As built File

STORMWATER DETENTION ANALYSIS
CREATIVE CORNER DAY CARE
DESAIN AND ASSOCIATES
November 11, 2004 (ASB. 2/08/07)

INTRODUCTION

The purpose of this report is to analyze the storm water detention basin proposed for the Creative Corner Day Care as shown on the construction plans by DeSain and Associates.

Storm water detention requirements for the City of O'Fallon will be used. The basin will be designed such that storage volume and outflow rates shall be proportioned to insure that the peak rate of runoff leaving the site under post-developed conditions is less than or equal to the peak rate of runoff leaving the site under pre-developed conditions for the required design storms. The proposed basin is located in the center of the property. This basin will provide detention such that the peak rate of runoff leaving the watershed at the discharge point under post-developed conditions is less than or equal to the peak rate under pre-developed conditions. The basin will be analyzed for the 2, 15, 25 and 100 year 20 minute storms.

GENERAL SITE DATA AND RUNOFF CALCULATIONS:

1) Area of tract: 2.25 Acres

2) The pre-developed PI factors to be used for this analysis are:
   2 year-20 minute storm: 1.33 cfs/Ac

   15 year-20 minute storm: 1.87 cfs/Ac

   25 year-20 minute storm: 2.31 cfs/Ac

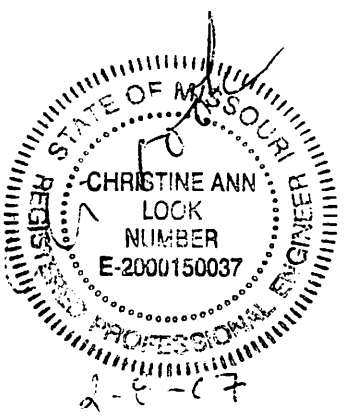
   100 year-20 minute storm: 2.61 cfs/Ac

3) The post-developed runoff coefficients and rainfall intensities to be used for this analysis are:
   2 year-20 minute storm: 2.73 cfs/Ac

   15 year-20 minute storm: 3.85 cfs/Ac

   25 year-20 minute storm: 4.75 cfs/Ac

   100 year-20 minute storm: 6.08 cfs/Ac



2 YEAR

Existing flow = 2.25 acres @ 1.33 cfs/Ac = 2.99 cfs

Proposed runoff
2.25 acres @ 2.73 cfs/Ac = 6.14 cfs

Required detention = 6.14-2.99=3.15 cfs

Flow to basin
1.53 acres @ 2.73 cfs/Ac = 4.18 cfs

Allowable Discharge = 4.18-3.15=1.03 cfs

15 YEAR

Existing flow = 2.25 acres @ 1.87 cfs/Ac = 4.21 cfs

Proposed runoff
2.25 acres @ 3.85 cfs/Ac = 8.66 cfs

Required detention = 8.66-4.21=4.45 cfs

Flow to basin
1.53 acres @ 3.85 cfs/Ac = 5.89 cfs

Allowable Discharge = 5.89-4.45=1.44 cfs

25 YEAR

Existing flow = 2.25 acres @ 2.31 cfs/Ac = 5.20 cfs

Proposed runoff
2.25 acres @ 4.75 cfs/Ac = 10.69 cfs

Required detention = 10.69-5.20=5.49 cfs

Flow to basin
1.53 acres @ 4.75 cfs/Ac = 7.27 cfs

Allowable Discharge = 7.27-5.49=1.78 cfs

100 YEAR

Existing flow = 2.25 acres @ 2.61 cfs/Ac = 5.87 cfs

Proposed runoff
2.25 acres @ 6.08 cfs/Ac = 13.68 cfs

Required detention = 13.68-5.87=7.81 cfs

Flow to basin
1.53 acres @ 6.08 cfs/Ac = 9.24 cfs

Allowable Discharge = 9.24-7.81=1.43 cfs

TIME OF CONCENTRATION

As shown in Figure A,
Tc = 424' overland flow (23' fall)
Tc = 5 minutes

ROUTING CALCULATIONS AND RESULTS

PondPack version 9 was utilized in routing the design storms through the basin. As found in the routing calculations, the results are as follows:

2 year-20 minute storm
Peak release rate = 0.94 cfs < 1.03 cfs (permitted release rate) **ASB 0.95 < 1.03**

15 year-20 minute storm
Peak release rate = 1.06 cfs < 1.44 cfs (permitted release rate) **ASB 1.05 < 1.44**

25 year-20 minute storm
Peak release rate = 1.41 cfs < 1.78 cfs (permitted release rate) **ASB 1.11 < 1.78**

100 year-20 minute storm
Peak release rate = 1.23 cfs < 1.47 cfs (permitted release rate) **ASB 1.18 < 1.47**

SUMMARY

2 year H.W.	531.81	ASB 531.63
15 year H.W.	532.51	ASB 532.47
25 year H.W.	533.01	ASB 533.01
100 year H.W.	533.64	ASB 533.69
100 year blocked	533.99	ASB 533.91

Top of Berm	535.00
Structure	42" dia. Standpipe Sill elevation = 534.00 Low-flow slot 3"w x 6"h rectangular slot at 529.00

SEE STRUCTURE DRAWING ON AS-BUILT PLAN BY BAX ENGINEERING

MASTER DESIGN STORM SUMMARY

Hydrograph Queue Only Network

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

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

Node ID		Type	Return Event	HYG Vol ac-ft	Trun	Qpeak min	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
HYD QUEUE 10		HYG	2	.115		5.00	4.18		
HYD QUEUE 10		HYG	15	.162		5.00	5.89		
HYD QUEUE 10		HYG	100	.255		5.00	9.24		
HYD QUEUE 10		HYG	25	.200		5.00	7.27		
*OUT 10		JCT	2	.115		23.00	.95		
*OUT 10		JCT	15	.162		23.00	1.05		
*OUT 10		JCT	100	.255		23.00	1.18		
*OUT 10		JCT	25	.200		23.00	1.11		
POND 10	IN	POND	2	.115		5.00	4.18		
POND 10	IN	POND	15	.162		5.00	5.89		
POND 10	IN	POND	100	.255		5.00	9.24		
POND 10	IN	POND	25	.200		5.00	7.27		
POND 10	OUT	POND	2	.115		23.00	.95	531.63	.092
POND 10	OUT	POND	15	.162		23.00	1.05	532.47	.136
POND 10	OUT	POND	100	.255		23.00	1.18	533.69	.224
POND 10	OUT	POND	25	.200		23.00	1.11	533.01	.172

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

Node ID		Type	HYG Vol ac-ft	Trun.	Qpeak min	Qpeak cfs	Max WSEL ft
HYD QUEUE 10		HYG	.115		5.00	4.18	
Outfall OUT 10		JCT	.115		23.00	.95	
POND 10	IN	POND	.115		5.00	4.18	
POND 10	OUT	POND	.115		23.00	.95	531.63

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

	Node ID		Type	HYG Vol ac-ft	Trun.	Qpeak min	Qpeak cfs	Max WSEL ft
	HYD QUEUE 10		HYG	.162		5.00	5.89	
Outfall	OUT 10		JCT	.162		23.00	1.05	
	POND 10	IN	POND	.162		5.00	5.89	
	POND 10	OUT	POND	.162		23.00	1.05	532.47

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

	Node ID		Type	HYG Vol ac-ft	Trun.	Qpeak min	Qpeak cfs	Max WSEL ft
	HYD QUEUE 10		HYG	.200		5.00	7.27	
Outfall	OUT 10		JCT	.200		23.00	1.11	
	POND 10	IN	POND	.200		5.00	7.27	
	POND 10	OUT	POND	.200		23.00	1.11	533.01

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

	Node ID		Type	HYG Vol ac-ft	Trun.	Qpeak min	Qpeak cfs	Max WSEL ft
	HYD QUEUE 10		HYG	.255		5.00	9.24	
Outfall	OUT 10		JCT	.255		23.00	1.18	
	POND 10	IN	POND	.255		5.00	9.24	
	POND 10	OUT	POND	.255		23.00	1.18	533.69

HYG file =
HYG ID = 2 year
HYG Tag =

Peak Discharge =	4.18 cfs
Time to Peak =	5.00 min
HYG Volume =	.115 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
.00	.00	.84	1.67	2.51	3.34
5.00	4.18	4.18	4.18	4.18	4.18
10.00	4.18	4.18	4.18	4.18	4.18
15.00	4.18	4.18	4.18	4.18	4.18
20.00	4.18	3.34	2.51	1.67	.84
25.00	.00	.00	.00	.00	.00
30.00	.00	.00	.00	.00	.00
35.00	.00	.00	.00	.00	.00
40.00	.00	.00	.00	.00	.00
45.00	.00	.00	.00	.00	.00
50.00	.00	.00	.00	.00	.00
55.00	.00	.00	.00	.00	.00
60.00	.00	.00	.00	.00	.00
65.00	.00	.00	.00	.00	.00
70.00	.00	.00	.00	.00	.00
75.00	.00	.00	.00	.00	.00
80.00	.00	.00	.00	.00	.00
85.00	.00	.00	.00	.00	.00
90.00	.00	.00	.00	.00	.00
95.00	.00	.00	.00	.00	.00
100.00	.00	.00	.00	.00	.00
105.00	.00	.00	.00	.00	.00
110.00	.00	.00	.00	.00	.00
115.00	.00	.00	.00	.00	.00
120.00	.00	.00	.00	.00	.00
125.00	.00	.00	.00	.00	.00
130.00	.00	.00	.00	.00	.00
135.00	.00	.00	.00	.00	.00
140.00	.00	.00	.00	.00	.00
145.00	.00	.00	.00	.00	.00
150.00	.00	.00	.00	.00	.00

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
155.00	.00	.00	.00	.00	.00
160.00	.00	.00	.00	.00	.00
165.00	.00	.00	.00	.00	.00
170.00	.00	.00	.00	.00	.00
175.00	.00	.00	.00	.00	.00
180.00	.00	.00	.00	.00	.00
185.00	.00	.00	.00	.00	.00
190.00	.00	.00	.00	.00	.00
195.00	.00	.00	.00	.00	.00
200.00	.00	.00	.00	.00	.00
205.00	.00	.00	.00	.00	.00
210.00	.00	.00	.00	.00	.00
215.00	.00	.00	.00	.00	.00
220.00	.00	.00	.00	.00	.00
225.00	.00	.00	.00	.00	.00
230.00	.00	.00	.00	.00	.00
235.00	.00	.00	.00	.00	.00
240.00	.00	.00	.00	.00	.00
245.00	.00	.00	.00	.00	.00
250.00	.00				

HYG file =
HYG ID = 15 year
HYG Tag =

Peak Discharge =	5.89 cfs
Time to Peak =	5.00 min
HYG Volume =	.162 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
.00	.00	1.18	2.36	3.53	4.71
5.00	5.89	5.89	5.89	5.89	5.89
10.00	5.89	5.89	5.89	5.89	5.89
15.00	5.89	5.89	5.89	5.89	5.89
20.00	5.89	4.71	3.53	2.36	1.18
25.00	.00	.00	.00	.00	.00
30.00	.00	.00	.00	.00	.00
35.00	.00	.00	.00	.00	.00
40.00	.00	.00	.00	.00	.00
45.00	.00	.00	.00	.00	.00
50.00	.00	.00	.00	.00	.00
55.00	.00	.00	.00	.00	.00
60.00	.00	.00	.00	.00	.00
65.00	.00	.00	.00	.00	.00
70.00	.00	.00	.00	.00	.00
75.00	.00	.00	.00	.00	.00
80.00	.00	.00	.00	.00	.00
85.00	.00	.00	.00	.00	.00
90.00	.00	.00	.00	.00	.00
95.00	.00	.00	.00	.00	.00
100.00	.00	.00	.00	.00	.00
105.00	.00	.00	.00	.00	.00
110.00	.00	.00	.00	.00	.00
115.00	.00	.00	.00	.00	.00
120.00	.00	.00	.00	.00	.00
125.00	.00	.00	.00	.00	.00
130.00	.00	.00	.00	.00	.00
135.00	.00	.00	.00	.00	.00
140.00	.00	.00	.00	.00	.00
145.00	.00	.00	.00	.00	.00
150.00	.00	.00	.00	.00	.00

Name.... HYD QUEUE 10 Event: 15 yr
File.... C:\Documents and Settings\Christopher Look\My Documents\CREATIVEDETENTIONASB.PPW
Storm... Tag: 15

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
155.00	.00	.00	.00	.00	.00
160.00	.00	.00	.00	.00	.00
165.00	.00	.00	.00	.00	.00
170.00	.00	.00	.00	.00	.00
175.00	.00	.00	.00	.00	.00
180.00	.00	.00	.00	.00	.00
185.00	.00	.00	.00	.00	.00
190.00	.00	.00	.00	.00	.00
195.00	.00	.00	.00	.00	.00
200.00	.00	.00	.00	.00	.00
205.00	.00	.00	.00	.00	.00
210.00	.00	.00	.00	.00	.00
215.00	.00	.00	.00	.00	.00
220.00	.00	.00	.00	.00	.00
225.00	.00	.00	.00	.00	.00
230.00	.00	.00	.00	.00	.00
235.00	.00	.00	.00	.00	.00
240.00	.00	.00	.00	.00	.00
245.00	.00	.00	.00	.00	.00
250.00	.00				

HYG file =
HYG ID = 25 year
HYG Tag =

Peak Discharge =	7.27 cfs
Time to Peak =	5.00 min
HYG Volume =	.200 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
.00	.00	1.45	2.91	4.36	5.82
5.00	7.27	7.27	7.27	7.27	7.27
10.00	7.27	7.27	7.27	7.27	7.27
15.00	7.27	7.27	7.27	7.27	7.27
20.00	7.27	5.82	4.36	2.91	1.45
25.00	.00	.00	.00	.00	.00
30.00	.00	.00	.00	.00	.00
35.00	.00	.00	.00	.00	.00
40.00	.00	.00	.00	.00	.00
45.00	.00	.00	.00	.00	.00
50.00	.00	.00	.00	.00	.00
55.00	.00	.00	.00	.00	.00
60.00	.00	.00	.00	.00	.00
65.00	.00	.00	.00	.00	.00
70.00	.00	.00	.00	.00	.00
75.00	.00	.00	.00	.00	.00
80.00	.00	.00	.00	.00	.00
85.00	.00	.00	.00	.00	.00
90.00	.00	.00	.00	.00	.00
95.00	.00	.00	.00	.00	.00
100.00	.00	.00	.00	.00	.00
105.00	.00	.00	.00	.00	.00
110.00	.00	.00	.00	.00	.00
115.00	.00	.00	.00	.00	.00
120.00	.00	.00	.00	.00	.00
125.00	.00	.00	.00	.00	.00
130.00	.00	.00	.00	.00	.00
135.00	.00	.00	.00	.00	.00
140.00	.00	.00	.00	.00	.00
145.00	.00	.00	.00	.00	.00
150.00	.00	.00	.00	.00	.00

Type.... Read HYD
Name.... HYD QUEUE 10 Event: 25 yr
File.... C:\Documents and Settings\Christopher Look\My Documents\CREATIVEDETENTIONASB.PPW
Storm... Tag: 25

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
155.00	.00	.00	.00	.00	.00
160.00	.00	.00	.00	.00	.00
165.00	.00	.00	.00	.00	.00
170.00	.00	.00	.00	.00	.00
175.00	.00	.00	.00	.00	.00
180.00	.00	.00	.00	.00	.00
185.00	.00	.00	.00	.00	.00
190.00	.00	.00	.00	.00	.00
195.00	.00	.00	.00	.00	.00
200.00	.00	.00	.00	.00	.00
205.00	.00	.00	.00	.00	.00
210.00	.00	.00	.00	.00	.00
215.00	.00	.00	.00	.00	.00
220.00	.00	.00	.00	.00	.00
225.00	.00	.00	.00	.00	.00
230.00	.00	.00	.00	.00	.00
235.00	.00	.00	.00	.00	.00
240.00	.00	.00	.00	.00	.00
245.00	.00	.00	.00	.00	.00
250.00	.00				

HYG file =
HYG ID = 100 year
HYG Tag =

Peak Discharge =	9.24 cfs
Time to Peak =	5.00 min
HYG Volume =	.255 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
.00	.00	1.85	3.70	5.54	7.39
5.00	9.24	9.24	9.24	9.24	9.24
10.00	9.24	9.24	9.24	9.24	9.24
15.00	9.24	9.24	9.24	9.24	9.24
20.00	9.24	7.39	5.54	3.70	1.85
25.00	.00	.00	.00	.00	.00
30.00	.00	.00	.00	.00	.00
35.00	.00	.00	.00	.00	.00
40.00	.00	.00	.00	.00	.00
45.00	.00	.00	.00	.00	.00
50.00	.00	.00	.00	.00	.00
55.00	.00	.00	.00	.00	.00
60.00	.00	.00	.00	.00	.00
65.00	.00	.00	.00	.00	.00
70.00	.00	.00	.00	.00	.00
75.00	.00	.00	.00	.00	.00
80.00	.00	.00	.00	.00	.00
85.00	.00	.00	.00	.00	.00
90.00	.00	.00	.00	.00	.00
95.00	.00	.00	.00	.00	.00
100.00	.00	.00	.00	.00	.00
105.00	.00	.00	.00	.00	.00
110.00	.00	.00	.00	.00	.00
115.00	.00	.00	.00	.00	.00
120.00	.00	.00	.00	.00	.00
125.00	.00	.00	.00	.00	.00
130.00	.00	.00	.00	.00	.00
135.00	.00	.00	.00	.00	.00
140.00	.00	.00	.00	.00	.00
145.00	.00	.00	.00	.00	.00
150.00	.00	.00	.00	.00	.00

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
155.00	.00	.00	.00	.00	.00
160.00	.00	.00	.00	.00	.00
165.00	.00	.00	.00	.00	.00
170.00	.00	.00	.00	.00	.00
175.00	.00	.00	.00	.00	.00
180.00	.00	.00	.00	.00	.00
185.00	.00	.00	.00	.00	.00
190.00	.00	.00	.00	.00	.00
195.00	.00	.00	.00	.00	.00
200.00	.00	.00	.00	.00	.00
205.00	.00	.00	.00	.00	.00
210.00	.00	.00	.00	.00	.00
215.00	.00	.00	.00	.00	.00
220.00	.00	.00	.00	.00	.00
225.00	.00	.00	.00	.00	.00
230.00	.00	.00	.00	.00	.00
235.00	.00	.00	.00	.00	.00
240.00	.00	.00	.00	.00	.00
245.00	.00	.00	.00	.00	.00
250.00	.00				

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 10

HYG Directory: C:\Documents and Settings\Christopher Look\My Documents\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ROUTE 10	POND 10	IN	ROUTE 10	2

INFLOWS TO: OUT 10

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time min	Peak Flow cfs
	ROUTE 10	2	.115	23.00	.95

TOTAL FLOW INTO: OUT 10

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time min	Peak Flow cfs
	OUT 10	2	.115	23.00	.95

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 10
HYG Tag = 2

Peak Discharge =	.95 cfs
Time to Peak =	23.00 min
HYG Volume =	.115 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
.00	.00	.09	.20	.34	.43
5.00	.51	.58	.63	.67	.70
10.00	.73	.76	.78	.81	.83
15.00	.85	.86	.88	.89	.91
20.00	.92	.94	.94	.95	.95
25.00	.95	.94	.94	.94	.93
30.00	.93	.92	.92	.92	.91
35.00	.91	.90	.90	.90	.89
40.00	.89	.88	.88	.88	.87
45.00	.87	.86	.86	.85	.85
50.00	.84	.84	.83	.83	.82
55.00	.82	.82	.81	.80	.80
60.00	.79	.79	.78	.78	.77
65.00	.77	.76	.76	.75	.74
70.00	.74	.73	.73	.72	.71
75.00	.71	.70	.70	.69	.68
80.00	.67	.67	.66	.65	.64
85.00	.64	.63	.62	.61	.61
90.00	.60	.59	.58	.57	.56
95.00	.55	.55	.54	.52	.51
100.00	.50	.49	.48	.47	.46
105.00	.45	.43	.42	.40	.39
110.00	.38	.36	.35	.33	.32
115.00	.30	.27	.25	.23	.21
120.00	.19	.18	.16	.14	.13
125.00	.11	.10	.09	.08	.07
130.00	.07	.05	.03	.02	.02
135.00	.01	.01	.01	.00	.00

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 10

HYG Directory: C:\Documents and Settings\Christopher Look\My Documents\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ROUTE 10	POND 10	IN	ROUTE 10	15

INFLOWS TO: OUT 10

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time min	Peak Flow cfs
	ROUTE 10	15	.162	23.00	1.05

TOTAL FLOW INTO: OUT 10

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time min	Peak Flow cfs
	OUT 10	15	.162	23.00	1.05

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 10
HYG Tag = 15

Peak Discharge =	1.05 cfs
Time to Peak =	23.00 min
HYG Volume =	.162 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
.00	.00	.10	.26	.39	.50
5.00	.58	.65	.70	.75	.79
10.00	.82	.85	.87	.90	.92
15.00	.94	.96	.98	.99	1.01
20.00	1.02	1.03	1.04	1.05	1.05
25.00	1.05	1.05	1.04	1.04	1.04
30.00	1.03	1.03	1.03	1.03	1.02
35.00	1.02	1.02	1.01	1.01	1.01
40.00	1.00	1.00	1.00	.99	.99
45.00	.99	.99	.98	.98	.97
50.00	.97	.97	.96	.96	.96
55.00	.95	.95	.95	.94	.94
60.00	.94	.93	.93	.92	.92
65.00	.92	.91	.91	.91	.90
70.00	.90	.89	.89	.88	.88
75.00	.88	.87	.87	.86	.86
80.00	.85	.85	.84	.84	.84
85.00	.83	.83	.82	.82	.81
90.00	.81	.80	.80	.79	.78
95.00	.78	.77	.77	.76	.76
100.00	.75	.75	.74	.73	.73
105.00	.72	.71	.71	.70	.70
110.00	.69	.68	.67	.67	.66
115.00	.65	.65	.64	.63	.62
120.00	.62	.61	.60	.59	.58
125.00	.57	.56	.56	.55	.54
130.00	.53	.52	.51	.49	.48
135.00	.47	.46	.45	.43	.42
140.00	.41	.39	.38	.36	.35
145.00	.33	.32	.30	.28	.25
150.00	.23	.21	.20	.18	.16

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
155.00	.14	.13	.12	.10	.09
160.00	.08	.08	.07	.05	.03
165.00	.02	.02	.01	.01	.01
170.00	.00	.00			

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 10

HYG Directory: C:\Documents and Settings\Christopher Look\My Documents\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ROUTE 10	POND 10	IN	ROUTE 10	25

INFLOWS TO: OUT 10

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time min	Peak Flow cfs
	ROUTE 10	25	.200	23.00	1.11

TOTAL FLOW INTO: OUT 10

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time min	Peak Flow cfs
	OUT 10	25	.200	23.00	1.11

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 10
HYG Tag = 25

Peak Discharge =	1.11 cfs
Time to Peak =	23.00 min
HYG Volume =	.200 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
.00	.00	.12	.30	.43	.54
5.00	.63	.70	.75	.80	.84
10.00	.87	.90	.93	.95	.98
15.00	1.00	1.02	1.04	1.05	1.07
20.00	1.08	1.09	1.10	1.11	1.11
25.00	1.11	1.11	1.11	1.10	1.10
30.00	1.10	1.10	1.09	1.09	1.09
35.00	1.09	1.08	1.08	1.08	1.08
40.00	1.07	1.07	1.07	1.07	1.06
45.00	1.06	1.06	1.06	1.05	1.05
50.00	1.05	1.04	1.04	1.04	1.04
55.00	1.03	1.03	1.03	1.02	1.02
60.00	1.02	1.01	1.01	1.01	1.01
65.00	1.00	1.00	1.00	.99	.99
70.00	.99	.98	.98	.98	.97
75.00	.97	.97	.96	.96	.96
80.00	.95	.95	.94	.94	.94
85.00	.93	.93	.93	.92	.92
90.00	.91	.91	.91	.90	.90
95.00	.89	.89	.89	.88	.88
100.00	.87	.87	.86	.86	.86
105.00	.85	.85	.84	.84	.83
110.00	.83	.82	.82	.81	.81
115.00	.80	.80	.79	.79	.78
120.00	.78	.77	.76	.76	.75
125.00	.75	.74	.74	.73	.72
130.00	.72	.71	.70	.70	.69
135.00	.68	.68	.67	.66	.66
140.00	.65	.64	.63	.63	.62
145.00	.61	.60	.59	.59	.58
150.00	.57	.56	.55	.54	.53

Name.... OUT 10 Event: 25 yr
File.... C:\Documents and Settings\Christopher Look\My Documents\CREATIVEDETENTIONASB.PPW
Storm... 25 Tag: 25

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
155.00	.52	.51	.50	.49	.47
160.00	.46	.45	.44	.42	.41
165.00	.40	.39	.37	.35	.34
170.00	.32	.31	.28	.26	.24
175.00	.22	.20	.19	.17	.15
180.00	.13	.12	.11	.10	.09
185.00	.08	.07	.06	.04	.03
190.00	.02	.01	.01	.01	.00
195.00	.00				

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 10

HYG Directory: C:\Documents and Settings\Christopher Look\My Documents\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ROUTE 10	POND 10	IN	ROUTE 10	100

INFLOWS TO: OUT 10

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time min	Peak Flow cfs
	ROUTE 10	100	.255	23.00	1.18

TOTAL FLOW INTO: OUT 10

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time min	Peak Flow cfs
	OUT 10	100	.255	23.00	1.18

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 10
HYG Tag = 100

Peak Discharge =	1.18 cfs
Time to Peak =	23.00 min
HYG Volume =	.255 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
.00	.00	.14	.34	.48	.59
5.00	.68	.75	.81	.86	.90
10.00	.94	.97	1.00	1.02	1.04
15.00	1.06	1.08	1.10	1.12	1.14
20.00	1.15	1.16	1.17	1.18	1.18
25.00	1.18	1.18	1.18	1.18	1.17
30.00	1.17	1.17	1.17	1.17	1.16
35.00	1.16	1.16	1.16	1.16	1.15
40.00	1.15	1.15	1.15	1.14	1.14
45.00	1.14	1.14	1.14	1.13	1.13
50.00	1.13	1.13	1.12	1.12	1.12
55.00	1.12	1.12	1.11	1.11	1.11
60.00	1.11	1.10	1.10	1.10	1.10
65.00	1.09	1.09	1.09	1.09	1.08
70.00	1.08	1.08	1.08	1.07	1.07
75.00	1.07	1.07	1.06	1.06	1.06
80.00	1.06	1.05	1.05	1.05	1.04
85.00	1.04	1.04	1.04	1.03	1.03
90.00	1.03	1.02	1.02	1.02	1.01
95.00	1.01	1.01	1.01	1.00	1.00
100.00	1.00	.99	.99	.99	.98
105.00	.98	.98	.97	.97	.97
110.00	.96	.96	.96	.95	.95
115.00	.94	.94	.94	.93	.93
120.00	.93	.92	.92	.91	.91
125.00	.91	.90	.90	.89	.89
130.00	.89	.88	.88	.87	.87
135.00	.86	.86	.86	.85	.85
140.00	.84	.84	.83	.83	.82
145.00	.82	.81	.81	.80	.80
150.00	.79	.79	.78	.78	.77

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
155.00	.76	.76	.75	.75	.74
160.00	.74	.73	.72	.72	.71
165.00	.70	.70	.69	.68	.68
170.00	.67	.66	.66	.65	.64
175.00	.63	.63	.62	.61	.60
180.00	.59	.59	.58	.57	.56
185.00	.55	.54	.53	.52	.51
190.00	.50	.49	.47	.46	.45
195.00	.44	.42	.41	.40	.39
200.00	.37	.35	.34	.33	.31
205.00	.28	.26	.24	.22	.20
210.00	.19	.17	.15	.13	.12
215.00	.11	.10	.09	.08	.07
220.00	.06	.04	.03	.02	.01
225.00	.01	.01	.00	.00	

TIME vs. ELEVATION (ft)

Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
.00	527.69	527.92	528.11	528.35	528.63
5.00	528.95	529.24	529.50	529.72	529.93
10.00	530.11	530.28	530.44	530.59	530.73
15.00	530.86	530.99	531.11	531.22	531.33
20.00	531.44	531.53	531.59	531.62	531.63
25.00	531.61	531.59	531.56	531.53	531.50
30.00	531.47	531.44	531.41	531.38	531.35
35.00	531.32	531.29	531.26	531.23	531.20
40.00	531.17	531.14	531.11	531.08	531.05
45.00	531.01	530.98	530.95	530.92	530.89
50.00	530.85	530.82	530.79	530.75	530.72
55.00	530.69	530.65	530.62	530.58	530.55
60.00	530.52	530.48	530.44	530.41	530.37
65.00	530.34	530.30	530.27	530.23	530.19
70.00	530.15	530.12	530.08	530.04	530.00
75.00	529.96	529.93	529.89	529.85	529.81
80.00	529.77	529.73	529.69	529.65	529.60
85.00	529.56	529.52	529.48	529.44	529.39
90.00	529.35	529.31	529.27	529.22	529.18
95.00	529.13	529.09	529.05	529.00	528.95
100.00	528.91	528.87	528.82	528.77	528.73
105.00	528.69	528.64	528.60	528.55	528.51
110.00	528.47	528.42	528.38	528.34	528.30
115.00	528.26	528.22	528.19	528.16	528.13
120.00	528.10	528.07	528.04	528.01	527.99
125.00	527.97	527.95	527.93	527.92	527.90
130.00	527.89	527.83	527.79	527.76	527.74
135.00	527.72	527.71	527.71	527.70	527.70

TIME vs. ELEVATION (ft)

Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
.00	527.69	527.95	528.20	528.52	528.88
5.00	529.28	529.63	529.94	530.21	530.45
10.00	530.67	530.87	531.06	531.24	531.40
15.00	531.56	531.71	531.85	531.98	532.11
20.00	532.23	532.34	532.41	532.45	532.47
25.00	532.46	532.43	532.41	532.38	532.36
30.00	532.34	532.31	532.29	532.26	532.24
35.00	532.21	532.19	532.16	532.13	532.11
40.00	532.08	532.06	532.03	532.00	531.98
45.00	531.95	531.92	531.90	531.87	531.84
50.00	531.81	531.79	531.76	531.73	531.70
55.00	531.68	531.65	531.62	531.59	531.56
60.00	531.53	531.50	531.48	531.45	531.42
65.00	531.39	531.36	531.33	531.30	531.27
70.00	531.24	531.21	531.17	531.14	531.11
75.00	531.08	531.05	531.02	530.99	530.95
80.00	530.92	530.89	530.86	530.82	530.79
85.00	530.76	530.72	530.69	530.66	530.62
90.00	530.59	530.55	530.52	530.49	530.45
95.00	530.41	530.38	530.34	530.31	530.27
100.00	530.23	530.20	530.16	530.12	530.09
105.00	530.05	530.01	529.97	529.93	529.89
110.00	529.85	529.81	529.77	529.73	529.69
115.00	529.65	529.61	529.57	529.53	529.49
120.00	529.44	529.40	529.36	529.32	529.27
125.00	529.23	529.18	529.14	529.10	529.05
130.00	529.01	528.96	528.92	528.87	528.83
135.00	528.78	528.74	528.69	528.65	528.60
140.00	528.56	528.52	528.47	528.43	528.39
145.00	528.35	528.31	528.27	528.23	528.19
150.00	528.16	528.13	528.10	528.08	528.05
155.00	528.02	527.99	527.97	527.95	527.93
160.00	527.92	527.90	527.89	527.84	527.79
165.00	527.76	527.74	527.72	527.71	527.71
170.00	527.70	527.70			

TIME vs. ELEVATION (ft)

Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
.00	527.69	527.98	528.27	528.64	529.07
5.00	529.51	529.91	530.25	530.55	530.81
10.00	531.06	531.28	531.48	531.68	531.86
15.00	532.03	532.19	532.34	532.49	532.62
20.00	532.75	532.86	532.94	532.99	533.01
25.00	533.01	532.98	532.96	532.94	532.92
30.00	532.90	532.88	532.85	532.83	532.81
35.00	532.79	532.77	532.74	532.72	532.70
40.00	532.68	532.65	532.63	532.61	532.58
45.00	532.56	532.54	532.51	532.49	532.47
50.00	532.44	532.42	532.39	532.37	532.34
55.00	532.32	532.30	532.27	532.25	532.22
60.00	532.19	532.17	532.14	532.12	532.09
65.00	532.07	532.04	532.01	531.99	531.96
70.00	531.93	531.91	531.88	531.85	531.82
75.00	531.80	531.77	531.74	531.71	531.69
80.00	531.66	531.63	531.60	531.57	531.54
85.00	531.51	531.49	531.46	531.43	531.40
90.00	531.37	531.34	531.31	531.28	531.25
95.00	531.22	531.18	531.15	531.12	531.09
100.00	531.06	531.03	531.00	530.97	530.93
105.00	530.90	530.87	530.84	530.80	530.77
110.00	530.74	530.70	530.67	530.63	530.60
115.00	530.57	530.53	530.50	530.46	530.43
120.00	530.39	530.35	530.32	530.28	530.25
125.00	530.21	530.17	530.13	530.10	530.06
130.00	530.02	529.98	529.94	529.91	529.87
135.00	529.83	529.79	529.75	529.71	529.67
140.00	529.62	529.58	529.54	529.50	529.46
145.00	529.42	529.37	529.33	529.29	529.24
150.00	529.20	529.16	529.11	529.07	529.02
155.00	528.98	528.93	528.89	528.84	528.80
160.00	528.75	528.71	528.66	528.62	528.57
165.00	528.53	528.49	528.44	528.40	528.36
170.00	528.32	528.28	528.24	528.21	528.17
175.00	528.14	528.11	528.09	528.06	528.03
180.00	528.00	527.98	527.96	527.94	527.92
185.00	527.91	527.90	527.86	527.80	527.77
190.00	527.74	527.73	527.72	527.71	527.70
195.00	527.70				

TIME vs. ELEVATION (ft)

Time min	Output Time increment = 1.00 min Time on left represents time for first value in each row.				
.00	527.69	528.01	528.36	528.81	529.30
5.00	529.80	530.26	530.64	530.97	531.26
10.00	531.53	531.78	532.01	532.22	532.41
15.00	532.60	532.77	532.93	533.09	533.24
20.00	533.39	533.51	533.61	533.66	533.69
25.00	533.69	533.67	533.65	533.63	533.61
30.00	533.59	533.57	533.55	533.53	533.51
35.00	533.49	533.46	533.44	533.42	533.40
40.00	533.38	533.36	533.34	533.32	533.30
45.00	533.28	533.26	533.24	533.22	533.20
50.00	533.18	533.15	533.13	533.11	533.09
55.00	533.07	533.05	533.03	533.01	532.98
60.00	532.96	532.94	532.92	532.90	532.88
65.00	532.86	532.83	532.81	532.79	532.77
70.00	532.74	532.72	532.70	532.68	532.65
75.00	532.63	532.61	532.58	532.56	532.54
80.00	532.51	532.49	532.47	532.44	532.42
85.00	532.39	532.37	532.35	532.32	532.30
90.00	532.27	532.25	532.22	532.19	532.17
95.00	532.14	532.12	532.09	532.07	532.04
100.00	532.01	531.99	531.96	531.93	531.91
105.00	531.88	531.85	531.82	531.80	531.77
110.00	531.74	531.71	531.69	531.66	531.63
115.00	531.60	531.57	531.54	531.52	531.49
120.00	531.46	531.43	531.40	531.37	531.34
125.00	531.31	531.28	531.25	531.22	531.19
130.00	531.16	531.12	531.09	531.06	531.03
135.00	531.00	530.97	530.93	530.90	530.87
140.00	530.84	530.80	530.77	530.74	530.70
145.00	530.67	530.64	530.60	530.57	530.53
150.00	530.50	530.46	530.43	530.39	530.36
155.00	530.32	530.29	530.25	530.21	530.17
160.00	530.14	530.10	530.06	530.02	529.98
165.00	529.95	529.91	529.87	529.83	529.79
170.00	529.75	529.71	529.67	529.63	529.58
175.00	529.54	529.50	529.46	529.42	529.37
180.00	529.33	529.29	529.25	529.20	529.16
185.00	529.11	529.07	529.02	528.98	528.93
190.00	528.89	528.84	528.80	528.75	528.71
195.00	528.66	528.62	528.57	528.53	528.49
200.00	528.45	528.40	528.36	528.32	528.28
205.00	528.24	528.21	528.17	528.14	528.11
210.00	528.09	528.06	528.03	528.00	527.98

TIME vs. ELEVATION (ft)

Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
215.00	527.96	527.94	527.92	527.91	527.90
220.00	527.86	527.81	527.77	527.75	527.73
225.00	527.72	527.71	527.70	527.70	

TIME vs. VOLUME (ac-ft)

Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
.00	.000	.000	.002	.005	.008
5.00	.013	.018	.023	.027	.032
10.00	.037	.042	.046	.051	.056
15.00	.060	.065	.069	.074	.078
20.00	.083	.087	.090	.091	.092
25.00	.091	.090	.088	.087	.086
30.00	.084	.083	.082	.081	.079
35.00	.078	.077	.076	.074	.073
40.00	.072	.071	.069	.068	.067
45.00	.066	.065	.063	.062	.061
50.00	.060	.059	.058	.056	.055
55.00	.054	.053	.052	.051	.050
60.00	.049	.048	.046	.045	.044
65.00	.043	.042	.041	.040	.039
70.00	.038	.037	.036	.035	.034
75.00	.033	.032	.031	.030	.029
80.00	.028	.027	.027	.026	.025
85.00	.024	.023	.022	.021	.020
90.00	.020	.019	.018	.017	.016
95.00	.016	.015	.014	.013	.013
100.00	.012	.011	.011	.010	.009
105.00	.009	.008	.008	.007	.006
110.00	.006	.005	.005	.004	.004
115.00	.004	.003	.003	.002	.002
120.00	.002	.002	.001	.001	.001
125.00	.001	.001	.000	.000	.000
130.00	.000	.000	.000	.000	.000
135.00	.000	.000	.000	.000	.000

TIME vs. VOLUME (ac-ft)

Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
.00	.000	.001	.003	.007	.012
5.00	.018	.025	.033	.040	.047
10.00	.054	.061	.068	.075	.081
15.00	.088	.095	.102	.109	.115
20.00	.122	.128	.132	.135	.136
25.00	.135	.134	.132	.131	.129
30.00	.128	.127	.125	.124	.122
35.00	.121	.119	.118	.117	.115
40.00	.114	.113	.111	.110	.108
45.00	.107	.106	.104	.103	.102
50.00	.100	.099	.098	.096	.095
55.00	.094	.092	.091	.090	.088
60.00	.087	.086	.085	.083	.082
65.00	.081	.079	.078	.077	.076
70.00	.075	.073	.072	.071	.070
75.00	.068	.067	.066	.065	.064
80.00	.062	.061	.060	.059	.058
85.00	.057	.056	.054	.053	.052
90.00	.051	.050	.049	.048	.047
95.00	.046	.044	.043	.042	.041
100.00	.040	.039	.038	.037	.036
105.00	.035	.034	.033	.032	.031
110.00	.030	.029	.028	.028	.027
115.00	.026	.025	.024	.023	.022
120.00	.021	.021	.020	.019	.018
125.00	.017	.016	.016	.015	.014
130.00	.013	.013	.012	.011	.011
135.00	.010	.009	.009	.008	.008
140.00	.007	.006	.006	.005	.005
145.00	.004	.004	.004	.003	.003
150.00	.003	.002	.002	.002	.001
155.00	.001	.001	.001	.001	.000
160.00	.000	.000	.000	.000	.000
165.00	.000	.000	.000	.000	.000
170.00	.000	.000			

TIME vs. VOLUME (ac-ft)

Output Time increment = 1.00 min

Time min	Time on left represents time for first value in each row.				
.00	.000	.001	.004	.008	.014
5.00	.023	.032	.041	.050	.059
10.00	.067	.076	.085	.094	.102
15.00	.111	.120	.128	.137	.145
20.00	.154	.161	.167	.170	.172
25.00	.171	.170	.168	.167	.165
30.00	.164	.162	.161	.159	.158
35.00	.156	.155	.153	.152	.150
40.00	.149	.147	.146	.144	.143
45.00	.141	.140	.139	.137	.136
50.00	.134	.133	.131	.130	.128
55.00	.127	.126	.124	.123	.121
60.00	.120	.119	.117	.116	.114
65.00	.113	.112	.110	.109	.107
70.00	.106	.105	.103	.102	.101
75.00	.099	.098	.097	.095	.094
80.00	.093	.091	.090	.089	.088
85.00	.086	.085	.084	.082	.081
90.00	.080	.079	.077	.076	.075
95.00	.074	.072	.071	.070	.069
100.00	.068	.066	.065	.064	.063
105.00	.062	.061	.059	.058	.057
110.00	.056	.055	.054	.053	.051
115.00	.050	.049	.048	.047	.046
120.00	.045	.044	.043	.042	.041
125.00	.040	.039	.038	.037	.036
130.00	.035	.034	.033	.032	.031
135.00	.030	.029	.028	.027	.026
140.00	.025	.024	.023	.023	.022
145.00	.021	.020	.019	.018	.018
150.00	.017	.016	.015	.014	.014
155.00	.013	.012	.012	.011	.010
160.00	.010	.009	.008	.008	.007
165.00	.007	.006	.006	.005	.005
170.00	.004	.004	.003	.003	.003
175.00	.002	.002	.002	.001	.001
180.00	.001	.001	.001	.000	.000
185.00	.000	.000	.000	.000	.000
190.00	.000	.000	.000	.000	.000
195.00	.000				

TIME vs. VOLUME (ac-ft)

Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
.00	.000	.001	.005	.010	.019
5.00	.029	.041	.053	.064	.076
10.00	.087	.099	.110	.121	.133
15.00	.144	.155	.166	.178	.189
20.00	.200	.210	.217	.222	.224
25.00	.224	.222	.220	.219	.217
30.00	.215	.214	.212	.211	.209
35.00	.207	.206	.204	.203	.201
40.00	.199	.198	.196	.195	.193
45.00	.192	.190	.188	.187	.185
50.00	.184	.182	.181	.179	.178
55.00	.176	.174	.173	.171	.170
60.00	.168	.167	.165	.164	.162
65.00	.161	.159	.158	.156	.155
70.00	.153	.152	.150	.149	.147
75.00	.146	.144	.143	.141	.140
80.00	.139	.137	.136	.134	.133
85.00	.131	.130	.128	.127	.126
90.00	.124	.123	.121	.120	.119
95.00	.117	.116	.114	.113	.112
100.00	.110	.109	.108	.106	.105
105.00	.104	.102	.101	.099	.098
110.00	.097	.095	.094	.093	.092
115.00	.090	.089	.088	.086	.085
120.00	.084	.083	.081	.080	.079
125.00	.077	.076	.075	.074	.073
130.00	.071	.070	.069	.068	.066
135.00	.065	.064	.063	.062	.061
140.00	.059	.058	.057	.056	.055
145.00	.054	.053	.051	.050	.049
150.00	.048	.047	.046	.045	.044
155.00	.043	.042	.041	.040	.039
160.00	.038	.037	.036	.035	.034
165.00	.033	.032	.031	.030	.029
170.00	.028	.027	.026	.025	.024
175.00	.023	.023	.022	.021	.020
180.00	.019	.018	.018	.017	.016
185.00	.015	.015	.014	.013	.012
190.00	.012	.011	.010	.010	.009
195.00	.008	.008	.007	.007	.006
200.00	.006	.005	.005	.004	.004
205.00	.003	.003	.003	.002	.002
210.00	.002	.001	.001	.001	.001

TIME vs. VOLUME (ac-ft)

Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
215.00	.001	.001	.000	.000	.000
220.00	.000	.000	.000	.000	.000
225.00	.000	.000	.000	.000	

Name.... POND 10

File.... C:\Documents and Settings\Christopher Look\My Documents\CREATIVEDETENTIONASB.PPW

POND VOLUME CALCULATIONS

Planimeter scale: 1.00 ft/in

Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
527.69	.000	.0000	.0000	.000	.000
528.00	398.530	.0091	.0091	.001	.001
529.00	699.850	.0161	.0373	.012	.013
530.00	1114.550	.0256	.0619	.021	.034
531.00	1627.780	.0374	.0939	.031	.065
532.00	2241.830	.0515	.1327	.044	.110
533.00	3129.640	.0718	.1841	.061	.171
534.00	3752.400	.0861	.2367	.079	.250
535.00	4548.540	.1044	.2854	.095	.345

POND VOLUME EQUATIONS

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

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

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

Name.... STRUCTURE

File.... C:\Documents and Settings\Christopher Look\My Documents\CREATIVEDETENTIONASB.PPW

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 527.69 ft
Increment = .20 ft
Max. Elev.= 535.00 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
Stand Pipe	ST	--->	CV	533.700	535.000
Weir-Rectangular	WR	--->	CV	527.690	528.107
Orifice-Area	OR	--->	CV	528.107	535.000
Culvert-Circular	CV	--->	TW	527.490	535.000

TW SETUP, DS Channel

OUTLET STRUCTURE INPUT DATA

Structure ID	= ST	
Structure Type	= Stand Pipe	
# of Openings	= 1	
Invert Elev.	= 533.70	ft
Diameter	= 3.5000	ft
Orifice Area	= 9.6211	sq.ft
Orifice Coeff.	= .600	
Weir Length	= 11.00	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	= WR	
Structure Type	= Weir-Rectangular	
# of Openings	= 1	
Crest Elev.	= 527.69	ft
Weir Length	= .25	ft
Weir Coeff.	= 3.000000	

Weir TW effects (Use adjustment equation)

Name.... STRUCTURE

File.... C:\Documents and Settings\Christopher Look\My Documents\CREATIVEDETENTIONASB.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID	= OR	
Structure Type	= Orifice-Area	
# of Openings	= 1	
Invert Elev.	= 527.69	ft
Area	= .1042	sq.ft
Top of Orifice	= 528.11	ft
Datum Elev.	= 527.90	ft
Orifice Coeff.	= .600	

Name.... STRUCTURE

File.... C:\Documents and Settings\Christopher Look\My Documents\CREATIVEDETENTIONASB.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID = CV
Structure Type = Culvert-Circular

No. Barrels	=	1	
Barrel Diameter	=	1.5000	ft
Upstream Invert	=	527.49	ft
Dnstream Invert	=	526.69	ft
Horiz. Length	=	50.00	ft
Barrel Length	=	50.01	ft
Barrel Slope	=	.01600	ft/ft

OUTLET CONTROL DATA...

Mannings n	=	.0130	
Ke	=	.5000	(forward entrance loss)
Kb	=	.018213	(per ft of full flow)
Kr	=	.5000	(reverse entrance loss)
HW Convergence	=	.001	+/- ft

INLET CONTROL DATA...

Equation form	=	1	
Inlet Control K	=	.0018	
Inlet Control M	=	2.0000	
Inlet Control c	=	.02920	
Inlet Control Y	=	.7400	
T1 ratio (HW/D)	=	1.054	
T2 ratio (HW/D)	=	1.199	
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 = 529.07 ft ---> Flow = 7.58 cfs
At T2 Elev = 529.29 ft ---> Flow = 8.66 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

Name.... STRUCTURE

File.... C:\Documents and Settings\Christopher Look\My Documents\CREATIVEDETENTIONASB.PPW

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
527.69	.00	Free Outfall		(no Q: ST,WR,OR,CV)
527.89	.07	Free Outfall		WR,CV (no Q: ST,OR)
528.09	.19	Free Outfall		WR,CV (no Q: ST,OR)
528.29	.31	Free Outfall		OR,CV (no Q: ST,WR)
528.49	.39	Free Outfall		OR,CV (no Q: ST,WR)
528.69	.45	Free Outfall		OR,CV (no Q: ST,WR)
528.89	.50	Free Outfall		OR,CV (no Q: ST,WR)
529.09	.55	Free Outfall		OR,CV (no Q: ST,WR)
529.29	.59	Free Outfall		OR,CV (no Q: ST,WR)
529.49	.62	Free Outfall		OR,CV (no Q: ST,WR)
529.69	.66	Free Outfall		OR,CV (no Q: ST,WR)
529.89	.70	Free Outfall		OR,CV (no Q: ST,WR)
530.09	.73	Free Outfall		OR,CV (no Q: ST,WR)
530.29	.76	Free Outfall		OR,CV (no Q: ST,WR)
530.49	.79	Free Outfall		OR,CV (no Q: ST,WR)
530.69	.82	Free Outfall		OR,CV (no Q: ST,WR)
530.89	.85	Free Outfall		OR,CV (no Q: ST,WR)
531.09	.88	Free Outfall		OR,CV (no Q: ST,WR)
531.29	.90	Free Outfall		OR,CV (no Q: ST,WR)
531.49	.93	Free Outfall		OR,CV (no Q: ST,WR)
531.69	.96	Free Outfall		OR,CV (no Q: ST,WR)
531.89	.98	Free Outfall		OR,CV (no Q: ST,WR)
532.09	1.01	Free Outfall		OR,CV (no Q: ST,WR)
532.29	1.03	Free Outfall		OR,CV (no Q: ST,WR)
532.49	1.05	Free Outfall		OR,CV (no Q: ST,WR)
532.69	1.08	Free Outfall		OR,CV (no Q: ST,WR)
532.89	1.10	Free Outfall		OR,CV (no Q: ST,WR)
533.09	1.12	Free Outfall		OR,CV (no Q: ST,WR)
533.29	1.14	Free Outfall		OR,CV (no Q: ST,WR)
533.49	1.16	Free Outfall		OR,CV (no Q: ST,WR)
533.69	1.18	Free Outfall		OR,CV (no Q: ST,WR)
533.70	1.18	Free Outfall		OR,CV (no Q: ST,WR)
533.89	3.88	Free Outfall		ST,OR,CV (no Q: WR)
534.09	9.10	Free Outfall		ST,OR,CV (no Q: WR)
534.29	15.84	Free Outfall		ST,OR,CV (no Q: WR)
534.49	22.93	Free Outfall		ST,CV (no Q: WR,OR)
534.69	23.29	Free Outfall		ST,CV (no Q: WR,OR)
534.89	23.64	Free Outfall		ST,CV (no Q: WR,OR)

Type.... Composite Rating Curve
Name.... STRUCTURE

File.... C:\Documents and Settings\Christopher Look\My Documents\CREATIVEDETENTIONASB.PPW

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
535.00	23.83	Free Outfall		ST,CV (no Q: WR,OR)

Name.... POND 10
File.... C:\Documents and Settings\Christopher Look\My Documents\CREATIVEDETENTIONASB.PPW

LEVEL POOL ROUTING DATA

HYG Dir = C:\Documents and Settings\Christopher Look\My Documents\
Inflow HYG file = NONE STORED - POND 10 IN 2
Outflow HYG file = NONE STORED - POND 10 OUT 2

Pond Node Data = POND 10
Pond Volume Data = POND 10
Pond Outlet Data = STRUCTURE

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 527.69 ft
Starting Volume = .000 ac-ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
527.69	.00	.000	.0000	.00	.00	.00
527.89	.07	.000	.0038	.00	.07	.44
528.09	.19	.002	.0097	.00	.19	2.79
528.29	.31	.004	.0110	.00	.31	5.91
528.49	.39	.006	.0123	.00	.39	9.36
528.69	.45	.009	.0137	.00	.45	13.20
528.89	.50	.012	.0152	.00	.50	17.45
529.09	.55	.015	.0168	.00	.55	22.14
529.29	.59	.018	.0186	.00	.59	27.32
529.49	.62	.022	.0205	.00	.62	33.03
529.69	.66	.027	.0224	.00	.66	39.29
529.89	.70	.031	.0244	.00	.70	46.12
530.09	.73	.036	.0266	.00	.73	53.55
530.29	.76	.042	.0288	.00	.76	61.62
530.49	.79	.048	.0311	.00	.79	70.34
530.69	.82	.054	.0335	.00	.82	79.74
530.89	.85	.061	.0360	.00	.85	89.85
531.09	.88	.069	.0385	.00	.88	100.69
531.29	.90	.077	.0412	.00	.90	112.30
531.49	.93	.085	.0440	.00	.93	124.70

Name.... POND 10
File.... C:\Documents and Settings\Christopher Look\My Documents\CREATIVEDETENTIONASB.PPW

LEVEL POOL ROUTING DATA

HYG Dir = C:\Documents and Settings\Christopher Look\My Documents\
Inflow HYG file = NONE STORED - POND 10 IN 2
Outflow HYG file = NONE STORED - POND 10 OUT 2

Pond Node Data = POND 10
Pond Volume Data = POND 10
Pond Outlet Data = STRUCTURE

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	527.69 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
531.69	.96	.094	.0469	.00	.96	137.91
531.89	.98	.104	.0498	.00	.98	151.97
532.09	1.01	.114	.0532	.00	1.01	166.92
532.29	1.03	.125	.0570	.00	1.03	182.93
532.49	1.05	.137	.0610	.00	1.05	200.10
532.69	1.08	.150	.0652	.00	1.08	218.44
532.89	1.10	.163	.0694	.00	1.10	238.01
533.09	1.12	.177	.0731	.00	1.12	258.78
533.29	1.14	.192	.0759	.00	1.14	280.42
533.49	1.16	.208	.0787	.00	1.16	302.88
533.69	1.18	.224	.0816	.00	1.18	326.17
533.70	1.18	.225	.0817	.00	1.18	327.36
533.89	3.88	.240	.0845	.00	3.88	352.98
534.09	9.10	.258	.0877	.00	9.10	383.20
534.29	15.84	.276	.0913	.00	15.84	415.91
534.49	22.93	.294	.0949	.00	22.93	450.03
534.69	23.29	.313	.0986	.00	23.29	478.48
534.89	23.64	.334	.1023	.00	23.64	508.00
535.00	23.83	.345	.1044	.00	23.83	524.70

SUMMARY FOR HYDROGRAPH ADDITION
at Node: POND 10 IN

HYG Directory: C:\Documents and Settings\Christopher Look\My Documents\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ADDLINK 10	HYD QUEUE 10		2 year	

INFLOWS TO: POND 10 IN

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time min	Peak Flow cfs
	2 year		.115	5.00	4.18

TOTAL FLOW INTO: POND 10 IN

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time min	Peak Flow cfs
	POND 10 IN	2	.115	5.00	4.18

TOTAL NODE INFLOW...
HYG file =
HYG ID = POND 10 IN
HYG Tag = 2

Peak Discharge =	4.18 cfs
Time to Peak =	5.00 min
HYG Volume =	.115 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
.00	.00	.84	1.67	2.51	3.34
5.00	4.18	4.18	4.18	4.18	4.18
10.00	4.18	4.18	4.18	4.18	4.18
15.00	4.18	4.18	4.18	4.18	4.18
20.00	4.18	3.34	2.51	1.67	.84
25.00	.00				

SUMMARY FOR HYDROGRAPH ADDITION
at Node: POND 10 IN

HYG Directory: C:\Documents and Settings\Christopher Look\My Documents\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ADDLINK 10	HYD QUEUE 10		15 year	

INFLOWS TO: POND 10 IN

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time min	Peak Flow cfs
	15 year		.162	5.00	5.89

TOTAL FLOW INTO: POND 10 IN

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time min	Peak Flow cfs
	POND 10 IN	15	.162	5.00	5.89

TOTAL NODE INFLOW...
HYG file =
HYG ID = POND 10 IN
HYG Tag = 15

Peak Discharge =	5.89 cfs
Time to Peak =	5.00 min
HYG Volume =	.162 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
.00	.00	1.18	2.36	3.53	4.71
5.00	5.89	5.89	5.89	5.89	5.89
10.00	5.89	5.89	5.89	5.89	5.89
15.00	5.89	5.89	5.89	5.89	5.89
20.00	5.89	4.71	3.53	2.36	1.18
25.00	.00				

SUMMARY FOR HYDROGRAPH ADDITION
at Node: POND 10 IN

HYG Directory: C:\Documents and Settings\Christopher Look\My Documents\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ADDLINK 10	HYD QUEUE 10		25 year	

INFLOWS TO: POND 10 IN

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time min	Peak Flow cfs
	25 year		.200	5.00	7.27

TOTAL FLOW INTO: POND 10 IN

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time min	Peak Flow cfs
	POND 10 IN	25	.200	5.00	7.27

TOTAL NODE INFLOW...
HYG file =
HYG ID = POND 10 IN
HYG Tag = 25

Peak Discharge =	7.27 cfs
Time to Peak =	5.00 min
HYG Volume =	.200 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
.00	.00	1.45	2.91	4.36	5.82
5.00	7.27	7.27	7.27	7.27	7.27
10.00	7.27	7.27	7.27	7.27	7.27
15.00	7.27	7.27	7.27	7.27	7.27
20.00	7.27	5.82	4.36	2.91	1.45
25.00	.00				

SUMMARY FOR HYDROGRAPH ADDITION
at Node: POND 10 IN

HYG Directory: C:\Documents and Settings\Christopher Look\My Documents\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ADDLINK 10	HYD QUEUE 10		100 year	

INFLOWS TO: POND 10 IN

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time min	Peak Flow cfs
	100 year		.255	5.00	9.24

TOTAL FLOW INTO: POND 10 IN

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time min	Peak Flow cfs
	POND 10 IN	100	.255	5.00	9.24

TOTAL NODE INFLOW...
HYG file =
HYG ID = POND 10 IN
HYG Tag = 100

Peak Discharge =	9.24 cfs
Time to Peak =	5.00 min
HYG Volume =	.255 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
.00	.00	1.85	3.70	5.54	7.39
5.00	9.24	9.24	9.24	9.24	9.24
10.00	9.24	9.24	9.24	9.24	9.24
15.00	9.24	9.24	9.24	9.24	9.24
20.00	9.24	7.39	5.54	3.70	1.85
25.00	.00				

LEVEL POOL ROUTING SUMMARY

HYG Dir = C:\Documents and Settings\Christopher Look\My Documents\
Inflow HYG file = NONE STORED - POND 10 IN 2
Outflow HYG file = NONE STORED - POND 10 OUT 2

Pond Node Data = POND 10
Pond Volume Data = POND 10
Pond Outlet Data = STRUCTURE

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	527.69 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	4.18 cfs	at	5.00 min
Peak Outflow	=	.95 cfs	at	23.00 min
Peak Elevation	=	531.63 ft		
Peak Storage	=	.092 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	.115
- Infiltration	=	.000
- HYG Vol OUT	=	.115
- Retained Vol	=	.000
Unrouted Vol	=	-.000 ac-ft (.008% of Inflow Volume)

2yr

LEVEL POOL ROUTING SUMMARY

HYG Dir = C:\Documents and Settings\Christopher Look\My Documents\
Inflow HYG file = NONE STORED - POND 10 IN 15
Outflow HYG file = NONE STORED - POND 10 OUT 15

Pond Node Data = POND 10
Pond Volume Data = POND 10
Pond Outlet Data = STRUCTURE

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	527.69 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	5.89 cfs	at	5.00 min
Peak Outflow	=	1.05 cfs	at	23.00 min
Peak Elevation	=	532.47 ft		
Peak Storage	=	.136 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	.162
- Infiltration	=	.000
- HYG Vol OUT	=	.162
- Retained Vol	=	.000
Unrouted Vol	=	-.000 ac-ft (.006% of Inflow Volume)

15 yr

LEVEL POOL ROUTING SUMMARY

HYG Dir = C:\Documents and Settings\Christopher Look\My Documents\
Inflow HYG file = NONE STORED - POND 10 IN 25
Outflow HYG file = NONE STORED - POND 10 OUT 25

Pond Node Data = POND 10
Pond Volume Data = POND 10
Pond Outlet Data = STRUCTURE

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	527.69 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	7.27 cfs	at	5.00 min
Peak Outflow	=	1.11 cfs	at	23.00 min
Peak Elevation	=	533.01 ft		
Peak Storage	=	.172 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	.200
- Infiltration	=	.000
- HYG Vol OUT	=	.200
- Retained Vol	=	.000
Unrouted Vol	=	-.000 ac-ft (.006% of Inflow Volume)

25 yr

Name.... POND 10 OUT Tag: 100 Event: 100 yr
File.... C:\Documents and Settings\Christopher Look\My Documents\CREATIVEDETENTIONASB.PPW
Storm... 100 Tag: 100

LEVEL POOL ROUTING SUMMARY

HYG Dir = C:\Documents and Settings\Christopher Look\My Documents\
Inflow HYG file = NONE STORED - POND 10 IN 100
Outflow HYG file = NONE STORED - POND 10 OUT 100

Pond Node Data = POND 10
Pond Volume Data = POND 10
Pond Outlet Data = STRUCTURE

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	527.69 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	9.24 cfs	at	5.00 min
Peak Outflow	=	1.18 cfs	at	23.00 min
Peak Elevation	=	533.69 ft		
Peak Storage	=	.224 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	.255
- Infiltration	=	.000
- HYG Vol OUT	=	.255
- Retained Vol	=	.000
Unrouted Vol	=	-.000 ac-ft (.004% of Inflow Volume)

100 yr

Index of Starting Page Numbers for ID Names

Name.... Watershed
File.... C:\Documents and Settings\Christopher Look\My Documents\CREATIVEDETENTIONASB.PPW

MASTER DESIGN STORM SUMMARY

Hydrograph Queue Only Network

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

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

Node ID		Type	Return Event	HYG Vol ac-ft	Trun	Qpeak min	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
HYD QUEUE 10		HYG	2	.115		5.00	4.18		
HYD QUEUE 10		HYG	15	.162		5.00	5.89		
HYD QUEUE 10		HYG	100	.255		5.00	9.24		
HYD QUEUE 10		HYG	25	.200		5.00	7.27		
*OUT 10		JCT	2	.000		1.00	.00		
*OUT 10		JCT	15	.000		1.00	.00		
*OUT 10		JCT	100	.030		23.00	3.14		
*OUT 10		JCT	25	.000		1.00	.00		
POND 10	IN	POND	2	.115		5.00	4.18		
POND 10	IN	POND	15	.162		5.00	5.89		
POND 10	IN	POND	100	.255		5.00	9.24		
POND 10	IN	POND	25	.200		5.00	7.27		
POND 10	OUT	POND	2	.000		1.00	.00	532.11	.115
POND 10	OUT	POND	15	.000		1.00	.00	532.88	.162
POND 10	OUT	POND	100	.030		23.00	3.14	533.91	.242
POND 10	OUT	POND	25	.000		1.00	.00	533.39	.200

NETWORK SUMMARY -- NODES

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

	Node ID		Type	HYG Vol ac-ft	Trun.	Qpeak min	Qpeak cfs	Max WSEL ft
	HYD QUEUE 10		HYG	.255		5.00	9.24	
Outfall	OUT 10		JCT	.030		23.00	3.14	
	POND 10	IN	POND	.255		5.00	9.24	
	POND 10	OUT	POND	.030		23.00	3.14	533.91

HYG file =
HYG ID = 100 year
HYG Tag =

Peak Discharge =	9.24 cfs
Time to Peak =	5.00 min
HYG Volume =	.255 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
.00	.00	1.85	3.70	5.54	7.39
5.00	9.24	9.24	9.24	9.24	9.24
10.00	9.24	9.24	9.24	9.24	9.24
15.00	9.24	9.24	9.24	9.24	9.24
20.00	9.24	7.39	5.54	3.70	1.85
25.00	.00	.00	.00	.00	.00
30.00	.00	.00	.00	.00	.00
35.00	.00	.00	.00	.00	.00
40.00	.00	.00	.00	.00	.00
45.00	.00	.00	.00	.00	.00
50.00	.00	.00	.00	.00	.00
55.00	.00	.00	.00	.00	.00
60.00	.00	.00	.00	.00	.00
65.00	.00	.00	.00	.00	.00
70.00	.00	.00	.00	.00	.00
75.00	.00	.00	.00	.00	.00
80.00	.00	.00	.00	.00	.00
85.00	.00	.00	.00	.00	.00
90.00	.00	.00	.00	.00	.00
95.00	.00	.00	.00	.00	.00
100.00	.00	.00	.00	.00	.00
105.00	.00	.00	.00	.00	.00
110.00	.00	.00	.00	.00	.00
115.00	.00	.00	.00	.00	.00
120.00	.00	.00	.00	.00	.00
125.00	.00	.00	.00	.00	.00
130.00	.00	.00	.00	.00	.00
135.00	.00	.00	.00	.00	.00
140.00	.00	.00	.00	.00	.00
145.00	.00	.00	.00	.00	.00
150.00	.00	.00	.00	.00	.00

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
155.00	.00	.00	.00	.00	.00
160.00	.00	.00	.00	.00	.00
165.00	.00	.00	.00	.00	.00
170.00	.00	.00	.00	.00	.00
175.00	.00	.00	.00	.00	.00
180.00	.00	.00	.00	.00	.00
185.00	.00	.00	.00	.00	.00
190.00	.00	.00	.00	.00	.00
195.00	.00	.00	.00	.00	.00
200.00	.00	.00	.00	.00	.00
205.00	.00	.00	.00	.00	.00
210.00	.00	.00	.00	.00	.00
215.00	.00	.00	.00	.00	.00
220.00	.00	.00	.00	.00	.00
225.00	.00	.00	.00	.00	.00
230.00	.00	.00	.00	.00	.00
235.00	.00	.00	.00	.00	.00
240.00	.00	.00	.00	.00	.00
245.00	.00	.00	.00	.00	.00
250.00	.00				

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 10

HYG Directory: C:\Documents and Settings\Christopher Look\My Documents\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ROUTE 10	POND 10	IN	ROUTE 10	100

INFLOWS TO: OUT 10

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time min	Peak Flow cfs
	ROUTE 10	100	.030	23.00	3.14

TOTAL FLOW INTO: OUT 10

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time min	Peak Flow cfs
	OUT 10	100	.030	23.00	3.14

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 10
HYG Tag = 100

Peak Discharge =	3.14 cfs
Time to Peak =	23.00 min
HYG Volume =	.030 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
20.00	.00	1.47	2.54	3.14	3.01
25.00	2.46	1.93	1.52	1.20	.94
30.00	.74	.58	.46	.36	.28
35.00	.22	.18	.14	.11	.09
40.00	.07	.05	.04	.03	.03
45.00	.02	.02	.01	.01	.01
50.00	.01	.00	.00	.00	.00

Type.... Time-Elev
Name.... POND 10 OUT Tag: 100 Event: 100 yr
File.... C:\Documents and Settings\Christopher Look\My Documents\CREATIVEDETENTIONASB.PPW
Storm... 100 Tag: 100

TIME vs. ELEVATION (ft)

Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
.00	527.69	528.02	528.40	528.88	529.39
5.00	529.91	530.38	530.77	531.12	531.43
10.00	531.71	531.97	532.21	532.43	532.64
15.00	532.83	533.01	533.19	533.35	533.52
20.00	533.68	533.80	533.88	533.91	533.90
25.00	533.87	533.83	533.81	533.78	533.77
30.00	533.75	533.74	533.73	533.73	533.72
35.00	533.72	533.71	533.71	533.71	533.71
40.00	533.70	533.70	533.70	533.70	533.70
45.00	533.70	533.70	533.70	533.70	533.70
50.00	533.70	533.70	533.70	533.70	533.70

Name.... POND 10 OUT Tag: 100 Event: 100 yr
File.... C:\Documents and Settings\Christopher Look\My Documents\CREATIVEDETENTIONASB.PPW
Storm... 100 Tag: 100

TIME vs. VOLUME (ac-ft)

Time min	Output Time increment = 1.00 min Time on left represents time for first value in each row.				
.00	.000	.001	.005	.011	.020
5.00	.032	.044	.057	.070	.083
10.00	.095	.108	.121	.134	.146
15.00	.159	.172	.184	.197	.210
20.00	.223	.233	.239	.242	.241
25.00	.239	.236	.233	.232	.230
30.00	.229	.228	.227	.227	.226
35.00	.226	.226	.225	.225	.225
40.00	.225	.225	.225	.225	.225
45.00	.225	.225	.225	.225	.225
50.00	.225	.225	.225	.225	.225

Type.... Vol. Planimeter
Name.... POND 10

File.... C:\Documents and Settings\Christopher Look\My Documents\CREATIVEDETENTIONASB.PPW

POND VOLUME CALCULATIONS

Planimeter scale: 1.00 ft/in

Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
527.69	.000	.0000	.0000	.000	.000
528.00	398.530	.0091	.0091	.001	.001
529.00	699.850	.0161	.0373	.012	.013
530.00	1114.550	.0256	.0619	.021	.034
531.00	1627.780	.0374	.0939	.031	.065
532.00	2241.830	.0515	.1327	.044	.110
533.00	3129.640	.0718	.1841	.061	.171
534.00	3752.400	.0861	.2367	.079	.250
535.00	4548.540	.1044	.2854	.095	.345

POND VOLUME EQUATIONS

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

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

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

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 527.69 ft
Increment = .20 ft
Max. Elev.= 535.00 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
Stand Pipe	ST	--->	CV	533.700	535.000
Culvert-Circular	CV	--->	TW	527.490	535.000

TW SETUP, DS Channel

OUTLET STRUCTURE INPUT DATA

Structure ID	=	ST	
Structure Type	=	Stand Pipe	
# of Openings	=	1	
Invert Elev.	=	533.70	ft
Diameter	=	3.5000	ft
Orifice Area	=	9.6211	sq.ft
Orifice Coeff.	=	.600	
Weir Length	=	11.00	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	

OUTLET STRUCTURE INPUT DATA

Structure ID = CV
Structure Type = Culvert-Circular

No. Barrels	=	1	
Barrel Diameter	=	1.5000	ft
Upstream Invert	=	527.49	ft
Dnstream Invert	=	526.69	ft
Horiz. Length	=	50.00	ft
Barrel Length	=	50.01	ft
Barrel Slope	=	.01600	ft/ft

OUTLET CONTROL DATA...

Mannings n	=	.0130	
Ke	=	.5000	(forward entrance loss)
Kb	=	.018213	(per ft of full flow)
Kr	=	.5000	(reverse entrance loss)
HW Convergence	=	.001	+/- ft

INLET CONTROL DATA...

Equation form	=	1
Inlet Control K	=	.0018
Inlet Control M	=	2.0000
Inlet Control c	=	.02920
Inlet Control Y	=	.7400
T1 ratio (HW/D)	=	1.054
T2 ratio (HW/D)	=	1.199
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 = 529.07 ft ---> Flow = 7.58 cfs
At T2 Elev = 529.29 ft ---> Flow = 8.66 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

Name.... BLOCKEDasb

File.... C:\Documents and Settings\Christopher Look\My Documents\CREATIVEDETENTIONASB.PPW

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
527.69	.00	Free Outfall		(no Q: ST,CV)
527.89	.00	Free Outfall		(no Q: ST,CV)
528.09	.00	Free Outfall		(no Q: ST,CV)
528.29	.00	Free Outfall		(no Q: ST,CV)
528.49	.00	Free Outfall		(no Q: ST,CV)
528.69	.00	Free Outfall		(no Q: ST,CV)
528.89	.00	Free Outfall		(no Q: ST,CV)
529.09	.00	Free Outfall		(no Q: ST,CV)
529.29	.00	Free Outfall		(no Q: ST,CV)
529.49	.00	Free Outfall		(no Q: ST,CV)
529.69	.00	Free Outfall		(no Q: ST,CV)
529.89	.00	Free Outfall		(no Q: ST,CV)
530.09	.00	Free Outfall		(no Q: ST,CV)
530.29	.00	Free Outfall		(no Q: ST,CV)
530.49	.00	Free Outfall		(no Q: ST,CV)
530.69	.00	Free Outfall		(no Q: ST,CV)
530.89	.00	Free Outfall		(no Q: ST,CV)
531.09	.00	Free Outfall		(no Q: ST,CV)
531.29	.00	Free Outfall		(no Q: ST,CV)
531.49	.00	Free Outfall		(no Q: ST,CV)
531.69	.00	Free Outfall		(no Q: ST,CV)
531.89	.00	Free Outfall		(no Q: ST,CV)
532.09	.00	Free Outfall		(no Q: ST,CV)
532.29	.00	Free Outfall		(no Q: ST,CV)
532.49	.00	Free Outfall		(no Q: ST,CV)
532.69	.00	Free Outfall		(no Q: ST,CV)
532.89	.00	Free Outfall		(no Q: ST,CV)
533.09	.00	Free Outfall		(no Q: ST,CV)
533.29	.00	Free Outfall		(no Q: ST,CV)
533.49	.00	Free Outfall		(no Q: ST,CV)
533.69	.00	Free Outfall		(no Q: ST,CV)
533.70	.00	Free Outfall		(no Q: ST,CV)
533.89	2.73	Free Outfall		ST,CV
534.09	8.03	Free Outfall		ST,CV
534.29	14.95	Free Outfall		ST,CV
534.49	22.93	Free Outfall		ST,CV
534.69	23.29	Free Outfall		ST,CV
534.89	23.64	Free Outfall		ST,CV

Name.... BLOCKEDasb

File.... C:\Documents and Settings\Christopher Look\My Documents\CREATIVEDETENTIONASB.PPW

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
535.00	23.83	Free Outfall		ST,CV

Name.... POND 10
File.... C:\Documents and Settings\Christopher Look\My Documents\CREATIVEDETENTIONASB.PPW

LEVEL POOL ROUTING DATA

HYG Dir = C:\Documents and Settings\Christopher Look\My Documents\
Inflow HYG file = NONE STORED - POND 10 IN 2
Outflow HYG file = NONE STORED - POND 10 OUT 2

Pond Node Data = POND 10
Pond Volume Data = POND 10
Pond Outlet Data = BLOCKEDasb

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	527.69 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
527.69	.00	.000	.0000	.00	.00	.00
527.89	.00	.000	.0038	.00	.00	.37
528.09	.00	.002	.0097	.00	.00	2.60
528.29	.00	.004	.0110	.00	.00	5.60
528.49	.00	.006	.0123	.00	.00	8.97
528.69	.00	.009	.0137	.00	.00	12.75
528.89	.00	.012	.0152	.00	.00	16.95
529.09	.00	.015	.0168	.00	.00	21.59
529.29	.00	.018	.0186	.00	.00	26.74
529.49	.00	.022	.0205	.00	.00	32.41
529.69	.00	.027	.0224	.00	.00	38.63
529.89	.00	.031	.0244	.00	.00	45.42
530.09	.00	.036	.0266	.00	.00	52.83
530.29	.00	.042	.0288	.00	.00	60.86
530.49	.00	.048	.0311	.00	.00	69.55
530.69	.00	.054	.0335	.00	.00	78.92
530.89	.00	.061	.0360	.00	.00	89.00
531.09	.00	.069	.0385	.00	.00	99.82
531.29	.00	.077	.0412	.00	.00	111.39
531.49	.00	.085	.0440	.00	.00	123.77

Name.... POND 10
File.... C:\Documents and Settings\Christopher Look\My Documents\CREATIVEDETENTIONASB.PPW

LEVEL POOL ROUTING DATA

HYG Dir = C:\Documents and Settings\Christopher Look\My Documents\
Inflow HYG file = NONE STORED - POND 10 IN 2
Outflow HYG file = NONE STORED - POND 10 OUT 2

Pond Node Data = POND 10
Pond Volume Data = POND 10
Pond Outlet Data = BLOCKEDasb

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	527.69 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
531.69	.00	.094	.0469	.00	.00	136.96
531.89	.00	.104	.0498	.00	.00	150.99
532.09	.00	.114	.0532	.00	.00	165.91
532.29	.00	.125	.0570	.00	.00	181.91
532.49	.00	.137	.0610	.00	.00	199.04
532.69	.00	.150	.0652	.00	.00	217.37
532.89	.00	.163	.0694	.00	.00	236.91
533.09	.00	.177	.0731	.00	.00	257.66
533.29	.00	.192	.0759	.00	.00	279.28
533.49	.00	.208	.0787	.00	.00	301.72
533.69	.00	.224	.0816	.00	.00	324.99
533.70	.00	.225	.0817	.00	.00	326.18
533.89	2.73	.240	.0845	.00	2.73	351.84
534.09	8.03	.258	.0877	.00	8.03	382.13
534.29	14.95	.276	.0913	.00	14.95	415.02
534.49	22.93	.294	.0949	.00	22.93	450.03
534.69	23.29	.313	.0986	.00	23.29	478.48
534.89	23.64	.334	.1023	.00	23.64	508.00
535.00	23.83	.345	.1044	.00	23.83	524.70

SUMMARY FOR HYDROGRAPH ADDITION
at Node: POND 10 IN

HYG Directory: C:\Documents and Settings\Christopher Look\My Documents\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ADDLINK 10	HYD QUEUE 10		100 year	

INFLOWS TO: POND 10 IN

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time min	Peak Flow cfs
	100 year		.255	5.00	9.24

TOTAL FLOW INTO: POND 10 IN

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time min	Peak Flow cfs
	POND 10 IN	100	.255	5.00	9.24

TOTAL NODE INFLOW...
HYG file =
HYG ID = POND 10 IN
HYG Tag = 100

Peak Discharge =	9.24 cfs
Time to Peak =	5.00 min
HYG Volume =	.255 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 1.00 min
Time on left represents time for first value in each row.

Time min					
.00	.00	1.85	3.70	5.54	7.39
5.00	9.24	9.24	9.24	9.24	9.24
10.00	9.24	9.24	9.24	9.24	9.24
15.00	9.24	9.24	9.24	9.24	9.24
20.00	9.24	7.39	5.54	3.70	1.85
25.00	.00				

LEVEL POOL ROUTING SUMMARY

HYG Dir = C:\Documents and Settings\Christopher Look\My Documents\
Inflow HYG file = NONE STORED - POND 10 IN 100
Outflow HYG file = NONE STORED - POND 10 OUT 100

Pond Node Data = POND 10
Pond Volume Data = POND 10
Pond Outlet Data = BLOCKEDasb

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	527.69 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	9.24 cfs	at	5.00 min
Peak Outflow	=	3.14 cfs	at	23.00 min
Peak Elevation	=	533.91 ft		
Peak Storage	=	.242 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	.255
- Infiltration	=	.000
- HYG Vol OUT	=	.030
- Retained Vol	=	.225
Unrouted Vol	=	.000 ac-ft (.000% of Inflow Volume)

100 yr blocked.

Index of Starting Page Numbers for ID Names