ENGINEERING
PLANNING
SURVEYING

PREDEVELOPED STORMWATER ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
ROCKENSTEIN ELEMENTARY SCHOOL – WENTZVILL R-IV SCHOOL DISTRICT
CITY OF O'FALLON
BAX PROJECT NO. 03-12495A
June 16, 2008

INTRODUCTION

The presently undeveloped tract of land lies just to the north of the intersection of Sommers Road and Foxwood Drive. The tract of land contains approximately 15.17 acres that will be proposed to be developed into an elementary school. A dry basin in the western area of the property shall provide detention for the site. This basin will provide detention for the development when considering the increased runoff for the site as required by City of O'Fallon. The 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 the peak rate of runoff leaving the site under pre-developed conditions for the required design storms. The basin is designed for the 2-year, 15-year, 25-year, and the pass the 100-year 20-minute design storms.

GENERAL SITE DATA AND RUNOFF CALCULATIONS:

The pre-developed P.I. factors to be used for the analysis are:

2 year	0-5%	Impervious	1.15	cfs/ac
15 year	0-5%	Impervious	1.87	cfs/ac
25 year	0-5%	Impervious	2.31	cfs/ac
100 year	0-5%	Impervious	2.95	cfs/ac

The post-developed P.I. factors to be used for the analysis are:

2 year	100%	Impervious	2.39	cfs/ac
15 year	100%	Impervious	3.85	cfs/ac
25 year	100%	Impervious	4.75	cfs/ac
100 year	100%	Impervious	6.08	cfs/ac

STATE OF MISSOURI
TODD C. FLAUAUS
NUMBER PE-2005000982
PROFESSIONAL ENGINEER
6/23/08

BAX ENGINEERING CO.
221 Point West Blvd.
St. Charles, MO 63301
636-928-5552 FAX 928-1718

EXISTING CONDITIONS

Drainage Area "A"

15 yr. 20 minute storm:

9.24 ac x 1.87 cfs/ac = 17.28 cfs

2 yr. 20 minute:	10.63 cfs
15 yr. 20 minute:	17.28 cfs
25 yr. 20 minute:	21.34 cfs
100 yr. 20 minute:	27.26 cfs

Drainage Area "B"

15 yr. 20 minute storm:

5.93 ac x 1.87 cfs/ac = 11.09 cfs

2 yr. 20 minute:	6.82 cfs
15 yr. 20 minute:	11.09 cfs
25 yr. 20 minute:	13.70 cfs
100 yr. 20 minute:	17.49 cfs

PROPOSED CONDITIONS

Drainage Area "A"

15 yr. 20 minute storm:

7.16 ac (1.87 cfs/ac) + 6.03 ac (3.85 cfs/ac) = 36.60 cfs

2 yr. 20 minute:	22.65 cfs
15 yr. 20 minute:	36.60 cfs
25 yr. 20 minute:	45.18 cfs
100 yr. 20 minute:	57.78 cfs

Drainage Area "B"

15 yr. 20 minute storm:

1.85 ac (1.87 cfs/ac) + 0.13 ac (3.85 cfs/ac) = 3.96 cfs

2 yr. 20 minute:	2.44 cfs
15 yr. 20 minute:	3.96 cfs
25 yr. 20 minute:	4.89 cfs
100 yr. 20 minute:	6.25 cfs

REQUIRED ATTENUATION

The required attenuation is the amount of runoff that must be temporarily stored in the detention basin to ensure no increase in runoff will be produced. The required attenuation is found by subtracting the existing runoff from the proposed runoff.

Drainage Area "A"

15 yr. 20 minute storm:

36.60 cfs – 17.28 cfs = 19.32 cfs

2 yr. 20 minute:	12.02 cfs
15 yr. 20 minute:	19.32 cfs
25 yr. 20 minute:	23.84 cfs
100 yr. 20 minute:	30.52 cfs

Drainage Area "B"

15 yr. 20 minute storm:

3.96 cfs – 11.09 cfs = -7.13 cfs

2 yr. 20 minute:	-4.38 cfs
15 yr. 20 minute:	-7.13 cfs
25 yr. 20 minute:	-8.81 cfs
100 yr. 20 minute:	-11.24 cfs

The required attenuation for drainage area "B" indicates a decrease in runoff from this watershed will result from this development. therefore no detention will be provided for drainage area "B".

BASIN PEAK INFLOW

Basin peak inflows have been estimated using the basin inflow drainage area map included with this report.

15 yr. 20 minute storm:

5.55 ac (1.87 cfs/ac) + 6.03 ac (3.85 cfs/ac) = 33.59 cfs

2 yr, 20 minute:	20.79 cfs
15 yr, 20 minute:	33.59 cfs
25 yr, 20 minute:	41.46 cfs
100 yr, 20 minute:	53.03 cfs

TIME OF CONCENTRATION

The time of concentration flow path begins at the entrance from Sommers Rd. in the southwest portion of the site. From this point flow travels as sheet flow for approximately 269 feet with a change in elevation of approximately 5.85 ft. The time of concentration for sheet flow has been estimate to be 1.16 minutes, see figure 1 for the time of concentration nomograph. At this point the flow enters the storm sewer system at GI-114 and continues as channel flow for approximately 1,154 ft with an assumed average velocity of 7 ft/sec until it enters the detention basin.

Sheet Flow (see figure 1)

$L = 286'$
$\Delta h = 5.85'$

$Tc_1 = 1.16$ min

Channel Flow

$L = 1{,}154'$
$V = 7.00$ ft/sec

$Tc_2 = 1154$ ft / 420 = 2.75 min

$Tc = Tc_1 + Tc_2$

$Tc = 1.16 \text{ min} + 2.75 \text{ min} = 3.91 \text{ min} \approx 4.00 \text{ min}$

Use Tc = 4.00 minutes

ALLOWABLE RELEASE RATE

The allowable release rate is found by subtracting the required attenuation from the basin peak inflow. The ensures that the peak discharge from the detention basin plus any direct runoff will not result in an increase in runoff form the proposed development.

15 yr, 20 minute storm:

33.59 cfs – 19.32 cfs = 14.27 cfs

2 yr, 20 minute:	8.77 cfs
15 yr, 20 minute:	14.27 cfs
25 yr, 20 minute:	17.62 cfs
100 yr, 20 minute:	22.51 cfs

STORM ROUTING RESULTS

A computer program, Pond Pack v.10, was used to route the required design through the detention basin. A summary of these results is presented here, please see the Pond Pack data output included in the appendix of this report for detailed calculations.

DESIGN STORM	ALLOWABLE RELEASE	CALCULATED RELEASE	PEAK ELEVATION
2 YR, 20 MIN	8.77 CFS	7.74 CFS	589.46 FT
15 YR, 20 MIN	14.27 CFS	10.78 CFS	590.55 FT
25 YR, 20 MIN	17.62 CFS	13.46 CFS	591.13 FT
100 YR, 20 MIN	22.51 CFS	17.76 CFS	591.90 FT

CHECK 100-YEAR OUTFLOW:(low-flow slots blocked)

WEIR FLOW $Q = C \times L \times H (3/2)$

Where 100-YEAR FLOW	Q =	53.03
	C =	3.0
Spillway length	L =	18.76 ft
	H =	0.96 ft
	Sill =	592.20 ft
	100 yr h/w =	593.10 ft

SEDIMENT VOLUME CALCULATION:

BASIN A
The basin shall be analyzed to accommodate 2 years of sediment storage.

-The Drainage area to the basin = 11.58 Acres
-Rational Method runoff coefficient 'c'= 0.06
-Annual sediment storage volume (from figure 2) = 140 ft^3/Acre
-The sediment volume and storage required =

2 years of sediment storage = 11.58 Acres (140 ft^3/Acre/year)(2 years)

2 years of sediment storage = 3,242 ft^3

To provide for the additional sediment storage the top of the overflow sill will be set at 592.20.

Volume between the 100-year high water of 591.90 and the overflow sill elevation of 592.20 is 4,708 ft^3.

4,708 ft^3 provided > 3,242 ft^3 required

OUTFALL STRUCTURE

The outfall structure will be constructed from a standard double untrapped street inlet base (See MSD Detail Sheet 38). The low flow slot will be 1.00'w x 0.92'h with a flow line of 586.00. The upper flow slot will be 0.83'w x 2.55'h with a flow line of 589.65. The outfall pipe will be a 36" RCP with an upper flow line of 583.00 and a lower flow line of 582.00. A detail of the outfall structure is included with this report.

SUMMARY

2 Year – 20 MINUTE HIGH-WATER	589.46 ft
15 Year – 20 MINUTE HIGH-WATER	590.55 ft
25 Year - 20 MINUTE HIGH-WATER	591.13 ft
100 Year - 20 MINUTE HIGH-WATER	591.90 ft
100 Year - 20 MINUTE HIGH-WATER LFB	593.10 ft
LOW-FLOW SLOT	1.0' W x 0.92' H
LOW-FLOW ELEVATION	586.00 ft
UPPER-FLOW SLOT	0.83' W x 2.55' H
UPPER-FLOW ELEVATION	589.65 ft
EMERGENCY OVERFLOW STRUCTURE	DOUBLE UNTRAPPED STREET INLET
EMERGENCY OVERFLOW SILL ELEVATION	592.50 ft
TOP OF BERM	600.00 ft

FIGURES

Bax Engineering
Engineering – Planning - Surveying
221 Point West Blvd.
St. Charles, Missouri 63301
(636) 928-5552 FAX (636) 928-1718

Project: Sommers Elementary
Date: 6-16-08 Project No: 03-12495A
Designer: JEL Checked: TCF

TIME OF CONCENTRATION FOR SMALL DRAINAGE BASINS

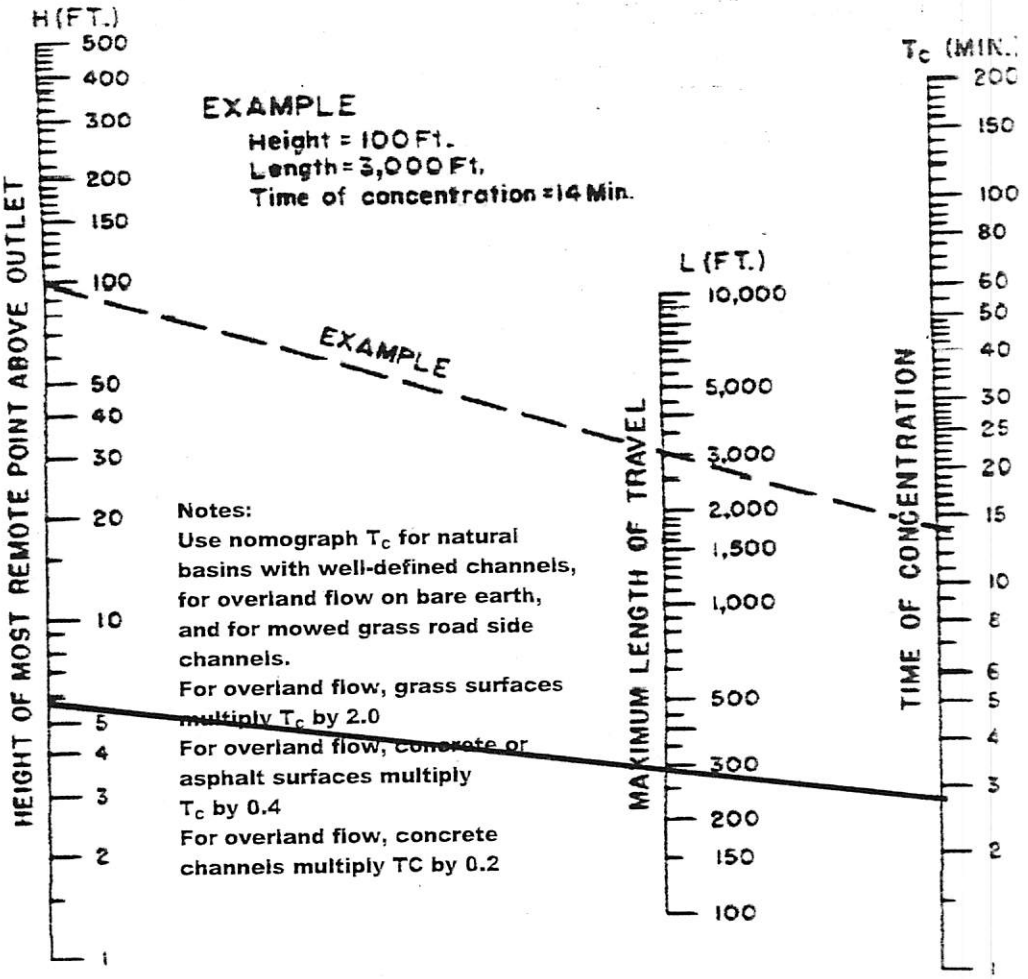


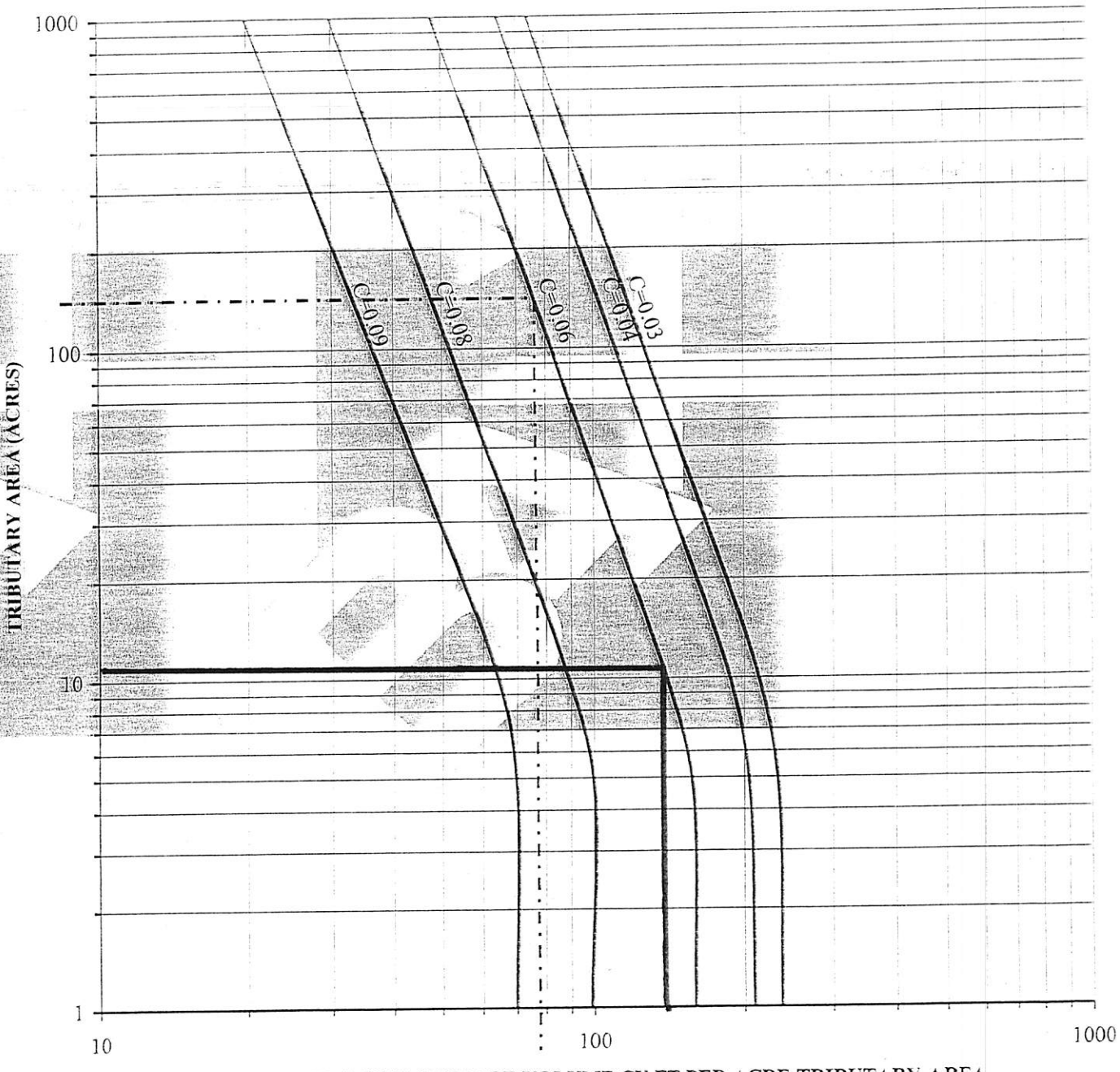
FIGURE 1

Δ Height = 5.85
Length = 286
T_c = 2.90(0.40) = 1.16 min

BAX ENGINEERING
Engineering – Planning – Surveying
221 Point West Blvd.
St. Charles, MO 63301
636 928-5552 FAX 636 928-1718

Project: Sommers Rd. Elementary
Date: 6-16-08 Project: 03-12495A
Designer: JEL Checked: TCF

ANNUAL SEDIMENT STORAGE



ANNUAL SEDIMENT STORAGE VOLUME CU FT PER ACRE TRIBUTARY AREA

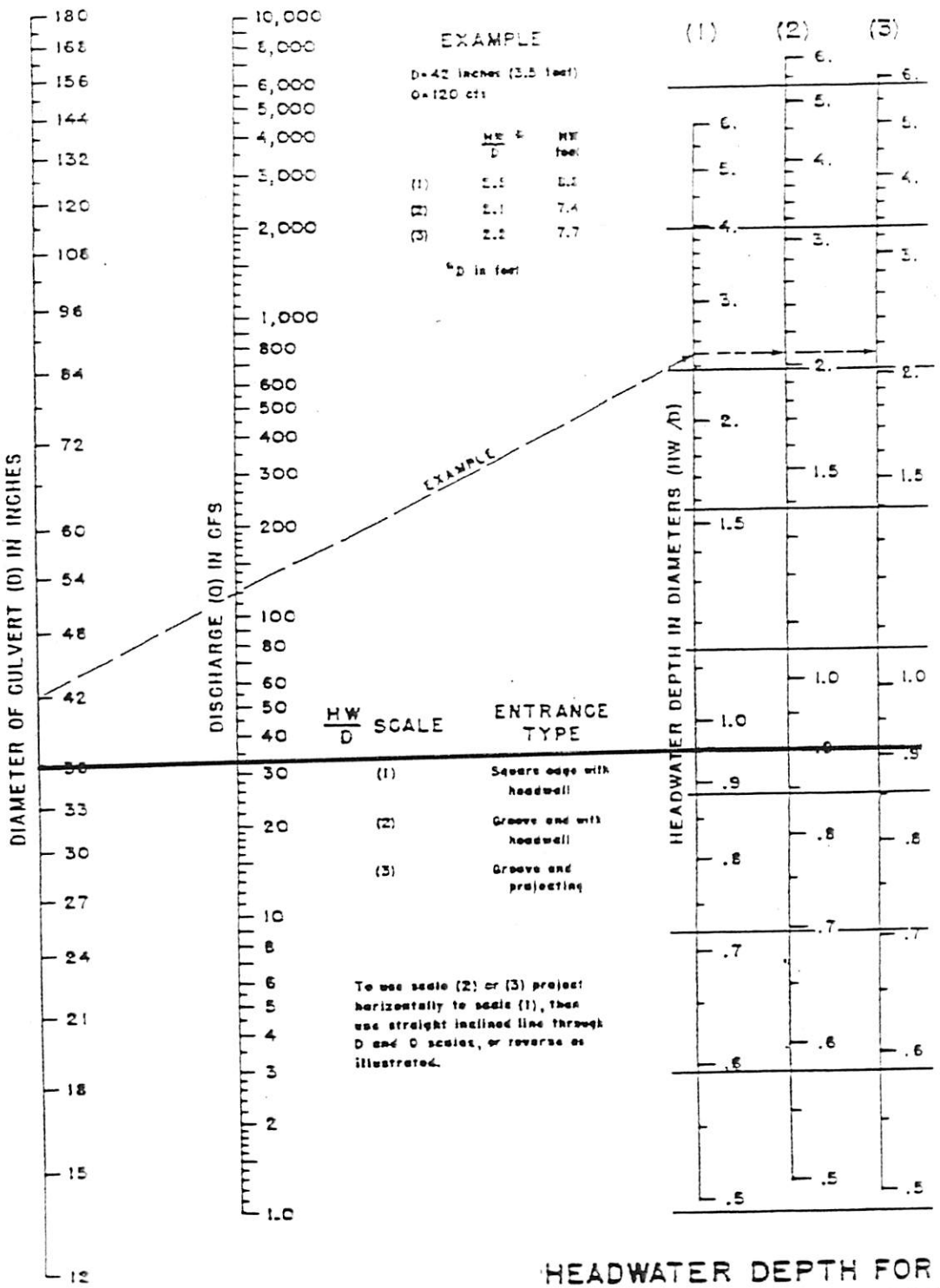
Storage Required = Year of Storage * Annual Sediment * Drainage Area

RUNOFF C VALUE = 0.06
DRAINAGE AREA = 11.58 ac.
ANNUAL SEDIMENT = 140 ft³/ac/yr

YEARS OF STORAGE = 2yrs
STORAGE REQUIRED = 3,242 ft³

BAX ENGINEERING
Engineering - Planning - Surveying
221 Point West Blvd.
St. Charles, MO 63301
636 928-5552 FAX 636 928-1718

Project: Sommers Rd. Elementary
Date: 6-16-08 Project No: 03-12495A
Designer: JEL Checked: TCF



Design Storm: 15/20

D = 36"
Q = 33.87 cfs
(HW/D) = 0.95
HW = 2.85'

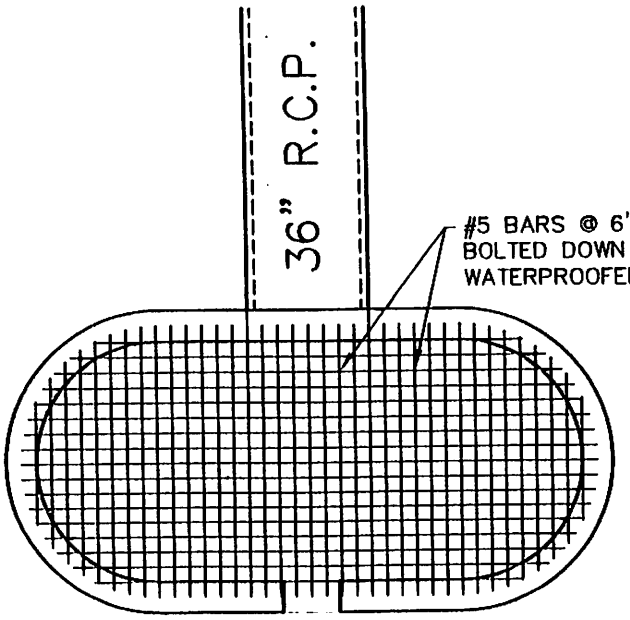
Elevations
Flow Line = 583.00
Max Ground = 586.00
High Water = 585.85
Free Board = 0.15'

HEADWATER DEPTH FOR CONCRETE PIPE CULVERTS WITH INLET CONTROL

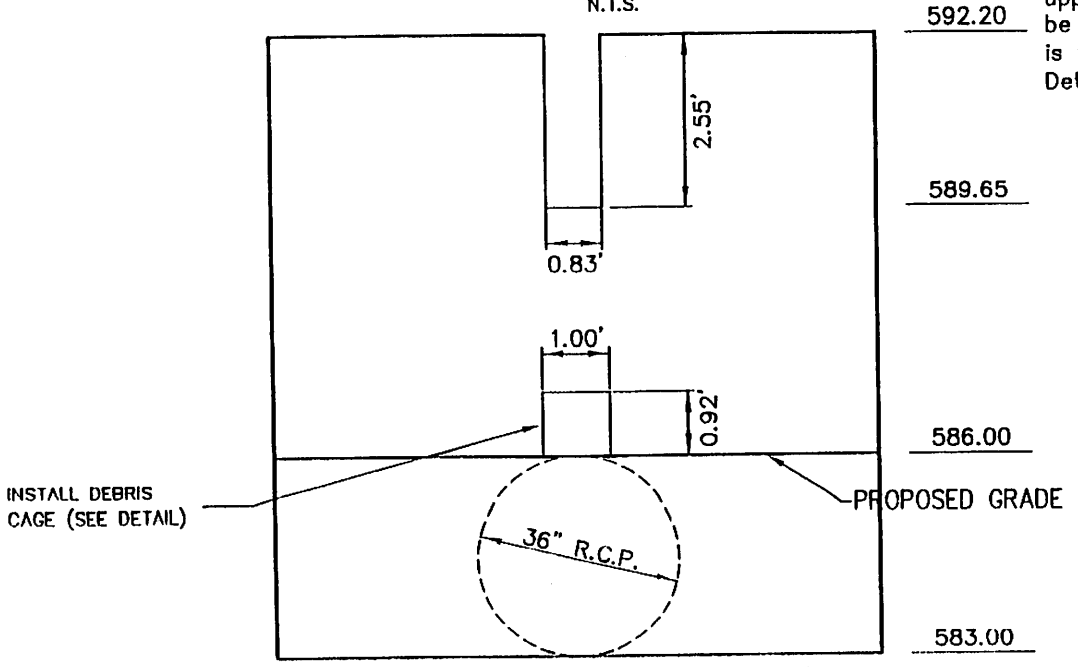
HEADWATER SCALES 2 & 3
REVISED MAY 1964

BUREAU OF PUBLIC ROADS JAN. 1963

OUTFALL STRUCTURE

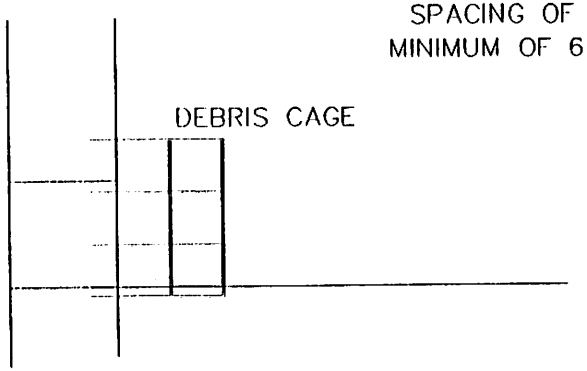


TOP VIEW
N.T.S.

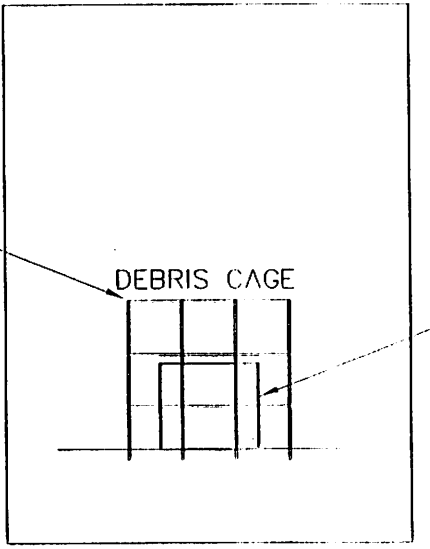


OVERFLOW STRUCTURE 101
N.T.S.

The overflow structure is to be a standard double untrapped precast concrete street inlet (without top). See. M.S.D. detail 38. The bottom must be constructed to the correct height so that no brick will be used. A rectangular orifice 1.00'w x 0.93'h with a flowline of 586.00 will be used as the low flow slot. A rectangular orifice 0.83'w x 2.55'h wth a flow line of 589.65 will be used as the upper flow slot. The top of the structure will be at a flowline of 592.20. The low flow slot is to be equipped with a debris cage (See Detail).



#3 BARS DRILLED AND GROUTED TO OUTFALL STRUCTURE FACE. 3" MAXIMUM SPACING OF REBAR, CAGE TO EXTEND A MINIMUM OF 6" FROM FACE OF STRUCTURE.



DEBRIS CAGE

NOT TO SCALE

POND 10
Routing Calculations
2 yr, 15 yr, 25 yr & 100 yr, 20 minute Design Storm

Table of Contents

********** MASTER SUMMARY **********

Watershed..... Master Network Summary 1.01

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

Watershed..... 2
Executive Summary (Nodes) 2.01

Watershed..... 15
Executive Summary (Nodes) 2.02

Watershed..... 25
Executive Summary (Nodes) 2.03

Watershed..... 100
Executive Summary (Nodes) 2.04

********** RUNOFF HYDROGRAPHS **********

HYD QUEUE 10.... 2
Read HYG 3.01

HYD QUEUE 10.... 15
Read HYG 3.02

HYD QUEUE 10.... 25
Read HYG 3.03

HYD QUEUE 10.... 100
Read HYG 3.04

********** TIME VS.ELEV **********

POND 10 OUT 2
Time-Elev 4.01

Table of Contents (continued)

POND 10 OUT 15
Time-Elev 4.02

POND 10 OUT 25
Time-Elev 4.03

POND 10 OUT 100
Time-Elev 4.04

********** TIME VS.VOL **********

POND 10 OUT 2
Time vs. Volume 5.01

POND 10 OUT 15
Time vs. Volume 5.02

POND 10 OUT 25
Time vs. Volume 5.03

POND 10 OUT 100
Time vs. Volume 5.04

********** POND VOLUMES **********

POND 10..... Vol: Planimeter 6.01

********** OUTLET STRUCTURES **********

Outlet 1..... Outlet Input Data 7.01
Composite Rating Curve 7.05

********** POND ROUTING **********

POND 10..... Pond E-V-Q Table 8.01

Table of Contents (continued)

POND 10	OUT 2	
	Pond Routing Summary	8.09
	Pond Routed HYG (total out)	8.10
POND 10	OUT 15	
	Pond Routing Summary	8.11
	Pond Routed HYG (total out)	8.12
POND 10	OUT 25	
	Pond Routing Summary	8.13
	Pond Routed HYG (total out)	8.14
POND 10	OUT 100	
	Pond Routing Summary	8.15
	Pond Routed HYG (total out)	8.16

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 cu.ft	Trun	Qpeak min	Qpeak cfs	Max WSEL ft	Max Pond Storage cu.ft
HYD QUEUE 10	HYG	2	24949		4.00	20.79		
HYD QUEUE 10	HYG	15	40309		4.00	33.59		
HYD QUEUE 10	HYG	25	49753		4.00	41.46		
HYD QUEUE 10	HYG	100	63637		4.00	53.03		
*OUT 10	JCT	2	24949		22.00	7.74		
*OUT 10	JCT	15	40309		23.00	10.78		
*OUT 10	JCT	25	49753		23.00	13.46		
*OUT 10	JCT	100	63637		23.00	17.76		
POND 10 IN	POND	2	24949		4.00	20.79		
POND 10 IN	POND	15	40309		4.00	33.59		
POND 10 IN	POND	25	49753		4.00	41.46		
POND 10 IN	POND	100	63637		4.00	53.03		
POND 10 OUT	POND	2	24949		22.00	7.74	589.46	16630
POND 10 OUT	POND	15	40309		23.00	10.78	590.55	30025
POND 10 OUT	POND	25	49753		23.00	13.46	591.13	37926
POND 10 OUT	POND	100	63637		23.00	17.76	591.90	49190

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

	Node ID		Type	HYG Vol cu.ft	Trun.	Qpeak min	Qpeak cfs	Max WSEL ft
	HYD QUEUE 10		HYG	24949		4.00	20.79	
Outfall	OUT 10		JCT	24949		22.00	7.74	
	POND 10	IN	POND	24949		4.00	20.79	
	POND 10	OUT	POND	24949		22.00	7.74	589.46

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

	Node ID		Type	HYG Vol cu.ft	Trun.	Qpeak min	Qpeak cfs	Max WSEL ft
	HYD QUEUE 10		HYG	40309		4.00	33.59	
Outfall	OUT 10		JCT	40309		23.00	10.78	
	POND 10	IN	POND	40309		4.00	33.59	
	POND 10	OUT	POND	40309		23.00	10.76	590.55

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

	Node ID		Type	HYG Vol cu.ft	Trun.	Qpeak min	Qpeak cfs	Max WSEL ft
	HYD QUEUE 10		HYG	49753		4.00	41.46	
Outfall	OUT 10		JCT	49753		23.00	13.46	
	POND 10	IN	POND	49753		4.00	41.46	
	POND 10	OUT	POND	49753		23.00	13.46	591.13

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

	Node ID		Type	HYG Vol cu.ft	Trun.	Qpeak min	Qpeak cfs	Max WSEL ft
	HYD QUEUE 10		HYG	63637		4.00	53.03	
Outfall	OUT 10		JCT	63637		23.00	17.76	
	POND 10	IN	POND	63637		4.00	53.03	
	POND 10	OUT	POND	63637		23.00	17.76	591.90

HYG file =
HYG ID = 2 YR
HYG Tag =

Peak Discharge =	20.79 cfs
Time to Peak =	4.00 min
HYG Volume =	24949 cu.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	5.20	10.40	15.59	20.79
5.00	20.79	20.79	20.79	20.79	20.79
10.00	20.79	20.79	20.79	20.79	20.79
15.00	20.79	20.79	20.79	20.79	20.79
20.00	20.79	15.59	10.40	5.20	.00

HYG file =
HYG ID = 15 YR
HYG Tag =

Peak Discharge =	33.59 cfs
Time to Peak =	4.00 min
HYG Volume =	40309 cu.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	8.40	16.80	25.19	33.59
5.00	33.59	33.59	33.59	33.59	33.59
10.00	33.59	33.59	33.59	33.59	33.59
15.00	33.59	33.59	33.59	33.59	33.59
20.00	33.59	25.19	16.80	8.40	.00

HYG file =
HYG ID = 25 YR
HYG Tag =

Peak Discharge =	41.46 cfs
Time to Peak =	4.00 min
HYG Volume =	49753 cu.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	10.37	20.73	31.10	41.46
5.00	41.46	41.46	41.46	41.46	41.46
10.00	41.46	41.46	41.46	41.46	41.46
15.00	41.46	41.46	41.46	41.46	41.46
20.00	41.46	31.10	20.73	10.37	.00

HYG file =
HYG ID = 100 YR
HYG Tag =

Peak Discharge =	53.03 cfs
Time to Peak =	4.00 min
HYG Volume =	63637 cu.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	13.26	26.52	39.77	53.03
5.00	53.03	53.03	53.03	53.03	53.03
10.00	53.03	53.03	53.03	53.03	53.03
15.00	53.03	53.03	53.03	53.03	53.03
20.00	53.03	39.77	26.52	13.26	.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	586.00	586.60	586.95	587.24	587.52
5.00	587.74	587.92	588.06	588.20	588.32
10.00	588.44	588.55	588.66	588.76	588.86
15.00	588.95	589.04	589.13	589.21	589.29
20.00	589.37	589.43	589.46	589.46	589.43
25.00	589.39	589.34	589.30	589.26	589.21
30.00	589.17	589.12	589.08	589.03	588.99
35.00	588.94	588.90	588.85	588.80	588.76
40.00	588.71	588.66	588.61	588.56	588.52
45.00	588.47	588.42	588.37	588.32	588.27
50.00	588.22	588.17	588.12	588.07	588.02
55.00	587.96	587.91	587.85	587.80	587.74
60.00	587.67	587.61	587.53	587.46	587.38
65.00	587.29	587.19	587.09	586.97	586.85
70.00	586.73	586.59	586.43	586.23	586.00

TIME vs. ELEVATION (ft)

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

Time min					
.00	586.00	586.71	587.14	587.50	587.83
5.00	588.11	588.34	588.56	588.76	588.94
10.00	589.11	589.27	589.42	589.57	589.70
15.00	589.83	589.95	590.07	590.19	590.30
20.00	590.41	590.50	590.54	590.55	590.52
25.00	590.47	590.43	590.38	590.33	590.29
30.00	590.24	590.20	590.15	590.11	590.07
35.00	590.03	589.98	589.94	589.90	589.86
40.00	589.82	589.78	589.73	589.69	589.65
45.00	589.61	589.56	589.52	589.48	589.43
50.00	589.39	589.35	589.30	589.26	589.22
55.00	589.17	589.13	589.08	589.04	588.99
60.00	588.94	588.90	588.85	588.81	588.76
65.00	588.71	588.66	588.61	588.57	588.52
70.00	588.47	588.42	588.37	588.33	588.28
75.00	588.23	588.17	588.12	588.07	588.02
80.00	587.97	587.91	587.86	587.80	587.74
85.00	587.68	587.61	587.54	587.46	587.38
90.00	587.30	587.20	587.10	586.98	586.86
95.00	586.74	586.60	586.44	586.25	586.00

TIME vs. ELEVATION (ft)

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

Time min					
.00	586.00	586.78	587.23	587.63	587.98
5.00	588.30	588.58	588.81	589.06	589.27
10.00	589.46	589.65	589.82	589.98	590.13
15.00	590.28	590.43	590.57	590.71	590.84
20.00	590.97	591.07	591.12	591.13	591.09
25.00	591.04	590.98	590.93	590.87	590.82
30.00	590.77	590.72	590.67	590.62	590.57
35.00	590.52	590.47	590.43	590.38	590.33
40.00	590.29	590.24	590.20	590.15	590.11
45.00	590.07	590.03	589.98	589.94	589.90
50.00	589.86	589.82	589.78	589.73	589.69
55.00	589.65	589.61	589.56	589.52	589.48
60.00	589.43	589.39	589.35	589.30	589.26
65.00	589.22	589.17	589.13	589.08	589.04
70.00	588.99	588.94	588.90	588.85	588.81
75.00	588.76	588.71	588.66	588.62	588.57
80.00	588.52	588.47	588.42	588.37	588.33
85.00	588.28	588.23	588.17	588.12	588.07
90.00	588.02	587.97	587.91	587.86	587.80
95.00	587.74	587.68	587.61	587.54	587.46
100.00	587.38	587.30	587.20	587.10	586.98
105.00	586.86	586.74	586.60	586.44	586.25
110.00	586.00				

TIME vs. ELEVATION (ft)

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

Time min					
.00	586.00	586.85	587.35	587.79	588.19
5.00	588.57	588.90	589.19	589.46	589.70
10.00	589.93	590.14	590.34	590.53	590.72
15.00	590.90	591.08	591.25	591.41	591.56
20.00	591.71	591.83	591.90	591.90	591.86
25.00	591.79	591.72	591.66	591.59	591.52
30.00	591.46	591.40	591.34	591.28	591.22
35.00	591.16	591.10	591.04	590.99	590.93
40.00	590.88	590.83	590.78	590.72	590.67
45.00	590.62	590.58	590.53	590.48	590.43
50.00	590.38	590.34	590.29	590.25	590.20
55.00	590.16	590.12	590.07	590.03	589.99
60.00	589.95	589.91	589.86	589.82	589.78
65.00	589.74	589.70	589.65	589.61	589.57
70.00	589.53	589.48	589.44	589.40	589.35
75.00	589.31	589.27	589.22	589.18	589.13
80.00	589.09	589.04	589.00	588.95	588.90
85.00	588.86	588.81	588.76	588.72	588.67
90.00	588.62	588.57	588.52	588.48	588.43
95.00	588.38	588.33	588.28	588.23	588.18
100.00	588.13	588.08	588.03	587.97	587.92
105.00	587.86	587.81	587.75	587.69	587.62
110.00	587.55	587.47	587.39	587.31	587.21
115.00	587.11	586.99	586.87	586.75	586.62
120.00	586.46	586.28	586.00		

TIME vs. VOLUME (cu.ft)

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

Time min					
.00	0	115	452	1025	1861
5.00	2820	3762	4678	5580	6471
10.00	7356	8230	9090	9937	10778
15.00	11615	12442	13258	14067	14873
20.00	15673	16310	16627	16630	16325
25.00	15871	15419	14978	14533	14093
30.00	13651	13212	12777	12348	11929
35.00	11512	11106	10695	10291	9881
40.00	9480	9079	8690	8304	7927
45.00	7553	7189	6829	6471	6113
50.00	5758	5405	5056	4709	4368
55.00	4029	3709	3390	3092	2791
60.00	2499	2213	1926	1653	1395
65.00	1148	911	688	489	329
70.00	206	110	43	7	0

TIME vs. VOLUME (cu.ft)

Time min	Output Time increment = 1.00 min Time on left represents time for first value in each row.				
.00	0	195	782	1800	3269
5.00	4964	6623	8268	9891	11498
10.00	13091	14665	16231	17781	19321
15.00	20841	22345	23837	25302	26741
20.00	28160	29299	29915	30025	29632
25.00	28994	28371	27763	27166	26580
30.00	26000	25427	24861	24313	23774
35.00	23243	22715	22193	21683	21172
40.00	20672	20175	19683	19200	18716
45.00	18237	17760	17289	16819	16354
50.00	15900	15448	15006	14561	14121
55.00	13679	13240	12805	12375	11956
60.00	11539	11133	10721	10316	9908
65.00	9506	9105	8715	8329	7951
70.00	7578	7212	6852	6494	6137
75.00	5781	5429	5079	4731	4390
80.00	4050	3729	3410	3113	2810
85.00	2519	2231	1944	1671	1412
90.00	1165	926	704	501	337
95.00	212	116	46	8	0

TIME vs. VOLUME (cu.ft)

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

Time min					
.00	0	249	1002	2293	4159
5.00	6305	8420	10511	12580	14633
10.00	16666	18683	20677	22653	24606
15.00	26529	28417	30272	32097	33887
20.00	35637	37042	37800	37926	37434
25.00	36644	35874	35123	34388	33668
30.00	32961	32271	31596	30934	30281
35.00	29635	28997	28374	27765	27169
40.00	26583	26002	25429	24864	24315
45.00	23777	23245	22718	22195	21686
50.00	21174	20674	20178	19685	19203
55.00	18718	18239	17763	17291	16821
60.00	16356	15902	15450	15009	14563
65.00	14123	13681	13242	12807	12377
70.00	11958	11541	11135	10723	10319
75.00	9909	9508	9107	8717	8331
80.00	7953	7580	7214	6854	6496
85.00	6138	5783	5430	5080	4733
90.00	4392	4052	3731	3412	3115
95.00	2811	2520	2232	1945	1673
100.00	1414	1167	928	705	502
105.00	338	213	117	47	8
110.00	0				

TIME vs. VOLUME (cu.ft)

Time min	Output Time increment = 1.00 min Time on left represents time for first value in each row.				
.00	0	327	1325	3041	5502
5.00	8316	11106	13862	16589	19300
10.00	21980	24632	27242	29805	32324
15.00	34797	37215	39579	41894	44153
20.00	46360	48122	49061	49190	48529
25.00	47491	46476	45483	44516	43568
30.00	42644	41742	40859	39999	39160
35.00	38337	37530	36737	35965	35211
40.00	34476	33753	33045	32352	31676
45.00	31013	30359	29712	29074	28448
50.00	27838	27240	26653	26072	25498
55.00	24931	24381	23841	23309	22781
60.00	22257	21747	21235	20734	20237
65.00	19744	19261	18777	18296	17820
70.00	17348	16878	16411	15958	15504
75.00	15061	14617	14176	13735	13295
80.00	12860	12428	12009	11590	11183
85.00	10772	10367	9959	9556	9155
90.00	8763	8377	7998	7624	7258
95.00	6897	6538	6182	5825	5473
100.00	5122	4775	4432	4093	3768
105.00	3449	3149	2846	2557	2265
110.00	1979	1706	1447	1195	954
115.00	730	525	354	226	125
120.00	53	12	0		

POND VOLUME CALCULATIONS

Planimeter scale: 1.00 ft/in

Elevation (ft)	Planimeter (sq.in)	Area (sq.ft)	A1+A2+sqr(A1*A2) (sq.ft	Volume (cu.ft)	Volume Sum (cu.ft
586.00	.000	0	0	0	0
588.00	6406.000	6406	6406	4271	4271
590.00	12576.000	12576	27958	18638	22909
592.00	15202.000	15202	41605	27737	50646
594.00	18055.000	18055	49824	33216	83862
596.00	21134.000	21134	58723	39149	123010
598.00	24440.000	24440	68301	45534	168544
600.00	28917.000	28917	79941	53294	221839

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.= 586.00 ft
Increment = .10 ft
Max. Elev.= 600.00 ft

****
OUTLET CONNECTIVITY
****

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

Structure	No.		Outfall	E1, ft	E2, ft
Weir-Rectangular	1	--->	CV	586.000	586.917
Weir-Rectangular	3	--->	CV	589.650	600.000
Inlet Box	R0	--->	CV	592.200	600.000
Orifice-Area	2	--->	CV	586.917	600.000
Culvert-Circular	CV	--->	TW	583.000	600.000

TW SETUP, DS Channel

OUTLET STRUCTURE INPUT DATA

Structure ID = 1
Structure Type = Weir-Rectangular

# of Openings = 1
Crest Elev. = 586.00 ft
Weir Length = 1.00 ft
Weir Coeff. = 3.000000

Weir TW effects (Use adjustment equation)

Structure ID = 3
Structure Type = Weir-Rectangular

# of Openings = 1
Crest Elev. = 589.65 ft
Weir Length = .83 ft
Weir Coeff. = 3.000000

Weir TW effects (Use adjustment equation)

OUTLET STRUCTURE INPUT DATA

Structure ID = R0
Structure Type = Inlet Box

# of Openings	=	1
Invert Elev.	=	592.20 ft
Orifice Area	=	21.0700 sq.ft
Orifice Coeff.	=	.600
Weir Length	=	17.93 ft
Weir Coeff.	=	3.000
K, Reverse	=	1.000
Mannings n	=	.0000
Kev,Charged Riser	=	.000
Weir Submergence	=	No

Structure ID = 2
Structure Type = Orifice-Area

# of Openings	=	1
Invert Elev.	=	586.00 ft
Area	=	.9167 sq.ft
Top of Orifice	=	586.92 ft
Datum Elev.	=	586.46 ft
Orifice Coeff.	=	.600

OUTLET STRUCTURE INPUT DATA

Structure ID = CV
Structure Type = Culvert-Circular

No. Barrels	=	1
Barrel Diameter	=	3.0000 ft
Upstream Invert	=	583.00 ft
Dnstream Invert	=	582.00 ft
Horiz. Length	=	87.44 ft
Barrel Length	=	87.45 ft
Barrel Slope	=	.01144 ft/ft

OUTLET CONTROL DATA...

Mannings n	=	.0130	
Ke	=	.0000	(forward entrance loss)
Kb	=	.007228	(per ft of full flow)
Kr	=	1.0000	(reverse entrance loss)
HW Convergence	=	.001	+/- ft

INLET CONTROL DATA...

Equation form	=	1
Inlet Control K	=	.0098
Inlet Control M	=	2.0000
Inlet Control c	=	.03980
Inlet Control Y	=	.6700
T1 ratio (HW/D)	=	.000
T2 ratio (HW/D)	=	1.301
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 = 583.00 ft ---> Flow = 42.85 cfs
At T2 Elev = 586.90 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

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
586.00	.00	Free Outfall		(no Q: 1,3,R0,2,CV)
586.10	.00	Free Outfall		None contributing
586.20	.23	Free Outfall		1,CV (no Q: 3,R0,2)
586.30	.49	Free Outfall		1,CV (no Q: 3,R0,2)
586.40	.76	Free Outfall		1,CV (no Q: 3,R0,2)
586.50	1.06	Free Outfall		1,CV (no Q: 3,R0,2)
586.60	1.38	Free Outfall		1,CV (no Q: 3,R0,2)
586.70	1.83	Free Outfall		1,CV (no Q: 3,R0,2)
586.80	2.03	Free Outfall		1,CV (no Q: 3,R0,2)
586.90	2.46	Free Outfall		1,CV (no Q: 3,R0,2)
587.00	3.35	Free Outfall		2,CV (no Q: 1,3,R0)
587.10	3.52	Free Outfall		2,CV (no Q: 1,3,R0)
587.20	3.90	Free Outfall		2,CV (no Q: 1,3,R0)
587.30	4.07	Free Outfall		2,CV (no Q: 1,3,R0)
587.40	4.30	Free Outfall		2,CV (no Q: 1,3,R0)
587.50	4.54	Free Outfall		2,CV (no Q: 1,3,R0)
587.60	4.81	Free Outfall		2,CV (no Q: 1,3,R0)
587.70	4.86	Free Outfall		2,CV (no Q: 1,3,R0)
587.80	4.98	Free Outfall		2,CV (no Q: 1,3,R0)
587.90	5.30	Free Outfall		2,CV (no Q: 1,3,R0)
588.00	5.61	Free Outfall		2,CV (no Q: 1,3,R0)
588.10	5.81	Free Outfall		2,CV (no Q: 1,3,R0)
588.20	5.87	Free Outfall		2,CV (no Q: 1,3,R0)
588.30	5.97	Free Outfall		2,CV (no Q: 1,3,R0)
588.40	5.97	Free Outfall		2,CV (no Q: 1,3,R0)
588.50	6.23	Free Outfall		2,CV (no Q: 1,3,R0)
588.60	6.42	Free Outfall		2,CV (no Q: 1,3,R0)
588.70	6.69	Free Outfall		2,CV (no Q: 1,3,R0)
588.80	6.79	Free Outfall		2,CV (no Q: 1,3,R0)
588.90	6.79	Free Outfall		2,CV (no Q: 1,3,R0)
589.00	6.97	Free Outfall		2,CV (no Q: 1,3,R0)
589.10	7.28	Free Outfall		2,CV (no Q: 1,3,R0)
589.20	7.36	Free Outfall		2,CV (no Q: 1,3,R0)
589.30	7.36	Free Outfall		2,CV (no Q: 1,3,R0)
589.40	7.56	Free Outfall		2,CV (no Q: 1,3,R0)
589.50	7.87	Free Outfall		2,CV (no Q: 1,3,R0)
589.60	7.87	Free Outfall		2,CV (no Q: 1,3,R0)
589.65	8.07	Free Outfall		2,CV (no Q: 1,3,R0)

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
589.70	8.07	Free Outfall		3,2,CV (no Q: 1,R0)
589.80	8.28	Free Outfall		3,2,CV (no Q: 1,R0)
589.90	8.50	Free Outfall		3,2,CV (no Q: 1,R0)
590.00	8.77	Free Outfall		3,2,CV (no Q: 1,R0)
590.10	8.97	Free Outfall		3,2,CV (no Q: 1,R0)
590.20	9.54	Free Outfall		3,2,CV (no Q: 1,R0)
590.30	9.73	Free Outfall		3,2,CV (no Q: 1,R0)
590.40	10.11	Free Outfall		3,2,CV (no Q: 1,R0)
590.50	10.68	Free Outfall		3,2,CV (no Q: 1,R0)
590.60	10.87	Free Outfall		3,2,CV (no Q: 1,R0)
590.70	11.25	Free Outfall		3,2,CV (no Q: 1,R0)
590.80	11.83	Free Outfall		3,2,CV (no Q: 1,R0)
590.90	12.21	Free Outfall		3,2,CV (no Q: 1,R0)
591.00	12.78	Free Outfall		3,2,CV (no Q: 1,R0)
591.10	13.35	Free Outfall		3,2,CV (no Q: 1,R0)
591.20	13.73	Free Outfall		3,2,CV (no Q: 1,R0)
591.30	14.31	Free Outfall		3,2,CV (no Q: 1,R0)
591.40	14.88	Free Outfall		3,2,CV (no Q: 1,R0)
591.50	15.45	Free Outfall		3,2,CV (no Q: 1,R0)
591.60	16.02	Free Outfall		3,2,CV (no Q: 1,R0)
591.70	16.59	Free Outfall		3,2,CV (no Q: 1,R0)
591.80	17.17	Free Outfall		3,2,CV (no Q: 1,R0)
591.90	17.74	Free Outfall		3,2,CV (no Q: 1,R0)
592.00	18.31	Free Outfall		3,2,CV (no Q: 1,R0)
592.10	18.88	Free Outfall		3,2,CV (no Q: 1,R0)
592.20	19.65	Free Outfall		3,2,CV (no Q: 1,R0)
592.30	22.03	Free Outfall		3,R0,2,CV (no Q: 1)
592.40	25.75	Free Outfall		3,R0,2,CV (no Q: 1)
592.50	30.52	Free Outfall		3,R0,2,CV (no Q: 1)
592.60	35.95	Free Outfall		3,R0,2,CV (no Q: 1)
592.70	42.06	Free Outfall		3,R0,2,CV (no Q: 1)
592.80	48.74	Free Outfall		3,R0,2,CV (no Q: 1)
592.90	60.94	Free Outfall		3,R0,2,CV (no Q: 1)
593.00	61.44	Free Outfall		3,R0,2,CV (no Q: 1)
593.10	68.04	Free Outfall		3,R0,2,CV (no Q: 1)
593.20	75.61	Free Outfall		3,R0,2,CV (no Q: 1)
593.30	89.85	Free Outfall		3,R0,2,CV (no Q: 1)
593.40	90.19	Free Outfall		3,R0,2,CV (no Q: 1)

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
593.50	97.16	Free Outfall		3,R0,2,CV (no Q: 1)
593.60	101.41	Free Outfall		3,R0,2,CV (no Q: 1)
593.70	104.24	Free Outfall		3,R0,2,CV (no Q: 1)
593.80	105.15	Free Outfall		3,R0,2,CV (no Q: 1)
593.90	105.75	Free Outfall		R0,CV (no Q: 1,3,2)
594.00	106.33	Free Outfall		R0,CV (no Q: 1,3,2)
594.10	106.93	Free Outfall		R0,CV (no Q: 1,3,2)
594.20	107.51	Free Outfall		3,R0,2,CV (no Q: 1)
594.30	108.09	Free Outfall		3,R0,2,CV (no Q: 1)
594.40	108.67	Free Outfall		R0,CV (no Q: 1,3,2)
594.50	109.24	Free Outfall		R0,CV (no Q: 1,3,2)
594.60	109.82	Free Outfall		R0,CV (no Q: 1,3,2)
594.70	110.39	Free Outfall		3,R0,2,CV (no Q: 1)
594.80	110.96	Free Outfall		3,R0,2,CV (no Q: 1)
594.90	111.52	Free Outfall		R0,CV (no Q: 1,3,2)
595.00	112.08	Free Outfall		R0,CV (no Q: 1,3,2)
595.10	112.64	Free Outfall		R0,CV (no Q: 1,3,2)
595.20	113.20	Free Outfall		3,R0,2,CV (no Q: 1)
595.30	113.75	Free Outfall		3,R0,2,CV (no Q: 1)
595.40	114.30	Free Outfall		R0,CV (no Q: 1,3,2)
595.50	114.85	Free Outfall		R0,CV (no Q: 1,3,2)
595.60	115.39	Free Outfall		R0,CV (no Q: 1,3,2)
595.70	115.94	Free Outfall		R0,CV (no Q: 1,3,2)
595.80	116.48	Free Outfall		R0,CV (no Q: 1,3,2)
595.90	117.02	Free Outfall		R0,CV (no Q: 1,3,2)
596.00	117.55	Free Outfall		R0,CV (no Q: 1,3,2)
596.10	118.09	Free Outfall		R0,CV (no Q: 1,3,2)
596.20	118.61	Free Outfall		R0,CV (no Q: 1,3,2)
596.30	119.14	Free Outfall		R0,CV (no Q: 1,3,2)
596.40	119.67	Free Outfall		R0,CV (no Q: 1,3,2)
596.50	120.19	Free Outfall		R0,CV (no Q: 1,3,2)
596.60	120.71	Free Outfall		R0,CV (no Q: 1,3,2)
596.70	121.24	Free Outfall		R0,CV (no Q: 1,3,2)
596.80	121.75	Free Outfall		R0,CV (no Q: 1,3,2)
596.90	122.26	Free Outfall		R0,CV (no Q: 1,3,2)
597.00	122.77	Free Outfall		R0,CV (no Q: 1,3,2)
597.10	123.29	Free Outfall		R0,CV (no Q: 1,3,2)
597.20	123.79	Free Outfall		R0,CV (no Q: 1,3,2)

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
597.30	124.30	Free Outfall		R0,CV (no Q: 1,3,2)
597.40	124.80	Free Outfall		R0,CV (no Q: 1,3,2)
597.50	125.30	Free Outfall		R0,CV (no Q: 1,3,2)
597.60	125.80	Free Outfall		R0,CV (no Q: 1,3,2)
597.70	126.30	Free Outfall		R0,CV (no Q: 1,3,2)
597.80	126.80	Free Outfall		R0,CV (no Q: 1,3,2)
597.90	127.29	Free Outfall		R0,CV (no Q: 1,3,2)
598.00	127.79	Free Outfall		R0,CV (no Q: 1,3,2)
598.10	128.28	Free Outfall		R0,CV (no Q: 1,3,2)
598.20	128.76	Free Outfall		R0,CV (no Q: 1,3,2)
598.30	129.25	Free Outfall		R0,CV (no Q: 1,3,2)
598.40	129.74	Free Outfall		R0,CV (no Q: 1,3,2)
598.50	130.22	Free Outfall		R0,CV (no Q: 1,3,2)
598.60	130.70	Free Outfall		R0,CV (no Q: 1,3,2)
598.70	131.18	Free Outfall		R0,CV (no Q: 1,3,2)
598.80	131.65	Free Outfall		R0,CV (no Q: 1,3,2)
598.90	132.13	Free Outfall		R0,CV (no Q: 1,3,2)
599.00	132.61	Free Outfall		R0,CV (no Q: 1,3,2)
599.10	133.08	Free Outfall		R0,CV (no Q: 1,3,2)
599.20	133.55	Free Outfall		R0,CV (no Q: 1,3,2)
599.30	134.02	Free Outfall		R0,CV (no Q: 1,3,2)
599.40	134.49	Free Outfall		R0,CV (no Q: 1,3,2)
599.50	134.96	Free Outfall		R0,CV (no Q: 1,3,2)
599.60	135.42	Free Outfall		R0,CV (no Q: 1,3,2)
599.70	135.88	Free Outfall		R0,CV (no Q: 1,3,2)
599.80	136.34	Free Outfall		R0,CV (no Q: 1,3,2)
599.90	136.80	Free Outfall		R0,CV (no Q: 1,3,2)
600.00	137.26	Free Outfall		R0,CV (no Q: 1,3,2)

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12000PLUS\12495A\Detention\
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 = Outlet 1

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 586.00 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
586.00	.00	0	0	.00	.00	.00
586.10	.00	1	16	.00	.00	.02
586.20	.23	4	64	.00	.23	.37
586.30	.49	14	144	.00	.49	.97
586.40	.76	34	256	.00	.76	1.90
586.50	1.06	67	400	.00	1.06	3.28
586.60	1.38	115	576	.00	1.38	5.22
586.70	1.83	183	785	.00	1.83	7.94
586.80	2.03	273	1025	.00	2.03	11.14
586.90	2.46	389	1297	.00	2.46	15.43
587.00	3.35	534	1602	.00	3.35	21.14
587.10	3.52	710	1938	.00	3.52	27.21
587.20	3.90	922	2306	.00	3.90	34.65
587.30	4.07	1173	2706	.00	4.07	43.16
587.40	4.30	1465	3139	.00	4.30	53.13
587.50	4.54	1802	3603	.00	4.54	64.60
587.60	4.81	2186	4100	.00	4.81	77.69
587.70	4.86	2623	4628	.00	4.86	92.29
587.80	4.98	3113	5189	.00	4.98	108.76
587.90	5.30	3662	5782	.00	5.30	127.36

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12000PLUS\12495A\Detention\
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 = Outlet 1

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 586.00 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
588.00	5.61	4271	6406	.00	5.61	147.96
588.10	5.81	4924	6665	.00	5.81	169.94
588.20	5.87	5604	6930	.00	5.87	192.67
588.30	5.97	6310	7200	.00	5.97	216.32
588.40	5.97	7044	7475	.00	5.97	240.78
588.50	6.23	7806	7755	.00	6.23	266.42
588.60	6.42	8595	8040	.00	6.42	292.93
588.70	6.69	9414	8331	.00	6.69	320.49
588.80	6.79	10262	8627	.00	6.79	348.85
588.90	6.79	11140	8927	.00	6.79	378.11
589.00	6.97	12047	9233	.00	6.97	408.55
589.10	7.28	12986	9544	.00	7.28	440.14
589.20	7.36	13957	9861	.00	7.36	472.58
589.30	7.36	14958	10182	.00	7.36	505.97
589.40	7.56	15993	10509	.00	7.56	540.66
589.50	7.87	17060	10840	.00	7.87	576.55
589.60	7.87	18161	11177	.00	7.87	613.24
589.65	8.07	18725	11348	.00	8.07	632.23
589.70	8.07	19296	11519	.00	8.07	651.28
589.80	8.28	20465	11866	.00	8.28	690.45

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12000PLUS\12495A\Detention\
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 = Outlet 1

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 586.00 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
589.90	8.50	21670	12219	.00	8.50	730.82
590.00	8.77	22909	12576	.00	8.77	772.41
590.10	8.97	24173	12701	.00	8.97	814.72
590.20	9.54	25450	12827	.00	9.54	857.85
590.30	9.73	26738	12954	.00	9.73	901.00
590.40	10.11	28041	13081	.00	10.11	944.79
590.50	10.68	29355	13209	.00	10.68	989.17
590.60	10.87	30682	13338	.00	10.87	1033.59
590.70	11.25	32022	13467	.00	11.25	1078.67
590.80	11.83	33375	13597	.00	11.83	1124.33
590.90	12.21	34742	13727	.00	12.21	1170.27
591.00	12.78	36121	13858	.00	12.78	1216.81
591.10	13.35	37513	13989	.00	13.35	1263.78
591.20	13.73	38919	14122	.00	13.73	1311.03
591.30	14.31	40337	14255	.00	14.31	1358.88
591.40	14.88	41770	14388	.00	14.88	1407.21
591.50	15.45	43215	14522	.00	15.45	1455.95
591.60	16.02	44674	14657	.00	16.02	1505.15
591.70	16.59	46147	14792	.00	16.59	1554.82
591.80	17.17	47632	14928	.00	17.17	1604.91

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12000PLUS\12495A\Detention\
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 = Outlet 1

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 586.00 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
591.90	17.74	49133	15065	.00	17.74	1655.49
592.00	18.31	50646	15202	.00	18.31	1706.49
592.10	18.88	52172	15339	.00	18.88	1757.96
592.20	19.65	53714	15476	.00	19.65	1810.10
592.30	22.03	55268	15614	.00	22.03	1864.28
592.40	25.75	56837	15753	.00	25.75	1920.30
592.50	30.52	58419	15892	.00	30.52	1977.80
592.60	35.95	60014	16032	.00	35.95	2036.43
592.70	42.06	61625	16173	.00	42.06	2096.23
592.80	48.74	63249	16314	.00	48.74	2157.04
592.90	60.94	64888	16456	.00	60.94	2223.88
593.00	61.44	66540	16598	.00	61.44	2279.45
593.10	68.04	68207	16741	.00	68.04	2341.61
593.20	75.61	69889	16884	.00	75.61	2405.24
593.30	89.85	71584	17029	.00	89.85	2475.98
593.40	90.19	73295	17173	.00	90.19	2533.35
593.50	97.16	75019	17319	.00	97.16	2597.78
593.60	101.41	76758	17465	.00	101.41	2660.00
593.70	104.24	78512	17611	.00	104.24	2721.30
593.80	105.15	80280	17759	.00	105.15	2781.16

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12000PLUS\12495A\Detention\
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 = Outlet 1

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	586.00 ft
Starting Volume	=	0 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
593.90	105.75	82064	17907	.00	105.75	2841.22
594.00	106.33	83862	18055	.00	106.33	2901.72
594.10	106.93	85674	18203	.00	106.93	2962.73
594.20	107.51	87503	18352	.00	107.51	3024.26
594.30	108.09	89345	18501	.00	108.09	3086.25
594.40	108.67	91203	18651	.00	108.67	3148.77
594.50	109.24	93075	18802	.00	109.24	3211.75
594.60	109.82	94963	18953	.00	109.82	3275.24
594.70	110.39	96866	19105	.00	110.39	3339.26
594.80	110.96	98784	19258	.00	110.96	3403.75
594.90	111.52	100718	19411	.00	111.52	3468.78
595.00	112.08	102666	19564	.00	112.08	3534.28
595.10	112.64	104630	19718	.00	112.64	3600.30
595.20	113.20	106610	19873	.00	113.20	3666.87
595.30	113.75	108605	20029	.00	113.75	3733.91
595.40	114.30	110616	20185	.00	114.30	3801.50
595.50	114.85	112642	20342	.00	114.85	3869.58
595.60	115.39	114684	20499	.00	115.39	3938.18
595.70	115.94	116742	20657	.00	115.94	4007.34
595.80	116.48	118815	20815	.00	116.48	4076.98

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12000PLUS\12495A\Detention\
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 = Outlet 1

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 586.00 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
595.90	117.02	120906	20974	.00	117.02	4147.19
596.00	117.55	123010	21134	.00	117.55	4217.89
596.10	118.09	125131	21294	.00	118.09	4289.12
596.20	118.61	127269	21454	.00	118.61	4360.92
596.30	119.14	129422	21615	.00	119.14	4433.21
596.40	119.67	131593	21776	.00	119.67	4506.08
596.50	120.19	133778	21938	.00	120.19	4579.44
596.60	120.71	135979	22101	.00	120.71	4653.34
596.70	121.24	138198	22264	.00	121.24	4727.83
596.80	121.75	140432	22428	.00	121.75	4802.81
596.90	122.26	142684	22592	.00	122.26	4878.38
597.00	122.77	144951	22757	.00	122.77	4954.46
597.10	123.29	147234	22923	.00	123.29	5031.09
597.20	123.79	149536	23089	.00	123.79	5108.31
597.30	124.30	151852	23256	.00	124.30	5186.03
597.40	124.80	154187	23423	.00	124.80	5264.36
597.50	125.30	156537	23591	.00	125.30	5343.20
597.60	125.80	158904	23760	.00	125.80	5422.60
597.70	126.30	161290	23929	.00	126.30	5502.61
597.80	126.80	163690	24099	.00	126.80	5583.13

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12000PLUS\12495A\Detention\
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 = Outlet 1

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 586.00 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
597.90	127.29	166110	24269	.00	127.29	5664.26
598.00	127.79	168544	24440	.00	127.79	5745.92
598.10	128.28	170999	24655	.00	128.28	5828.21
598.20	128.76	173476	24871	.00	128.76	5911.28
598.30	129.25	175973	25088	.00	129.25	5995.00
598.40	129.74	178494	25305	.00	129.74	6079.51
598.50	130.22	181034	25524	.00	130.22	6164.69
598.60	130.70	183597	25744	.00	130.70	6250.59
598.70	131.18	186183	25964	.00	131.18	6337.28
598.80	131.65	188790	26186	.00	131.65	6424.65
598.90	132.13	191421	26408	.00	132.13	6512.82
599.00	132.61	194072	26631	.00	132.61	6601.67
599.10	133.08	196746	26856	.00	133.08	6691.27
599.20	133.55	199444	27081	.00	133.55	6781.66
599.30	134.02	202163	27307	.00	134.02	6872.75
599.40	134.49	204906	27534	.00	134.49	6964.66
599.50	134.96	207670	27762	.00	134.96	7057.27
599.60	135.42	210457	27991	.00	135.42	7150.63
599.70	135.88	213268	28221	.00	135.88	7244.81
599.80	136.34	216101	28452	.00	136.34	7339.71

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12000PLUS\12495A\Detention\
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 = Outlet 1

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	586.00 ft
Starting Volume	=	0 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
599.90	136.80	218959	28684	.00	136.80	7435.43
600.00	137.26	221839	28917	.00	137.26	7531.86

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\PONDPACK\A12000PLUS\12495A\Detention\
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 = Outlet 1

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	586.00 ft
Starting Volume	=	0 cu.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	=	20.79 cfs	at	4.00 min
Peak Outflow	=	7.75 cfs	at	22.00 min
Peak Elevation	=	589.46 ft		
Peak Storage	=	16630 cu.ft		

MASS BALANCE (cu.ft)

+ Initial Vol	=	0
+ HYG Vol IN	=	24949
- Infiltration	=	0
- HYG Vol OUT	=	24949
- Retained Vol	=	0
Unrouted Vol	=	0 cu.ft (.000% of Outflow Volume)

POND ROUTED TOTAL OUTFLOW HYG...
HYG file =
HYG ID = POND 10 OUT
HYG Tag = 2

Peak Discharge =	7.74 cfs
Time to Peak =	22.00 min
HYG Volume =	24949 cu.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	1.37	2.87	3.97	4.59
5.00	4.91	5.35	5.73	5.87	5.97
10.00	6.08	6.34	6.59	6.76	6.79
15.00	6.89	7.10	7.30	7.36	7.36
20.00	7.50	7.65	7.74	7.75	7.65
25.00	7.53	7.45	7.37	7.36	7.36
30.00	7.34	7.30	7.21	7.07	6.95
35.00	6.87	6.79	6.79	6.79	6.75
40.00	6.70	6.58	6.46	6.35	6.26
45.00	6.15	6.02	5.97	5.97	5.94
50.00	5.90	5.85	5.82	5.74	5.64
55.00	5.49	5.33	5.15	4.98	4.91
60.00	4.85	4.81	4.63	4.44	4.25
65.00	4.05	3.88	3.50	3.09	2.25
70.00	1.89	1.35	.86	.32	.00

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\PONDPACK\A12000PLUS\12495A\Detention\
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 = Outlet 1

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	586.00 ft
Starting Volume	=	0 cu.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	=	33.59 cfs	at	4.00 min
Peak Outflow	=	10.78 cfs	at	23.00 min
Peak Elevation	=	590.55 ft		
Peak Storage	=	30025 cu.ft		

MASS BALANCE (cu.ft)

+ Initial Vol	=	0
+ HYG Vol IN	=	40309
- Infiltration	=	0
- HYG Vol OUT	=	40309
- Retained Vol	=	0
Unrouted Vol	= -	cu.ft (.000% of Inflow Volume)

POND ROUTED TOTAL OUTFLOW HYG...
HYG file =
HYG ID = POND 10 OUT
HYG Tag = 15

Peak Discharge =	10.78 cfs
Time to Peak =	23.00 min
HYG Volume =	40309 cu.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	1.86	3.66	4.54	5.08
5.00	5.81	5.97	6.35	6.75	6.86
10.00	7.29	7.36	7.63	7.87	8.08
15.00	8.35	8.65	8.91	9.47	9.73
20.00	10.16	10.66	10.76	10.78	10.72
25.00	10.52	10.25	10.03	9.85	9.70
30.00	9.62	9.53	9.27	9.03	8.90
35.00	8.82	8.73	8.61	8.50	8.41
40.00	8.32	8.23	8.14	8.07	8.07
45.00	7.90	7.87	7.87	7.80	7.66
50.00	7.54	7.45	7.37	7.36	7.36
55.00	7.34	7.30	7.22	7.08	6.96
60.00	6.87	6.79	6.79	6.79	6.75
65.00	6.70	6.59	6.46	6.36	6.27
70.00	6.15	6.03	5.97	5.97	5.95
75.00	5.90	5.86	5.82	5.75	5.65
80.00	5.50	5.34	5.16	4.98	4.91
85.00	4.85	4.82	4.64	4.45	4.26
90.00	4.07	3.90	3.52	3.16	2.28
95.00	1.90	1.38	.89	.36	.00

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\PONDPACK\A12000PLUS\12495A\Detention\
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 = Outlet 1

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	586.00 ft
Starting Volume	=	0 cu.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	=	41.46 cfs	at	4.00 min
Peak Outflow	=	13.46 cfs	at	23.00 min
Peak Elevation	=	591.13 ft		
Peak Storage	=	37926 cu.ft		

MASS BALANCE (cu.ft)

+ Initial Vol	=	0
+ HYG Vol IN	=	49753
- Infiltration	=	0
- HYG Vol OUT	=	49753
- Retained Vol	=	0
Unrouted Vol	= -	cu.ft (.000% of Inflow Volume)

POND ROUTED TOTAL OUTFLOW HYG...
HYG file =
HYG ID = POND 10 OUT
HYG Tag = 25

Peak Discharge =	13.46 cfs
Time to Peak =	23.00 min
HYG Volume =	49753 cu.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	1.99	3.96	4.82	5.55
5.00	5.97	6.38	6.79	7.15	7.36
10.00	7.76	8.06	8.32	8.72	9.16
15.00	9.70	10.27	10.81	11.29	11.97
20.00	12.58	13.16	13.43	13.46	13.32
25.00	12.99	12.68	12.37	12.11	11.91
30.00	11.65	11.36	11.13	10.94	10.81
35.00	10.72	10.53	10.25	10.03	9.85
40.00	9.70	9.62	9.53	9.28	9.03
45.00	8.90	8.82	8.73	8.61	8.50
50.00	8.41	8.32	8.23	8.14	8.07
55.00	8.07	7.90	7.87	7.87	7.80
60.00	7.66	7.54	7.46	7.37	7.36
65.00	7.36	7.34	7.30	7.22	7.08
70.00	6.96	6.87	6.79	6.79	6.79
75.00	6.75	6.70	6.59	6.47	6.36
80.00	6.27	6.16	6.03	5.97	5.97
85.00	5.95	5.90	5.86	5.82	5.75
90.00	5.65	5.50	5.34	5.16	4.98
95.00	4.91	4.85	4.82	4.65	4.45
100.00	4.26	4.07	3.90	3.52	3.17
105.00	2.28	1.91	1.39	.89	.36
110.00	.00				

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\PONDPACK\A12000PLUS\12495A\Detention\
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 = Outlet 1

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	586.00 ft
Starting Volume	=	0 cu.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	=	53.03 cfs	at	4.00 min
Peak Outflow	=	17.76 cfs	at	23.00 min
Peak Elevation	=	591.90 ft		
Peak Storage	=	49190 cu.ft		

MASS BALANCE (cu.ft)

+ Initial Vol	=	0
+ HYG Vol IN	=	63637
- Infiltration	=	0
- HYG Vol OUT	=	63637
- Retained Vol	=	0
Unrouted Vol	= -	cu.ft (.000% of Inflow Volume)

POND ROUTED TOTAL OUTFLOW HYG...
HYG file =
HYG ID = POND 10 OUT
HYG Tag = 100

Peak Discharge =	10.76 cfs
Time to Peak =	23.00 min
HYG Volume =	63637 cu.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	2.24	4.19	4.97	5.86
5.00	6.36	6.79	7.35	7.73	8.07
10.00	8.57	9.17	9.88	10.75	11.38
15.00	12.23	13.23	14.00	14.93	15.82
20.00	16.68	17.35	17.71	17.76	17.51
25.00	17.11	16.72	16.34	15.96	15.59
30.00	15.22	14.87	14.51	14.17	13.83
35.00	13.58	13.36	13.03	12.72	12.40
40.00	12.13	11.93	11.69	11.39	11.16
45.00	10.97	10.83	10.73	10.56	10.29
50.00	10.05	9.87	9.71	9.63	9.54
55.00	9.31	9.06	8.91	8.83	8.74
60.00	8.63	8.51	8.42	8.33	8.24
65.00	8.15	8.07	8.07	7.92	7.87
70.00	7.87	7.82	7.68	7.55	7.47
75.00	7.38	7.36	7.36	7.34	7.30
80.00	7.24	7.10	6.97	6.88	6.80
85.00	6.79	6.79	6.76	6.71	6.61
90.00	6.48	6.37	6.28	6.17	6.05
95.00	5.97	5.97	5.95	5.90	5.86
100.00	5.83	5.76	5.66	5.52	5.36
105.00	5.18	5.00	4.92	4.86	4.82
110.00	4.67	4.48	4.28	4.09	3.92
115.00	3.56	3.30	2.34	1.93	1.46
120.00	.95	.44	.00		

Index of Starting Page Numbers for ID Names

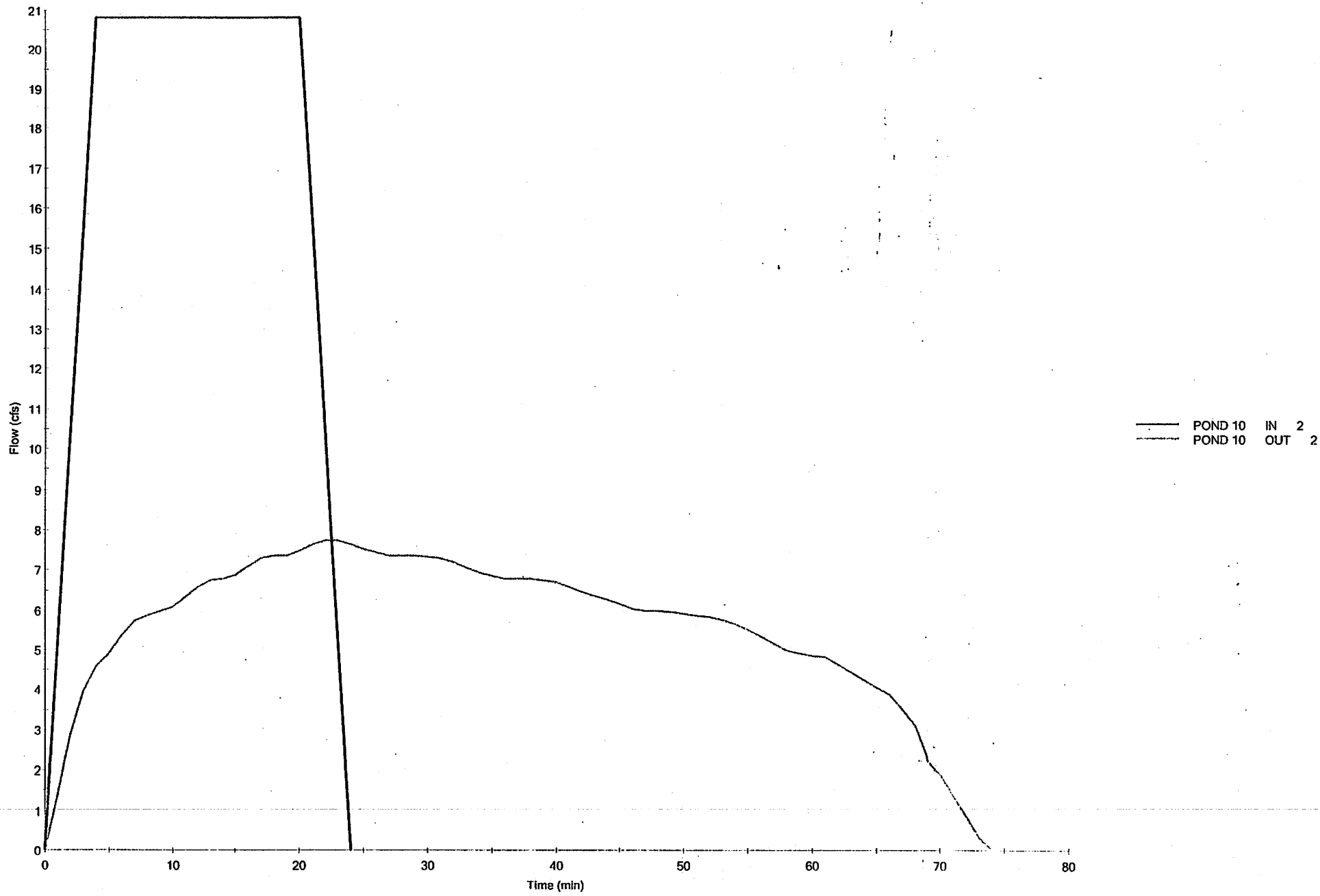
----- H -----
HYD QUEUE 10 2... 3.01, 3.02, 3.03,
3.04

----- O -----
Outlet 1... 7.01, 7.05

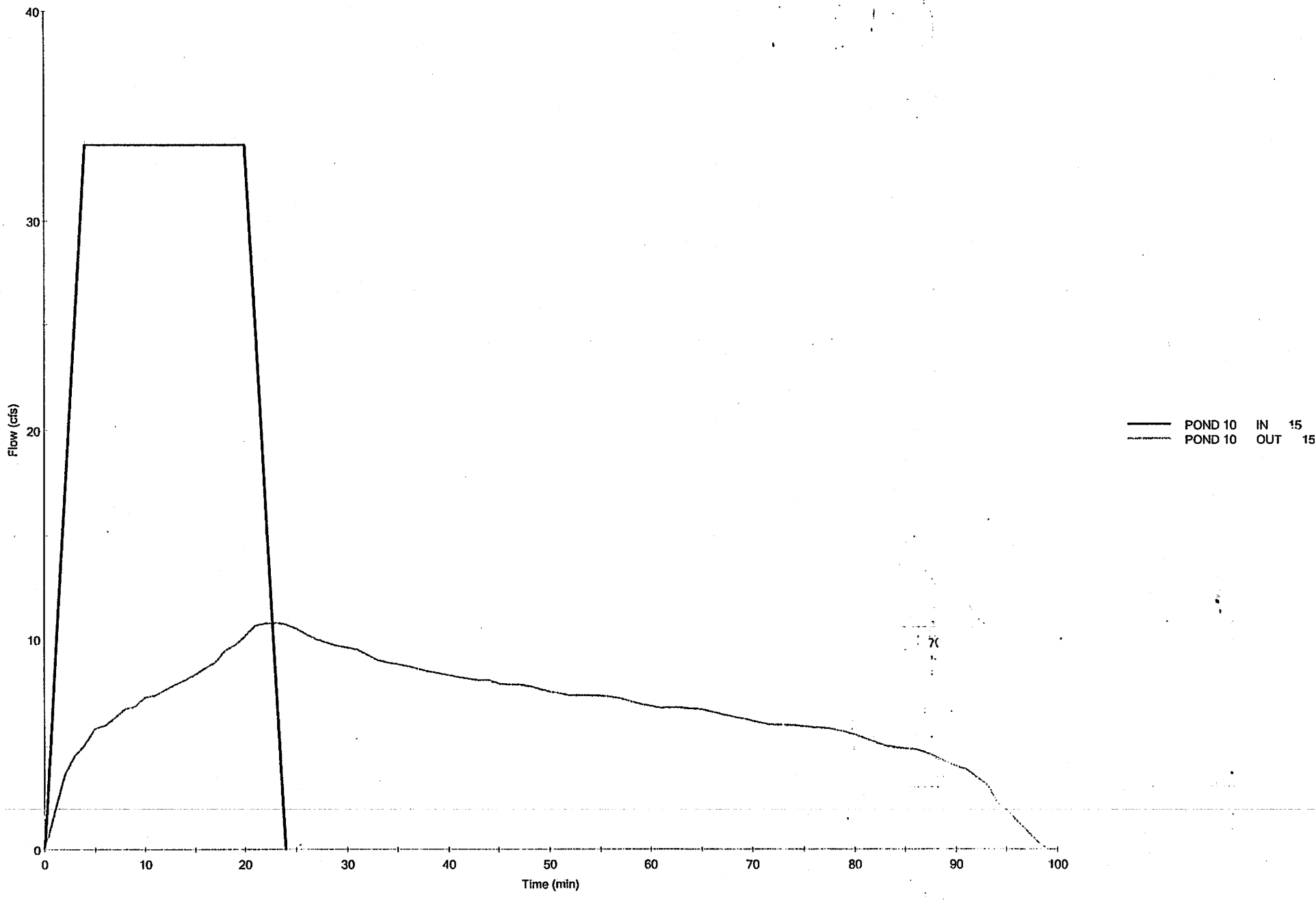
----- P -----
POND 10... 6.01, 8.01
POND 10 OUT 2... 4.01, 5.01,
8.09, 8.10, 4.02, 5.02, 8.11,
8.12, 4.03, 5.03, 8.13, 8.14,
4.04, 5.04, 8.15, 8.16

----- W -----
Watershed... 1.01, 2.01, 2.02, 2.03,
2.04

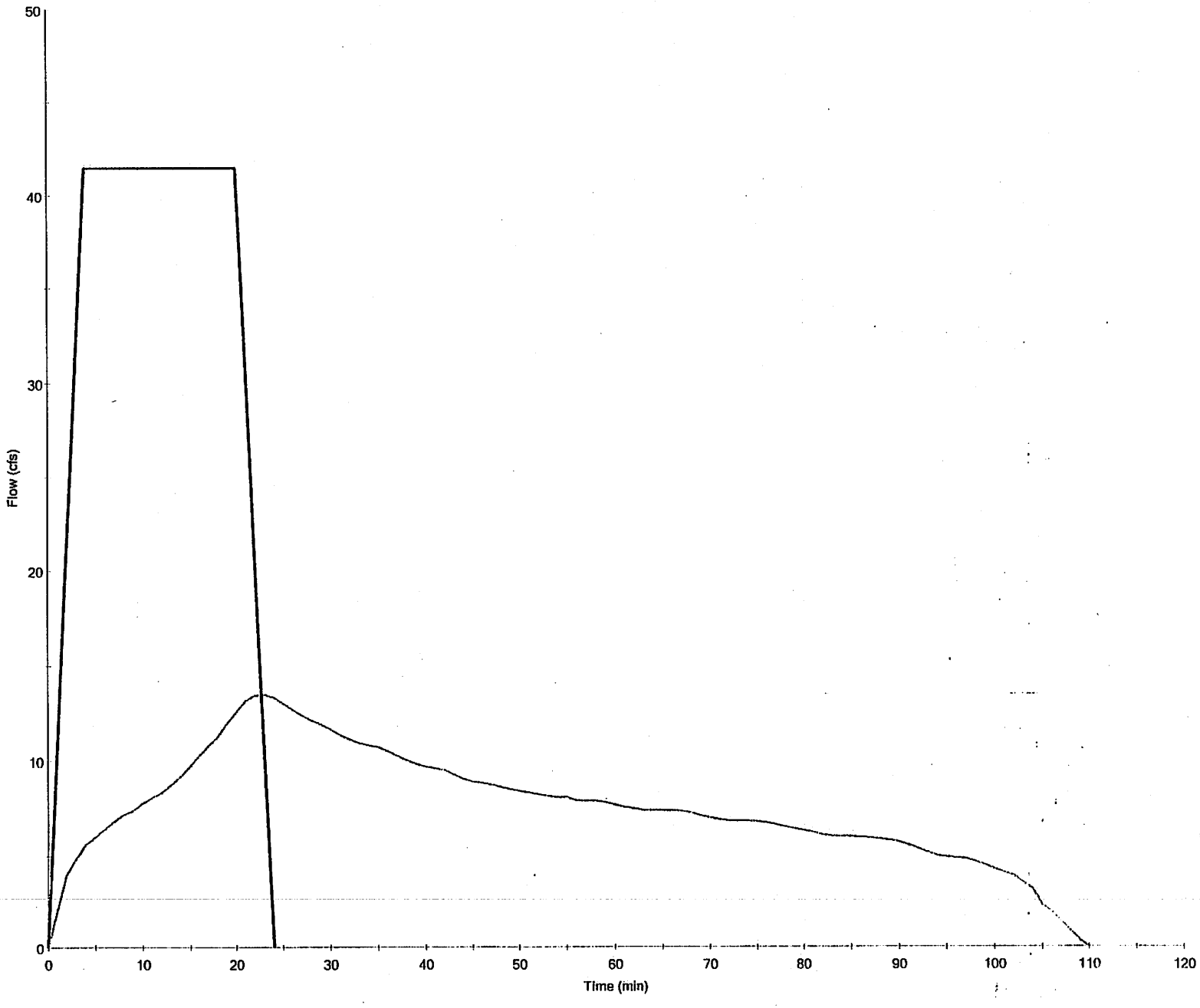
Hydrograph
POND 10 OUT 2



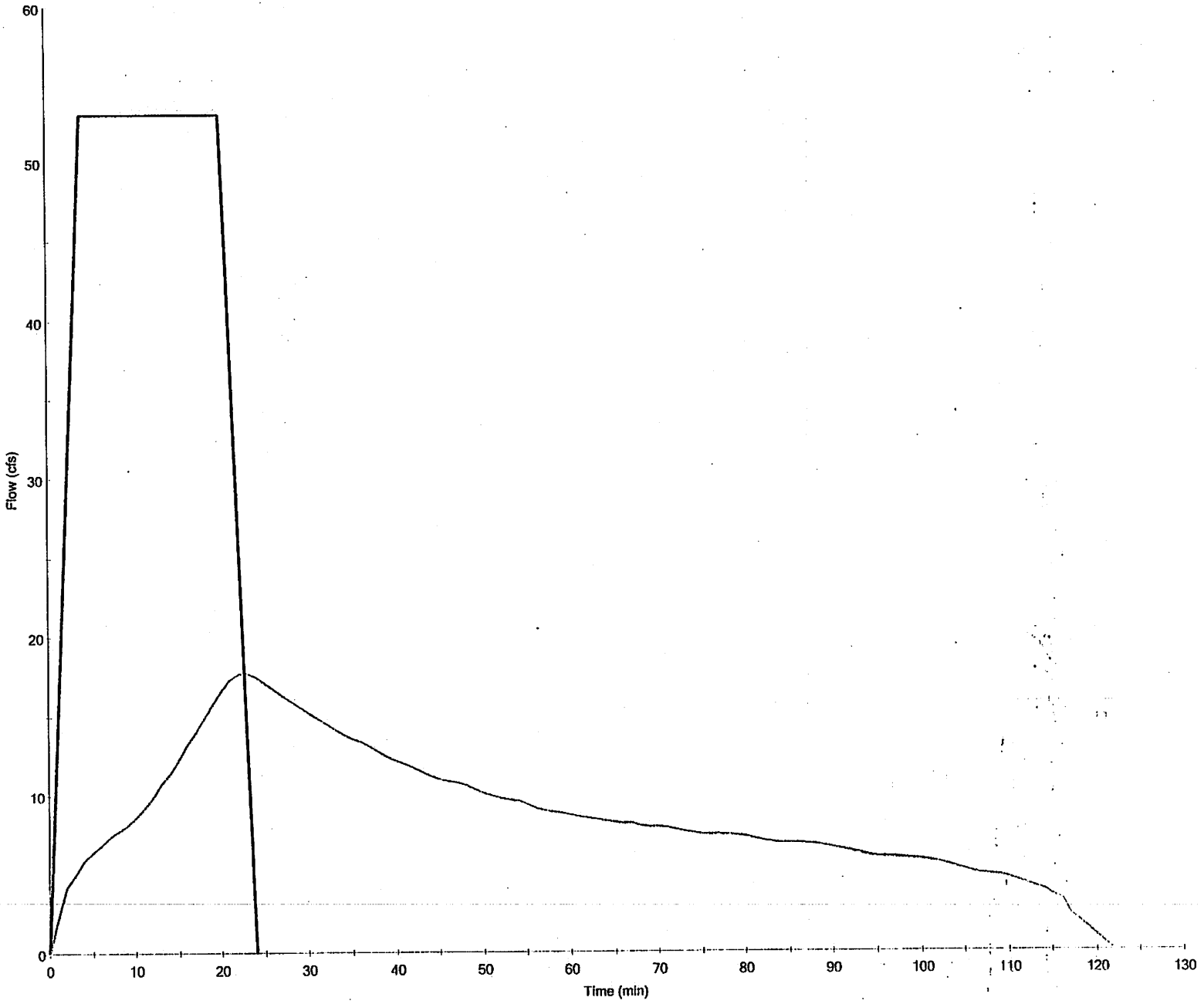
Hydrograph
POND 10 OUT 15



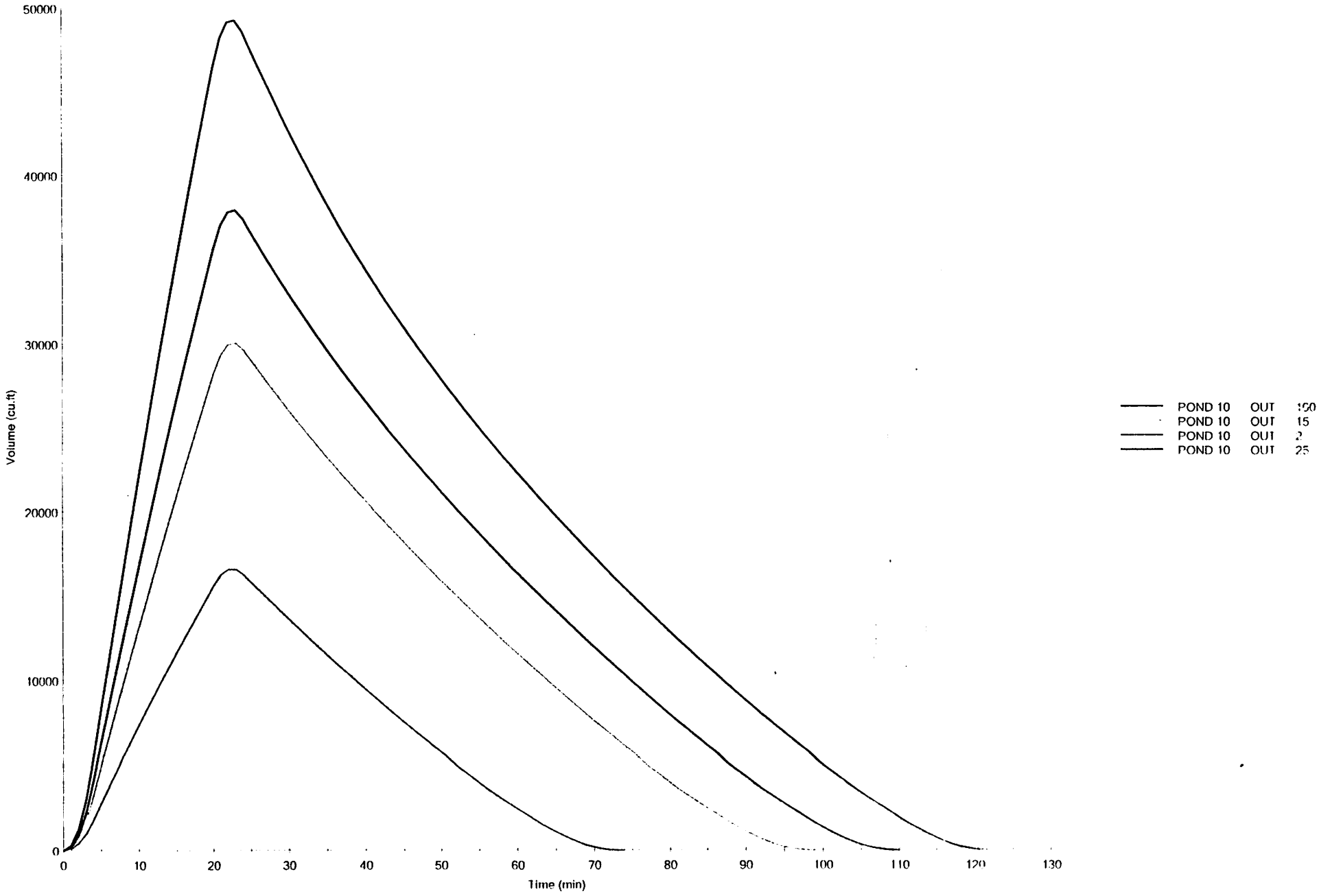
Hydrograph
POND 10 OUT 25



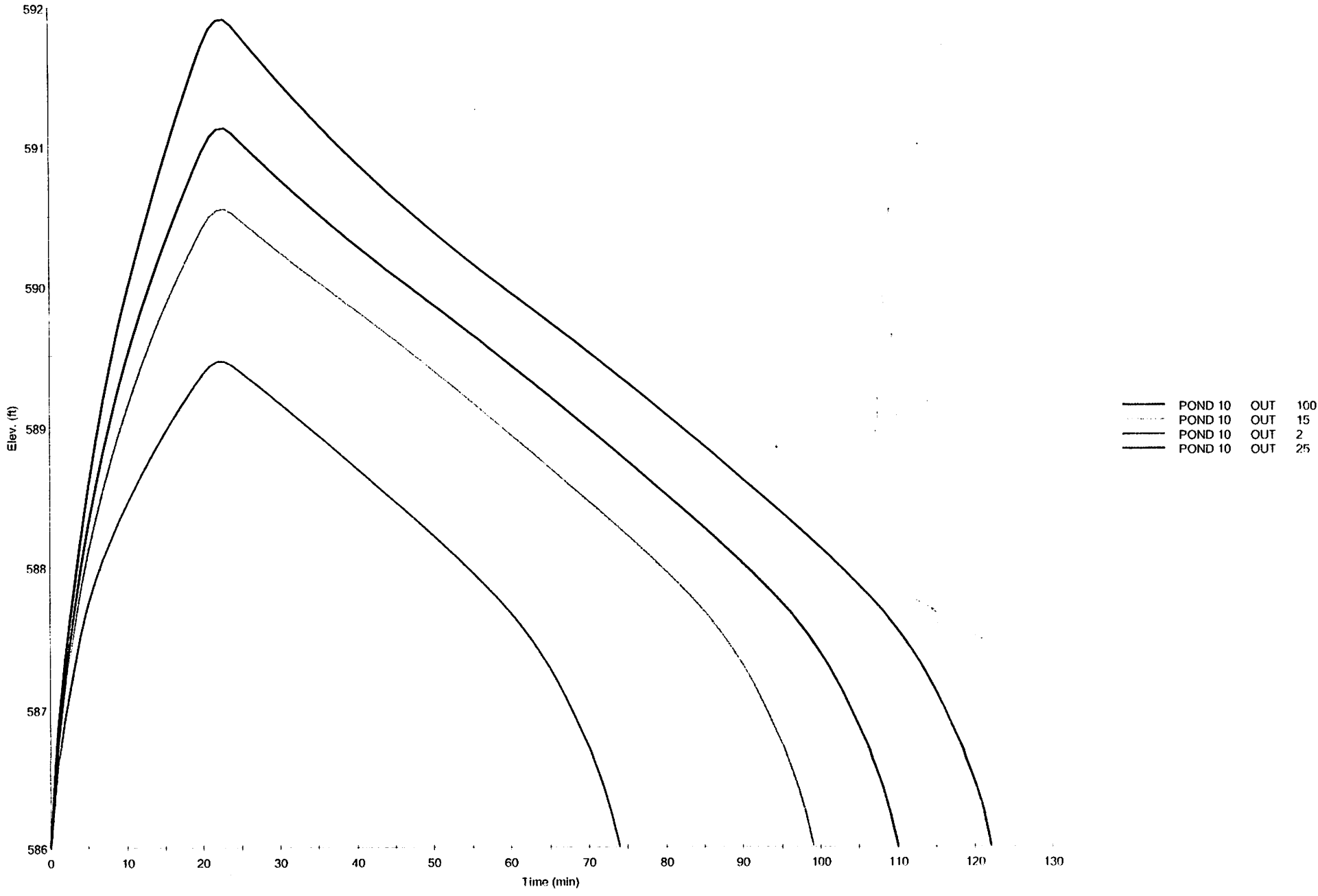
Hydrograph
POND 10 OUT 100

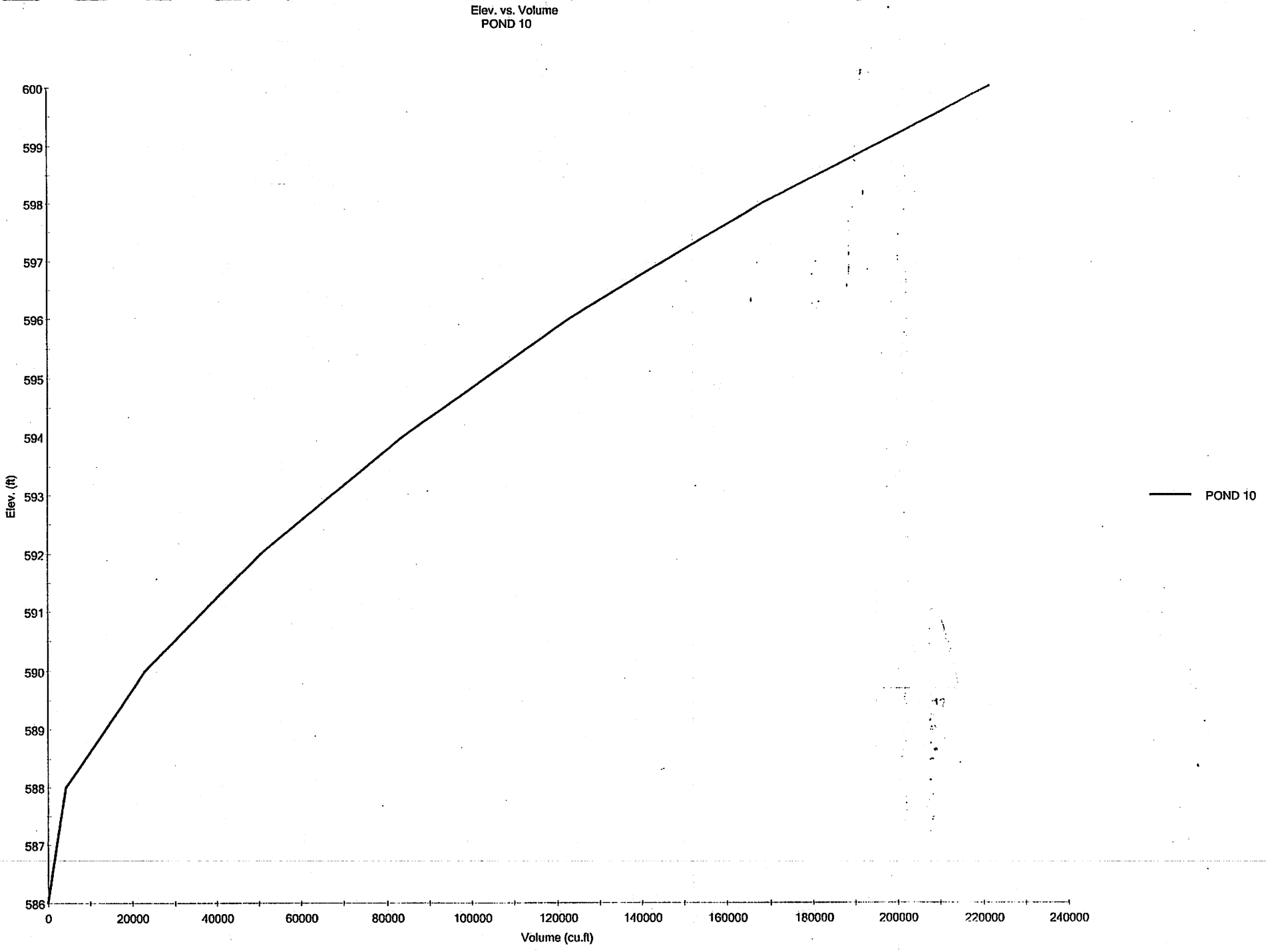


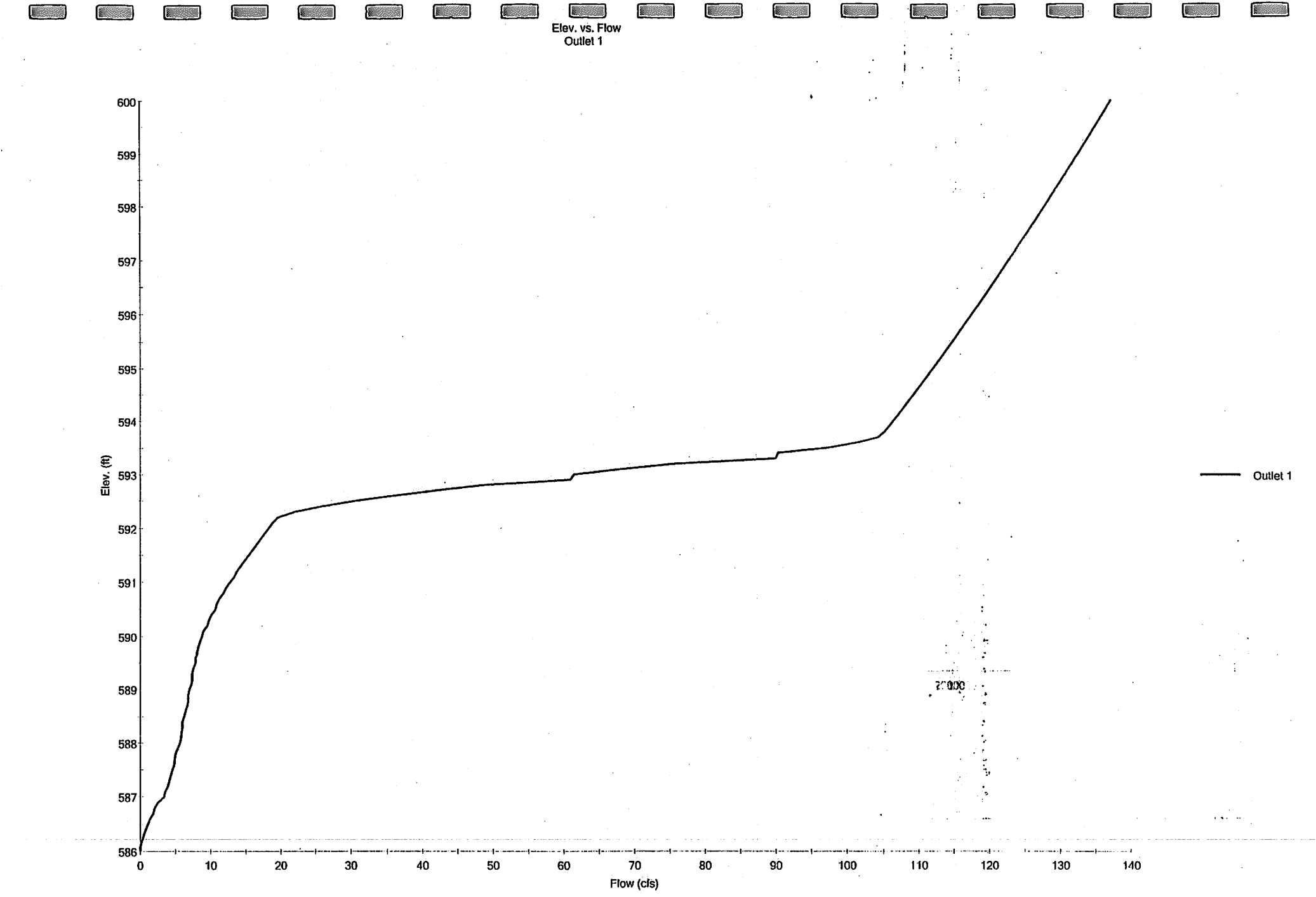
Volume vs. Time
POND 10 OUT 25



Elev. vs. Time
POND 10 OUT 25




Elev. vs. Volume
POND 10
600
599
598
597
596
595
594
593
592
591
590
589
588
587
586
Elev. (ft)
0
20000
40000
60000
80000
100000
120000
140000
160000
180000
200000
220000
240000
Volume (cu.ft)
POND 10


Elev. vs. Flow
Outlet 1
Elev. (ft)
600
599
598
597
596
595
594
593
592
591
590
589
588
587
586
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
Flow (cfs)
Outlet 1

POND 10
Routing Calculations
100 yr. 20 minute Design Storm
Low Flow Blocked

Table of Contents

********** MASTER SUMMARY **********

Watershed..... Master Network Summary 1.01

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

Watershed..... 100
Executive Summary (Nodes) 2.01

********** RUNOFF HYDROGRAPHS **********

HYD QUEUE 10.... 100
Read HYG 3.01

********** TIME VS.ELEV **********

POND 10 OUT 100
Time-Elev 4.01

********** TIME VS.VOL **********

POND 10 OUT 100
Time vs. Volume 5.01

********** POND VOLUMES **********

POND 10..... Vol: Planimeter 6.01

Table of Contents (continued)

********** OUTLET STRUCTURES **********

LFB..... Outlet Input Data 7.01
Composite Rating Curve 7.04

********** POND ROUTING **********

POND 10..... Pond E-V-Q Table 8.01

POND 10 OUT 100
Pond Routing Summary 8.09
Pond Routed HYG (total out) 8.10

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 cu.ft	Trun	Qpeak min	Qpeak cfs	Max WSEL ft	Max Pond Storage cu.ft
HYD QUEUE 10		HYG	2	24949		4.00	20.79		
HYD QUEUE 10		HYG	15	40309		4.00	33.59		
HYD QUEUE 10		HYG	25	49753		4.00	41.46		
HYD QUEUE 10		HYG	100	63637		4.00	53.03		
*OUT 10		JCT	2	24946		20.00	20.04		
*OUT 10		JCT	15	40306		20.00	32.96		
*OUT 10		JCT	25	49751		20.00	40.89		
*OUT 10		JCT	100	63634		20.00	52.95		
POND 10	IN	POND	2	24949		4.00	20.79		
POND 10	IN	POND	15	40309		4.00	33.59		
POND 10	IN	POND	25	49753		4.00	41.46		
POND 10	IN	POND	100	63637		4.00	53.03		
POND 10	OUT	POND	2	24946		20.00	20.04	592.70	61678
POND 10	OUT	POND	15	40306		20.00	32.96	592.90	64880
POND 10	OUT	POND	25	49751		20.00	40.89	593.01	66678
POND 10	OUT	POND	100	63634		20.00	52.95	593.13	68777

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

	Node ID		Type	HYG Vol cu.ft	Trun.	Qpeak min	Qpeak cfs	Max WSEL ft
	HYD QUEUE 10		HYG	63637		4.00	53.03	
Outfall	OUT 10		JCT	63634		20.00	52.95	
	POND 10	IN	POND	63637		4.00	53.03	
	POND 10	OUT	POND	63634		20.00	52.95	593.13

HYG file =
HYG ID = 100 YR
HYG Tag =

Peak Discharge =	53.03 cfs
Time to Peak =	4.00 min
HYG Volume =	63637 cu.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	13.26	26.52	39.77	53.03
5.00	53.03	53.03	53.03	53.03	53.03
10.00	53.03	53.03	53.03	53.03	53.03
15.00	53.03	53.03	53.03	53.03	53.03
20.00	53.03	39.77	26.52	13.26	.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	592.20	592.22	592.30	592.41	592.55
5.00	592.69	592.80	592.89	592.96	593.01
10.00	593.05	593.08	593.10	593.11	593.12
15.00	593.13	593.13	593.13	593.13	593.13
20.00	593.13	593.12	593.06	592.98	592.88
25.00	592.78	592.69	592.63	592.57	592.53
30.00	592.49	592.46	592.44	592.41	592.39
35.00	592.38	592.36	592.35	592.34	592.32
40.00	592.32	592.31	592.30	592.29	592.29
45.00	592.28	592.28	592.27	592.27	592.26
50.00	592.26	592.25	592.25	592.25	592.24
55.00	592.24	592.24	592.23	592.23	592.23
60.00	592.23	592.23	592.22	592.22	592.22
65.00	592.22	592.22	592.22	592.22	592.21
70.00	592.21	592.21	592.21	592.21	592.21
75.00	592.21	592.21	592.21	592.21	592.21
80.00	592.21	592.21	592.21	592.21	592.21
85.00	592.20	592.20	592.20	592.20	592.20
90.00	592.20	592.20	592.20	592.20	592.20
95.00	592.20	592.20	592.20	592.20	592.20
100.00	592.20	592.20	592.20	592.20	592.20
105.00	592.20	592.20	592.20	592.20	592.20
110.00	592.20	592.20	592.20	592.20	592.20
115.00	592.20	592.20	592.20	592.20	592.20
120.00	592.20	592.20	592.20	592.20	592.20
125.00	592.20	592.20	592.20	592.20	592.20
130.00	592.20	592.20	592.20	592.20	

TIME vs. VOLUME (cu.ft)

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

Time min					
.00	53714	54097	55224	56996	59262
5.00	61508	63315	64734	65830	66672
10.00	67311	67794	68159	68410	68565
15.00	68655	68709	68741	68759	68771
20.00	68777	68466	67590	66259	64540
25.00	62855	61532	60472	59610	58901
30.00	58315	57820	57399	57041	56732
35.00	56461	56221	56009	55821	55654
40.00	55507	55376	55261	55154	55055
45.00	54964	54877	54799	54723	54654
50.00	54590	54530	54474	54422	54373
55.00	54329	54286	54247	54210	54176
60.00	54145	54116	54088	54062	54039
65.00	54016	53995	53976	53958	53941
70.00	53926	53911	53898	53886	53873
75.00	53863	53853	53843	53835	53826
80.00	53818	53811	53804	53799	53792
85.00	53787	53782	53777	53773	53769
90.00	53766	53762	53758	53755	53752
95.00	53749	53748	53745	53743	53741
100.00	53739	53737	53735	53734	53732
105.00	53732	53731	53729	53728	53727
110.00	53726	53725	53724	53724	53723
115.00	53722	53722	53721	53721	53720
120.00	53720	53719	53719	53718	53718
125.00	53718	53717	53717	53717	53716
130.00	53716	53716	53716	53716	

POND VOLUME CALCULATIONS

Planimeter scale: 1.00 ft/in

Elevation (ft)	Planimeter (sq.in)	Area (sq.ft)	A1+A2+sqr(A1*A2) (sq.ft)	Volume (cu.ft)	Volume Sum (cu.ft)
586.00	.000	0	0	0	0
588.00	6406.000	6406	6406	4271	4271
590.00	12576.000	12576	27958	18638	22909
592.00	15202.000	15202	41605	27737	50646
594.00	18055.000	18055	49824	33216	83862
596.00	21134.000	21134	58723	39149	123010
598.00	24440.000	24440	68301	45534	168544
600.00	28917.000	28917	79941	53294	221839

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.= 586.00 ft
Increment = .10 ft
Max. Elev.= 600.00 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	RO	--->	CV	592.200	600.000
Culvert-Circular	CV	--->	TW	583.000	600.000

TW SETUP, DS Channel

OUTLET STRUCTURE INPUT DATA

Structure ID	= R0	
Structure Type	= Inlet Box	
# of Openings	= 1	
Invert Elev.	= 592.20	ft
Orifice Area	= 21.0700	sq.ft
Orifice Coeff.	= .600	
Weir Length	= 18.76	ft
Weir Coeff.	= 3.000	
K, Reverse	= 1.000	
Mannings n	= .0000	
Kev,Charged Riser	= .000	
Weir Submergence	= No	

OUTLET STRUCTURE INPUT DATA

Structure ID = CV
Structure Type = Culvert-Circular

No. Barrels	=	1	
Barrel Diameter	=	3.0000	ft
Upstream Invert	=	583.00	ft
Dnstream Invert	=	582.00	ft
Horiz. Length	=	87.44	ft
Barrel Length	=	87.45	ft
Barrel Slope	=	.01144	ft/ft

OUTLET CONTROL DATA...

Mannings n	=	.0130	
Ke	=	.0000	(forward entrance loss)
Kb	=	.007228	(per ft of full flow)
Kr	=	1.0000	(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)	=	1.154
T2 ratio (HW/D)	=	1.301
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 = 586.46 ft ---> Flow = 42.85 cfs
At T2 Elev = 586.90 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

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
586.00	.00	Free Outfall		(no Q: R0,CV)
586.10	.00	Free Outfall		(no Q: R0,CV)
586.20	.00	Free Outfall		(no Q: R0,CV)
586.30	.00	Free Outfall		(no Q: R0,CV)
586.40	.00	Free Outfall		(no Q: R0,CV)
586.50	.00	Free Outfall		(no Q: R0,CV)
586.60	.00	Free Outfall		(no Q: R0,CV)
586.70	.00	Free Outfall		(no Q: R0,CV)
586.80	.00	Free Outfall		(no Q: R0,CV)
586.90	.00	Free Outfall		(no Q: R0,CV)
587.00	.00	Free Outfall		(no Q: R0,CV)
587.10	.00	Free Outfall		(no Q: R0,CV)
587.20	.00	Free Outfall		(no Q: R0,CV)
587.30	.00	Free Outfall		(no Q: R0,CV)
587.40	.00	Free Outfall		(no Q: R0,CV)
587.50	.00	Free Outfall		(no Q: R0,CV)
587.60	.00	Free Outfall		(no Q: R0,CV)
587.70	.00	Free Outfall		(no Q: R0,CV)
587.80	.00	Free Outfall		(no Q: R0,CV)
587.90	.00	Free Outfall		(no Q: R0,CV)
588.00	.00	Free Outfall		(no Q: R0,CV)
588.10	.00	Free Outfall		(no Q: R0,CV)
588.20	.00	Free Outfall		(no Q: R0,CV)
588.30	.00	Free Outfall		(no Q: R0,CV)
588.40	.00	Free Outfall		(no Q: R0,CV)
588.50	.00	Free Outfall		(no Q: R0,CV)
588.60	.00	Free Outfall		(no Q: R0,CV)
588.70	.00	Free Outfall		(no Q: R0,CV)
588.80	.00	Free Outfall		(no Q: R0,CV)
588.90	.00	Free Outfall		(no Q: R0,CV)
589.00	.00	Free Outfall		(no Q: R0,CV)
589.10	.00	Free Outfall		(no Q: R0,CV)
589.20	.00	Free Outfall		(no Q: R0,CV)
589.30	.00	Free Outfall		(no Q: R0,CV)
589.40	.00	Free Outfall		(no Q: R0,CV)
589.50	.00	Free Outfall		(no Q: R0,CV)
589.60	.00	Free Outfall		(no Q: R0,CV)
589.70	.00	Free Outfall		(no Q: R0,CV)

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
589.80	.00	Free Outfall		(no Q: R0,CV)
589.90	.00	Free Outfall		(no Q: R0,CV)
590.00	.00	Free Outfall		(no Q: R0,CV)
590.10	.00	Free Outfall		(no Q: R0,CV)
590.20	.00	Free Outfall		(no Q: R0,CV)
590.30	.00	Free Outfall		(no Q: R0,CV)
590.40	.00	Free Outfall		(no Q: R0,CV)
590.50	.00	Free Outfall		(no Q: R0,CV)
590.60	.00	Free Outfall		(no Q: R0,CV)
590.70	.00	Free Outfall		(no Q: R0,CV)
590.80	.00	Free Outfall		(no Q: R0,CV)
590.90	.00	Free Outfall		(no Q: R0,CV)
591.00	.00	Free Outfall		(no Q: R0,CV)
591.10	.00	Free Outfall		(no Q: R0,CV)
591.20	.00	Free Outfall		(no Q: R0,CV)
591.30	.00	Free Outfall		(no Q: R0,CV)
591.40	.00	Free Outfall		(no Q: R0,CV)
591.50	.00	Free Outfall		(no Q: R0,CV)
591.60	.00	Free Outfall		(no Q: R0,CV)
591.70	.00	Free Outfall		(no Q: R0,CV)
591.80	.00	Free Outfall		(no Q: R0,CV)
591.90	.00	Free Outfall		(no Q: R0,CV)
592.00	.00	Free Outfall		(no Q: R0,CV)
592.10	.00	Free Outfall		(no Q: R0,CV)
592.20	.00	Free Outfall		(no Q: R0,CV)
592.30	1.83	Free Outfall		R0,CV
592.40	4.98	Free Outfall		R0,CV
592.50	9.15	Free Outfall		R0,CV
592.60	14.21	Free Outfall		R0,CV
592.70	19.84	Free Outfall		R0,CV
592.80	26.13	Free Outfall		R0,CV
592.90	33.00	Free Outfall		R0,CV
593.00	40.25	Free Outfall		R0,CV
593.10	48.05	Free Outfall		R0,CV
593.20	62.45	Free Outfall		R0,CV
593.30	62.97	Free Outfall		R0,CV
593.40	73.98	Free Outfall		R0,CV
593.50	89.87	Free Outfall		R0,CV

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
593.60	90.22	Free Outfall		RO,CV
593.70	103.39	Free Outfall		RO,CV
593.80	105.14	Free Outfall		RO,CV
593.90	105.75	Free Outfall		RO,CV
594.00	106.33	Free Outfall		RO,CV
594.10	106.93	Free Outfall		RO,CV
594.20	107.51	Free Outfall		RO,CV
594.30	108.09	Free Outfall		RO,CV
594.40	108.67	Free Outfall		RO,CV
594.50	109.24	Free Outfall		RO,CV
594.60	109.82	Free Outfall		RO,CV
594.70	110.39	Free Outfall		RO,CV
594.80	110.96	Free Outfall		RO,CV
594.90	111.52	Free Outfall		RO,CV
595.00	112.08	Free Outfall		RO,CV
595.10	112.64	Free Outfall		RO,CV
595.20	113.20	Free Outfall		RO,CV
595.30	113.75	Free Outfall		RO,CV
595.40	114.30	Free Outfall		RO,CV
595.50	114.85	Free Outfall		RO,CV
595.60	115.39	Free Outfall		RO,CV
595.70	115.94	Free Outfall		RO,CV
595.80	116.48	Free Outfall		RO,CV
595.90	117.02	Free Outfall		RO,CV
596.00	117.55	Free Outfall		RO,CV
596.10	118.09	Free Outfall		RO,CV
596.20	118.61	Free Outfall		RO,CV
596.30	119.14	Free Outfall		RO,CV
596.40	119.67	Free Outfall		RO,CV
596.50	120.19	Free Outfall		RO,CV
596.60	120.71	Free Outfall		RO,CV
596.70	121.24	Free Outfall		RO,CV
596.80	121.75	Free Outfall		RO,CV
596.90	122.26	Free Outfall		RO,CV
597.00	122.77	Free Outfall		RO,CV
597.10	123.29	Free Outfall		RO,CV
597.20	123.79	Free Outfall		RO,CV
597.30	124.30	Free Outfall		RO,CV

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

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
597.40	124.80	Free Outfall		RO,CV
597.50	125.30	Free Outfall		RO,CV
597.60	125.80	Free Outfall		RO,CV
597.70	126.30	Free Outfall		RO,CV
597.80	126.80	Free Outfall		RO,CV
597.90	127.29	Free Outfall		RO,CV
598.00	127.79	Free Outfall		RO,CV
598.10	128.28	Free Outfall		RO,CV
598.20	128.76	Free Outfall		RO,CV
598.30	129.25	Free Outfall		RO,CV
598.40	129.74	Free Outfall		RO,CV
598.50	130.22	Free Outfall		RO,CV
598.60	130.70	Free Outfall		RO,CV
598.70	131.18	Free Outfall		RO,CV
598.80	131.65	Free Outfall		RO,CV
598.90	132.13	Free Outfall		RO,CV
599.00	132.61	Free Outfall		RO,CV
599.10	133.08	Free Outfall		RO,CV
599.20	133.55	Free Outfall		RO,CV
599.30	134.02	Free Outfall		RO,CV
599.40	134.49	Free Outfall		RO,CV
599.50	134.96	Free Outfall		RO,CV
599.60	135.42	Free Outfall		RO,CV
599.70	135.88	Free Outfall		RO,CV
599.80	136.34	Free Outfall		RO,CV
599.90	136.80	Free Outfall		RO,CV
600.00	137.26	Free Outfall		RO,CV

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12000PLUS\12495A\Detention\
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 = LFB

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	592.20 ft
Starting Volume	=	53714 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
586.00	.00	0	0	.00	.00	.00
586.10	.00	1	16	.00	.00	.02
586.20	.00	4	64	.00	.00	.14
586.30	.00	14	144	.00	.00	.48
586.40	.00	34	256	.00	.00	1.14
586.50	.00	67	400	.00	.00	2.22
586.60	.00	115	576	.00	.00	3.84
586.70	.00	183	785	.00	.00	6.10
586.80	.00	273	1025	.00	.00	9.11
586.90	.00	389	1297	.00	.00	12.97
587.00	.00	534	1602	.00	.00	17.79
587.10	.00	710	1938	.00	.00	23.68
587.20	.00	922	2306	.00	.00	30.75
587.30	.00	1173	2706	.00	.00	39.09
587.40	.00	1465	3139	.00	.00	48.83
587.50	.00	1802	3603	.00	.00	60.06
587.60	.00	2186	4100	.00	.00	72.88
587.70	.00	2623	4628	.00	.00	87.43
587.80	.00	3113	5189	.00	.00	103.77
587.90	.00	3662	5782	.00	.00	122.06

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12000PLUS\12495A\Detention\
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 = LFB

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	592.20 ft
Starting Volume	=	53714 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
588.00	.00	4271	6406	.00	.00	142.36
588.10	.00	4924	6665	.00	.00	164.13
588.20	.00	5604	6930	.00	.00	186.80
588.30	.00	6310	7200	.00	.00	210.34
588.40	.00	7044	7475	.00	.00	234.81
588.50	.00	7806	7755	.00	.00	260.19
588.60	.00	8595	8040	.00	.00	286.50
588.70	.00	9414	8331	.00	.00	313.80
588.80	.00	10262	8627	.00	.00	342.05
588.90	.00	11140	8927	.00	.00	371.32
589.00	.00	12047	9233	.00	.00	401.58
589.10	.00	12986	9544	.00	.00	432.87
589.20	.00	13957	9861	.00	.00	465.22
589.30	.00	14958	10182	.00	.00	498.61
589.40	.00	15993	10509	.00	.00	533.11
589.50	.00	17060	10840	.00	.00	568.68
589.60	.00	18161	11177	.00	.00	605.36
589.70	.00	19296	11519	.00	.00	643.20
589.80	.00	20465	11866	.00	.00	682.17
589.90	.00	21670	12219	.00	.00	722.32

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12000PLUS\12495A\Detention\
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 = LFB

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 592.20 ft
Starting Volume = 53714 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
590.00	.00	22909	12576	.00	.00	763.63
590.10	.00	24173	12701	.00	.00	805.75
590.20	.00	25450	12827	.00	.00	848.32
590.30	.00	26738	12954	.00	.00	891.27
590.40	.00	28041	13081	.00	.00	934.68
590.50	.00	29355	13209	.00	.00	978.49
590.60	.00	30682	13338	.00	.00	1022.72
590.70	.00	32022	13467	.00	.00	1067.41
590.80	.00	33375	13597	.00	.00	1112.51
590.90	.00	34742	13727	.00	.00	1158.06
591.00	.00	36121	13858	.00	.00	1204.03
591.10	.00	37513	13989	.00	.00	1250.43
591.20	.00	38919	14122	.00	.00	1297.30
591.30	.00	40337	14255	.00	.00	1344.58
591.40	.00	41770	14388	.00	.00	1392.33
591.50	.00	43215	14522	.00	.00	1440.51
591.60	.00	44674	14657	.00	.00	1489.12
591.70	.00	46147	14792	.00	.00	1538.22
591.80	.00	47632	14928	.00	.00	1587.75
591.90	.00	49133	15065	.00	.00	1637.75

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12000PLUS\12495A\Detention\
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 = LFB

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 592.20 ft
Starting Volume = 53714 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
592.00	.00	50646	15202	.00	.00	1688.18
592.10	.00	52172	15339	.00	.00	1739.07
592.20	.00	53714	15476	.00	.00	1790.45
592.30	1.83	55268	15614	.00	1.83	1844.09
592.40	4.98	56837	15753	.00	4.98	1899.53
592.50	9.15	58419	15892	.00	9.15	1956.43
592.60	14.21	60014	16032	.00	14.21	2014.69
592.70	19.84	61625	16173	.00	19.84	2074.01
592.80	26.13	63249	16314	.00	26.13	2134.43
592.90	33.00	64888	16456	.00	33.00	2195.93
593.00	40.25	66540	16598	.00	40.25	2258.26
593.10	48.05	68207	16741	.00	48.05	2321.61
593.20	62.45	69889	16884	.00	62.45	2392.08
593.30	62.97	71584	17029	.00	62.97	2449.10
593.40	73.98	73295	17173	.00	73.98	2517.14
593.50	89.87	75019	17319	.00	89.87	2590.50
593.60	90.22	76758	17465	.00	90.22	2648.80
593.70	103.39	78512	17611	.00	103.39	2720.46
593.80	105.14	80280	17759	.00	105.14	2781.14
593.90	105.75	82064	17907	.00	105.75	2841.22

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12000PLUS\12495A\Detention\
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 = LFB

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 592.20 ft
Starting Volume = 53714 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
594.00	106.33	83862	18055	.00	106.33	2901.72
594.10	106.93	85674	18203	.00	106.93	2962.73
594.20	107.51	87503	18352	.00	107.51	3024.26
594.30	108.09	89345	18501	.00	108.09	3086.25
594.40	108.67	91203	18651	.00	108.67	3148.77
594.50	109.24	93075	18802	.00	109.24	3211.75
594.60	109.82	94963	18953	.00	109.82	3275.24
594.70	110.39	96866	19105	.00	110.39	3339.26
594.80	110.96	98784	19258	.00	110.96	3403.75
594.90	111.52	100718	19411	.00	111.52	3468.78
595.00	112.08	102666	19564	.00	112.08	3534.28
595.10	112.64	104630	19718	.00	112.64	3600.30
595.20	113.20	106610	19873	.00	113.20	3666.87
595.30	113.75	108605	20029	.00	113.75	3733.91
595.40	114.30	110616	20185	.00	114.30	3801.50
595.50	114.85	112642	20342	.00	114.85	3869.58
595.60	115.39	114684	20499	.00	115.39	3938.18
595.70	115.94	116742	20657	.00	115.94	4007.34
595.80	116.48	118815	20815	.00	116.48	4076.98
595.90	117.02	120906	20974	.00	117.02	4147.19

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12000PLUS\12495A\Detention\
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 = LFB

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 592.20 ft
Starting Volume = 53714 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
596.00	117.55	123010	21134	.00	117.55	4217.89
596.10	118.09	125131	21294	.00	118.09	4289.12
596.20	118.61	127269	21454	.00	118.61	4360.92
596.30	119.14	129422	21615	.00	119.14	4433.21
596.40	119.67	131593	21776	.00	119.67	4506.08
596.50	120.19	133778	21938	.00	120.19	4579.44
596.60	120.71	135979	22101	.00	120.71	4653.34
596.70	121.24	138198	22264	.00	121.24	4727.83
596.80	121.75	140432	22428	.00	121.75	4802.81
596.90	122.26	142684	22592	.00	122.26	4878.38
597.00	122.77	144951	22757	.00	122.77	4954.46
597.10	123.29	147234	22923	.00	123.29	5031.09
597.20	123.79	149536	23089	.00	123.79	5108.31
597.30	124.30	151852	23256	.00	124.30	5186.03
597.40	124.80	154187	23423	.00	124.80	5264.36
597.50	125.30	156537	23591	.00	125.30	5343.20
597.60	125.80	158904	23760	.00	125.80	5422.60
597.70	126.30	161290	23929	.00	126.30	5502.61
597.80	126.80	163690	24099	.00	126.80	5583.13
597.90	127.29	166110	24269	.00	127.29	5664.26

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12000PLUS\12495A\Detention\
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 = LFB

No Infiltration

INITIAL CONDITIONS

Starting WS Elev = 592.20 ft
Starting Volume = 53714 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
598.00	127.79	168544	24440	.00	127.79	5745.92
598.10	128.28	170999	24655	.00	128.28	5828.21
598.20	128.76	173476	24871	.00	128.76	5911.28
598.30	129.25	175973	25088	.00	129.25	5995.00
598.40	129.74	178494	25305	.00	129.74	6079.51
598.50	130.22	181034	25524	.00	130.22	6164.69
598.60	130.70	183597	25744	.00	130.70	6250.59
598.70	131.18	186183	25964	.00	131.18	6337.28
598.80	131.65	188790	26186	.00	131.65	6424.65
598.90	132.13	191421	26408	.00	132.13	6512.82
599.00	132.61	194072	26631	.00	132.61	6601.67
599.10	133.08	196746	26856	.00	133.08	6691.27
599.20	133.55	199444	27081	.00	133.55	6781.66
599.30	134.02	202163	27307	.00	134.02	6872.75
599.40	134.49	204906	27534	.00	134.49	6964.66
599.50	134.96	207670	27762	.00	134.96	7057.27
599.60	135.42	210457	27991	.00	135.42	7150.63
599.70	135.88	213268	28221	.00	135.88	7244.81
599.80	136.34	216101	28452	.00	136.34	7339.71
599.90	136.80	218959	28684	.00	136.80	7435.43

LEVEL POOL ROUTING DATA

HYG Dir = H:\PONDPACK\A12000PLUS\12495A\Detention\
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 = LFB

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	592.20 ft
Starting Volume	=	53714 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
600.00	137.26	221839	28917	.00	137.26	7531.86

LEVEL POOL ROUTING SUMMARY

HYG Dir = H:\PONDPACK\A12000PLUS\12495A\Detention\
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 = LFB

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	592.20 ft
Starting Volume	=	53714 cu.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	=	53.03 cfs	at	4.00 min
Peak Outflow	=	52.95 cfs	at	20.00 min
Peak Elevation	=	593.13 ft		
Peak Storage	=	68777 cu.ft		

MASS BALANCE (cu.ft)

+ Initial Vol	=	53714
+ HYG Vol IN	=	63637
- Infiltration	=	0
- HYG Vol OUT	=	63634
- Retained Vol	=	53716
Unrouted Vol	=	0 cu.ft (.001% of Inflow Volume)

POND ROUTED TOTAL OUTFLOW HYG...
HYG file =
HYG ID = POND 10 OUT
HYG Tag = 100

Peak Discharge = 51.95 cfs
Time to Peak = 20.00 min
HYG Volume = 63634 cu.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	.45	1.78	5.40	11.83
5.00	19.43	26.41	32.35	37.13	40.87
10.00	43.86	46.12	47.82	49.80	51.12
15.00	51.90	52.36	52.64	52.80	52.89
20.00	52.95	50.27	45.17	39.01	31.54
25.00	24.61	19.51	15.81	12.93	10.68
30.00	8.88	7.58	6.47	5.52	4.77
35.00	4.23	3.75	3.32	2.95	2.61
40.00	2.32	2.05	1.82	1.70	1.58
45.00	1.48	1.37	1.28	1.19	1.11
50.00	1.04	.96	.90	.84	.78
55.00	.73	.68	.63	.59	.55
60.00	.51	.48	.44	.41	.38
65.00	.36	.33	.31	.29	.27
70.00	.25	.23	.22	.20	.19
75.00	.18	.16	.15	.14	.13
80.00	.12	.12	.11	.10	.09
85.00	.09	.08	.08	.07	.07
90.00	.06	.06	.05	.05	.05
95.00	.04	.04	.04	.03	.03
100.00	.03	.03	.03	.02	.02
105.00	.02	.02	.02	.02	.02
110.00	.01	.01	.01	.01	.01
115.00	.01	.01	.01	.01	.01
120.00	.01	.01	.01	.01	.01
125.00	.01	.00	.00	.00	.00
130.00	.00	.00	.00	.00	

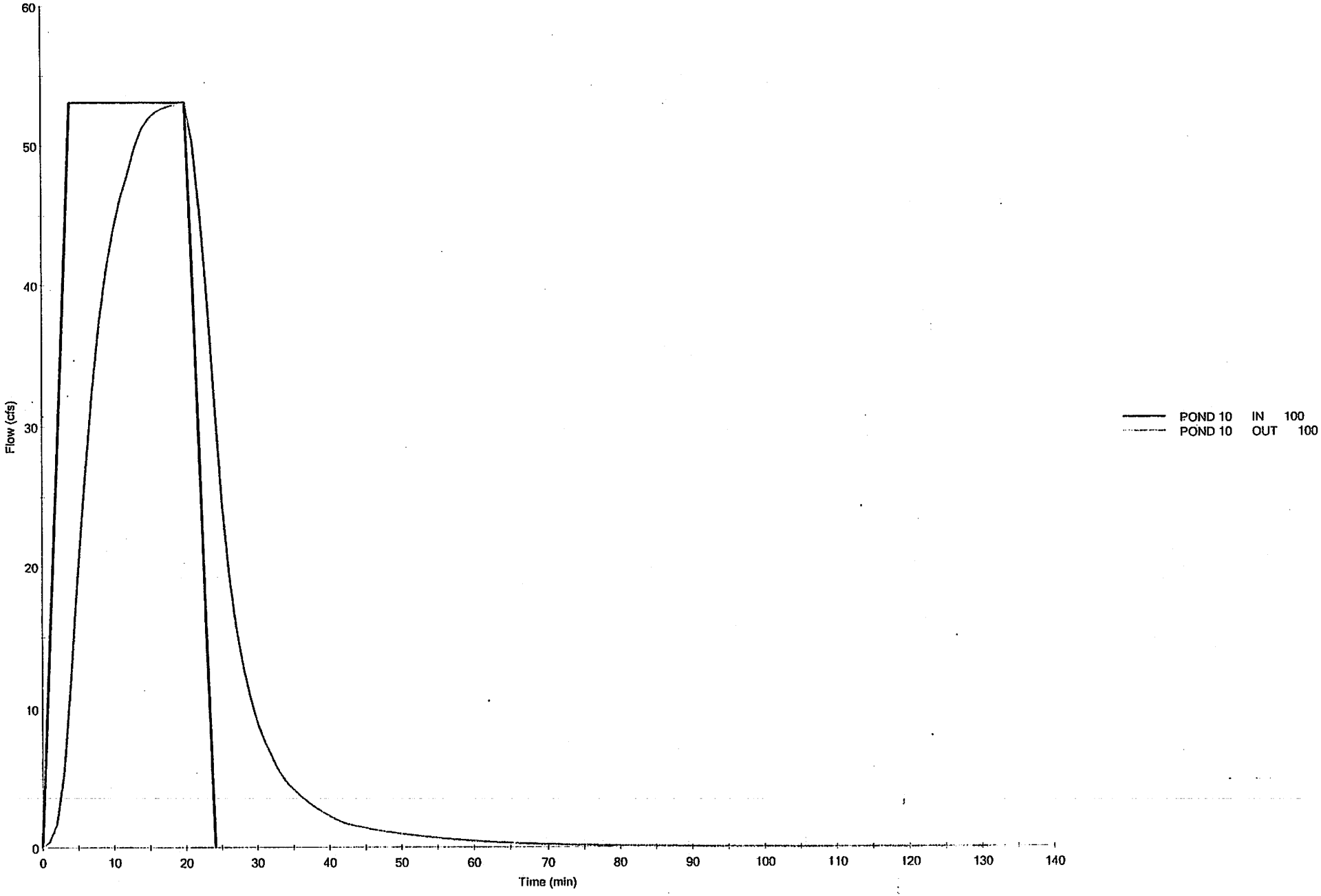
Index of Starting Page Numbers for ID Names

----- L -----
LFB... 7.01, 7.04

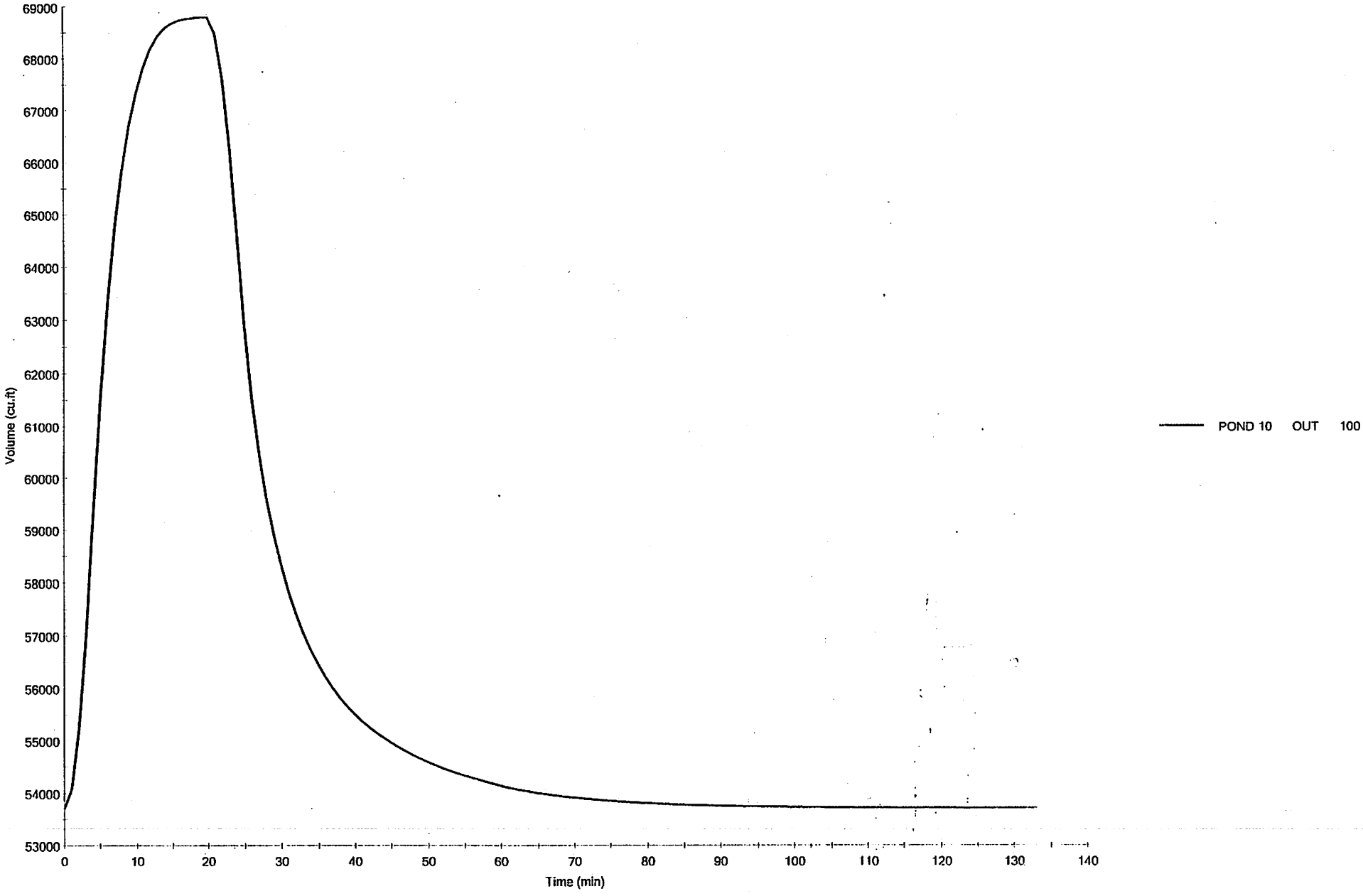
----- P -----
POND 10... 6.01, 8.01, 4.01, 5.01,
8.09, 8.10

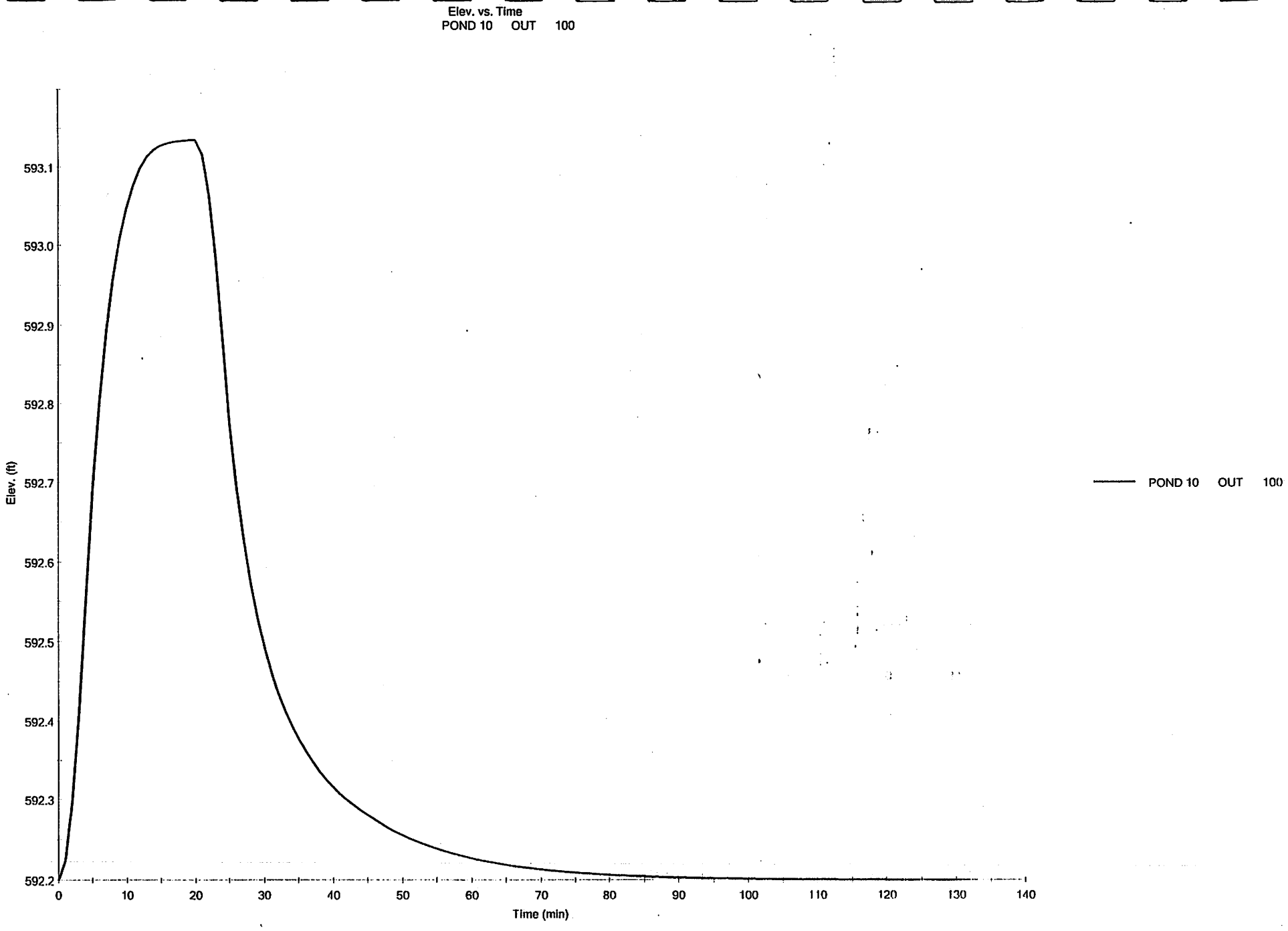
----- W -----
Watershed... 1.01, 2.01

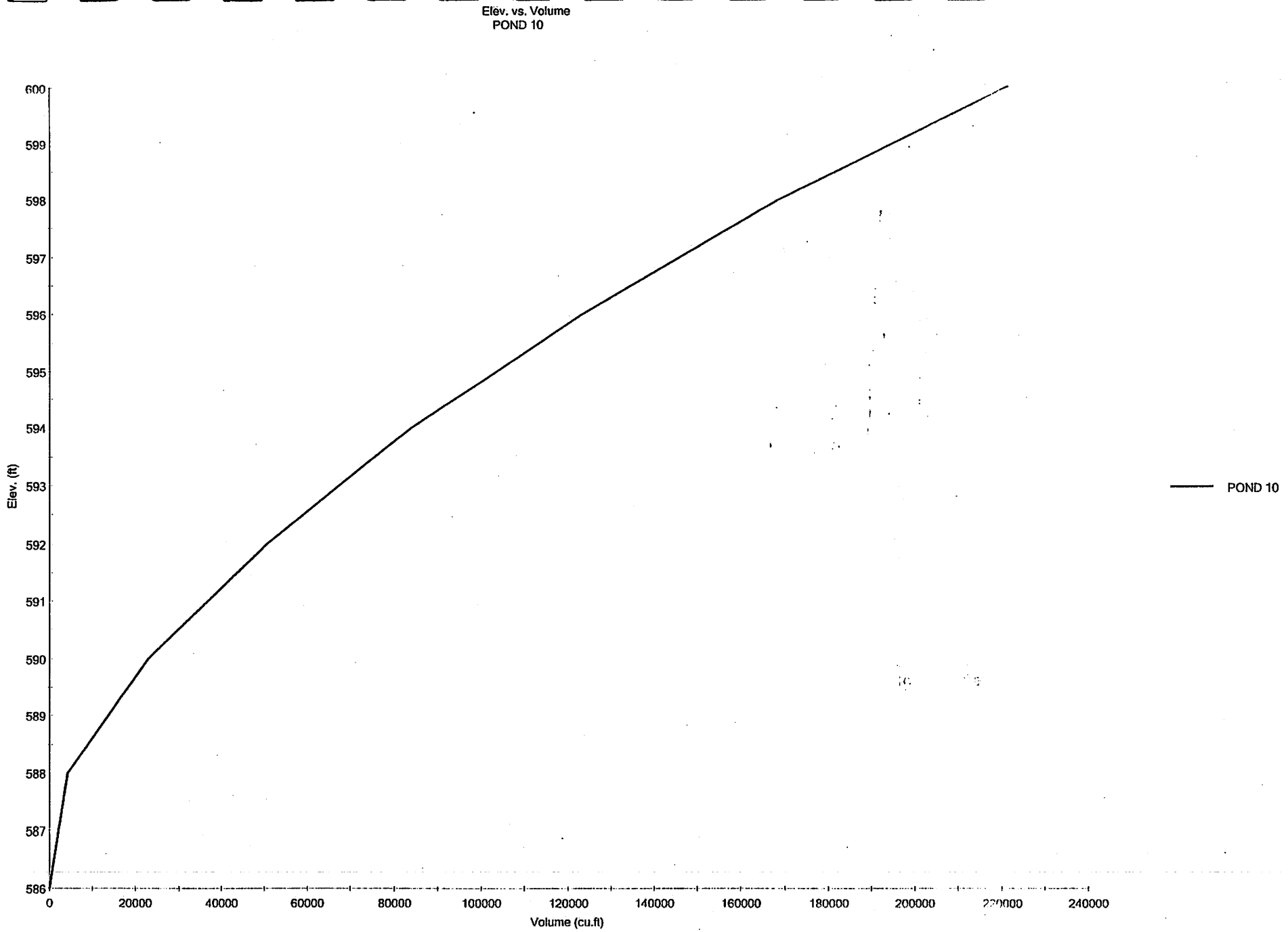
Hydrograph
POND 10 OUT 100

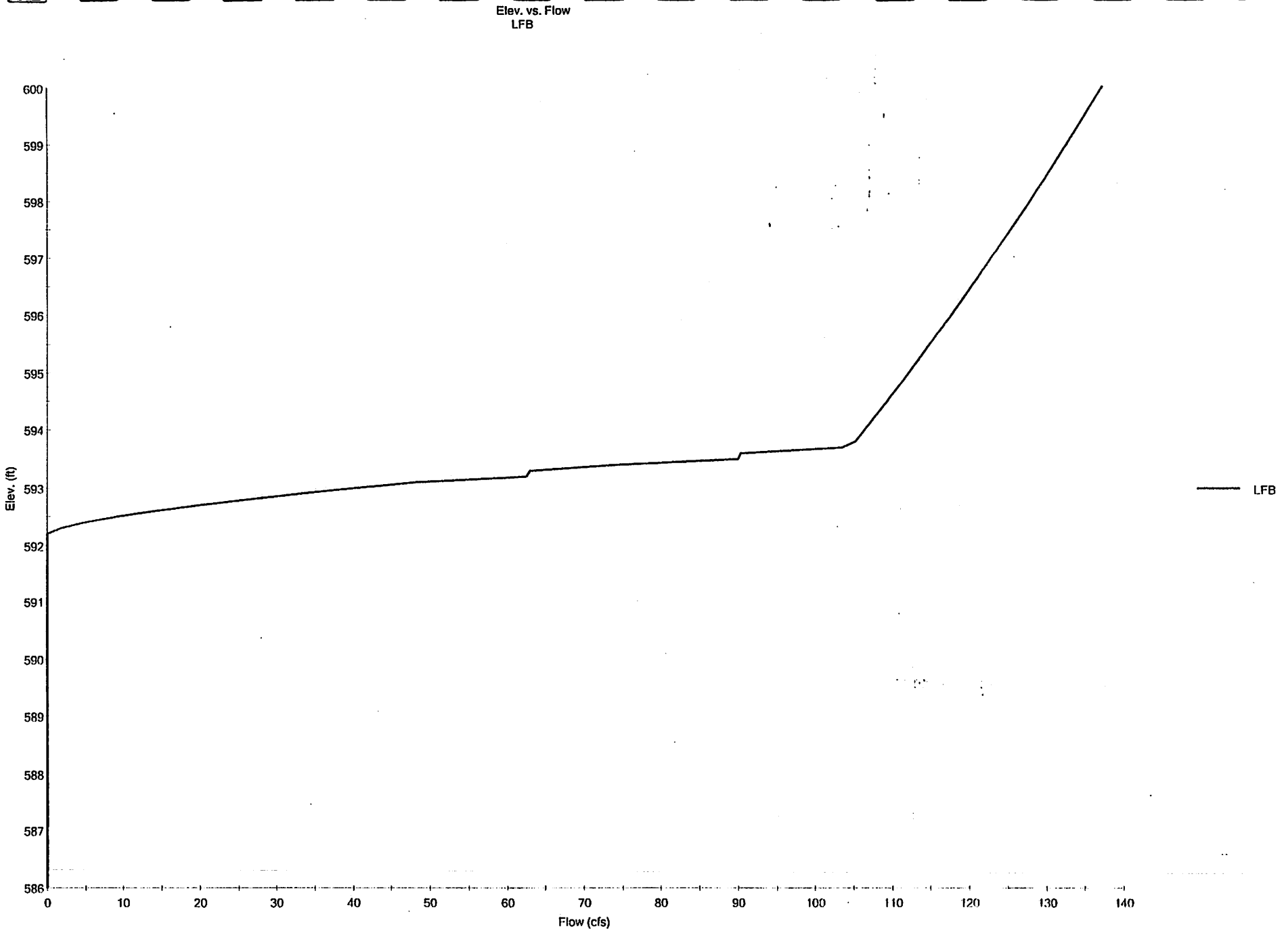


Volume vs. Time
POND 10 OUT 100




Elev. vs. Time
POND 10 OUT 100
593.1
593.0
592.9
592.8
592.7
592.6
592.5
592.4
592.3
592.2
Elev. (ft)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
Time (min)
POND 10 OUT 100


Elev. vs. Volume
POND 10
600
599
598
597
596
595
594
593
592
591
590
589
588
587
586
Elev. (ft)
0
20000
40000
60000
80000
100000
120000
140000
160000
180000
200000
220000
240000
Volume (cu.ft)
POND 10


Elev. vs. Flow
LFB
600
599
598
597
596
595
594
593
592
591
590
589
588
587
586
Elev. (ft)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
Flow (cfs)
LFB