ENGINEERING

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STORMWATER DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
ST. DOMINIC ESTATES - O'FALLON
BAX PROJECT NO. **96-8683**
March 4, 1998

INTRODUCTION:

This presently undeveloped site is located in the City of O'Fallon, Missouri. It is proposed that the 34.56 acre tract be developed into residential lots. A dry stormwater detention basin shall be constructed. 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 storms. The basin was also analyzed for the 100 year frequency - 20 minute duration design storms.

GENERAL SITE DATA AND RUNOFF CALCULATIONS:

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

2 year	5%	impervious	1.15	cfs/ac
15 year	5%	impervious	1.87	cfs/ac
25 year	5%	impervious	2.31	cfs/ac
100 year	5%	impervious	2.95	cfs/ac

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

2 year	100%	impervious	1.61	cfs/ac
15 year	100%	impervious	2.64	cfs/ac
25 year	100%	impervious	3.26	cfs/ac
100 year	100%	impervious	4.17	cfs/ac

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

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TIME OF CONCENTRATION:

Of the inflows to the basin, the most remote point lies to the southwest near Interstate 70. Flows will travel approximately 3,000 feet overland to an inlet then 200 feet via stormpipe to the detention basin. Time of concentration is estimated as follows:

T(overland): L = 3,000 feet

Elevation difference = 630 - 550 = 80 feet
T(overland) = 15 minutes: See figure 1

T(stormpipe): L = 200 feet

Estimated velocity 7 feet per second
T(stormpipe) = 0.5 minutes

Total time = 15.5 use **15 minutes**

BASIN PEAK INFLOWS:

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

25 year-20 minute storm:

Onsite	20.64 ac	x	3.26 cfs/ac	= 67.29 cfs
Offsite	41.00 ac	x	3.26 cfs/ac	= 133.66 cfs
	27.00 ac	x	4.75 cfs/ac	= 128.25 cfs
			Total	= 329.20 cfs

2 year-20 minute storm: 163.77 cfs
15 year-20 minute storm: 266.68 cfs
100 year-20 minute storm: 421.20 cfs

REQUIRED ATTENUATION: (20 minute storms)

= TRACT AREA x [PI(post) - PI(pre)]

2 year	34.56 x (	1.61 cfs/ac -	1.15 cfs/ac) =	15.90 cfs
15 year	34.56 x (	2.64 cfs/ac -	1.87 cfs/ac) =	26.61 cfs
25 year	34.56 x (	3.26 cfs/ac -	2.31 cfs/ac) =	32.83 cfs

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PERMITTED RELEASE RATE:

The permitted release rate of the basin was found by subtracting the required attenuation from the peak inflow to the basin for each design storm.:

2 year	163.77 cfs -	15.90 cfs =	147.87 cfs
15 year	266.68 cfs -	26.61 cfs =	240.07 cfs
25 year	329.20 cfs -	32.83 cfs =	296.36 cfs

STORM ROUTING CALCULATIONS AND RESULTS:

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

20 MIN STORM	PERMITTED RELEASE RATE	CALCULATED RELEASE RATE	PEAK ELEVATION
2 YR	147.87 cfs	145.73 cfs	544.24
15 YR	240.07 cfs	205.34 cfs	546.35
25 YR	296.36 cfs	233.57 cfs - 23 /	547.62
100 YR	-	268.44 cfs	549.43

SUMMARY

2 year-20min H.W.	544.24
15 year-20min H.W.	546.35
25 year-20min H.W.	547.62
100 year-20min H.W.	549.43
36" Outflow Pipe Flowline Elevation	539.00
48" Outflow Pipe Flowline Elevation	540.00
Top Of Berm (Low Pt Autumn Grove)	552.62

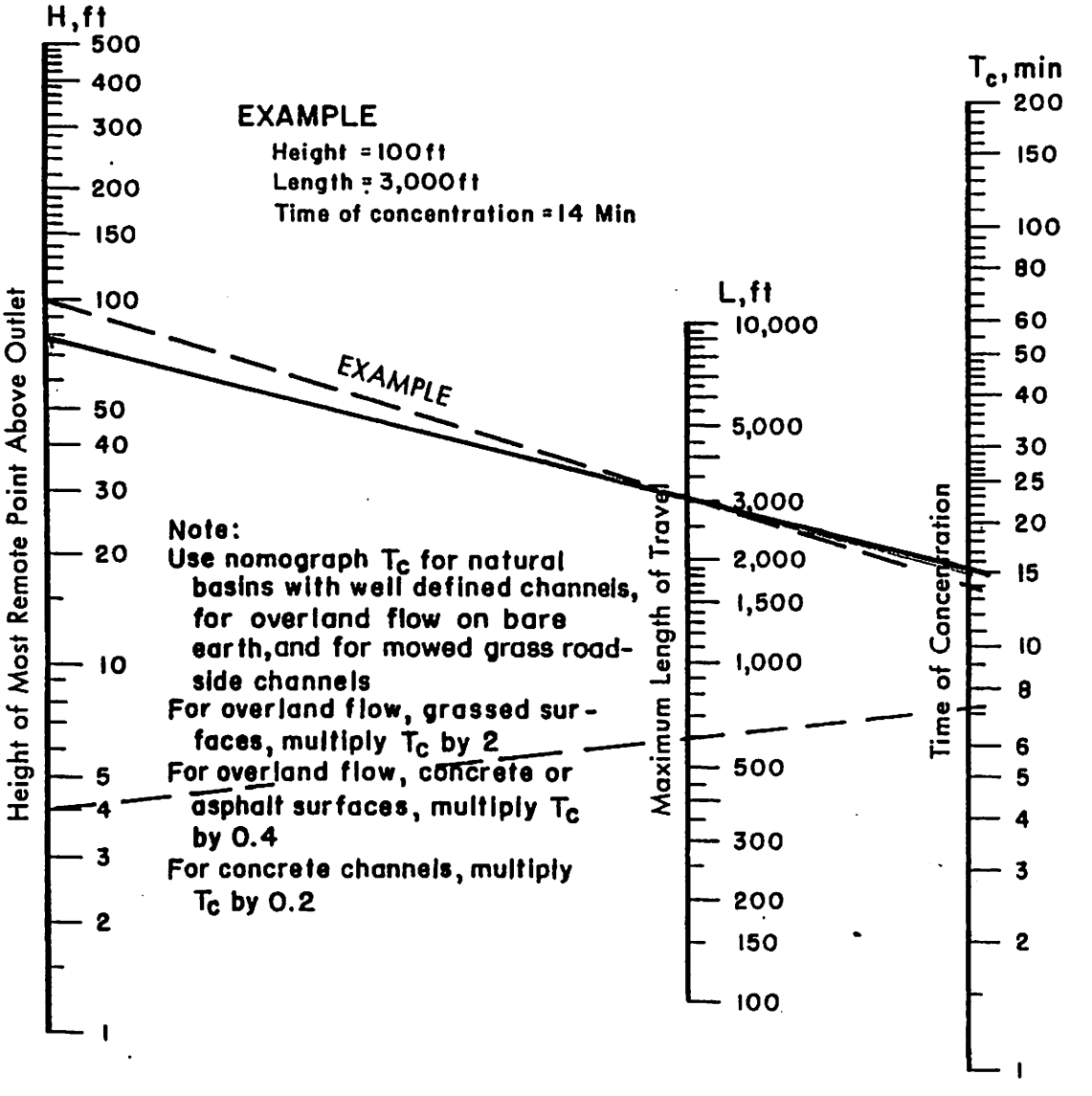
BAX ENGINEERING

Project: ST DOMINIC ESTATES SHEET ___ of ___

Date: 3-4-98 Project No: 96-B605

Designed: AD Checked: ___

FIGURE 1



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

UFL 630
CFL 550
80 ft

L = 3900 ft
15 min

PIPE 200 ft / 9 ft/sec = .5 min

13.5 USE 15 MIN

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

POND-2 Version: 5.20
S/N:

ST. DOMINIC ESTATES
BAX ENGINEERING COMPANY, INCORPORATED

MARCH 12 1998

CALCULATED 03-12-1998 16:28:35
DISK FILE: C:\WINDOWS\DESKTOP\PONDPA~1\8683 .VOL

Planimeter scale: 1 inch = 1 ft.

Elevation (ft)	Planimeter (sq.in.)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	* Volume (acre-ft)	Volume Sum (acre-ft)
539.00	0.00	0.00	0.00	0.00	0.00
540.00	1,173.00	0.03	0.03	0.01	0.01
542.00	5,374.00	0.12	0.21	0.14	0.15
544.00	14,870.00	0.34	0.67	0.45	0.59
546.00	24,151.00	0.55	1.33	0.89	1.48
548.00	30,605.00	0.70	1.88	1.25	2.74
550.00	37,769.00	0.87	2.35	1.57	4.30
552.00	44,846.00	1.03	2.84	1.89	6.20

$$IA = (sq.rt(Area1) + ((Ei-E1)/(E2-E1))*(sq.rt(Area2)-sq.rt(Area1)))^2$$

where: E1, E2 = Closest two elevations with planimeter data
Ei = Elevation at which to interpolate area
Area1,Area2 = Areas computed for E1, E2, respectively
IA = Interpolated area for Ei

* 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

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* ST. DOMINIC ESTATES *
* DETENTION ANALYSIS *
* PREPARED BY: BAX ENGINEERING CO., INC. *
* DECEMBER 5 1997 *
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Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\8683-002.HYD
Rating Table file: C:\WINDOWS\DESKTOP\PONDPA~1\8683 .PND

----INITIAL CONDITIONS----
Elevation = 539.00 ft
Outflow = 0.00 cfs
Storage = 0.00 ac-ft

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (ac-ft)	2S/t (cfs)	2S/t + O (cfs)
539.00	0.0	0.000	0.0	0.0
539.50	2.1	0.001	1.6	3.7
540.00	6.5	0.009	13.0	19.5
540.50	15.6	0.027	38.7	54.3
541.00	28.6	0.054	78.7	107.3
541.50	45.0	0.094	136.2	181.2
542.00	62.9	0.148	214.3	277.2
542.50	82.2	0.220	319.6	401.8
543.00	101.1	0.316	459.4	560.5
543.50	119.6	0.440	638.9	758.5
544.00	137.3	0.594	862.8	1000.1
544.50	154.9	0.777	1128.1	1283.0
545.00	170.0	0.985	1429.6	1599.6
545.50	183.9	1.219	1769.9	1953.8
546.00	197.0	1.481	2151.1	2348.1
546.50	208.9	1.767	2566.4	2775.3
547.00	220.1	2.071	3007.8	3227.9
547.50	231.0	2.394	3476.1	3707.1
548.00	241.4	2.736	3972.0	4213.4
548.50	251.3	3.097	4496.4	4747.7
549.00	260.5	3.478	5049.8	5310.3
549.50	269.7	3.880	5633.1	5902.8
550.00	278.7	4.302	6247.0	6525.7
550.50	287.2	4.746	6890.7	7177.9
551.00	295.6	5.209	7563.2	7858.8
551.50	303.7	5.692	8265.3	8569.0
552.00	311.6	6.197	8997.4	9309.0

Time increment (t) = 1.0 min.

POND-2 Version: 5.20 S/N:
EXECUTED: 03-12-1998 16:20:52

Return Freq: 2 years

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\8683 .PND
Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\8683-002.HYD
Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\86830002.HYD

INFLOW HYDROGRAPH

TIME (min)	INFLOW (cfs)
0.0	0.00
1.0	10.95
2.0	21.81
3.0	32.75
4.0	43.69
5.0	54.54
6.0	65.50
7.0	76.44
8.0	87.29
9.0	98.24
10.0	109.20
11.0	120.05
12.0	130.98
13.0	141.93
14.0	152.79
15.0	163.74
16.0	163.77
17.0	163.77
18.0	163.77
19.0	163.77
20.0	163.77
21.0	152.87
22.0	141.91
23.0	131.06
24.0	120.12
25.0	109.17
26.0	98.32
27.0	87.37
28.0	76.42
29.0	65.57
30.0	54.62
31.0	43.67
32.0	32.83
33.0	21.88
34.0	10.92
35.0	0.08
36.0	0.00
37.0	0.00
38.0	0.00
39.0	0.00
40.0	0.00
41.0	0.00
42.0	0.00
43.0	0.00
44.0	0.00

ROUTING COMPUTATIONS

I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
-----	0.0	0.0	0.00	539.00
11.0	2.7	11.0	4.11	539.73
32.8	14.1	35.5	10.68	540.23
54.6	30.4	68.7	19.14	540.64
76.4	49.9	106.9	28.50	541.00
98.2	72.8	148.1	37.66	541.28
120.0	98.5	192.8	47.17	541.56
141.9	128.3	240.4	56.04	541.81
163.7	161.7	292.1	65.20	542.06
185.5	199.7	347.2	73.74	542.28
207.4	241.5	407.1	82.84	542.52
229.3	289.9	470.7	90.41	542.72
251.0	343.4	540.9	98.76	542.94
272.9	403.7	616.3	106.31	543.14
294.7	470.4	698.4	113.98	543.35
316.5	543.6	787.0	121.69	543.56
327.5	615.4	871.1	127.85	543.73
327.5	676.7	942.9	133.11	543.88
327.5	729.1	1004.3	137.56	544.01
327.5	775.1	1056.7	140.82	544.10
327.5	815.2	1102.6	143.68	544.18
316.6	840.9	1131.9	145.50	544.23
294.8	844.2	1135.7	145.73	544.24
273.0	828.0	1117.2	144.58	544.21
251.2	794.7	1079.2	142.22	544.14
229.3	746.5	1024.0	138.79	544.04
207.5	686.1	953.9	133.92	543.90
185.7	616.0	871.8	127.90	543.73
163.8	537.5	779.8	121.16	543.54
142.0	455.0	679.5	112.21	543.30
120.2	370.3	575.2	102.47	543.04
98.3	288.3	468.6	90.15	542.71
76.5	211.8	364.8	76.47	542.35
54.7	144.7	266.5	60.91	541.94
32.8	89.1	177.5	44.19	541.48
11.0	46.4	100.1	26.85	540.93
0.1	19.4	46.5	13.57	540.39
0.0	6.5	19.4	6.46	540.00
0.0	0.7	6.5	2.86	539.59
0.0	-0.1	0.7	0.42	539.10
0.0	-0.1	-0.1	0.00	539.00
0.0	-0.1	-0.1	0.00	539.00
0.0	-0.1	-0.1	0.00	539.00
0.0	-0.1	-0.1	0.00	539.00
0.0	-0.1	-0.1	0.00	539.00

POND-2 Version: 5.20 S/N: Return Freq: 2 years
EXECUTED: 03-12-1998 16:20:52

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\8683 .PND
Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\8683-002.HYD
Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\86830002.HYD

INFLOW HYDROGRAPH / ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
45.0	0.00	0.0	-0.1	-0.1	0.00	539.00
46.0	0.00	0.0	-0.1	-0.1	0.00	539.00
47.0	0.00	0.0	-0.1	-0.1	0.00	539.00
48.0	0.00	0.0	-0.1	-0.1	0.00	539.00
49.0	0.00	0.0	-0.1	-0.1	0.00	539.00
50.0	0.00	0.0	-0.1	-0.1	0.00	539.00
51.0	0.00	0.0	-0.1	-0.1	0.00	539.00
52.0	0.00	0.0	-0.1	-0.1	0.00	539.00
53.0	0.00	0.0	-0.1	-0.1	0.00	539.00
54.0	0.00	0.0	-0.1	-0.1	0.00	539.00
55.0	0.00	0.0	-0.1	-0.1	0.00	539.00
56.0	0.00	0.0	-0.1	-0.1	0.00	539.00
57.0	0.00	0.0	-0.1			
58.0	0.00	0.0	-0.1	-0.1	0.00	539.00
59.0	0.00	0.0	-0.1	-0.1	0.00	539.00
60.0	0.00	0.0	-0.1	-0.1	0.00	539.00

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

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\8683 .PND
Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\8683-002.HYD
Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\86830002.HYD

Starting Pond W.S. Elevation = 539.00 ft

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

Peak Inflow	=	163.77 cfs
Peak Outflow	=	145.73 cfs
Peak Elevation	=	544.24 ft

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

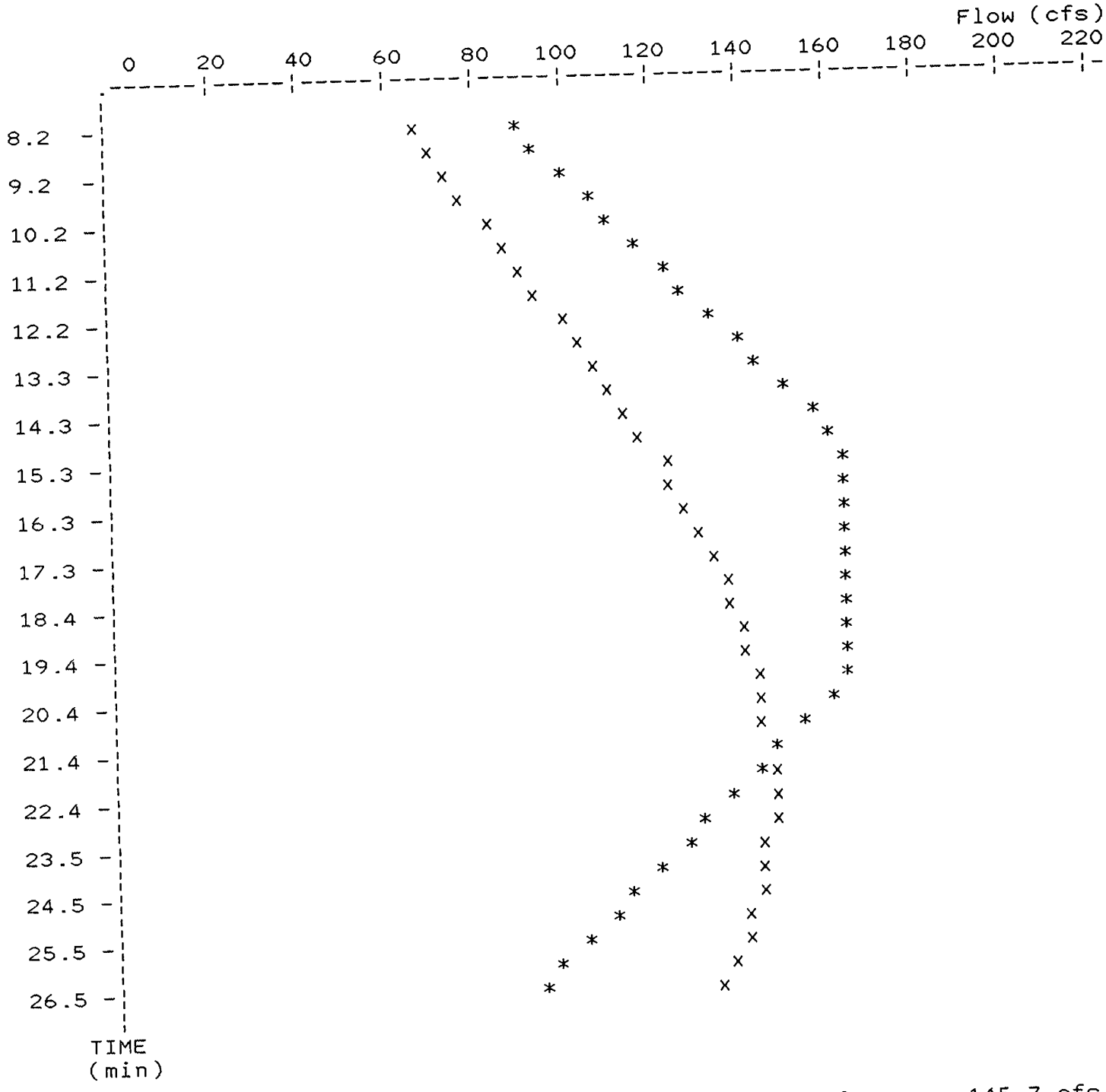
Initial Storage	=	0.00 ac-ft
Peak Storage From Storm	=	0.68 ac-ft
Total Storage in Pond	=	0.68 ac-ft

POND-2 Version: 5.20 S/N:

Return Freq: 2 years

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\8683 .PND
Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\8683-002.HYD
Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\86830002.HYD
EXECUTED: 03-12-1998 16:20:52

Peak Inflow = 163.77 cfs
Peak Outflow = 145.73 cfs
Peak Elevation = 544.24 ft



x File: C:\WINDOWS\DESKTOP\PONDPA~1\86830002.HYD Qmax = 145.7 cfs
* File: C:\WINDOWS\DESKTOP\PONDPA~1\8683-002.HYD Qmax = 163.8 cfs

POND-2 Version: 5.20 S/N:
EXECUTED: 03-12-1998 16:20:52

Return Freq: 15 years

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* ST. DOMINIC ESTATES
* DETENTION ANALYSIS
* PREPARED BY: BAX ENGINEERING CO., INC.
* DECEMBER 5 1997
*
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Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\8683-015.HYD
Rating Table file: C:\WINDOWS\DESKTOP\PONDPA~1\8683 .PND

----INITIAL CONDITIONS----
Elevation = 539.00 ft
Outflow = 0.00 cfs
Storage = 0.00 ac-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (ac-ft)
539.00	0.0	0.000
539.50	2.1	0.001
540.00	6.5	0.009
540.50	15.6	0.027
541.00	28.6	0.054
541.50	45.0	0.094
542.00	62.9	0.148
542.50	82.2	0.220
543.00	101.1	0.316
543.50	119.6	0.440
544.00	137.3	0.594
544.50	154.9	0.777
545.00	170.0	0.985
545.50	183.9	1.219
546.00	197.0	1.481
546.50	208.9	1.767
547.00	220.1	2.071
547.50	231.0	2.394
548.00	241.4	2.736
548.50	251.3	3.097
549.00	260.5	3.478
549.50	269.7	3.880
550.00	278.7	4.302
550.50	287.2	4.746
551.00	295.6	5.209
551.50	303.7	5.692
552.00	311.6	6.197

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + O (cfs)
0.0	0.0
1.6	3.7
13.0	19.5
38.7	54.3
78.7	107.3
136.2	181.2
214.3	277.2
319.6	401.8
459.4	560.5
638.9	758.5
862.8	1000.1
1128.1	1283.0
1429.6	1599.6
1769.9	1953.8
2151.1	2348.1
2566.4	2775.3
3007.8	3227.9
3476.1	3707.1
3972.0	4213.4
4496.4	4747.7
5049.8	5310.3
5633.1	5902.8
6247.0	6525.7
6890.7	7177.9
7563.2	7858.8
8265.3	8569.0
8997.4	9309.0

Time increment (t) = 1.0 min.

POND-2 Version: 5.20 S/N:
EXECUTED: 03-12-1998 16:20:52

Return Freq: 15 years

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\8683 .PND
Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\8683-015.HYD
Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\86830015.HYD

INFLOW HYDROGRAPH

TIME (min)	INFLOW (cfs)
0.0	0.00
1.0	17.82
2.0	35.55
3.0	53.37
4.0	71.09
5.0	88.90
6.0	106.64
7.0	124.45
8.0	142.27
9.0	160.00
10.0	177.82
11.0	195.54
12.0	213.36
13.0	231.08
14.0	248.91
15.0	266.63
16.0	266.68
17.0	266.68
18.0	266.68
19.0	266.68
20.0	266.68
21.0	248.94
22.0	231.21
23.0	213.38
24.0	195.67
25.0	177.85
26.0	160.12
27.0	142.30
28.0	124.48
29.0	106.76
30.0	88.93
31.0	71.21
32.0	53.39
33.0	35.68
34.0	17.84
35.0	0.12
36.0	0.00
37.0	0.00
38.0	0.00
39.0	0.00
40.0	0.00
41.0	0.00
42.0	0.00
43.0	0.00
44.0	0.00

ROUTING COMPUTATIONS

I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
-----	0.0	0.0	0.00	539.00
17.8	5.8	17.8	6.02	539.95
53.4	25.6	59.1	16.79	540.55
88.9	54.1	114.5	30.20	541.05
124.5	89.7	178.5	44.42	541.48
160.0	134.1	249.7	57.77	541.86
195.5	187.6	329.7	71.03	542.21
231.1	250.3	418.7	84.22	542.55
266.7	325.2	517.0	95.92	542.86
302.3	412.7	627.4	107.35	543.17
337.8	512.8	750.5	118.86	543.48
373.4	628.3	886.2	128.95	543.76
408.9	758.0	1037.2	139.61	544.07
444.4	902.6	1202.4	149.89	544.36
480.0	1063.3	1382.6	159.65	544.66
515.5	1240.8	1578.9	169.01	544.97
533.3	1420.5	1774.2	176.85	545.25
533.4	1586.0	1953.8	183.90	545.50
533.4	1740.6	2119.4	189.40	545.71
533.4	1884.9	2273.9	194.54	545.91
533.4	2020.3	2418.2	198.95	546.08
515.6	2131.5	2535.9	202.23	546.22
480.2	2202.9	2611.6	204.34	546.31
444.6	2236.8	2647.5	205.34	546.35
409.1	2235.3	2645.9	205.30	546.35
373.5	2200.3	2608.8	204.26	546.31
338.0	2133.7	2538.3	202.30	546.22
302.4	2037.2	2436.1	199.45	546.10
266.8	1912.9	2304.0	195.53	545.94
231.2	1763.7	2144.1	190.22	545.74
195.7	1591.2	1959.4	184.09	545.51
160.1	1399.4	1751.3	175.96	545.21
124.6	1191.2	1524.0	166.40	544.88
89.1	970.8	1280.3	154.74	544.50
53.5	746.7	1024.4	138.81	544.04
18.0	524.6	764.7	120.06	543.51
0.1	331.0	524.7	96.84	542.89
0.0	188.6	331.0	71.24	542.22
0.0	95.8	188.6	46.38	541.54
0.0	44.2	95.8	25.79	540.89
0.0	18.3	44.2	12.97	540.36
0.0	6.0	18.3	6.15	539.96
0.0	0.5	6.0	2.73	539.57
0.0	-0.1	0.5	0.30	539.07
0.0	-0.1	-0.1	0.00	539.00

POND-2 Version: 5.20 S/N:
EXECUTED: 03-12-1998 16:20:52

Return Freq: 15 years

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\8683 .PND
Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\8683-015.HYD
Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\86830015.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
45.0	0.00			-0.1	0.00	539.00
46.0	0.00	0.0	-0.1	-0.1	0.00	539.00
47.0	0.00	0.0	-0.1	-0.1	0.00	539.00
48.0	0.00	0.0	-0.1	-0.1	0.00	539.00
49.0	0.00	0.0	-0.1	-0.1	0.00	539.00
50.0	0.00	0.0	-0.1	-0.1	0.00	539.00
51.0	0.00	0.0	-0.1	-0.1	0.00	539.00
52.0	0.00	0.0	-0.1	-0.1	0.00	539.00
53.0	0.00	0.0	-0.1	-0.1	0.00	539.00
54.0	0.00	0.0	-0.1	-0.1	0.00	539.00
55.0	0.00	0.0	-0.1	-0.1	0.00	539.00
56.0	0.00	0.0	-0.1	-0.1	0.00	539.00
57.0	0.00	0.0	-0.1	-0.1	0.00	539.00
58.0	0.00	0.0	-0.1	-0.1	0.00	539.00
59.0	0.00	0.0	-0.1	-0.1	0.00	539.00
60.0	0.00	0.0	-0.1	-0.1	0.00	539.00
		0.0	-0.1			

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

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\8683 .PND
Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\8683-015.HYD
Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\86830015.HYD

Starting Pond W.S. Elevation = 539.00 ft

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

Peak Inflow	=	266.68 cfs
Peak Outflow	=	205.34 cfs
Peak Elevation	=	546.35 ft

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

Initial Storage	=	0.00 ac-ft
Peak Storage From Storm	=	1.68 ac-ft
Total Storage in Pond	=	1.68 ac-ft

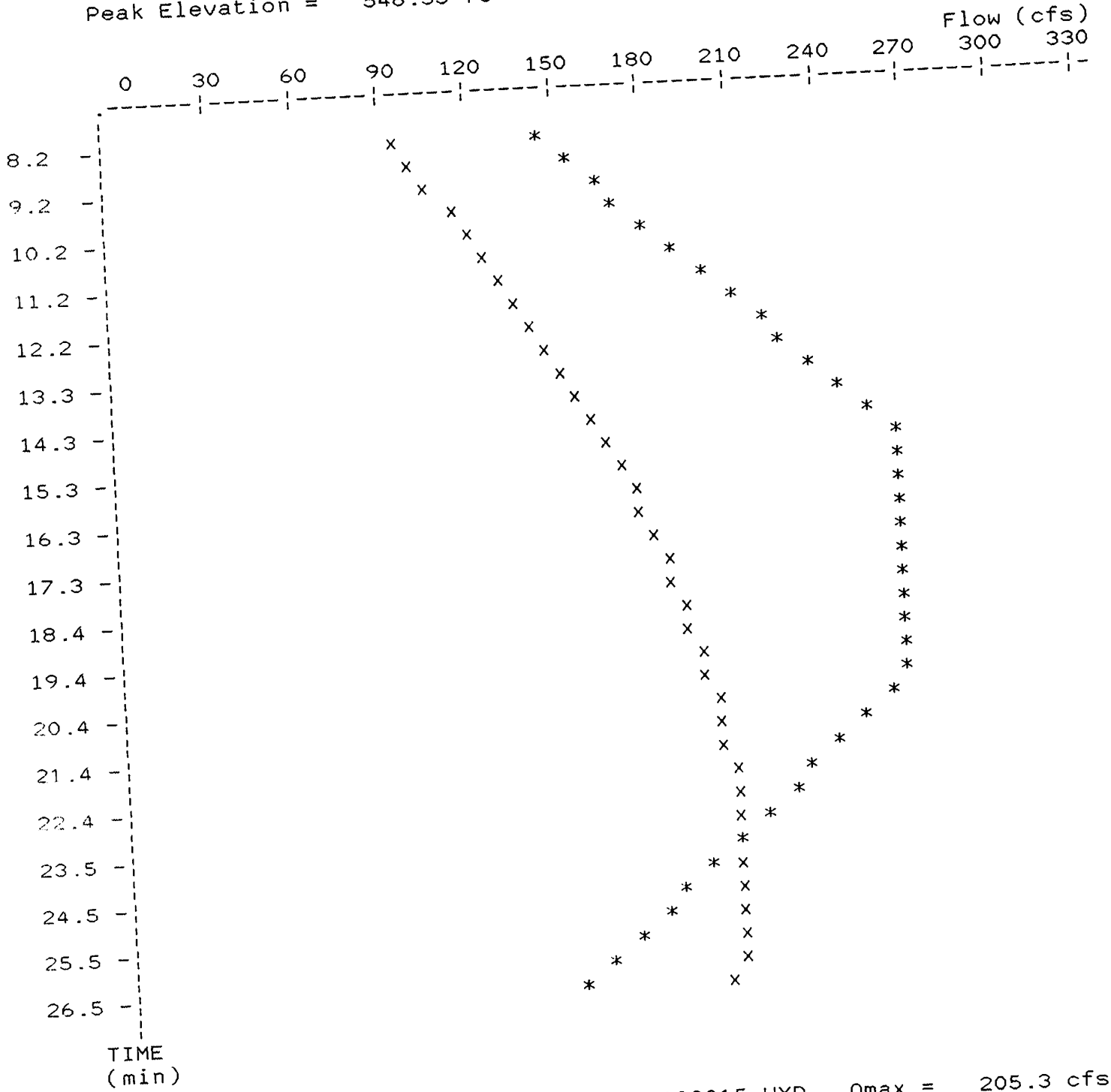
POND-2 Version: 5.20 S/N:

Return Freq: 15 years

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\8683 .PND
Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\8683-015.HYD
Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\86830015.HYD

EXECUTED: 03-12-1998 16:20:52

Peak Inflow = 266.68 cfs
Peak Outflow = 205.34 cfs
Peak Elevation = 546.35 ft



x File: C:\WINDOWS\DESKTOP\PONDPA~1\86830015.HYD Qmax = 205.3 cfs
* File: C:\WINDOWS\DESKTOP\PONDPA~1\8683-015.HYD Qmax = 266.7 cfs

POND-2 Version: 5.20 S/N:
EXECUTED: 03-12-1998 16:20:52

Return Freq: 25 years

****
*
* ST. DOMINIC ESTATES *
* DETENTION ANALYSIS *
* PREPARED BY: BAX ENGINEERING CO., INC. *
* DECEMBER 5 1997 *
*
****

Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\8683-025.HYD
Rating Table file: C:\WINDOWS\DESKTOP\PONDPA~1\8683 .PND

----INITIAL CONDITIONS----
Elevation = 539.00 ft
Outflow = 0.00 cfs
Storage = 0.00 ac-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (ac-ft)
539.00	0.0	0.000
539.50	2.1	0.001
540.00	6.5	0.009
540.50	15.6	0.027
541.00	28.6	0.054
541.50	45.0	0.094
542.00	62.9	0.148
542.50	82.2	0.220
543.00	101.1	0.316
543.50	119.6	0.440
544.00	137.3	0.594
544.50	154.9	0.777
545.00	170.0	0.985
545.50	183.9	1.219
546.00	197.0	1.481
546.50	208.9	1.767
547.00	220.1	2.071
547.50	231.0	2.394
548.00	241.4	2.736
548.50	251.3	3.097
549.00	260.5	3.478
549.50	269.7	3.880
550.00	278.7	4.302
550.50	287.2	4.746
551.00	295.6	5.209
551.50	303.7	5.692
552.00	311.6	6.197

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + O (cfs)
0.0	0.0
1.6	3.7
13.0	19.5
38.7	54.3
78.7	107.3
136.2	181.2
214.3	277.2
319.6	401.8
459.4	560.5
638.9	758.5
862.8	1000.1
1128.1	1283.0
1429.6	1599.6
1769.9	1953.8
2151.1	2348.1
2566.4	2775.3
3007.8	3227.9
3476.1	3707.1
3972.0	4213.4
4496.4	4747.7
5049.8	5310.3
5633.1	5902.8
6247.0	6525.7
6890.7	7177.9
7563.2	7858.8
8265.3	8569.0
8997.4	9309.0

Time increment (t) = 1.0 min.

POND-2 Version: 5.20 S/N:
EXECUTED: 03-12-1998 16:20:52

Return Freq: 25 years

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\8683 .PND
Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\8683-025.HYD
Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\86830025.HYD

INFLOW HYDROGRAPH

TIME (min)	INFLOW (cfs)
0.0	0.00
1.0	21.90
2.0	43.90
3.0	65.81
4.0	87.80
5.0	109.71
6.0	131.71
7.0	153.61
8.0	175.52
9.0	197.52
10.0	219.43
11.0	241.42
12.0	263.31
13.0	285.32
14.0	307.23
15.0	329.13
16.0	329.20
17.0	329.20
18.0	329.20
19.0	329.20
20.0	329.20
21.0	307.28
22.0	285.38
23.0	263.36
24.0	241.48
25.0	219.58
26.0	197.57
27.0	175.68
28.0	153.66
29.0	131.77
30.0	109.86
31.0	87.86
32.0	65.96
33.0	43.96
34.0	22.05
35.0	0.15
36.0	0.00
37.0	0.00
38.0	0.00
39.0	0.00
40.0	0.00
41.0	0.00
42.0	0.00
43.0	0.00
44.0	0.00

ROUTING COMPUTATIONS

I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
-----	0.0	0.0	0.00	539.00
21.9	7.7	21.9	7.12	540.03
65.8	32.9	73.5	20.31	540.68
109.7	69.7	142.6	36.43	541.24
153.6	117.6	223.3	52.85	541.72
197.5	177.6	315.1	68.77	542.15
241.4	250.5	419.0	84.25	542.55
285.3	339.5	535.8	98.16	542.92
329.1	446.2	668.6	111.20	543.27
373.0	571.2	819.3	124.05	543.63
417.0	715.3	988.1	136.42	543.98
460.9	879.6	1176.1	148.25	544.31
504.7	1064.9	1384.3	159.73	544.66
548.6	1272.4	1613.5	170.54	545.02
592.6	1504.1	1865.0	180.42	545.37
636.4	1760.3	2140.5	190.10	545.74
658.3	2020.7	2418.6	198.96	546.08
658.4	2266.6	2679.1	206.22	546.39
658.4	2499.8	2925.0	212.61	546.67
658.4	2721.5	3158.2	218.38	546.92
658.4	2932.8	3379.9	223.56	547.16
636.5	3113.5	3569.2	227.87	547.36
592.7	3244.2	3706.2	230.98	547.50
548.7	3327.4	3793.0	232.76	547.58
504.8	3365.1	3832.3	233.57	547.62
461.1	3359.3	3826.2	233.45	547.62
417.2	3311.6	3776.4	232.42	547.57
373.3	3223.9	3684.8	230.49	547.48
329.3	3098.2	3553.2	227.50	547.34
285.4	2936.3	3383.6	223.64	547.16
241.6	2740.2	3178.0	218.86	546.94
197.7	2512.1	2938.0	212.93	546.68
153.8	2254.2	2665.9	205.85	546.37
109.9	1969.2	2364.1	197.45	546.02
66.0	1662.0	2035.3	186.61	545.60
22.2	1337.6	1684.2	173.32	545.12
0.2	1022.7	1337.8	157.51	544.59
0.0	745.3	1022.7	138.71	544.04
0.0	508.6	745.3	118.37	543.47
0.0	318.7	508.6	94.91	542.84
0.0	180.1	318.7	69.34	542.17
0.0	90.6	180.1	44.76	541.49
0.0	41.6	90.6	24.50	540.84
0.0	17.0	41.6	12.27	540.32
0.0	5.4	17.0	5.80	539.92

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\8683 .PND
Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\8683-025.HYD
Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\86830025.HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
45.0	0.00	0.0	0.3	5.4	2.57	539.55
46.0	0.00	0.0	-0.0	0.3	0.16	539.04
47.0	0.00	0.0	-0.0	-0.0	0.00	539.00
48.0	0.00	0.0	-0.0	-0.0	0.00	539.00
49.0	0.00	0.0	-0.0	-0.0	0.00	539.00
50.0	0.00	0.0	-0.0	-0.0	0.00	539.00
51.0	0.00	0.0	-0.0	-0.0	0.00	539.00
52.0	0.00	0.0	-0.0	-0.0	0.00	539.00
53.0	0.00	0.0	-0.0	-0.0	0.00	539.00
54.0	0.00	0.0	-0.0	-0.0	0.00	539.00
55.0	0.00	0.0	-0.0	-0.0	0.00	539.00
56.0	0.00	0.0	-0.0	-0.0	0.00	539.00
57.0	0.00	0.0	-0.0	-0.0	0.00	539.00
58.0	0.00	0.0	-0.0	-0.0	0.00	539.00
59.0	0.00	0.0	-0.0	-0.0	0.00	539.00
60.0	0.00	0.0	-0.0	-0.0	0.00	539.00

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

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\8683 .PND
Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\8683-025.HYD
Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\86830025.HYD

Starting Pond W.S. Elevation = 539.00 ft

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

Peak Inflow	=	329.20 cfs
Peak Outflow	=	233.57 cfs
Peak Elevation	=	547.62 ft

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

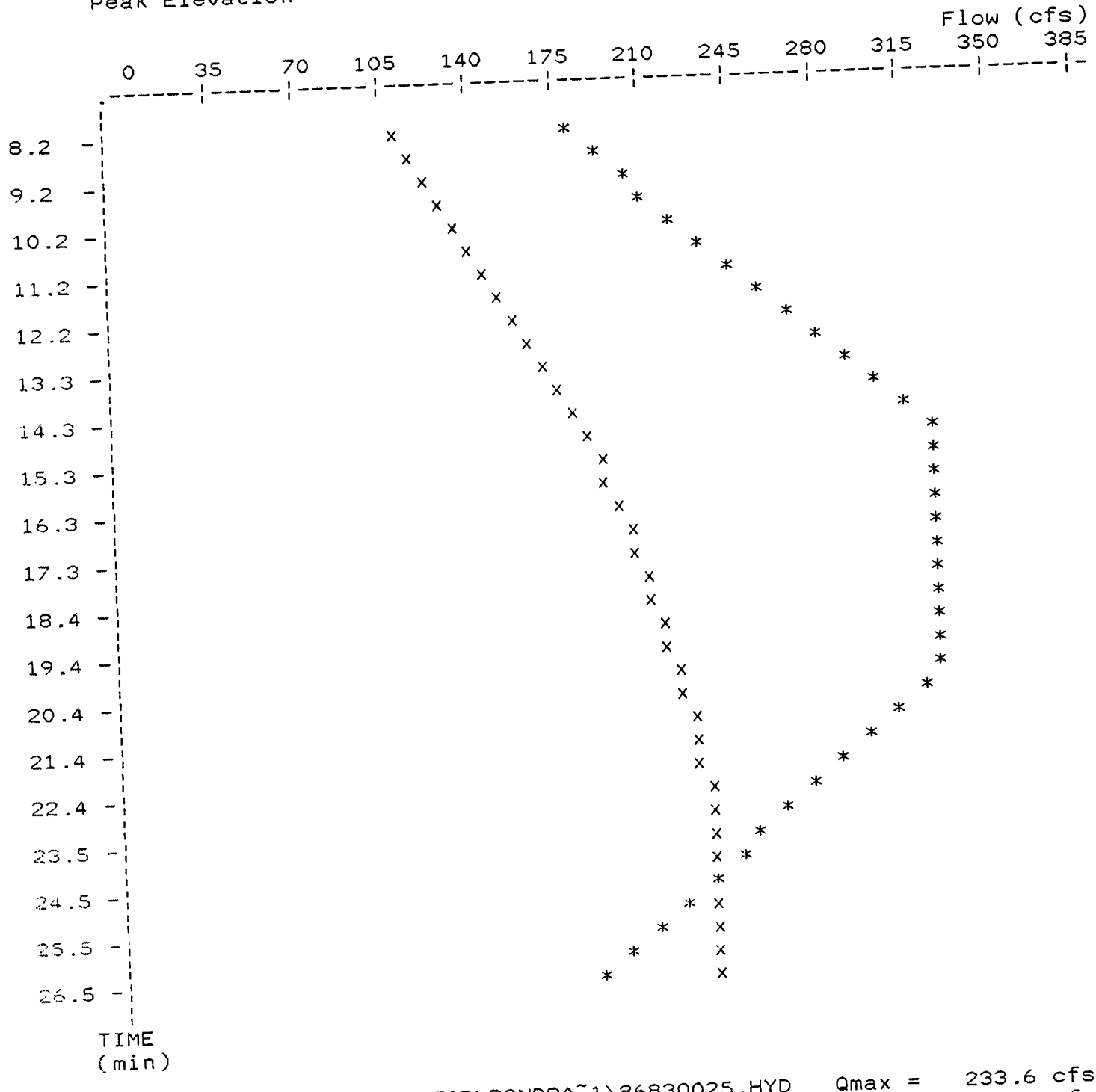
Initial Storage	=	0.00 ac-ft
Peak Storage From Storm	=	2.48 ac-ft
Total Storage in Pond	=	2.48 ac-ft

POND-2 Version: 5.20 S/N:

Return Freq: 25 years

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\8683 .PND
Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\8683-025.HYD
Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\86830025.HYD
EXECUTED: 03-12-1998 16:20:52

Peak Inflow = 329.20 cfs
Peak Outflow = 233.57 cfs
Peak Elevation = 547.62 ft



x File: C:\WINDOWS\DESKTOP\PONDPA~1\86830025.HYD Qmax = 233.6 cfs
* File: C:\WINDOWS\DESKTOP\PONDPA~1\8683-025.HYD Qmax = 329.2 cfs

POND-2 Version: 5.20 S/N:
EXECUTED: 03-12-1998 16:20:52

Return Freq: 100 years

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*
* ST. DOMINIC ESTATES
* DETENTION ANALYSIS
* PREPARED BY: BAX ENGINEERING CO., INC.
* DECEMBER 5 1997
*
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Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\8683-100.HYD
Rating Table file: C:\WINDOWS\DESKTOP\PONDPA~1\8683 .PND

----INITIAL CONDITIONS----
Elevation = 539.00 ft
Outflow = 0.00 cfs
Storage = 0.00 ac-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (ac-ft)
539.00	0.0	0.000
539.50	2.1	0.001
540.00	6.5	0.009
540.50	15.6	0.027
541.00	28.6	0.054
541.50	45.0	0.094
542.00	62.9	0.148
542.50	82.2	0.220
543.00	101.1	0.316
543.50	119.6	0.440
544.00	137.3	0.594
544.50	154.9	0.777
545.00	170.0	0.985
545.50	183.9	1.219
546.00	197.0	1.481
546.50	208.9	1.767
547.00	220.1	2.071
547.50	231.0	2.394
548.00	241.4	2.736
548.50	251.3	3.097
549.00	260.5	3.478
549.50	269.7	3.880
550.00	278.7	4.302
550.50	287.2	4.746
551.00	295.6	5.209
551.50	303.7	5.692
552.00	311.6	6.197

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + O (cfs)
0.0	0.0
1.6	3.7
13.0	19.5
38.7	54.3
78.7	107.3
136.2	181.2
214.3	277.2
319.6	401.8
459.4	560.5
638.9	758.5
862.8	1000.1
1128.1	1283.0
1429.6	1599.6
1769.9	1953.8
2151.1	2348.1
2566.4	2775.3
3007.8	3227.9
3476.1	3707.1
3972.0	4213.4
4496.4	4747.7
5049.8	5310.3
5633.1	5902.8
6247.0	6525.7
6890.7	7177.9
7563.2	7858.8
8265.3	8569.0
8997.4	9309.0

Time increment (t) = 1.0 min.

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\8683 .PND
Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\8683-100.HYD
Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\86830100.HYD

INFLOW HYDROGRAPH

TIME (min)	INFLOW (cfs)
0.0	0.00
1.0	28.07
2.0	56.15
3.0	84.23
4.0	112.30
5.0	140.37
6.0	168.45
7.0	196.52
8.0	224.58
9.0	252.67
10.0	280.73
11.0	308.81
12.0	336.88
13.0	364.96
14.0	393.04
15.0	421.12
16.0	421.20
17.0	421.20
18.0	421.20
19.0	421.20
20.0	421.20
21.0	393.24
22.0	365.16
23.0	337.08
24.0	309.01
25.0	280.83
26.0	252.77
27.0	224.69
28.0	196.61
29.0	168.54
30.0	140.47
31.0	112.39
32.0	84.33
33.0	56.25
34.0	28.17
35.0	0.20
36.0	0.00
37.0	0.00
38.0	0.00
39.0	0.00
40.0	0.00
41.0	0.00
42.0	0.00
43.0	0.00
44.0	0.00

ROUTING COMPUTATIONS

I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
-----	0.0	0.0	0.00	539.00
28.1	10.6	28.1	8.73	540.12
84.2	43.7	94.8	25.55	540.88
140.4	93.0	184.1	45.55	541.52
196.5	159.9	289.5	64.81	542.05
252.7	245.6	412.6	83.49	542.53
308.8	353.7	554.4	100.37	542.98
365.0	486.9	718.7	115.88	543.40
421.1	646.9	908.0	130.55	543.81
477.3	834.1	1124.1	145.02	544.22
533.4	1049.6	1367.5	158.93	544.63
589.5	1296.1	1639.2	171.55	545.06
645.7	1574.9	1941.8	183.43	545.48
701.8	1887.5	2276.8	194.63	545.91
758.0	2234.9	2645.5	205.28	546.35
814.2	2617.7	3049.1	215.68	546.80
842.3	3009.3	3460.1	225.38	547.24
842.4	3383.8	3851.7	233.97	547.64
842.4	3742.9	4226.2	241.64	548.01
842.4	4088.7	4585.3	248.29	548.35
842.4	4422.5	4931.1	254.30	548.66
814.4	4718.3	5236.9	259.30	548.93
758.4	4950.6	5476.7	263.08	549.14
702.2	5121.2	5652.8	265.82	549.29
646.1	5232.1	5767.3	267.60	549.39
589.8	5285.0	5821.9	268.44	549.43
533.6	5281.8	5818.6	268.39	549.43
477.5	5224.4	5759.3	267.47	549.38
421.3	5114.2	5645.7	265.71	549.28
365.2	4953.1	5479.4	263.13	549.14
309.0	4742.7	5262.1	259.71	548.96
252.9	4484.9	4995.6	255.35	548.72
196.7	4181.4	4681.6	250.08	548.44
140.6	3835.2	4322.0	243.41	548.10
84.4	3448.9	3919.6	235.37	547.71
28.4	3025.7	3477.3	225.77	547.26
0.2	2595.7	3025.9	215.10	546.78
0.0	2187.9	2595.7	203.90	546.29
0.0	1804.6	2187.9	191.68	545.80
0.0	1448.5	1804.6	178.04	545.29
0.0	1122.9	1448.5	162.79	544.76
0.0	833.0	1122.9	144.94	544.22
0.0	582.9	833.0	125.06	543.65
0.0	376.5	582.9	103.19	543.06
0.0	219.9	376.5	78.29	542.40

POND-2 Version: 5.20 S/N:
EXECUTED: 03-12-1998 16:20:52

Return Freq: 100 years

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\8683 .PND
Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\8683-100.HYD
Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\86830100.HYD

INFLOW HYDROGRAPH / ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
45.0	0.00	0.0	115.5	219.9	52.23	541.70
46.0	0.00	0.0	54.6	115.5	30.42	541.06
47.0	0.00	0.0	23.3	54.6	15.69	540.50
48.0	0.00	0.0	8.3	23.3	7.48	540.05
49.0	0.00	0.0	1.6	8.3	3.38	539.64
50.0	0.00	0.0	-0.2	1.6	0.88	539.21
51.0	0.00	0.0	-0.2	-0.2	0.00	539.00
52.0	0.00	0.0	-0.2	-0.2	0.00	539.00
53.0	0.00	0.0	-0.2	-0.2	0.00	539.00
54.0	0.00	0.0	-0.2	-0.2	0.00	539.00
55.0	0.00	0.0	-0.2	-0.2	0.00	539.00
56.0	0.00	0.0	-0.2	-0.2	0.00	539.00
57.0	0.00	0.0	-0.2	-0.2	0.00	539.00
58.0	0.00	0.0	-0.2	-0.2	0.00	539.00
59.0	0.00	0.0	-0.2	-0.2	0.00	539.00
60.0	0.00	0.0	-0.2	-0.2	0.00	539.00

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

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\8683 .PND
Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\8683-100.HYD
Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\86830100.HYD

Starting Pond W.S. Elevation = 539.00 ft

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

Peak Inflow	=	421.20 cfs
Peak Outflow	=	268.44 cfs
Peak Elevation	=	549.43 ft

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

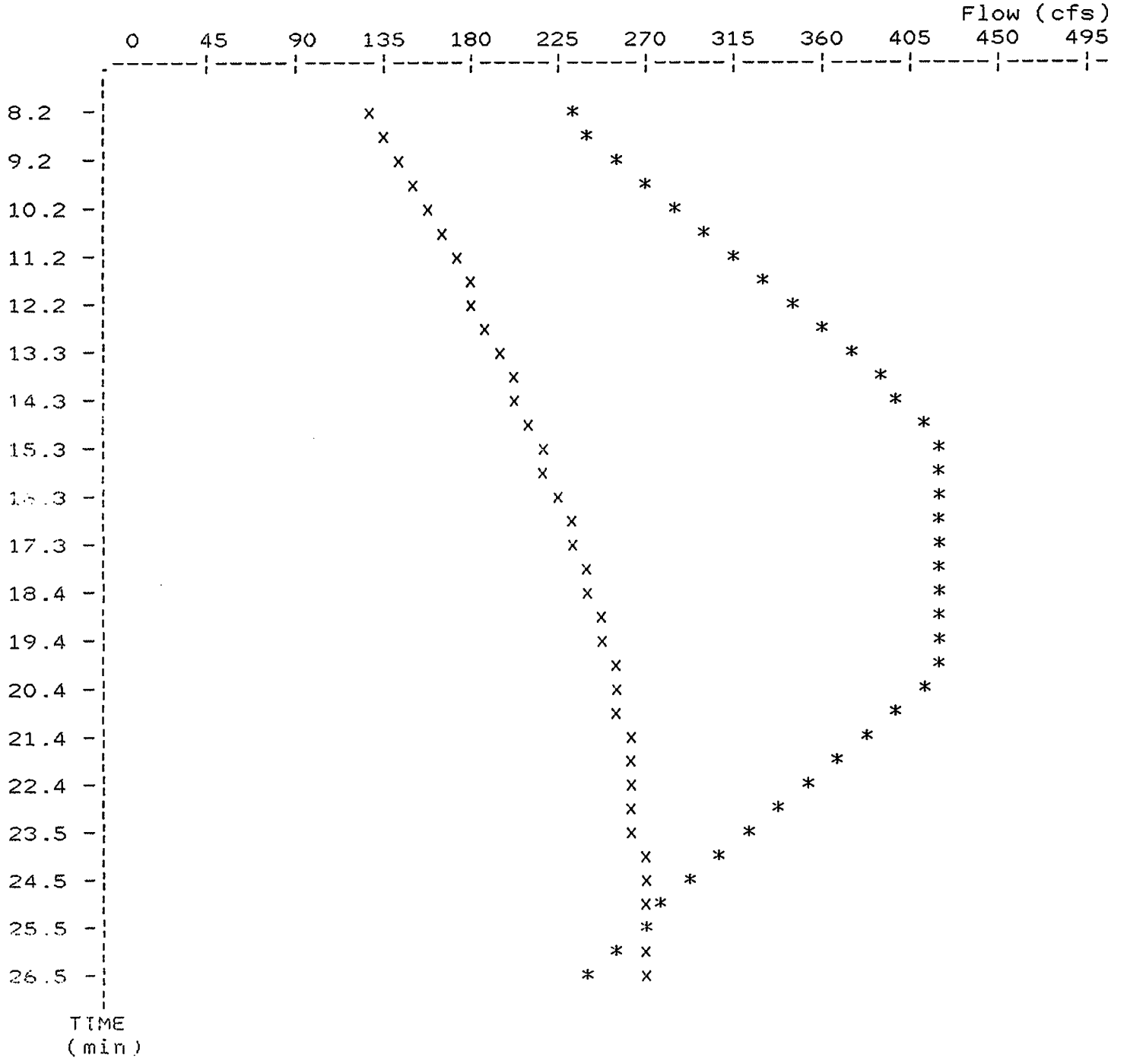
Initial Storage	=	0.00 ac-ft
Peak Storage From Storm	=	3.82 ac-ft
Total Storage in Pond	=	3.82 ac-ft

Return Freq: 100 years

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\8683 .PND
Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\8683-100.HYD
Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\86830100.HYD

EXECUTED: 03-12-1998 16:20:52

Peak Inflow = 421.20 cfs
Peak Outflow = 268.44 cfs
Peak Elevation = 549.43 ft



x File: C:\WINDOWS\DESKTOP\PONDPA~1\86830100.HYD Qmax = 268.4 cfs
* File: C:\WINDOWS\DESKTOP\PONDPA~1\8683-100.HYD Qmax = 421.2 cfs

Outlet Structure File: 8683CULV.STR

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

****

DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
, 1997

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

Elevation (ft)	Q (cfs)	Contributing Structures
539.00	0.0	2
539.50	2.1	2
540.00	6.5	2 +1
540.50	15.6	2 +1
541.00	28.6	2 +1
541.50	45.0	2 +1
542.00	62.9	2 +1
542.50	82.2	2 +1
543.00	101.1	2 +1
543.50	119.6	2 +1
544.00	137.3	2 +1
544.50	154.9	2 +1
545.00	170.0	2 +1
545.50	183.9	2 +1
546.00	197.0	2 +1
546.50	208.9	2 +1
547.00	220.1	2 +1
547.50	231.0	2 +1
548.00	241.4	2 +1
548.50	251.3	2 +1
549.00	260.5	2 +1
549.50	269.7	2 +1
550.00	278.7	2 +1
550.50	287.2	2 +1
551.00	295.6	2 +1
551.50	303.7	2 +1
552.00	311.6	2 +1

Outlet Structure File: 8683CULV.STR

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

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DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
, 1997
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Outlet Structure File: C:\WINDOWS\DESKTOP\PONDPA~1\8683CULV.STR
Planimeter Input File: C:\WINDOWS\DESKTOP\PONDPA~1\8683 .VOL
Rating Table Output File: C:\WINDOWS\DESKTOP\PONDPA~1\8683 .PND

Min. Elev.(ft) = 539 Max. Elev.(ft) = 552 Incr.(ft) = .5

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

****
SYSTEM CONNECTIVITY
****

Structure	No.	Q Table		Q Table
CULVERT-CR	2		->	2
CULVERT-CR	1		->	1

Outflow rating table summary was stored in file:
C:\WINDOWS\DESKTOP\PONDPA~1\8683 .PND

Outlet Structure File: 8683CULV.STR

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

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DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
, 1997

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

CULVERT-CR
Circular Culvert (With Inlet Control)

E1 elev.(ft)?	539
E2 elev.(ft)?	552.001
Diam. (ft)?	3.0
Inv. el.(ft)?	539
Slope (ft/ft)?	.0636
T1 ratio?	
T2 ratio?	
K Coeff.?	.0098
M Coeff.?	2
c Coeff.?	.0398
Y Coeff.?	.67
Form 1 or 2?	1
Slope factor?	-.5

Outlet Structure File: 8683CULV.STR

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

****

DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
, 1997

****

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

CULVERT-CR
Circular Culvert (With Inlet Control)

E1 elev.(ft)?	540
E2 elev.(ft)?	552.001
Diam. (ft)?	4.0
Inv. el.(ft)?	540.0
Slope (ft/ft)?	.0636
T1 ratio?	
T2 ratio?	.0098
K Coeff.?	2
M Coeff.?	.0398
c Coeff.?	.67
Y Coeff.?	1
Form 1 or 2?	-.5
Slope factor?	

Outlet Structure File: 8683CULV.STR

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

****

DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
, 1997

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Outflow Rating Table for Structure #2
CULVERT-CR Circular Culvert (With Inlet Control)

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

Elevation (ft)	Q (cfs)	Computation Messages		
539.00	0.0	No headwater		
539.50	2.1	Equ.1: HW =.5	dc=.449	Ac=.662
540.00	6.5	Equ.1: HW =1.0	dc=.8	Ac=1.514
540.50	13.0	Equ.1: HW =1.5	dc=1.144	Ac=2.478
541.00	20.4	Equ.1: HW =2.0	dc=1.45	Ac=3.385
541.50	28.6	Equ.1: HW =2.5	dc=1.731	Ac=4.224
542.00	36.6	Equ.1: HW =3.0	dc=1.968	Ac=4.914
542.50	44.5	Transition: HW =3.5		
543.00	51.1	Submerged: HW =4.0		
543.50	57.0	Submerged: HW =4.5		
544.00	62.2	Submerged: HW =5.0		
544.50	67.1	Submerged: HW =5.5		
545.00	71.6	Submerged: HW =6.0		
545.50	75.9	Submerged: HW =6.5		
546.00	79.9	Submerged: HW =7.0		
546.50	83.7	Submerged: HW =7.5		
547.00	87.4	Submerged: HW =8.0		
547.50	91.0	Submerged: HW =8.5		
548.00	94.3	Submerged: HW =9.0		
548.50	97.6	Submerged: HW =9.5		
549.00	100.7	Submerged: HW =10.0		
549.50	103.8	Submerged: HW =10.5		
550.00	106.8	Submerged: HW =11.0		
550.50	109.7	Submerged: HW =11.5		
551.00	112.5	Submerged: HW =12.0		
551.50	115.3	Submerged: HW =12.5		
552.00	118.0	Submerged: HW =13.0		

91 cfs
140/23 cfs

Used Unsubmerged Equ. Form (1) for elev. less than 542.38 ft
Used Submerged Equation for elevations greater than 542.83 ft
HW=Headwater (ft) dc=Critical depth (ft) Ac=Area (sq.ft) at dc

Transition flows interpolated from the following values:
E1=542.38 ft; Q1=42.85 cfs; Dc=2.13 ft; E2=542.83 ft; Q2=48.97 c

Outlet Structure File: 8683CULV.STR

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

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DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
, 1997

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Outflow Rating Table for Structure #1
CULVERT-CR Circular Culvert (With Inlet Control)

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

Elevation (ft)	Q (cfs)	Computation Messages
539.00	0.0	E < Inv.El.= 540
539.50	0.0	E < Inv.El.= 540
540.00	0.0	No headwater
540.50	2.7	Equ.1: HW =.5 dc=.471 Ac=.83
541.00	8.2	Equ.1: HW =1.0 dc=.833 Ac=1.894
541.50	16.4	Equ.1: HW =1.5 dc=1.188 Ac=3.126
542.00	26.3	Equ.1: HW =2.0 dc=1.517 Ac=4.372
542.50	37.8	Equ.1: HW =2.5 dc=1.831 Ac=5.609
543.00	50.0	Equ.1: HW =3.0 dc=2.121 Ac=6.765
543.50	62.6	Equ.1: HW =3.5 dc=2.385 Ac=7.814
544.00	75.1	Equ.1: HW =4.0 dc=2.623 Ac=8.735
544.50	87.7	Equ.1: HW =4.5 dc=2.839 Ac=9.539
545.00	98.4	Transition: HW =5.0
545.50	108.0	Submerged: HW =5.5
546.00	117.1	Submerged: HW =6.0
546.50	125.1	Submerged: HW =6.5
547.00	132.8	Submerged: HW =7.0
547.50	140.0	Submerged: HW =7.5
548.00	147.1	Submerged: HW =8.0
548.50	153.7	Submerged: HW =8.5
549.00	159.6	Submerged: HW =9.0
549.50	165.9	Submerged: HW =9.5
550.00	171.9	Submerged: HW =10.0
550.50	177.6	Submerged: HW =10.5
551.00	183.1	Submerged: HW =11.0
551.50	188.4	Submerged: HW =11.5
552.00	193.6	Submerged: HW =12.0

Used Unsubmerged Equ. Form (1) for elev. less than 544.51 ft
Used Submerged Equation for elevations greater than 545.1 ft
HW=Headwater (ft) dc=Critical depth (ft) Ac=Area (sq.ft) at dc

Transition flows interpolated from the following values:
E1=544.51 ft; Q1=87.96 cfs; Dc=2.84 ft; E2=545.1 ft; Q2=100.53

City of O'Fallon, Missouri

138 South Main Street
O'Fallon, MO 63366
Phone 314-240-2000
Fax 314-978-4144

December 16, 1997

John Pearson
Bax Engineering Co., INC.
1052 South Cloverleaf Drive
St. Peters, MO 63376-6445

RE: St. Dominic Estates - Project No. 96-8683
Grading Plans

Dear Mr. Pearson:

The grading plans for St. Dominic Estates have been reviewed and approved. Approval is contingent upon providing any means necessary to prohibit silt from infiltrating the creek. Please note that a temporary turn-around will be required at Drive C. One stamped "APPROVED" set is enclosed for your use.

Please make sure the City specifications listed on the grading plan application/checklist are followed. Additional temporary swales,berms and/or silting basins may be required as grading proceeds and planned siltation control is evaluated for effectiveness. Siltation control is to be erected before grading begins in any area. Copies of any required off site easements should be on file before any grading off site. Care should be taken to ensure no soil or mud is tracked onto any pavement from the site. Please notify the Engineering Department at least 48 hours before commencement of grading.

Thank you for your cooperation. If you have any questions, please contact me at 240-5555, Ext. 318.

Sincerely,

Joan Gallup

Joan Gallup
Engineer III

cc J. Heitkamp, F. Godwin, B. Hedden
Commonwealth Development Corp.
P.O. Box 176
St. Peters, Missouri 63376