ENGINEERING
PLANNING
SURVEYING

STORMWATER DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
DETENTION BASIN "C"
HOMEFIELD SQUARE - VILLAGE P - O'FALLON
BAX PROJECT NO. **98-10001P**
September 21, 1999
Revised March 3, 2000

INTRODUCTION:

This tract of land is presently an undeveloped site located in the City of O'Fallon, Missouri. The proposed Homefield Square - Village P, consisting of 12.2 acres of the 103.4 acre Homefield tract will be developed into single-family residential lots. A dry-basin will be constructed in the northwest corner of the tract. The storage volume and outflow rates shall be proportioned to insure that the peak rate of runoff leaving the tract under post-developed conditions is less than or equal to the peak rate of runoff under pre-developed conditions for the 2, 15, and 25 year-20 minute design storm. The basin was also analyzed for the 100 year frequency - 20 minute duration design storm. All or part of Villages K, M, N, P, R and part of the recreational area are served by this detention basin. Two other basins are proposed for the residential portion of this tract and will be analyzed, in conjunction with this basin, with submittals for future villages.

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 - ±52% impervious 1.76 cfs/ac.
15 year - ±52% impervious 2.90 cfs/ac.
25 year - ±52% impervious 3.58 cfs/ac.
100 year - ±52% impervious 4.58 cfs/ac.

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
RICHARD L. FRANCIS
NUMBER E-25631
REGISTERED PROFESSIONAL ENGINEER

BAX ENGINEERING CO., INC.
1052 South Cloverleaf Drive
St. Peters, MO 63376-6445
636-928-5552 FAX 928-1718
e-mail: baxeng@msn.com

TIME OF CONCENTRATION:

Of the inflows to the basin, the most remote point lies to the northeast near the amenities area. Flows will travel approximately 320 feet overland to AI 538, then 960 feet via stormpipe to the detention basin. Time of concentration is estimated as follows:

T(overland): L = 320 feet
Elevation difference = 522 - 517 = 5 feet
T(overland) = 6.8 minutes: See figure 1

T(stormpipe): L = 960 feet
960 / 7 fps = 2.3 minutes

Total 9.1 min Use **9** min.

REQUIRED ATTENUATION

= [Developed area x PI(post)] – [Pre-developed area x PI(pre)]

(2 yr)	[4.08 x 2.39 + 39.94 x 1.76]	-	[47.80 x 1.15]	=	25.08 cfs
(15 yr)	[4.08 x 3.85 + 39.94 x 2.90]	-	[47.80 x 1.87]	=	42.14 cfs
(25 yr)	[4.08 x 4.75 + 39.94 x 3.58]	-	[47.80 x 2.31]	=	51.95 cfs

BASIN PEAK INFLOWS:

Inflows to the basin have been estimated from the drainage area map.

25 year-20 minute storm

0.95 Ac. x 3.26 cfs/Ac.	3.10 cfs
27.28 Ac. x 3.58 cfs/Ac.	97.66 cfs
	100.76 cfs

2 year-20 minute storm:	49.54 cfs
15 year-20 minute storm:	81.62 cfs
100 year-20 minute storm:	128.90 cfs

ALLOWABLE OUTFLOWS:

Allowable outflows were determined by subtracting the required attenuation from the basin inflows.

STORM	INFLOW		REQUIRED. ATTENUATION		ALLOWABLE OUTFLOW
20-min	cfs		cfs		cfs
2 year	49.54	-	25.08	=	24.46
15 year	81.62	-	42.14	=	39.48
25 year	100.76	-	51.95	=	48.81

STORM ROUTING CALCULATIONS AND RESULTS:

A computer program was used in routing the 2, 15, and 25 year-20 minute storm through the basin. As found in the routing calculations, the results are as follows:

20 MIN STORM	ALLOWABLE RELEASE RATE	CALCULATED RELEASE RATE	PEAK ELEVATION
2 YR	24.46	24.06 cfs	488.05
15 YR	39.48	35.44 cfs	488.96
25 YR	48.81	41.31 cfs	489.45

CHECK 100 YEAR OUTFLOW: (low-flow outlet pipe blocked)

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

where 100-YEAR FLOW	Q	=	128.90 cfs
	c	=	3.0
Spillway width	L	=	23.562 ft
	H	=	1.49 ft
	sill	=	489.50 ft
	100 yr h/w	=	490.99 ft

SUMMARY

25 year-20min H.W.	489.45
100 year-20min H.W.	490.99
Low-flow slot	18"W x 42"H
Low-flow elevation	485.00
Top Of Berm	492.00

POND-2 Version: 5.20
S/N:

HOMEFIELD
NORTH BASIN
BAX ENGINEERING COMPANY INCORPORATED
September 21, 1999

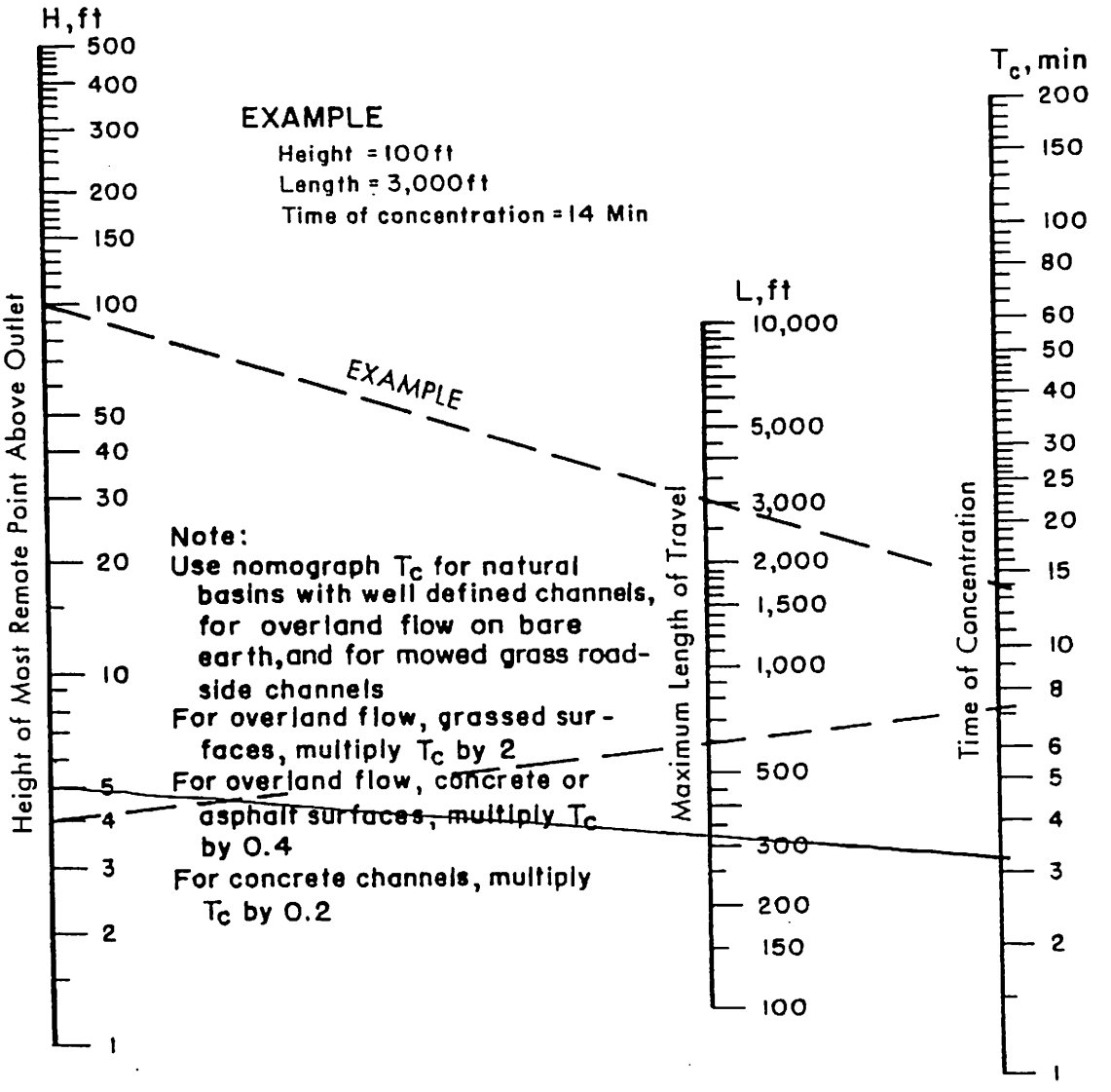
CALCULATED 09-22-1999 15:53:17
DISK FILE: c:\windows\profiles\andy\desktop\pondpa~1\10001C .VOL

Planimeter scale: 1 inch = 1 ft.

Elevation (ft)	Planimeter (sq.in.)	Area (sq.ft)	A1+A2+sqr(A1*A2) (sq.ft)	* Volume (cubic-ft)	Volume Sum (cubic-ft)
485.00	0.00	0	0	0	0
486.00	6,354.00	6,354	6,354	2,118	2,118
488.00	28,237.00	28,237	47,986	31,990	34,108
490.00	39,207.00	39,207	100,717	67,145	101,253
492.00	44,946.00	44,946	126,132	84,088	185,341

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

BASIN C



Based on study by P. Z. Kirpich,
Civil Engineering, Vol. 10, No. 6, June 1940, p. 362

320' 522-517 = 5 = 3.4 × 2 = 6.8 min

(960 ÷ 7) ÷ 60 = 2.3 min

TOTAL 9.1 MIN USE 9

1052 South Cloverleaf Drive
St. Peters, MO 63376-6445
314-928-5552 FAX 928-1718

Outlet Structure File: 10001C .STR

POND-2 Version: 5.20 S/N:
Date Executed: Time Executed:

****
HOMEFIELD
DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
September 21, 1999
****

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

Elevation (ft)	Q (cfs)	Contributing Structures
485.00	0.0	1
485.50	1.6	1
486.00	4.5	1
486.50	8.3	1
487.00	12.7	1
487.50	17.8	1
488.00	23.4	1
488.50	29.5	1
489.00	36.0	1
489.50	41.9	2 +3
490.00	70.6	2 +3
490.50	119.6	2 +3
491.00	182.0	2 +3

Outlet Structure File: 10001C .STR

POND-2 Version: 5.20 S/N:
Date Executed: Time Executed:

****
HOMEFIELD
DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
September 21, 1999
****

Outlet Structure File: c:\windows\profiles\andy\desktop\pondpa~1\10001C .STR

Planimeter Input File: c:\windows\profiles\andy\desktop\pondpa~1\10001C .VOL

Rating Table Output File: c:\windows\profiles\andy\desktop\pondpa~1\10001C .PND

Min. Elev.(ft) = 485 Max. Elev.(ft) = 491 Incr.(ft) = .5

Additional elevations (ft) to be included in table:
* *

****
SYSTEM CONNECTIVITY
****

Structure	No.	Q Table		Q Table
WEIR-VR	1		->	1
ORIFICE	2	? 1	->	A
WEIR-VR	3		->	3

Outflow rating table summary was stored in file:
c:\windows\profiles\andy\desktop\pondpa~1\10001C .PND

Outlet Structure File: 10001C .STR

POND-2 Version: 5.20 S/N:
Date Executed: Time Executed:

****
HOMEFIELD
DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
September 21, 1999
****

>>>>>> Structure No. 1 <<<<<<
(Input Data)

WEIR-VR
Weir - Vertical Rectangular

E1 elev.(ft)?	485
E2 elev.(ft)?	491.001
Weir coefficient?	3
Weir elev.(ft)?	485.00
Length (ft)?	1.5
Contracted/Suppressed (C/S)?	S

Outlet Structure File: 10001C .STR

POND-2 Version: 5.20 S/N:
Date Executed: Time Executed:

****
HOMEFIELD
DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
September 21, 1999
****

>>>>>> Structure No. 2 <<<<<<
(Input Data)

ORIFICE
Orifice - Based on Area and Datum Elevation

E1 elev.(ft)?	488.50
E2 elev.(ft)?	491.001
Orifice coeff.?	0.6
Invert elev.(ft)?	485.000
Datum elev.(ft) ?	486.7500
Orifice area (sq ft)?	5.25

Outlet Structure File: 10001C .STR

POND-2 Version: 5.20 S/N:
Date Executed: Time Executed:

****
HOMEFIELD
DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
September 21, 1999
****

>>>>>> Structure No. 3 <<<<<<
(Input Data)

WEIR-VR
Weir - Vertical Rectangular

E1 elev.(ft)?	489.5
E2 elev.(ft)?	491.001
Weir coefficient?	3
Weir elev.(ft)?	489.50
Length (ft)?	23.562
Contracted/Suppressed (C/S)?	S

Outlet Structure File: 10001C .STR

POND-2 Version: 5.20 S/N:
Date Executed: Time Executed:

****
HOMEFIELD
DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
September 21, 1999
****

Outflow Rating Table for Structure #1
WEIR-VR Weir - Vertical Rectangular

***** INLET CONTROL ASSUMED *****

Elevation (ft)	Q (cfs)	Computation Messages
485.00	0.0	H =0.0
485.50	1.6	H =.5
486.00	4.5	H =1.0
486.50	8.3	H =1.5
487.00	12.7	H =2.0
487.50	17.8	H =2.5
488.00	23.4	H =3.0
488.50	29.5	H =3.5
489.00	36.0	H =4.0
489.50	43.0	H =4.5
490.00	50.3	H =5.0
490.50	58.0	H =5.5
491.00	66.1	H =6.0

C = 3 L (ft) = 1.5
H (ft) = Table elev. - Invert elev. (485 ft)
Q (cfs) = C * L * (H**1.5) -- Suppressed Weir

Outlet Structure File: 10001C .STR

POND-2 Version: 5.20 S/N:
Date Executed: Time Executed:

****
HOMEFIELD
DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
September 21, 1999
****

Outflow Rating Table for Structure #2
ORIFICE Orifice - Based on Area and Datum Elevation

Elevation (ft)	Q (cfs)	Computation Messages
485.00	0.0	E < E1=488.50
485.50	0.0	E < E1=488.50
486.00	0.0	E < E1=488.50
486.50	0.0	E < E1=488.50
487.00	0.0	E < E1=488.50
487.50	0.0	E < E1=488.50
488.00	0.0	E < E1=488.50
488.50	33.4	H =1.75
489.00	37.9	H =2.25
489.50	41.9	H =2.75
490.00	45.6	H =3.25
490.50	49.0	H =3.75
491.00	52.1	H =4.25

C = .6 A = 5.25 sq.ft.
H (ft) = Table elev. - Datum elev. (486.75 ft)
Q (cfs) = C * A * sqr(2g * H)

Outlet Structure File: 10001C .STR

POND-2 Version: 5.20 S/N:
Date Executed: Time Executed:

****
HOMEFIELD
DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
September 21, 1999
****

Outflow Rating Table for Structure #3
WEIR-VR Weir - Vertical Rectangular

***** INLET CONTROL ASSUMED *****

Elevation (ft)	Q (cfs)	Computation Messages
485.00	0.0	E < Inv.El.= 489.5
485.50	0.0	E < Inv.El.= 489.5
486.00	0.0	E < Inv.El.= 489.5
486.50	0.0	E < Inv.El.= 489.5
487.00	0.0	E < Inv.El.= 489.5
487.50	0.0	E < Inv.El.= 489.5
488.00	0.0	E < Inv.El.= 489.5
488.50	0.0	E < Inv.El.= 489.5
489.00	0.0	E < Inv.El.= 489.5
489.50	0.0	H =0.0
490.00	25.0	H =.5
490.50	70.7	H =1.0
491.00	129.9	H =1.5

C = 3 L (ft) = 23.562
H (ft) = Table elev. - Invert elev. (489.5 ft)
Q (cfs) = C * L * (H**1.5) -- Suppressed Weir

Outlet Structure File: 10001C .STR

POND-2 Version: 5.20 S/N:
Date Executed: Time Executed:

****
HOMEFIELD
DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
September 21, 1999
****

Outflow Rating Table A
Table A = 1 ? 2

Elevation (ft)	Q (cfs)	Contributing Structures
485.00	0.0	1
485.50	1.6	1
486.00	4.5	1
486.50	8.3	1
487.00	12.7	1
487.50	17.8	1
488.00	23.4	1
488.50	29.5	1
489.00	36.0	1
489.50	41.9	2
490.00	45.6	2
490.50	49.0	2
491.00	52.1	2

****
*
* HOMEFIELD
* DETENTION ANALYSIS
* PREPARED BY: BAX ENGINEERING CO., INC.
* September 21, 1999
*
****

Inflow Hydrograph:
c:\windows\profiles\andy\desktop\pondpa~1\10001C02.HYD
Rating Table file:
c:\windows\profiles\andy\desktop\pondpa~1\10001C .PND

----INITIAL CONDITIONS----
Elevation = 485.00 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + O (cfs)
485.00	0.0	0	0.0	0.0
485.50	1.6	265	8.8	10.4
486.00	4.5	2,118	70.6	75.1
486.50	8.3	6,257	208.6	216.9
487.00	12.7	12,642	421.4	434.1
487.50	17.8	21,764	725.5	743.3
488.00	23.4	34,108	1136.9	1160.3
488.50	29.5	48,866	1628.9	1658.4
489.00	36.0	64,938	2164.6	2200.6
489.50	41.9	82,382	2746.1	2788.0
490.00	70.6	101,253	3375.1	3445.7
490.50	119.6	121,205	4040.2	4159.8
491.00	182.0	141,862	4728.7	4910.7

Time increment (t) = 1.0 min.

Pond File: c:\windows\profiles\andy\desktop\pondpa~1\10001C .PND
Inflow Hydrograph: c:\windows\profiles\andy\desktop\pondpa~1\10001C02.HYD
Outflow Hydrograph: c:\windows\profiles\andy\desktop\pondpa~1\C02 .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.0	0.00	-----	0.0	0.0	0.00	485.00
1.0	4.95	5.0	3.4	5.0	0.76	485.24
2.0	9.91	14.9	14.4	18.3	1.95	485.56
3.0	14.86	24.8	33.4	39.2	2.89	485.72
4.0	19.81	34.7	59.7	68.0	4.18	485.95
5.0	29.73	49.5	98.4	109.2	5.41	486.12
6.0	34.68	64.4	149.1	162.8	6.85	486.31
7.0	39.63	74.3	206.5	223.4	8.43	486.52
8.0	44.59	84.2	271.2	290.8	9.80	486.67
9.0	49.54	94.1	342.7	365.3	11.31	486.84
10.0	49.54	99.1	416.1	441.8	12.83	487.01
11.0	49.54	99.1	487.1	515.2	14.04	487.13
12.0	49.54	99.1	555.8	586.2	15.21	487.25
13.0	49.54	99.1	622.2	654.9	16.34	487.36
14.0	49.54	99.1	686.4	721.3	17.44	487.46
15.0	49.54	99.1	748.7	785.5	18.37	487.55
16.0	49.54	99.1	809.4	847.8	19.20	487.63
17.0	49.54	99.1	868.4	908.5	20.02	487.70
18.0	49.54	99.1	925.9	967.5	20.81	487.77
19.0	49.54	99.1	981.8	1025.0	21.58	487.84
20.0	49.54	99.1	1036.2	1080.9	22.33	487.90
21.0	44.59	94.1	1084.4	1130.4	23.00	487.96
22.0	39.63	84.2	1121.6	1168.6	23.50	488.01
23.0	34.68	74.3	1148.2	1195.9	23.84	488.04
24.0	29.73	64.4	1164.6	1212.6	24.04	488.05
25.0	19.81	49.5	1166.0	1214.1	24.06	488.05
26.0	14.86	34.7	1152.9	1200.6	23.89	488.04
27.0	9.91	24.8	1130.4	1177.6	23.61	488.02
28.0	4.95	14.9	1098.9	1145.3	23.20	487.98
29.0	0.00	5.0	1058.5	1103.8	22.64	487.93
30.0	0.00	0.0	1014.5	1058.5	22.03	487.88
31.0	0.00	0.0	971.6	1014.5	21.44	487.83
32.0	0.00	0.0	929.9	971.6	20.87	487.77
33.0	0.00	0.0	889.2	929.9	20.31	487.72
34.0	0.00	0.0	849.7	889.2	19.76	487.68
35.0	0.00	0.0	811.3	849.7	19.23	487.63
36.0	0.00	0.0	773.8	811.3	18.71	487.58
37.0	0.00	0.0	737.4	773.8	18.21	487.54
38.0	0.00	0.0	702.0	737.4	17.70	487.49
39.0	0.00	0.0	667.8	702.0	17.12	487.43
40.0	0.00	0.0	634.7	667.8	16.55	487.38
41.0	0.00	0.0	602.6	634.7	16.01	487.32
42.0	0.00	0.0	571.7	602.6	15.48	487.27
43.0	0.00	0.0	541.7	571.7	14.97	487.22
44.0	0.00	0.0	512.8	541.7	14.48	487.17

Pond File: c:\windows\profiles\andy\desktop\pondpa~1\10001C .PND
Inflow Hydrograph: c:\windows\profiles\andy\desktop\pondpa~1\10001C02.HYD
Outflow Hydrograph: c:\windows\profiles\andy\desktop\pondpa~1\C02 .HYD

INFLOW HYDROGRAPH

TIME (min)	INFLOW (cfs)
45.0	0.00
46.0	0.00
47.0	0.00
48.0	0.00
49.0	0.00
50.0	0.00
51.0	0.00
52.0	0.00
53.0	0.00
54.0	0.00
55.0	0.00
56.0	0.00
57.0	0.00
58.0	0.00
59.0	0.00
60.0	0.00

ROUTING COMPUTATIONS

I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.0	484.8	512.8	14.00	487.13
0.0	457.7	484.8	13.54	487.08
0.0	431.5	457.7	13.09	487.04
0.0	406.3	431.5	12.65	486.99
0.0	382.0	406.3	12.14	486.94
0.0	358.7	382.0	11.64	486.88
0.0	336.3	358.7	11.17	486.83
0.0	314.9	336.3	10.72	486.78
0.0	294.3	314.9	10.29	486.73
0.0	274.6	294.3	9.87	486.68
0.0	255.7	274.6	9.47	486.63
0.0	237.5	255.7	9.09	486.59
0.0	220.1	237.5	8.72	486.55
0.0	203.3	220.1	8.36	486.51
0.0	187.4	203.3	7.94	486.45
0.0	172.4	187.4	7.51	486.40

```
*********************************************
*                                           *
*                  HOMEFIELD                *
*              DETENTION ANALYSIS           *
*   PREPARED BY: BAX ENGINEERING CO., INC.  *
*              September 21, 1999           *
*                                           *
*********************************************
```

********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: c:\windows\profiles\andy\desktop\pondpa~1\10001C .PND
Inflow Hydrograph: c:\windows\profiles\andy\desktop\pondpa~1\10001C02.HYD
Outflow Hydrograph: c:\windows\profiles\andy\desktop\pondpa~1\C02 .HYD

Starting Pond W.S. Elevation = 485.00 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow	=	49.54 cfs
Peak Outflow	=	24.06 cfs
Peak Elevation	=	488.05 ft

***** Summary of Approximate Peak Storage *****

Initial Storage	=	0 cu-ft
Peak Storage From Storm	=	35,701 cu-ft
Total Storage in Pond	=	35,701 cu-ft

****
*
* HOMEFIELD
* DETENTION ANALYSIS
* PREPARED BY: BAX ENGINEERING CO., INC.
* September 21, 1999
*
****

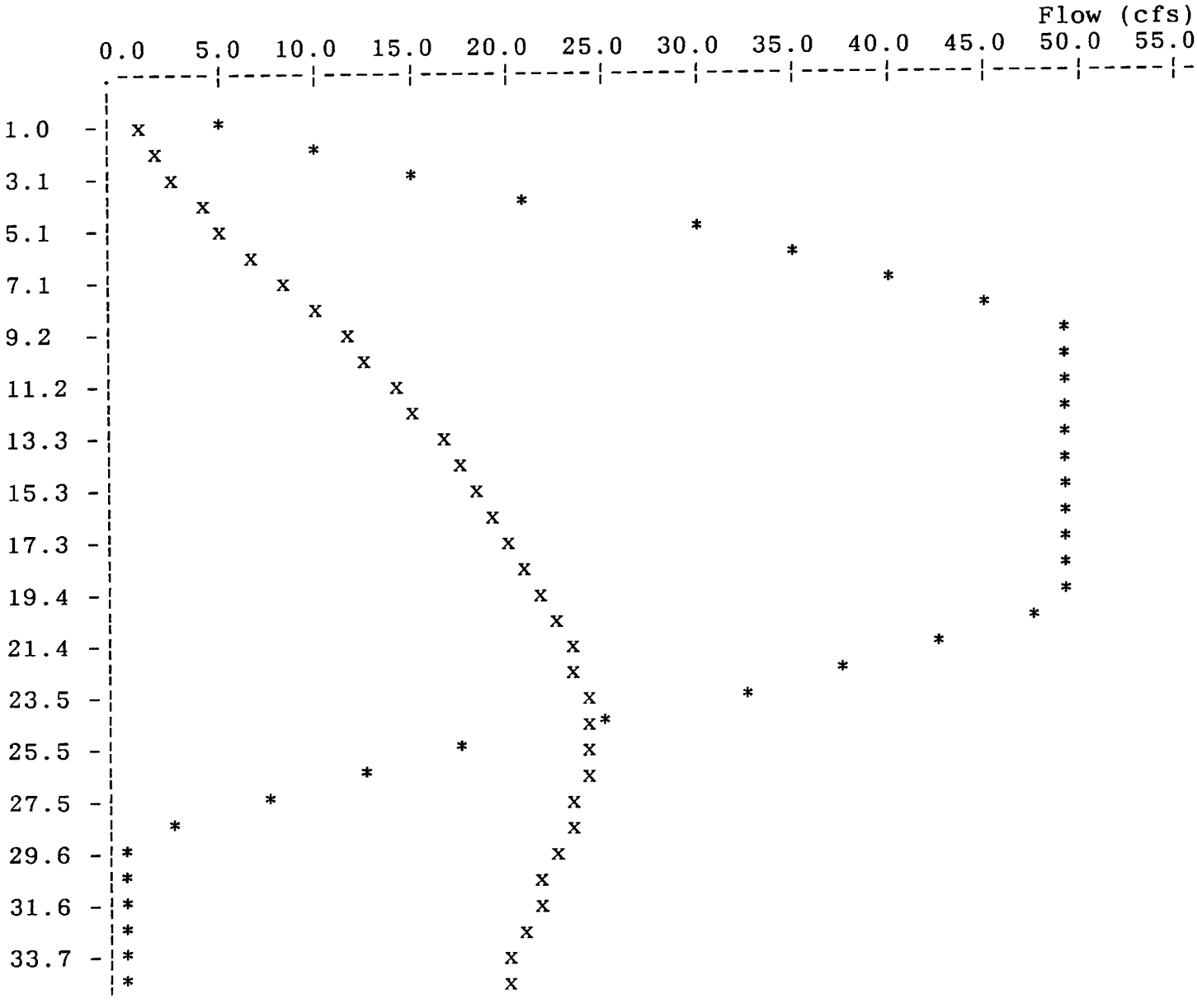
Pond File: c:\windows\profiles\andy\desktop\pondpa~1\10001C .PND

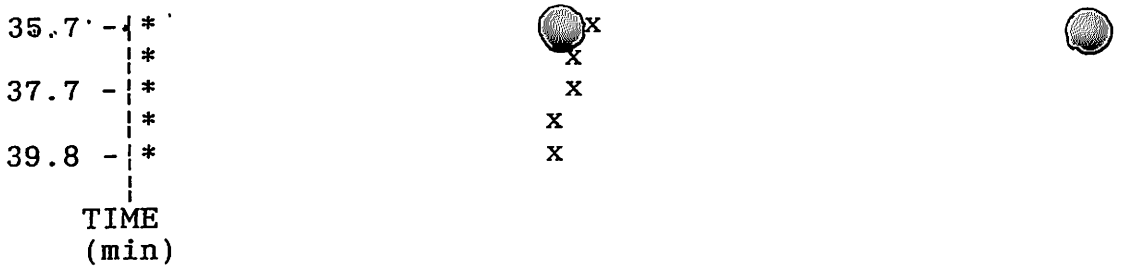
Inflow Hydrograph: c:\windows\profiles\andy\desktop\pondpa~1\10001C02.HYD

Outflow Hydrograph: c:\windows\profiles\andy\desktop\pondpa~1\C02 .HYD

EXECUTED: 09-22-1999
15:55:11

Peak Inflow = 49.54 cfs
Peak Outflow = 24.06 cfs
Peak Elevation = 488.05 ft





x File: c:\windows\profiles\andy\desktop\pondpa~1\C02 .HYD | Qmax = 2
4.1 cfs
* File: c:\windows\profiles\andy\desktop\pondpa~1\10001C02.HYD | Qmax = 4
9.5 cfs

****
*
* HOMEFIELD
* DETENTION ANALYSIS
* PREPARED BY: BAX ENGINEERING CO., INC.
* September 21, 1999
*
****

Inflow Hydrograph:
c:\windows\profiles\andy\desktop\pondpa~1\10001C15.HYD
Rating Table file:
c:\windows\profiles\andy\desktop\pondpa~1\10001C .PND

----INITIAL CONDITIONS----
Elevation = 485.00 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + O (cfs)
485.00	0.0	0	0.0	0.0
485.50	1.6	265	8.8	10.4
486.00	4.5	2,118	70.6	75.1
486.50	8.3	6,257	208.6	216.9
487.00	12.7	12,642	421.4	434.1
487.50	17.8	21,764	725.5	743.3
488.00	23.4	34,108	1136.9	1160.3
488.50	29.5	48,866	1628.9	1658.4
489.00	36.0	64,938	2164.6	2200.6
489.50	41.9	82,382	2746.1	2788.0
490.00	70.6	101,253	3375.1	3445.7
490.50	119.6	121,205	4040.2	4159.8
491.00	182.0	141,862	4728.7	4910.7

Time increment (t) = 1.0 min.

Pond File: c:\windows\profiles\andy\desktop\pondpa~1\10001C .PND
Inflow Hydrograph: c:\windows\profiles\andy\desktop\pondpa~1\10001C15.HYD
Outflow Hydrograph: c:\windows\profiles\andy\desktop\pondpa~1\C15 .HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.0	0.00	-----	0.0	0.0	0.00	485.00
1.0	8.16	8.2	5.7	8.2	1.25	485.39
2.0	16.32	24.5	25.2	30.1	2.48	485.65
3.0	24.48	40.8	57.8	66.0	4.09	485.93
4.0	32.65	57.1	103.8	114.9	5.57	486.14
5.0	48.97	81.6	170.5	185.4	7.46	486.39
6.0	57.14	106.1	257.6	276.6	9.51	486.64
7.0	65.30	122.4	356.8	380.0	11.60	486.88
8.0	73.46	138.8	468.1	495.6	13.71	487.10
9.0	81.62	155.1	591.6	623.2	15.82	487.31
10.0	81.62	163.2	718.9	754.8	17.96	487.51
11.0	81.62	163.2	842.8	882.2	19.66	487.67
12.0	81.62	163.2	963.4	1006.1	21.33	487.82
13.0	81.62	163.2	1080.7	1126.6	22.95	487.96
14.0	81.62	163.2	1195.1	1244.0	24.42	488.08
15.0	81.62	163.2	1306.7	1358.4	25.83	488.20
16.0	81.62	163.2	1415.6	1470.0	27.19	488.31
17.0	81.62	163.2	1521.8	1578.8	28.53	488.42
18.0	81.62	163.2	1625.4	1685.0	29.82	488.52
19.0	81.62	163.2	1726.5	1788.6	31.06	488.62
20.0	81.62	163.2	1825.2	1889.7	32.27	488.71
21.0	73.46	155.1	1913.5	1980.3	33.36	488.80
22.0	65.30	138.8	1983.9	2052.3	34.22	488.86
23.0	57.14	122.4	2036.6	2106.3	34.87	488.91
24.0	48.97	106.1	2072.1	2142.7	35.31	488.95
25.0	32.65	81.6	2082.8	2153.7	35.44	488.96
26.0	24.48	57.1	2069.4	2139.9	35.27	488.94
27.0	16.32	40.8	2040.4	2110.2	34.92	488.92
28.0	8.16	24.5	1996.1	2064.8	34.37	488.87
29.0	0.00	8.2	1937.0	2004.3	33.65	488.82
30.0	0.00	0.0	1871.3	1937.0	32.84	488.76
31.0	0.00	0.0	1807.2	1871.3	32.05	488.70
32.0	0.00	0.0	1744.6	1807.2	31.28	488.64
33.0	0.00	0.0	1683.5	1744.6	30.53	488.58
34.0	0.00	0.0	1623.9	1683.5	29.80	488.52
35.0	0.00	0.0	1565.8	1623.9	29.08	488.47
36.0	0.00	0.0	1509.0	1565.8	28.37	488.41
37.0	0.00	0.0	1453.7	1509.0	27.67	488.35
38.0	0.00	0.0	1399.7	1453.7	26.99	488.29
39.0	0.00	0.0	1347.1	1399.7	26.33	488.24
40.0	0.00	0.0	1295.7	1347.1	25.69	488.19
41.0	0.00	0.0	1245.6	1295.7	25.06	488.14
42.0	0.00	0.0	1196.7	1245.6	24.44	488.09
43.0	0.00	0.0	1149.0	1196.7	23.85	488.04
44.0	0.00	0.0	1102.5	1149.0	23.25	487.99

Pond File: c:\windows\profiles\andy\desktop\pondpa~1\10001C .PND
Inflow Hydrograph: c:\windows\profiles\andy\desktop\pondpa~1\10001C15.HYD
Outflow Hydrograph: c:\windows\profiles\andy\desktop\pondpa~1\C15 .HYD

INFLOW HYDROGRAPH

TIME (min)	INFLOW (cfs)
45.0	0.00
46.0	0.00
47.0	0.00
48.0	0.00
49.0	0.00
50.0	0.00
51.0	0.00
52.0	0.00
53.0	0.00
54.0	0.00
55.0	0.00
56.0	0.00
57.0	0.00
58.0	0.00
59.0	0.00
60.0	0.00

ROUTING COMPUTATIONS

I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.0	1057.2	1102.5	22.62	487.93
0.0	1013.2	1057.2	22.02	487.88
0.0	970.4	1013.2	21.42	487.82
0.0	928.7	970.4	20.85	487.77
0.0	888.1	928.7	20.29	487.72
0.0	848.6	888.1	19.74	487.67
0.0	810.2	848.6	19.21	487.63
0.0	772.8	810.2	18.70	487.58
0.0	736.4	772.8	18.20	487.54
0.0	701.0	736.4	17.69	487.49
0.0	666.8	701.0	17.10	487.43
0.0	633.7	666.8	16.54	487.38
0.0	601.7	633.7	15.99	487.32
0.0	570.8	601.7	15.47	487.27
0.0	540.9	570.8	14.96	487.22
0.0	512.0	540.9	14.46	487.17

****
*
* HOMEFIELD
* DETENTION ANALYSIS
* PREPARED BY: BAX ENGINEERING CO., INC.
* September 21, 1999
*
****

********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: c:\windows\profiles\andy\desktop\pondpa~1\10001C .PND
Inflow Hydrograph: c:\windows\profiles\andy\desktop\pondpa~1\10001C15.HYD
Outflow Hydrograph: c:\windows\profiles\andy\desktop\pondpa~1\C15 .HYD

Starting Pond W.S. Elevation = 485.00 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow	=	81.62 cfs
Peak Outflow	=	35.44 cfs
Peak Elevation	=	488.96 ft

***** Summary of Approximate Peak Storage *****

Initial Storage	=	0 cu-ft
Peak Storage From Storm	=	63,547 cu-ft
Total Storage in Pond	=	63,547 cu-ft

****
*
* HOMEFIELD
* DETENTION ANALYSIS
* PREPARED BY: BAX ENGINEERING CO., INC.
* September 21, 1999
*
****

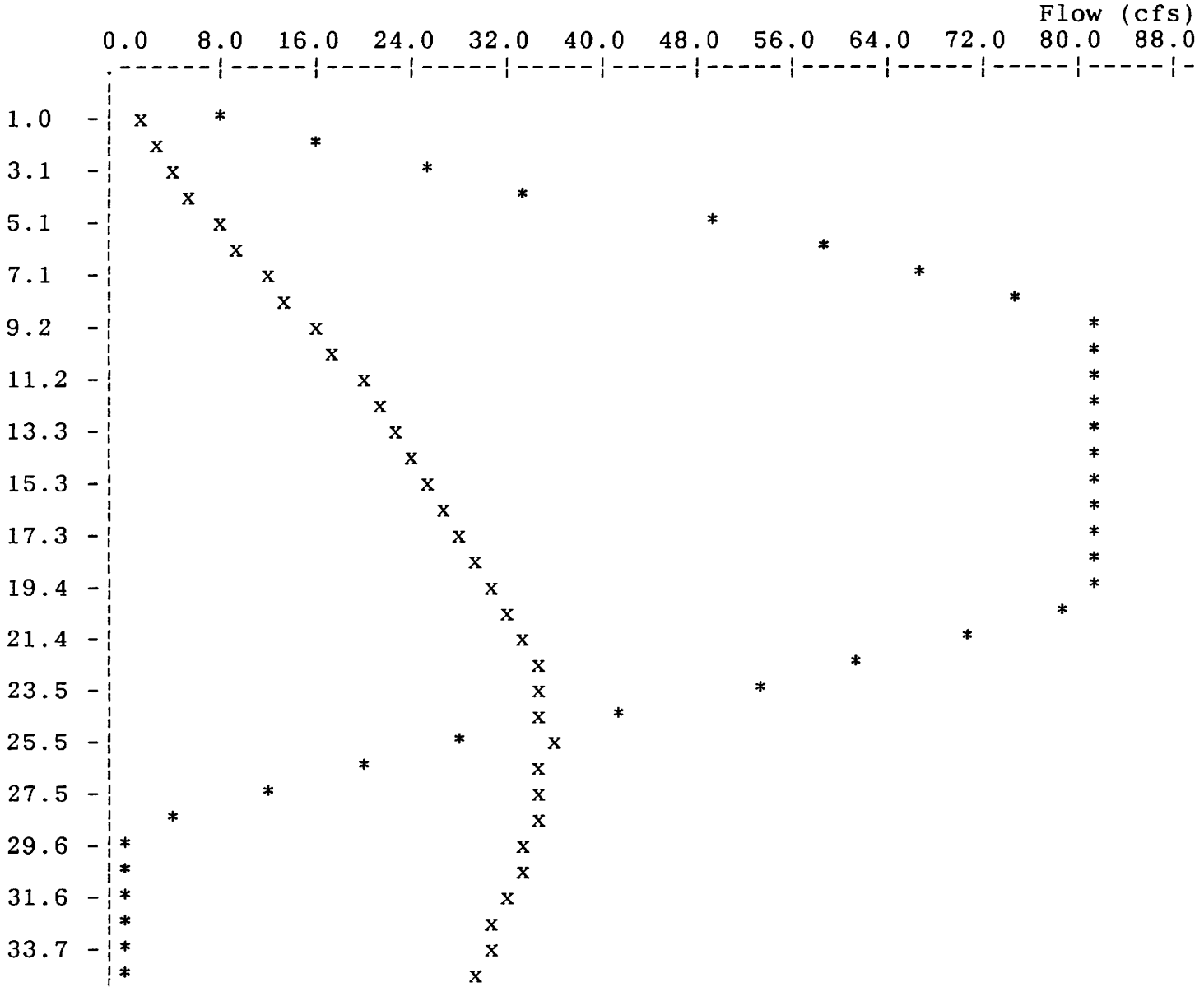
Pond File: c:\windows\profiles\andy\desktop\pondpa~1\10001C .PND

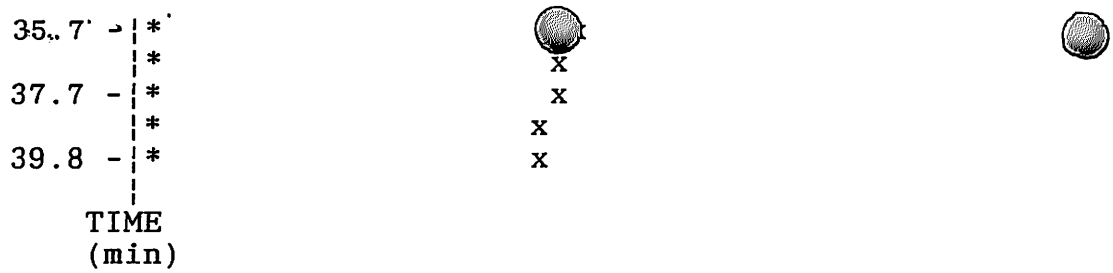
Inflow Hydrograph: c:\windows\profiles\andy\desktop\pondpa~1\10001C15.HYD

Outflow Hydrograph: c:\windows\profiles\andy\desktop\pondpa~1\C15 .HYD

EXECUTED: 09-22-1999
15:55:11

Peak Inflow = 81.62 cfs
Peak Outflow = 35.44 cfs
Peak Elevation = 488.96 ft





x File: c:\windows\profiles\andy\desktop\pondpa~1\C15 .HYD Qmax = 3
5.4 cfs
* File: c:\windows\profiles\andy\desktop\pondpa~1\10001C15.HYD Qmax = 8
1.6 cfs

****
*
* HOMEFIELD
* DETENTION ANALYSIS
* PREPARED BY: BAX ENGINEERING CO., INC.
* September 21, 1999
*
****

Inflow Hydrograph:
c:\windows\profiles\andy\desktop\pondpa~1\10001C25.HYD
Rating Table file:
c:\windows\profiles\andy\desktop\pondpa~1\10001C .PND

----INITIAL CONDITIONS----
Elevation = 485.00 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
485.00	0.0	0
485.50	1.6	265
486.00	4.5	2,118
486.50	8.3	6,257
487.00	12.7	12,642
487.50	17.8	21,764
488.00	23.4	34,108
488.50	29.5	48,866
489.00	36.0	64,938
489.50	41.9	82,382
490.00	70.6	101,253
490.50	119.6	121,205
491.00	182.0	141,862

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + O (cfs)
0.0	0.0
8.8	10.4
70.6	75.1
208.6	216.9
421.4	434.1
725.5	743.3
1136.9	1160.3
1628.9	1658.4
2164.6	2200.6
2746.1	2788.0
3375.1	3445.7
4040.2	4159.8
4728.7	4910.7

Time increment (t) = 1.0 min.

Pond File: c:\windows\profiles\andy\desktop\pondpa~1\10001C .PND
Inflow Hydrograph: c:\windows\profiles\andy\desktop\pondpa~1\10001C25.HYD
Outflow Hydrograph: c:\windows\profiles\andy\desktop\pondpa~1\C25 .HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.0	0.00	-----	0.0	0.0	0.00	485.00
1.0	10.07	10.1	7.0	10.1	1.55	485.48
2.0	20.15	30.2	31.6	37.2	2.80	485.71
3.0	30.22	50.4	72.6	82.0	4.68	486.02
4.0	40.30	70.5	130.5	143.1	6.32	486.24
5.0	60.46	100.8	214.1	231.2	8.59	486.53
6.0	70.53	131.0	323.2	345.0	10.90	486.80
7.0	80.61	151.1	447.7	474.4	13.36	487.07
8.0	90.68	171.3	587.5	618.9	15.75	487.30
9.0	100.76	191.4	742.3	778.9	18.28	487.54
10.0	100.76	201.5	902.9	943.9	20.49	487.74
11.0	100.76	201.5	1059.1	1104.4	22.65	487.93
12.0	100.76	201.5	1211.4	1260.6	24.63	488.10
13.0	100.76	201.5	1359.9	1412.9	26.49	488.25
14.0	100.76	201.5	1504.8	1561.4	28.31	488.40
15.0	100.76	201.5	1646.2	1706.3	30.07	488.54
16.0	100.76	201.5	1784.1	1847.7	31.77	488.67
17.0	100.76	201.5	1918.8	1985.7	33.42	488.80
18.0	100.76	201.5	2050.3	2120.3	35.04	488.93
19.0	100.76	201.5	2178.7	2251.8	36.51	489.04
20.0	100.76	201.5	2304.7	2380.3	37.80	489.15
21.0	90.68	191.4	2418.2	2496.1	38.97	489.25
22.0	80.61	171.3	2509.6	2589.4	39.91	489.33
23.0	70.53	151.1	2579.5	2660.8	40.62	489.39
24.0	60.46	131.0	2628.3	2710.5	41.12	489.43
25.0	40.30	100.8	2646.4	2729.0	41.31	489.45
26.0	30.22	70.5	2634.6	2716.9	41.19	489.44
27.0	20.15	50.4	2603.2	2684.9	40.87	489.41
28.0	10.07	30.2	2552.7	2633.4	40.35	489.37
29.0	0.00	10.1	2483.5	2562.8	39.64	489.31
30.0	0.00	0.0	2405.8	2483.5	38.84	489.24
31.0	0.00	0.0	2329.7	2405.8	38.06	489.17
32.0	0.00	0.0	2255.1	2329.7	37.30	489.11
33.0	0.00	0.0	2182.0	2255.1	36.55	489.05
34.0	0.00	0.0	2110.5	2182.0	35.78	488.98
35.0	0.00	0.0	2040.6	2110.5	34.92	488.92
36.0	0.00	0.0	1972.5	2040.6	34.08	488.85
37.0	0.00	0.0	1905.9	1972.5	33.27	488.79
38.0	0.00	0.0	1841.0	1905.9	32.47	488.73
39.0	0.00	0.0	1777.6	1841.0	31.69	488.67
40.0	0.00	0.0	1715.8	1777.6	30.93	488.61
41.0	0.00	0.0	1655.4	1715.8	30.19	488.55
42.0	0.00	0.0	1596.5	1655.4	29.46	488.50
43.0	0.00	0.0	1539.0	1596.5	28.74	488.44
44.0	0.00	0.0	1482.9	1539.0	28.04	488.38

Pond File: c:\windows\profiles\andy\desktop\pondpa~1\10001C .PND
Inflow Hydrograph: c:\windows\profiles\andy\desktop\pondpa~1\10001C25.HYD
Outflow Hydrograph: c:\windows\profiles\andy\desktop\pondpa~1\C25 .HYD

INFLOW HYDROGRAPH

TIME (min)	INFLOW (cfs)
45.0	0.00
46.0	0.00
47.0	0.00
48.0	0.00
49.0	0.00
50.0	0.00
51.0	0.00
52.0	0.00
53.0	0.00
54.0	0.00
55.0	0.00
56.0	0.00
57.0	0.00
58.0	0.00
59.0	0.00
60.0	0.00

ROUTING COMPUTATIONS

I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.0	1428.2	1482.9	27.35	488.32
0.0	1374.8	1428.2	26.68	488.27
0.0	1322.8	1374.8	26.03	488.22
0.0	1272.0	1322.8	25.39	488.16
0.0	1222.5	1272.0	24.77	488.11
0.0	1174.1	1222.5	24.16	488.06
0.0	1127.0	1174.1	23.57	488.01
0.0	1081.1	1127.0	22.95	487.96
0.0	1036.4	1081.1	22.34	487.91
0.0	993.0	1036.4	21.74	487.85
0.0	950.7	993.0	21.15	487.80
0.0	909.5	950.7	20.58	487.75
0.0	869.4	909.5	20.03	487.70
0.0	830.4	869.4	19.49	487.65
0.0	792.5	830.4	18.97	487.60
0.0	755.6	792.5	18.46	487.56

****
*
* HOMEFIELD
* DETENTION ANALYSIS
* PREPARED BY: BAX ENGINEERING CO., INC.
* September 21, 1999
*
****

********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: c:\windows\profiles\andy\desktop\pondpa~1\10001C .PND
Inflow Hydrograph: c:\windows\profiles\andy\desktop\pondpa~1\10001C25.HYD
Outflow Hydrograph: c:\windows\profiles\andy\desktop\pondpa~1\C25 .HYD

Starting Pond W.S. Elevation = 485.00 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow	=	100.76 cfs
Peak Outflow	=	41.31 cfs
Peak Elevation	=	489.45 ft

***** Summary of Approximate Peak Storage *****

Initial Storage	=	0 cu-ft
Peak Storage From Storm	=	80,632 cu-ft
Total Storage in Pond	=	80,632 cu-ft

****
*
*
HOMEFIELD
DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
September 21, 1999
*
*
****

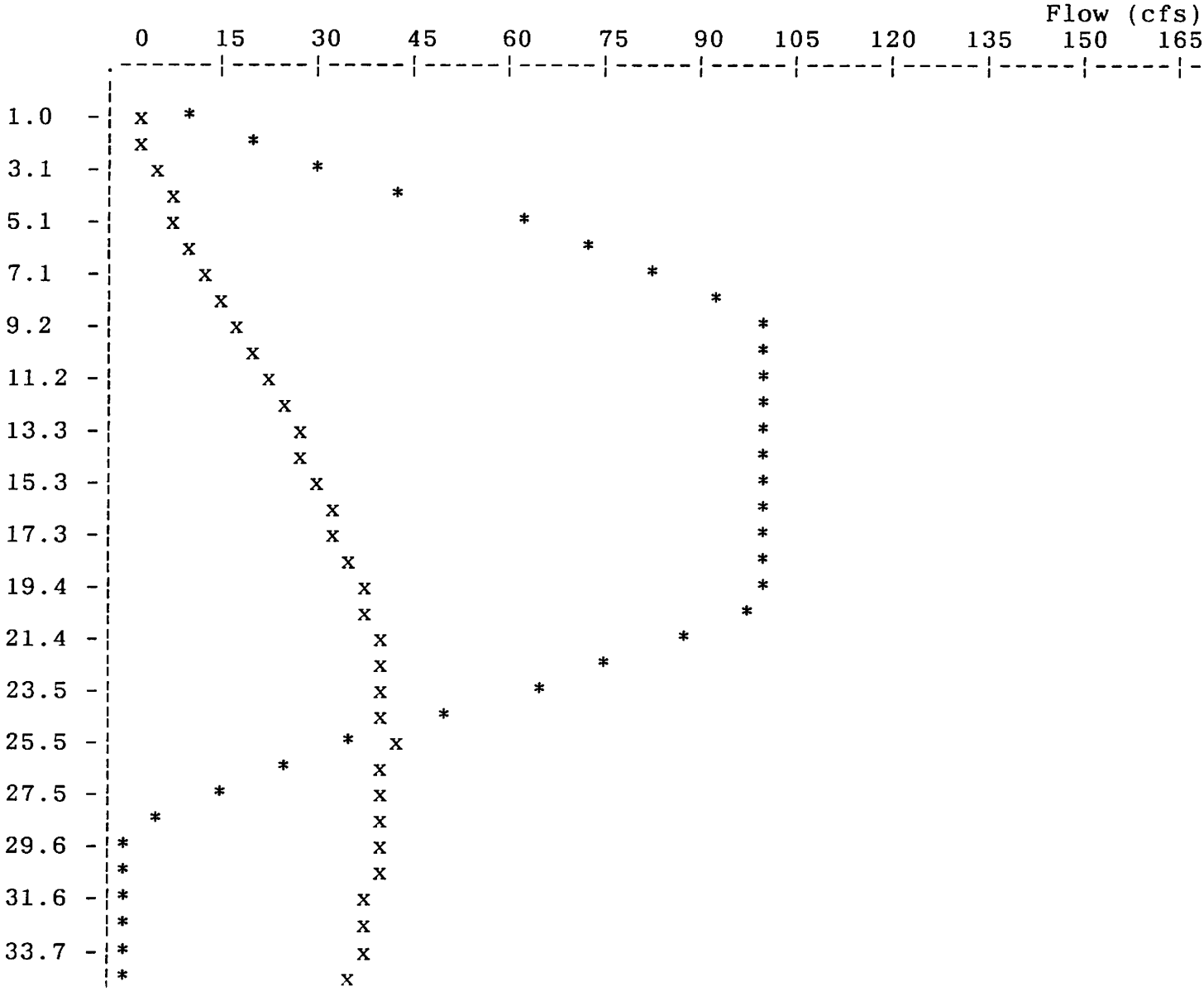
Pond File: c:\windows\profiles\andy\desktop\pondpa~1\10001C .PND

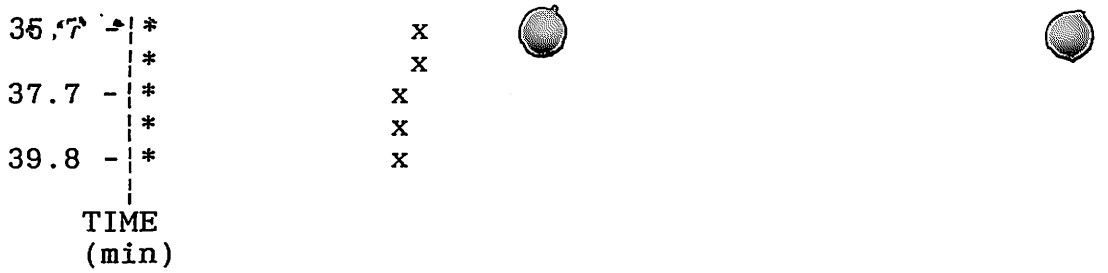
Inflow Hydrograph: c:\windows\profiles\andy\desktop\pondpa~1\10001C25.HYD

Outflow Hydrograph: c:\windows\profiles\andy\desktop\pondpa~1\C25 .HYD

EXECUTED: 09-22-1999
15:55:11

Peak Inflow = 100.76 cfs
Peak Outflow = 41.31 cfs
Peak Elevation = 489.45 ft





x File: c:\windows\profiles\andy\desktop\pondpa~1\C25 .HYD | Qmax = 4
1.3 cfs
* File: c:\windows\profiles\andy\desktop\pondpa~1\10001C25.HYD | Qmax = 10
0.8 cfs