	33340	9452	.00	9.28	379.73
612.25	14.29	35740	9749	.00	14.29	411.40
612.50	23.28	38215	10050	.00	23.28	447.89
612.75	34.86	40765	10357	.00	34.86	487.81
613.00	49.74	43393	10667	.00	49.74	531.89
613.25	58.85	46099	10983	.00	58.85	571.07
613.50	66.55	48885	11302	.00	66.55	609.72
613.75	73.35	51751	11627	.00	73.35	648.36
614.00	79.51	54699	11956	.00	79.51	687.28

SUMMARY FOR HYDROGRAPH ADDITION  
 at Node: EX. BASIN 1 IN

HYG Directory: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\

```

=====
Upstream Link ID  Upstream Node ID  HYG file      HYG ID        HYG tag
-----
ADDLINK 10        CS AREA 3          CS AREA 3      2 YR
=====
  
```

INFLOWS TO: EX. BASIN 1 IN

```

----- Volume      Peak Time      Peak Flow
HYG file      HYG ID        HYG tag      cu.ft         hrs           cfs
-----
          CS AREA 3          2 YR         69475         11.9500      28.78
  
```

TOTAL FLOW INTO: EX. BASIN 1 IN

```

----- Volume      Peak Time      Peak Flow
HYG file      HYG ID        HYG tag      cu.ft         hrs           cfs
-----
EX. BASIN 1 IN  2 YR         69475         11.9500      28.78
  
```

Type... Node: Pond Inflow Summary  
 Name... EX. BASIN 1 IN  
 File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.FPW  
 Storm... TypeII 24hr Tag: 2 YR

Page 13.04  
 Event: 2 yr

TOTAL NODE INFLOW...

HYG file =  
 HYG ID = EX. BASIN 1 IN  
 HYG Tag = 2 YR

-----  
 Peak Discharge = 28.78 cfs  
 Time to Peak = 11.9500 hrs  
 HYG Volume = 69475 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time | | | | | |  
 hrs | | | | | |  
 -----  
 Time on left represents time for first value in each row.

7.9000	.00	.00	.00	.01	.01
8.1500	.01	.02	.02	.02	.03
8.4000	.03	.04	.04	.05	.05
8.6500	.06	.06	.07	.07	.08
8.9000	.09	.09	.10	.11	.11
9.1500	.12	.12	.13	.13	.14
9.4000	.15	.15	.16	.16	.17
9.6500	.18	.19	.20	.21	.22
9.9000	.23	.24	.25	.27	.28
10.1500	.30	.31	.33	.35	.37
10.4000	.39	.41	.43	.45	.47
10.6500	.50	.53	.56	.60	.63
10.9000	.67	.71	.75	.79	.85
11.1500	.92	1.00	1.08	1.17	1.26
11.4000	1.35	1.45	1.56	2.14	3.12
11.6500	4.66	6.93	9.63	13.24	19.05
11.9000	27.42	28.78	25.85	19.43	9.57
12.1500	6.15	4.96	4.45	4.07	3.80
12.4000	3.48	3.20	2.87	2.65	2.44
12.6500	2.33	2.25	2.18	2.11	2.04
12.9000	1.97	1.90	1.83	1.77	1.71
13.1500	1.67	1.63	1.59	1.55	1.52
13.4000	1.48	1.44	1.40	1.37	1.33
13.6500	1.31	1.28	1.25	1.22	1.19
13.9000	1.16	1.14	1.11	1.09	1.07
14.1500	1.06	1.04	1.03	1.03	1.02
14.4000	1.01	1.00	.99	.98	.97
14.6500	.96	.95	.94	.93	.92
14.9000	.91	.90	.89	.88	.87
15.1500	.86	.85	.84	.83	.82
15.4000	.81	.80	.79	.78	.77

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

Time hrs					
15.6500	.76	.75	.74	.73	.72
15.9000	.71	.70	.69	.69	.68
16.1500	.67	.67	.67	.66	.66
16.4000	.66	.65	.65	.65	.64
16.6500	.64	.64	.63	.63	.62
16.9000	.62	.62	.61	.61	.61
17.1500	.60	.60	.60	.59	.59
17.4000	.59	.58	.58	.58	.57
17.6500	.57	.57	.56	.56	.55
17.9000	.55	.55	.54	.54	.54
18.1500	.53	.53	.53	.52	.52
18.4000	.51	.51	.51	.50	.50
18.6500	.50	.49	.49	.49	.48
18.9000	.48	.48	.47	.47	.46
19.1500	.46	.46	.45	.45	.45
19.4000	.44	.44	.44	.43	.43
19.6500	.42	.42	.42	.41	.41
19.9000	.41	.40	.40	.40	.39
20.1500	.39	.39	.39	.39	.39
20.4000	.39	.39	.39	.39	.38
20.6500	.38	.38	.38	.38	.38
20.9000	.38	.38	.38	.38	.38
21.1500	.38	.38	.38	.38	.38
21.4000	.37	.37	.37	.37	.37
21.6500	.37	.37	.37	.37	.37
21.9000	.37	.37	.37	.36	.36
22.1500	.36	.36	.36	.36	.36
22.4000	.36	.36	.36	.36	.36
22.6500	.36	.36	.36	.35	.35
22.9000	.35	.35	.35	.35	.35
23.1500	.35	.35	.35	.35	.35
23.4000	.35	.35	.34	.34	.34
23.6500	.34	.34	.34	.34	.34
23.9000	.34	.34	.34	.24	.08
24.1500	.02	.01	.00	.00	



Type.... Node: Pond Inflow Summary Page 13.06  
 Name.... EX. BASIN 1 IN Event: 10 yr  
 File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW  
 Storm... TypeII 24hr Tag: 10 YR

SUMMARY FOR HYDROGRAPH ADDITION  
 at Node: EX. BASIN 1 IN

HYG Directory: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\

```

=====
Upstream Link ID  Upstream Node ID  HYG file      HYG ID        HYG tag
-----
ADDLINK 10        CS AREA 3      CS AREA 3     10 YR
=====
  
```

INFLOWS TO: EX. BASIN 1 IN

```

----- Volume      Peak Time      Peak Flow
HYG file  HYG ID        HYG tag      cu.ft         hrs           cfs
-----
          CS AREA 3      10 YR        118654        11.9500      48.38
  
```

TOTAL FLOW INTO: EX. BASIN 1 IN

```

----- Volume      Peak Time      Peak Flow
HYG file  HYG ID        HYG tag      cu.ft         hrs           cfs
-----
          EX. BASIN 1 IN  10 YR        118654        11.9500      48.38
  
```

TOTAL NODE INFLOW...  
 HYG file =  
 HYG ID = EX. BASIN 1 IN  
 HYG Tag = 10 YR

-----

Peak Discharge = 48.38 cfs  
 Time to Peak = 11.9500 hrs  
 HYG Volume = 118654 cu.ft

-----

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs					
6.1500	.00	.00	.01	.01	.01
6.4000	.02	.02	.03	.03	.04
6.6500	.04	.05	.05	.06	.06
6.9000	.06	.07	.07	.08	.08
7.1500	.09	.09	.10	.10	.11
7.4000	.11	.12	.12	.13	.13
7.6500	.14	.15	.15	.16	.16
7.9000	.17	.17	.18	.18	.19
8.1500	.20	.21	.22	.23	.24
8.4000	.25	.26	.27	.28	.30
8.6500	.31	.32	.33	.35	.36
8.9000	.37	.39	.40	.41	.43
9.1500	.44	.44	.45	.46	.47
9.4000	.48	.48	.49	.50	.52
9.6500	.53	.56	.58	.60	.62
9.9000	.65	.67	.69	.72	.75
10.1500	.78	.82	.85	.89	.92
10.4000	.96	1.00	1.04	1.08	1.13
10.6500	1.19	1.25	1.31	1.38	1.44
10.9000	1.51	1.58	1.65	1.74	1.85
11.1500	1.98	2.13	2.28	2.45	2.61
11.4000	2.79	2.96	3.16	4.29	6.17
11.6500	9.06	13.20	17.89	24.02	33.60
11.9000	47.10	48.38	42.73	31.77	15.56
12.1500	9.94	7.99	7.16	6.53	6.08
12.4000	5.56	5.11	4.58	4.23	3.89
12.6500	3.71	3.57	3.47	3.35	3.24
12.9000	3.12	3.02	2.90	2.81	2.71
13.1500	2.64	2.58	2.52	2.45	2.40
13.4000	2.33	2.27	2.21	2.16	2.10
13.6500	2.06	2.01	1.97	1.92	1.88

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

Time hrs					
13.9000	1.83	1.79	1.74	1.71	1.68
14.1500	1.66	1.64	1.62	1.61	1.59
14.4000	1.58	1.56	1.55	1.53	1.52
14.6500	1.50	1.49	1.47	1.45	1.44
14.9000	1.43	1.41	1.39	1.38	1.36
15.1500	1.35	1.33	1.32	1.30	1.29
15.4000	1.27	1.25	1.24	1.22	1.20
15.6500	1.19	1.18	1.16	1.14	1.13
15.9000	1.11	1.10	1.08	1.07	1.06
16.1500	1.05	1.04	1.04	1.03	1.03
16.4000	1.02	1.02	1.01	1.01	1.00
16.6500	.99	.99	.98	.98	.97
16.9000	.97	.96	.95	.95	.94
17.1500	.94	.93	.93	.92	.92
17.4000	.91	.90	.90	.89	.89
17.6500	.88	.88	.87	.86	.86
17.9000	.85	.85	.84	.84	.83
18.1500	.83	.82	.81	.81	.80
18.4000	.80	.79	.79	.78	.77
18.6500	.77	.76	.76	.75	.75
18.9000	.74	.74	.73	.72	.72
19.1500	.71	.71	.70	.70	.69
19.4000	.68	.68	.67	.67	.66
19.6500	.65	.65	.64	.64	.63
19.9000	.63	.62	.61	.61	.61
20.1500	.60	.60	.60	.60	.60
20.4000	.60	.60	.60	.60	.59
20.6500	.59	.59	.59	.59	.59
20.9000	.59	.59	.58	.58	.58
21.1500	.58	.58	.58	.58	.58
21.4000	.58	.58	.58	.57	.57
21.6500	.57	.57	.57	.57	.57
21.9000	.57	.56	.56	.56	.56
22.1500	.56	.56	.56	.56	.56
22.4000	.55	.55	.55	.55	.55
22.6500	.55	.55	.55	.54	.54
22.9000	.54	.54	.54	.54	.54
23.1500	.54	.54	.54	.53	.53
23.4000	.53	.53	.53	.53	.53
23.6500	.53	.53	.52	.52	.52
23.9000	.52	.52	.52	.37	.12
24.1500	.03	.01	.00	.00	

SUMMARY FOR HYDROGRAPH ADDITION  
 at Node: EX. BASIN 1 IN

HYG Directory: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\

```

=====
Upstream Link ID  Upstream Node ID  HYG file      HYG ID        HYG tag
-----
ADDLINK 10        CS AREA 3      CS AREA 3      100 YR
=====
  
```

INFLOWS TO: EX. BASIN 1 IN

```

-----
HYG file      HYG ID        HYG tag      Volume      Peak Time     Peak Flow
              cu.ft         hrs          cfs
-----
              CS AREA 3     100 YR      195019      11.9500      77.58
  
```

TOTAL FLOW INTO: EX. BASIN 1 IN

```

-----
HYG file      HYG ID        HYG tag      Volume      Peak Time     Peak Flow
              cu.ft         hrs          cfs
-----
              EX. BASIN 1 IN 100 YR      195019      11.9500      77.58
  
```

TOTAL NODE INFLOW...

HYG file =  
 HYG ID = EX. BASIN 1 IN  
 HYG Tag = 100 YR

-----  
 Peak Discharge = 77.58 cfs  
 Time to Peak = 11.9500 hrs  
 HYG Volume = 195019 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time hrs	Time on left represents time for first value in each row.				
4.6500	.00	.00	.01	.01	.02
4.9000	.03	.03	.04	.05	.05
5.1500	.06	.07	.07	.08	.09
5.4000	.09	.10	.11	.12	.12
5.6500	.13	.14	.14	.15	.16
5.9000	.17	.18	.18	.19	.20
6.1500	.21	.21	.22	.23	.24
6.4000	.25	.25	.26	.27	.28
6.6500	.29	.30	.30	.31	.32
6.9000	.33	.34	.35	.36	.37
7.1500	.37	.38	.39	.40	.41
7.4000	.42	.43	.44	.45	.45
7.6500	.46	.47	.48	.49	.50
7.9000	.51	.52	.53	.54	.56
8.1500	.57	.59	.61	.63	.66
8.4000	.68	.70	.72	.74	.77
8.6500	.79	.82	.84	.87	.89
8.9000	.92	.94	.97	.99	1.01
9.1500	1.03	1.04	1.05	1.06	1.08
9.4000	1.09	1.10	1.11	1.13	1.15
9.6500	1.18	1.22	1.26	1.30	1.34
9.9000	1.39	1.43	1.48	1.52	1.58
10.1500	1.63	1.70	1.76	1.83	1.89
10.4000	1.96	2.02	2.10	2.17	2.26
10.6500	2.36	2.47	2.58	2.69	2.80
10.9000	2.93	3.04	3.17	3.32	3.52
11.1500	3.74	4.01	4.27	4.56	4.83
11.4000	5.14	5.41	5.74	7.75	11.05
11.6500	16.04	23.07	30.78	40.64	55.75
11.9000	76.69	77.58	67.68	49.93	24.36
12.1500	15.50	12.42	11.11	10.13	9.42

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

Time hrs					
12.4000	8.61	7.90	7.08	6.53	6.00
12.6500	5.73	5.51	5.34	5.15	4.99
12.9000	4.80	4.64	4.45	4.31	4.16
13.1500	4.06	3.96	3.87	3.77	3.68
13.4000	3.58	3.49	3.39	3.30	3.22
13.6500	3.15	3.07	3.01	2.94	2.87
13.9000	2.80	2.74	2.66	2.61	2.56
14.1500	2.53	2.50	2.48	2.46	2.44
14.4000	2.41	2.39	2.36	2.34	2.31
14.6500	2.29	2.27	2.25	2.22	2.20
14.9000	2.17	2.15	2.12	2.10	2.08
15.1500	2.05	2.03	2.00	1.98	1.96
15.4000	1.93	1.91	1.89	1.86	1.83
15.6500	1.81	1.79	1.77	1.74	1.72
15.9000	1.69	1.67	1.64	1.62	1.61
16.1500	1.60	1.58	1.58	1.57	1.56
16.4000	1.55	1.54	1.53	1.53	1.52
16.6500	1.51	1.50	1.49	1.48	1.47
16.9000	1.47	1.46	1.45	1.44	1.43
17.1500	1.42	1.41	1.41	1.40	1.39
17.4000	1.38	1.37	1.36	1.35	1.34
17.6500	1.34	1.33	1.32	1.31	1.30
17.9000	1.29	1.29	1.28	1.27	1.26
18.1500	1.25	1.24	1.23	1.23	1.22
18.4000	1.21	1.20	1.19	1.18	1.17
18.6500	1.16	1.16	1.15	1.14	1.13
18.9000	1.12	1.11	1.10	1.09	1.09
19.1500	1.08	1.07	1.06	1.05	1.04
19.4000	1.03	1.02	1.02	1.01	1.00
19.6500	.99	.98	.97	.96	.95
19.9000	.95	.94	.93	.92	.92
20.1500	.91	.91	.91	.91	.91
20.4000	.90	.90	.90	.90	.90
20.6500	.90	.90	.89	.89	.89
20.9000	.89	.89	.88	.88	.88
21.1500	.88	.88	.88	.87	.87
21.4000	.87	.87	.87	.87	.86
21.6500	.86	.86	.86	.86	.85
21.9000	.85	.85	.85	.85	.85
22.1500	.85	.84	.84	.84	.84
22.4000	.84	.83	.83	.83	.83
22.6500	.83	.83	.82	.82	.82
22.9000	.82	.82	.81	.81	.81
23.1500	.81	.81	.81	.81	.80
23.4000	.80	.80	.80	.80	.79

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

---

Time hrs					
23.6500		.79	.79	.79	.79
23.9000		.79	.78	.78	.55
24.1500		.05	.01	.00	.00

LEVEL POOL ROUTING SUMMARY

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
 Inflow HYG file = NONE STORED - EX. BASIN 1 IN 2 YR  
 Outflow HYG file = NONE STORED - EX. BASIN 1 OUT 2 YR

Pond Node Data = EX. BASIN 1  
 Pond Volume Data = EX. BASIN 1  
 Pond Outlet Data = Countryshire 3

No Infiltration

INITIAL CONDITIONS

```

-----
Starting WS Elev = 605.50 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout = .00 cfs
Time Increment = .0500 hrs
  
```

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

```

=====
Peak Inflow = 28.78 cfs at 11.9500 hrs
Peak Outflow = 7.93 cfs at 12.1000 hrs
-----
Peak Elevation = 610.37 ft
Peak Storage = 19529 cu.ft
=====
  
```

MASS BALANCE (cu.ft)

```

-----
+ Initial Vol = 0
+ HYG Vol IN = 69475
- Infiltration = 0
- HYG Vol OUT = 69475
- Retained Vol = 0
-----
Unrouted Vol = - cu.ft (.000% of Inflow Volume)
  
```



POND ROUTED TOTAL OUTFLOW HYG...  
 HYG file =  
 HYG ID = EX. BASIN 1 OUT  
 HYG Tag = 2 YR  
 -----  
 Peak Discharge = 7.93 cfs  
 Time to Peak = 12.1000 hrs  
 HYG Volume = 69475 cu.ft  
 -----

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

Time hrs					
7.9000	.00	.00	.00	.01	.01
8.1500	.01	.01	.02	.02	.03
8.4000	.03	.03	.04	.04	.05
8.6500	.05	.06	.07	.07	.08
8.9000	.08	.09	.10	.10	.11
9.1500	.12	.12	.13	.13	.14
9.4000	.14	.15	.15	.16	.17
9.6500	.17	.18	.19	.20	.21
9.9000	.22	.24	.25	.26	.27
10.1500	.29	.30	.32	.34	.36
10.4000	.38	.40	.42	.44	.46
10.6500	.49	.52	.55	.58	.62
10.9000	.65	.69	.73	.77	.82
11.1500	.88	.95	1.02	1.10	1.18
11.4000	1.27	1.37	1.46	1.68	2.22
11.6500	2.94	3.75	4.33	4.86	5.46
11.9000	6.18	6.89	7.43	7.79	7.93
12.1500	7.93	7.88	7.81	7.73	7.64
12.4000	7.55	7.45	7.34	7.22	7.10
12.6500	6.96	6.83	6.69	6.55	6.40
12.9000	6.25	6.10	5.93	5.77	5.60
13.1500	5.43	5.24	5.05	4.83	4.60
13.4000	4.35	4.07	3.58	2.91	2.24
13.6500	1.72	1.48	1.33	1.26	1.22
13.9000	1.19	1.16	1.13	1.11	1.09
14.1500	1.07	1.05	1.04	1.03	1.02
14.4000	1.01	1.00	1.00	.99	.98
14.6500	.97	.96	.95	.94	.93
14.9000	.92	.91	.90	.89	.88
15.1500	.87	.86	.85	.84	.83
15.4000	.82	.81	.80	.79	.78

HYDROGRAPH ORDINATES (cfs)  
 Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs					
15.6500	.77	.76	.75	.74	.73
15.9000	.72	.71	.70	.69	.68
16.1500	.68	.67	.67	.66	.66
16.4000	.66	.65	.65	.65	.64
16.6500	.64	.64	.63	.63	.63
16.9000	.62	.62	.62	.61	.61
17.1500	.61	.60	.60	.60	.59
17.4000	.59	.58	.58	.58	.57
17.6500	.57	.57	.56	.56	.56
17.9000	.55	.55	.55	.54	.54
18.1500	.53	.53	.53	.52	.52
18.4000	.52	.51	.51	.51	.50
18.6500	.50	.50	.49	.49	.48
18.9000	.48	.48	.47	.47	.47
19.1500	.46	.46	.45	.45	.45
19.4000	.44	.44	.44	.43	.43
19.6500	.43	.42	.42	.41	.41
19.9000	.41	.40	.40	.40	.39
20.1500	.39	.39	.39	.39	.39
20.4000	.39	.39	.39	.39	.39
20.6500	.38	.38	.38	.38	.38
20.9000	.38	.38	.38	.38	.38
21.1500	.38	.38	.38	.38	.38
21.4000	.37	.37	.37	.37	.37
21.6500	.37	.37	.37	.37	.37
21.9000	.37	.37	.37	.37	.36
22.1500	.36	.36	.36	.36	.36
22.4000	.36	.36	.36	.36	.36
22.6500	.36	.36	.36	.35	.35
22.9000	.35	.35	.35	.35	.35
23.1500	.35	.35	.35	.35	.35
23.4000	.35	.35	.35	.34	.34
23.6500	.34	.34	.34	.34	.34
23.9000	.34	.34	.34	.29	.16
24.1500	.05	.01	.00	.00	

LEVEL POOL ROUTING SUMMARY

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
 Inflow HYG file = NONE STORED - EX. BASIN 1 IN 10 YR  
 Outflow HYG file = NONE STORED - EX. BASIN 1 OUT 10 YR

Pond Node Data = EX. BASIN 1  
 Pond Volume Data = EX. BASIN 1  
 Pond Outlet Data = Countryshire 3

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 605.50 ft  
 Starting Volume = 0 cu.ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

=====  
 Peak Inflow = 48.38 cfs at 11.9500 hrs  
 Peak Outflow = 18.99 cfs at 12.1000 hrs  
 -----  
 Peak Elevation = 612.38 ft  
 Peak Storage = 37025 cu.ft  
 =====

MASS BALANCE (cu.ft)

-----  
 + Initial Vol = 0  
 + HYG Vol IN = 118654  
 - Infiltration = 0  
 - HYG Vol OUT = 118654  
 - Retained Vol = 0  
 -----  
 Unrouted Vol = - cu.ft (.000% of Inflow Volume)

POND ROUTED TOTAL OUTFLOW HYG...

HYG file =  
 HYG ID = EX. BASIN 1 OUT  
 HYG Tag = 10 YR  
 -----  
 Peak Discharge = 18.99 cfs  
 Time to Peak = 12.1000 hrs  
 HYG Volume = 118654 cu.ft  
 -----

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

Time hrs					
6.1500		.00	.00	.00	.01
6.4000		.02	.02	.03	.03
6.6500		.04	.04	.05	.06
6.9000		.06	.07	.07	.08
7.1500		.09	.09	.10	.11
7.4000		.11	.12	.12	.13
7.6500		.14	.14	.15	.16
7.9000		.16	.17	.17	.18
8.1500		.20	.20	.21	.22
8.4000		.24	.26	.27	.28
8.6500		.30	.31	.33	.34
8.9000		.37	.38	.40	.41
9.1500		.43	.44	.45	.46
9.4000		.47	.48	.49	.50
9.6500		.53	.55	.57	.59
9.9000		.63	.66	.68	.71
10.1500		.76	.80	.83	.87
10.4000		.93	.97	1.00	1.05
10.6500		1.14	1.20	1.26	1.32
10.9000		1.45	1.50	1.56	1.64
11.1500		1.83	1.96	2.10	2.25
11.4000		2.52	2.66	2.83	3.19
11.6500		4.24	4.80	5.40	6.04
11.9000		7.67	8.49	9.11	14.46
12.1500		15.92	13.14	11.38	9.94
12.4000		9.21	9.15	9.09	9.01
12.6500		8.85	8.76	8.68	8.58
12.9000		8.39	8.29	8.19	8.08
13.1500		7.86	7.74	7.62	7.50
13.4000		7.25	7.12	6.98	6.85
13.6500		6.56	6.41	6.26	6.10

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

Time hrs					
13.9000	5.78	5.61	5.45	5.26	5.08
14.1500	4.87	4.65	4.41	4.15	3.79
14.4000	3.29	2.58	2.09	1.78	1.64
14.6500	1.56	1.52	1.50	1.48	1.46
14.9000	1.44	1.42	1.41	1.39	1.38
15.1500	1.36	1.34	1.33	1.31	1.30
15.4000	1.28	1.27	1.25	1.24	1.22
15.6500	1.20	1.19	1.17	1.16	1.14
15.9000	1.13	1.11	1.09	1.08	1.07
16.1500	1.06	1.05	1.04	1.04	1.03
16.4000	1.03	1.02	1.01	1.01	1.00
16.6500	1.00	.99	.99	.98	.98
16.9000	.97	.97	.96	.95	.95
17.1500	.94	.94	.93	.93	.92
17.4000	.91	.91	.90	.90	.89
17.6500	.88	.88	.87	.87	.86
17.9000	.86	.85	.85	.84	.83
18.1500	.83	.82	.82	.81	.81
18.4000	.80	.79	.79	.78	.78
18.6500	.77	.77	.76	.75	.75
18.9000	.74	.74	.73	.73	.72
19.1500	.72	.71	.70	.70	.69
19.4000	.69	.68	.68	.67	.66
19.6500	.66	.65	.65	.64	.63
19.9000	.63	.62	.62	.61	.61
20.1500	.61	.60	.60	.60	.60
20.4000	.60	.60	.60	.60	.59
20.6500	.59	.59	.59	.59	.59
20.9000	.59	.59	.59	.58	.58
21.1500	.58	.58	.58	.58	.58
21.4000	.58	.58	.58	.57	.57
21.6500	.57	.57	.57	.57	.57
21.9000	.57	.57	.56	.56	.56
22.1500	.56	.56	.56	.56	.56
22.4000	.55	.55	.55	.55	.55
22.6500	.55	.55	.55	.55	.54
22.9000	.54	.54	.54	.54	.54
23.1500	.54	.54	.54	.54	.53
23.4000	.53	.53	.53	.53	.53
23.6500	.53	.53	.53	.52	.52
23.9000	.52	.52	.52	.44	.24
24.1500	.07	.02	.01	.00	

LEVEL POOL ROUTING SUMMARY

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\  
Inflow HYG file = NONE STORED - EX. BASIN 1 IN 100 YR  
Outflow HYG file = NONE STORED - EX. BASIN 1 OUT 100 YR

Pond Node Data = EX. BASIN 1  
Pond Volume Data = EX. BASIN 1  
Pond Outlet Data = Countryshire 3

No Infiltration

INITIAL CONDITIONS

-----  
Starting WS Elev = 605.50 ft  
Starting Volume = 0 cu.ft  
Starting Outflow = .00 cfs  
Starting Infiltr. = .00 cfs  
Starting Total Qout= .00 cfs  
Time Increment = .0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

=====  
Peak Inflow = 77.58 cfs at 11.9500 hrs  
Peak Outflow = 59.19 cfs at 12.0000 hrs  
-----  
Peak Elevation = 613.26 ft  
Peak Storage = 46222 cu.ft  
=====

MASS BALANCE (cu.ft)

-----  
+ Initial Vol = 0  
+ HYG Vol IN = 195019  
- Infiltration = 0  
- HYG Vol OUT = 195019  
- Retained Vol = 0  
-----  
Unrouted Vol = - cu.ft (.000% of Inflow Volume)

POND ROUTED TOTAL OUTFLOW HYG...  
 HYG file =  
 HYG ID = EX. BASIN 1 OUT  
 HYG Tag = 100 YR  
 -----  
 Peak Discharge = 59.19 cfs  
 Time to Peak = 12.0000 hrs  
 HYG Volume = 195019 cu.ft  
 -----

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

Time hrs					
4.6500	.00	.00	.01	.01	.02
4.9000	.02	.03	.04	.04	.05
5.1500	.06	.06	.07	.08	.08
5.4000	.09	.10	.10	.11	.12
5.6500	.13	.13	.14	.15	.16
5.9000	.16	.17	.18	.19	.19
6.1500	.20	.21	.22	.23	.23
6.4000	.24	.25	.26	.27	.28
6.6500	.28	.29	.30	.31	.32
6.9000	.33	.33	.34	.35	.36
7.1500	.37	.38	.39	.40	.40
7.4000	.41	.42	.43	.44	.45
7.6500	.46	.47	.48	.49	.50
7.9000	.51	.51	.52	.54	.55
8.1500	.56	.58	.60	.62	.64
8.4000	.67	.69	.71	.73	.76
8.6500	.78	.80	.83	.85	.88
8.9000	.91	.93	.95	.97	1.00
9.1500	1.02	1.03	1.04	1.05	1.07
9.4000	1.08	1.09	1.10	1.11	1.13
9.6500	1.16	1.19	1.23	1.27	1.31
9.9000	1.35	1.39	1.44	1.47	1.52
10.1500	1.57	1.62	1.68	1.74	1.81
10.4000	1.87	1.94	2.01	2.08	2.16
10.6500	2.24	2.34	2.42	2.51	2.61
10.9000	2.71	2.82	2.94	3.06	3.21
11.1500	3.34	3.46	3.62	3.80	3.99
11.4000	4.09	4.20	4.34	4.54	4.88
11.6500	5.36	5.96	6.68	7.47	8.34
11.9000	9.62	44.68	59.19	59.04	48.51
12.1500	30.01	21.09	16.49	13.85	12.56

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

Time hrs					
12.4000	11.44	10.43	9.50	9.25	9.21
12.6500	9.16	9.11	9.05	8.99	8.93
12.9000	8.86	8.79	8.72	8.65	8.57
13.1500	8.49	8.41	8.32	8.24	8.15
13.4000	8.06	7.96	7.86	7.77	7.66
13.6500	7.56	7.45	7.34	7.23	7.12
13.9000	7.00	6.88	6.75	6.63	6.50
14.1500	6.37	6.23	6.10	5.96	5.82
14.4000	5.68	5.54	5.40	5.25	5.10
14.6500	4.93	4.76	4.57	4.38	4.18
14.9000	3.98	3.57	3.20	2.75	2.48
15.1500	2.30	2.15	2.07	2.03	2.00
15.4000	1.97	1.94	1.92	1.89	1.87
15.6500	1.84	1.82	1.80	1.77	1.75
15.9000	1.72	1.70	1.67	1.65	1.63
16.1500	1.61	1.60	1.59	1.58	1.57
16.4000	1.56	1.55	1.55	1.54	1.53
16.6500	1.52	1.51	1.50	1.49	1.48
16.9000	1.48	1.47	1.46	1.45	1.44
17.1500	1.43	1.42	1.41	1.40	1.40
17.4000	1.39	1.38	1.37	1.36	1.35
17.6500	1.34	1.34	1.33	1.32	1.31
17.9000	1.30	1.29	1.28	1.27	1.27
18.1500	1.26	1.25	1.24	1.23	1.22
18.4000	1.21	1.21	1.20	1.19	1.18
18.6500	1.17	1.16	1.15	1.15	1.14
18.9000	1.13	1.12	1.11	1.10	1.09
19.1500	1.08	1.08	1.07	1.06	1.05
19.4000	1.04	1.03	1.02	1.02	1.01
19.6500	1.00	.99	.98	.97	.96
19.9000	.95	.95	.94	.93	.92
20.1500	.92	.91	.91	.91	.91
20.4000	.91	.90	.90	.90	.90
20.6500	.90	.90	.89	.89	.89
20.9000	.89	.89	.88	.88	.88
21.1500	.88	.88	.88	.87	.87
21.4000	.87	.87	.87	.87	.86
21.6500	.86	.86	.86	.86	.86
21.9000	.85	.85	.85	.85	.85
22.1500	.85	.84	.84	.84	.84
22.4000	.84	.83	.83	.83	.83
22.6500	.83	.83	.83	.82	.82
22.9000	.82	.82	.82	.81	.81
23.1500	.81	.81	.81	.81	.81
23.4000	.80	.80	.80	.80	.80



Type.... Pond Routed HYG (total out) Page 13.22  
 Name.... EX. BASIN 1 OUT Tag: 100 YR Event: 100 yr  
 File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\5-22-07\PHASE 2 EXISTING.PPW  
 Storm... TypeII 24hr Tag: 100 YR

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

---

Time hrs					
23.6500	.79	.79	.79	.79	.79
23.9000	.79	.78	.78	.66	.36
24.1500	.11	.03	.01	.00	

## Index of Starting Page Numbers for ID Names

## ----- A -----

AREA A... 5.01, 6.01, 7.03, 7.04,  
7.06, 7.07, 7.09, 7.10

## ----- C -----

CHN-TRAPZ - 2... 8.01, 8.03  
Countryshire 3... 12.01, 12.04,  
12.11  
CS AREA 3... 5.05, 6.02, 7.13, 7.14,  
7.16, 7.17, 7.19, 7.20

## ----- E -----

EX. BASIN 1... 11.01, 13.01  
EX. BASIN 1 IN 2 YR... 13.03,  
13.06, 13.09, 13.13, 13.14, 13.16,  
13.17, 13.19, 13.20

## ----- J -----

JUNC 10 2 YR... 10.01, 10.04, 10.07

## ----- O -----

OUTLET A 2 YR... 10.11, 10.14,  
10.18

## ----- R -----

REACH 10... 9.01, 9.04, 9.05, 9.07,  
9.08, 9.11, 9.12

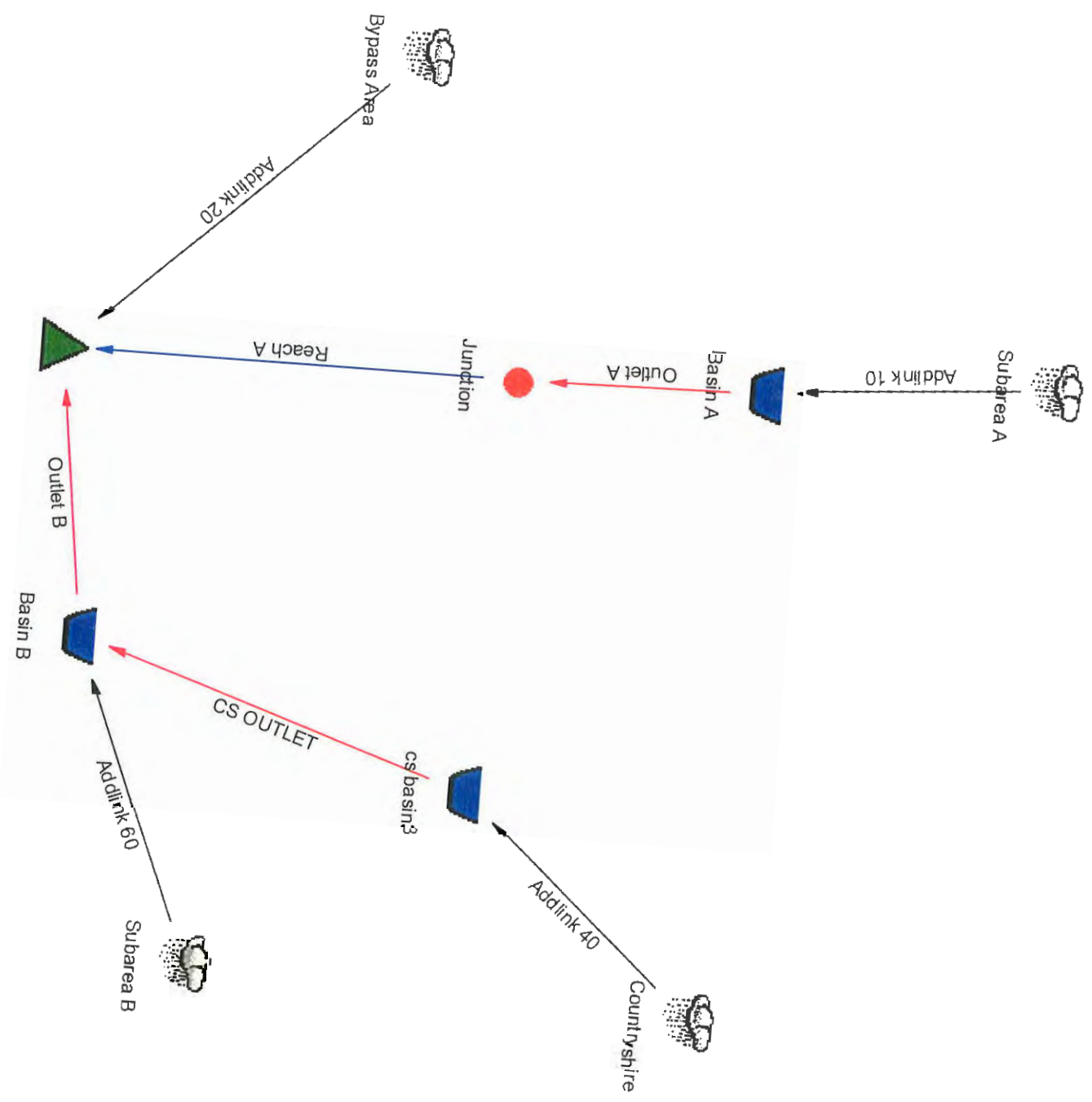
## ----- S -----

ST. CHARLES COUN... 4.01, 4.02

## ----- W -----

WARNING... 1.01  
Watershed... 2.01, 3.01, 3.02, 3.03,  
3.04, 3.05, 3.06, 3.07







Job File: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW  
Rain Dir: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\

=====  
JOB TITLE  
=====

Project Date: 7/26/2007  
Project Engineer: Cole and Associates  
Project Title: Preston Woods Phase 2  
Project Comments:  
Proposed Conditions

Table of Contents

\*\*\*\*\* WARNING MSG \*\*\*\*\*

WARNING..... WARNING MESSAGES ..... 1.01

\*\*\*\*\* MASTER SUMMARY \*\*\*\*\*

Watershed..... Master Network Summary ..... 2.01

\*\*\*\*\* NETWORK SUMMARIES (DETAILED) \*\*\*\*\*

Watershed..... 2  
     Executive Summary (Nodes) ..... 3.01  
     Executive Summary (Links) ..... 3.02

Watershed..... 10  
     Executive Summary (Nodes) ..... 3.04  
     Executive Summary (Links) ..... 3.05

Watershed..... 100  
     Executive Summary (Nodes) ..... 3.07  
     Executive Summary (Links) ..... 3.08  
     Network Calcs Sequence ..... 3.10

\*\*\*\*\* DESIGN STORMS SUMMARY \*\*\*\*\*

ST. CHARLES COUN Design Storms ..... 4.01

ST. CHARLES COUN 2  
     Design Storms ..... 4.02

\*\*\*\*\* TC CALCULATIONS \*\*\*\*\*

BYPASS AREA..... Tc Calcs ..... 5.01

Table of Contents (continued)

COUNTRYSHIRE....	Tc Calcs .....	5.05
SUBAREA A.....	Tc Calcs .....	5.07
SUBAREA B.....	Tc Calcs .....	5.12
***** CN CALCULATIONS *****		
BYPASS AREA.....	Runoff CN-Area .....	6.01
COUNTRYSHIRE....	Runoff CN-Area .....	6.02
SUBAREA A.....	Runoff CN-Area .....	6.03
SUBAREA B.....	Runoff CN-Area .....	6.04
***** RUNOFF HYDROGRAPHS *****		
	Unit Hyd. Equations .....	7.01
BYPASS AREA.....	2	
	Unit Hyd. Summary .....	7.03
	Unit Hyd. (HYG output) .....	7.04
BYPASS AREA.....	10	
	Unit Hyd. Summary .....	7.06
	Unit Hyd. (HYG output) .....	7.07
BYPASS AREA.....	100	
	Unit Hyd. Summary .....	7.09
	Unit Hyd. (HYG output) .....	7.10
COUNTRYSHIRE....	2	
	Unit Hyd. Summary .....	7.12
	Unit Hyd. (HYG output) .....	7.13
COUNTRYSHIRE....	10	
	Unit Hyd. Summary .....	7.15
	Unit Hyd. (HYG output) .....	7.16



Table of Contents (continued)

COUNTRYSHIRE....	100		
		Unit Hyd. Summary .....	7.18
		Unit Hyd. (HYG output) .....	7.19
SUBAREA A.....	2		
		Unit Hyd. Summary .....	7.22
		Unit Hyd. (HYG output) .....	7.23
SUBAREA A.....	10		
		Unit Hyd. Summary .....	7.25
		Unit Hyd. (HYG output) .....	7.26
SUBAREA A.....	100		
		Unit Hyd. Summary .....	7.28
		Unit Hyd. (HYG output) .....	7.29
SUBAREA B.....	2		
		Unit Hyd. Summary .....	7.32
		Unit Hyd. (HYG output) .....	7.33
SUBAREA B.....	10		
		Unit Hyd. Summary .....	7.35
		Unit Hyd. (HYG output) .....	7.36
SUBAREA B.....	100		
		Unit Hyd. Summary .....	7.39
		Unit Hyd. (HYG output) .....	7.40
***** CHANNEL ANALYSES *****			
CHN-TRAPZ - 1...		Chn-Trapz. ....	8.01
		Channel Equations .....	8.03
***** REACH ROUTING *****			
REACH A.....		Reach E-V-Q Table .....	9.01
REACH A.....	2		
		Reach Routing Summary .....	9.04

Table of Contents (continued)

	Reach Routing (HYG output) .....	9.05
REACH A.....	10	
	Reach Routing Summary .....	9.08
	Reach Routing (HYG output) .....	9.09
REACH A.....	100	
	Reach Routing Summary .....	9.12
	Reach Routing (HYG output) .....	9.13
***** HYG ADDITION *****		
JUNCTION A.....	2	
	Node: Addition Summary .....	10.01
JUNCTION A.....	10	
	Node: Addition Summary .....	10.04
JUNCTION A.....	100	
	Node: Addition Summary .....	10.07
OUTFALL.....	2	
	Node: Addition Summary .....	10.11
OUTFALL.....	10	
	Node: Addition Summary .....	10.15
OUTFALL.....	100	
	Node: Addition Summary .....	10.19
***** POND VOLUMES *****		
BASIN A.....	Vol: Elev-Area .....	11.01
BASIN B.....	Vol: Elev-Area .....	11.02
CS BASIN3.....	Vol: Elev-Area .....	11.03
***** OUTLET STRUCTURES *****		
Countryshire 3..	Outlet Input Data .....	12.01

## Table of Contents (continued)

	Individual Outlet Curves .....	12.04
	Composite Rating Curve .....	12.16
Outlet A.....	Outlet Input Data .....	12.19
	Individual Outlet Curves .....	12.23
	Composite Rating Curve .....	12.41
Outlet B1.....	Outlet Input Data .....	12.43
	Individual Outlet Curves .....	12.46
	Composite Rating Curve .....	12.56
***** POND ROUTING *****		
BASIN A.....	Pond E-V-Q Table .....	13.01
BASIN A	IN 2	
	Node: Pond Inflow Summary .....	13.04
BASIN A	IN 10	
	Node: Pond Inflow Summary .....	13.07
BASIN A	IN 100	
	Node: Pond Inflow Summary .....	13.10
BASIN A	OUT 2	
	Pond Routing Summary .....	13.14
	Pond Routed HYG (total out) .....	13.15
BASIN A	OUT 10	
	Pond Routing Summary .....	13.17
	Pond Routed HYG (total out) .....	13.18
BASIN A	OUT 100	
	Pond Routing Summary .....	13.20
	Pond Routed HYG (total out) .....	13.21
BASIN B.....	Pond E-V-Q Table .....	13.24
BASIN B	IN 2	
	Node: Pond Inflow Summary .....	13.27
BASIN B	IN 10	
	Node: Pond Inflow Summary .....	13.30
BASIN B	IN 100	
	Node: Pond Inflow Summary .....	13.34

## Table of Contents (continued)

BASIN B	OUT 2		
		Pond Routing Summary .....	13.38
		Pond Routed HYG (total out) .....	13.39
BASIN B	OUT 10		
		Pond Routing Summary .....	13.41
		Pond Routed HYG (total out) .....	13.42
BASIN B	OUT 100		
		Pond Routing Summary .....	13.45
		Pond Routed HYG (total out) .....	13.46
CS BASIN3.....		Pond E-V-Q Table .....	13.49
CS BASIN3	IN 2		
		Node: Pond Inflow Summary .....	13.54
CS BASIN3	IN 10		
		Node: Pond Inflow Summary .....	13.57
CS BASIN3	IN 100		
		Node: Pond Inflow Summary .....	13.60
CS BASIN3	OUT 2		
		Pond Routing Summary .....	13.64
		Pond Routed HYG (total out) .....	13.65
CS BASIN3	OUT 10		
		Pond Routing Summary .....	13.67
		Pond Routed HYG (total out) .....	13.68
CS BASIN3	OUT 100		
		Pond Routing Summary .....	13.70
		Pond Routed HYG (total out) .....	13.71

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

WARNING: Relaxed HW convergence for conditions below.  
HW elev= 605.60ft TW elev= free outfall Q = .03cfs  
Convergence: HW +/- .004ft; Q +/- .0022cfs  
Check data for..... Type: Outlet Input Data Name: Countryshire 3

WARNING: Relaxed HW convergence for conditions below.  
HW elev= 605.70ft TW elev= free outfall Q = .12cfs  
Convergence: HW +/- .001ft; Q +/- .0021cfs  
Check data for..... Type: Outlet Input Data Name: Countryshire 3

WARNING: TR-55 Sheet Flow Length > 300.00 ft  
Check Sheet Flow input for Tc data: COUNTRYSHIRE

WARNING: The difference between calculated peak flow  
and interpolated peak flow is greater than 1.50%  
Computed peak flow = 29.42 cfs  
Interp. peak flow = 28.78 cfs (2.17% difference)

Check SCS UH data for: Unit Hyd. COUNTRYSHIRE  
Output increment for this subarea may be too large.  
Use Tools --> Options --> Project Options to change increment for entire project,  
or if you are running a watershed network analysis,  
use the GO button to change output increment.

WARNING: The difference between calculated peak flow and interpolated peak flow is greater than 1.50%  
Computed peak flow = 49.75 cfs  
Interp. peak flow = 48.38 cfs (2.74% difference)

Check SCS UH data for: Unit Hyd. COUNTRYSHIRE  
Output increment for this subarea may be too large.  
Use Tools --> Options --> Project Options to change increment for entire project,  
or if you are running a watershed network analysis,  
use the GO button to change output increment.

WARNING: The difference between calculated peak flow and interpolated peak flow is greater than 1.50%  
Computed peak flow = 80.38 cfs  
Interp. peak flow = 77.58 cfs (3.49% difference)

Check SCS UH data for: Unit Hyd. COUNTRYSHIRE  
Output increment for this subarea may be too large.  
Use Tools --> Options --> Project Options to change increment for entire project,  
or if you are running a watershed network analysis,  
use the GO button to change output increment.

MASTER DESIGN STORM SUMMARY

Network Storm Collection: ST. CHARLES COUN

Return Event	Total Depth in	Rainfall Type	RNF ID
2	3.5000	Synthetic Curve	TypeII 24hr
10	5.0000	Synthetic Curve	TypeII 24hr
100	7.2000	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 cu.ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage cu.ft
BASIN A	IN	POND 2	203543		12.0500	67.98		
BASIN A	IN	POND 10	347614		12.0500	114.87		
BASIN A	IN	POND 100	571322		12.0500	184.96		
BASIN A	OUT	POND 2	203543		12.3000	23.37	604.12	51538
BASIN A	OUT	POND 10	347614		12.3000	33.74	605.52	104921
BASIN A	OUT	POND 100	571322		12.2500	71.04	607.08	175176
BASIN B	IN	POND 2	310653		12.1500	67.77		
BASIN B	IN	POND 10	521504		12.1500	115.29		
BASIN B	IN	POND 100	846168		12.1000	202.32		
BASIN B	OUT	POND 2	310653		12.4000	41.27	569.94	44714
BASIN B	OUT	POND 10	521504		12.3000	86.26	571.28	76146
BASIN B	OUT	POND 100	846168		12.2000	179.81	572.14	98572
BYPASS AREA	AREA	2	114456		12.0500	38.65		
BYPASS AREA	AREA	10	215342		12.0500	73.61		
BYPASS AREA	AREA	100	380355		12.0500	128.82		

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 cu.ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage cu.ft
COUNTRYSHIRE	AREA	2	69475		11.9500	28.78		
COUNTRYSHIRE	AREA	10	118654		11.9500	48.38		
COUNTRYSHIRE	AREA	100	195019		11.9500	77.58		
CS BASIN3	IN POND	2	69475		11.9500	28.78		
CS BASIN3	IN POND	10	118654		11.9500	48.38		
CS BASIN3	IN POND	100	195019		11.9500	77.58		
CS BASIN3	OUT POND	2	69475		12.1000	7.93	610.37	19524
CS BASIN3	OUT POND	10	118654		12.1000	18.73	612.38	37044
CS BASIN3	OUT POND	100	195019		12.0000	59.40	613.27	46291
JUNCTION A	JCT	2	203543		12.3000	23.37		
JUNCTION A	JCT	10	347614		12.3000	33.74		
JUNCTION A	JCT	100	571322		12.2500	71.04		
*OUTFALL	JCT	2	628633		12.1000	86.37		
*OUTFALL	JCT	10	1084441		12.3000	140.40		
*OUTFALL	JCT	100	1797825		12.1500	310.89		
SUBAREA A	AREA	2	203543		12.0500	67.98		
SUBAREA A	AREA	10	347614		12.0500	114.87		
SUBAREA A	AREA	100	571322		12.0500	184.96		
SUBAREA B	AREA	2	241178		12.1500	59.84		
SUBAREA B	AREA	10	402850		12.1500	99.44		
SUBAREA B	AREA	100	651149		12.1500	158.27		



NETWORK SUMMARY -- NODES  
 (Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File, ID = ST. CHARLES COUN

Storm Tag Name = 2

-----  
 Data Type, File, ID = Synthetic Storm TypeII 24hr  
 Storm Frequency = 2 yr  
 Total Rainfall Depth= 3.5000 in  
 Duration Multiplier = 1  
 Resulting Duration = 24.0000 hrs  
 Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol cu.ft	Qpeak Trun. hrs	Qpeak cfs	Max WSEL ft
BASIN A	IN POND	203543	12.0500	67.98	
BASIN A	OUT POND	203543	12.3000	23.37	604.12
BASIN B	IN POND	310653	12.1500	67.77	
BASIN B	OUT POND	310653	12.4000	41.27	569.94
BYPASS AREA	AREA	114456	12.0500	38.65	
COUNTRYSHIRE	AREA	69475	11.9500	28.78	
CS BASIN3	IN POND	69475	11.9500	28.78	
CS BASIN3	OUT POND	69475	12.1000	7.93	610.37
JUNCTION A	JCT	203543	12.3000	23.37	
Outfall OUTFALL	JCT	628633	12.1000	86.37	
SUBAREA A	AREA	203543	12.0500	67.98	
SUBAREA B	AREA	241178	12.1500	59.84	

NETWORK SUMMARY -- LINKS  
 (UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)  
 (Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File, ID = ST. CHARLES COUN

Storm Tag Name = 2  
 -----  
 Data Type, File, ID = Synthetic Storm TypeII 24hr  
 Storm Frequency = 2 yr  
 Total Rainfall Depth= 3.5000 in  
 Duration Multiplier = 1  
 Resulting Duration = 24.0000 hrs  
 Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Link ID	Type		HYG Vol cu.ft	Peak Time hrs	Peak Q cfs	End Points
ADDLINK 10	ADD	UN	203543	12.0500	67.98	SUBAREA A
		DL	203543	12.0500	67.98	
		DN	203543	12.0500	67.98	BASIN A IN
ADDLINK 20	ADD	UN	114456	12.0500	38.65	BYPASS AREA
		DL	114456	12.0500	38.65	
		DN	628633	12.1000	86.37	OUTFALL
ADDLINK 40	ADD	UN	69475	11.9500	28.78	COUNTRYSHIRE
		DL	69475	11.9500	28.78	
		DN	69475	11.9500	28.78	CS BASIN3 IN
ADDLINK 60	ADD	UN	241178	12.1500	59.84	SUBAREA B
		DL	241178	12.1500	59.84	
		DN	310653	12.1500	67.77	BASIN B IN
CS OUTLET	PONDrt	UN	69475	11.9500	28.78	CS BASIN3 IN
CS OUTLET		DL	69475	12.1000	7.93	CS BASIN3 OUT
		DN	69475	12.1000	7.93	
		DN	310653	12.1500	67.77	BASIN B IN
OUTLET A	PONDrt	UN	203543	12.0500	67.98	BASIN A IN
OUTLET A		DL	203543	12.3000	23.37	BASIN A OUT
		DN	203543	12.3000	23.37	JUNCTION A
OUTLET B	PONDrt	UN	310653	12.1500	67.77	BASIN B IN
OUTLET B		DL	310653	12.4000	41.27	BASIN B OUT
		DN	310653	12.4000	41.27	
		DN	628633	12.1000	86.37	OUTFALL

NETWORK SUMMARY -- LINKS  
 (UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)  
 (Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

Link ID	Type		HYG Vol cu.ft	Peak Time Trun. hrs	Peak Q cfs	End Points
REACH A	REACH	UN	203543	12.3000	23.37	JUNCTION A
		DL	203523	12.4000	23.08	
		DN	628633	12.1000	86.37	OUTFALL

NETWORK SUMMARY -- NODES  
 (Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File, ID = ST. CHARLES COUN

Storm Tag Name = 10

-----  
 Data Type, File, ID = Synthetic Storm TypeII 24hr  
 Storm Frequency = 10 yr  
 Total Rainfall Depth= 5.0000 in  
 Duration Multiplier = 1  
 Resulting Duration = 24.0000 hrs  
 Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol cu.ft	Qpeak Trun. hrs	Qpeak cfs	Max WSEL ft
BASIN A	IN POND	347614	12.0500	114.87	
BASIN A	OUT POND	347614	12.3000	33.74	605.52
BASIN B	IN POND	521504	12.1500	115.29	
BASIN B	OUT POND	521504	12.3000	86.26	571.28
BYPASS AREA	AREA	215342	12.0500	73.61	
COUNTRYSHIRE	AREA	118654	11.9500	48.38	
CS BASIN3	IN POND	118654	11.9500	48.38	
CS BASIN3	OUT POND	118654	12.1000	18.73	612.38
JUNCTION A	JCT	347614	12.3000	33.74	
Outfall	OUTFALL	1084441	12.3000	140.40	
SUBAREA A	AREA	347614	12.0500	114.87	
SUBAREA B	AREA	402850	12.1500	99.44	

NETWORK SUMMARY -- LINKS  
 (UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)  
 (Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File, ID = ST. CHARLES COUN

Storm Tag Name = 10

-----  
 Data Type, File, ID = Synthetic Storm TypeII 24hr  
 Storm Frequency = 10 yr  
 Total Rainfall Depth= 5.0000 in  
 Duration Multiplier = 1  
 Resulting Duration = 24.0000 hrs  
 Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Link ID	Type		HYG Vol cu.ft	Peak Time Trun. hrs	Peak Q cfs	End Points
ADDLINK 10	ADD UN		347614	12.0500	114.87	SUBAREA A
	DL		347614	12.0500	114.87	
	DN		347614	12.0500	114.87	BASIN A IN
ADDLINK 20	ADD UN		215342	12.0500	73.61	BYPASS AREA
	DL		215342	12.0500	73.61	
	DN		1084441	12.3000	140.40	OUTFALL
ADDLINK 40	ADD UN		118654	11.9500	48.38	COUNTRYSHIRE
	DL		118654	11.9500	48.38	
	DN		118654	11.9500	48.38	CS BASIN3 IN
ADDLINK 60	ADD UN		402850	12.1500	99.44	SUBAREA B
	DL		402850	12.1500	99.44	
	DN		521504	12.1500	115.29	BASIN B IN
CS OUTLET	PONDrt UN		118654	11.9500	48.38	CS BASIN3 IN
CS OUTLET	DL		118654	12.1000	18.73	CS BASIN3 OUT
	DN		521504	12.1500	115.29	BASIN B IN
OUTLET A	PONDrt UN		347614	12.0500	114.87	BASIN A IN
OUTLET A	DL		347614	12.3000	33.74	BASIN A OUT
	DN		347614	12.3000	33.74	JUNCTION A
OUTLET B	PONDrt UN		521504	12.1500	115.29	BASIN B IN
OUTLET B	DL		521504	12.3000	86.26	BASIN B OUT
	DN		1084441	12.3000	140.40	OUTFALL

NETWORK SUMMARY -- LINKS

(UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)

(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

Link ID	Type		HYG Vol cu.ft	Peak Time Trun. hrs	Peak Q cfs	End Points
REACH A	REACH	UN	347614	12.3000	33.74	JUNCTION A
		DL	347595	12.4000	33.18	
		DN	1084441	12.3000	140.40	OUTFALL

NETWORK SUMMARY -- NODES  
 (Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File, ID = ST. CHARLES COUN

Storm Tag Name = 100

-----  
 Data Type, File, ID = Synthetic Storm TypeII 24hr  
 Storm Frequency = 100 yr  
 Total Rainfall Depth= 7.2000 in  
 Duration Multiplier = 1  
 Resulting Duration = 24.0000 hrs  
 Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol cu.ft	Qpeak Trun. hrs	Qpeak cfs	Max WSEL ft
BASIN A	IN POND	571322	12.0500	184.96	
BASIN A	OUT POND	571322	12.2500	71.04	607.08
BASIN B	IN POND	846168	12.1000	202.32	
BASIN B	OUT POND	846168	12.2000	179.81	572.14
BYPASS AREA	AREA	380355	12.0500	128.82	
COUNTRYSHIRE	AREA	195019	11.9500	77.58	
CS BASIN3	IN POND	195019	11.9500	77.58	
CS BASIN3	OUT POND	195019	12.0000	59.40	613.27
JUNCTION A	JCT	571322	12.2500	71.04	
Outfall OUTFALL	JCT	1797825	12.1500	310.89	
SUBAREA A	AREA	571322	12.0500	184.96	
SUBAREA B	AREA	651149	12.1500	158.27	

NETWORK SUMMARY -- LINKS  
 (UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)  
 (Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File, ID = ST. CHARLES COUN

Storm Tag Name = 100  
 -----  
 Data Type, File, ID = Synthetic Storm TypeII 24hr  
 Storm Frequency = 100 yr  
 Total Rainfall Depth= 7.2000 in  
 Duration Multiplier = 1  
 Resulting Duration = 24.0000 hrs  
 Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Link ID	Type		HYG Vol cu.ft	Trun.	Peak Time hrs	Peak Q cfs	End Points
ADDLINK 10	ADD	UN	571322		12.0500	184.96	SUBAREA A
		DL	571322		12.0500	184.96	
		DN	571322		12.0500	184.96	BASIN A IN
ADDLINK 20	ADD	UN	380355		12.0500	128.82	BYPASS AREA
		DL	380355		12.0500	128.82	
		DN	1797825		12.1500	310.89	OUTFALL
ADDLINK 40	ADD	UN	195019		11.9500	77.58	COUNTRYSHIRE
		DL	195019		11.9500	77.58	
		DN	195019		11.9500	77.58	CS BASIN3 IN
ADDLINK 60	ADD	UN	651149		12.1500	158.27	SUBAREA B
		DL	651149		12.1500	158.27	
		DN	846168		12.1000	202.32	BASIN B IN
CS OUTLET	PONDrt	UN	195019		11.9500	77.58	CS BASIN3 IN
CS OUTLET		DL	195019		12.0000	59.40	CS BASIN3 OUT
		DN	846168		12.1000	202.32	BASIN B IN
		UN	571322		12.0500	184.96	BASIN A IN
OUTLET A	PONDrt	UN	571322		12.2500	71.04	BASIN A OUT
OUTLET A		DL	571322		12.2500	71.04	
		DN	571322		12.2500	71.04	JUNCTION A
		UN	846168		12.1000	202.32	BASIN B IN
OUTLET B	PONDrt	UN	846168		12.2000	179.81	BASIN B OUT
OUTLET B		DL	846168		12.2000	179.81	
		DN	1797825		12.1500	310.89	OUTFALL
		UN	571322		12.0500	184.96	BASIN A IN



Type... Executive Summary (Links) Page 3.09  
 Name... Watershed Event: 100 yr  
 File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW  
 Storm... TypeII 24hr Tag: 100

NETWORK SUMMARY -- LINKS  
 (UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)  
 (Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

Link ID	Type		HYG Vol cu.ft	Peak Time Trun. hrs	Peak Q cfs	End Points
REACH A	REACH	UN	571322	12.2500	71.04	JUNCTION A
		DL	571302	12.3500	67.68	
		DN	1797825	12.1500	310.89	OUTFALL

NETWORK RUNOFF NODE SEQUENCE

```

=====
Runoff Data          Apply to Node          Receiving Link
=====
SCS UH  SUBAREA A      Subarea  SUBAREA A      Add Hyd  SUBAREA A
SCS UH  COUNTRYSHIRE  Subarea  COUNTRYSHIRE    Add Hyd  COUNTRYSHIRE
SCS UH  BYPASS AREA   Subarea  BYPASS AREA        Add Hyd  BYPASS AREA
SCS UH  SUBAREA B      Subarea  SUBAREA B          Add Hyd  SUBAREA B
=====
  
```

NETWORK ROUTING SEQUENCE

```

=====
Link Operation          UPstream Node          DNstream Node
=====
Add Hyd ADDLINK 10     Subarea SUBAREA A     Pond   BASIN A     IN

POND ROUTE TOTAL OUTFLOW...
Total Pond Outflow     Pond   BASIN A     IN   Outflow BASIN A     OUT

SET POND ROUTING LINK TO TOTAL POND OUTFLOW...
Outlet  OUTLET A       Outflow BASIN A     OUT Jct   JUNCTION A

Add Hyd ADDLINK 40     Subarea COUNTRYSHIRE  Pond   CS BASIN3     IN

POND ROUTE TOTAL OUTFLOW...
Total Pond Outflow     Pond   CS BASIN3     IN   Outflow CS BASIN3     OUT

SET POND ROUTING LINK TO TOTAL POND OUTFLOW...
Outlet  CS OUTLET      Outflow CS BASIN3     OUT Pond   BASIN B     IN

Add Hyd ADDLINK 60     Subarea SUBAREA B     Pond   BASIN B     IN

POND ROUTE TOTAL OUTFLOW...
Total Pond Outflow     Pond   BASIN B     IN   Outflow BASIN B     OUT

SET POND ROUTING LINK TO TOTAL POND OUTFLOW...
Outlet  OUTLET B       Outflow BASIN B     OUT Jct   OUTFALL

Add Hyd ADDLINK 20     Subarea BYPASS AREA   Jct   OUTFALL
Reach  REACH A         Jct   JUNCTION A     Jct   OUTFALL
  
```

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
Title... Project Date: 7/26/2007  
Project Engineer: Cole and Associates  
Project Title: Preston Woods Phase 2  
Project Comments:  
Proposed Conditions

DESIGN STORMS SUMMARY

Design Storm File, ID = ST. CHARLES COUN

Storm Tag Name = 2

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 2 yr  
Total Rainfall Depth= 3.5000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 10

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 10 yr  
Total Rainfall Depth= 5.0000 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= 7.2000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

DESIGN STORMS SUMMARY

Design Storm File, ID = ST. CHARLES COUN

Storm Tag Name = 2

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 2 yr  
Total Rainfall Depth= 3.5000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 10

-----  
Data Type, File, ID = Synthetic Storm TypeII 24hr  
Storm Frequency = 10 yr  
Total Rainfall Depth= 5.0000 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= 7.2000 in  
Duration Multiplier = 1  
Resulting Duration = 24.0000 hrs  
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

TIME OF CONCENTRATION CALCULATOR

Segment #1: Tc: TR-55 Sheet

Mannings n .2400  
Hydraulic Length 140.00 ft  
2yr, 24hr P 3.5000 in  
Slope .060000 ft/ft

Avg.Velocity .20 ft/sec

Segment #1 Time: .1918 hrs

Segment #2: Tc: TR-55 Shallow

Hydraulic Length 200.00 ft  
Slope .220000 ft/ft  
Unpaved

Avg.Velocity 7.57 ft/sec

Segment #2 Time: .0073 hrs

Segment #3: Tc: TR-55 Channel

Flow Area 23.3000 sq.ft  
Wetted Perimeter 20.20 ft  
Hydraulic Radius 1.15 ft  
Slope .012000 ft/ft  
Mannings n .0400  
Hydraulic Length 314.00 ft

Avg.Velocity 4.49 ft/sec

Segment #3 Time: .0194 hrs

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

Segment #4: Tc: TR-55 Channel

Flow Area           35.1000 sq.ft  
Wetted Perimeter    19.20 ft  
Hydraulic Radius     1.83 ft  
Slope                .012000 ft/ft  
Mannings n           .0400  
Hydraulic Length    275.00 ft

Avg.Velocity         6.10 ft/sec

Segment #4 Time:     .0125 hrs

-----  
=====  
Total Tc:            .2311 hrs  
=====

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

-----  
Tc Equations used...  
-----

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

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

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

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

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

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

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

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



File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

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

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

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

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

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

-----  
Segment #1: Tc: TR-55 Sheet

Mannings n .0130  
Hydraulic Length 320.00 ft  
2yr, 24hr P 3.5000 in  
Slope .015600 ft/ft

Avg.Velocity 1.44 ft/sec

Segment #1 Time: .0618 hrs

-----  
Segment #2: Tc: TR-55 Channel

Flow Area 3.1400 sq.ft  
Wetted Perimeter 6.28 ft  
Hydraulic Radius .50 ft  
Slope .015000 ft/ft  
Mannings n .0130  
Hydraulic Length 1070.00 ft

Avg.Velocity 8.84 ft/sec

Segment #2 Time: .0336 hrs

-----  
=====  
Total Tc: .0954 hrs  
=====

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.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 Channel Flow =====

$$R = Aq / Wp$$
$$V = (1.49 * (R**(2/3)) * (Sf**-.5)) / n$$
$$Tc = (Lf / V) / (3600sec/hr)$$

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

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

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

-----  
Segment #1: Tc: TR-55 Sheet

Mannings n           .2400  
Hydraulic Length     86.00 ft  
2yr, 24hr P         3.5000 in  
Slope                .020000 ft/ft

Avg.Velocity         .12 ft/sec

Segment #1 Time:     .2016 hrs

-----  
Segment #2: Tc: TR-55 Shallow

Hydraulic Length     157.00 ft  
Slope                .020000 ft/ft  
Unpaved

Avg.Velocity         2.28 ft/sec

Segment #2 Time:     .0191 hrs

-----  
Segment #3: Tc: TR-55 Channel

Flow Area            1.2300 sq.ft  
Wetted Perimeter     3.93 ft  
Hydraulic Radius     .31 ft  
Slope                .028600 ft/ft  
Mannings n           .0130  
Hydraulic Length     210.00 ft

Avg.Velocity         8.94 ft/sec

Segment #3 Time:     .0065 hrs

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

Segment #4: Tc: TR-55 Channel

Flow Area            1.7700 sq.ft  
Wetted Perimeter    4.71 ft  
Hydraulic Radius    .38 ft  
Slope                .040300 ft/ft  
Mannings n          .0130  
Hydraulic Length    72.00 ft  
  
Avg.Velocity        11.98 ft/sec

Segment #4 Time:    .0017 hrs

-----

Segment #5: Tc: TR-55 Channel

Flow Area            2.4100 sq.ft  
Wetted Perimeter    5.50 ft  
Hydraulic Radius    .44 ft  
Slope                .027300 ft/ft  
Mannings n          .0130  
Hydraulic Length    547.00 ft  
  
Avg.Velocity        10.93 ft/sec

Segment #5 Time:    .0139 hrs

-----

Segment #6: Tc: TR-55 Channel

Flow Area            7.0700 sq.ft  
Wetted Perimeter    9.42 ft  
Hydraulic Radius    .75 ft  
Slope                .034100 ft/ft  
Mannings n          .0130  
Hydraulic Length    78.00 ft  
  
Avg.Velocity        17.48 ft/sec

Segment #6 Time:    .0012 hrs

-----

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

Segment #7: Tc: TR-55 Channel

Flow Area            9.6200 sq.ft  
Wetted Perimeter    11.00 ft  
Hydraulic Radius     .87 ft  
Slope                .015000 ft/ft  
Mannings n           .0130  
Hydraulic Length    123.00 ft

Avg.Velocity        12.84 ft/sec

Segment #7 Time:     .0027 hrs

-----  
=====  
Total Tc:            .2467 hrs  
=====

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

-----  
Tc Equations used...  
-----

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

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

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

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

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

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

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

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

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

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

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

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

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



File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

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

-----  
Segment #1: Tc: TR-55 Sheet

Mannings n .2400  
Hydraulic Length 200.00 ft  
2yr, 24hr P 3.5000 in  
Slope .020000 ft/ft  
  
Avg.Velocity .14 ft/sec

Segment #1 Time: .3960 hrs

-----  
Segment #2: Tc: TR-55 Shallow

Hydraulic Length 162.00 ft  
Slope .020000 ft/ft  
Unpaved  
  
Avg.Velocity 2.28 ft/sec

Segment #2 Time: .0197 hrs

-----  
Segment #3: Tc: TR-55 Channel

Flow Area 1.2300 sq.ft  
Wetted Perimeter 3.93 ft  
Hydraulic Radius .31 ft  
Slope .020000 ft/ft  
Mannings n .0130  
Hydraulic Length 113.00 ft  
  
Avg.Velocity 7.47 ft/sec

Segment #3 Time: .0042 hrs  
-----

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

Segment #4: Tc: TR-55 Channel

Flow Area 1.2300 sq.ft  
Wetted Perimeter 3.93 ft  
Hydraulic Radius .31 ft  
Slope .040000 ft/ft  
Mannings n .0130  
Hydraulic Length 283.00 ft

Avg.Velocity 10.57 ft/sec

Segment #4 Time: .0074 hrs

-----

Segment #5: Tc: TR-55 Channel

Flow Area 1.7700 sq.ft  
Wetted Perimeter 4.71 ft  
Hydraulic Radius .38 ft  
Slope .020000 ft/ft  
Mannings n .0130  
Hydraulic Length 205.00 ft

Avg.Velocity 8.44 ft/sec

Segment #5 Time: .0067 hrs

-----

Segment #6: Tc: TR-55 Channel

Flow Area 7.0700 sq.ft  
Wetted Perimeter 9.42 ft  
Hydraulic Radius .75 ft  
Slope .020000 ft/ft  
Mannings n .0130  
Hydraulic Length 266.00 ft

Avg.Velocity 13.39 ft/sec

Segment #6 Time: .0055 hrs

-----

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

Segment #7: Tc: TR-55 Channel

Flow Area 9.6200 sq.ft  
Wetted Perimeter 11.00 ft  
Hydraulic Radius .87 ft  
Slope .020000 ft/ft  
Mannings n .0130  
Hydraulic Length 87.00 ft  
  
Avg.Velocity 14.82 ft/sec

Segment #7 Time: .0016 hrs

Segment #8: Tc: TR-55 Channel

Flow Area 9.6200 sq.ft  
Wetted Perimeter 11.00 ft  
Hydraulic Radius .87 ft  
Slope .010000 ft/ft  
Mannings n .0130  
Hydraulic Length 328.00 ft  
  
Avg.Velocity 10.48 ft/sec

Segment #8 Time: .0087 hrs

Segment #9: Tc: TR-55 Channel

Flow Area 12.5700 sq.ft  
Wetted Perimeter 12.57 ft  
Hydraulic Radius 1.00 ft  
Slope .020000 ft/ft  
Mannings n .0130  
Hydraulic Length 207.00 ft  
  
Avg.Velocity 16.21 ft/sec

Segment #9 Time: .0035 hrs

=====  
Total Tc: .4535 hrs  
=====

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

-----  
Tc Equations used...  
-----

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

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

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

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

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

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

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

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

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

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

$$R = Aq / Wp$$
$$V = (1.49 * (R^{2/3}) * (Sf^{-.5})) / n$$
$$Tc = (Lf / V) / (3600sec/hr)$$

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

Type.... Runoff CN-Area  
Name.... BYPASS AREA

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

RUNOFF CURVE NUMBER DATA

.....

-----

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Residential Districts - 1/4 acre	83	8.860			83.00
Open space (Lawns,parks etc.) - Goo	74	2.700			74.00
Woods - good	70	12.660			70.00

COMPOSITE AREA & WEIGHTED CN --->                    24.220                    75.20 (75)

.....

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

RUNOFF CURVE NUMBER DATA  
:.....

-----

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Residential Districts - 1/4 acre	83	10.300			83.00

COMPOSITE AREA & WEIGHTED CN --->            10.300            83.00 (83)  
:.....

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

RUNOFF CURVE NUMBER DATA

.....

-----

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Urban Districts - Commercial & Busi	94	1.620			94.00
Residential Districts - 1/4 acre	83	20.100			83.00
Residential Districts - 1/4 acre	87	5.500			87.00
Open space (Lawns,parks etc.) - Goo	61	.320			61.00
Open space (Lawns,parks etc.) - Goo	74	2.630			74.00

COMPOSITE AREA & WEIGHTED CN --->                    30.170                    83.30 (83)  
.....



Type.... Runoff CN-Area  
Name.... SUBAREA B

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

RUNOFF CURVE NUMBER DATA

.....

-----

Soil/Surface Description	CN	Area acres	Impervious Adjustment		Adjusted CN
			%C	%UC	
Residential Districts - 1/8 acre (t	90	11.860			90.00
Residential Districts - 1/4 acre	83	19.350			83.00
Open space (Lawns,parks etc.) - Fai	79	1.740			79.00

COMPOSITE AREA & WEIGHTED CN --->                    32.950                    85.31 (85)  
.....

Name....

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

SCS UNIT HYDROGRAPH METHOD  
(Computational Notes)

## DEFINITION OF TERMS: -----

At = Total area (acres):  $At = Ai + Ap$   
 Ai = Impervious area (acres)  
 Ap = Pervious area (acres)  
 CNi = Runoff curve number for impervious area  
 CNp = Runoff curve number for pervious area  
 fLoss = f loss constant infiltration (depth/time)  
 gKs = Saturated Hydraulic Conductivity (depth/time)  
 Md = Volumetric Moisture Deficit  
 Psi = Capillary Suction (length)  
 hK = Horton Infiltration Decay Rate (time<sup>-1</sup>)  
 fo = Initial Infiltration Rate (depth/time)  
 fc = Ultimate(capacity)Infiltration Rate (depth/time)  
 Ia = Initial Abstraction (length)  
 dt = Computational increment (duration of unit excess rainfall)  
 Default dt is smallest value of  $0.1333Tc$ ,  $rtm$ , and  $th$   
 (Smallest dt is then adjusted to match up with  $Tp$ )  
 UDdt = User specified override computational main time increment  
 (only used if UDdt is =>  $.1333Tc$ )  
 D(t) = Point on distribution curve (fraction of P) for time step t  
  
 K =  $2 / (1 + (Tr/Tp))$ : default K = 0.75: (for  $Tr/Tp = 1.67$ )  
 Ks = Hydrograph shape factor  
 = Unit Conversions \* K:  
 =  $((1hr/3600sec) * (1ft/12in) * ((5280ft)**2/sq.mi)) * K$   
 Default Ks =  $645.333 * 0.75 = 484$   
  
 Lag = Lag time from center of excess runoff (dt) to  $Tp$ :  $Lag = 0.6Tc$   
 P = Total precipitation depth, inches  
 Pa(t) = Accumulated rainfall at time step t  
 Pi(t) = Incremental rainfall at time step t  
 qp = Peak discharge (cfs) for lin. runoff, for 1hr, for 1 sq.mi.  
 =  $(Ks * A * Q) / Tp$  (where Q = lin. runoff, A=sq.mi.)  
 Qu(t) = Unit hydrograph ordinate (cfs) at time step t  
 Q(t) = Final hydrograph ordinate (cfs) at time step t  
 Rai(t) = Accumulated runoff (inches) at time step t for impervious area  
 Rap(t) = Accumulated runoff (inches) at time step t for pervious area  
 Rii(t) = Incremental runoff (inches) at time step t for impervious area  
 Rip(t) = Incremental runoff (inches) at time step t for pervious area  
 R(t) = Incremental weighted total runoff (inches)  
 Rtm = Time increment for rainfall table  
 Si = S for impervious area:  $Si = (1000/CNi) - 10$   
 Sp = S for pervious area:  $Sp = (1000/CNp) - 10$   
 t = Time step (row) number  
 Tc = Time of concentration  
 Tb = Time (hrs) of entire unit hydrograph:  $Tb = Tp + Tr$   
 Tp = Time (hrs) to peak of a unit hydrograph:  $Tp = (dt/2) + Lag$   
 Tr = Time (hrs) of receding limb of unit hydrograph:  $Tr = ratio\ of\ Tp$

Name....

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

SCS UNIT HYDROGRAPH METHOD  
(Computational Notes)

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

PERVIOUS AREA RUNOFF (using SCS Runoff CN Method) -----  
Column (5): Rap(t) = Accumulated pervious runoff for time step t  
If (Pa(t) is <= 0.2Sp) then use: Rap(t) = 0.0  
If (Pa(t) is > 0.2Sp) then use:  
  
Rap(t) = (Col.(4)-0.2Sp)\*\*2 / (Col.(4)+0.8Sp)  
  
Column (6): Rip(t) = Incremental pervious runoff for time step t  
Rip(t) = Rap(t) - Rap(t-1)  
Rip(t) = Col.(5) for current row - Col.(5) for preceding row.

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

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

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

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm  
 Duration = 24.0000 hrs Rain Depth = 3.5000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 HYG File - ID = - BYPASS AREA 2  
 Tc = .2311 hrs  
 Drainage Area = 24.220 acres Runoff CN= 75

=====  
 Computational Time Increment = .03081 hrs  
 Computed Peak Time = 12.0485 hrs  
 Computed Peak Flow = 38.73 cfs

Time Increment for HYG File = .0500 hrs  
 Peak Time, Interpolated Output = 12.0500 hrs  
 Peak Flow, Interpolated Output = 38.65 cfs  
 =====

DRAINAGE AREA

-----  
 ID: BYPASS AREA  
 CN = 75  
 Area = 24.220 acres  
 S = 3.3333 in  
 0.2S = .6667 in

Cumulative Runoff

-----  
 1.3018 in  
 114453 cu.ft

HYG Volume... 114456 cu.ft (area under HYG curve)

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

Time Concentration, Tc = .23111 hrs (ID: BYPASS AREA)  
 Computational Incr, Tm = .03081 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 = 118.74 cfs  
 Unit peak time, Tp = .15407 hrs  
 Unit receding limb, Tr = .61629 hrs  
 Total unit time, Tb = .77036 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm  
 Duration = 24.0000 hrs Rain Depth = 3.5000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 HYG File - ID = - BYPASS AREA 2  
 Tc = .2311 hrs  
 Drainage Area = 24.220 acres Runoff CN= 75  
 Calc.Increment= .03081 hrs Out.Incr.= .0500 hrs  
 HYG Volume = 114456 cu.ft

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs  
 Time on left represents time for first value in each row.

Time hrs	0.00	0.05	0.10	0.15	0.20
10.2500	.00	.00	.01	.01	.03
10.5000	.04	.06	.09	.11	.14
10.7500	.17	.20	.24	.28	.32
11.0000	.36	.41	.46	.52	.59
11.2500	.67	.76	.86	.97	1.08
11.5000	1.21	1.43	1.87	2.68	4.10
11.7500	6.27	9.38	14.16	21.37	30.03
12.0000	36.48	38.65	34.72	27.60	20.47
12.2500	15.45	12.27	10.21	8.78	7.71
12.5000	6.87	6.16	5.56	5.08	4.71
12.7500	4.45	4.26	4.09	3.94	3.81
13.0000	3.67	3.55	3.43	3.32	3.23
13.2500	3.14	3.06	2.99	2.92	2.85
13.5000	2.78	2.71	2.64	2.58	2.52
13.7500	2.46	2.41	2.36	2.31	2.26
14.0000	2.20	2.15	2.11	2.07	2.04
14.2500	2.01	1.99	1.97	1.95	1.93
14.5000	1.91	1.89	1.88	1.86	1.84
14.7500	1.83	1.81	1.79	1.77	1.76
15.0000	1.74	1.72	1.70	1.69	1.67
15.2500	1.65	1.63	1.61	1.60	1.58
15.5000	1.56	1.54	1.52	1.50	1.48
15.7500	1.47	1.45	1.43	1.41	1.39
16.0000	1.37	1.36	1.34	1.32	1.31
16.2500	1.30	1.29	1.29	1.28	1.27
16.5000	1.27	1.26	1.25	1.25	1.24
16.7500	1.23	1.23	1.22	1.21	1.21
17.0000	1.20	1.20	1.19	1.18	1.18
17.2500	1.17	1.16	1.16	1.15	1.14
17.5000	1.14	1.13	1.12	1.12	1.11

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

---

Time hrs					
17.7500	1.10	1.10	1.09	1.08	1.08
18.0000	1.07	1.06	1.06	1.05	1.04
18.2500	1.04	1.03	1.02	1.02	1.01
18.5000	1.00	1.00	.99	.98	.98
18.7500	.97	.96	.95	.95	.94
19.0000	.93	.93	.92	.91	.91
19.2500	.90	.89	.89	.88	.87
19.5000	.86	.86	.85	.84	.84
19.7500	.83	.82	.82	.81	.80
20.0000	.79	.79	.78	.78	.77
20.2500	.77	.77	.76	.76	.76
20.5000	.76	.76	.76	.76	.76
20.7500	.75	.75	.75	.75	.75
21.0000	.75	.75	.75	.74	.74
21.2500	.74	.74	.74	.74	.74
21.5000	.74	.73	.73	.73	.73
21.7500	.73	.73	.73	.73	.72
22.0000	.72	.72	.72	.72	.72
22.2500	.72	.71	.71	.71	.71
22.5000	.71	.71	.71	.71	.70
22.7500	.70	.70	.70	.70	.70
23.0000	.70	.70	.69	.69	.69
23.2500	.69	.69	.69	.69	.68
23.5000	.68	.68	.68	.68	.68
23.7500	.68	.68	.67	.67	.67
24.0000	.67	.64	.54	.38	.24
24.2500	.14	.08	.05	.03	.02
24.5000	.01	.00	.00	.00	.00

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm  
Duration = 24.0000 hrs Rain Depth = 5.0000 in  
Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
Rain File -ID = - TypeII 24hr  
Unit Hyd Type = Default Curvilinear  
HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
HYG File - ID = - BYPASS AREA 10  
Tc = .2311 hrs  
Drainage Area = 24.220 acres Runoff CN= 75

=====  
Computational Time Increment = .03081 hrs  
Computed Peak Time = 12.0485 hrs  
Computed Peak Flow = 73.81 cfs  
  
Time Increment for HYG File = .0500 hrs  
Peak Time, Interpolated Output = 12.0500 hrs  
Peak Flow, Interpolated Output = 73.61 cfs  
=====

DRAINAGE AREA

-----  
ID: BYPASS AREA  
CN = 75  
Area = 24.220 acres  
S = 3.3333 in  
0.2S = .6667 in

Cumulative Runoff  
-----  
2.4493 in  
215337 cu.ft

HYG Volume... 215342 cu.ft (area under HYG curve)

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

Time Concentration, Tc = .23111 hrs (ID: BYPASS AREA)  
Computational Incr, Tm = .03081 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 = 118.74 cfs  
Unit peak time Tp = .15407 hrs  
Unit receding limb, Tr = .61629 hrs  
Total unit time, Tb = .77036 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm  
 Duration = 24.0000 hrs Rain Depth = 5.0000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 HYG File - ID = - BYPASS AREA 10  
 Tc = .2311 hrs  
 Drainage Area = 24.220 acres Runoff CN= 75  
 Calc.Increment= .03081 hrs Out.Incr.= .0500 hrs  
 HYG Volume = 215342 cu.ft

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

Time hrs					
8.6000	.00	.00	.01	.02	.03
8.8500	.04	.06	.07	.09	.11
9.1000	.12	.14	.16	.18	.20
9.3500	.21	.23	.25	.26	.28
9.6000	.30	.32	.34	.36	.39
9.8500	.42	.45	.48	.51	.54
10.1000	.58	.61	.65	.70	.74
10.3500	.79	.84	.89	.95	1.00
10.6000	1.06	1.13	1.20	1.29	1.37
10.8500	1.46	1.56	1.66	1.76	1.87
11.1000	2.00	2.15	2.32	2.52	2.73
11.3500	2.97	3.22	3.48	3.77	4.27
11.6000	5.38	7.35	10.69	15.52	22.06
11.8500	31.51	45.09	60.64	71.27	73.61
12.1000	65.00	51.07	37.54	28.10	22.12
12.3500	18.27	15.60	13.62	12.08	10.78
12.6000	9.70	8.85	8.19	7.72	7.37
12.8500	7.08	6.82	6.57	6.34	6.11
13.1000	5.90	5.71	5.54	5.39	5.25
13.3500	5.12	5.00	4.87	4.75	4.63
13.6000	4.51	4.40	4.30	4.20	4.11
13.8500	4.02	3.93	3.84	3.75	3.66
14.1000	3.58	3.51	3.46	3.41	3.37
14.3500	3.33	3.30	3.27	3.23	3.20
14.6000	3.17	3.14	3.11	3.08	3.05
14.8500	3.02	2.99	2.96	2.93	2.90
15.1000	2.87	2.84	2.81	2.77	2.74
15.3500	2.71	2.68	2.65	2.62	2.59
15.6000	2.56	2.52	2.49	2.46	2.43
15.8500	2.40	2.37	2.33	2.30	2.27



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

Time hrs					
16.1000	2.24	2.22	2.19	2.18	2.16
16.3500	2.15	2.14	2.13	2.11	2.10
16.6000	2.09	2.08	2.07	2.06	2.05
16.8500	2.04	2.03	2.02	2.00	1.99
17.1000	1.98	1.97	1.96	1.95	1.94
17.3500	1.93	1.91	1.90	1.89	1.88
17.6000	1.87	1.86	1.85	1.84	1.82
17.8500	1.81	1.80	1.79	1.78	1.77
18.1000	1.76	1.74	1.73	1.72	1.71
18.3500	1.70	1.69	1.67	1.66	1.65
18.6000	1.64	1.63	1.62	1.61	1.59
18.8500	1.58	1.57	1.56	1.55	1.53
19.1000	1.52	1.51	1.50	1.49	1.48
19.3500	1.47	1.45	1.44	1.43	1.42
19.6000	1.41	1.39	1.38	1.37	1.36
19.8500	1.35	1.33	1.32	1.31	1.30
20.1000	1.29	1.28	1.27	1.27	1.26
20.3500	1.26	1.26	1.26	1.25	1.25
20.6000	1.25	1.25	1.25	1.24	1.24
20.8500	1.24	1.24	1.23	1.23	1.23
21.1000	1.23	1.23	1.22	1.22	1.22
21.3500	1.22	1.21	1.21	1.21	1.21
21.6000	1.21	1.20	1.20	1.20	1.20
21.8500	1.19	1.19	1.19	1.19	1.19
22.1000	1.18	1.18	1.18	1.18	1.17
22.3500	1.17	1.17	1.17	1.17	1.16
22.6000	1.16	1.16	1.16	1.15	1.15
22.8500	1.15	1.15	1.15	1.14	1.14
23.1000	1.14	1.14	1.13	1.13	1.13
23.3500	1.13	1.13	1.12	1.12	1.12
23.6000	1.12	1.11	1.11	1.11	1.11
23.8500	1.10	1.10	1.10	1.10	1.04
24.1000	.88	.62	.39	.22	.13
24.3500	.08	.04	.03	.01	.01
24.6000	.00	.00	.00		

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm  
 Duration = 24.0000 hrs Rain Depth = 7.2000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 HYG File - ID = - BYPASS AREA 100  
 Tc = .2311 hrs  
 Drainage Area = 24.220 acres Runoff CN= 75

=====  
 Computational Time Increment = .03081 hrs  
 Computed Peak Time = 12.0176 hrs  
 Computed Peak Flow = 130.07 cfs

Time Increment for HYG File = .0500 hrs  
 Peak Time, Interpolated Output = 12.0500 hrs  
 Peak Flow, Interpolated Output = 128.82 cfs  
 =====

DRAINAGE AREA

-----  
 ID: BYPASS AREA  
 CN = 75  
 Area = 24.220 acres  
 S = 3.3333 in  
 0.2S = .6667 in

Cumulative Runoff

-----  
 4.3261 in  
 380347 cu.ft

HYG Volume... 380355 cu.ft (area under HYG curve)

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

Time Concentration, Tc = .23111 hrs (ID: BYPASS AREA)  
 Computational Incr, Tm = .03081 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 = 118.74 cfs  
 Unit peak time Tp = .15407 hrs  
 Unit receding limb, Tr = .61629 hrs  
 Total unit time, Tb = .77036 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm  
 Duration = 24.0000 hrs Rain Depth = 7.2000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 HYG File - ID = - BYPASS AREA 100  
 Tc = .2311 hrs  
 Drainage Area = 24.220 acres Runoff CN= 75  
 Calc.Increment= .03081 hrs Out.Incr.= .0500 hrs  
 HYG Volume = 380355 cu.ft

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs					
6.7500	.00	.00	.01	.02	.03
7.0000	.04	.06	.07	.09	.10
7.2500	.12	.13	.15	.16	.18
7.5000	.19	.21	.23	.24	.26
7.7500	.27	.29	.31	.32	.34
8.0000	.36	.37	.39	.41	.44
8.2500	.46	.48	.51	.54	.57
8.5000	.60	.63	.66	.70	.73
8.7500	.77	.81	.84	.88	.92
9.0000	.96	1.01	1.05	1.08	1.12
9.2500	1.15	1.18	1.21	1.24	1.26
9.5000	1.29	1.32	1.35	1.39	1.43
9.7500	1.49	1.54	1.61	1.67	1.74
10.0000	1.81	1.88	1.96	2.04	2.13
10.2500	2.22	2.32	2.43	2.54	2.65
10.5000	2.76	2.88	3.01	3.15	3.31
10.7500	3.47	3.66	3.84	4.04	4.24
11.0000	4.45	4.67	4.93	5.22	5.57
11.2500	5.97	6.41	6.87	7.36	7.88
11.5000	8.44	9.43	11.68	15.66	22.30
11.7500	31.59	43.76	60.67	84.19	110.24
12.0000	126.83	128.82	112.44	87.63	64.03
12.2500	47.64	37.28	30.61	26.02	22.61
12.5000	19.99	17.79	15.97	14.54	13.45
12.7500	12.66	12.08	11.58	11.15	10.74
13.0000	10.35	9.98	9.63	9.31	9.02
13.2500	8.77	8.54	8.33	8.12	7.91
13.5000	7.71	7.51	7.32	7.13	6.96
13.7500	6.80	6.65	6.50	6.35	6.20
14.0000	6.06	5.92	5.79	5.67	5.58

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

Time hrs					
14.2500	5.50	5.43	5.37	5.32	5.26
14.5000	5.21	5.16	5.11	5.06	5.01
14.7500	4.96	4.91	4.86	4.81	4.76
15.0000	4.71	4.66	4.60	4.56	4.50
15.2500	4.45	4.40	4.35	4.30	4.25
15.5000	4.20	4.15	4.09	4.04	3.99
15.7500	3.94	3.89	3.84	3.78	3.73
16.0000	3.68	3.63	3.58	3.54	3.51
16.2500	3.48	3.46	3.43	3.41	3.39
16.5000	3.38	3.36	3.34	3.32	3.30
16.7500	3.29	3.27	3.25	3.23	3.21
17.0000	3.19	3.18	3.16	3.14	3.12
17.2500	3.10	3.08	3.07	3.05	3.03
17.5000	3.01	2.99	2.97	2.96	2.94
17.7500	2.92	2.90	2.88	2.86	2.85
18.0000	2.83	2.81	2.79	2.77	2.75
18.2500	2.73	2.71	2.70	2.68	2.66
18.5000	2.64	2.62	2.60	2.58	2.57
18.7500	2.55	2.53	2.51	2.49	2.47
19.0000	2.45	2.43	2.42	2.40	2.38
19.2500	2.36	2.34	2.32	2.30	2.28
19.5000	2.26	2.25	2.23	2.21	2.19
19.7500	2.17	2.15	2.13	2.11	2.09
20.0000	2.08	2.06	2.04	2.03	2.02
20.2500	2.01	2.00	2.00	1.99	1.99
20.5000	1.98	1.98	1.98	1.97	1.97
20.7500	1.97	1.96	1.96	1.95	1.95
21.0000	1.95	1.94	1.94	1.94	1.93
21.2500	1.93	1.92	1.92	1.92	1.91
21.5000	1.91	1.91	1.90	1.90	1.90
21.7500	1.89	1.89	1.88	1.88	1.88
22.0000	1.87	1.87	1.87	1.86	1.86
22.2500	1.86	1.85	1.85	1.85	1.84
22.5000	1.84	1.83	1.83	1.83	1.82
22.7500	1.82	1.82	1.81	1.81	1.81
23.0000	1.80	1.80	1.79	1.79	1.79
23.2500	1.78	1.78	1.78	1.77	1.77
23.5000	1.76	1.76	1.76	1.75	1.75
23.7500	1.75	1.74	1.74	1.73	1.73
24.0000	1.72	1.64	1.39	.98	.61
24.2500	.35	.21	.12	.07	.04
24.5000	.02	.01	.01	.00	.00

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm  
 Duration = 24.0000 hrs Rain Depth = 3.5000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 HYG File - ID = - COUNTRYSHIRE 2  
 Tc = .0954 hrs  
 Drainage Area = 10.300 acres Runoff CN= 83

=====  
 Computational Time Increment = .01272 hrs  
 Computed Peak Time = 11.9345 hrs  
 Computed Peak Flow = 29.42 cfs

Time Increment for HYG File = .0500 hrs  
 Peak Time, Interpolated Output = 11.9500 hrs  
 Peak Flow, Interpolated Output = 28.78 cfs  
 WARNING: The difference between calculated peak flow  
 and interpolated peak flow is greater than 1.50%  
 =====

DRAINAGE AREA  
 -----  
 ID:COUNTRYSHIRE  
 CN = 83  
 Area = 10.300 acres  
 S = 2.0482 in  
 0.2S = .4096 in

Cumulative Runoff  
 -----  
 1.8586 in  
 69490 cu.ft

HYG Volume... 69475 cu.ft (area under HYG curve)

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

Time Concentration, Tc = .09543 hrs (ID: COUNTRYSHIRE)  
 Computational Incr, Tm = .01272 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 = 122.30 cfs  
 Unit peak time, Tp = .06362 hrs  
 Unit receding limb, Tr = .25447 hrs  
 Total unit time, Tb = .31808 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm  
 Duration = 24.0000 hrs Rain Depth = 3.5000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 HYG File - ID = - COUNTRYSHIRE 2  
 Tc = .0954 hrs  
 Drainage Area = 10.300 acres Runoff CN= 83  
 Calc.Increment= .01272 hrs Out.Incr.= .0500 hrs  
 HYG Volume = 69475 cu.ft

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

Time hrs					
7.9000	.00	.00	.00	.01	.01
8.1500	.01	.02	.02	.02	.03
8.4000	.03	.04	.04	.05	.05
8.6500	.06	.06	.07	.07	.08
8.9000	.09	.09	.10	.11	.11
9.1500	.12	.12	.13	.13	.14
9.4000	.15	.15	.16	.16	.17
9.6500	.18	.19	.20	.21	.22
9.9000	.23	.24	.25	.27	.28
10.1500	.30	.31	.33	.35	.37
10.4000	.39	.41	.43	.45	.47
10.6500	.50	.53	.56	.60	.63
10.9000	.67	.71	.75	.79	.85
11.1500	.92	1.00	1.08	1.17	1.26
11.4000	1.35	1.45	1.56	2.14	3.12
11.6500	4.66	6.93	9.63	13.24	19.05
11.9000	27.42	28.78	25.85	19.43	9.57
12.1500	6.15	4.96	4.45	4.07	3.80
12.4000	3.48	3.20	2.87	2.65	2.44
12.6500	2.33	2.25	2.18	2.11	2.04
12.9000	1.97	1.90	1.83	1.77	1.71
13.1500	1.67	1.63	1.59	1.55	1.52
13.4000	1.48	1.44	1.40	1.37	1.33
13.6500	1.31	1.28	1.25	1.22	1.19
13.9000	1.16	1.14	1.11	1.09	1.07
14.1500	1.06	1.04	1.03	1.03	1.02
14.4000	1.01	1.00	.99	.98	.97
14.6500	.96	.95	.94	.93	.92
14.9000	.91	.90	.89	.88	.87
15.1500	.86	.85	.84	.83	.82

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

Time hrs					
15.4000	.81	.80	.79	.78	.77
15.6500	.76	.75	.74	.73	.72
15.9000	.71	.70	.69	.69	.68
16.1500	.67	.67	.67	.66	.66
16.4000	.66	.65	.65	.65	.64
16.6500	.64	.64	.63	.63	.62
16.9000	.62	.62	.61	.61	.61
17.1500	.60	.60	.60	.59	.59
17.4000	.59	.58	.58	.58	.57
17.6500	.57	.57	.56	.56	.55
17.9000	.55	.55	.54	.54	.54
18.1500	.53	.53	.53	.52	.52
18.4000	.51	.51	.51	.50	.50
18.6500	.50	.49	.49	.49	.48
18.9000	.48	.48	.47	.47	.46
19.1500	.46	.46	.45	.45	.45
19.4000	.44	.44	.44	.43	.43
19.6500	.42	.42	.42	.41	.41
19.9000	.41	.40	.40	.40	.39
20.1500	.39	.39	.39	.39	.39
20.4000	.39	.39	.39	.39	.38
20.6500	.38	.38	.38	.38	.38
20.9000	.38	.38	.38	.38	.38
21.1500	.38	.38	.38	.38	.38
21.4000	.37	.37	.37	.37	.37
21.6500	.37	.37	.37	.37	.37
21.9000	.37	.37	.37	.36	.36
22.1500	.36	.36	.36	.36	.36
22.4000	.36	.36	.36	.36	.36
22.6500	.36	.36	.36	.35	.35
22.9000	.35	.35	.35	.35	.35
23.1500	.35	.35	.35	.35	.35
23.4000	.35	.35	.34	.34	.34
23.6500	.34	.34	.34	.34	.34
23.9000	.34	.34	.34	.24	.08
24.1500	.02	.01	.00	.00	

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm  
 Duration = 24.0000 hrs Rain Depth = 5.0000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 HYG File - ID = - COUNTRYSHIRE 10  
 Tc = .0954 hrs  
 Drainage Area = 10.300 acres Runoff CN= 83

=====  
 Computational Time Increment = .01272 hrs  
 Computed Peak Time = 11.9345 hrs  
 Computed Peak Flow = 49.75 cfs

Time Increment for HYG File = .0500 hrs  
 Peak Time, Interpolated Output = 11.9500 hrs  
 Peak Flow, Interpolated Output = 48.38 cfs  
 WARNING: The difference between calculated peak flow  
 and interpolated peak flow is greater than 1.50%  
 =====

DRAINAGE AREA

-----  
 ID:COUNTRYSHIRE  
 CN = 83  
 Area = 10.300 acres  
 S = 2.0482 in  
 0.2S = .4096 in

Cumulative Runoff

-----  
 3.1741 in  
 118676 cu.ft

HYG Volume... 118654 cu.ft (area under HYG curve)

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

Time Concentration, Tc = .09543 hrs (ID: COUNTRYSHIRE)  
 Computational Incr, Tm = .01272 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 = 122.30 cfs  
 Unit peak time Tp = .06362 hrs  
 Unit receding limb, Tr = .25447 hrs  
 Total unit time, Tb = .31808 hrs



SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm  
 Duration = 24.0000 hrs Rain Depth = 5.0000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 HYG File - ID = - COUNTRYSHIRE 10  
 Tc = .0954 hrs  
 Drainage Area = 10.300 acres Runoff CN= 83  
 Calc.Increment= .01272 hrs Out.Incr.= .0500 hrs  
 HYG Volume = 118654 cu.ft

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

Time hrs					
6.1500	.00	.00	.01	.01	.01
6.4000	.02	.02	.03	.03	.04
6.6500	.04	.05	.05	.06	.06
6.9000	.06	.07	.07	.08	.08
7.1500	.09	.09	.10	.10	.11
7.4000	.11	.12	.12	.13	.13
7.6500	.14	.15	.15	.16	.16
7.9000	.17	.17	.18	.18	.19
8.1500	.20	.21	.22	.23	.24
8.4000	.25	.26	.27	.28	.30
8.6500	.31	.32	.33	.35	.36
8.9000	.37	.39	.40	.41	.43
9.1500	.44	.44	.45	.46	.47
9.4000	.48	.48	.49	.50	.52
9.6500	.53	.56	.58	.60	.62
9.9000	.65	.67	.69	.72	.75
10.1500	.78	.82	.85	.89	.92
10.4000	.96	1.00	1.04	1.08	1.13
10.6500	1.19	1.25	1.31	1.38	1.44
10.9000	1.51	1.58	1.65	1.74	1.85
11.1500	1.98	2.13	2.28	2.45	2.61
11.4000	2.79	2.96	3.16	4.29	6.17
11.6500	9.06	13.20	17.89	24.02	33.60
11.9000	47.10	48.38	42.73	31.77	15.56
12.1500	9.94	7.99	7.16	6.53	6.08
12.4000	5.56	5.11	4.58	4.23	3.89
12.6500	3.71	3.57	3.47	3.35	3.24
12.9000	3.12	3.02	2.90	2.81	2.71
13.1500	2.64	2.58	2.52	2.45	2.40
13.4000	2.33	2.27	2.21	2.16	2.10

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

Time hrs					
13.6500	2.06	2.01	1.97	1.92	1.88
13.9000	1.83	1.79	1.74	1.71	1.68
14.1500	1.66	1.64	1.62	1.61	1.59
14.4000	1.58	1.56	1.55	1.53	1.52
14.6500	1.50	1.49	1.47	1.45	1.44
14.9000	1.43	1.41	1.39	1.38	1.36
15.1500	1.35	1.33	1.32	1.30	1.29
15.4000	1.27	1.25	1.24	1.22	1.20
15.6500	1.19	1.18	1.16	1.14	1.13
15.9000	1.11	1.10	1.08	1.07	1.06
16.1500	1.05	1.04	1.04	1.03	1.03
16.4000	1.02	1.02	1.01	1.01	1.00
16.6500	.99	.99	.98	.98	.97
16.9000	.97	.96	.95	.95	.94
17.1500	.94	.93	.93	.92	.92
17.4000	.91	.90	.90	.89	.89
17.6500	.88	.88	.87	.86	.86
17.9000	.85	.85	.84	.84	.83
18.1500	.83	.82	.81	.81	.80
18.4000	.80	.79	.79	.78	.77
18.6500	.77	.76	.76	.75	.75
18.9000	.74	.74	.73	.72	.72
19.1500	.71	.71	.70	.70	.69
19.4000	.68	.68	.67	.67	.66
19.6500	.65	.65	.64	.64	.63
19.9000	.63	.62	.61	.61	.61
20.1500	.60	.60	.60	.60	.60
20.4000	.60	.60	.60	.60	.59
20.6500	.59	.59	.59	.59	.59
20.9000	.59	.59	.58	.58	.58
21.1500	.58	.58	.58	.58	.58
21.4000	.58	.58	.58	.57	.57
21.6500	.57	.57	.57	.57	.57
21.9000	.57	.56	.56	.56	.56
22.1500	.56	.56	.56	.56	.56
22.4000	.55	.55	.55	.55	.55
22.6500	.55	.55	.55	.54	.54
22.9000	.54	.54	.54	.54	.54
23.1500	.54	.54	.54	.53	.53
23.4000	.53	.53	.53	.53	.53
23.6500	.53	.53	.52	.52	.52
23.9000	.52	.52	.52	.37	.12
24.1500	.03	.01	.00	.00	

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm  
 Duration = 24.0000 hrs Rain Depth = 7.2000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 HYG File - ID = - COUNTRYSHIRE 100  
 Tc = .0954 hrs  
 Drainage Area = 10.300 acres Runoff CN= 83

=====  
 Computational Time Increment = .01272 hrs  
 Computed Peak Time = 11.9218 hrs  
 Computed Peak Flow = 80.38 cfs

Time Increment for HYG File = .0500 hrs  
 Peak Time, Interpolated Output = 11.9500 hrs  
 Peak Flow, Interpolated Output = 77.58 cfs  
 WARNING: The difference between calculated peak flow  
 and interpolated peak flow is greater than 1.50%  
 =====

DRAINAGE AREA

-----  
 ID:COUNTRYSHIRE  
 CN = 83  
 Area = 10.300 acres  
 S = 2.0482 in  
 0.2S = .4096 in

Cumulative Runoff

-----  
 5.2168 in  
 195051 cu.ft

HYG Volume... 195019 cu.ft (area under HYG curve)

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

Time Concentration, Tc = .09543 hrs (ID: COUNTRYSHIRE)  
 Computational Incr, Tm = .01272 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 = 122.30 cfs  
 Unit peak time Tp = .06362 hrs  
 Unit receding limb, Tr = .25447 hrs  
 Total unit time, Tb = .31808 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm  
 Duration = 24.0000 hrs Rain Depth = 7.2000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 HYG File - ID = - COUNTRYSHIRE 100  
 Tc = .0954 hrs  
 Drainage Area = 10.300 acres Runoff CN= 83  
 Calc.Increment= .01272 hrs Out.Incr.= .0500 hrs  
 HYG Volume = 195019 cu.ft

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

Time hrs						
4.6500		.00	.00	.01	.01	.02
4.9000		.03	.03	.04	.05	.05
5.1500		.06	.07	.07	.08	.09
5.4000		.09	.10	.11	.12	.12
5.6500		.13	.14	.14	.15	.16
5.9000		.17	.18	.18	.19	.20
6.1500		.21	.21	.22	.23	.24
6.4000		.25	.25	.26	.27	.28
6.6500		.29	.30	.30	.31	.32
6.9000		.33	.34	.35	.36	.37
7.1500		.37	.38	.39	.40	.41
7.4000		.42	.43	.44	.45	.45
7.6500		.46	.47	.48	.49	.50
7.9000		.51	.52	.53	.54	.56
8.1500		.57	.59	.61	.63	.66
8.4000		.68	.70	.72	.74	.77
8.6500		.79	.82	.84	.87	.89
8.9000		.92	.94	.97	.99	1.01
9.1500		1.03	1.04	1.05	1.06	1.08
9.4000		1.09	1.10	1.11	1.13	1.15
9.6500		1.18	1.22	1.26	1.30	1.34
9.9000		1.39	1.43	1.48	1.52	1.58
10.1500		1.63	1.70	1.76	1.83	1.89
10.4000		1.96	2.02	2.10	2.17	2.26
10.6500		2.36	2.47	2.58	2.69	2.80
10.9000		2.93	3.04	3.17	3.32	3.52
11.1500		3.74	4.01	4.27	4.56	4.83
11.4000		5.14	5.41	5.74	7.75	11.05
11.6500		16.04	23.07	30.78	40.64	55.75
11.9000		76.69	77.58	67.68	49.93	24.36

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs  
 Time on left represents time for first value in each row.

Time hrs	15.50	12.42	11.11	10.13	9.42
12.1500	8.61	7.90	7.08	6.53	6.00
12.4000	5.73	5.51	5.34	5.15	4.99
12.6500	4.80	4.64	4.45	4.31	4.16
12.9000	4.06	3.96	3.87	3.77	3.68
13.1500	3.58	3.49	3.39	3.30	3.22
13.4000	3.15	3.07	3.01	2.94	2.87
13.6500	2.80	2.74	2.66	2.61	2.56
13.9000	2.53	2.50	2.48	2.46	2.44
14.1500	2.41	2.39	2.36	2.34	2.31
14.4000	2.29	2.27	2.25	2.22	2.20
14.6500	2.17	2.15	2.12	2.10	2.08
14.9000	2.05	2.03	2.00	1.98	1.96
15.1500	1.93	1.91	1.89	1.86	1.83
15.4000	1.81	1.79	1.77	1.74	1.72
15.6500	1.69	1.67	1.64	1.62	1.61
15.9000	1.60	1.58	1.58	1.57	1.56
16.1500	1.55	1.54	1.53	1.53	1.52
16.4000	1.51	1.50	1.49	1.48	1.47
16.6500	1.47	1.46	1.45	1.44	1.43
16.9000	1.42	1.41	1.41	1.40	1.39
17.1500	1.38	1.37	1.36	1.35	1.34
17.4000	1.34	1.33	1.32	1.31	1.30
17.6500	1.29	1.29	1.28	1.27	1.26
17.9000	1.25	1.24	1.23	1.23	1.22
18.1500	1.21	1.20	1.19	1.18	1.17
18.4000	1.16	1.16	1.15	1.14	1.13
18.6500	1.12	1.11	1.10	1.09	1.09
18.9000	1.08	1.07	1.06	1.05	1.04
19.1500	1.03	1.02	1.02	1.01	1.00
19.4000	.99	.98	.97	.96	.95
19.6500	.95	.94	.93	.92	.92
19.9000	.91	.91	.91	.91	.91
20.1500	.90	.90	.90	.90	.90
20.4000	.90	.90	.89	.89	.89
20.6500	.89	.89	.88	.88	.88
20.9000	.88	.88	.88	.87	.87
21.1500	.87	.87	.87	.87	.86
21.4000	.86	.86	.86	.86	.85
21.6500	.85	.85	.85	.85	.85
21.9000	.85	.84	.84	.84	.84
22.1500	.84	.83	.83	.83	.83
22.4000	.83	.83	.82	.82	.82
22.6500	.82	.82	.81	.81	.81
22.9000	.81	.81	.81	.81	.80
23.1500	.81	.81	.81	.81	.80

Type.... Unit Hyd. (HYG output) Page 7.21  
 Name.... COUNTRYSHIRE Tag: 100 Event: 100 yr  
 File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW  
 Storm... TypeII 24hr Tag: 100

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

---

Time hrs					
23.4000	.80	.80	.80	.80	.79
23.6500	.79	.79	.79	.79	.79
23.9000	.79	.78	.78	.55	.18
24.1500	.05	.01	.00	.00	

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm  
 Duration = 24.0000 hrs Rain Depth = 3.5000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 HYG File - ID = - SUBAREA A 2  
 Tc = .2467 hrs  
 Drainage Area = 30.170 acres Runoff CN= 83

=====  
 Computational Time Increment = .03289 hrs  
 Computed Peak Time = 12.0383 hrs  
 Computed Peak Flow = 68.52 cfs

Time Increment for HYG File = .0500 hrs  
 Peak Time, Interpolated Output = 12.0500 hrs  
 Peak Flow, Interpolated Output = 67.98 cfs  
 =====

DRAINAGE AREA

-----  
 ID:SUBAREA A  
 CN = 83  
 Area = 30.170 acres  
 S = 2.0482 in  
 0.2S = .4096 in

Cumulative Runoff

-----  
 1.8586 in  
 203545 cu.ft

HYG Volume... 203543 cu.ft (area under HYG curve)

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

Time Concentration, Tc = .24669 hrs (ID: SUBAREA A)  
 Computational Incr, Tm = .03289 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 = 138.57 cfs  
 Unit peak time, Tp = .16446 hrs  
 Unit receding limb, Tr = .65783 hrs  
 Total unit time, Tb = .82229 hrs

Type.... Unit Hyd. (HYG output) Page 7.23  
 Name.... SUBAREA A Tag: 2 Event: 2 yr  
 File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW  
 Storm... TypeII 24hr Tag: 2

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm  
 Duration = 24.0000 hrs Rain Depth = 3.5000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 HYG File - ID = - SUBAREA A 2  
 Tc = .2467 hrs  
 Drainage Area = 30.170 acres Runoff CN= 83  
 Calc.Increment= .03289 hrs Out.Incr.= .0500 hrs  
 HYG Volume = 203543 cu.ft

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

Time hrs						
7.9500	.00	.00	.01	.01	.02	
8.2000	.03	.04	.05	.06	.07	
8.4500	.08	.09	.10	.12	.13	
8.7000	.15	.16	.18	.19	.21	
8.9500	.23	.25	.27	.29	.30	
9.2000	.32	.34	.36	.37	.39	
9.4500	.40	.42	.43	.45	.47	
9.7000	.49	.52	.54	.57	.60	
9.9500	.63	.66	.70	.73	.77	
10.2000	.81	.86	.90	.95	1.00	
10.4500	1.06	1.11	1.17	1.23	1.30	
10.7000	1.37	1.45	1.54	1.63	1.72	
10.9500	1.82	1.93	2.04	2.16	2.30	
11.2000	2.47	2.66	2.87	3.10	3.35	
11.4500	3.60	3.89	4.36	5.36	7.18	
11.7000	10.20	14.64	20.70	29.23	41.16	
11.9500	54.80	65.20	67.98	62.13	49.99	
12.2000	37.64	28.24	22.06	18.12	15.29	
12.4500	13.28	11.67	10.38	9.29	8.41	
12.7000	7.74	7.24	6.87	6.59	6.33	
12.9500	6.10	5.88	5.66	5.47	5.28	
13.2000	5.12	4.98	4.85	4.73	4.61	
13.4500	4.49	4.38	4.27	4.16	4.06	
13.7000	3.96	3.87	3.78	3.69	3.61	
13.9500	3.53	3.45	3.37	3.29	3.23	
14.2000	3.17	3.13	3.09	3.05	3.02	
14.4500	2.99	2.96	2.93	2.90	2.88	
14.7000	2.85	2.82	2.79	2.76	2.74	
14.9500	2.71	2.68	2.65	2.62	2.59	
15.2000	2.57	2.54	2.51	2.48	2.45	



HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs  
Time on left represents time for first value in each row.

Time hrs					
15.4500	2.42	2.39	2.36	2.34	2.31
15.7000	2.28	2.25	2.22	2.19	2.16
15.9500	2.13	2.10	2.07	2.05	2.02
16.2000	2.00	1.99	1.97	1.96	1.95
16.4500	1.94	1.93	1.92	1.91	1.90
16.7000	1.89	1.88	1.87	1.86	1.84
16.9500	1.83	1.82	1.81	1.80	1.79
17.2000	1.78	1.77	1.76	1.75	1.74
17.4500	1.73	1.72	1.71	1.70	1.69
17.7000	1.68	1.67	1.66	1.65	1.64
17.9500	1.63	1.62	1.61	1.60	1.59
18.2000	1.58	1.56	1.55	1.54	1.53
18.4500	1.52	1.51	1.50	1.49	1.48
18.7000	1.47	1.46	1.45	1.44	1.43
18.9500	1.42	1.41	1.40	1.38	1.37
19.2000	1.36	1.35	1.34	1.33	1.32
19.4500	1.31	1.30	1.29	1.28	1.27
19.7000	1.26	1.25	1.23	1.22	1.21
19.9500	1.20	1.19	1.18	1.17	1.16
20.2000	1.16	1.15	1.15	1.14	1.14
20.4500	1.14	1.14	1.14	1.13	1.13
20.7000	1.13	1.13	1.13	1.12	1.12
20.9500	1.12	1.12	1.11	1.11	1.11
21.2000	1.11	1.11	1.10	1.10	1.10
21.4500	1.10	1.10	1.09	1.09	1.09
21.7000	1.09	1.09	1.08	1.08	1.08
21.9500	1.08	1.08	1.07	1.07	1.07
22.2000	1.07	1.07	1.06	1.06	1.06
22.4500	1.06	1.06	1.05	1.05	1.05
22.7000	1.05	1.05	1.04	1.04	1.04
22.9500	1.04	1.04	1.03	1.03	1.03
23.2000	1.03	1.02	1.02	1.02	1.02
23.4500	1.02	1.01	1.01	1.01	1.01
23.7000	1.01	1.00	1.00	1.00	1.00
23.9500	1.00	.99	.95	.82	.61
24.2000	.40	.24	.15	.09	.05
24.4500	.03	.02	.01	.01	.00
24.7000	.00	.00			

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm  
 Duration = 24.0000 hrs Rain Depth = 5.0000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 HYG File - ID = - SUBAREA A 10  
 Tc = .2467 hrs  
 Drainage Area = 30.170 acres Runoff CN= 83

=====  
 Computational Time Increment = .03289 hrs  
 Computed Peak Time = 12.0383 hrs  
 Computed Peak Flow = 116.12 cfs

Time Increment for HYG File = .0500 hrs  
 Peak Time, Interpolated Output = 12.0500 hrs  
 Peak Flow, Interpolated Output = 114.87 cfs  
 =====

DRAINAGE AREA

-----  
 ID: SUBAREA A  
 CN = 83  
 Area = 30.170 acres  
 S = 2.0482 in  
 0.2S = .4096 in

Cumulative Runoff

-----  
 3.1741 in  
 347618 cu.ft

HYG Volume... 347614 cu.ft (area under HYG curve)

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

Time Concentration, Tc = .24669 hrs (ID: SUBAREA A)  
 Computational Incr, Tm = .03289 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 = 138.57 cfs  
 Unit peak time, Tp = .16446 hrs  
 Unit receding limb, Tr = .65783 hrs  
 Total unit time, Tb = .82229 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm  
 Duration = 24.0000 hrs Rain Depth = 5.0000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 HYG File - ID = - SUBAREA A 10  
 Tc = .2467 hrs  
 Drainage Area = 30.170 acres Runoff CN= 83  
 Calc.Increment= .03289 hrs Out.Incr.= .0500 hrs  
 HYG Volume = 347614 cu.ft

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs					
6.1500	.00	.00	.00	.01	.02
6.4000	.03	.04	.05	.06	.08
6.6500	.09	.10	.12	.13	.14
6.9000	.16	.17	.18	.20	.21
7.1500	.23	.24	.25	.27	.28
7.4000	.30	.31	.33	.34	.36
7.6500	.37	.39	.40	.42	.43
7.9000	.45	.47	.48	.50	.52
8.1500	.54	.56	.58	.61	.63
8.4000	.66	.69	.72	.75	.79
8.6500	.82	.85	.89	.93	.96
8.9000	1.00	1.04	1.08	1.12	1.16
9.1500	1.20	1.23	1.26	1.29	1.31
9.4000	1.34	1.36	1.39	1.41	1.44
9.6500	1.47	1.51	1.56	1.62	1.67
9.9000	1.74	1.80	1.87	1.94	2.01
10.1500	2.09	2.17	2.26	2.36	2.45
10.4000	2.56	2.66	2.77	2.88	3.01
10.6500	3.14	3.28	3.44	3.60	3.78
10.9000	3.96	4.15	4.35	4.56	4.79
11.1500	5.06	5.38	5.74	6.14	6.57
11.4000	7.03	7.50	8.03	8.91	10.81
11.6500	14.27	19.93	28.06	38.85	53.54
11.9000	73.52	95.67	111.77	114.87	103.88
12.1500	83.01	62.16	46.41	36.06	29.49
12.4000	24.77	21.42	18.77	16.64	14.87
12.6500	13.44	12.34	11.54	10.94	10.47
12.9000	10.06	9.68	9.33	8.98	8.66
13.1500	8.37	8.11	7.88	7.67	7.47
13.4000	7.28	7.10	6.91	6.73	6.56

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

---

Time hrs					
13.6500	6.39	6.24	6.09	5.95	5.82
13.9000	5.68	5.55	5.42	5.29	5.18
14.1500	5.07	4.98	4.91	4.85	4.79
14.4000	4.74	4.69	4.64	4.60	4.55
14.6500	4.51	4.46	4.42	4.37	4.33
14.9000	4.28	4.24	4.19	4.15	4.10
15.1500	4.06	4.01	3.96	3.92	3.87
15.4000	3.83	3.78	3.74	3.69	3.65
15.6500	3.60	3.55	3.51	3.46	3.42
15.9000	3.37	3.32	3.28	3.23	3.19
16.1500	3.15	3.12	3.09	3.07	3.05
16.4000	3.03	3.02	3.00	2.98	2.97
16.6500	2.95	2.93	2.92	2.90	2.88
16.9000	2.87	2.85	2.84	2.82	2.80
17.1500	2.79	2.77	2.75	2.74	2.72
17.4000	2.71	2.69	2.67	2.66	2.64
17.6500	2.62	2.61	2.59	2.57	2.56
17.9000	2.54	2.52	2.51	2.49	2.47
18.1500	2.46	2.44	2.43	2.41	2.39
18.4000	2.38	2.36	2.34	2.33	2.31
18.6500	2.29	2.28	2.26	2.24	2.23
18.9000	2.21	2.19	2.18	2.16	2.14
19.1500	2.13	2.11	2.09	2.08	2.06
19.4000	2.04	2.03	2.01	1.99	1.98
19.6500	1.96	1.94	1.92	1.91	1.89
19.9000	1.87	1.86	1.84	1.82	1.81
20.1500	1.80	1.79	1.78	1.77	1.77
20.4000	1.76	1.76	1.76	1.75	1.75
20.6500	1.75	1.74	1.74	1.74	1.73
20.9000	1.73	1.73	1.72	1.72	1.72
21.1500	1.71	1.71	1.71	1.70	1.70
21.4000	1.70	1.69	1.69	1.69	1.68
21.6500	1.68	1.68	1.67	1.67	1.67
21.9000	1.66	1.66	1.66	1.65	1.65
22.1500	1.65	1.65	1.64	1.64	1.64
22.4000	1.63	1.63	1.63	1.62	1.62
22.6500	1.62	1.61	1.61	1.61	1.60
22.9000	1.60	1.60	1.59	1.59	1.59
23.1500	1.58	1.58	1.58	1.57	1.57
23.4000	1.57	1.56	1.56	1.56	1.55
23.6500	1.55	1.55	1.54	1.54	1.54
23.9000	1.53	1.53	1.52	1.46	1.26
24.1500	.94	.62	.37	.23	.14
24.4000	.08	.05	.03	.02	.01
24.6500	.01	.00	.00		

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm  
 Duration = 24.0000 hrs Rain Depth = 7.2000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 HYG File - ID = - SUBAREA A 100  
 Tc = .2467 hrs  
 Drainage Area = 30.170 acres Runoff CN= 83

=====  
 Computational Time Increment = .03289 hrs  
 Computed Peak Time = 12.0383 hrs  
 Computed Peak Flow = 187.34 cfs

Time Increment for HYG File = .0500 hrs  
 Peak Time, Interpolated Output = 12.0500 hrs  
 Peak Flow, Interpolated Output = 184.96 cfs  
 =====

DRAINAGE AREA

-----  
 ID:SUBAREA A  
 CN = 83  
 Area = 30.170 acres  
 S = 2.0482 in  
 0.2S = .4096 in

Cumulative Runoff

-----  
 5.2168 in  
 571329 cu.ft

HYG Volume... 571322 cu.ft (area under HYG curve)

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

Time Concentration, Tc = .24669 hrs (ID: SUBAREA A)  
 Computational Incr, Tm = .03289 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 = 138.57 cfs  
 Unit peak time, Tp = .16446 hrs  
 Unit receding limb, Tr = .65783 hrs  
 Total unit time, Tb = .82229 hrs

Type.... Unit Hyd. (HYG output) Page 7.29  
 Name.... SUBAREA A Tag: 100 Event: 100 yr  
 File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW  
 Storm... TypeII 24hr Tag: 100

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm  
 Duration = 24.0000 hrs Rain Depth = 7.2000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 HYG File - ID = - SUBAREA A 100  
 Tc = .2467 hrs  
 Drainage Area = 30.170 acres Runoff CN= 83  
 Calc.Increment= .03289 hrs Out.Incr.= .0500 hrs  
 HYG Volume = 571322 cu.ft

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

Time hrs					
4.6500	.00	.00	.01	.01	.03
4.9000	.04	.06	.07	.09	.11
5.1500	.13	.15	.17	.19	.21
5.4000	.23	.25	.27	.29	.31
5.6500	.33	.35	.37	.39	.42
5.9000	.44	.46	.48	.50	.53
6.1500	.55	.57	.60	.62	.64
6.4000	.67	.69	.71	.74	.76
6.6500	.78	.81	.83	.86	.88
6.9000	.91	.93	.96	.98	1.01
7.1500	1.03	1.06	1.08	1.11	1.14
7.4000	1.16	1.19	1.22	1.24	1.27
7.6500	1.29	1.32	1.35	1.38	1.40
7.9000	1.43	1.46	1.48	1.51	1.54
8.1500	1.58	1.62	1.67	1.72	1.78
8.4000	1.84	1.90	1.96	2.03	2.09
8.6500	2.16	2.23	2.30	2.37	2.44
8.9000	2.51	2.59	2.66	2.74	2.81
9.1500	2.87	2.93	2.98	3.02	3.06
9.4000	3.10	3.13	3.17	3.20	3.24
9.6500	3.30	3.37	3.46	3.56	3.67
9.9000	3.78	3.90	4.02	4.15	4.28
10.1500	4.42	4.57	4.74	4.91	5.09
10.4000	5.28	5.47	5.66	5.86	6.07
10.6500	6.31	6.56	6.84	7.14	7.45
10.9000	7.77	8.10	8.44	8.80	9.20
11.1500	9.67	10.23	10.86	11.56	12.30
11.4000	13.08	13.89	14.78	16.31	19.62
11.6500	25.66	35.45	49.29	67.27	91.22
11.9000	123.09	157.66	181.80	184.96	166.00

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs					
12.1500	132.00	98.46	73.26	56.71	46.21
12.4000	38.68	33.36	29.16	25.80	23.02
12.6500	20.78	19.06	17.81	16.87	16.14
12.9000	15.50	14.91	14.35	13.82	13.32
13.1500	12.87	12.47	12.10	11.78	11.47
13.4000	11.18	10.89	10.60	10.32	10.06
13.6500	9.80	9.56	9.33	9.11	8.90
13.9000	8.70	8.50	8.29	8.10	7.92
14.1500	7.75	7.62	7.50	7.40	7.32
14.4000	7.24	7.16	7.09	7.02	6.95
14.6500	6.88	6.81	6.74	6.67	6.60
14.9000	6.53	6.46	6.39	6.32	6.25
15.1500	6.18	6.11	6.04	5.97	5.90
15.4000	5.83	5.76	5.69	5.62	5.55
15.6500	5.48	5.41	5.34	5.27	5.19
15.9000	5.12	5.05	4.98	4.91	4.85
16.1500	4.79	4.74	4.70	4.67	4.64
16.4000	4.61	4.58	4.56	4.53	4.50
16.6500	4.48	4.45	4.43	4.40	4.38
16.9000	4.35	4.33	4.30	4.28	4.25
17.1500	4.23	4.20	4.18	4.15	4.13
17.4000	4.10	4.08	4.05	4.03	4.00
17.6500	3.98	3.95	3.93	3.90	3.88
17.9000	3.85	3.83	3.80	3.77	3.75
18.1500	3.72	3.70	3.67	3.65	3.62
18.4000	3.60	3.57	3.55	3.52	3.50
18.6500	3.47	3.44	3.42	3.39	3.37
18.9000	3.34	3.32	3.29	3.27	3.24
19.1500	3.22	3.19	3.16	3.14	3.11
19.4000	3.09	3.06	3.04	3.01	2.99
19.6500	2.96	2.94	2.91	2.88	2.86
19.9000	2.83	2.81	2.78	2.76	2.73
20.1500	2.72	2.70	2.69	2.68	2.67
20.4000	2.66	2.66	2.65	2.65	2.64
20.6500	2.64	2.63	2.63	2.62	2.62
20.9000	2.61	2.61	2.60	2.60	2.59
21.1500	2.59	2.58	2.58	2.57	2.57
21.4000	2.56	2.56	2.55	2.55	2.54
21.6500	2.54	2.53	2.53	2.52	2.52
21.9000	2.51	2.51	2.50	2.50	2.49
22.1500	2.49	2.48	2.48	2.47	2.47
22.4000	2.46	2.46	2.45	2.45	2.44
22.6500	2.44	2.43	2.43	2.42	2.42
22.9000	2.41	2.41	2.40	2.40	2.39
23.1500	2.39	2.38	2.38	2.37	2.37

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time | Time on left represents time for first value in each row.

---

Time hrs					
23.4000	2.36	2.36	2.35	2.35	2.34
23.6500	2.33	2.33	2.33	2.32	2.31
23.9000	2.31	2.31	2.29	2.20	1.89
24.1500	1.41	.93	.56	.34	.21
24.4000	.12	.07	.04	.03	.01
24.6500	.01	.00	.00	.00	



SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm  
 Duration = 24.0000 hrs Rain Depth = 3.5000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 HYG File - ID = - SUBAREA B 2  
 Tc = .4535 hrs  
 Drainage Area = 32.950 acres Runoff CN= 85

=====  
 Computational Time Increment = .06046 hrs  
 Computed Peak Time = 12.1525 hrs  
 Computed Peak Flow = 59.97 cfs

Time Increment for HYG File = .0500 hrs  
 Peak Time, Interpolated Output = 12.1500 hrs  
 Peak Flow, Interpolated Output = 59.84 cfs  
 =====

DRAINAGE AREA

-----  
 ID:SUBAREA B  
 CN = 85  
 Area = 32.950 acres  
 S = 1.7647 in  
 0.2S = .3529 in

Cumulative Runoff

-----  
 2.0164 in  
 241176 cu.ft

HYG Volume... 241178 cu.ft (area under HYG curve)

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

Time Concentration, Tc = .45345 hrs (ID: SUBAREA B)  
 Computational Incr, Tm = .06046 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 = 82.33 cfs  
 Unit peak time, Tp = .30230 hrs  
 Unit receding limb, Tr = 1.20921 hrs  
 Total unit time, Tb = 1.51151 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm  
 Duration = 24.0000 hrs Rain Depth = 3.5000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 HYG File - ID = - SUBAREA B 2  
 Tc = .4535 hrs  
 Drainage Area = 32.950 acres Runoff CN= 85  
 Calc.Increment= .06046 hrs Out.Incr.= .0500 hrs  
 HYG Volume = 241178 cu.ft

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

Time hrs					
7.2000	.00	.00	.00	.01	.01
7.4500	.01	.02	.03	.04	.04
7.7000	.05	.06	.07	.08	.09
7.9500	.10	.11	.12	.13	.14
8.2000	.15	.16	.18	.19	.20
8.4500	.22	.23	.25	.27	.28
8.7000	.30	.32	.34	.36	.38
8.9500	.40	.42	.45	.47	.49
9.2000	.52	.54	.56	.58	.60
9.4500	.62	.64	.66	.68	.70
9.7000	.72	.74	.77	.80	.83
9.9500	.86	.90	.93	.97	1.02
10.2000	1.06	1.11	1.16	1.21	1.27
10.4500	1.32	1.39	1.45	1.52	1.59
10.7000	1.66	1.75	1.83	1.93	2.03
10.9500	2.13	2.24	2.36	2.49	2.63
11.2000	2.78	2.95	3.14	3.35	3.59
11.4500	3.84	4.13	4.49	5.03	5.97
11.7000	7.50	9.81	13.18	17.96	24.90
11.9500	33.46	42.67	51.13	57.33	59.84
12.2000	58.02	53.55	47.53	41.00	34.81
12.4500	29.62	25.54	22.19	19.40	17.05
12.7000	15.07	13.47	12.15	11.06	10.15
12.9500	9.39	8.75	8.23	7.77	7.36
13.2000	6.99	6.67	6.37	6.12	5.90
13.4500	5.71	5.54	5.38	5.23	5.09
13.7000	4.96	4.83	4.71	4.59	4.48
13.9500	4.38	4.27	4.18	4.08	3.99
14.2000	3.90	3.82	3.75	3.68	3.63
14.4500	3.58	3.53	3.49	3.45	3.41

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

Time hrs	3.37	3.33	3.30	3.26	3.23
14.7000	3.37	3.33	3.30	3.26	3.23
14.9500	3.20	3.16	3.13	3.10	3.06
15.2000	3.03	3.00	2.97	2.93	2.90
15.4500	2.87	2.83	2.80	2.77	2.74
15.7000	2.70	2.67	2.64	2.60	2.57
15.9500	2.54	2.50	2.47	2.44	2.41
16.2000	2.38	2.35	2.32	2.30	2.28
16.4500	2.26	2.24	2.23	2.22	2.20
16.7000	2.19	2.17	2.16	2.15	2.14
16.9500	2.13	2.11	2.10	2.09	2.08
17.2000	2.07	2.05	2.04	2.03	2.02
17.4500	2.01	1.99	1.98	1.97	1.96
17.7000	1.95	1.94	1.92	1.91	1.90
17.9500	1.89	1.88	1.86	1.85	1.84
18.2000	1.83	1.82	1.80	1.79	1.78
18.4500	1.77	1.76	1.74	1.73	1.72
18.7000	1.71	1.70	1.68	1.67	1.66
18.9500	1.65	1.64	1.62	1.61	1.60
19.2000	1.59	1.57	1.56	1.55	1.54
19.4500	1.53	1.51	1.50	1.49	1.48
19.7000	1.46	1.45	1.44	1.43	1.42
19.9500	1.40	1.39	1.38	1.37	1.36
20.2000	1.34	1.34	1.33	1.32	1.31
20.4500	1.31	1.30	1.30	1.30	1.29
20.7000	1.29	1.29	1.28	1.28	1.28
20.9500	1.28	1.27	1.27	1.27	1.27
21.2000	1.26	1.26	1.26	1.26	1.25
21.4500	1.25	1.25	1.25	1.24	1.24
21.7000	1.24	1.24	1.24	1.23	1.23
21.9500	1.23	1.23	1.22	1.22	1.22
22.2000	1.22	1.21	1.21	1.21	1.21
22.4500	1.21	1.20	1.20	1.20	1.20
22.7000	1.19	1.19	1.19	1.19	1.18
22.9500	1.18	1.18	1.18	1.17	1.17
23.2000	1.17	1.17	1.16	1.16	1.16
23.4500	1.16	1.16	1.15	1.15	1.15
23.7000	1.15	1.14	1.14	1.14	1.14
23.9500	1.13	1.13	1.11	1.07	1.00
24.2000	.90	.76	.62	.50	.38
24.4500	.29	.22	.17	.13	.10
24.7000	.07	.06	.04	.03	.02
24.9500	.02	.01	.01	.01	.01
25.2000	.00	.00	.00	.00	.00

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm  
 Duration = 24.0000 hrs Rain Depth = 5.0000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 HYG File - ID = - SUBAREA B 10  
 Tc = .4535 hrs  
 Drainage Area = 32.950 acres Runoff CN= 85

=====  
 Computational Time Increment = .06046 hrs  
 Computed Peak Time = 12.1525 hrs  
 Computed Peak Flow = 99.61 cfs

Time Increment for HYG File = .0500 hrs  
 Peak Time, Interpolated Output = 12.1500 hrs  
 Peak Flow, Interpolated Output = 99.44 cfs  
 =====

DRAINAGE AREA

-----  
 ID: SUBAREA B  
 CN = 85  
 Area = 32.950 acres  
 S = 1.7647 in  
 0.2S = .3529 in

Cumulative Runoff

-----  
 3.3681 in  
 402848 cu.ft

HYG Volume... 402850 cu.ft (area under HYG curve)

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

Time Concentration, Tc = .45345 hrs (ID: SUBAREA B)  
 Computational Incr, Tm = .06046 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 = 82.33 cfs  
 Unit peak time, Tp = .30230 hrs  
 Unit receding limb, Tr = 1.20921 hrs  
 Total unit time, Tb = 1.51151 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm  
 Duration = 24.0000 hrs Rain Depth = 5.0000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 HYG File - ID = - SUBAREA B 10  
 Tc = .4535 hrs  
 Drainage Area = 32.950 acres Runoff CN= 85  
 Calc.Increment= .06046 hrs Out.Incr.= .0500 hrs  
 HYG Volume = 402850 cu.ft

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs					
5.5500	.00	.00	.00	.01	.01
5.8000	.02	.03	.04	.05	.06
6.0500	.07	.08	.10	.11	.12
6.3000	.14	.15	.17	.18	.20
6.5500	.21	.23	.24	.26	.27
6.8000	.29	.31	.32	.34	.36
7.0500	.37	.39	.41	.42	.44
7.3000	.46	.47	.49	.51	.53
7.5500	.54	.56	.58	.60	.62
7.8000	.63	.65	.67	.69	.71
8.0500	.73	.75	.77	.79	.81
8.3000	.84	.86	.89	.93	.96
8.5500	1.00	1.03	1.07	1.11	1.15
8.8000	1.19	1.24	1.28	1.32	1.37
9.0500	1.42	1.46	1.51	1.56	1.60
9.3000	1.64	1.68	1.71	1.75	1.78
9.5500	1.81	1.84	1.87	1.91	1.95
9.8000	1.99	2.04	2.10	2.17	2.23
10.0500	2.30	2.38	2.46	2.54	2.63
10.3000	2.73	2.83	2.94	3.05	3.17
10.5500	3.29	3.42	3.55	3.69	3.84
10.8000	4.01	4.18	4.37	4.56	4.77
11.0500	4.98	5.21	5.46	5.74	6.04
11.3000	6.39	6.78	7.20	7.66	8.17
11.5500	8.81	9.79	11.49	14.22	18.33
11.8000	24.23	32.46	44.13	58.23	73.15
12.0500	86.56	96.06	99.44	95.81	87.95
12.3000	77.71	66.77	56.48	47.90	41.17
12.5500	35.66	31.08	27.23	23.99	21.39
12.8000	19.25	17.47	16.00	14.77	13.75

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs	12.90	12.16	11.50	10.92	10.39
13.0500	12.90	12.16	11.50	10.92	10.39
13.3000	9.92	9.52	9.17	8.87	8.60
13.5500	8.36	8.12	7.90	7.69	7.49
13.8000	7.30	7.12	6.94	6.78	6.62
14.0500	6.46	6.31	6.16	6.03	5.91
14.3000	5.79	5.69	5.60	5.52	5.45
14.5500	5.38	5.32	5.26	5.20	5.14
14.8000	5.09	5.03	4.98	4.93	4.87
15.0500	4.82	4.77	4.72	4.67	4.62
15.3000	4.56	4.51	4.46	4.41	4.36
15.5500	4.31	4.26	4.20	4.15	4.10
15.8000	4.05	4.00	3.95	3.89	3.84
16.0500	3.79	3.74	3.69	3.64	3.60
16.3000	3.56	3.53	3.50	3.47	3.44
16.5500	3.42	3.40	3.37	3.35	3.33
16.8000	3.31	3.29	3.27	3.25	3.24
17.0500	3.22	3.20	3.18	3.16	3.14
17.3000	3.13	3.11	3.09	3.07	3.05
17.5500	3.03	3.01	3.00	2.98	2.96
17.8000	2.94	2.92	2.90	2.89	2.87
18.0500	2.85	2.83	2.81	2.79	2.77
18.3000	2.76	2.74	2.72	2.70	2.68
18.5500	2.66	2.64	2.63	2.61	2.59
18.8000	2.57	2.55	2.53	2.51	2.49
19.0500	2.48	2.46	2.44	2.42	2.40
19.3000	2.38	2.36	2.34	2.33	2.31
19.5500	2.29	2.27	2.25	2.23	2.21
19.8000	2.19	2.18	2.16	2.14	2.12
20.0500	2.10	2.08	2.06	2.05	2.03
20.3000	2.02	2.01	2.00	1.99	1.98
20.5500	1.98	1.97	1.97	1.96	1.96
20.8000	1.95	1.95	1.94	1.94	1.94
21.0500	1.93	1.93	1.93	1.92	1.92
21.3000	1.91	1.91	1.91	1.90	1.90
21.5500	1.90	1.89	1.89	1.89	1.88
21.8000	1.88	1.87	1.87	1.87	1.86
22.0500	1.86	1.86	1.85	1.85	1.84
22.3000	1.84	1.84	1.83	1.83	1.83
22.5500	1.82	1.82	1.82	1.81	1.81
22.8000	1.80	1.80	1.80	1.79	1.79
23.0500	1.79	1.78	1.78	1.78	1.77
23.3000	1.77	1.76	1.76	1.76	1.75
23.5500	1.75	1.75	1.74	1.74	1.73
23.8000	1.73	1.73	1.72	1.72	1.71
24.0500	1.69	1.63	1.52	1.36	1.16

HYDROGRAPH ORDINATES (cfs)

Time | Output Time increment = .0500 hrs  
hrs | Time on left represents time for first value in each row.

Time hrs					
24.3000	.95	.75	.58	.44	.33
24.5500	.25	.19	.15	.11	.08
24.8000	.06	.05	.04	.03	.02
25.0500	.02	.01	.01	.01	.00
25.3000	.00	.00	.00		

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm  
 Duration = 24.0000 hrs Rain Depth = 7.2000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 HYG File - ID = - SUBAREA B 100  
 Tc = .4535 hrs  
 Drainage Area = 32.950 acres Runoff CN= 85

=====  
 Computational Time Increment = .06046 hrs  
 Computed Peak Time = 12.1525 hrs  
 Computed Peak Flow = 158.50 cfs

Time Increment for HYG File = .0500 hrs  
 Peak Time, Interpolated Output = 12.1500 hrs  
 Peak Flow, Interpolated Output = 158.27 cfs  
 =====

DRAINAGE AREA

-----  
 ID:SUBAREA B  
 CN = 85  
 Area = 32.950 acres  
 S = 1.7647 in  
 0.2S = .3529 in

Cumulative Runoff

-----  
 5.4440 in  
 651145 cu.ft

HYG Volume... 651149 cu.ft (area under HYG curve)

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

Time Concentration, Tc = .45345 hrs (ID: SUBAREA B)  
 Computational Incr, Tm = .06046 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 = 82.33 cfs  
 Unit peak time Tp = .30230 hrs  
 Unit receding limb, Tr = 1.20921 hrs  
 Total unit time, Tb = 1.51151 hrs



SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm  
 Duration = 24.0000 hrs Rain Depth = 7.2000 in  
 Rain Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Rain File -ID = - TypeII 24hr  
 Unit Hyd Type = Default Curvilinear  
 HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 HYG File - ID = - SUBAREA B 100  
 Tc = .4535 hrs  
 Drainage Area = 32.950 acres Runoff CN= 85  
 Calc.Increment= .06046 hrs Out.Incr.= .0500 hrs  
 HYG Volume = 651149 cu.ft

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

Time hrs					
4.1500	.00	.00	.00	.01	.01
4.4000	.02	.03	.05	.06	.08
4.6500	.10	.12	.14	.16	.18
4.9000	.20	.22	.24	.26	.28
5.1500	.31	.33	.35	.38	.40
5.4000	.42	.45	.47	.49	.52
5.6500	.54	.57	.59	.62	.64
5.9000	.67	.70	.72	.75	.77
6.1500	.80	.83	.85	.88	.91
6.4000	.94	.96	.99	1.02	1.05
6.6500	1.07	1.10	1.13	1.16	1.19
6.9000	1.22	1.24	1.27	1.30	1.33
7.1500	1.36	1.39	1.42	1.45	1.48
7.4000	1.51	1.54	1.57	1.60	1.63
7.6500	1.66	1.69	1.72	1.75	1.78
7.9000	1.81	1.84	1.87	1.91	1.94
8.1500	1.97	2.01	2.05	2.10	2.15
8.4000	2.21	2.27	2.33	2.40	2.47
8.6500	2.55	2.62	2.70	2.78	2.86
8.9000	2.94	3.02	3.11	3.19	3.28
9.1500	3.36	3.44	3.52	3.59	3.65
9.4000	3.71	3.76	3.81	3.85	3.90
9.6500	3.95	4.00	4.07	4.14	4.23
9.9000	4.33	4.44	4.55	4.68	4.81
10.1500	4.95	5.10	5.26	5.43	5.60
10.4000	5.79	5.99	6.19	6.40	6.62
10.6500	6.85	7.09	7.36	7.64	7.93
10.9000	8.25	8.58	8.93	9.30	9.68
11.1500	10.11	10.57	11.09	11.67	12.32
11.4000	13.03	13.79	14.65	15.72	17.36

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

Time hrs	20.23	24.81	31.65	41.38	54.81
11.6500	20.23	24.81	31.65	41.38	54.81
11.9000	73.50	95.79	119.03	139.61	153.80
12.1500	158.27	151.79	138.83	122.27	104.75
12.4000	88.38	74.78	64.14	55.42	48.19
12.6500	42.13	37.04	32.96	29.60	26.83
12.9000	24.53	22.62	21.02	19.69	18.54
13.1500	17.53	16.62	15.80	15.08	14.46
13.4000	13.93	13.46	13.05	12.67	12.32
13.6500	11.98	11.66	11.35	11.06	10.78
13.9000	10.51	10.26	10.01	9.77	9.54
14.1500	9.32	9.12	8.93	8.76	8.60
14.4000	8.46	8.34	8.23	8.12	8.03
14.6500	7.93	7.85	7.76	7.67	7.59
14.9000	7.51	7.43	7.35	7.27	7.19
15.1500	7.11	7.04	6.96	6.88	6.80
15.4000	6.72	6.64	6.57	6.49	6.41
15.6500	6.33	6.25	6.17	6.10	6.02
15.9000	5.94	5.86	5.78	5.71	5.63
16.1500	5.55	5.48	5.42	5.36	5.31
16.4000	5.26	5.21	5.17	5.14	5.10
16.6500	5.07	5.04	5.01	4.98	4.95
16.9000	4.92	4.89	4.86	4.83	4.81
17.1500	4.78	4.75	4.72	4.69	4.66
17.4000	4.64	4.61	4.58	4.55	4.53
17.6500	4.50	4.47	4.44	4.41	4.39
17.9000	4.36	4.33	4.30	4.27	4.24
18.1500	4.22	4.19	4.16	4.13	4.10
18.4000	4.08	4.05	4.02	3.99	3.96
18.6500	3.94	3.91	3.88	3.85	3.82
18.9000	3.79	3.77	3.74	3.71	3.68
19.1500	3.65	3.62	3.60	3.57	3.54
19.4000	3.51	3.48	3.46	3.43	3.40
19.6500	3.37	3.34	3.31	3.29	3.26
19.9000	3.23	3.20	3.17	3.14	3.12
20.1500	3.09	3.07	3.04	3.02	3.01
20.4000	2.99	2.98	2.97	2.96	2.95
20.6500	2.94	2.94	2.93	2.92	2.92
20.9000	2.91	2.90	2.90	2.89	2.89
21.1500	2.88	2.87	2.87	2.86	2.86
21.4000	2.85	2.85	2.84	2.84	2.83
21.6500	2.82	2.82	2.81	2.81	2.80
21.9000	2.80	2.79	2.79	2.78	2.77
22.1500	2.77	2.76	2.76	2.75	2.75
22.4000	2.74	2.74	2.73	2.72	2.72
22.6500	2.71	2.71	2.70	2.70	2.69

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

---

Time hrs					
22.9000	2.68	2.68	2.67	2.67	2.66
23.1500	2.66	2.65	2.65	2.64	2.63
23.4000	2.63	2.62	2.62	2.61	2.61
23.6500	2.60	2.60	2.59	2.58	2.58
23.9000	2.57	2.57	2.56	2.52	2.43
24.1500	2.27	2.03	1.73	1.41	1.12
24.4000	.86	.65	.49	.37	.29
24.6500	.22	.17	.13	.10	.07
24.9000	.05	.04	.03	.02	.02
25.1500	.01	.01	.01	.00	.00
25.4000	.00				

Solution to Mannings Open Channel Flow Equation  
 (Computed values are based on normal depth.)

TRAPEZOIDAL CROSS SECTION

Slope = .022000 ft/ft  
 Mannings n = 0.04000  
 Invert Elev. = 592.00 ft  
 Top of Channel = 597.00 ft  
 Base width = 5.00 ft  
 Rt Side slope = 3.000 horizontal :1 vert.  
 Lt Side slope = 3.000 horizontal :1 vert.

Elev. (ft)	Depth (ft)	Flow (cfs)	Vel. (ft/sec)	Area (sq.ft)	Top W. (ft)	Wet.P. (ft)	Hd (ft)	Froude No.
592.000	.00	.00	.00	.0000	.00	.00	.00	0.00
592.010	.01	.01	.25	.0503	5.06	5.06	.01	0.45
592.100	.10	.60	1.14	.5299	5.60	5.63	.09	0.65
592.200	.20	1.96	1.75	1.1201	6.20	6.26	.18	0.73
592.300	.30	3.94	2.22	1.7699	6.80	6.90	.26	0.77
592.400	.40	6.52	2.63	2.4802	7.40	7.53	.34	0.80
592.500	.50	9.69	2.98	3.2500	8.00	8.16	.41	0.82
592.600	.60	13.47	3.30	4.0798	8.60	8.79	.47	0.85
592.700	.70	17.87	3.60	4.9701	9.20	9.43	.54	0.86
592.800	.80	22.91	3.87	5.9199	9.80	10.06	.60	0.88
592.900	.90	28.60	4.13	6.9303	10.40	10.69	.67	0.89
593.000	1.00	34.96	4.37	8.0000	11.00	11.32	.73	0.90
593.100	1.10	42.02	4.60	9.1297	11.60	11.96	.79	0.91
593.200	1.20	49.81	4.83	10.3202	12.20	12.59	.85	0.93
593.300	1.30	58.32	5.04	11.5698	12.80	13.22	.90	0.93
593.400	1.40	67.60	5.25	12.8803	13.40	13.85	.96	0.94
593.500	1.50	77.66	5.45	14.2500	14.00	14.49	1.02	0.95
593.600	1.60	88.52	5.65	15.6796	14.60	15.12	1.07	0.96
593.700	1.70	100.20	5.84	17.1702	15.20	15.75	1.13	0.97
593.800	1.80	112.73	6.02	18.7198	15.80	16.38	1.18	0.98
593.900	1.90	126.13	6.20	20.3304	16.40	17.02	1.24	0.98
594.000	2.00	140.40	6.38	22.0000	17.00	17.65	1.29	0.99
594.100	2.10	155.58	6.56	23.7296	17.60	18.28	1.35	1.00
594.200	2.20	171.70	6.73	25.5202	18.20	18.91	1.40	1.00
594.300	2.30	188.75	6.90	27.3698	18.80	19.55	1.46	1.01
594.400	2.40	206.78	7.06	29.2805	19.40	20.18	1.51	1.01
594.500	2.50	225.79	7.23	31.2500	20.00	20.81	1.56	1.02
594.600	2.60	245.80	7.39	33.2795	20.60	21.44	1.62	1.02
594.700	2.70	266.84	7.54	35.3703	21.20	22.08	1.67	1.03
594.800	2.80	288.92	7.70	37.5197	21.80	22.71	1.72	1.03
594.900	2.90	312.08	7.85	39.7306	22.40	23.34	1.77	1.04
595.000	3.00	336.31	8.01	42.0000	23.00	23.97	1.83	1.04
595.100	3.10	361.64	8.16	44.3294	23.60	24.61	1.88	1.05
595.200	3.20	388.10	8.31	46.7203	24.20	25.24	1.93	1.05
595.300	3.30	415.69	8.45	49.1697	24.80	25.87	1.98	1.06

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

Solution to Mannings Open Channel Flow Equation  
 (Computed values are based on normal depth.)

TRAPEZOIDAL CROSS SECTION

Slope = .022000 ft/ft  
 Mannings n = 0.04000  
 Invert Elev. = 592.00 ft  
 Top of Channel = 597.00 ft  
 Base width = 5.00 ft  
 Rt Side slope = 3.000 horizontal :1 vert.  
 Lt Side slope = 3.000 horizontal :1 vert.

Elev. (ft)	Depth (ft)	Flow (cfs)	Vel. (ft/sec)	Area (sq.ft)	Top W. (ft)	Wet.P. (ft)	Hd (ft)	Froude No.
595.400	3.40	444.45	8.60	51.6806	25.40	26.50	2.03	1.06
595.500	3.50	474.37	8.74	54.2500	26.00	27.14	2.09	1.07
595.600	3.60	505.48	8.89	56.8794	26.60	27.77	2.14	1.07
595.700	3.70	537.83	9.03	59.5703	27.20	28.40	2.19	1.08
595.800	3.80	571.38	9.17	62.3197	27.80	29.03	2.24	1.08
595.900	3.90	606.20	9.31	65.1307	28.40	29.67	2.29	1.08
596.000	4.00	642.27	9.45	68.0000	29.00	30.30	2.34	1.09
596.100	4.10	679.62	9.58	70.9293	29.60	30.93	2.40	1.09
596.200	4.20	718.29	9.72	73.9204	30.20	31.56	2.45	1.09
596.300	4.30	758.25	9.85	76.9696	30.80	32.20	2.50	1.10
596.400	4.40	799.58	9.98	80.0808	31.40	32.83	2.55	1.10
596.500	4.50	842.23	10.12	83.2500	32.00	33.46	2.60	1.11
596.600	4.60	886.25	10.25	86.4792	32.60	34.09	2.65	1.11
596.700	4.70	931.69	10.38	89.7704	33.20	34.73	2.70	1.11
596.800	4.80	978.49	10.51	93.1196	33.80	35.36	2.76	1.12
596.900	4.90	1026.75	10.64	96.5308	34.40	35.99	2.81	1.12
597.000	5.00	1076.41	10.76	100.0000	35.00	36.62	2.86	1.12

SOLUTION TO MANNINGS OPEN CHANNEL FLOW EQUATION  
(Computed values are based on normal depth.)

$$Q = (k/n) * A * (R^{2/3}) * (S^{1/2})$$

where:	English Units	SI units
Q = Channel flow	cfs	cms
k = Mannings constant	1.485919	1.0
n = Mannings n	no units	no units
R = Hydraulic radius, A/WP	ft	m
A = X-section flow area	sq.ft.	sq.m.
WP = Wetted perimeter	ft	m
S = Slope	ft/ft	m/m

ADDITIONAL OUTPUT VARIABLES:

Vel= Q/A  
Hd = A/TpW  
F = Vel / (g \* Hd)\*\*1/2

where:	English Units	SI units
Vel= Velocity	ft/sec	m/sec
Q = Channel flow	cfs	cms
A = X-section flow area	sq.ft.	sq.m.
Hd = Hydraulic depth	ft	m
TpW= Top width for flow area	ft	m
g = Acceleration of gravity	ft/sec**2	m/sec**2
F = Froude No.	no units	no units

(Subcritical: F < 1; Critical: F = 1; Supercritical: F > 1)

Name.... REACH A

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

MODIFIED PULS REACH DATA

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Inflow HYG file = NONE STORED - JUNCTION A 2  
 Outflow HYG file = NONE STORED - REACH A 2

Reach Link Data = REACH A  
 Reach Length = 1650.00 ft  
 Approx. Total Tt = .1419 hrs (based on Wtd.Q = 12.45 cfs)  
 Reach Channel = Chn-Trapz - 1 (Chn-Trapz.)  
 Overflow Elev. = 597.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 592.00 ft  
 Starting Volume = 0 cu.ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
592.00	.00	0	0	.00	.00	.00
592.01	.01	83	8349	.00	.01	.94
592.10	.60	874	9240	.00	.60	10.32
592.20	1.96	1848	10230	.00	1.96	22.49
592.30	3.94	2920	11220	.00	3.94	36.39
592.40	6.52	4092	12210	.00	6.52	51.99
592.50	9.69	5363	13200	.00	9.69	69.28
592.60	13.47	6732	14190	.00	13.47	88.27
592.70	17.87	8201	15180	.00	17.87	108.99
592.80	22.91	9768	16170	.00	22.91	131.44
592.90	28.60	11435	17160	.00	28.60	155.65
593.00	34.96	13200	18150	.00	34.96	181.63
593.10	42.02	15064	19140	.00	42.02	209.40
593.20	49.81	17028	20130	.00	49.81	239.01
593.30	58.32	19090	21120	.00	58.32	270.44
593.40	67.60	21253	22110	.00	67.60	303.74
593.50	77.66	23513	23100	.00	77.66	338.91
593.60	88.52	25871	24090	.00	88.52	375.98
593.70	100.20	28331	25080	.00	100.20	414.99
593.80	112.73	30888	26070	.00	112.73	455.92

MODIFIED PULS REACH DATA

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Inflow HYG file = NONE STORED - JUNCTION A 2  
 Outflow HYG file = NONE STORED - REACH A 2

Reach Link Data = REACH A  
 Reach Length = 1650.00 ft  
 Approx. Total Tt = .1419 hrs (based on Wtd.Q = 12.45 cfs)  
 Reach Channel = Chn-Trapz - 1 (Chn-Trapz.)  
 Overflow Elev. = 597.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 592.00 ft  
 Starting Volume = 0 cu.ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
593.90	126.13	33545	27060	.00	126.13	498.85
594.00	140.40	36300	28050	.00	140.40	543.73
594.10	155.58	39154	29040	.00	155.58	590.62
594.20	171.70	42108	30030	.00	171.70	639.57
594.30	188.75	45160	31020	.00	188.75	690.53
594.40	206.78	48313	32010	.00	206.78	743.59
594.50	225.79	51563	33000	.00	225.79	798.70
594.60	245.80	54911	33990	.00	245.80	855.92
594.70	266.84	58361	34980	.00	266.84	915.30
594.80	288.92	61908	35970	.00	288.92	976.79
594.90	312.08	65555	36960	.00	312.08	1040.48
595.00	336.31	69300	37950	.00	336.31	1106.31
595.10	361.64	73144	38940	.00	361.64	1174.34
595.20	388.10	77088	39930	.00	388.10	1244.64
595.30	415.69	81130	40920	.00	415.69	1317.13
595.40	444.45	85273	41910	.00	444.45	1391.93
595.50	474.37	89513	42900	.00	474.37	1468.95
595.60	505.48	93851	43890	.00	505.48	1548.27
595.70	537.83	98291	44880	.00	537.83	1629.95
595.80	571.38	102827	45870	.00	571.38	1713.91



MODIFIED PULS REACH DATA

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Inflow HYG file = NONE STORED - JUNCTION A 2  
 Outflow HYG file = NONE STORED - REACH A 2

Reach Link Data = REACH A  
 Reach Length = 1650.00 ft  
 Approx. Total Tt = .1419 hrs (based on Wtd.Q = 12.45 cfs)  
 Reach Channel = Chn-Trapz - 1 (Chn-Trapz.)  
 Overflow Elev. = 597.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 592.00 ft  
 Starting Volume = 0 cu.ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
595.90	606.20	107466	46860	.00	606.20	1800.27
596.00	642.27	112200	47850	.00	642.27	1888.94
596.10	679.62	117033	48840	.00	679.62	1979.99
596.20	718.29	121969	49830	.00	718.29	2073.50
596.30	758.25	127000	50820	.00	758.25	2169.37
596.40	799.58	132133	51810	.00	799.58	2267.73
596.50	842.23	137363	52800	.00	842.23	2368.48
596.60	886.25	142691	53790	.00	886.25	2471.71
596.70	931.69	148121	54780	.00	931.69	2577.48
596.80	978.49	153647	55770	.00	978.49	2685.69
596.90	1026.75	159276	56760	.00	1026.75	2796.48
597.00	1076.41	165000	57750	.00	1076.41	2909.75

MODIFIED PULS REACH ROUTING SUMMARY

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Inflow HYG file = NONE STORED - JUNCTION A 2  
 Outflow HYG file = NONE STORED - REACH A 2

Reach Link Data = REACH A  
 Reach Length = 1650.00 ft  
 Approx. Total Tt = .1419 hrs (based on Wtd.Q = 12.45 cfs)  
 Reach Channel = Chn-Trapz - 1 (Chn-Trapz.)  
 Overflow Elev. = 597.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 592.00 ft  
 Starting Volume = 0 cu.ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

=====  
 Peak Inflow = 23.37 cfs at 12.3000 hrs  
 Peak Outflow = 23.08 cfs at 12.4000 hrs  
 =====

MASS BALANCE (cu.ft)

-----  
 + Initial Vol = 0  
 + HYG Vol IN = 203543  
 - Infiltration = 0  
 - HYG Vol OUT = 203523  
 - Retained Vol = 19  
 -----  
 Unrouted Vol = - cu.ft (.000% of Inflow Volume)

POND ROUTED TOTAL OUTFLOW HYG...  
 HYG file =  
 HYG ID = REACH A  
 HYG Tag = 2  
 -----  
 Peak Discharge = 23.08 cfs  
 Time to Peak = 12.4000 hrs  
 HYG Volume = 203523 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs					
7.9500	.00	.00	.00	.00	.00
8.2000	.00	.00	.00	.00	.01
8.4500	.01	.01	.01	.02	.03
8.7000	.04	.06	.07	.08	.10
8.9500	.11	.13	.14	.16	.17
9.2000	.19	.21	.22	.24	.26
9.4500	.27	.29	.31	.32	.34
9.7000	.35	.37	.39	.41	.43
9.9500	.45	.47	.50	.52	.55
10.2000	.58	.61	.66	.72	.77
10.4500	.82	.87	.93	.98	1.04
10.7000	1.10	1.16	1.22	1.29	1.37
10.9500	1.45	1.53	1.62	1.71	1.81
11.2000	1.92	2.07	2.22	2.38	2.54
11.4500	2.73	2.93	3.16	3.43	3.79
11.7000	4.45	5.60	7.21	9.04	10.97
11.9500	12.92	14.89	16.76	18.51	20.07
12.2000	21.29	22.14	22.68	22.97	23.08
12.4500	23.04	22.90	22.69	22.43	22.11
12.7000	21.77	21.39	20.99	20.58	20.16
12.9500	19.72	19.28	18.83	18.37	17.90
13.2000	17.43	16.92	16.37	15.76	15.08
13.4500	14.32	13.45	12.53	11.25	9.64
13.7000	8.24	7.07	6.20	5.56	5.05
13.9500	4.64	4.31	4.05	3.86	3.72
14.2000	3.59	3.49	3.39	3.32	3.25
14.4500	3.19	3.14	3.10	3.05	3.02
14.7000	2.98	2.95	2.92	2.89	2.86
14.9500	2.83	2.80	2.77	2.74	2.71
15.2000	2.69	2.66	2.63	2.60	2.57
15.4500	2.54	2.50	2.47	2.44	2.41

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

---

Time hrs					
15.7000	2.38	2.35	2.32	2.29	2.26
15.9500	2.23	2.21	2.18	2.15	2.12
16.2000	2.09	2.07	2.04	2.02	2.01
16.4500	1.99	1.97	1.96	1.95	1.94
16.7000	1.93	1.92	1.91	1.90	1.89
16.9500	1.88	1.87	1.86	1.85	1.84
17.2000	1.83	1.82	1.81	1.80	1.79
17.4500	1.78	1.77	1.76	1.75	1.74
17.7000	1.73	1.72	1.71	1.70	1.69
17.9500	1.67	1.66	1.65	1.64	1.63
18.2000	1.62	1.61	1.60	1.59	1.58
18.4500	1.57	1.56	1.55	1.54	1.53
18.7000	1.52	1.51	1.50	1.49	1.48
18.9500	1.46	1.45	1.44	1.43	1.42
19.2000	1.41	1.40	1.39	1.38	1.37
19.4500	1.36	1.35	1.34	1.33	1.32
19.7000	1.30	1.29	1.28	1.27	1.26
19.9500	1.25	1.24	1.23	1.22	1.21
20.2000	1.20	1.19	1.18	1.17	1.17
20.4500	1.16	1.16	1.15	1.15	1.15
20.7000	1.14	1.14	1.14	1.13	1.13
20.9500	1.13	1.13	1.12	1.12	1.12
21.2000	1.12	1.12	1.11	1.11	1.11
21.4500	1.11	1.11	1.10	1.10	1.10
21.7000	1.10	1.10	1.09	1.09	1.09
21.9500	1.09	1.09	1.08	1.08	1.08
22.2000	1.08	1.08	1.07	1.07	1.07
22.4500	1.07	1.06	1.06	1.06	1.06
22.7000	1.06	1.05	1.05	1.05	1.05
22.9500	1.05	1.04	1.04	1.04	1.04
23.2000	1.04	1.03	1.03	1.03	1.03
23.4500	1.03	1.02	1.02	1.02	1.02
23.7000	1.02	1.01	1.01	1.01	1.01
23.9500	1.00	1.00	1.00	.98	.94
24.2000	.87	.77	.65	.57	.51
24.4500	.45	.40	.35	.31	.27
24.7000	.24	.21	.18	.16	.14
24.9500	.12	.11	.09	.08	.07
25.2000	.06	.05	.05	.04	.04
25.4500	.03	.03	.02	.02	.02
25.7000	.02	.01	.01	.01	.01
25.9500	.01	.01	.01	.01	.01
26.2000	.01	.01	.01	.01	.01
26.4500	.01	.01	.01	.01	.01
26.7000	.01	.01	.01	.01	.01

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs						
26.9500		.01	.01	.01	.01	.01
27.2000		.01	.01	.01	.01	.01
27.4500		.01	.00	.00	.00	.00
27.7000		.00	.00	.00	.00	.00
27.9500		.00	.00	.00	.00	.00
28.2000		.00	.00	.00	.00	.00

MODIFIED PULS REACH ROUTING SUMMARY

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Inflow HYG file = NONE STORED - JUNCTION A 10  
 Outflow HYG file = NONE STORED - REACH A 10

Reach Link Data = REACH A  
 Reach Length = 1650.00 ft  
 Approx. Total Tt = .1287 hrs (based on Wtd.Q = 17.26 cfs)  
 Reach Channel = Chn-Trapz - 1 (Chn-Trapz.)  
 Overflow Elev. = 597.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

```
-----
Starting WS Elev = 592.00 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout = .00 cfs
Time Increment = .0500 hrs
```

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

```
=====
Peak Inflow = 33.74 cfs at 12.3000 hrs
Peak Outflow = 33.18 cfs at 12.4000 hrs
=====
```

MASS BALANCE (cu.ft)

```
-----
+ Initial Vol = 0
+ HYG Vol IN = 347614
- Infiltration = 0
- HYG Vol OUT = 347595
- Retained Vol = 19
-----
Unrouted Vol = 0 cu.ft (.000% of Inflow Volume)
```

POND ROUTED TOTAL OUTFLOW HYG...  
 HYG file =  
 HYG ID = REACH A  
 HYG Tag = 10  
 -----  
 Peak Discharge = 33.18 cfs  
 Time to Peak = 12.4000 hrs  
 HYG Volume = 347595 cu.ft  
 -----

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

Time hrs					
6.2000	.00	.00	.00	.00	.00
6.4500	.00	.00	.00	.01	.01
6.7000	.01	.01	.02	.04	.05
6.9500	.06	.08	.09	.10	.12
7.2000	.13	.14	.16	.17	.19
7.4500	.20	.21	.23	.24	.26
7.7000	.27	.29	.30	.32	.33
7.9500	.35	.36	.38	.39	.41
8.2000	.42	.44	.46	.48	.50
8.4500	.52	.54	.56	.59	.62
8.7000	.66	.71	.75	.79	.83
8.9500	.87	.90	.94	.98	1.02
9.2000	1.06	1.10	1.13	1.17	1.20
9.4500	1.23	1.26	1.29	1.32	1.34
9.7000	1.37	1.40	1.44	1.48	1.52
9.9500	1.57	1.62	1.68	1.73	1.80
10.2000	1.86	1.93	2.02	2.11	2.21
10.4500	2.30	2.39	2.48	2.58	2.68
10.7000	2.78	2.90	3.02	3.16	3.30
10.9500	3.46	3.61	3.77	3.93	4.12
11.2000	4.32	4.54	4.79	5.07	5.38
11.4500	5.74	6.14	6.59	7.20	8.05
11.7000	9.09	10.30	11.75	13.34	15.12
11.9500	17.02	19.15	21.39	23.62	26.06
12.2000	28.47	30.58	32.03	32.85	33.18
12.4500	33.14	32.83	32.34	31.74	31.06
12.7000	30.33	29.60	28.87	28.19	27.56
12.9500	26.96	26.45	26.03	25.65	25.28
13.2000	24.92	24.55	24.17	23.78	23.38
13.4500	22.97	22.56	22.14	21.71	21.28
13.7000	20.83	20.39	19.93	19.48	19.02

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

Time hrs					
13.9500	18.56	18.09	17.62	17.13	16.60
14.2000	16.02	15.39	14.68	13.89	13.03
14.4500	12.06	10.75	9.24	8.00	7.03
14.7000	6.31	5.81	5.42	5.13	4.91
14.9500	4.73	4.60	4.49	4.40	4.33
15.2000	4.26	4.20	4.15	4.09	4.03
15.4500	3.98	3.93	3.88	3.84	3.79
15.7000	3.75	3.70	3.65	3.61	3.56
15.9500	3.52	3.47	3.42	3.38	3.33
16.2000	3.29	3.25	3.21	3.18	3.15
16.4500	3.12	3.09	3.07	3.05	3.03
16.7000	3.01	2.99	2.97	2.96	2.94
16.9500	2.92	2.91	2.89	2.87	2.86
17.2000	2.84	2.82	2.81	2.79	2.77
17.4500	2.76	2.74	2.73	2.71	2.69
17.7000	2.68	2.66	2.64	2.63	2.61
17.9500	2.59	2.58	2.56	2.54	2.52
18.2000	2.51	2.49	2.47	2.45	2.44
18.4500	2.42	2.40	2.38	2.37	2.35
18.7000	2.33	2.32	2.30	2.28	2.27
18.9500	2.25	2.23	2.22	2.20	2.18
19.2000	2.17	2.15	2.13	2.12	2.10
19.4500	2.08	2.07	2.05	2.03	2.02
19.7000	2.00	1.98	1.97	1.95	1.94
19.9500	1.92	1.91	1.89	1.88	1.86
20.2000	1.85	1.83	1.82	1.81	1.80
20.4500	1.79	1.79	1.78	1.77	1.77
20.7000	1.76	1.76	1.75	1.75	1.75
20.9500	1.74	1.74	1.74	1.73	1.73
21.2000	1.73	1.72	1.72	1.72	1.71
21.4500	1.71	1.71	1.70	1.70	1.70
21.7000	1.69	1.69	1.69	1.68	1.68
21.9500	1.68	1.67	1.67	1.67	1.66
22.2000	1.66	1.66	1.65	1.65	1.65
22.4500	1.64	1.64	1.64	1.63	1.63
22.7000	1.63	1.62	1.62	1.62	1.61
22.9500	1.61	1.61	1.60	1.60	1.60
23.2000	1.59	1.59	1.59	1.58	1.58
23.4500	1.58	1.57	1.57	1.57	1.56
23.7000	1.56	1.56	1.55	1.55	1.55
23.9500	1.54	1.54	1.53	1.51	1.45
24.2000	1.33	1.18	1.00	.83	.68
24.4500	.57	.51	.45	.39	.35
24.7000	.30	.26	.23	.20	.18
24.9500	.15	.13	.12	.10	.09



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

Time   hrs					
25.2000	.08	.07	.06	.05	.05
25.4500	.04	.04	.03	.03	.02
25.7000	.02	.02	.02	.01	.01
25.9500	.01	.01	.01	.01	.01
26.2000	.01	.01	.01	.01	.01
26.4500	.01	.01	.01	.01	.01
26.7000	.01	.01	.01	.01	.01
26.9500	.01	.01	.01	.01	.01
27.2000	.01	.01	.01	.01	.01
27.4500	.01	.01	.01	.00	.00
27.7000	.00	.00	.00	.00	.00
27.9500	.00	.00	.00	.00	.00
28.2000	.00	.00	.00	.00	.00
28.4500	.00	.00			

MODIFIED PULS REACH ROUTING SUMMARY

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Inflow HYG file = NONE STORED - JUNCTION A 100  
 Outflow HYG file = NONE STORED - REACH A 100

Reach Link Data = REACH A  
 Reach Length = 1650.00 ft  
 Approx. Total Tt = .1124 hrs (based on Wtd.Q = 27.35 cfs)  
 Reach Channel = Chn-Trapz - 1 (Chn-Trapz.)  
 Overflow Elev. = 597.00 ft  
 Overflow Channel = NONE

No Infiltration

INITIAL CONDITIONS

```
-----
Starting WS Elev = 592.00 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout = .00 cfs
Time Increment = .0500 hrs
```

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

```
=====
Peak Inflow = 71.04 cfs at 12.2500 hrs
Peak Outflow = 67.68 cfs at 12.3500 hrs
=====
```

MASS BALANCE (cu.ft)

```
-----
+ Initial Vol = 0
+ HYG Vol IN = 571322
- Infiltration = 0
- HYG Vol OUT = 571302
- Retained Vol = 19
-----
Unrouted Vol = 0 cu.ft (.000% of Inflow Volume)
```

POND ROUTED TOTAL OUTFLOW HYG...  
 HYG file =  
 HYG ID = REACH A  
 HYG Tag = 100  
 -----  
 Peak Discharge = 67.68 cfs  
 Time to Peak = 12.3500 hrs  
 HYG Volume = 571302 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)  
 Output Time increment = .0500 hrs

Time hrs	Time on left represents time for first value in each row.				
4.7000	.00	.00	.00	.00	.00
4.9500	.00	.00	.01	.01	.01
5.2000	.02	.04	.05	.07	.09
5.4500	.10	.12	.14	.16	.18
5.7000	.20	.22	.24	.26	.28
5.9500	.30	.32	.34	.36	.38
6.2000	.40	.42	.44	.47	.49
6.4500	.51	.53	.56	.58	.60
6.7000	.64	.68	.71	.75	.78
6.9500	.81	.83	.86	.89	.91
7.2000	.94	.97	.99	1.02	1.05
7.4500	1.07	1.10	1.12	1.15	1.18
7.7000	1.20	1.23	1.26	1.28	1.31
7.9500	1.34	1.36	1.39	1.42	1.45
8.2000	1.48	1.51	1.54	1.58	1.63
8.4500	1.67	1.72	1.78	1.83	1.89
8.7000	1.95	2.03	2.10	2.18	2.25
8.9500	2.32	2.39	2.46	2.52	2.59
9.2000	2.66	2.72	2.78	2.84	2.90
9.4500	2.95	2.99	3.03	3.08	3.12
9.7000	3.16	3.21	3.27	3.33	3.41
9.9500	3.49	3.59	3.69	3.79	3.89
10.2000	4.00	4.13	4.26	4.40	4.54
10.4500	4.70	4.86	5.03	5.21	5.40
10.7000	5.59	5.81	6.04	6.29	6.57
10.9500	6.88	7.19	7.51	7.84	8.18
11.2000	8.55	8.97	9.39	9.79	10.18
11.4500	10.57	10.99	11.44	11.93	12.54
11.7000	13.35	14.44	15.74	17.28	19.21
11.9500	21.48	24.60	29.46	35.94	44.58
12.2000	54.59	62.70	67.03	67.68	66.01

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

Time hrs					
12.4500	63.17	59.78	55.80	51.95	49.21
12.7000	47.22	45.49	43.91	42.41	41.01
12.9500	39.66	38.35	37.09	35.88	34.73
13.2000	33.67	32.64	31.66	30.73	29.87
13.4500	29.06	28.32	27.67	27.06	26.53
13.7000	26.10	25.72	25.37	25.02	24.66
13.9500	24.30	23.94	23.56	23.17	22.77
14.2000	22.38	21.98	21.57	21.16	20.74
14.4500	20.32	19.90	19.48	19.07	18.65
14.7000	18.23	17.80	17.38	16.94	16.46
14.9500	15.95	15.40	14.81	14.16	13.46
15.2000	12.74	11.94	10.93	9.72	8.71
15.4500	7.88	7.24	6.77	6.43	6.19
15.7000	6.00	5.85	5.72	5.61	5.51
15.9500	5.42	5.33	5.25	5.18	5.10
16.2000	5.03	4.97	4.90	4.85	4.80
16.4500	4.75	4.71	4.68	4.64	4.61
16.7000	4.58	4.55	4.52	4.50	4.47
16.9500	4.44	4.42	4.39	4.37	4.34
17.2000	4.32	4.29	4.27	4.24	4.22
17.4500	4.19	4.17	4.14	4.12	4.09
17.7000	4.06	4.04	4.01	3.98	3.95
17.9500	3.93	3.90	3.88	3.85	3.83
18.2000	3.80	3.78	3.75	3.73	3.70
18.4500	3.68	3.65	3.63	3.60	3.58
18.7000	3.55	3.53	3.50	3.48	3.45
18.9500	3.42	3.40	3.37	3.35	3.32
19.2000	3.30	3.27	3.25	3.22	3.20
19.4500	3.17	3.14	3.12	3.09	3.07
19.7000	3.04	3.02	2.99	2.97	2.94
19.9500	2.92	2.89	2.86	2.84	2.81
20.2000	2.79	2.77	2.75	2.73	2.72
20.4500	2.70	2.69	2.68	2.67	2.66
20.7000	2.66	2.65	2.65	2.64	2.63
20.9500	2.63	2.62	2.62	2.61	2.61
21.2000	2.60	2.60	2.59	2.59	2.58
21.4500	2.58	2.57	2.57	2.56	2.56
21.7000	2.55	2.55	2.54	2.54	2.53
21.9500	2.53	2.52	2.52	2.51	2.51
22.2000	2.50	2.50	2.49	2.48	2.48
22.4500	2.47	2.47	2.46	2.46	2.45
22.7000	2.45	2.44	2.44	2.43	2.43
22.9500	2.42	2.42	2.41	2.41	2.40
23.2000	2.40	2.39	2.39	2.38	2.38
23.4500	2.37	2.37	2.36	2.36	2.35

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

---

Time hrs					
23.7000		2.35	2.34	2.34	2.33
23.9500		2.32	2.32	2.30	2.26
24.2000		1.94	1.72	1.47	1.22
24.4500		.81	.65	.55	.49
24.7000		.37	.33	.29	.25
24.9500		.19	.17	.15	.13
25.2000		.10	.09	.07	.07
25.4500		.05	.04	.04	.03
25.7000		.03	.02	.02	.02
25.9500		.01	.01	.01	.01
26.2000		.01	.01	.01	.01
26.4500		.01	.01	.01	.01
26.7000		.01	.01	.01	.01
26.9500		.01	.01	.01	.01
27.2000		.01	.01	.01	.01
27.4500		.01	.01	.01	.01
27.7000		.00	.00	.00	.00
27.9500		.00	.00	.00	.00
28.2000		.00	.00	.00	.00
28.4500		.00	.00	.00	.00

Type... Node: Addition Summary Page 10.01  
 Name... JUNCTION A Event: 2 yr  
 File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW  
 Storm... TypeII 24hr Tag: 2

SUMMARY FOR HYDROGRAPH ADDITION  
 at Node: JUNCTION A

HYG Directory: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\

```

=====
Upstream Link ID  Upstream Node ID  HYG file      HYG ID      HYG tag
-----
OUTLET A          BASIN A          IN            OUTLET A     2
=====

```

INFLOWS TO: JUNCTION A

```

-----
HYG file      HYG ID      HYG tag      Volume      Peak Time      Peak Flow
-----
                OUTLET A          2            203543      12.3000      23.37
-----

```

TOTAL FLOW INTO: JUNCTION A

```

-----
HYG file      HYG ID      HYG tag      Volume      Peak Time      Peak Flow
-----
                JUNCTION A          2            203543      12.3000      23.37
-----

```

Type... Node: Addition Summary  
 Name... JUNCTION A  
 File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW  
 Storm... TypeII 24hr Tag: 2

Page 10.02  
 Event: 2 yr

TOTAL NODE INFLOW...  
 HYG file =  
 HYG ID = JUNCTION A  
 HYG Tag = 2

-----  
 Peak Discharge = 23.37 cfs  
 Time to Peak = 12.3000 hrs  
 HYG Volume = 203543 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs  
 Time on left represents time for first value in each row.

Time hrs					
7.9500	.00	.00	.00	.01	.02
8.2000	.02	.03	.04	.05	.06
8.4500	.07	.09	.10	.11	.12
8.7000	.14	.15	.17	.19	.20
8.9500	.22	.24	.26	.28	.29
9.2000	.31	.33	.35	.36	.38
9.4500	.40	.41	.43	.44	.46
9.7000	.48	.50	.53	.56	.58
9.9500	.62	.65	.68	.71	.75
10.2000	.79	.83	.88	.93	.98
10.4500	1.03	1.08	1.14	1.20	1.26
10.7000	1.33	1.41	1.49	1.58	1.68
10.9500	1.77	1.87	1.98	2.10	2.23
11.2000	2.39	2.54	2.67	2.86	3.07
11.4500	3.31	3.57	3.90	4.32	5.09
11.7000	6.59	9.26	11.28	13.08	14.98
11.9500	16.78	18.49	20.11	21.50	22.49
12.2000	23.07	23.32	23.37	23.28	23.11
12.4500	22.89	22.60	22.27	21.92	21.54
12.7000	21.14	20.72	20.29	19.86	19.41
12.9500	18.96	18.51	18.04	17.58	17.06
13.2000	16.55	15.93	15.30	14.55	13.78
13.4500	12.80	11.76	10.50	8.12	6.28
13.7000	5.35	4.78	4.40	4.14	3.91
13.9500	3.71	3.58	3.48	3.39	3.31
14.2000	3.25	3.19	3.14	3.10	3.06
14.4500	3.03	3.00	2.97	2.94	2.91
14.7000	2.88	2.85	2.83	2.80	2.77
14.9500	2.74	2.71	2.68	2.66	2.63
15.2000	2.60	2.57	2.54	2.51	2.47
15.4500	2.44	2.41	2.38	2.35	2.32

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

---

Time hrs						
15.7000	2.29	2.26	2.23	2.20	2.18	
15.9500	2.15	2.12	2.09	2.06	2.03	
16.2000	2.01	1.99	1.98	1.97	1.95	
16.4500	1.94	1.93	1.92	1.91	1.90	
16.7000	1.89	1.88	1.87	1.86	1.85	
16.9500	1.84	1.83	1.82	1.81	1.80	
17.2000	1.79	1.78	1.77	1.76	1.75	
17.4500	1.74	1.73	1.72	1.71	1.70	
17.7000	1.69	1.67	1.66	1.65	1.64	
17.9500	1.63	1.62	1.61	1.60	1.59	
18.2000	1.58	1.57	1.56	1.55	1.54	
18.4500	1.53	1.52	1.51	1.50	1.49	
18.7000	1.48	1.46	1.45	1.44	1.43	
18.9500	1.42	1.41	1.40	1.39	1.38	
19.2000	1.37	1.36	1.35	1.34	1.33	
19.4500	1.32	1.30	1.29	1.28	1.27	
19.7000	1.26	1.25	1.24	1.23	1.22	
19.9500	1.21	1.20	1.19	1.18	1.17	
20.2000	1.16	1.15	1.15	1.15	1.14	
20.4500	1.14	1.14	1.14	1.13	1.13	
20.7000	1.13	1.13	1.13	1.12	1.12	
20.9500	1.12	1.12	1.12	1.11	1.11	
21.2000	1.11	1.11	1.11	1.10	1.10	
21.4500	1.10	1.10	1.10	1.09	1.09	
21.7000	1.09	1.09	1.09	1.08	1.08	
21.9500	1.08	1.08	1.08	1.07	1.07	
22.2000	1.07	1.07	1.06	1.06	1.06	
22.4500	1.06	1.06	1.05	1.05	1.05	
22.7000	1.05	1.05	1.04	1.04	1.04	
22.9500	1.04	1.04	1.03	1.03	1.03	
23.2000	1.03	1.03	1.02	1.02	1.02	
23.4500	1.02	1.02	1.01	1.01	1.01	
23.7000	1.01	1.00	1.00	1.00	1.00	
23.9500	1.00	.99	.97	.88	.71	
24.2000	.51	.32	.19	.12	.07	
24.4500	.04	.03	.02	.01	.00	
24.7000	.00	.00				



SUMMARY FOR HYDROGRAPH ADDITION  
 at Node: JUNCTION A

HYG Directory: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\

```

=====
Upstream Link ID  Upstream Node ID  HYG file      HYG ID        HYG tag
-----
OUTLET A          BASIN A        IN             OUTLET A      10
=====
  
```

INFLOWS TO: JUNCTION A

```

-----
HYG file          HYG ID        HYG tag        Volume      Peak Time    Peak Flow
                   cu.ft         hrs            cfs
-----
                OUTLET A          10             347614      12.3000      33.74
  
```

TOTAL FLOW INTO: JUNCTION A

```

-----
HYG file          HYG ID        HYG tag        Volume      Peak Time    Peak Flow
                   cu.ft         hrs            cfs
-----
                JUNCTION A          10             347614      12.3000      33.74
  
```

TOTAL NODE INFLOW...

HYG file =  
 HYG ID = JUNCTION A  
 HYG Tag = 10

-----  
 Peak Discharge = 33.74 cfs  
 Time to Peak = 12.3000 hrs  
 HYG Volume = 347614 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs  
 Time on left represents time for first value in each row.

Time hrs					
6.2000	.00	.00	.01	.01	.02
6.4500	.03	.05	.06	.07	.08
6.7000	.10	.11	.12	.14	.15
6.9500	.16	.18	.19	.20	.22
7.2000	.23	.25	.26	.28	.29
7.4500	.31	.32	.34	.35	.37
7.7000	.38	.40	.41	.43	.44
7.9500	.46	.47	.49	.51	.53
8.2000	.55	.57	.59	.62	.65
8.4500	.68	.71	.74	.77	.80
8.7000	.84	.87	.91	.94	.98
8.9500	1.02	1.06	1.10	1.14	1.18
9.2000	1.21	1.24	1.27	1.30	1.33
9.4500	1.35	1.37	1.40	1.42	1.46
9.7000	1.49	1.54	1.59	1.64	1.71
9.9500	1.77	1.83	1.90	1.97	2.05
10.2000	2.13	2.22	2.31	2.40	2.50
10.4500	2.57	2.66	2.76	2.87	2.99
10.7000	3.12	3.26	3.41	3.58	3.75
10.9500	3.93	4.09	4.23	4.41	4.61
11.2000	4.85	5.13	5.45	5.81	6.22
11.4500	6.70	7.19	7.77	8.73	10.31
11.7000	11.46	13.06	14.83	16.64	18.49
11.9500	20.69	23.08	25.18	27.42	30.18
12.2000	32.21	33.34	33.74	33.69	33.35
12.4500	32.83	32.18	31.49	30.74	29.95
12.7000	29.21	28.47	27.76	27.15	26.54
12.9500	26.04	25.72	25.40	25.05	24.70
13.2000	24.32	23.94	23.55	23.13	22.72
13.4500	22.28	21.85	21.40	20.97	20.51
13.7000	20.06	19.61	19.15	18.69	18.23

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs  
 Time on left represents time for first value in each row.

Time hrs					
13.9500	17.77	17.26	16.75	16.19	15.57
14.2000	14.91	14.14	13.30	12.36	11.22
14.4500	9.97	7.54	6.20	5.54	5.14
14.7000	4.88	4.70	4.58	4.49	4.42
14.9500	4.35	4.30	4.25	4.20	4.15
15.2000	4.10	4.06	4.01	3.94	3.89
15.4500	3.84	3.79	3.75	3.70	3.65
15.7000	3.61	3.56	3.52	3.47	3.42
15.9500	3.38	3.33	3.29	3.24	3.20
16.2000	3.16	3.13	3.10	3.08	3.06
16.4500	3.04	3.02	3.00	2.99	2.97
16.7000	2.95	2.94	2.92	2.90	2.89
16.9500	2.87	2.86	2.84	2.82	2.81
17.2000	2.79	2.77	2.76	2.74	2.72
17.4500	2.71	2.69	2.68	2.66	2.64
17.7000	2.63	2.61	2.59	2.58	2.56
17.9500	2.54	2.53	2.51	2.49	2.47
18.2000	2.45	2.43	2.42	2.40	2.38
18.4500	2.37	2.35	2.33	2.32	2.30
18.7000	2.28	2.27	2.25	2.23	2.22
18.9500	2.20	2.18	2.17	2.15	2.13
19.2000	2.12	2.10	2.08	2.07	2.05
19.4500	2.03	2.02	2.00	1.98	1.97
19.7000	1.95	1.93	1.92	1.90	1.88
19.9500	1.87	1.85	1.83	1.82	1.80
20.2000	1.79	1.78	1.78	1.77	1.77
20.4500	1.76	1.76	1.75	1.75	1.75
20.7000	1.74	1.74	1.74	1.73	1.73
20.9500	1.73	1.72	1.72	1.72	1.71
21.2000	1.71	1.71	1.70	1.70	1.70
21.4500	1.70	1.69	1.69	1.69	1.68
21.7000	1.68	1.68	1.67	1.67	1.67
21.9500	1.66	1.66	1.66	1.65	1.65
22.2000	1.65	1.64	1.64	1.64	1.63
22.4500	1.63	1.63	1.62	1.62	1.62
22.7000	1.61	1.61	1.61	1.60	1.60
22.9500	1.60	1.59	1.59	1.59	1.58
23.2000	1.58	1.58	1.57	1.57	1.57
23.4500	1.56	1.56	1.56	1.56	1.55
23.7000	1.55	1.54	1.54	1.54	1.53
23.9500	1.53	1.53	1.49	1.36	1.10
24.2000	.78	.49	.30	.18	.11
24.4500	.07	.04	.02	.01	.01
24.7000	.00	.00			

SUMMARY FOR HYDROGRAPH ADDITION  
 at Node: JUNCTION A

HYG Directory: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\

```

=====
Upstream Link ID  Upstream Node ID  HYG file      HYG ID      HYG tag
-----
OUTLET A          BASIN A       IN             OUTLET A     100
=====
  
```

INFLOWS TO: JUNCTION A

```

----- Volume      Peak Time      Peak Flow
HYG file  HYG ID        HYG tag        cu.ft         hrs           cfs
-----
          OUTLET A          100            571322        12.2500       71.04
  
```

TOTAL FLOW INTO: JUNCTION A

```

----- Volume      Peak Time      Peak Flow
HYG file  HYG ID        HYG tag        cu.ft         hrs           cfs
-----
          JUNCTION A          100            571322        12.2500       71.04
  
```

TOTAL NODE INFLOW...

HYG file =  
HYG ID = JUNCTION A  
HYG Tag = 100

-----  
Peak Discharge = 71.04 cfs  
Time to Peak = 12.2500 hrs  
HYG Volume = 571322 cu.ft  
-----

HYDROGRAPH ORDINATES (cfs)

Time hrs	Output Time increment = .0500 hrs				
	Time on left represents time for first value in each row.				
4.7000	.00	.00	.01	.02	.03
4.9500	.05	.07	.08	.10	.12
5.2000	.14	.16	.18	.20	.22
5.4500	.24	.26	.28	.30	.32
5.7000	.34	.36	.38	.41	.43
5.9500	.45	.47	.49	.52	.54
6.2000	.56	.58	.61	.63	.65
6.4500	.68	.70	.72	.75	.77
6.7000	.80	.82	.85	.87	.90
6.9500	.92	.95	.97	1.00	1.02
7.2000	1.05	1.07	1.10	1.12	1.15
7.4500	1.18	1.20	1.23	1.25	1.28
7.7000	1.31	1.33	1.36	1.39	1.42
7.9500	1.44	1.47	1.50	1.53	1.56
8.2000	1.60	1.65	1.70	1.75	1.81
8.4500	1.87	1.93	1.99	2.06	2.12
8.7000	2.19	2.26	2.33	2.40	2.48
8.9500	2.53	2.59	2.65	2.72	2.79
9.2000	2.86	2.91	2.97	3.01	3.05
9.4500	3.09	3.12	3.16	3.20	3.24
9.7000	3.30	3.37	3.45	3.55	3.65
9.9500	3.76	3.88	4.00	4.09	4.19
10.2000	4.31	4.45	4.60	4.76	4.93
10.4500	5.10	5.29	5.47	5.67	5.88
10.7000	6.10	6.38	6.66	6.95	7.25
10.9500	7.57	7.89	8.22	8.58	8.97
11.2000	9.42	9.93	10.32	10.59	10.95
11.4500	11.38	11.88	12.35	12.98	13.94
11.7000	15.21	16.67	18.33	20.39	22.93
11.9500	25.62	30.91	38.81	46.42	59.09
12.2000	67.61	71.04	69.90	66.46	62.91

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs					
12.4500	58.93	55.23	49.81	47.59	46.15
12.7000	44.68	43.21	41.76	40.36	39.01
12.9500	37.71	36.47	35.28	34.14	33.07
13.2000	32.04	31.10	30.18	29.36	28.58
13.4500	27.84	27.23	26.63	26.11	25.78
13.7000	25.46	25.13	24.79	24.45	24.08
13.9500	23.72	23.32	22.93	22.52	22.11
14.2000	21.69	21.27	20.86	20.43	20.02
14.4500	19.60	19.18	18.76	18.34	17.92
14.7000	17.49	17.04	16.60	16.07	15.54
14.9500	14.98	14.32	13.70	12.88	12.14
15.2000	11.16	10.30	8.49	7.32	6.65
15.4500	6.26	6.02	5.88	5.76	5.66
15.7000	5.57	5.49	5.42	5.34	5.27
15.9500	5.20	5.13	5.06	4.99	4.92
16.2000	4.86	4.80	4.76	4.72	4.68
16.4500	4.65	4.61	4.59	4.56	4.53
16.7000	4.51	4.48	4.45	4.43	4.40
16.9500	4.38	4.35	4.33	4.30	4.28
17.2000	4.25	4.23	4.20	4.18	4.15
17.4500	4.13	4.10	4.08	4.05	4.03
17.7000	4.00	3.96	3.93	3.91	3.88
17.9500	3.86	3.83	3.80	3.78	3.75
18.2000	3.73	3.70	3.68	3.65	3.63
18.4500	3.60	3.58	3.55	3.53	3.50
18.7000	3.48	3.45	3.42	3.40	3.37
18.9500	3.35	3.32	3.30	3.27	3.25
19.2000	3.22	3.20	3.17	3.14	3.12
19.4500	3.09	3.07	3.04	3.02	2.99
19.7000	2.97	2.94	2.92	2.89	2.86
19.9500	2.84	2.81	2.79	2.76	2.74
20.2000	2.72	2.70	2.69	2.68	2.67
20.4500	2.67	2.66	2.65	2.65	2.64
20.7000	2.64	2.63	2.63	2.62	2.62
20.9500	2.61	2.61	2.60	2.60	2.59
21.2000	2.59	2.58	2.58	2.57	2.57
21.4500	2.56	2.56	2.55	2.55	2.54
21.7000	2.54	2.53	2.53	2.52	2.52
21.9500	2.51	2.51	2.50	2.49	2.49
22.2000	2.48	2.48	2.47	2.47	2.46
22.4500	2.46	2.45	2.45	2.44	2.44
22.7000	2.43	2.43	2.42	2.42	2.41
22.9500	2.41	2.40	2.40	2.39	2.39
23.2000	2.38	2.38	2.37	2.37	2.36
23.4500	2.36	2.35	2.35	2.34	2.34

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time | | | | | |  
hrs					
Time on left represents time for first value in each row.

23.7000	2.33	2.33	2.32	2.32	2.31
23.9500	2.31	2.30	2.25	2.05	1.65
24.2000	1.17	.75	.45	.27	.17
24.4500	.10	.06	.04	.02	.01
24.7000	.01	.00	.00		

Type.... Node: Addition Summary Page 10.11  
 Name.... OUTFALL Event: 2 yr  
 File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW  
 Storm... TypeII 24hr Tag: 2

SUMMARY FOR HYDROGRAPH ADDITION  
 at Node: OUTFALL

HYG Directory: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\

```

=====
Upstream Link ID  Upstream Node ID  HYG file  HYG ID  HYG tag
-----
OUTLET B          BASIN B      IN          OUTLET B    2
ADDLINK 20        BYPASS AREA  BYPASS AREA  2
REACH A           JUNCTION A   REACH A      2
=====
  
```

INFLOWS TO: OUTFALL

```

-----
HYG file  HYG ID  HYG tag  Volume  Peak Time  Peak Flow
          cu.ft  hrs      cfs
-----
          OUTLET B    2      310653  12.4000  41.27
          BYPASS AREA  2      114456  12.0500  38.65
          REACH A     2      203523  12.4000  23.08
-----
  
```

TOTAL FLOW INTO: OUTFALL

```

-----
HYG file  HYG ID  HYG tag  Volume  Peak Time  Peak Flow
          cu.ft  hrs      cfs
-----
          OUTFALL    2      628633  12.1000  86.37
-----
  
```



TOTAL NODE INFLOW...  
 HYG file =  
 HYG ID = OUTFALL  
 HYG Tag = 2

-----  
 Peak Discharge = 86.37 cfs  
 Time to Peak = 12.1000 hrs  
 HYG Volume = 628633 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)  
 Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs					
7.2500	.00	.00	.00	.01	.01
7.5000	.02	.02	.03	.04	.05
7.7500	.06	.07	.07	.08	.09
8.0000	.11	.12	.13	.15	.16
8.2500	.18	.19	.21	.23	.25
8.5000	.27	.29	.32	.36	.39
8.7500	.43	.47	.51	.55	.59
9.0000	.63	.68	.72	.77	.81
9.2500	.86	.90	.95	.99	1.03
9.5000	1.07	1.11	1.15	1.20	1.24
9.7500	1.29	1.35	1.40	1.46	1.53
10.0000	1.60	1.67	1.74	1.83	1.91
10.2500	2.01	2.13	2.25	2.39	2.53
10.5000	2.68	2.84	3.00	3.18	3.36
10.7500	3.57	3.78	4.01	4.25	4.51
11.0000	4.79	5.08	5.39	5.75	6.14
11.2500	6.51	6.95	7.45	8.01	8.63
11.5000	9.30	10.12	11.37	13.44	16.77
11.7500	21.74	28.47	37.67	50.13	67.26
12.0000	78.66	85.79	86.37	83.25	79.40
12.2500	76.83	75.32	74.20	73.13	71.94
12.5000	70.61	69.14	67.54	65.90	64.20
12.7500	62.48	60.73	58.93	57.02	55.00
13.0000	52.86	50.59	48.18	45.58	40.80
13.2500	37.41	35.29	33.29	31.39	29.60
13.5000	27.70	25.82	23.57	20.95	18.71
13.7500	16.83	15.35	14.28	13.45	12.77
14.0000	12.21	11.75	11.37	11.02	10.73
14.2500	10.48	10.27	10.09	9.92	9.78
14.5000	9.65	9.53	9.41	9.31	9.21
14.7500	9.11	9.01	8.92	8.83	8.74

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

Time hrs					
15.0000	8.65	8.56	8.47	8.38	8.29
15.2500	8.20	8.11	8.02	7.93	7.84
15.5000	7.75	7.65	7.53	7.44	7.35
15.7500	7.26	7.17	7.08	6.98	6.89
16.0000	6.80	6.71	6.62	6.54	6.47
16.2500	6.40	6.34	6.28	6.23	6.19
16.5000	6.15	6.11	6.07	6.04	6.00
16.7500	5.97	5.94	5.91	5.87	5.84
17.0000	5.81	5.78	5.75	5.71	5.68
17.2500	5.65	5.62	5.59	5.55	5.52
17.5000	5.49	5.46	5.42	5.39	5.36
17.7500	5.33	5.29	5.26	5.23	5.20
18.0000	5.16	5.13	5.10	5.07	5.03
18.2500	5.00	4.97	4.93	4.90	4.87
18.5000	4.84	4.80	4.77	4.74	4.70
18.7500	4.67	4.64	4.60	4.57	4.54
19.0000	4.50	4.47	4.44	4.40	4.37
19.2500	4.34	4.30	4.27	4.24	4.20
19.5000	4.17	4.14	4.10	4.07	4.04
19.7500	4.00	3.97	3.93	3.90	3.87
20.0000	3.83	3.80	3.77	3.74	3.71
20.2500	3.69	3.67	3.65	3.64	3.62
20.5000	3.61	3.60	3.59	3.58	3.57
20.7500	3.56	3.56	3.55	3.54	3.54
21.0000	3.53	3.52	3.52	3.51	3.50
21.2500	3.50	3.49	3.48	3.48	3.47
21.5000	3.47	3.46	3.45	3.45	3.44
21.7500	3.43	3.43	3.42	3.41	3.41
22.0000	3.40	3.40	3.39	3.38	3.38
22.2500	3.37	3.36	3.36	3.35	3.34
22.5000	3.34	3.33	3.33	3.32	3.31
22.7500	3.31	3.30	3.29	3.29	3.28
23.0000	3.27	3.27	3.26	3.25	3.25
23.2500	3.24	3.23	3.23	3.22	3.22
23.5000	3.21	3.20	3.20	3.19	3.18
23.7500	3.18	3.17	3.16	3.16	3.15
24.0000	3.14	3.07	2.84	2.46	2.08
24.2500	1.74	1.43	1.18	.98	.80
24.5000	.66	.55	.46	.38	.32
24.7500	.27	.23	.20	.17	.14
25.0000	.12	.10	.09	.08	.07
25.2500	.06	.05	.04	.04	.03
25.5000	.03	.02	.02	.02	.02
25.7500	.01	.01	.01	.01	.01
26.0000	.01	.01	.01	.01	.01

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

---

Time hrs					
26.2500		.01	.01	.01	.01
26.5000		.01	.01	.01	.01
26.7500		.01	.01	.01	.01
27.0000		.01	.01	.01	.01
27.2500		.01	.01	.01	.01
27.5000		.00	.00	.00	.00
27.7500		.00	.00	.00	.00
28.0000		.00	.00	.00	.00
28.2500		.00	.00	.00	.00

Type... Node: Addition Summary Page 10.15  
 Name... OUTFALL Event: 10 yr  
 File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW  
 Storm... TypeII 24hr Tag: 10

SUMMARY FOR HYDROGRAPH ADDITION  
 at Node: OUTFALL

HYG Directory: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\

```

=====
Upstream Link ID  Upstream Node ID  HYG file      HYG ID        HYG tag
-----
OUTLET B          BASIN B        IN            OUTLET B      10
ADDLINK 20       BYPASS AREA    BYPASS AREA   BYPASS AREA   10
REACH A          JUNCTION A     REACH A       REACH A       10
=====
  
```

INFLOWS TO: OUTFALL

```

-----
HYG file          HYG ID        HYG tag        Volume      Peak Time    Peak Flow
cu.ft            hrs           cfs
-----
                OUTLET B      10             521504      12.3000      86.26
                BYPASS AREA  10             215342      12.0500      73.61
                REACH A      10             347595      12.4000      33.18
  
```

TOTAL FLOW INTO: OUTFALL

```

-----
HYG file          HYG ID        HYG tag        Volume      Peak Time    Peak Flow
cu.ft            hrs           cfs
-----
                OUTFALL      10             1084441     12.3000      140.40
  
```

TOTAL NODE INFLOW...

HYG file =  
 HYG ID = OUTFALL  
 HYG Tag = 10

-----  
 Peak Discharge = 140.40 cfs  
 Time to Peak = 12.3000 hrs  
 HYG Volume = 1084441 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time | Time on left represents time for first value in each row.  
 hrs |

5.6000	.00	.00	.00	.01	.01
5.8500	.02	.03	.04	.05	.06
6.1000	.08	.09	.10	.12	.14
6.3500	.16	.18	.20	.22	.24
6.6000	.26	.28	.30	.33	.36
6.8500	.39	.43	.46	.49	.53
7.1000	.56	.60	.63	.67	.71
7.3500	.74	.78	.81	.85	.89
7.6000	.93	.96	1.00	1.04	1.08
7.8500	1.12	1.15	1.19	1.23	1.27
8.1000	1.31	1.36	1.40	1.45	1.50
8.3500	1.56	1.62	1.68	1.74	1.81
8.6000	1.89	1.97	2.07	2.17	2.28
8.8500	2.39	2.50	2.61	2.73	2.85
9.1000	2.96	3.08	3.19	3.30	3.40
9.3500	3.50	3.60	3.69	3.77	3.86
9.6000	3.94	4.04	4.14	4.25	4.38
9.8500	4.51	4.66	4.83	5.00	5.18
10.1000	5.37	5.58	5.80	6.03	6.29
10.3500	6.56	6.80	7.06	7.35	7.64
10.6000	7.95	8.29	8.65	9.04	9.46
10.8500	9.91	10.35	10.80	11.30	11.82
11.1000	12.38	13.02	13.73	14.52	15.33
11.3500	16.25	17.27	18.39	19.64	21.18
11.6000	23.69	27.64	33.51	41.65	52.77
11.8500	69.35	87.68	108.59	124.90	133.29
12.1000	131.61	131.40	134.16	139.15	140.40
12.3500	135.39	127.41	119.44	111.48	104.34
12.6000	98.51	93.29	88.51	84.29	80.55
12.8500	77.62	75.42	73.60	71.82	70.09
13.1000	68.38	66.69	64.98	63.24	61.47

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs  
 Time on left represents time for first value in each row.

Time hrs	59.60	57.62	55.58	53.52	51.34
13.3500	59.60	57.62	55.58	53.52	51.34
13.6000	47.83	44.54	42.57	41.14	39.84
13.8500	38.65	37.46	36.36	35.31	34.31
14.1000	33.33	32.31	31.25	30.16	29.02
14.3500	27.81	26.48	24.92	22.94	20.82
14.6000	19.07	17.69	16.61	15.85	15.27
14.8500	14.82	14.47	14.18	13.94	13.73
15.1000	13.54	13.36	13.20	13.04	12.89
15.3500	12.73	12.58	12.42	12.27	12.13
15.6000	11.99	11.84	11.69	11.55	11.39
15.8500	11.23	11.08	10.94	10.79	10.64
16.1000	10.50	10.37	10.25	10.13	10.03
16.3500	9.94	9.85	9.78	9.70	9.64
16.6000	9.57	9.51	9.46	9.40	9.35
16.8500	9.29	9.24	9.18	9.13	9.08
17.1000	9.03	8.98	8.92	8.87	8.82
17.3500	8.77	8.72	8.67	8.61	8.56
17.6000	8.51	8.46	8.41	8.36	8.30
17.8500	8.25	8.20	8.15	8.10	8.04
18.1000	7.99	7.94	7.88	7.81	7.76
18.3500	7.71	7.65	7.60	7.55	7.49
18.6000	7.44	7.39	7.34	7.28	7.23
18.8500	7.18	7.12	7.07	7.02	6.97
19.1000	6.91	6.86	6.81	6.76	6.70
19.3500	6.65	6.60	6.54	6.49	6.44
19.6000	6.39	6.33	6.28	6.23	6.17
19.8500	6.12	6.07	6.02	5.97	5.92
20.1000	5.87	5.82	5.78	5.75	5.72
20.3500	5.69	5.67	5.64	5.62	5.61
20.6000	5.59	5.58	5.57	5.55	5.54
20.8500	5.53	5.52	5.51	5.50	5.49
21.1000	5.48	5.47	5.45	5.44	5.43
21.3500	5.42	5.41	5.40	5.39	5.38
21.6000	5.37	5.36	5.35	5.34	5.33
21.8500	5.32	5.31	5.30	5.29	5.28
22.1000	5.27	5.26	5.25	5.24	5.23
22.3500	5.22	5.21	5.20	5.19	5.18
22.6000	5.17	5.16	5.15	5.14	5.13
22.8500	5.11	5.10	5.10	5.08	5.07
23.1000	5.06	5.05	5.04	5.03	5.02
23.3500	5.01	5.00	4.99	4.98	4.97
23.6000	4.96	4.95	4.94	4.93	4.92
23.8500	4.91	4.90	4.89	4.87	4.76
24.1000	4.39	3.80	3.21	2.67	2.19
24.3500	1.76	1.39	1.11	.91	.75

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs  
Time on left represents time for first value in each row.

Time hrs					
24.6000	.62	.52	.43	.36	.31
24.8500	.26	.22	.19	.16	.14
25.1000	.12	.10	.09	.07	.06
25.3500	.05	.05	.04	.04	.03
25.6000	.03	.02	.02	.02	.02
25.8500	.01	.01	.01	.01	.01
26.1000	.01	.01	.01	.01	.01
26.3500	.01	.01	.01	.01	.01
26.6000	.01	.01	.01	.01	.01
26.8500	.01	.01	.01	.01	.01
27.1000	.01	.01	.01	.01	.01
27.3500	.01	.01	.01	.01	.01
27.6000	.00	.00	.00	.00	.00
27.8500	.00	.00	.00	.00	.00
28.1000	.00	.00	.00	.00	.00
28.3500	.00	.00	.00	.00	.00

SUMMARY FOR HYDROGRAPH ADDITION  
 at Node: OUTFALL

HYG Directory: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\

```

=====
Upstream Link ID  Upstream Node ID  HYG file      HYG ID        HYG tag
-----
OUTLET B          BASIN B        IN             OUTLET B      100
ADDLINK 20       BYPASS AREA    BYPASS AREA    BYPASS AREA    100
REACH A          JUNCTION A     REACH A        REACH A        100
=====
  
```

INFLOWS TO: OUTFALL

```

----- Volume      Peak Time      Peak Flow
HYG file  HYG ID        HYG tag        cu.ft         hrs           cfs
-----
          OUTLET B          100            846168        12.2000      179.81
          BYPASS AREA     100            380355        12.0500      128.82
          REACH A          100            571302        12.3500       67.68
  
```

TOTAL FLOW INTO: OUTFALL

```

----- Volume      Peak Time      Peak Flow
HYG file  HYG ID        HYG tag        cu.ft         hrs           cfs
-----
          OUTFALL          100            1797825       12.1500      310.89
  
```



TOTAL NODE INFLOW...

HYG file =  
 HYG ID = OUTFALL  
 HYG Tag = 100

-----  
 Peak Discharge = 310.89 cfs  
 Time to Peak = 12.1500 hrs  
 HYG Volume = 1797825 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs  
 Time on left represents time for first value in each row.

Time hrs					
4.2000	.00	.00	.01	.01	.02
4.4500	.03	.04	.06	.07	.09
4.7000	.11	.13	.15	.18	.21
4.9500	.24	.27	.30	.33	.36
5.2000	.40	.44	.49	.54	.58
5.4500	.63	.68	.73	.78	.83
5.7000	.88	.94	.99	1.04	1.09
5.9500	1.15	1.20	1.26	1.31	1.37
6.2000	1.42	1.48	1.53	1.59	1.65
6.4500	1.71	1.76	1.82	1.88	1.94
6.7000	2.02	2.09	2.17	2.24	2.32
6.9500	2.40	2.47	2.55	2.63	2.71
7.2000	2.79	2.87	2.95	3.03	3.11
7.4500	3.19	3.27	3.35	3.43	3.52
7.7000	3.60	3.68	3.76	3.85	3.93
7.9500	4.01	4.10	4.18	4.27	4.37
8.2000	4.48	4.59	4.72	4.86	5.00
8.4500	5.16	5.33	5.50	5.68	5.87
8.7000	6.06	6.27	6.49	6.69	6.88
8.9500	7.08	7.29	7.51	7.72	7.93
9.2000	8.13	8.32	8.51	8.67	8.83
9.4500	8.98	9.11	9.25	9.38	9.53
9.7000	9.69	9.88	10.09	10.32	10.56
9.9500	10.83	11.13	11.45	11.79	12.15
10.2000	12.53	12.95	13.39	13.85	14.34
10.4500	14.85	15.33	15.86	16.41	17.01
10.7000	17.65	18.35	19.09	19.89	20.70
10.9500	21.57	22.47	23.43	24.45	25.57
11.2000	26.77	28.08	29.50	30.99	32.55
11.4500	34.12	35.82	38.08	41.91	48.72
11.7000	59.19	71.57	87.46	108.88	137.79

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time | | Time on left represents time for first value in each row.

Time hrs					
11.9500	171.14	205.10	256.23	302.22	310.89
12.2000	298.43	280.58	259.89	236.99	213.90
12.4500	192.13	172.82	155.92	142.35	131.45
12.7000	123.04	116.16	110.50	105.35	100.59
12.9500	96.34	92.56	89.26	86.63	84.35
13.2000	82.13	79.95	77.82	75.72	73.70
13.4500	71.69	69.77	67.89	66.02	64.23
13.7000	62.46	60.76	59.02	57.30	55.57
13.9500	53.01	50.31	48.32	46.87	45.85
14.2000	44.89	43.97	43.09	42.23	41.40
14.4500	40.58	39.75	38.97	38.20	37.44
14.7000	36.69	35.94	35.20	34.42	33.61
14.9500	32.71	31.72	30.66	29.54	28.39
15.2000	27.27	26.11	24.77	23.30	22.06
15.4500	21.03	20.20	19.56	19.05	18.65
15.7000	18.30	17.99	17.70	17.43	17.18
15.9500	16.93	16.70	16.46	16.23	16.00
16.2000	15.79	15.60	15.43	15.28	15.14
16.4500	15.02	14.90	14.79	14.69	14.60
16.7000	14.50	14.42	14.33	14.24	14.16
16.9500	14.08	14.00	13.92	13.84	13.76
17.2000	13.68	13.59	13.51	13.43	13.35
17.4500	13.27	13.19	13.11	13.03	12.95
17.7000	12.87	12.79	12.70	12.62	12.54
17.9500	12.46	12.38	12.30	12.22	12.14
18.2000	12.06	11.98	11.90	11.82	11.73
18.4500	11.64	11.56	11.47	11.39	11.31
18.7000	11.23	11.15	11.07	10.99	10.91
18.9500	10.83	10.75	10.66	10.58	10.50
19.2000	10.42	10.34	10.26	10.18	10.10
19.4500	10.01	9.93	9.85	9.77	9.69
19.7000	9.61	9.52	9.44	9.36	9.28
19.9500	9.20	9.12	9.03	8.96	8.88
20.2000	8.82	8.76	8.71	8.67	8.63
20.4500	8.59	8.56	8.54	8.51	8.49
20.7000	8.47	8.45	8.43	8.41	8.40
20.9500	8.38	8.36	8.35	8.33	8.31
21.2000	8.30	8.28	8.26	8.25	8.23
21.4500	8.22	8.20	8.19	8.17	8.15
21.7000	8.14	8.12	8.11	8.09	8.07
21.9500	8.06	8.04	8.02	8.00	7.99
22.2000	7.97	7.95	7.94	7.92	7.91
22.4500	7.89	7.87	7.86	7.84	7.82
22.7000	7.81	7.79	7.78	7.76	7.74
22.9500	7.73	7.71	7.70	7.68	7.67

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs  
Time on left represents time for first value in each row.

Time hrs					
23.2000	7.65	7.63	7.62	7.60	7.59
23.4500	7.57	7.55	7.54	7.52	7.50
23.7000	7.49	7.47	7.46	7.44	7.42
23.9500	7.41	7.39	7.21	6.64	5.71
24.2000	4.77	3.97	3.26	2.61	2.06
24.4500	1.61	1.24	1.00	.82	.68
24.7000	.57	.47	.40	.33	.28
24.9500	.24	.20	.17	.15	.13
25.2000	.11	.09	.08	.07	.06
25.4500	.05	.04	.04	.03	.03
25.7000	.03	.02	.02	.02	.01
25.9500	.01	.01	.01	.01	.01
26.2000	.01	.01	.01	.01	.01
26.4500	.01	.01	.01	.01	.01
26.7000	.01	.01	.01	.01	.01
26.9500	.01	.01	.01	.01	.01
27.2000	.01	.01	.01	.01	.01
27.4500	.01	.01	.01	.01	.00
27.7000	.00	.00	.00	.00	.00
27.9500	.00	.00	.00	.00	.00
28.2000	.00	.00	.00	.00	.00
28.4500	.00	.00	.00	.00	.00

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

Elevation (ft)	Planimeter (sq.in)	Area (sq.ft)	A1+A2+sqr(A1*A2) (sq.ft)	Volume (cu.ft)	Volume Sum (cu.ft)
601.00	-----	0	0	0	0
602.00	-----	7656	7656	2552	2552
603.00	-----	27716	49939	16646	19198
604.00	-----	29677	86073	28691	47889
605.00	-----	41100	105702	35234	83123
606.00	-----	43930	127521	42507	125630
607.00	-----	47455	137044	45681	171312
608.00	-----	50439	146818	48939	220251
609.00	-----	53481	155858	51953	272204

POND VOLUME EQUATIONS

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

$$\text{Volume} = (1/3) * (\text{EL2}-\text{EL1}) * (\text{Area1} + \text{Area2} + \text{sq.rt.}(\text{Area1}*\text{Area2}))$$

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.= 605.50 ft  
Increment = .10 ft  
Max. Elev.= 614.00 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
Orifice-Area	3	--->	TW	613.000	614.000
Weir-Rectangular	2	--->	TW	612.000	613.000
Culvert-Circular	1	--->	TW	605.500	614.000

TW SETUP, DS Channel

OUTLET STRUCTURE INPUT DATA

Structure ID = 3  
Structure Type = Orifice-Area  
-----  
# of Openings = 1  
Invert Elev. = 612.00 ft  
Area = 11.6700 sq.ft  
Top of Orifice = 613.00 ft  
Datum Elev. = 612.50 ft  
Orifice Coeff. = .600

Structure ID = 2  
Structure Type = Weir-Rectangular  
-----  
# of Openings = 1  
Crest Elev. = 612.00 ft  
Weir Length = 11.67 ft  
Weir Coeff. = 3.300000

Weir TW effects (Use adjustment equation)

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID = 1  
Structure Type = Culvert-Circular  
-----  
No. Barrels = 1  
Barrel Diameter = 1.0000 ft  
Upstream Invert = 605.50 ft  
Dnstream Invert = 605.00 ft  
Horiz. Length = 50.00 ft  
Barrel Length = 50.00 ft  
Barrel Slope = .01000 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0130  
Ke = .2000 (forward entrance loss)  
Kb = .031274 (per ft of full flow)  
Kr = .2000 (reverse entrance loss)  
HW Convergence = .001 +/- ft

INLET CONTROL DATA...

Equation form = 1  
Inlet Control K = .0045  
Inlet Control M = 2.0000  
Inlet Control c = .03170  
Inlet Control Y = .6900  
T1 ratio (HW/D) = 1.090  
T2 ratio (HW/D) = 1.192  
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 = 606.59 ft ---> Flow = 2.75 cfs  
At T2 Elev = 606.69 ft ---> Flow = 3.14 cfs

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

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.FPW

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 3 (Orifice-Area)  
 -----  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = TW (Pond Outfall)

WS Elev, Device Q		Tail Water		Notes	
WS Elev.	Q	TW Elev	Converge		
ft	cfs	ft	+/-ft	Computation Messages	
605.50	.00	Free Outfall	E < E1=	613.000	
605.60	.00	Free Outfall	E < E1=	613.000	
605.70	.00	Free Outfall	E < E1=	613.000	
605.80	.00	Free Outfall	E < E1=	613.000	
605.90	.00	Free Outfall	E < E1=	613.000	
606.00	.00	Free Outfall	E < E1=	613.000	
606.10	.00	Free Outfall	E < E1=	613.000	
606.20	.00	Free Outfall	E < E1=	613.000	
606.30	.00	Free Outfall	E < E1=	613.000	
606.40	.00	Free Outfall	E < E1=	613.000	
606.50	.00	Free Outfall	E < E1=	613.000	
606.60	.00	Free Outfall	E < E1=	613.000	
606.70	.00	Free Outfall	E < E1=	613.000	
606.80	.00	Free Outfall	E < E1=	613.000	
606.90	.00	Free Outfall	E < E1=	613.000	
607.00	.00	Free Outfall	E < E1=	613.000	
607.10	.00	Free Outfall	E < E1=	613.000	
607.20	.00	Free Outfall	E < E1=	613.000	
607.30	.00	Free Outfall	E < E1=	613.000	
607.40	.00	Free Outfall	E < E1=	613.000	
607.50	.00	Free Outfall	E < E1=	613.000	
607.60	.00	Free Outfall	E < E1=	613.000	
607.70	.00	Free Outfall	E < E1=	613.000	
607.80	.00	Free Outfall	E < E1=	613.000	
607.90	.00	Free Outfall	E < E1=	613.000	
608.00	.00	Free Outfall	E < E1=	613.000	
608.10	.00	Free Outfall	E < E1=	613.000	
608.20	.00	Free Outfall	E < E1=	613.000	
608.30	.00	Free Outfall	E < E1=	613.000	
608.40	.00	Free Outfall	E < E1=	613.000	
608.50	.00	Free Outfall	E < E1=	613.000	
608.60	.00	Free Outfall	E < E1=	613.000	
608.70	.00	Free Outfall	E < E1=	613.000	
608.80	.00	Free Outfall	E < E1=	613.000	



File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 3 (Orifice-Area)

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

WS Elev, Device Q		Tail Water		Notes	
WS Elev.	Q	TW Elev	Converge	Computation Messages	
ft	cfs	ft	+/-ft		
608.90	.00	Free Outfall	E < E1=	613.000	
609.00	.00	Free Outfall	E < E1=	613.000	
609.10	.00	Free Outfall	E < E1=	613.000	
609.20	.00	Free Outfall	E < E1=	613.000	
609.30	.00	Free Outfall	E < E1=	613.000	
609.40	.00	Free Outfall	E < E1=	613.000	
609.50	.00	Free Outfall	E < E1=	613.000	
609.60	.00	Free Outfall	E < E1=	613.000	
609.70	.00	Free Outfall	E < E1=	613.000	
609.80	.00	Free Outfall	E < E1=	613.000	
609.90	.00	Free Outfall	E < E1=	613.000	
610.00	.00	Free Outfall	E < E1=	613.000	
610.10	.00	Free Outfall	E < E1=	613.000	
610.20	.00	Free Outfall	E < E1=	613.000	
610.30	.00	Free Outfall	E < E1=	613.000	
610.40	.00	Free Outfall	E < E1=	613.000	
610.50	.00	Free Outfall	E < E1=	613.000	
610.60	.00	Free Outfall	E < E1=	613.000	
610.70	.00	Free Outfall	E < E1=	613.000	
610.80	.00	Free Outfall	E < E1=	613.000	
610.90	.00	Free Outfall	E < E1=	613.000	
611.00	.00	Free Outfall	E < E1=	613.000	
611.10	.00	Free Outfall	E < E1=	613.000	
611.20	.00	Free Outfall	E < E1=	613.000	
611.30	.00	Free Outfall	E < E1=	613.000	
611.40	.00	Free Outfall	E < E1=	613.000	
611.50	.00	Free Outfall	E < E1=	613.000	
611.60	.00	Free Outfall	E < E1=	613.000	
611.70	.00	Free Outfall	E < E1=	613.000	
611.80	.00	Free Outfall	E < E1=	613.000	
611.90	.00	Free Outfall	E < E1=	613.000	
612.00	.00	Free Outfall	E < E1=	613.000	
612.10	.00	Free Outfall	E < E1=	613.000	
612.20	.00	Free Outfall	E < E1=	613.000	

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 3 (Orifice-Area)  
 -----  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = TW (Pond Outfall)

WS Elev, Device Q		Tail Water		Notes	
WS Elev.	Q	TW Elev	Converge	Computation Messages	
ft	cfs	ft	+/-ft		
612.30	.00	Free Outfall		E < E1=	613.000
612.40	.00	Free Outfall		E < E1=	613.000
612.50	.00	Free Outfall		E < E1=	613.000
612.60	.00	Free Outfall		E < E1=	613.000
612.70	.00	Free Outfall		E < E1=	613.000
612.80	.00	Free Outfall		E < E1=	613.000
612.90	.00	Free Outfall		E < E1=	613.000
613.00	39.72	Free Outfall		H =.50	
613.10	43.51	Free Outfall		H =.60	
613.20	46.99	Free Outfall		H =.70	
613.30	50.24	Free Outfall		H =.80	
613.40	53.29	Free Outfall		H =.90	
613.50	56.17	Free Outfall		H =1.00	
613.60	58.91	Free Outfall		H =1.10	
613.70	61.53	Free Outfall		H =1.20	
613.80	64.04	Free Outfall		H =1.30	
613.90	66.46	Free Outfall		H =1.40	
614.00	68.79	Free Outfall		H =1.50	

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 2 (Weir-Rectangular)

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

WS Elev, Device Q		Tail Water		Notes
WS Elev. ft	Q cfs	TW Elev ft	Converge +/-ft	Computation Messages
605.50	.00	Free Outfall		HW & TW below Inv.El.=612.000
605.60	.00	Free Outfall		HW & TW below Inv.El.=612.000
605.70	.00	Free Outfall		HW & TW below Inv.El.=612.000
605.80	.00	Free Outfall		HW & TW below Inv.El.=612.000
605.90	.00	Free Outfall		HW & TW below Inv.El.=612.000
606.00	.00	Free Outfall		HW & TW below Inv.El.=612.000
606.10	.00	Free Outfall		HW & TW below Inv.El.=612.000
606.20	.00	Free Outfall		HW & TW below Inv.El.=612.000
606.30	.00	Free Outfall		HW & TW below Inv.El.=612.000
606.40	.00	Free Outfall		HW & TW below Inv.El.=612.000
606.50	.00	Free Outfall		HW & TW below Inv.El.=612.000
606.60	.00	Free Outfall		HW & TW below Inv.El.=612.000
606.70	.00	Free Outfall		HW & TW below Inv.El.=612.000
606.80	.00	Free Outfall		HW & TW below Inv.El.=612.000
606.90	.00	Free Outfall		HW & TW below Inv.El.=612.000
607.00	.00	Free Outfall		HW & TW below Inv.El.=612.000
607.10	.00	Free Outfall		HW & TW below Inv.El.=612.000
607.20	.00	Free Outfall		HW & TW below Inv.El.=612.000
607.30	.00	Free Outfall		HW & TW below Inv.El.=612.000
607.40	.00	Free Outfall		HW & TW below Inv.El.=612.000
607.50	.00	Free Outfall		HW & TW below Inv.El.=612.000
607.60	.00	Free Outfall		HW & TW below Inv.El.=612.000
607.70	.00	Free Outfall		HW & TW below Inv.El.=612.000
607.80	.00	Free Outfall		HW & TW below Inv.El.=612.000
607.90	.00	Free Outfall		HW & TW below Inv.El.=612.000
608.00	.00	Free Outfall		HW & TW below Inv.El.=612.000
608.10	.00	Free Outfall		HW & TW below Inv.El.=612.000
608.20	.00	Free Outfall		HW & TW below Inv.El.=612.000
608.30	.00	Free Outfall		HW & TW below Inv.El.=612.000
608.40	.00	Free Outfall		HW & TW below Inv.El.=612.000
608.50	.00	Free Outfall		HW & TW below Inv.El.=612.000
608.60	.00	Free Outfall		HW & TW below Inv.El.=612.000
608.70	.00	Free Outfall		HW & TW below Inv.El.=612.000
608.80	.00	Free Outfall		HW & TW below Inv.El.=612.000

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 2 (Weir-Rectangular)  
 -----  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = TW (Pond Outfall)

WS Elev, Device Q		Tail Water		Notes
WS Elev. ft	Q cfs	TW Elev ft	Converge +/-ft	Computation Messages
608.90	.00	Free Outfall		HW & TW below Inv.El.=612.000
609.00	.00	Free Outfall		HW & TW below Inv.El.=612.000
609.10	.00	Free Outfall		HW & TW below Inv.El.=612.000
609.20	.00	Free Outfall		HW & TW below Inv.El.=612.000
609.30	.00	Free Outfall		HW & TW below Inv.El.=612.000
609.40	.00	Free Outfall		HW & TW below Inv.El.=612.000
609.50	.00	Free Outfall		HW & TW below Inv.El.=612.000
609.60	.00	Free Outfall		HW & TW below Inv.El.=612.000
609.70	.00	Free Outfall		HW & TW below Inv.El.=612.000
609.80	.00	Free Outfall		HW & TW below Inv.El.=612.000
609.90	.00	Free Outfall		HW & TW below Inv.El.=612.000
610.00	.00	Free Outfall		HW & TW below Inv.El.=612.000
610.10	.00	Free Outfall		HW & TW below Inv.El.=612.000
610.20	.00	Free Outfall		HW & TW below Inv.El.=612.000
610.30	.00	Free Outfall		HW & TW below Inv.El.=612.000
610.40	.00	Free Outfall		HW & TW below Inv.El.=612.000
610.50	.00	Free Outfall		HW & TW below Inv.El.=612.000
610.60	.00	Free Outfall		HW & TW below Inv.El.=612.000
610.70	.00	Free Outfall		HW & TW below Inv.El.=612.000
610.80	.00	Free Outfall		HW & TW below Inv.El.=612.000
610.90	.00	Free Outfall		HW & TW below Inv.El.=612.000
611.00	.00	Free Outfall		HW & TW below Inv.El.=612.000
611.10	.00	Free Outfall		HW & TW below Inv.El.=612.000
611.20	.00	Free Outfall		HW & TW below Inv.El.=612.000
611.30	.00	Free Outfall		HW & TW below Inv.El.=612.000
611.40	.00	Free Outfall		HW & TW below Inv.El.=612.000
611.50	.00	Free Outfall		HW & TW below Inv.El.=612.000
611.60	.00	Free Outfall		HW & TW below Inv.El.=612.000
611.70	.00	Free Outfall		HW & TW below Inv.El.=612.000
611.80	.00	Free Outfall		HW & TW below Inv.El.=612.000
611.90	.00	Free Outfall		HW & TW below Inv.El.=612.000
612.00	.00	Free Outfall		H=.00; Htw=.00; Qfree=.00;
612.10	1.22	Free Outfall		H=.10; Htw=.00; Qfree=1.22;
612.20	3.44	Free Outfall		H=.20; Htw=.00; Qfree=3.44;

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 2 (Weir-Rectangular)

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

WS Elev, Device Q		Tail Water		Notes
WS Elev. ft	Q cfs	TW Elev ft	Converge +/-ft	Computation Messages
612.30	6.33	Free	Outfall	H=.30; Htw=.00; Qfree=6.33;
612.40	9.74	Free	Outfall	H=.40; Htw=.00; Qfree=9.74;
612.50	13.62	Free	Outfall	H=.50; Htw=.00; Qfree=13.62;
612.60	17.90	Free	Outfall	H=.60; Htw=.00; Qfree=17.90;
612.70	22.56	Free	Outfall	H=.70; Htw=.00; Qfree=22.56;
612.80	27.56	Free	Outfall	H=.80; Htw=.00; Qfree=27.56;
612.90	32.88	Free	Outfall	H=.90; Htw=.00; Qfree=32.88;
613.00	.00	Free	Outfall	E = or > E2= 613.000
613.10	.00	Free	Outfall	E = or > E2= 613.000
613.20	.00	Free	Outfall	E = or > E2= 613.000
613.30	.00	Free	Outfall	E = or > E2= 613.000
613.40	.00	Free	Outfall	E = or > E2= 613.000
613.50	.00	Free	Outfall	E = or > E2= 613.000
613.60	.00	Free	Outfall	E = or > E2= 613.000
613.70	.00	Free	Outfall	E = or > E2= 613.000
613.80	.00	Free	Outfall	E = or > E2= 613.000
613.90	.00	Free	Outfall	E = or > E2= 613.000
614.00	.00	Free	Outfall	E = or > E2= 613.000

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 1 (Culvert-Circular)  
 -----  
 Mannings open channel maximum capacity: 3.83 cfs  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = TW (Pond Outfall)

WS Elev, Device Q	Tail Water	Notes
WS Elev. ft	Q cfs	TW Elev Converge ft +/-ft
-----		
Computation Messages		
-----		
605.50	.00	Free Outfall
		Upstream HW & DNstream TW < Inv.El
605.60	.03	Free Outfall
		RELAXED CONVERGENCE: HW +/- .004ft; Q +/- .0022cfs
605.70	.12	Free Outfall
		RELAXED CONVERGENCE: HW +/- .001ft; Q +/- .0021cfs
605.80	.26	Free Outfall
		CRIT.DEPTH CONTROL Vh= .074ft Dcr= .211ft CRIT.DEPTH
605.90	.46	Free Outfall
		CRIT.DEPTH CONTROL Vh= .100ft Dcr= .279ft CRIT.DEPTH
606.00	.70	Free Outfall
		CRIT.DEPTH CONTROL Vh= .127ft Dcr= .347ft CRIT.DEPTH
606.10	.97	Free Outfall
		CRIT.DEPTH CONTROL Vh= .155ft Dcr= .413ft CRIT.DEPTH
606.20	1.28	Free Outfall
		CRIT.DEPTH CONTROL Vh= .185ft Dcr= .477ft CRIT.DEPTH
606.30	1.62	Free Outfall
		CRIT.DEPTH CONTROL Vh= .217ft Dcr= .540ft CRIT.DEPTH
606.40	1.97	Free Outfall
		CRIT.DEPTH CONTROL Vh= .251ft Dcr= .599ft CRIT.DEPTH
606.50	2.35	Free Outfall
		CRIT.DEPTH CONTROL Vh= .287ft Dcr= .656ft CRIT.DEPTH
606.60	2.72	Free Outfall
		CRIT.DEPTH CONTROL Vh= .327ft Dcr= .708ft CRIT.DEPTH
606.70	3.11	Free Outfall
		CRIT.DEPTH CONTROL Vh= .370ft Dcr= .755ft CRIT.DEPTH
606.80	3.46	Free Outfall
		INLET CONTROL... Submerged: HW =1.30
606.90	3.73	Free Outfall
		INLET CONTROL... Submerged: HW =1.40
607.00	3.98	Free Outfall
		INLET CONTROL... Submerged: HW =1.50
607.10	4.14	Free Outfall
		FULL FLOW...Lfull=23.23ft Vh=.432ft HL=.833ft

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 1 (Culvert-Circular)

Mannings open channel maximum capacity: 3.83 cfs  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = TW (Pond Outfall)

WS Elev, Device	Q	Tail Water	Notes	
WS Elev. ft	Q cfs	TW Elev ft	Converge +/-ft	Computation Messages
607.20	4.28	Free Outfall		
		FULL FLOW...Lfull=33.08ft	Vh=.461ft	HL=1.031ft
607.30	4.42	Free Outfall		
		FULL FLOW...Lfull=38.99ft	Vh=.492ft	HL=1.189ft
607.40	4.57	Free Outfall		
		FULL FLOW...Lfull=41.16ft	Vh=.527ft	HL=1.311ft
607.50	4.72	Free Outfall		
		FULL FLOW...Lfull=43.43ft	Vh=.561ft	HL=1.434ft
607.60	4.86	Free Outfall		
		FULL FLOW...Lfull=44.96ft	Vh=.595ft	HL=1.550ft
607.70	5.00	Free Outfall		
		FULL FLOW...Lfull=46.05ft	Vh=.629ft	HL=1.661ft
607.80	5.13	Free Outfall		
		FULL FLOW...Lfull=46.87ft	Vh=.664ft	HL=1.769ft
607.90	5.26	Free Outfall		
		FULL FLOW...Lfull=47.57ft	Vh=.698ft	HL=1.875ft
608.00	5.40	Free Outfall		
		FULL FLOW...Lfull=47.91ft	Vh=.733ft	HL=1.979ft
608.10	5.52	Free Outfall		
		FULL FLOW...Lfull=48.68ft	Vh=.767ft	HL=2.087ft
608.20	5.64	Free Outfall		
		FULL FLOW...Lfull=48.80ft	Vh=.802ft	HL=2.188ft
608.30	5.77	Free Outfall		
		FULL FLOW...Lfull=48.89ft	Vh=.839ft	HL=2.290ft
608.40	5.89	Free Outfall		
		FULL FLOW...Lfull=48.97ft	Vh=.875ft	HL=2.389ft
608.50	6.01	Free Outfall		
		FULL FLOW...Lfull=49.07ft	Vh=.911ft	HL=2.491ft
608.60	6.13	Free Outfall		
		FULL FLOW...Lfull=49.19ft	Vh=.947ft	HL=2.592ft
608.70	6.24	Free Outfall		
		FULL FLOW...Lfull=49.30ft	Vh=.982ft	HL=2.693ft
608.80	6.36	Free Outfall		
		FULL FLOW...Lfull=49.38ft	Vh=1.018ft	HL=2.795ft

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 1 (Culvert-Circular)  
 -----  
 Mannings open channel maximum capacity: 3.83 cfs  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = TW (Pond Outfall)

WS Elev, Device	Q	Tail Water	Notes	
WS Elev. ft	Q cfs	TW Elev ft	Converge +/-ft	Computation Messages
608.90	6.47	Free Outfall		
		FULL FLOW...Lfull=49.49ft	Vh=1.054ft	HL=2.895ft
609.00	6.58	Free Outfall		
		FULL FLOW...Lfull=49.53ft	Vh=1.089ft	HL=2.995ft
609.10	6.68	Free Outfall		
		FULL FLOW...Lfull=49.57ft	Vh=1.125ft	HL=3.095ft
609.20	6.79	Free Outfall		
		FULL FLOW...Lfull=49.60ft	Vh=1.161ft	HL=3.195ft
609.30	6.89	Free Outfall		
		FULL FLOW...Lfull=49.73ft	Vh=1.196ft	HL=3.296ft
609.40	7.00	Free Outfall		
		FULL FLOW...Lfull=49.75ft	Vh=1.233ft	HL=3.398ft
609.50	7.10	Free Outfall		
		FULL FLOW...Lfull=49.76ft	Vh=1.269ft	HL=3.497ft
609.60	7.20	Free Outfall		
		FULL FLOW...Lfull=49.77ft	Vh=1.305ft	HL=3.598ft
609.70	7.30	Free Outfall		
		FULL FLOW...Lfull=49.78ft	Vh=1.341ft	HL=3.698ft
609.80	7.39	Free Outfall		
		FULL FLOW...Lfull=49.79ft	Vh=1.377ft	HL=3.797ft
609.90	7.49	Free Outfall		
		FULL FLOW...Lfull=49.80ft	Vh=1.414ft	HL=3.899ft
610.00	7.59	Free Outfall		
		FULL FLOW...Lfull=49.81ft	Vh=1.449ft	HL=3.997ft
610.10	7.68	Free Outfall		
		FULL FLOW...Lfull=49.83ft	Vh=1.486ft	HL=4.098ft
610.20	7.77	Free Outfall		
		FULL FLOW...Lfull=49.84ft	Vh=1.522ft	HL=4.198ft
610.30	7.86	Free Outfall		
		FULL FLOW...Lfull=49.85ft	Vh=1.558ft	HL=4.299ft
610.40	7.95	Free Outfall		
		FULL FLOW...Lfull=49.86ft	Vh=1.594ft	HL=4.398ft
610.50	8.04	Free Outfall		
		FULL FLOW...Lfull=49.87ft	Vh=1.630ft	HL=4.498ft



RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 1 (Culvert-Circular)  
 -----  
 Mannings open channel maximum capacity: 3.83 cfs  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = TW (Pond Outfall)

WS Elev, Device Q		Tail Water		Notes	
WS Elev.	Q	TW Elev	Converge		
ft	cfs	ft	+/-ft	Computation	Messages
610.60	8.13	Free Outfall			
		FULL FLOW...Lfull=49.88ft		Vh=1.666ft	HL=4.599ft
610.70	8.22	Free Outfall			
		FULL FLOW...Lfull=49.90ft		Vh=1.702ft	HL=4.699ft
610.80	8.31	Free Outfall			
		FULL FLOW...Lfull=49.91ft		Vh=1.738ft	HL=4.799ft
610.90	8.39	Free Outfall			
		FULL FLOW...Lfull=49.91ft		Vh=1.775ft	HL=4.900ft
611.00	8.48	Free Outfall			
		FULL FLOW...Lfull=49.91ft		Vh=1.810ft	HL=4.998ft
611.10	8.56	Free Outfall			
		FULL FLOW...Lfull=49.92ft		Vh=1.847ft	HL=5.099ft
611.20	8.64	Free Outfall			
		FULL FLOW...Lfull=49.94ft		Vh=1.883ft	HL=5.199ft
611.30	8.73	Free Outfall			
		FULL FLOW...Lfull=49.94ft		Vh=1.919ft	HL=5.299ft
611.40	8.81	Free Outfall			
		FULL FLOW...Lfull=49.94ft		Vh=1.955ft	HL=5.400ft
611.50	8.89	Free Outfall			
		FULL FLOW...Lfull=49.95ft		Vh=1.991ft	HL=5.500ft
611.60	8.97	Free Outfall			
		FULL FLOW...Lfull=49.95ft		Vh=2.027ft	HL=5.599ft
611.70	9.05	Free Outfall			
		FULL FLOW...Lfull=49.95ft		Vh=2.064ft	HL=5.700ft
611.80	9.13	Free Outfall			
		FULL FLOW...Lfull=49.95ft		Vh=2.099ft	HL=5.799ft
611.90	9.21	Free Outfall			
		FULL FLOW...Lfull=49.96ft		Vh=2.135ft	HL=5.899ft
612.00	9.28	Free Outfall			
		FULL FLOW...Lfull=49.96ft		Vh=2.172ft	HL=5.999ft
612.10	9.36	Free Outfall			
		FULL FLOW...Lfull=49.96ft		Vh=2.208ft	HL=6.099ft
612.20	9.44	Free Outfall			
		FULL FLOW...Lfull=49.96ft		Vh=2.244ft	HL=6.199ft

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 1 (Culvert-Circular)  
 -----  
 Mannings open channel maximum capacity: 3.83 cfs  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = TW (Pond Outfall)

WS Elev, Device Q	Tail Water	Notes
WS Elev. ft	Q cfs	TW Elev Converge ft +/-ft
-----		
Computation Messages		
-----		
612.30	9.51	Free Outfall
		FULL FLOW...Lfull=49.96ft Vh=2.281ft HL=6.301ft
612.40	9.59	Free Outfall
		FULL FLOW...Lfull=49.96ft Vh=2.316ft HL=6.399ft
612.50	9.66	Free Outfall
		FULL FLOW...Lfull=49.96ft Vh=2.353ft HL=6.500ft
612.60	9.74	Free Outfall
		FULL FLOW...Lfull=49.98ft Vh=2.388ft HL=6.600ft
612.70	9.81	Free Outfall
		FULL FLOW...Lfull=49.98ft Vh=2.425ft HL=6.700ft
612.80	9.88	Free Outfall
		FULL FLOW...Lfull=49.98ft Vh=2.461ft HL=6.800ft
612.90	9.96	Free Outfall
		FULL FLOW...Lfull=49.98ft Vh=2.497ft HL=6.900ft
613.00	10.03	Free Outfall
		FULL FLOW...Lfull=49.98ft Vh=2.533ft HL=6.999ft
613.10	10.10	Free Outfall
		FULL FLOW...Lfull=49.98ft Vh=2.570ft HL=7.100ft
613.20	10.17	Free Outfall
		FULL FLOW...Lfull=49.98ft Vh=2.605ft HL=7.199ft
613.30	10.24	Free Outfall
		FULL FLOW...Lfull=49.98ft Vh=2.642ft HL=7.300ft
613.40	10.31	Free Outfall
		FULL FLOW...Lfull=49.98ft Vh=2.678ft HL=7.400ft
613.50	10.38	Free Outfall
		FULL FLOW...Lfull=49.98ft Vh=2.715ft HL=7.501ft
613.60	10.45	Free Outfall
		FULL FLOW...Lfull=49.98ft Vh=2.751ft HL=7.600ft
613.70	10.52	Free Outfall
		FULL FLOW...Lfull=49.98ft Vh=2.787ft HL=7.700ft
613.80	10.59	Free Outfall
		FULL FLOW...Lfull=49.98ft Vh=2.823ft HL=7.801ft
613.90	10.65	Free Outfall
		FULL FLOW...Lfull=49.98ft Vh=2.859ft HL=7.900ft

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 1 (Culvert-Circular)  
-----  
Mannings open channel maximum capacity: 3.83 cfs  
Upstream ID = (Pond Water Surface)  
DNstream ID = TW (Pond Outfall)

WS Elev, Device	Q	Tail Water		Notes
ft	cfs	ft	+/-ft	Computation Messages
614.00	10.72	Free Outfall		
		FULL FLOW...Lfull=49.98ft Vh=2.895ft HL=8.000ft		

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

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

WS Elev, Total Q		Converge		Notes
Elev.	Q	TW Elev	Error	Contributing Structures
ft	cfs	ft	+/-ft	
605.50	.00	Free Outfall		None contributing
605.60	.03	Free Outfall	1	
605.70	.12	Free Outfall	1	
605.80	.26	Free Outfall	1	
605.90	.46	Free Outfall	1	
606.00	.70	Free Outfall	1	
606.10	.97	Free Outfall	1	
606.20	1.28	Free Outfall	1	
606.30	1.62	Free Outfall	1	
606.40	1.97	Free Outfall	1	
606.50	2.35	Free Outfall	1	
606.60	2.72	Free Outfall	1	
606.70	3.11	Free Outfall	1	
606.80	3.46	Free Outfall	1	
606.90	3.73	Free Outfall	1	
607.00	3.98	Free Outfall	1	
607.10	4.14	Free Outfall	1	
607.20	4.28	Free Outfall	1	
607.30	4.42	Free Outfall	1	
607.40	4.57	Free Outfall	1	
607.50	4.72	Free Outfall	1	
607.60	4.86	Free Outfall	1	
607.70	5.00	Free Outfall	1	
607.80	5.13	Free Outfall	1	
607.90	5.26	Free Outfall	1	
608.00	5.40	Free Outfall	1	
608.10	5.52	Free Outfall	1	
608.20	5.64	Free Outfall	1	
608.30	5.77	Free Outfall	1	
608.40	5.89	Free Outfall	1	
608.50	6.01	Free Outfall	1	
608.60	6.13	Free Outfall	1	
608.70	6.24	Free Outfall	1	
608.80	6.36	Free Outfall	1	
608.90	6.47	Free Outfall	1	
609.00	6.58	Free Outfall	1	
609.10	6.68	Free Outfall	1	
609.20	6.79	Free Outfall	1	

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
609.30	6.89	Free	Outfall	1
609.40	7.00	Free	Outfall	1
609.50	7.10	Free	Outfall	1
609.60	7.20	Free	Outfall	1
609.70	7.30	Free	Outfall	1
609.80	7.39	Free	Outfall	1
609.90	7.49	Free	Outfall	1
610.00	7.59	Free	Outfall	1
610.10	7.68	Free	Outfall	1
610.20	7.77	Free	Outfall	1
610.30	7.86	Free	Outfall	1
610.40	7.95	Free	Outfall	1
610.50	8.04	Free	Outfall	1
610.60	8.13	Free	Outfall	1
610.70	8.22	Free	Outfall	1
610.80	8.31	Free	Outfall	1
610.90	8.39	Free	Outfall	1
611.00	8.48	Free	Outfall	1
611.10	8.56	Free	Outfall	1
611.20	8.64	Free	Outfall	1
611.30	8.73	Free	Outfall	1
611.40	8.81	Free	Outfall	1
611.50	8.89	Free	Outfall	1
611.60	8.97	Free	Outfall	1
611.70	9.05	Free	Outfall	1
611.80	9.13	Free	Outfall	1
611.90	9.21	Free	Outfall	1
612.00	9.28	Free	Outfall	2 +1
612.10	10.58	Free	Outfall	2 +1
612.20	12.88	Free	Outfall	2 +1
612.30	15.84	Free	Outfall	2 +1
612.40	19.33	Free	Outfall	2 +1
612.50	23.28	Free	Outfall	2 +1
612.60	27.63	Free	Outfall	2 +1
612.70	32.37	Free	Outfall	2 +1
612.80	37.44	Free	Outfall	2 +1
612.90	42.84	Free	Outfall	2 +1
613.00	49.74	Free	Outfall	3 +1

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
613.10	53.61	Free Outfall	3 +1	
613.20	57.16	Free Outfall	3 +1	
613.30	60.48	Free Outfall	3 +1	
613.40	63.60	Free Outfall	3 +1	
613.50	66.55	Free Outfall	3 +1	
613.60	69.36	Free Outfall	3 +1	
613.70	72.05	Free Outfall	3 +1	
613.80	74.63	Free Outfall	3 +1	
613.90	77.11	Free Outfall	3 +1	
614.00	79.51	Free Outfall	3 +1	

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 601.00 ft  
Increment = .20 ft  
Max. Elev.= 609.00 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
Inlet Box	5	--->	C0	606.750	609.000
Weir-Rectangular	3	--->	C0	604.750	606.750
Orifice-Area	4	--->	C0	606.750	609.000
Orifice-Area	2	--->	C0	602.000	609.000
Weir-Rectangular	1	--->	C0	601.000	602.000
Culvert-Circular	C0	--->	TW	597.000	609.000
TW SETUP, DS Channel					

OUTLET STRUCTURE INPUT DATA

Structure ID = 5  
Structure Type = Inlet Box  
-----  
# of Openings = 1  
Invert Elev. = 606.75 ft  
Orifice Area = 36.0000 sq.ft  
Orifice Coeff. = .600  
Weir Length = 24.00 ft  
Weir Coeff. = 3.000  
K, Submerged = .000  
K, Reverse = 1.000  
Kb, Barrel = .000000 (per ft of full flow)  
Barrel Length = .00 ft  
Mannings n = .0000

Structure ID = 3  
Structure Type = Weir-Rectangular  
-----  
# of Openings = 1  
Crest Elev. = 604.75 ft  
Weir Length = 2.50 ft  
Weir Coeff. = 3.000000  
  
Weir TW effects (Use adjustment equation)



File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID = 4  
Structure Type = Orifice-Area  
-----  
# of Openings = 1  
Invert Elev. = 604.75 ft  
Area = 5.0000 sq.ft  
Top of Orifice = 606.75 ft  
Datum Elev. = 605.75 ft  
Orifice Coeff. = .600

Structure ID = 2  
Structure Type = Orifice-Area  
-----  
# of Openings = 1  
Invert Elev. = 601.00 ft  
Area = 3.0000 sq.ft  
Top of Orifice = 602.00 ft  
Datum Elev. = 601.50 ft  
Orifice Coeff. = .600

Structure ID = 1  
Structure Type = Weir-Rectangular  
-----  
# of Openings = 1  
Crest Elev. = 601.00 ft  
Weir Length = 3.00 ft  
Weir Coeff. = 3.000000

Weir TW effects (Use adjustment equation)

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID = CO  
Structure Type = Culvert-Circular  
-----  
No. Barrels = 1  
Barrel Diameter = 3.0000 ft  
Upstream Invert = 597.00 ft  
Dnstream Invert = 592.11 ft  
Horiz. Length = 127.00 ft  
Barrel Length = 127.09 ft  
Barrel Slope = .03850 ft/ft

OUTLET CONTROL DATA...  
Mannings n = .0130  
Ke = .5000 (forward entrance loss)  
Kb = .007228 (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) = 1.141  
T2 ratio (HW/D) = 1.288  
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 = 600.42 ft ---> Flow = 42.85 cfs  
At T2 Elev = 600.86 ft ---> Flow = 48.97 cfs

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

FREE OUTFALL CONDITIONS SPECIFIED

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

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 5 (Inlet Box)  
 -----  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = C0 (Culvert-Circular)

Pond WS. Elev. ft	Device Q cfs	(into) HW HGL ft	Converge DS HGL ft	Next DS HGL ft	DS HGL Error +/-ft	Q SUM Error +/-cfs	DS Chan. TW ft	TW Error +/-ft
601.00	.00	...	...	...	...	...	Free Outfall	
601.20	.00	WS below an invert;	no flow.	...	...	...	Free Outfall	
601.40	.00	WS below an invert;	no flow.	...	...	...	Free Outfall	
601.60	.00	WS below an invert;	no flow.	...	...	...	Free Outfall	
601.80	.00	WS below an invert;	no flow.	...	...	...	Free Outfall	
602.00	.00	WS below an invert;	no flow.	...	...	...	Free Outfall	
602.20	.00	WS below an invert;	no flow.	...	...	...	Free Outfall	
602.40	.00	WS below an invert;	no flow.	...	...	...	Free Outfall	
602.60	.00	WS below an invert;	no flow.	...	...	...	Free Outfall	
602.80	.00	WS below an invert;	no flow.	...	...	...	Free Outfall	
603.00	.00	WS below an invert;	no flow.	...	...	...	Free Outfall	
603.20	.00	WS below an invert;	no flow.	...	...	...	Free Outfall	
603.40	.00	WS below an invert;	no flow.	...	...	...	Free Outfall	
603.60	.00	WS below an invert;	no flow.	...	...	...	Free Outfall	
603.80	.00	WS below an invert;	no flow.	...	...	...	Free Outfall	
604.00	.00	WS below an invert;	no flow.	...	...	...	Free Outfall	
604.20	.00	WS below an invert;	no flow.	...	...	...	Free Outfall	
604.40	.00	WS below an invert;	no flow.	...	...	...	Free Outfall	

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 5 (Inlet Box)  
 -----  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = C0 (Culvert-Circular)

Pond WS. Elev. ft	Device Q cfs	(into) HW HGL ft	Converge DS HGL ft	Next DS HGL ft	DS HGL Error +/-ft	Q SUM Error +/-cfs	DS Chan. TW ft	TW Error +/-ft
604.60	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
604.75	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
604.80	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
605.00	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
605.20	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
605.40	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
605.60	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
605.80	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
606.00	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
606.20	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
606.40	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
606.60	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
606.75	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
606.80	.80	606.80	Free	601.65	.000	.000	Free Outfall	
		Weir: H =.05						
607.00	9.00	607.00	Free	602.48	.000	.000	Free Outfall	
		Weir: H =.25						
607.20	21.74	607.20	Free	603.75	.000	.000	Free Outfall	
		Weir: H =.45						
607.40	37.73	607.40	Free	605.33	.000	.000	Free Outfall	
		Weir: H =.65						
607.60	104.19	607.60	607.60	607.60	.000	.000	Free Outfall	
		DS HGL+Loss > crest: Flow set to Downstream outlet.						

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 5 (Inlet Box)

Upstream ID = (Pond Water Surface)

DNstream ID = C0 (Culvert-Circular)

Pond WS. Elev. ft	Device Q cfs	(into) HW HGL ft	Converge DS HGL ft	Next DS HGL ft	DS HGL Error +/-ft	Q SUM Error +/-cfs	DS Chan. TW ft	TW Error +/-ft
607.80	105.39	607.80	607.80	607.80	.000	.000	Free Outfall	
		DS HGL+Loss > crest: Flow set to Downstream outlet.						
608.00	106.57	608.00	608.00	608.00	.000	.000	Free Outfall	
		DS HGL+Loss > crest: Flow set to Downstream outlet.						
608.20	107.75	608.20	608.20	608.20	.000	.000	Free Outfall	
		DS HGL+Loss > crest: Flow set to Downstream outlet.						
608.40	108.91	608.40	608.40	608.40	.000	.000	Free Outfall	
		DS HGL+Loss > crest: Flow set to Downstream outlet.						
608.60	110.05	608.60	608.60	608.60	.000	.000	Free Outfall	
		DS HGL+Loss > crest: Flow set to Downstream outlet.						
608.80	111.19	608.80	608.80	608.80	.000	.000	Free Outfall	
		DS HGL+Loss > crest: Flow set to Downstream outlet.						
609.00	112.31	609.00	609.00	609.00	.000	.000	Free Outfall	
		DS HGL+Loss > crest: Flow set to Downstream outlet.						

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 3 (Weir-Rectangular)

Upstream ID = (Pond Water Surface)

DNstream ID = C0 (Culvert-Circular)

Pond WS. Elev. ft	Device Q cfs	(into) HW HGL ft	Converge DS HGL ft	Next DS HGL ft	DS HGL Error +/-ft	Q SUM Error +/-cfs	DS Chan. TW ft	TW Error +/-ft
601.00	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
601.20	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
601.40	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
601.60	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
601.80	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
602.00	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
602.20	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
602.40	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
602.60	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
602.80	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
603.00	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
603.20	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
603.40	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
603.60	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
603.80	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
604.00	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
604.20	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
604.40	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 3 (Weir-Rectangular)

Upstream ID = (Pond Water Surface)  
 DNstream ID = C0 (Culvert-Circular)

Pond WS. Elev. ft	Device Q cfs	(into) HW HGL ft	Converge DS HGL ft	Next DS HGL ft	DS HGL Error +/-ft	Q SUM Error +/-cfs	DS Chan. TW ft	TW Error +/-ft
604.60	.00	...	...	...	...	...	Free	Outfall
		WS below an invert; no flow.						
604.75	.00	...	...	...	...	...	Free	Outfall
		WS below an invert; no flow.						
604.80	.08	604.80	Free	599.66	.000	.000	Free	Outfall
		H=.05; Htw=.00; Qfree=.08;						
605.00	.92	605.00	Free	599.76	.000	.000	Free	Outfall
		H=.25; Htw=.00; Qfree=.92;						
605.20	2.18	605.20	Free	599.88	.000	.000	Free	Outfall
		H=.45; Htw=.00; Qfree=2.18;						
605.40	3.73	605.40	Free	600.01	.000	.000	Free	Outfall
		H=.65; Htw=.00; Qfree=3.73;						
605.60	5.48	605.60	Free	600.15	.000	.000	Free	Outfall
		H=.85; Htw=.00; Qfree=5.48;						
605.80	7.39	605.80	Free	600.30	.000	.000	Free	Outfall
		H=1.05; Htw=.00; Qfree=7.39;						
606.00	9.43	606.00	Free	600.46	.000	.000	Free	Outfall
		H=1.25; Htw=.00; Qfree=9.43;						
606.20	11.58	606.20	Free	600.62	.000	.000	Free	Outfall
		H=1.45; Htw=.00; Qfree=11.58;						
606.40	13.80	606.40	Free	600.78	.000	.000	Free	Outfall
		H=1.65; Htw=.00; Qfree=13.80;						
606.60	16.08	606.60	Free	600.95	.000	.000	Free	Outfall
		H=1.85; Htw=.00; Qfree=16.08;						
606.75	.00	...	...	...	...	...	Free	Outfall
		E = or > E2= 606.750						
606.80	.00	...	...	...	...	...	Free	Outfall
		E = or > E2= 606.750						
607.00	.00	...	...	...	...	...	Free	Outfall
		E = or > E2= 606.750						
607.20	.00	...	...	...	...	...	Free	Outfall
		E = or > E2= 606.750						
607.40	.00	...	...	...	...	...	Free	Outfall
		E = or > E2= 606.750						
607.60	.00	...	...	...	...	...	Free	Outfall
		Full riser flow. Q=0 this opening.						

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 3 (Weir-Rectangular)

Upstream ID = (Pond Water Surface)

DNstream ID = C0 (Culvert-Circular)

Pond WS. Elev. ft	Device Q cfs	(into) HW HGL ft	Converge DS HGL ft	Next DS HGL ft	DS HGL Error +/-ft	Q SUM Error +/-cfs	DS Chan. TW ft	TW Error +/-ft
607.80	.00	...	...	...	...	...	Free Outfall	
		Full riser flow. Q=0	this opening.					
608.00	.00	...	...	...	...	...	Free Outfall	
		Full riser flow. Q=0	this opening.					
608.20	.00	...	...	...	...	...	Free Outfall	
		Full riser flow. Q=0	this opening.					
608.40	.00	...	...	...	...	...	Free Outfall	
		Full riser flow. Q=0	this opening.					
608.60	.00	...	...	...	...	...	Free Outfall	
		Full riser flow. Q=0	this opening.					
608.80	.00	...	...	...	...	...	Free Outfall	
		Full riser flow. Q=0	this opening.					
609.00	.00	...	...	...	...	...	Free Outfall	
		Full riser flow. Q=0	this opening.					



File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 4 (Orifice-Area)  
 -----  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = C0 (Culvert-Circular)

Pond WS. Elev. ft	Device Q cfs	(into) HW HGL ft	Converge DS HGL ft	Next DS HGL ft	DS HGL Error +/-ft	Q SUM Error +/-cfs	DS Chan. TW ft	TW Error +/-ft
601.00	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
601.20	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
601.40	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
601.60	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
601.80	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
602.00	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
602.20	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
602.40	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
602.60	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
602.80	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
603.00	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
603.20	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
603.40	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
603.60	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
603.80	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
604.00	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
604.20	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
604.40	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 4 (Orifice-Area)  
 -----  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = C0 (Culvert-Circular)

Pond WS. Elev. ft	Device Q cfs	(into) HW HGL ft	Converge DS HGL ft	Next DS HGL ft	DS HGL Error +/-ft	Q SUM Error +/-cfs	DS Chan. TW ft	TW Error +/-ft
604.60	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
604.75	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
604.80	.00	...	...	...	...	...	Free Outfall	
		E < E1=	606.750	...	...	...	Free Outfall	
605.00	.00	...	...	...	...	...	Free Outfall	
		E < E1=	606.750	...	...	...	Free Outfall	
605.20	.00	...	...	...	...	...	Free Outfall	
		E < E1=	606.750	...	...	...	Free Outfall	
605.40	.00	...	...	...	...	...	Free Outfall	
		E < E1=	606.750	...	...	...	Free Outfall	
605.60	.00	...	...	...	...	...	Free Outfall	
		E < E1=	606.750	...	...	...	Free Outfall	
605.80	.00	...	...	...	...	...	Free Outfall	
		E < E1=	606.750	...	...	...	Free Outfall	
606.00	.00	...	...	...	...	...	Free Outfall	
		E < E1=	606.750	...	...	...	Free Outfall	
606.20	.00	...	...	...	...	...	Free Outfall	
		E < E1=	606.750	...	...	...	Free Outfall	
606.40	.00	...	...	...	...	...	Free Outfall	
		E < E1=	606.750	...	...	...	Free Outfall	
606.60	.00	...	...	...	...	...	Free Outfall	
		E < E1=	606.750	...	...	...	Free Outfall	
606.75	24.07	606.75	Free	601.54	.000	.000	Free Outfall	
		H =1.00						
606.80	24.66	606.80	Free	601.65	.000	.000	Free Outfall	
		H =1.05						
607.00	26.91	607.00	Free	602.48	.000	.000	Free Outfall	
		H =1.25						
607.20	28.98	607.20	Free	603.75	.000	.000	Free Outfall	
		H =1.45						
607.40	30.91	607.40	605.32	605.33	.000	.000	Free Outfall	
		H =1.65						
607.60	.00	607.60	607.60	607.60	.000	.000	Free Outfall	
		Full riser flow. Q=0 this opening.						
607.80	.00	607.80	607.80	607.80	.000	.000	Free Outfall	
		Full riser flow. Q=0 this opening.						

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 4 (Orifice-Area)  
 -----  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = C0 (Culvert-Circular)

Pond WS. Elev. ft	Device Q cfs	(into) HW HGL ft	Converge DS HGL ft	Next DS HGL ft	DS HGL Error +/-ft	Q SUM Error +/-cfs	DS Chan. TW ft	TW Error +/-ft
608.00	.00	608.00	608.00	608.00	.000	.000	Free Outfall	
							Full riser flow. Q=0 this opening.	
608.20	.00	608.20	608.20	608.20	.000	.000	Free Outfall	
							Full riser flow. Q=0 this opening.	
608.40	.00	608.40	608.40	608.40	.000	.000	Free Outfall	
							Full riser flow. Q=0 this opening.	
608.60	.00	608.60	608.60	608.60	.000	.000	Free Outfall	
							Full riser flow. Q=0 this opening.	
608.80	.00	608.80	608.80	608.80	.000	.000	Free Outfall	
							Full riser flow. Q=0 this opening.	
609.00	.00	609.00	609.00	609.00	.000	.000	Free Outfall	
							Full riser flow. Q=0 this opening.	

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 2 (Orifice-Area)

Upstream ID = (Pond Water Surface)

DNstream ID = C0 (Culvert-Circular)

Pond WS. Elev. ft	Device Q cfs	(into) HW HGL ft	Converge DS HGL ft	Next DS HGL ft	DS HGL Error +/-ft	Q SUM Error +/-cfs	DS Chan. TW ft	TW Error +/-ft
601.00	.00	...	...	...	...	...	Free	Outfall
WS below an invert; no flow.								
601.20	.00	...	...	...	...	...	Free	Outfall
		E < E1=	602.000					
601.40	.00	...	...	...	...	...	Free	Outfall
		E < E1=	602.000					
601.60	.00	...	...	...	...	...	Free	Outfall
		E < E1=	602.000					
601.80	.00	...	...	...	...	...	Free	Outfall
		E < E1=	602.000					
602.00	10.21	602.00	Free	598.57	.000	.000	Free	Outfall
		H =.50						
602.20	12.08	602.20	Free	598.72	.000	.000	Free	Outfall
		H =.70						
602.40	13.70	602.40	Free	598.84	.000	.000	Free	Outfall
		H =.90						
602.60	15.14	602.60	Free	598.94	.000	.000	Free	Outfall
		H =1.10						
602.80	16.46	602.80	Free	599.03	.000	.000	Free	Outfall
		H =1.30						
603.00	17.68	603.00	Free	599.12	.000	.000	Free	Outfall
		H =1.50						
603.20	18.83	603.20	Free	599.19	.000	.000	Free	Outfall
		H =1.70						
603.40	19.90	603.40	Free	599.26	.000	.000	Free	Outfall
		H =1.90						
603.60	20.92	603.60	Free	599.33	.000	.000	Free	Outfall
		H =2.10						
603.80	21.90	603.80	Free	599.39	.000	.000	Free	Outfall
		H =2.30						
604.00	22.83	604.00	Free	599.45	.000	.000	Free	Outfall
		H =2.50						
604.20	23.73	604.20	Free	599.51	.000	.000	Free	Outfall
		H =2.70						
604.40	24.59	604.40	Free	599.56	.000	.000	Free	Outfall
		H =2.90						

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 2 (Orifice-Area)  
 -----  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = C0 (Culvert-Circular)

Pond WS. Elev. ft	Device Q cfs	(into) HW HGL ft	Converge DS HGL ft	Next DS HGL ft	DS HGL Error +/-ft	Q SUM Error +/-cfs	DS Chan. TW ft	TW Error +/-ft
604.60	25.42	604.60	Free	599.61	.000	.000	Free	Outfall
		H =3.10						
604.75	26.03	604.75	Free	599.65	.000	.000	Free	Outfall
		H =3.25						
604.80	26.23	604.80	Free	599.66	.000	.000	Free	Outfall
		H =3.30						
605.00	27.01	605.00	Free	599.76	.000	.000	Free	Outfall
		H =3.50						
605.20	27.77	605.20	Free	599.88	.000	.000	Free	Outfall
		H =3.70						
605.40	28.52	605.40	Free	600.01	.000	.000	Free	Outfall
		H =3.90						
605.60	29.24	605.60	Free	600.15	.000	.000	Free	Outfall
		H =4.10						
605.80	29.94	605.80	Free	600.30	.000	.000	Free	Outfall
		H =4.30						
606.00	30.63	606.00	Free	600.46	.000	.000	Free	Outfall
		H =4.50						
606.20	31.30	606.20	Free	600.62	.000	.000	Free	Outfall
		H =4.70						
606.40	31.96	606.40	Free	600.78	.000	.000	Free	Outfall
		H =4.90						
606.60	32.61	606.60	Free	600.95	.000	.000	Free	Outfall
		H =5.10						
606.75	32.96	606.75	601.54	601.54	.004	.000	Free	Outfall
		H =5.21						
606.80	32.75	606.80	601.66	601.65	.005	.000	Free	Outfall
		H =5.14						
607.00	30.66	607.00	602.49	602.48	.008	.000	Free	Outfall
		H =4.51						
607.20	26.87	607.20	603.74	603.75	.009	.000	Free	Outfall
		H =3.46						
607.40	20.82	607.40	605.32	605.33	.008	.000	Free	Outfall
		H =2.08						
607.60	.00	607.60	607.60	607.60	.000	.000	Free	Outfall
				Full riser flow. Q=0 this opening.				
607.80	.00	607.80	607.80	607.80	.000	.000	Free	Outfall
				Full riser flow. Q=0 this opening.				

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 2 (Orifice-Area)  
 -----  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = C0 (Culvert-Circular)

Pond WS. Elev. ft	Device Q cfs	(into) HW HGL ft	Converge DS HGL ft	Next DS HGL ft	DS HGL Error +/-ft	Q SUM Error +/-cfs	DS Chan. TW ft	TW Error +/-ft
608.00	.00	608.00	608.00	608.00	.000	.000	Free Outfall	
							Full riser flow. Q=0 this opening.	
608.20	.00	608.20	608.20	608.20	.000	.000	Free Outfall	
							Full riser flow. Q=0 this opening.	
608.40	.00	608.40	608.40	608.40	.000	.000	Free Outfall	
							Full riser flow. Q=0 this opening.	
608.60	.00	608.60	608.60	608.60	.000	.000	Free Outfall	
							Full riser flow. Q=0 this opening.	
608.80	.00	608.80	608.80	608.80	.000	.000	Free Outfall	
							Full riser flow. Q=0 this opening.	
609.00	.00	609.00	609.00	609.00	.000	.000	Free Outfall	
							Full riser flow. Q=0 this opening.	

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 1 (Weir-Rectangular)

Upstream ID = (Pond Water Surface)  
 DNstream ID = C0 (Culvert-Circular)

Pond WS. Elev. ft	Device Q cfs	(into) HW HGL ft	Converge DS HGL ft	Next DS HGL ft	DS HGL Error +/-ft	Q SUM Error +/-cfs	DS Chan. TW ft	TW Error +/-ft
601.00	.00	...	...	...	...	...	Free Outfall	
		WS below an invert; no flow.						
601.20	.79	601.20	Free	597.42	.000	.000	Free Outfall	
		H=.20; Htw=.00; Qfree=.79;						
601.40	2.22	601.40	Free	597.70	.000	.000	Free Outfall	
		H=.40; Htw=.00; Qfree=2.22;						
601.60	4.02	601.60	Free	597.95	.000	.000	Free Outfall	
		H=.60; Htw=.00; Qfree=4.02;						
601.80	6.10	601.80	Free	598.19	.000	.000	Free Outfall	
		H=.80; Htw=.00; Qfree=6.10;						
602.00	.00	...	...	...	...	...	Free Outfall	
		E = or > E2= 602.000						
602.20	.00	...	...	...	...	...	Free Outfall	
		E = or > E2= 602.000						
602.40	.00	...	...	...	...	...	Free Outfall	
		E = or > E2= 602.000						
602.60	.00	...	...	...	...	...	Free Outfall	
		E = or > E2= 602.000						
602.80	.00	...	...	...	...	...	Free Outfall	
		E = or > E2= 602.000						
603.00	.00	...	...	...	...	...	Free Outfall	
		E = or > E2= 602.000						
603.20	.00	...	...	...	...	...	Free Outfall	
		E = or > E2= 602.000						
603.40	.00	...	...	...	...	...	Free Outfall	
		E = or > E2= 602.000						
603.60	.00	...	...	...	...	...	Free Outfall	
		E = or > E2= 602.000						
603.80	.00	...	...	...	...	...	Free Outfall	
		E = or > E2= 602.000						
604.00	.00	...	...	...	...	...	Free Outfall	
		E = or > E2= 602.000						
604.20	.00	...	...	...	...	...	Free Outfall	
		E = or > E2= 602.000						
604.40	.00	...	...	...	...	...	Free Outfall	
		E = or > E2= 602.000						

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 1 (Weir-Rectangular)

Upstream ID = (Pond Water Surface)

DNstream ID = C0 (Culvert-Circular)

Pond WS. Elev. ft	Device Q cfs	(into) HW HGL ft	Converge DS HGL ft	Next DS HGL ft	DS HGL Error +/-ft	Q SUM Error +/-cfs	DS Chan. TW ft	TW Error +/-ft
604.60	.00	...	...	...	...	...	Free	Outfall
		E = or > E2=	602.000	...	...	...	Free	Outfall
604.75	.00	...	...	...	...	...	Free	Outfall
		E = or > E2=	602.000	...	...	...	Free	Outfall
604.80	.00	...	...	...	...	...	Free	Outfall
		E = or > E2=	602.000	...	...	...	Free	Outfall
605.00	.00	...	...	...	...	...	Free	Outfall
		E = or > E2=	602.000	...	...	...	Free	Outfall
605.20	.00	...	...	...	...	...	Free	Outfall
		E = or > E2=	602.000	...	...	...	Free	Outfall
605.40	.00	...	...	...	...	...	Free	Outfall
		E = or > E2=	602.000	...	...	...	Free	Outfall
605.60	.00	...	...	...	...	...	Free	Outfall
		E = or > E2=	602.000	...	...	...	Free	Outfall
605.80	.00	...	...	...	...	...	Free	Outfall
		E = or > E2=	602.000	...	...	...	Free	Outfall
606.00	.00	...	...	...	...	...	Free	Outfall
		E = or > E2=	602.000	...	...	...	Free	Outfall
606.20	.00	...	...	...	...	...	Free	Outfall
		E = or > E2=	602.000	...	...	...	Free	Outfall
606.40	.00	...	...	...	...	...	Free	Outfall
		E = or > E2=	602.000	...	...	...	Free	Outfall
606.60	.00	...	...	...	...	...	Free	Outfall
		E = or > E2=	602.000	...	...	...	Free	Outfall
606.75	.00	...	...	...	...	...	Free	Outfall
		E = or > E2=	602.000	...	...	...	Free	Outfall
606.80	.00	...	...	...	...	...	Free	Outfall
		E = or > E2=	602.000	...	...	...	Free	Outfall
607.00	.00	...	...	...	...	...	Free	Outfall
		E = or > E2=	602.000	...	...	...	Free	Outfall
607.20	.00	...	...	...	...	...	Free	Outfall
		E = or > E2=	602.000	...	...	...	Free	Outfall
607.40	.00	...	...	...	...	...	Free	Outfall
		E = or > E2=	602.000	...	...	...	Free	Outfall
607.60	.00	...	...	...	...	...	Free	Outfall

Full riser flow. Q=0 this opening.



RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 1 (Weir-Rectangular)

Upstream ID = (Pond Water Surface)

DNstream ID = C0 (Culvert-Circular)

Pond WS. Elev. ft	Device Q cfs	(into) HW HGL ft	Converge DS HGL ft	Next DS HGL ft	DS HGL Error +/-ft	Q SUM Error +/-cfs	DS Chan. TW ft	TW Error +/-ft
607.80	.00	...	...	...	...	...	Free Outfall	
608.00	.00	Full riser flow.	Q=0 this opening.	...	...	...	Free Outfall	
608.20	.00	Full riser flow.	Q=0 this opening.	...	...	...	Free Outfall	
608.40	.00	Full riser flow.	Q=0 this opening.	...	...	...	Free Outfall	
608.60	.00	Full riser flow.	Q=0 this opening.	...	...	...	Free Outfall	
608.80	.00	Full riser flow.	Q=0 this opening.	...	...	...	Free Outfall	
609.00	.00	Full riser flow.	Q=0 this opening.	...	...	...	Free Outfall	

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = C0 (Culvert-Circular)

Mannings open channel maximum capacity: 140.78 cfs  
 UPstream ID's= 5, 3, 4, 2, 1  
 DNstream ID = TW (Pond Outfall)

Pond WS. Elev. ft	Device Q cfs	(into) HW HGL ft	Converge DS HGL ft	Next DS HGL ft	DS HGL Error +/-ft	Q SUM Error +/-cfs	DS Chan. TW ft	TW Error +/-ft
601.00	.00	597.00	Free	Free	.000	.000	Free	Outfall
601.20	.79	597.42	Free	Free	.000	.000	Free	Outfall
601.40	2.22	597.70	Free	Free	.000	.000	Free	Outfall
601.60	4.02	597.95	Free	Free	.000	.000	Free	Outfall
601.80	6.10	598.19	Free	Free	.000	.000	Free	Outfall
602.00	10.21	598.57	Free	Free	.000	.000	Free	Outfall
602.20	12.08	598.72	Free	Free	.000	.000	Free	Outfall
602.40	13.70	598.84	Free	Free	.000	.000	Free	Outfall
602.60	15.14	598.94	Free	Free	.000	.000	Free	Outfall
602.80	16.46	599.03	Free	Free	.000	.000	Free	Outfall
603.00	17.68	599.12	Free	Free	.000	.000	Free	Outfall
603.20	18.83	599.19	Free	Free	.000	.000	Free	Outfall
603.40	19.90	599.26	Free	Free	.000	.000	Free	Outfall
603.60	20.92	599.33	Free	Free	.000	.000	Free	Outfall
603.80	21.90	599.39	Free	Free	.000	.000	Free	Outfall
604.00	22.83	599.45	Free	Free	.000	.000	Free	Outfall
604.20	23.73	599.51	Free	Free	.000	.000	Free	Outfall
604.40	24.59	599.56	Free	Free	.000	.000	Free	Outfall

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = C0 (Culvert-Circular)

Mannings open channel maximum capacity: 140.78 cfs

UPstream ID's= 5, 3, 4, 2, 1

DNstream ID = TW (Pond Outfall)

Pond WS. Elev. ft	Device Q cfs	(into) HW HGL ft	Converge DS HGL ft	Next DS HGL ft	DS HGL Error +/-ft	Q SUM Error +/-cfs	DS Chan. TW ft	TW Error +/-ft
604.60	25.42	599.61	Free	Free	.000	.000	Free Outfall	
		CRIT.DEPTH	CONTROL	Vh= .655ft	Dcr= 1.627ft		CRIT.DEPTH	
604.75	26.03	599.65	Free	Free	.000	.000	Free Outfall	
		CRIT.DEPTH	CONTROL	Vh= .666ft	Dcr= 1.648ft		CRIT.DEPTH	
604.80	26.31	599.66	Free	Free	.000	.000	Free Outfall	
		CRIT.DEPTH	CONTROL	Vh= .671ft	Dcr= 1.657ft		CRIT.DEPTH	
605.00	27.93	599.76	Free	Free	.000	.000	Free Outfall	
		CRIT.DEPTH	CONTROL	Vh= .700ft	Dcr= 1.710ft		CRIT.DEPTH	
605.20	29.96	599.88	Free	Free	.000	.000	Free Outfall	
		CRIT.DEPTH	CONTROL	Vh= .737ft	Dcr= 1.773ft		CRIT.DEPTH	
605.40	32.24	600.01	Free	Free	.000	.000	Free Outfall	
		CRIT.DEPTH	CONTROL	Vh= .779ft	Dcr= 1.842ft		CRIT.DEPTH	
605.60	34.71	600.15	Free	Free	.000	.000	Free Outfall	
		CRIT.DEPTH	CONTROL	Vh= .826ft	Dcr= 1.914ft		CRIT.DEPTH	
605.80	37.33	600.30	Free	Free	.000	.000	Free Outfall	
		CRIT.DEPTH	CONTROL	Vh= .876ft	Dcr= 1.988ft		CRIT.DEPTH	
606.00	40.06	600.46	Free	Free	.000	.000	Free Outfall	
		CRIT.DEPTH	CONTROL	Vh= .930ft	Dcr= 2.061ft		CRIT.DEPTH	
606.20	42.88	600.62	Free	Free	.000	.000	Free Outfall	
		CRIT.DEPTH	CONTROL	Vh= .989ft	Dcr= 2.133ft		CRIT.DEPTH	
606.40	45.76	600.78	Free	Free	.000	.000	Free Outfall	
		CRIT.DEPTH	CONTROL	Vh= 1.051ft	Dcr= 2.204ft		CRIT.DEPTH	
606.60	48.69	600.95	Free	Free	.000	.000	Free Outfall	
		CRIT.DEPTH	CONTROL	Vh= 1.117ft	Dcr= 2.272ft		CRIT.DEPTH	
606.75	57.03	601.54	Free	Free	.000	.000	Free Outfall	
		INLET CONTROL...		Submerged: HW =4.54				
606.80	58.21	601.65	Free	Free	.000	.000	Free Outfall	
		INLET CONTROL...		Submerged: HW =4.65				
607.00	66.57	602.48	Free	Free	.000	.000	Free Outfall	
		INLET CONTROL...		Submerged: HW =5.48				
607.20	77.58	603.75	Free	Free	.000	.000	Free Outfall	
		INLET CONTROL...		Submerged: HW =6.75				
607.40	89.47	605.33	Free	Free	.000	.000	Free Outfall	
		INLET CONTROL...		Submerged: HW =8.33				
607.60	104.19	607.60	Free	Free	.000	.000	Free Outfall	
		INLET CONTROL...		Submerged: HW =10.60				

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = C0 (Culvert-Circular)

Mannings open channel maximum capacity: 140.78 cfs

UPstream ID's= 5, 3, 4, 2, 1

DNstream ID = TW (Pond Outfall)

Pond WS. Elev. ft	Device Q cfs	(into) HW HGL ft	Converge DS HGL ft	Next DS HGL ft	DS HGL Error +/-ft	Q SUM Error +/-cfs	DS Chan. TW ft	TW Error +/-ft
607.80	105.39	607.80	Free	Free	.000	.000	Free Outfall	
		INLET CONTROL...		Submerged:	HW =10.80			
608.00	106.57	608.00	Free	Free	.000	.000	Free Outfall	
		INLET CONTROL...		Submerged:	HW =11.00			
608.20	107.75	608.20	Free	Free	.000	.000	Free Outfall	
		INLET CONTROL...		Submerged:	HW =11.20			
608.40	108.91	608.40	Free	Free	.000	.000	Free Outfall	
		INLET CONTROL...		Submerged:	HW =11.40			
608.60	110.05	608.60	Free	Free	.000	.000	Free Outfall	
		INLET CONTROL...		Submerged:	HW =11.60			
608.80	111.19	608.80	Free	Free	.000	.000	Free Outfall	
		INLET CONTROL...		Submerged:	HW =11.80			
609.00	112.31	609.00	Free	Free	.000	.000	Free Outfall	
		INLET CONTROL...		Submerged:	HW =12.00			

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
601.00	.00	Free Outfall		(no Q: 5,3,4,2,1,C0)
601.20	.79	Free Outfall		1,C0 (no Q: 5,3,4,2)
601.40	2.22	Free Outfall		1,C0 (no Q: 5,3,4,2)
601.60	4.02	Free Outfall		1,C0 (no Q: 5,3,4,2)
601.80	6.10	Free Outfall		1,C0 (no Q: 5,3,4,2)
602.00	10.21	Free Outfall		2,C0 (no Q: 5,3,4,1)
602.20	12.08	Free Outfall		2,C0 (no Q: 5,3,4,1)
602.40	13.70	Free Outfall		2,C0 (no Q: 5,3,4,1)
602.60	15.14	Free Outfall		2,C0 (no Q: 5,3,4,1)
602.80	16.46	Free Outfall		2,C0 (no Q: 5,3,4,1)
603.00	17.68	Free Outfall		2,C0 (no Q: 5,3,4,1)
603.20	18.83	Free Outfall		2,C0 (no Q: 5,3,4,1)
603.40	19.90	Free Outfall		2,C0 (no Q: 5,3,4,1)
603.60	20.92	Free Outfall		2,C0 (no Q: 5,3,4,1)
603.80	21.90	Free Outfall		2,C0 (no Q: 5,3,4,1)
604.00	22.83	Free Outfall		2,C0 (no Q: 5,3,4,1)
604.20	23.73	Free Outfall		2,C0 (no Q: 5,3,4,1)
604.40	24.59	Free Outfall		2,C0 (no Q: 5,3,4,1)
604.60	25.42	Free Outfall		2,C0 (no Q: 5,3,4,1)
604.75	26.03	Free Outfall		2,C0 (no Q: 5,3,4,1)
604.80	26.31	Free Outfall		3,2,C0 (no Q: 5,4,1)
605.00	27.93	Free Outfall		3,2,C0 (no Q: 5,4,1)
605.20	29.96	Free Outfall		3,2,C0 (no Q: 5,4,1)
605.40	32.24	Free Outfall		3,2,C0 (no Q: 5,4,1)
605.60	34.71	Free Outfall		3,2,C0 (no Q: 5,4,1)
605.80	37.33	Free Outfall		3,2,C0 (no Q: 5,4,1)
606.00	40.06	Free Outfall		3,2,C0 (no Q: 5,4,1)
606.20	42.88	Free Outfall		3,2,C0 (no Q: 5,4,1)
606.40	45.76	Free Outfall		3,2,C0 (no Q: 5,4,1)
606.60	48.69	Free Outfall		3,2,C0 (no Q: 5,4,1)
606.75	57.03	Free Outfall		4,2,C0 (no Q: 5,3,1)
606.80	58.21	Free Outfall		5,4,2,C0 (no Q: 3,1)
607.00	66.57	Free Outfall		5,4,2,C0 (no Q: 3,1)
607.20	77.58	Free Outfall		5,4,2,C0 (no Q: 3,1)
607.40	89.47	Free Outfall		5,4,2,C0 (no Q: 3,1)
607.60	104.19	Free Outfall		5,C0 (no Q: 3,4,2,1)
607.80	105.39	Free Outfall		5,C0 (no Q: 3,4,2,1)
608.00	106.57	Free Outfall		5,C0 (no Q: 3,4,2,1)

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
608.20	107.75	Free Outfall		5,C0 (no Q: 3,4,2,1)
608.40	108.91	Free Outfall		5,C0 (no Q: 3,4,2,1)
608.60	110.05	Free Outfall		5,C0 (no Q: 3,4,2,1)
608.80	111.19	Free Outfall		5,C0 (no Q: 3,4,2,1)
609.00	112.31	Free Outfall		5,C0 (no Q: 3,4,2,1)

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 566.00 ft  
Increment = .20 ft  
Max. Elev.= 574.00 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
Inlet Box	5	--->	TW	571.000	574.000
Orifice-Area	4	--->	TW	571.000	574.000
Weir-Rectangular	3	--->	TW	570.000	571.000
Orifice-Area	2	--->	TW	568.000	574.000
Weir-Rectangular	1	--->	TW	566.000	568.000
TW SETUP, DS Channel					

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID = 3  
Structure Type = Weir-Rectangular  
-----  
# of Openings = 1  
Crest Elev. = 570.00 ft  
Weir Length = 6.00 ft  
Weir Coeff. = 3.000000  
  
Weir TW effects (Use adjustment equation)

Structure ID = 2  
Structure Type = Orifice-Area  
-----  
# of Openings = 1  
Invert Elev. = 566.00 ft  
Area = 5.0000 sq.ft  
Top of Orifice = 568.00 ft  
Datum Elev. = 567.00 ft  
Orifice Coeff. = .600

Structure ID = 1  
Structure Type = Weir-Rectangular  
-----  
# of Openings = 1  
Crest Elev. = 566.00 ft  
Weir Length = 2.50 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= 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



OUTLET STRUCTURE INPUT DATA

Structure ID = 5  
Structure Type = Inlet Box  
-----  
# of Openings = 1  
Invert Elev. = 571.00 ft  
Orifice Area = 36.0000 sq.ft  
Orifice Coeff. = .600  
Weir Length = 24.00 ft  
Weir Coeff. = 3.000  
K, Submerged = .000  
K, Reverse = 1.000  
Kb,Barrel = .000000 (per ft of full flow)  
Barrel Length = .00 ft  
Mannings n = .0000

Structure ID = 4  
Structure Type = Orifice-Area  
-----  
# of Openings = 1  
Invert Elev. = 570.00 ft  
Area = 6.0000 sq.ft  
Top of Orifice = 571.00 ft  
Datum Elev. = 570.50 ft  
Orifice Coeff. = .600

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 5 (Inlet Box)  
 -----  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = TW (Pond Outfall)

WS Elev, Device Q		Tail Water		Notes
WS Elev. ft	Q cfs	TW Elev ft	Converge +/-ft	Computation Messages
566.00	.00	Free	Outfall	HW & TW < Inv.El.=571.000
566.20	.00	Free	Outfall	HW & TW < Inv.El.=571.000
566.40	.00	Free	Outfall	HW & TW < Inv.El.=571.000
566.60	.00	Free	Outfall	HW & TW < Inv.El.=571.000
566.80	.00	Free	Outfall	HW & TW < Inv.El.=571.000
567.00	.00	Free	Outfall	HW & TW < Inv.El.=571.000
567.20	.00	Free	Outfall	HW & TW < Inv.El.=571.000
567.40	.00	Free	Outfall	HW & TW < Inv.El.=571.000
567.60	.00	Free	Outfall	HW & TW < Inv.El.=571.000
567.80	.00	Free	Outfall	HW & TW < Inv.El.=571.000
568.00	.00	Free	Outfall	HW & TW < Inv.El.=571.000
568.20	.00	Free	Outfall	HW & TW < Inv.El.=571.000
568.40	.00	Free	Outfall	HW & TW < Inv.El.=571.000
568.60	.00	Free	Outfall	HW & TW < Inv.El.=571.000
568.80	.00	Free	Outfall	HW & TW < Inv.El.=571.000
569.00	.00	Free	Outfall	HW & TW < Inv.El.=571.000
569.20	.00	Free	Outfall	HW & TW < Inv.El.=571.000
569.40	.00	Free	Outfall	HW & TW < Inv.El.=571.000
569.60	.00	Free	Outfall	HW & TW < Inv.El.=571.000
569.80	.00	Free	Outfall	HW & TW < Inv.El.=571.000
570.00	.00	Free	Outfall	HW & TW < Inv.El.=571.000
570.20	.00	Free	Outfall	HW & TW < Inv.El.=571.000
570.40	.00	Free	Outfall	HW & TW < Inv.El.=571.000
570.60	.00	Free	Outfall	HW & TW < Inv.El.=571.000
570.80	.00	Free	Outfall	HW & TW < Inv.El.=571.000
571.00	.00	Free	Outfall	Weir: H =.00
571.20	6.44	Free	Outfall	Weir: H =.20
571.40	18.22	Free	Outfall	Weir: H =.40
571.60	33.46	Free	Outfall	Weir: H =.60
571.80	51.52	Free	Outfall	Weir: H =.80
572.00	72.00	Free	Outfall	Weir: H =1.00
572.20	94.65	Free	Outfall	Weir: H =1.20
572.40	119.27	Free	Outfall	Weir: H =1.40
572.60	145.71	Free	Outfall	Weir: H =1.60

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 5 (Inlet Box)  
 -----  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = TW (Pond Outfall)

WS Elev, Device Q		Tail Water		Notes
WS Elev.	Q	TW Elev Converge		Computation Messages
ft	cfs	ft	+/-ft	
572.80	173.87	Free	Outfall	Weir: H =1.80
573.00	203.65	Free	Outfall	Weir: H =2.00
573.20	234.95	Free	Outfall	Weir: H =2.20
573.40	267.70	Free	Outfall	Weir: H =2.40
573.60	279.39	Free	Outfall	
		Orifice:	H =2.60	
573.80	289.93	Free	Outfall	
		Orifice:	H =2.80	
574.00	300.11	Free	Outfall	
		Orifice:	H =3.00	

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 4 (Orifice-Area)  
 -----  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = TW (Pond Outfall)

WS Elev, Device Q		Tail Water		Notes	
WS Elev.	Q	TW Elev	Converge	Computation Messages	
ft	cfs	ft	+/-ft		
566.00	.00	Free Outfall	E < E1=	571.000	
566.20	.00	Free Outfall	E < E1=	571.000	
566.40	.00	Free Outfall	E < E1=	571.000	
566.60	.00	Free Outfall	E < E1=	571.000	
566.80	.00	Free Outfall	E < E1=	571.000	
567.00	.00	Free Outfall	E < E1=	571.000	
567.20	.00	Free Outfall	E < E1=	571.000	
567.40	.00	Free Outfall	E < E1=	571.000	
567.60	.00	Free Outfall	E < E1=	571.000	
567.80	.00	Free Outfall	E < E1=	571.000	
568.00	.00	Free Outfall	E < E1=	571.000	
568.20	.00	Free Outfall	E < E1=	571.000	
568.40	.00	Free Outfall	E < E1=	571.000	
568.60	.00	Free Outfall	E < E1=	571.000	
568.80	.00	Free Outfall	E < E1=	571.000	
569.00	.00	Free Outfall	E < E1=	571.000	
569.20	.00	Free Outfall	E < E1=	571.000	
569.40	.00	Free Outfall	E < E1=	571.000	
569.60	.00	Free Outfall	E < E1=	571.000	
569.80	.00	Free Outfall	E < E1=	571.000	
570.00	.00	Free Outfall	E < E1=	571.000	
570.20	.00	Free Outfall	E < E1=	571.000	
570.40	.00	Free Outfall	E < E1=	571.000	
570.60	.00	Free Outfall	E < E1=	571.000	
570.80	.00	Free Outfall	E < E1=	571.000	
571.00	20.42	Free Outfall	H =.50		
571.20	24.16	Free Outfall	H =.70		
571.40	27.40	Free Outfall	H =.90		
571.60	30.29	Free Outfall	H =1.10		
571.80	32.93	Free Outfall	H =1.30		
572.00	35.37	Free Outfall	H =1.50		
572.20	37.65	Free Outfall	H =1.70		
572.40	39.81	Free Outfall	H =1.90		
572.60	41.85	Free Outfall	H =2.10		

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 4 (Orifice-Area)  
-----  
Upstream ID = (Pond Water Surface)  
DNstream ID = TW (Pond Outfall)

WS Elev, Device Q		Tail Water		Notes
WS Elev.	Q	TW Elev	Converge	
ft	cfs	ft	+/-ft	Computation Messages
572.80	43.80	Free Outfall	H =2.30	
573.00	45.66	Free Outfall	H =2.50	
573.20	47.45	Free Outfall	H =2.70	
573.40	49.18	Free Outfall	H =2.90	
573.60	50.85	Free Outfall	H =3.10	
573.80	52.46	Free Outfall	H =3.30	
574.00	54.03	Free Outfall	H =3.50	

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 3 (Weir-Rectangular)  
 -----  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = TW (Pond Outfall)

WS Elev, Device Q		Tail Water		Notes
WS Elev. ft	Q cfs	TW Elev ft	Converge +/-ft	Computation Messages
566.00	.00	Free Outfall		HW & TW below Inv.El.=570.000
566.20	.00	Free Outfall		HW & TW below Inv.El.=570.000
566.40	.00	Free Outfall		HW & TW below Inv.El.=570.000
566.60	.00	Free Outfall		HW & TW below Inv.El.=570.000
566.80	.00	Free Outfall		HW & TW below Inv.El.=570.000
567.00	.00	Free Outfall		HW & TW below Inv.El.=570.000
567.20	.00	Free Outfall		HW & TW below Inv.El.=570.000
567.40	.00	Free Outfall		HW & TW below Inv.El.=570.000
567.60	.00	Free Outfall		HW & TW below Inv.El.=570.000
567.80	.00	Free Outfall		HW & TW below Inv.El.=570.000
568.00	.00	Free Outfall		HW & TW below Inv.El.=570.000
568.20	.00	Free Outfall		HW & TW below Inv.El.=570.000
568.40	.00	Free Outfall		HW & TW below Inv.El.=570.000
568.60	.00	Free Outfall		HW & TW below Inv.El.=570.000
568.80	.00	Free Outfall		HW & TW below Inv.El.=570.000
569.00	.00	Free Outfall		HW & TW below Inv.El.=570.000
569.20	.00	Free Outfall		HW & TW below Inv.El.=570.000
569.40	.00	Free Outfall		HW & TW below Inv.El.=570.000
569.60	.00	Free Outfall		HW & TW below Inv.El.=570.000
569.80	.00	Free Outfall		HW & TW below Inv.El.=570.000
570.00	.00	Free Outfall		H=.00; Htw=.00; Qfree=.00;
570.20	1.61	Free Outfall		H=.20; Htw=.00; Qfree=1.61;
570.40	4.55	Free Outfall		H=.40; Htw=.00; Qfree=4.55;
570.60	8.37	Free Outfall		H=.60; Htw=.00; Qfree=8.37;
570.80	12.88	Free Outfall		H=.80; Htw=.00; Qfree=12.88;
571.00	.00	Free Outfall		E = or > E2= 571.000
571.20	.00	Free Outfall		E = or > E2= 571.000
571.40	.00	Free Outfall		E = or > E2= 571.000
571.60	.00	Free Outfall		E = or > E2= 571.000
571.80	.00	Free Outfall		E = or > E2= 571.000
572.00	.00	Free Outfall		E = or > E2= 571.000
572.20	.00	Free Outfall		E = or > E2= 571.000
572.40	.00	Free Outfall		E = or > E2= 571.000
572.60	.00	Free Outfall		E = or > E2= 571.000

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 3 (Weir-Rectangular)  
 -----  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = TW (Pond Outfall)

WS Elev, Device Q		Tail Water		Notes	
WS Elev.	Q	TW Elev	Converge	Computation Messages	
ft	cfs	ft	+/-ft		
572.80	.00	Free	Outfall	E = or > E2=	571.000
573.00	.00	Free	Outfall	E = or > E2=	571.000
573.20	.00	Free	Outfall	E = or > E2=	571.000
573.40	.00	Free	Outfall	E = or > E2=	571.000
573.60	.00	Free	Outfall	E = or > E2=	571.000
573.80	.00	Free	Outfall	E = or > E2=	571.000
574.00	.00	Free	Outfall	E = or > E2=	571.000

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 2 (Orifice-Area)  
 -----  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = TW (Pond Outfall)

WS Elev, Device Q		Tail Water		Notes	
WS Elev.	Q	TW Elev	Converge	Computation Messages	
ft	cfs	ft	+/-ft		
566.00	.00	Free Outfall	E < E1=	568.000	
566.20	.00	Free Outfall	E < E1=	568.000	
566.40	.00	Free Outfall	E < E1=	568.000	
566.60	.00	Free Outfall	E < E1=	568.000	
566.80	.00	Free Outfall	E < E1=	568.000	
567.00	.00	Free Outfall	E < E1=	568.000	
567.20	.00	Free Outfall	E < E1=	568.000	
567.40	.00	Free Outfall	E < E1=	568.000	
567.60	.00	Free Outfall	E < E1=	568.000	
567.80	.00	Free Outfall	E < E1=	568.000	
568.00	24.07	Free Outfall	H =1.00		
568.20	26.36	Free Outfall	H =1.20		
568.40	28.47	Free Outfall	H =1.40		
568.60	30.44	Free Outfall	H =1.60		
568.80	32.29	Free Outfall	H =1.80		
569.00	34.03	Free Outfall	H =2.00		
569.20	35.69	Free Outfall	H =2.20		
569.40	37.28	Free Outfall	H =2.40		
569.60	38.80	Free Outfall	H =2.60		
569.80	40.27	Free Outfall	H =2.80		
570.00	41.68	Free Outfall	H =3.00		
570.20	43.05	Free Outfall	H =3.20		
570.40	44.37	Free Outfall	H =3.40		
570.60	45.66	Free Outfall	H =3.60		
570.80	46.91	Free Outfall	H =3.80		
571.00	48.13	Free Outfall	H =4.00		
571.20	49.32	Free Outfall	H =4.20		
571.40	50.48	Free Outfall	H =4.40		
571.60	51.61	Free Outfall	H =4.60		
571.80	52.72	Free Outfall	H =4.80		
572.00	53.81	Free Outfall	H =5.00		
572.20	54.88	Free Outfall	H =5.20		
572.40	55.92	Free Outfall	H =5.40		
572.60	56.95	Free Outfall	H =5.60		



RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 2 (Orifice-Area)  
 -----  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = TW (Pond Outfall)

WS Elev, Device Q		Tail Water		Notes
WS Elev.	Q	TW Elev	Converge	Computation Messages
ft	cfs	ft	+/-ft	
572.80	57.96	Free	Outfall	H =5.80
573.00	58.95	Free	Outfall	H =6.00
573.20	59.92	Free	Outfall	H =6.20
573.40	60.88	Free	Outfall	H =6.40
573.60	61.82	Free	Outfall	H =6.60
573.80	62.75	Free	Outfall	H =6.80
574.00	63.67	Free	Outfall	H =7.00

File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 1 (Weir-Rectangular)  
 -----  
 Upstream ID = (Pond Water Surface)  
 DNstream ID = TW (Pond Outfall)

WS Elev, Device Q		Tail Water		Notes
WS Elev.	Q	TW Elev	Converge	Computation Messages
ft	cfs	ft	+/-ft	
566.00	.00	Free	Outfall	H=.00; Htw=.00; Qfree=.00;
566.20	.67	Free	Outfall	H=.20; Htw=.00; Qfree=.67;
566.40	1.90	Free	Outfall	H=.40; Htw=.00; Qfree=1.90;
566.60	3.49	Free	Outfall	H=.60; Htw=.00; Qfree=3.49;
566.80	5.37	Free	Outfall	H=.80; Htw=.00; Qfree=5.37;
567.00	7.50	Free	Outfall	H=1.00; Htw=.00; Qfree=7.50;
567.20	9.86	Free	Outfall	H=1.20; Htw=.00; Qfree=9.86;
567.40	12.42	Free	Outfall	H=1.40; Htw=.00; Qfree=12.42;
567.60	15.18	Free	Outfall	H=1.60; Htw=.00; Qfree=15.18;
567.80	18.11	Free	Outfall	H=1.80; Htw=.00; Qfree=18.11;
568.00	.00	Free	Outfall	E = or > E2= 568.000
568.20	.00	Free	Outfall	E = or > E2= 568.000
568.40	.00	Free	Outfall	E = or > E2= 568.000
568.60	.00	Free	Outfall	E = or > E2= 568.000
568.80	.00	Free	Outfall	E = or > E2= 568.000
569.00	.00	Free	Outfall	E = or > E2= 568.000
569.20	.00	Free	Outfall	E = or > E2= 568.000
569.40	.00	Free	Outfall	E = or > E2= 568.000
569.60	.00	Free	Outfall	E = or > E2= 568.000
569.80	.00	Free	Outfall	E = or > E2= 568.000
570.00	.00	Free	Outfall	E = or > E2= 568.000
570.20	.00	Free	Outfall	E = or > E2= 568.000
570.40	.00	Free	Outfall	E = or > E2= 568.000
570.60	.00	Free	Outfall	E = or > E2= 568.000
570.80	.00	Free	Outfall	E = or > E2= 568.000
571.00	.00	Free	Outfall	E = or > E2= 568.000
571.20	.00	Free	Outfall	E = or > E2= 568.000
571.40	.00	Free	Outfall	E = or > E2= 568.000
571.60	.00	Free	Outfall	E = or > E2= 568.000
571.80	.00	Free	Outfall	E = or > E2= 568.000
572.00	.00	Free	Outfall	E = or > E2= 568.000
572.20	.00	Free	Outfall	E = or > E2= 568.000
572.40	.00	Free	Outfall	E = or > E2= 568.000
572.60	.00	Free	Outfall	E = or > E2= 568.000

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 1 (Weir-Rectangular)

Upstream ID = (Pond Water Surface)

DNstream ID = TW (Pond Outfall)

WS Elev, Device Q		Tail Water		Notes	
WS Elev.	Q	TW Elev	Converge	Computation Messages	
ft	cfs	ft	+/-ft		
572.80	.00	Free Outfall		E = or > E2=	568.000
573.00	.00	Free Outfall		E = or > E2=	568.000
573.20	.00	Free Outfall		E = or > E2=	568.000
573.40	.00	Free Outfall		E = or > E2=	568.000
573.60	.00	Free Outfall		E = or > E2=	568.000
573.80	.00	Free Outfall		E = or > E2=	568.000
574.00	.00	Free Outfall		E = or > E2=	568.000

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
566.00	.00	Free	Outfall	1
566.20	.67	Free	Outfall	1
566.40	1.90	Free	Outfall	1
566.60	3.49	Free	Outfall	1
566.80	5.37	Free	Outfall	1
567.00	7.50	Free	Outfall	1
567.20	9.86	Free	Outfall	1
567.40	12.42	Free	Outfall	1
567.60	15.18	Free	Outfall	1
567.80	18.11	Free	Outfall	1
568.00	24.07	Free	Outfall	2
568.20	26.36	Free	Outfall	2
568.40	28.47	Free	Outfall	2
568.60	30.44	Free	Outfall	2
568.80	32.29	Free	Outfall	2
569.00	34.03	Free	Outfall	2
569.20	35.69	Free	Outfall	2
569.40	37.28	Free	Outfall	2
569.60	38.80	Free	Outfall	2
569.80	40.27	Free	Outfall	2
570.00	41.68	Free	Outfall	3 +2
570.20	44.66	Free	Outfall	3 +2
570.40	48.93	Free	Outfall	3 +2
570.60	54.03	Free	Outfall	3 +2
570.80	59.79	Free	Outfall	3 +2
571.00	68.55	Free	Outfall	5 +4 +2
571.20	79.92	Free	Outfall	5 +4 +2
571.40	96.09	Free	Outfall	5 +4 +2
571.60	115.36	Free	Outfall	5 +4 +2
571.80	137.17	Free	Outfall	5 +4 +2
572.00	161.18	Free	Outfall	5 +4 +2
572.20	187.18	Free	Outfall	5 +4 +2
572.40	215.00	Free	Outfall	5 +4 +2
572.60	244.51	Free	Outfall	5 +4 +2
572.80	275.63	Free	Outfall	5 +4 +2
573.00	308.25	Free	Outfall	5 +4 +2
573.20	342.32	Free	Outfall	5 +4 +2
573.40	377.76	Free	Outfall	5 +4 +2

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
573.60	392.06	Free Outfall	5 +4 +2	
573.80	405.15	Free Outfall	5 +4 +2	
574.00	417.81	Free Outfall	5 +4 +2	

Name.... BASIN A

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

LEVEL POOL ROUTING DATA

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Inflow HYG file = NONE STORED - BASIN A IN 2  
 Outflow HYG file = NONE STORED - BASIN A OUT 2

Pond Node Data = BASIN A  
 Pond Volume Data = BASIN A  
 Pond Outlet Data = Outlet A

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 601.00 ft  
 Starting Volume = 0 cu.ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infiltr. cfs	Q Total cfs	2S/t + O cfs
601.00	.00	0	0	.00	.00	.00
601.20	.79	20	306	.00	.79	1.02
601.40	2.22	163	1225	.00	2.22	4.03
601.60	4.02	551	2756	.00	4.02	10.14
601.80	6.10	1307	4900	.00	6.10	20.61
602.00	10.21	2552	7656	.00	10.21	38.57
602.20	12.08	4376	10670	.00	12.08	60.71
602.40	13.70	6854	14183	.00	13.70	89.85
602.60	15.14	10082	18194	.00	15.14	127.17
602.80	16.46	14164	22706	.00	16.46	173.84
603.00	17.68	19198	27716	.00	17.68	231.00
603.20	18.83	24781	28103	.00	18.83	294.17
603.40	19.90	30440	28492	.00	19.90	358.13
603.60	20.92	36177	28885	.00	20.92	422.89
603.80	21.90	41993	29279	.00	21.90	488.49
604.00	22.83	47869	29677	.00	22.83	554.93
604.20	23.73	54038	31813	.00	23.73	624.14
604.40	24.59	60620	34024	.00	24.59	698.15
604.60	25.42	67651	36308	.00	25.42	777.10
604.75	26.03	73229	38070	.00	26.03	839.69

LEVEL POOL ROUTING DATA

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Inflow HYG file = NONE STORED - BASIN A IN 2  
 Outflow HYG file = NONE STORED - BASIN A OUT 2

Pond Node Data = BASIN A  
 Pond Volume Data = BASIN A  
 Pond Outlet Data = Outlet A

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 601.00 ft  
 Starting Volume = 0 cu.ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infiltr. cfs	Q Total cfs	2S/t + O cfs
604.80	26.31	75147	38667	.00	26.31	861.28
605.00	27.93	83123	41100	.00	27.93	951.52
605.20	29.96	91399	41659	.00	29.96	1045.51
605.40	32.24	99788	42221	.00	32.24	1141.00
605.60	34.71	108287	42787	.00	34.71	1237.90
605.80	37.33	116901	43356	.00	37.33	1336.24
606.00	40.06	125630	43930	.00	40.06	1435.96
606.20	42.88	134486	44624	.00	42.88	1537.17
606.40	45.76	143482	45324	.00	45.76	1640.00
606.60	48.69	152614	46029	.00	48.69	1744.40
606.75	57.03	159560	46561	.00	57.03	1829.91
606.80	58.21	161892	46739	.00	58.21	1857.01
607.00	66.57	171312	47455	.00	66.57	1970.03
607.20	77.58	180862	48045	.00	77.58	2087.16
607.40	89.47	190531	48638	.00	89.47	2206.48
607.60	104.19	200316	49234	.00	104.19	2329.92
607.80	105.39	210223	49835	.00	105.39	2441.20
608.00	106.57	220251	50439	.00	106.57	2553.81
608.20	107.75	230399	51040	.00	107.75	2667.75
608.40	108.91	240669	51645	.00	108.91	2783.01

Name.... BASIN A

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

LEVEL POOL ROUTING DATA

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Inflow HYG file = NONE STORED - BASIN A IN 2  
 Outflow HYG file = NONE STORED - BASIN A OUT 2

Pond Node Data = BASIN A  
 Pond Volume Data = BASIN A  
 Pond Outlet Data = Outlet A

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 601.00 ft  
 Starting Volume = 0 cu.ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
608.60	110.05	251056	52253	.00	110.05	2899.56
608.80	111.19	261568	52865	.00	111.19	3017.50
609.00	112.31	272204	53481	.00	112.31	3136.79



SUMMARY FOR HYDROGRAPH ADDITION  
 at Node: BASIN A IN

HYG Directory: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\

```

=====
Upstream Link ID  Upstream Node ID  HYG file      HYG ID        HYG tag
-----
ADDLINK IO        SUBAREA A          SUBAREA A     2
=====
  
```

```

INFLOWS TO:  BASIN A      IN
-----
HYG file      HYG ID          HYG tag        Volume      Peak Time    Peak Flow
              HYG ID          HYG tag        cu.ft       hrs          cfs
-----
              SUBAREA A      2              203543      12.0500     67.98
  
```

```

TOTAL FLOW INTO:  BASIN A      IN
-----
HYG file      HYG ID          HYG tag        Volume      Peak Time    Peak Flow
              HYG ID          HYG tag        cu.ft       hrs          cfs
-----
              BASIN A        IN  2              203543      12.0500     67.98
  
```

TOTAL NODE INFLOW...  
 HYG file =  
 HYG ID = BASIN A IN  
 HYG Tag = 2  
 -----  
 Peak Discharge = 67.98 cfs  
 Time to Peak = 12.0500 hrs  
 HYG Volume = 203543 cu.ft  
 -----

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

Time hrs					
7.9500	.00	.00	.01	.01	.02
8.2000	.03	.04	.05	.06	.07
8.4500	.08	.09	.10	.12	.13
8.7000	.15	.16	.18	.19	.21
8.9500	.23	.25	.27	.29	.30
9.2000	.32	.34	.36	.37	.39
9.4500	.40	.42	.43	.45	.47
9.7000	.49	.52	.54	.57	.60
9.9500	.63	.66	.70	.73	.77
10.2000	.81	.86	.90	.95	1.00
10.4500	1.06	1.11	1.17	1.23	1.30
10.7000	1.37	1.45	1.54	1.63	1.72
10.9500	1.82	1.93	2.04	2.16	2.30
11.2000	2.47	2.66	2.87	3.10	3.35
11.4500	3.60	3.89	4.36	5.36	7.18
11.7000	10.20	14.64	20.70	29.23	41.16
11.9500	54.80	65.20	67.98	62.13	49.99
12.2000	37.64	28.24	22.06	18.12	15.29
12.4500	13.28	11.67	10.38	9.29	8.41
12.7000	7.74	7.24	6.87	6.59	6.33
12.9500	6.10	5.88	5.66	5.47	5.28
13.2000	5.12	4.98	4.85	4.73	4.61
13.4500	4.49	4.38	4.27	4.16	4.06
13.7000	3.96	3.87	3.78	3.69	3.61
13.9500	3.53	3.45	3.37	3.29	3.23
14.2000	3.17	3.13	3.09	3.05	3.02
14.4500	2.99	2.96	2.93	2.90	2.88
14.7000	2.85	2.82	2.79	2.76	2.74
14.9500	2.71	2.68	2.65	2.62	2.59
15.2000	2.57	2.54	2.51	2.48	2.45
15.4500	2.42	2.39	2.36	2.34	2.31

HYDROGRAPH ORDINATES (cfs)  
 Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

---

Time hrs					
15.7000	2.28	2.25	2.22	2.19	2.16
15.9500	2.13	2.10	2.07	2.05	2.02
16.2000	2.00	1.99	1.97	1.96	1.95
16.4500	1.94	1.93	1.92	1.91	1.90
16.7000	1.89	1.88	1.87	1.86	1.84
16.9500	1.83	1.82	1.81	1.80	1.79
17.2000	1.78	1.77	1.76	1.75	1.74
17.4500	1.73	1.72	1.71	1.70	1.69
17.7000	1.68	1.67	1.66	1.65	1.64
17.9500	1.63	1.62	1.61	1.60	1.59
18.2000	1.58	1.56	1.55	1.54	1.53
18.4500	1.52	1.51	1.50	1.49	1.48
18.7000	1.47	1.46	1.45	1.44	1.43
18.9500	1.42	1.41	1.40	1.38	1.37
19.2000	1.36	1.35	1.34	1.33	1.32
19.4500	1.31	1.30	1.29	1.28	1.27
19.7000	1.26	1.25	1.23	1.22	1.21
19.9500	1.20	1.19	1.18	1.17	1.16
20.2000	1.16	1.15	1.15	1.14	1.14
20.4500	1.14	1.14	1.14	1.13	1.13
20.7000	1.13	1.13	1.13	1.12	1.12
20.9500	1.12	1.12	1.11	1.11	1.11
21.2000	1.11	1.11	1.10	1.10	1.10
21.4500	1.10	1.10	1.09	1.09	1.09
21.7000	1.09	1.09	1.08	1.08	1.08
21.9500	1.08	1.08	1.07	1.07	1.07
22.2000	1.07	1.07	1.06	1.06	1.06
22.4500	1.06	1.06	1.05	1.05	1.05
22.7000	1.05	1.05	1.04	1.04	1.04
22.9500	1.04	1.04	1.03	1.03	1.03
23.2000	1.03	1.02	1.02	1.02	1.02
23.4500	1.02	1.01	1.01	1.01	1.01
23.7000	1.01	1.00	1.00	1.00	1.00
23.9500	1.00	.99	.95	.82	.61
24.2000	.40	.24	.15	.09	.05
24.4500	.03	.02	.01	.01	.00
24.7000	.00	.00			

Type... Node: Pond Inflow Summary Page 13.07  
 Name... BASIN A IN Event: 10 yr  
 File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW  
 Storm... TypeII 24hr Tag: 10

SUMMARY FOR HYDROGRAPH ADDITION  
 at Node: BASIN A IN

HYG Directory: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\

```

=====
Upstream Link ID  Upstream Node ID  HYG file      HYG ID      HYG tag
-----
ADDLINK 10        SUBAREA A          SUBAREA A      10
=====
  
```

```

INFLOWS TO:  BASIN A      IN
-----
HYG file      HYG ID      HYG tag      Volume      Peak Time      Peak Flow
              cu.ft       hrs          cfs
-----
              SUBAREA A      10          347614      12.0500      114.87
  
```

```

TOTAL FLOW INTO:  BASIN A      IN
-----
HYG file      HYG ID      HYG tag      Volume      Peak Time      Peak Flow
              cu.ft       hrs          cfs
-----
              BASIN A      IN  10          347614      12.0500      114.87
  
```

TOTAL NODE INFLOW...  
 HYG file =  
 HYG ID = BASIN A IN  
 HYG Tag = 10  
 -----  
 Peak Discharge = 114.87 cfs  
 Time to Peak = 12.0500 hrs  
 HYG Volume = 347614 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)  
 Output Time increment = .0500 hrs

Time hrs	Time on left represents time for first value in each row.				
6.1500	.00	.00	.00	.01	.02
6.4000	.03	.04	.05	.06	.08
6.6500	.09	.10	.12	.13	.14
6.9000	.16	.17	.18	.20	.21
7.1500	.23	.24	.25	.27	.28
7.4000	.30	.31	.33	.34	.36
7.6500	.37	.39	.40	.42	.43
7.9000	.45	.47	.48	.50	.52
8.1500	.54	.56	.58	.61	.63
8.4000	.66	.69	.72	.75	.79
8.6500	.82	.85	.89	.93	.96
8.9000	1.00	1.04	1.08	1.12	1.16
9.1500	1.20	1.23	1.26	1.29	1.31
9.4000	1.34	1.36	1.39	1.41	1.44
9.6500	1.47	1.51	1.56	1.62	1.67
9.9000	1.74	1.80	1.87	1.94	2.01
10.1500	2.09	2.17	2.26	2.36	2.45
10.4000	2.56	2.66	2.77	2.88	3.01
10.6500	3.14	3.28	3.44	3.60	3.78
10.9000	3.96	4.15	4.35	4.56	4.79
11.1500	5.06	5.38	5.74	6.14	6.57
11.4000	7.03	7.50	8.03	8.91	10.81
11.6500	14.27	19.93	28.06	38.85	53.54
11.9000	73.52	95.67	111.77	114.87	103.88
12.1500	83.01	62.16	46.41	36.06	29.49
12.4000	24.77	21.42	18.77	16.64	14.87
12.6500	13.44	12.34	11.54	10.94	10.47
12.9000	10.06	9.68	9.33	8.98	8.66
13.1500	8.37	8.11	7.88	7.67	7.47
13.4000	7.28	7.10	6.91	6.73	6.56
13.6500	6.39	6.24	6.09	5.95	5.82

Type.... Node: Pond Inflow Summary  
 Name.... BASIN A IN  
 File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW  
 Storm... TypeII 24hr Tag: 10

Page 13.09  
 Event: 10 yr

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

Time hrs					
13.9000	5.68	5.55	5.42	5.29	5.18
14.1500	5.07	4.98	4.91	4.85	4.79
14.4000	4.74	4.69	4.64	4.60	4.55
14.6500	4.51	4.46	4.42	4.37	4.33
14.9000	4.28	4.24	4.19	4.15	4.10
15.1500	4.06	4.01	3.96	3.92	3.87
15.4000	3.83	3.78	3.74	3.69	3.65
15.6500	3.60	3.55	3.51	3.46	3.42
15.9000	3.37	3.32	3.28	3.23	3.19
16.1500	3.15	3.12	3.09	3.07	3.05
16.4000	3.03	3.02	3.00	2.98	2.97
16.6500	2.95	2.93	2.92	2.90	2.88
16.9000	2.87	2.85	2.84	2.82	2.80
17.1500	2.79	2.77	2.75	2.74	2.72
17.4000	2.71	2.69	2.67	2.66	2.64
17.6500	2.62	2.61	2.59	2.57	2.56
17.9000	2.54	2.52	2.51	2.49	2.47
18.1500	2.46	2.44	2.43	2.41	2.39
18.4000	2.38	2.36	2.34	2.33	2.31
18.6500	2.29	2.28	2.26	2.24	2.23
18.9000	2.21	2.19	2.18	2.16	2.14
19.1500	2.13	2.11	2.09	2.08	2.06
19.4000	2.04	2.03	2.01	1.99	1.98
19.6500	1.96	1.94	1.92	1.91	1.89
19.9000	1.87	1.86	1.84	1.82	1.81
20.1500	1.80	1.79	1.78	1.77	1.77
20.4000	1.76	1.76	1.76	1.75	1.75
20.6500	1.75	1.74	1.74	1.74	1.73
20.9000	1.73	1.73	1.72	1.72	1.72
21.1500	1.71	1.71	1.71	1.70	1.70
21.4000	1.70	1.69	1.69	1.69	1.68
21.6500	1.68	1.68	1.67	1.67	1.67
21.9000	1.66	1.66	1.66	1.65	1.65
22.1500	1.65	1.65	1.64	1.64	1.64
22.4000	1.63	1.63	1.63	1.62	1.62
22.6500	1.62	1.61	1.61	1.61	1.60
22.9000	1.60	1.60	1.59	1.59	1.59
23.1500	1.58	1.58	1.58	1.57	1.57
23.4000	1.57	1.56	1.56	1.56	1.55
23.6500	1.55	1.55	1.54	1.54	1.54
23.9000	1.53	1.53	1.52	1.46	1.26
24.1500	.94	.62	.37	.23	.14
24.4000	.08	.05	.03	.02	.01
24.6500	.01	.00	.00		

SUMMARY FOR HYDROGRAPH ADDITION  
 at Node: BASIN A IN

HYG Directory: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\

```

=====
Upstream Link ID  Upstream Node ID  HYG file      HYG ID        HYG tag
-----
ADDLINK 10        SUBAREA A          SUBAREA A      100
=====
  
```

```

INFLOWS TO:  BASIN A      IN
-----
HYG file      HYG ID      HYG tag      Volume      Peak Time    Peak Flow
              cu.ft       hrs          cfs
-----
              SUBAREA A    100          571322      12.0500     184.96
  
```

```

TOTAL FLOW INTO:  BASIN A      IN
-----
HYG file      HYG ID      HYG tag      Volume      Peak Time    Peak Flow
              cu.ft       hrs          cfs
-----
              BASIN A      IN  100          571322      12.0500     184.96
  
```

TOTAL NODE INFLOW...

HYG file =  
 HYG ID = BASIN A IN  
 HYG Tag = 100

-----  
 Peak Discharge = 184.96 cfs  
 Time to Peak = 12.0500 hrs  
 HYG Volume = 571322 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time |  
 hrs | Time on left represents time for first value in each row.

Time (hrs)	0.00	0.05	0.10	0.15	0.20
4.6500	.00	.00	.01	.01	.03
4.9000	.04	.06	.07	.09	.11
5.1500	.13	.15	.17	.19	.21
5.4000	.23	.25	.27	.29	.31
5.6500	.33	.35	.37	.39	.42
5.9000	.44	.46	.48	.50	.53
6.1500	.55	.57	.60	.62	.64
6.4000	.67	.69	.71	.74	.76
6.6500	.78	.81	.83	.86	.88
6.9000	.91	.93	.96	.98	1.01
7.1500	1.03	1.06	1.08	1.11	1.14
7.4000	1.16	1.19	1.22	1.24	1.27
7.6500	1.29	1.32	1.35	1.38	1.40
7.9000	1.43	1.46	1.48	1.51	1.54
8.1500	1.58	1.62	1.67	1.72	1.78
8.4000	1.84	1.90	1.96	2.03	2.09
8.6500	2.16	2.23	2.30	2.37	2.44
8.9000	2.51	2.59	2.66	2.74	2.81
9.1500	2.87	2.93	2.98	3.02	3.06
9.4000	3.10	3.13	3.17	3.20	3.24
9.6500	3.30	3.37	3.46	3.56	3.67
9.9000	3.78	3.90	4.02	4.15	4.28
10.1500	4.42	4.57	4.74	4.91	5.09
10.4000	5.28	5.47	5.66	5.86	6.07
10.6500	6.31	6.56	6.84	7.14	7.45
10.9000	7.77	8.10	8.44	8.80	9.20
11.1500	9.67	10.23	10.86	11.56	12.30
11.4000	13.08	13.89	14.78	16.31	19.62
11.6500	25.66	35.45	49.29	67.27	91.22
11.9000	123.09	157.66	181.80	184.96	166.00
12.1500	132.00	98.46	73.26	56.71	46.21



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

Time hrs					
12.4000	38.68	33.36	29.16	25.80	23.02
12.6500	20.78	19.06	17.81	16.87	16.14
12.9000	15.50	14.91	14.35	13.82	13.32
13.1500	12.87	12.47	12.10	11.78	11.47
13.4000	11.18	10.89	10.60	10.32	10.06
13.6500	9.80	9.56	9.33	9.11	8.90
13.9000	8.70	8.50	8.29	8.10	7.92
14.1500	7.75	7.62	7.50	7.40	7.32
14.4000	7.24	7.16	7.09	7.02	6.95
14.6500	6.88	6.81	6.74	6.67	6.60
14.9000	6.53	6.46	6.39	6.32	6.25
15.1500	6.18	6.11	6.04	5.97	5.90
15.4000	5.83	5.76	5.69	5.62	5.55
15.6500	5.48	5.41	5.34	5.27	5.19
15.9000	5.12	5.05	4.98	4.91	4.85
16.1500	4.79	4.74	4.70	4.67	4.64
16.4000	4.61	4.58	4.56	4.53	4.50
16.6500	4.48	4.45	4.43	4.40	4.38
16.9000	4.35	4.33	4.30	4.28	4.25
17.1500	4.23	4.20	4.18	4.15	4.13
17.4000	4.10	4.08	4.05	4.03	4.00
17.6500	3.98	3.95	3.93	3.90	3.88
17.9000	3.85	3.83	3.80	3.77	3.75
18.1500	3.72	3.70	3.67	3.65	3.62
18.4000	3.60	3.57	3.55	3.52	3.50
18.6500	3.47	3.44	3.42	3.39	3.37
18.9000	3.34	3.32	3.29	3.27	3.24
19.1500	3.22	3.19	3.16	3.14	3.11
19.4000	3.09	3.06	3.04	3.01	2.99
19.6500	2.96	2.94	2.91	2.88	2.86
19.9000	2.83	2.81	2.78	2.76	2.73
20.1500	2.72	2.70	2.69	2.68	2.67
20.4000	2.66	2.66	2.65	2.65	2.64
20.6500	2.64	2.63	2.63	2.62	2.62
20.9000	2.61	2.61	2.60	2.60	2.59
21.1500	2.59	2.58	2.58	2.57	2.57
21.4000	2.56	2.56	2.55	2.55	2.54
21.6500	2.54	2.53	2.53	2.52	2.52
21.9000	2.51	2.51	2.50	2.50	2.49
22.1500	2.49	2.48	2.48	2.47	2.47
22.4000	2.46	2.46	2.45	2.45	2.44
22.6500	2.44	2.43	2.43	2.42	2.42
22.9000	2.41	2.41	2.40	2.40	2.39
23.1500	2.39	2.38	2.38	2.37	2.37
23.4000	2.36	2.36	2.35	2.35	2.34

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time | Time on left represents time for first value in each row.

Time hrs					
23.6500	2.33	2.33	2.33	2.32	2.31
23.9000	2.31	2.31	2.29	2.20	1.89
24.1500	1.41	.93	.56	.34	.21
24.4000	.12	.07	.04	.03	.01
24.6500	.01	.00	.00	.00	

LEVEL POOL ROUTING SUMMARY

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
Inflow HYG file = NONE STORED - BASIN A IN 2  
Outflow HYG file = NONE STORED - BASIN A OUT 2

Pond Node Data = BASIN A  
Pond Volume Data = BASIN A  
Pond Outlet Data = Outlet A

No Infiltration

INITIAL CONDITIONS

-----  
Starting WS Elev = 601.00 ft  
Starting Volume = 0 cu.ft  
Starting Outflow = .00 cfs  
Starting Infiltr. = .00 cfs  
Starting Total Qout = .00 cfs  
Time Increment = .0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

=====  
Peak Inflow = 67.98 cfs at 12.0500 hrs  
Peak Outflow = 23.37 cfs at 12.3000 hrs  
-----  
Peak Elevation = 604.12 ft  
Peak Storage = 51538 cu.ft  
=====

MASS BALANCE (cu.ft)

-----  
+ Initial Vol = 0  
+ HYG Vol IN = 203543  
- Infiltration = 0  
- HYG Vol OUT = 203543  
- Retained Vol = 0  
-----  
Unrouted Vol = - cu.ft (.000% of Inflow Volume)

POND ROUTED TOTAL OUTFLOW HYG...

HYG file =  
 HYG ID = BASIN A OUT  
 HYG Tag = 2

---

Peak Discharge = 23.37 cfs  
 Time to Peak = 12.3000 hrs  
 HYG Volume = 203543 cu.ft

---

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs  
 Time on left represents time for first value in each row.

Time hrs					
7.9500	.00	.00	.00	.01	.02
8.2000	.02	.03	.04	.05	.06
8.4500	.07	.09	.10	.11	.12
8.7000	.14	.15	.17	.19	.20
8.9500	.22	.24	.26	.28	.29
9.2000	.31	.33	.35	.36	.38
9.4500	.40	.41	.43	.44	.46
9.7000	.48	.50	.53	.56	.58
9.9500	.62	.65	.68	.71	.75
10.2000	.79	.83	.88	.93	.98
10.4500	1.03	1.08	1.14	1.20	1.26
10.7000	1.33	1.41	1.49	1.58	1.68
10.9500	1.77	1.87	1.98	2.10	2.23
11.2000	2.39	2.54	2.67	2.86	3.07
11.4500	3.31	3.57	3.90	4.32	5.09
11.7000	6.59	9.26	11.28	13.08	14.98
11.9500	16.78	18.49	20.11	21.50	22.49
12.2000	23.07	23.32	23.37	23.28	23.11
12.4500	22.89	22.60	22.27	21.92	21.54
12.7000	21.14	20.72	20.29	19.86	19.41
12.9500	18.96	18.51	18.04	17.58	17.06
13.2000	16.55	15.93	15.30	14.55	13.78
13.4500	12.80	11.76	10.50	8.12	6.28
13.7000	5.35	4.78	4.40	4.14	3.91
13.9500	3.71	3.58	3.48	3.39	3.31
14.2000	3.25	3.19	3.14	3.10	3.06
14.4500	3.03	3.00	2.97	2.94	2.91
14.7000	2.88	2.85	2.83	2.80	2.77
14.9500	2.74	2.71	2.68	2.66	2.63
15.2000	2.60	2.57	2.54	2.51	2.47
15.4500	2.44	2.41	2.38	2.35	2.32

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

Time hrs					
15.7000	2.29	2.26	2.23	2.20	2.18
15.9500	2.15	2.12	2.09	2.06	2.03
16.2000	2.01	1.99	1.98	1.97	1.95
16.4500	1.94	1.93	1.92	1.91	1.90
16.7000	1.89	1.88	1.87	1.86	1.85
16.9500	1.84	1.83	1.82	1.81	1.80
17.2000	1.79	1.78	1.77	1.76	1.75
17.4500	1.74	1.73	1.72	1.71	1.70
17.7000	1.69	1.67	1.66	1.65	1.64
17.9500	1.63	1.62	1.61	1.60	1.59
18.2000	1.58	1.57	1.56	1.55	1.54
18.4500	1.53	1.52	1.51	1.50	1.49
18.7000	1.48	1.46	1.45	1.44	1.43
18.9500	1.42	1.41	1.40	1.39	1.38
19.2000	1.37	1.36	1.35	1.34	1.33
19.4500	1.32	1.30	1.29	1.28	1.27
19.7000	1.26	1.25	1.24	1.23	1.22
19.9500	1.21	1.20	1.19	1.18	1.17
20.2000	1.16	1.15	1.15	1.15	1.14
20.4500	1.14	1.14	1.14	1.13	1.13
20.7000	1.13	1.13	1.13	1.12	1.12
20.9500	1.12	1.12	1.12	1.11	1.11
21.2000	1.11	1.11	1.11	1.10	1.10
21.4500	1.10	1.10	1.10	1.09	1.09
21.7000	1.09	1.09	1.09	1.08	1.08
21.9500	1.08	1.08	1.08	1.07	1.07
22.2000	1.07	1.07	1.06	1.06	1.06
22.4500	1.06	1.06	1.05	1.05	1.05
22.7000	1.05	1.05	1.04	1.04	1.04
22.9500	1.04	1.04	1.03	1.03	1.03
23.2000	1.03	1.03	1.02	1.02	1.02
23.4500	1.02	1.02	1.01	1.01	1.01
23.7000	1.01	1.00	1.00	1.00	1.00
23.9500	1.00	.99	.97	.88	.71
24.2000	.51	.32	.19	.12	.07
24.4500	.04	.03	.02	.01	.00
24.7000	.00	.00			

LEVEL POOL ROUTING SUMMARY

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
Inflow HYG file = NONE STORED - BASIN A IN 10  
Outflow HYG file = NONE STORED - BASIN A OUT 10

Pond Node Data = BASIN A  
Pond Volume Data = BASIN A  
Pond Outlet Data = Outlet A

No Infiltration

INITIAL CONDITIONS

-----  
Starting WS Elev = 601.00 ft  
Starting Volume = 0 cu.ft  
Starting Outflow = .00 cfs  
Starting Infiltr. = .00 cfs  
Starting Total Qout = .00 cfs  
Time Increment = .0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

=====  
Peak Inflow = 114.87 cfs at 12.0500 hrs  
Peak Outflow = 33.74 cfs at 12.3000 hrs  
-----  
Peak Elevation = 605.52 ft  
Peak Storage = 104921 cu.ft  
=====

MASS BALANCE (cu.ft)

-----  
+ Initial Vol = 0  
+ HYG Vol IN = 347614  
- Infiltration = 0  
- HYG Vol OUT = 347614  
- Retained Vol = 0  
-----  
Unrouted Vol = - cu.ft (.000% of Inflow Volume)

POND ROUTED TOTAL OUTFLOW HYG...  
 HYG file =  
 HYG ID = BASIN A OUT  
 HYG Tag = 10  
 -----  
 Peak Discharge = 33.74 cfs  
 Time to Peak = 12.3000 hrs  
 HYG Volume = 347614 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)  
 Output Time increment = .0500 hrs

Time |  
 hrs | Time on left represents time for first value in each row.

Time hrs	0.00	0.05	0.10	0.15	0.20
6.1500	.00	.00	.00	.01	.01
6.4000	.02	.03	.05	.06	.07
6.6500	.08	.10	.11	.12	.14
6.9000	.15	.16	.18	.19	.20
7.1500	.22	.23	.25	.26	.28
7.4000	.29	.31	.32	.34	.35
7.6500	.37	.38	.40	.41	.43
7.9000	.44	.46	.47	.49	.51
8.1500	.53	.55	.57	.59	.62
8.4000	.65	.68	.71	.74	.77
8.6500	.80	.84	.87	.91	.94
8.9000	.98	1.02	1.06	1.10	1.14
9.1500	1.18	1.21	1.24	1.27	1.30
9.4000	1.33	1.35	1.37	1.40	1.42
9.6500	1.46	1.49	1.54	1.59	1.64
9.9000	1.71	1.77	1.83	1.90	1.97
10.1500	2.05	2.13	2.22	2.31	2.40
10.4000	2.50	2.57	2.66	2.76	2.87
10.6500	2.99	3.12	3.26	3.41	3.58
10.9000	3.75	3.93	4.09	4.23	4.41
11.1500	4.61	4.85	5.13	5.45	5.81
11.4000	6.22	6.70	7.19	7.77	8.73
11.6500	10.31	11.46	13.06	14.83	16.64
11.9000	18.49	20.69	23.08	25.18	27.42
12.1500	30.18	32.21	33.34	33.74	33.69
12.4000	33.35	32.83	32.18	31.49	30.74
12.6500	29.95	29.21	28.47	27.76	27.15
12.9000	26.54	26.04	25.72	25.40	25.05
13.1500	24.70	24.32	23.94	23.55	23.13
13.4000	22.72	22.28	21.85	21.40	20.97
13.6500	20.51	20.06	19.61	19.15	18.69

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

Time hrs					
13.9000	18.23	17.77	17.26	16.75	16.19
14.1500	15.57	14.91	14.14	13.30	12.36
14.4000	11.22	9.97	7.54	6.20	5.54
14.6500	5.14	4.88	4.70	4.58	4.49
14.9000	4.42	4.35	4.30	4.25	4.20
15.1500	4.15	4.10	4.06	4.01	3.94
15.4000	3.89	3.84	3.79	3.75	3.70
15.6500	3.65	3.61	3.56	3.52	3.47
15.9000	3.42	3.38	3.33	3.29	3.24
16.1500	3.20	3.16	3.13	3.10	3.08
16.4000	3.06	3.04	3.02	3.00	2.99
16.6500	2.97	2.95	2.94	2.92	2.90
16.9000	2.89	2.87	2.86	2.84	2.82
17.1500	2.81	2.79	2.77	2.76	2.74
17.4000	2.72	2.71	2.69	2.68	2.66
17.6500	2.64	2.63	2.61	2.59	2.58
17.9000	2.56	2.54	2.53	2.51	2.49
18.1500	2.47	2.45	2.43	2.42	2.40
18.4000	2.38	2.37	2.35	2.33	2.32
18.6500	2.30	2.28	2.27	2.25	2.23
18.9000	2.22	2.20	2.18	2.17	2.15
19.1500	2.13	2.12	2.10	2.08	2.07
19.4000	2.05	2.03	2.02	2.00	1.98
19.6500	1.97	1.95	1.93	1.92	1.90
19.9000	1.88	1.87	1.85	1.83	1.82
20.1500	1.80	1.79	1.78	1.78	1.77
20.4000	1.77	1.76	1.76	1.75	1.75
20.6500	1.75	1.74	1.74	1.74	1.73
20.9000	1.73	1.73	1.72	1.72	1.72
21.1500	1.71	1.71	1.71	1.70	1.70
21.4000	1.70	1.70	1.69	1.69	1.69
21.6500	1.68	1.68	1.68	1.67	1.67
21.9000	1.67	1.66	1.66	1.66	1.65
22.1500	1.65	1.65	1.64	1.64	1.64
22.4000	1.63	1.63	1.63	1.62	1.62
22.6500	1.62	1.61	1.61	1.61	1.60
22.9000	1.60	1.60	1.59	1.59	1.59
23.1500	1.58	1.58	1.58	1.57	1.57
23.4000	1.57	1.56	1.56	1.56	1.56
23.6500	1.55	1.55	1.54	1.54	1.54
23.9000	1.53	1.53	1.53	1.49	1.36
24.1500	1.10	.78	.49	.30	.18
24.4000	.11	.07	.04	.02	.01
24.6500	.01	.00	.00		



LEVEL POOL ROUTING SUMMARY

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Inflow HYG file = NONE STORED - BASIN A IN 100  
 Outflow HYG file = NONE STORED - BASIN A OUT 100

Pond Node Data = BASIN A  
 Pond Volume Data = BASIN A  
 Pond Outlet Data = Outlet A

No Infiltration

INITIAL CONDITIONS

```

-----
Starting WS Elev = 601.00 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout = .00 cfs
Time Increment = .0500 hrs
  
```

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

```

=====
Peak Inflow = 184.96 cfs at 12.0500 hrs
Peak Outflow = 71.04 cfs at 12.2500 hrs
-----
Peak Elevation = 607.08 ft
Peak Storage = 175176 cu.ft
=====
  
```

MASS BALANCE (cu.ft)

```

-----
+ Initial Vol = 0
+ HYG Vol IN = 571322
- Infiltration = 0
- HYG Vol OUT = 571322
- Retained Vol = 0
-----
Unrouted Vol = - cu.ft (.000% of Inflow Volume)
  
```

POND ROUTED TOTAL OUTFLOW HYG...  
 HYG file =  
 HYG ID = BASIN A OUT  
 HYG Tag = 100  
 -----  
 Peak Discharge = 71.04 cfs  
 Time to Peak = 12.2500 hrs  
 HYG Volume = 571322 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs					
4.6500	.00	.00	.00	.01	.02
4.9000	.03	.05	.07	.08	.10
5.1500	.12	.14	.16	.18	.20
5.4000	.22	.24	.26	.28	.30
5.6500	.32	.34	.36	.38	.41
5.9000	.43	.45	.47	.49	.52
6.1500	.54	.56	.58	.61	.63
6.4000	.65	.68	.70	.72	.75
6.6500	.77	.80	.82	.85	.87
6.9000	.90	.92	.95	.97	1.00
7.1500	1.02	1.05	1.07	1.10	1.12
7.4000	1.15	1.18	1.20	1.23	1.25
7.6500	1.28	1.31	1.33	1.36	1.39
7.9000	1.42	1.44	1.47	1.50	1.53
8.1500	1.56	1.60	1.65	1.70	1.75
8.4000	1.81	1.87	1.93	1.99	2.06
8.6500	2.12	2.19	2.26	2.33	2.40
8.9000	2.48	2.53	2.59	2.65	2.72
9.1500	2.79	2.86	2.91	2.97	3.01
9.4000	3.05	3.09	3.12	3.16	3.20
9.6500	3.24	3.30	3.37	3.45	3.55
9.9000	3.65	3.76	3.88	4.00	4.09
10.1500	4.19	4.31	4.45	4.60	4.76
10.4000	4.93	5.10	5.29	5.47	5.67
10.6500	5.88	6.10	6.38	6.66	6.95
10.9000	7.25	7.57	7.89	8.22	8.58
11.1500	8.97	9.42	9.93	10.32	10.59
11.4000	10.95	11.38	11.88	12.35	12.98
11.6500	13.94	15.21	16.67	18.33	20.39
11.9000	22.93	25.62	30.91	38.81	46.42
12.1500	59.09	67.61	71.04	69.90	66.46

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

Time hrs					
12.4000	62.91	58.93	55.23	49.81	47.59
12.6500	46.15	44.68	43.21	41.76	40.36
12.9000	39.01	37.71	36.47	35.28	34.14
13.1500	33.07	32.04	31.10	30.18	29.36
13.4000	28.58	27.84	27.23	26.63	26.11
13.6500	25.78	25.46	25.13	24.79	24.45
13.9000	24.08	23.72	23.32	22.93	22.52
14.1500	22.11	21.69	21.27	20.86	20.43
14.4000	20.02	19.60	19.18	18.76	18.34
14.6500	17.92	17.49	17.04	16.60	16.07
14.9000	15.54	14.98	14.32	13.70	12.88
15.1500	12.14	11.16	10.30	8.49	7.32
15.4000	6.65	6.26	6.02	5.88	5.76
15.6500	5.66	5.57	5.49	5.42	5.34
15.9000	5.27	5.20	5.13	5.06	4.99
16.1500	4.92	4.86	4.80	4.76	4.72
16.4000	4.68	4.65	4.61	4.59	4.56
16.6500	4.53	4.51	4.48	4.45	4.43
16.9000	4.40	4.38	4.35	4.33	4.30
17.1500	4.28	4.25	4.23	4.20	4.18
17.4000	4.15	4.13	4.10	4.08	4.05
17.6500	4.03	4.00	3.96	3.93	3.91
17.9000	3.88	3.86	3.83	3.80	3.78
18.1500	3.75	3.73	3.70	3.68	3.65
18.4000	3.63	3.60	3.58	3.55	3.53
18.6500	3.50	3.48	3.45	3.42	3.40
18.9000	3.37	3.35	3.32	3.30	3.27
19.1500	3.25	3.22	3.20	3.17	3.14
19.4000	3.12	3.09	3.07	3.04	3.02
19.6500	2.99	2.97	2.94	2.92	2.89
19.9000	2.86	2.84	2.81	2.79	2.76
20.1500	2.74	2.72	2.70	2.69	2.68
20.4000	2.67	2.67	2.66	2.65	2.65
20.6500	2.64	2.64	2.63	2.63	2.62
20.9000	2.62	2.61	2.61	2.60	2.60
21.1500	2.59	2.59	2.58	2.58	2.57
21.4000	2.57	2.56	2.56	2.55	2.55
21.6500	2.54	2.54	2.53	2.53	2.52
21.9000	2.52	2.51	2.51	2.50	2.49
22.1500	2.49	2.48	2.48	2.47	2.47
22.4000	2.46	2.46	2.45	2.45	2.44
22.6500	2.44	2.43	2.43	2.42	2.42
22.9000	2.41	2.41	2.40	2.40	2.39
23.1500	2.39	2.38	2.38	2.37	2.37
23.4000	2.36	2.36	2.35	2.35	2.34

Type... Pond Routed HYG (total out) Page 13.23  
 Name... BASIN A OUT Tag: 100 Event: 100 yr  
 File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW  
 Storm... TypeII 24hr Tag: 100

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

---

Time hrs					
23.6500	2.34	2.33	2.33	2.32	2.32
23.9000	2.31	2.31	2.30	2.25	2.05
24.1500	1.65	1.17	.75	.45	.27
24.4000	.17	.10	.06	.04	.02
24.6500	.01	.01	.00	.00	

LEVEL POOL ROUTING DATA

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Inflow HYG file = NONE STORED - BASIN B IN 2  
 Outflow HYG file = NONE STORED - BASIN B OUT 2

Pond Node Data = BASIN B  
 Pond Volume Data = BASIN B  
 Pond Outlet Data = Outlet B1

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 566.00 ft  
 Starting Volume = 0 cu.ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infiltr. cfs	Q Total cfs	2S/t + O cfs
566.00	.00	0	0	.00	.00	.00
566.20	.67	11	163	.00	.67	.79
566.40	1.90	87	653	.00	1.90	2.87
566.60	3.49	294	1469	.00	3.49	6.75
566.80	5.37	697	2612	.00	5.37	13.11
567.00	7.50	1361	4082	.00	7.50	22.62
567.20	9.86	2297	5310	.00	9.86	35.38
567.40	12.42	3495	6699	.00	12.42	51.26
567.60	15.18	4987	8248	.00	15.18	70.59
567.80	18.11	6805	9960	.00	18.11	93.73
568.00	24.07	8982	11832	.00	24.07	123.86
568.20	26.36	11496	13325	.00	26.36	154.10
568.40	28.47	14318	14907	.00	28.47	187.57
568.60	30.44	17464	16577	.00	30.44	224.49
568.80	32.29	20954	18336	.00	32.29	265.11
569.00	34.03	24805	20184	.00	34.03	309.65
569.20	35.69	28882	20585	.00	35.69	356.61
569.40	37.28	33040	20989	.00	37.28	404.39
569.60	38.80	37277	21397	.00	38.80	453.00
569.80	40.27	41598	21810	.00	40.27	502.47

LEVEL POOL ROUTING DATA

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Inflow HYG file = NONE STORED - BASIN B IN 2  
 Outflow HYG file = NONE STORED - BASIN B OUT 2

Pond Node Data = BASIN B  
 Pond Volume Data = BASIN B  
 Pond Outlet Data = Outlet B1

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 566.00 ft  
 Starting Volume = 0 cu.ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
570.00	41.68	46002	22226	.00	41.68	552.81
570.20	44.66	50489	22643	.00	44.66	605.65
570.40	48.93	55060	23064	.00	48.93	660.71
570.60	54.03	59714	23489	.00	54.03	717.52
570.80	59.79	64455	23918	.00	59.79	775.96
571.00	68.55	69282	24351	.00	68.55	838.35
571.20	79.92	74196	24788	.00	79.92	904.33
571.40	96.09	79198	25228	.00	96.09	976.07
571.60	115.36	84287	25673	.00	115.36	1051.89
571.80	137.17	89467	26121	.00	137.17	1131.24
572.00	161.18	94736	26573	.00	161.18	1213.81
572.20	187.18	100101	27072	.00	187.18	1299.41
572.40	215.00	105566	27576	.00	215.00	1387.96
572.60	244.51	111131	28084	.00	244.51	1479.30
572.80	275.63	116799	28598	.00	275.63	1573.40
573.00	308.25	122571	29115	.00	308.25	1670.15
573.20	342.32	128446	29638	.00	342.32	1769.50
573.40	377.76	134427	30165	.00	377.76	1871.40
573.60	392.06	140512	30697	.00	392.06	1953.30
573.80	405.15	146705	31233	.00	405.15	2035.20

Name.... BASIN B

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW

LEVEL POOL ROUTING DATA

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\

Inflow HYG file = NONE STORED - BASIN B IN 2

Outflow HYG file = NONE STORED - BASIN B OUT 2

Pond Node Data = BASIN B

Pond Volume Data = BASIN B

Pond Outlet Data = Outlet B1

No Infiltration

INITIAL CONDITIONS

-----

Starting WS Elev = 566.00 ft  
 Starting Volume = 0 cu.ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infiltr. cfs	Q Total cfs	2S/t + O cfs
574.00	417.81	153006	31774	.00	417.81	2117.87

SUMMARY FOR HYDROGRAPH ADDITION  
 at Node: BASIN B IN

HYG Directory: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\

```

=====
Upstream Link ID  Upstream Node ID  HYG file      HYG ID        HYG tag
-----
ADDLINK 60        SUBAREA B          SUBAREA B      2
CS OUTLET         CS BASIN3         IN              CS OUTLET     2
=====
  
```

```

INFLOWS TO:  BASIN B      IN
-----
HYG file      HYG ID          HYG tag        Volume      Peak Time    Peak Flow
              HYG ID          HYG tag        cu.ft       hrs          cfs
-----
              SUBAREA B      2              241178      12.1500     59.84
              CS OUTLET      2              69475       12.1000     7.93
  
```

```

TOTAL FLOW INTO:  BASIN B      IN
-----
HYG file      HYG ID          HYG tag        Volume      Peak Time    Peak Flow
              HYG ID          HYG tag        cu.ft       hrs          cfs
-----
              BASIN B        IN      2              310653      12.1500     67.77
  
```



TOTAL NODE INFLOW...

HYG file =  
 HYG ID = BASIN B IN  
 HYG Tag = 2

-----  
 Peak Discharge = 67.77 cfs  
 Time to Peak = 12.1500 hrs  
 HYG Volume = 310653 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs  
 Time on left represents time for first value in each row.

Time hrs					
7.2000	.00	.00	.00	.01	.01
7.4500	.01	.02	.03	.04	.04
7.7000	.05	.06	.07	.08	.09
7.9500	.10	.11	.12	.14	.15
8.2000	.17	.18	.20	.21	.23
8.4500	.25	.27	.29	.31	.34
8.7000	.36	.38	.41	.44	.46
8.9500	.49	.52	.55	.58	.61
9.2000	.64	.67	.69	.72	.75
9.4500	.77	.80	.82	.85	.87
9.7000	.90	.94	.97	1.01	1.05
9.9500	1.10	1.15	1.19	1.25	1.30
10.2000	1.36	1.43	1.50	1.57	1.64
10.4500	1.72	1.80	1.89	1.98	2.08
10.7000	2.18	2.30	2.42	2.54	2.68
10.9500	2.82	2.97	3.13	3.31	3.51
11.2000	3.74	3.97	4.24	4.53	4.86
11.4500	5.20	5.58	6.19	7.25	8.93
11.7000	11.27	14.13	18.05	23.42	31.08
11.9500	40.34	50.10	58.91	65.26	67.77
12.2000	65.90	61.36	55.26	48.65	42.36
12.4500	37.07	32.88	29.41	26.50	24.02
12.7000	21.90	20.16	18.70	17.46	16.40
12.9500	15.49	14.69	14.00	13.36	12.79
13.2000	12.24	11.72	11.21	10.72	10.24
13.4500	9.78	9.15	8.28	7.44	6.81
13.7000	6.41	6.16	5.97	5.82	5.67
13.9500	5.54	5.41	5.28	5.16	5.05
14.2000	4.95	4.86	4.78	4.71	4.64
14.4500	4.58	4.52	4.47	4.42	4.37
14.7000	4.32	4.28	4.23	4.19	4.15

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time | | | | | |  
hrs					
 Time on left represents time for first value in each row.

14.9500	4.10	4.06	4.02	3.97	3.93
15.2000	3.89	3.85	3.80	3.76	3.72
15.4500	3.68	3.63	3.59	3.55	3.50
15.7000	3.46	3.42	3.37	3.33	3.29
15.9500	3.25	3.20	3.16	3.12	3.08
16.2000	3.05	3.02	2.99	2.96	2.94
16.4500	2.92	2.90	2.88	2.86	2.84
16.7000	2.83	2.81	2.79	2.78	2.76
16.9500	2.75	2.73	2.71	2.70	2.68
17.2000	2.67	2.65	2.64	2.62	2.61
17.4500	2.59	2.58	2.56	2.54	2.53
17.7000	2.51	2.50	2.48	2.47	2.45
17.9500	2.44	2.42	2.41	2.39	2.37
18.2000	2.36	2.34	2.33	2.31	2.30
18.4500	2.28	2.27	2.25	2.23	2.22
18.7000	2.20	2.19	2.17	2.16	2.14
18.9500	2.12	2.11	2.09	2.08	2.06
19.2000	2.05	2.03	2.01	2.00	1.98
19.4500	1.97	1.95	1.93	1.92	1.90
19.7000	1.89	1.87	1.85	1.84	1.82
19.9500	1.81	1.79	1.78	1.76	1.75
20.2000	1.74	1.73	1.72	1.71	1.70
20.4500	1.70	1.69	1.69	1.68	1.68
20.7000	1.67	1.67	1.67	1.66	1.66
20.9500	1.66	1.65	1.65	1.65	1.64
21.2000	1.64	1.64	1.63	1.63	1.63
21.4500	1.63	1.62	1.62	1.62	1.61
21.7000	1.61	1.61	1.60	1.60	1.60
21.9500	1.60	1.59	1.59	1.59	1.58
22.2000	1.58	1.58	1.57	1.57	1.57
22.4500	1.56	1.56	1.56	1.56	1.55
22.7000	1.55	1.55	1.54	1.54	1.54
22.9500	1.53	1.53	1.53	1.52	1.52
23.2000	1.52	1.52	1.51	1.51	1.51
23.4500	1.50	1.50	1.50	1.49	1.49
23.7000	1.49	1.48	1.48	1.48	1.48
23.9500	1.47	1.47	1.40	1.23	1.05
24.2000	.91	.77	.63	.50	.38
24.4500	.29	.22	.17	.13	.10
24.7000	.07	.06	.04	.03	.02
24.9500	.02	.01	.01	.01	.01
25.2000	.00	.00	.00	.00	.00

SUMMARY FOR HYDROGRAPH ADDITION  
 at Node: BASIN B IN

HYG Directory: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\

```

=====
Upstream Link ID  Upstream Node ID  HYG file      HYG ID        HYG tag
-----
ADDLINK 60        SUBAREA B          SUBAREA B      10
CS OUTLET         CS BASIN3 IN      CS OUTLET      10
=====
  
```

```

INFLOWS TO:  BASIN B      IN
-----
HYG file      HYG ID        HYG tag      Volume      Peak Time    Peak Flow
              HYG ID        HYG tag      cu.ft       hrs          cfs
-----
              SUBAREA B     10           402850      12.1500     99.44
              CS OUTLET     10           118654      12.1000     18.73
  
```

```

TOTAL FLOW INTO:  BASIN B      IN
-----
HYG file      HYG ID        HYG tag      Volume      Peak Time    Peak Flow
              HYG ID        HYG tag      cu.ft       hrs          cfs
-----
              BASIN B      IN  10           521504      12.1500     115.29
  
```

TOTAL NODE INFLOW...

HYG file =  
 HYG ID = BASIN B IN  
 HYG Tag = 10

-----  
 Peak Discharge = 115.29 cfs  
 Time to Peak = 12.1500 hrs  
 HYG Volume = 521504 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs  
 Time on left represents time for first value in each row.

Time hrs					
5.5500	.00	.00	.00	.01	.01
5.8000	.02	.03	.04	.05	.06
6.0500	.07	.08	.10	.11	.13
6.3000	.15	.16	.18	.20	.22
6.5500	.24	.26	.28	.30	.32
6.8000	.34	.36	.39	.41	.43
7.0500	.45	.47	.49	.51	.54
7.3000	.56	.58	.60	.63	.65
7.5500	.67	.69	.72	.74	.76
7.8000	.79	.81	.83	.86	.88
8.0500	.91	.93	.96	.99	1.02
8.3000	1.06	1.10	1.14	1.18	1.23
8.5500	1.27	1.32	1.37	1.42	1.48
8.8000	1.53	1.59	1.65	1.71	1.77
9.0500	1.83	1.89	1.94	2.00	2.05
9.3000	2.10	2.14	2.19	2.23	2.27
9.5500	2.31	2.35	2.40	2.45	2.51
9.8000	2.58	2.66	2.74	2.82	2.91
10.0500	3.01	3.11	3.22	3.34	3.47
10.3000	3.60	3.74	3.88	4.03	4.18
10.5500	4.34	4.51	4.69	4.89	5.10
10.8000	5.32	5.56	5.81	6.07	6.34
11.0500	6.63	6.95	7.30	7.70	8.14
11.3000	8.63	9.16	9.73	10.34	11.01
11.5500	11.99	13.52	15.74	19.02	23.72
11.8000	30.27	39.26	51.80	66.72	82.25
12.0500	101.01	114.79	115.29	108.70	98.96
12.3000	87.65	76.04	65.70	57.06	50.27
12.5500	44.69	40.03	36.09	32.77	30.08
12.8000	27.84	25.97	24.40	23.08	21.95
13.0500	20.99	20.14	19.38	18.67	18.03

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

Time hrs					
13.3000	17.44	16.91	16.44	16.01	15.60
13.5500	15.22	14.85	14.48	14.12	13.77
13.8000	13.42	13.08	12.74	12.41	12.08
14.0500	11.75	11.41	11.06	10.71	10.34
14.3000	9.98	9.55	8.91	8.17	7.57
14.5500	7.18	6.96	6.81	6.71	6.63
14.8000	6.56	6.49	6.42	6.35	6.28
15.0500	6.21	6.15	6.08	6.01	5.95
15.3000	5.88	5.81	5.75	5.68	5.61
15.5500	5.54	5.48	5.41	5.34	5.27
15.8000	5.21	5.14	5.07	5.00	4.94
16.0500	4.87	4.81	4.75	4.69	4.64
16.3000	4.60	4.56	4.52	4.49	4.46
16.5500	4.43	4.40	4.37	4.35	4.32
16.8000	4.29	4.27	4.24	4.22	4.19
17.0500	4.17	4.15	4.12	4.10	4.07
17.3000	4.05	4.03	4.00	3.98	3.95
17.5500	3.93	3.90	3.88	3.86	3.83
17.8000	3.81	3.78	3.76	3.74	3.71
18.0500	3.69	3.66	3.64	3.62	3.59
18.3000	3.57	3.54	3.52	3.49	3.47
18.5500	3.45	3.42	3.40	3.37	3.35
18.8000	3.32	3.30	3.28	3.25	3.23
19.0500	3.20	3.18	3.15	3.13	3.10
19.3000	3.08	3.06	3.03	3.01	2.98
19.5500	2.96	2.93	2.91	2.88	2.86
19.8000	2.83	2.81	2.79	2.76	2.74
20.0500	2.71	2.69	2.67	2.65	2.64
20.3000	2.62	2.61	2.60	2.59	2.58
20.5500	2.57	2.57	2.56	2.55	2.55
20.8000	2.54	2.54	2.53	2.53	2.52
21.0500	2.52	2.51	2.51	2.50	2.50
21.3000	2.49	2.49	2.48	2.48	2.48
21.5500	2.47	2.47	2.46	2.46	2.45
21.8000	2.45	2.44	2.44	2.43	2.43
22.0500	2.42	2.42	2.41	2.41	2.40
22.3000	2.40	2.39	2.39	2.38	2.38
22.5500	2.38	2.37	2.36	2.36	2.36
22.8000	2.35	2.35	2.34	2.34	2.33
23.0500	2.33	2.32	2.32	2.31	2.31
23.3000	2.30	2.30	2.29	2.29	2.28
23.5500	2.28	2.27	2.27	2.26	2.26
23.8000	2.25	2.25	2.24	2.24	2.23
24.0500	2.13	1.87	1.59	1.38	1.16
24.3000	.95	.75	.58	.44	.33

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time | Time on left represents time for first value in each row.

Time hrs					
24.5500	.25	.19	.15	.11	.08
24.8000	.06	.05	.04	.03	.02
25.0500	.02	.01	.01	.01	.00
25.3000	.00	.00	.00		

SUMMARY FOR HYDROGRAPH ADDITION  
 at Node: BASIN B IN

HYG Directory: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\

```

=====
Upstream Link ID  Upstream Node ID  HYG file      HYG ID        HYG tag
-----
ADDLINK 60        SUBAREA B          SUBAREA B      100
CS OUTLET         CS BASIN3         IN              CS OUTLET     100
=====
  
```

```

INFLOWS TO:  BASIN B      IN
-----
HYG file      HYG ID        HYG tag      Volume      Peak Time    Peak Flow
              HYG ID        HYG tag      cu.ft       hrs          cfs
-----
              SUBAREA B     100          651149      12.1500     158.27
              CS OUTLET     100          195019      12.0000     59.40
  
```

```

TOTAL FLOW INTO:  BASIN B      IN
-----
HYG file      HYG ID        HYG tag      Volume      Peak Time    Peak Flow
              HYG ID        HYG tag      cu.ft       hrs          cfs
-----
              BASIN B       IN  100          846168      12.1000     202.32
  
```

TOTAL NODE INFLOW...  
 HYG file =  
 HYG ID = BASIN B IN  
 HYG Tag = 100

-----

Peak Discharge = 202.32 cfs  
 Time to Peak = 12.1000 hrs  
 HYG Volume = 846168 cu.ft

-----

HYDROGRAPH ORDINATES (cfs)  
 Output Time increment = .0500 hrs

Time |  
 hrs | Time on left represents time for first value in each row.

-----

4.1500	.00	.00	.00	.01	.01
4.4000	.02	.03	.05	.06	.08
4.6500	.10	.12	.14	.17	.19
4.9000	.22	.25	.28	.30	.33
5.1500	.36	.39	.42	.45	.48
5.4000	.51	.54	.58	.61	.64
5.6500	.67	.70	.74	.77	.80
5.9000	.83	.87	.90	.93	.97
6.1500	1.00	1.04	1.07	1.11	1.14
6.4000	1.18	1.21	1.25	1.28	1.32
6.6500	1.36	1.39	1.43	1.47	1.50
6.9000	1.54	1.58	1.62	1.65	1.69
7.1500	1.73	1.77	1.81	1.84	1.88
7.4000	1.92	1.96	2.00	2.04	2.08
7.6500	2.12	2.16	2.20	2.24	2.28
7.9000	2.32	2.36	2.40	2.44	2.49
8.1500	2.54	2.59	2.66	2.72	2.80
8.4000	2.87	2.96	3.05	3.14	3.23
8.6500	3.33	3.43	3.53	3.63	3.74
8.9000	3.84	3.95	4.07	4.18	4.28
9.1500	4.38	4.47	4.56	4.64	4.72
9.4000	4.78	4.85	4.90	4.96	5.03
9.6500	5.10	5.19	5.29	5.41	5.53
9.9000	5.67	5.82	5.98	6.15	6.33
10.1500	6.53	6.73	6.95	7.17	7.42
10.4000	7.67	7.93	8.20	8.47	8.77
10.6500	9.08	9.42	9.77	10.15	10.56
10.9000	10.98	11.42	11.87	12.36	12.87
11.1500	13.44	14.06	14.73	15.48	16.30
11.4000	17.12	18.00	18.98	20.26	22.25
11.6500	25.58	30.77	38.33	48.85	63.15



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

---

Time hrs	83.00	140.00	178.43	198.76	202.32
11.9000	83.00	140.00	178.43	198.76	202.32
12.1500	188.24	172.85	155.26	136.14	117.00
12.4000	99.49	85.06	73.81	64.69	57.41
12.6500	51.30	46.16	42.02	38.61	35.77
12.9000	33.40	31.42	29.75	28.35	27.13
13.1500	26.03	25.04	24.14	23.33	22.62
13.4000	22.00	21.44	20.93	20.45	20.00
13.6500	19.55	19.12	18.71	18.30	17.91
13.9000	17.53	17.15	16.78	16.42	16.06
14.1500	15.71	15.37	15.04	14.73	14.44
14.4000	14.16	13.89	13.64	13.39	13.14
14.6500	12.89	12.63	12.36	12.07	11.80
14.9000	11.51	11.07	10.57	10.07	9.68
15.1500	9.40	9.19	9.04	8.91	8.80
15.4000	8.69	8.59	8.48	8.38	8.28
15.6500	8.17	8.07	7.97	7.87	7.76
15.9000	7.66	7.56	7.46	7.35	7.26
16.1500	7.17	7.08	7.00	6.94	6.87
16.4000	6.82	6.77	6.72	6.67	6.63
16.6500	6.59	6.55	6.51	6.47	6.43
16.9000	6.39	6.36	6.32	6.28	6.25
17.1500	6.21	6.17	6.14	6.10	6.06
17.4000	6.03	5.99	5.95	5.92	5.88
17.6500	5.84	5.81	5.77	5.73	5.70
17.9000	5.66	5.62	5.59	5.55	5.51
18.1500	5.48	5.44	5.40	5.36	5.33
18.4000	5.29	5.25	5.22	5.18	5.14
18.6500	5.11	5.07	5.03	5.00	4.96
18.9000	4.92	4.89	4.85	4.81	4.77
19.1500	4.74	4.70	4.66	4.63	4.59
19.4000	4.55	4.52	4.48	4.44	4.40
19.6500	4.37	4.33	4.29	4.25	4.22
19.9000	4.18	4.14	4.11	4.07	4.04
20.1500	4.01	3.98	3.95	3.93	3.91
20.4000	3.90	3.88	3.87	3.86	3.85
20.6500	3.84	3.83	3.82	3.81	3.81
20.9000	3.80	3.79	3.78	3.77	3.77
21.1500	3.76	3.75	3.74	3.74	3.73
21.4000	3.72	3.72	3.71	3.70	3.69
21.6500	3.69	3.68	3.67	3.67	3.66
21.9000	3.65	3.64	3.64	3.63	3.62
22.1500	3.62	3.61	3.60	3.59	3.59
22.4000	3.58	3.57	3.56	3.56	3.55
22.6500	3.54	3.53	3.53	3.52	3.51
22.9000	3.50	3.50	3.49	3.48	3.48

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs					
23.1500	3.47	3.46	3.45	3.45	3.44
23.4000	3.43	3.42	3.42	3.41	3.40
23.6500	3.39	3.39	3.38	3.37	3.36
23.9000	3.36	3.35	3.34	3.19	2.80
24.1500	2.38	2.06	1.74	1.42	1.12
24.4000	.86	.65	.49	.37	.29
24.6500	.22	.17	.13	.10	.07
24.9000	.05	.04	.03	.02	.02
25.1500	.01	.01	.01	.00	.00
25.4000	.00				

LEVEL POOL ROUTING SUMMARY

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
Inflow HYG file = NONE STORED - BASIN B IN 2  
Outflow HYG file = NONE STORED - BASIN B OUT 2

Pond Node Data = BASIN B  
Pond Volume Data = BASIN B  
Pond Outlet Data = Outlet B1

No Infiltration

INITIAL CONDITIONS

-----  
Starting WS Elev = 566.00 ft  
Starting Volume = 0 cu.ft  
Starting Outflow = .00 cfs  
Starting Infiltr. = .00 cfs  
Starting Total Qout= .00 cfs  
Time Increment = .0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

=====  
Peak Inflow = 67.77 cfs at 12.1500 hrs  
Peak Outflow = 41.27 cfs at 12.4000 hrs  
-----  
Peak Elevation = 569.94 ft  
Peak Storage = 44714 cu.ft  
=====

MASS BALANCE (cu.ft)

-----  
+ Initial Vol = 0  
+ HYG Vol IN = 310653  
- Infiltration = 0  
- HYG Vol OUT = 310653  
- Retained Vol = 0  
-----  
Unrouted Vol = 0 cu.ft (.000% of Outflow Volume)

POND ROUTED TOTAL OUTFLOW HYG...

HYG file =  
 HYG ID = BASIN B OUT  
 HYG Tag = 2

-----

Peak Discharge = 41.27 cfs  
 Time to Peak = 12.4000 hrs  
 HYG Volume = 310653 cu.ft

-----

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs					
7.2000	.00	.00	.00	.00	.01
7.4500	.01	.02	.02	.03	.04
7.7000	.05	.06	.07	.07	.08
7.9500	.09	.11	.12	.13	.14
8.2000	.16	.17	.19	.21	.22
8.4500	.24	.26	.28	.30	.33
8.7000	.35	.37	.40	.42	.45
8.9500	.48	.51	.53	.56	.59
9.2000	.62	.65	.68	.71	.73
9.4500	.76	.78	.81	.83	.86
9.7000	.89	.92	.95	.99	1.03
9.9500	1.08	1.12	1.17	1.22	1.28
10.2000	1.33	1.40	1.46	1.53	1.60
10.4500	1.68	1.76	1.84	1.93	2.03
10.7000	2.13	2.24	2.36	2.48	2.61
10.9500	2.75	2.90	3.05	3.22	3.41
11.2000	3.62	3.77	3.97	4.22	4.50
11.4500	4.81	5.16	5.53	6.07	6.97
11.7000	8.22	9.88	11.88	14.47	17.79
11.9500	24.30	27.29	30.38	33.13	35.58
12.2000	37.64	39.25	40.37	41.02	41.27
12.4500	41.18	40.84	40.29	39.56	38.71
12.7000	37.72	36.64	35.49	34.25	32.92
12.9500	31.48	29.91	28.21	26.38	24.36
13.2000	20.15	17.35	15.85	14.55	13.39
13.4500	12.43	11.47	10.58	9.68	8.73
13.7000	7.95	7.30	6.74	6.36	6.09
13.9500	5.87	5.69	5.54	5.40	5.24
14.2000	5.10	4.99	4.89	4.80	4.73
14.4500	4.66	4.60	4.54	4.48	4.43
14.7000	4.38	4.33	4.29	4.24	4.20

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

Time hrs					
14.9500	4.15	4.11	4.07	4.03	3.98
15.2000	3.94	3.90	3.85	3.81	3.77
15.4500	3.73	3.68	3.64	3.57	3.53
15.7000	3.48	3.44	3.40	3.35	3.31
15.9500	3.27	3.22	3.18	3.14	3.10
16.2000	3.06	3.03	3.00	2.97	2.95
16.4500	2.93	2.91	2.89	2.87	2.85
16.7000	2.83	2.82	2.80	2.78	2.77
16.9500	2.75	2.74	2.72	2.71	2.69
17.2000	2.68	2.66	2.64	2.63	2.61
17.4500	2.60	2.58	2.57	2.55	2.54
17.7000	2.52	2.51	2.49	2.48	2.46
17.9500	2.44	2.43	2.41	2.40	2.38
18.2000	2.37	2.35	2.34	2.32	2.30
18.4500	2.29	2.27	2.26	2.24	2.23
18.7000	2.21	2.20	2.18	2.16	2.15
18.9500	2.13	2.12	2.10	2.08	2.07
19.2000	2.05	2.04	2.02	2.01	1.99
19.4500	1.97	1.96	1.94	1.93	1.91
19.7000	1.89	1.88	1.86	1.85	1.83
19.9500	1.81	1.80	1.78	1.77	1.75
20.2000	1.74	1.73	1.72	1.71	1.71
20.4500	1.70	1.69	1.69	1.68	1.68
20.7000	1.68	1.67	1.67	1.66	1.66
20.9500	1.66	1.65	1.65	1.65	1.65
21.2000	1.64	1.64	1.64	1.63	1.63
21.4500	1.63	1.62	1.62	1.62	1.61
21.7000	1.61	1.61	1.61	1.60	1.60
21.9500	1.60	1.59	1.59	1.59	1.58
22.2000	1.58	1.58	1.58	1.57	1.57
22.4500	1.57	1.56	1.56	1.56	1.55
22.7000	1.55	1.55	1.54	1.54	1.54
22.9500	1.54	1.53	1.53	1.53	1.52
23.2000	1.52	1.52	1.51	1.51	1.51
23.4500	1.50	1.50	1.50	1.50	1.49
23.7000	1.49	1.49	1.48	1.48	1.48
23.9500	1.47	1.47	1.43	1.32	1.14
24.2000	.98	.84	.70	.56	.44
24.4500	.33	.25	.19	.15	.11
24.7000	.09	.06	.05	.04	.03
24.9500	.02	.02	.01	.01	.01
25.2000	.00	.00	.00	.00	

LEVEL POOL ROUTING SUMMARY

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Inflow HYG file = NONE STORED - BASIN B IN 10  
 Outflow HYG file = NONE STORED - BASIN B OUT 10

Pond Node Data = BASIN B  
 Pond Volume Data = BASIN B  
 Pond Outlet Data = Outlet B1

No Infiltration

INITIAL CONDITIONS

```
-----
Starting WS Elev = 566.00 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = .0500 hrs
```

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

```
=====
Peak Inflow = 115.29 cfs at 12.1500 hrs
Peak Outflow = 86.26 cfs at 12.3000 hrs
-----
Peak Elevation = 571.28 ft
Peak Storage = 76146 cu.ft
=====
```

MASS BALANCE (cu.ft)

```
-----
+ Initial Vol = 0
+ HYG Vol IN = 521504
- Infiltration = 0
- HYG Vol OUT = 521504
- Retained Vol = 0
-----
Unrouted Vol = 0 cu.ft (.000% of Outflow Volume)
```

POND ROUTED TOTAL OUTFLOW HYG...

HYG file =  
 HYG ID = BASIN B OUT  
 HYG Tag = 10

-----  
 Peak Discharge = 86.26 cfs  
 Time to Peak = 12.3000 hrs  
 HYG Volume = 521504 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs  
 Time on left represents time for first value in each row.

Time hrs					
5.5500	.00	.00	.00	.00	.01
5.8000	.01	.02	.03	.04	.05
6.0500	.06	.08	.09	.10	.12
6.3000	.14	.16	.17	.19	.21
6.5500	.23	.25	.27	.29	.31
6.8000	.33	.35	.37	.40	.42
7.0500	.44	.46	.48	.50	.52
7.3000	.55	.57	.59	.61	.64
7.5500	.66	.68	.71	.73	.75
7.8000	.78	.80	.82	.85	.87
8.0500	.89	.92	.95	.98	1.01
8.3000	1.04	1.08	1.12	1.16	1.20
8.5500	1.25	1.30	1.35	1.40	1.45
8.8000	1.51	1.56	1.62	1.68	1.74
9.0500	1.80	1.86	1.91	1.97	2.02
9.3000	2.07	2.12	2.17	2.21	2.25
9.5500	2.29	2.33	2.37	2.43	2.48
9.8000	2.55	2.62	2.70	2.78	2.87
10.0500	2.96	3.06	3.17	3.28	3.40
10.3000	3.53	3.66	3.75	3.87	4.01
10.5500	4.16	4.31	4.48	4.67	4.86
10.8000	5.07	5.29	5.48	5.69	5.92
11.0500	6.18	6.45	6.75	7.09	7.46
11.3000	7.81	8.21	8.67	9.17	9.73
11.5500	10.32	11.10	12.24	13.73	15.83
11.8000	18.96	24.50	27.47	30.93	34.48
12.0500	38.29	42.98	54.27	68.14	80.48
12.3000	86.26	84.27	78.63	72.68	66.58
12.5500	61.22	57.07	53.38	49.98	46.96
12.8000	44.30	42.34	41.05	40.07	39.03
13.0500	37.94	36.83	35.69	34.51	33.30

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

Time hrs					
13.3000	32.04	30.69	29.24	27.74	26.21
13.5500	24.57	21.60	18.86	17.44	16.55
13.8000	15.80	15.15	14.51	13.96	13.47
14.0500	13.03	12.61	12.19	11.77	11.37
14.3000	10.98	10.59	10.15	9.60	8.96
14.5500	8.37	7.89	7.52	7.18	6.95
14.8000	6.79	6.67	6.57	6.49	6.41
15.0500	6.34	6.27	6.20	6.13	6.06
15.3000	6.00	5.93	5.86	5.80	5.73
15.5500	5.66	5.59	5.52	5.46	5.39
15.8000	5.31	5.23	5.16	5.09	5.02
16.0500	4.95	4.88	4.82	4.76	4.71
16.3000	4.66	4.61	4.57	4.53	4.50
16.5500	4.46	4.43	4.41	4.38	4.35
16.8000	4.32	4.30	4.27	4.25	4.22
17.0500	4.20	4.17	4.15	4.13	4.10
17.3000	4.08	4.05	4.03	4.01	3.98
17.5500	3.96	3.93	3.91	3.89	3.86
17.8000	3.84	3.81	3.79	3.77	3.74
18.0500	3.72	3.69	3.67	3.64	3.60
18.3000	3.58	3.55	3.53	3.51	3.48
18.5500	3.46	3.43	3.41	3.38	3.36
18.8000	3.34	3.31	3.29	3.26	3.24
19.0500	3.21	3.19	3.17	3.14	3.12
19.3000	3.09	3.07	3.04	3.02	2.99
19.5500	2.97	2.95	2.92	2.90	2.87
19.8000	2.85	2.82	2.80	2.77	2.75
20.0500	2.72	2.70	2.68	2.66	2.64
20.3000	2.63	2.62	2.60	2.59	2.58
20.5500	2.58	2.57	2.56	2.56	2.55
20.8000	2.55	2.54	2.54	2.53	2.53
21.0500	2.52	2.52	2.51	2.51	2.50
21.3000	2.50	2.49	2.49	2.48	2.48
21.5500	2.47	2.47	2.46	2.46	2.45
21.8000	2.45	2.44	2.44	2.43	2.43
22.0500	2.42	2.42	2.42	2.41	2.41
22.3000	2.40	2.40	2.39	2.39	2.38
22.5500	2.38	2.37	2.37	2.36	2.36
22.8000	2.35	2.35	2.34	2.34	2.33
23.0500	2.33	2.32	2.32	2.31	2.31
23.3000	2.30	2.30	2.30	2.29	2.29
23.5500	2.28	2.28	2.27	2.27	2.26
23.8000	2.26	2.25	2.25	2.24	2.24
24.0500	2.18	2.00	1.73	1.49	1.27
24.3000	1.06	.85	.66	.51	.38



Type.... Pond Routed HYG (total out) Page 13.44  
 Name.... BASIN B OUT Tag: 10 Event: 10 yr  
 File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW  
 Storm... TypeII 24hr Tag: 10

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs					
24.5500	.29	.22	.17	.13	.10
24.8000	.07	.06	.04	.03	.02
25.0500	.02	.01	.01	.01	.00
25.3000	.00	.00	.00		

LEVEL POOL ROUTING SUMMARY

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
Inflow HYG file = NONE STORED - BASIN B IN 100  
Outflow HYG file = NONE STORED - BASIN B OUT 100

Pond Node Data = BASIN B  
Pond Volume Data = BASIN B  
Pond Outlet Data = Outlet B1

No Infiltration

INITIAL CONDITIONS

-----  
Starting WS Elev = 566.00 ft  
Starting Volume = 0 cu.ft  
Starting Outflow = .00 cfs  
Starting Infiltr. = .00 cfs  
Starting Total Qout = .00 cfs  
Time Increment = .0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

=====  
Peak Inflow = 202.32 cfs at 12.1000 hrs  
Peak Outflow = 179.81 cfs at 12.2000 hrs  
-----  
Peak Elevation = 572.14 ft  
Peak Storage = 98572 cu.ft  
=====

MASS BALANCE (cu.ft)

-----  
+ Initial Vol = 0  
+ HYG Vol IN = 846168  
- Infiltration = 0  
- HYG Vol OUT = 846168  
- Retained Vol = 0  
-----  
Unrouted Vol = 0 cu.ft (.000% of Outflow Volume)

POND ROUTED TOTAL OUTFLOW HYG...

HYG file =  
 HYG ID = BASIN B OUT  
 HYG Tag = 100  
 -----  
 Peak Discharge = 179.81 cfs  
 Time to Peak = 12.2000 hrs  
 HYG Volume = 846168 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs					
4.1500	.00	.00	.00	.01	.01
4.4000	.02	.03	.04	.06	.07
4.6500	.09	.11	.13	.15	.18
4.9000	.21	.23	.26	.29	.32
5.1500	.35	.38	.41	.44	.47
5.4000	.50	.53	.56	.59	.62
5.6500	.65	.69	.72	.75	.78
5.9000	.82	.85	.88	.92	.95
6.1500	.99	1.02	1.05	1.09	1.12
6.4000	1.16	1.20	1.23	1.27	1.30
6.6500	1.34	1.38	1.41	1.45	1.49
6.9000	1.52	1.56	1.60	1.64	1.67
7.1500	1.71	1.75	1.79	1.83	1.86
7.4000	1.90	1.94	1.98	2.02	2.06
7.6500	2.10	2.14	2.18	2.22	2.26
7.9000	2.30	2.34	2.38	2.42	2.46
8.1500	2.51	2.57	2.62	2.69	2.76
8.4000	2.84	2.92	3.00	3.09	3.18
8.6500	3.28	3.38	3.48	3.58	3.67
8.9000	3.74	3.83	3.94	4.05	4.15
9.1500	4.26	4.36	4.45	4.54	4.62
9.4000	4.70	4.77	4.83	4.89	4.95
9.6500	5.02	5.10	5.18	5.28	5.39
9.9000	5.48	5.60	5.74	5.89	6.05
10.1500	6.22	6.40	6.60	6.81	7.03
10.4000	7.26	7.50	7.71	7.94	8.19
10.6500	8.46	8.75	9.07	9.40	9.75
10.9000	10.09	10.45	10.84	11.25	11.69
11.1500	12.16	12.65	13.15	13.70	14.33
11.4000	15.01	15.67	16.39	17.21	18.30
11.6500	20.52	23.54	25.54	27.96	30.94

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

Time hrs	34.39	39.42	53.67	97.95	153.84
11.9000	34.39	39.42	53.67	97.95	153.84
12.1500	178.68	179.81	170.24	155.58	138.71
12.4000	121.88	106.34	93.05	82.32	74.42
12.6500	67.70	62.37	58.00	54.51	51.36
12.9000	48.43	45.94	43.86	42.19	41.13
13.1500	40.31	39.44	38.54	37.61	36.66
13.4000	35.71	34.72	33.73	32.71	31.64
13.6500	30.56	29.39	28.24	27.01	25.79
13.9000	24.56	22.50	20.31	18.85	17.92
14.1500	17.40	16.93	16.49	16.09	15.71
14.4000	15.35	14.99	14.64	14.32	14.02
14.6500	13.74	13.46	13.18	12.91	12.63
14.9000	12.34	12.00	11.62	11.20	10.77
15.1500	10.37	10.03	9.71	9.44	9.23
15.4000	9.05	8.90	8.76	8.64	8.52
15.6500	8.41	8.31	8.20	8.10	7.99
15.9000	7.89	7.78	7.68	7.58	7.47
16.1500	7.36	7.25	7.16	7.07	7.00
16.4000	6.93	6.87	6.81	6.76	6.71
16.6500	6.67	6.62	6.58	6.54	6.50
16.9000	6.46	6.42	6.38	6.35	6.31
17.1500	6.27	6.24	6.20	6.16	6.13
17.4000	6.09	6.05	6.02	5.98	5.94
17.6500	5.91	5.87	5.83	5.80	5.76
17.9000	5.72	5.69	5.65	5.61	5.58
18.1500	5.54	5.50	5.46	5.43	5.39
18.4000	5.35	5.30	5.26	5.23	5.19
18.6500	5.15	5.11	5.08	5.04	5.00
18.9000	4.97	4.93	4.89	4.86	4.82
19.1500	4.78	4.74	4.71	4.67	4.63
19.4000	4.60	4.56	4.52	4.49	4.45
19.6500	4.41	4.37	4.34	4.30	4.26
19.9000	4.22	4.19	4.15	4.11	4.08
20.1500	4.04	4.01	3.99	3.96	3.94
20.4000	3.92	3.90	3.89	3.87	3.86
20.6500	3.85	3.84	3.83	3.82	3.82
20.9000	3.81	3.80	3.79	3.78	3.78
21.1500	3.77	3.76	3.75	3.75	3.74
21.4000	3.73	3.72	3.72	3.71	3.70
21.6500	3.70	3.69	3.68	3.67	3.67
21.9000	3.66	3.65	3.65	3.63	3.63
22.1500	3.62	3.61	3.60	3.60	3.59
22.4000	3.58	3.57	3.57	3.56	3.55
22.6500	3.54	3.54	3.53	3.52	3.52
22.9000	3.51	3.50	3.49	3.49	3.48

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

---

Time hrs					
23.1500	3.47	3.46	3.46	3.45	3.44
23.4000	3.44	3.43	3.42	3.41	3.41
23.6500	3.40	3.39	3.38	3.38	3.37
23.9000	3.36	3.35	3.35	3.26	2.99
24.1500	2.59	2.22	1.90	1.58	1.27
24.4000	.99	.76	.57	.43	.33
24.6500	.25	.19	.15	.11	.08
24.9000	.06	.05	.04	.03	.02
25.1500	.01	.01	.01	.00	.00
25.4000	.00				

LEVEL POOL ROUTING DATA

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Inflow HYG file = NONE STORED - CS BASIN3 IN 2  
 Outflow HYG file = NONE STORED - CS BASIN3 OUT 2

Pond Node Data = CS BASIN3  
 Pond Volume Data = CS BASIN3  
 Pond Outlet Data = Countryshire 3

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 605.50 ft  
 Starting Volume = 0 cu.ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infiltr. cfs	Q Total cfs	2S/t + O cfs
605.50	.00	0	0	.00	.00	.00
605.60	.03	0	12	.00	.03	.04
605.70	.12	3	48	.00	.12	.16
605.80	.26	11	108	.00	.26	.38
605.90	.46	26	192	.00	.46	.74
606.00	.70	50	300	.00	.70	1.25
606.10	.97	86	414	.00	.97	1.92
606.20	1.28	133	547	.00	1.28	2.76
606.30	1.62	196	698	.00	1.62	3.79
606.40	1.97	274	868	.00	1.97	5.01
606.50	2.35	370	1056	.00	2.35	6.46
606.60	2.72	486	1263	.00	2.72	8.12
606.70	3.11	623	1488	.00	3.11	10.03
606.80	3.46	784	1731	.00	3.46	12.17
606.90	3.73	970	1993	.00	3.73	14.51
607.00	3.98	1183	2273	.00	3.98	17.13
607.10	4.14	1421	2494	.00	4.14	19.93
607.20	4.28	1682	2726	.00	4.28	22.97
607.30	4.42	1967	2968	.00	4.42	26.27
607.40	4.57	2276	3220	.00	4.57	29.86

LEVEL POOL ROUTING DATA

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Inflow HYG file = NONE STORED - CS BASIN3 IN 2  
 Outflow HYG file = NONE STORED - CS BASIN3 OUT 2

Pond Node Data = CS BASIN3  
 Pond Volume Data = CS BASIN3  
 Pond Outlet Data = Countryshire 3

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 605.50 ft  
 Starting Volume = 0 cu.ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
607.50	4.72	2611	3483	.00	4.72	33.73
607.60	4.86	2973	3756	.00	4.86	37.89
607.70	5.00	3363	4039	.00	5.00	42.36
607.80	5.13	3781	4332	.00	5.13	47.14
607.90	5.26	4230	4636	.00	5.26	52.26
608.00	5.40	4709	4950	.00	5.40	57.71
608.10	5.52	5209	5051	.00	5.52	63.39
608.20	5.64	5719	5154	.00	5.64	69.19
608.30	5.77	6240	5257	.00	5.77	75.10
608.40	5.89	6771	5362	.00	5.89	81.12
608.50	6.01	7312	5468	.00	6.01	87.26
608.60	6.13	7864	5574	.00	6.13	93.51
608.70	6.24	8427	5682	.00	6.24	99.88
608.80	6.36	9000	5791	.00	6.36	106.36
608.90	6.47	9585	5900	.00	6.47	112.97
609.00	6.58	10181	6011	.00	6.58	119.69
609.10	6.68	10787	6123	.00	6.68	126.54
609.20	6.79	11405	6236	.00	6.79	133.52
609.30	6.89	12034	6349	.00	6.89	140.61
609.40	7.00	12675	6464	.00	7.00	147.83

LEVEL POOL ROUTING DATA

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Inflow HYG file = NONE STORED - CS BASIN3 IN 2  
 Outflow HYG file = NONE STORED - CS BASIN3 OUT 2

Pond Node Data = CS BASIN3  
 Pond Volume Data = CS BASIN3  
 Pond Outlet Data = Countryshire 3

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 605.50 ft  
 Starting Volume = 0 cu.ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infiltr. cfs	Q Total cfs	2S/t + O cfs
609.50	7.10	13327	6580	.00	7.10	155.18
609.60	7.20	13991	6697	.00	7.20	162.65
609.70	7.30	14667	6815	.00	7.30	170.26
609.80	7.39	15354	6934	.00	7.39	178.00
609.90	7.49	16054	7054	.00	7.49	185.87
610.00	7.59	16765	7175	.00	7.59	193.86
610.10	7.68	17488	7281	.00	7.68	201.99
610.20	7.77	18221	7389	.00	7.77	210.23
610.30	7.86	18966	7497	.00	7.86	218.59
610.40	7.95	19721	7605	.00	7.95	227.07
610.50	8.04	20487	7715	.00	8.04	235.67
610.60	8.13	21264	7825	.00	8.13	244.39
610.70	8.22	22052	7936	.00	8.22	253.24
610.80	8.31	22851	8048	.00	8.31	262.21
610.90	8.39	23662	8161	.00	8.39	271.30
611.00	8.48	24483	8274	.00	8.48	280.51
611.10	8.56	25316	8389	.00	8.56	289.85
611.20	8.64	26161	8504	.00	8.64	299.32
611.30	8.73	27017	8619	.00	8.73	308.92
611.40	8.81	27885	8736	.00	8.81	318.64



LEVEL POOL ROUTING DATA

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Inflow HYG file = NONE STORED - CS BASIN3 IN 2  
 Outflow HYG file = NONE STORED - CS BASIN3 OUT 2

Pond Node Data = CS BASIN3  
 Pond Volume Data = CS BASIN3  
 Pond Outlet Data = Countryshire 3

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 605.50 ft  
 Starting Volume = 0 cu.ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout= .00 cfs  
 Time Increment = .0500 hrs

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infiltr. cfs	Q Total cfs	2S/t + O cfs
611.50	8.89	28764	8853	.00	8.89	328.49
611.60	8.97	29655	8972	.00	8.97	338.47
611.70	9.05	30559	9090	.00	9.05	348.59
611.80	9.13	31474	9210	.00	9.13	358.83
611.90	9.21	32401	9331	.00	9.21	369.22
612.00	9.28	33340	9452	.00	9.28	379.73
612.10	10.58	34291	9570	.00	10.58	391.59
612.20	12.88	35254	9689	.00	12.88	404.59
612.30	15.84	36229	9809	.00	15.84	418.38
612.40	19.33	37216	9929	.00	19.33	432.84
612.50	23.28	38215	10050	.00	23.28	447.89
612.60	27.63	39226	10172	.00	27.63	463.47
612.70	32.37	40249	10295	.00	32.37	479.58
612.80	37.44	41285	10418	.00	37.44	496.16
612.90	42.84	42333	10542	.00	42.84	513.21
613.00	49.74	43393	10667	.00	49.74	531.89
613.10	53.61	44466	10793	.00	53.61	547.67
613.20	57.16	45552	10919	.00	57.16	563.30
613.30	60.48	46650	11046	.00	60.48	578.81
613.40	63.60	47761	11174	.00	63.60	594.28

Name.... CS BASIN3

File.... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PFW

LEVEL POOL ROUTING DATA

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\
Inflow HYG file = NONE STORED - CS BASIN3 IN 2
Outflow HYG file = NONE STORED - CS BASIN3 OUT 2

Pond Node Data = CS BASIN3
Pond Volume Data = CS BASIN3
Pond Outlet Data = Countryshire 3

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 605.50 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = .0500 hrs

Table with 7 columns: Elevation ft, Outflow cfs, Storage cu.ft, Area sq.ft, Infiltr. cfs, Q Total cfs, 2S/t + 0 cfs. It contains 7 rows of data showing the relationship between elevation and various flow/storage parameters.

SUMMARY FOR HYDROGRAPH ADDITION  
 at Node: CS BASIN3 IN

HYG Directory: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\

```
=====
Upstream Link ID  Upstream Node ID  HYG file      HYG ID        HYG tag
-----
ADDLINK 40        COUNTRYSHIRE          COUNTRYSHIRE  2
=====
```

```
INFLOWS TO:  CS BASIN3  IN
-----
HYG file      HYG ID        HYG tag      Volume      Peak Time    Peak Flow
              HYG ID        HYG tag      cu.ft       hrs          cfs
-----
              COUNTRYSHIRE  2            69475       11.9500     28.78
```

```
TOTAL FLOW INTO:  CS BASIN3  IN
-----
HYG file      HYG ID        HYG tag      Volume      Peak Time    Peak Flow
              HYG ID        HYG tag      cu.ft       hrs          cfs
-----
              CS BASIN3     IN  2            69475       11.9500     28.78
```

TOTAL NODE INFLOW...

HYG file =  
 HYG ID = CS BASIN3 IN  
 HYG Tag = 2

-----  
 Peak Discharge = 28.78 cfs  
 Time to Peak = 11.9500 hrs  
 HYG Volume = 69475 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs					
7.9000	.00	.00	.00	.01	.01
8.1500	.01	.02	.02	.02	.03
8.4000	.03	.04	.04	.05	.05
8.6500	.06	.06	.07	.07	.08
8.9000	.09	.09	.10	.11	.11
9.1500	.12	.12	.13	.13	.14
9.4000	.15	.15	.16	.16	.17
9.6500	.18	.19	.20	.21	.22
9.9000	.23	.24	.25	.27	.28
10.1500	.30	.31	.33	.35	.37
10.4000	.39	.41	.43	.45	.47
10.6500	.50	.53	.56	.60	.63
10.9000	.67	.71	.75	.79	.85
11.1500	.92	1.00	1.08	1.17	1.26
11.4000	1.35	1.45	1.56	2.14	3.12
11.6500	4.66	6.93	9.63	13.24	19.05
11.9000	27.42	28.78	25.85	19.43	9.57
12.1500	6.15	4.96	4.45	4.07	3.80
12.4000	3.48	3.20	2.87	2.65	2.44
12.6500	2.33	2.25	2.18	2.11	2.04
12.9000	1.97	1.90	1.83	1.77	1.71
13.1500	1.67	1.63	1.59	1.55	1.52
13.4000	1.48	1.44	1.40	1.37	1.33
13.6500	1.31	1.28	1.25	1.22	1.19
13.9000	1.16	1.14	1.11	1.09	1.07
14.1500	1.06	1.04	1.03	1.03	1.02
14.4000	1.01	1.00	.99	.98	.97
14.6500	.96	.95	.94	.93	.92
14.9000	.91	.90	.89	.88	.87
15.1500	.86	.85	.84	.83	.82
15.4000	.81	.80	.79	.78	.77

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

Time hrs					
15.6500	.76	.75	.74	.73	.72
15.9000	.71	.70	.69	.69	.68
16.1500	.67	.67	.67	.66	.66
16.4000	.66	.65	.65	.65	.64
16.6500	.64	.64	.63	.63	.62
16.9000	.62	.62	.61	.61	.61
17.1500	.60	.60	.60	.59	.59
17.4000	.59	.58	.58	.58	.57
17.6500	.57	.57	.56	.56	.55
17.9000	.55	.55	.54	.54	.54
18.1500	.53	.53	.53	.52	.52
18.4000	.51	.51	.51	.50	.50
18.6500	.50	.49	.49	.49	.48
18.9000	.48	.48	.47	.47	.46
19.1500	.46	.46	.45	.45	.45
19.4000	.44	.44	.44	.43	.43
19.6500	.42	.42	.42	.41	.41
19.9000	.41	.40	.40	.40	.39
20.1500	.39	.39	.39	.39	.39
20.4000	.39	.39	.39	.39	.38
20.6500	.38	.38	.38	.38	.38
20.9000	.38	.38	.38	.38	.38
21.1500	.38	.38	.38	.38	.38
21.4000	.37	.37	.37	.37	.37
21.6500	.37	.37	.37	.37	.37
21.9000	.37	.37	.37	.36	.36
22.1500	.36	.36	.36	.36	.36
22.4000	.36	.36	.36	.36	.36
22.6500	.36	.36	.36	.35	.35
22.9000	.35	.35	.35	.35	.35
23.1500	.35	.35	.35	.35	.35
23.4000	.35	.35	.34	.34	.34
23.6500	.34	.34	.34	.34	.34
23.9000	.34	.34	.34	.24	.08
24.1500	.02	.01	.00	.00	

SUMMARY FOR HYDROGRAPH ADDITION  
 at Node: CS BASIN3 IN

HYG Directory: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\

```

=====
Upstream Link ID  Upstream Node ID  HYG file      HYG ID        HYG tag
-----
ADDLINK 40        COUNTRYSHIRE          COUNTRYSHIRE    10
=====
  
```

```

INFLOWS TO:  CS BASIN3  IN
-----
HYG file      HYG ID        HYG tag      Volume      Peak Time    Peak Flow
              HYG ID        HYG tag      cu.ft       hrs          cfs
-----
              COUNTRYSHIRE  10           118654      11.9500     48.38
  
```

```

TOTAL FLOW INTO:  CS BASIN3  IN
-----
HYG file      HYG ID        HYG tag      Volume      Peak Time    Peak Flow
              HYG ID        HYG tag      cu.ft       hrs          cfs
-----
              CS BASIN3     IN  10           118654      11.9500     48.38
  
```

TOTAL NODE INFLOW...

HYG file =  
 HYG ID = CS BASIN3 IN  
 HYG Tag = 10

-----  
 Peak Discharge = 48.38 cfs  
 Time to Peak = 11.9500 hrs  
 HYG Volume = 118654 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time | | | | | |  
 hrs | | | | | |  
 -----  
 Time on left represents time for first value in each row.

Time hrs					
6.1500	.00	.00	.01	.01	.01
6.4000	.02	.02	.03	.03	.04
6.6500	.04	.05	.05	.06	.06
6.9000	.06	.07	.07	.08	.08
7.1500	.09	.09	.10	.10	.11
7.4000	.11	.12	.12	.13	.13
7.6500	.14	.15	.15	.16	.16
7.9000	.17	.17	.18	.18	.19
8.1500	.20	.21	.22	.23	.24
8.4000	.25	.26	.27	.28	.30
8.6500	.31	.32	.33	.35	.36
8.9000	.37	.39	.40	.41	.43
9.1500	.44	.44	.45	.46	.47
9.4000	.48	.48	.49	.50	.52
9.6500	.53	.56	.58	.60	.62
9.9000	.65	.67	.69	.72	.75
10.1500	.78	.82	.85	.89	.92
10.4000	.96	1.00	1.04	1.08	1.13
10.6500	1.19	1.25	1.31	1.38	1.44
10.9000	1.51	1.58	1.65	1.74	1.85
11.1500	1.98	2.13	2.28	2.45	2.61
11.4000	2.79	2.96	3.16	4.29	6.17
11.6500	9.06	13.20	17.89	24.02	33.60
11.9000	47.10	48.38	42.73	31.77	15.56
12.1500	9.94	7.99	7.16	6.53	6.08
12.4000	5.56	5.11	4.58	4.23	3.89
12.6500	3.71	3.57	3.47	3.35	3.24
12.9000	3.12	3.02	2.90	2.81	2.71
13.1500	2.64	2.58	2.52	2.45	2.40
13.4000	2.33	2.27	2.21	2.16	2.10
13.6500	2.06	2.01	1.97	1.92	1.88

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

Time hrs					
13.9000	1.83	1.79	1.74	1.71	1.68
14.1500	1.66	1.64	1.62	1.61	1.59
14.4000	1.58	1.56	1.55	1.53	1.52
14.6500	1.50	1.49	1.47	1.45	1.44
14.9000	1.43	1.41	1.39	1.38	1.36
15.1500	1.35	1.33	1.32	1.30	1.29
15.4000	1.27	1.25	1.24	1.22	1.20
15.6500	1.19	1.18	1.16	1.14	1.13
15.9000	1.11	1.10	1.08	1.07	1.06
16.1500	1.05	1.04	1.04	1.03	1.03
16.4000	1.02	1.02	1.01	1.01	1.00
16.6500	.99	.99	.98	.98	.97
16.9000	.97	.96	.95	.95	.94
17.1500	.94	.93	.93	.92	.92
17.4000	.91	.90	.90	.89	.89
17.6500	.88	.88	.87	.86	.86
17.9000	.85	.85	.84	.84	.83
18.1500	.83	.82	.81	.81	.80
18.4000	.80	.79	.79	.78	.77
18.6500	.77	.76	.76	.75	.75
18.9000	.74	.74	.73	.72	.72
19.1500	.71	.71	.70	.70	.69
19.4000	.68	.68	.67	.67	.66
19.6500	.65	.65	.64	.64	.63
19.9000	.63	.62	.61	.61	.61
20.1500	.60	.60	.60	.60	.60
20.4000	.60	.60	.60	.60	.59
20.6500	.59	.59	.59	.59	.59
20.9000	.59	.59	.58	.58	.58
21.1500	.58	.58	.58	.58	.58
21.4000	.58	.58	.58	.57	.57
21.6500	.57	.57	.57	.57	.57
21.9000	.57	.56	.56	.56	.56
22.1500	.56	.56	.56	.56	.56
22.4000	.55	.55	.55	.55	.55
22.6500	.55	.55	.55	.54	.54
22.9000	.54	.54	.54	.54	.54
23.1500	.54	.54	.54	.53	.53
23.4000	.53	.53	.53	.53	.53
23.6500	.53	.53	.52	.52	.52
23.9000	.52	.52	.52	.37	.12
24.1500	.03	.01	.00	.00	



SUMMARY FOR HYDROGRAPH ADDITION  
 at Node: CS BASIN3 IN

HYG Directory: S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\

```
=====
Upstream Link ID Upstream Node ID HYG file HYG ID HYG tag
-----
ADDLINK 40 COUNTRYSHIRE COUNTRYSHIRE 100
=====
```

```
INFLOWS TO: CS BASIN3 IN
-----
HYG file HYG ID HYG tag Volume Peak Time Peak Flow
cu.ft hrs cfs
-----
COUNTRYSHIRE 100 195019 11.9500 77.58
```

```
TOTAL FLOW INTO: CS BASIN3 IN
-----
HYG file HYG ID HYG tag Volume Peak Time Peak Flow
cu.ft hrs cfs
-----
CS BASIN3 IN 100 195019 11.9500 77.58
```

TOTAL NODE INFLOW...  
 HYG file =  
 HYG ID = CS BASIN3 IN  
 HYG Tag = 100  
 -----  
 Peak Discharge = 77.58 cfs  
 Time to Peak = 11.9500 hrs  
 HYG Volume = 195019 cu.ft  
 -----

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

Time hrs					
4.6500	.00	.00	.01	.01	.02
4.9000	.03	.03	.04	.05	.05
5.1500	.06	.07	.07	.08	.09
5.4000	.09	.10	.11	.12	.12
5.6500	.13	.14	.14	.15	.16
5.9000	.17	.18	.18	.19	.20
6.1500	.21	.21	.22	.23	.24
6.4000	.25	.25	.26	.27	.28
6.6500	.29	.30	.30	.31	.32
6.9000	.33	.34	.35	.36	.37
7.1500	.37	.38	.39	.40	.41
7.4000	.42	.43	.44	.45	.45
7.6500	.46	.47	.48	.49	.50
7.9000	.51	.52	.53	.54	.56
8.1500	.57	.59	.61	.63	.66
8.4000	.68	.70	.72	.74	.77
8.6500	.79	.82	.84	.87	.89
8.9000	.92	.94	.97	.99	1.01
9.1500	1.03	1.04	1.05	1.06	1.08
9.4000	1.09	1.10	1.11	1.13	1.15
9.6500	1.18	1.22	1.26	1.30	1.34
9.9000	1.39	1.43	1.48	1.52	1.58
10.1500	1.63	1.70	1.76	1.83	1.89
10.4000	1.96	2.02	2.10	2.17	2.26
10.6500	2.36	2.47	2.58	2.69	2.80
10.9000	2.93	3.04	3.17	3.32	3.52
11.1500	3.74	4.01	4.27	4.56	4.83
11.4000	5.14	5.41	5.74	7.75	11.05
11.6500	16.04	23.07	30.78	40.64	55.75
11.9000	76.69	77.58	67.68	49.93	24.36
12.1500	15.50	12.42	11.11	10.13	9.42

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

Time hrs					
12.4000	8.61	7.90	7.08	6.53	6.00
12.6500	5.73	5.51	5.34	5.15	4.99
12.9000	4.80	4.64	4.45	4.31	4.16
13.1500	4.06	3.96	3.87	3.77	3.68
13.4000	3.58	3.49	3.39	3.30	3.22
13.6500	3.15	3.07	3.01	2.94	2.87
13.9000	2.80	2.74	2.66	2.61	2.56
14.1500	2.53	2.50	2.48	2.46	2.44
14.4000	2.41	2.39	2.36	2.34	2.31
14.6500	2.29	2.27	2.25	2.22	2.20
14.9000	2.17	2.15	2.12	2.10	2.08
15.1500	2.05	2.03	2.00	1.98	1.96
15.4000	1.93	1.91	1.89	1.86	1.83
15.6500	1.81	1.79	1.77	1.74	1.72
15.9000	1.69	1.67	1.64	1.62	1.61
16.1500	1.60	1.58	1.58	1.57	1.56
16.4000	1.55	1.54	1.53	1.53	1.52
16.6500	1.51	1.50	1.49	1.48	1.47
16.9000	1.47	1.46	1.45	1.44	1.43
17.1500	1.42	1.41	1.41	1.40	1.39
17.4000	1.38	1.37	1.36	1.35	1.34
17.6500	1.34	1.33	1.32	1.31	1.30
17.9000	1.29	1.29	1.28	1.27	1.26
18.1500	1.25	1.24	1.23	1.23	1.22
18.4000	1.21	1.20	1.19	1.18	1.17
18.6500	1.16	1.16	1.15	1.14	1.13
18.9000	1.12	1.11	1.10	1.09	1.09
19.1500	1.08	1.07	1.06	1.05	1.04
19.4000	1.03	1.02	1.02	1.01	1.00
19.6500	.99	.98	.97	.96	.95
19.9000	.95	.94	.93	.92	.92
20.1500	.91	.91	.91	.91	.91
20.4000	.90	.90	.90	.90	.90
20.6500	.90	.90	.89	.89	.89
20.9000	.89	.89	.88	.88	.88
21.1500	.88	.88	.88	.87	.87
21.4000	.87	.87	.87	.87	.86
21.6500	.86	.86	.86	.86	.85
21.9000	.85	.85	.85	.85	.85
22.1500	.85	.84	.84	.84	.84
22.4000	.84	.83	.83	.83	.83
22.6500	.83	.83	.82	.82	.82
22.9000	.82	.82	.81	.81	.81
23.1500	.81	.81	.81	.81	.80
23.4000	.80	.80	.80	.80	.79

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time | | | | | |  
hrs					

Time hrs	Time on left represents time for first value in each row.				
23.6500	.79	.79	.79	.79	.79
23.9000	.79	.78	.78	.55	.18
24.1500	.05	.01	.00	.00	

LEVEL POOL ROUTING SUMMARY

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Inflow HYG file = NONE STORED - CS BASIN3 IN 2  
 Outflow HYG file = NONE STORED - CS BASIN3 OUT 2

Pond Node Data = CS BASIN3  
 Pond Volume Data = CS BASIN3  
 Pond Outlet Data = Countryside 3

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 605.50 ft  
 Starting Volume = 0 cu.ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

=====  
 Peak Inflow = 28.78 cfs at 11.9500 hrs  
 Peak Outflow = 7.93 cfs at 12.1000 hrs  
 -----  
 Peak Elevation = 610.37 ft  
 Peak Storage = 19524 cu.ft  
 =====

MASS BALANCE (cu.ft)

-----  
 + Initial Vol = 0  
 + HYG Vol IN = 69475  
 - Infiltration = 0  
 - HYG Vol OUT = 69475  
 - Retained Vol = 0  
 -----  
 Unrouted Vol = - cu.ft (.000% of Inflow Volume)

POND ROUTED TOTAL OUTFLOW HYG...

HYG file =  
 HYG ID = CS BASIN3 OUT  
 HYG Tag = 2  
 -----  
 Peak Discharge = 7.93 cfs  
 Time to Peak = 12.1000 hrs  
 HYG Volume = 69475 cu.ft  
 -----

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

Time hrs					
7.9000	.00	.00	.00	.01	.01
8.1500	.01	.01	.02	.02	.03
8.4000	.03	.03	.04	.04	.05
8.6500	.05	.06	.07	.07	.08
8.9000	.08	.09	.10	.10	.11
9.1500	.12	.12	.13	.13	.14
9.4000	.14	.15	.15	.16	.17
9.6500	.17	.18	.19	.20	.21
9.9000	.22	.24	.25	.26	.27
10.1500	.29	.30	.32	.34	.36
10.4000	.38	.40	.42	.44	.46
10.6500	.49	.52	.55	.58	.62
10.9000	.65	.69	.73	.77	.82
11.1500	.88	.96	1.03	1.10	1.18
11.4000	1.27	1.36	1.45	1.70	2.22
11.6500	2.96	3.78	4.32	4.87	5.46
11.9000	6.18	6.88	7.43	7.79	7.93
12.1500	7.93	7.88	7.81	7.73	7.64
12.4000	7.55	7.45	7.34	7.22	7.10
12.6500	6.97	6.83	6.69	6.55	6.40
12.9000	6.25	6.10	5.93	5.77	5.59
13.1500	5.43	5.24	5.05	4.84	4.61
13.4000	4.34	4.07	3.61	2.90	2.20
13.6500	1.72	1.45	1.33	1.26	1.22
13.9000	1.19	1.16	1.13	1.11	1.09
14.1500	1.07	1.05	1.04	1.03	1.02
14.4000	1.01	1.00	1.00	.99	.97
14.6500	.96	.95	.95	.93	.92
14.9000	.92	.91	.90	.89	.88
15.1500	.87	.86	.85	.84	.83
15.4000	.82	.81	.80	.79	.78

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

Time hrs					
15.6500	.77	.76	.75	.74	.73
15.9000	.72	.71	.70	.69	.68
16.1500	.68	.67	.67	.66	.66
16.4000	.66	.65	.65	.65	.64
16.6500	.64	.64	.63	.63	.63
16.9000	.62	.62	.62	.61	.61
17.1500	.61	.60	.60	.60	.59
17.4000	.59	.58	.58	.58	.57
17.6500	.57	.57	.56	.56	.56
17.9000	.55	.55	.55	.54	.54
18.1500	.53	.53	.53	.52	.52
18.4000	.52	.51	.51	.51	.50
18.6500	.50	.50	.49	.49	.48
18.9000	.48	.48	.47	.47	.47
19.1500	.46	.46	.45	.45	.45
19.4000	.44	.44	.44	.43	.43
19.6500	.43	.42	.42	.41	.41
19.9000	.41	.40	.40	.40	.39
20.1500	.39	.39	.39	.39	.39
20.4000	.39	.39	.39	.39	.39
20.6500	.38	.38	.38	.38	.38
20.9000	.38	.38	.38	.38	.38
21.1500	.38	.38	.38	.38	.38
21.4000	.37	.37	.37	.37	.37
21.6500	.37	.37	.37	.37	.37
21.9000	.37	.37	.37	.37	.36
22.1500	.36	.36	.36	.36	.36
22.4000	.36	.36	.36	.36	.36
22.6500	.36	.36	.36	.35	.35
22.9000	.35	.35	.35	.35	.35
23.1500	.35	.35	.35	.35	.35
23.4000	.35	.35	.35	.34	.34
23.6500	.34	.34	.34	.34	.34
23.9000	.34	.34	.34	.29	.16
24.1500	.05	.01	.00	.00	

LEVEL POOL ROUTING SUMMARY

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Inflow HYG file = NONE STORED - CS BASIN3 IN 10  
 Outflow HYG file = NONE STORED - CS BASIN3 OUT 10

Pond Node Data = CS BASIN3  
 Pond Volume Data = CS BASIN3  
 Pond Outlet Data = Countryshire 3

No Infiltration

INITIAL CONDITIONS

```
-----
Starting WS Elev = 605.50 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = .0500 hrs
```

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

```
=====
Peak Inflow = 48.38 cfs at 11.9500 hrs
Peak Outflow = 18.73 cfs at 12.1000 hrs
-----
Peak Elevation = 612.38 ft
Peak Storage = 37044 cu.ft
=====
```

MASS BALANCE (cu.ft)

```
-----
+ Initial Vol = 0
+ HYG Vol IN = 118654
- Infiltration = 0
- HYG Vol OUT = 118654
- Retained Vol = 0
-----
Unrouted Vol = - cu.ft (.000% of Inflow Volume)
```



POND ROUTED TOTAL OUTFLOW HYG...  
 HYG file =  
 HYG ID = CS BASIN3 OUT  
 HYG Tag = 10  
 -----  
 Peak Discharge = 18.73 cfs  
 Time to Peak = 12.1000 hrs  
 HYG Volume = 118654 cu.ft  
 -----

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

Time hrs					
6.1500	.00	.00	.00	.01	.01
6.4000	.02	.02	.03	.03	.03
6.6500	.04	.04	.05	.05	.06
6.9000	.06	.07	.07	.08	.08
7.1500	.09	.09	.10	.10	.11
7.4000	.11	.12	.12	.13	.13
7.6500	.14	.14	.15	.15	.16
7.9000	.16	.17	.17	.18	.19
8.1500	.20	.20	.21	.22	.23
8.4000	.24	.26	.27	.28	.29
8.6500	.30	.31	.33	.34	.35
8.9000	.37	.38	.40	.41	.42
9.1500	.43	.44	.45	.46	.46
9.4000	.47	.48	.49	.50	.51
9.6500	.53	.55	.57	.59	.61
9.9000	.63	.66	.68	.71	.73
10.1500	.76	.80	.83	.87	.90
10.4000	.94	.98	1.01	1.05	1.09
10.6500	1.14	1.20	1.26	1.32	1.38
10.9000	1.44	1.51	1.58	1.65	1.73
11.1500	1.84	1.96	2.09	2.24	2.38
11.4000	2.53	2.68	2.84	3.18	3.74
11.6500	4.25	4.80	5.39	6.04	6.80
11.9000	7.67	8.49	9.10	14.46	18.73
12.1500	15.84	12.89	11.00	9.93	9.28
12.4000	9.22	9.17	9.10	9.03	8.95
12.6500	8.87	8.78	8.69	8.60	8.50
12.9000	8.41	8.30	8.20	8.09	7.98
13.1500	7.87	7.76	7.64	7.52	7.39
13.4000	7.27	7.13	7.00	6.86	6.72
13.6500	6.58	6.43	6.28	6.12	5.96

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

Time hrs					
13.9000	5.80	5.63	5.46	5.29	5.10
14.1500	4.90	4.68	4.43	4.19	3.86
14.4000	3.31	2.65	2.13	1.80	1.64
14.6500	1.56	1.52	1.49	1.47	1.46
14.9000	1.44	1.43	1.41	1.39	1.38
15.1500	1.36	1.35	1.33	1.32	1.30
15.4000	1.29	1.27	1.25	1.24	1.22
15.6500	1.20	1.19	1.17	1.16	1.14
15.9000	1.13	1.11	1.09	1.08	1.07
16.1500	1.06	1.05	1.04	1.04	1.03
16.4000	1.03	1.02	1.01	1.01	1.00
16.6500	1.00	.99	.99	.98	.97
16.9000	.97	.96	.96	.95	.95
17.1500	.94	.94	.93	.92	.92
17.4000	.91	.91	.90	.90	.89
17.6500	.88	.88	.87	.87	.86
17.9000	.86	.85	.85	.84	.83
18.1500	.83	.82	.82	.81	.81
18.4000	.80	.79	.79	.78	.78
18.6500	.77	.77	.76	.75	.75
18.9000	.74	.74	.73	.73	.72
19.1500	.72	.71	.70	.70	.69
19.4000	.69	.68	.68	.67	.66
19.6500	.66	.65	.65	.64	.63
19.9000	.63	.62	.62	.61	.61
20.1500	.61	.60	.60	.60	.60
20.4000	.60	.60	.60	.60	.59
20.6500	.59	.59	.59	.59	.59
20.9000	.59	.59	.59	.58	.58
21.1500	.58	.58	.58	.58	.58
21.4000	.58	.58	.58	.57	.57
21.6500	.57	.57	.57	.57	.57
21.9000	.57	.57	.56	.56	.56
22.1500	.56	.56	.56	.56	.56
22.4000	.55	.55	.55	.55	.55
22.6500	.55	.55	.55	.55	.54
22.9000	.54	.54	.54	.54	.54
23.1500	.54	.54	.54	.54	.53
23.4000	.53	.53	.53	.53	.53
23.6500	.53	.53	.53	.52	.52
23.9000	.52	.52	.52	.44	.24
24.1500	.07	.02	.01	.00	

LEVEL POOL ROUTING SUMMARY

HYG Dir = S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\  
 Inflow HYG file = NONE STORED - CS BASIN3 IN 100  
 Outflow HYG file = NONE STORED - CS BASIN3 OUT 100

Pond Node Data = CS BASIN3  
 Pond Volume Data = CS BASIN3  
 Pond Outlet Data = Countryshire 3

No Infiltration

INITIAL CONDITIONS

-----  
 Starting WS Elev = 605.50 ft  
 Starting Volume = 0 cu.ft  
 Starting Outflow = .00 cfs  
 Starting Infiltr. = .00 cfs  
 Starting Total Qout = .00 cfs  
 Time Increment = .0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

=====  
 Peak Inflow = 77.58 cfs at 11.9500 hrs  
 Peak Outflow = 59.40 cfs at 12.0000 hrs  
 -----  
 Peak Elevation = 613.27 ft  
 Peak Storage = 46291 cu.ft  
 =====

MASS BALANCE (cu.ft)

-----  
 + Initial Vol = 0  
 + HYG Vol IN = 195019  
 - Infiltration = 0  
 - HYG Vol OUT = 195019  
 - Retained Vol = 0  
 -----  
 Unrouted Vol = 0 cu.ft (.000% of Outflow Volume)

POND ROUTED TOTAL OUTFLOW HYG...  
 HYG file =  
 HYG ID = CS BASIN3 OUT  
 HYG Tag = 100  
 -----  
 Peak Discharge = 59.40 cfs  
 Time to Peak = 12.0000 hrs  
 HYG Volume = 195019 cu.ft  
 -----

HYDROGRAPH ORDINATES (cfs)  
 Output Time increment = .0500 hrs

Time |  
 hrs | Time on left represents time for first value in each row.

Time hrs	0.00	0.05	0.10	0.15	0.20
4.6500	.00	.00	.01	.01	.02
4.9000	.02	.03	.04	.04	.05
5.1500	.06	.06	.07	.08	.08
5.4000	.09	.10	.10	.11	.12
5.6500	.13	.13	.14	.15	.16
5.9000	.16	.17	.18	.19	.19
6.1500	.20	.21	.22	.23	.23
6.4000	.24	.25	.26	.27	.28
6.6500	.28	.29	.30	.31	.32
6.9000	.33	.33	.34	.35	.36
7.1500	.37	.38	.39	.40	.40
7.4000	.41	.42	.43	.44	.45
7.6500	.46	.47	.48	.49	.50
7.9000	.51	.51	.52	.54	.55
8.1500	.56	.58	.60	.62	.64
8.4000	.67	.69	.71	.73	.76
8.6500	.78	.80	.83	.85	.88
8.9000	.91	.93	.96	.98	1.00
9.1500	1.02	1.03	1.04	1.05	1.07
9.4000	1.08	1.09	1.10	1.11	1.13
9.6500	1.16	1.19	1.23	1.27	1.31
9.9000	1.35	1.39	1.43	1.48	1.52
10.1500	1.58	1.63	1.69	1.75	1.81
10.4000	1.88	1.94	2.01	2.07	2.15
10.6500	2.23	2.33	2.42	2.52	2.62
10.9000	2.73	2.83	2.94	3.06	3.19
11.1500	3.33	3.49	3.65	3.81	3.98
11.4000	4.09	4.21	4.33	4.54	4.89
11.6500	5.36	5.96	6.68	7.47	8.34
11.9000	9.50	44.22	59.40	59.15	48.52
12.1500	29.96	21.05	16.43	13.87	12.25

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

Time hrs					
12.4000	11.10	10.28	9.67	9.27	9.22
12.6500	9.17	9.12	9.06	9.00	8.94
12.9000	8.88	8.81	8.74	8.66	8.58
13.1500	8.50	8.42	8.34	8.25	8.16
13.4000	8.07	7.98	7.88	7.78	7.68
13.6500	7.57	7.47	7.36	7.25	7.13
13.9000	7.01	6.89	6.77	6.64	6.51
14.1500	6.38	6.25	6.12	5.98	5.84
14.4000	5.69	5.55	5.41	5.27	5.12
14.6500	4.95	4.78	4.60	4.40	4.21
14.9000	4.00	3.64	3.22	2.80	2.49
15.1500	2.29	2.16	2.08	2.04	2.00
15.4000	1.97	1.94	1.92	1.89	1.87
15.6500	1.84	1.82	1.79	1.77	1.74
15.9000	1.72	1.70	1.67	1.65	1.63
16.1500	1.61	1.60	1.59	1.58	1.57
16.4000	1.56	1.55	1.54	1.53	1.53
16.6500	1.52	1.51	1.50	1.49	1.48
16.9000	1.47	1.47	1.46	1.45	1.44
17.1500	1.43	1.42	1.41	1.41	1.40
17.4000	1.39	1.38	1.37	1.36	1.35
17.6500	1.35	1.34	1.33	1.32	1.31
17.9000	1.30	1.29	1.29	1.28	1.27
18.1500	1.26	1.25	1.24	1.23	1.22
18.4000	1.21	1.21	1.20	1.19	1.18
18.6500	1.17	1.16	1.15	1.15	1.14
18.9000	1.13	1.12	1.11	1.10	1.09
19.1500	1.09	1.08	1.07	1.06	1.05
19.4000	1.04	1.03	1.02	1.02	1.01
19.6500	1.00	.99	.98	.97	.96
19.9000	.95	.94	.93	.92	.92
20.1500	.92	.91	.91	.91	.91
20.4000	.91	.90	.90	.90	.90
20.6500	.90	.90	.89	.89	.89
20.9000	.89	.89	.88	.88	.88
21.1500	.88	.88	.88	.87	.87
21.4000	.87	.87	.87	.87	.86
21.6500	.86	.86	.86	.86	.86
21.9000	.85	.85	.85	.85	.85
22.1500	.85	.84	.84	.84	.84
22.4000	.84	.83	.83	.83	.83
22.6500	.83	.83	.83	.82	.82
22.9000	.82	.82	.82	.81	.81
23.1500	.81	.81	.81	.81	.81
23.4000	.80	.80	.80	.80	.80

Type... Pond Routed HYG (total out) Page 13.73  
 Name... CS BASIN3 OUT Tag: 100 Event: 100 yr  
 File... S:\JOBS\Jobs2007\07-0041\Data-C\DETENTION\7-26-07\PHASE 2 PROPOSED-A.PPW  
 Storm... TypeII 24hr Tag: 100

HYDROGRAPH ORDINATES (cfs)

Output Time increment = .0500 hrs

Time on left represents time for first value in each row.

---

Time hrs					
23.6500	.79	.79	.79	.79	.79
23.9000	.79	.78	.78	.66	.36
24.1500	.11	.03	.01	.00	

## Index of Starting Page Numbers for ID Names

## ----- B -----

BASIN A... 11.01, 13.01  
BASIN A IN 2... 13.04, 13.07,  
13.10, 13.14, 13.15, 13.17, 13.18,  
13.20, 13.21  
BASIN B... 11.02, 13.24  
BASIN B IN 2... 13.27, 13.30,  
13.34, 13.38, 13.39, 13.41, 13.42,  
13.45, 13.46  
BYPASS AREA... 5.01, 6.01, 7.03,  
7.04, 7.06, 7.07, 7.09, 7.10

## ----- C -----

CHN-TRAPZ - 1... 8.01, 8.03  
COUNTRYSHIRE... 5.05, 6.02, 7.12,  
7.13, 7.15, 7.16, 7.18, 7.19  
Countryshire 3... 12.01, 12.04,  
12.16  
CS BASIN3... 11.03, 13.49  
CS BASIN3 IN 2... 13.54, 13.57,  
13.60, 13.64, 13.65, 13.67, 13.68,  
13.70, 13.71

## ----- J -----

JUNCTION A 2... 10.01, 10.04, 10.07

## ----- O -----

OUTFALL 2... 10.11, 10.15, 10.19  
Outlet A... 12.19, 12.23, 12.41  
Outlet B1... 12.43, 12.46, 12.56

## ----- R -----

REACH A... 9.01, 9.04, 9.05, 9.08,  
9.09, 9.12, 9.13

## ----- S -----

ST. CHARLES COUN... 4.01, 4.02  
SUBAREA A... 5.07, 6.03, 7.22, 7.23,  
7.25, 7.26, 7.28, 7.29  
SUBAREA B... 5.12, 6.04, 7.32, 7.33,  
7.35, 7.36, 7.39, 7.40

## ----- W -----

WARNING... 1.01  
Watershed... 2.01, 3.01, 3.02, 3.04,  
3.05, 3.07, 3.08, 3.10