

Sniper Todd R.

True Street Subdivision

41-41 True St, Portland, Maine

424-A-005001

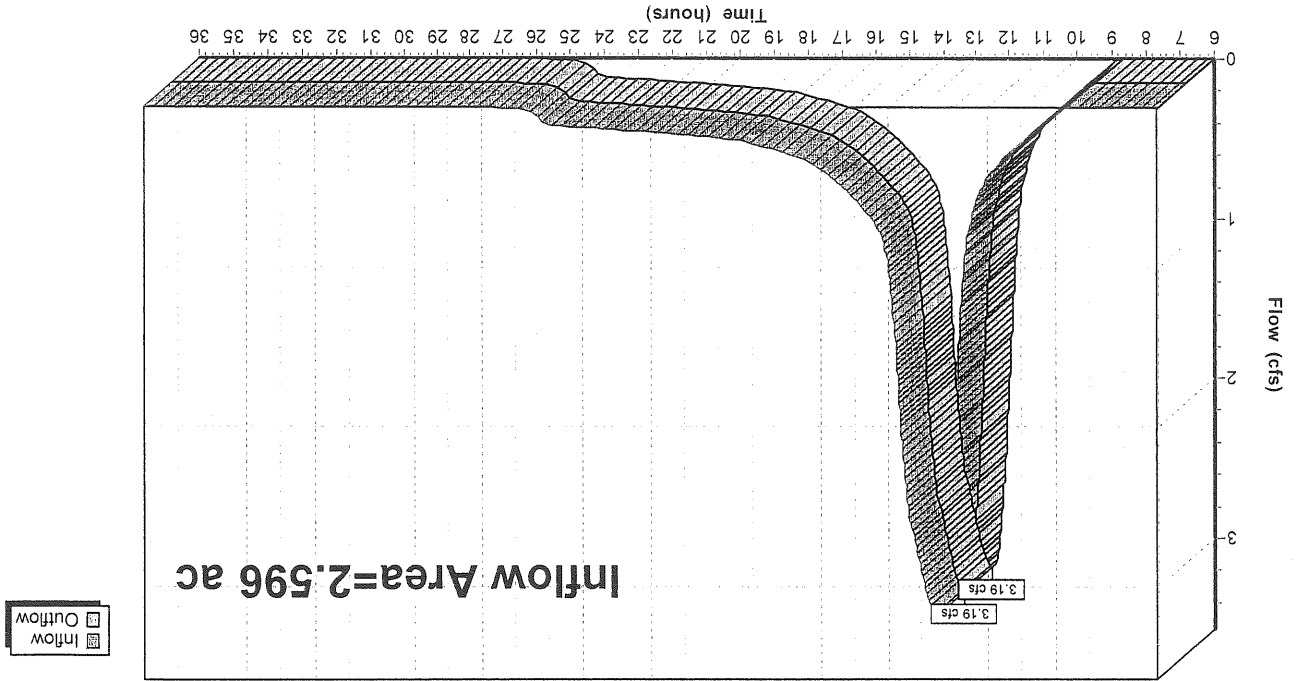
Reach SP1: To Grafton St.

Inflow Area = 2.596 ac, Inflow Depth = 3.50" for 25-YEAR EVENT event
 Inflow = 3.19 cfs @ 12.56 hrs, Volume= 0.757 af
 Outflow = 3.19 cfs @ 12.56 hrs, Volume= 0.757 af, Atten=0%, Lag=0.0 min

Routing by Stor-Ind+Trans method, Time Span= 6.00-36.00 hrs, dt= 0.01 hrs

Reach SP1: To Grafton St.

Hydrograph



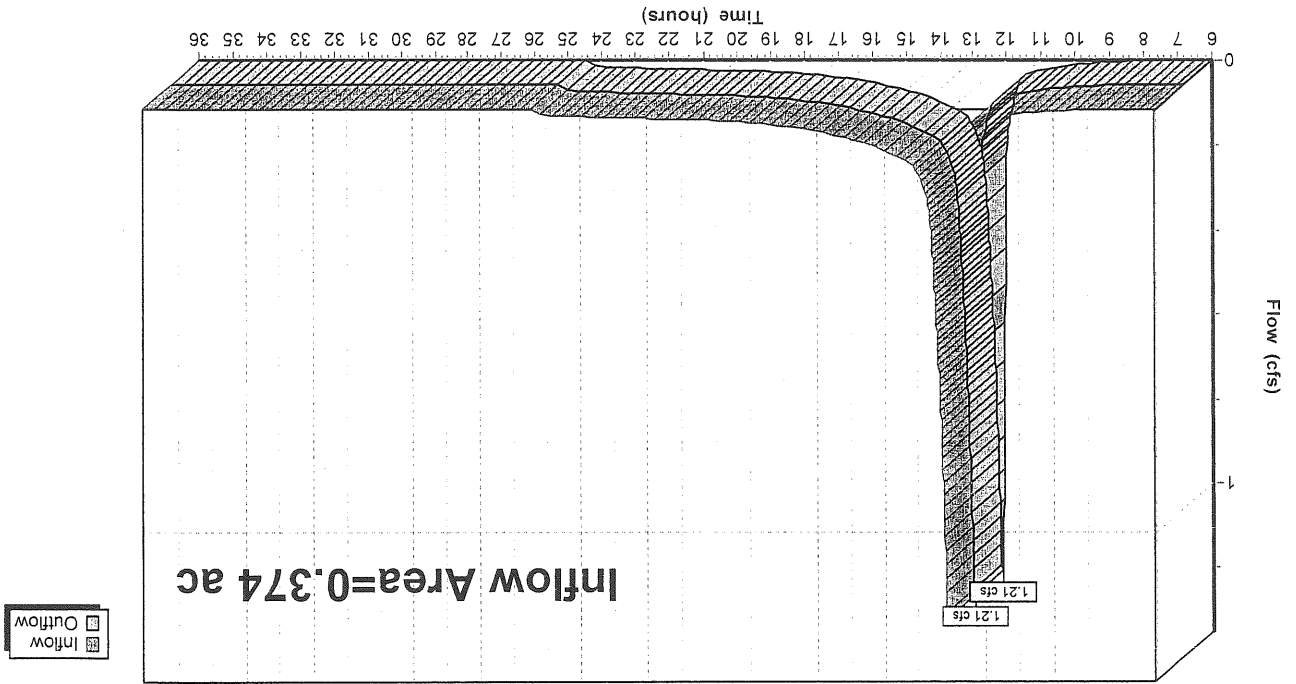
Reach SP2:

Inflow Area = 0.374 ac, Inflow Depth = 2.88" for 25-YEAR EVENT event
 Inflow = 12.21 cfs @ 12.16 hrs, Volume= 0.090 af
 Outflow = 12.21 cfs @ 12.16 hrs, Volume= 0.090 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 6.00-36.00 hrs, dt= 0.01 hrs

Reach SP2:

Hydrograph



Pond 1P:

Inflow Area = 2.596 ac, Inflow Depth = 3.53" for 25-YEAR EVENT event
 Inflow = 7.45 cfs @ 12.20 hrs, Volume = 0.763 af
 Outflow = 3.19 cfs @ 12.56 hrs, Volume = 0.757 af, Atten = 57%, Lag = 21.4 min
 Primary = 3.19 cfs @ 12.56 hrs, Volume = 0.757 af

Routing by Stor-Ind method, Time Span = 6.00-36.00 hrs, dt = 0.01 hrs
 Peak Elev = 75.29' @ 12.56 hrs Surf.Area = 10,078 sf Storage = 6,572 cf

Plug-Flow detention time = 24.6 min calculated for 0.756 af (99% of inflow)
 Center-of-Mass det. time = 19.8 min (844.6 - 824.8)

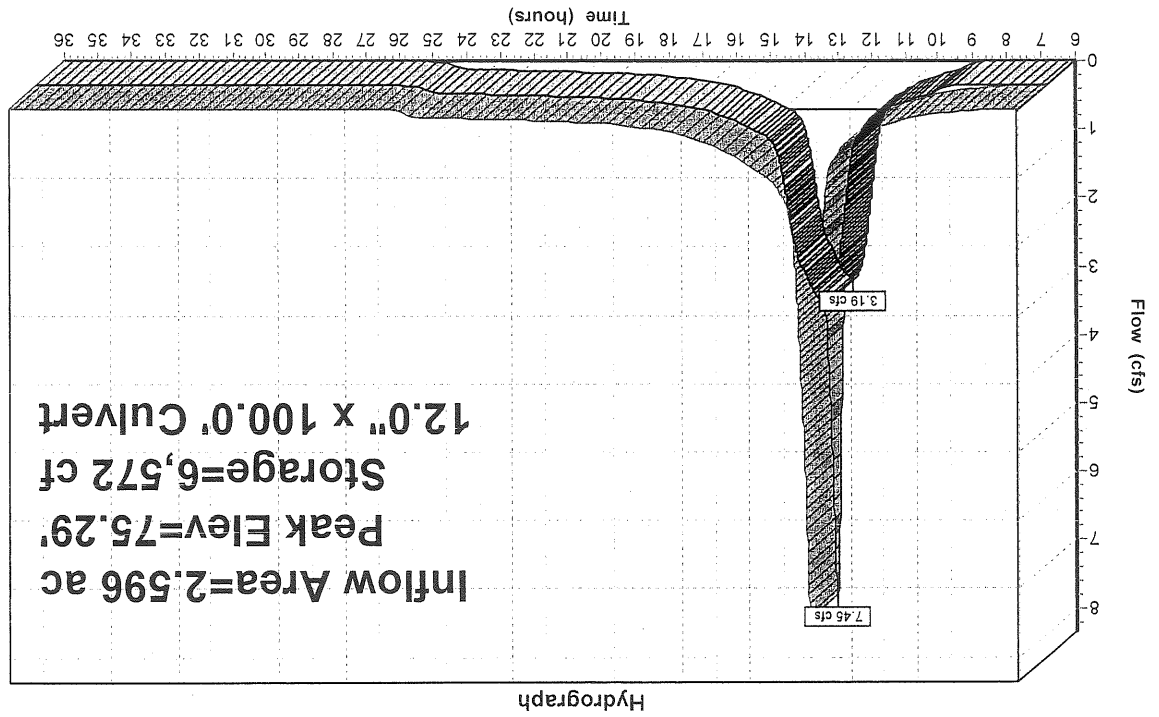
Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	16,604 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
73.00	405	105.0	0	0	405
74.00	750	140.0	569	569	1,098
75.00	7,400	655.0	3,502	4,071	33,682
76.00	18,500	650.0	12,533	16,604	34,516

Device	Routing	Invert	Outlet Devices
#1	Primary	73.53'	12.0" x 100.0' long Culvert CPP, projecting, no headwall, Ke = 0.900 Outlet Invert = 73.00' S = 0.0053 1/100' Cc = 0.900 n = 0.013 Corrugated PE, smooth interior

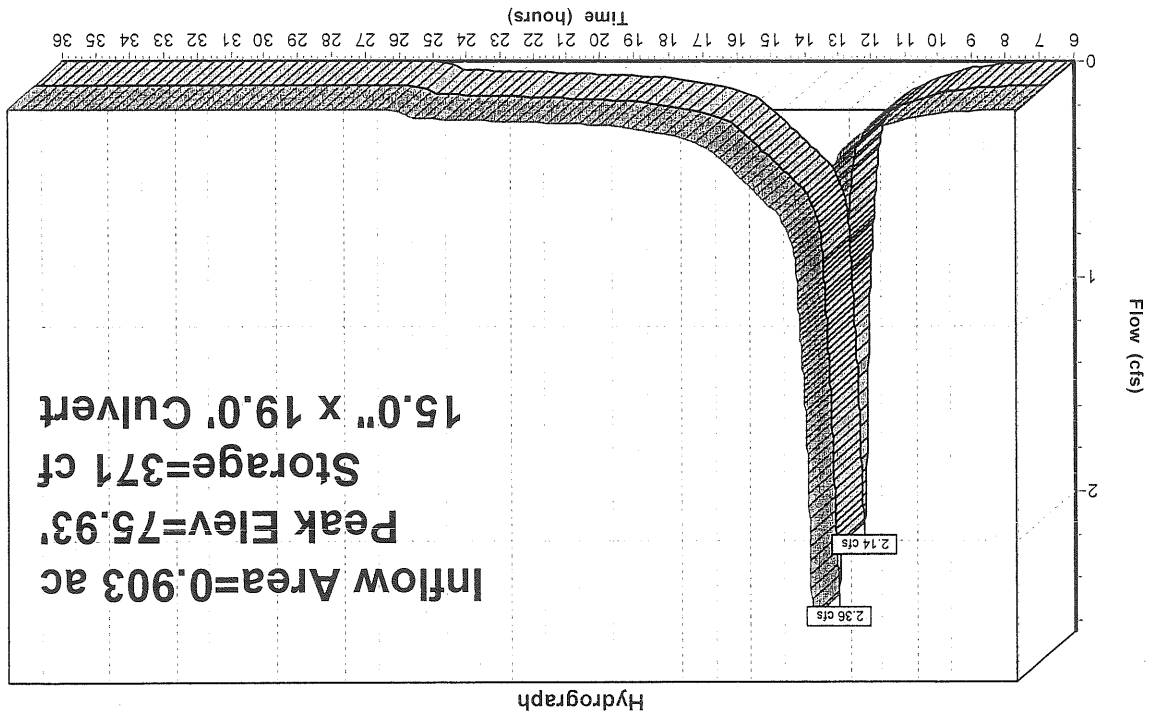
Primary Outflow Max = 3.19 cfs @ 12.56 hrs HW = 75.29' (Free Discharge)
 1=Culvert (Barrel Controls 3.19 cfs @ 4.06 fps)

Pond 1P:



Inflow
 Primary

Pond 2P:



Inflow
 Primary

Pond 3P:

Inflow Area = 0.310 ac, Inflow Depth = 3.53" for 25-YEAR EVENT event
 Inflow = 1.27 cfs @ 12.09 hrs, Volume = 0.091 af
 Outflow = 0.30 cfs @ 12.50 hrs, Volume = 0.090 af, Atten = 77%, Lag = 24.5 min
 Primary = 0.30 cfs @ 12.50 hrs, Volume = 0.090 af

Routing by Stor-Ind method, Time Span = 6.00-36.00 hrs, dt = 0.01 hrs
 Peak Elev = 78.81' @ 12.50 hrs Surf.Area = 2,429 sf Storage = 1,254 cf

Plug-Flow detention time = 52.1 min calculated for 0.090 af (99% of inflow)
 Center-of-Mass det. time = 45.5 min (858.1 - 812.6)

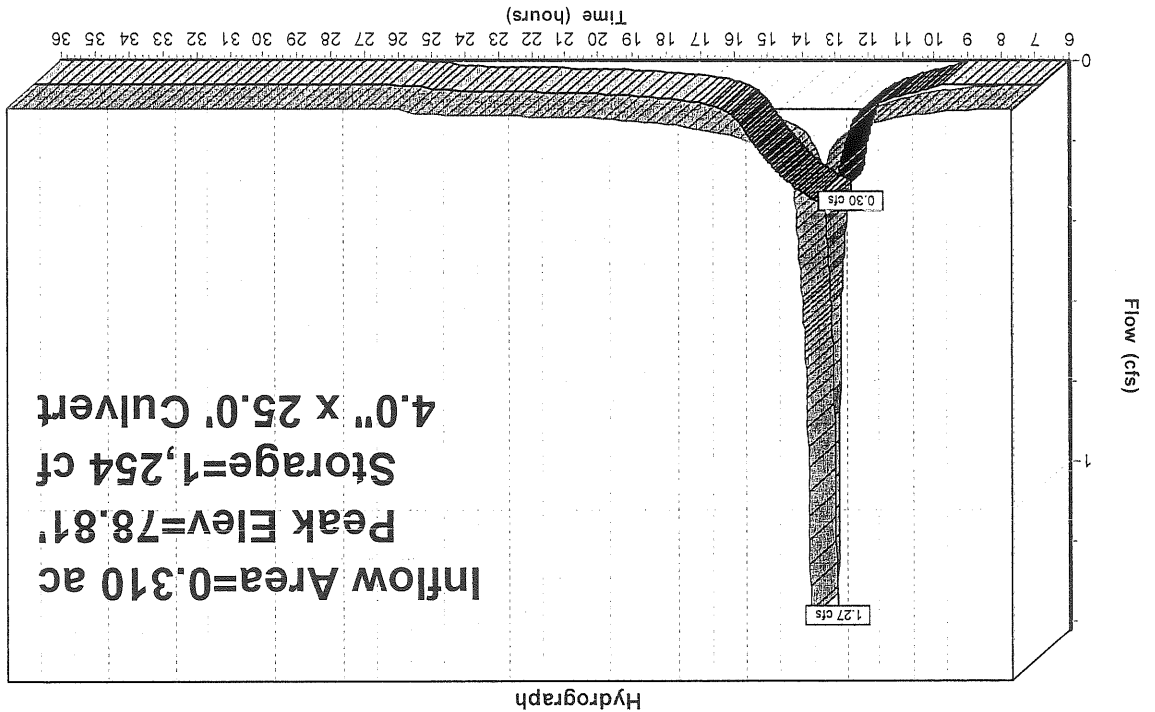
Volume	Invert	Avail.Storage	Storage Description
#1	77.50'	1,782 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
77.50	10	20.0	0	0	10
78.00	600	100.0	115	115	775
79.00	3,050	218.0	1,668	1,782	3,765

Device	Routing	Invert	Outlet Devices
#1	Primary	77.84'	4.0" x 25.0' long Culvert CP, projecting, no headwall, Ke = 0.900 Outlet Invert = 76.86' S = 0.0392' /' Cc = 0.900 n = 0.013 Clay tile

Primary Outflow Max = 0.30 cfs @ 12.50 hrs HW = 78.81' (Free Discharge)
 Inlet Controls 0.30 cfs @ 3.40 fps

Pond 3P:



Inflow
 Primary

Pond 4P:

Inflow Area = 0.234 ac, Inflow Depth = 3.43" for 25-YEAR EVENT event
 Inflow = 0.88 cfs @ 12.11 hrs, Volume = 0.067 af
 Outflow = 0.76 cfs @ 12.17 hrs, Volume = 0.052 af, Atten = 13%, Lag = 3.1 min
 Primary = 0.76 cfs @ 12.17 hrs, Volume = 0.052 af

Routing by Stor-Ind method, Time Span = 6.00-36.00 hrs, dt = 0.01 hrs / 3
 Peak Elev = 88.34' @ 12.17 hrs Surf.Area = 2,121 sf Storage = 836 cf

Plug-Flow detention time = 131.5 min calculated for 0.052 af (78% of inflow)
 Center-of-Mass det. time = 49.6 min (866.5 - 816.9)

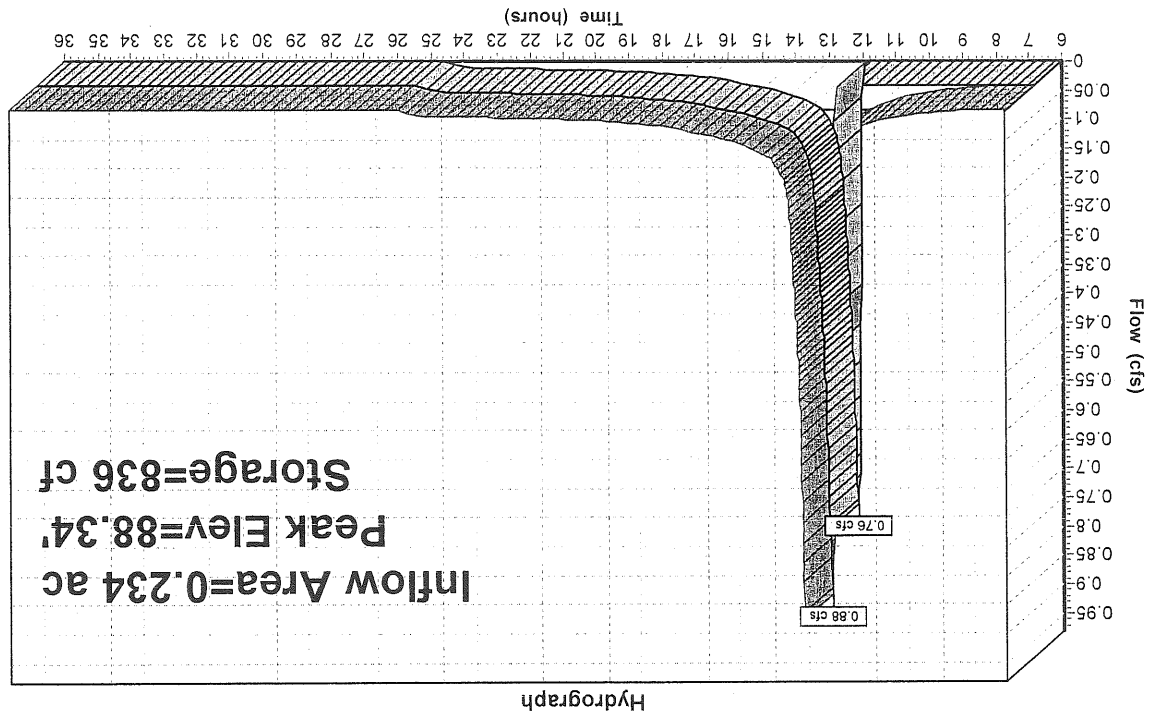
Volume	Invert	Avail.Storage	Storage Description
#1	87.50'	1,217 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
87.50	275	110.0	0	0	275
88.00	1,030	175.0	306	306	1,751
88.50	2,750	225.0	911	1,217	3,346

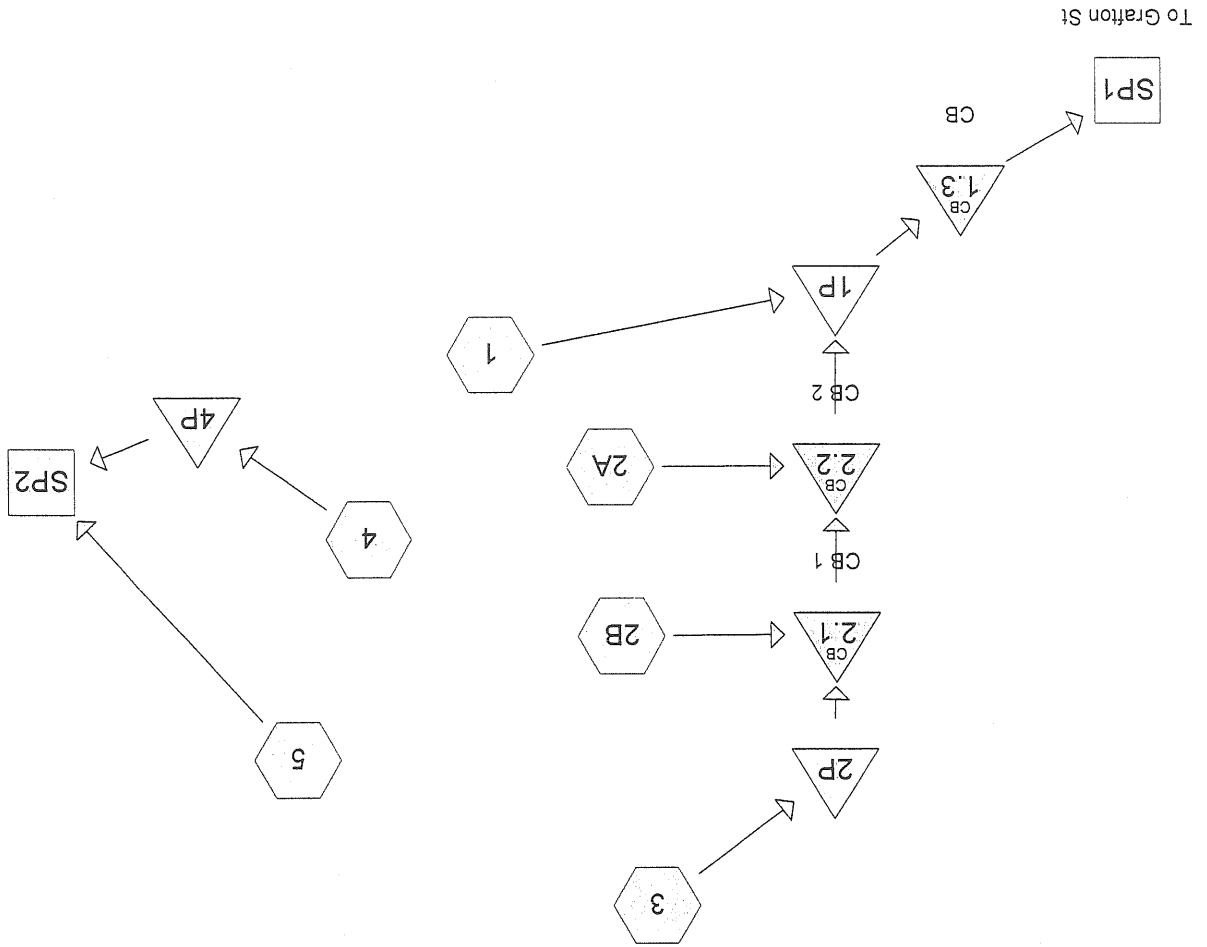
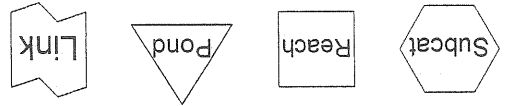
Device Routing #1 Primary
 10.0' long x 15.0' breadth Broad-Crested Rectangular Weir
 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary Outflow Max=0.76 cfs @ 12.17 hrs HW=88.34' (Free Discharge)
 1=Broad-Crested Rectangular Weir (Weir Controls 0.76 cfs @ 0.82 fps)

Pond 4P:



Inflow
 Primary



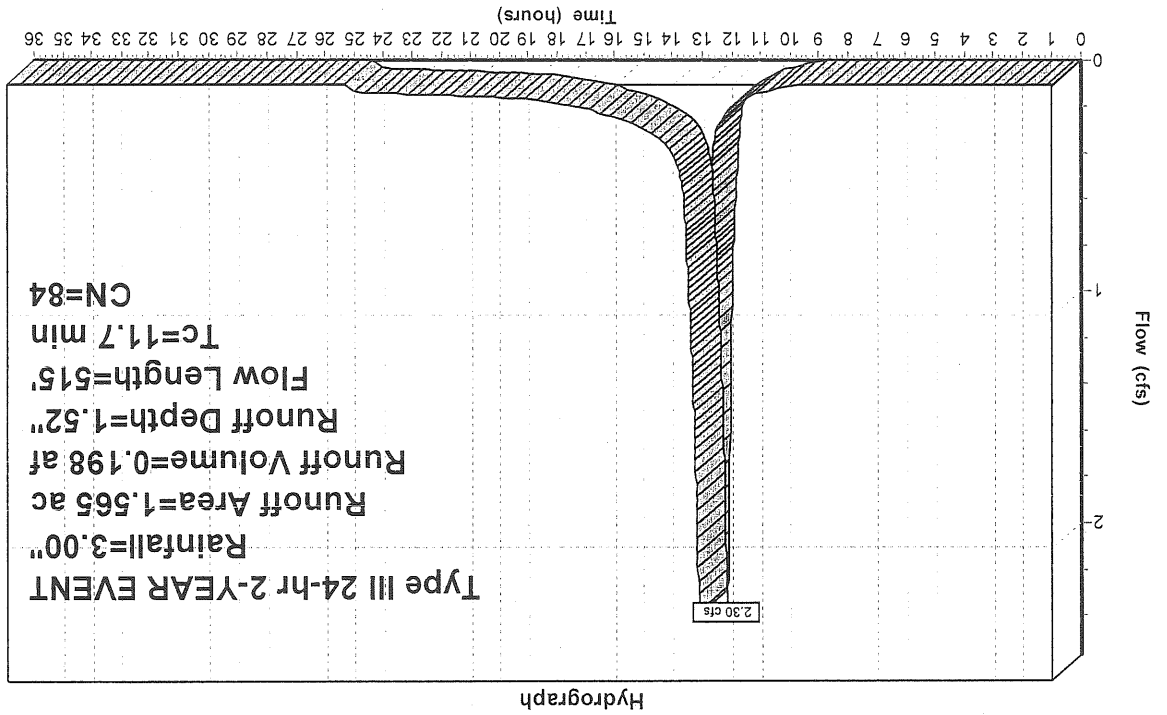
Subcatchment 1:

Runoff = 2.30 cfs @ 12.16 hrs, Volume= 0.198 af, Depth= 1.52"
 Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-YEAR EVENT Rainfall=3.00"

Area (ac)	CN	Description
0.152	98	Roots
0.235	98	Driveways, parking
1.024	80	>75% Grass cover, Good, HSG D
0.060	73	Brush, weeds, grass, Good, HSG D
0.094	79	Woods/grass comb., Good, HSG D
1.565	84	Weighted Average
1.178		Pervious Area
0.387		Imperious Area
9.0	60	Sheet Flow, A-B
9.0	60	0.0250 0.11
0.4	90	Grass: Dense n= 0.240 P2= 3.00"
0.4	90	0.0650 3.82
1.6	135	Shallow Concentrated Flow, B-C
1.6	135	Grassed Waterway Kv= 15.0 fps
0.4	130	Shallow Concentrated Flow, C-D
0.4	130	Short Grass Pasture Kv= 7.0 fps
0.4	130	0.0250 5.92
0.4	130	189.34
0.4	130	Trap/Vee/Rect Channel Flow, D-E
0.3	100	Bot.W=10.00' D=2.00' Z= 3.0'/' Top.W=22.00'
0.3	100	n= 0.050 Scattered brush, heavy weeds
0.3	100	0.0130 5.00
0.3	100	9.99
0.3	100	Trap/Vee/Rect Channel Flow, E-F
0.3	100	Bot.W=1.00' D=1.00' Z= 1.0'/' Top.W=3.00'
0.3	100	n= 0.022 Earth, clean & straight
11.7	515	Total

Subcatchment 1:

Runoff



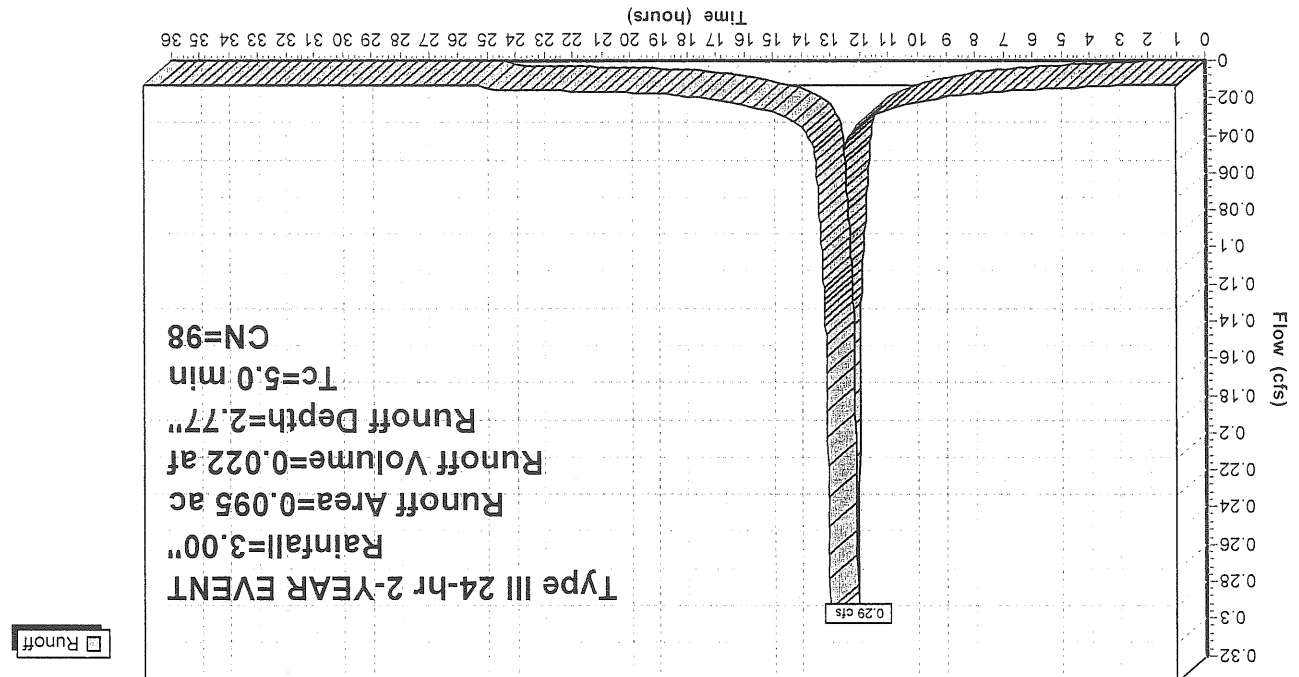
Subcatchment 2A:

Runoff = 0.29 cfs @ 12.07 hrs, Volume = 0.022 af, Depth = 2.77"
 Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-YEAR EVENT Rainfall=3.00"

Area (ac)	CN	Description
0.095	98	Paved roads w/curbs & sewers
0.095		Imperious Area
<hr/>		
Tc Length (min)	Slope Velocity (ft/ft)	Capacity (cfs)
5.0		Direct Entry, Minimum

Subcatchment 2A:

Hydrograph



Runoff = 0.68 cfs @ 12.12 hrs, Volume= 0.052 af, Depth= 1.66"
 Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-YEAR EVENT Rainfall=3.00"

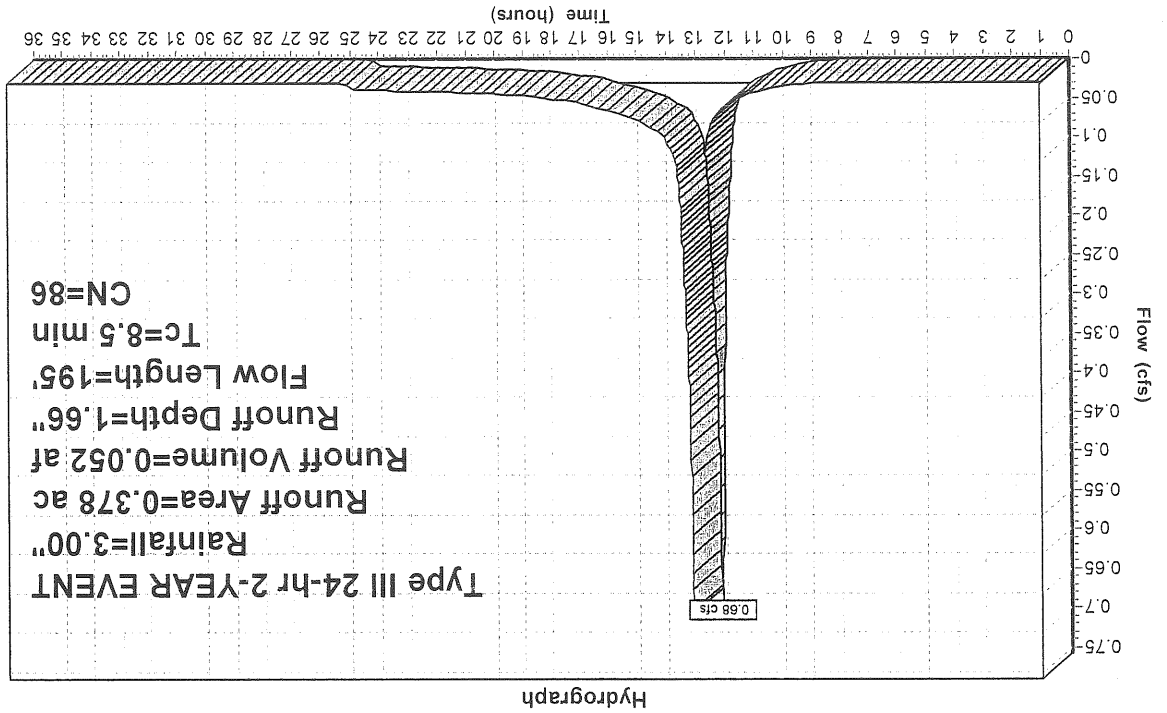
Subcatchment 2B:

Area (ac)	CN	Description
0.035	98	Roots
0.113	98	Roadway, drives, and parking
0.077	73	Brush, weeds, grass, Good, HSG D
0.153	80	>75% Grass cover, Good, HSG D
0.378	86	Weighted Average
0.230		Pervious Area
0.148		Imperious Area

Tc Length (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	55	0.0360	0.13	Sheet Flow, A-B
1.0	85	0.0450	1.48	Grass: Dense n=0.240 P2=3.00" Shallow Concentrated Flow, B-C
0.3	55	0.0050	3.27	Short Grass Pasture Kv=7.0 fps Trap/Vee/Rect Channel Flow, C-D
8.5	195	Total		Bot.W=1.00' D=0.50' Z=33.0 & 0.0' Top.W=17.50' n=0.013

Subcatchment 2B:

Runoff



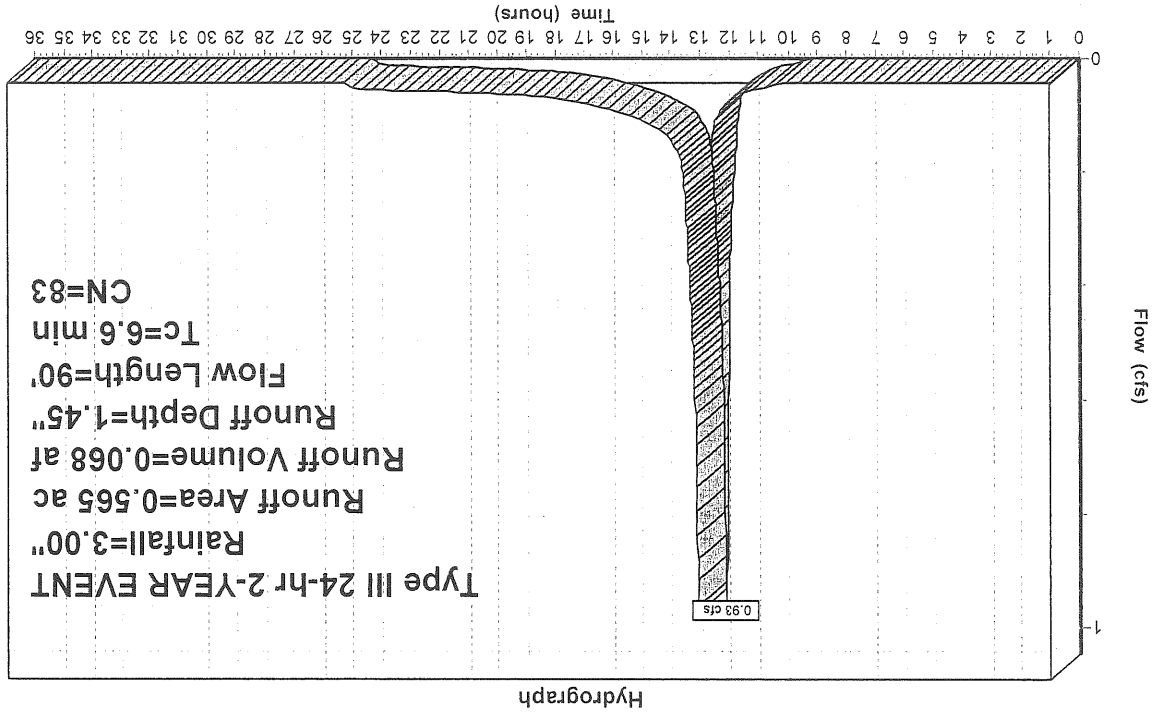
Subcatchment 3:
 Runoff = 0.93 cfs @ 12.10 hrs, Volume = 0.068 af, Depth = 1.45"
 Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-YEAR EVENT Rainfall=3.00"

Area (ac)	CN	Description
0.076	98	Roots
0.021	98	Roadway, drives, and parking
0.023	73	Brush, weeds, grass, Good, HSG D
0.445	80	>75% Grass cover, Good, HSG D
0.565	83	Weighted Average
0.468		Pervious Area
0.097		Impervious Area

Tc (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	50	0.0400	0.13	Sheet Flow, A-B
0.2	40	0.0600	3.67	Grass: Dense n= 0.240 P2= 3.00" Shallow Concentrated Flow, B-C
6.6	90	Total		Grassed Waterway Kv= 15.0 fps

Subcatchment 3:

Runoff



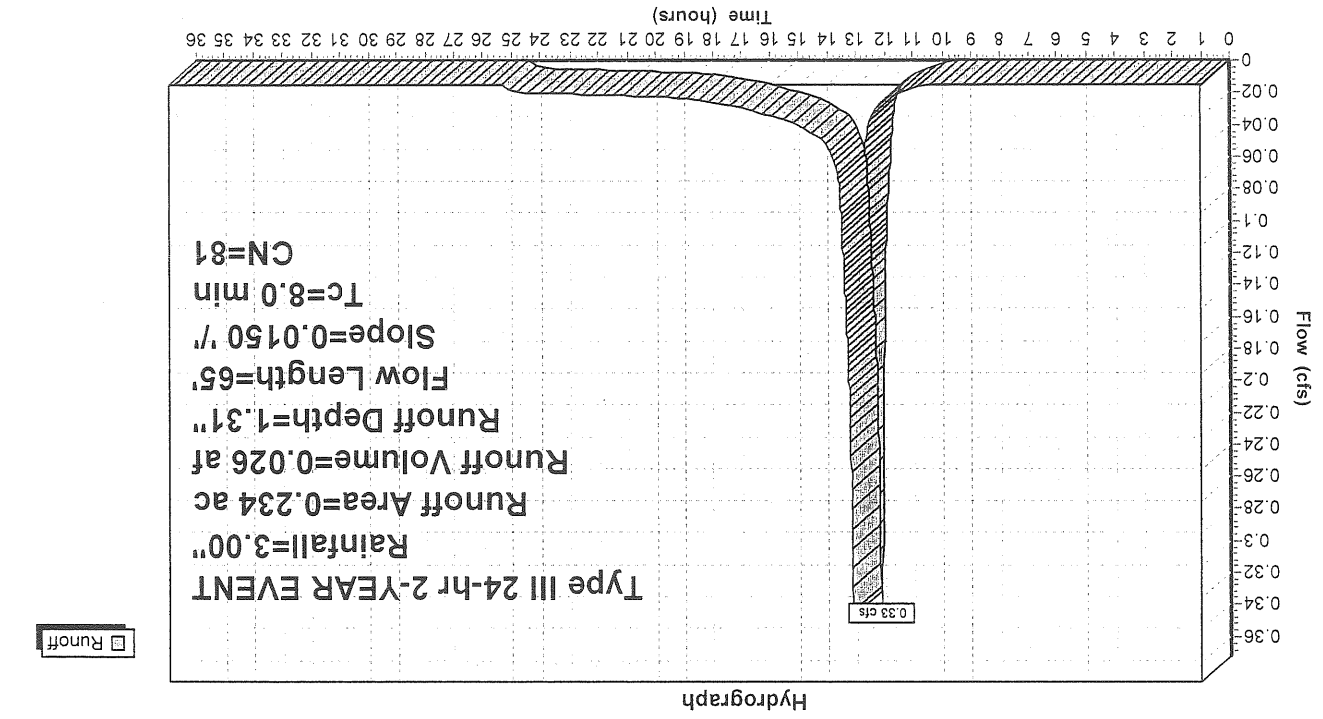
Type III 24-hr 2-YEAR EVENT Rainfall=3.00"

Subcatchment 4:
 Runoff = 0.33 cfs @ 12.12 hrs, Volume = 0.026 af, Depth = 1.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-YEAR EVENT Rainfall=3.00"

Area (ac)	CN	Description
0.024	98	Roots
0.032	73	Brush, weeds, grass, good, HSG D
0.178	80	>75% Grass cover, Good, HSG D
0.234	81	Weighted Average
0.210		Pervious Area
0.024		Impervious Area
Tc Length (min)		Description
8.0		Sheet Flow, A-B
65	0.0150	Grass: Short n= 0.150 P2= 3.00"
0.13		

Subcatchment 4:



Subcatchment 5:

Runoff = 0.24 cfs @ 12.11 hrs, Volume = 0.018 af, Depth = 1.66"

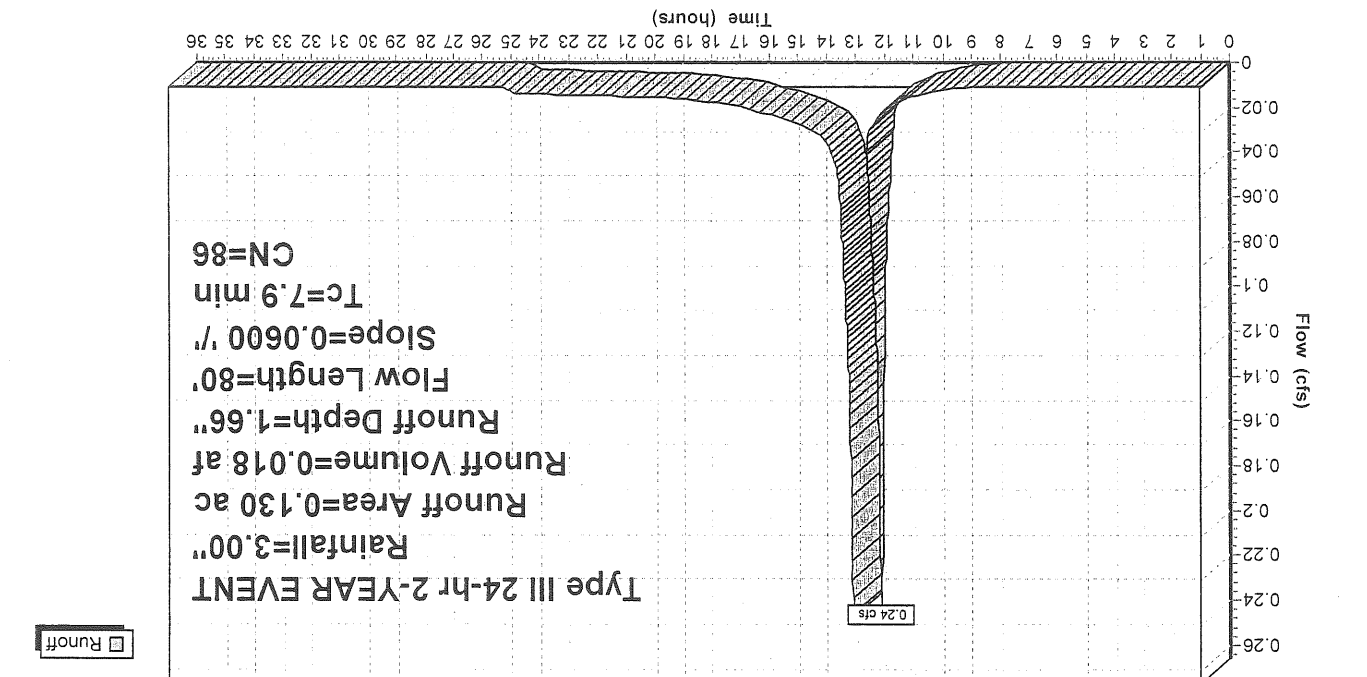
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-YEAR EVENT Rainfall=3.00"

Area (ac)	CN	Description
0.032	98	Roots
0.009	98	Driveway, parking
0.089	80	>75% Grass cover, Good, HSG D
0.130	86	Weighted Average
0.089		Pervious Area
0.041		Imperious Area

Area (ac)	CN	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	80	0.0600	0.17		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 3.00"

Subcatchment 5:

Hydrograph



Runoff

True Street Subdivision
 Type III 24-hr 2-YEAR EVENT Rainfall=3.00"
 Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
 Runoff by SCS TR-20 method, UH=SCS
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Runoff Area=1.565 ac Runoff Depth=1.52" Flow Length=515' Tc=11.7 min CN=84 Runoff=2.30 cfs 0.198 af

Subcatchment 2A: Runoff Area=0.095 ac Runoff Depth=2.77" Tc=5.0 min CN=98 Runoff=0.29 cfs 0.022 af

Subcatchment 2B: Runoff Area=0.378 ac Runoff Depth=1.66" Flow Length=195' Tc=8.5 min CN=86 Runoff=0.68 cfs 0.052 af

Subcatchment 3: Runoff Area=0.565 ac Runoff Depth=1.45" Flow Length=90' Tc=6.6 min CN=83 Runoff=0.93 cfs 0.068 af

Subcatchment 4: Runoff Area=0.234 ac Runoff Depth=1.31" Flow Length=65' Slope=0.0150 % Tc=8.0 min CN=81 Runoff=0.33 cfs 0.026 af

Subcatchment 5: Runoff Area=0.130 ac Runoff Depth=1.66" Flow Length=80' Slope=0.0600 % Tc=7.9 min CN=86 Runoff=0.24 cfs 0.018 af

Reach SP1: To Grafton St
 Inflow=1.69 cfs 0.327 af
 Outflow=1.69 cfs 0.327 af

Reach SP2:
 Inflow=0.24 cfs 0.029 af
 Outflow=0.24 cfs 0.029 af

Pond 1.3: CB
 Peak Elev=74.23' Inflow=1.69 cfs 0.327 af
 12.0" x 100.0' Culvert Outflow=1.69 cfs 0.327 af

Pond 1P:
 Peak Elev=75.08' Storage=3.927 cf Inflow=3.96 cfs 0.340 af
 10.0" x 7.0' Culvert Outflow=1.69 cfs 0.327 af

Pond 2.1: CB 1
 Peak Elev=75.51' Inflow=1.51 cfs 0.120 af
 12.0" x 22.5' Culvert Outflow=1.51 cfs 0.120 af

Pond 2.2: CB 2
 Peak Elev=75.49' Inflow=1.74 cfs 0.142 af
 12.0" x 16.0' Culvert Outflow=1.74 cfs 0.142 af

Pond 2P:
 Peak Elev=76.04' Storage=147 cf Inflow=0.93 cfs 0.068 af
 12.0" x 8.0' Culvert Outflow=0.84 cfs 0.068 af

Pond 4P:
 Peak Elev=88.26' Storage=673 cf Inflow=0.33 cfs 0.026 af
 Outflow=0.03 cfs 0.011 af

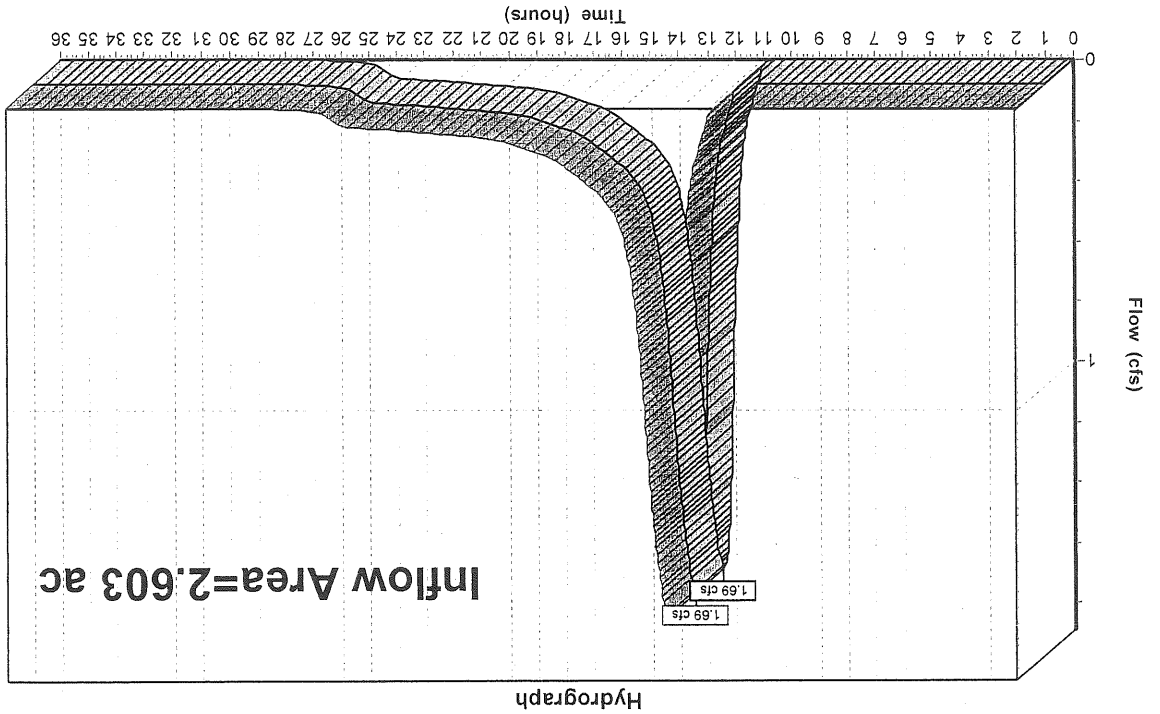
Total Runoff Area = 2.967 ac Runoff Volume = 0.384 af Average Runoff Depth = 1.55"
 73.31% Pervious Area = 2.175 ac 26.69% ImperVIOUS Area = 0.792 ac

Reach SP1: To Grafton St

Inflow Area = 2.603 ac, Inflow Depth = 1.51" for 2-YEAR EVENT event
 Inflow = 1.69 cfs @ 12.46 hrs, Volume= 0.327 af
 Outflow = 1.69 cfs @ 12.46 hrs, Volume= 0.327 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Reach SP1: To Grafton St

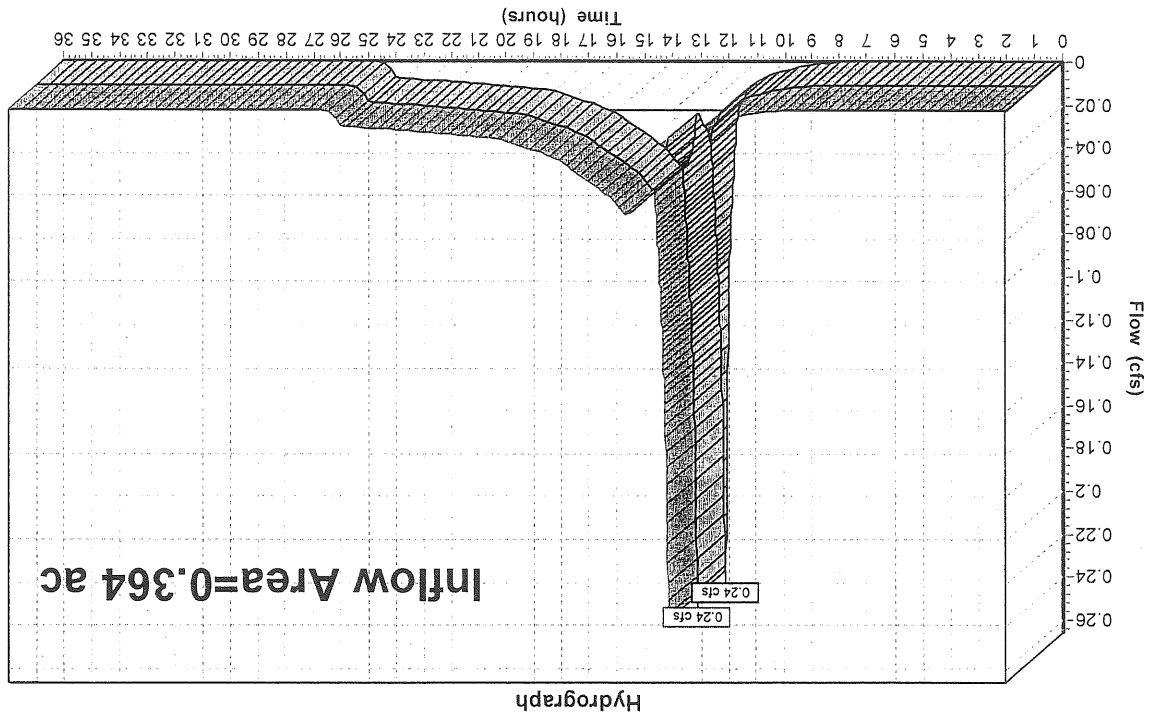


Reach SP2:

Inflow Area = 0.364 ac, Inflow Depth = 0.94" for 2-YEAR EVENT event
 Inflow = 0.24 cfs @ 12.11 hrs, Volume= 0.029 af
 Outflow = 0.24 cfs @ 12.11 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Reach SP2:



Pond 1.3: CB

Inflow Area = 2.603 ac, Inflow Depth = 1.51" for 2-YEAR EVENT event
 Inflow = 1.69 cfs @ 12.46 hrs, Volume = 0.327 af
 Outflow = 1.69 cfs @ 12.46 hrs, Volume = 0.327 af, Atten = 0%, Lag = 0.0 min
 Primary = 1.69 cfs @ 12.46 hrs, Volume = 0.327 af

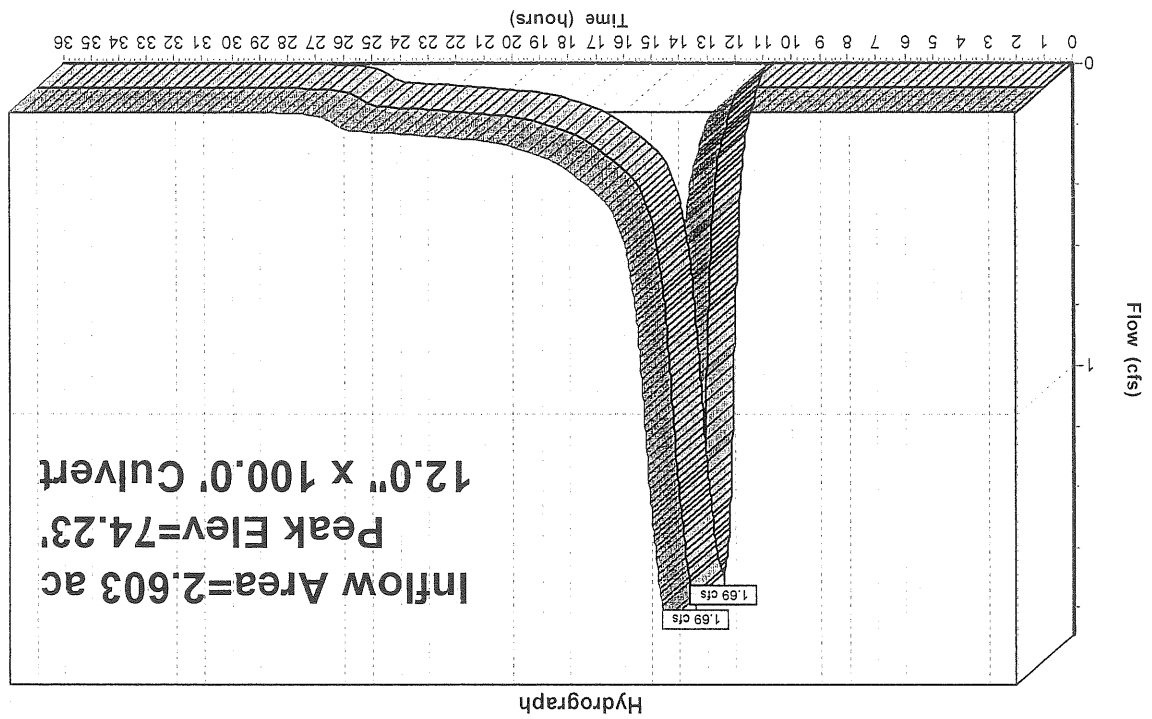
Routing by Stor-Ind method, Time Span = 0.00-36.00 hrs, dt = 0.01 hrs / 3
 Peak Elev = 74.23' @ 12.46 hrs
 Flood Elev = 75.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.53'	12.0" x 100.0' long Existing Clay Pipe CP, square edge headwall, Ke = 0.500 Outlet Invert = 72.53' S = 0.0100' /' Cc = 0.900 n = 0.013 Clay tile

Primary Outflow Max = 1.69 cfs @ 12.46 hrs HW = 74.23' (Free Discharge)
 ← 1 = Existing Clay Pipe (Inlet Controls 1.69 cfs @ 2.86 fps)

Pond 1.3: CB

Legend:
 [Hatched] Inflow
 [White] Primary



Pond 1P:

Inflow Area = 2.603 ac, Inflow Depth = 1.57" for 2-YEAR EVENT event
 Inflow = 3.96 cfs @ 12.14 hrs, Volume = 0.340 af
 Outflow = 1.69 cfs @ 12.46 hrs, Volume = 0.327 af, Atten = 57%, Lag = 18.9 min
 Primary = 1.69 cfs @ 12.46 hrs, Volume = 0.327 af

Routing by Stor-Ind method, Time Span = 0.00-36.00 hrs, dt = 0.01 hrs
 Peak Elev = 75.08' @ 12.46 hrs Surf.Area = 6,061 sf Storage = 3,927 cf

Plug-Flow detention time = 58.8 min calculated for 0.327 af (96% of inflow)
 Center-of-Mass det. time = 37.3 min (869.1 - 831.7)

Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	15,698 cf	Custom Stage Data (Irregular) Listed below (Recalc)

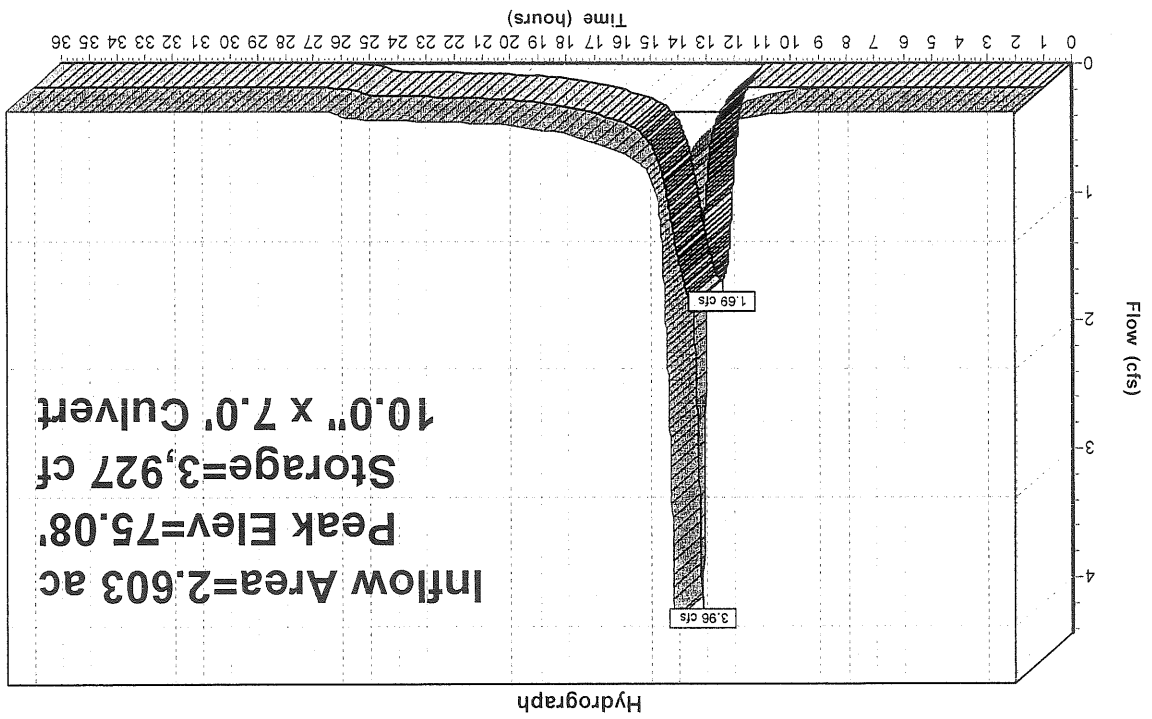
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
73.00	405	105.0	0	0	405
74.00	750	140.0	569	569	1,098
75.00	5,830	580.0	2,890	3,459	26,311
76.00	9,100	490.0	7,405	10,864	33,993
76.50	10,250	525.0	4,835	15,698	36,831

Device	Routing	Invert	Outlet Devices
#1	Primary	74.00'	10.0" x 7.0' long Culvert C/P, projecting, no headwall, Ke = 0.900

Outlet Invert = 73.65' S = 0.0500 1/ Cc = 0.900
 n = 0.010 PVC, smooth interior

Primary Outflow Max = 1.69 cfs @ 12.46 hrs HW = 75.08' (Free Discharge)
 1=Culvert (Inlet Controls 1.69 cfs @ 3.09 fps)

Pond 1P:



Inflow
 Primary

Pond 2.1: CB 1

Inflow Area = 0.943 ac, Inflow Depth = 1.53" for 2-YEAR EVENT event
 Inflow = 1.51 cfs @ 12.13 hrs, Volume = 0.120 af
 Outflow = 1.51 cfs @ 12.13 hrs, Volume = 0.120 af, Atten = 0%, Lag = 0.0 min
 Primary = 1.51 cfs @ 12.13 hrs, Volume = 0.120 af

Routing by Stor-Ind method, Time Span = 0.00-36.00 hrs, dt = 0.01 hrs
 Peak Elev = 75.51' @ 12.13 hrs
 Flood Elev = 77.66'

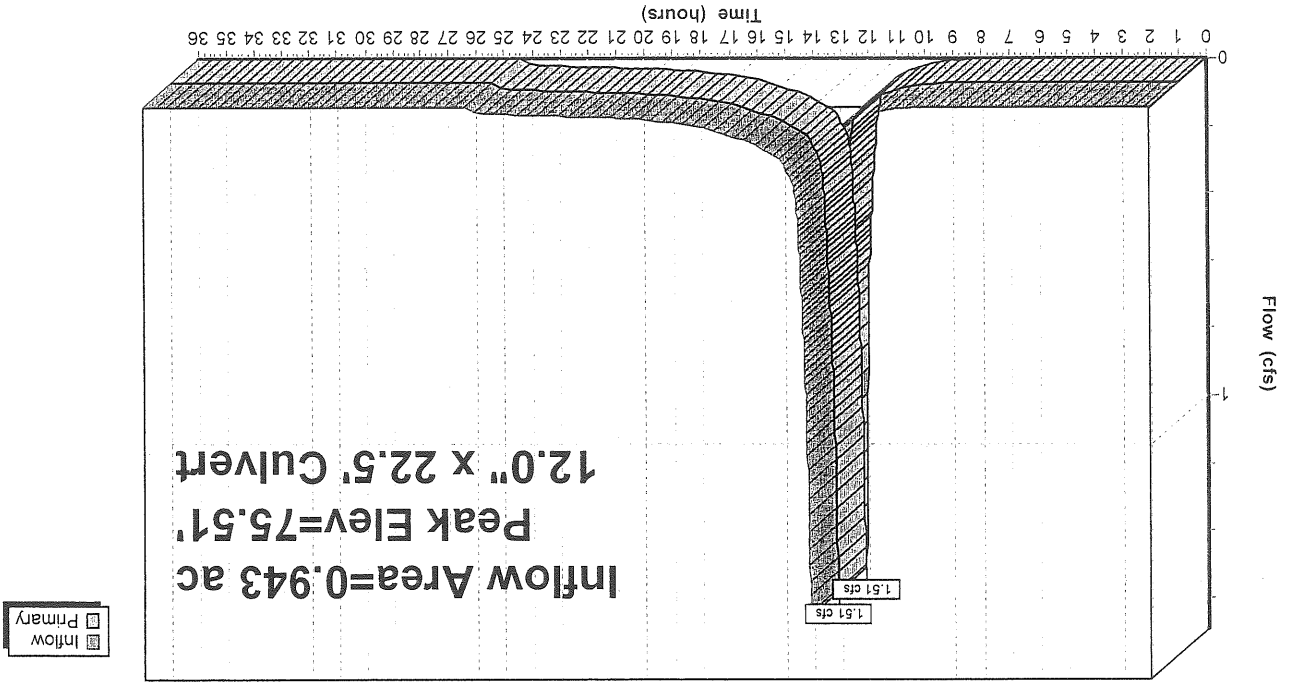
Device	Routing	#1	Primary	Invert	Outlet Devices
				74.69'	12.0" x 22.5' long Culvert CPP, projecting, no headwall, Ke = 0.900

Outlet Invert = 74.58' S = 0.0049 1/ Cc = 0.900
 n = 0.010 PVC, smooth interior

Primary Outflow Max = 1.51 cfs @ 12.13 hrs HW = 75.51' (Free Discharge)
 1-Culvert (Barrel Controls 1.51 cfs @ 2.99 fps)

Pond 2.1: CB 1

Hydrograph



Pond 2.2: CB 2

Inflow Area = 1.038 ac, Inflow Depth = 1.65" for 2-YEAR EVENT event
 Inflow = 1.74 cfs @ 12.12 hrs, Volume = 0.142 af
 Outflow = 1.74 cfs @ 12.12 hrs, Volume = 0.142 af, Atten = 0%, Lag = 0.0 min
 Primary = 1.74 cfs @ 12.12 hrs, Volume = 0.142 af
 Routing by Stor-Ind method, Time Span = 0.00-36.00 hrs, dt = 0.01 hrs
 Peak Elev = 75.49' @ 12.12 hrs
 Flood Elev = 77.66'

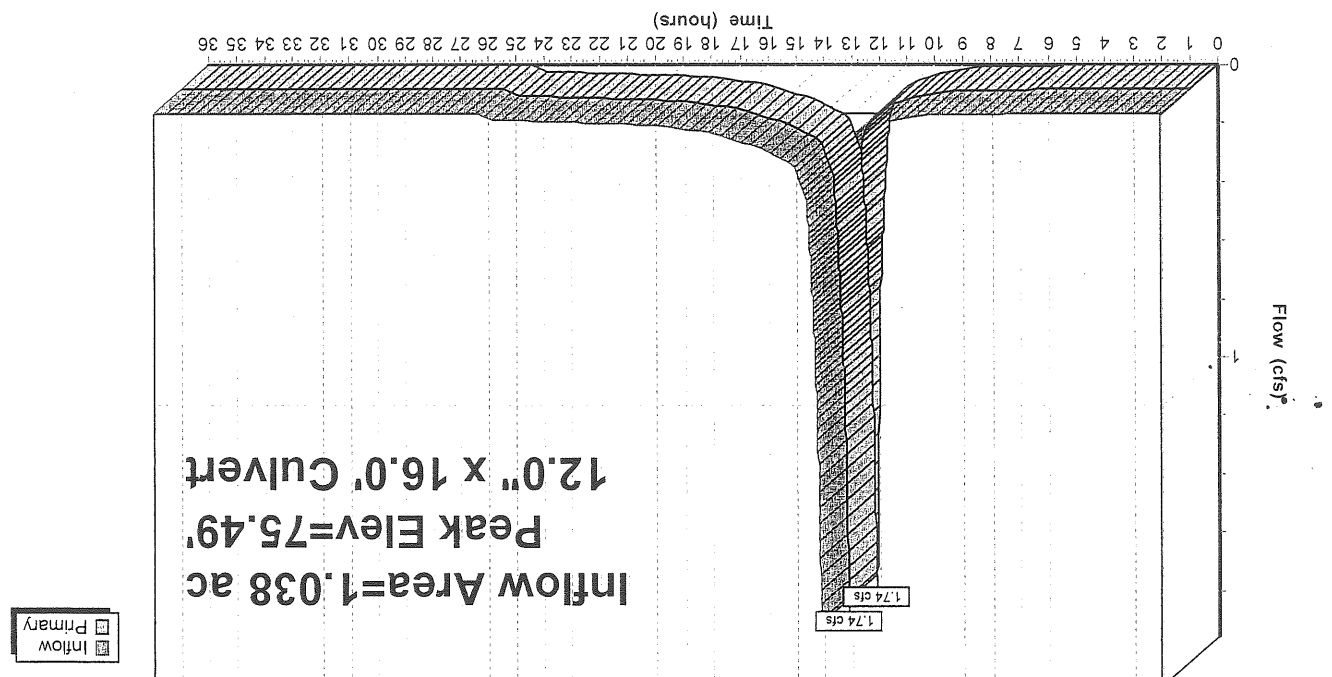
Device	Routing	Invert	Outlet Devices
#1	Primary	74.58'	12.0" x 16.0' long SD 3 C/P, projecting, no headwall, Ke = 0.900

Outlet Invert = 74.50', S = 0.0050', Cc = 0.900
 n = 0.010 PVC, smooth interior

Primary Outflow Max = 1.74 cfs @ 12.12 hrs HW = 75.49' (Free Discharge)
 ← SD 3 (Barrel Controls 1.74 cfs @ 3.04 fps)

Pond 2.2: CB 2

Hydrograph



Legend:
 [] Inflow
 [] Primary

Pond 2P:

Inflow Area = 0.565 ac, Inflow Depth = 1.45" for 2-YEAR EVENT event
 Inflow = 0.93 cfs @ 12.10 hrs, Volume = 0.068 af
 Outflow = 0.84 cfs @ 12.14 hrs, Volume = 0.068 af, Atten = 10%, Lag = 2.4 min
 Primary = 0.84 cfs @ 12.14 hrs, Volume = 0.068 af

Routing by Stor-Ind method, Time Span = 0.00-36.00 hrs, dt = 0.01 hrs / 3
 Peak Elev = 76.04' @ 12.14 hrs Surf.Area = 493 sf Storage = 147 cf

Plug-Flow detention time = 4.6 min calculated for 0.068 af (100% of inflow)
 Center-of-Mass det. time = 4.6 min (841.2 - 836.6)

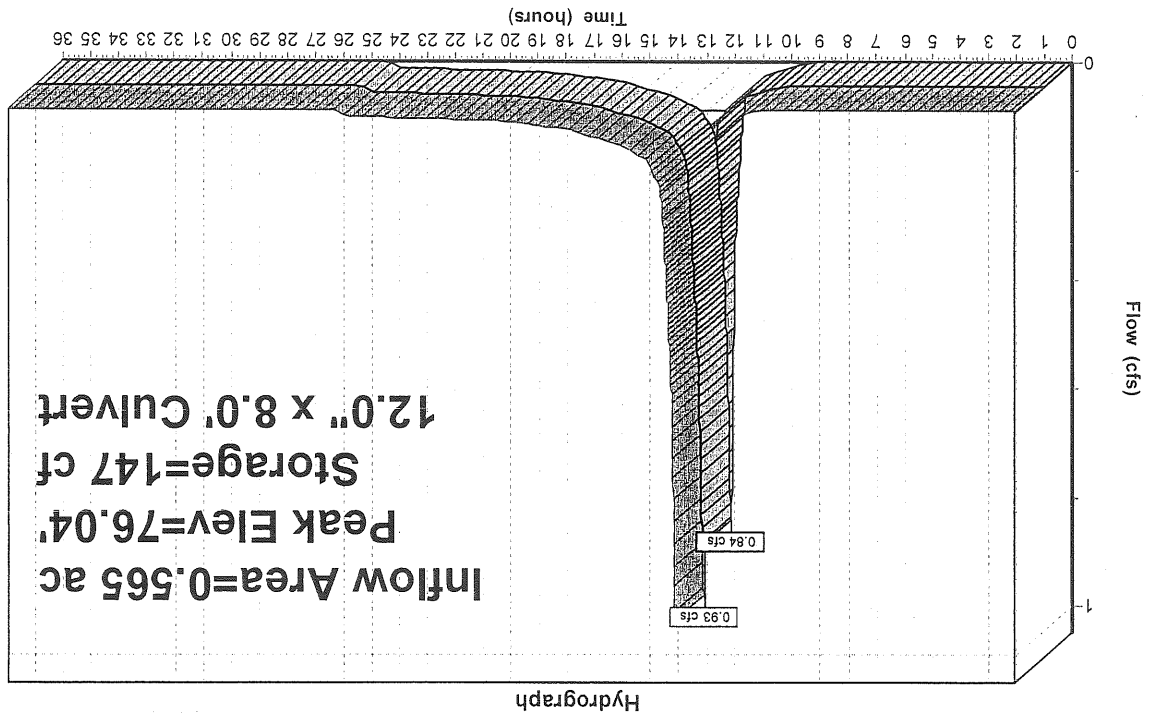
Volume	Invert	Avail.Storage	Storage Description
#1	75.50'	3,076 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
75.50	100	100.0	0	0	100
76.00	465	145.0	130	130	979
77.00	1,535	185.0	948	1,078	2,043
78.00	2,500	220.0	1,998	3,076	3,189

Device Routing	Invert	Outlet Devices
#1 Primary	75.50'	12.0" x 8.0' long Culvert CPP, projecting, no headwall, Ke = 0.900 Outlet Invert = 74.69' S = 0.1013 % Cc = 0.900 n = 0.010 PVC, smooth interior

Primary Outflow Max=0.84 cfs @ 12.14 hrs HW=76.04' (Free Discharge)
 1=Culvert (Inlet Controls 0.84 cfs @ 1.97 fps)

Pond 2P:



Pond 4P:

Inflow Area = 0.234 ac, Inflow Depth = 1.31" for 2-YEAR EVENT event
 Inflow = 0.33 cfs @ 12.12 hrs, Volume = 0.026 af
 Outflow = 0.03 cfs @ 13.63 hrs, Volume = 0.011 af, Atten = 91%, Lag = 90.4 min
 Primary = 0.03 cfs @ 13.63 hrs, Volume = 0.011 af

Routing by Stor-Ind method, Time Span = 0.00-36.00 hrs, dt = 0.01 hrs / 3
 Peak Elev = 88.26' @ 13.63 hrs Surf.Area = 1,823 sf Storage = 673 cf

Plug-Flow detention time = 301.2 min calculated for 0.011 af (41% of inflow)
 Center-of-Mass det. time = 174.2 min (1,018.8 - 844.7)

Volume	Invert	Avail. Storage	Storage Description
#1	87.50'	1,217 cf	Custom Stage Data (Irregular) Listed below (Recalc)

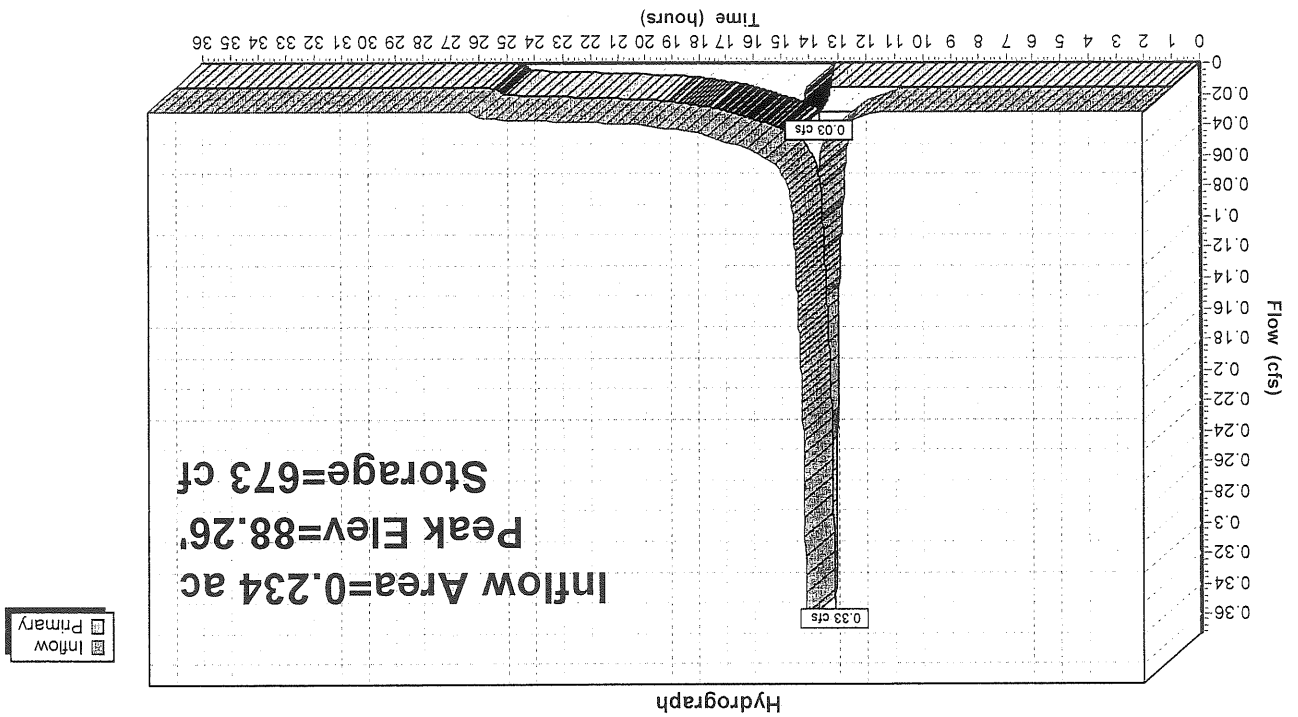
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
87.50	275	110.0	0	0	275
88.00	1,030	175.0	306	306	1,751
88.50	2,750	225.0	911	1,217	3,346

Device	Routing	Invert	Outlet Devices
#1	Primary	88.25'	10.0' long x 15.0' breadth Broad-Crested Rectangular Weir

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary Outflow Max=0.03 cfs @ 13.63 hrs HW=88.26' (Free Discharge)
 1-Broad-Crested Rectangular Weir (Weir Controls 0.03 cfs @ 0.28 fps)

Pond 4P:



True Street Subdivision
 Type III 24-hr 10-YEAR EVENT Rainfall=4.70"
 Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
 Runoff by SCS TR-20 method, UH=SCS
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Runoff Area=1.565 ac Runoff Depth=3.00" Flow Length=515' Tc=11.7 min CN=84 Runoff=4.55 cfs 0.391 af

Subcatchment 2A: Runoff Area=0.095 ac Runoff Depth=4.46" Tc=5.0 min CN=98 Runoff=0.45 cfs 0.035 af

Subcatchment 2B: Runoff Area=0.378 ac Runoff Depth=3.19" Flow Length=195' Tc=8.5 min CN=86 Runoff=1.28 cfs 0.100 af

Subcatchment 3: Runoff Area=0.565 ac Runoff Depth=2.90" Flow Length=90' Tc=6.6 min CN=83 Runoff=1.88 cfs 0.137 af

Subcatchment 4: Runoff Area=0.234 ac Runoff Depth=2.72" Flow Length=65' Slope=0.0150 V' Tc=8.0 min CN=81 Runoff=0.70 cfs 0.053 af

Subcatchment 5: Runoff Area=0.130 ac Runoff Depth=3.19" Flow Length=80' Slope=0.0600 V' Tc=7.9 min CN=86 Runoff=0.45 cfs 0.035 af

Reach SP1: To Grafton St
 Inflow=2.39 cfs 0.650 af
 Outflow=2.39 cfs 0.650 af

Reach SP2:
 Inflow=0.81 cfs 0.073 af
 Outflow=0.81 cfs 0.073 af

Pond 1.3: CB
 Peak Elev=74.43' Inflow=2.39 cfs 0.650 af
 12.0" x 100.0' Culvert Outflow=2.39 cfs 0.650 af

Pond 1P:
 Peak Elev=75.74' Storage=8.651 cf Inflow=7.69 cfs 0.663 af
 10.0" x 7.0' Culvert Outflow=2.39 cfs 0.650 af

Pond 2.1: CB 1
 Peak Elev=76.14' Inflow=2.91 cfs 0.237 af
 12.0" x 22.5' Culvert Outflow=2.91 cfs 0.237 af

Pond 2.2: CB 2
 Peak Elev=76.28' Inflow=3.27 cfs 0.272 af
 12.0" x 16.0' Culvert Outflow=3.27 cfs 0.272 af

Pond 2P:
 Peak Elev=76.31' Storage=312 cf Inflow=1.88 cfs 0.137 af
 12.0" x 8.0' Culvert Outflow=1.64 cfs 0.137 af

Pond 4P:
 Peak Elev=88.32' Storage=785 cf Inflow=0.70 cfs 0.053 af
 Outflow=0.48 cfs 0.038 af

Total Runoff Area = 2.967 ac Runoff Volume = 0.751 af Average Runoff Depth = 3.04"
 73.31% Pervious Area = 2.175 ac 26.69% Impervious Area = 0.792 ac

Subcatchment 1:

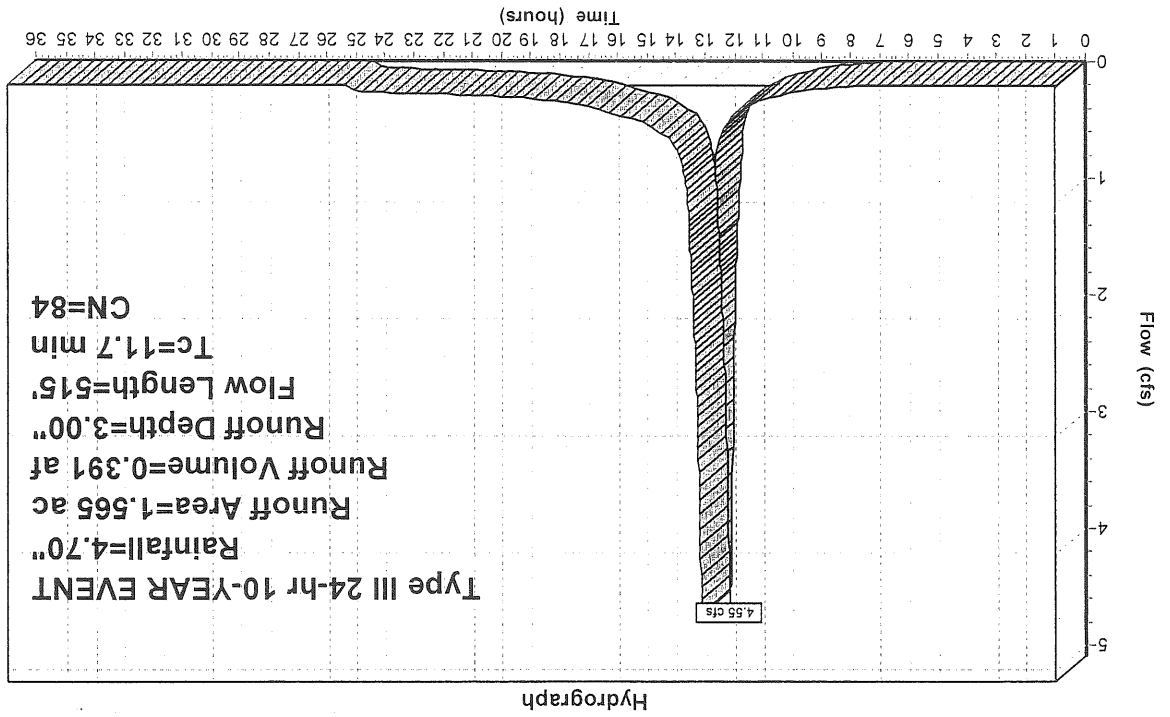
Runoff = 4.55 cfs @ 12.16 hrs, Volume= 0.391 af, Depth= 3.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR EVENT Rainfall=4.70"

Area (ac)	CN	Description
0.152	98	Roots
0.235	98	Driveways, parking
1.024	80	>75% Grass cover, Good, HSG D
0.060	73	Brush, weeds, grass, Good, HSG D
0.094	79	Woods/grass comb, Good, HSG D
1.565	84	Weighted Average
1.178		Pervious Area
0.387		Imperious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	60	0.0250	0.11		Sheet Flow, A-B
0.4	90	0.0650	3.82		Grass: Dense n= 0.240 P2= 3.00"
0.4	90	0.0650	3.82		Shallow Concentrated Flow, B-C
1.6	135	0.0400	1.40		Grassed Waterway Kv= 15.0 fps
1.6	135	0.0400	1.40		Shallow Concentrated Flow, C-D
0.4	130	0.0250	5.92	189.34	Short Grass Pasture Kv= 7.0 fps
0.4	130	0.0250	5.92	189.34	Trap/Vee/Rect Channel Flow, D-E
0.4	130	0.0250	5.92	189.34	Trap/Vee/Rect Channel Flow, E-F
0.3	100	0.0130	5.00	9.99	n= 0.050 Scattered brush, heavy weeds
11.7	515	Total			Bot.W=1.00' D=1.00' Z= 1.0' /' Top.W=3.00'
					n= 0.022 Earth, clean & straight

Subcatchment 1:



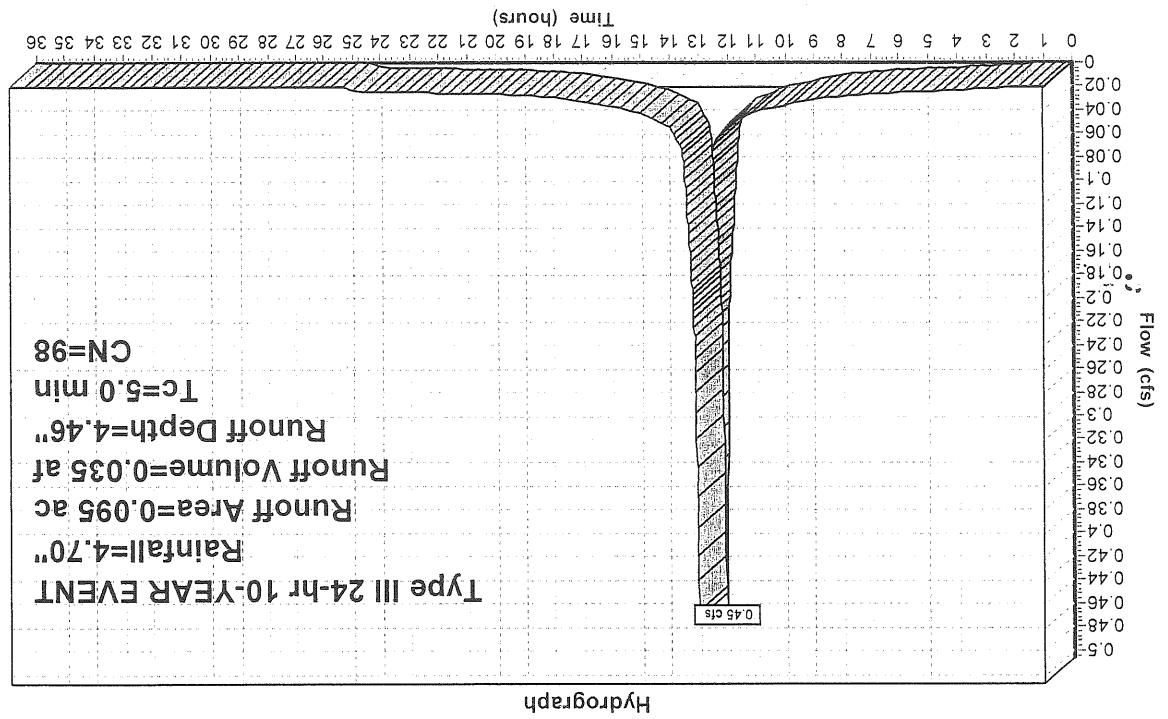
Runoff = 0.45 cfs @ 12.07 hrs, Volume= 0.035 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-YEAR EVENT Rainfall=4.70"

Area (ac)	CN	Description
0.095	98	Paved roads w/curbs & sewers
0.095		ImperVIOUS Area

Tc (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0				Direct Entry, Minimum

Subcatchment 2A:



Runoff = 1.28 cfs @ 12.12 hrs, Volume = 0.100 af, Depth = 3.19"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-36.00 hrs, dt = 0.01 hrs
 Type III 24-hr 10-YEAR EVENT Rainfall=4.70"

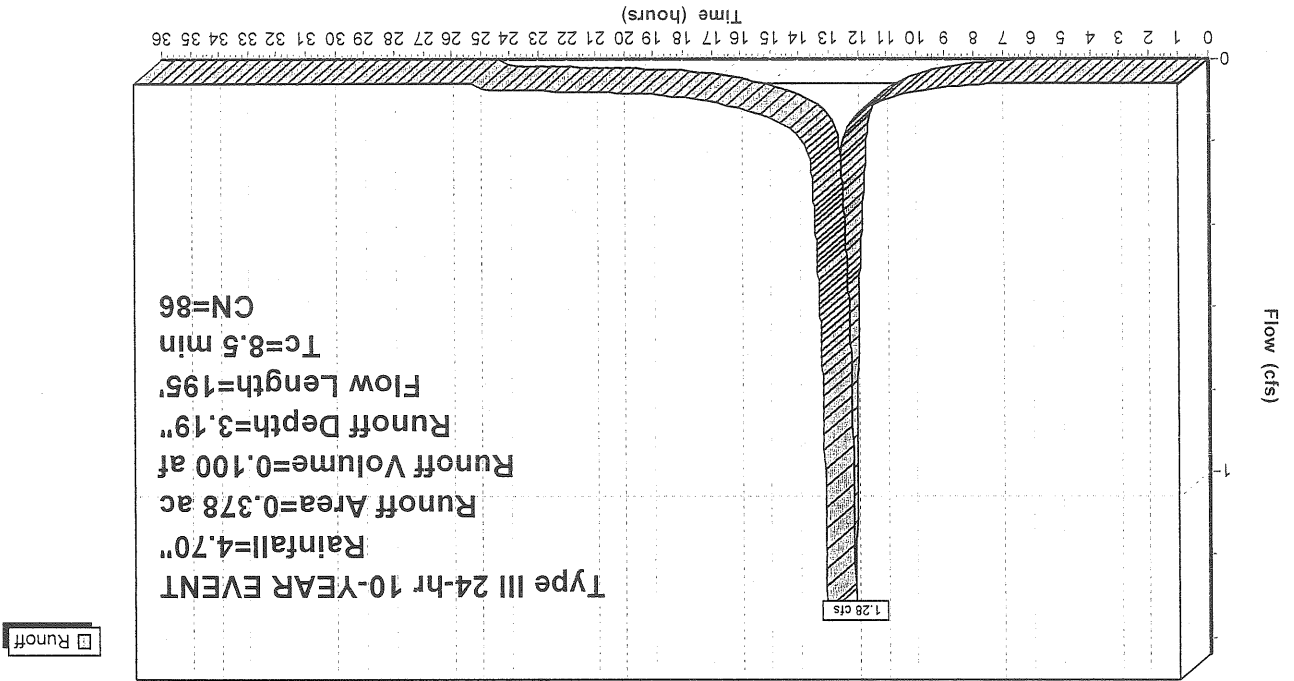
Subcatchment 2B:

Area (ac)	CN	Description
0.035	98	Roots
0.113	98	Roadway, drives, and parking
0.077	73	Brush, weeds, grass, Good, HSG D
0.153	80	>75% Grass cover, Good, HSG D
0.378	86	Weighted Average
0.230		Pervious Area
0.148		Impervious Area

Tc Length (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	55	0.0360	0.13	Sheet Flow, A-B
1.0	85	0.0450	1.48	Grass: Dense n = 0.240 P2 = 3.00"
0.3	55	0.0050	3.27	Short Grass Pasture Kv = 7.0 fps
			15.10	Trap/Vee/Rect Channel Flow, C-D
8.5	195	Total		Bot.W=1.00' D=0.50' Z = 33.0 & 0.0' Top.W=17.50' n = 0.013

Subcatchment 2B:

Hydrograph



Type III 24-hr 10-YEAR EVENT Rainfall=4.70"

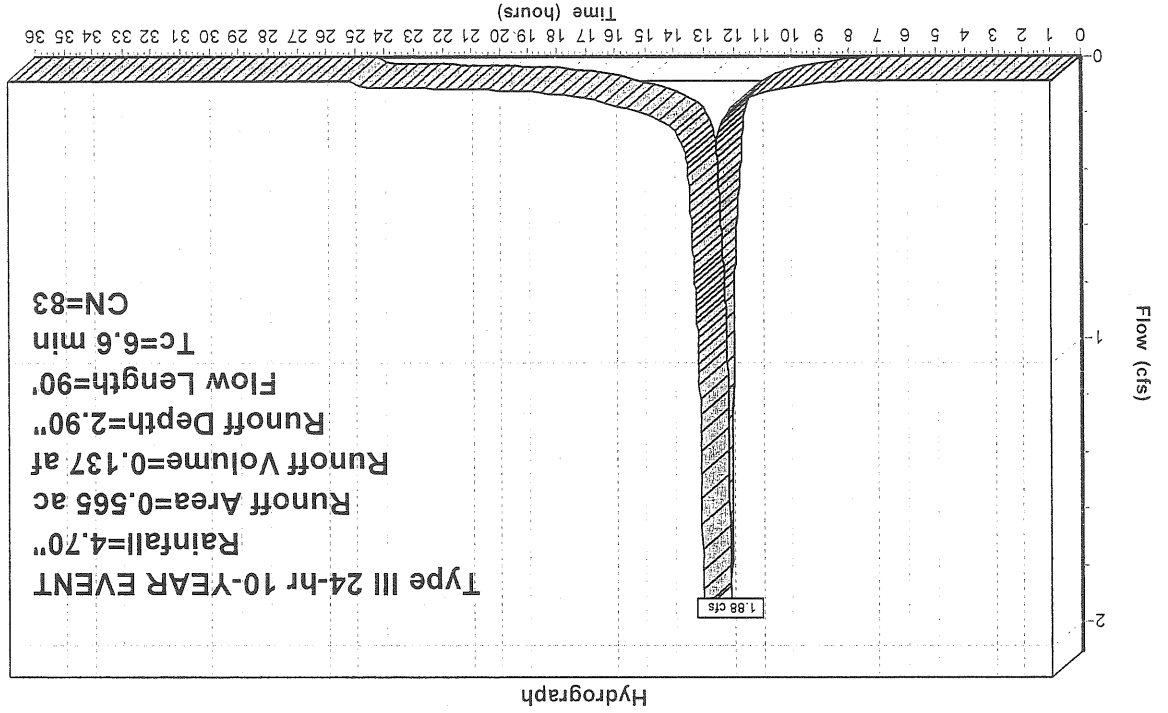
Subcatchment 3:

Runoff = 1.88 cfs @ 12.09 hrs, Volume= 0.137 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-YEAR EVENT Rainfall=4.70"

Area (ac)	CN	Description
0.076	98	Roots
0.021	98	Roadway, drives, and parking
0.023	73	Brush, weeds, grass, Good, HSG D
0.445	80	>75% Grass cover, Good, HSG D
0.565	83	Weighted Average
0.468		Pervious Area
0.097		Imperious Area
Tc Length (min)		Description
6.4	50	Sheet Flow, A-B
0.2	40	Shallow Concentrated Flow, B-C
6.6	90	Grassed Waterway K _v = 15.0 fps
Total		

Subcatchment 3:



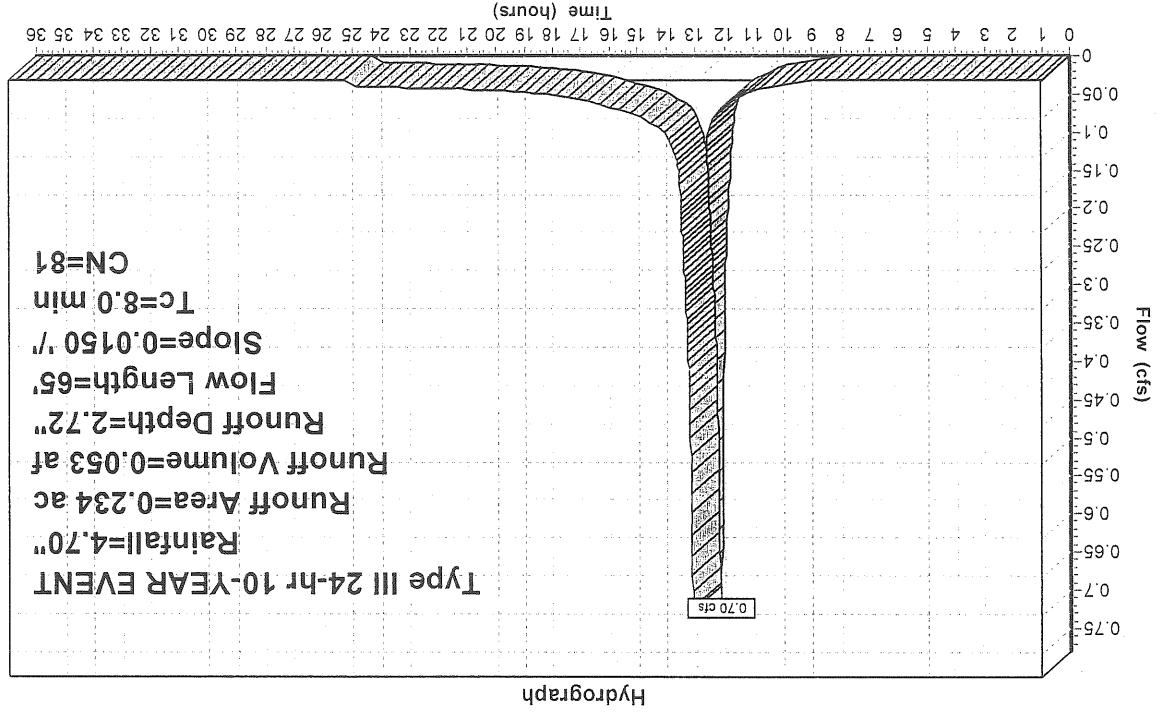
Runoff

Type III 24-hr 10-YEAR EVENT Rainfall=4.70"
 Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Runoff = 0.70 cfs @ 12.11 hrs, Volume= 0.053 af, Depth= 2.72"

Subcatchment 4:

Area (ac)	CN	Description
0.024		Roofs
0.032	73	Brush, weeds, grass, Good, HSG D
0.178	80	>75% Grass cover, Good, HSG D
0.234	81	Weighted Average
0.210		Pervious Area
0.024		Impervious Area
Tc Length (min)	Slope (ft/ft)	Velocity (ft/sec)
8.0	65	0.0150
Sheet Flow, A-B		0.13
Grass: Short n= 0.150 P2= 3.00"		

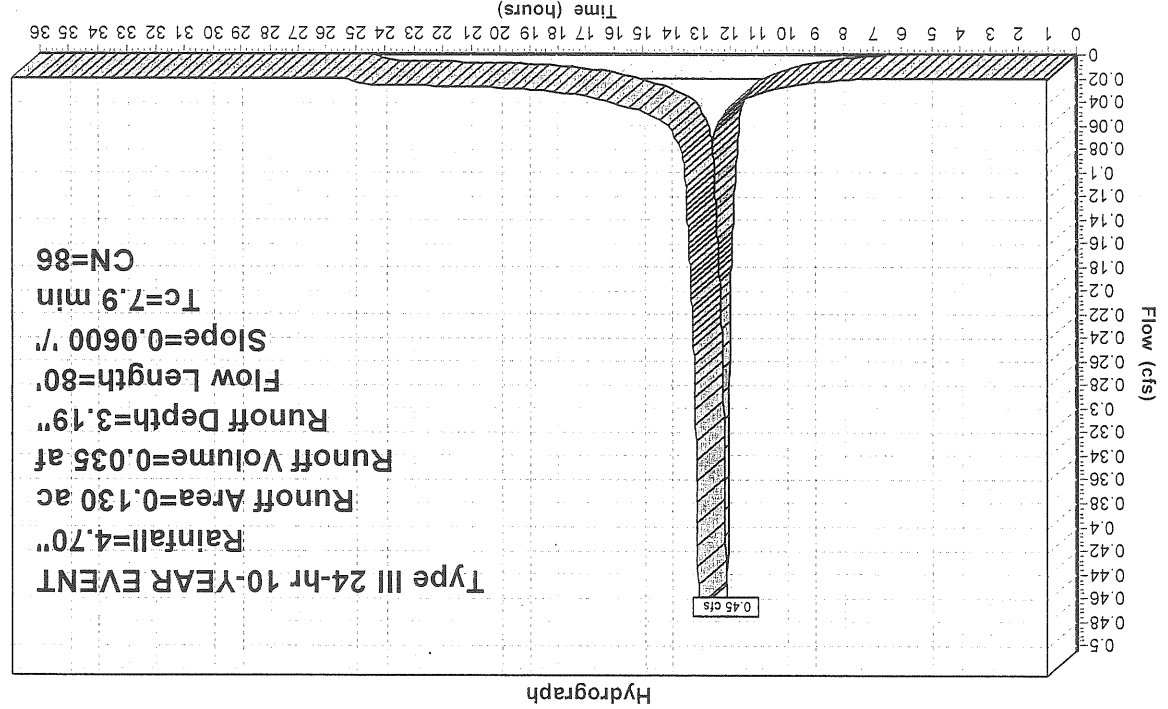
Subcatchment 4:



Subcatchment 5:
 Runoff = 0.45 cfs @ 12.11 hrs, Volume = 0.035 af, Depth = 3.19"
 Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-YEAR EVENT Rainfall=4.70"

Area (ac)	CN	Description
0.032	98	Roots
0.009	98	Drway, parking
0.089	80	>75% Grass cover, Good, HSG D
0.130	86	Weighted Average
0.089		Pervious Area
0.041		Impervious Area
Tc Length (min)		Description
7.9		
Slope (ft/ft)	0.0600	
Velocity (ft/sec)	0.17	
Capacity (cfs)		
Sheet Flow, A-B		
Grass: Dense n = 0.240 P2 = 3.00"		

Subcatchment 5:

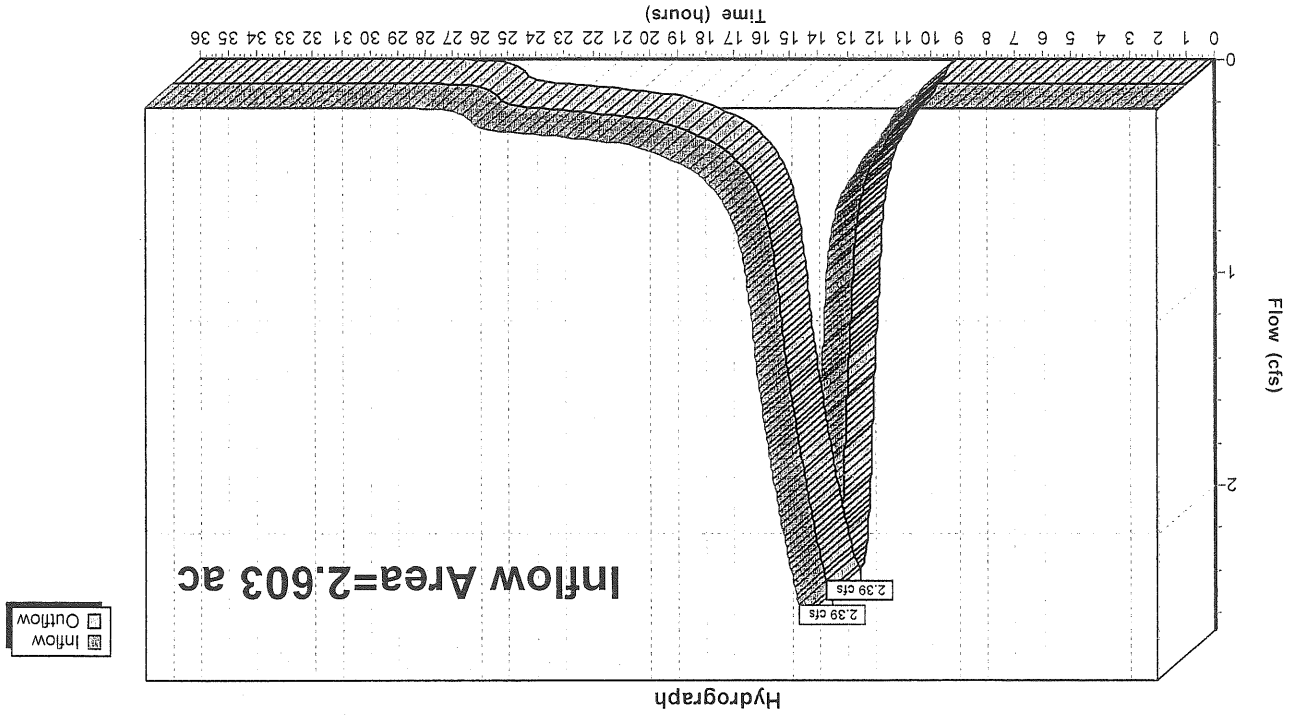


Reach SP1: To Grafton St

Inflow Area = 2.603 ac, Inflow Depth = 3.00" for 10-YEAR EVENT event
 Inflow = 2.39 cfs @ 12.54 hrs, Volume= 0.650 af
 Outflow = 2.39 cfs @ 12.54 hrs, Volume= 0.650 af, Atten=0%, Lag=0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Reach SP1: To Grafton St

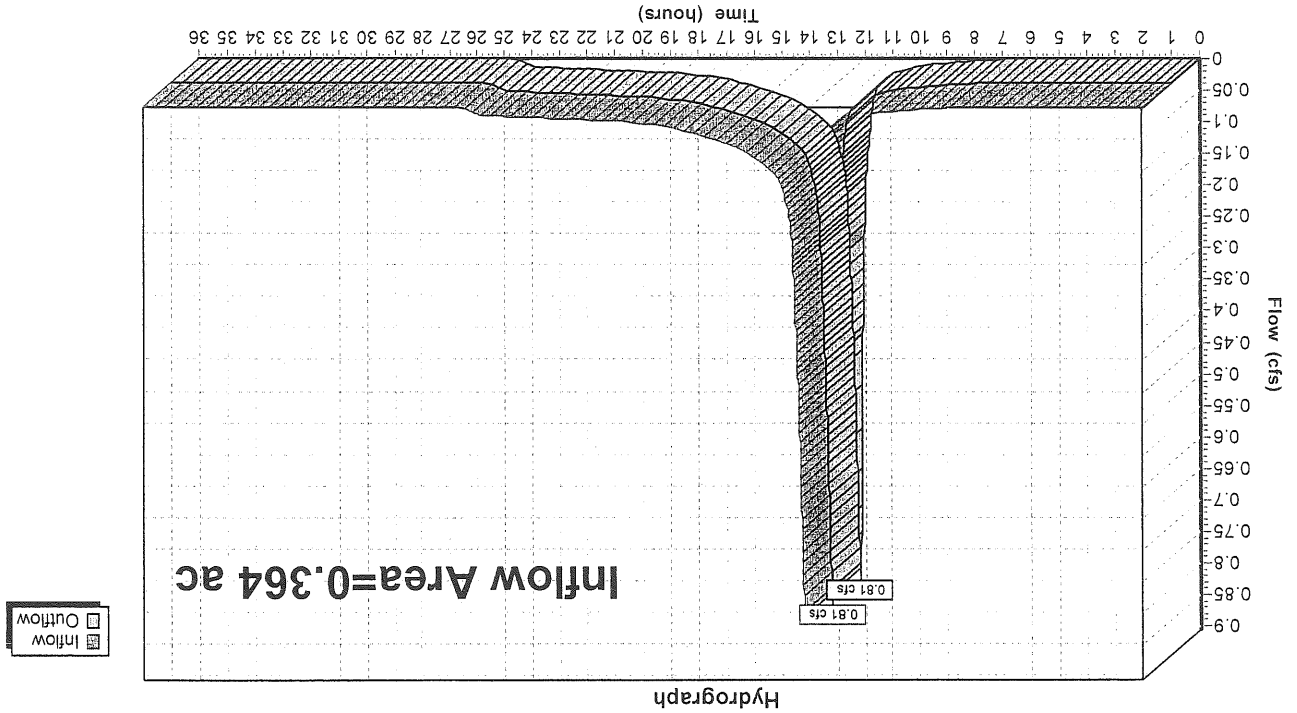


Reach SP2:

Inflow Area = 0.364 ac, Inflow Depth = 2.39" for 10-YEAR EVENT event
 Inflow = 0.81 cfs @ 12.18 hrs, Volume= 0.073 af
 Outflow = 0.81 cfs @ 12.18 hrs, Volume= 0.073 af, Atten=0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Reach SP2:



Pond 1.3: CB

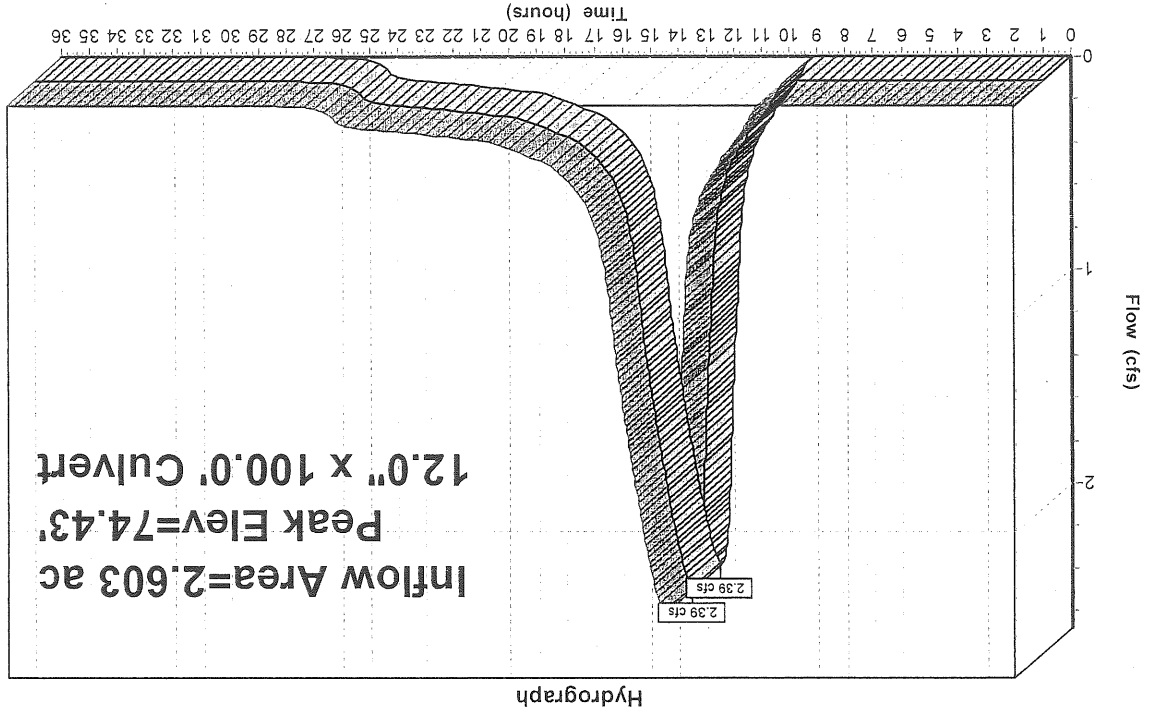
Inflow Area = 2.603 ac, Inflow Depth = 3.00" for 10-YEAR EVENT event
 Inflow = 2.39 cfs @ 12.54 hrs, Volume = 0.650 af
 Outflow = 2.39 cfs @ 12.54 hrs, Volume = 0.650 af, Atten = 0%, Lag = 0.0 min
 Primary = 2.39 cfs @ 12.54 hrs, Volume = 0.650 af

Routing by Stor-Ind method, Time Span = 0.00-36.00 hrs, dt = 0.01 hrs / 3
 Peak Elev = 74.43' @ 12.54 hrs
 Flood Elev = 75.00'

Device	Routing	#1	Primary
Invert		73.53'	
Outlet Devices			

12.0" x 100.0' long Existing Clay Pipe
 CP, square edge headwall, Ke = 0.500
 Outlet Invert = 72.53', S = 0.0100' /', Cc = 0.900 n = 0.013 Clay tile
 Primary Outflow Max = 2.39 cfs @ 12.54 hrs HW = 74.43' (Free Discharge)
 ← Existing Clay Pipe (Inlet Controls 2.39 cfs @ 3.22 fps)

Pond 1.3: CB



Inflow
 Primary

Pond 1P:

Inflow Area = 2.603 ac, Inflow Depth = 3.06" for 10-YEAR EVENT event
 Inflow = 7.69 cfs @ 12.14 hrs, Volume = 0.663 af
 Outflow = 2.39 cfs @ 12.54 hrs, Volume = 0.650 af, Atten= 69%, Lag = 23.7 min
 Primary = 2.39 cfs @ 12.54 hrs, Volume = 0.650 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Peak Elev= 75.74' @ 12.54 hrs Surf.Area= 8,194 sf Storage= 8,651 cf

Plug-Flow detention time= 53.7 min calculated for 0.650 af (98% of inflow)
 Center-of-Mass det. time= 41.9 min (855.5 - 813.6)

Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	15,698 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
73.00	405	105.0	0	0	405
74.00	750	140.0	569	569	1,098
75.00	5,830	580.0	2,890	3,459	26,311
76.00	9,100	490.0	7,405	10,864	33,993
76.50	10,250	525.0	4,835	15,698	36,831

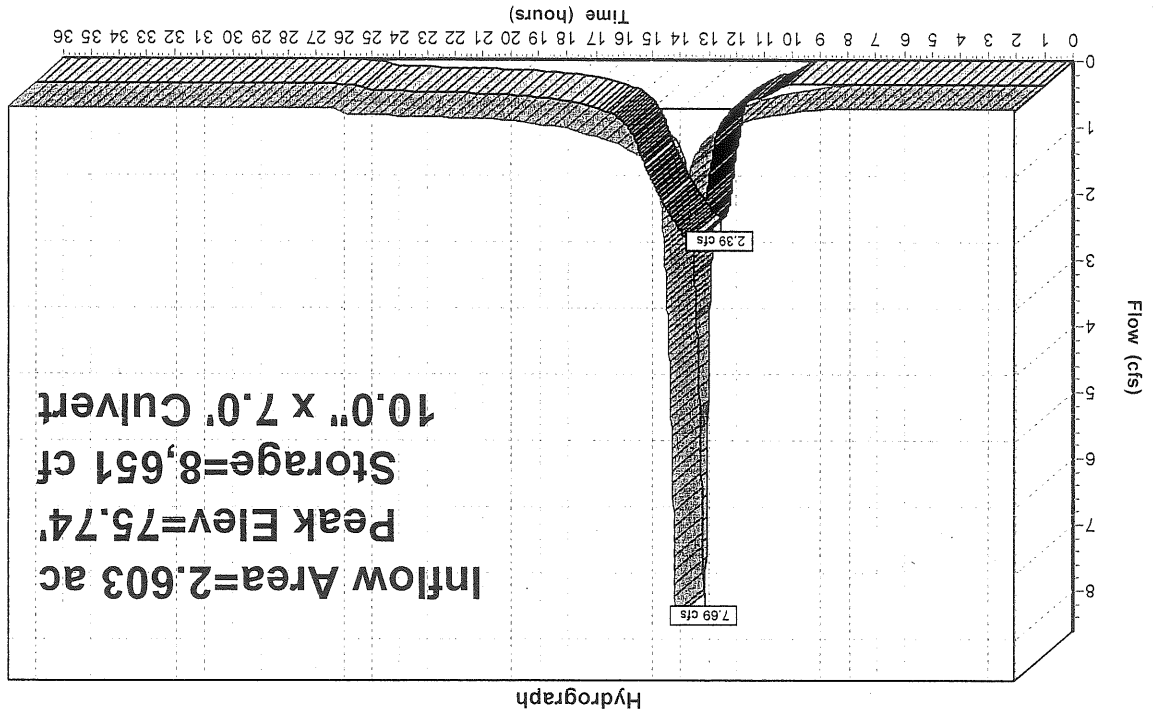
Primary Outflow Max=2.39 cfs @ 12.54 hrs HW=75.74' (Free Discharge)
 1=Culvert (Inlet Controls 2.39 cfs @ 4.38 fps)

Outlet Invert= 73.65' S= 0.0500 '/ Cc= 0.900
 n= 0.010 PVC, smooth interior

10.0" x 7.0' long Culvert CPP, projecting, no headwall, Ke= 0.900
 74.00' Invert Outlet Devices

Device Routing #1 Primary

Pond 1P:



Inflow Area = 0.943 ac, Inflow Depth = 3.02" for 10-YEAR EVENT event
 Inflow = 2.91 cfs @ 12.13 hrs, Volume = 0.237 af
 Outflow = 2.91 cfs @ 12.13 hrs, Volume = 0.237 af, Atten=0%, Lag=0.0 min
 Primary = 2.91 cfs @ 12.13 hrs, Volume = 0.237 af

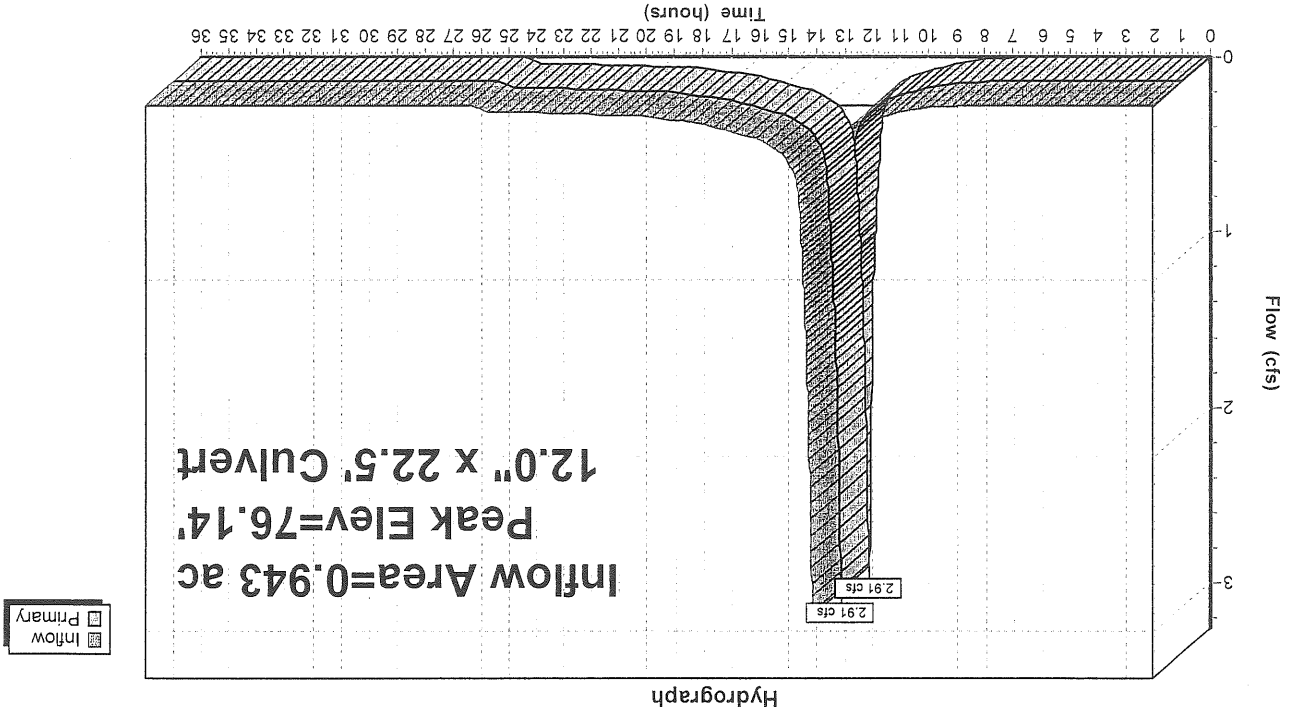
Routing by Stor-Ind method, Time Span=0.00-36.00 hrs, dt=0.01 hrs
 Peak Elev=76.14' @ 12.13 hrs
 Flood Elev=77.66'

Device	Routing	#1	Primary
Invert		74.69'	
Outlet Devices			

12.0" x 22.5' long Culvert C/P, projecting, no headwall, Ke=0.900
 Outlet Invert=74.58', S=0.0049 1', Cc=0.900
 n=0.010 PVC, smooth interior

Primary Outflow Max=2.91 cfs @ 12.13 hrs HW=76.14' (Free Discharge)
 1=Culvert (Inlet Controls 2.91 cfs @ 3.70 fps)

Pond 2.1: CB 1



Pond 2.2: CB 2

Inflow Area = 1.038 ac, Inflow Depth = 3.15" for 10-YEAR EVENT event
 Inflow = 3.27 cfs @ 12.12 hrs, Volume= 0.272 af
 Outflow = 3.27 cfs @ 12.12 hrs, Volume= 0.272 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.27 cfs @ 12.12 hrs, Volume= 0.272 af

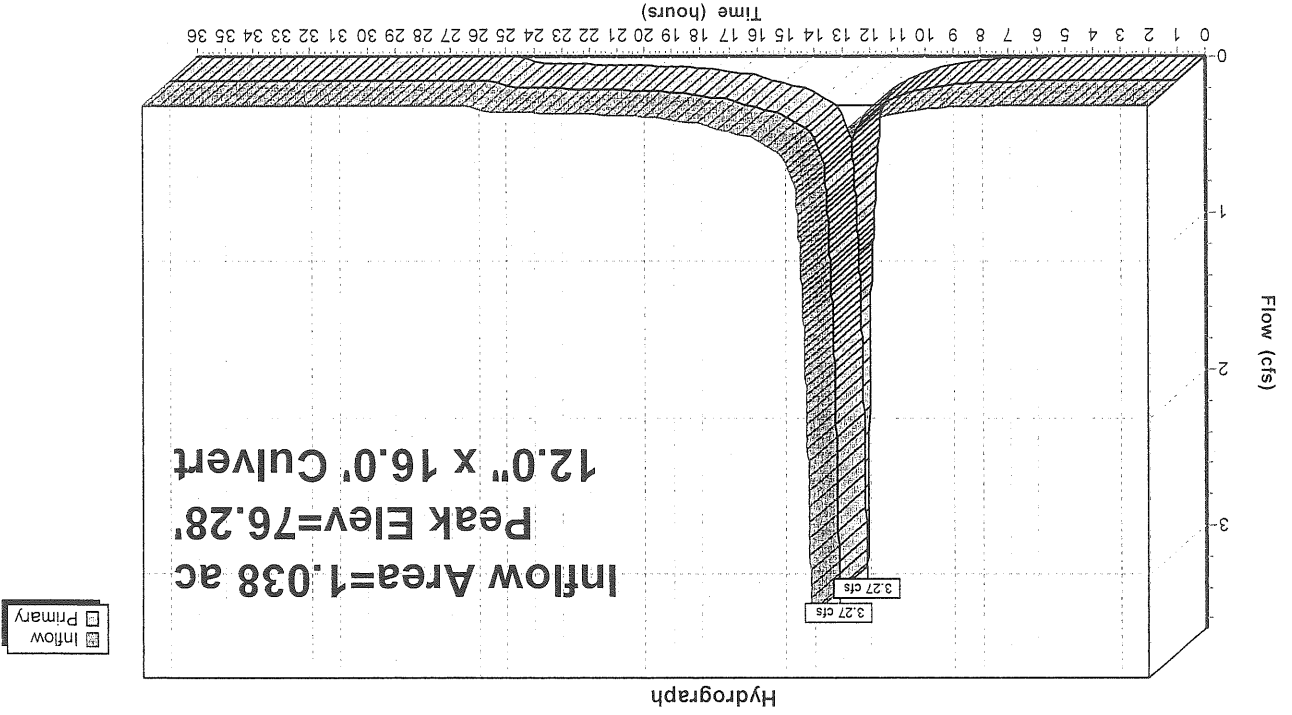
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Peak Elev= 76.28' @ 12.12 hrs
 Flood Elev= 77.66'

Device	Routing	Invert	Outlet Devices
#1	Primary	74.58'	12.0" x 16.0' long SD 3 C/P, projecting, no headwall, Ke= 0.900

Outlet Invert= 74.50' S= 0.0050 1/1' Cc= 0.900
 n= 0.010 PVC, smooth interior

Primary Outflow Max=3.27 cfs @ 12.12 hrs HW=76.28' (Free Discharge)
 1=SD 3 (Inlet Controls 3.27 cfs @ 4.16 fps)

Pond 2.2: CB 2



Inflow
 Primary

Inflow Area=1.038 ac
 Peak Elev=76.28'
 12.0" x 16.0' Culvert

Pond 2P:

Inflow Area = 0.565 ac, Inflow Depth = 2.90" for 10-YEAR EVENT event
 Inflow = 1.88 cfs @ 12.09 hrs, Volume = 0.137 af
 Outflow = 1.64 cfs @ 12.14 hrs, Volume = 0.137 af, Atten = 13%, Lag = 2.8 min
 Primary = 1.64 cfs @ 12.14 hrs, Volume = 0.137 af

Routing by Stor-Ind method, Time Span = 0.00-36.00 hrs, dt = 0.01 hrs / 3
 Peak Elev = 76.31' @ 12.14 hrs Surf.Area = 728 sf Storage = 312 cf

Plug-Flow detention time = 4.0 min calculated for 0.137 af (100% of inflow)
 Center-of-Mass det. time = 4.0 min (820.5 - 816.5)

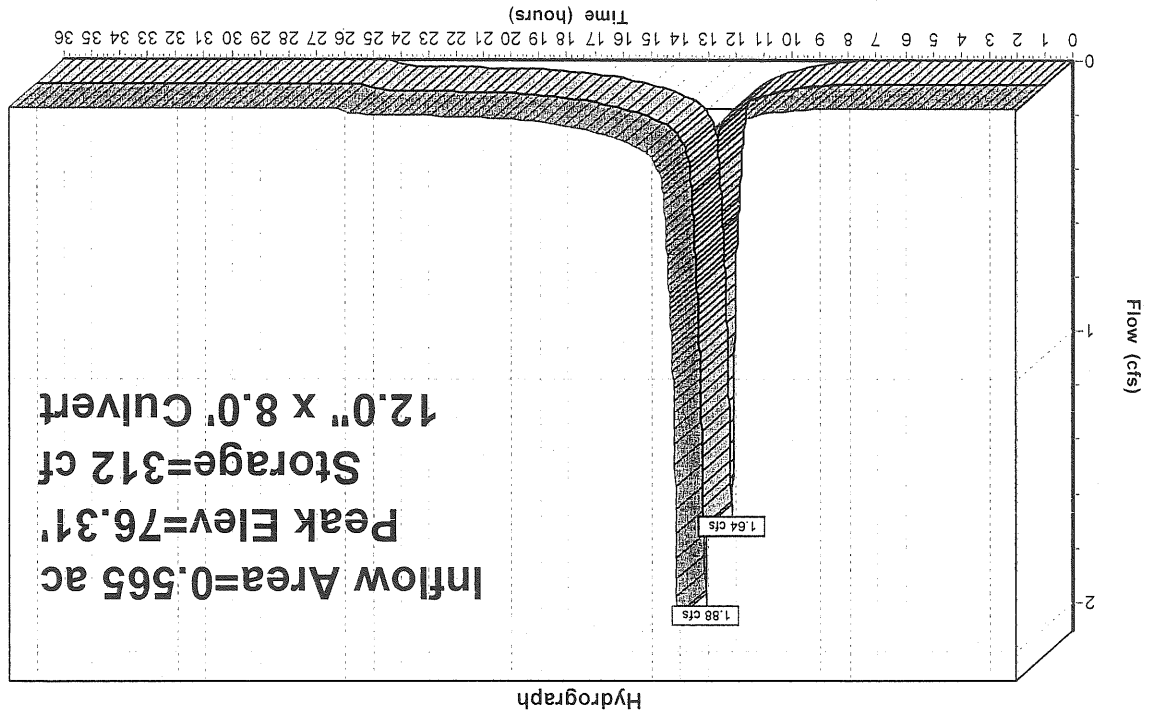
Volume	Invert	Avail.Storage	Storage Description
#1	75.50'	3,076 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
75.50	100	100.0	0	0	100
76.00	465	145.0	130	130	979
77.00	1,535	185.0	948	1,078	2,043
78.00	2,500	220.0	1,998	3,076	3,189

Device Routing	Invert	Outlet Devices
#1 Primary	75.50'	12.0" x 8.0' long Culvert CPP, projecting, no headwall, Ke = 0.900 Outlet Invert = 74.69' S = 0.1013 '/ Cc = 0.900 n = 0.010 PVC, smooth interior

Primary Outflow Max = 1.64 cfs @ 12.14 hrs HW = 76.31' (Free Discharge)
 1=Culvert (Inlet Controls 1.64 cfs @ 2.42 fps)

Pond 2P:



Pond 4P:

Inflow Area = 0.234 ac, Inflow Depth = 2.72" for 10-YEAR EVENT event
 Inflow = 0.70 cfs @ 12.11 hrs, Volume= 0.053 af
 Outflow = 0.48 cfs @ 12.21 hrs, Volume= 0.038 af, Atten= 31%, Lag= 6.0 min
 Primary = 0.48 cfs @ 12.21 hrs, Volume= 0.038 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 88.32' @ 12.21 hrs Surf.Area= 2,030 sf Storage= 785 cf

Plug-Flow detention time= 154.0 min calculated for 0.038 af (72% of inflow)
 Center-of-Mass det. time= 60.8 min (884.4 - 823.6)

Volume	Invert	Avail. Storage	Storage Description
#1	87.50'	1,217 cf	Custom Stage Data (Irregular) Listed below (Recalc)

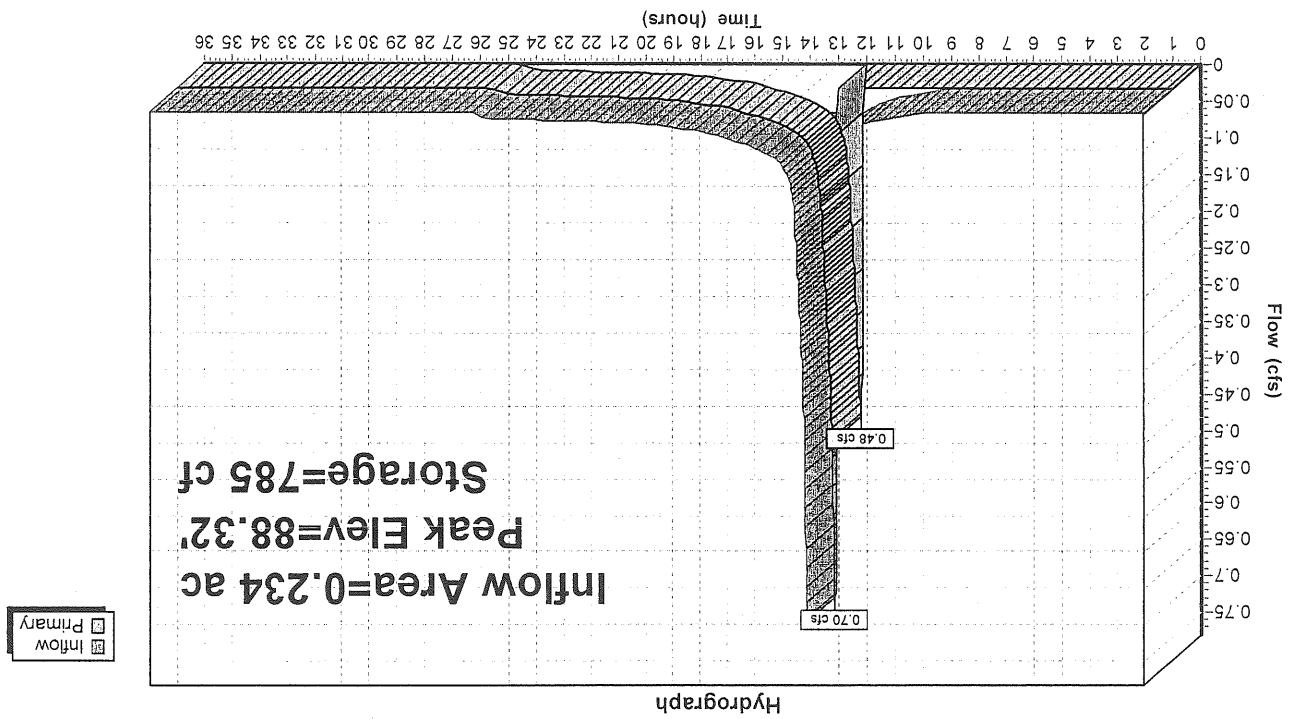
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
87.50	275	110.0	0	0	275
88.00	1,030	175.0	306	306	1,751
88.50	2,750	225.0	911	1,217	3,346

Device Routing	Invert	Outlet Devices
#1 Primary	88.25'	10.0' long x 15.0' breadth Broad-Crested Rectangular Weir

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary Outflow Max=0.48 cfs @ 12.21 hrs HW=88.32' (Free Discharge)
 1=Broad-Crested Rectangular Weir (Weir Controls 0.48 cfs @ 0.70 fps)

Pond 4P:



Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Runoff Area=1.565 ac Runoff Depth=3.73" Flow Length=515' Tc=11.7 min CN=84 Runoff=5.63 cfs 0.487 af

Subcatchment 2A: Runoff Area=0.095 ac Runoff Depth=5.26" Tc=5.0 min CN=98 Runoff=0.53 cfs 0.042 af

Subcatchment 2B: Runoff Area=0.378 ac Runoff Depth=3.94" Flow Length=195' Tc=8.5 min CN=86 Runoff=1.57 cfs 0.124 af

Subcatchment 3: Runoff Area=0.565 ac Runoff Depth=3.63" Flow Length=90' Tc=6.6 min CN=83 Runoff=2.34 cfs 0.171 af

Subcatchment 4: Runoff Area=0.234 ac Runoff Depth=3.43" Flow Length=65' Slope=0.0150 '/ Tc=8.0 min CN=81 Runoff=0.88 cfs 0.067 af

Subcatchment 5: Runoff Area=0.130 ac Runoff Depth=3.94" Flow Length=80' Slope=0.0600 '/ Tc=7.9 min CN=86 Runoff=0.55 cfs 0.043 af

Reach SP1: To Grafton St

Inflow=2.64 cfs 0.810 af
 Outflow=2.64 cfs 0.810 af

Reach SP2:

Inflow=1.26 cfs 0.095 af
 Outflow=1.26 cfs 0.095 af

Pond 1.3: CB

Peak Elev=74.51' Inflow=2.64 cfs 0.810 af
 12.0" x 100.0' Culvert Outflow=2.64 cfs 0.810 af

Pond 1P:

Peak Elev=76.04' Storage=11,218 cf Inflow=9.44 cfs 0.823 af
 10.0" x 7.0' Culvert Outflow=2.64 cfs 0.810 af

Pond 2.1: CB 1

Peak Elev=76.58' Inflow=3.52 cfs 0.295 af
 12.0" x 22.5' Culvert Outflow=3.52 cfs 0.295 af

Pond 2.2: CB 2

Peak Elev=76.83' Inflow=3.95 cfs 0.337 af
 12.0" x 16.0' Culvert Outflow=3.95 cfs 0.337 af

Pond 2P:

Peak Elev=76.43' Storage=411 cf Inflow=2.34 cfs 0.171 af
 12.0" x 8.0' Culvert Outflow=1.98 cfs 0.171 af

Pond 4P:

Peak Elev=88.34' Storage=836 cf Inflow=0.88 cfs 0.067 af
 Outflow=0.76 cfs 0.052 af

Total Runoff Area = 2.967 ac Runoff Volume = 0.933 af Average Runoff Depth = 3.77"
 73.31% Pervious Area = 2.175 ac 26.69% ImperVIOUS Area = 0.792 ac

Subcatchment 1:

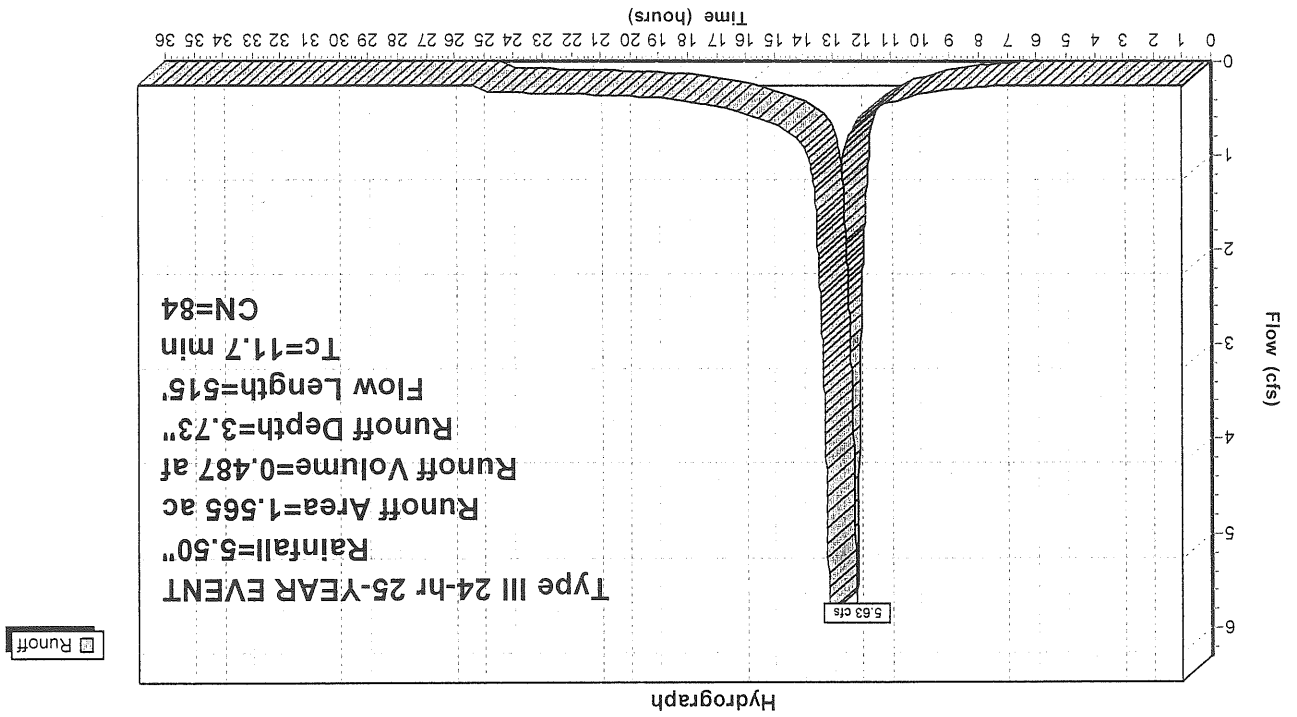
Runoff = 5.63 cfs @ 12.16 hrs, Volume= 0.487 af, Depth= 3.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-YEAR EVENT Rainfall=5.50"

Area (ac)	CN	Description
0.152	98	Roofs
0.235	98	Driveways, parking
1.024	80	>75% Grass cover, Good, HSG D
0.060	73	Brush, weeds, grass, Good, HSG D
0.094	79	Woods/grass comb., Good, HSG D
1.565	84	Weighted Average
1.178		Pervious Area
0.387		Imperious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	60	0.0250	0.11		Sheet Flow, A-B
0.4	90	0.0650	3.82		Grass: Dense n=0.240 P2=3.00"
1.6	135	0.0400	1.40		Grassed Waterway Kv=15.0 fps
0.4	130	0.0250	5.92	189.34	Shallow Concentrated Flow, C-D
0.4	130	0.0250	5.92	189.34	Trap/Vee/Rect Channel Flow, D-E
0.3	100	0.0130	5.00	9.99	Short Grass Pasture Kv=7.0 fps
11.7	515	Total			Trap/Vee/Rect Channel Flow, E-F
					n=0.050 Scattered brush, heavy weeds
					Bot.W=10.00' D=2.00' Z=3.0' / Top.W=22.00'
					n=0.022 Earth, clean & straight
					Bot.W=1.00' D=1.00' Z=1.0' / Top.W=3.00'

Subcatchment 1:



Subcatchment 2A:

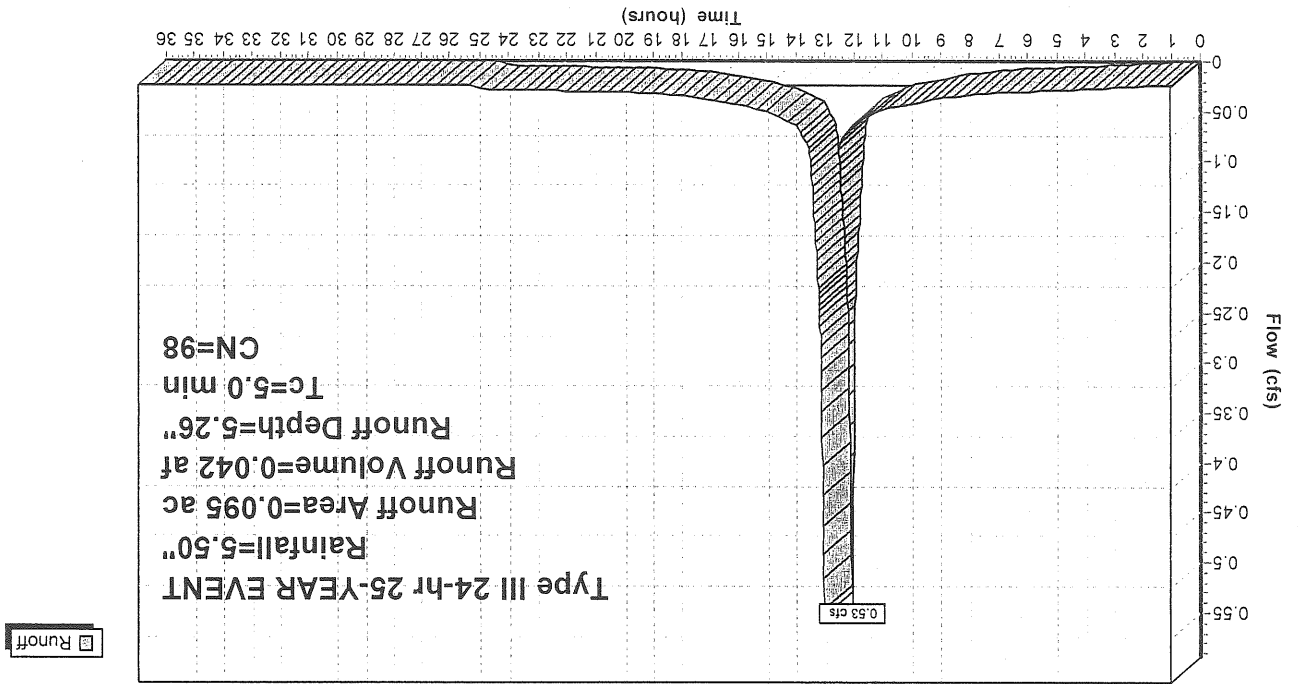
Runoff = 0.53 cfs @ 12.07 hrs, Volume = 0.042 af, Depth = 5.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR EVENT Rainfall=5.50"

Area (ac)	CN	Description												
0.095	98	Paved roads w/curbs & sewers												
0.095		Impervious Area												
<table border="0"> <tr> <td>Tc</td> <td>Length</td> <td>Slope</td> <td>Velocity</td> <td>Capacity</td> <td>Description</td> </tr> <tr> <td>(min)</td> <td>(feet)</td> <td>(ft/ft)</td> <td>(ft/sec)</td> <td>(cfs)</td> <td></td> </tr> </table>			Tc	Length	Slope	Velocity	Capacity	Description	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
Tc	Length	Slope	Velocity	Capacity	Description									
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)										
5.0 Direct Entry, Minimum														

Subcatchment 2A:

Hydrograph



Subcatchment 2B:

Runoff = 1.57 cfs @ 12.12 hrs, Volume= 0.124 af, Depth= 3.94"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-YEAR EVENT Rainfall=5.50"

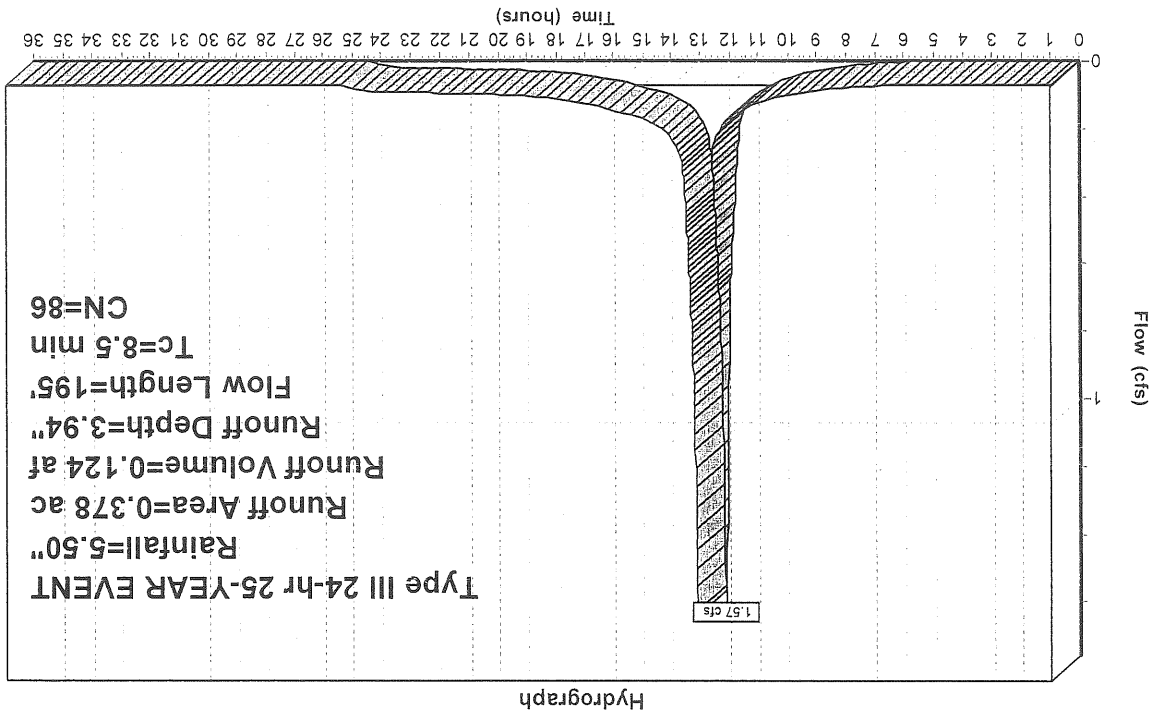
Area (ac)	CN	Description
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0.035	98	Roots
0.113	98	Roadway, drives, and parking
0.077	73	Brush, weeds, grass, Good, HSG D
0.153	80	>75% Grass cover, Good, HSG D
0.378	86	Weighted Average
0.230		Pervious Area
0.148		Impervious Area

Tc Length (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
-----------------	---------------	-------------------	----------------	-------------

7.2	55	0.0360	0.13	Sheet Flow, A-B
1.0	85	0.0450	1.48	Grass: Dense n= 0.240 P2= 3.00" Shallow Concentrated Flow, B-C
0.3	55	0.0050	3.27	Short Grass Pasture Kv= 7.0 fps Trap/Vee/Rect Channel Flow, C-D
8.5	195	Total		Bot.W=1.00' D=0.50' Z= 33.0 & 0.0' / Top.W=17.50' n= 0.013

Subcatchment 2B:



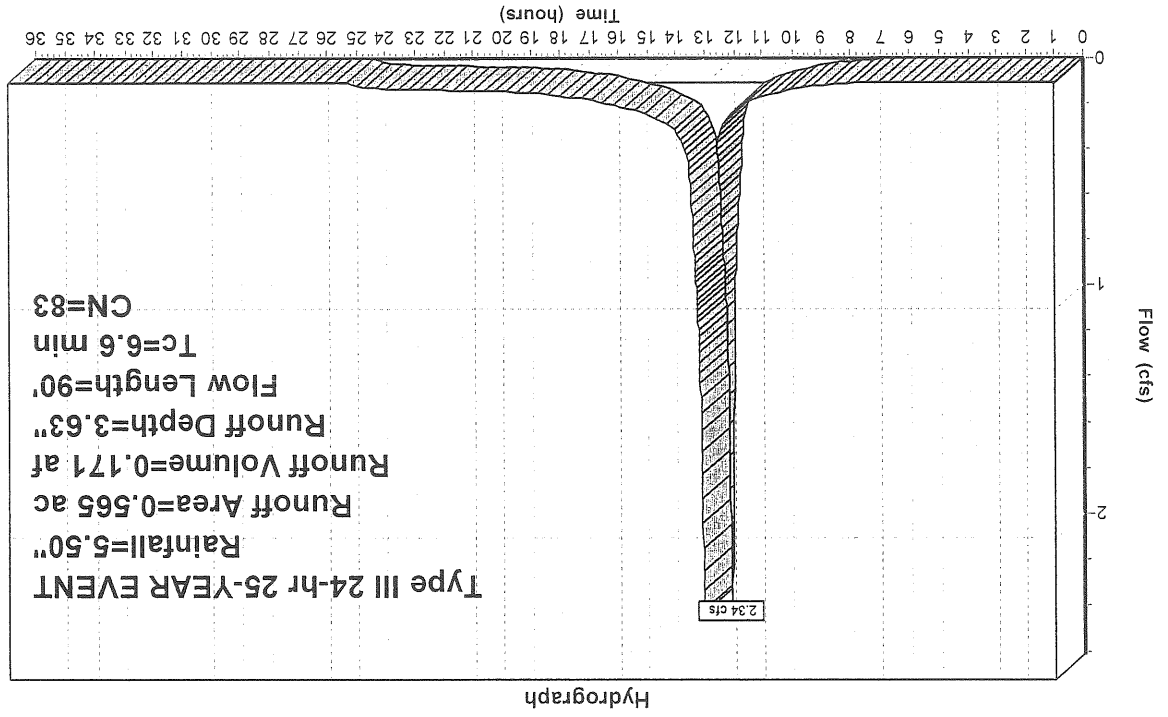
Subcatchment 3:

Runoff = 2.34 cfs @ 12.09 hrs, Volume= 0.171 af, Depth= 3.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR EVENT Rainfall=5.50"

Area (ac)	CN	Description
0.076	98	Roots
0.021	98	Roadway, drives, and parking
0.023	73	Brush, weeds, grass, Good, HSG D
0.445	80	>75% Grass cover, Good, HSG D
0.565	83	Weighted Average
0.468		Pervious Area
0.097		Impervious Area
Tc Length (min)	Slope (ft/ft)	Velocity (ft/sec)
6.4	0.0400	0.13
6.2	0.0600	3.67
Sheet Flow, A-B	Grass: Dense n= 0.240 P2= 3.00"	
90	Total	
6.6		

Subcatchment 3:



Subcatchment 4:

Runoff = 0.88 cfs @ 12.11 hrs, Volume = 0.067 af, Depth = 3.43"

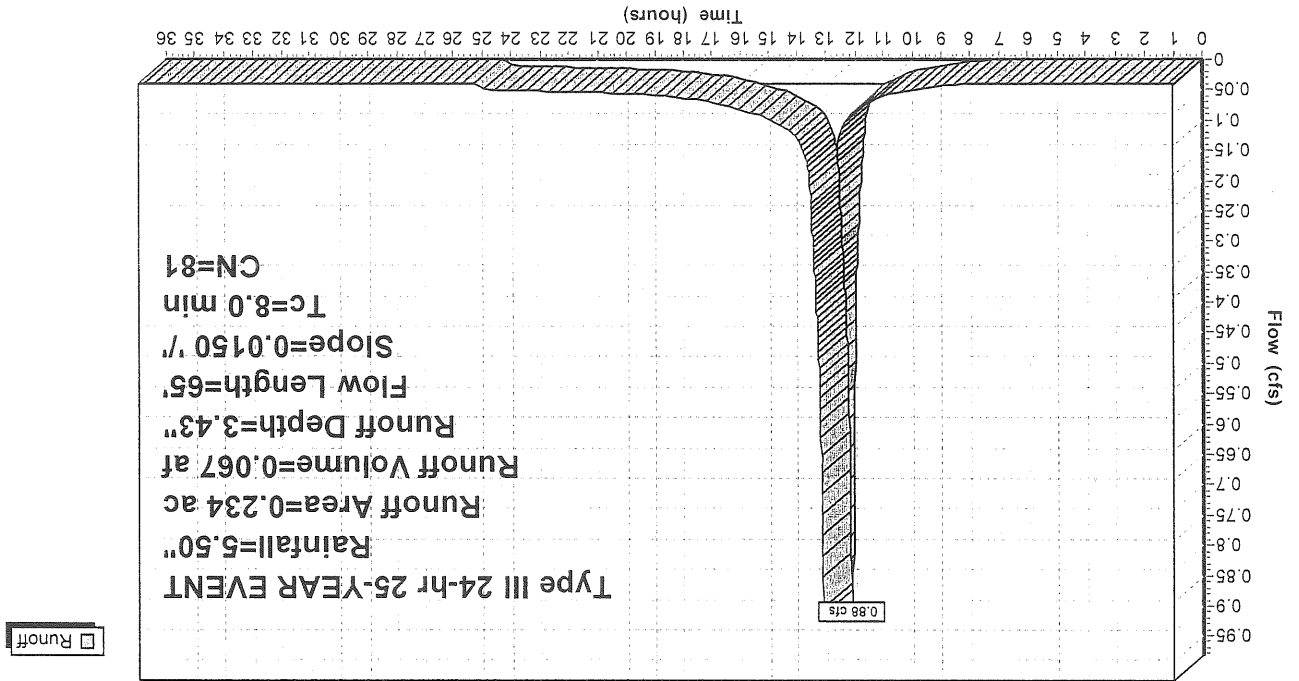
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-YEAR EVENT Rainfall=5.50"

Area (ac)	CN	Description
0.024	98	Roots
0.032	73	Brush, weeds, grass, Good, HSG D
0.178	80	>75% Grass cover, Good, HSG D
0.234	81	Weighted Average
0.210		Pervious Area
0.024		Impervious Area

Tc Length (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	0.0150	0.13		Sheet Flow, A-B
Grass: Short n = 0.150 P2 = 3.00"				

Subcatchment 4:

Hydrograph

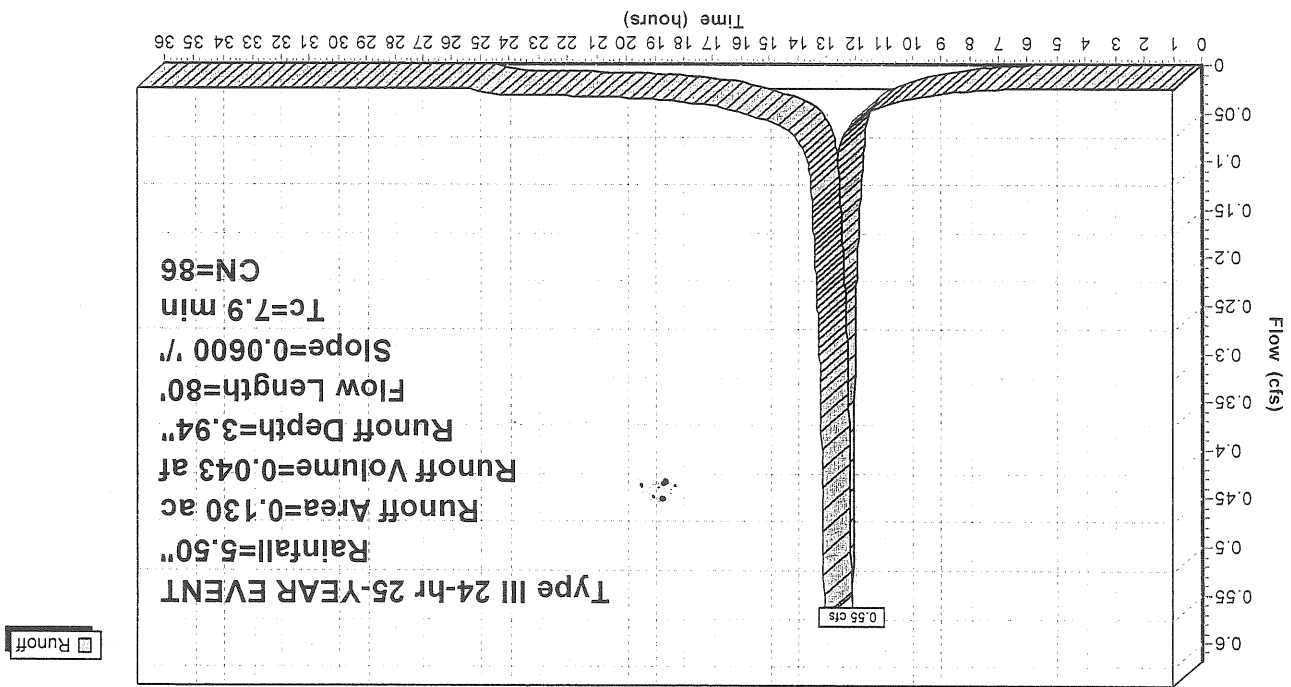


Subcatchment 5:
 Runoff = 0.55 cfs @ 12.11 hrs, Volume = 0.043 af, Depth = 3.94"
 Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-YEAR EVENT Rainfall=5.50"

Area (ac)	CN	Description
0.032	98	Roofs
0.009	98	Driveway, parking
0.089	80	>75% Grass cover, Good, HSG D
0.130	86	Weighted Average
0.089		Pervious Area
0.041		Impervious Area
Tc Length (min)		Description
7.9		
Slope (ft/ft)		
0.0600		
Velocity (ft/sec)		
0.17		
Capacity (cfs)		
Sheet Flow, A-B		
Grass: Dense n= 0.240 P2= 3.00"		

Subcatchment 5:

Hydrograph



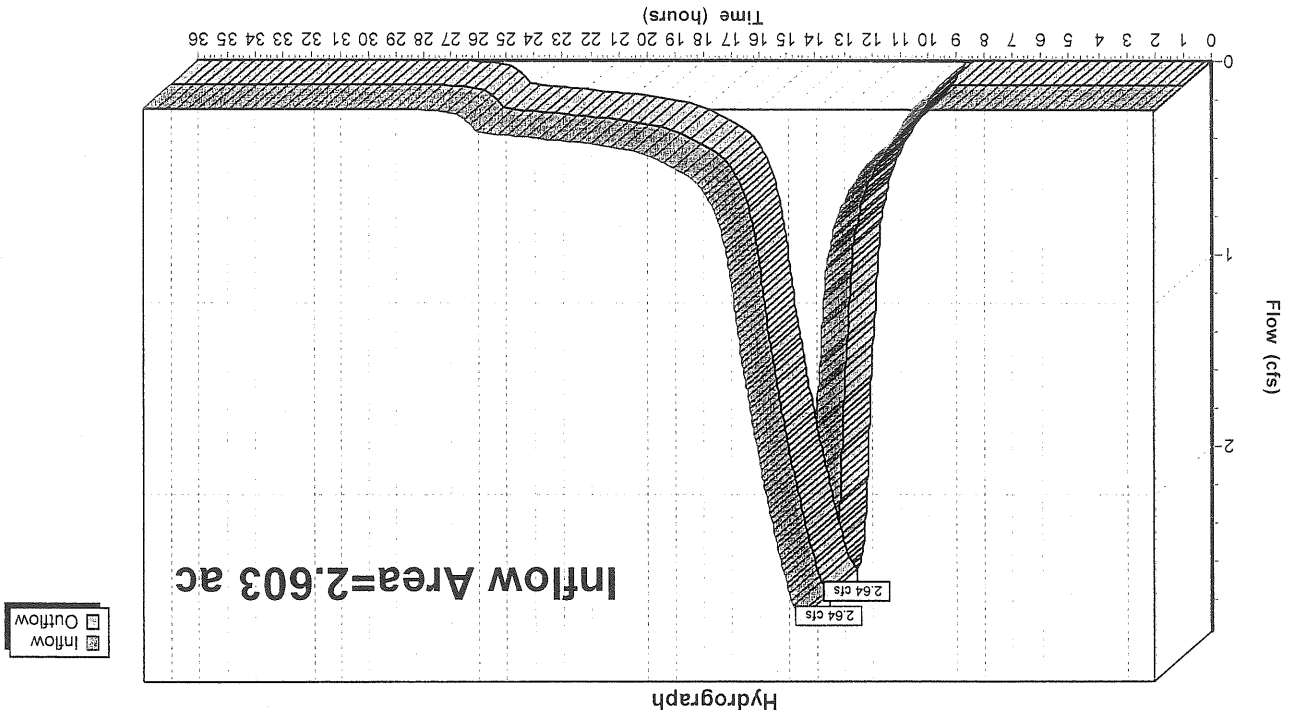
Runoff

Reach SP1: To Grafton St

Inflow Area = 2.603 ac, Inflow Depth = 3.73" for 25-YEAR EVENT event
 Inflow = 2.64 cfs @ 12.56 hrs, Volume = 0.810 af
 Outflow = 2.64 cfs @ 12.56 hrs, Volume = 0.810 af, Atten=0%, Lag=0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

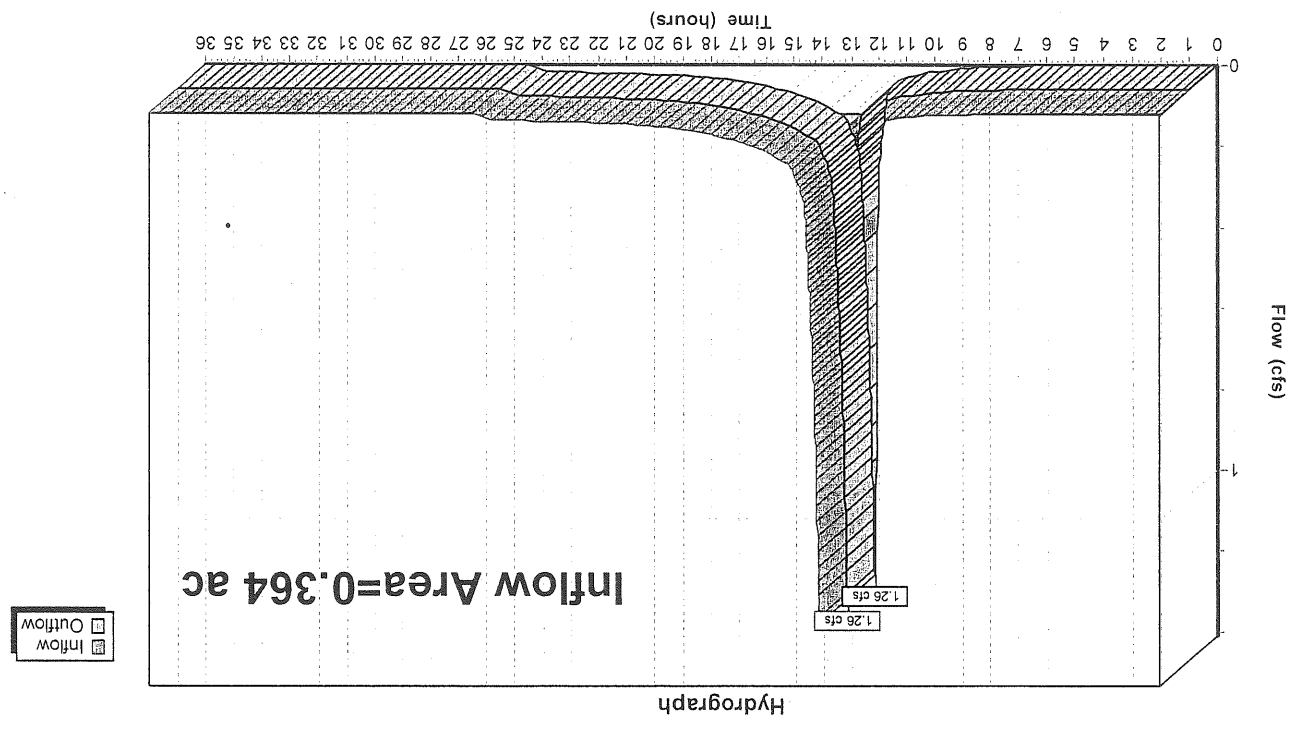
Reach SP1: To Grafton St



Reach SP2:

Inflow Area = 0.364 ac, Inflow Depth = 3.12" for 25-YEAR EVENT event
 Inflow = 1.26 cfs @ 12.14 hrs, Volume= 0.095 af
 Outflow = 1.26 cfs @ 12.14 hrs, Volume= 0.095 af, Atten=0%, Lag= 0.0 min
 Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Reach SP2:



Inflow Area = 2.603 ac, Inflow Depth = 3.73" for 25-YEAR EVENT event
 Inflow = 2.64 cfs @ 12.56 hrs, Volume = 0.810 af
 Outflow = 2.64 cfs @ 12.56 hrs, Volume = 0.810 af, Atten=0%, Lag=0.0 min
 Primary = 2.64 cfs @ 12.56 hrs, Volume = 0.810 af

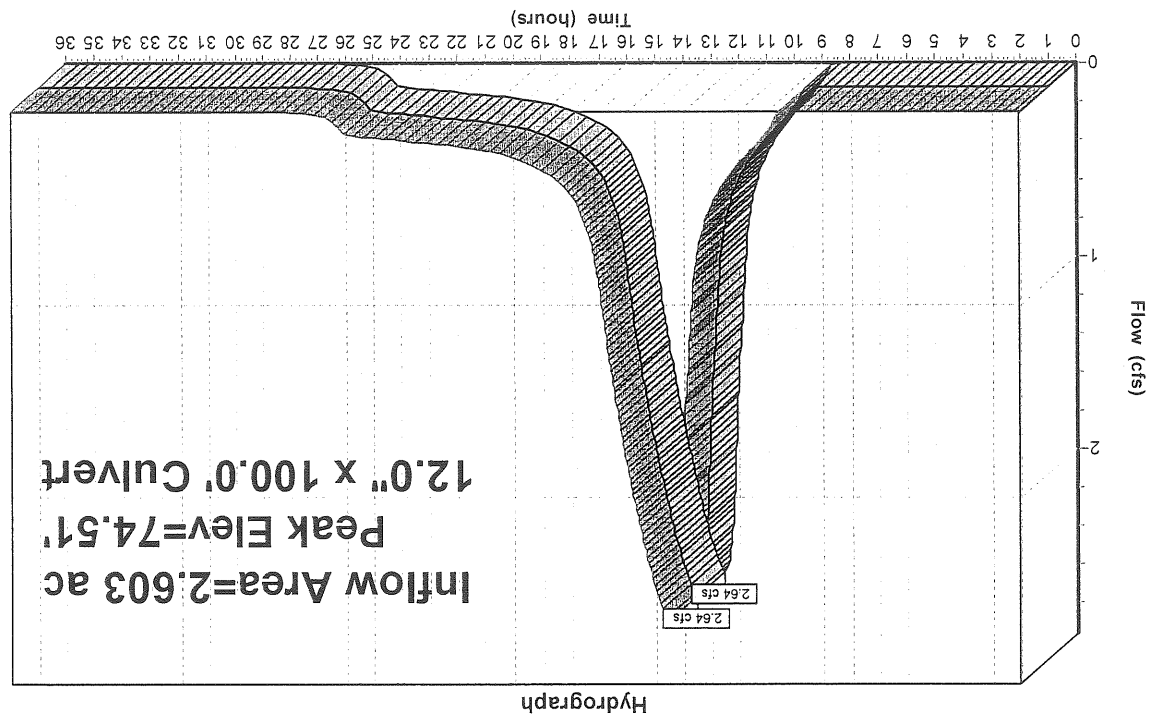
Routing by Stor-Ind method, Time Span=0.00-36.00 hrs, dt=0.01 hrs / 3
 Peak Elev=74.51' @ 12.56 hrs
 Flood Elev=75.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	73.53'	12.0" x 100.0' long Existing Clay Pipe

CP, square edge headwall, Ke=0.500
 Outlet Invert=72.53' S=0.0100' /' Cc=0.900 n=0.013 Clay tile

Primary Outflow Max=2.64 cfs @ 12.56 hrs HW=74.51' (Free Discharge)
 1=Existing Clay Pipe (Inlet Controls 2.64 cfs @ 3.38 fps)

Pond 1.3: CB



Primary
 Inflow

Pond 1P:

Inflow Area = 2.603 ac, Inflow Depth = 3.79" for 25-YEAR EVENT event
 Inflow = 9.44 cfs @ 12.14 hrs, Volume = 0.823 af
 Outflow = 2.64 cfs @ 12.56 hrs, Volume = 0.810 af, Atten = 72%, Lag = 25.1 min
 Primary = 2.64 cfs @ 12.56 hrs, Volume = 0.810 af

Routing by Stor-Ind method, Time Span = 0.00-36.00 hrs, dt = 0.01 hrs
 Peak Elev = 76.04' @ 12.56 hrs Surf.Area = 9,187 sf Storage = 11,218 cf

Plug-Flow detention time = 55.2 min calculated for 0.810 af (98% of inflow)
 Center-of-Mass det. time = 45.6 min (853.4 - 807.8)

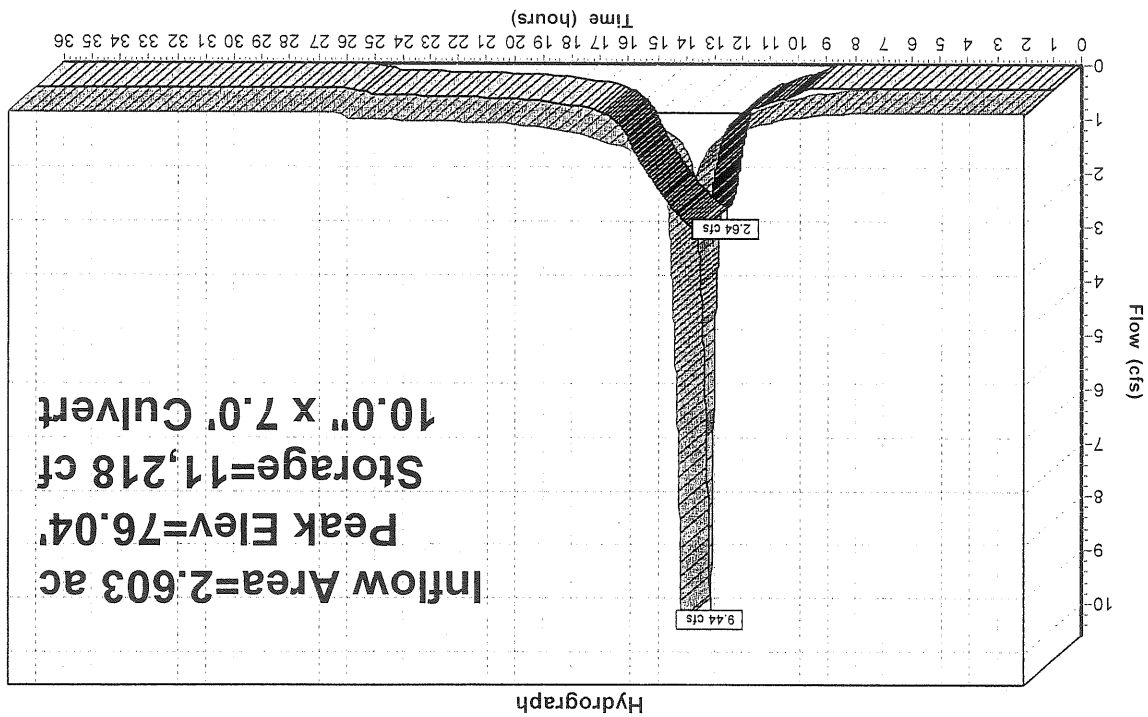
Volume	Invert	Avail.Storage	Storage Description
#1	73.00'	15,698 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
73.00	405	105.0	0	0	405
74.00	750	140.0	569	569	1,098
75.00	5,830	580.0	2,890	3,459	26,311
76.00	9,100	490.0	7,405	10,864	33,993
76.50	10,250	525.0	4,835	15,698	36,831

Device Routing #1 Primary
 10.0" x 7.0' long Culvert C/P, projecting, no headwall, Ke = 0.900
 Outlet Invert = 73.65', S = 0.0500 1/1, Cc = 0.900
 n = 0.010 PVC, smooth interior

Primary Outflow Max = 2.64 cfs @ 12.56 hrs HW = 76.04' (Free Discharge)
 1=Culvert (Inlet Controls 2.64 cfs @ 4.84 fps)

Pond 1P:



Pond 2:1: CB 1

Inflow Area = 0.943 ac, Inflow Depth = 3.75" for 25-YEAR EVENT event
 Inflow = 3.52 cfs @ 12.13 hrs, Volume = 0.295 af
 Outflow = 3.52 cfs @ 12.13 hrs, Volume = 0.295 af, Atten=0%, Lag=0.0 min
 Primary = 3.52 cfs @ 12.13 hrs, Volume = 0.295 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Peak Elev= 76.58' @ 12.13 hrs
 Flood Elev= 77.66'

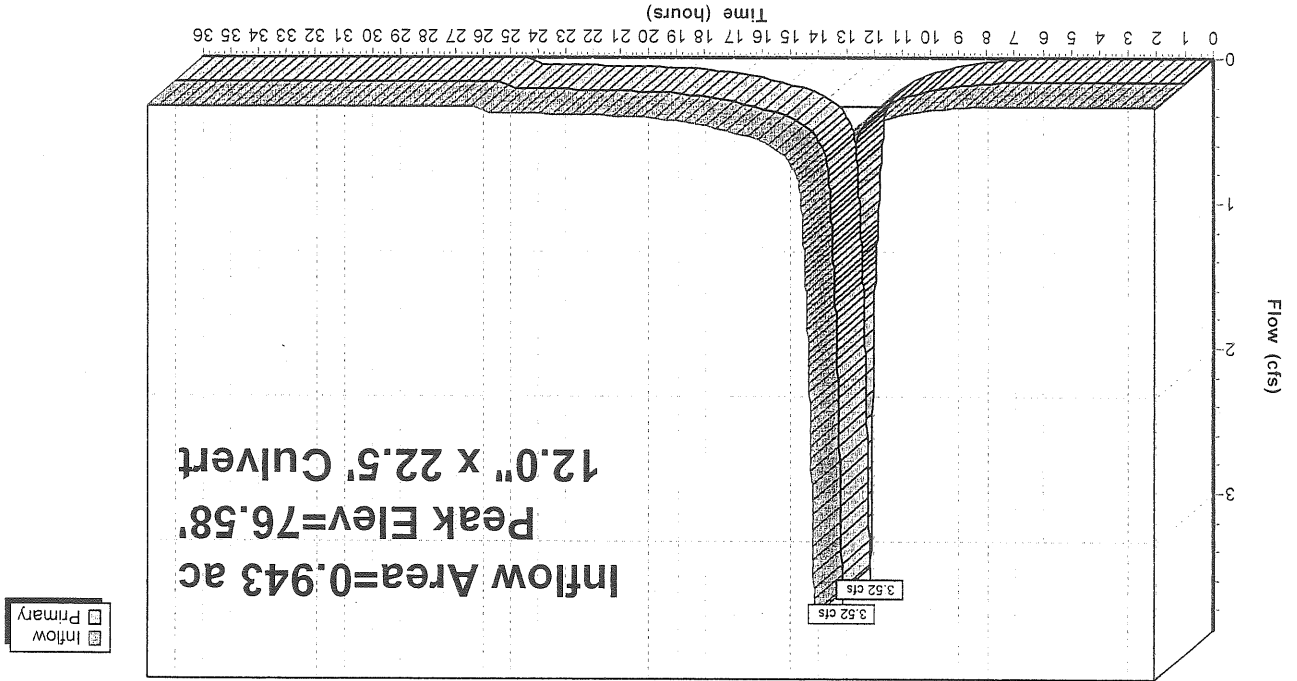
Device	Routing	Invert	Outlet Devices
#1	Primary	74.69'	12.0" x 22.5' long Culvert C/P, projecting, no headwall, Ke= 0.900

Outlet Invert= 74.58', S= 0.0049 1', Cc= 0.900
 n= 0.010 PVC, smooth interior

Primary Outflow Max=3.52 cfs @ 12.13 hrs HW=76.58' (Free Discharge)
 1=Culvert (Inlet Controls 3.52 cfs @ 4.48 fps)

Pond 2:1: CB 1

Hydrograph



Pond 2.2: CB 2

Inflow Area = 1.038 ac, Inflow Depth = 3.89" for 25-YEAR EVENT event
 Inflow = 3.95 cfs @ 12.12 hrs, Volume = 0.337 af
 Outflow = 3.95 cfs @ 12.12 hrs, Volume = 0.337 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.95 cfs @ 12.12 hrs, Volume = 0.337 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Peak Elev= 76.83' @ 12.12 hrs
 Flood Elev= 77.66'

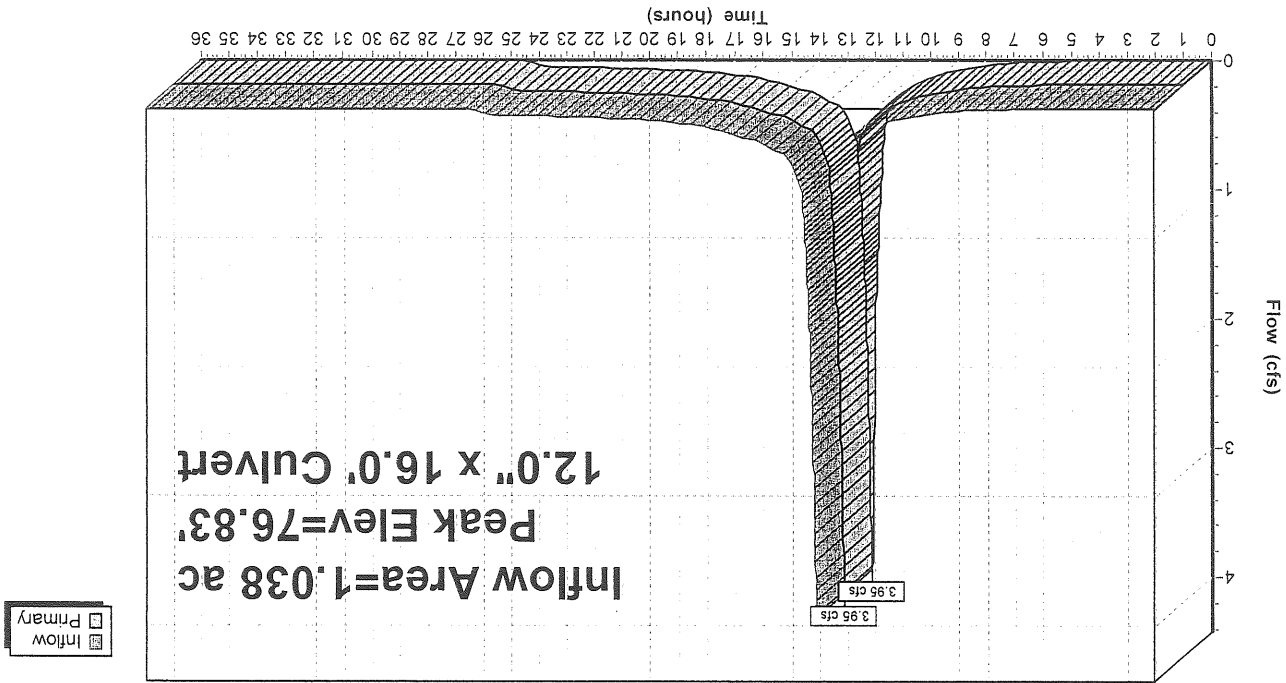
Device	Routing	Invert	Outlet Devices
#1	Primary	74.58'	12.0" x 16.0' long SD 3 CPP, projecting, no headwall, Ke= 0.900

Outlet Invert= 74.50' S= 0.0050 '/ Cc= 0.900
 n= 0.010 PVC, smooth interior

Primary Outflow Max=3.95 cfs @ 12.12 hrs HW=76.83' (Free Discharge)
 1=SD 3 (Inlet Controls 3.95 cfs @ 5.03 fps)

Pond 2.2: CB 2

Hydrograph



Pond 2P:

Inflow Area = 0.565 ac, Inflow Depth = 3.63" for 25-YEAR EVENT event
 Inflow = 2.34 cfs @ 12.09 hrs, Volume = 0.171 af
 Outflow = 1.98 cfs @ 12.15 hrs, Volume = 0.171 af, Atten = 15%, Lag = 3.2 min
 Primary = 1.98 cfs @ 12.15 hrs, Volume = 0.171 af

Routing by Stor-Ind method, Time Span = 0.00-36.00 hrs, dt = 0.01 hrs / 3
 Peak Elev = 76.43' @ 12.15 hrs Surf.Area = 852 sf Storage = 411 cf

Plug-Flow detention time = 3.8 min calculated for 0.171 af (100% of inflow)
 Center-of-Mass det. time = 3.9 min (814.0 - 810.2)

Volume	Invert	Avail.Storage	Storage Description
#1	75.50'	3,076 cf	Custom Stage Data (Irregular) Listed below (Recalc)

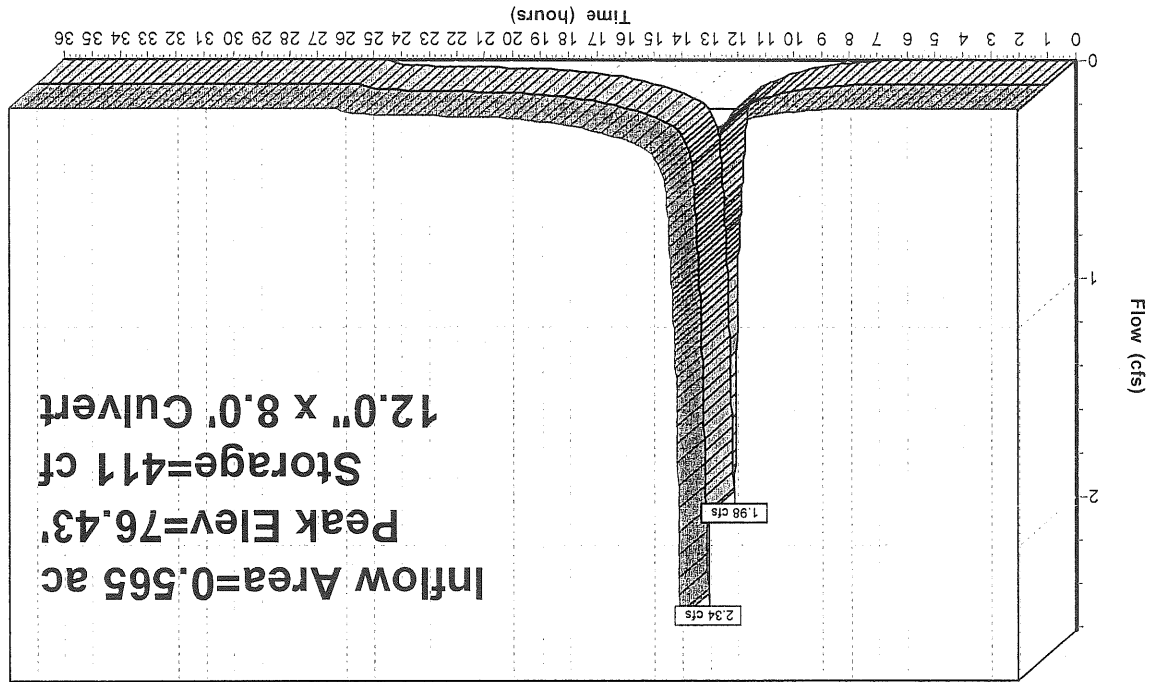
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
75.50	100	100.0	0	0	100
76.00	465	145.0	130	130	979
77.00	1,535	185.0	948	1,078	2,043
78.00	2,500	220.0	1,998	3,076	3,189

Device Routing #1 Primary
 12.0" x 8.0' long Culvert CPP, projecting, no headwall, Ke = 0.900
 Outlet Invert = 74.69' S = 0.1013 % Cc = 0.900
 n = 0.010 PVC, smooth interior

Primary Outflow Max = 1.98 cfs @ 12.15 hrs HW = 76.43' (Free Discharge)
 1=Culvert (Inlet Controls 1.98 cfs @ 2.59 fps)

Pond 2P:

Hydrograph



Inflow
Primary

Pond 4P:

Inflow Area = 0.234 ac, Inflow Depth = 3.43" for 25-YEAR EVENT event
 Inflow = 0.88 cfs @ 12.11 hrs, Volume = 0.067 af
 Outflow = 0.76 cfs @ 12.17 hrs, Volume = 0.052 af, Atten = 13%, Lag = 3.1 min
 Primary = 0.76 cfs @ 12.17 hrs, Volume = 0.052 af

Routing by Stor-Ind method, Time Span = 0.00-36.00 hrs, dt = 0.01 hrs / 3
 Peak Elev = 88.34' @ 12.17 hrs Surf.Area = 2,121 sf Storage = 836 cf

Plug-Flow detention time = 131.3 min calculated for 0.052 af (78% of inflow)
 Center-of-Mass det. time = 49.6 min (866.5 - 816.9)

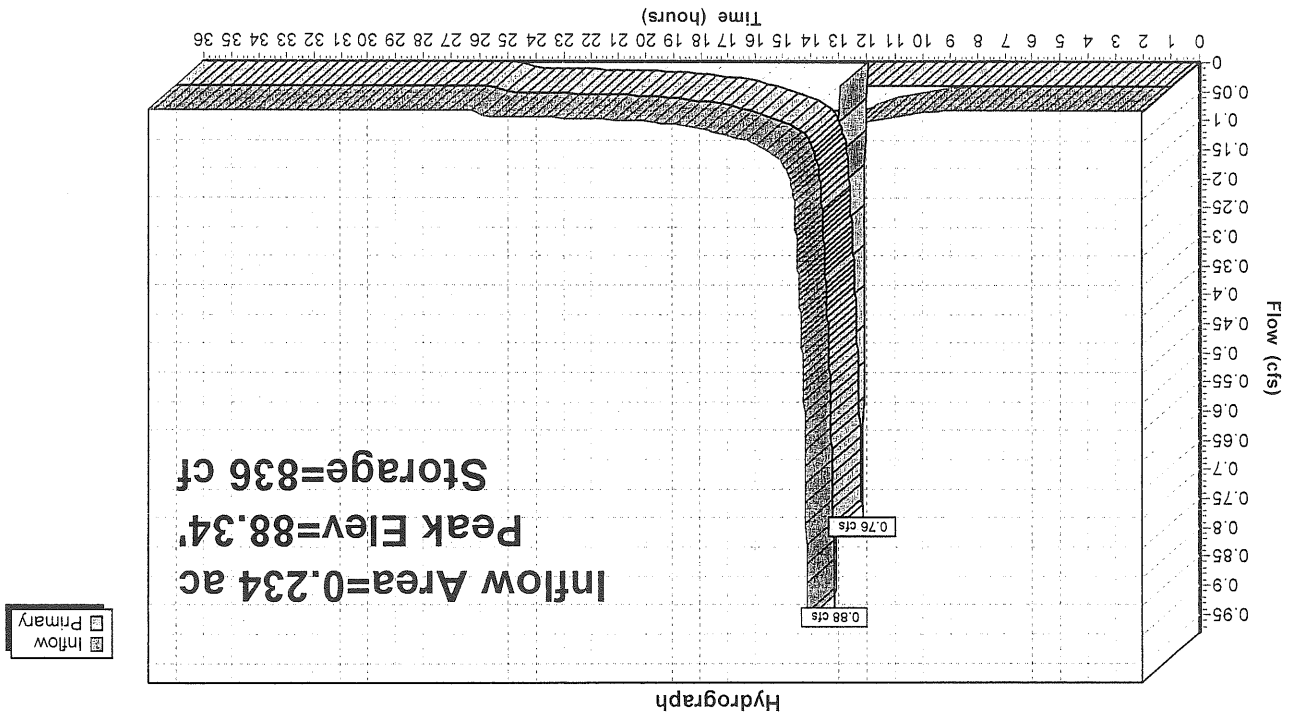
Volume	Invert	Avail.Storage	Storage Description
#1	87.50'	1,217 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
87.50	275	110.0	0	0	275
88.00	1,030	175.0	306	306	1,751
88.50	2,750	225.0	911	1,217	3,346

Device Routing #1 Primary
 10.0' long x 15.0' breadth Broad-Crested Rectangular Weir
 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
 Coef. (English) 2.68 2.70 2.70 2.63 2.64 2.64 2.63

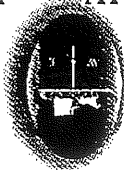
Primary Outflow Max=0.76 cfs @ 12.17 hrs HW=88.34' (Free Discharge)
 1=Broad-Crested Rectangular Weir (Weir Controls 0.76 cfs @ 0.82 fps)

Pond 4P:



ABILITY TO SERVE LETTERS

ATTACHMENT 6



Portland Water District
FROM SEBAGO LAKE TO CASCO BAY

November 26, 2007

Sebago Technics, Inc.

P.O. Box 1339

Westbrook, ME 04098-1339

Attn: Patrick Martin

Re: True Street Subdivision, Portland

Ability to serve with PWD water

Dear Mr. Martin:

We have received your letter dated September 19, 2007 requesting confirmation that the public water system can meet the water needs of the proposed 8-lot residential subdivision on True Street in Portland. This letter is to confirm that there should be an adequate supply of clean and healthful water to serve the needs of your project.

According to District records, there is a 12-inch diameter cast iron water main on the east side of the street as well as a hydrant located approximately 175 feet north of the proposed entrance to True Street.

The current data from the nearest hydrant, shown on the attached plan, is as follows:

Hydrant Location: 175 feet north of True Street
Hydrant Number: POD-HYD01228
Static Pressure: 70 psi
Flow: 1233 gpm
Last Tested: 10/06/1989

If the District can be of further assistance in this matter, please let us know.

Sincerely,
Portland Water District

Rico Spugnardi, P.E.
Business Development Engineer
ispugnardi@pwd.org

Sewer Capacity

A letter has been requested from the Public Works Department relative to the sewer capacity for this project. Because of the impending CSO project for Ocean Avenue (scheduled to begin April 7), a letter was unable to be obtained. It is assumed with the completion of the CSO project, the system will have the capacity to service the existing and proposed single family lots.

Three of the existing single family lots are currently served by the City of Portland municipal sewer system. The proposed subdivision will only contribute the additional flows from the other existing single family lot and possible flows from four other single family lots.

LETTERS FROM STATE AGENCIES

ATTACHMENT 7



JOHN ELIAS BALDACCIO

GOVERNOR

STATE OF MAINE
DEPARTMENT OF CONSERVATION
17 ELKINS LANE
93 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0093

PATRICK K. MCGOWAN
COMMISSIONER

December 3, 2007

Robert A. McSorley

Sebago Technics, Inc.

One Chabot Street

PO Box 1339

Westbrook, ME 04098-0277

Re: Rare and exemplary botanical features, Proposed True Street Subdivision,
Project #05207, Portland, Maine.

Dear Mr. McSorley:

I have searched the Natural Areas Program's Biological and Conservation Data System files in response to your request of November 27, 2007 for information on the presence of rare or unique botanical features documented from the vicinity of the project site in the City of Portland, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare botanical features. You may want to have the site inventoried by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed.

If a field survey of the project area is conducted, please refer to the enclosed supplemental information regarding rare and exemplary botanical features documented to occur in the vicinity of the project site. The list may include information on features that have been known to occur historically in the area as

MAINE NATURAL AREAS PROGRAM
MOLLY DOHERTY, DIRECTOR

PRINTED ON RECYCLED PAPER



PHONE: (207) 287-8044
FAX: (207) 287-8040
TTY: (207) 287-2213

SEBAGO TECHNICS

DEC 04 2007

RECEIVED

well as recently field-verified information. While historic records have not been documented in several years, they may persist in the area if suitable habitat exists. The enclosed list identifies features with potential to occur in the area, and it should be considered if you choose to conduct field surveys.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys.

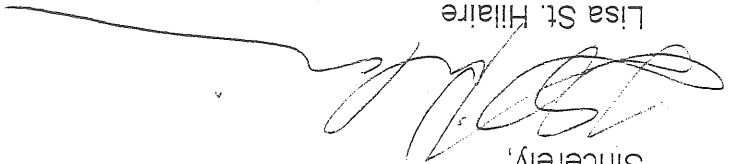
Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

The Natural Areas Program is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. The Natural Areas Program welcomes coordination with individuals or organizations proposing environmental alteration, or conducting environmental assessments. If, however, data provided by the Natural Areas Program are to be published in any form, the Program should be informed at the outset and credited as the source.

The Natural Areas Program has instituted a fee structure of \$75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for \$75.00 for our services.

Thank you for using the Natural Areas Program in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,



Lisa St. Hilaire
Information Manager
207-287-8046

Lisa.St.Hilaire@maine.gov

Enclosures

Brian Lewis
Fishery Specialist
MDHM

Sincerely,

I have reviewed your request for fishery resource information, and there are no known threatened/endangered fish species or habitat in the vicinity of the proposed project. There are also no known fisheries resources within the proposed project area. Our regional riparian buffer policy is outlined below.

Stream systems are vulnerable to environmental impacts associated with increased development and encroachment. If present, this project should be sensitive to these resource issues by including provisions for riparian buffers and maintaining any other potential stream impacts. Our regional buffer policy requests 100 foot undisturbed buffers along both sides of any stream or stream-associated wetlands. Buffers should be measured from the upland wetland edge of stream-associated wetlands, and if the natural vegetation has been previously altered then restoration may be warranted. This buffer requirement improves erosion/sedimentation problems; reduces thermal impacts; maintains water quality; supplies leaf litter and woody debris for the system; and provides valuable wildlife habitat. Protection of these important riparian functions insures that the overall health of the stream habitat is maintained.

Stream crossings, if applicable, must include provisions for adequate fish passage, and any in-stream work needs to be done between the first of July and the first of October. Project design should minimize the number of stream crossings. I have forwarded your information requests to our wildlife division and they will be responding separately. If you have any additional questions or concerns then feel free to contact us.

Dear Robert McSorley,

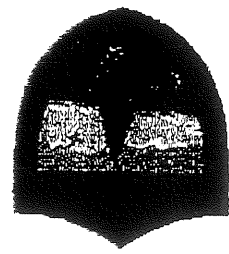
Robert McSorley
One Chabot Street
PO Box 1339
Westbrook, Maine 04098-1339
Rt. Five Sweet Subdivision, Portland

January 7, 2007

John Elias Baldaen, Governor

Roland Martin, Commissioner

Maine Department of Inland
Fisheries and Wildlife
358 Shaker Road
Gray, Maine 04039
Telephone: 207-657-2345 ext.113
Fax: 207-657-2980
Email: brian.lewis@maine.gov





Deputy State Historic Preservation Officer
Kirk F. Mohny

Sincerely,

In response to your recent request, I have reviewed the information received December 18, 2007 to continue consultation on the above referenced project pursuant to the requirements of the City of Portland.
Based on the information submitted, I have concluded that the proposed project will have no effect upon historic properties [architectural or archaeological].
Please contact Robin Stancampiano of my staff if we can be of further assistance in this matter.

Dear Mr. McSorley:

Project: MHPC #2149-07 - True Street Subdivision, east side of Ocean Avenue
Town: Portland, ME

Mr. Robert A. McSorley, P.E.
Sr. Project Manager
Sebago Technics
P.O. Box 1339
Westbrook, ME 04098-1339

RECEIVED
JAN 2 2008
SEBAGO, ME

January 2, 2008

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

JOHN ELIAS BALDACCIO
GOVERNOR

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE 04333



RIGHT, INTEREST & TITLE

ATTACHMENT 8

BK 16270Pg259

0030905

WARRANTY DEED

I, Royce A. Gould, of Portland, Cumberland County, Maine, for consideration paid, grant to Stacy L. Dean, whose mailing address is: 681 Ocean Avenue, Portland, Maine 04103, with WARRANTY COVENANTS, a certain lot or parcel of land with the buildings thereon, situated in Portland, Cumberland County, Maine, being bounded and described as follows:

Beginning at a stake standing on Ocean Avenue at the northeast corner of land owned by the heirs of the late George M. Adams; thence running on a line of Ocean Avenue, North 32° East Sixty (60) feet to a point; thence South 62° East One Hundred (100) feet to a point; thence South 32° West to land of Adams' heirs; thence North 58° West by said Adams' heirs and to point of beginning.

This conveyance is made subject to all encumbrances and mortgages of record.

Hereby conveying the same premises conveyed to Stacy L. Dean and Royce Gould by Stacy L. Dean, by deed dated April 5, 1999, and recorded in the Cumberland County Registry of Deeds in Book 13802, at Page 293.

WITNESS my hand and seal this 4th day of May, 2001.

WITNESS
Royce A. Gould

STATE OF MAINE
CUMBERLAND, ss

May 4, 2001.

Then personally appeared the above named Royce A. Gould and acknowledged the foregoing instrument to be her free act and deed.

Before me,

Ernest L. Anderson
~~Not Public~~ / Attorney at Law

ERNEST L. ANDERSON
Printed Name

c:\file\ud\dean\warranty.doc

RECEIVED
RECORDED REGISTRY OF DEEDS

2001 MAY -4 PM 1:27

CUMBERLAND COUNTY

John B. Brown

BK12907Pc330

02519

Quitclaim Deed Without Covenant
(Maine Statutory Short Form)

KNOW ALL MEN BY THESE PRESENTS THAT Darryl A. Card of 41 True Street, Portland, Cumberland County, State of Maine, for one dollar and other valuable consideration paid, grant to Todd R. Sniper of 257 State Street, Portland, Cumberland County, State of Maine, the land in Portland, Cumberland County, State of Maine, bounded and described as follows:

SEE EXHIBIT "A" ATTACHED HERETO AND MADE A PART HEREOF.

IN WITNESS WHEREOF, I have hereunto set my hand this 15th day of January, 1997.

Darryl A. Card
Darryl A. Card

Witness

STATE OF Maine
COUNTY OF Cumberland

On this 15th day of January, 1997, personally appeared before me the above-named Darryl A. Card, and acknowledged the foregoing to be his free act and deed.

[Signature]
Notary Public/Attorney at Law
Cheryl M. Kelly

My Commission Expires:

MAINE REAL ESTATE TAX PAID

BK 12907 PG 331

EXHIBIT A

A certain lot of land, with any buildings thereon, situated in the East Deering District of the City of Portland in Cumberland County, State of Maine, bounded and described as follows:

Beginning at a point in the northerly side line of or formerly of the George Adams estate property, which point is distant six hundred (600) feet from the point where the said side line intercepts the easterly side line of Ocean Street; thence North 58° West by said Adams land two hundred (200) feet; thence North 32° East fifty (50) feet; thence South 58° East two hundred (200) feet; thence southerly in a direct line to the point of beginning.

Meaning and intending to describe and convey the same premises conveyed to Darryl A. Card by Quit-Claim Deed of Linwood R. Card and Charlotte R. Card dated August 20, 1981 and recorded in the Cumberland County Registry of Deeds in Book 4844, Page 337. Further reference is herein made to a joint life estate granted to Linwood R. Card and Charlotte R. Card in said deed. Said Linwood R. Card died on April 24, 1982. Said Charlotte R. Card died on May 30, 1996.

RECEIVED
REGISTERED RECORDS OF DEEDS
97 JAN 16 AM 11:05
CUMBERLAND COUNTY
John B. Corbin

Known all Men by these Warranties,

@ that we, Harold H. Rutter, Jr. and Virginia S. Rutter,

of Portland and wife
County of Cumberland, State of Maine
being ~~married~~ for consideration paid, grant to
Amanda S. McQuiddy and Nicholas C. Kent

of Portland
County of Cumberland, State of Maine
whose mailing address is
35 Taylor Street, Portland, Maine,

with ~~warranty~~ ~~tenants~~ as joint tenants the land in
Portland
County of Cumberland
State of Maine, described as follows:

A certain lot or parcel of land with the buildings thereon situated on the south-
eastern side of Ocean Avenue, in the City of Portland, County of Cumberland and
State of Maine, bounded and described as follows: Beginning on the southeastern
side of Ocean Avenue at the southwestern corner of land conveyed by Sarah A.
Sawyer to William R. Burke et al by deed dated October 27, 1908 and recorded in
the Cumberland County Registry of Deeds in Book 831, Page 103; thence south-
westerly by Ocean Avenue fifteen (15) feet, more or less, to land formerly of
Andrew T. True and Frank E. True; thence southeasterly by said True land five
hundred twelve (512) feet, more or less, to land conveyed by Daniel E. Burgess
et al to Clifford R. Card et al by deed dated June 25, 1948 and recorded in said
Registry of Deeds in Book 1942, Page 252; thence northeasterly by said Card land
eighty one and two tenths (81.2) feet to an iron rod and land formerly of Samuel
J. Knowles; thence northwesterly by said Knowles land three hundred sixty two
land forty (40) feet to a corner; thence northwesterly by said Burke land one
hundred fifty (150) feet to said Ocean Avenue at the point of beginning.

The above described premises are conveyed subject to easements granted to Central
Maine Power Company et al by deed recorded in the Cumberland County Registry of
Deeds in Book 2064, Page 170 and to Portland Water District by deed recorded in
said Registry of Deeds in Book 2159, Page 444.
Being the same premises conveyed to the Grantors herein by deed of Armand M.
Slusser et al dated August 30, 1961 and recorded in the Cumberland County
Registry of Deeds in Book 2627, Page 243.
This conveyance is made subject to real estate taxes for the current tax year
which the grantees, by acceptance of this deed, assume and agree to pay.

And each

~~and releases all rights by descent and all other rights.~~

WITNESSES our hands and seals this 14th day of the month of August, 1985

Signed, Sealed and Delivered

in presence of

[Signature]

to wit:

[Signature]
Harold H. Rutter, Jr.

[Signature]
Virginia S. Rutter

State of ~~Ohio~~, County of Cumberland

on August 14, 1985

Then personally appeared the above named Harold H. Rutter, Jr.

and acknowledged the foregoing instrument to be his free act and deed.

Before me,

[Signature]
Judith A. Fletcher
Attorney at Law

RECEIVED

1985 AUG 15 PM 4: 15

RECORDED REGISTRY OF DEEDS
CUMBERLAND COUNTY

James J. Clark

WARRANTY DEED

Maine Statutory Short Form

JOINT TENANCY

KNOW ALL MEN BY THESE PRESENTS

THAT, WE, CLIFFORD A. CARD, of Sudbury, Massachusetts, and ANDREW T. CARD, of Billerica, Massachusetts,

for consideration paid, grant to TODD R. SNIPER and KELLY O. SNIPER, as joint tenants and not as tenants in common, and whose mailing address is: 41 True Street, Portland, Maine 04103

with warranty covenants, certain real estate situated in the City of Portland, County of Cumberland, State of Maine, described as follows:

Reference to Exhibit A attached hereto.

IN WITNESS WHEREOF, WE, CLIFFORD A. CARD and ANDREW T. CARD, hereby set our hands and seals this 16th day of June, 2004.

WITNESS:

[Signature]

[Signature]
CLIFFORD A. CARD
[Signature]
ANDREW T. CARD

State of Maine
Cumberland, ss.

Personally appeared the above-named CLIFFORD A. CARD and acknowledged the foregoing instrument to be his free act and deed.

Date: June 16, 2004

Before me,

[Signature]
Notary Public
Attorney at Law

Printed Name

[Signature]
Andrew T. Card

MAINE REAL ESTATE TAX PAID

Commonwealth of Massachusetts
Middlesex, ss.

Personally appeared the above-named ANDREW T. CARD and acknowledged the foregoing instrument to be his free act and deed.

Date: June 17, 2004

Before me,

Barbara M. Newman
Notary Public
~~XXXXXXXXXXXX~~

Barbara M. Newman

Printed Name

My commission expires: 10/15/04

SEAL

EXHIBIT A

A certain lot or parcel of land being situated on the easterly side of Ocean Avenue, in Portland, County of Cumberland, State of Maine, and being depicted as "Lot 1, Land To Be Reserved By Card, 1.27 Acres" on plan entitled "Townhomes at Ocean East, Ocean Avenue & Presumpscot Street, Portland, Cumberland County, Maine", dated July 17, 2002 and prepared by Coffin Engineering & Surveying, LLC, and recorded in the Cumberland County Registry of Deeds in Plan Book 204, Page 48.

Being a portion of the same premises conveyed to the Grantors herein, Clifford A. Card and Andrew T. Card by deed recorded in the Cumberland County Registry of Deeds in Book 6739, Page 136.

Received
Recorded Register of Deeds
Cumberland County
Jul 08, 2004 11:45:35A
John B. Oberien

SHORT FORM WARRANTY DEED

Marian D. Hicks, Frederick Hicks and Barbara Hicks Mainville of 693 Ocean Avenue, Portland, Maine, 04103 FOR CONSIDERATION PAID, grants to Marc A. Giguere, with WARRANTY COVENANTS, the following described real property located in the City of Portland, County of Cumberland and State of Maine:

A certain lot or parcel of land with the buildings thereon, situated in the City of Portland, County of Cumberland and State of Maine described as follows:

Beginning on the southeasterly side of Ocean Avenue at the westerly corner of land now or formerly of Samuel J. Knowles; thence

Southeasterly by said Knowles land one hundred fifty (150) feet; thence

Southwesterly at right angles with said Knowles land forty (40) feet; thence

Northwesterly keeping the distance of forty (40) feet from said Knowles land a distance of one hundred fifty (150) feet to said Ocean Avenue; thence

Northeasterly by said Ocean Avenue forty (40) feet to the point of beginning. Being the premises formerly numbered 299 on said Ocean Avenue and now numbered 693 on said Avenue.

The premises are conveyed together with and subject to any and all easements or appurtenances of record, insofar as the same are in force and applicable.

This conveyance is made subject to unpaid real estate taxes for the current tax year, if any, which the Grantees herein, by acceptance of this deed, assume and agree to pay.

Meaning and intending to convey and hereby conveying the same premises conveyed to Grantors herein by deed of William B. Burke by deed dated July 25, 1946 and recorded in the Cumberland County Registry of Deeds in Book 1831, Page 321. Also by deed of Marian D. Hicks dated January 31, 1995 and recorded in the Cumberland County Registry of Deeds in Book 11808, Page 135.

WITNESS our hands and seals this 15th day of March, 1996

WITNESS

Marian D. Hicks by Frederick Hicks her Attorney in Fact

Frederick Hicks

Barbara Hicks Mainville

Barbara Hicks Mainville

BK 12400PE 151

13617

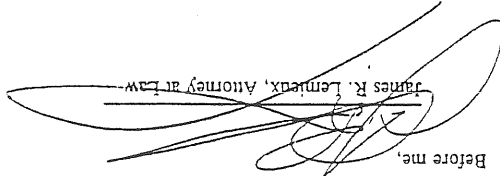
BK 112400Pg 152

STATE OF MAINE
Cumberland, ss.

March 15, 1996

Personally appeared the above named Frederick Hicks and Barbara Hicks Mainville and acknowledged the foregoing instrument to be their free act and deed.

Before me,


~~James R. Lemieux, Attorney at Law~~

RECEIVED
RECORDED REGISTRY OF DEEDS
56 MAR 15 PM 2: 24
CUMBERLAND COUNTY
James R. Lemieux

FINANCIAL CAPACITY

ATTACHMENT 9

Financial Capacity

The applicant is proposing to personally fund the improvements for the project.

TECHNICAL CAPACITY

ATTACHMENT 10

100% Employee Owned
www.sebagotech.com

400 Center Street
Auburn, Maine 04210
ph. (207) 783-5656 fax (207) 783-5655

P.O. Box 1339, One Chabot Street
Westbrook, Maine 04098-1339
ph. (207) 856-0277 fax (207) 856-2206

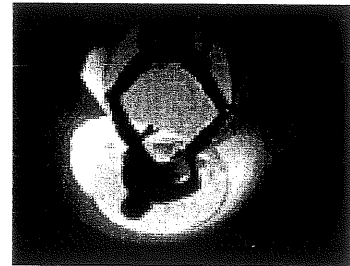
We believe our quality of life in the future will depend on the intelligent management of natural, physical, and human resources. At Sebago Technics, we are committed to the provision of professional services responsive to the needs of the people we serve and the protection of our natural, cultural and economic resources.

Sebago Technics' historical interest and experience in public and private sector projects has served to form our reputation for quality technical services performed on time and on budget. Our current management and technical staff share these objectives, which have been so important to our growth and success. We are large enough to assemble the personnel and equipment resources necessary to accomplish large projects, yet small enough that principal managers maintain day-to-day involvement with our clients.

Our corporate philosophy is founded in our pride and commitment to provide our clients with creative, cost-effective professional services through an organized and responsive process. Our philosophy is supported by the emphasis placed on the major objectives of our practice: To provide a full range of consulting services; To provide our services in a responsive and timely manner; To maintain our continued involvement in quality projects; To provide our clients with design and engineering excellence.

Since its formation in 1981, Sebago Technics has grown to a multi-service consulting firm of more than ninety design professionals and technical staff. Our multi-disciplinary project teams have played significant roles in the design, survey, engineering and implementation of many major projects throughout New England.

Sebago Technics, Inc.
Engineers
Land Surveyors
Landscape Architects
Soil Scientists



Introduction to Sebago Technics, Inc.

Engineering Expertise You Can Build On
Sebago Technics



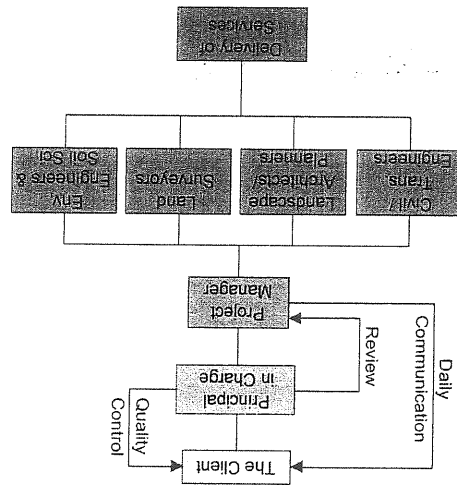
The chart illustrates our corporate structure and details our approach to project organization and management. The professional staff is supported by qualified technicians with the latest in computer technology. Technical software includes AutoCAD 2000i, Land Development Desktop and HydroCAD. The ACCI accounting package maintains up to date project costs and detailed reports of time charges and expenses by specific task.

A senior member of the firm is assigned responsibility for each client, and fills the position of Principal-in-Charge. A Project Manager is assigned to each project to maintain client communication, and coordinate the diverse technical and administrative aspects of the project. The Project Manager is available daily to meet client needs. With the Principal-in-Charge, the Project Manager selects and assigns technical staff as required by the nature and schedule of the project.

an independent section of the firm.

While the firm emphasizes its ability to provide coordinated multi-disciplinary services, each section within the firm practices independently for those clients who may require only certain aspects of our professional service. In some cases, our services may be limited at the outset of a project and more comprehensive as the project progresses. In either case, our multi-disciplinary strength provides a check and balance to each discipline performing services as

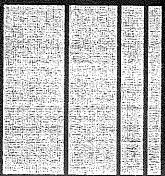
Project teams are selected based on our understanding of client objectives, the special technical requirements of the project, and the management skills necessary to coordinate the comprehensive review and approval process. Specific team members are selected for their individual abilities and demonstrated performance on similar projects.



Our diversified professional experience provides each client with the specialized knowledge and abilities required for each project. In accordance with our corporate philosophy, the firm offers integrated professional services in the fields of civil, environmental and transportation engineering, soil science, land surveying, planning and landscape architecture.

Sebago Technics, Inc. Project Organization



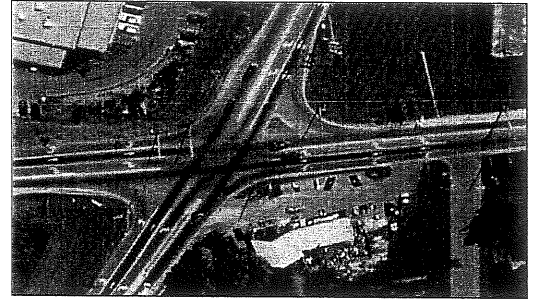
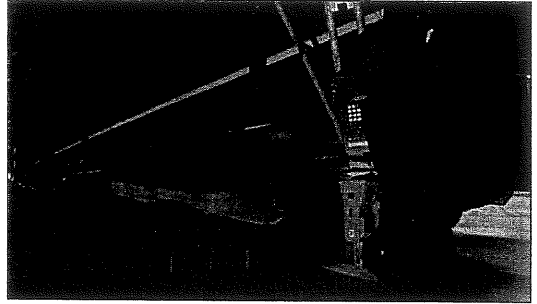
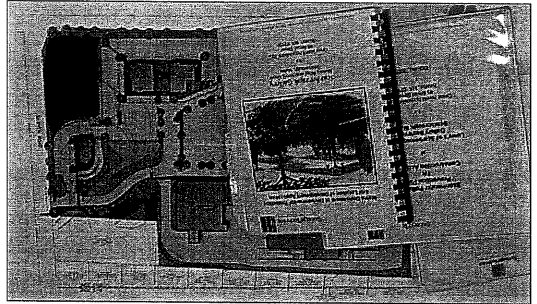
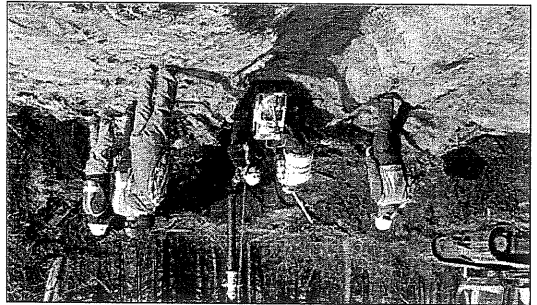


Civil Engineering:
Site grading / drainage / utility design
Erosion / sediment control design
Stormwater management planning
Subdivision design / permitting
Residential / commercial street design
Airport / municipal engineering
Technical review
Construction administration / inspection
Design-build

Environmental Engineering:
Regulatory permitting (state & federal)
Site assessments (ESA Phase I & II)
Water / wastewater engineering
Underground storage tank services
Combined Sewer Overflow (CSO) studies
Water supply / treatment system design
Subsurface wastewater disposal systems

Land Surveying:
Boundary surveys
Topographic surveys
Global Positioning Surveys (GPS)
Construction layout
As-built record documentation
Hydrographic surveys
Land title surveys
Technical deed research

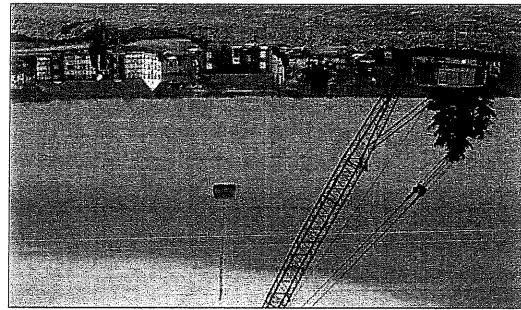
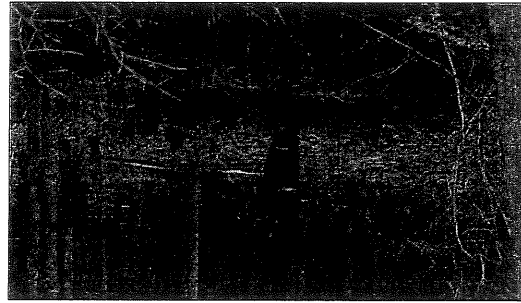
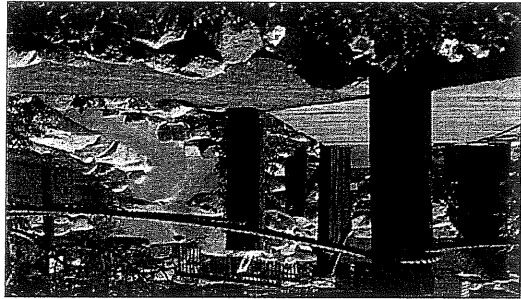
Transportation Engineering:
Highway design
Site location / alignment studies
Traffic analysis / signal design
Pedestrian / bike trail design
Intermodal facility planning / design
Right-of-way mapping
Environmental documentation / permitting
Construction administration



Landscape Architecture:
Master planning
Site selection / feasibility studies
Conceptual / site design
Site improvement / land planning
Urban redevelopment / streetscape design
Recreation / resort facilities design
Planting design

Natural Resources:
Medium / high intensity soil surveys
Soil mapping
Wetland delineation
Wetland mitigation planning / design
Septic system design
HHE-200 preparation
Federal / State permitting

Geotechnical Engineering:
Site characterization
Subsurface / foundation investigations
Earth / rock slope stability analysis
Technical specifications
Field instrumentation
Construction monitoring



ATTACHMENT 11

**SITE/SUBDIVISION PLANS
TRUE STREET SUBDIVISION**

From: Jean Fraser
To: Erico, Thomas
Date: 3/7/2006 9:35:12 AM
Subject: RE: True Street subdivision proposal

Tom

I went on site yesterday and the only constraint to making the relocated and rebuilt True Street wider is that they will need a lot of fill and built up foundations and so expensive; also near wetlands (no trees in the way - could widen existing access drives or place road in a new place without affecting trees). The other existing (private) road is higher and also a good location for an access road.

The house facing Ocean Ave. to the south clearly faces onto Ocean and the garage is facing Ocean - they have recently created a rear access off of True.

is there any traffic reason they couldn't do a one-way loop? (using the existing access drives and connecting them along the lot line between Lot 5 and the "True Street" proposed right of way. How wide would the right-of-way need to be for a loop road?

Anyway...
Jean

>>> "Thomas Erico" <terrico@willbursmith.com> 3/7/2006 7:59:51 AM >>>
Jean--

I have not submitted comments to date. I plan on reviewing this over the next week.

Thomas A. Erico, P.E.
Senior Transportation Engineer
Willbur Smith Associates
59 Middle Street
Portland, Maine 04101
(207) 871-1785 Phone
(207) 871-5825 Fax

-----Original Message-----

From: Jean Fraser [mailto:JF@portlandmaine.gov]
Sent: Monday, March 06, 2006 11:44 AM
To: ELL@portlandmaine.gov; MES@portlandmaine.gov; terrico@willbursmith.com
Cc: DGoyette@woodardcurran.com
Subject: True Street subdivision proposal

Marge, Eric and Tom,

I have taken this over from Kandl and I know it was discussed at the Dev Rev on 4 January. There is nothing on file except DRC comments and I am trying to catch up quickly...

This is the one where four neighbors have got together to regularize non-confirming lots and the street access but in doing so have created 8 lots from 6 lots, with 2 flag shaped lots to achieve the 50 foot street frontage; plus affidavits showing that True Street has been treated as a

city road for at least 20 years.

They are asking for waivers for:

- a. 22' pavement for the road
- b. sidewalks (providing 4' gravel shoulder on one side)
- c. curbing (to maintain existing drainage patterns)

Its scheduled for a Workshop on March 28 (came in Dec 23 '05) and I am drafting a letter - have you sent formal comments to Kandl??

If so could you please resend as they seem to have got lost; if not, please send asap - does it need to go back to Dev Rev???

- as Dan Goyette's review (attached) raises a lot of issues - with a good suggestion that they loop the road and if the loop could be one-way around the Sniper's existing house/garage it would seem a much better solution.

Thanks for your help...wouldn't normally try to cover all this by e-mails but...
Jean

From: Jean Fraser
To: Labelle, Eric; Schmuckal, Marge; terrico@willbursmith.com
Date: 3/6/2006 11:44:03 AM
Subject: True Street subdivision proposal

Marge, Eric and Tom,

I have taken this over from Kandi and I know it was discussed at the Dev Rev on 4 January. There is nothing on file except DRC comments and I am trying to catch up quickly...

This is the one where four neighbors have got together to regularize non-confirming lots and the street access but in doing so have created 8 lots from 6 lots, with 2 flag shaped lots to achieve the 50 foot street frontage; plus affidavits showing that True Street has been treated as a city road for at least 20 years.

They are asking for waivers for:

- a. 22' pavement for the road
- b. sidewalks (providing 4' gravel shoulder on one side)
- c. curbing (to maintain existing drainage patterns)

Its scheduled for a Workshop on March 28 (came in Dec 23 '05) and I am drafting a letter - have you sent formal comments to Kandi??

If so could you please resend as they seem to have got lost; if not, please send asap- does it need to go back to Dev Rev???

- as Dan Goyette's review (attached) raises a lot of issues- with a good suggestion that they loop the road and if the loop could be one-way around the Sniper's existing house/garage it would seem a much better solution.

Thanks for your help...wouldn't normally try to cover all this by e-mails but...
Jean

CC: Goyette, Dan



CORPORATE OFFICES: Maine, Massachusetts,
New Hampshire, Connecticut, Florida
Operational offices throughout the U.S.

MEMORANDUM

05-274

TO: Kandi Talbot, City of Portland Planner
FROM: Dan Goyette, PE - Development Review Coordinator, Woodard & Curran, Inc.
DATE: January 20, 2006
RE: True Street Subdivision

Woodard & Curran has reviewed the Subdivision Sketch Plan submission for the proposed project at True Street, off of Ocean Avenue. The project involves the creation of an eight lot subdivision.

Documents Reviewed

- City of Portland Subdivision Plan Application for True Street Subdivision, dated December 22, 2005.

1. Stormwater Management

A. The applicant has indicated that the existing driveway access controls stormwater runoff through the use of shallow swales and wetlands on both sides of the road connected by a culvert. The existing conditions site plan does not indicate the swales or culvert.

B. The existing driveway is 12 feet wide. The proposed street is 28 feet wide. The applicant has not determined the volume or indicated how the additional stormwater runoff from the expanded street will be handled.

C. The applicant has proposed directing runoff to the wetlands. The topography of the land south of the proposed subdivision has not been shown. It is unclear if the stormwater from the subdivision will cause the lots to the south of the development to flood.

D. A stormwater manhole has been indicated on the plans approximately 150 feet north of the proposed subdivision street. The applicant is proposing not to tie in to the existing collection system due to their desire not to install curbing and sidewalks along the proposed street.

2. Roadway Construction and Layout

A. The cross section provided on the sketch plan for the proposed street indicates that the shoulders are to be loamed and seeded. The site plan and supporting narrative indicate that the shoulders are to be gravel. This discrepancy should be corrected.

B. The proposed swales and culverts have not been indicated on the site. Also, the proposed grading associated with the street construction has not been shown. Therefore, the wetland impact limits shown on the plans may be inaccurate.

C. The applicant has proposed installing a double hammerhead turnaround at the end of the street. The City requires a single hammerhead. The installation of the second hammerhead appears to be the applicants' way of providing adequate street frontage for a proposed lot.

D. The use of a double hammerhead results in an additional wetland impact of 1,500 square feet. This additional wetland impact can be eliminated by using a single hammerhead as required.

E. The shared driveway for Lots 3 and 4, and the shared driveway for Lots 5, 6 and 7 are shown as 12 feet wide. The driveways are required to be at least 24 feet wide so that vehicles may pass by one another when traveling in opposite directions.

F. The driveways accessing the hammerheads appear to have a very tight radius. It is not clear if emergency, or service vehicles such as oil trucks, will be able to access the driveways from the hammerheads.

G. The elimination of the driveway for Lot 1 from Ocean Avenue should be considered. By accessing the lot from the subdivision street it will provide for added safety.

H. Site distances for the subdivision street have not been indicated.

I. The applicant is requesting a waiver from the street construction standards which require the installation of sidewalks and curbing. The Portland Public Works Department will be consulted in regards to the waiver request.

3. Utilities

A. The applicant has not provided information on the utilities for the proposed subdivision therefore no comments can be made at this time.

4. General Engineering

A. Lots 4 and 6 are odd shaped (flag shaped) lots. The lots are this shape so they will meet the street frontage criteria. The applicant should look at other possible street layouts to avoid these odd shaped lots.

B. The applicant may wish to consider constructing a looped street rather than a double hammerhead to gain frontage. This would negate the need to install 24 foot wide driveways and provide for more traditionally shaped lots. It would also provide for open space within the loop, consistent with the communal feel of the neighborhood.

C. A soils map for the proposed development has not been provided.

D. A landscaping plan has not been provided.

E. A lighting plan has not been provided.

DRG

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cc: File