

Vel Total (ft/s)	2.15	Avg. Vel. (ft/s)	0.77	4.10
0.49				
Max Chl Dpth (ft)	14.24	Hydr. Depth (ft)	5.78	13.75
4.06				
Conv. Total (cfs)	656952.3	Conv. (cfs)	136808.3	519307.1
836.9				
Length Wtd. (ft)		Wetted Per. (ft)	595.56	181.92
11.66				
Min Ch El (ft)	231.86	Shear (lb/sq ft)	0.14	0.32
0.07				
Alpha	2.89	Stream Power (lb/ft s)	1356.24	0.00
0.00				
Frctn Loss (ft)		Cum Volume (acre-ft)		
C & E Loss (ft)		Cum SA (acres)		

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	248.50	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.30	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	248.20	Reach Len. (ft)		
Crit W.S. (ft)	239.71	Flow Area (sq ft)	4683.49	2837.82
53.08				
E.G. Slope (ft/ft)	0.000475	Area (sq ft)	5035.76	2837.82
53.08				
Q Total (cfs)	19382.00	Flow (cfs)	4999.93	14348.35
33.72				
Top Width (ft)	977.32	Top Width (ft)	787.80	179.07
10.45				
Vel Total (ft/s)	2.56	Avg. Vel. (ft/s)	1.07	5.06
0.64				
Max Chl Dpth (ft)	16.34	Hydr. Depth (ft)	7.88	15.85
5.08				
Conv. Total (cfs)	889028.1	Conv. (cfs)	229340.6	658140.7
1546.8				
Length Wtd. (ft)		Wetted Per. (ft)	595.56	181.92
14.70				
Min Ch El (ft)	231.86	Shear (lb/sq ft)	0.23	0.46
0.11				

Alpha	2.94	Stream Power (lb/ft s)	1356.24	0.00
0.00				
Frctn Loss (ft)		Cum Volume (acre-ft)		
C & E Loss (ft)		Cum SA (acres)		

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

SUMMARY OF MANNING'S N VALUES

River:W Br Neshminy

Reach		River Sta.	n1	n2	n3	n4	n5	
n6	n7	n8	n9	n10	n11	n12	n13	
1		18937.81		.05	.03	.05	.05	.038
.038	.038	.05	.05	.03				
1		18500.98		.05	.03	.05	.038	.038
.038	.05	.12	.05	.03	.05	.03		.05
1		18437.76	Bridge					
1		18388.17		.05	.12	.04	.05	.12
.05								
1		18288.75		.05	.12	.042	.12	.05
1		17911.97		.05	.12	.04	.04	.04
.12	.05							
1		17408.13		.05	.05	.12	.04	.04
.12	.05							
1		17013.07		.05	.12	.04	.04	.04
.12	.05							
1		16436.43		.05	.12	.04	.04	.04
.04	.04	.12	.05					
1		15916.41		.05	.05	.12	.04	.04
.01	.04	.04	.12	.05				
1		15388.21		.05	.05	.05	.04	.04
.04	.04	.04	.12	.05				
1		15308.34		.05	.05	.05	.04	.04
.04	.04	.04	.12	.05				
1		15257.58	Bridge					
1		15200.99		.05	.12	.12	.04	.04

	.05	.05	.05					
1			14915.63	.05	.05	.12	.04	.04
	.05	.12	.05	.12				
1			14578.26	.05	.12	.04	.04	.04
	.04	.04	.12	.03				
1			14203.75	.12	.04	.04	.04	.12
	.12	.03						
1			14145.82	Bridge				
1			14099.93	.05	.12	.12	.04	.04
	.045	.03						
1			13997.64	.05	.12	.04	.04	.04
	.04	.04	.12	.03				
1			13592.2	.05	.12	.04	.12	.03
	.03	.03	.05					
1			12998.26	.05	.12	.04	.12	.05
	.05							
1			12717.34	.05	.12	.04	.04	.04
	.12	.05						
1			12347.56	.05	.12	.04	.04	.04
	.04	.05	.12	.05				
1			11770.05	.05	.12	.04	.04	.04
	.04	.04	.12	.05				
1			11466.44	.03	.05	.12	.12	.04
	.04	.04	.12	.05				
1			11130.8	.12	.03	.045	.04	.04
	.04	.12	.05					
1			10624.89	.05	.12	.04	.04	.04
	.12	.05						
1			10209.28	.12	.04	.04	.04	.05
1			9873.511	.12	.04	.04	.04	.05
1			9475.018	.05	.12	.04	.04	.04
	.12	.05						
1			8965.166	.05	.12	.04	.04	.04
	.12	.05						
1			8454.733	.05	.12	.04	.04	.04
	.12	.05						
1			7955.335	.05	.12	.04	.04	.04
	.04	.12	.05					
1			7649.488	.05	.12	.04	.04	.04
	.12	.05						
1			7377.751	.03	.12	.04	.04	.04
	.04	.04	.12	.05				
1			6919.301	.03	.12	.04	.04	.04
	.12							
1			6428.657	.05	.03	.12	.04	.04
	.04	.12						
1			5952.17	.05	.05	.03	.04	.04

	.04	.12							
1			5604.917	.05	.05	.03	.12	.04	
	.04	.04	.12	.12					
1			5177.776	.03	.05	.12	.04	.04	
	.04	.12	.12						
1			4842.552	.05	.03	.05	.12	.04	
	.04	.04	.12	.05					
1			4310.577	.03	.05	.12	.04	.04	
	.04	.04	.05						
1			3983.411	.03	.05	.12	.04	.04	
	.04	.04	.12	.05					
1			3498.278	.03	.05	.12	.04	.04	
	.04	.05	.03	.05					
1			3023.827	.05	.03	.12	.04	.04	
	.04	.04	.04	.05	.05	.05			
1			2697.228	.05	.03	.12	.04	.04	
	.04	.04	.04	.05	.05	.05			
1			2480.647	.03	.05	.12	.05	.05	
	.04	.04	.05	.05					
1			2460.118	Bridge					
1			2439.608	.05	.12	.05	.05	.04	
	.05	.05							
1			2173.758	.05	.04	.04	.04	.05	
	.05	.05							
1			1933.057	.05	.03	.05	.03	.05	
	.03	.05	.04	.04	.04	.05	.05		
1			1774.36	.05	.03	.05	.045	.042	
	.05	.05	.05						
1			1728.924	Bridge					
1			1685.841	.05	.03	.045	.042	.042	
	.12	.05	.05						
1			1488.97	.05	.04	.04	.04	.04	
	.04	.12	.05	.05	.12				
1			1218.175	.05	.05	.04	.04	.04	
	.04	.12							
1			839.6553	.05	.05	.05	.04	.04	
	.04	.12	.12	.05					
1			241.2043	.05	.12	.05	.12	.05	
	.05	.04	.04	.04	.04	.12	.05		
1			58.01602	.05	.12	.04	.12	.05	

SUMMARY OF REACH LENGTHS

River: W Br Neshminy

Reach	River Sta.	Left	Channel	Right
1	18937.81	428.53	436.83	443.78
1	18500.98	106.27	112.81	117.07
1	18437.76	Bridge		
1	18388.17	104.32	99.42	99.99
1	18288.75	348.88	376.78	384.56
1	17911.97	454.17	503.84	444.58
1	17408.13	417.6	395.07	266.22
1	17013.07	561.56	574.74	500.62
1	16436.43	528.61	521.92	543.43
1	15916.41	491.14	528.2	507.1
1	15388.21	60.8	79.86	85.92
1	15308.34	106.89	107.35	102.82
1	15257.58	Bridge		
1	15200.99	332.95	285.36	267.29
1	14915.63	363.66	337.37	261.75
1	14578.26	431.74	374.5	152.77
1	14203.75	94.32	103.83	103.09
1	14145.82	Bridge		
1	14099.93	93.64	102.28	123.71
1	13997.64	378.67	405.44	424.26
1	13592.2	260.8	593.93	588.98
1	12998.26	137.16	280.93	307.93
1	12717.34	124.15	369.78	428.59
1	12347.56	207	577.5	465.88
1	11770.05	327.44	303.61	203.08
1	11466.44	368.75	335.64	110.7
1	11130.8	561.91	505.91	229.13
1	10624.89	292.64	415.6	285.68
1	10209.28	353.32	335.77	320.32
1	9873.511	329.3	398.49	409.07
1	9475.018	373.05	509.85	541.29
1	8965.166	472.78	510.43	528.6
1	8454.733	376.1	499.4	534.3
1	7955.335	259.83	305.85	157.89
1	7649.488	322.31	271.74	189.84
1	7377.751	434.15	459.29	437.92
1	6919.301	239.23	489.81	272.12
1	6428.657	515.23	476.49	147.78
1	5952.17	369.19	347.25	42.15
1	5604.917	444.43	427.14	137.84
1	5177.776	310.89	335.22	338.41
1	4842.552	383.76	532.05	503.01
1	4310.577	279.48	327.09	326.13
1	3983.411	329.01	485.13	520.5
1	3498.278	473.48	474.45	417.37
1	3023.827	348.54	326.6	206.58

1	2697.228	212.34	216.58	214.85
1	2480.647	40.41	41.04	41.32
1	2460.118	Bridge		
1	2439.608	287.35	265.85	71.47
1	2173.758	245.81	240.7	107.6
1	1933.057	147	158.7	207.02
1	1774.36	86.88	88.52	80.94
1	1728.924	Bridge		
1	1685.841	197.77	196.87	193.67
1	1488.97	252.1	270.8	273.04
1	1218.175	344.72	378.52	389.6
1	839.6553	538.37	598.45	533.67
1	241.2043	176.62	183.19	177.62
1	58.01602	89.48	58.02	101.77

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: W Br Neshminy

Reach	River Sta.	Contr.	Expan.
1	18937.81	.3	.5
1	18500.98	.3	.5
1	18437.76	Bridge	
1	18388.17	.3	.5
1	18288.75	.1	.3
1	17911.97	.1	.3
1	17408.13	.1	.3
1	17013.07	.1	.3
1	16436.43	.1	.3
1	15916.41	.1	.3
1	15388.21	.3	.5
1	15308.34	.3	.5
1	15257.58	Bridge	
1	15200.99	.3	.5
1	14915.63	.1	.3
1	14578.26	.3	.5
1	14203.75	.3	.5
1	14145.82	Bridge	
1	14099.93	.3	.5
1	13997.64	.1	.3
1	13592.2	.1	.3
1	12998.26	.1	.3
1	12717.34	.1	.3
1	12347.56	.1	.3
1	11770.05	.1	.3
1	11466.44	.1	.3

1	11130.8	.1	.3
1	10624.89	.1	.3
1	10209.28	.1	.3
1	9873.511	.1	.3
1	9475.018	.1	.3
1	8965.166	.1	.3
1	8454.733	.1	.3
1	7955.335	.1	.3
1	7649.488	.1	.3
1	7377.751	.1	.3
1	6919.301	.1	.3
1	6428.657	.1	.3
1	5952.17	.1	.3
1	5604.917	.1	.3
1	5177.776	.1	.3
1	4842.552	.1	.3
1	4310.577	.1	.3
1	3983.411	.1	.3
1	3498.278	.1	.3
1	3023.827	.1	.3
1	2697.228	.3	.5
1	2480.647	.3	.5
1	2460.118 Bridge		
1	2439.608	.3	.5
1	2173.758	.1	.3
1	1933.057	.3	.5
1	1774.36	.3	.5
1	1728.924 Bridge		
1	1685.841	.3	.5
1	1488.97	.1	.3
1	1218.175	.1	.3
1	839.6553	.1	.3
1	241.2043	.1	.3
1	58.01602	.1	.3

Appendix B

HEC-RAS Version 4.1.0 Jan 2010
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

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X      X  XXXXXX   XXXX      XXXX      XX      XXXX
X      X  X        X   X      X   X      X   X      X
X      X  X        X        X   X      X   X      X
XXXXXXXX XXXX      X        XXX XXXX      XXXXXX   XXXX
X      X  X        X        X   X      X   X          X
X      X  X        X   X      X   X      X   X          X
X      X  XXXXXX   XXXX      X   X      X   X      XXXXX

```

PROJECT DATA

Project Title: WestBranchNeshaminy
Project File : WestBranchNeshaminy.prj
Run Date and Time: 9/19/2025 11:00:02 AM

Project in English units

Project Description:

Neshaminy Watershed - West Branch Neshaminy Creek. Detailed Study. Bucks Co,
PA.
Units in feet, NAVD88
Date to ITR:

PLAN DATA

Plan Title: Proposed
Plan File : r:\2025\PAC250095.00\Technical\Flood Study\Rev-0\WestBranchNeshaminy.p04

Geometry Title: Proposed
Geometry File : r:\2025\PAC250095.00\Technical\Flood
Study\Rev-0\WestBranchNeshaminy.g02

Flow Title : Basic Flow File
Flow File : r:\2025\PAC250095.00\Technical\Flood
Study\Rev-0\WestBranchNeshaminy.f01

Plan Summary Information:

Number of: Cross Sections = 55 Multiple Openings = 0

Culverts	=	0	Inline Structures	=	0
Bridges	=	5	Lateral Structures	=	0

Computational Information

Water surface calculation tolerance	=	0.01
Critical depth calculation tolerance	=	0.01
Maximum number of iterations	=	20
Maximum difference tolerance	=	0.33
Flow tolerance factor	=	0.001

Computation Options

Critical depth computed at all cross sections	
Conveyance Calculation Method:	At breaks in n values only
Friction Slope Method:	Average Conveyance
Computational Flow Regime:	Subcritical Flow

FLOW DATA

Flow Title: Basic Flow File

Flow File : r:\2025\PAC250095.00\Technical\Flood Study\Rev-0\WestBranchNeshaminy.f01

Flow Data (cfs)

River	Reach	RS	10%	2%
1%	.2%			
W Br Neshminy	1	18937.81	2671	10810
12761	19382			
W Br Neshminy	1	241.2043	2671	10810
12761	19382			

Boundary Conditions

River	Reach	Profile	Upstream
Downstream			
W Br Neshminy	1	10%	
Known WS = 243.5			
W Br Neshminy	1	2%	
Known WS = 245.3			
W Br Neshminy	1	1%	
Known WS = 246.1			
W Br Neshminy	1	.2%	

Known WS = 248.2

GEOMETRY DATA

Geometry Title: Proposed

Geometry File : r:\2025\PAC250095.00\Technical\Flood

Study\Rev-0\WestBranchNeshaminy.g02

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 18937.81

INPUT

Description:

Station Elevation Data num= 480

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	278	6.28	278.13	18.13	277.46	20.73	277.41	24.26	277.51
28.53	277.68	32.04	277.72	34.81	277.58	44.83	276.95	50.58	277.51
51.6	277.58	59.57	277.22	61.19	277.16	64.76	277.35	69.38	277.48
70.34	277.4	80.78	276.7	81.47	276.59	84.36	276.26	90.87	275.4
92.42	275.39	95.91	275.16	101.66	275.01	103.11	274.91	105.12	275.04
107.64	275.15	111.05	275.18	112.46	275.17	117.83	274.94	118.72	274.93
120.9	274.97	124.87	274.88	126.47	275.04	134.3	275.14	135.09	275.13
135.63	275.23	141.13	275.64	143.85	275.81	148.56	275.83	151.87	275.57
158	275.22	161.07	275.18	163.68	275.1	165.32	274.94	168.31	274.54
168.93	274.53	181.67	273.99	184.65	274.16	189.04	274.24	192.23	273.93
194.18	273.79	198.83	273.35	200.63	273.11	201.6	273.07	203.71	272.74
206.57	272.44	210.35	272.69	211.96	272.65	214.53	272.76	218.15	272.72
223.55	272.72	224.38	272.83	225.73	272.8	228.46	272.7	234.57	272.53
236.97	272.42	239.49	272.35	244.26	272.43	247.16	272.29	249.45	272.32
255.25	271.8	256.19	271.73	262.79	271.77	267.22	271.29	268.65	271.21
275.22	271.1	276.51	271.24	288.28	272	291.98	272.31	293.68	272.35
336.01	273.4	360.75	273.09	362.27	273.05	371.68	273.42	380.02	273.4
384.09	273.35	393.72	273.1	399.52	273.31	403.37	273.14	407.41	273.02
409.18	272.96	413.62	273.05	414.9	273.06	417.53	272.86	420.09	272.74
423.31	272.92	425.36	272.84	428.95	272.59	432.23	272.55	434.32	272.49
438.06	272.51	440.78	272.55	441.96	272.52	446.52	272.57	450.2	272.12
451.23	272.14	452.62	272.04	457.22	271.98	461.54	271.8	462.85	271.85
465.8	271.74	471.37	271.79	476.26	271.67	479.02	272.04	481.52	272.38
482.94	272.54	484.57	272.18	488	271.51	493.1	271.61	503.12	271.39
506.02	271.34	506.36	271.3	510.69	271.03	512.85	270.93	515.41	270.73
517.52	270.54	524.06	270.72	531.22	270.56	533.15	270.48	539.71	269.84
548.4	269.68	550.51	269.85	555.55	270.21	557.44	269.88	561	269.35
563.48	269.33	568.95	269.33	573.59	269.52	577.95	269.37	579.31	269.29

581.59	269.31	583.27	269.43	587.01	269.47	590.86	269.1	591.45	268.95
603.32	267.82	607.64	267.18	612.35	265.99	613.21	265.9	615.54	265.42
620.37	265.14	622.75	265.02	629.51	263.47	637.6	261.87	640.31	261.7
642.57	261.6	645.62	261.28	648.75	260.77	671	259.7	697.5	260.4
702.37	262.48	706.26	262.77	708.32	262.93	710.56	263.78	715.14	264.03
720.23	264.92	722.22	265.07	724.15	265.06	726.25	265.23	728.99	265.05
732.3	265.1	736.32	265.59	736.81	265.63	742.16	265.47	747.08	265.65
750.93	265.71	754.01	265.66	757.18	265.88	761.65	266.06	765.99	265.69
770.09	265.75	771.66	265.83	774.54	266.04	777.49	266.02	782.69	266.03
783.42	266.11	786.94	265.83	793.69	265.82	795.4	265.89	798.03	265.92
799.84	265.72	802.28	265.6	803.53	265.73	805.86	265.65	808.14	265.66
812.39	265.65	819.02	265.48	820.78	265.45	823.37	265.55	825.18	265.54
829.05	265.62	833.33	265.49	836.81	265.32	842.85	265.24	845.03	265.26
850.43	265.42	853.13	265.34	858.93	265.05	860.32	265.08	863.1	265.01
871.09	265.04	871.59	265	882.27	264.81	885.96	265.01	887.08	265
890.8	264.78	891.8	264.88	898.15	264.36	901.89	264.02	905.17	264.15
910.66	263.73	913.74	264.22	916.07	264.24	924.61	264.26	925.83	264.23
927.37	264.35	932.73	264.39	938.3	264.05	943.09	264.73	944.51	264.84
947.27	264.75	947.91	264.8	953.04	264.87	954.96	264.93	964.79	263.04
969.55	261.39	975	261.95	977.66	262.58	978.3	262.68	982.15	262.98
988.82	263.62	996.88	264.6	998.16	264.83	1000.43	265.14	1003.54	266.07
1004.73	266.35	1007.11	266.72	1008.14	266.8	1011.02	267.45	1014.7	267.5
1016.24	267.59	1019.38	268.21	1021.16	268.43	1024.82	268.69	1026.52	268.75
1028.28	268.55	1031.84	268.37	1035.08	268.33	1039.32	268.52	1041.01	268.71
1050.93	269.69	1053.33	269.76	1055.21	269.69	1058.2	269.74	1060.56	269.78
1062.78	269.63	1065.38	269.62	1068.38	269.93	1068.65	269.92	1074.57	269.39
1075.43	269.38	1078.37	269.28	1082.31	269.43	1085.68	269.37	1087.04	269.29
1089.08	269.29	1092.7	269.42	1095.98	269.5	1098.21	269.6	1099.23	269.6
1104.17	269.78	1106.17	269.84	1109.57	269.85	1112.29	269.84	1116.44	270.31
1116.86	270.3	1119.83	269.99	1122.57	270.1	1126.95	270.25	1130.3	270.29
1133.51	270.23	1137.37	270.3	1138.79	270.43	1140.68	270.5	1142.05	270.58
1146.39	270.66	1147.94	270.72	1149.51	270.65	1151.15	270.63	1152.5	270.7
1154.94	270.65	1158.31	270.62	1161.57	270.85	1167.96	270.78	1171.43	271
1172.09	271.13	1174.22	271.33	1175.43	271.44	1179.94	272.13	1182.27	272.59
1185.55	273.12	1189.5	273.8	1190.51	274.05	1192.56	274.46	1196.89	274.85
1199.82	275.2	1201.49	275.68	1202.81	275.78	1205.19	276.06	1210.1	276.52
1213.16	277.24	1215.49	277.45	1220.49	277.69	1223.61	278.12	1225.31	278.25
1227.56	278.27	1234.16	278.68	1239.3	278.79	1244.97	279.01	1250.56	279.11
1252.16	279.05	1257.07	279.21	1258.24	279.43	1262.54	279.23	1263.28	279.24
1265.62	279.43	1268.46	279.39	1273.03	279.19	1273.52	279.25	1276.05	279.39
1278.7	279.2	1281.3	279.11	1283	279.31	1286.6	279.23	1288.12	279.17
1290.71	279.13	1295.78	279.12	1298.14	279.14	1300.78	279.07	1303.47	279.09
1304.64	279	1307.51	279.4	1315.16	279.12	1318.06	279.57	1322.01	279.53
1325.64	279.32	1328.65	279.46	1332.2	279.49	1335.98	279.66	1339.06	279.48
1343.4	279.55	1346.58	279.53	1348.03	279.63	1351.03	279.66	1353.57	279.57
1355.62	279.46	1356.97	279.48	1361.46	279.62	1367.12	279.83	1370.21	279.83
1374.76	279.74	1379.11	280.02	1380.52	279.9	1384.71	279.65	1387.86	279.57
1389.54	279.62	1390.85	279.74	1395.3	279.75	1398.15	279.78	1399.68	279.66
1401.11	279.71	1403.47	279.85	1405.41	279.89	1408.3	279.91	1411.37	280.07
1413.33	280.05	1418.25	279.49	1418.9	279.44	1421.82	279.76	1425.82	279.85

1429.13	279.87	1430.4	279.82	1432.73	279.56	1437.18	279.29	1439.48	279.12
1442.02	279.01	1443.38	278.86	1447.92	278.27	1449.89	278.2	1452.82	278.23
1454.94	278.03	1459.22	277.45	1461.86	277.31	1463.19	277.18	1465.65	277.24
1470.47	277.01	1471.27	276.93	1477.25	276.67	1481.68	276.23	1484.02	275.83
1484.94	275.81	1486.67	275.63	1489.83	275.5	1493.04	275.2	1494.37	275.14
1496.69	275.08	1501.94	274.72	1504.58	274.59	1506	274.6	1512.04	274.5
1516.05	274.65	1519.43	274.8	1522.19	274.41	1524.39	274.45	1525.26	274.57
1529.93	274.47	1532.48	274.54	1535.74	274.7	1541.37	274.76	1542.68	274.75
1543.77	274.67	1547.3	274.54	1553.28	274.54	1555.87	274.81	1557.46	274.9
1563.22	275.09	1565.92	274.77	1570.87	275.16	1573.47	275.12	1576.39	275.18
1581.3	275.08	1583.79	274.87	1587.12	274.79	1590.72	275.18	1591.87	275.42
1594.03	275.38	1596.91	275.52	1599.14	275.47	1604.32	275.62	1607.23	275.37
1614.61	275.67	1614.84	275.69	1617.22	275.65	1617.42	275.62	1619.19	275.91
1626.62	276.95	1635.55	279.17	1637.51	279.17	1640.74	279.24	1644.89	279.35
1645.62	279.27	1647.7	279.17	1649.12	279.16	1650.31	279.19	1656.54	278.52
1664.41	277.3	1668.64	277.35	1674.69	277.1	1675.97	277.09	1680.42	277.29
1682.02	277.45	1686.21	277.66	1688.78	277.43	1691.99	277.47	1696.41	277.7
1699.06	277.67	1702.31	277.71	1706.55	277.72	1708.85	277.98	1709.57	278

Manning's n Values			num= 10								
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	407.41	.03	479.02	.05	622.75	.05	645.62	.038		
706.26	.038	720.23	.038	1058.2	.05	1174.22	.05	1516.05	.03		

Bank Sta:	Left	Right	Lengths:		Left Channel	Right	Coeff	Contr.	Expan.
	622.75	720.23		428.53	436.83	443.78		.3	.5

Ineffective Flow			num= 1		
Sta L	Sta R	Elev	Permanent		
0	411.3	279.3	F		

Blocked Obstructions			num= 1		
Sta L	Sta R	Elev			
297.42	394.88	280			

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	268.18	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.05	Wt. n-Val.	0.050	0.040
0.038				
W.S. Elev (ft)	268.12	Reach Len. (ft)	428.53	436.83
443.78				
Crit W.S. (ft)	264.20	Flow Area (sq ft)	39.05	647.72
935.54				
E.G. Slope (ft/ft)	0.000255	Area (sq ft)	39.05	647.72
935.54				
Q Total (cfs)	2671.00	Flow (cfs)	26.44	1398.10
1246.47				
Top Width (ft)	418.83	Top Width (ft)	22.63	97.48
298.72				

Vel Total (ft/s)	1.65	Avg. Vel. (ft/s)	0.68	2.16
1.33				
Max Chl Dpth (ft)	8.42	Hydr. Depth (ft)	1.73	6.64
3.13				
Conv. Total (cfs)	167286.7	Conv. (cfs)	1655.8	87563.9
78067.0				
Length Wtd. (ft)	438.28	Wetted Per. (ft)	22.91	98.60
300.10				
Min Ch El (ft)	259.70	Shear (lb/sq ft)	0.03	0.10
0.05				
Alpha	1.21	Stream Power (lb/ft s)	1709.57	0.00
0.00				
Frctn Loss (ft)	0.16	Cum Volume (acre-ft)	159.07	235.10
94.67				
C & E Loss (ft)	0.04	Cum SA (acres)	77.86	36.96
53.05				

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	273.06	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.10	Wt. n-Val.	0.049	0.040
0.039				
W.S. Elev (ft)	272.96	Reach Len. (ft)	428.53	436.83
443.78				
Crit W.S. (ft)	267.33	Flow Area (sq ft)	517.84	1118.94
2882.89				
E.G. Slope (ft/ft)	0.000280	Area (sq ft)	594.46	1118.94
2882.89				
Q Total (cfs)	10810.00	Flow (cfs)	549.95	3560.61
6699.44				
Top Width (ft)	863.43	Top Width (ft)	301.63	97.48
464.32				
Vel Total (ft/s)	2.39	Avg. Vel. (ft/s)	1.06	3.18
2.32				
Max Chl Dpth (ft)	13.26	Hydr. Depth (ft)	2.51	11.48
6.21				
Conv. Total (cfs)	645621.9	Conv. (cfs)	32845.6	212655.9
400120.5				
Length Wtd. (ft)	438.42	Wetted Per. (ft)	207.27	98.60
466.12				

Min Ch El (ft)	259.70	Shear (lb/sq ft)	0.04	0.20
0.11				
Alpha	1.18	Stream Power (lb/ft s)	1709.57	0.00
0.00				
Frctn Loss (ft)	0.15	Cum Volume (acre-ft)	644.28	401.20
456.58				
C & E Loss (ft)	0.01	Cum SA (acres)	133.92	36.67
99.66				

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	273.85	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.11	Wt. n-Val.	0.048	0.040
0.039				
W.S. Elev (ft)	273.73	Reach Len. (ft)	428.53	436.83
443.78				
Crit W.S. (ft)	267.68	Flow Area (sq ft)	681.56	1194.58
3244.96				
E.G. Slope (ft/ft)	0.000278	Area (sq ft)	844.70	1194.58
3244.96				
Q Total (cfs)	12761.00	Flow (cfs)	838.46	3949.52
7973.02				
Top Width (ft)	896.90	Top Width (ft)	330.53	97.48
468.89				
Vel Total (ft/s)	2.49	Avg. Vel. (ft/s)	1.23	3.31
2.46				
Max Chl Dpth (ft)	14.03	Hydr. Depth (ft)	3.22	12.25
6.92				
Conv. Total (cfs)	764943.4	Conv. (cfs)	50260.5	236749.3
477933.6				
Length Wtd. (ft)	438.38	Wetted Per. (ft)	212.20	98.60
470.75				
Min Ch El (ft)	259.70	Shear (lb/sq ft)	0.06	0.21
0.12				
Alpha	1.17	Stream Power (lb/ft s)	1709.57	0.00
0.00				
Frctn Loss (ft)	0.14	Cum Volume (acre-ft)	751.72	429.17
535.18				
C & E Loss (ft)	0.01	Cum SA (acres)	139.94	36.70
105.59				

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	276.42	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.12	Wt. n-Val.	0.045	0.040
0.039				
W.S. Elev (ft)	276.30	Reach Len. (ft)	428.53	436.83
443.78				
Crit W.S. (ft)	268.77	Flow Area (sq ft)	1224.35	1444.81
4649.17				
E.G. Slope (ft/ft)	0.000243	Area (sq ft)	1836.45	1444.81
4649.17				
Q Total (cfs)	19382.00	Flow (cfs)	2078.39	5041.43
12262.19				
Top Width (ft)	1167.35	Top Width (ft)	441.30	97.48
628.57				
Vel Total (ft/s)	2.65	Avg. Vel. (ft/s)	1.70	3.49
2.64				
Max Chl Dpth (ft)	16.60	Hydr. Depth (ft)	5.79	14.82
7.40				
Conv. Total (cfs)	1244606.0	Conv. (cfs)	133462.5	323732.8
787410.6				
Length Wtd. (ft)	438.31	Wetted Per. (ft)	212.20	98.60
630.97				
Min Ch El (ft)	259.70	Shear (lb/sq ft)	0.09	0.22
0.11				
Alpha	1.12	Stream Power (lb/ft s)	1709.57	0.00
0.00				
Frctn Loss (ft)	0.11	Cum Volume (acre-ft)	1100.11	512.39
794.25				
C & E Loss (ft)	0.01	Cum SA (acres)	157.51	36.95
119.91				

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 18500.98

INPUT

Description:

Station Elevation Data		num=		480					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	276.37	4.37	276.35	9.05	276.41	19.19	277.23	20.05	277.28
21.42	277.25	32.69	276.87	35.7	277.02	44.69	276.78	46.58	276.87
48.8	276.9	79.5	276.67	80.63	276.72	82.22	276.69	84.76	276.5
86.21	276.41	86.76	276.14	88.62	275.75	89.6	275.67	91.89	275.58
96.65	275.08	100.5	274.77	103.03	274.6	108.25	274.53	110.61	274.44
112.31	274.21	122.44	274.12	125.48	273.99	131.67	273.85	136.31	273.67
142.81	273.7	144.18	273.67	145.51	273.68	148.63	273.53	150.54	273.59
154.02	273.33	154.84	273.28	160.67	273.61	163.35	273.59	169.41	273.45
171.78	273.44	173.29	273.38	176.77	273.22	178.31	273.19	181.15	272.95
181.58	272.95	183.54	272.86	186.95	272.81	187.7	272.86	190.15	272.61
192.17	272.44	198.55	272.56	199.53	272.55	202.04	272.48	202.91	272.47
206.81	272.35	209.33	272.26	211.53	272.29	213.66	272.24	216.81	272.26
220.38	272.2	226.53	271.92	228.9	271.73	231.38	271.62	233.95	271.69
235.73	271.85	237.88	271.91	239.09	271.86	242.21	271.75	246.38	271.75
249.52	271.68	253.58	271.62	257.53	271.5	260.01	271.41	265.71	272.1
268.79	272.27	276.82	272.02	281.66	272.01	284.45	272.08	289.28	271.76
292.2	271.63	296.97	271.62	299.38	271.59	306.76	271.76	309.81	271.78
310.9	271.82	312.08	271.83	319.14	272.05	323.43	271.97	324.89	271.86
326.7	271.8	331.36	271.96	335.56	272.01	336.88	271.88	339.82	271.8
348.27	271.37	348.48	271.34	353.88	270.93	357.07	270.89	360.35	270.82
363.37	271.04	366.39	271.13	368.23	270.92	369.73	270.9	376.87	270.1
378.54	270.24	384.31	270.39	385.87	270.47	390.29	270.62	397.54	270.44
399	270.46	401.16	269.94	403.73	269.46	407.44	268.9	413.25	269.12
415.7	269.17	416.87	269.16	422.21	269.06	426.15	268.74	435.47	269.28
438.38	269.47	440.75	269.41	442.96	269.37	445.55	269.19	446.86	269.15
451.29	269.1	455.89	269.17	460.09	269.01	463.72	269.07	465.13	269.04
470.52	268.85	474.64	269.06	476.23	269.13	477.98	269.11	482.92	269.41
484.41	269.41	489.46	269.09	497.17	269.23	502.59	269.3	503.67	269.4
507.62	269.6	509.14	269.53	511.45	269.17	515.73	269.06	519.67	268.65
521.55	268.56	524.85	268.78	526.57	268.77	529.98	268.48	533.49	268.39
536.28	268.39	539.34	268.31	543.64	268.06	545.39	268.03	545.9	267.95
547.89	267.95	550.54	267.93	552.44	267.96	556.16	268.09	560.91	268.18
563.08	268.32	567.23	268.54	569.84	268.49	572.19	268.34	574.78	268.21
582.2	268.04	583.6	268	588.1	267.82	588.66	267.82	592.53	267.9
596.46	267.89	598.65	267.75	600.03	267.75	602.57	268.05	604.29	267.99
609.11	267.74	612.13	267.64	618.52	267.56	619.55	267.56	623.35	267.69
624.15	267.66	629.98	267.35	630.53	267.38	633.8	267.45	642.9	267.15
646.9	267.09	648.95	267.08	650.69	267.11	653.11	267.29	654.54	267.28
657.1	267.14	661.15	267.21	661.55	267.23	665.05	267.21	667.46	267.31
672.04	267.56	679.15	267.15	682.22	266.84	684.01	266.91	686.18	266.76
687.95	266.51	692.1	266.43	692.86	266.43	696.78	266.24	698.44	266.24
703.63	266.2	707.54	266.04	709.5	265.88	714.42	265.67	715.58	265.66
718.3	265.53	719.96	265.5	723.33	265.5	725.31	265.44	728.29	265.53
729.49	265.52	730.67	265.59	734.35	265.68	735.88	265.74	739.97	265.7
742.3	265.69	747.54	265.02	752.18	264.65	757.62	264.24	758.76	264.24

758.87	264.21	764	263.8	770.44	263.62	773.47	263.5	775.96	262.96
779.04	262.22	781.1	262.14	790.5	262	800.5	259.9	827	258.7
853.5	259.4	863.5	263.7	868.65	263.76	869.48	263.83	872.36	265.21
875.51	265.24	879.11	265.4	881.38	265.47	882.4	265.74	885.6	266.16
888.1	266.75	893.14	266.91	894.3	267.03	896.68	267.31	897.72	267.49
900.07	267.62	905.08	268.12	908.48	268.16	909.76	268.48	921.25	268.32
922.82	268.17	928.37	267.66	930.04	267.9	936.27	267.77	938.99	267.7
939.89	267.78	942.41	267.91	945.84	267.85	949.28	267.96	952.87	267.89
954.69	267.92	957.58	268.05	959.77	268.19	962.39	268.14	963.99	268.17
970.21	268.35	973.79	268.32	980.61	268.62	981.17	268.59	984.12	268.5
989.24	268.58	991.12	268.59	994.07	268.39	994.53	268.41	999.64	268.75
1001.56	268.73	1003.66	268.67	1005.11	268.7	1012.53	268.92	1015.42	268.96
1018.14	268.98	1022.38	268.8	1024.13	268.9	1025.72	269.02	1029.42	268.88
1032.79	268.9	1033.8	268.95	1036.12	269.15	1037.89	269.14	1041.12	269.03
1042.98	269.03	1045.95	269.18	1046.95	269.21	1053.28	269.04	1056.81	269.11
1057.31	269.13	1063.89	269.02	1067.38	269.22	1071.83	269.18	1074.34	269.27
1077.41	269.32	1077.75	269.34	1084	269.31	1084.72	269.3	1088	269.38
1091.39	269.49	1095.08	269.59	1098.55	269.52	1101.85	269.54	1105.4	269.41
1106.96	269.39	1108.9	269.52	1112.97	269.68	1115.81	269.69	1117.61	269.68
1119.17	269.58	1121.41	269.55	1125.75	269.69	1126.15	269.72	1130.62	269.7
1136.5	269.83	1137	269.85	1139.94	269.72	1141.11	269.74	1147.02	269.75
1147.34	269.76	1150.01	269.98	1150.3	269.96	1155.39	269.87	1157.33	269.96
1160.15	269.94	1166.09	270.28	1170.37	270.26	1171.08	270.28	1178.24	270.14
1180.47	270.37	1184.33	270.2	1188.6	270.16	1189.75	270.31	1195.18	270.23
1199.02	270.33	1200.18	270.28	1202.25	270.6	1203.04	270.61	1203.81	270.69
1208.22	270.79	1210.86	270.65	1213.19	270.56	1216.77	270.56	1218.75	270.61
1219.83	270.7	1223.05	270.89	1231.47	270.89	1232.75	270.93	1233.38	270.89
1237.56	270.87	1240.5	271.06	1242.37	271.2	1243.74	271.16	1247.76	271.15
1250.83	271.4	1252.6	271.43	1258.38	271.4	1261.24	271.33	1262.88	271.47
1264.4	271.42	1266.43	271.44	1270.1	271.57	1271.03	271.64	1272.52	271.7
1274.64	271.82	1276.28	271.85	1281.88	272.15	1282.28	272.13	1285.03	272.21
1286.43	272.28	1292.21	272.11	1294.98	272.24	1295.3	272.27	1300.31	272.47
1302.59	272.69	1304.97	272.62	1305.65	272.56	1311.52	272.66	1313.1	272.68
1315.95	273.19	1321.28	273.04	1323.34	272.99	1324.92	273.03	1326.31	273.14
1327.52	273.14	1328.43	273.17	1330.87	273.1	1333.6	273.14	1338.81	273.53
1343.94	273.68	1344.33	273.66	1347.57	273.67	1354.24	273.99	1356.42	274.28
1357.23	274.25	1362.86	274.16	1364.66	274.26	1367.5	274.55	1373.78	274.66
1375.04	274.69	1376.92	274.48	1377.97	274.47	1380.6	274.65	1385.43	274.77
1388.34	274.69	1390.67	274.83	1395.77	275.21	1396.37	275.18	1398.66	274.97
1400.54	275.03	1406.22	275.39	1409.41	275.45	1409.98	275.49	1413.82	275.66
1416.5	275.52	1418.76	275.53	1419.41	275.58	1425.29	275.88	1426.78	275.95
1429.12	276.14	1429.71	276.13	1437.26	275.88	1438.92	276.12	1439.93	276.29
1442.72	276.38	1447.58	276.48	1450.3	276.72	1452.69	276.7	1457.87	276.78
1458.49	276.77	1460.61	276.9	1463.23	277.02	1468.33	277.06	1468.81	277.14
1471.1	277.28	1476.48	277.16	1478.65	277.26	1481.15	277.72	1481.43	277.75
1488.21	277.55	1491.84	277.69	1494.18	277.77	1499.73	278.06	1502.13	278.22
1504.28	278.16	1508.19	278.09	1509.73	278.05	1512.63	278.09	1514.16	278.14
1521.14	278.44	1527.27	278.53	1530.45	278.66	1532.06	278.78	1533.1	278.82
1537.59	278.87	1540.57	279.02	1541.91	278.99	1543.34	279.13	1546.5	279.3
1550.87	279.11	1552.1	279.03	1553.71	279.16	1555.51	279.22	1558.02	279.6

1559.6 279.85 1564.39 280.36 1569.25 280.66 1574.07 281.6 1576.23 282.23

Manning's n Values num= 13

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	173.29	.03	239.09	.05	773.47	.038	779.04	.038
800.5	.038	863.5	.05	875.51	.12	922.82	.05	962.39	.03
1160.15	.05	1216.77	.03	1558.02	.05				

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	773.47	863.5		106.27	112.81		.3	.5

Ineffective Flow num= 3

Sta L	Sta R	Elev	Permanent
0	238.77	278.55	F
906	1576.23	269	F
238.77	750	268.25	F

Blocked Obstructions num= 1

Sta L	Sta R	Elev
50.44	83.55	275.4333

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	267.97	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.19	Wt. n-Val.	0.050	0.038
0.061				
W.S. Elev (ft)	267.79	Reach Len. (ft)	25.00	25.00
25.00				
Crit W.S. (ft)	263.22	Flow Area (sq ft)	87.74	679.87
75.69				
E.G. Slope (ft/ft)	0.000580	Area (sq ft)	249.40	679.87
76.03				
Q Total (cfs)	2671.00	Flow (cfs)	151.04	2440.75
79.21				
Top Width (ft)	302.72	Top Width (ft)	167.56	90.03
45.13				
Vel Total (ft/s)	3.17	Avg. Vel. (ft/s)	1.72	3.59
1.05				
Max Chl Dpth (ft)	9.09	Hydr. Depth (ft)	3.74	7.55
1.98				
Conv. Total (cfs)	110925.9	Conv. (cfs)	6272.7	101363.5
3289.7				
Length Wtd. (ft)	25.00	Wetted Per. (ft)	23.52	91.32
38.75				
Min Ch El (ft)	258.70	Shear (lb/sq ft)	0.14	0.27
0.07				
Alpha	1.19	Stream Power (lb/ft s)	1576.23	0.00
0.00				
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	157.65	228.44
89.52				

C & E Loss (ft)	0.02	Cum SA (acres)	76.92	36.02
51.30				

Warning: Divided flow computed for this cross-section.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	272.90	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.15	Wt. n-Val.	0.050	0.038
0.042				
W.S. Elev (ft)	272.75	Reach Len. (ft)	25.00	25.00
25.00				
Crit W.S. (ft)	268.49	Flow Area (sq ft)	2111.17	1126.41
1503.82				
E.G. Slope (ft/ft)	0.000423	Area (sq ft)	2138.46	1126.41
1503.82				
Q Total (cfs)	10810.00	Flow (cfs)	3222.83	4838.92
2748.25				
Top Width (ft)	1124.68	Top Width (ft)	584.67	90.03
449.98				
Vel Total (ft/s)	2.28	Avg. Vel. (ft/s)	1.53	4.30
1.83				
Max Chl Dpth (ft)	14.05	Hydr. Depth (ft)	3.95	12.51
3.34				
Conv. Total (cfs)	525308.8	Conv. (cfs)	156612.7	235145.8
133550.4				
Length Wtd. (ft)	25.00	Wetted Per. (ft)	535.52	91.32
450.90				
Min Ch El (ft)	258.70	Shear (lb/sq ft)	0.10	0.33
0.09				
Alpha	1.89	Stream Power (lb/ft s)	1576.23	0.00
0.00				
Frctn Loss (ft)		Cum Volume (acre-ft)	630.84	389.94
434.23				
C & E Loss (ft)		Cum SA (acres)	129.56	35.73
95.00				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	273.70	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.14	Wt. n-Val.	0.050	0.038
0.041				
W.S. Elev (ft)	273.56	Reach Len. (ft)	25.00	25.00
25.00				
Crit W.S. (ft)	269.49	Flow Area (sq ft)	2547.88	1199.95
1882.23				
E.G. Slope (ft/ft)	0.000369	Area (sq ft)	2626.41	1199.95
1882.23				
Q Total (cfs)	12761.00	Flow (cfs)	4115.64	5019.28
3626.09				
Top Width (ft)	1186.30	Top Width (ft)	619.78	90.03
476.48				
Vel Total (ft/s)	2.27	Avg. Vel. (ft/s)	1.62	4.18
1.93				
Max Chl Dpth (ft)	14.86	Hydr. Depth (ft)	4.77	13.33
3.95				
Conv. Total (cfs)	664282.5	Conv. (cfs)	214242.2	261282.0
188758.3				
Length Wtd. (ft)	25.00	Wetted Per. (ft)	535.52	91.32
477.46				
Min Ch El (ft)	258.70	Shear (lb/sq ft)	0.11	0.30
0.09				
Alpha	1.71	Stream Power (lb/ft s)	1576.23	0.00
0.00				
Frctn Loss (ft)		Cum Volume (acre-ft)	734.64	417.16
509.06				
C & E Loss (ft)		Cum SA (acres)	135.27	35.76
100.77				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the

largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	276.31	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.11	Wt. n-Val.	0.050	0.038
0.039				
W.S. Elev (ft)	276.20	Reach Len. (ft)	25.00	25.00
25.00				
Crit W.S. (ft)	270.88	Flow Area (sq ft)	3958.29	1437.42
3267.77				
E.G. Slope (ft/ft)	0.000246	Area (sq ft)	4389.30	1437.42
3267.77				
Q Total (cfs)	19382.00	Flow (cfs)	7009.50	5542.62
6829.88				
Top Width (ft)	1352.77	Top Width (ft)	686.84	90.03
575.91				
Vel Total (ft/s)	2.24	Avg. Vel. (ft/s)	1.77	3.86
2.09				
Max Chl Dpth (ft)	17.50	Hydr. Depth (ft)	7.40	15.97
5.67				
Conv. Total (cfs)	1234520.0	Conv. (cfs)	446464.0	353032.4
435023.3				
Length Wtd. (ft)	25.00	Wetted Per. (ft)	535.52	91.32
577.06				
Min Ch El (ft)	258.70	Shear (lb/sq ft)	0.11	0.24
0.09				
Alpha	1.38	Stream Power (lb/ft s)	1576.23	0.00
0.00				
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	1069.49	497.94
753.92				
C & E Loss (ft)	0.01	Cum SA (acres)	151.96	36.01
113.77				

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the

largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may

wish to examine this cross section and enter a single n value for the

entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

BRIDGE

RIVER: W Br Neshminy

REACH: 1 RS: 18437.76

INPUT

Description: WBNES_05L - County Line Rd

Survey RDCL (274.4) does not tie
into LiDAR TOR. Elevations from LiDAR used for weir profile.

Distance from Upstream XS = 25

Deck/Roadway Width = 67.4

Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num= 591

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
0	276.34				1.22	276.37				4.96	276.3			
6.02	276.18				9.73	276.08				11.96	276.14			
15.72	276.1				17.61	275.98				20.31	276.05			
21.59	275.98				24.16	276.04				25.26	276.01			
26.43	275.99				28.15	276.03				31.01	276.04			
32.6	275.98				33.92	275.98				37.77	275.81			
38.92	275.83				42.92	275.85				47.75	275.69			
48.71	275.68				52.21	275.47				52.57	275.45			
53.37	275.42				56.84	275.31				58.38	275.27			
62.83	275.09				62.89	275.09				68.56	274.69			
73.27	274.86				73.42	274.85				73.55	274.84			
74.43	274.81				79.65	274.55				81.09	274.6			
83.13	274.51				86.27	274.25				90.43	274.1			
92.43	273.99				94.9	273.89				99.56	273.55			
100.92	273.52				103.84	273.55				105.43	273.53			
107.53	273.6				111.04	273.43				111.39	273.39			
111.59	273.39				114.57	273.14				115.99	273.15			
118.9	273.13				122.25	273.12				124.46	273.06			
130.33	272.88				132.04	272.78				132.84	272.78			
135.65	272.6				137.25	272.61				139.29	272.63			
143.34	272.7				143.47	272.7				143.62	272.69			
149.01	272.36				154.19	272.21				154.46	272.2			
158.5	272.44				160.01	272.38				164.88	272.05			
166.52	272.08				169.31	272.01				170.32	271.94			
172.55	271.98				174.14	271.93				175.51	271.85			
180.46	271.48				186.21	271.75				186.54	271.77			
190.59	271.74				191.83	271.64				196.95	271.5			
198.3	271.48				201.41	271.43				201.79	271.45			

202.15	271.44	202.94	271.43	206.4	271.42
207.62	271.4	211.34	271.42	212.01	271.43
217.8	271.31	222.26	271.18	222.67	271.17
222.71	271.17	226.53	271.13	228.91	271.15
231.98	271.14	233.26	271.09	237.64	270.91
242.36	270.87	243.1	270.94	243.88	270.87
249.78	270.84	250.13	270.83	253.17	270.74
256.23	270.55	260.81	270.71	262.49	270.76
265.05	270.82	268.38	270.71	271.03	270.69
273.61	270.48	275.59	270.55	280.77	270.46
281.93	270.39	284.46	270.32	287.25	270.26
290.16	270.34	298.28	270.09	299.7	270.18
301.39	270.18	306.96	270.2	307.76	270.2
308.91	270.23	314.17	270.04	315.38	270.03
316.7	270.01	321.42	270.19	321.5	270.19
323.92	270.25	328.14	270.06	328.49	270.05
328.81	270.06	330.27	270.01	335.17	269.89
335.99	269.93	339.05	269.94	339.3	269.94
339.37	269.94	339.7	269.95	345.57	269.74
349.15	269.54	349.61	269.48	349.81	269.47
358.14	269.63	359.31	269.59	360.22	269.61
365.53	269.41	366.64	269.36	366.92	269.34
367.68	269.41	370.16	269.56	370.62	269.57
374.01	269.45	376.94	269.68	378.37	269.64
380.97	269.43	384.31	269.28	386.41	269.38
389.24	269.21	391.37	269.38	393.31	269.33
397.38	268.91	397.66	268.87	397.79	268.88
398.02	268.89	401.81	269.26	404.37	269.22
406.78	269.22	412.1	269.41	415.69	269.39
418.48	269.15	420.93	269.06	422.51	268.98
424.85	269	428.86	268.95	428.89	268.95
432.92	269.19	435.55	269.12	438.05	269.27
441.14	269.04	444.24	269.07	446.9	269.29
449.65	269.3	451.54	269.2	453.68	269.17
455.05	269.18	457.57	269.15	459.14	269.1
460.02	269.01	462.46	268.9	464.07	269.12
466.78	269.08	468.78	269.04	471.53	268.83
474.26	269.06	477.99	268.93	480.59	268.76
482.64	268.83	484.59	268.84	486.06	268.79
488.85	268.81	490.17	268.81	495.84	268.78
499.07	268.72	501.05	268.82	503.72	268.83
510.83	268.76	511.81	268.8	513.6	268.83
515.81	268.59	517.3	268.53	521.98	268.96
522.09	268.97	526.12	269.12	526.3	269.11
526.59	269.1	530.23	268.75	532.58	268.54
533.84	268.57	536.65	268.8	537.82	268.75
541.19	268.56	545.42	268.65	547.08	268.57
551.52	268.25	556.47	268.9	557.14	268.93
557.44	268.94	559.46	268.88	563.85	268.66
564.37	268.62	565.66	268.58	567.23	268.44

567.83	268.51		571.73	268.63		575.38	268.8
577.2	268.71		580.66	268.93		582.5	268.89
584.47	269.07		586.95	269.1		588.48	268.95
591.01	268.9		594.97	268.87		595.46	268.89
599	268.89		601.28	268.82		605.5	268.87
606.79	268.88		607.13	268.9		611.64	269.27
616.8	269.38		619.83	269.28		622.32	269.3
626.15	269.4		627.1	269.52		630.52	269.43
632.28	269.41		633.97	269.47		637.77	269.54
641.2	269.69		643.47	269.76		647.85	270.03
649.16	270.11		651.79	270.4		652.55	270.41
653.91	270.4		656.97	270.3		658.71	270.08
660.32	270.04		662.25	269.95		666.25	270.29
668.05	270.45		671.16	270.74		673.12	270.82
675.96	270.8		677.01	270.81		681.59	270.77
685.82	270.86		687.03	271.01		690.69	271.06
691.78	271.16		694.44	271.37		697.73	271.38
701.46	271.38		703.03	271.44		705.27	271.47
707.08	271.54		709.7	271.77		711.13	271.82
712.12	271.79		714.42	271.62		715.92	271.84
718.52	271.92		722.81	272.06		723.95	272.04
725.32	272.06		729.18	272		733.65	271.81
734.9	271.85		737.45	272.12		738.57	272.12
739.6	272.08		746.4	272		748.05	271.98
752.79	272.02		754.8	272.02		754.8	275.6
774.8	275.6	268.9	881.2	275.6	268.9	901.2	275.6
901.2	271.71		904.27	271.71		905.33	271.55
907.94	271.56		910.54	271.62		912.95	271.51
917.37	271.34		918.39	271.32		919.47	271.22
925.28	271.08		925.7	271.07		929.96	271.09
935.74	271.09		935.95	271.09		937.04	271.05
939.04	270.96		939.43	270.94		943.27	270.74
946.22	270.63		948.37	270.72		949.8	270.82
955.2	270.45		956.67	270.28		959.12	270.41
960.14	270.45		960.64	270.43		962.46	270.43
965.1	270.35		966.11	270.37		967.07	270.4
969.36	270.42		970.55	270.38		973.04	270.23
977.35	269.81		977.52	269.79		977.78	269.79
983.49	269.63		986.05	269.58		987.81	269.67
989.51	269.84		991.34	269.74		995.34	269.6
998.28	269.54		1000.09	269.49		1001.92	269.59
1003.74	269.47		1008.78	269.27		1008.97	269.27
1012.33	269.27		1014.45	269.15		1016.42	269.12
1020.56	269.13		1022.66	268.79		1024.1	268.79
1026.19	268.63		1028.21	268.56		1032.03	268.61
1034.16	268.65		1037.25	268.74		1039.23	268.78
1039.93	268.79		1041.41	268.78		1043.56	268.77
1044.79	268.74		1050.44	268.25		1051.14	268.17
1053.95	268.26		1057.94	268.46		1058.71	268.5
1060.72	268.53		1063.21	268.57		1064.24	268.61

1069.73	268.89	1071.05	268.83	1073.94	268.6
1074.63	268.68	1080.28	268.23	1081.63	268.2
1083.8	268.4	1085.05	268.39	1088.24	268.56
1091.92	268.52	1093.35	268.54	1095.45	268.54
1098.81	268.34	1102.35	268.19	1105.34	268.16
1107.83	268.55	1110.46	268.64	1112.2	268.57
1112.74	268.59	1114.41	268.58	1116.28	268.51
1117.85	268.47	1120.96	268.35	1121.54	268.39
1122.39	268.3	1123.22	268.27	1123.55	268.29
1123.87	268.3	1126.71	268.38	1127.56	268.38
1128	268.38	1133.6	268.6	1134.26	268.62
1136.04	268.68	1136.75	268.68	1137	268.68
1141.79	268.6	1146.75	268.94	1147.01	268.98
1147.36	268.96	1155.96	269.06	1156.96	269.07
1157.8	269.16	1163.68	269.02	1164.71	268.98
1167	269.16	1168.09	269.09	1171.48	268.98
1175.09	269.09	1176.58	269.13	1178.46	269.24
1181.78	269.33	1183.89	269.33	1186.34	269.2
1188.83	269.22	1192.66	269.23	1197.61	269.32
1200.89	269.3	1204.46	269.39	1205.6	269.41
1206.16	269.46	1207.35	269.52	1209.38	269.67
1210.77	269.64	1216.47	269.98	1216.91	270
1219.78	269.87	1221.15	269.96	1226.78	270.13
1229.76	270.05	1230.04	270.05	1235.17	270.15
1237.22	270.14	1239.78	270.34	1240.38	270.38
1246.57	270.44	1247.68	270.49	1249.99	270.61
1250.73	270.65	1256.68	270.82	1257.9	270.86
1258.94	270.87	1261.01	270.89	1262.66	270.87
1267.84	270.93	1268.08	270.93	1268.32	270.93
1271.19	270.99	1272.08	270.93	1273.44	270.95
1279.34	271.31	1281.57	271.35	1283.03	271.45
1283.58	271.45	1286.9	271.48	1288.76	271.62
1291.73	271.99	1291.87	272	1292.02	272
1297.8	272.3	1301.77	272.49	1302.06	272.5
1302.11	272.51	1303.18	272.49	1309.52	272.33
1310.3	272.32	1312.59	272.24	1316.57	272.37
1317.52	272.4	1319.93	272.49	1321.41	272.63
1322.99	272.66	1326.01	272.55	1328.68	272.81
1331.87	273.05	1333.43	273.06	1337.36	273.25
1340.91	273.4	1342.63	273.42	1345.39	273.41
1347.94	273.34	1350.09	273.27	1351.35	273.33
1353.54	273.59	1355.16	273.74	1361.73	273.89
1362.02	273.91	1364.85	274.04	1365.34	274.04
1372.28	274.18	1372.44	274.19	1372.71	274.19
1373.3	274.25	1378.67	274.74	1382.68	275.04
1384.03	275.1	1385.61	275.2	1388.79	275.38
1392.09	275.5	1394.68	275.51	1397.95	275.5
1400.94	275.44	1403.67	275.71	1404.78	275.93
1406.7	275.99	1411.73	276	1413.33	276.07
1414.09	276.13	1415.66	276.33	1417.06	276.56

1418	276.62	1424.43	277.14	1425.39	277.13
1426.85	276.94	1430.8	276.99	1434.52	277.31
1435.92	277.46	1437.22	277.44	1441.55	277.7
1445.34	277.98	1446.38	277.91	1448.46	278.08
1451.23	278.18	1455.88	278.34	1458.32	278.81
1458.63	278.84	1462.65	278.94	1464.38	278.98
1464.51	278.99	1465.2	278.98	1468.44	278.96
1468.75	278.98	1469.14	279.05	1474.93	279.6
1476.5	279.63	1478.47	279.83	1479.44	279.86
1481.89	279.83	1482.66	279.82	1485.72	280.06
1488.76	280.18	1489.84	280.38	1492.44	280.62
1494.51	280.58	1499	280.73	1504.51	281.23
1508.08	281.2	1510.6	281.75	1512.4	281.74
1517.93	281.6	1519.87	281.71	1522.57	281.88
1525.91	282.08	1528.34	282.32	1530.34	282.44
1531.48	282.37	1536.29	282.68	1538.89	282.96
1540.67	283.03	1545.34	283.11	1547.27	283.08
1547.78	283.12	1549.27	283.22	1551.65	283.45
1552.36	283.5	1557.21	283.66	1559.77	283.81

Upstream Bridge Cross Section Data

Station Elevation Data				num=	480				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	276.37	4.37	276.35	9.05	276.41	19.19	277.23	20.05	277.28
21.42	277.25	32.69	276.87	35.7	277.02	44.69	276.78	46.58	276.87
48.8	276.9	79.5	276.67	80.63	276.72	82.22	276.69	84.76	276.5
86.21	276.41	86.76	276.14	88.62	275.75	89.6	275.67	91.89	275.58
96.65	275.08	100.5	274.77	103.03	274.6	108.25	274.53	110.61	274.44
112.31	274.21	122.44	274.12	125.48	273.99	131.67	273.85	136.31	273.67
142.81	273.7	144.18	273.67	145.51	273.68	148.63	273.53	150.54	273.59
154.02	273.33	154.84	273.28	160.67	273.61	163.35	273.59	169.41	273.45
171.78	273.44	173.29	273.38	176.77	273.22	178.31	273.19	181.15	272.95
181.58	272.95	183.54	272.86	186.95	272.81	187.7	272.86	190.15	272.61
192.17	272.44	198.55	272.56	199.53	272.55	202.04	272.48	202.91	272.47
206.81	272.35	209.33	272.26	211.53	272.29	213.66	272.24	216.81	272.26
220.38	272.2	226.53	271.92	228.9	271.73	231.38	271.62	233.95	271.69
235.73	271.85	237.88	271.91	239.09	271.86	242.21	271.75	246.38	271.75
249.52	271.68	253.58	271.62	257.53	271.5	260.01	271.41	265.71	272.1
268.79	272.27	276.82	272.02	281.66	272.01	284.45	272.08	289.28	271.76
292.2	271.63	296.97	271.62	299.38	271.59	306.76	271.76	309.81	271.78
310.9	271.82	312.08	271.83	319.14	272.05	323.43	271.97	324.89	271.86
326.7	271.8	331.36	271.96	335.56	272.01	336.88	271.88	339.82	271.8
348.27	271.37	348.48	271.34	353.88	270.93	357.07	270.89	360.35	270.82
363.37	271.04	366.39	271.13	368.23	270.92	369.73	270.9	376.87	270.1
378.54	270.24	384.31	270.39	385.87	270.47	390.29	270.62	397.54	270.44
399	270.46	401.16	269.94	403.73	269.46	407.44	268.9	413.25	269.12
415.7	269.17	416.87	269.16	422.21	269.06	426.15	268.74	435.47	269.28
438.38	269.47	440.75	269.41	442.96	269.37	445.55	269.19	446.86	269.15
451.29	269.1	455.89	269.17	460.09	269.01	463.72	269.07	465.13	269.04
470.52	268.85	474.64	269.06	476.23	269.13	477.98	269.11	482.92	269.41

484.41	269.41	489.46	269.09	497.17	269.23	502.59	269.3	503.67	269.4
507.62	269.6	509.14	269.53	511.45	269.17	515.73	269.06	519.67	268.65
521.55	268.56	524.85	268.78	526.57	268.77	529.98	268.48	533.49	268.39
536.28	268.39	539.34	268.31	543.64	268.06	545.39	268.03	545.9	267.95
547.89	267.95	550.54	267.93	552.44	267.96	556.16	268.09	560.91	268.18
563.08	268.32	567.23	268.54	569.84	268.49	572.19	268.34	574.78	268.21
582.2	268.04	583.6	268	588.1	267.82	588.66	267.82	592.53	267.9
596.46	267.89	598.65	267.75	600.03	267.75	602.57	268.05	604.29	267.99
609.11	267.74	612.13	267.64	618.52	267.56	619.55	267.56	623.35	267.69
624.15	267.66	629.98	267.35	630.53	267.38	633.8	267.45	642.9	267.15
646.9	267.09	648.95	267.08	650.69	267.11	653.11	267.29	654.54	267.28
657.1	267.14	661.15	267.21	661.55	267.23	665.05	267.21	667.46	267.31
672.04	267.56	679.15	267.15	682.22	266.84	684.01	266.91	686.18	266.76
687.95	266.51	692.1	266.43	692.86	266.43	696.78	266.24	698.44	266.24
703.63	266.2	707.54	266.04	709.5	265.88	714.42	265.67	715.58	265.66
718.3	265.53	719.96	265.5	723.33	265.5	725.31	265.44	728.29	265.53
729.49	265.52	730.67	265.59	734.35	265.68	735.88	265.74	739.97	265.7
742.3	265.69	747.54	265.02	752.18	264.65	757.62	264.24	758.76	264.24
758.87	264.21	764	263.8	770.44	263.62	773.47	263.5	775.96	262.96
779.04	262.22	781.1	262.14	790.5	262	800.5	259.9	827	259.8
853.5	259.8	863.5	263.7	868.65	263.76	869.48	263.83	872.36	265.21
875.51	265.24	879.11	265.4	881.38	265.47	882.4	265.74	885.6	266.16
888.1	266.75	893.14	266.91	894.3	267.03	896.68	267.31	897.72	267.49
900.07	267.62	905.08	268.12	908.48	268.16	909.76	268.48	921.25	268.32
922.82	268.17	928.37	267.66	930.04	267.9	936.27	267.77	938.99	267.7
939.89	267.78	942.41	267.91	945.84	267.85	949.28	267.96	952.87	267.89
954.69	267.92	957.58	268.05	959.77	268.19	962.39	268.14	963.99	268.17
970.21	268.35	973.79	268.32	980.61	268.62	981.17	268.59	984.12	268.5
989.24	268.58	991.12	268.59	994.07	268.39	994.53	268.41	999.64	268.75
1001.56	268.73	1003.66	268.67	1005.11	268.7	1012.53	268.92	1015.42	268.96
1018.14	268.98	1022.38	268.8	1024.13	268.9	1025.72	269.02	1029.42	268.88
1032.79	268.9	1033.8	268.95	1036.12	269.15	1037.89	269.14	1041.12	269.03
1042.98	269.03	1045.95	269.18	1046.95	269.21	1053.28	269.04	1056.81	269.11
1057.31	269.13	1063.89	269.02	1067.38	269.22	1071.83	269.18	1074.34	269.27
1077.41	269.32	1077.75	269.34	1084	269.31	1084.72	269.3	1088	269.38
1091.39	269.49	1095.08	269.59	1098.55	269.52	1101.85	269.54	1105.4	269.41
1106.96	269.39	1108.9	269.52	1112.97	269.68	1115.81	269.69	1117.61	269.68
1119.17	269.58	1121.41	269.55	1125.75	269.69	1126.15	269.72	1130.62	269.7
1136.5	269.83	1137	269.85	1139.94	269.72	1141.11	269.74	1147.02	269.75
1147.34	269.76	1150.01	269.98	1150.3	269.96	1155.39	269.87	1157.33	269.96
1160.15	269.94	1166.09	270.28	1170.37	270.26	1171.08	270.28	1178.24	270.14
1180.47	270.37	1184.33	270.2	1188.6	270.16	1189.75	270.31	1195.18	270.23
1199.02	270.33	1200.18	270.28	1202.25	270.6	1203.04	270.61	1203.81	270.69
1208.22	270.79	1210.86	270.65	1213.19	270.56	1216.77	270.56	1218.75	270.61
1219.83	270.7	1223.05	270.89	1231.47	270.89	1232.75	270.93	1233.38	270.89
1237.56	270.87	1240.5	271.06	1242.37	271.2	1243.74	271.16	1247.76	271.15
1250.83	271.4	1252.6	271.43	1258.38	271.4	1261.24	271.33	1262.88	271.47
1264.4	271.42	1266.43	271.44	1270.1	271.57	1271.03	271.64	1272.52	271.7
1274.64	271.82	1276.28	271.85	1281.88	272.15	1282.28	272.13	1285.03	272.21
1286.43	272.28	1292.21	272.11	1294.98	272.24	1295.3	272.27	1300.31	272.47

1302.59	272.69	1304.97	272.62	1305.65	272.56	1311.52	272.66	1313.1	272.68
1315.95	273.19	1321.28	273.04	1323.34	272.99	1324.92	273.03	1326.31	273.14
1327.52	273.14	1328.43	273.17	1330.87	273.1	1333.6	273.14	1338.81	273.53
1343.94	273.68	1344.33	273.66	1347.57	273.67	1354.24	273.99	1356.42	274.28
1357.23	274.25	1362.86	274.16	1364.66	274.26	1367.5	274.55	1373.78	274.66
1375.04	274.69	1376.92	274.48	1377.97	274.47	1380.6	274.65	1385.43	274.77
1388.34	274.69	1390.67	274.83	1395.77	275.21	1396.37	275.18	1398.66	274.97
1400.54	275.03	1406.22	275.39	1409.41	275.45	1409.98	275.49	1413.82	275.66
1416.5	275.52	1418.76	275.53	1419.41	275.58	1425.29	275.88	1426.78	275.95
1429.12	276.14	1429.71	276.13	1437.26	275.88	1438.92	276.12	1439.93	276.29
1442.72	276.38	1447.58	276.48	1450.3	276.72	1452.69	276.7	1457.87	276.78
1458.49	276.77	1460.61	276.9	1463.23	277.02	1468.33	277.06	1468.81	277.14
1471.1	277.28	1476.48	277.16	1478.65	277.26	1481.15	277.72	1481.43	277.75
1488.21	277.55	1491.84	277.69	1494.18	277.77	1499.73	278.06	1502.13	278.22
1504.28	278.16	1508.19	278.09	1509.73	278.05	1512.63	278.09	1514.16	278.14
1521.14	278.44	1527.27	278.53	1530.45	278.66	1532.06	278.78	1533.1	278.82
1537.59	278.87	1540.57	279.02	1541.91	278.99	1543.34	279.13	1546.5	279.3
1550.87	279.11	1552.1	279.03	1553.71	279.16	1555.51	279.22	1558.02	279.6
1559.6	279.85	1564.39	280.36	1569.25	280.66	1574.07	281.6	1576.23	282.23

Manning's n Values			num= 12								
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	173.29	.03	239.09	.05	758.76	.038	800.5	.038		
863.5	.05	875.51	.12	922.82	.05	962.39	.03	1160.15	.05		
1216.77	.03	1558.02	.05								

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	773.47	863.5		.3	.5

Ineffective Flow			num= 3
Sta L	Sta R	Elev	Permanent
0	238.77	278.55	F
906	1576.23	269	F
238.77	750	268.25	F

Blocked Obstructions			num= 1
Sta L	Sta R	Elev	
50.44	83.55	275.4333	

Downstream Deck/Roadway Coordinates

num= 591			
Sta	Hi	Cord	Lo Cord
0	276.34		
6.02	276.18		
15.72	276.1		
21.59	275.98		
26.43	275.99		
32.6	275.98		
38.92	275.83		
48.71	275.68		
53.37	275.42		
62.83	275.09		

73.27	274.86	73.42	274.85	73.55	274.84
74.43	274.81	79.65	274.55	81.09	274.6
83.13	274.51	86.27	274.25	90.43	274.1
92.43	273.99	94.9	273.89	99.56	273.55
100.92	273.52	103.84	273.55	105.43	273.53
107.53	273.6	111.04	273.43	111.39	273.39
111.59	273.39	114.57	273.14	115.99	273.15
118.9	273.13	122.25	273.12	124.46	273.06
130.33	272.88	132.04	272.78	132.84	272.78
135.65	272.6	137.25	272.61	139.29	272.63
143.34	272.7	143.47	272.7	143.62	272.69
149.01	272.36	154.19	272.21	154.46	272.2
158.5	272.44	160.01	272.38	164.88	272.05
166.52	272.08	169.31	272.01	170.32	271.94
172.55	271.98	174.14	271.93	175.51	271.85
180.46	271.48	186.21	271.75	186.54	271.77
190.59	271.74	191.83	271.64	196.95	271.5
198.3	271.48	201.41	271.43	201.79	271.45
202.15	271.44	202.94	271.43	206.4	271.42
207.62	271.4	211.34	271.42	212.01	271.43
217.8	271.31	222.26	271.18	222.67	271.17
222.71	271.17	226.53	271.13	228.91	271.15
231.98	271.14	233.26	271.09	237.64	270.91
242.36	270.87	243.1	270.94	243.88	270.87
249.78	270.84	250.13	270.83	253.17	270.74
256.23	270.55	260.81	270.71	262.49	270.76
265.05	270.82	268.38	270.71	271.03	270.69
273.61	270.48	275.59	270.55	280.77	270.46
281.93	270.39	284.46	270.32	287.25	270.26
290.16	270.34	298.28	270.09	299.7	270.18
301.39	270.18	306.96	270.2	307.76	270.2
308.91	270.23	314.17	270.04	315.38	270.03
316.7	270.01	321.42	270.19	321.5	270.19
323.92	270.25	328.14	270.06	328.49	270.05
328.81	270.06	330.27	270.01	335.17	269.89
335.99	269.93	339.05	269.94	339.3	269.94
339.37	269.94	339.7	269.95	345.57	269.74
349.15	269.54	349.61	269.48	349.81	269.47
358.14	269.63	359.31	269.59	360.22	269.61
365.53	269.41	366.64	269.36	366.92	269.34
367.68	269.41	370.16	269.56	370.62	269.57
374.01	269.45	376.94	269.68	378.37	269.64
380.97	269.43	384.31	269.28	386.41	269.38
389.24	269.21	391.37	269.38	393.31	269.33
397.38	268.91	397.66	268.87	397.79	268.88
398.02	268.89	401.81	269.26	404.37	269.22
406.78	269.22	412.1	269.41	415.69	269.39
418.48	269.15	420.93	269.06	422.51	268.98
424.85	269	428.86	268.95	428.89	268.95
432.92	269.19	435.55	269.12	438.05	269.27

441.14	269.04		444.24	269.07		446.9	269.29
449.65	269.3		451.54	269.2		453.68	269.17
455.05	269.18		457.57	269.15		459.14	269.1
460.02	269.01		462.46	268.9		464.07	269.12
466.78	269.08		468.78	269.04		471.53	268.83
474.26	269.06		477.99	268.93		480.59	268.76
482.64	268.83		484.59	268.84		486.06	268.79
488.85	268.81		490.17	268.81		495.84	268.78
499.07	268.72		501.05	268.82		503.72	268.83
510.83	268.76		511.81	268.8		513.6	268.83
515.81	268.59		517.3	268.53		521.98	268.96
522.09	268.97		526.12	269.12		526.3	269.11
526.59	269.1		530.23	268.75		532.58	268.54
533.84	268.57		536.65	268.8		537.82	268.75
541.19	268.56		545.42	268.65		547.08	268.57
551.52	268.25		556.47	268.9		557.14	268.93
557.44	268.94		559.46	268.88		563.85	268.66
564.37	268.62		565.66	268.58		567.23	268.44
567.83	268.51		571.73	268.63		575.38	268.8
577.2	268.71		580.66	268.93		582.5	268.89
584.47	269.07		586.95	269.1		588.48	268.95
591.01	268.9		594.97	268.87		595.46	268.89
599	268.89		601.28	268.82		605.5	268.87
606.79	268.88		607.13	268.9		611.64	269.27
616.8	269.38		619.83	269.28		622.32	269.3
626.15	269.4		627.1	269.52		630.52	269.43
632.28	269.41		633.97	269.47		637.77	269.54
641.2	269.69		643.47	269.76		647.85	270.03
649.16	270.11		651.79	270.4		652.55	270.41
653.91	270.4		656.97	270.3		658.71	270.08
660.32	270.04		662.25	269.95		666.25	270.29
668.05	270.45		671.16	270.74		673.12	270.82
675.96	270.8		677.01	270.81		681.59	270.77
685.82	270.86		687.03	271.01		690.69	271.06
691.78	271.16		694.44	271.37		697.73	271.38
701.46	271.38		703.03	271.44		705.27	271.47
707.08	271.54		709.7	271.77		711.13	271.82
712.12	271.79		714.42	271.62		715.92	271.84
718.52	271.92		722.81	272.06		723.95	272.04
725.32	272.06		729.18	272		733.65	271.81
734.9	271.85		737.45	272.12		738.57	272.12
739.6	272.08		746.4	272		748.05	271.98
752.79	272.02		754.8	272.02		754.8	275.6
774.8	275.6	268.9	881.2	275.6	268.9	901.2	275.6
901.2	271.71		904.27	271.71		905.33	271.55
907.94	271.56		910.54	271.62		912.95	271.51
917.37	271.34		918.39	271.32		919.47	271.22
925.28	271.08		925.7	271.07		929.96	271.09
935.74	271.09		935.95	271.09		937.04	271.05
939.04	270.96		939.43	270.94		943.27	270.74

946.22	270.63	948.37	270.72	949.8	270.82
955.2	270.45	956.67	270.28	959.12	270.41
960.14	270.45	960.64	270.43	962.46	270.43
965.1	270.35	966.11	270.37	967.07	270.4
969.36	270.42	970.55	270.38	973.04	270.23
977.35	269.81	977.52	269.79	977.78	269.79
983.49	269.63	986.05	269.58	987.81	269.67
989.51	269.84	991.34	269.74	995.34	269.6
998.28	269.54	1000.09	269.49	1001.92	269.59
1003.74	269.47	1008.78	269.27	1008.97	269.27
1012.33	269.27	1014.45	269.15	1016.42	269.12
1020.56	269.13	1022.66	268.79	1024.1	268.79
1026.19	268.63	1028.21	268.56	1032.03	268.61
1034.16	268.65	1037.25	268.74	1039.23	268.78
1039.93	268.79	1041.41	268.78	1043.56	268.77
1044.79	268.74	1050.44	268.25	1051.14	268.17
1053.95	268.26	1057.94	268.46	1058.71	268.5
1060.72	268.53	1063.21	268.57	1064.24	268.61
1069.73	268.89	1071.05	268.83	1073.94	268.6
1074.63	268.68	1080.28	268.23	1081.63	268.2
1083.8	268.4	1085.05	268.39	1088.24	268.56
1091.92	268.52	1093.35	268.54	1095.45	268.54
1098.81	268.34	1102.35	268.19	1105.34	268.16
1107.83	268.55	1110.46	268.64	1112.2	268.57
1112.74	268.59	1114.41	268.58	1116.28	268.51
1117.85	268.47	1120.96	268.35	1121.54	268.39
1122.39	268.3	1123.22	268.27	1123.55	268.29
1123.87	268.3	1126.71	268.38	1127.56	268.38
1128	268.38	1133.6	268.6	1134.26	268.62
1136.04	268.68	1136.75	268.68	1137	268.68
1141.79	268.6	1146.75	268.94	1147.01	268.98
1147.36	268.96	1155.96	269.06	1156.96	269.07
1157.8	269.16	1163.68	269.02	1164.71	268.98
1167	269.16	1168.09	269.09	1171.48	268.98
1175.09	269.09	1176.58	269.13	1178.46	269.24
1181.78	269.33	1183.89	269.33	1186.34	269.2
1188.83	269.22	1192.66	269.23	1197.61	269.32
1200.89	269.3	1204.46	269.39	1205.6	269.41
1206.16	269.46	1207.35	269.52	1209.38	269.67
1210.77	269.64	1216.47	269.98	1216.91	270
1219.78	269.87	1221.15	269.96	1226.78	270.13
1229.76	270.05	1230.04	270.05	1235.17	270.15
1237.22	270.14	1239.78	270.34	1240.38	270.38
1246.57	270.44	1247.68	270.49	1249.99	270.61
1250.73	270.65	1256.68	270.82	1257.9	270.86
1258.94	270.87	1261.01	270.89	1262.66	270.87
1267.84	270.93	1268.08	270.93	1268.32	270.93
1271.19	270.99	1272.08	270.93	1273.44	270.95
1279.34	271.31	1281.57	271.35	1283.03	271.45
1283.58	271.45	1286.9	271.48	1288.76	271.62

1291.73	271.99	1291.87	272	1292.02	272
1297.8	272.3	1301.77	272.49	1302.06	272.5
1302.11	272.51	1303.18	272.49	1309.52	272.33
1310.3	272.32	1312.59	272.24	1316.57	272.37
1317.52	272.4	1319.93	272.49	1321.41	272.63
1322.99	272.66	1326.01	272.55	1328.68	272.81
1331.87	273.05	1333.43	273.06	1337.36	273.25
1340.91	273.4	1342.63	273.42	1345.39	273.41
1347.94	273.34	1350.09	273.27	1351.35	273.33
1353.54	273.59	1355.16	273.74	1361.73	273.89
1362.02	273.91	1364.85	274.04	1365.34	274.04
1372.28	274.18	1372.44	274.19	1372.71	274.19
1373.3	274.25	1378.67	274.74	1382.68	275.04
1384.03	275.1	1385.61	275.2	1388.79	275.38
1392.09	275.5	1394.68	275.51	1397.95	275.5
1400.94	275.44	1403.67	275.71	1404.78	275.93
1406.7	275.99	1411.73	276	1413.33	276.07
1414.09	276.13	1415.66	276.33	1417.06	276.56
1418	276.62	1424.43	277.14	1425.39	277.13
1426.85	276.94	1430.8	276.99	1434.52	277.31
1435.92	277.46	1437.22	277.44	1441.55	277.7
1445.34	277.98	1446.38	277.91	1448.46	278.08
1451.23	278.18	1455.88	278.34	1458.32	278.81
1458.63	278.84	1462.65	278.94	1464.38	278.98
1464.51	278.99	1465.2	278.98	1468.44	278.96
1468.75	278.98	1469.14	279.05	1474.93	279.6
1476.5	279.63	1478.47	279.83	1479.44	279.86
1481.89	279.83	1482.66	279.82	1485.72	280.06
1488.76	280.18	1489.84	280.38	1492.44	280.62
1494.51	280.58	1499	280.73	1504.51	281.23
1508.08	281.2	1510.6	281.75	1512.4	281.74
1517.93	281.6	1519.87	281.71	1522.57	281.88
1525.91	282.08	1528.34	282.32	1530.34	282.44
1531.48	282.37	1536.29	282.68	1538.89	282.96
1540.67	283.03	1545.34	283.11	1547.27	283.08
1547.78	283.12	1549.27	283.22	1551.65	283.45
1552.36	283.5	1557.21	283.66	1559.77	283.81

Downstream Bridge Cross Section Data

Station Elevation Data num= 465

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	275.95	5.7	275.94	7.77	275.93	13.55	275.93	17.99	275.94
19.32	275.93	21.79	275.93	24.17	275.94	27.49	275.93	29.86	275.91
36.01	275.89	37.64	275.88	40.58	275.88	42.85	275.87	64.24	274.18
66.12	274	67.43	274	68.67	273.99	69.8	273.99	70.36	273.98
71.38	273.98	74.58	273.97	81.99	274	82.5	274	88.85	274.12
89.25	274.11	96.42	274	100.65	274	106.59	273.98	114.51	273.55
125.01	273.2	130.35	273.15	133.95	273.15	137.78	272.53	141.15	272.46
147.2	272	169.81	272	172.65	272.23	174.13	272.27	182.94	273.16
187.28	273.41	188.5	273.46	189.4	273.5	191.49	273.5	193.33	273.41

195.6	273.31	207.42	272	207.44	272	215.19	271.74	221.33	271.58
231.81	271.39	231.97	271.38	241.15	271.24	243.96	271.02	250.05	270.95
256.65	270.59	259.96	270.54	267.4	270	268.4	270	269.06	269.98
269.55	269.98	269.78	269.99	274.17	269.97	275.94	269.98	277.53	269.97
283.71	269.99	313.11	269.99	314.83	269.98	325.28	269.98	337.58	268.99
342.52	268.85	347.82	268.7	356.75	268	381.09	268	389.32	268.61
397.13	269.42	398.42	269.55	398.63	269.57	398.8	269.56	399.11	269.52
399.5	269.7	401.04	269.86	401.81	269.95	421.19	268.4	425.34	268.4
426.1	268.39	446.9	268.43	467.49	268.41	486.44	268.25	509.64	268.05
512.44	268.02	514.75	268	632.66	268	633.77	267.99	642.73	267.99
655.03	270.8	664.97	271.68	668.94	271.85	669.13	271.85	669.34	272.11
671.2	271.04	671.21	271.03	671.8	270.69	675.2	270.73	682.29	270.83
692.68	271	695.29	271.04	695.93	271.06	707.28	271.25	710.96	271.31
722.4	271.19	725	271.16	737.9	271.08	738.98	271.07	739.38	271.04
739.67	271	739.74	270.99	740.33	270.89	740.66	270.86	744.92	270.6
751.62	270.1	751.72	270.08	751.78	270.08	752.13	270.01	752.2	270.01
752.36	270	752.45	270	752.56	269.98	752.67	269.96	752.84	269.92
753.13	269.85	754.47	269.48	755	269.33	755.34	269.22	756.23	269
756.76	268.99	757.16	269	757.97	269.48	758.05	269	758.08	269.52
758.15	269.54	758.21	269.54	758.34	269.52	758.55	269.47	758.87	269.59
759.11	269.61	759.54	269.49	759.95	269.39	760.3	269.28	760.5	269.21
761.05	269	763.01	268.28	763.94	268	765.88	267.16	766.29	267
766.74	266.98	768.01	266.61	768.14	266.56	768.51	266.45	769.73	266.1
770.09	266	770.39	265.99	770.62	265.98	770.75	265.97	771.92	265.66
773.66	265.21	773.96	265.15	774.73	265.02	774.88	265	775.27	264.99
775.5	264.97	775.74	264.96	776.39	264.95	777.25	264.65	777.29	264.64
777.39	264.63	777.61	264.6	781.27	264.14	782.22	264.02	782.49	264
789.57	264.17	790.02	264.23	790.43	264.44	790.69	264.43	791.23	264.4
791.77	263.82	791.97	263.82	800.99	263.62	803.21	263.59	806.45	263.44
806.7	263.43	806.82	263.43	806.86	263.42	806.93	263.42	807.04	263.41
812.06	263	813.75	262.53	815.6	262	817.4	261.51	818.89	261
823.88	261	825.24	261	825.92	261	826.6	261	827.27	261
827.82	261	827.97	261	828.12	261	828.26	261	829	261
836.09	261	836.92	261	836.98	261	837.84	261	838.76	261
839.68	261	840.6	261	841.51	261	842.43	261	843.82	261
844.76	261	854.28	261	864.8	260.82	864.9	260.82	873.79	261
875.29	261.82	875.62	262	877.51	262.43	877.71	262.49	879.53	263
879.83	263	880.19	262.78	881.36	262	883.71	262	883.8	262.56
883.84	262.71	883.96	263	883.97	263.6	884.04	264	884.67	264.48
885.19	264.87	886.67	266	887.54	266.21	888.41	266.4	888.96	266.51
889.48	266.61	889.67	266.64	891.9	267	896.32	267.79	896.94	267.98
896.98	268	899.84	268.99	899.96	269	900.12	269	900.34	269.04
901.28	269.1	901.46	269.11	901.99	269.16	902.1	269.17	910.35	270
911.57	270.12	911.64	270.13	913.27	270.22	917.1	270.37	924.55	270.65
925.41	270.66	928.33	270.64	928.59	270.64	928.82	270.63	929.79	270.61
931.57	270.59	939.73	270.5	947.35	270.43	953.99	270.47	962.28	270.38
967.46	270.42	968.95	270.4	975.74	270.3	979.97	270.29	992.27	270.05
992.33	270.04	992.41	270.04	992.43	270.03	992.45	270.03	992.47	270.02
993.62	270	1006.26	269.61	1015.24	269.34	1019.55	269.17	1023.94	269
1031.34	268.7	1036.74	268.53	1039.81	268.46	1050.47	268.23	1053.8	268.18

1062.24	268	1067.64	267.96	1068.22	267.95	1068.43	267.94	1081.81	267.89
1082.15	267.89	1082.19	267.9	1082.22	267.9	1084.71	267.94	1084.77	267.94
1084.81	267.95	1087.06	268	1099.13	268.51	1099.2	268.52	1099.37	268.54
1099.74	268.57	1100.46	268.62	1104.52	268.8	1106.88	268.85	1110.87	269
1118.64	269.01	1130.83	269.01	1142.45	269	1144.19	269	1154.82	268.92
1155.77	268.96	1159.93	268.98	1159.98	268.98	1162.16	269	1173.67	269.03
1174.62	269.03	1178.99	269.33	1179.07	269.33	1186.25	269.41	1186.31	269.42
1186.48	269.43	1187.19	269.45	1187.57	269.47	1188.19	269.49	1188.92	269.51
1189.46	269.54	1189.91	269.57	1190.29	269.6	1190.6	269.63	1201.68	269.8
1202.08	269.82	1202.7	269.85	1203.56	269.9	1218.37	270	1218.96	270
1219.16	270.01	1219.17	270.01	1233.16	270.26	1233.2	270.27	1233.31	270.28
1233.57	270.29	1234.11	270.31	1234.63	270.33	1234.94	270.35	1235.1	270.36
1235.16	270.37	1235.41	270.4	1235.61	270.42	1235.82	270.46	1245.4	270.66
1246.03	270.7	1246.55	270.73	1246.97	270.75	1247.89	270.81	1248.05	270.83
1248.91	270.89	1264.52	271	1264.62	271	1277.61	271.2	1279.31	271.22
1279.45	271.23	1284.55	271.33	1293.95	271.76	1307.8	271.93	1309.53	272
1310.95	272	1311.37	272.03	1312.03	272.08	1312.57	272.13	1314.62	272.16
1315.79	272.22	1316.82	272.28	1317.73	272.34	1318.38	272.38	1318.88	272.43
1319.27	272.47	1333.34	272.89	1334.81	272.89	1341.03	272.96	1341.15	272.95
1342.21	272.95	1343.82	272.98	1345.23	272.98	1345.33	272.99	1345.78	272.99
1346.02	273	1346.18	273	1346.35	273.02	1346.82	273.09	1348.52	273.1
1350.44	273.2	1361.26	273.64	1364.67	273.75	1366.61	273.76	1368.65	273.79
1377.48	273.9	1382.89	273.99	1384.26	274	1391.76	274.36	1397.28	274.47
1397.44	274.48	1398.96	274.52	1401.72	274.62	1404.47	274.78	1411.48	275
1414.04	275.28	1418.46	275.36	1419.2	275.39	1420.12	275.44	1421.41	275.52
1426.64	275.89	1426.8	275.9	1428.12	276	1431.15	276.48	1432.56	276.68
1434.55	276.99	1434.61	277	1442.33	277	1444.94	276.99	1452.71	276.99
1457.22	277	1460.67	277	1464.58	277.16	1465.06	277.19	1465.36	277.2
1466.4	277.26	1466.8	277.28	1467.5	277.32	1467.98	277.34	1468.44	277.37
1468.99	277.39	1469.27	277.41	1469.39	277.42	1469.92	277.43	1470.03	277.44
1470.23	277.46	1470.84	277.46	1471.15	277.49	1471.49	277.53	1484.01	277.92
1490.83	277.91	1495.29	277.94	1497.49	277.93	1500.6	277.97	1501.23	277.98
1501.42	277.98	1502.84	278	1509.07	278.25	1511.78	278.36	1516.02	278.53
1518.41	279	1557.99	280	1559.94	280.13	1567.59	280.64	1578.04	280.93

Manning's n Values			num= 8								
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	401.04	.12	790.69	.04	884.67	.05	889.67	.12		
968.95	.05	1518.41	.03	1557.99	.05						

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	790.69	884.67		.3	.5

Ineffective Flow			num= 3
Sta L	Sta R	Elev	Permanent
0	297.82	280.36	F
297.82	762	269	F
894	1578.04	269	F

Upstream Embankment side slope	=	0 horiz. to 1.0 vertical
Downstream Embankment side slope	=	0 horiz. to 1.0 vertical

Maximum allowable submergence for weir flow = .98
 Elevation at which weir flow begins =
 Energy head used in spillway design =
 Spillway height used in design =
 Weir crest shape = Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Pressure and Weir flow

Submerged Inlet Cd =
 Submerged Inlet + Outlet Cd = .8
 Max Low Cord =

Additional Bridge Parameters

Add Friction component to Momentum

Do not add Weight component to Momentum

Class B flow critical depth computations use critical depth
 inside the bridge at the upstream end

Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT Profile #10%

E.G. US. (ft)	267.97	Element	Inside BR US
Inside BR DS			
W.S. US. (ft)	267.79	E.G. Elev (ft)	267.94
267.81			
Q Total (cfs)	2671.00	W.S. Elev (ft)	267.68
267.41			
Q Bridge (cfs)	2671.00	Crit W.S. (ft)	263.64
264.79			
Q Weir (cfs)		Max Chl Dpth (ft)	7.88
6.59			
Weir Sta Lft (ft)		Vel Total (ft/s)	3.92
4.77			
Weir Sta Rgt (ft)		Flow Area (sq ft)	681.77
559.71			
Weir Submerg		Froude # Chl	0.26
0.35			
Weir Max Depth (ft)		Specif Force (cu ft)	2697.56
1990.52			
Min El Weir Flow (ft)	269.01	Hydr Depth (ft)	6.41
5.26			
Min El Prs (ft)	268.90	W.P. Total (ft)	114.60
115.72			

Delta EG (ft)	0.22	Conv. Total (cfs)	91303.8
58432.8			
Delta WS (ft)	0.41	Top Width (ft)	106.44
106.45			
BR Open Area (sq ft)	718.77	Frctn Loss (ft)	0.09
0.04			
BR Open Vel (ft/s)	4.77	C & E Loss (ft)	0.04
0.01			
Coef of Q		Shear Total (lb/sq ft)	0.32
0.63			
Br Sel Method	Energy only	Power Total (lb/ft s)	0.00
0.00			

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

BRIDGE OUTPUT Profile #2%

E.G. US. (ft)	272.90	Element	Inside BR US
Inside BR DS			
W.S. US. (ft)	272.75	E.G. Elev (ft)	272.90
272.85			
Q Total (cfs)	10810.00	W.S. Elev (ft)	272.75
272.50			
Q Bridge (cfs)	2929.70	Crit W.S. (ft)	268.26
270.89			
Q Weir (cfs)	7880.30	Max Chl Dpth (ft)	12.95
11.68			
Weir Sta Lft (ft)	238.77	Vel Total (ft/s)	3.36
3.19			
Weir Sta Rgt (ft)	1314.33	Flow Area (sq ft)	3214.73
3385.63			
Weir Submerg	0.93	Froude # Chl	0.19
0.23			
Weir Max Depth (ft)	4.65	Specif Force (cu ft)	11017.97
10102.95			
Min El Weir Flow (ft)	269.01	Hydr Depth (ft)	3.46
3.87			
Min El Prs (ft)	268.90	W.P. Total (ft)	1154.77
1103.22			
Delta EG (ft)	0.06	Conv. Total (cfs)	

Delta WS (ft)	0.25	Top Width (ft)	978.27
999.96			
BR Open Area (sq ft)	718.77	Frctn Loss (ft)	
BR Open Vel (ft/s)	4.08	C & E Loss (ft)	
Coef of Q		Shear Total (lb/sq ft)	
Br Sel Method	Press/Weir	Power Total (lb/ft s)	0.00
0.00			

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

BRIDGE OUTPUT Profile #1%

E.G. US. (ft)	273.70	Element	Inside BR US
Inside BR DS			
W.S. US. (ft)	273.56	E.G. Elev (ft)	273.70
273.65			
Q Total (cfs)	12761.00	W.S. Elev (ft)	273.56
273.35			
Q Bridge (cfs)	2760.14	Crit W.S. (ft)	271.21
271.37			
Q Weir (cfs)	10000.86	Max Chl Dpth (ft)	13.76
12.53			
Weir Sta Lft (ft)	238.77	Vel Total (ft/s)	3.21
3.11			
Weir Sta Rgt (ft)	1348.21	Flow Area (sq ft)	3973.00
4104.84			
Weir Submerg	0.96	Froude # Chl	0.17
0.19			
Weir Max Depth (ft)	5.45	Specif Force (cu ft)	13951.13
13070.29			

Min El Weir Flow (ft)	269.01	Hydr Depth (ft)	4.16
4.57			
Min El Prs (ft)	268.90	W.P. Total (ft)	1182.97
1128.82			
Delta EG (ft)	0.05	Conv. Total (cfs)	
Delta WS (ft)	0.22	Top Width (ft)	1039.90
1067.79			
BR Open Area (sq ft)	718.77	Frctn Loss (ft)	
BR Open Vel (ft/s)	3.84	C & E Loss (ft)	
Coef of Q		Shear Total (lb/sq ft)	
Br Sel Method	Press/Weir	Power Total (lb/ft s)	0.00
0.00			

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

BRIDGE OUTPUT Profile #.2%

E.G. US. (ft)	276.31	Element	Inside BR US
Inside BR DS			
W.S. US. (ft)	276.20	E.G. Elev (ft)	276.29
276.20			
Q Total (cfs)	19382.00	W.S. Elev (ft)	276.13
276.04			
Q Bridge (cfs)	2076.85	Crit W.S. (ft)	272.01
272.21			
Q Weir (cfs)		Max Chl Dpth (ft)	16.33
15.22			
Weir Sta Lft (ft)		Vel Total (ft/s)	3.00
3.05			

Weir Sta Rgt (ft)		Flow Area (sq ft)	6469.55
6364.98			
Weir Submerg		Froude # Ch1	0.14
0.15			
Weir Max Depth (ft)		Specif Force (cu ft)	27570.81
27073.29			
Min El Weir Flow (ft)	269.01	Hydr Depth (ft)	5.50
5.71			
Min El Prs (ft)	268.90	W.P. Total (ft)	1407.69
1349.09			
Delta EG (ft)	0.15	Conv. Total (cfs)	700514.0
429084.4			
Delta WS (ft)	0.27	Top Width (ft)	1327.30
1395.46			
BR Open Area (sq ft)	718.77	Frctn Loss (ft)	0.08
0.02			
BR Open Vel (ft/s)	2.89	C & E Loss (ft)	0.00
0.02			
Coef of Q		Shear Total (lb/sq ft)	0.22
0.60			
Br Sel Method	Energy only	Power Total (lb/ft s)	0.00
0.00			

Note: The weir over a bridge is submerged, the energy answer was used.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1 RS: 18388.17

INPUT

Description:

Station Elevation Data num= 465

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

0	275.95	5.7	275.94	7.77	275.93	13.55	275.93	17.99	275.94
19.32	275.93	21.79	275.93	24.17	275.94	27.49	275.93	29.86	275.91
36.01	275.89	37.64	275.88	40.58	275.88	42.85	275.87	64.24	274.18
66.12	274	67.43	274	68.67	273.99	69.8	273.99	70.36	273.98
71.38	273.98	74.58	273.97	81.99	274	82.5	274	88.85	274.12
89.25	274.11	96.42	274	100.65	274	106.59	273.98	114.51	273.55
125.01	273.2	130.35	273.15	133.95	273.15	137.78	272.53	141.15	272.46
147.2	272	169.81	272	172.65	272.23	174.13	272.27	182.94	273.16
187.28	273.41	188.5	273.46	189.4	273.5	191.49	273.5	193.33	273.41
195.6	273.31	207.42	272	207.44	272	215.19	271.74	221.33	271.58
231.81	271.39	231.97	271.38	241.15	271.24	243.96	271.02	250.05	270.95
256.65	270.59	259.96	270.54	267.4	270	268.4	270	269.06	269.98
269.55	269.98	269.78	269.99	274.17	269.97	275.94	269.98	277.53	269.97
283.71	269.99	313.11	269.99	314.83	269.98	325.28	269.98	337.58	268.99
342.52	268.85	347.82	268.7	356.75	268	381.09	268	389.32	268.61
397.13	269.42	398.42	269.55	398.63	269.57	398.8	269.56	399.11	269.52
399.5	269.7	401.04	269.86	401.81	269.95	421.19	268.4	425.34	268.4
426.1	268.39	446.9	268.43	467.49	268.41	486.44	268.25	509.64	268.05
512.44	268.02	514.75	268	632.66	268	633.77	267.99	642.73	267.99
655.03	270.8	664.97	271.68	668.94	271.85	669.13	271.85	669.34	272.11
671.2	271.04	671.21	271.03	671.8	270.69	675.2	270.73	682.29	270.83
692.68	271	695.29	271.04	695.93	271.06	707.28	271.25	710.96	271.31
722.4	271.19	725	271.16	737.9	271.08	738.98	271.07	739.38	271.04
739.67	271	739.74	270.99	740.33	270.89	740.66	270.86	744.92	270.6
751.62	270.1	751.72	270.08	751.78	270.08	752.13	270.01	752.2	270.01
752.36	270	752.45	270	752.56	269.98	752.67	269.96	752.84	269.92
753.13	269.85	754.47	269.48	755	269.33	755.34	269.22	756.23	269
756.76	268.99	757.16	269	757.97	269.48	758.05	269	758.08	269.52
758.15	269.54	758.21	269.54	758.34	269.52	758.55	269.47	758.87	269.59
759.11	269.61	759.54	269.49	759.95	269.39	760.3	269.28	760.5	269.21
761.05	269	763.01	268.28	763.94	268	765.88	267.16	766.29	267
766.74	266.98	768.01	266.61	768.14	266.56	768.51	266.45	769.73	266.1
770.09	266	770.39	265.99	770.62	265.98	770.75	265.97	771.92	265.66
773.66	265.21	773.96	265.15	774.73	265.02	774.88	265	775.27	264.99
775.5	264.97	775.74	264.96	776.39	264.95	777.25	264.65	777.29	264.64
777.39	264.63	777.61	264.6	781.27	264.14	782.22	264.02	782.49	264
789.57	264.17	790.02	264.23	790.43	264.44	790.69	264.43	791.23	264.4
791.77	263.82	791.97	263.82	800.99	263.62	803.21	263.59	806.45	263.44
806.7	263.43	806.82	263.43	806.86	263.42	806.93	263.42	807.04	263.41
812.06	263	813.75	262.53	815.6	262	817.4	261.51	818.89	261
823.88	261	825.24	261	825.92	261	826.6	261	827.27	261
827.82	261	827.97	261	828.12	261	828.26	261	829	261
836.09	261	836.92	261	836.98	261	837.84	261	838.76	261
839.68	261	840.6	261	841.51	261	842.43	261	843.82	261
844.76	261	854.28	261	864.8	260.82	864.9	260.82	873.79	261
875.29	261.82	875.62	262	877.51	262.43	877.71	262.49	879.53	263
879.83	263	880.19	262.78	881.36	262	883.71	262	883.8	262.56
883.84	262.71	883.96	263	883.97	263.6	884.04	264	884.67	264.48
885.19	264.87	886.67	266	887.54	266.21	888.41	266.4	888.96	266.51
889.48	266.61	889.67	266.64	891.9	267	896.32	267.79	896.94	267.98

896.98	268	899.84	268.99	899.96	269	900.12	269	900.34	269.04
901.28	269.1	901.46	269.11	901.99	269.16	902.1	269.17	910.35	270
911.57	270.12	911.64	270.13	913.27	270.22	917.1	270.37	924.55	270.65
925.41	270.66	928.33	270.64	928.59	270.64	928.82	270.63	929.79	270.61
931.57	270.59	939.73	270.5	947.35	270.43	953.99	270.47	962.28	270.38
967.46	270.42	968.95	270.4	975.74	270.3	979.97	270.29	992.27	270.05
992.33	270.04	992.41	270.04	992.43	270.03	992.45	270.03	992.47	270.02
993.62	270	1006.26	269.61	1015.24	269.34	1019.55	269.17	1023.94	269
1031.34	268.7	1036.74	268.53	1039.81	268.46	1050.47	268.23	1053.8	268.18
1062.24	268	1067.64	267.96	1068.22	267.95	1068.43	267.94	1081.81	267.89
1082.15	267.89	1082.19	267.9	1082.22	267.9	1084.71	267.94	1084.77	267.94
1084.81	267.95	1087.06	268	1099.13	268.51	1099.2	268.52	1099.37	268.54
1099.74	268.57	1100.46	268.62	1104.52	268.8	1106.88	268.85	1110.87	269
1118.64	269.01	1130.83	269.01	1142.45	269	1144.19	269	1154.82	268.92
1155.77	268.96	1159.93	268.98	1159.98	268.98	1162.16	269	1173.67	269.03
1174.62	269.03	1178.99	269.33	1179.07	269.33	1186.25	269.41	1186.31	269.42
1186.48	269.43	1187.19	269.45	1187.57	269.47	1188.19	269.49	1188.92	269.51
1189.46	269.54	1189.91	269.57	1190.29	269.6	1190.6	269.63	1201.68	269.8
1202.08	269.82	1202.7	269.85	1203.56	269.9	1218.37	270	1218.96	270
1219.16	270.01	1219.17	270.01	1233.16	270.26	1233.2	270.27	1233.31	270.28
1233.57	270.29	1234.11	270.31	1234.63	270.33	1234.94	270.35	1235.1	270.36
1235.16	270.37	1235.41	270.4	1235.61	270.42	1235.82	270.46	1245.4	270.66
1246.03	270.7	1246.55	270.73	1246.97	270.75	1247.89	270.81	1248.05	270.83
1248.91	270.89	1264.52	271	1264.62	271	1277.61	271.2	1279.31	271.22
1279.45	271.23	1284.55	271.33	1293.95	271.76	1307.8	271.93	1309.53	272
1310.95	272	1311.37	272.03	1312.03	272.08	1312.57	272.13	1314.62	272.16
1315.79	272.22	1316.82	272.28	1317.73	272.34	1318.38	272.38	1318.88	272.43
1319.27	272.47	1333.34	272.89	1334.81	272.89	1341.03	272.96	1341.15	272.95
1342.21	272.95	1343.82	272.98	1345.23	272.98	1345.33	272.99	1345.78	272.99
1346.02	273	1346.18	273	1346.35	273.02	1346.82	273.09	1348.52	273.1
1350.44	273.2	1361.26	273.64	1364.67	273.75	1366.61	273.76	1368.65	273.79
1377.48	273.9	1382.89	273.99	1384.26	274	1391.76	274.36	1397.28	274.47
1397.44	274.48	1398.96	274.52	1401.72	274.62	1404.47	274.78	1411.48	275
1414.04	275.28	1418.46	275.36	1419.2	275.39	1420.12	275.44	1421.41	275.52
1426.64	275.89	1426.8	275.9	1428.12	276	1431.15	276.48	1432.56	276.68
1434.55	276.99	1434.61	277	1442.33	277	1444.94	276.99	1452.71	276.99
1457.22	277	1460.67	277	1464.58	277.16	1465.06	277.19	1465.36	277.2
1466.4	277.26	1466.8	277.28	1467.5	277.32	1467.98	277.34	1468.44	277.37
1468.99	277.39	1469.27	277.41	1469.39	277.42	1469.92	277.43	1470.03	277.44
1470.23	277.46	1470.84	277.46	1471.15	277.49	1471.49	277.53	1484.01	277.92
1490.83	277.91	1495.29	277.94	1497.49	277.93	1500.6	277.97	1501.23	277.98
1501.42	277.98	1502.84	278	1509.07	278.25	1511.78	278.36	1516.02	278.53
1518.41	279	1557.99	280	1559.94	280.13	1567.59	280.64	1578.04	280.93

Manning's	n	Values		num=	8				
Sta	n	Val	Sta	n	Val	Sta	n	Val	Sta
0	.05	401.04	.12	790.69	.04	884.67	.05	889.67	.12
968.95	.05	1518.41	.03	1557.99	.05				

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.

790.69	884.67	104.32	99.42	99.99	.3	.5
Ineffective Flow	num=	3				
Sta L	Sta R	Elev	Permanent			
0	297.82	280.36	96	F		
297.82	762	269		F		
894	1578.04	269		F		

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	267.75	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.37	Wt. n-Val.	0.120	0.040
0.053				
W.S. Elev (ft)	267.38	Reach Len. (ft)	104.32	99.42
99.99				
Crit W.S. (ft)	264.75	Flow Area (sq ft)	60.92	524.53
9.05				
E.G. Slope (ft/ft)	0.001880	Area (sq ft)	60.92	524.53
9.05				
Q Total (cfs)	2671.00	Flow (cfs)	58.01	2601.02
11.98				
Top Width (ft)	128.65	Top Width (ft)	25.32	93.98
9.35				
Vel Total (ft/s)	4.49	Avg. Vel. (ft/s)	0.95	4.96
1.32				
Max Chl Dpth (ft)	6.56	Hydr. Depth (ft)	2.41	5.58
0.97				
Conv. Total (cfs)	61602.0	Conv. (cfs)	1337.8	59987.9
276.2				
Length Wtd. (ft)	99.67	Wetted Per. (ft)	25.80	97.11
9.97				
Min Ch El (ft)	260.82	Shear (lb/sq ft)	0.28	0.63
0.11				
Alpha	1.19	Stream Power (lb/ft s)	1578.04	0.00
0.00				
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)	157.52	226.94
89.43				
C & E Loss (ft)	0.03	Cum SA (acres)	76.85	35.79
51.26				

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	272.85	Element	Left OB	Channel

Right OB				
Vel Head (ft)	0.35	Wt. n-Val.	0.094	0.040
0.055				
W.S. Elev (ft)	272.50	Reach Len. (ft)	104.32	99.42
99.99				
Crit W.S. (ft)	270.17	Flow Area (sq ft)	1813.57	1005.94
1230.95				
E.G. Slope (ft/ft)	0.001196	Area (sq ft)	1985.35	1005.94
1230.95				
Q Total (cfs)	10810.00	Flow (cfs)	2346.37	6140.73
2322.90				
Top Width (ft)	1154.68	Top Width (ft)	625.05	93.98
435.65				
Vel Total (ft/s)	2.67	Avg. Vel. (ft/s)	1.29	6.10
1.89				
Max Chl Dpth (ft)	11.68	Hydr. Depth (ft)	3.68	10.70
2.83				
Conv. Total (cfs)	312605.0	Conv. (cfs)	67852.7	177578.5
67173.8				
Length Wtd. (ft)	100.55	Wetted Per. (ft)	496.12	97.11
436.74				
Min Ch El (ft)	260.82	Shear (lb/sq ft)	0.27	0.77
0.21				
Alpha	3.13	Stream Power (lb/ft s)	1578.04	0.00
0.00				
Frctn Loss (ft)	0.11	Cum Volume (acre-ft)	626.90	387.95
431.31				
C & E Loss (ft)	0.06	Cum SA (acres)	128.06	35.68
93.91				

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	273.65	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.30	Wt. n-Val.	0.094	0.040
0.055				
W.S. Elev (ft)	273.35	Reach Len. (ft)	104.32	99.42
99.99				
Crit W.S. (ft)	270.78	Flow Area (sq ft)	2230.04	1085.35
1614.03				
E.G. Slope (ft/ft)	0.001034	Area (sq ft)	2525.44	1085.35
1614.03				
Q Total (cfs)	12761.00	Flow (cfs)	3088.43	6480.86

3191.70				
Top Width (ft)	1224.81	Top Width (ft)	661.46	93.98
469.37				
Vel Total (ft/s)	2.59	Avg. Vel. (ft/s)	1.38	5.97
1.98				
Max Chl Dpth (ft)	12.53	Hydr. Depth (ft)	4.52	11.55
3.44				
Conv. Total (cfs)	396863.2	Conv. (cfs)	96049.4	201552.8
99261.0				
Length Wtd. (ft)	100.66	Wetted Per. (ft)	496.12	97.11
470.48				
Min Ch El (ft)	260.82	Shear (lb/sq ft)	0.29	0.72
0.22				
Alpha	2.92	Stream Power (lb/ft s)	1578.04	0.00
0.00				
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)	729.42	415.13
505.21				
C & E Loss (ft)	0.04	Cum SA (acres)	133.67	35.71
99.61				

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	276.16	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.23	Wt. n-Val.	0.094	0.040
0.056				
W.S. Elev (ft)	275.94	Reach Len. (ft)	104.32	99.42
99.99				
Crit W.S. (ft)	271.84	Flow Area (sq ft)	3506.53	1328.75
2941.43				
E.G. Slope (ft/ft)	0.000703	Area (sq ft)	4393.94	1328.75
2941.43				
Q Total (cfs)	19382.00	Flow (cfs)	5441.19	7487.96
6452.86				
Top Width (ft)	1416.38	Top Width (ft)	779.79	93.98
542.61				
Vel Total (ft/s)	2.49	Avg. Vel. (ft/s)	1.55	5.64
2.19				
Max Chl Dpth (ft)	15.12	Hydr. Depth (ft)	7.11	14.14
5.42				
Conv. Total (cfs)	730936.7	Conv. (cfs)	205198.8	282386.9
243351.0				
Length Wtd. (ft)	100.85	Wetted Per. (ft)	496.12	97.11

543.79				
Min Ch El (ft)	260.82	Shear (lb/sq ft)	0.31	0.60
0.24				
Alpha	2.34	Stream Power (lb/ft s)	1578.04	0.00
0.00				
Frctn Loss (ft)	0.07	Cum Volume (acre-ft)	1059.68	495.69
746.73				
C & E Loss (ft)	0.00	Cum SA (acres)	150.07	35.77
112.36				

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 18288.75

INPUT

Description:

Station Elevation Data		num=	170						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	278.4	5.22	278.13	6.05	278.08	6.75	278.07	8.23	278.05
8.26	278.05	8.36	278	9.98	276.49	10.53	276	12.02	274.16
12.17	274	12.33	274	13.59	273.99	14.23	273.99	16.29	273.97
17.41	273.97	26.28	273.96	27.21	273.95	51.01	272.59	56.42	272.33
61.84	272.16	62.94	272.22	64.2	272.28	74.58	272.05	74.78	272.07
75.24	272.18	76.81	272	80.43	272	83.58	272.36	85.41	273.25
86.02	273.53	86.07	273.56	86.76	273.82	87.07	274	88.36	274.64
91.49	276	104.08	276	108.35	275.17	110.76	274.72	113.05	274.41
115.23	274	119.75	273.28	126.16	272	128.13	271.68	128.73	271.57
139.77	269.38	147.66	268	187.32	268	196.24	268.02	200.8	268.01
202.95	268.01	208.43	268.05	209.91	268.04	211.53	268.05	216.24	268.02
219.13	268	222.06	267.99	222.39	267.99	229.23	267.97	243.52	268.55
248.05	268.73	253.14	274.54	253.64	274.27	253.99	274.08	254.03	274.06
254.09	274.03	254.17	273.98	254.18	273.98	254.23	273.95	254.32	273.9
254.35	273.88	254.36	273.88	254.41	273.85	254.43	273.84	254.44	273.84
254.49	273.81	254.53	273.79	254.56	273.77	254.6	273.75	254.61	273.75
254.75	273.66	254.79	273.64	254.81	273.63	254.82	273.63	254.83	273.62
254.85	273.61	254.88	273.59	254.89	273.59	256.65	272.64	258.43	271.67
260.8	271.57	320.15	271.28	320.84	270.52	355.91	266.4	358.01	266.01
360.3	266.01	363.66	266	368.79	266	389.4	266.04	396.41	266.04
407.74	266.06	412.94	266.05	425.35	266.03	438.22	266	442.09	265.52
446.58	265	449.3	264.98	451.54	264.96	452.52	264.97	455.8	265
464.13	265	472.4	265.01	481.04	265.01	491.61	265	507.15	265
510	264.55	511.59	264.25	512.94	264	514.36	263.6	516.59	263

518.76	262.91	531.14	262.4	542.56	262	548.06	261.15	548.86	261
553.29	260.21	554.64	260	562.78	260.21	571.52	260.43	572.25	260.45
589.73	260.95	590.66	260.98	590.69	260.98	591.36	261	591.47	261.04
593.72	262	596	262.98	596.24	263.1	597.99	264	598.47	264.24
599.57	265	617.13	265.25	639.27	265.55	656.33	265.79	666.65	265.93
671.9	266	672.64	266	688.48	266.13	708.13	266.28	712.61	266.31
718.24	266.35	734.38	266.47	749.21	266.59	771.85	266.78	778.36	266.83
797.07	267	807.66	267.22	820.59	267.48	833.17	267.74	846.81	268
864.93	268.33	899.49	269	902.84	269.12	916.4	269.74	919.65	283.75
926.15	283.5	926.95	283	953.89	283	979.78	287	1180.68	287

Manning's n Values			num=	8					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	86.76	.12	511.59	.042	590.69	.12	666.65	.05
916.4	.013	919.65	.03	926.15	.013				

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
511.59	590.69	348.88	376.78	384.56		.1	.3

Ineffective Flow	num=	1	
Sta L	Sta R	Elev	Permanent
0	93.97	278.42	F

Blocked Obstructions	num=	1	
Sta L	Sta R	Elev	
979.78	1180.68	307	

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	267.54	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.31	Wt. n-Val.	0.120	0.042
0.090				
W.S. Elev (ft)	267.22	Reach Len. (ft)	348.88	376.78
384.56				
Crit W.S. (ft)	264.67	Flow Area (sq ft)	261.48	459.16
258.40				
E.G. Slope (ft/ft)	0.001839	Area (sq ft)	261.48	459.16
258.40				
Q Total (cfs)	2671.00	Flow (cfs)	190.34	2243.16
237.50				
Top Width (ft)	458.92	Top Width (ft)	162.69	79.10
217.14				
Vel Total (ft/s)	2.73	Avg. Vel. (ft/s)	0.73	4.89
0.92				
Max Chl Dpth (ft)	7.22	Hydr. Depth (ft)	1.61	5.80
1.19				
Conv. Total (cfs)	62288.9	Conv. (cfs)	4438.9	52311.5
5538.5				
Length Wtd. (ft)	374.33	Wetted Per. (ft)	162.90	79.46
218.09				

Min Ch El (ft) 0.14	260.00	Shear (lb/sq ft)	0.18	0.66
Alpha 0.00	2.71	Stream Power (lb/ft s)	1180.68	0.00
Frctn Loss (ft) 89.13	0.83	Cum Volume (acre-ft)	157.13	225.82
C & E Loss (ft) 51.00	0.01	Cum SA (acres)	76.63	35.59

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft) Right OB	272.68	Element	Left OB	Channel
Vel Head (ft) 0.063	0.23	Wt. n-Val.	0.120	0.042
W.S. Elev (ft) 384.56	272.46	Reach Len. (ft)	348.88	376.78
Crit W.S. (ft) 1845.00	268.94	Flow Area (sq ft)	1777.92	872.99
E.G. Slope (ft/ft) 1845.00	0.000931	Area (sq ft)	1786.11	872.99
Q Total (cfs) 4274.96	10810.00	Flow (cfs)	1876.99	4658.05
Top Width (ft) 326.34	817.43	Top Width (ft)	411.99	79.10
Vel Total (ft/s) 2.32	2.40	Avg. Vel. (ft/s)	1.06	5.34
Max Chl Dpth (ft) 5.65	12.46	Hydr. Depth (ft)	4.65	11.04
Conv. Total (cfs) 140089.3	354240.6	Conv. (cfs)	61508.6	152642.8
Length Wtd. (ft) 329.49	373.19	Wetted Per. (ft)	385.09	79.46
Min Ch El (ft) 0.33	260.00	Shear (lb/sq ft)	0.27	0.64
Alpha 0.00	2.52	Stream Power (lb/ft s)	1180.68	0.00
Frctn Loss (ft) 427.78	0.45	Cum Volume (acre-ft)	622.38	385.81
C & E Loss (ft) 93.04	0.02	Cum SA (acres)	126.82	35.48

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	273.52	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.23	Wt. n-Val.	0.120	0.042
0.062				
W.S. Elev (ft)	273.29	Reach Len. (ft)	348.88	376.78
384.56				
Crit W.S. (ft)	269.40	Flow Area (sq ft)	2098.93	938.90
2117.01				
E.G. Slope (ft/ft)	0.000881	Area (sq ft)	2139.21	938.90
2117.01				
Q Total (cfs)	12761.00	Flow (cfs)	2376.88	5113.82
5270.30				
Top Width (ft)	840.82	Top Width (ft)	435.19	79.10
326.53				
Vel Total (ft/s)	2.48	Avg. Vel. (ft/s)	1.13	5.45
2.49				
Max Chl Dpth (ft)	13.29	Hydr. Depth (ft)	5.40	11.87
6.48				
Conv. Total (cfs)	430030.6	Conv. (cfs)	80097.9	172329.7
177603.0				
Length Wtd. (ft)	373.11	Wetted Per. (ft)	392.22	79.46
330.34				
Min Ch El (ft)	260.00	Shear (lb/sq ft)	0.29	0.65
0.35				
Alpha	2.40	Stream Power (lb/ft s)	1180.68	0.00
0.00				
Frctn Loss (ft)	0.44	Cum Volume (acre-ft)	723.84	412.82
500.92				
C & E Loss (ft)	0.03	Cum SA (acres)	132.35	35.52
98.70				

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	276.08	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.24	Wt. n-Val.	0.120	0.042

0.061				
W.S. Elev (ft)	275.84	Reach Len. (ft)	348.88	376.78
384.56				
Crit W.S. (ft)	270.48	Flow Area (sq ft)	3116.74	1140.81
2951.26				
E.G. Slope (ft/ft)	0.000764	Area (sq ft)	3338.60	1140.81
2951.26				
Q Total (cfs)	19382.00	Flow (cfs)	4114.06	6590.39
8677.55				
Top Width (ft)	893.38	Top Width (ft)	487.16	79.10
327.13				
Vel Total (ft/s)	2.69	Avg. Vel. (ft/s)	1.32	5.78
2.94				
Max Chl Dpth (ft)	15.84	Hydr. Depth (ft)	7.66	14.42
9.02				
Conv. Total (cfs)	701190.6	Conv. (cfs)	148836.2	238423.1
313931.3				
Length Wtd. (ft)	372.91	Wetted Per. (ft)	411.54	79.46
332.96				
Min Ch El (ft)	260.00	Shear (lb/sq ft)	0.36	0.68
0.42				
Alpha	2.16	Stream Power (lb/ft s)	1180.68	0.00
0.00				
Frctn Loss (ft)	0.41	Cum Volume (acre-ft)	1050.43	492.88
739.97				
C & E Loss (ft)	0.04	Cum SA (acres)	148.55	35.57
111.37				

Warning: Divided flow computed for this cross-section.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 17911.97

INPUT

Description:

Station Elevation Data num= 159

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	277.91	94.11	277.88	97.14	277.8	102.05	277.74	111.52	277.29
122.2	276.95	122.79	276.95	124.47	276.97	145.77	276.78	150.16	276.57
153.75	276.31	153.83	276.31	158.04	276.33	163.07	276.37	172.02	276.89

176.25	276.96	185.78	276.6	187.17	276.62	187.96	276.61	189.72	276.63
190.25	276.64	192.82	276.68	200.73	276.92	201.4	276.95	201.69	276.95
203.5	276.97	205.66	276.97	207.38	276.99	208.56	276.99	209.85	277
212.8	276.22	213.65	276	217.35	275.01	217.4	275	217.62	274.94
220.43	274.23	221.29	274	224.52	273.15	225.07	273	226.97	272.53
229.1	272	230.71	271.54	232.54	271	234.49	270.27	235.22	270
235.68	269.76	237.17	269	238.08	268.55	238.38	268.41	239.02	268.17
239.55	268	240.51	267.69	243.02	267	244.68	266.5	246.38	266
262.7	265.41	275.3	265	298.26	264.54	305.64	264.41	310.07	264.33
317.8	264.2	328.57	264	355.92	264	367.2	264.02	401.5	264.09
421.73	264.05	429.85	264.04	434.64	264.03	435.79	264.03	447.77	264
450.43	263.5	453.11	263	456.74	262.29	457.86	262	461	261.15
461.57	261	461.73	260.95	465.08	260	481.29	260.12	482.3	260.13
485.91	260.15	486.58	260.16	488.29	260.15	501.24	260.06	508.43	260
509.27	260.39	510.57	261	511.54	261.49	512.62	262	514.22	262.84
514.55	263	514.77	263.12	516.34	264	517.31	264.23	518.6	264.58
520.18	265	521.7	265.26	523.5	265.56	525.78	266	532.78	266
552.92	265.67	587.64	265	587.79	265.01	587.97	265.02	604.32	265.56
604.43	265.55	615.47	266	615.74	266.02	632.77	267	636.62	267.28
646.83	268	661.51	268.95	662.23	269	662.69	269.04	672.41	270
677.06	270.43	683.02	271	691.67	271.8	692.93	271.93	693.72	272
695.31	272.21	697.35	272.46	698.85	272.66	701.1	272.93	701.69	273
702.45	273.01	706.09	273.07	709.01	273.03	709.72	273.02	710.71	273
716.83	272.93	720.34	272.9	721.21	272.89	722.55	272.91	728.44	273
737.64	273.35	754.8	274	757.98	274.14	770.7	274.78	774.96	275
776.78	275.05	777.69	275.11	780.52	276	783.69	277	786.86	278
790.03	279	793.2	280	796.37	281	799.54	282	802.88	282.5
803.59	282	806.23	282	845.85	282.81	856.42	282.96	859.08	283
872.12	282.99	880.19	283	912.49	282.35	939.56	282.5		

Manning's n Values			num= 9						
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	189.72	.12	434.64	.04	481.29	.04	518.6	.04
521.7	.12	587.97	.05	780.52	.03	802.88	.013		

Bank Sta:	Left	Right	Lengths:		Left Channel	Right	Coeff	Contr.	Expan.
	434.64	521.7			454.17	503.84		.1	.3

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	266.70	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.39	Wt. n-Val.	0.120	0.040
0.083				
W.S. Elev (ft)	266.30	Reach Len. (ft)	454.17	503.84
444.58				
Crit W.S. (ft)	264.76	Flow Area (sq ft)	360.93	414.22
71.69				
E.G. Slope (ft/ft)	0.002752	Area (sq ft)	360.93	414.22

71.69				
Q Total (cfs)	2671.00	Flow (cfs)	360.41	2256.19
54.40				
Top Width (ft)	375.32	Top Width (ft)	189.29	87.06
98.97				
Vel Total (ft/s)	3.15	Avg. Vel. (ft/s)	1.00	5.45
0.76				
Max Chl Dpth (ft)	6.30	Hydr. Depth (ft)	1.91	4.76
0.72				
Conv. Total (cfs)	50917.1	Conv. (cfs)	6870.5	43009.6
1036.9				
Length Wtd. (ft)	496.38	Wetted Per. (ft)	189.36	88.64
99.07				
Min Ch El (ft)	260.00	Shear (lb/sq ft)	0.33	0.80
0.12				
Alpha	2.53	Stream Power (lb/ft s)	939.56	0.00
0.00				
Frctn Loss (ft)	0.85	Cum Volume (acre-ft)	154.64	222.04
87.67				
C & E Loss (ft)	0.04	Cum SA (acres)	75.22	34.87
49.61				

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	272.20	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.47	Wt. n-Val.	0.120	0.040
0.075				
W.S. Elev (ft)	271.73	Reach Len. (ft)	454.17	503.84
444.58				
Crit W.S. (ft)	268.22	Flow Area (sq ft)	1431.14	886.69
818.19				
E.G. Slope (ft/ft)	0.001663	Area (sq ft)	1431.14	886.69
818.19				
Q Total (cfs)	10810.00	Flow (cfs)	2634.43	6236.64
1938.93				
Top Width (ft)	460.88	Top Width (ft)	204.60	87.06
169.22				
Vel Total (ft/s)	3.45	Avg. Vel. (ft/s)	1.84	7.03
2.37				
Max Chl Dpth (ft)	11.73	Hydr. Depth (ft)	6.99	10.18
4.84				

Conv. Total (cfs)	265060.1	Conv. (cfs)	64595.9	152921.8
47542.4				
Length Wtd. (ft)	478.27	Wetted Per. (ft)	205.64	88.64
169.54				
Min Ch El (ft)	260.00	Shear (lb/sq ft)	0.72	1.04
0.50				
Alpha	2.56	Stream Power (lb/ft s)	939.56	0.00
0.00				
Frctn Loss (ft)	0.50	Cum Volume (acre-ft)	609.50	378.20
416.03				
C & E Loss (ft)	0.07	Cum SA (acres)	124.35	34.76
90.85				

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	273.05	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.52	Wt. n-Val.	0.120	0.040
0.074				
W.S. Elev (ft)	272.53	Reach Len. (ft)	454.17	503.84
444.58				
Crit W.S. (ft)	268.74	Flow Area (sq ft)	1595.85	956.27
956.39				
E.G. Slope (ft/ft)	0.001684	Area (sq ft)	1595.85	956.27
956.39				
Q Total (cfs)	12761.00	Flow (cfs)	3145.95	7116.78
2498.27				
Top Width (ft)	470.90	Top Width (ft)	207.67	87.06
176.17				
Vel Total (ft/s)	3.64	Avg. Vel. (ft/s)	1.97	7.44
2.61				
Max Chl Dpth (ft)	12.53	Hydr. Depth (ft)	7.68	10.98
5.43				
Conv. Total (cfs)	310995.6	Conv. (cfs)	76669.3	173441.5
60884.8				
Length Wtd. (ft)	476.68	Wetted Per. (ft)	208.82	88.64
176.54				
Min Ch El (ft)	260.00	Shear (lb/sq ft)	0.80	1.13
0.57				
Alpha	2.51	Stream Power (lb/ft s)	939.56	0.00
0.00				
Frctn Loss (ft)	0.49	Cum Volume (acre-ft)	708.88	404.63

487.36				
C & E Loss (ft)	0.09	Cum SA (acres)	129.78	34.80
96.48				

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	275.63	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.64	Wt. n-Val.	0.120	0.040
0.072				
W.S. Elev (ft)	274.99	Reach Len. (ft)	454.17	503.84
444.58				
Crit W.S. (ft)	270.18	Flow Area (sq ft)	2119.25	1170.76
1502.42				
E.G. Slope (ft/ft)	0.001702	Area (sq ft)	2119.25	1170.76
1502.42				
Q Total (cfs)	19382.00	Flow (cfs)	4920.42	10024.17
4437.42				
Top Width (ft)	557.41	Top Width (ft)	217.22	87.06
253.13				
Vel Total (ft/s)	4.04	Avg. Vel. (ft/s)	2.32	8.56
2.95				
Max Chl Dpth (ft)	14.99	Hydr. Depth (ft)	9.76	13.45
5.94				
Conv. Total (cfs)	469869.6	Conv. (cfs)	119283.6	243011.7
107574.4				
Length Wtd. (ft)	472.65	Wetted Per. (ft)	218.68	88.64
253.58				
Min Ch El (ft)	260.00	Shear (lb/sq ft)	1.03	1.40
0.63				
Alpha	2.52	Stream Power (lb/ft s)	939.56	0.00
0.00				
Frctn Loss (ft)	0.41	Cum Volume (acre-ft)	1028.57	482.88
720.31				
C & E Loss (ft)	0.13	Cum SA (acres)	145.73	34.86
108.80				

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 17408.13

INPUT

Description:

Station Elevation Data				num=	215				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	285.8	49.01	283.46	73.91	282.66	82.8	282.4	91.96	283
94.83	283	96.49	282.47	98.04	282	99.93	281.43	101.34	281
102.97	280.51	104.62	280	106.1	279.57	107.89	279	110.85	278.09
111.14	278	112.13	277.92	112.48	277.86	112.64	277.83	112.91	277.78
113.47	277.63	113.93	277.52	114.48	277.43	115	277.31	115.51	277.19
115.85	277.12	116.25	277.04	116.44	277	117.49	277	118.03	276.99
118.64	276.99	120.59	276.72	121.03	276.67	121.26	276.66	121.86	276.59
122.68	276.51	123.83	276.4	127.11	276.1	128.45	276	129.96	275.9
132.35	275.75	140.28	275	144.12	274.99	145.62	274.99	153.01	274.96
159.48	274.96	173.19	274.33	173.59	274.31	174.99	274.29	175.32	274.28
175.68	274.26	175.97	274.26	176.82	274.22	177.1	274.21	177.37	274.21
180.39	274.11	180.52	274.1	180.77	274.09	181.07	274.08	183.58	274
197.9	273.51	198.12	273.5	201.85	273.28	206.09	273.01	206.22	273
209.09	272.75	217.41	272	222.61	271.55	228.49	271	239.52	270.16
241.53	270	250.77	269.38	256.35	269	258.92	268.88	272.86	268.19
276.64	268	304.12	267.12	307.97	267	309.15	266.99	310.07	266.99
340.84	266.59	348.22	266.49	362.35	266.33	363.78	266.31	384.62	266
385.4	265.99	388.22	265.99	388.76	266	407.02	266	409.32	265.46
411.27	265	412.52	264.63	415.17	264	417.29	263.45	418.83	263
422.1	262.17	422.76	262	425.06	261.43	426.05	261.2	426.92	261
427.42	260.89	431.91	260	432.88	259.84	433.85	259.69	434.35	259.65
435.02	259.59	435.86	259.49	436.41	259.42	436.99	259.37	437.44	259.34
438.17	259.31	438.37	259.29	438.54	259.27	438.62	259.26	439.19	259
440.58	258.98	467.84	258.49	469.11	258.47	497.58	258	498	258.29
499.08	259	499.68	259.4	500.55	260	501.25	260.39	502.23	261
504.52	261.61	506.2	262	509.75	262.81	510.38	262.95	510.6	263
525.8	263	528.09	263.01	530.01	263.01	534.56	263	534.83	263
535.26	263.02	540.71	263.28	541.15	263.28	541.56	263.27	541.8	263.27
544.13	263.25	544.31	263.25	547.27	263.21	547.94	263.21	548.07	263.22
567.91	263.44	579.24	263.55	585.64	263.5	611.15	263.56	644.44	263.65
645.3	263.67	645.44	263.67	647.68	263.7	647.98	263.7	659.4	263.84
659.5	263.84	672.12	264	673.25	264.02	674.1	264.03	675.98	264.04
679.96	264.1	681.86	264.12	693.17	264.27	748.37	265	786.6	265.99
786.97	266	786.98	266	797.45	266.41	808.24	266.83	810.22	266.91
812.63	267	812.96	267	813.53	267.01	814.41	267.01	831.46	267.47
841.82	267.72	847.09	267.85	853.41	268	855.69	268.03	855.74	268.03
858.75	268.04	902.27	268.95	904.81	269	906.75	269.03	934.11	269.37
947.56	269.52	962.44	269.75	967.5	269.8	969.28	269.82	978.34	270

997.35	270.34	1034.88	270.97	1035.83	270.98	1036.37	270.99	1036.54	270.99
1036.98	271	1064.44	271.38	1080.05	271.64	1089.33	271.77	1102.24	272
1127.17	272.34	1131.42	272.39	1137.18	273	1141.02	274	1145.54	275
1150.54	276	1155.55	277	1160.56	278	1170.76	278.5	1171.95	278
1233.02	279	1243.86	279.17	1244.64	279.67	1281.77	283.8	1369.47	283.8

Manning's n Values num= 11

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	129.96	.05	363.78	.12	426.05	.04	440.58	.04
509.75	.12	693.17	.05	1137.18	.03	1170.76	.013	1243.86	.03
1281.77	.013								

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

426.05	509.75	417.6	395.07	266.22	.1	.3

Blocked Obstructions num= 1

Sta L	Sta R	Elev
1281.77	1369.47	303.8

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	265.81	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.26	Wt. n-Val.	0.120	0.040
0.109				
W.S. Elev (ft)	265.55	Reach Len. (ft)	417.60	395.07
266.22				
Crit W.S. (ft)	262.21	Flow Area (sq ft)	37.21	539.80
424.49				
E.G. Slope (ft/ft)	0.001165	Area (sq ft)	37.21	539.80
424.49				
Q Total (cfs)	2671.00	Flow (cfs)	25.86	2350.96
294.18				
Top Width (ft)	360.50	Top Width (ft)	17.10	83.70
259.70				
Vel Total (ft/s)	2.67	Avg. Vel. (ft/s)	0.70	4.36
0.69				
Max Chl Dpth (ft)	7.55	Hydr. Depth (ft)	2.18	6.45
1.63				
Conv. Total (cfs)	78250.9	Conv. (cfs)	757.7	68874.8
8618.4				
Length Wtd. (ft)	371.44	Wetted Per. (ft)	17.64	85.04
259.75				
Min Ch El (ft)	258.00	Shear (lb/sq ft)	0.15	0.46
0.12				
Alpha	2.36	Stream Power (lb/ft s)	1369.47	0.00
0.00				
Frctn Loss (ft)	0.57	Cum Volume (acre-ft)	152.56	216.53
85.14				
C & E Loss (ft)	0.01	Cum SA (acres)	74.14	33.88

47.78

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	271.63	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.23	Wt. n-Val.	0.072	0.040
0.082				
W.S. Elev (ft)	271.40	Reach Len. (ft)	417.60	395.07
266.22				
Crit W.S. (ft)	267.05	Flow Area (sq ft)	863.98	1029.41
2676.31				
E.G. Slope (ft/ft)	0.000721	Area (sq ft)	863.98	1029.41
2676.31				
Q Total (cfs)	10810.00	Flow (cfs)	1306.10	5417.27
4086.64				
Top Width (ft)	841.11	Top Width (ft)	201.79	83.70
555.62				
Vel Total (ft/s)	2.37	Avg. Vel. (ft/s)	1.51	5.26
1.53				
Max Chl Dpth (ft)	13.40	Hydr. Depth (ft)	4.28	12.30
4.82				
Conv. Total (cfs)	402516.1	Conv. (cfs)	48633.1	201714.9
152168.1				
Length Wtd. (ft)	348.54	Wetted Per. (ft)	202.53	85.04
555.73				
Min Ch El (ft)	258.00	Shear (lb/sq ft)	0.19	0.55
0.22				
Alpha	2.69	Stream Power (lb/ft s)	1369.47	0.00
0.00				
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	597.53	367.12
398.19				
C & E Loss (ft)	0.01	Cum SA (acres)	122.23	33.78
87.15				

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	272.47	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.23	Wt. n-Val.	0.071	0.040
0.080				
W.S. Elev (ft)	272.24	Reach Len. (ft)	417.60	395.07
266.22				
Crit W.S. (ft)	267.65	Flow Area (sq ft)	1038.25	1100.04

3167.38				
E.G. Slope (ft/ft)	0.000691	Area (sq ft)	1038.25	1100.04
3167.38				
Q Total (cfs)	12761.00	Flow (cfs)	1715.69	5921.33
5123.98				
Top Width (ft)	905.03	Top Width (ft)	211.29	83.70
610.04				
Vel Total (ft/s)	2.41	Avg. Vel. (ft/s)	1.65	5.38
1.62				
Max Chl Dpth (ft)	14.24	Hydr. Depth (ft)	4.91	13.14
5.19				
Conv. Total (cfs)	485520.4	Conv. (cfs)	65277.1	225290.0
194953.3				
Length Wtd. (ft)	346.56	Wetted Per. (ft)	212.07	85.04
610.16				
Min Ch El (ft)	258.00	Shear (lb/sq ft)	0.21	0.56
0.22				
Alpha	2.57	Stream Power (lb/ft s)	1369.47	0.00
0.00				
Frctn Loss (ft)	0.24	Cum Volume (acre-ft)	695.15	392.73
466.31				
C & E Loss (ft)	0.01	Cum SA (acres)	127.59	33.81
92.47				

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	275.09	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.20	Wt. n-Val.	0.068	0.040
0.072				
W.S. Elev (ft)	274.89	Reach Len. (ft)	417.60	395.07
266.22				
Crit W.S. (ft)	269.03	Flow Area (sq ft)	1658.27	1321.88
4833.89				
E.G. Slope (ft/ft)	0.000533	Area (sq ft)	1658.27	1321.88
4833.89				
Q Total (cfs)	19382.00	Flow (cfs)	2960.64	7064.77
9356.59				
Top Width (ft)	984.03	Top Width (ft)	265.04	83.70
635.29				
Vel Total (ft/s)	2.48	Avg. Vel. (ft/s)	1.79	5.34
1.94				
Max Chl Dpth (ft)	16.89	Hydr. Depth (ft)	6.26	15.79
7.61				
Conv. Total (cfs)	839368.5	Conv. (cfs)	128215.1	305951.3
405202.0				
Length Wtd. (ft)	337.60	Wetted Per. (ft)	265.89	85.04

635.67				
Min Ch El (ft)	258.00	Shear (lb/sq ft)	0.21	0.52
0.25				
Alpha	2.07	Stream Power (lb/ft s)	1369.47	0.00
0.00				
Frctn Loss (ft)	0.18	Cum Volume (acre-ft)	1008.88	468.46
687.98				
C & E Loss (ft)	0.01	Cum SA (acres)	143.22	33.87
104.27				

CROSS SECTION

RIVER: W Br Neshminy
 REACH: 1

RS: 17013.07

INPUT

Description:

Station	Elevation	Data	num=	134						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
0	284.33	16.02	284	50.52	283	82.66	282	96.84	282	
97.51	282.5	102.56	282	105.59	281	108.62	282	111.65	281	
114.63	280	117.58	279	120.79	278	124.49	277	129.1	276	
132.72	275.04	132.87	275	132.96	274.97	136.43	274	138.75	273.34	
139.96	273	140.13	272.95	143.53	272	144.59	271.7	147.11	271	
150.67	270.26	152	270	157.01	269.14	157.82	269	158.05	268.96	
163.8	268	164.16	267.94	170.59	267	176.23	266.33	178.9	266	
184.34	265.59	191.92	265	323.69	265	324.52	265.02	329.31	265.16	
348.25	265.83	348.69	265.84	349.09	265.84	351.75	265.88	356.72	266	
359.59	266	360.27	265.58	360.91	265	362.13	264.18	362.36	264	
362.49	263.87	363.52	263	364.09	262.52	364.7	262	365.47	261.36	
365.8	261.09	365.9	261	366.32	260.65	367.12	260	367.53	259.67	
368.35	259	383.67	258.61	387.21	258.52	391.07	258.42	395.4	258.31	
407.74	258	408.64	258.13	409.91	258.29	413.02	258.62	416.53	259	
421.3	259.21	425.12	259.37	433.51	259.99	435.66	259.99	438.53	260	
440.65	260.39	444.3	261	450.23	261.98	450.36	262	454.35	262	
489.44	262.01	507.77	262.01	514.2	262	529.12	262	553.43	262.43	
557.29	262.5	557.58	262.49	558.02	262.49	570.42	262.92	570.43	262.92	
570.45	262.93	570.82	262.93	572.82	263	575.54	263.07	614.14	264	
614.45	264.01	641.35	265	645.24	265.14	647.67	265.23	669.19	266	
678.38	266.34	696.75	267	719.59	267.72	728.12	268	741.27	268.3	
769.77	269	794.46	269.43	829.02	270	837.86	270.17	851.12	270.42	
870.2	270.78	882.65	271	889.14	271.1	907.56	271.37	916.7	271.51	
919.85	271.56	938.43	271.85	942.11	271.91	948.4	272	954.75	272.08	
961.1	273	966.47	274	975.48	275	986.27	276	994.31	277	
999.37	278	1003.64	279	1019.57	279.76	1020.3	279.26	1023.79	279	
1070.17	278.1	1117.74	279	1159.38	283.8	1208.26	283.8			

Manning's n Values	num=	11
Sta n Val Sta n Val Sta n Val Sta n Val Sta n Val		
0 .013 97.51 .03 124.49 .05 324.52 .12 365.47 .04		
391.07 .04 413.02 .04 421.3 .12 553.43 .05 961.1 .03		
1019.57 .013		

Bank Sta: Left Right Lengths: Left Channel Right	Coeff Contr.	Expan.
365.47 421.3 561.56 574.74 500.62	.1	.3
Blocked Obstructions num=	1	
Sta L Sta R Elev		
1159.38 1208.26 303.8		

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	265.23	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.38	Wt. n-Val.	0.120	0.040
0.103				
W.S. Elev (ft)	264.84	Reach Len. (ft)	561.56	574.74
500.62				
Crit W.S. (ft)	261.88	Flow Area (sq ft)	7.28	346.39
528.96				
E.G. Slope (ft/ft)	0.002103	Area (sq ft)	7.28	346.39
528.96				
Q Total (cfs)	2671.00	Flow (cfs)	4.94	1975.20
690.86				
Top Width (ft)	275.99	Top Width (ft)	4.33	55.83
215.84				
Vel Total (ft/s)	3.03	Avg. Vel. (ft/s)	0.68	5.70
1.31				
Max Chl Dpth (ft)	6.84	Hydr. Depth (ft)	1.68	6.20
2.45				
Conv. Total (cfs)	58249.7	Conv. (cfs)	107.7	43075.6
15066.4				
Length Wtd. (ft)	562.80	Wetted Per. (ft)	5.56	56.75
216.07				
Min Ch El (ft)	258.00	Shear (lb/sq ft)	0.17	0.80
0.32				
Alpha	2.67	Stream Power (lb/ft s)	1208.26	0.00
0.00				
Frctn Loss (ft)	1.07	Cum Volume (acre-ft)	152.35	212.51
82.22				
C & E Loss (ft)	0.02	Cum SA (acres)	74.04	33.25
46.33				

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the

need for additional cross sections.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	271.37	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.19	Wt. n-Val.	0.057	0.040
0.080				
W.S. Elev (ft)	271.18	Reach Len. (ft)	561.56	574.74
500.62				
Crit W.S. (ft)	266.85	Flow Area (sq ft)	1226.31	700.06
2573.25				
E.G. Slope (ft/ft)	0.000709	Area (sq ft)	1226.31	700.06
2573.25				
Q Total (cfs)	10810.00	Flow (cfs)	2690.12	3700.26
4419.61				
Top Width (ft)	748.10	Top Width (ft)	219.01	55.83
473.26				
Vel Total (ft/s)	2.40	Avg. Vel. (ft/s)	2.19	5.29
1.72				
Max Chl Dpth (ft)	13.18	Hydr. Depth (ft)	5.60	12.54
5.44				
Conv. Total (cfs)	405940.1	Conv. (cfs)	101020.2	138953.3
165966.5				
Length Wtd. (ft)	551.90	Wetted Per. (ft)	221.11	56.75
473.59				
Min Ch El (ft)	258.00	Shear (lb/sq ft)	0.25	0.55
0.24				
Alpha	2.07	Stream Power (lb/ft s)	1208.26	0.00
0.00				
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	587.51	359.27
382.15				
C & E Loss (ft)	0.01	Cum SA (acres)	120.21	33.14
84.01				

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	272.22	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.19	Wt. n-Val.	0.057	0.040
0.078				
W.S. Elev (ft)	272.03	Reach Len. (ft)	561.56	574.74
500.62				
Crit W.S. (ft)	267.30	Flow Area (sq ft)	1413.66	747.48
2999.10				
E.G. Slope (ft/ft)	0.000688	Area (sq ft)	1413.66	747.48

2999.10				
Q Total (cfs)	12761.00	Flow (cfs)	3328.27	4066.04
5366.70				
Top Width (ft)	807.28	Top Width (ft)	222.04	55.83
529.40				
Vel Total (ft/s)	2.47	Avg. Vel. (ft/s)	2.35	5.44
1.79				
Max Chl Dpth (ft)	14.03	Hydr. Depth (ft)	6.37	13.39
5.67				
Conv. Total (cfs)	486410.8	Conv. (cfs)	126863.5	154985.1
204562.3				
Length Wtd. (ft)	551.01	Wetted Per. (ft)	224.27	56.75
529.73				
Min Ch El (ft)	258.00	Shear (lb/sq ft)	0.27	0.57
0.24				
Alpha	2.00	Stream Power (lb/ft s)	1208.26	0.00
0.00				
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	683.39	384.36
447.47				
C & E Loss (ft)	0.01	Cum SA (acres)	125.52	33.18
88.99				

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	274.90	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.17	Wt. n-Val.	0.056	0.040
0.070				
W.S. Elev (ft)	274.73	Reach Len. (ft)	561.56	574.74
500.62				
Crit W.S. (ft)	268.46	Flow Area (sq ft)	2025.64	898.10
4461.01				
E.G. Slope (ft/ft)	0.000531	Area (sq ft)	2025.64	898.10
4461.01				
Q Total (cfs)	19382.00	Flow (cfs)	5176.86	4847.94
9357.19				
Top Width (ft)	839.19	Top Width (ft)	231.64	55.83
551.72				
Vel Total (ft/s)	2.62	Avg. Vel. (ft/s)	2.56	5.40
2.10				
Max Chl Dpth (ft)	16.73	Hydr. Depth (ft)	8.74	16.09
8.09				
Conv. Total (cfs)	841279.9	Conv. (cfs)	224702.9	210426.0
406151.0				
Length Wtd. (ft)	547.31	Wetted Per. (ft)	234.24	56.75
552.25				
Min Ch El (ft)	258.00	Shear (lb/sq ft)	0.29	0.52

0.27				
Alpha	1.62	Stream Power (lb/ft s)	1208.26	0.00
0.00				
Frctn Loss (ft)	0.26	Cum Volume (acre-ft)	991.22	458.40
659.57				
C & E Loss (ft)	0.00	Cum SA (acres)	140.84	33.24
100.64				

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 16436.43

INPUT

Description:

Station Elevation Data		num=	151						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	275.25	2.08	275.16	3.53	275.09	3.93	275.07	5.58	275
19.29	274.3	25	274	36.56	273.42	44.79	273	59.85	272.22
64.12	272	66.78	271.86	82.06	271	91.76	270.44	94.51	270.27
98.43	270	102.61	269.7	112.2	269	117.6	268.99	123.59	268.98
133.82	269	136.06	269	139.89	268	141.88	267.57	144.45	267
148.68	266.09	149.09	266	149.92	265.94	154.32	265.68	163.72	265.1
165.81	265	185.68	264.24	191.76	264	415.96	264	443.11	264
443.62	263.91	448.14	263	450.06	262.52	452.29	262	453.45	261.73
457.12	261	457.79	260.96	458.6	260.94	459.46	260.9	459.87	260.91
461.21	261	464.94	261.01	465.37	261.01	469.68	261.16	470.42	261.18
490.64	261.69	507.45	261.42	507.9	261.39	508.14	261.4	510.4	261.47
511.11	261.39	511.49	261.4	512.12	261.4	515.05	261	517.54	260.64
522.5	260	530.99	260	532.64	260.01	533.02	260.01	537.67	260.04
541.49	260.02	543.64	260	545.54	259.62	546.76	259.38	548.64	259
550.63	258.6	553.6	258	577.18	257.55	580.04	257.49	604.73	257.02
605.2	257.01	605.75	257	605.98	257	606.22	257.16	607.5	258
608.94	258.9	609.1	259	609.3	259.13	610.92	260	611.46	260.29
612.08	260.62	612.8	261	615.64	261.22	617.37	261.4	617.63	261.43
623.03	262	625.28	262.62	626.63	263	629.66	263.83	630.23	264
631.03	264.22	633.73	265	636.74	265.83	637.29	266	640.52	266.2
640.62	266.19	643.05	266.22	643.78	266	646.1	265.27	646.94	265
647.31	264.88	647.64	264.78	650.11	264	651.68	263.5	653.27	263
653.33	263	653.45	262.99	653.46	262.99	654.13	262.97	654.3	262.98
655.05	263	658.57	263.94	658.79	264	659.45	264.18	659.84	264.28
662.27	265	663.62	265.44	665.39	266	667.13	266.55	668.54	267
671.54	267.39	675.94	268	699.75	268.52	710.6	268.76	721.78	269
748.91	269.85	753.28	270	759.66	270.23	768.86	270.56	781.38	271
785.87	271.17	808.68	272	817.07	272.25	840.17	273	843.25	274
846.33	275	849.4	276	852.48	277	855.56	278	860.69	278.7
861.38	278.2	902.41	279	910.01	279.15	917.75	279	963.75	278.1

988.27 278.58

Manning's n Values		num= 11							
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	415.96	.12	508.14	.04	546.76	.04	580.04	.04
605.2	.04	611.46	.04	617.37	.12	699.75	.05	840.17	.03
860.69	.013								

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	546.76	611.46		528.61	521.92		.1	.3

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	264.14	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.32	Wt. n-Val.	0.057	0.040
0.057				
W.S. Elev (ft)	263.82	Reach Len. (ft)	528.61	521.92
543.43				
Crit W.S. (ft)	261.65	Flow Area (sq ft)	279.00	394.16
38.07				
E.G. Slope (ft/ft)	0.001720	Area (sq ft)	279.00	394.16
38.07				
Q Total (cfs)	2671.00	Flow (cfs)	605.98	2003.78
61.25				
Top Width (ft)	192.99	Top Width (ft)	102.69	64.70
25.60				
Vel Total (ft/s)	3.76	Avg. Vel. (ft/s)	2.17	5.08
1.61				
Max Chl Dpth (ft)	6.82	Hydr. Depth (ft)	2.72	6.09
1.49				
Conv. Total (cfs)	64400.9	Conv. (cfs)	14610.8	48313.3
1476.7				
Length Wtd. (ft)	522.99	Wetted Per. (ft)	103.17	65.76
26.31				
Min Ch El (ft)	257.00	Shear (lb/sq ft)	0.29	0.64
0.16				
Alpha	1.45	Stream Power (lb/ft s)	988.27	0.00
0.00				
Frctn Loss (ft)	0.50	Cum Volume (acre-ft)	150.51	207.62
78.97				
C & E Loss (ft)	0.01	Cum SA (acres)	73.35	32.46
44.94				

Warning: Divided flow computed for this cross-section.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	271.04	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.15	Wt. n-Val.	0.057	0.040
0.084				
W.S. Elev (ft)	270.89	Reach Len. (ft)	528.61	521.92
543.43				
Crit W.S. (ft)	265.68	Flow Area (sq ft)	3116.75	851.84
584.79				
E.G. Slope (ft/ft)	0.000467	Area (sq ft)	3116.75	851.84
584.79				
Q Total (cfs)	10810.00	Flow (cfs)	6418.30	3770.15
621.56				
Top Width (ft)	694.43	Top Width (ft)	462.85	64.70
166.88				
Vel Total (ft/s)	2.37	Avg. Vel. (ft/s)	2.06	4.43
1.06				
Max Chl Dpth (ft)	13.89	Hydr. Depth (ft)	6.73	13.17
3.50				
Conv. Total (cfs)	500424.8	Conv. (cfs)	297120.7	174530.5
28773.7				
Length Wtd. (ft)	526.21	Wetted Per. (ft)	463.81	65.76
168.86				
Min Ch El (ft)	257.00	Shear (lb/sq ft)	0.20	0.38
0.10				
Alpha	1.67	Stream Power (lb/ft s)	988.27	0.00
0.00				
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)	559.52	349.03
364.00				
C & E Loss (ft)	0.02	Cum SA (acres)	115.82	32.35
80.33				

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	271.90	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.16	Wt. n-Val.	0.057	0.040
0.083				
W.S. Elev (ft)	271.74	Reach Len. (ft)	528.61	521.92
543.43				

Crit W.S. (ft)	266.08	Flow Area (sq ft)	3515.64	906.71
736.17				
E.G. Slope (ft/ft)	0.000471	Area (sq ft)	3515.64	906.71
736.17				
Q Total (cfs)	12761.00	Flow (cfs)	7715.73	4203.48
841.80				
Top Width (ft)	732.68	Top Width (ft)	477.87	64.70
190.11				
Vel Total (ft/s)	2.47	Avg. Vel. (ft/s)	2.19	4.64
1.14				
Max Chl Dpth (ft)	14.74	Hydr. Depth (ft)	7.36	14.01
3.87				
Conv. Total (cfs)	587939.0	Conv. (cfs)	355487.6	193667.3
38784.2				
Length Wtd. (ft)	526.49	Wetted Per. (ft)	478.85	65.76
192.10				
Min Ch El (ft)	257.00	Shear (lb/sq ft)	0.22	0.41
0.11				
Alpha	1.65	Stream Power (lb/ft s)	988.27	0.00
0.00				
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)	651.62	373.44
426.01				
C & E Loss (ft)	0.02	Cum SA (acres)	121.01	32.38
84.85				

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	274.64	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.17	Wt. n-Val.	0.057	0.040
0.076				
W.S. Elev (ft)	274.47	Reach Len. (ft)	528.61	521.92
543.43				
Crit W.S. (ft)	267.21	Flow Area (sq ft)	4889.26	1083.00
1338.11				
E.G. Slope (ft/ft)	0.000435	Area (sq ft)	4889.26	1083.00
1338.11				
Q Total (cfs)	19382.00	Flow (cfs)	12019.03	5432.12
1930.85				
Top Width (ft)	828.65	Top Width (ft)	530.72	64.70
233.23				
Vel Total (ft/s)	2.65	Avg. Vel. (ft/s)	2.46	5.02
1.44				
Max Chl Dpth (ft)	17.47	Hydr. Depth (ft)	9.21	16.74
5.74				

Conv. Total (cfs)	929153.3	Conv. (cfs)	576180.1	260410.1
92563.1				
Length Wtd. (ft)	527.38	Wetted Per. (ft)	531.77	65.76
235.47				
Min Ch El (ft)	257.00	Shear (lb/sq ft)	0.25	0.45
0.15				
Alpha	1.57	Stream Power (lb/ft s)	988.27	0.00
0.00				
Frctn Loss (ft)	0.18	Cum Volume (acre-ft)	946.64	445.33
626.25				
C & E Loss (ft)	0.02	Cum SA (acres)	135.93	32.44
96.13				

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 15916.41

INPUT

Description: not interpolated

Station Elevation Data				num=	168				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	277.34	2.26	277	7.39	276.23	8.96	276	10.67	275.92
29.87	275.06	30.81	275.03	31.11	275.02	31.12	275.02	31.2	275
31.36	274.97	31.41	274.95	31.52	274.93	35.73	274	37.46	273.81
47.72	273.23	48.93	273.16	49.58	273.12	50.36	273.07	51.94	273
66.66	272.26	71.58	272	86.35	271.15	89.1	271	98.77	270.47
107.23	270	109.16	269.9	118.28	269.42	125.88	269	128	268.92
131.78	268.74	143.22	268.26	147.69	268	161.32	267.38	162.99	267.31
169.85	267	180.95	266.48	190.82	266	196.06	265.76	212.11	265
214.5	264.9	217.2	264.79	237.87	264	251.03	263.72	282.06	263
316.44	262.95	321.51	262.94	366.39	262.87	390.33	262.9	391.08	262.9
391.71	262.91	392.28	262.91	412.51	262.93	413.58	262.94	416.38	262.94
438.86	262.91	449.69	262.9	449.78	262.9	450.06	262.91	450.21	262.91
450.62	262.93	450.67	262.92	451.01	262.93	452.96	262.97	453.27	262.97
454.61	263	477.43	263	477.64	262.98	478.77	262.88	479.49	262.8
479.94	262.74	480.32	262.68	480.39	262.67	480.54	262.64	480.74	262.59
480.96	262.52	481.84	262	483.28	261.41	484.03	261.1	484.26	261
484.88	260.73	485.51	260.54	486.38	260.28	486.47	260.24	486.95	260
487.94	259.61	488.65	259.41	489.86	259	490.57	258.75	491.76	258
492.46	257.55	493.29	257	518.15	256.58	518.56	256.58	527.57	256.32
529.17	256.27	535.49	256.23	543.07	256.15	554.94	256.03	555.29	256.03
555.88	256.01	555.94	256	556.17	256.06	556.55	256.27	556.6	256.3
556.86	256.43	558.03	257	559.7	257.76	560.22	258	560.89	258.31
561.8	258.75	562.33	259	562.68	259.17	564.24	260	565.92	260.35

567.3	260.61	569.31	261	573.52	261.25	576.83	261.44	586.73	262
593.95	262.58	599.38	263	606.42	263.47	614.59	264	622.14	264.48
626.31	264.75	627.59	264.83	630.14	265	639.42	265.64	645.21	266
652.69	266.43	653.35	266.45	656.88	266.59	657.57	266.63	658.17	266.65
660.93	266.75	667.06	267	674.94	267.29	681.54	267.54	682.57	267.58
683.33	267.62	687.3	267.78	689.51	267.87	690.27	267.91	692.28	268
695.79	268.15	696.4	268.17	696.77	268.18	699.13	268.28	709.81	268.72
716.24	269	725.73	269.43	737.48	270	745.29	270.4	756.67	271
769.37	271.68	775.73	272	778.57	272.14	781.32	279	786.83	280.43
787.57	279.93	827.24	279.84	827.98	280.34	830.55	281	848.8	282
860.87	283	868.88	283.8	897.14	283.8				

Manning's n Values num= 15

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	10.67	.05	438.86	.12	483.28	.04	485.51	.04
486.47	.01	543.07	.04	567.3	.04	573.52	.12	626.31	.05
778.57	.013	781.32	.03	786.83	.013	827.98	.03	868.88	.013

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
483.28 573.52 491.14 528.2 507.1 .1 .3

Blocked Obstructions num= 1

Sta L	Sta R	Elev
868.88	897.14	303.8

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	263.63	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.38	Wt. n-Val.	0.058	0.024
0.120				
W.S. Elev (ft)	263.25	Reach Len. (ft)	491.14	528.20
507.10				
Crit W.S. (ft)	260.15	Flow Area (sq ft)	67.72	530.41
31.31				
E.G. Slope (ft/ft)	0.000612	Area (sq ft)	67.72	530.41
31.31				
Q Total (cfs)	2671.00	Flow (cfs)	20.00	2641.06
9.95				
Top Width (ft)	331.77	Top Width (ft)	211.94	90.24
29.59				
Vel Total (ft/s)	4.24	Avg. Vel. (ft/s)	0.30	4.98
0.32				
Max Chl Dpth (ft)	7.25	Hydr. Depth (ft)	0.32	5.88
1.06				
Conv. Total (cfs)	107968.9	Conv. (cfs)	808.3	106758.5
402.1				
Length Wtd. (ft)	524.81	Wetted Per. (ft)	212.25	92.27
29.66				
Min Ch El (ft)	256.00	Shear (lb/sq ft)	0.01	0.22

0.04				
Alpha	1.36	Stream Power (lb/ft s)	897.14	0.00
0.00				
Frctn Loss (ft)	0.29	Cum Volume (acre-ft)	148.40	202.08
78.53				
C & E Loss (ft)	0.07	Cum SA (acres)	71.44	31.53
44.59				

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	270.84	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.33	Wt. n-Val.	0.055	0.024
0.085				
W.S. Elev (ft)	270.51	Reach Len. (ft)	491.14	528.20
507.10				
Crit W.S. (ft)	265.43	Flow Area (sq ft)	2312.55	1185.43
729.18				
E.G. Slope (ft/ft)	0.000275	Area (sq ft)	2312.55	1185.43
729.18				
Q Total (cfs)	10810.00	Flow (cfs)	3408.01	6768.41
633.58				
Top Width (ft)	649.24	Top Width (ft)	385.19	90.24
173.81				
Vel Total (ft/s)	2.56	Avg. Vel. (ft/s)	1.47	5.71
0.87				
Max Chl Dpth (ft)	14.51	Hydr. Depth (ft)	6.00	13.14
4.20				
Conv. Total (cfs)	651413.1	Conv. (cfs)	205367.7	407866.0
38179.4				
Length Wtd. (ft)	513.09	Wetted Per. (ft)	385.66	92.27
174.07				
Min Ch El (ft)	256.00	Shear (lb/sq ft)	0.10	0.22
0.07				
Alpha	3.23	Stream Power (lb/ft s)	897.14	0.00
0.00				
Frctn Loss (ft)	0.15	Cum Volume (acre-ft)	526.58	336.83
355.81				
C & E Loss (ft)	0.05	Cum SA (acres)	110.67	31.42
78.20				

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	271.69	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.36	Wt. n-Val.	0.055	0.024
0.081				
W.S. Elev (ft)	271.33	Reach Len. (ft)	491.14	528.20
507.10				
Crit W.S. (ft)	266.02	Flow Area (sq ft)	2634.18	1259.35
877.90				
E.G. Slope (ft/ft)	0.000289	Area (sq ft)	2634.18	1259.35
877.90				
Q Total (cfs)	12761.00	Flow (cfs)	4237.45	7663.20
860.36				
Top Width (ft)	679.49	Top Width (ft)	400.00	90.24
189.25				
Vel Total (ft/s)	2.67	Avg. Vel. (ft/s)	1.61	6.09
0.98				
Max Chl Dpth (ft)	15.33	Hydr. Depth (ft)	6.59	13.96
4.64				
Conv. Total (cfs)	751233.6	Conv. (cfs)	249456.3	451128.5
50648.7				
Length Wtd. (ft)	512.43	Wetted Per. (ft)	400.49	92.27
189.53				
Min Ch El (ft)	256.00	Shear (lb/sq ft)	0.12	0.25
0.08				
Alpha	3.24	Stream Power (lb/ft s)	897.14	0.00
0.00				
Frctn Loss (ft)	0.16	Cum Volume (acre-ft)	614.31	360.47
415.94				
C & E Loss (ft)	0.05	Cum SA (acres)	115.68	31.45
82.49				

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	274.43	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.41	Wt. n-Val.	0.055	0.024
0.072				
W.S. Elev (ft)	274.02	Reach Len. (ft)	491.14	528.20
507.10				
Crit W.S. (ft)	267.72	Flow Area (sq ft)	3779.50	1502.69
1425.01				
E.G. Slope (ft/ft)	0.000287	Area (sq ft)	3779.50	1502.69

1425.01				
Q Total (cfs)	19382.00	Flow (cfs)	7202.96	10251.16
1927.89				
Top Width (ft)	743.70	Top Width (ft)	447.66	90.24
205.80				
Vel Total (ft/s)	2.89	Avg. Vel. (ft/s)	1.91	6.82
1.35				
Max Chl Dpth (ft)	18.02	Hydr. Depth (ft)	8.44	16.65
6.92				
Conv. Total (cfs)	1144983.0	Conv. (cfs)	425511.5	605582.6
113889.0				
Length Wtd. (ft)	510.42	Wetted Per. (ft)	448.22	92.27
207.38				
Min Ch El (ft)	256.00	Shear (lb/sq ft)	0.15	0.29
0.12				
Alpha	3.13	Stream Power (lb/ft s)	897.14	0.00
0.00				
Frctn Loss (ft)	0.16	Cum Volume (acre-ft)	894.05	429.84
609.01				
C & E Loss (ft)	0.06	Cum SA (acres)	129.99	31.51
93.39				

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 15388.21

INPUT

Description: not interpolated

Station	Elevation	Data	num=	158						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
0	286.06	1.55	286.06	6.34	286.05	10.59	286.04	18.55	286.04	
23.7	286.03	26.72	286.02	29.04	286.02	37.63	286.01	38.62	286	
40.94	286	50.2	284.74	56.48	284	57.71	283.04	59.34	282	
60.87	281.3	69.45	278	70.23	277.06	71.02	276	72.05	274.61	
72.25	274.34	72.5	274	72.88	273.65	76.18	272	76.5	271.98	
77.24	271.98	82.06	271.68	89.54	271.27	104.02	270	114.65	268.75	
125.6	268	129.4	268	131.97	268.06	132.59	268.09	148.59	268.57	
164.28	270	170.06	271.39	172.32	272	174.5	272.52	180.23	274	
185.32	274	185.84	273.87	192.23	272	197.15	270.22	201.14	268.8	
203.34	268	204.86	267.47	209.4	266	215.67	264.61	217	264.35	
219.42	264	219.64	263.99	220.57	263.99	222.88	263.97	222.93	263.97	
234.27	263.63	253.35	263.06	285.95	262	288.73	262	293.34	261.99	
306.05	261.99	333.56	261.97	339.19	261.96	347.53	261.96	353.96	261.95	
359.26	261.94	360.9	261.94	366.04	261.93	370.2	261.92	374.7	261.92	

376.91	261.93	378.54	261.93	379.3	261.94	379.42	261.05	382.04	260.75
383.49	260.62	383.86	260.59	383.93	260.59	383.95	260.58	383.96	260.58
426.56	256.9	434.65	256.2	435.27	256.06	435.58	255.99	435.88	255.92
436.19	255.85	436.48	255.78	436.61	255.75	436.78	255.71	437.07	255.64
437.36	255.57	440.37	255.49	445.22	255.36	445.58	255.35	453.96	255.08
454.26	255.08	454.98	255.09	455.79	255.1	456.72	255.11	457.97	255.13
460.12	255.16	463.06	255.2	467.21	255.26	476.94	255.4	485.71	255.52
487.28	255.55	499.05	255.72	506.71	255.83	516.87	255.97	518.82	256
521.45	256.68	522.69	257	523.37	257.18	524.35	257.43	526.5	258
529.23	258.7	530.04	258.91	530.39	259	530.65	259.07	534.1	260
550.75	260.56	562.13	261	564.09	261.33	568.58	262	570.15	262.27
574.75	263	577.04	263.39	580.64	264	584.13	264.56	586.67	265
597.05	265.66	602.43	266	605.04	266.16	614.78	266.67	618.65	267
619.96	267.07	636.36	268	642.57	268.41	651.63	269	657.83	269.41
666.77	270	681.28	270.98	681.58	271	681.79	271.01	697.41	272
700.04	272.17	702.94	273	706.09	274	709.24	275	712.4	276
715.57	277	718.78	278	722.03	279	725.34	280	737.22	280
741.44	279	746.96	278	796.35	277.46				

Manning's n Values				num=	11				
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	72.05	.05	234.27	.05	436.61	.04	440.37	.04
445.58	.04	516.87	.04	523.37	.04	529.23	.12	614.78	.05
702.94	.03								

Bank Sta:	Left	Right	Lengths:	Left	Channel	Right	Coeff	Contr.	Expan.
	436.61	529.23		60.8	79.86	85.92		.3	.5
Ineffective Flow	num=			1					
Sta L	Sta R	Elev	Permanent						
0	181.77	273.48	F						

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	263.26	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.13	Wt. n-Val.	0.050	0.040
0.120				
W.S. Elev (ft)	263.13	Reach Len. (ft)	60.80	79.86
85.92				
Crit W.S. (ft)	258.59	Flow Area (sq ft)	393.65	687.80
107.00				
E.G. Slope (ft/ft)	0.000508	Area (sq ft)	393.65	687.80
107.00				
Q Total (cfs)	2671.00	Flow (cfs)	433.46	2185.61
51.93				
Top Width (ft)	324.56	Top Width (ft)	185.65	92.62
46.29				
Vel Total (ft/s)	2.25	Avg. Vel. (ft/s)	1.10	3.18
0.49				

Max Chl Dpth (ft)	8.05	Hydr. Depth (ft)	2.12	7.43
2.31				
Conv. Total (cfs)	118527.8	Conv. (cfs)	19235.0	96988.3
2304.6				
Length Wtd. (ft)	76.55	Wetted Per. (ft)	186.71	93.00
46.65				
Min Ch El (ft)	255.08	Shear (lb/sq ft)	0.07	0.23
0.07				
Alpha	1.68	Stream Power (lb/ft s)	796.35	0.00
0.00				
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	145.80	194.70
77.73				
C & E Loss (ft)	0.05	Cum SA (acres)	69.20	30.42
44.15				

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	270.63	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.16	Wt. n-Val.	0.050	0.040
0.110				
W.S. Elev (ft)	270.47	Reach Len. (ft)	60.80	79.86
85.92				
Crit W.S. (ft)	263.23	Flow Area (sq ft)	2058.21	1367.60
760.60				
E.G. Slope (ft/ft)	0.000323	Area (sq ft)	2164.54	1367.60
760.60				
Q Total (cfs)	10810.00	Flow (cfs)	4680.10	5483.37
646.53				
Top Width (ft)	544.87	Top Width (ft)	307.74	92.62
144.51				
Vel Total (ft/s)	2.58	Avg. Vel. (ft/s)	2.27	4.01
0.85				
Max Chl Dpth (ft)	15.39	Hydr. Depth (ft)	8.57	14.77
5.26				
Conv. Total (cfs)	601163.4	Conv. (cfs)	260268.8	304940.1
35954.4				
Length Wtd. (ft)	72.17	Wetted Per. (ft)	242.18	93.00
145.20				
Min Ch El (ft)	255.08	Shear (lb/sq ft)	0.17	0.30

0.11				
Alpha	1.57	Stream Power (lb/ft s)	796.35	0.00
0.00				
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	501.34	321.35
347.14				
C & E Loss (ft)	0.04	Cum SA (acres)	106.76	30.31
76.35				

Warning: Divided flow computed for this cross-section.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	271.47	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.19	Wt. n-Val.	0.050	0.040
0.107				
W.S. Elev (ft)	271.28	Reach Len. (ft)	60.80	79.86
85.92				
Crit W.S. (ft)	263.94	Flow Area (sq ft)	2254.36	1442.90
883.03				
E.G. Slope (ft/ft)	0.000353	Area (sq ft)	2420.78	1442.90
883.03				
Q Total (cfs)	12761.00	Flow (cfs)	5652.36	6261.25
847.39				
Top Width (ft)	572.23	Top Width (ft)	322.73	92.62
156.88				
Vel Total (ft/s)	2.79	Avg. Vel. (ft/s)	2.51	4.34
0.96				
Max Chl Dpth (ft)	16.20	Hydr. Depth (ft)	9.30	15.58
5.63				
Conv. Total (cfs)	679565.4	Conv. (cfs)	301006.8	333432.4
45126.3				
Length Wtd. (ft)	71.89	Wetted Per. (ft)	244.57	93.00
157.60				
Min Ch El (ft)	255.08	Shear (lb/sq ft)	0.20	0.34
0.12				
Alpha	1.56	Stream Power (lb/ft s)	796.35	0.00
0.00				
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	585.81	344.08
405.69				
C & E Loss (ft)	0.03	Cum SA (acres)	111.60	30.35

80.47

Warning: Divided flow computed for this cross-section.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	274.21	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.22	Wt. n-Val.	0.050	0.040
0.095				
W.S. Elev (ft)	273.99	Reach Len. (ft)	60.80	79.86
85.92				
Crit W.S. (ft)	265.32	Flow Area (sq ft)	3353.32	1693.25
1344.18				
E.G. Slope (ft/ft)	0.000367	Area (sq ft)	3353.32	1693.25
1344.18				
Q Total (cfs)	19382.00	Flow (cfs)	9315.13	8343.56
1723.31				
Top Width (ft)	628.34	Top Width (ft)	358.90	92.62
176.82				
Vel Total (ft/s)	3.03	Avg. Vel. (ft/s)	2.78	4.93
1.28				
Max Chl Dpth (ft)	18.91	Hydr. Depth (ft)	9.34	18.28
7.60				
Conv. Total (cfs)	1011262.0	Conv. (cfs)	486019.9	435328.1
89914.2				
Length Wtd. (ft)	71.12	Wetted Per. (ft)	362.75	93.00
177.83				
Min Ch El (ft)	255.08	Shear (lb/sq ft)	0.21	0.42
0.17				
Alpha	1.56	Stream Power (lb/ft s)	796.35	0.00
0.00				
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	853.83	410.46
592.90				
C & E Loss (ft)	0.02	Cum SA (acres)	125.44	30.40
91.17				

Warning: Divided flow computed for this cross-section.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 15308.34

INPUT

Description:

Station Elevation Data num= 330

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	275.45	.2	275.43	4.46	275.57	8.73	275.26	10.15	275.24
13.5	274.81	14.89	274.63	16.51	274.53	19.92	274.4	23.94	274.28
29.45	274.17	31.19	274.14	32.43	274.09	36.23	273.97	38.59	273.9
41.27	273.79	43.26	273.72	45.27	273.65	46.72	273.63	51.23	273.45
52.4	273.42	57.53	273.5	58.84	273.5	59.69	273.46	63.83	273.36
67.93	273.47	68.77	273.46	70.06	273.47	72.8	273.37	76.35	273.4
76.69	273.39	77.02	273.4	81.83	273.26	84.06	273.33	89.15	273.2
89.2	273.2	89.85	273.2	91.66	273.22	94.79	273.25	95.15	273.25
100	273.13	103.27	272.85	105.15	272.7	107.91	272.62	109.51	272.62
111.58	272.62	112.99	272.65	114.08	272.69	119.22	272.48	126.65	272.32
126.67	272.32	131.49	272.13	132.78	272.15	137.05	272.19	138.98	272.01
142.95	271.78	147.58	271.6	148.85	271.56	151.7	271.38	154.76	271.32
156.05	271.22	159.32	271.23	164.08	271.04	164.48	271.02	168.06	270.78
170.65	270.66	172.64	270.57	173.62	270.52	174.71	270.42	178.87	270.13
182.97	269.68	185	269.56	189.33	269.38	190.8	269.31	191.08	269.33
191.9	269.28	197.08	268.95	200.61	268.81	203.07	268.6	204.89	268.43
208.44	268.08	209.06	268.04	209.84	268.06	215.93	268.14	220.62	268.04
222.33	267.99	223.06	268.02	225.33	267.9	226.89	267.82	227.59	267.84
232.97	267.84	238.89	267.8	239.2	267.79	239.49	267.79	244.67	267.56
246.33	267.61	249.03	267.66	250.34	267.68	253.85	267.54	255.96	267.42
258.33	267.53	260.6	267.65	263.95	267.68	264.26	267.67	264.95	267.66
271.1	267.49	277.02	267.48	277.65	267.47	278.91	267.44	280.96	267.33
281.91	267.29	284.1	267.22	287.93	267.06	289.29	266.97	293.49	266.81
297.62	266.63	299.57	266.69	303.03	266.66	304.79	266.7	306.08	266.69
309.74	266.59	314.7	266.83	314.71	266.83	314.72	266.83	318.7	266.52
321.55	266.67	323.45	266.68	325.87	266.68	330.01	266.56	332.08	266.51
334.09	266.47	335.49	266.44	340.28	266.31	341.38	266.25	342.32	266.2
346.83	265.76	352.21	265.27	352.27	265.26	356.1	264.7	358.97	264.14
359.28	264.09	359.93	264.02	361.8	264.01	368.34	264.16	371.14	264.15
373.88	264.21	378.33	264.01	380.37	263.98	382.91	264.27	385.77	264.33
386.69	264.3	389.14	264.28	395.25	264.54	397.04	264.71	399.68	265.02
401.73	265.12	405.03	265.33	407.98	265.22	410.12	265.27	413.45	265.45
414.56	265.52	416.9	265.64	417.63	265.64	418	265.61	421.68	265.43
425.31	265.38	425.76	265.33	427.74	265.31	429.41	265.23	434.47	264.53
436.06	263.96	444.47	259.51	446.62	259.22	449.55	259.25	451.97	259.23
454.22	259.16	457.03	259.54	461.13	259.68	461.21	259.68	466.67	259.6
502.5	258.6	507.5	254.9	525	254.3	542.5	254.7	547.5	258

570.55	259.81	570.69	259.82	571.55	259.9	572.28	259.97	577.72	260.98
578.87	261.33	581.36	261.88	589.03	263.38	590.11	263.59	593.61	264.01
595.2	264.3	595.82	264.27	610.13	265.41	620.56	267.25	624.17	266.89
625.54	267.05	629.79	266.91	634.62	267.16	638.52	267.36	639.22	267.39
639.27	267.39	639.54	267.4	653.1	268.27	654.64	268.23	660.89	268.46
664.87	268.64	668.5	268.59	670.92	268.66	673.81	268.56	675.29	268.62
680.46	269.15	681.97	269.17	684.02	269.35	687.71	269.15	691.99	269.68
694.12	269.82	696.53	269.94	699.09	270.16	703.19	270.6	703.24	270.6
703.82	270.62	707.62	270.66	707.99	270.68	714.45	271.05	714.48	271.05
714.59	271.06	719.22	271.29	719.9	271.34	721.99	271.51	724.12	271.71
725.01	271.81	725.98	271.83	729.36	272.04	730.69	272.11	731.01	272.13
731.61	272.15	735.34	272.28	737.35	272.44	739.5	272.61	742.13	272.9
744.83	273.1	748.65	273.34	751.45	273.67	753.37	273.64	756.46	273.48
760.17	273.52	760.73	273.54	761.92	273.57	763.9	273.69	764.42	273.67
764.82	273.65	769.57	273.88	770.85	273.94	771.14	273.94	773.05	274.01
774.91	274.08	775.2	274.1	777.84	274.17	781.06	274.29	781.8	274.29
785.28	274.44	787.43	274.64	791.18	274.7	791.24	274.7	791.32	274.7
792.84	274.77	795.25	274.88	798.4	274.99	801.43	275.09	801.55	275.09
805.74	275.3	807.32	275.36	811.79	275.36	812.18	275.35	813.18	275.35
815.29	275.34	816.12	275.37	820.65	275.69	822.14	275.8	822.49	275.8
822.94	275.82	826.63	275.65	828.65	275.75	832.25	275.93	832.52	275.94
833.02	275.96	836.96	276.18	838.7	276.24	842.88	276.35	843.09	276.36
843.6	276.37	846.29	276.39	847.35	276.41	852.8	276.46	853.32	276.47
853.5	276.47	853.68	276.47	858.82	276.67	863.54	276.6	864.32	276.63
867.94	276.75	870.16	276.72	873.95	276.87	875.75	276.97	878.32	277.08
883.79	277.25	884.27	277.27	884.39	277.27	888.64	277.41	889.79	277.38
894.58	277.41	895.2	277.46	899.1	277.65	901.48	277.71	904.94	277.69
905.59	277.71	907.83	277.94	909.01	278.05	909.35	278.06	913.2	278.13
915.38	278.16	915.67	278.18	915.9	278.18	920.62	278.19	920.72	278.19

Manning's n Values			num= 10						
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	91.66	.05	249.03	.05	466.67	.04	489.54	.04
502.5	.04	547.5	.04	571.55	.04	572.28	.12	638.52	.05

Bank Sta:	Left	Right	Lengths:		Left Channel	Right	Coeff	Contr.	Expan.
	502.5	547.5	106.89	107.35	102.82		.3	.5	
Ineffective Flow		num=	2						
Sta L	Sta R	Elev	Permanent						
0	441	266.73	F						
609	920.72	268.3	F						

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	263.16	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.29	Wt. n-Val.	0.043	0.040
0.043				
W.S. Elev (ft)	262.87	Reach Len. (ft)	25.00	25.00

25.00				
Crit W.S. (ft)	260.30	Flow Area (sq ft)	220.21	354.60
117.38				
E.G. Slope (ft/ft)	0.001189	Area (sq ft)	222.42	354.60
117.38				
Q Total (cfs)	2671.00	Flow (cfs)	611.66	1741.62
317.72				
Top Width (ft)	148.33	Top Width (ft)	64.39	45.00
38.94				
Vel Total (ft/s)	3.86	Avg. Vel. (ft/s)	2.78	4.91
2.71				
Max Chl Dpth (ft)	8.57	Hydr. Depth (ft)	3.58	7.88
3.01				
Conv. Total (cfs)	77462.8	Conv. (cfs)	17739.0	50509.4
9214.5				
Length Wtd. (ft)	25.00	Wetted Per. (ft)	62.02	47.23
39.32				
Min Ch El (ft)	254.30	Shear (lb/sq ft)	0.26	0.56
0.22				
Alpha	1.23	Stream Power (lb/ft s)	920.72	0.00
0.00				
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	145.37	193.74
77.51				
C & E Loss (ft)	0.03	Cum SA (acres)	69.02	30.29
44.07				

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	270.56	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.28	Wt. n-Val.	0.046	0.040
0.056				
W.S. Elev (ft)	270.28	Reach Len. (ft)	25.00	25.00
25.00				
Crit W.S. (ft)	264.18	Flow Area (sq ft)	1662.74	687.82
741.14				
E.G. Slope (ft/ft)	0.000719	Area (sq ft)	1662.74	687.82
741.14				
Q Total (cfs)	10810.00	Flow (cfs)	4841.51	4086.96
1881.52				
Top Width (ft)	523.47	Top Width (ft)	325.77	45.00
152.70				
Vel Total (ft/s)	3.50	Avg. Vel. (ft/s)	2.91	5.94
2.54				

Max Chl Dpth (ft)	15.98	Hydr. Depth (ft)	5.10	15.28
4.85				
Conv. Total (cfs)	403056.8	Conv. (cfs)	180518.4	152384.7
70153.7				
Length Wtd. (ft)	25.00	Wetted Per. (ft)	327.49	47.23
153.59				
Min Ch El (ft)	254.30	Shear (lb/sq ft)	0.23	0.65
0.22				
Alpha	1.49	Stream Power (lb/ft s)	920.72	0.00
0.00				
Frctn Loss (ft)		Cum Volume (acre-ft)	498.66	319.47
345.66				
C & E Loss (ft)		Cum SA (acres)	106.32	30.18
76.06				

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	271.40	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.30	Wt. n-Val.	0.046	0.040
0.058				
W.S. Elev (ft)	271.10	Reach Len. (ft)	25.00	25.00
25.00				
Crit W.S. (ft)	264.87	Flow Area (sq ft)	1936.79	724.91
872.79				
E.G. Slope (ft/ft)	0.000731	Area (sq ft)	1936.79	724.91
872.79				
Q Total (cfs)	12761.00	Flow (cfs)	6003.02	4496.45
2261.53				
Top Width (ft)	552.98	Top Width (ft)	340.01	45.00
167.97				
Vel Total (ft/s)	3.61	Avg. Vel. (ft/s)	3.10	6.20
2.59				
Max Chl Dpth (ft)	16.80	Hydr. Depth (ft)	5.70	16.11
5.20				
Conv. Total (cfs)	472034.1	Conv. (cfs)	222053.9	166325.2
83655.0				
Length Wtd. (ft)	25.00	Wetted Per. (ft)	341.76	47.23
168.89				
Min Ch El (ft)	254.30	Shear (lb/sq ft)	0.26	0.70
0.24				
Alpha	1.48	Stream Power (lb/ft s)	920.72	0.00
0.00				
Frctn Loss (ft)		Cum Volume (acre-ft)	582.77	342.10

403.96				
C & E Loss (ft)		Cum SA (acres)	111.14	30.22
80.15				

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	274.15	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.30	Wt. n-Val.	0.047	0.040
0.060				
W.S. Elev (ft)	273.85	Reach Len. (ft)	25.00	25.00
25.00				
Crit W.S. (ft)	267.44	Flow Area (sq ft)	3004.36	848.30
1393.49				
E.G. Slope (ft/ft)	0.000661	Area (sq ft)	3004.36	848.30
1393.49				
Q Total (cfs)	19382.00	Flow (cfs)	10164.70	5556.32
3660.99				
Top Width (ft)	728.95	Top Width (ft)	462.59	45.00
221.36				
Vel Total (ft/s)	3.69	Avg. Vel. (ft/s)	3.38	6.55
2.63				
Max Chl Dpth (ft)	19.55	Hydr. Depth (ft)	6.49	18.85
6.30				
Conv. Total (cfs)	753956.6	Conv. (cfs)	395405.0	216139.8
142411.8				
Length Wtd. (ft)	25.00	Wetted Per. (ft)	464.42	47.23
222.40				
Min Ch El (ft)	254.30	Shear (lb/sq ft)	0.27	0.74
0.26				
Alpha	1.44	Stream Power (lb/ft s)	920.72	0.00
0.00				
Frctn Loss (ft)		Cum Volume (acre-ft)	849.40	408.13
590.20				
C & E Loss (ft)		Cum SA (acres)	124.87	30.28
90.77				

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

BRIDGE

RIVER: W Br Neshminy

REACH: 1

RS: 15257.58

INPUT

Description: WBNES-04L Schoolhouse Rd

Distance from Upstream XS = 25

Deck/Roadway Width = 41.7

Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num= 289

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
0	274.12				2.6	274.13				3.01	274.13			
3.07	274.12				3.11	274.12				7.87	273.83			
10.85	273.78				12.72	273.79				15.72	273.75			
17.36	273.63				18.43	273.64				21.8	273.49			
21.99	273.48				25.55	273.14				27.46	273.18			
32.33	273.23				33.18	273.25				34.21	273.15			
38.82	272.93				40.25	272.92				44.2	272.57			
47.01	272.52				49.45	272.49				52.83	272.24			
54.09	272.12				55.75	272.17				57.6	272.03			
61.51	271.49				64.64	271.51				67.46	271.67			
69.11	271.74				71.37	271.61				74.91	271.65			
78.9	271.19				83.3	271.09				90.01	271.04			
90.69	271.02				93.88	270.72				96.08	270.69			
98.89	270.61				102.4	270.39				105.87	270.26			
108.6	270.07				111.22	270.01				113.39	269.88			
117.47	269.7				121.22	269.64				122.27	269.56			
127.31	269.57				128.4	269.54				132.26	269.34			
133.48	269.28				133.82	269.29				139.34	269.44			
144.34	268.91				145.16	268.86				150.47	268.84			
152.35	268.84				152.81	268.85				153.46	268.82			
159.96	268.63				164.58	268.68				166.09	268.82			
168.87	268.64				170.41	268.51				171.28	268.53			
176.39	268.46				181.8	268				182.61	267.96			
186.12	268.1				187.31	268.07				190.01	268.05			
192.7	267.92				194.71	267.99				199.15	267.69			
202.63	267.38				203.19	267.35				203.92	267.33			
211.36	267.7				215.22	267.81				218.11	267.84			
220.33	267.69				223.68	267.36				225.29	267.29			
228.95	267.47				230.7	267.44				232.87	267.14			
234.48	267.22				238.91	266.94				240.39	266.97			
243.14	267.15				245.45	267.2				247.2	267.2			
247.83	267.17				249.1	267.16				254.53	266.8			
256.4	266.7				256.77	266.7				257.3	266.69			
262.47	266.72				264.81	266.63				267.49	266.92			
271.76	266.98				274.01	266.99				278.69	267.15			
280.06	267.16				282.76	267.1				285.7	267.01			
288.05	267.18				290.81	267.3				294.37	267.18			
295.51	267.12				296.89	267.06				299.26	266.87			

304.27	266.67		307.85	266.78		311.98	266.79
312.33	266.8		316.27	267.08		319.89	266.95
322.39	266.81		323.66	266.9		327.35	267.01
328.62	267.04		331.78	266.63		334.42	266.72
334.74	266.71		334.85	266.71		335.3	266.71
340.52	266.82		341.7	266.84		343.14	266.87
343.93	266.87		346.15	266.86		346.83	266.84
346.89	266.84		347.85	266.9		353.41	266.83
357.84	267.09		359.4	266.96		362.4	266.73
364.23	266.56		365.15	266.58		371.94	266.77
374.37	266.73		376.87	266.91		378.64	267.01
381.32	266.99		385.78	267.02		389.41	267.04
392.96	266.86		395	266.77		400.04	267.05
400.12	267.06		400.29	267.06		403.22	267.08
404.59	267.35		408.94	267.59		411.69	267.45
414.59	267.39		417.38	267.34		419.77	267.38
423.41	267.61		425.68	267.68		428	267.62
432.42	267.66		433.34	267.64		437	267.62
439.15	267.7		456.3	268.3		456.3	270.7
466.3	270.7	265.3	583.7	270.7	265.3	593.7	270.7
593.7	268.3		613.85	269.86		619.72	270.14
620.32	270.15		620.66	270.14		624.44	269.94
625.39	269.97		631.05	270.22		632.03	270.28
636.43	270.2		640.35	270.14		641.81	270.11
647.16	270.44		647.98	270.42		648.24	270.44
652.19	270.12		655.08	270.41		656.38	270.49
658.66	270.57		662.45	270.46		666.51	270.5
668.02	270.51		671.13	270.62		673.07	270.53
677.22	270.21		677.58	270.17		678.09	270.17
678.64	270.22		684.31	270.74		686.52	270.46
689.54	270.42		692.03	270.92		694.22	271.03
697.27	270.93		700.93	270.8		704.39	270.84
705.54	270.88		708.89	271.17		712.22	271.17
712.92	271.14		713.92	271.17		718.41	271.09
723.43	271.3		723.54	271.31		723.59	271.31
723.66	271.31		729.05	271.34		734.05	271.34
734.95	271.38		737.3	271.56		738.26	271.61
743.79	271.66		744.41	271.66		744.55	271.67
744.74	271.67		746.55	271.73		748.48	271.79
748.62	271.78		754.17	271.68		754.81	271.68
757.27	271.68		765.06	271.74		765.3	271.74
765.45	271.75		769.57	272.03		775.46	272.28
775.62	272.29		776.04	272.26		780.73	272.04
785.82	272.59		786.12	272.6		790.17	272.41
792.05	272.48		796.25	272.61		797.31	272.56
800.58	272.52		806.23	272.8		806.61	272.81
807.83	272.75		811.56	272.61		816.5	273.21
816.81	273.26		816.85	273.26		816.89	273.26
816.97	273.26		821.33	273.37		823.37	273.36
827.27	273.5		827.63	273.52		828.8	273.58

830.92	273.62	831.6	273.72	837.49	273.76
837.74	273.75	839.35	273.94	842.26	274.23
843.42	274.18	846.4	273.93	847.13	274.01
847.98	273.98	850.71	274.27	852.4	274.15
854.45	273.95	858.34	274.55	858.35	274.55
858.35	274.55	862.45	274.31	862.86	274.38
868.68	274.81	868.83	274.82	869.34	274.84
873.25	274.96	873.95	275	875.29	275.02
877.39	274.92				

Upstream Bridge Cross Section Data

Station Elevation Data				num= 330					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	275.45	.2	275.43	4.46	275.57	8.73	275.26	10.15	275.24
13.5	274.81	14.89	274.63	16.51	274.53	19.92	274.4	23.94	274.28
29.45	274.17	31.19	274.14	32.43	274.09	36.23	273.97	38.59	273.9
41.27	273.79	43.26	273.72	45.27	273.65	46.72	273.63	51.23	273.45
52.4	273.42	57.53	273.5	58.84	273.5	59.69	273.46	63.83	273.36
67.93	273.47	68.77	273.46	70.06	273.47	72.8	273.37	76.35	273.4
76.69	273.39	77.02	273.4	81.83	273.26	84.06	273.33	89.15	273.2
89.2	273.2	89.85	273.2	91.66	273.22	94.79	273.25	95.15	273.25
100	273.13	103.27	272.85	105.15	272.7	107.91	272.62	109.51	272.62
111.58	272.62	112.99	272.65	114.08	272.69	119.22	272.48	126.65	272.32
126.67	272.32	131.49	272.13	132.78	272.15	137.05	272.19	138.98	272.01
142.95	271.78	147.58	271.6	148.85	271.56	151.7	271.38	154.76	271.32
156.05	271.22	159.32	271.23	164.08	271.04	164.48	271.02	168.06	270.78
170.65	270.66	172.64	270.57	173.62	270.52	174.71	270.42	178.87	270.13
182.97	269.68	185	269.56	189.33	269.38	190.8	269.31	191.08	269.33
191.9	269.28	197.08	268.95	200.61	268.81	203.07	268.6	204.89	268.43
208.44	268.08	209.06	268.04	209.84	268.06	215.93	268.14	220.62	268.04
222.33	267.99	223.06	268.02	225.33	267.9	226.89	267.82	227.59	267.84
232.97	267.84	238.89	267.8	239.2	267.79	239.49	267.79	244.67	267.56
246.33	267.61	249.03	267.66	250.34	267.68	253.85	267.54	255.96	267.42
258.33	267.53	260.6	267.65	263.95	267.68	264.26	267.67	264.95	267.66
271.1	267.49	277.02	267.48	277.65	267.47	278.91	267.44	280.96	267.33
281.91	267.29	284.1	267.22	287.93	267.06	289.29	266.97	293.49	266.81
297.62	266.63	299.57	266.69	303.03	266.66	304.79	266.7	306.08	266.69
309.74	266.59	314.7	266.83	314.71	266.83	314.72	266.83	318.7	266.52
321.55	266.67	323.45	266.68	325.87	266.68	330.01	266.56	332.08	266.51
334.09	266.47	335.49	266.44	340.28	266.31	341.38	266.25	342.32	266.2
346.83	265.76	352.21	265.27	352.27	265.26	356.1	264.7	358.97	264.14
359.28	264.09	359.93	264.02	361.8	264.01	368.34	264.16	371.14	264.15
373.88	264.21	378.33	264.01	380.37	263.98	382.91	264.27	385.77	264.33
386.69	264.3	389.14	264.28	395.25	264.54	397.04	264.71	399.68	265.02
401.73	265.12	405.03	265.33	407.98	265.22	410.12	265.27	413.45	265.45
414.56	265.52	416.9	265.64	417.63	265.64	418	265.61	421.68	265.43
425.31	265.38	425.76	265.33	427.74	265.31	429.41	265.23	434.47	264.53
436.06	263.96	444.47	259.51	446.62	259.22	449.55	259.25	451.97	259.23
454.22	259.16	457.03	259.54	461.13	259.68	461.21	259.68	466.67	259.6
502.5	258.6	507.5	254.9	525	254.3	542.5	254.7	547.5	258

570.55	259.81	570.69	259.82	571.55	259.9	572.28	259.97	577.72	260.98
578.87	261.33	581.36	261.88	589.03	263.38	590.11	263.59	593.61	264.01
595.2	264.3	595.82	264.27	610.13	265.41	620.56	267.25	624.17	266.89
625.54	267.05	629.79	266.91	634.62	267.16	638.52	267.36	639.22	267.39
639.27	267.39	639.54	267.4	653.1	268.27	654.64	268.23	660.89	268.46
664.87	268.64	668.5	268.59	670.92	268.66	673.81	268.56	675.29	268.62
680.46	269.15	681.97	269.17	684.02	269.35	687.71	269.15	691.99	269.68
694.12	269.82	696.53	269.94	699.09	270.16	703.19	270.6	703.24	270.6
703.82	270.62	707.62	270.66	707.99	270.68	714.45	271.05	714.48	271.05
714.59	271.06	719.22	271.29	719.9	271.34	721.99	271.51	724.12	271.71
725.01	271.81	725.98	271.83	729.36	272.04	730.69	272.11	731.01	272.13
731.61	272.15	735.34	272.28	737.35	272.44	739.5	272.61	742.13	272.9
744.83	273.1	748.65	273.34	751.45	273.67	753.37	273.64	756.46	273.48
760.17	273.52	760.73	273.54	761.92	273.57	763.9	273.69	764.42	273.67
764.82	273.65	769.57	273.88	770.85	273.94	771.14	273.94	773.05	274.01
774.91	274.08	775.2	274.1	777.84	274.17	781.06	274.29	781.8	274.29
785.28	274.44	787.43	274.64	791.18	274.7	791.24	274.7	791.32	274.7
792.84	274.77	795.25	274.88	798.4	274.99	801.43	275.09	801.55	275.09
805.74	275.3	807.32	275.36	811.79	275.36	812.18	275.35	813.18	275.35
815.29	275.34	816.12	275.37	820.65	275.69	822.14	275.8	822.49	275.8
822.94	275.82	826.63	275.65	828.65	275.75	832.25	275.93	832.52	275.94
833.02	275.96	836.96	276.18	838.7	276.24	842.88	276.35	843.09	276.36
843.6	276.37	846.29	276.39	847.35	276.41	852.8	276.46	853.32	276.47
853.5	276.47	853.68	276.47	858.82	276.67	863.54	276.6	864.32	276.63
867.94	276.75	870.16	276.72	873.95	276.87	875.75	276.97	878.32	277.08
883.79	277.25	884.27	277.27	884.39	277.27	888.64	277.41	889.79	277.38
894.58	277.41	895.2	277.46	899.1	277.65	901.48	277.71	904.94	277.69
905.59	277.71	907.83	277.94	909.01	278.05	909.35	278.06	913.2	278.13
915.38	278.16	915.67	278.18	915.9	278.18	920.62	278.19	920.72	278.19

Manning's n Values				num= 10					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	91.66	.05	249.03	.05	466.67	.04	489.54	.04
502.5	.04	547.5	.04	571.55	.04	572.28	.12	638.52	.05

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	502.5	547.5		.3	.5

Ineffective Flow		num= 2	
Sta L	Sta R	Elev	Permanent
0	441	266.73	F
609	920.72	268.3	F

Downstream Deck/Roadway Coordinates

num= 289									
Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
0	274.12		2.6	274.13	3.01	274.13			
3.07	274.12		3.11	274.12	7.87	273.83			
10.85	273.78		12.72	273.79	15.72	273.75			
17.36	273.63		18.43	273.64	21.8	273.49			
21.99	273.48		25.55	273.14	27.46	273.18			

32.33	273.23	33.18	273.25	34.21	273.15
38.82	272.93	40.25	272.92	44.2	272.57
47.01	272.52	49.45	272.49	52.83	272.24
54.09	272.12	55.75	272.17	57.6	272.03
61.51	271.49	64.64	271.51	67.46	271.67
69.11	271.74	71.37	271.61	74.91	271.65
78.9	271.19	83.3	271.09	90.01	271.04
90.69	271.02	93.88	270.72	96.08	270.69
98.89	270.61	102.4	270.39	105.87	270.26
108.6	270.07	111.22	270.01	113.39	269.88
117.47	269.7	121.22	269.64	122.27	269.56
127.31	269.57	128.4	269.54	132.26	269.34
133.48	269.28	133.82	269.29	139.34	269.44
144.34	268.91	145.16	268.86	150.47	268.84
152.35	268.84	152.81	268.85	153.46	268.82
159.96	268.63	164.58	268.68	166.09	268.82
168.87	268.64	170.41	268.51	171.28	268.53
176.39	268.46	181.8	268	182.61	267.96
186.12	268.1	187.31	268.07	190.01	268.05
192.7	267.92	194.71	267.99	199.15	267.69
202.63	267.38	203.19	267.35	203.92	267.33
211.36	267.7	215.22	267.81	218.11	267.84
220.33	267.69	223.68	267.36	225.29	267.29
228.95	267.47	230.7	267.44	232.87	267.14
234.48	267.22	238.91	266.94	240.39	266.97
243.14	267.15	245.45	267.2	247.2	267.2
247.83	267.17	249.1	267.16	254.53	266.8
256.4	266.7	256.77	266.7	257.3	266.69
262.47	266.72	264.81	266.63	267.49	266.92
271.76	266.98	274.01	266.99	278.69	267.15
280.06	267.16	282.76	267.1	285.7	267.01
288.05	267.18	290.81	267.3	294.37	267.18
295.51	267.12	296.89	267.06	299.26	266.87
304.27	266.67	307.85	266.78	311.98	266.79
312.33	266.8	316.27	267.08	319.89	266.95
322.39	266.81	323.66	266.9	327.35	267.01
328.62	267.04	331.78	266.63	334.42	266.72
334.74	266.71	334.85	266.71	335.3	266.71
340.52	266.82	341.7	266.84	343.14	266.87
343.93	266.87	346.15	266.86	346.83	266.84
346.89	266.84	347.85	266.9	353.41	266.83
357.84	267.09	359.4	266.96	362.4	266.73
364.23	266.56	365.15	266.58	371.94	266.77
374.37	266.73	376.87	266.91	378.64	267.01
381.32	266.99	385.78	267.02	389.41	267.04
392.96	266.86	395	266.77	400.04	267.05
400.12	267.06	400.29	267.06	403.22	267.08
404.59	267.35	408.94	267.59	411.69	267.45
414.59	267.39	417.38	267.34	419.77	267.38
423.41	267.61	425.68	267.68	428	267.62

432.42	267.66		433.34	267.64		437	267.62
439.15	267.7		456.3	268.3		456.3	270.7
466.3	270.7	265.3	583.7	270.7	265.3	593.7	270.7
593.7	268.3		613.85	269.86		619.72	270.14
620.32	270.15		620.66	270.14		624.44	269.94
625.39	269.97		631.05	270.22		632.03	270.28
636.43	270.2		640.35	270.14		641.81	270.11
647.16	270.44		647.98	270.42		648.24	270.44
652.19	270.12		655.08	270.41		656.38	270.49
658.66	270.57		662.45	270.46		666.51	270.5
668.02	270.51		671.13	270.62		673.07	270.53
677.22	270.21		677.58	270.17		678.09	270.17
678.64	270.22		684.31	270.74		686.52	270.46
689.54	270.42		692.03	270.92		694.22	271.03
697.27	270.93		700.93	270.8		704.39	270.84
705.54	270.88		708.89	271.17		712.22	271.17
712.92	271.14		713.92	271.17		718.41	271.09
723.43	271.3		723.54	271.31		723.59	271.31
723.66	271.31		729.05	271.34		734.05	271.34
734.95	271.38		737.3	271.56		738.26	271.61
743.79	271.66		744.41	271.66		744.55	271.67
744.74	271.67		746.55	271.73		748.48	271.79
748.62	271.78		754.17	271.68		754.81	271.68
757.27	271.68		765.06	271.74		765.3	271.74
765.45	271.75		769.57	272.03		775.46	272.28
775.62	272.29		776.04	272.26		780.73	272.04
785.82	272.59		786.12	272.6		790.17	272.41
792.05	272.48		796.25	272.61		797.31	272.56
800.58	272.52		806.23	272.8		806.61	272.81
807.83	272.75		811.56	272.61		816.5	273.21
816.81	273.26		816.85	273.26		816.89	273.26
816.97	273.26		821.33	273.37		823.37	273.36
827.27	273.5		827.63	273.52		828.8	273.58
830.92	273.62		831.6	273.72		837.49	273.76
837.74	273.75		839.35	273.94		842.26	274.23
843.42	274.18		846.4	273.93		847.13	274.01
847.98	273.98		850.71	274.27		852.4	274.15
854.45	273.95		858.34	274.55		858.35	274.55
858.35	274.55		862.45	274.31		862.86	274.38
868.68	274.81		868.83	274.82		869.34	274.84
873.25	274.96		873.95	275		875.29	275.02
877.39	274.92						

Downstream Bridge Cross Section Data

Station Elevation Data		num=		279					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	277.4	3.69	277.18	6.55	276.97	15.59	276.49	16.87	276.45
17.2	276.45	18.3	276.38	22.88	276.31	23.63	276.3	23.85	276.28
24.23	276.26	31.23	275.65	35.12	275.65	36.91	275.62	40.26	275.01
40.76	274.92	48.05	274.75	52.08	274.63	53.58	274.54	55.85	274.46

57.14	274.41	57.77	274.35	62.34	273.93	66.24	273.94	67.52	274.07
68.96	273.89	70.13	273.83	80.49	273.31	81.8	273.4	83.69	273.17
86.31	273.13	91.15	273.13	92.17	273.14	93.19	273.06	98.14	272.56
102.4	272.29	103.54	272.23	108.02	272.07	109.76	271.98	111.12	271.91
114.11	271.59	116.48	271.35	118.42	271.23	125.13	270.78	128.03	270.6
129.83	270.33	136.04	270.33	136.65	270.37	140.27	270.8	141.6	270.96
141.83	270.98	146.82	270.56	153.52	270.36	160.95	268.98	166.32	267.53
166.7	267.47	168.11	267.35	171.8	267.27	176.07	267.13	182.65	266.81
190.5	267.08	199.55	267.08	201.28	267.04	202.08	267	205.3	266.87
212.16	266.24	218.35	266.08	220.3	265.85	225.15	265.14	225.34	265.1
226.49	265.18	232.89	265.22	235.1	265.3	236.08	265.26	237.07	265.19
241.53	264.85	243.3	264.74	246.75	264.49	249.72	264.35	251.7	264.27
253.94	264.19	256.22	264.15	259.97	264.15	260.57	264.13	261.37	264.11
266.56	263.94	270.44	263.91	272.41	263.8	276.5	263.83	278.11	263.93
280.05	263.84	283.81	263.69	286.94	263.55	290.08	263.5	293.2	263.55
297.55	263.57	303.57	263.4	304.47	263.37	305.17	263.35	307.03	263.36
308.98	263.41	309.67	263.4	314.76	263.56	320.19	263.48	320.69	263.47
326.44	263.52	326.55	263.52	326.58	263.52	326.67	263.52	332.96	263.85
336.15	264.41	336.41	264.47	336.69	264.52	340.53	265.45	345.02	266.43
348.35	266.84	349.94	266.79	353.08	266.83	353.46	266.82	354.17	266.91
357.52	267.16	358.94	267.2	361.64	267.1	363	267.05	368.58	266.84
369.01	266.82	369.32	266.83	372.05	266.95	375.68	267.13	375.84	267.12
376.01	267.12	376.54	267.11	380.03	266.97	382.71	266.62	383.08	266.57
386.51	266.48	386.71	266.48	387.18	266.47	387.53	266.49	387.7	266.49
389.62	266.38	393.91	266.22	394.94	266.17	395.37	266.16	395.74	266.16
399.66	266.12	400.16	266.09	403.5	265.86	404.67	265.8	406.77	265.54
408.52	265.31	411.44	264.97	411.74	264.94	412.11	264.83	416	263.51
419.14	263.1	420.17	262.88	423.82	262.32	423.92	262.31	424.03	262.31
430.53	262.13	432.39	261.85	435.84	261.76	439.15	261.61	443.03	261.34
446.15	261.39	448.51	261.3	451.92	261.36	455.11	261	456.22	260.87
459.73	260.66	460.75	260.64	467.04	260.31	467.12	260.29	471.98	259.17
474.6	258.98	502.5	258.6	507.5	254.9	525	254	542.5	254.7
547.5	258	563.62	259.48	566.28	260.34	569.92	261.5	574.77	262.8
580.18	263.86	581.89	264.24	585.49	264.45	585.87	264.5	586.83	264.61
595.6	265.65	597.35	265.73	601.28	265.99	601.97	266.05	602.23	266.04
602.34	266.05	602.66	266.07	610.32	266.47	613.73	266.79	613.97	266.81
614.05	266.81	616.2	266.84	621.15	266.9	621.45	266.93	625.78	267.29
627.13	267.37	629.09	267.54	631.35	267.74	632.89	267.73	635.25	267.95
637.49	267.79	640.44	267.85	644.87	267.88	646.75	267.66	649.74	267.51
652.13	267.41	657.04	267.6	657.89	267.58	660.46	267.41	667.02	267.64
668.19	267.68	669.15	267.72	672.06	267.71	673.93	267.83	677.07	268.21
681.15	268.49	683.3	268.54	686.07	268.85	688.96	269.16	693.18	269.31
694.35	269.41	698.1	269.68	700.35	269.81	703.31	269.94	707.04	270.29
710.09	270.45	714.64	270.64	716.35	270.68	729.16	271.42	730.78	271.48
732.02	271.48	737.82	271.81	739.86	271.89	740.3	271.93	741.14	271.97
745.46	272.21	749.24	272.34	750.88	272.43	753.12	272.55	757.61	273.06
758.15	273.08	762.49	272.97	765.2	272.93	766.63	272.91	769.63	273.27
769.96	273.3	770.13	273.29	777.08	273.28	777.39	273.3	781.82	273.21
782.34	273.21	782.83	273.2	786.87	273.33	799.09	273.65	802.94	273.76
803.57	273.76	807.29	273.8	807.5	273.81	818.9	273.75	829.85	273.96

830.17	273.96	830.7	273.97	830.96	273.98	833.91	274.21	838.74	274.55
843.45	274.18	844.61	274.26	848.74	274.61	849.5	274.64		

Manning's n Values num= 8

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	361.64	.12	455.11	.12	502.5	.04	524.1	.04
547.5	.05	559.23	.05	569.92	.05				

Bank Sta: Left Right Coeff Contr. Expan.
502.5 547.5 .3 .5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	431	266.5	F
619	849.5	266.5	F

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .98
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Piers = 1

Pier Data

Pier Station	Upstream=	525	Downstream=	525
Upstream	num=	2		
Width	Elev	Width	Elev	
3	254.3	3	265.3	
Downstream	num=	2		
Width	Elev	Width	Elev	
3	254	3	265.3	

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy			
Momentum	Cd	=	1.33

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Pressure and Weir flow		
Submerged Inlet Cd	=	
Submerged Inlet + Outlet Cd	=	.8
Max Low Cord	=	

Additional Bridge Parameters

Add Friction component to Momentum	
Do not add Weight component to Momentum	

Class B flow critical depth computations use critical depth
inside the bridge at the upstream end
Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT Profile #10%

E.G. US. (ft)	263.16	Element	Inside BR US
Inside BR DS			
W.S. US. (ft)	262.87	E.G. Elev (ft)	263.09
262.87			
Q Total (cfs)	2671.00	W.S. Elev (ft)	262.72
262.17			
Q Bridge (cfs)	2671.00	Crit W.S. (ft)	260.42
260.23			
Q Weir (cfs)		Max Chl Dpth (ft)	8.39
8.11			
Weir Sta Lft (ft)		Vel Total (ft/s)	4.73
5.49			
Weir Sta Rgt (ft)		Flow Area (sq ft)	564.85
486.10			
Weir Submerg		Froude # Chl	0.30
0.42			
Weir Max Depth (ft)		Specif Force (cu ft)	2095.01
1954.87			
Min El Weir Flow (ft)	266.74	Hydr Depth (ft)	4.94
4.71			
Min El Prs (ft)	265.30	W.P. Total (ft)	137.29
124.03			
Delta EG (ft)	0.44	Conv. Total (cfs)	56422.0
40221.2			
Delta WS (ft)	0.85	Top Width (ft)	114.44
103.14			
BR Open Area (sq ft)	830.31	Frctn Loss (ft)	0.13
0.14			
BR Open Vel (ft/s)	5.49	C & E Loss (ft)	0.10
0.00			
Coef of Q		Shear Total (lb/sq ft)	0.58
1.08			
Br Sel Method	Energy only	Power Total (lb/ft s)	0.00
0.00			

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

BRIDGE OUTPUT Profile #2%

E.G. US. (ft)	270.56	Element	Inside BR US
Inside BR DS			
W.S. US. (ft)	270.28	E.G. Elev (ft)	270.56
270.56			
Q Total (cfs)	10810.00	W.S. Elev (ft)	270.28
269.27			
Q Bridge (cfs)	6740.88	Crit W.S. (ft)	264.46
269.27			
Q Weir (cfs)	4069.12	Max Chl Dpth (ft)	15.95
15.21			
Weir Sta Lft (ft)	172.78	Vel Total (ft/s)	6.15
5.85			
Weir Sta Rgt (ft)	690.25	Flow Area (sq ft)	1757.96
1846.74			
Weir Submerg	0.48	Froude # Chl	0.30
0.46			
Weir Max Depth (ft)	4.00	Specif Force (cu ft)	11233.48
10529.90			
Min El Weir Flow (ft)	266.74	Hydr Depth (ft)	5.22
5.97			
Min El Prs (ft)	265.30	W.P. Total (ft)	603.30
572.26			
Delta EG (ft)	1.00	Conv. Total (cfs)	
Delta WS (ft)	1.32	Top Width (ft)	336.90
309.53			
BR Open Area (sq ft)	830.31	Frctn Loss (ft)	
BR Open Vel (ft/s)	8.12	C & E Loss (ft)	
Coef of Q		Shear Total (lb/sq ft)	
Br Sel Method	Press/Weir	Power Total (lb/ft s)	0.00
0.00			

Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

Note: Multiple critical depths were found at this location. The critical depth

with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from

the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface is based on critical depth over the weir. The energy has been projected.

BRIDGE OUTPUT Profile #1%

E.G. US. (ft)	271.40	Element	Inside BR US
Inside BR DS			
W.S. US. (ft)	271.10	E.G. Elev (ft)	271.40
271.40			
Q Total (cfs)	12761.00	W.S. Elev (ft)	271.10
269.93			
Q Bridge (cfs)	6466.88	Crit W.S. (ft)	265.20
269.77			
Q Weir (cfs)	6294.12	Max Chl Dpth (ft)	16.77
15.87			
Weir Sta Lft (ft)	151.34	Vel Total (ft/s)	5.82
5.51			
Weir Sta Rgt (ft)	720.67	Flow Area (sq ft)	2192.60
2315.98			
Weir Submerg	0.57	Froude # Chl	0.28
0.43			
Weir Max Depth (ft)	4.84	Specif Force (cu ft)	13040.34
11995.11			
Min El Weir Flow (ft)	266.74	Hydr Depth (ft)	4.02
7.19			
Min El Prs (ft)	265.30	W.P. Total (ft)	813.04
586.27			
Delta EG (ft)	0.92	Conv. Total (cfs)	
Delta WS (ft)	1.17	Top Width (ft)	545.64
322.14			
BR Open Area (sq ft)	830.31	Frctn Loss (ft)	
BR Open Vel (ft/s)	7.79	C & E Loss (ft)	
Coef of Q		Shear Total (lb/sq ft)	
Br Sel Method	Press/Weir	Power Total (lb/ft s)	0.00
0.00			

Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

BRIDGE OUTPUT Profile #.2%

E.G. US. (ft)	274.15	Element	Inside BR US
Inside BR DS			
W.S. US. (ft)	273.85	E.G. Elev (ft)	274.15
273.98			
Q Total (cfs)	19382.00	W.S. Elev (ft)	273.85
273.59			
Q Bridge (cfs)	3997.54	Crit W.S. (ft)	270.77
270.98			
Q Weir (cfs)	15384.46	Max Chl Dpth (ft)	19.51
19.53			
Weir Sta Lft (ft)	30.61	Vel Total (ft/s)	4.89
4.65			
Weir Sta Rgt (ft)	777.09	Flow Area (sq ft)	3960.77
4171.28			
Weir Submerg	0.90	Froude # Chl	0.22
0.21			
Weir Max Depth (ft)	7.59	Specif Force (cu ft)	21506.56
20964.34			
Min El Weir Flow (ft)	266.74	Hydr Depth (ft)	5.43
5.78			
Min El Prs (ft)	265.30	W.P. Total (ft)	996.55
987.96			
Delta EG (ft)	0.17	Conv. Total (cfs)	
Delta WS (ft)	0.26	Top Width (ft)	728.95
721.75			
BR Open Area (sq ft)	830.31	Frctn Loss (ft)	

BR Open Vel (ft/s)	4.81	C & E Loss (ft)	
Coef of Q		Shear Total (lb/sq ft)	
Br Sel Method	Press/Weir	Power Total (lb/ft s)	0.00
0.00			

Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1 RS: 15200.99

INPUT

Description:

Station Elevation Data				num=	279				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	277.4	3.69	277.18	6.55	276.97	15.59	276.49	16.87	276.45
17.2	276.45	18.3	276.38	22.88	276.31	23.63	276.3	23.85	276.28
24.23	276.26	31.23	275.65	35.12	275.65	36.91	275.62	40.26	275.01
40.76	274.92	48.05	274.75	52.08	274.63	53.58	274.54	55.85	274.46
57.14	274.41	57.77	274.35	62.34	273.93	66.24	273.94	67.52	274.07
68.96	273.89	70.13	273.83	80.49	273.31	81.8	273.4	83.69	273.17
86.31	273.13	91.15	273.13	92.17	273.14	93.19	273.06	98.14	272.56
102.4	272.29	103.54	272.23	108.02	272.07	109.76	271.98	111.12	271.91
114.11	271.59	116.48	271.35	118.42	271.23	125.13	270.78	128.03	270.6
129.83	270.33	136.04	270.33	136.65	270.37	140.27	270.8	141.6	270.96
141.83	270.98	146.82	270.56	153.52	270.36	160.95	268.98	166.32	267.53

166.7	267.47	168.11	267.35	171.8	267.27	176.07	267.13	182.65	266.81
190.5	267.08	199.55	267.08	201.28	267.04	202.08	267	205.3	266.87
212.16	266.24	218.35	266.08	220.3	265.85	225.15	265.14	225.34	265.1
226.49	265.18	232.89	265.22	235.1	265.3	236.08	265.26	237.07	265.19
241.53	264.85	243.3	264.74	246.75	264.49	249.72	264.35	251.7	264.27
253.94	264.19	256.22	264.15	259.97	264.15	260.57	264.13	261.37	264.11
266.56	263.94	270.44	263.91	272.41	263.8	276.5	263.83	278.11	263.93
280.05	263.84	283.81	263.69	286.94	263.55	290.08	263.5	293.2	263.55
297.55	263.57	303.57	263.4	304.47	263.37	305.17	263.35	307.03	263.36
308.98	263.41	309.67	263.4	314.76	263.56	320.19	263.48	320.69	263.47
326.44	263.52	326.55	263.52	326.58	263.52	326.67	263.52	332.96	263.85
336.15	264.41	336.41	264.47	336.69	264.52	340.53	265.45	345.02	266.43
348.35	266.84	349.94	266.79	353.08	266.83	353.46	266.82	354.17	266.91
357.52	267.16	358.94	267.2	361.64	267.1	363	267.05	368.58	266.84
369.01	266.82	369.32	266.83	372.05	266.95	375.68	267.13	375.84	267.12
376.01	267.12	376.54	267.11	380.03	266.97	382.71	266.62	383.08	266.57
386.51	266.48	386.71	266.48	387.18	266.47	387.53	266.49	387.7	266.49
389.62	266.38	393.91	266.22	394.94	266.17	395.37	266.16	395.74	266.16
399.66	266.12	400.16	266.09	403.5	265.86	404.67	265.8	406.77	265.54
408.52	265.31	411.44	264.97	411.74	264.94	412.11	264.83	416	263.51
419.14	263.1	420.17	262.88	423.82	262.32	423.92	262.31	424.03	262.31
430.53	262.13	432.39	261.85	435.84	261.76	439.15	261.61	443.03	261.34
446.15	261.39	448.51	261.3	451.92	261.36	455.11	261	456.22	260.87
459.73	260.66	460.75	260.64	467.04	260.31	467.12	260.29	471.98	259.17
474.6	258.98	502.5	258.6	507.5	254.9	525	254	542.5	254.7
547.5	258	563.62	259.48	566.28	260.34	569.92	261.5	574.77	262.8
580.18	263.86	581.89	264.24	585.49	264.45	585.87	264.5	586.83	264.61
595.6	265.65	597.35	265.73	601.28	265.99	601.97	266.05	602.23	266.04
602.34	266.05	602.66	266.07	610.32	266.47	613.73	266.79	613.97	266.81
614.05	266.81	616.2	266.84	621.15	266.9	621.45	266.93	625.78	267.29
627.13	267.37	629.09	267.54	631.35	267.74	632.89	267.73	635.25	267.95
637.49	267.79	640.44	267.85	644.87	267.88	646.75	267.66	649.74	267.51
652.13	267.41	657.04	267.6	657.89	267.58	660.46	267.41	667.02	267.64
668.19	267.68	669.15	267.72	672.06	267.71	673.93	267.83	677.07	268.21
681.15	268.49	683.3	268.54	686.07	268.85	688.96	269.16	693.18	269.31
694.35	269.41	698.1	269.68	700.35	269.81	703.31	269.94	707.04	270.29
710.09	270.45	714.64	270.64	716.35	270.68	729.16	271.42	730.78	271.48
732.02	271.48	737.82	271.81	739.86	271.89	740.3	271.93	741.14	271.97
745.46	272.21	749.24	272.34	750.88	272.43	753.12	272.55	757.61	273.06
758.15	273.08	762.49	272.97	765.2	272.93	766.63	272.91	769.63	273.27
769.96	273.3	770.13	273.29	777.08	273.28	777.39	273.3	781.82	273.21
782.34	273.21	782.83	273.2	786.87	273.33	799.09	273.65	802.94	273.76
803.57	273.76	807.29	273.8	807.5	273.81	818.9	273.75	829.85	273.96
830.17	273.96	830.7	273.97	830.96	273.98	833.91	274.21	838.74	274.55
843.45	274.18	844.61	274.26	848.74	274.61	849.5	274.64		

Manning's	n Values		num=	8					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	361.64	.12	455.11	.12	502.5	.04	524.1	.04
547.5	.05	559.23	.05	569.92	.05				

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
502.5	547.5	332.95	285.36	267.29	.3	.5
Ineffective Flow	num=	2				
Sta L	Sta R	Elev	Permanent			
0	431	266.5	F			
619	849.5	266.5	F			

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	262.72	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.70	Wt. n-Val.	0.120	0.040
0.050				
W.S. Elev (ft)	262.03	Reach Len. (ft)	332.95	285.36
267.29				
Crit W.S. (ft)	259.94	Flow Area (sq ft)	138.97	321.66
63.14				
E.G. Slope (ft/ft)	0.002873	Area (sq ft)	138.97	321.66
63.14				
Q Total (cfs)	2671.00	Flow (cfs)	166.02	2300.85
204.13				
Top Width (ft)	140.66	Top Width (ft)	71.28	45.00
24.38				
Vel Total (ft/s)	5.10	Avg. Vel. (ft/s)	1.19	7.15
3.23				
Max Chl Dpth (ft)	8.03	Hydr. Depth (ft)	1.95	7.15
2.59				
Conv. Total (cfs)	49827.6	Conv. (cfs)	3097.0	42922.5
3808.1				
Length Wtd. (ft)	286.44	Wetted Per. (ft)	71.49	47.25
24.83				
Min Ch El (ft)	254.00	Shear (lb/sq ft)	0.35	1.22
0.46				
Alpha	1.73	Stream Power (lb/ft s)	849.50	0.00
0.00				
Frctn Loss (ft)	0.40	Cum Volume (acre-ft)	145.03	192.96
77.30				
C & E Loss (ft)	0.23	Cum SA (acres)	68.91	30.19
43.99				

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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largest [smallest] user entered n value. The n value has been set to the

largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	269.56	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.60	Wt. n-Val.	0.080	0.040
0.050				
W.S. Elev (ft)	268.96	Reach Len. (ft)	332.95	285.36
267.29				
Crit W.S. (ft)	265.47	Flow Area (sq ft)	1628.28	633.88
491.90				
E.G. Slope (ft/ft)	0.001605	Area (sq ft)	1628.28	633.88
491.90				
Q Total (cfs)	10810.00	Flow (cfs)	3735.99	5326.50
1747.51				
Top Width (ft)	526.12	Top Width (ft)	341.49	45.00
139.63				
Vel Total (ft/s)	3.93	Avg. Vel. (ft/s)	2.29	8.40
3.55				
Max Chl Dpth (ft)	14.96	Hydr. Depth (ft)	4.77	14.09
3.52				
Conv. Total (cfs)	269817.1	Conv. (cfs)	93250.2	132949.2
43617.7				
Length Wtd. (ft)	297.00	Wetted Per. (ft)	342.87	47.25
140.60				
Min Ch El (ft)	254.00	Shear (lb/sq ft)	0.48	1.34
0.35				
Alpha	2.51	Stream Power (lb/ft s)	849.50	0.00
0.00				
Frctn Loss (ft)	0.24	Cum Volume (acre-ft)	495.91	318.23
344.87				
C & E Loss (ft)	0.19	Cum SA (acres)	105.57	30.15
75.89				

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wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	270.49	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.55	Wt. n-Val.	0.077	0.040
0.050				
W.S. Elev (ft)	269.93	Reach Len. (ft)	332.95	285.36
267.29				
Crit W.S. (ft)	266.70	Flow Area (sq ft)	1961.44	677.45
634.35				
E.G. Slope (ft/ft)	0.001458	Area (sq ft)	1961.44	677.45
634.35				
Q Total (cfs)	12761.00	Flow (cfs)	4856.65	5672.16
2232.19				
Top Width (ft)	547.31	Top Width (ft)	346.68	45.00
155.63				
Vel Total (ft/s)	3.90	Avg. Vel. (ft/s)	2.48	8.37
3.52				
Max Chl Dpth (ft)	15.93	Hydr. Depth (ft)	5.66	15.05
4.08				
Conv. Total (cfs)	334151.1	Conv. (cfs)	127173.0	148527.4
58450.7				
Length Wtd. (ft)	298.32	Wetted Per. (ft)	348.14	47.25
156.63				
Min Ch El (ft)	254.00	Shear (lb/sq ft)	0.51	1.31
0.37				
Alpha	2.35	Stream Power (lb/ft s)	849.50	0.00
0.00				
Frctn Loss (ft)	0.24	Cum Volume (acre-ft)	579.39	340.82
402.99				
C & E Loss (ft)	0.16	Cum SA (acres)	110.34	30.15
79.89				

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entire channel.

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CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	273.98	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.39	Wt. n-Val.	0.073	0.040
0.050				
W.S. Elev (ft)	273.59	Reach Len. (ft)	332.95	285.36
267.29				
Crit W.S. (ft)	268.75	Flow Area (sq ft)	3382.95	841.95
1334.09				
E.G. Slope (ft/ft)	0.000927	Area (sq ft)	3382.95	841.95
1334.09				
Q Total (cfs)	19382.00	Flow (cfs)	8701.76	6497.64
4182.60				
Top Width (ft)	721.75	Top Width (ft)	427.54	45.00
249.21				
Vel Total (ft/s)	3.49	Avg. Vel. (ft/s)	2.57	7.72
3.14				
Max Chl Dpth (ft)	19.59	Hydr. Depth (ft)	7.91	18.71
5.35				
Conv. Total (cfs)	636497.3	Conv. (cfs)	285762.4	213380.0
137354.9				
Length Wtd. (ft)	300.96	Wetted Per. (ft)	429.25	47.25
250.35				
Min Ch El (ft)	254.00	Shear (lb/sq ft)	0.46	1.03
0.31				
Alpha	2.06	Stream Power (lb/ft s)	849.50	0.00
0.00				
Frctn Loss (ft)	0.15	Cum Volume (acre-ft)	842.93	406.52
587.77				
C & E Loss (ft)	0.11	Cum SA (acres)	123.78	30.17
90.19				

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wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 14915.63

INPUT

Description:

Station Elevation Data				num=	343				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	276.63	.13	276.62	3.34	276.54	5.58	276.46	10.5	276.22
11.04	276.21	12.79	276.08	17.33	275.94	19.03	275.9	21.18	275.74
23.86	275.55	24.85	275.51	32.17	275.19	33.12	275.23	36.35	275.02
42.16	274.9	42.65	274.89	43.93	274.84	47.27	274.85	50.52	274.6
51.46	274.59	52.41	274.59	56.87	274.54	58.36	274.39	62.54	274.03
66.03	274.09	68.32	274.06	73.71	273.56	74.03	273.53	74.98	273.51
80.3	273.44	83.14	273.22	85.89	272.99	86.67	273	90.91	273.07
93.09	272.97	96.98	272.55	99.47	272.46	104.46	272.41	105.46	272.41
105.83	272.41	105.99	272.42	109.82	272.32	112.58	272.12	116.81	272.06
118.83	272.11	120.14	272	122.51	272.02	126.41	271.77	128.41	271.68
131.62	271.64	135.73	271.33	138.49	271.15	138.92	271.14	139.51	271.13
145.36	271	147.67	270.87	154.31	270.62	157.26	270.71	162.84	270.47
164.18	270.49	164.98	270.46	167.19	270.33	169.41	270.19	171.2	270.13
173.31	270.04	175.88	270.11	178.02	270.07	178.89	270.07	184.32	269.75
187.87	269.84	190.68	269.87	196.74	269.62	196.94	269.63	197.41	269.63
202.04	269.76	207.01	269.38	207.11	269.37	207.2	269.37	213.1	269.13
215.45	269.08	217.85	269.14	219.78	269.03	224.89	268.89	225.37	268.84
228.48	268.68	231.26	268.54	235.83	268.52	237	268.52	237.71	268.48
242.33	268.26	243.74	268.12	247.66	268	250.88	268.17	252.99	268.2
257.9	267.72	258.31	267.69	259.58	267.67	264.84	267.74	266.43	267.73
268.53	267.68	271.02	267.57	271.8	267.59	276.22	267.43	277.51	267.39
281.11	267.54	285.27	267.29	293.42	267.4	294.94	267.44	296.03	267.27
296.48	267.21	298.69	266.52	302.99	266.4	309.24	266.43	311.73	266.62
313.21	266.57	315.58	266.56	317.71	266.41	319.69	266.42	321.15	266.5
325.92	266.34	333.41	266.17	334.88	266.21	335.93	266.08	337.01	265.92
339.65	265.58	346.28	265.52	348.62	265.51	348.71	265.5	353.16	265.25
355.4	265.32	358.57	265.05	361.7	264.83	362.16	264.79	365.25	264.87
366.83	264.89	369.75	264.82	371.93	264.67	373.15	264.66	377.48	264.38
379.71	264.33	383.14	264.21	388.21	264	388.78	263.99	389.79	263.97
392.89	263.85	395.87	264.02	396.81	264.02	402.24	263.47	406.15	263.32
409.45	263.1	414.73	262.75	415.78	262.63	417.78	262.68	421.26	262.65
423.21	262.7	430.56	262.75	436.58	262.86	440.31	262.76	443.43	262.53
445.96	262.45	459.45	261.3	460.85	261.22	464.5	261.29	467.98	261.43
469.4	261.45	477.1	261.61	478.96	261.96	480.76	262.35	482.47	262.62
483.91	262.77	488.33	262.86	488.64	262.88	489.31	262.91	494.81	262.42
495.43	262.24	497.15	261.97	501.06	261.96	502.16	261.82	503.72	261.49
518.38	261.38	527.69	261.88	529.84	261.95	532.48	261.78	537.91	261.76
552.68	260.64	558.15	260.27	562.54	260.15	563.13	260.25	564.99	259.74
569.33	259.05	571.95	259.61	589.42	259.14	591.28	259.14	592.41	258.68
599.75	258.33	600.51	258.33	602.14	258.14	606.79	257.4	608.33	256.32

610.66	254.86	613.18	254.86	628.37	254.14	639.27	253.53	645.4	253.22
659.26	253.78	678.88	254.86	681.61	254.86	685.97	257.92	687.06	258.93
691.73	258.67	693.42	258.57	694.09	258.63	701.75	259.71	703.36	259.83
705.06	259.62	710.15	259.59	710.34	259.62	710.68	259.65	711.78	259.75
715.16	260.05	717.98	260.54	719.65	260.83	719.76	260.85	720.2	260.91
721.22	260.9	726.74	261.39	728.69	261.56	729.85	261.53	734.46	261.49
734.84	261.49	735.88	261.63	740.19	262.18	742.12	262.23	744.68	262.39
745	262.39	751.29	262.39	755.05	262.2	756.45	262.14	758.51	262.29
763.79	262.82	765.74	262.88	771.51	262.79	775.56	263.04	779.5	263.06
780.67	263.05	782.83	263.14	787.21	263.28	792.03	263.16	794.95	263.28
796.03	263.31	798.99	263.35	802.93	263.5	807.24	263.71	809.34	263.83
810.3	263.89	812.17	264.1	814.8	264.28	818.31	264.37	820.92	264.52
824.41	264.86	827.48	265.21	830.55	265.63	833.93	266.15	840.26	267.5
841.23	267.7	844.63	268.23	846.43	268.53	849.76	268.68	851.1	268.87
863.13	269.21	863.14	269.21	863.16	269.21	863.17	269.21	870.03	269.4
872.13	269.34	879.46	269.65	879.91	269.65	881.39	269.44	892.07	268.02
898.13	268.1	900.82	268.3	904.79	269.85	908.04	269.97	909.66	270.04
912.97	269.83	922.81	268.83	924.32	268.67	927.71	268.8	930.53	268.97
930.62	268.97	931.91	269	934.09	269.18	935.89	269.2	939.72	269
942	269.09	943.42	269.2	945.74	269.21	947.64	269.27	948.41	269.31
951.6	269.51	954.55	269.74	954.85	269.75	956.47	269.79	959.54	270.05
962.36	270.28	962.97	270.32	963.6	270.33	968.45	270.55	970.03	270.66
970.37	270.68	973.44	270.82	977.85	270.98	980.76	271.15	981.86	271.16
985.38	271.09	986.9	271.22	992.77	271.54	992.91	271.55	992.97	271.55
993.23	271.56	998.61	271.66	1000.85	271.76	1004.31	272	1008.82	272.09
1009.97	272.14	1012.74	272.21	1016.61	272.32	1020.87	272.47	1024.04	272.58
1026.93	272.78	1031.19	273.05	1033.53	273.1	1038.16	273.02	1044.45	273.45
1045.19	273.53	1047.37	273.61	1048.56	273.63	1050.82	273.66	1064.6	274.48
1066.36	274.5	1068.52	274.89	1074.35	275.13				

Manning's n Values			num= 9						
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	111.9	.05	523.45	.12	602.14	.04	656.86	.04
685.97	.05	727.23	.12	762.48	.05	996.9	.12		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	602.14	685.97		363.66	337.37		.1	.3

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	262.09	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.23	Wt. n-Val.	0.113	0.040
0.050				
W.S. Elev (ft)	261.85	Reach Len. (ft)	363.66	337.37
261.75				
Crit W.S. (ft)	257.60	Flow Area (sq ft)	149.94	616.53
89.89				
E.G. Slope (ft/ft)	0.000837	Area (sq ft)	149.94	616.53

89.89				
Q Total (cfs)	2671.00	Flow (cfs)	79.17	2470.06
121.77				
Top Width (ft)	257.08	Top Width (ft)	121.58	83.83
51.67				
Vel Total (ft/s)	3.12	Avg. Vel. (ft/s)	0.53	4.01
1.35				
Max Chl Dpth (ft)	8.63	Hydr. Depth (ft)	1.23	7.35
1.74				
Conv. Total (cfs)	92318.7	Conv. (cfs)	2736.5	85373.4
4208.7				
Length Wtd. (ft)	331.69	Wetted Per. (ft)	122.05	85.70
52.32				
Min Ch El (ft)	253.22	Shear (lb/sq ft)	0.06	0.38
0.09				
Alpha	1.54	Stream Power (lb/ft s)	1074.35	0.00
0.00				
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	143.93	189.88
76.83				
C & E Loss (ft)	0.00	Cum SA (acres)	68.17	29.76
43.76				

Warning: Divided flow computed for this cross-section.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	269.13	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.22	Wt. n-Val.	0.069	0.040
0.058				
W.S. Elev (ft)	268.91	Reach Len. (ft)	363.66	337.37
261.75				
Crit W.S. (ft)	263.19	Flow Area (sq ft)	1951.34	1208.27
1020.79				
E.G. Slope (ft/ft)	0.000494	Area (sq ft)	1951.34	1208.27
1020.79				
Q Total (cfs)	10810.00	Flow (cfs)	2977.66	5823.22
2009.12				
Top Width (ft)	653.19	Top Width (ft)	378.09	83.83
191.28				
Vel Total (ft/s)	2.59	Avg. Vel. (ft/s)	1.53	4.82
1.97				
Max Chl Dpth (ft)	15.69	Hydr. Depth (ft)	5.16	14.41
5.34				
Conv. Total (cfs)	486340.7	Conv. (cfs)	133964.5	261986.2
90390.0				
Length Wtd. (ft)	327.47	Wetted Per. (ft)	379.14	85.70

192.60				
Min Ch El (ft)	253.22	Shear (lb/sq ft)	0.16	0.43
0.16				
Alpha	2.07	Stream Power (lb/ft s)	1074.35	0.00
0.00				
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)	482.22	312.20
340.23				
C & E Loss (ft)	0.01	Cum SA (acres)	102.82	29.73
74.88				

Warning: Divided flow computed for this cross-section.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	270.08	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.23	Wt. n-Val.	0.067	0.040
0.059				
W.S. Elev (ft)	269.86	Reach Len. (ft)	363.66	337.37
261.75				
Crit W.S. (ft)	263.84	Flow Area (sq ft)	2325.23	1287.63
1242.84				
E.G. Slope (ft/ft)	0.000497	Area (sq ft)	2325.23	1287.63
1242.84				
Q Total (cfs)	12761.00	Flow (cfs)	3855.01	6495.17
2410.82				
Top Width (ft)	766.17	Top Width (ft)	418.46	83.83
263.87				
Vel Total (ft/s)	2.63	Avg. Vel. (ft/s)	1.66	5.04
1.94				
Max Chl Dpth (ft)	16.64	Hydr. Depth (ft)	5.56	15.36
4.71				
Conv. Total (cfs)	572291.1	Conv. (cfs)	172885.1	291288.0
108118.0				
Length Wtd. (ft)	328.01	Wetted Per. (ft)	419.55	85.70
265.52				
Min Ch El (ft)	253.22	Shear (lb/sq ft)	0.17	0.47
0.15				
Alpha	2.10	Stream Power (lb/ft s)	1074.35	0.00
0.00				
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)	563.01	334.38
397.23				
C & E Loss (ft)	0.01	Cum SA (acres)	107.41	29.73
78.60				

Warning: Divided flow computed for this cross-section.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	273.71	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.16	Wt. n-Val.	0.063	0.040
0.057				
W.S. Elev (ft)	273.55	Reach Len. (ft)	363.66	337.37
261.75				
Crit W.S. (ft)	265.50	Flow Area (sq ft)	4078.43	1596.73
2397.03				
E.G. Slope (ft/ft)	0.000322	Area (sq ft)	4078.43	1596.73
2397.03				
Q Total (cfs)	19382.00	Flow (cfs)	7330.20	7480.00
4571.80				
Top Width (ft)	971.80	Top Width (ft)	528.29	83.83
359.68				
Vel Total (ft/s)	2.40	Avg. Vel. (ft/s)	1.80	4.68
1.91				
Max Chl Dpth (ft)	20.33	Hydr. Depth (ft)	7.72	19.05
6.66				
Conv. Total (cfs)	1080303.0	Conv. (cfs)	408566.4	416915.9
254820.6				
Length Wtd. (ft)	326.34	Wetted Per. (ft)	529.50	85.70
361.45				
Min Ch El (ft)	253.22	Shear (lb/sq ft)	0.15	0.37
0.13				
Alpha	1.83	Stream Power (lb/ft s)	1074.35	0.00
0.00				
Frctn Loss (ft)	0.13	Cum Volume (acre-ft)	814.41	398.53
576.32				
C & E Loss (ft)	0.01	Cum SA (acres)	120.12	29.74
88.32				

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 14578.26

INPUT

Description:

Station Elevation Data num= 329

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	277.73	.21	277.67	5.97	277.11	11.11	276.38	16.29	275.81
16.8	275.7	25.4	275.19	25.85	275.16	26.03	275.15	45.55	273.5

45.67	273.49	46.41	273.45	48.59	273.03	53.93	272.22	55.85	272.68
61.66	272.27	64.23	272.12	69.72	271.77	73.47	271.3	82.62	270.93
84.4	270.82	100.27	269.14	114.06	268.22	117.88	267.87	120.12	267.79
127.75	266.95	130.17	266.73	131.18	266.81	132.83	266.86	133.78	266.77
138.73	266.52	142.84	266.23	145.22	266.04	148.04	265.97	150.37	265.96
153.84	265.7	155.33	265.72	158.54	266.15	163.83	265.91	165.21	265.98
167.79	266.05	172.23	265.94	173.06	265.84	173.8	265.77	177.91	265.64
180.32	265.5	183.13	265.36	187.8	264.84	188.13	264.8	188.72	264.77
191.97	264.65	196.04	264.67	197.44	264.86	198.32	264.84	201.94	264.89
202.35	264.95	202.77	265.03	207.21	264.72	208.41	264.74	213.14	264.78
213.55	264.74	214.15	264.7	217.02	264.18	219.64	263.96	221.23	263.67
222.26	263.5	223.44	263.44	226.37	263.3	228.49	263	232.76	262.81
234.49	262.68	236	262.68	239.21	262.59	241.33	262.55	244.76	262.47
248.23	262.33	252.35	262.4	255.73	262.37	258.02	262.32	258.73	262.34
262.1	262.39	264.78	262.46	266.26	262.57	270.8	262.81	272.83	262.83
276.53	262.84	278.36	262.51	283.18	261.85	289.09	262.19	291.58	262.1
293.91	262.01	299.17	261.7	300.89	261.65	301.82	261.62	303.85	261.62
313.02	261.72	316.73	261.59	321.5	261.42	327.52	261.09	328.96	260.98
330.37	261.01	334.64	260.89	335.84	260.9	341.11	260.82	341.93	260.74
346.08	260.67	352.71	260.67	354.29	260.66	354.78	260.63	364.12	260.21
367.11	260.03	367.81	260.01	369.61	259.97	370.93	259.84	376.56	259.68
377.48	259.74	380.85	259.78	383.21	259.83	383.71	259.82	389.37	260.09
390.54	260.26	391.35	260.24	396.04	260.36	402.64	259.68	405.97	259.36
409.53	258.04	414.96	255.68	417.14	254.74	418.26	254.74	427.58	254.1
430.58	253.7	445.2	252.76	469.78	254.74	471.78	254.74	473.67	255.44
475.58	256.28	476.54	256.46	481.26	257.08	487.83	258.88	488.94	259.21
489.91	259.38	490.76	259.59	490.9	259.62	496.75	260.31	500.8	260.37
502.88	260.28	509.24	260.01	509.41	260.01	509.98	259.99	514.8	259.81
517.11	259.8	520.08	259.86	524.89	259.72	525.34	259.69	529.7	259.29
533.22	259.01	536.43	258.47	537.59	258.12	541	257.68	543.15	257.57
546.19	257.63	549.87	257.52	553.84	257.33	556.68	258.06	558.04	258.21
562.87	258.42	567.78	258.15	568.51	258.09	568.83	258.14	569.41	258.2
576.99	259.58	580.76	259.84	582.88	260.19	586.41	260.03	589.84	259.88
595.62	259.76	596.79	259.72	600.48	259.76	602.98	259.83	604.05	259.75
608.05	259.44	611.45	259.3	613.12	259.13	616.83	258.92	618.61	258.82
618.75	258.81	619.13	258.77	625.94	258.2	629.46	258.38	632.26	258.51
633.44	258.67	640.38	258.83	640.72	258.82	640.79	258.82	641.61	258.79
645.48	258.64	648.09	258.52	651.38	258.7	654.53	258.48	655.35	258.28
656.22	258.26	661.82	258.79	662.67	258.87	662.78	258.89	662.91	258.92
669.43	260.71	671.36	261.11	674.51	261.67	678.65	262.05	691.69	263.79
694.74	263.83	699.17	263.62	702.83	263.3	705.31	263.56	706.87	263.7
707.36	263.76	711.1	264.22	713.2	264.07	717.09	264.28	717.49	264.3
717.79	264.32	720.34	264.52	722.85	264.72	723.59	264.8	724.43	264.83
733.63	265.31	738.74	264.88	739.04	264.88	739.35	264.89	741.56	265.04
746.21	265.36	747.25	265.39	749.52	265.44	752.02	265.59	761.71	266.35
764.33	266.52	768.27	266.5	768.5	266.48	771.56	266.68	776.69	266.93
778.84	267.06	781.74	266.99	783.12	267.05	786.57	267.26	789.74	267.27
792.68	267.37	795.9	267.73	798.25	267.9	803.2	268.14	804.97	268.15
807.07	268.15	808.27	268.08	811.98	268.2	814.37	268.3	821.68	268.88
822.04	268.85	822.66	268.91	824.68	268.73	826.9	268.62	828.08	268.6

833.54	269.05	835.26	269.11	835.9	269.12	838.19	269.17	845.34	268.97
849.17	269.29	852.53	269.35	853.59	269.41	855.44	269.38	860.58	269.49
866.89	269.69	868.14	269.59	870.08	269.44	874.19	269.7	877.35	269.88
880.13	269.73	881.68	269.84	884.66	270.19	888.16	270.06	889.38	270.17
892.37	270.27	897.47	270.27	898.91	270.29	901.68	270.4	903.24	270.48
906.4	270.72	908.56	270.63	909.88	270.82	911.67	271.07	915.85	271.61
918.54	271.72	919.39	271.79	920.96	271.69	923.47	271.56	927.61	271.34
929.84	271.36	932.34	271.42	937.38	271.64	939.68	271.59	943.51	271.9
944.8	272.02	947.77	272.07	958.25	272.43	958.46	272.43	958.7	272.47
964.95	272.5	967.71	272.7	968.66	272.77	968.86	272.77	973.7	273
975.05	273.1	979.16	273.05	979.84	273.13	984.63	273.76	988.97	273.53
989.85	273.55	990.8	273.56	995.42	274.11	998.83	274.19	1000.37	274.35
1001.83	274.44	1004.93	274.79	1008.15	274.9	1010.44	274.93	1012	275.01
1018.25	275.46	1019.25	275.54	1022.94	275.74	1023.56	275.76		

Manning's n Values			num= 9						
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	202.35	.12	405.97	.04	409.53	.04	414.96	.04
469.78	.04	481.26	.04	488.94	.12	907.82	.03		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	405.97	488.94		431.74	374.5		.3	.5

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	261.77	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.24	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	261.54	Reach Len. (ft)	431.74	374.50
152.77				
Crit W.S. (ft)	257.95	Flow Area (sq ft)	99.32	549.26
446.21				
E.G. Slope (ft/ft)	0.001056	Area (sq ft)	99.32	549.26
446.21				
Q Total (cfs)	2671.00	Flow (cfs)	43.36	2305.73
321.92				
Top Width (ft)	355.56	Top Width (ft)	87.77	82.97
184.83				
Vel Total (ft/s)	2.44	Avg. Vel. (ft/s)	0.44	4.20
0.72				
Max Chl Dpth (ft)	8.78	Hydr. Depth (ft)	1.13	6.62
2.41				
Conv. Total (cfs)	82195.0	Conv. (cfs)	1334.2	70954.5
9906.4				
Length Wtd. (ft)	318.56	Wetted Per. (ft)	87.89	84.70
185.86				
Min Ch El (ft)	252.76	Shear (lb/sq ft)	0.07	0.43
0.16				

Alpha	2.57	Stream Power (lb/ft s)	1023.56	0.00
0.00				
Frctn Loss (ft)	0.26	Cum Volume (acre-ft)	142.89	185.37
75.22				
C & E Loss (ft)	0.07	Cum SA (acres)	67.30	29.12
43.05				

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	268.93	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.28	Wt. n-Val.	0.109	0.040
0.120				
W.S. Elev (ft)	268.65	Reach Len. (ft)	431.74	374.50
152.77				
Crit W.S. (ft)	262.72	Flow Area (sq ft)	1643.54	1139.39
2213.55				
E.G. Slope (ft/ft)	0.000686	Area (sq ft)	1643.54	1139.39
2213.55				
Q Total (cfs)	10810.00	Flow (cfs)	1989.88	6272.65
2547.47				
Top Width (ft)	713.57	Top Width (ft)	298.36	82.97
332.24				
Vel Total (ft/s)	2.16	Avg. Vel. (ft/s)	1.21	5.51
1.15				
Max Chl Dpth (ft)	15.89	Hydr. Depth (ft)	5.51	13.73
6.66				
Conv. Total (cfs)	412583.4	Conv. (cfs)	75947.3	239407.1
97229.0				
Length Wtd. (ft)	314.79	Wetted Per. (ft)	298.99	84.70
333.70				
Min Ch El (ft)	252.76	Shear (lb/sq ft)	0.24	0.58
0.28				
Alpha	3.88	Stream Power (lb/ft s)	1023.56	0.00
0.00				
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	467.22	303.11
330.51				
C & E Loss (ft)	0.01	Cum SA (acres)	100.00	29.08
73.31				

Warning: Divided flow computed for this cross-section.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	269.88	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.31	Wt. n-Val.	0.106	0.040
0.120				
W.S. Elev (ft)	269.57	Reach Len. (ft)	431.74	374.50
152.77				
Crit W.S. (ft)	263.38	Flow Area (sq ft)	1924.89	1216.00
2539.69				
E.G. Slope (ft/ft)	0.000714	Area (sq ft)	1924.89	1216.00
2539.69				
Q Total (cfs)	12761.00	Flow (cfs)	2631.07	7127.64
3002.29				
Top Width (ft)	770.88	Top Width (ft)	309.79	82.97
378.11				
Vel Total (ft/s)	2.25	Avg. Vel. (ft/s)	1.37	5.86
1.18				
Max Chl Dpth (ft)	16.81	Hydr. Depth (ft)	6.21	14.66
6.72				
Conv. Total (cfs)	477724.4	Conv. (cfs)	98497.4	266832.4
112394.6				
Length Wtd. (ft)	315.73	Wetted Per. (ft)	310.47	84.70
379.64				
Min Ch El (ft)	252.76	Shear (lb/sq ft)	0.28	0.64
0.30				
Alpha	3.94	Stream Power (lb/ft s)	1023.56	0.00
0.00				
Frctn Loss (ft)	0.23	Cum Volume (acre-ft)	545.27	324.68
385.86				
C & E Loss (ft)	0.00	Cum SA (acres)	104.37	29.08
76.67				

Warning: Divided flow computed for this cross-section.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	273.57	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.26	Wt. n-Val.	0.097	0.040
0.118				
W.S. Elev (ft)	273.31	Reach Len. (ft)	431.74	374.50
152.77				
Crit W.S. (ft)	264.75	Flow Area (sq ft)	3169.97	1525.80
4177.20				

E.G. Slope (ft/ft)	0.000524	Area (sq ft)	3169.97	1525.80
4177.20				
Q Total (cfs)	19382.00	Flow (cfs)	5073.63	8915.27
5393.10				
Top Width (ft)	934.04	Top Width (ft)	358.82	82.97
492.25				
Vel Total (ft/s)	2.18	Avg. Vel. (ft/s)	1.60	5.84
1.29				
Max Chl Dpth (ft)	20.55	Hydr. Depth (ft)	8.83	18.39
8.49				
Conv. Total (cfs)	846793.4	Conv. (cfs)	221665.3	389505.3
235622.8				
Length Wtd. (ft)	293.94	Wetted Per. (ft)	359.77	84.70
494.00				
Min Ch El (ft)	252.76	Shear (lb/sq ft)	0.29	0.59
0.28				
Alpha	3.53	Stream Power (lb/ft s)	1023.56	0.00
0.00				
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)	784.15	386.44
556.57				
C & E Loss (ft)	0.08	Cum SA (acres)	116.42	29.10
85.76				

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 14203.75

INPUT

Description:

Station Elevation Data num= 357

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	284.49	.38	284.45	3.37	284.35	5.35	284.34	8.41	284.41
13.01	284.25	13.37	284.23	15.49	284.1	17.61	283.97	17.96	283.97
22.24	283.96	24.88	283.95	26.95	283.94	30.28	283.97	31.82	283.91
35.2	283.72	37.16	283.73	37.62	283.72	42.16	283.6	48.22	283.49
48.83	283.49	51.41	283.23	52.43	283.14	52.76	283.17	59.52	283.51
62.1	283.39	63.52	283.31	66.63	282.9	67.65	282.89	70.13	282.82
73.69	282.78	77.98	282.7	80.8	282.66	81.24	282.68	82.6	282.64
84.68	282.59	87.66	282.45	87.74	282.45	87.8	282.45	92.86	282.47
96.64	282.73	98.16	282.78	100.26	282.62	104.1	282.34	107.65	282.39
108.66	282.34	110.79	282.21	115.43	282.08	117.45	281.93	126.6	281.93
129.28	282.04	135.12	281.6	135.22	281.59	135.48	281.58	138.44	281.37
140.47	281.24	142.49	281.23	144.32	281.22	148.47	281.18	153	281.16
154.35	281.13	154.94	281.13	157.29	281.19	157.87	281.2	158.03	281.2

164.55	281.27	170.35	280.74	171.3	280.71	175.77	280.37	177.5	280.19
179.75	280.15	184.4	280.15	187.99	280.06	190.93	280.02	193	280.19
193.21	280.2	193.32	280.2	200.17	280.09	202.5	279.87	203.81	279.82
207.15	279.94	208.53	279.9	210.82	279.79	213.08	279.72	214.59	279.82
218.05	280.12	222.63	279.43	222.8	279.41	223.05	279.4	226.99	279.05
228.21	278.95	228.3	278.94	228.39	278.92	231.53	278.61	234.4	278.2
236.07	277.59	238.06	276.68	242.09	275.65	243.51	275.31	245.16	274.91
247.89	274.15	250.05	273.53	252.79	272.68	256.32	271.99	258.26	271.54
262.36	270.18	262.91	270.02	265.59	269.28	269.4	268.32	270.65	267.91
272.67	267.18	277.17	265.68	278	265.44	283.72	263.79	291.24	261.89
294.82	261.53	296.71	261.55	298.08	261.45	303.19	260.98	306.78	260.58
309.44	260.64	310.86	260.66	313.57	260.75	317.17	260.74	318.71	260.76
319.93	260.79	322.73	260.82	325.41	260.78	327.77	260.92	330.24	261.08
333.76	261.16	335.31	261.01	337.77	260.7	338.69	260.71	341.84	260.75
346.95	260.8	348.69	260.87	350.41	260.77	355.91	260.59	361.66	260.32
364.81	260.25	366.29	260.22	367.99	260.27	374.28	260.78	375.88	260.58
378.63	260.9	386.54	260.98	392.53	260.95	394.94	260.67	396.07	260.79
398.8	260.53	400.47	260.5	415.71	260.48	424.71	260.6	431.07	260.3
432.59	260.16	434.81	259.86	445.36	259.45	447.5	259.36	448.11	259.14
448.93	258.85	456.85	256.35	457.21	256.24	462.5	255.6	467.5	253.2
485	252	502.5	252.8	507.5	258.1	533.7	258.15	541.29	259.29
542.46	259.48	542.6	259.48	543.22	259.5	547.19	259.32	549.09	259.4
551.03	259.15	553.17	259.08	556.12	258.91	566.1	257.29	567.91	257.01
568.35	256.9	569.41	256.7	573.72	256.09	578.29	256.26	584.32	256.5
584.9	256.44	594.75	255.87	595.76	255.29	598.65	255.02	600.35	255
607.04	253.97	607.64	253.97	607.77	253.97	628.51	253.94	633.72	253.95
644.57	253.94	648.4	253.94	655.49	253.94	663.02	253.94	666.82	253.94
674.95	253.94	679.06	253.93	691.18	253.93	692.53	254.21	692.96	254.23
696.77	255.56	701.39	257.29	705.91	257.53	707.6	257.58	711.08	257.32
717.11	257.73	720.53	257.76	723.31	257.49	724.19	257.49	727.05	257.4
736.78	257.79	736.95	257.8	737.01	257.8	737.18	257.81	742.71	258.09
744.07	258.04	746.26	258.03	747.5	258.09	748.19	258.13	750.77	258.17
755.66	258.78	762.25	259.4	763.7	259.32	767.02	259.34	771.75	259.25
774.01	259.12	777.26	259.55	777.33	259.55	777.92	259.61	783.37	260.17
785.79	260.21	789.27	260.34	792.01	260.61	793.72	260.67	798.29	261.37
803.35	261.84	804.92	261.79	807.07	261.84	808.5	261.7	818.83	261.81
825.26	261.57	832.4	262.27	834.13	262.38	841.44	262.68	844.79	262.64
845.9	262.56	849.11	262.31	859.03	262.32	862.81	262.5	865.01	262.57
866.27	262.67	879.46	262.92	880.54	262.9	881.71	262.94	882.75	262.99
887.45	263.18	890.47	263.29	898.07	263.87	899.76	264.04	902.59	264.17
907.33	264.12	911.08	264.21	923.83	265.19	925.09	265.19	926.49	265.17
937.79	265.58	939.28	265.75	940.36	265.72	949.54	265.55	949.55	265.55
957.34	265.62	958.63	265.54	960.98	265.79	963.16	265.83	967.64	266.05
970.11	265.94	973.34	266.05	974.02	266.05	974.93	266.15	979.97	266.89
981.74	266.87	992.93	267.9	1001.96	268.1	1004.6	268.15	1009.22	268.54
1012.91	268.75	1025.32	269.55	1031.53	269.5	1038.35	268.93	1041.1	268.82
1042.49	268.89	1047.04	269.15	1050.96	269.38	1055.76	269.43	1058.21	269.7
1061.82	269.88	1066.07	270.14	1067.06	270.15	1074.06	269.9	1074.67	269.9
1075.27	269.95	1086.79	270.9	1093.05	270.64	1097.52	270.44	1101.49	270.57
1101.59	270.57	1101.62	270.57	1104.58	270.44	1105.37	270.35	1109.31	270.35

1114.12	270.7	1114.48	270.74	1114.6	270.75	1114.95	270.73	1118.66	270.76
1121.68	270.95	1124.4	271.16	1126.25	271.18	1127.96	271.23	1129.99	271.24
1132.52	271.24	1136.06	271.37	1139.73	271.66	1141	271.8	1141.67	271.82
1143.59	271.8	1146.95	271.76	1149.65	271.91	1150.71	271.97	1152.22	272.05
1156.01	272.26	1156.96	272.28	1159.99	272.81	1160.82	272.86	1165.15	272.82
1165.9	272.84	1169.11	272.97	1170.83	273.06	1174.37	273.29	1174.72	273.3
1176.84	273.38	1178.07	273.44	1178.28	273.44	1179.54	273.43	1183.6	273.48
1184.31	273.5	1185.24	273.57	1186.91	273.71	1193.67	274.4	1196.77	274.32
1199	274.33	1199.14	274.33						

Manning's n Values			num= 7								
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.12	445.36	.04	456.85	.04	507.5	.04	541.29	.12		
543.22	.12	845.9	.03								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
445.36	541.29	94.32	103.83	103.09		.3	.5

Ineffective Flow			num= 2	
Sta L	Sta R	Elev	Permanent	
0	395	270.87	F	
710	1199.14	272.8	F	

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	261.44	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.09	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	261.35	Reach Len. (ft)	40.00	40.00
40.00				
Crit W.S. (ft)	256.84	Flow Area (sq ft)	52.70	546.24
1004.38				
E.G. Slope (ft/ft)	0.000651	Area (sq ft)	109.49	546.24
1232.71				
Q Total (cfs)	2671.00	Flow (cfs)	17.16	1612.41
1041.43				
Top Width (ft)	499.02	Top Width (ft)	146.21	95.93
256.88				
Vel Total (ft/s)	1.67	Avg. Vel. (ft/s)	0.33	2.95
1.04				
Max Chl Dpth (ft)	9.35	Hydr. Depth (ft)	1.05	5.69
5.95				
Conv. Total (cfs)	104650.1	Conv. (cfs)	672.2	63174.4
40803.5				
Length Wtd. (ft)	40.00	Wetted Per. (ft)	50.42	99.44
169.84				
Min Ch El (ft)	252.00	Shear (lb/sq ft)	0.04	0.22
0.24				
Alpha	2.05	Stream Power (lb/ft s)	1199.14	0.00

0.00				
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	141.85	180.66
72.27				
C & E Loss (ft)	0.19	Cum SA (acres)	66.14	28.35
42.28				

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	268.71	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.26	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	268.44	Reach Len. (ft)	40.00	40.00
40.00				
Crit W.S. (ft)	260.12	Flow Area (sq ft)	409.89	1226.63
2200.97				
E.G. Slope (ft/ft)	0.000681	Area (sq ft)	1278.47	1226.63
3934.04				
Q Total (cfs)	10810.00	Flow (cfs)	535.47	6348.20
3926.33				
Top Width (ft)	739.18	Top Width (ft)	176.45	95.93
466.80				
Vel Total (ft/s)	2.82	Avg. Vel. (ft/s)	1.31	5.18
1.78				
Max Chl Dpth (ft)	16.44	Hydr. Depth (ft)	8.14	12.79
13.05				
Conv. Total (cfs)	414253.5	Conv. (cfs)	20520.0	243271.4
150462.2				
Length Wtd. (ft)	40.00	Wetted Per. (ft)	50.42	99.44
169.84				
Min Ch El (ft)	252.00	Shear (lb/sq ft)	0.35	0.52
0.55				

Alpha 0.00	2.14	Stream Power (lb/ft s)	1199.14	0.00
Frctn Loss (ft) 319.73		Cum Volume (acre-ft)	452.74	292.94
C & E Loss (ft) 71.90		Cum SA (acres)	97.65	28.31

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft) Right OB	269.65	Element	Left OB	Channel
Vel Head (ft) 0.120	0.32	Wt. n-Val.	0.120	0.040
W.S. Elev (ft) 40.00	269.33	Reach Len. (ft)	40.00	40.00
Crit W.S. (ft) 2350.17	260.73	Flow Area (sq ft)	454.42	1311.47
E.G. Slope (ft/ft) 4357.47	0.000756	Area (sq ft)	1436.08	1311.47
Q Total (cfs) 4614.14	12761.00	Flow (cfs)	669.98	7476.88
Top Width (ft) 497.10	772.98	Top Width (ft)	179.95	95.93
Vel Total (ft/s) 1.96	3.10	Avg. Vel. (ft/s)	1.47	5.70
Max Chl Dpth (ft) 13.93	17.33	Hydr. Depth (ft)	9.02	13.67
Conv. Total (cfs) 167830.2	464155.8	Conv. (cfs)	24369.2	271956.4
Length Wtd. (ft) 169.84	40.00	Wetted Per. (ft)	50.42	99.44
Min Ch El (ft) 0.65	252.00	Shear (lb/sq ft)	0.43	0.62
Alpha 0.00	2.14	Stream Power (lb/ft s)	1199.14	0.00
Frctn Loss (ft) 373.77		Cum Volume (acre-ft)	528.61	313.82
C & E Loss (ft)		Cum SA (acres)	101.95	28.31

75.14

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	273.39	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.11	Wt. n-Val.	0.120	0.040
0.082				
W.S. Elev (ft)	273.28	Reach Len. (ft)	40.00	40.00
40.00				
Crit W.S. (ft)	262.45	Flow Area (sq ft)	2174.67	1690.53
6646.55				
E.G. Slope (ft/ft)	0.000258	Area (sq ft)	2174.67	1690.53
6646.55				
Q Total (cfs)	19382.00	Flow (cfs)	2150.79	6674.92
10556.29				
Top Width (ft)	923.36	Top Width (ft)	194.50	95.93
632.93				
Vel Total (ft/s)	1.84	Avg. Vel. (ft/s)	0.99	3.95
1.59				
Max Chl Dpth (ft)	21.28	Hydr. Depth (ft)	11.18	17.62
10.50				
Conv. Total (cfs)	1205662.0	Conv. (cfs)	133790.1	415215.2
656656.3				
Length Wtd. (ft)	40.00	Wetted Per. (ft)	196.37	99.44
634.96				
Min Ch El (ft)	252.00	Shear (lb/sq ft)	0.18	0.27
0.17				
Alpha	2.02	Stream Power (lb/ft s)	1199.14	0.00
0.00				
Frctn Loss (ft)		Cum Volume (acre-ft)	757.67	372.62
537.59				
C & E Loss (ft)		Cum SA (acres)	113.68	28.33
83.79				

Warning: When the Manning's n value for the channel was composited, the computed n

value was larger [smaller] than the
largest [smallest] user entered n value. The n value has been set to the
largest [smallest] entered value. The user may
wish to examine this cross section and enter a single n value for the
entire channel.

Note: Multiple critical depths were found at this location. The critical depth
with the lowest, valid, water surface was used.

BRIDGE

RIVER: W Br Neshminy

REACH: 1

RS: 14145.82

INPUT

Description: WBNES_03L - SE of Railroad Ave

Distance from Upstream XS = 40

Deck/Roadway Width = 13.3

Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num= 302

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
0	271.1				1.55	271.08				2.49	271.1			
5.86	271.07				10.98	271.22				12.66	271.19			
15.04	271.16				16.58	270.92				17.57	270.98			
21.47	270.96				22.59	271.08				25.81	271.02			
27.46	270.93				35.96	271.18				36.53	271.2			
36.58	271.2				42.18	271.32				42.27	271.33			
42.67	271.34				48.07	271.47				51.47	271.49			
52.61	271.49				58.5	271.52				60.39	271.52			
65.86	271.54				67.46	271.51				68.88	271.52			
73.1	271.55				75.18	271.55				78.89	271.54			
84.62	271.53				89.07	271.52				92.81	271.54			
93.62	271.54				98.13	271.5				102.04	271.59			
104.7	271.61				106.4	271.62				113.47	271.81			
114.81	271.82				115.83	271.74				118.24	271.73			
120.14	271.79				128.99	271.76				130.06	271.74			
139.61	271.71				139.83	271.71				139.83	271.71			
139.84	271.71				147.18	271.66				147.75	271.65			
157.82	271.58				159.23	271.69				163.56	271.69			
165.65	271.5				168.72	271.5				169.31	271.66			
170.97	271.44				178.32	271.42				179.83	272.04			
185.64	272				186.67	271.75				188.36	271.36			
194.55	271.27				195.68	271.23				196.92	271.21			
201.57	271.34				202.33	271.33				204.62	271.56			
208.05	271.57				210.27	271.37				215.42	271.37			
219.27	271.78				221.67	271.22				228.24	271.21			
229.71	271.32				232.06	271.34				235.03	271.5			
235.63	271.5				239.27	271.54				243.09	271.43			
244.09	271.26				248.53	271.3				250.4	271.43			

252.09	271.36		253.26	271.32	257.79	271.34	
264.2	271.4		267.13	271.07	268.48	271.01	
275	271.01		277.65	271.24	278.32	271.24	
282.82	271.24		285.62	271.5	289.93	271.5	
292.88	271.17		296.61	271.14	300.73	271.05	
302.52	271.34		304.33	271.32	308.05	271.14	
314.32	271.08		317.28	270.74	319.27	270.87	
360.9	271.08		364.46	271.36	366.1	271.21	
372.65	271.24		373.19	271.26	373.96	271.26	
377.28	271.46		381.6	271.46	383.25	271.31	
384.62	271.41		389.85	271.43	392.16	271.47	
392.94	271.34		394.17	271.44	401.96	271.61	
404.75	271.67		406.02	271.71	414.21	271.88	
414.67	271.85		418.03	271.84	418.43	271.85	
418.85	271.88		422.63	271.86	435	272.8	267
579.9	272.8	267	601.73	272.78	604.55	272.78	
613.72	272.83		620.05	272.87	623.07	272.86	
624.56	272.91		628.74	272.89	629.78	272.84	
631.53	272.87		636.24	272.84	639.6	272.83	
641.54	272.85		645.95	272.83	648.33	272.87	
654.29	273.02		655.55	273	656.79	272.98	
661.24	273		662.49	273.08	665.64	273.1	
667.13	273.06		669.15	273.09	670.94	273.12	
680	273.18		681.69	273.21	686.86	273.3	
688.2	273.31		689.04	273.32	695.48	273.43	
696.29	273.44		700.01	273.51	701.45	273.52	
702.2	273.53		702.98	273.55	705.2	273.59	
705.97	273.6		706.6	273.6	711.63	273.55	
712.65	273.56		713.57	273.57	720.35	273.51	
721.22	273.52		722.33	273.53	730.48	273.44	
731.51	273.45		735.01	273.28	735.7	273.29	
737.37	273.53		772.3	273.66	773.42	273.64	
780	274.16		780.47	274.13	781.33	274.13	
781.61	274.15		783.72	274.18	789.18	274.24	
789.66	274.23		790.27	274.24	790.85	274.31	
794.52	274.35		795.23	274.32	800.28	274.38	
800.98	274.37		801.27	274.39	805.47	274.44	
806.25	274.43		812.38	274.45	812.85	274.46	
822.97	274.5		823.33	274.5	823.56	274.5	
830.99	274.53		831.16	274.53	834.36	274.45	
834.47	274.45		840.98	274.62	841.15	274.62	
848.07	274.8		848.4	274.81	859.17	275.09	
859.48	275.09		863.2	274.99	863.53	275	
874.88	274.69		884.12	274.45	884.49	274.45	
884.6	274.48		886.23	274.53	891.13	274.68	
891.29	274.66		891.48	274.66	900.54	274.95	
900.72	274.95		909.3	275.22	909.4	275.22	
909.5	275.22		911.71	275.24	918.34	275.31	
918.51	275.32		924.14	275.37	924.41	275.36	
924.51	275.36		934.39	275.45	934.45	275.45	

934.51	275.45	938.15	275.48	938.19	275.48
938.24	275.49	944.45	275.54	944.58	275.53
944.64	275.53	953.27	275.6	953.33	275.6
953.38	275.62	959.35	275.66	959.52	275.65
959.74	275.68	968.03	275.92	968.05	275.91
975.35	276.13	975.42	276.13	975.48	276.13
984.48	276.4	984.53	276.4	987.56	276.38
987.61	276.38	994.28	276.33	994.34	276.33
1002.15	276.27	1002.22	276.27	1002.28	276.27
1002.32	276.27	1009.52	276.22	1009.54	276.22
1013.69	276.39	1014.84	276.44	1014.85	276.44
1021.4	276.72	1023.29	276.73	1023.34	276.74
1030.95	276.77	1031.06	276.76	1031.13	276.77
1031.26	276.77	1039.43	276.81	1046.08	276.84
1046.48	276.85	1048.6	276.87	1048.75	276.87
1056.42	276.93	1056.61	276.95	1064.99	277.02
1065.53	276.97	1065.92	277.04	1071.1	277.08
1071.47	277.01	1072.83	277.03	1073.19	277.05
1078.7	277.12	1079.2	277.11	1089.87	277.24
1090.11	277.3	1090.66	277.34	1096.23	277.41
1096.58	277.29	1104.22	277.41	1104.48	277.45
1105.31	277.56	1110.88	277.66	1111.67	277.57
1115.24	277.63	1199	277.63		

Upstream Bridge Cross Section Data

Station Elevation Data				num=	347				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	284.49	.38	284.45	3.37	284.35	5.35	284.34	8.41	284.41
13.01	284.25	13.37	284.23	15.49	284.1	17.61	283.97	17.96	283.97
22.24	283.96	24.88	283.95	26.95	283.94	30.28	283.97	31.82	283.91
35.2	283.72	37.16	283.73	37.62	283.72	42.16	283.6	48.22	283.49
48.83	283.49	51.41	283.23	52.43	283.14	52.76	283.17	59.52	283.51
62.1	283.39	63.52	283.31	66.63	282.9	67.65	282.89	70.13	282.82
73.69	282.78	77.98	282.7	80.8	282.66	81.24	282.68	82.6	282.64
84.68	282.59	87.66	282.45	87.74	282.45	87.8	282.45	92.86	282.47
96.64	282.73	98.16	282.78	100.26	282.62	104.1	282.34	107.65	282.39
108.66	282.34	110.79	282.21	115.43	282.08	117.45	281.93	126.6	281.93
129.28	282.04	135.12	281.6	135.22	281.59	135.48	281.58	138.44	281.37
140.47	281.24	142.49	281.23	144.32	281.22	148.47	281.18	153	281.16
154.35	281.13	154.94	281.13	157.29	281.19	157.87	281.2	158.03	281.2
164.55	281.27	170.35	280.74	171.3	280.71	175.77	280.37	177.5	280.19
179.75	280.15	184.4	280.15	187.99	280.06	190.93	280.02	193	280.19
193.21	280.2	193.32	280.2	200.17	280.09	202.5	279.87	203.81	279.82
207.15	279.94	208.53	279.9	210.82	279.79	213.08	279.72	214.59	279.82
218.05	280.12	222.63	279.43	222.8	279.41	223.05	279.4	226.99	279.05
228.21	278.95	228.3	278.94	228.39	278.92	231.53	278.61	234.4	278.2
236.07	277.59	238.06	276.68	242.09	275.65	243.51	275.31	245.16	274.91
247.89	274.15	250.05	273.53	252.79	272.68	256.32	271.99	258.26	271.54
262.36	270.18	262.91	270.02	265.59	269.28	269.4	268.32	270.65	267.91
272.67	267.18	277.17	265.68	278	265.44	283.72	263.79	291.24	261.89

294.82	261.53	296.71	261.55	298.08	261.45	303.19	260.98	306.78	260.58
309.44	260.64	310.86	260.66	313.57	260.75	317.17	260.74	318.71	260.76
319.93	260.79	322.73	260.82	325.41	260.78	327.77	260.92	330.24	261.08
333.76	261.16	335.31	261.01	337.77	260.7	338.69	260.71	341.84	260.75
346.95	260.8	348.69	260.87	350.41	260.77	355.91	260.59	361.66	260.32
364.81	260.25	366.29	260.22	367.99	260.27	374.28	260.78	375.88	260.58
378.63	260.9	386.54	260.98	392.53	260.95	394.94	260.67	396.07	260.79
398.8	260.53	400.47	260.5	415.71	260.48	424.71	260.6	431.07	260.3
432.59	260.16	434.81	259.86	445.36	259.45	447.5	259.36	448.11	259.14
448.93	258.85	456.85	256.35	457.21	256.24	462.5	255.6	467.5	253.2
485	252.7	502.5	252.8	507.5	258.1	533.7	258.15	541.29	259.29
542.46	259.48	542.6	259.48	543.22	259.5	547.19	259.32	549.09	259.4
551.03	259.15	553.17	259.08	556.12	258.91	566.1	257.29	567.91	257.01
568.35	256.9	569.41	256.7	573.72	256.09	578.29	256.26	584.32	256.5
584.9	256.44	594.75	255.87	595.76	255.29	598.65	255.02	600.35	255
607.04	253.97	607.64	253.97	607.77	253.97	628.51	253.94	633.72	253.95
644.57	253.94	648.4	253.94	655.49	253.94	663.02	253.94	666.82	253.94
674.95	253.94	679.06	253.93	691.18	253.93	692.53	254.21	692.96	254.23
696.77	255.56	701.39	257.29	705.91	257.53	707.6	257.58	711.08	257.32
717.11	257.73	720.53	257.76	723.31	257.49	724.19	257.49	727.05	257.4
736.78	257.79	736.95	257.8	737.01	257.8	737.18	257.81	771.75	259.25
774.01	259.12	777.26	259.55	777.33	259.55	777.92	259.61	783.37	260.17
785.79	260.21	789.27	260.34	792.01	260.61	793.72	260.67	798.29	261.37
803.35	261.84	804.92	261.79	807.07	261.84	808.5	261.7	818.83	261.81
825.26	261.57	832.4	262.27	834.13	262.38	841.44	262.68	844.79	262.64
845.9	262.56	849.11	262.31	859.03	262.32	862.81	262.5	865.01	262.57
866.27	262.67	879.46	262.92	880.54	262.9	881.71	262.94	882.75	262.99
887.45	263.18	890.47	263.29	898.07	263.87	899.76	264.04	902.59	264.17
907.33	264.12	911.08	264.21	923.83	265.19	925.09	265.19	926.49	265.17
937.79	265.58	939.28	265.75	940.36	265.72	949.54	265.55	949.55	265.55
957.34	265.62	958.63	265.54	960.98	265.79	963.16	265.83	967.64	266.05
970.11	265.94	973.34	266.05	974.02	266.05	974.93	266.15	979.97	266.89
981.74	266.87	992.93	267.9	1001.96	268.1	1004.6	268.15	1009.22	268.54
1012.91	268.75	1025.32	269.55	1031.53	269.5	1038.35	268.93	1041.1	268.82
1042.49	268.89	1047.04	269.15	1050.96	269.38	1055.76	269.43	1058.21	269.7
1061.82	269.88	1066.07	270.14	1067.06	270.15	1074.06	269.9	1074.67	269.9
1075.27	269.95	1086.79	270.9	1093.05	270.64	1097.52	270.44	1101.49	270.57
1101.59	270.57	1101.62	270.57	1104.58	270.44	1105.37	270.35	1109.31	270.35
1114.12	270.7	1114.48	270.74	1114.6	270.75	1114.95	270.73	1118.66	270.76
1121.68	270.95	1124.4	271.16	1126.25	271.18	1127.96	271.23	1129.99	271.24
1132.52	271.24	1136.06	271.37	1139.73	271.66	1141	271.8	1141.67	271.82
1143.59	271.8	1146.95	271.76	1149.65	271.91	1150.71	271.97	1152.22	272.05
1156.01	272.26	1156.96	272.28	1159.99	272.81	1160.82	272.86	1165.15	272.82
1165.9	272.84	1169.11	272.97	1170.83	273.06	1174.37	273.29	1174.72	273.3
1176.84	273.38	1178.07	273.44	1178.28	273.44	1179.54	273.43	1183.6	273.48
1184.31	273.5	1185.24	273.57	1186.91	273.71	1193.67	274.4	1196.77	274.32
1199	274.33	1199.14	274.33						

Manning's	n Values		num=	7					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val

0	.12	445.36	.04	456.85	.04	507.5	.04	541.29	.04
543.22	.12	845.9	.03						

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	445.36	541.29		.3	.5

Ineffective Flow	num=	2
Sta L	Sta R	Elev
0	395	270.87
710	1199.14	272.8
		F
		F

Downstream Deck/Roadway Coordinates

num=	302													
Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
0	271.1				1.55	271.08				2.49	271.1			
5.86	271.07				10.98	271.22				12.66	271.19			
15.04	271.16				16.58	270.92				17.57	270.98			
21.47	270.96				22.59	271.08				25.81	271.02			
27.46	270.93				35.96	271.18				36.53	271.2			
36.58	271.2				42.18	271.32				42.27	271.33			
42.67	271.34				48.07	271.47				51.47	271.49			
52.61	271.49				58.5	271.52				60.39	271.52			
65.86	271.54				67.46	271.51				68.88	271.52			
73.1	271.55				75.18	271.55				78.89	271.54			
84.62	271.53				89.07	271.52				92.81	271.54			
93.62	271.54				98.13	271.5				102.04	271.59			
104.7	271.61				106.4	271.62				113.47	271.81			
114.81	271.82				115.83	271.74				118.24	271.73			
120.14	271.79				128.99	271.76				130.06	271.74			
139.61	271.71				139.83	271.71				139.83	271.71			
139.84	271.71				147.18	271.66				147.75	271.65			
157.82	271.58				159.23	271.69				163.56	271.69			
165.65	271.5				168.72	271.5				169.31	271.66			
170.97	271.44				178.32	271.42				179.83	272.04			
185.64	272				186.67	271.75				188.36	271.36			
194.55	271.27				195.68	271.23				196.92	271.21			
201.57	271.34				202.33	271.33				204.62	271.56			
208.05	271.57				210.27	271.37				215.42	271.37			
219.27	271.78				221.67	271.22				228.24	271.21			
229.71	271.32				232.06	271.34				235.03	271.5			
235.63	271.5				239.27	271.54				243.09	271.43			
244.09	271.26				248.53	271.3				250.4	271.43			
252.09	271.36				253.26	271.32				257.79	271.34			
264.2	271.4				267.13	271.07				268.48	271.01			
275	271.01				277.65	271.24				278.32	271.24			
282.82	271.24				285.62	271.5				289.93	271.5			
292.88	271.17				296.61	271.14				300.73	271.05			
302.52	271.34				304.33	271.32				308.05	271.14			
314.32	271.08				317.28	270.74				319.27	270.87			
360.9	271.08				364.46	271.36				366.1	271.21			
372.65	271.24				373.19	271.26				373.96	271.26			

377.28	271.46		381.6	271.46	383.25	271.31	
384.62	271.41		389.85	271.43	392.16	271.47	
392.94	271.34		394.17	271.44	401.96	271.61	
404.75	271.67		406.02	271.71	414.21	271.88	
414.67	271.85		418.03	271.84	418.43	271.85	
418.85	271.88		422.63	271.86	435	272.8	267
579.9	272.8	267	601.73	272.78	604.55	272.78	
613.72	272.83		620.05	272.87	623.07	272.86	
624.56	272.91		628.74	272.89	629.78	272.84	
631.53	272.87		636.24	272.84	639.6	272.83	
641.54	272.85		645.95	272.83	648.33	272.87	
654.29	273.02		655.55	273	656.79	272.98	
661.24	273		662.49	273.08	665.64	273.1	
667.13	273.06		669.15	273.09	670.94	273.12	
680	273.18		681.69	273.21	686.86	273.3	
688.2	273.31		689.04	273.32	695.48	273.43	
696.29	273.44		700.01	273.51	701.45	273.52	
702.2	273.53		702.98	273.55	705.2	273.59	
705.97	273.6		706.6	273.6	711.63	273.55	
712.65	273.56		713.57	273.57	720.35	273.51	
721.22	273.52		722.33	273.53	730.48	273.44	
731.51	273.45		735.01	273.28	735.7	273.29	
737.37	273.53		772.3	273.66	773.42	273.64	
780	274.16		780.47	274.13	781.33	274.13	
781.61	274.15		783.72	274.18	789.18	274.24	
789.66	274.23		790.27	274.24	790.85	274.31	
794.52	274.35		795.23	274.32	800.28	274.38	
800.98	274.37		801.27	274.39	805.47	274.44	
806.25	274.43		812.38	274.45	812.85	274.46	
822.97	274.5		823.33	274.5	823.56	274.5	
830.99	274.53		831.16	274.53	834.36	274.45	
834.47	274.45		840.98	274.62	841.15	274.62	
848.07	274.8		848.4	274.81	859.17	275.09	
859.48	275.09		863.2	274.99	863.53	275	
874.88	274.69		884.12	274.45	884.49	274.45	
884.6	274.48		886.23	274.53	891.13	274.68	
891.29	274.66		891.48	274.66	900.54	274.95	
900.72	274.95		909.3	275.22	909.4	275.22	
909.5	275.22		911.71	275.24	918.34	275.31	
918.51	275.32		924.14	275.37	924.41	275.36	
924.51	275.36		934.39	275.45	934.45	275.45	
934.51	275.45		938.15	275.48	938.19	275.48	
938.24	275.49		944.45	275.54	944.58	275.53	
944.64	275.53		953.27	275.6	953.33	275.6	
953.38	275.62		959.35	275.66	959.52	275.65	
959.74	275.68		968.03	275.92	968.05	275.91	
975.35	276.13		975.42	276.13	975.48	276.13	
984.48	276.4		984.53	276.4	987.56	276.38	
987.61	276.38		994.28	276.33	994.34	276.33	
1002.15	276.27		1002.22	276.27	1002.28	276.27	

1002.32	276.27	1009.52	276.22	1009.54	276.22
1013.69	276.39	1014.84	276.44	1014.85	276.44
1021.4	276.72	1023.29	276.73	1023.34	276.74
1030.95	276.77	1031.06	276.76	1031.13	276.77
1031.26	276.77	1039.43	276.81	1046.08	276.84
1046.48	276.85	1048.6	276.87	1048.75	276.87
1056.42	276.93	1056.61	276.95	1064.99	277.02
1065.53	276.97	1065.92	277.04	1071.1	277.08
1071.47	277.01	1072.83	277.03	1073.19	277.05
1078.7	277.12	1079.2	277.11	1089.87	277.24
1090.11	277.3	1090.66	277.34	1096.23	277.41
1096.58	277.29	1104.22	277.41	1104.48	277.45
1105.31	277.56	1110.88	277.66	1111.67	277.57
1115.24	277.63	1199	277.63		

Downstream Bridge Cross Section Data

Station	Elevation	Data	num=	285					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	275.29	4.5	275.01	10.68	274.97	12.21	274.98	12.76	274.98
16.23	275.43	21.73	275.58	27.97	275.74	34.56	275.52	36.71	275.59
40.39	275.66	47.4	275.71	51.38	275.79	59.95	276.26	61.85	276.02
65.61	276.18	77.56	276.17	82.09	276.62	84.03	276.59	90.85	276.45
91.32	276.46	91.47	276.46	97.44	276.22	101.66	276.13	102.31	276.21
105.03	276.21	106.63	276.31	107.88	276.26	109.62	276.26	110.85	276.27
116.36	276.45	116.37	276.45	121.57	276.48	124.76	276.46	126.86	276.59
130.38	276.57	131.48	276.49	133.16	276.46	135.26	276.57	138.77	276.59
140.15	276.69	141.56	276.72	143.86	276.79	147.23	276.7	148.1	276.71
150.03	276.91	151.61	277.06	155.64	277.17	156.06	277.17	161.92	277.39
164.14	277.54	166.65	277.44	166.76	277.44	167.17	277.45	172.47	277.63
172.89	277.65	173.71	277.63	180.81	277.67	181.67	277.56	183.56	277.26
188.68	277.29	189.22	277.31	189.43	277.32	191.94	277.25	196.42	277.17
197.55	277.02	200.08	276.92	205.27	276.67	205.75	276.62	212.45	275.63
213.17	275.44	213.96	275.3	216.1	274.64	220.86	273.19	222.18	272.81
222.51	272.68	225.45	271.77	228.24	270.73	229.67	270.14	230.05	270
230.43	269.8	232.7	268.47	236.08	267.65	238.14	267	240.04	265.88
240.7	265.57	244.55	263.62	246.08	263.13	251.53	261.37	252.87	260.95
254.33	260.71	255.9	260.29	258.87	259.83	261.14	259.79	267.15	259.67
268.45	259.71	271.02	259.65	273.21	259.43	273.85	259.38	277.59	259.73
279.52	259.73	280.77	259.58	282.23	259.44	284.68	259.45	287.91	259.67
289.61	259.58	290.67	259.63	294.2	259.95	299.06	259.89	299.16	259.9
299.43	259.88	305.86	259.91	307.53	259.95	308.45	260.02	317.5	260.93
329.3	261.89	332.52	261.97	342.51	260.61	347	260.39	348.84	259.84
350.59	259.85	357.13	259.75	358.4	259.77	362.97	259.92	370.19	259.71
371.44	259.69	373.11	259.67	381.03	259.6	381.76	259.6	387.65	259.71
389.13	259.74	389.55	259.72	389.71	259.72	397.34	259.55	401.42	259.39
405.01	259.62	407.46	259.72	410.19	260.04	412.49	259.83	415.61	259.63
416.08	259.61	417.31	259.53	418.97	259.43	423.94	259.23	424.6	259.19
425.09	259.08	426.76	258.69	427.31	258.64	431.85	258.01	432.68	257.8
434.66	257.08	436.24	256.44	437.16	256.25	438.01	255.88	462.5	255.6
467.5	253.2	485	253.2	502.5	253.2	504.67	255.71	507.5	258.1

584.75	258.83	586.1	259	593.7	259.95	596.68	259.99	597.19	260.09
599.4	260.15	601.99	260.24	602.46	260.26	607.56	260.5	611.91	260.66
614.57	260.71	618.04	261.13	627.12	261.47	629.87	261.54	631.64	261.58
635.17	261.59	638.54	262.11	641.59	262.08	643.72	261.83	647.99	261.74
650.59	261.73	652.19	261.7	663.93	261.43	664.33	261.44	669.86	261.29
675.31	261.24	675.81	261.21	695.83	261.5	705.7	261.4	717.16	261.98
731.33	263.16	733.01	263.22	734.18	263.29	737.93	263.33	748.3	263.7
751.94	263.35	777.09	262.11	777.9	262.09	789.08	262.23	790.17	262.18
791.27	262.23	797.06	262.52	799.39	262.67	799.61	262.64	805.98	262.76
813.07	262.5	813.69	262.48	816.96	262.59	824.59	262.75	826.93	262.91
830.46	263.14	833.65	263.26	834.71	263.31	839.69	263.51	839.83	263.52
847.35	263.96	848.95	264.02	857.59	264.12	857.71	264.13	858.02	264.15
862.56	264.58	874.74	265	875.89	265.05	892.61	265.02	894.92	265.31
902.05	265.53	906.41	266.15	907.9	266.15	914.38	265.87	917.2	266.37
919.32	266.81	923.57	268.91	926.79	269.56	935.42	268.8	938.01	269.11
939.88	269.48	949.55	268.77	951.9	268.64	957.79	269.3	960.51	269.66
968.9	268.59	973.23	269.12	982.89	268.06	984.16	268.01	986.89	268.18
990.24	268.24	993.3	268.28	994.27	268.42	1000.67	268.5	1005.56	269.02
1010.91	271.05	1013.91	270.99	1025.21	272.44	1027.75	272.85	1028.17	272.83
1029.23	272.85	1043.22	272.52	1053.52	270.59	1056.29	270.52	1063.15	270.74
1068.46	270.91	1069.1	270.92	1069.68	270.97	1077.2	271.35	1077.38	271.38
1085.65	271.99	1086.15	271.98	1086.3	272	1088.89	271.97	1096.3	272.17
1097.24	272.31	1100.6	272.01	1104.61	272.37	1116.06	273.19	1117.04	273.23
1118.56	273.34	1119.61	273.33	1126.4	274.11	1131.41	274.28	1134.43	274.57
1138.64	274.55	1142.11	274.81	1145.69	275.11	1147.58	275.15	1151.37	275.03

Manning's n Values			num=	7					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	109.62	.12	424.6	.12	431.85	.04	432.68	.04
507.5	.045	584.75	.03						

Bank Sta: Left	Right	Coeff	Contr.	Expan.
432.68	507.5		.3	.5

Ineffective Flow	num=	2
Sta L	Sta R	Elev
0	400	267.76
615	1151.37	267.76
		Permanent
		F
		F

Upstream Embankment side slope	=	0 horiz. to 1.0 vertical
Downstream Embankment side slope	=	0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow	=	.98
Elevation at which weir flow begins	=	
Energy head used in spillway design	=	
Spillway height used in design	=	
Weir crest shape	=	Broad Crested

Number of Piers = 3

Pier Data

Pier Station	Upstream=	467	Downstream=	467

Upstream	num=	2		
Width	Elev	Width	Elev	
7	252.7	7	267	

Downstream	num=	2		
Width	Elev	Width	Elev	
7	253.2	7	267	

Pier Data

Pier Station	Upstream=	501.9	Downstream=	501.9

Upstream	num=	2		
Width	Elev	Width	Elev	
7	252.7	7	267	

Downstream	num=	2		
Width	Elev	Width	Elev	
7	253.2	7	267	

Pier Data

Pier Station	Upstream=	547.9	Downstream=	547.9

Upstream	num=	2		
Width	Elev	Width	Elev	
7	252.7	7	267	

Downstream	num=	2		
Width	Elev	Width	Elev	
7	253.2	7	267	

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Momentum Cd = 1.33

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Pressure and Weir flow

Submerged Inlet Cd =

Submerged Inlet + Outlet Cd = .8

Max Low Cord =

Additional Bridge Parameters

Add Friction component to Momentum

Do not add Weight component to Momentum

Class B flow critical depth computations use critical depth

inside the bridge at the upstream end

Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT Profile #10%

E.G. US. (ft)	261.44	Element	Inside BR US
Inside BR DS			

W.S. US. (ft)	261.35	E.G. Elev (ft)	261.19
261.03			
Q Total (cfs)	2671.00	W.S. Elev (ft)	260.47
260.47			
Q Bridge (cfs)	2671.00	Crit W.S. (ft)	259.28
259.12			
Q Weir (cfs)		Max Chl Dpth (ft)	7.77
7.27			
Weir Sta Lft (ft)		Vel Total (ft/s)	5.93
5.61			
Weir Sta Rgt (ft)		Flow Area (sq ft)	450.51
475.73			
Weir Submerg		Froude # Chl	0.43
0.39			
Weir Max Depth (ft)		Specif Force (cu ft)	1726.59
1687.15			
Min El Weir Flow (ft)	270.88	Hydr Depth (ft)	3.63
3.83			
Min El Prs (ft)	267.00	W.P. Total (ft)	158.18
158.26			
Delta EG (ft)	0.66	Conv. Total (cfs)	30864.9
38472.6			
Delta WS (ft)	0.94	Top Width (ft)	124.08
124.08			
BR Open Area (sq ft)	1260.70	Frctn Loss (ft)	0.08
0.15			
BR Open Vel (ft/s)	5.93	C & E Loss (ft)	0.08
0.10			
Coef of Q		Shear Total (lb/sq ft)	1.33
0.90			
Br Sel Method	Energy only	Power Total (lb/ft s)	0.00
0.00			

Warning: For the final momentum answer at the bridge, the upstream energy was computed lower than the downstream energy.

This is not physically possible, the momentum answer has been disregarded.

Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

BRIDGE OUTPUT Profile #2%

E.G. US. (ft)	268.71	Element	Inside BR US
Inside BR DS			
W.S. US. (ft)	268.44	E.G. Elev (ft)	268.71
266.32			
Q Total (cfs)	10810.00	W.S. Elev (ft)	267.00
265.59			
Q Bridge (cfs)	10810.00	Crit W.S. (ft)	263.68
263.06			
Q Weir (cfs)		Max Chl Dpth (ft)	14.30
12.39			
Weir Sta Lft (ft)		Vel Total (ft/s)	8.57
9.73			
Weir Sta Rgt (ft)		Flow Area (sq ft)	1260.70
1110.87			
Weir Submerg		Froude # Chl	0.47
0.49			
Weir Max Depth (ft)		Specif Force (cu ft)	10083.79
8542.11			
Min El Weir Flow (ft)	270.88	Hydr Depth (ft)	635546.10
8.96			
Min El Prs (ft)	267.00	W.P. Total (ft)	334.30
199.23			
Delta EG (ft)	2.39	Conv. Total (cfs)	95670.4
124339.7			
Delta WS (ft)	2.86	Top Width (ft)	
123.94			
BR Open Area (sq ft)	1260.70	Frctn Loss (ft)	
BR Open Vel (ft/s)	8.57	C & E Loss (ft)	
Coef of Q		Shear Total (lb/sq ft)	3.01
2.63			
Br Sel Method	Press Only	Power Total (lb/ft s)	0.00
0.00			

Warning: For the final momentum answer at the bridge, the upstream energy was computed lower than the downstream energy.

This is not physically possible, the momentum answer has been disregarded.

Note: Momentum answer is not valid if the water surface is above the low chord or

if there is weir flow. The momentum
answer has been disregarded.

Note: The downstream water surface is below the minimum elevation for pressure
flow. The sluice gate equations were used
for pressure flow.

Note: Multiple critical depths were found at this location. The critical depth
with the lowest, valid, water surface was used.

Note: Multiple critical depths were found at this location. The critical depth
with the lowest, valid, water surface was used.

BRIDGE OUTPUT Profile #1%

E.G. US. (ft)	269.65	Element	Inside BR US
Inside BR DS			
W.S. US. (ft)	269.33	E.G. Elev (ft)	269.65
267.28			
Q Total (cfs)	12761.00	W.S. Elev (ft)	267.00
266.45			
Q Bridge (cfs)	12761.00	Crit W.S. (ft)	264.48
263.75			
Q Weir (cfs)		Max Chl Dpth (ft)	14.30
13.25			
Weir Sta Lft (ft)		Vel Total (ft/s)	10.12
10.48			
Weir Sta Rgt (ft)		Flow Area (sq ft)	1260.70
1217.65			
Weir Submerg		Froude # Chl	0.56
0.51			
Weir Max Depth (ft)		Specif Force (cu ft)	11390.73
10428.17			
Min El Weir Flow (ft)	270.88	Hydr Depth (ft)	635546.10
9.83			
Min El Prs (ft)	267.00	W.P. Total (ft)	334.30
206.12			
Delta EG (ft)	2.37	Conv. Total (cfs)	95670.4
141401.1			
Delta WS (ft)	2.88	Top Width (ft)	
123.91			
BR Open Area (sq ft)	1260.70	Frctn Loss (ft)	
BR Open Vel (ft/s)	10.12	C & E Loss (ft)	
Coef of Q		Shear Total (lb/sq ft)	4.19
3.00			
Br Sel Method	Press Only	Power Total (lb/ft s)	0.00
0.00			

Warning: For the final momentum answer at the bridge, the upstream energy was computed lower than the downstream energy.

This is not physically possible, the momentum answer has been disregarded.

Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.

Note: The downstream water surface is below the minimum elevation for pressure flow. The sluice gate equations were used for pressure flow.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

BRIDGE OUTPUT Profile #.2%

E.G. US. (ft)	273.39	Element	Inside BR US
Inside BR DS			
W.S. US. (ft)	273.28	E.G. Elev (ft)	273.39
273.20			
Q Total (cfs)	19382.00	W.S. Elev (ft)	273.28
272.58			
Q Bridge (cfs)	17709.46	Crit W.S. (ft)	274.31
265.88			
Q Weir (cfs)	1672.55	Max Chl Dpth (ft)	20.58
19.38			
Weir Sta Lft (ft)	250.51	Vel Total (ft/s)	10.97
10.45			
Weir Sta Rgt (ft)	736.37	Flow Area (sq ft)	1766.56
1854.19			
Weir Submerg	0.00	Froude # Chl	0.59
0.58			
Weir Max Depth (ft)	2.65	Specif Force (cu ft)	23810.04
22919.01			
Min El Weir Flow (ft)	270.88	Hydr Depth (ft)	4.06
8.86			
Min El Prs (ft)	267.00	W.P. Total (ft)	769.68
544.18			
Delta EG (ft)	4.49	Conv. Total (cfs)	
Delta WS (ft)	4.68	Top Width (ft)	434.87
209.30			
BR Open Area (sq ft)	1260.70	Frctn Loss (ft)	
BR Open Vel (ft/s)	14.05	C & E Loss (ft)	
Coef of Q		Shear Total (lb/sq ft)	
Br Sel Method	Press/Weir	Power Total (lb/ft s)	0.00

0.00

Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy are based on critical depth over the weir.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 14099.93

INPUT

Description:

Station Elevation Data num= 285

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	275.29	4.5	275.01	10.68	274.97	12.21	274.98	12.76	274.98
16.23	275.43	21.73	275.58	27.97	275.74	34.56	275.52	36.71	275.59
40.39	275.66	47.4	275.71	51.38	275.79	59.95	276.26	61.85	276.02
65.61	276.18	77.56	276.17	82.09	276.62	84.03	276.59	90.85	276.45
91.32	276.46	91.47	276.46	97.44	276.22	101.66	276.13	102.31	276.21
105.03	276.21	106.63	276.31	107.88	276.26	109.62	276.26	110.85	276.27
116.36	276.45	116.37	276.45	121.57	276.48	124.76	276.46	126.86	276.59
130.38	276.57	131.48	276.49	133.16	276.46	135.26	276.57	138.77	276.59
140.15	276.69	141.56	276.72	143.86	276.79	147.23	276.7	148.1	276.71
150.03	276.91	151.61	277.06	155.64	277.17	156.06	277.17	161.92	277.39
164.14	277.54	166.65	277.44	166.76	277.44	167.17	277.45	172.47	277.63
172.89	277.65	173.71	277.63	180.81	277.67	181.67	277.56	183.56	277.26
188.68	277.29	189.22	277.31	189.43	277.32	191.94	277.25	196.42	277.17
197.55	277.02	200.08	276.92	205.27	276.67	205.75	276.62	212.45	275.63
213.17	275.44	213.96	275.3	216.1	274.64	220.86	273.19	222.18	272.81
222.51	272.68	225.45	271.77	228.24	270.73	229.67	270.14	230.05	270
230.43	269.8	232.7	268.47	236.08	267.65	238.14	267	240.04	265.88
240.7	265.57	244.55	263.62	246.08	263.13	251.53	261.37	252.87	260.95

254.33	260.71	255.9	260.29	258.87	259.83	261.14	259.79	267.15	259.67
268.45	259.71	271.02	259.65	273.21	259.43	273.85	259.38	277.59	259.73
279.52	259.73	280.77	259.58	282.23	259.44	284.68	259.45	287.91	259.67
289.61	259.58	290.67	259.63	294.2	259.95	299.06	259.89	299.16	259.9
299.43	259.88	305.86	259.91	307.53	259.95	308.45	260.02	317.5	260.93
329.3	261.89	332.52	261.97	342.51	260.61	347	260.39	348.84	259.84
350.59	259.85	357.13	259.75	358.4	259.77	362.97	259.92	370.19	259.71
371.44	259.69	373.11	259.67	381.03	259.6	381.76	259.6	387.65	259.71
389.13	259.74	389.55	259.72	389.71	259.72	397.34	259.55	401.42	259.39
405.01	259.62	407.46	259.72	410.19	260.04	412.49	259.83	415.61	259.63
416.08	259.61	417.31	259.53	418.97	259.43	423.94	259.23	424.6	259.19
425.09	259.08	426.76	258.69	427.31	258.64	431.85	258.01	432.68	257.8
434.66	257.08	436.24	256.44	437.16	256.25	438.01	255.88	462.5	255.6
467.5	253.2	485	253.2	502.5	253.2	504.67	255.71	507.5	258.1
584.75	258.83	586.1	259	593.7	259.95	596.68	259.99	597.19	260.09
599.4	260.15	601.99	260.24	602.46	260.26	607.56	260.5	611.91	260.66
614.57	260.71	618.04	261.13	627.12	261.47	629.87	261.54	631.64	261.58
635.17	261.59	638.54	262.11	641.59	262.08	643.72	261.83	647.99	261.74
650.59	261.73	652.19	261.7	663.93	261.43	664.33	261.44	669.86	261.29
675.31	261.24	675.81	261.21	695.83	261.5	705.7	261.4	717.16	261.98
731.33	263.16	733.01	263.22	734.18	263.29	737.93	263.33	748.3	263.7
751.94	263.35	777.09	262.11	777.9	262.09	789.08	262.23	790.17	262.18
791.27	262.23	797.06	262.52	799.39	262.67	799.61	262.64	805.98	262.76
813.07	262.5	813.69	262.48	816.96	262.59	824.59	262.75	826.93	262.91
830.46	263.14	833.65	263.26	834.71	263.31	839.69	263.51	839.83	263.52
847.35	263.96	848.95	264.02	857.59	264.12	857.71	264.13	858.02	264.15
862.56	264.58	874.74	265	875.89	265.05	892.61	265.02	894.92	265.31
902.05	265.53	906.41	266.15	907.9	266.15	914.38	265.87	917.2	266.37
919.32	266.81	923.57	268.91	926.79	269.56	935.42	268.8	938.01	269.11
939.88	269.48	949.55	268.77	951.9	268.64	957.79	269.3	960.51	269.66
968.9	268.59	973.23	269.12	982.89	268.06	984.16	268.01	986.89	268.18
990.24	268.24	993.3	268.28	994.27	268.42	1000.67	268.5	1005.56	269.02
1010.91	271.05	1013.91	270.99	1025.21	272.44	1027.75	272.85	1028.17	272.83
1029.23	272.85	1043.22	272.52	1053.52	270.59	1056.29	270.52	1063.15	270.74
1068.46	270.91	1069.1	270.92	1069.68	270.97	1077.2	271.35	1077.38	271.38
1085.65	271.99	1086.15	271.98	1086.3	272	1088.89	271.97	1096.3	272.17
1097.24	272.31	1100.6	272.01	1104.61	272.37	1116.06	273.19	1117.04	273.23
1118.56	273.34	1119.61	273.33	1126.4	274.11	1131.41	274.28	1134.43	274.57
1138.64	274.55	1142.11	274.81	1145.69	275.11	1147.58	275.15	1151.37	275.03

Manning's n Values	num=	7
Sta n Val Sta n Val Sta n Val Sta n Val Sta n Val		
0 .05 109.62 .12 424.6 .12 431.85 .04 432.68 .04		
507.5 .045 584.75 .03		

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
432.68	507.5	93.64	102.28	123.71		.3	.5
Ineffective Flow	num=	2					
Sta L Sta R Elev	Permanent						
0 400 267.76	F						

615 1151.37 267.76 F

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	260.78	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.37	Wt. n-Val.	0.102	0.040
0.044				
W.S. Elev (ft)	260.42	Reach Len. (ft)	93.64	102.28
123.71				
Crit W.S. (ft)	257.95	Flow Area (sq ft)	36.08	439.06
162.88				
E.G. Slope (ft/ft)	0.001947	Area (sq ft)	108.85	439.06
162.88				
Q Total (cfs)	2671.00	Flow (cfs)	27.21	2282.60
361.19				
Top Width (ft)	316.21	Top Width (ft)	143.13	74.82
98.25				
Vel Total (ft/s)	4.19	Avg. Vel. (ft/s)	0.75	5.20
2.22				
Max Chl Dpth (ft)	7.21	Hydr. Depth (ft)	1.10	5.87
1.66				
Conv. Total (cfs)	60529.8	Conv. (cfs)	616.7	51727.8
8185.3				
Length Wtd. (ft)	103.68	Wetted Per. (ft)	32.87	77.74
98.34				
Min Ch El (ft)	253.20	Shear (lb/sq ft)	0.13	0.69
0.20				
Alpha	1.36	Stream Power (lb/ft s)	1151.37	0.00
0.00				
Frctn Loss (ft)	0.15	Cum Volume (acre-ft)	141.73	179.69
71.46				
C & E Loss (ft)	0.04	Cum SA (acres)	65.98	28.17
42.03				

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	266.32	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.73	Wt. n-Val.	0.112	0.040
0.041				
W.S. Elev (ft)	265.59	Reach Len. (ft)	93.64	102.28

123.71				
Crit W.S. (ft)	262.29	Flow Area (sq ft)	205.12	826.08
717.28				
E.G. Slope (ft/ft)	0.001861	Area (sq ft)	1042.43	826.08
1535.90				
Q Total (cfs)	10810.00	Flow (cfs)	398.40	6397.79
4013.81				
Top Width (ft)	661.79	Top Width (ft)	192.02	74.82
394.96				
Vel Total (ft/s)	6.18	Avg. Vel. (ft/s)	1.94	7.74
5.60				
Max Chl Dpth (ft)	12.39	Hydr. Depth (ft)	6.28	11.04
6.67				
Conv. Total (cfs)	250616.9	Conv. (cfs)	9236.5	148325.0
93055.4				
Length Wtd. (ft)	106.46	Wetted Per. (ft)	32.87	77.74
107.60				
Min Ch El (ft)	253.20	Shear (lb/sq ft)	0.72	1.23
0.77				
Alpha	1.24	Stream Power (lb/ft s)	1151.37	0.00
0.00				
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	451.50	290.88
316.51				
C & E Loss (ft)	0.07	Cum SA (acres)	97.46	28.18
71.41				

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	267.28	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.83	Wt. n-Val.	0.112	0.040
0.041				
W.S. Elev (ft)	266.45	Reach Len. (ft)	93.64	102.28
123.71				
Crit W.S. (ft)	262.83	Flow Area (sq ft)	233.28	890.55
809.91				
E.G. Slope (ft/ft)	0.001887	Area (sq ft)	1208.61	890.55
1882.75				
Q Total (cfs)	12761.00	Flow (cfs)	495.72	7303.63
4961.65				
Top Width (ft)	678.51	Top Width (ft)	193.61	74.82
410.08				
Vel Total (ft/s)	6.60	Avg. Vel. (ft/s)	2.13	8.20
6.13				

Max Chl Dpth (ft)	13.25	Hydr. Depth (ft)	7.14	11.90
7.53				
Conv. Total (cfs)	293733.9	Conv. (cfs)	11410.5	168115.6
114207.8				
Length Wtd. (ft)	106.71	Wetted Per. (ft)	32.87	77.74
107.60				
Min Ch El (ft)	253.20	Shear (lb/sq ft)	0.84	1.35
0.89				
Alpha	1.22	Stream Power (lb/ft s)	1151.37	0.00
0.00				
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	527.21	311.65
370.11				
C & E Loss (ft)	0.08	Cum SA (acres)	101.75	28.18
74.62				

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	268.90	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.30	Wt. n-Val.	0.118	0.040
0.034				
W.S. Elev (ft)	268.60	Reach Len. (ft)	93.64	102.28
123.71				
Crit W.S. (ft)	264.44	Flow Area (sq ft)	1631.16	1051.44
2778.22				
E.G. Slope (ft/ft)	0.000676	Area (sq ft)	1631.16	1051.44
2778.22				
Q Total (cfs)	19382.00	Flow (cfs)	2141.13	5764.66
11476.22				
Top Width (ft)	714.25	Top Width (ft)	200.20	74.82
439.23				
Vel Total (ft/s)	3.55	Avg. Vel. (ft/s)	1.31	5.48
4.13				
Max Chl Dpth (ft)	15.40	Hydr. Depth (ft)	8.15	14.05
6.33				
Conv. Total (cfs)	745501.1	Conv. (cfs)	82355.3	221729.4
441416.3				
Length Wtd. (ft)	113.64	Wetted Per. (ft)	202.34	77.74
440.27				
Min Ch El (ft)	253.20	Shear (lb/sq ft)	0.34	0.57
0.27				
Alpha	1.53	Stream Power (lb/ft s)	1151.37	0.00
0.00				
Frctn Loss (ft)	0.07	Cum Volume (acre-ft)	755.27	370.13

532.30				
C & E Loss (ft)	0.03	Cum SA (acres)	113.20	28.18
83.16				

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1 RS: 13997.64

INPUT

Description: not interpolated

Station Elevation Data		num=		417					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	273.71	1.21	273.75	3	273.86	5.19	273.84	11.42	273.42
15.87	273.23	18.62	273.06	21.63	273.21	25.11	273.37	29.48	273.32
30.44	273.31	37.37	273.43	39.8	273.37	42.36	273.3	43.25	273.2
45.28	272.98	47.26	272.82	48.11	272.78	49.05	272.79	51	272.79
54.19	272.8	56.89	273.06	58.86	273.24	60.03	273.26	63.8	273.74
66.04	273.88	68.92	273.86	69.03	273.87	73.22	274.51	75.08	274.64
76.87	274.68	78.03	274.76	79.96	274.74	83.79	274.72	84.94	274.71
86.85	274.65	88.48	274.66	92.68	274.57	93.98	274.5	95.63	274.52
100.91	274.38	101.45	274.38	101.54	274.37	103.02	274.27	104.24	274.19
104.31	274.17	107.96	273.9	109.98	273.75	110.02	273.74	112.3	273.46
112.92	273.38	112.96	273.37	117.4	272.49	118.51	272.24	120.1	271.85
121.42	271.47	122.23	271.31	123.94	270.84	126.05	270.31	127.02	270.04
131.69	268.85	135.41	267.75	137.39	267	138.36	266.67	141.66	265.94
143.89	265.16	146.45	265.06	146.73	264.97	147.17	264.9	147.36	264.83
151.57	263.3	154.05	262.68	157.5	261.88	160.72	261.36	161.58	261.15
163.73	260.97	168.14	260.17	169.34	260	169.92	259.98	172.28	259.79
175.87	259.75	178	259.66	180.16	259.41	180.97	259.35	185.27	259.53
188.86	259.65	189.61	259.64	189.88	259.67	190.46	259.71	193.75	259.92
195.61	259.76	197.6	259.8	202.09	259.91	209.03	259.74	214.98	259.53
221.32	259.75	224.38	259.8	225.74	259.84	227.44	259.91	232.17	260.01
233.68	260	236.51	259.56	240.59	259.62	241.29	259.68	241.99	259.66
245.32	259.5	247.76	259.7	248.81	259.77	250.71	259.79	253.68	260.04
256.86	260.39	266.06	260.46	267.93	260.46	268.38	260.48	273.49	260.81
274.34	260.84	274.59	260.82	282.91	259.66	285.72	259.5	288.85	259.12
291.33	258.91	293.28	258.48	294.52	258.59	298.49	258.66	301.71	258.92
302.84	258.96	306.87	259.05	307.68	259.04	308.8	258.89	310.25	258.78
311.96	258.54	314.59	258.54	317.6	258.63	319.46	258.71	325.18	258.42
328.1	258.24	329.6	258.27	332.07	258.21	335.13	257.61	338.19	257.55
338.58	257.53	343.81	256.98	344.24	256.91	344.84	256.7	349.76	254.53
352.58	253.58	360.38	253.59	368.38	253.6	378.18	253.61	380.91	253.61

392	253.62	402.43	253.63	423.7	253.64	425.15	253.64	429.97	253.64
431.78	253.65	433.92	256.26	434.34	256.46	436.42	256.85	440.17	257.75
442.8	258.44	443.63	258.59	446.4	258.75	450.4	258.7	453.2	258.85
454.18	258.82	457.39	258.98	463.02	259.63	464.19	259.75	464.53	259.83
469.98	261.43	470.34	261.51	470.77	261.5	476.39	261.48	478.14	261.44
478.48	261.43	479.44	261.41	479.98	261.46	480	261.46	485.22	261.35
487.74	261.29	488.89	261.26	492.76	261.4	493	261.41	496.69	261.06
507.81	260.61	510.32	260.46	511.23	260.49	512.05	260.51	513.28	260.55
515.17	260.64	518.15	260.74	520.37	260.86	522.74	260.71	526.5	260.55
527.79	260.58	530.47	260.5	532.56	260.39	536.72	260.6	537.43	260.6
540.54	260.4	543.48	260.41	546.71	260.43	548.58	260.51	550.64	260.42
553.15	260.37	556.86	260.42	559.01	260.37	560.79	260.43	563.55	260.51
567.05	260.65	568.51	260.59	571.06	260.44	575.79	260.46	577.09	260.49
579.94	260.51	581.14	260.52	584.41	260.55	587.33	260.61	589.61	260.59
591.21	260.52	594.13	260.48	597.36	260.52	599.83	260.6	601.32	260.65
605.72	260.68	609.83	260.63	610.62	260.62	611.3	260.62	615.28	260.62
617.32	260.63	621.08	260.66	621.74	260.68	627.39	260.88	628.35	260.83
631.17	260.74	631.25	260.74	631.28	260.74	633.44	260.76	637.37	260.81
637.47	260.81	641.42	260.77	643.4	260.87	647.6	261.02	650.68	260.94
652.88	260.9	657.59	260.84	659.18	260.77	661.52	260.65	662.98	260.64
664.57	260.65	668.21	260.78	671.57	260.91	673.1	260.99	677.12	260.85
677.43	260.84	677.54	260.84	677.94	260.84	681.61	260.85	683.21	260.86
687.61	260.79	688.83	260.78	691.71	260.97	692.87	260.99	697.61	260.88
698.14	260.89	701.63	260.85	704.59	260.74	707.59	260.85	709.59	260.97
711.7	260.76	714.49	260.74	717.76	260.83	721.01	260.95	721.95	260.95
725.36	261.01	727.88	261.06	730.96	261.3	732.11	261.33	735.17	261.24
738.17	261.11	738.62	261.11	739.82	261.21	741.74	261.4	742.44	261.35
746.62	261.49	748.45	261.51	752.17	261.47	752.64	261.5	756.27	261.7
758.6	261.73	759.97	261.73	762.26	261.74	768.79	261.84	769.79	261.89
773.02	262.01	773.67	262.01	778.85	261.89	779.1	261.9	783.25	261.91
783.67	261.88	784.5	261.9	787.51	261.99	789.04	262.01	792.22	262.14
793.48	262.18	794.65	262.24	799.35	262.48	800.67	262.58	803.73	262.75
804.75	262.76	809.53	263.07	810.44	263.11	813.93	263.18	818.75	263.73
819.51	263.83	819.92	263.92	820.8	264.05	824.38	264.68	827.16	265.22
830.31	265.76	832.29	266.06	834.74	266.64	836.73	267.12	840.79	268.05
843.08	268.37	845.16	268.6	848.77	268.95	851.05	269.21	852.82	269.44
854.85	269.7	855.51	269.76	864.1	271.56	865.03	271.78	865.53	271.79
867.98	272.18	871.84	272.82	872.86	272.96	874.65	273.16	879.47	274.04
885.73	275	886.6	275.09	887.07	275.14	896.04	275.1	896.62	275.16
899.09	274.79	903	274.87	906.5	274.8	908.23	274.75	908.62	274.78
915.67	274.68	917.53	274.41	924.23	274.42	927.24	274.44	928.63	274.32
931.84	274.36	934.3	274.52	938.92	274.49	939.74	274.58	944.4	274.54
946.85	274.45	949.59	274.4	953.64	274.74	954.48	274.75	957.94	274.49
962.05	274.6	963.63	274.7	966.52	274.67	967.96	274.62	970.66	274.71
973.63	274.76	975.36	274.77	978.06	274.68	979.93	274.59	983.75	274.67
984.62	274.67	988.21	274.68	991.75	274.62	993.81	274.57	996.82	274.81
998.38	274.88	1001.98	274.69	1003.97	274.71	1007.79	275	1008.63	275.05
1012.16	274.82	1014.2	274.76	1018.21	274.97	1018.77	274.97	1020.06	274.98
1024.44	275	1025.34	274.98	1028.83	274.72	1029.08	274.71	1030.18	274.72
1033.74	274.82	1034.54	274.77	1037.19	274.82	1038.99	274.85	1039.46	274.86

1040.56	274.92	1043.42	275.02	1044.61	275.05	1046.79	274.98	1049.03	274.76
1051.21	274.76	1054.65	274.84	1056.77	274.77	1059.16	274.87	1060.96	274.86
1064.69	274.85	1065.79	274.91	1069.27	275.01	1073.6	274.99	1074.72	274.98
1077.9	274.8	1079.02	274.86						

Manning's n Values			num= 9						
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	29.48	.12	343.81	.04	344.84	.04	360.38	.04
425.15	.04	429.97	.04	436.42	.12	492.76	.03		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	343.81	436.42		378.67	405.44		.1	.3

Ineffective Flow			num= 2
Sta L	Sta R	Elev	Permanent
0	248.01	268.29	F
505.26	1079.02	267.31	F

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	260.59	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.28	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	260.30	Reach Len. (ft)	378.67	405.44
424.26				
Crit W.S. (ft)	256.84	Flow Area (sq ft)	113.25	594.43
46.52				
E.G. Slope (ft/ft)	0.001175	Area (sq ft)	159.31	594.43
46.52				
Q Total (cfs)	2671.00	Flow (cfs)	66.73	2577.86
26.41				
Top Width (ft)	276.52	Top Width (ft)	154.19	92.61
29.72				
Vel Total (ft/s)	3.54	Avg. Vel. (ft/s)	0.59	4.34
0.57				
Max Chl Dpth (ft)	6.72	Hydr. Depth (ft)	1.54	6.42
1.57				
Conv. Total (cfs)	77919.4	Conv. (cfs)	1946.6	75202.2
770.5				
Length Wtd. (ft)	405.45	Wetted Per. (ft)	73.89	94.58
30.07				
Min Ch El (ft)	253.58	Shear (lb/sq ft)	0.11	0.46
0.11				
Alpha	1.45	Stream Power (lb/ft s)	1079.02	0.00
0.00				
Frctn Loss (ft)	0.54	Cum Volume (acre-ft)	141.45	178.47
71.16				
C & E Loss (ft)	0.00	Cum SA (acres)	65.66	27.97
41.85				

Warning: Divided flow computed for this cross-section.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the

largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may

wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	266.03	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.97	Wt. n-Val.	0.120	0.040
0.086				
W.S. Elev (ft)	265.06	Reach Len. (ft)	378.67	405.44
424.26				
Crit W.S. (ft)	261.81	Flow Area (sq ft)	564.58	1035.36
338.30				
E.G. Slope (ft/ft)	0.002223	Area (sq ft)	1052.74	1035.36
1596.14				
Q Total (cfs)	10810.00	Flow (cfs)	1072.78	8940.85
796.37				
Top Width (ft)	680.03	Top Width (ft)	197.48	92.61
389.94				
Vel Total (ft/s)	5.58	Avg. Vel. (ft/s)	1.90	8.64
2.35				
Max Chl Dpth (ft)	11.48	Hydr. Depth (ft)	5.89	11.18
4.91				
Conv. Total (cfs)	229262.6	Conv. (cfs)	22751.9	189621.0
16889.8				
Length Wtd. (ft)	405.66	Wetted Per. (ft)	96.16	94.58
69.39				
Min Ch El (ft)	253.58	Shear (lb/sq ft)	0.81	1.52
0.68				
Alpha	2.01	Stream Power (lb/ft s)	1079.02	0.00
0.00				
Frctn Loss (ft)	1.08	Cum Volume (acre-ft)	449.25	288.69
312.06				
C & E Loss (ft)	0.03	Cum SA (acres)	97.04	27.99
70.30				

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	266.97	Element	Left OB	Channel
Right OB				
Vel Head (ft)	1.11	Wt. n-Val.	0.120	0.040
0.085				
W.S. Elev (ft)	265.86	Reach Len. (ft)	378.67	405.44
424.26				
Crit W.S. (ft)	262.53	Flow Area (sq ft)	640.77	1109.01
393.05				
E.G. Slope (ft/ft)	0.002360	Area (sq ft)	1212.32	1109.01
1908.03				
Q Total (cfs)	12761.00	Flow (cfs)	1364.79	10328.80
1067.41				
Top Width (ft)	689.08	Top Width (ft)	201.92	92.61
394.55				
Vel Total (ft/s)	5.96	Avg. Vel. (ft/s)	2.13	9.31
2.72				
Max Chl Dpth (ft)	12.28	Hydr. Depth (ft)	6.69	11.98
5.71				
Conv. Total (cfs)	262701.5	Conv. (cfs)	28096.0	212631.5
21974.0				
Length Wtd. (ft)	405.71	Wetted Per. (ft)	96.16	94.58
69.39				
Min Ch El (ft)	253.58	Shear (lb/sq ft)	0.98	1.73
0.83				
Alpha	2.01	Stream Power (lb/ft s)	1079.02	0.00
0.00				
Frctn Loss (ft)	1.18	Cum Volume (acre-ft)	524.60	309.30
364.73				
C & E Loss (ft)	0.04	Cum SA (acres)	101.33	27.99
73.48				

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and

previous cross section. This may indicate the
need for additional cross sections.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the
largest [smallest] user entered n value. The n value has been set to the
largest [smallest] entered value. The user may
wish to examine this cross section and enter a single n value for the
entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	268.80	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.24	Wt. n-Val.	0.120	0.040
0.035				
W.S. Elev (ft)	268.56	Reach Len. (ft)	378.67	405.44
424.26				
Crit W.S. (ft)	264.52	Flow Area (sq ft)	1771.52	1359.42
2992.03				
E.G. Slope (ft/ft)	0.000493	Area (sq ft)	1771.52	1359.42
2992.03				
Q Total (cfs)	19382.00	Flow (cfs)	2001.09	6629.63
10751.28				
Top Width (ft)	712.18	Top Width (ft)	211.15	92.61
408.41				
Vel Total (ft/s)	3.17	Avg. Vel. (ft/s)	1.13	4.88
3.59				
Max Chl Dpth (ft)	14.98	Hydr. Depth (ft)	8.39	14.68
7.33				
Conv. Total (cfs)	872770.1	Conv. (cfs)	90108.9	298531.9
484129.3				
Length Wtd. (ft)	410.21	Wetted Per. (ft)	212.78	94.58
409.66				
Min Ch El (ft)	253.58	Shear (lb/sq ft)	0.26	0.44
0.22				
Alpha	1.54	Stream Power (lb/ft s)	1079.02	0.00
0.00				
Frctn Loss (ft)	0.48	Cum Volume (acre-ft)	751.61	367.30
524.11				
C & E Loss (ft)	0.23	Cum SA (acres)	112.76	27.99
81.95				

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the

largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may

wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 13592.2

INPUT

Description: not interpolated

Station Elevation Data				num=	480				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	269.32	2.36	269.31	2.7	269.33	5.14	269.21	7.49	268.95
11.72	268.91	14.22	268.98	18.34	268.68	22.14	268.91	22.69	268.89
28.69	268.65	29.34	268.66	35.45	268.91	36.83	268.91	43.73	268.96
48.79	268.64	49.63	268.64	55.52	268.77	56.25	268.73	57.28	268.75
63.1	268.85	68.73	268.41	69.77	268.38	75.53	268.38	76.64	268.33
82.13	268.19	83.34	268.18	88.92	268.08	90.21	268.13	95.72	268.45
97.61	268.45	98.35	268.39	103.79	268.03	109.13	268.02	110.62	268.01
116.01	268.27	117.55	268.35	122.86	268.19	124.46	268.14	129.65	268.24
133	268.13	138.21	268.11	143.13	267.57	145	267.58	145.74	267.47
148.65	267.63	162.58	267.81	164.4	267.83	165.8	267.8	170.52	267.59
172.64	267.49	177.28	267.25	178.89	267.22	184.29	267.17	186.5	267.12
190.91	266.86	194.2	266.93	199.65	267.19	204.88	266.76	207.42	266.62
211.73	266.8	214.43	266.88	214.67	266.88	218.62	266.88	221.39	266.8
225.49	266.6	228.41	266.63	232.55	266.88	235.45	266.73	238.45	266.85
244.76	266.75	246.46	266.68	249.55	266.69	253.37	266.46	256.55	266.39
260.33	266.57	262.31	266.47	267.18	266.21	270.65	266.1	274.25	266.12
276.3	266.02	277.74	266.2	281.36	266.36	283.47	266.45	284.93	266.53
291.47	266.5	301.11	266.29	303.62	266.04	306.07	266.13	308.12	265.99
309.39	266.09	311.64	266.05	313.29	266.23	319.71	266.4	325.91	266.28
328.38	266.21	332.92	265.94	334.77	265.89	336.64	265.69	342.52	265.04
343.53	265.03	344.47	264.98	346.9	264.88	348.95	264.8	351.53	264.77
354.02	264.95	356.19	264.8	358.69	264.69	361.09	264.6	365.79	264.56
368.26	264.66	370.57	264.54	372.92	264.55	375.44	264.55	377.78	264.47
379.26	264.41	382.02	264.41	383.94	264.45	385.51	264.42	387.9	264.46
389.82	264.47	393.93	264.4	394.2	264.39	396.68	264.52	402.08	264.53
404.32	264.59	406.44	264.6	409.43	264.59	414.24	264.48	416	264.56
418.09	264.65	419.79	264.59	422.62	264.48	424.34	264.48	426.79	264.57

428.13	264.63	432.3	264.71	434.32	264.8	436.96	264.78	438.16	264.72
441.36	264.82	444.41	264.98	447.38	265.04	454.49	264.75	457.38	264.68
458.34	264.63	461.57	264.36	464.16	264.24	466.31	264.22	467.71	264.25
474.53	263.55	475.35	263.32	478.5	262.67	481.88	262.18	484.48	261.78
486.63	261.25	488.33	260.76	490.95	260.2	494.21	259.35	497.55	258.49
501.08	257.61	504.07	256.83	504.82	256.65	506.83	256.65	509.4	256.46
512.59	256.26	513.16	256.3	519.37	254.47	523.59	254.02	525.15	253.04
526.3	253.04	547.93	253.04	579.5	253.03	584.44	253.03	588.24	253.03
588.31	253.03	590.5	254.6	592.52	256.19	595.36	256.44	598.01	256.68
599.65	256.89	604.08	257.34	605.69	257.5	611.38	258.45	617.21	258.97
619.26	258.66	620.28	258.64	623.28	258.74	630.27	258.98	630.58	258.98
632.07	258.88	635.74	258.63	636.63	258.5	642.39	258.1	646.61	258.25
649.89	258.29	650.87	258.26	654.85	258.41	656.93	258.47	657.19	258.49
661.04	258.61	662.52	258.62	665.8	258.62	667.08	258.64	670.24	259.05
671.2	259.15	672.07	259.16	677	258.89	680.89	259.1	681.26	259.14
683	259.18	687.07	259.26	687.48	259.3	691.22	259.13	696.82	259.03
698.08	259.05	702.87	259.19	707.1	259.24	708.76	259.32	711.45	259.4
712.87	259.32	713.99	259.31	718.22	259.18	719.04	259.23	722.53	259.38
726.11	259.47	726.8	259.49	727.58	259.48	731.32	259.4	734.29	259.44
737.1	259.57	739.27	259.6	741.35	259.48	744.98	259.42	747.7	259.33
751.31	259.31	754.25	259.32	757.19	259.39	759.36	259.48	761.36	259.5
763.5	259.51	765.19	259.49	769.05	259.48	771.33	259.54	773.45	259.61
777.01	259.6	778.48	259.59	781.21	259.62	785.54	259.79	787.08	259.81
788.12	259.85	791.28	259.75	795.62	259.59	799.86	259.8	801.34	259.83
804.84	259.84	807.03	259.83	809.97	259.95	811.35	260.01	814.63	259.96
817.1	259.94	817.66	259.93	820.11	259.97	821.25	259.98	821.51	259.99
827.22	259.94	831.12	259.66	831.61	259.67	835.65	260	837.41	260
841.38	259.94	841.9	259.92	847.52	259.89	848.18	259.92	851.59	259.96
851.87	259.95	857.64	259.78	861.88	259.69	866.31	259.73	867.76	259.76
872.05	259.76	873.53	259.74	877.79	259.63	879.36	259.67	882.17	259.68
883.17	259.66	887.8	259.6	892.38	259.67	893.14	259.66	894.98	259.7
897.1	259.73	897.97	259.69	900.46	259.67	902.42	259.75	904.77	259.65
907.96	259.57	911.98	259.66	914.7	259.61	918.12	259.6	919.67	259.57
922.73	259.59	926.9	259.63	928.35	259.64	930.15	259.61	934.65	259.61
936.94	259.69	940.61	259.88	945.23	259.77	948.71	259.9	949.51	259.9
953.27	259.81	957.68	259.9	958.97	259.9	962.18	259.84	963.52	259.73
966.62	259.56	970.05	259.66	971.76	259.67	973.79	259.76	978.71	259.59
980.02	259.58	982.99	259.64	984.09	259.63	987.91	259.76	993.11	259.94
995.97	259.78	997.95	259.65	1000.2	259.81	1004.11	259.67	1005.16	259.61
1008.04	259.75	1010.78	259.87	1011.91	259.87	1013.22	259.74	1015.54	259.6
1020.48	259.8	1021.26	259.82	1025	259.8	1026.17	259.84	1029.09	259.92
1031.84	260.02	1034.04	260	1036.85	260.01	1041.31	260.07	1043.11	259.93
1045.21	259.85	1047.25	259.87	1050.29	260.05	1053.07	259.95	1055.56	259.82
1057.94	259.95	1060.53	260.08	1063.68	259.96	1064.61	259.93	1066.65	260.21
1068.65	260.32	1074.25	260.07	1074.42	260.07	1078.2	260.16	1079.37	260.22
1083.16	260.13	1085.05	260.06	1088.7	260.14	1104.96	260.38	1106.43	260.41
1111.48	260.24	1115.43	260.34	1117.24	260.46	1120.8	260.63	1122.26	260.63
1125.49	260.8	1127.89	260.87	1128.6	260.9	1130.75	260.83	1132.76	260.76
1137.45	260.71	1142.31	261.61	1142.92	261.76	1145.72	262.92	1149.46	263.91
1153.47	264.62	1157.01	265.64	1160.38	266.63	1161.18	266.88	1162.05	267.14

1166.73	267.87	1170.07	268.43	1171.26	268.49	1175.45	268.52	1176.3	268.59
1178.02	268.68	1181.82	268.91	1184.4	268.95	1186.83	269.01	1190.7	269.13
1192.92	269.17	1195.62	269.41	1197.2	269.5	1197.5	269.5	1203.15	269.87
1207.6	269.43	1208.27	269.45	1211.64	269.69	1213.66	269.74	1215.29	269.94
1218.69	270.03	1218.83	270.03	1229.14	270.47	1233.38	270.54	1234.86	270.54
1239.83	270.59	1241.7	270.56	1246.39	270.47	1250.1	270.89	1251.92	271.14
1255.88	271.7	1256.07	271.73	1260.84	271	1261.12	270.97	1261.4	270.89
1264.04	270.24	1266.07	270.23	1270.79	270.75	1271.29	270.79	1276.58	270.89
1277.77	270.92	1280.52	271.12	1281.85	271.25	1282.19	271.27	1286.1	271.23
1287.26	271.27	1292.4	271.4	1296.26	271.61	1297.75	271.52	1302.6	271.41
1303.73	271.24	1308.34	271.87	1309.54	271.97	1313.58	273.31	1314.06	273.45
1314.4	273.48	1318.94	273.64	1323.42	273.99	1324.09	273.8	1327.11	273.4
1329.34	273.6	1330.7	273.44	1333.71	273.46	1334.33	273.49	1334.63	273.55
1339.57	274.6	1344.68	274.9	1345.12	274.92	1348.83	275.12	1350.43	275.14
1355.27	275.02	1355.65	275.04	1359.4	275.35	1361.03	275.31	1363.38	275.6
1366.41	275.8	1367.86	275.83	1369.38	275.93	1373.41	276.15	1377.08	276.47
1378.35	276.57	1381.31	276.64	1382.18	276.68	1382.55	276.73	1384.32	276.91
1387.96	277.3	1389.4	277.49	1393.45	278.12	1395.46	278.3	1398.76	278.43
1399.96	278.55	1404.11	278.75	1405	278.81	1410.74	279.48	1413.71	279.81

Manning's n Values			num= 8								
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	214.67	.12	497.55	.04	611.38	.12	632.07	.03		
1178.02	.03	1241.7	.03	1282.19	.05						

Bank Sta:	Left	Right	Lengths:			Left Channel	Right	Coeff Contr.		Expan.	
	497.55	611.38		260.8	593.93	588.98		.1	.3		
Ineffective Flow			num= 1								
Sta L	Sta R	Elev	Permanent								
651.09	1413.71	269.21	F								

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	260.04	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.28	Wt. n-Val.	0.120	0.040
0.042				
W.S. Elev (ft)	259.76	Reach Len. (ft)	260.80	593.93
588.98				
Crit W.S. (ft)	256.79	Flow Area (sq ft)	3.13	598.66
46.69				
E.G. Slope (ft/ft)	0.001526	Area (sq ft)	3.13	598.66
130.14				
Q Total (cfs)	2671.00	Flow (cfs)	1.10	2596.38
73.52				
Top Width (ft)	419.68	Top Width (ft)	4.91	113.83
300.94				
Vel Total (ft/s)	4.12	Avg. Vel. (ft/s)	0.35	4.34
1.57				

Max Chl Dpth (ft)	6.73	Hydr. Depth (ft)	0.64	5.26
1.18				
Conv. Total (cfs)	68384.6	Conv. (cfs)	28.0	66474.2
1882.4				
Length Wtd. (ft)	589.01	Wetted Per. (ft)	5.07	115.84
39.80				
Min Ch El (ft)	253.03	Shear (lb/sq ft)	0.06	0.49
0.11				
Alpha	1.08	Stream Power (lb/ft s)	1413.71	0.00
0.00				
Frctn Loss (ft)	0.85	Cum Volume (acre-ft)	140.74	172.92
70.30				
C & E Loss (ft)	0.02	Cum SA (acres)	64.97	27.01
40.24				

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	264.93	Element	Left OB	Channel
Right OB				
Vel Head (ft)	1.22	Wt. n-Val.	0.120	0.040
0.047				
W.S. Elev (ft)	263.70	Reach Len. (ft)	260.80	593.93
588.98				
Crit W.S. (ft)	261.07	Flow Area (sq ft)	57.91	1047.64
203.31				
E.G. Slope (ft/ft)	0.003266	Area (sq ft)	57.91	1047.64
2159.21				
Q Total (cfs)	10810.00	Flow (cfs)	71.54	9653.71
1084.75				
Top Width (ft)	675.65	Top Width (ft)	24.52	113.83
537.30				
Vel Total (ft/s)	8.26	Avg. Vel. (ft/s)	1.24	9.21
5.34				
Max Chl Dpth (ft)	10.67	Hydr. Depth (ft)	2.36	9.20
5.12				
Conv. Total (cfs)	189163.6	Conv. (cfs)	1251.8	168929.8
18982.0				
Length Wtd. (ft)	572.85	Wetted Per. (ft)	25.10	115.84
39.80				
Min Ch El (ft)	253.03	Shear (lb/sq ft)	0.47	1.84
1.04				
Alpha	1.15	Stream Power (lb/ft s)	1413.71	0.00
0.00				

Frctn Loss (ft)	1.61	Cum Volume (acre-ft)	444.42	279.00
293.78				
C & E Loss (ft)	0.16	Cum SA (acres)	96.07	27.03
65.78				

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	265.75	Element	Left OB	Channel
Right OB				
Vel Head (ft)	1.49	Wt. n-Val.	0.120	0.040
0.047				
W.S. Elev (ft)	264.26	Reach Len. (ft)	260.80	593.93
588.98				
Crit W.S. (ft)	261.73	Flow Area (sq ft)	73.27	1111.32
225.53				
E.G. Slope (ft/ft)	0.003680	Area (sq ft)	73.27	1111.32
2460.49				
Q Total (cfs)	12761.00	Flow (cfs)	90.91	11306.99
1363.10				
Top Width (ft)	687.81	Top Width (ft)	33.90	113.83
540.08				
Vel Total (ft/s)	9.05	Avg. Vel. (ft/s)	1.24	10.17
6.04				
Max Chl Dpth (ft)	11.23	Hydr. Depth (ft)	2.16	9.76
5.68				
Conv. Total (cfs)	210355.8	Conv. (cfs)	1498.6	186387.5
22469.7				
Length Wtd. (ft)	568.68	Wetted Per. (ft)	34.51	115.84
39.80				
Min Ch El (ft)	253.03	Shear (lb/sq ft)	0.49	2.20
1.30				
Alpha	1.17	Stream Power (lb/ft s)	1413.71	0.00
0.00				
Frctn Loss (ft)	1.66	Cum Volume (acre-ft)	519.02	298.97
343.45				
C & E Loss (ft)	0.24	Cum SA (acres)	100.30	27.03
68.93				

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	268.10	Element	Left OB	Channel
Right OB				
Vel Head (ft)	2.52	Wt. n-Val.	0.120	0.040
0.048				
W.S. Elev (ft)	265.58	Reach Len. (ft)	260.80	593.93
588.98				
Crit W.S. (ft)	263.71	Flow Area (sq ft)	233.81	1261.58
277.95				
E.G. Slope (ft/ft)	0.005326	Area (sq ft)	233.81	1261.58
3177.32				
Q Total (cfs)	19382.00	Flow (cfs)	271.33	16804.12
2306.55				
Top Width (ft)	819.21	Top Width (ft)	159.95	113.83
545.43				
Vel Total (ft/s)	10.93	Avg. Vel. (ft/s)	1.16	13.32
8.30				
Max Chl Dpth (ft)	12.55	Hydr. Depth (ft)	1.46	11.08
7.00				
Conv. Total (cfs)	265578.2	Conv. (cfs)	3717.8	230255.3
31605.1				
Length Wtd. (ft)	549.40	Wetted Per. (ft)	160.67	115.84
39.80				
Min Ch El (ft)	253.03	Shear (lb/sq ft)	0.48	3.62
2.32				
Alpha	1.36	Stream Power (lb/ft s)	1413.71	0.00
0.00				
Frctn Loss (ft)	1.59	Cum Volume (acre-ft)	742.89	355.10
494.07				
C & E Loss (ft)	0.58	Cum SA (acres)	111.15	27.03
77.31				

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 12998.26

INPUT

Description: not interpolated

Station Elevation Data num= 480

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	267.1	1.55	267.07	2.81	267	9.8	266.67	13.48	266.36
16.21	266.24	17.58	266.21	20.44	266.12	23.39	265.97	30.77	265.61
31.63	265.58	36.84	265.57	37.92	265.55	38.49	265.59	44.52	265.58
47.64	265.58	51.45	265.22	53.2	265.15	57.44	265.15	63.73	264.99
64.78	264.95	69.67	264.69	71.64	264.79	75.62	265.04	78.62	264.85
81.55	264.8	85.56	265.09	87.48	265.15	92.46	265.16	93.38	265.15
98.76	265.32	99.35	265.33	106.01	265.09	106.87	265.07	110.4	265.08
114.52	265.29	116.01	265.33	120.26	265.26	121.83	265.23	122.13	265.25
128.44	265.6	132.92	265.24	136.58	265.11	141.32	265.03	143.77	265.04
145.1	265.11	147.7	265.06	149.6	265.07	154.05	264.97	157.4	264.88
163.18	264.69	167.07	264.53	169.45	264.49	173.69	264.47	179.05	264.26
180.3	264.18	181.18	264.03	191.57	263.6	194.23	263.51	198.87	263.57
201.47	263.59	205.05	263.74	208.73	263.98	213.74	263.7	214.8	263.66
215.69	263.69	216.09	263.67	218.39	263.67	225.54	264.22	228.97	264.36
229.88	264.32	230.29	264.34	230.75	264.33	233.1	264.13	237.59	263.98
238.68	264.19	246.11	264.02	250.88	264.4	254.67	264.47	256.75	264.12
257.87	263.95	259.28	263.92	261.11	263.9	265.42	263.72	269.26	263.47
272.18	263.29	279.02	263.25	285.49	263.02	287.38	263.05	291.9	263.16
292.76	263.14	293.45	263.16	296.77	263.09	299.29	263	313.92	263.26
321.41	263.33	323.12	263.58	325.83	263.62	329.69	263.16	333.49	262.99
335.09	263.02	335.73	263.13	336.23	263.21	341.35	263.11	342.16	263
342.78	263	347.86	263.09	349.32	263.1	354.84	263.16	356.43	263.31
360.28	263.27	363.59	262.98	369.83	263.03	370.66	263.01	372.43	263.06
377.83	263.14	379.03	263.11	384.95	262.87	387.67	262.9	392.14	262.82
396.38	262.9	399.27	263	405.09	262.99	406.37	263	412.3	262.79
413.31	262.75	413.68	262.75	419.57	262.67	420.57	262.62	422.36	262.72
425.88	262.8	427.8	262.75	431.25	262.75	432.27	262.73	434.96	262.62
438.67	262.51	439.38	262.46	442.11	262.36	445.24	262.32	447.23	262.38
447.77	262.36	450.07	262.31	451.7	262.26	454.98	262.15	458.2	262.22
462.8	262.15	464.66	262.06	470.61	262.18	471.15	262.17	473.86	262.02
477.84	261.81	479.3	261.81	484.6	261.88	488.66	261.83	491.41	261.74
498.26	261.74	505.59	262.02	510.58	261.84	512.83	261.7	516.77	261.59
520.21	261.6	525.29	261.59	527.56	261.59	534.44	261.68	534.89	261.68
536.71	261.71	541.26	261.72	542.8	261.81	547.44	261.68	550.92	261.45

553.63	261.45	559.24	261.6	559.86	261.6	566.59	261.29	567.6	261.31
571.69	261.37	573.58	261.33	576.08	261.22	580.5	261.22	584.48	261.1
587.39	261.08	592.89	261.21	594.25	261.18	598.37	261.25	601.36	261.29
606.14	261.38	608.2	261.49	611.25	261.56	615.19	261.62	620.82	261.44
622.19	261.42	625.63	261.72	628.98	262.06	629.72	262.03	635.36	261.96
637.41	262.04	640.46	261.89	643.36	261.74	644.88	261.79	647.48	261.64
653.04	261.86	654.43	261.88	660.42	261.88	660.83	261.87	667.36	261.44
674.08	261.63	675.76	261.71	678.88	261.74	683.5	261.64	684.9	261.64
690.5	261.54	697.05	261.49	698.5	261.52	700.66	261.5	705.87	261.48
709.89	261.43	713.26	261.26	719.11	261.12	720.62	261.13	727.81	261.07
728	261.07	734.44	260.47	735.56	260.37	736.83	260.38	740.99	260.33
743.13	260.26	745.42	259.95	747.55	259.77	750.61	259.85	754.07	259.59
758.12	259.65	761.14	259.55	762.67	259.51	768.08	258.96	770.97	258.59
773.26	258.45	774.97	258.34	779.34	257.97	780.8	257.73	782.11	257.73
787.05	257.63	789.08	257.84	793.2	258.21	795.74	258.36	796.87	258.41
802.84	258.74	806.7	258.77	810.01	258.89	817.15	258.8	821.9	259
825.73	258.79	831.23	258.32	832.18	258.3	835.82	257.93	839.97	257.54
842.72	257.56	843.3	257.54	847.44	257.44	853.22	258.11	854.92	258.26
858.36	258.28	861.31	258.17	862.74	258.31	866.54	258.37	870.1	258.5
870.78	258.53	872.56	258.5	878.42	258.6	878.78	258.58	879.34	258.58
884.87	258.68	886.18	258.64	888.34	258.43	890.6	258.17	897.44	257.81
897.77	257.81	901.07	257.98	903.97	257.99	906.59	257.98	908.54	257.99
910.01	257.88	915.79	257.24	915.91	257.22	923.44	257.49	924.93	257.49
928.07	257.33	931.84	257.36	932.66	257.22	938.54	257.75	939.79	257.87
940.5	257.82	946.76	257.47	951.78	257.37	953.82	257.26	957.38	257.46
961.02	257.57	962.89	257.45	968.81	256.95	971.18	256.78	976.03	256.34
978.76	256.28	982.25	256.26	983.71	256.14	987.58	255.67	991.45	255.25
993	255.26	996.6	255.07	998.78	254.98	999.71	254.97	1005.4	254.67
1006.86	254.49	1011.63	254.27	1012.65	253.78	1019.68	252.03	1020.45	252.03
1031.01	252.01	1035.45	252.01	1042.06	252	1068.04	251.98	1070.44	251.97
1071.61	251.97	1071.83	252.29	1073.4	252.91	1075.29	253.69	1077.74	254.71
1081.82	256.44	1085.56	258.02	1088.13	257.98	1092.6	257.92	1099.26	258.08
1099.82	258.09	1100.85	258.04	1105.59	257.73	1107.69	257.73	1111.15	257.57
1115.61	257.34	1119.11	257.15	1122.74	256.93	1124.67	256.89	1131.52	256.65
1133.83	256.76	1135.76	256.78	1139.48	256.92	1142.47	257.41	1143.54	257.42
1147.35	257.26	1149.21	257.37	1153.94	257.49	1156.01	257.56	1159.78	257.36
1163	257.22	1164.9	257.24	1170.58	257.22	1173.18	257.17	1178.23	257.08
1184.36	257.3	1186.79	257.39	1189.14	257.33	1193.42	257.34	1201.16	257.53
1207.94	257.48	1211.8	257.6	1214.75	257.7	1221.57	258.52	1222.34	258.59
1227.07	258.52	1231.48	258.44	1234.65	258.29	1238.19	258.31	1241.25	258.28
1246.18	258.22	1251.01	258.31	1252.04	258.27	1253.38	258.13	1256.16	258.35
1259.39	258.51	1259.77	258.59	1263.84	258.79	1266.34	258.69	1266.6	258.74
1267.16	258.75	1268.24	258.79	1274.48	258.9	1281.16	259.45	1285.3	260.04
1291.24	260.15	1294.41	260.36	1301.86	260.59	1302.94	260.68	1307.94	261.18
1309.68	261.27	1316.83	261.47	1317.09	261.47	1325.15	261.7	1325.39	261.7
1332.08	261.59	1332.92	261.52	1334.96	261.45	1338	261.33	1339.6	261.41
1341.08	261.31	1343.55	261.51	1355.18	261.39	1363.42	261.59	1367.09	261.43
1370.06	260.79	1374.17	260.92	1376.99	260.91	1379.14	260.74	1380.8	260.7
1382.04	260.7	1385.1	261.03	1388.5	261.43	1395.42	261.48	1400.25	261.64
1402.28	261.76	1406.83	262.31	1409.52	262.62	1410.16	262.68	1411.3	262.68

1417.4	262.84	1419.99	262.91	1425.36	263.16	1426.41	263.18	1431.35	263.31
1433.18	263.34	1437.11	263.55	1440.97	263.9	1442.86	263.86	1448.12	264.07
1448.68	264.07	1455.01	264.32	1456.41	264.43	1458.5	264.4	1461.45	264.43
1464.14	264.59	1467.79	264.73	1468.01	264.73	1471.8	264.47	1474.31	264.61
1475	264.63	1476.66	264.64	1482.07	264.74	1486.7	264.56	1487.09	264.54
1487.34	264.56	1488.87	264.64	1493.18	264.9	1494.95	264.97	1498.79	264.94
1503.09	265.24	1504.53	265.31	1507.85	265.36	1510.73	265.38	1512.08	265.45
1517.8	265.69	1519.94	265.79	1522.4	265.9	1524.88	265.96	1530.27	266.12
1532.04	266.18	1535.1	266.43	1537.9	266.5	1546.82	266.64	1549.05	266.73
1553.61	266.96	1555.25	266.99	1559.64	267.11	1561.52	266.91	1563.56	267.13
1565.78	267.16	1568.66	267.06	1572.93	266.85	1575.89	266.77	1577.94	266.94
1579.38	267.15	1581.03	267.16	1583.97	267.19	1587.02	267.25	1588.25	267.26

Manning's n Values			num= 6								
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	335.73	.12	961.02	.04	1085.56	.12	1519.94	.05		
1583.97	.05										

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	961.02	1085.56		137.16	280.93		.1	.3

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	259.17	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.23	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	258.95	Reach Len. (ft)	137.16	280.93
307.93				
Crit W.S. (ft)	255.99	Flow Area (sq ft)	170.13	620.70
232.84				
E.G. Slope (ft/ft)	0.001378	Area (sq ft)	170.13	620.70
232.84				
Q Total (cfs)	2671.00	Flow (cfs)	74.89	2473.44
122.67				
Top Width (ft)	504.58	Top Width (ft)	190.56	124.54
189.48				
Vel Total (ft/s)	2.61	Avg. Vel. (ft/s)	0.44	3.98
0.53				
Max Chl Dpth (ft)	6.98	Hydr. Depth (ft)	0.89	4.98
1.23				
Conv. Total (cfs)	71965.4	Conv. (cfs)	2017.8	66642.5
3305.2				
Length Wtd. (ft)	268.19	Wetted Per. (ft)	190.95	126.32
189.70				
Min Ch El (ft)	251.97	Shear (lb/sq ft)	0.08	0.42
0.11				
Alpha	2.16	Stream Power (lb/ft s)	1588.25	0.00
0.00				

Frctn Loss (ft)	0.42	Cum Volume (acre-ft)	140.22	164.61
67.85				
C & E Loss (ft)	0.01	Cum SA (acres)	64.39	25.39
36.93				

Warning: Divided flow computed for this cross-section.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	263.15	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.68	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	262.47	Reach Len. (ft)	137.16	280.93
307.93				
Crit W.S. (ft)	260.07	Flow Area (sq ft)	1186.44	1059.84
1084.78				
E.G. Slope (ft/ft)	0.002458	Area (sq ft)	1186.44	1059.84
1084.78				
Q Total (cfs)	10810.00	Flow (cfs)	1258.29	8058.92
1492.79				
Top Width (ft)	969.03	Top Width (ft)	521.81	124.54
322.68				
Vel Total (ft/s)	3.25	Avg. Vel. (ft/s)	1.06	7.60
1.38				
Max Chl Dpth (ft)	10.50	Hydr. Depth (ft)	2.27	8.51
3.36				
Conv. Total (cfs)	218054.4	Conv. (cfs)	25381.7	162560.9
30111.8				
Length Wtd. (ft)	234.08	Wetted Per. (ft)	522.47	126.32
323.20				
Min Ch El (ft)	251.97	Shear (lb/sq ft)	0.35	1.29
0.51				
Alpha	4.13	Stream Power (lb/ft s)	1588.25	0.00
0.00				
Frctn Loss (ft)	0.38	Cum Volume (acre-ft)	440.70	264.63
271.84				
C & E Loss (ft)	0.14	Cum SA (acres)	94.44	25.40
59.97				

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	263.85	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.69	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	263.16	Reach Len. (ft)	137.16	280.93
307.93				
Crit W.S. (ft)	260.66	Flow Area (sq ft)	1570.74	1145.45
1312.11				
E.G. Slope (ft/ft)	0.002376	Area (sq ft)	1570.74	1145.45
1312.11				
Q Total (cfs)	12761.00	Flow (cfs)	1794.45	9019.31
1947.24				
Top Width (ft)	1112.61	Top Width (ft)	648.28	124.54
339.79				
Vel Total (ft/s)	3.17	Avg. Vel. (ft/s)	1.14	7.87
1.48				
Max Chl Dpth (ft)	11.19	Hydr. Depth (ft)	2.42	9.20
3.86				
Conv. Total (cfs)	261792.0	Conv. (cfs)	36813.1	185031.2
39947.7				
Length Wtd. (ft)	230.32	Wetted Per. (ft)	649.00	126.32
340.33				
Min Ch El (ft)	251.97	Shear (lb/sq ft)	0.36	1.35
0.57				
Alpha	4.42	Stream Power (lb/ft s)	1588.25	0.00
0.00				
Frctn Loss (ft)	0.35	Cum Volume (acre-ft)	514.09	283.58
317.95				
C & E Loss (ft)	0.14	Cum SA (acres)	98.26	25.40
62.98				

Warning: Divided flow computed for this cross-section.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	265.93	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.58	Wt. n-Val.	0.113	0.040
0.120				
W.S. Elev (ft)	265.35	Reach Len. (ft)	137.16	280.93
307.93				
Crit W.S. (ft)	261.55	Flow Area (sq ft)	3253.55	1418.55

2137.73					
E.G. Slope (ft/ft)	0.001808	Area (sq ft)	3253.55	1418.55	
2137.73					
Q Total (cfs)	19382.00	Flow (cfs)	4826.32	11237.57	
3318.11					
Top Width (ft)	1449.74	Top Width (ft)	903.42	124.54	
421.78					
Vel Total (ft/s)	2.85	Avg. Vel. (ft/s)	1.48	7.92	
1.55					
Max Chl Dpth (ft)	13.38	Hydr. Depth (ft)	3.60	11.39	
5.07					
Conv. Total (cfs)	455774.4	Conv. (cfs)	113492.6	264255.4	
78026.4					
Length Wtd. (ft)	218.29	Wetted Per. (ft)	904.48	126.32	
422.42					
Min Ch El (ft)	251.97	Shear (lb/sq ft)	0.41	1.27	
0.57					
Alpha	4.61	Stream Power (lb/ft s)	1588.25	0.00	
0.00					
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	732.45	336.83	
458.13					
C & E Loss (ft)	0.12	Cum SA (acres)	107.96	25.40	
70.77					

Warning: Divided flow computed for this cross-section.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 12717.34

INPUT

Description: not interpolated

Station Elevation Data num= 480

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	265.87	.76	265.92	2.38	265.77	8.18	265.69	9.64	265.66
10.26	265.68	12.16	265.61	14.57	265.61	16.73	265.59	18.35	265.62
24.79	265.57	29.55	265.72	35.97	265.68	36.69	265.65	39.54	265.43
42.19	265.27	47.74	265.18	53.37	265.05	60.01	265.31	63.27	265.8
63.53	265.82	64.67	265.75	70.52	264.93	77.68	263.91	79.3	263.84
84.06	263.75	88.35	263.5	93.85	263.49	95.74	263.56	98.02	263.46
100.48	263.26	102.66	263.2	105.71	262.99	114.3	262.82	117.24	262.74
122.83	262.91	123.62	262.89	127.19	262.68	131.78	262.19	135.25	262.23
138.14	262.21	144.22	262.02	150.51	262.1	152.11	261.95	155.14	261.54

158.27	261.46	160.38	261.38	166.56	261.59	168.61	261.45	172.39	261.35
177.97	261.42	178.85	261.45	182.42	261.22	184.55	261.14	185.86	261.11
190.44	261.19	192.55	261.12	196.25	261.05	201.15	261.13	202.09	261.16
209.09	261.14	211.12	261.01	213.25	261.12	216.65	261.06	218.6	260.98
222.97	260.65	226.04	260.47	231.97	260.53	236.14	260.44	240.51	259.96
240.94	259.9	244.4	259.69	246.88	259.76	249.79	259.93	251.68	260.09
252.92	260.16	258.82	259.57	264.5	259.48	268.31	259.5	272.66	259.5
276.84	259.44	280.09	259.46	287.43	259.36	299.64	259.74	301.19	259.75
302.91	259.69	309.27	259.15	314.16	259.02	315.92	259.1	318.33	259.15
321.23	259.31	323.4	259.18	326.71	258.86	328.14	258.88	332.19	259.11
336.1	259.17	336.81	259.12	342.8	258.98	344.15	258.99	347.4	259.07
351.37	258.91	357.73	258.78	366.97	258.62	368.73	258.57	372.3	258.55
374.01	258.47	375.8	258.42	384.06	258.26	387.94	258.41	394.58	258.23
396.22	258.24	401.23	258.33	407.28	258.03	412.89	258.29	416.13	258.13
419.13	258.09	427.76	258.23	430.51	258.15	439.09	258.47	441.77	258.52
442.92	258.5	447.05	258.39	450.23	258.24	453.37	258.06	456.93	257.98
460.43	257.97	464.39	258.07	466.34	258.18	469.98	258.3	474.52	257.86
477.61	257.83	482.86	258.02	487.56	258.18	490.61	258.09	492.69	257.83
495.8	257.86	504.54	257.91	506.46	257.91	515.9	257.64	521.13	257.82
522.1	257.85	526.05	257.83	527.7	257.79	532.1	257.88	534.61	257.87
538.35	257.68	543.06	257.48	546.94	257.49	548.88	257.59	549.89	257.74
556.49	257.65	557.79	257.68	566.02	257.53	572.12	257.8	577.35	257.76
579.65	257.87	582.44	257.93	586.03	257.93	590.67	257.71	592.77	257.72
599.16	258.02	602.5	257.99	608.73	258.05	611.15	258.26	614.37	258.01
617.66	257.93	622.88	258.16	624.59	258.22	625.64	258.28	632.73	258.44
637	258.47	641.54	258.43	643.77	258.44	645.66	258.22	648.75	258.14
650.77	258.22	653.31	258.39	656.83	258.46	659.74	258.37	663.47	258.07
665.6	258.08	669.16	258.18	671.2	258.2	671.8	258.16	675.78	257.83
680.9	257.39	687.33	256.87	691.25	256.75	692.93	256.79	697.19	256.64
700.05	256.62	704.37	256.56	706.8	256.61	711.65	256.9	715.05	256.94
717.72	256.89	722.98	256.97	728.48	257.35	730.04	257.38	734.26	257.37
737.76	257.2	740.79	257.28	745.49	257.34	746.65	257.29	749.85	257.44
753.24	257.32	758.75	257.55	760.83	257.53	764.72	257.59	770.92	257.71
775.63	257.76	776.69	257.75	778.56	257.69	789.94	257.64	790.66	257.61
791.98	257.67	798.67	258.08	806.31	258.18	811.61	258.61	813.89	258.78
817.54	258.75	823.59	258.78	827.79	258.83	829.12	258.82	829.84	258.87
833.01	258.87	836.57	258.85	842.05	258.28	845.09	257.89	851.08	257
856.03	257.16	858.41	257.17	861.14	257.11	864.41	256.99	869.72	257.28
874.73	257.17	876.22	257.09	877.28	257.14	882.19	257.26	884.8	257.02
893.24	256.2	895.16	255.96	901.3	256.06	901.78	256.08	904.16	256.31
906.86	256.21	911.98	256.12	913.19	256.16	916.71	256.03	919.68	256.05
925.19	256.44	928.01	256.67	933.12	256.76	935.3	256.9	942.88	257.04
943.21	257.03	954.1	256.85	956.27	256.91	962.59	257.11	965.7	257.33
974.14	257.22	977.18	257.12	981.69	256.99	985.93	257.03	990.14	257.25
992.38	257.4	998.6	257.28	999.76	257.21	1004.06	256.91	1006.92	256.99
1009	257.01	1012.12	256.92	1014.8	256.74	1016.99	256.76	1022.1	256.64
1024	256.67	1030.17	256.95	1033.22	257.01	1035.33	256.92	1037.26	256.65
1041.63	256.29	1042.07	256.29	1048.12	256.55	1052.15	256.62	1053.66	256.69
1056.08	256.69	1060.31	256.71	1065.81	256.54	1067.37	256.52	1068.61	256.47
1079.2	256.7	1082.56	256.91	1088.27	257	1089.78	256.91	1094.29	256.74

1096.56	256.52	1100.72	256.04	1102.08	256.01	1105.7	255.87	1109.25	255.45
1116.3	254.03	1120.43	253.52	1122.19	253.07	1125.28	252.27	1126.18	252.04
1127.23	251.72	1172.12	251.72	1172.8	251.96	1175.04	253.02	1177.86	254.32
1181.56	255.83	1185.67	257.54	1186.6	257.92	1192.14	257.9	1192.91	257.86
1195.52	257.9	1199.3	258.03	1202.92	258.03	1205.87	258	1209.18	257.63
1211.89	257.28	1213.49	257.34	1217.3	257.57	1219.43	257.31	1221.3	257.39
1230.14	258.42	1232.98	258.59	1237.51	258.63	1240.79	258.94	1245.76	259.29
1246.53	259.36	1249.55	259.26	1252.98	259.02	1256.81	259.02	1259.12	259.07
1261.42	259.14	1265.59	259.25	1269.71	259.53	1271.19	259.95	1277.11	262.07
1280.35	262.03	1284.68	262.98	1289.24	263.28	1297.15	262.14	1300.73	262.07
1302.2	262.16	1305.72	261.87	1309.01	262.04	1310.22	262.07	1311.67	262.15
1313.53	262.11	1316.37	262.1	1319.37	262.16	1323.94	262.06	1325.61	261.96
1328.66	261.88	1329.43	261.89	1332.73	261.56	1337.9	261.12	1338.39	261.06
1340.66	261.02	1347.39	261.1	1354.91	261.23	1360.49	261.52	1371.95	262.41
1377.23	262.31	1380.92	262.47	1385.54	262.63	1389.77	262.73	1394.41	262.72
1406.45	263.58	1409.4	263.76	1410.65	263.71	1417.14	263.16	1418.85	263.05
1424.37	262.51	1426.3	262.62	1428.87	262.92	1431.3	263.26	1432.86	263.26
1436.49	263.53	1441.38	263.61	1442.39	263.56	1456.81	263.46	1458.59	263.55
1464.41	263.91	1467.16	263.98	1472.05	264.43	1477.76	264.18	1479.34	264.07
1483.86	263.87	1484.11	263.87	1489.76	264.13	1492.38	264.35	1497.97	264.79
1501.54	264.94	1502.17	264.93	1505.03	265.08	1509.34	265.05	1510.39	265.06
1511.22	265.11	1515.65	265.43	1518.4	265.29	1524.34	265.53	1526.42	265.68
1528.38	265.71	1535.28	265.6	1541.39	266.06	1541.85	266.08	1549.1	266.17
1549.77	266.17	1558.06	266.66	1562.75	266.73	1564.22	266.88	1571.25	267.32
1575.94	267.6	1581.93	267.07	1593.83	267.49	1595.2	267.39	1600.85	266.78
1601.51	266.82	1616.2	266.84	1616.9	266.85	1624.52	267.11	1627.84	267.1
1632.13	267.07	1639.6	267.31	1641.23	267.31	1647.18	267.61	1648.04	267.75
1654.67	268.31	1655.84	268.34	1661.82	268.44	1662.75	268.44	1667.62	268.33
1672.49	268.95	1676.1	269.14	1679.04	269.13	1683.11	269.16	1684.72	269.19
1687.21	269.18	1690.24	269.24	1692.24	269.26	1695.34	269.45	1697.3	269.49
1699.71	269.42	1703.53	269.61	1704.41	269.67	1707.26	269.91	1711.44	270.06
1714.72	270.16	1718.57	270.47	1725.46	271.28	1729.12	271.58	1736.91	272.31
1738.54	272.58	1746.91	274.57	1748.17	274.87	1751.84	275.23	1753.7	275.87
1755.49	276.46	1757.86	276.99	1759.19	277.16	1760.74	277.43	1767.01	278.45
1780.07	280.35	1781.78	280.54	1784.71	280.72	1787.22	281.21	1789.65	281.52
1792.71	281.74	1796.83	282.08	1807.25	282.09	1826.39	282.2	1849.86	282.87
1854.21	282.44	1861.06	282.07	1864.93	281.67	1866.64	281.66	1877.85	280.57

Manning's n Values			num=	7					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	521.13	.12	1105.7	.04	1109.25	.04	1125.28	.04
1181.56	.12	1746.91	.05						

Bank Sta:	Left	Right	Lengths:	Left	Channel	Right	Coeff	Contr.	Expan.
	1105.7	1181.56		124.15	369.78	428.59		.1	.3
Blocked Obstructions			num=	1					
Sta L	Sta R	Elev							
1803.31	1856.19	281.14							

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	258.74	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.34	Wt. n-Val.	0.116	0.040
0.120				
W.S. Elev (ft)	258.40	Reach Len. (ft)	124.15	369.78
428.59				
Crit W.S. (ft)	256.00	Flow Area (sq ft)	670.04	437.24
34.65				
E.G. Slope (ft/ft)	0.001806	Area (sq ft)	670.04	437.24
34.65				
Q Total (cfs)	2671.00	Flow (cfs)	424.17	2232.36
14.47				
Top Width (ft)	794.16	Top Width (ft)	669.86	75.86
48.44				
Vel Total (ft/s)	2.34	Avg. Vel. (ft/s)	0.63	5.11
0.42				
Max Chl Dpth (ft)	6.68	Hydr. Depth (ft)	1.00	5.76
0.72				
Conv. Total (cfs)	62858.2	Conv. (cfs)	9982.2	52535.3
340.6				
Length Wtd. (ft)	322.80	Wetted Per. (ft)	670.60	77.15
48.98				
Min Ch El (ft)	251.72	Shear (lb/sq ft)	0.11	0.64
0.08				
Alpha	3.99	Stream Power (lb/ft s)	1877.85	0.00
0.00				
Frctn Loss (ft)	0.54	Cum Volume (acre-ft)	138.90	161.20
66.90				
C & E Loss (ft)	0.03	Cum SA (acres)	63.03	24.74
36.09				

Warning: Divided flow computed for this cross-section.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	262.63	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.22	Wt. n-Val.	0.092	0.040
0.120				
W.S. Elev (ft)	262.41	Reach Len. (ft)	124.15	369.78
428.59				
Crit W.S. (ft)	260.13	Flow Area (sq ft)	4126.29	740.84
428.84				
E.G. Slope (ft/ft)	0.001166	Area (sq ft)	4126.29	740.84
428.84				

Q Total (cfs)	10810.00	Flow (cfs)	6142.02	4270.03
397.95				
Top Width (ft)	1236.11	Top Width (ft)	975.94	75.86
184.31				
Vel Total (ft/s)	2.04	Avg. Vel. (ft/s)	1.49	5.76
0.93				
Max Chl Dpth (ft)	10.69	Hydr. Depth (ft)	4.23	9.77
2.33				
Conv. Total (cfs)	316637.7	Conv. (cfs)	179907.0	125074.3
11656.3				
Length Wtd. (ft)	226.56	Wetted Per. (ft)	976.98	77.15
185.52				
Min Ch El (ft)	251.72	Shear (lb/sq ft)	0.31	0.70
0.17				
Alpha	3.46	Stream Power (lb/ft s)	1877.85	0.00
0.00				
Frctn Loss (ft)	0.21	Cum Volume (acre-ft)	432.33	258.83
266.49				
C & E Loss (ft)	0.02	Cum SA (acres)	92.08	24.76
58.18				

Warning: Divided flow computed for this cross-section.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	263.35	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.21	Wt. n-Val.	0.090	0.040
0.120				
W.S. Elev (ft)	263.15	Reach Len. (ft)	124.15	369.78
428.59				
Crit W.S. (ft)	260.40	Flow Area (sq ft)	4858.41	797.11
582.50				
E.G. Slope (ft/ft)	0.001050	Area (sq ft)	4858.41	797.11
582.50				
Q Total (cfs)	12761.00	Flow (cfs)	7655.18	4574.93
530.89				
Top Width (ft)	1307.17	Top Width (ft)	1002.27	75.86
229.04				
Vel Total (ft/s)	2.05	Avg. Vel. (ft/s)	1.58	5.74
0.91				
Max Chl Dpth (ft)	11.43	Hydr. Depth (ft)	4.85	10.51
2.54				
Conv. Total (cfs)	393824.8	Conv. (cfs)	236251.1	141189.7
16384.0				
Length Wtd. (ft)	219.94	Wetted Per. (ft)	1003.35	77.15
230.45				

Min Ch El (ft)	251.72	Shear (lb/sq ft)	0.32	0.68
0.17				
Alpha	3.19	Stream Power (lb/ft s)	1877.85	0.00
0.00				
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)	503.97	277.32
311.25				
C & E Loss (ft)	0.02	Cum SA (acres)	95.66	24.76
60.97				

Warning: Divided flow computed for this cross-section.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	265.56	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.17	Wt. n-Val.	0.086	0.040
0.120				
W.S. Elev (ft)	265.39	Reach Len. (ft)	124.15	369.78
428.59				
Crit W.S. (ft)	261.31	Flow Area (sq ft)	7161.70	966.99
1243.44				
E.G. Slope (ft/ft)	0.000789	Area (sq ft)	7161.70	966.99
1243.44				
Q Total (cfs)	19382.00	Flow (cfs)	12882.11	5463.51
1036.38				
Top Width (ft)	1472.33	Top Width (ft)	1058.70	75.86
337.77				
Vel Total (ft/s)	2.07	Avg. Vel. (ft/s)	1.80	5.65
0.83				
Max Chl Dpth (ft)	13.67	Hydr. Depth (ft)	6.76	12.75
3.68				
Conv. Total (cfs)	689998.8	Conv. (cfs)	458602.9	194500.9
36895.0				
Length Wtd. (ft)	206.84	Wetted Per. (ft)	1059.92	77.15
339.37				
Min Ch El (ft)	251.72	Shear (lb/sq ft)	0.33	0.62
0.18				
Alpha	2.62	Stream Power (lb/ft s)	1877.85	0.00
0.00				
Frctn Loss (ft)	0.14	Cum Volume (acre-ft)	716.06	329.13
446.18				
C & E Loss (ft)	0.01	Cum SA (acres)	104.87	24.76
68.08				

Warning: Divided flow computed for this cross-section.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 12347.56

INPUT

Description: not interpolated

Station Elevation Data				num=	480				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	267.95	1.62	267.99	3.12	267.97	6.41	267.57	8.51	267.66
12.51	267.45	16.79	267.11	19.91	267.14	20.95	267.16	22.89	267.15
27.62	267	29.77	266.63	32.23	266.29	36.12	266.11	36.57	266.08
37.16	266.06	37.86	266.02	44.2	265.75	48.26	265.74	50.7	265.69
52.72	265.46	56.23	265.07	57.56	265.07	61.32	265.11	61.91	265.12
64.32	264.92	67.77	264.93	70.47	264.98	72.09	265.02	75.94	264.76
77.3	264.45	80.32	264.32	85.46	264.23	86.08	264.22	89.3	264.2
89.86	264.22	90.38	264.23	94.4	264.3	97.15	264.05	99.83	263.74
103.7	263.8	105.53	263.8	109.65	263.57	111.21	263.52	112.13	263.5
116.25	263.42	120.05	263.15	121.19	263.1	126.89	263.06	129.79	263
134.32	262.9	135.82	262.87	137.95	262.64	146.53	262.48	147.02	262.45
149.39	262.23	152.96	262.17	157.08	262.23	158.29	262.19	163.9	262.08
164.56	262.05	166.51	261.93	170.34	261.55	173.05	261.55	177.2	261.46
178.97	261.36	181.49	261.28	184.32	261.27	186.25	261.09	189.07	261
190.31	260.91	194.94	260.61	200.38	260.74	200.87	260.75	205.32	260.63
206.86	260.59	207.04	260.58	211.94	260.24	214.99	260.32	216.97	260.38
220.06	260.09	221.26	259.98	222.81	259.92	228.36	260.07	229.65	260.08
233.32	260.13	237.73	260.26	238.26	260.27	241.54	259.88	242.48	259.83
246.26	259.74	258.24	259.71	262.23	259.81	265.4	259.61	265.71	259.6
266.01	259.6	277.2	259.46	282.85	259.24	283.97	259.21	290.14	259.04
295.67	258.88	299.91	258.89	308.84	258.97	310.37	258.91	313.33	258.77
315.94	258.47	317.22	258.45	319.95	258.37	325.2	258.37	328.77	258.34
332.91	258.29	333.59	258.28	336.33	258.51	341.54	258.2	342.59	258.13
343.42	258.21	348.05	258.35	353.28	258.13	353.62	258.14	353.7	258.14
363.74	257.85	365.22	257.92	366	257.82	369.91	257.86	371.26	257.91
373.05	257.86	375.52	257.74	378.29	257.73	379.33	257.7	380.29	257.65
385.2	257.59	390.99	257.83	391.75	257.85	395.58	257.66	396.62	257.69
399.49	257.65	403.1	257.65	404.38	257.58	408.99	257.46	414.41	257.45
415.25	257.28	416.63	257.37	421.52	257.44	425.16	257.44	429.07	257.7
430.65	257.61	434.34	257.41	438.3	257.25	439.49	257.23	440.76	257.17
445.81	257.26	450.28	257.24	451.95	257.24	457.51	257.4	457.79	257.41
457.93	257.4	462.88	257.55	466.46	257.49	472.19	257.16	475.05	257.09
476.03	257.06	476.97	257.06	480.56	257.13	482.98	257.19	488.74	257.15
489.78	257.15	491.05	257.18	493.78	257.22	496.06	257.23	499	257.13
502.66	257.2	505.6	257.23	507.94	257.15	512.6	257.04	516.82	257.01
518.14	257.04	522.02	257.12	526.95	257.2	527.13	257.2	527.4	257.18
531.5	256.92	534.35	257.06	536.75	257.18	539.66	257.05	543.24	256.92
545.62	256.91	548.02	257.02	551.66	257.19	557.01	257.25	559.96	257.39
562.7	257.33	566.04	257.49	567.05	257.59	577.92	258.06	582.48	257.93

589.19	257.69	593.17	257.55	595.73	257.48	600.53	257.31	605.83	257.16
616.14	257.28	618.96	257.22	625.59	256.97	633.39	257.27	634.14	257.27
643.22	257.09	644	257.1	645.18	257.09	656.21	257.24	661.53	256.88
663.6	256.61	666.57	256.68	669.5	256.67	673.71	256.55	677.1	256.58
680.71	256.7	685.04	256.68	688.5	256.75	689.62	256.73	691.01	256.81
691.24	256.82	695.68	256.91	700.53	256.97	702.47	256.85	703.3	256.9
708.86	256.77	712.34	256.72	714.59	256.71	720.03	257.12	720.56	257.2
721.02	257.21	721.35	257.19	727.8	257.34	727.92	257.34	732.84	257.12
736.57	256.96	737.87	256.92	746.21	256.99	749.53	256.96	752.28	257.1
753.56	257.35	759.09	257.31	759.78	257.3	761.71	257.17	765.42	256.8
766.8	256.8	770.57	256.56	773.04	256.58	780.82	255.91	781.59	255.93
782.55	255.63	784.44	255.41	784.94	255.37	791.45	255.56	793.86	255.43
796.9	255.46	801.59	255.76	803.49	255.46	806.08	255.18	809.25	255.59
812.4	255.73	814.37	255.88	815.33	255.8	818	255.75	821.62	255.73
824.84	255.68	828.45	255.82	832.54	255.65	837.14	255.6	837.32	255.6
841.63	255.37	845.76	255.13	846.24	255.11	847.23	255.08	853.82	254.76
854.91	254.74	857.5	254.56	860.33	254.48	861.87	254.67	863.75	254.98
865.62	255.49	870.37	255.9	873.29	255.88	874.75	255.94	880.36	255.91
882.84	255.96	884.86	256.11	886.89	256.38	890.03	256.32	892.89	256.18
894.36	256.26	898.44	256.25	898.9	256.27	899.15	256.25	901.96	256.19
905.26	256.19	908.16	256.13	910.34	255.85	912.66	255.74	916.99	255.51
921.33	255.82	921.56	255.81	927.6	255.41	929.98	255.56	932.17	255.37
934.44	255.2	936.52	255.14	938.05	255.37	942.49	255.46	943.43	255.56
944.02	255.58	944.42	255.58	947.07	255.75	950.01	255.6	951.5	255.51
953.62	255.75	954.64	255.88	957.14	255.67	959.07	255.59	960.09	255.63
962.11	255.9	963.61	255.99	968.46	255.91	972.26	255.92	974.02	255.89
976.18	256.07	979.4	256.42	983.7	256.72	987.62	256.86	989.03	256.8
990.22	256.79	992.06	256.8	993.82	256.54	996.45	256.48	998.19	256.13
1001.16	255.29	1003.03	254.85	1011.87	253.38	1012.71	252.95	1013.95	252.3
1016.37	251.6	1023.93	251.6	1065.62	251.6	1074.66	251.6	1077.98	256.21
1079.44	257.5	1079.77	257.78	1079.99	257.8	1080.94	257.86	1087.37	258.27
1089.87	258.22	1092.69	258.29	1095.69	258.42	1098.26	258.61	1099.03	258.66
1105.95	258.5	1107.47	258.28	1111.16	258.17	1113.51	257.96	1117.68	258.51
1117.8	258.51	1118.16	258.5	1123.22	258.08	1125.27	258.03	1126.63	258.09
1128.39	257.98	1130.73	258.09	1133.96	257.99	1136	258.02	1139.56	258.07
1140.78	258.03	1143.54	257.98	1146.04	258.13	1147.91	258.09	1152.29	257.89
1155.5	257.78	1156.81	257.72	1158.69	257.93	1160.11	258.02	1161.52	258.09
1166.12	258.26	1168.72	258.63	1172.1	258.88	1187.88	259.31	1189.99	259.25
1192.79	259.54	1196.95	259.6	1200.56	259.5	1205.03	259.77	1207.08	259.87
1207.69	259.97	1208.87	260.18	1212.84	260.99	1218.19	262.44	1219.87	263.06
1222.16	263.37	1224.34	263.9	1230.81	265.83	1239.52	268.21	1239.62	268.24
1239.7	268.26	1241.44	268.68	1245.94	269.7	1246.68	269.9	1259.38	273.7
1261.25	274.23	1261.52	274.31	1262.2	274.48	1265.07	275.13	1268.76	275.95
1282.71	278.89	1282.99	278.94	1283.11	278.99	1283.33	279.03	1286.97	279.8
1288.39	280.05	1290.83	280.51	1295.59	281.16	1296.43	281.27	1297.49	281.49
1298.77	281.55	1303.23	282.03	1306.69	282.56	1307.26	282.74	1309.58	283.55
1312.16	284.15	1314.12	284.44	1327.79	287.95	1328.1	288.02	1328.22	288.04
1328.25	288.04	1331.98	287.81	1332.52	287.77	1341.41	287.22	1345.97	287.37
1364.33	288.34	1366.23	288.44	1379.88	289.73	1385.52	289.77	1386.75	289.88
1387.18	289.93	1388.29	290.08	1390.2	290.73	1397.84	291.51	1403.92	291.84

1405.19	291.88	1405.99	292	1430.53	293.2	1441.1	293.67	1441.34	293.69
1442.37	293.68	1449.05	293.5	1452.08	293.37	1453.22	293.28	1456.06	293.03
1458.95	293.19	1461.21	293.39	1462.28	293.34	1464.26	293.31	1467.63	293.13
1470.28	293.24	1473.69	293.25	1474.46	293.23	1474.88	293.25	1476.95	293.26
1479.1	293.32	1479.52	293.33	1482.41	293.57	1483.47	293.51	1488.55	293.61
1488.72	293.61	1488.77	293.61	1494.08	293.66	1497.56	293.82	1499.44	293.76
1501.23	293.94	1508.49	294.12	1509.66	294.1	1513.75	293.78	1514.16	293.79

Manning's n Values			num= 9								
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	691.24	.12	998.19	.04	1012.71	.04	1023.93	.04		
1065.62	.04	1077.98	.05	1079.99	.12	1265.07	.05				

Bank Sta:	Left	Right	Lengths:			Left Channel	Right	Coeff	Contr.	Expan.
	998.19	1077.98		207	577.5	465.88		.1		.3

Blocked Obstructions			num= 2		
Sta L	Sta R	Elev	Sta L	Sta R	Elev
1350.32	1385.52	91.85	64 1408.33	1436.19	294.61

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	258.17	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.25	Wt. n-Val.	0.098	0.040
0.054				
W.S. Elev (ft)	257.92	Reach Len. (ft)	207.00	577.50
465.88				
Crit W.S. (ft)	255.55	Flow Area (sq ft)	770.47	452.16
2.46				
E.G. Slope (ft/ft)	0.001576	Area (sq ft)	770.47	452.16
2.46				
Q Total (cfs)	2671.00	Flow (cfs)	601.36	2068.09
1.55				
Top Width (ft)	719.26	Top Width (ft)	628.66	79.79
10.81				
Vel Total (ft/s)	2.18	Avg. Vel. (ft/s)	0.78	4.57
0.63				
Max Chl Dpth (ft)	6.32	Hydr. Depth (ft)	1.23	5.67
0.23				
Conv. Total (cfs)	67271.9	Conv. (cfs)	15145.9	52087.0
39.0				
Length Wtd. (ft)	529.76	Wetted Per. (ft)	629.60	82.80
11.42				
Min Ch El (ft)	251.60	Shear (lb/sq ft)	0.12	0.54
0.02				
Alpha	3.44	Stream Power (lb/ft s)	1514.16	0.00
0.00				
Frctn Loss (ft)	0.66	Cum Volume (acre-ft)	136.85	157.42
66.72				

C & E Loss (ft)	0.01	Cum SA (acres)	61.18	24.08
35.79				

Warning: Divided flow computed for this cross-section.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the

largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may

wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	262.39	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.14	Wt. n-Val.	0.073	0.040
0.116				
W.S. Elev (ft)	262.25	Reach Len. (ft)	207.00	577.50
465.88				
Crit W.S. (ft)	259.25	Flow Area (sq ft)	4044.26	797.56
499.53				
E.G. Slope (ft/ft)	0.000777	Area (sq ft)	4044.26	797.56
499.53				
Q Total (cfs)	10810.00	Flow (cfs)	6658.11	3737.85
414.04				
Top Width (ft)	1068.28	Top Width (ft)	848.99	79.79
139.50				
Vel Total (ft/s)	2.02	Avg. Vel. (ft/s)	1.65	4.69
0.83				
Max Chl Dpth (ft)	10.65	Hydr. Depth (ft)	4.76	10.00
3.58				
Conv. Total (cfs)	387894.8	Conv. (cfs)	238912.6	134125.1
14857.1				
Length Wtd. (ft)	406.86	Wetted Per. (ft)	850.14	82.80
140.59				
Min Ch El (ft)	251.60	Shear (lb/sq ft)	0.23	0.47
0.17				
Alpha	2.27	Stream Power (lb/ft s)	1514.16	0.00
0.00				
Frctn Loss (ft)	0.35	Cum Volume (acre-ft)	420.69	252.30
261.93				
C & E Loss (ft)	0.01	Cum SA (acres)	89.48	24.09
56.58				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	263.15	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.14	Wt. n-Val.	0.072	0.040
0.117				
W.S. Elev (ft)	263.01	Reach Len. (ft)	207.00	577.50
465.88				
Crit W.S. (ft)	259.48	Flow Area (sq ft)	4693.72	857.99
606.08				
E.G. Slope (ft/ft)	0.000715	Area (sq ft)	4693.72	857.99
606.08				
Q Total (cfs)	12761.00	Flow (cfs)	8170.66	4049.59
540.75				
Top Width (ft)	1090.17	Top Width (ft)	868.64	79.79
141.74				
Vel Total (ft/s)	2.07	Avg. Vel. (ft/s)	1.74	4.72
0.89				
Max Chl Dpth (ft)	11.40	Hydr. Depth (ft)	5.40	10.75
4.28				
Conv. Total (cfs)	477362.0	Conv. (cfs)	305647.2	151486.6
20228.2				
Length Wtd. (ft)	396.42	Wetted Per. (ft)	869.81	82.80
142.96				
Min Ch El (ft)	251.60	Shear (lb/sq ft)	0.24	0.46
0.19				
Alpha	2.11	Stream Power (lb/ft s)	1514.16	0.00
0.00				
Frctn Loss (ft)	0.32	Cum Volume (acre-ft)	490.36	270.30
305.40				
C & E Loss (ft)	0.01	Cum SA (acres)	92.99	24.09
59.15				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	265.41	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.14	Wt. n-Val.	0.070	0.040
0.117				
W.S. Elev (ft)	265.27	Reach Len. (ft)	207.00	577.50
465.88				
Crit W.S. (ft)	260.34	Flow Area (sq ft)	6745.51	1038.61
938.67				
E.G. Slope (ft/ft)	0.000597	Area (sq ft)	6745.51	1038.61
938.67				
Q Total (cfs)	19382.00	Flow (cfs)	13314.90	5089.24
977.85				
Top Width (ft)	1174.49	Top Width (ft)	943.75	79.79
150.95				
Vel Total (ft/s)	2.22	Avg. Vel. (ft/s)	1.97	4.90
1.04				
Max Chl Dpth (ft)	13.67	Hydr. Depth (ft)	7.15	13.02
6.22				
Conv. Total (cfs)	793232.8	Conv. (cfs)	544929.1	208283.7
40019.9				
Length Wtd. (ft)	375.02	Wetted Per. (ft)	945.04	82.80
152.46				
Min Ch El (ft)	251.60	Shear (lb/sq ft)	0.27	0.47
0.23				
Alpha	1.83	Stream Power (lb/ft s)	1514.16	0.00
0.00				
Frctn Loss (ft)	0.26	Cum Volume (acre-ft)	696.24	320.62
435.45				
C & E Loss (ft)	0.01	Cum SA (acres)	102.02	24.09
65.68				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 11770.05

INPUT

Description: not interplated

Station Elevation Data num= 423

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	267.82	5.92	267.57	14.48	267.22	19.61	267.33	21	267.32
26.15	267.01	30.83	266.61	33.22	266.41	34.65	266.3	36.62	266.15
39.61	266.09	43.8	266	47.7	265.9	48.93	265.92	52	265.98
52.65	265.95	53.32	265.85	57.96	265.21	65.46	265.19	68.63	265.2
70.16	265.12	73.45	265.08	77.33	264.74	77.96	264.71	79.37	264.59
81.12	264.42	86.16	264.38	88.99	264.32	91.83	264.17	96.72	264.06
97.56	264.01	101.04	264.07	108.58	263.69	109.63	263.58	111.64	263.39
114.73	263.2	115.65	263.07	118.12	262.94	123.3	262.66	126.59	262.66
127.21	262.64	128.14	262.6	132.3	262.36	133.31	262.41	136.69	262.14
138.95	262.01	141.54	261.94	144.12	261.93	145.66	261.86	149.36	261.72
152.85	261.48	154.23	261.48	156.31	261.43	159.43	261.23	162.18	261.07
164.13	261	166.52	261.04	168.4	261	170.08	261.09	172.95	260.82
176.67	260.61	177.67	260.43	181.28	260.38	183.47	260.39	187.49	260.3
192.23	260.25	193.29	260.21	194.74	260.19	196.95	259.88	202.14	260.11
204.33	259.97	207.98	259.7	212.06	259.47	214.85	259.32	218.39	259.08
220.42	259.19	223.51	259.23	228.84	259.27	232.91	259.23	238.79	259.44
239.78	259.53	242.18	259.54	243.59	259.33	251.67	258.65	256.36	258.82
258.25	258.71	262.39	258.55	264.6	258.76	281.4	258.17	283.5	258.12
284.25	258.1	288.82	258.13	291.25	258.11	293.88	258.03	298.97	257.82
298.98	257.82	305.01	258.15	305.31	258.1	306.12	258.12	313.79	257.68
313.95	257.67	319.12	257.49	320.7	257.38	329.15	257.62	329.67	257.62
330.19	257.59	334.37	257.33	334.98	257.35	337.91	257.5	339.68	257.49
343.33	257.49	345.3	257.47	348.67	257.38	350.99	257.28	353.27	257.54
355.66	257.68	358.1	257.62	359.6	257.55	361.88	257.69	363.27	257.71
369.34	257.27	372.9	257.14	375.14	257.18	376.66	257.05	379.87	257.3
382.12	257.3	383.88	257.17	384.25	257.15	385.64	257.11	386.69	257.24
388.13	257.42	388.36	257.41	394.83	256.97	396.09	256.94	399.74	256.7
399.86	256.69	399.9	256.69	402.34	256.59	406.07	256.32	407.03	256.3
407.3	256.29	409.48	256.53	413.51	256.67	414.19	256.7	414.9	256.66
418.79	256.57	421.37	256.47	422.7	256.45	425.73	256.5	429.54	256.5
431.05	256.38	433.61	256.27	436.64	256.3	439.5	256.19	442.93	256.14
444.43	256.07	445.33	256.09	446.76	256.07	450.19	256.18	451.27	256.2
452.57	256.25	454.45	256.17	457.44	256.05	459.3	256.24	460.53	256.26
460.9	256.26	464.67	256.26	465.71	256.33	466.98	256.61	469.83	256.47
475.74	256.68	479.11	256.61	479.51	256.66	485.3	256.33	486.94	256.24
488.73	256.16	492.27	255.83	493.65	255.7	500.19	253.49	501.13	253.17
506.99	250.79	508.19	250.4	508.83	249.85	515.96	249.85	516	249.85
520.28	249.85	520.33	249.85	526.05	249.85	542.87	249.86	552.74	249.86
562.86	249.87	570.19	249.87	571.35	249.87	572.79	250.38	576.37	251.57
579.5	253.13	583.74	253.21	586.57	253.28	588.04	253.29	591.87	253.76
595.28	254.29	595.95	254.46	597.21	254.64	600.63	255.15	602.21	255.1
607.24	255.51	609.03	255.62	612.16	255.71	614.66	255.78	615.26	255.78
616.35	255.95	623.6	257.14	624.09	257.17	627.42	257	629.17	256.94
634.9	257.2	636.59	257.31	639.08	257.61	642.93	257.46	643.81	257.71

645.25	258.22	649.89	258.37	649.99	258.37	650.11	258.36	653.63	258.31
659.36	258.2	659.55	258.19	659.61	258.2	660.46	258.1	664.29	257.7
670.51	257.94	671.18	257.98	671.39	257.98	671.47	257.97	673.87	257.82
677.87	257.51	678.6	257.5	680.87	257.55	681.13	257.54	681.65	257.51
683.95	257.39	686.7	257.35	688.99	257.58	690.41	257.72	694.37	257.64
698.29	257.45	700.05	257.6	701.3	257.62	705.16	257.39	710.35	257.28
711.39	257.23	711.93	257.24	712.47	257.27	719.36	257.53	719.47	257.54
722.93	257.42	723.47	257.45	729.68	257.41	730.76	257.31	732.83	257.14
738.07	257.06	743.14	256.9	745.74	257.08	746.87	257.07	752.81	256.82
754.44	256.84	756.58	257.03	759.19	257.05	763.83	256.95	763.87	256.95
764.05	256.95	767	256.97	773.61	256.69	774.17	256.7	774.9	256.69
781.34	256.42	784.09	256.64	787.13	256.38	789.14	256.07	791.54	255.85
796.2	255.55	797.95	255.48	801.32	255.4	804.04	255.45	808.09	255.63
810.91	255.7	814.08	256.11	817.76	256.12	819.59	256.03	820.93	256.02
827.65	256.42	828.66	256.47	828.84	256.49	832.06	256.24	832.57	256.2
837.27	256.71	843.4	256.28	844.59	256.1	846.65	255.93	849.17	255.64
850.56	255.65	852.51	255.71	854.2	255.71	857.25	255.57	861.33	255.58
863.1	255.55	868.98	255.7	872.56	255.63	873.44	255.68	874.93	255.7
879	255.81	882.72	256.01	883.54	256.04	885.56	256.1	893.47	256.34
893.71	256.35	896.92	256.78	896.95	256.78	902.77	256.67	905.66	256.71
907.69	256.76	908.46	256.73	909.88	256.64	912.81	256.51	914.71	256.57
916.7	256.51	918.43	256.53	921.5	256.56	925.25	256.57	927.76	256.7
929.06	256.65	933.12	256.79	935.96	256.95	937.27	257.02	939.63	257.07
940.38	257.04	940.8	257.03	942.51	257.05	948.39	257.03	951.03	257.03
953.28	256.89	957.11	257.19	959.56	257.33	960.89	257.36	964.23	257.39
968.96	257.36	970.76	257.41	975.86	257.42	978.26	257.45	978.85	257.5
979.37	257.52	983.25	257.85	986.32	258.09	987.51	258.19	988.02	258.21
988.73	258.24	991.19	258.23	992.43	258.24	997.41	258.34	999.29	258.39
1001.73	258.44	1002.95	258.51	1007.17	258.73	1009.67	258.9	1012.81	259.28
1015.72	259.43	1017.86	259.52	1020.02	259.92	1021.61	260.41	1022.24	260.5
1023.84	260.73	1024.76	260.86	1026.1	261.17	1028.73	261.77	1030.45	262.22
1032.82	262.65	1035.36	263.33	1037.62	263.73	1040.71	264.42	1043.73	265.14
1044.63	265.36	1048.85	266.42	1050.42	266.74	1054.82	267.39	1056.93	267.63
1058.78	267.67	1062.87	268.11	1064	268.16	1067.66	268.39	1071.82	268.8
1074.17	268.94	1075.12	269.02	1075.98	269.08	1078.7	269.03	1079.93	269.17
1084.72	269.57	1085.94	269.62	1086.38	269.68	1090.59	270.19	1093.03	270.47
1093.42	270.53	1093.7	270.59	1098.36	271.35	1101.69	271.59	1102.87	271.77
1104.01	272.02	1109.65	273.35	1112.77	273.95	1115.95	274.82	1116.65	274.97
1116.96	275.03	1119.33	275.51	1121.52	275.92	1148.77	281.73	1151.38	281.79
1153.53	281.54	1155.49	281.32	1159.05	281.11	1162.26	281.01	1163.82	281.01
1164.55	281.01	1165.3	281.01	1167.33	281.02				

Manning's n Values			num=	9					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	460.53	.12	492.27	.04	493.65	.04	515.96	.04
570.19	.04	591.87	.04	597.21	.12	1022.24	.05		

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
492.27	597.21	327.44	303.61	203.08		.1	.3
Blocked Obstructions		num=	1				

Sta L Sta R Elev
1127.76 1139.65281.9486

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	257.50	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.22	Wt. n-Val.	0.062	0.040
0.120				
W.S. Elev (ft)	257.28	Reach Len. (ft)	327.44	303.61
203.08				
Crit W.S. (ft)	253.59	Flow Area (sq ft)	87.82	644.86
243.25				
E.G. Slope (ft/ft)	0.001008	Area (sq ft)	87.82	644.86
243.25				
Q Total (cfs)	2671.00	Flow (cfs)	59.24	2521.47
90.29				
Top Width (ft)	490.72	Top Width (ft)	116.99	104.94
268.80				
Vel Total (ft/s)	2.74	Avg. Vel. (ft/s)	0.67	3.91
0.37				
Max Chl Dpth (ft)	7.43	Hydr. Depth (ft)	0.75	6.15
0.90				
Conv. Total (cfs)	84118.6	Conv. (cfs)	1865.7	79409.5
2843.5				
Length Wtd. (ft)	293.69	Wetted Per. (ft)	117.17	106.85
269.33				
Min Ch El (ft)	249.85	Shear (lb/sq ft)	0.05	0.38
0.06				
Alpha	1.93	Stream Power (lb/ft s)	1167.33	0.00
0.00				
Frctn Loss (ft)	0.42	Cum Volume (acre-ft)	134.81	150.15
65.41				
C & E Loss (ft)	0.01	Cum SA (acres)	59.41	22.86
34.30				

Warning: Divided flow computed for this cross-section.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	262.03	Element	Left OB	Channel
Right OB				

Vel Head (ft)	0.28	Wt. n-Val.	0.056	0.040
0.120				
W.S. Elev (ft)	261.75	Reach Len. (ft)	327.44	303.61
203.08				
Crit W.S. (ft)	258.70	Flow Area (sq ft)	1263.53	1114.25
2050.80				
E.G. Slope (ft/ft)	0.000948	Area (sq ft)	1263.53	1114.25
2050.80				
Q Total (cfs)	10810.00	Flow (cfs)	2504.62	6081.69
2223.69				
Top Width (ft)	880.14	Top Width (ft)	343.76	104.94
431.44				
Vel Total (ft/s)	2.44	Avg. Vel. (ft/s)	1.98	5.46
1.08				
Max Chl Dpth (ft)	11.90	Hydr. Depth (ft)	3.68	10.62
4.75				
Conv. Total (cfs)	351184.6	Conv. (cfs)	81367.6	197576.0
72240.9				
Length Wtd. (ft)	275.36	Wetted Per. (ft)	344.27	106.85
432.55				
Min Ch El (ft)	249.85	Shear (lb/sq ft)	0.22	0.62
0.28				
Alpha	3.01	Stream Power (lb/ft s)	1167.33	0.00
0.00				
Frctn Loss (ft)	0.33	Cum Volume (acre-ft)	408.08	239.62
248.29				
C & E Loss (ft)	0.01	Cum SA (acres)	86.64	22.87
53.53				

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	262.82	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.27	Wt. n-Val.	0.055	0.040
0.120				
W.S. Elev (ft)	262.54	Reach Len. (ft)	327.44	303.61
203.08				
Crit W.S. (ft)	259.16	Flow Area (sq ft)	1543.01	1196.97
2392.18				
E.G. Slope (ft/ft)	0.000898	Area (sq ft)	1543.01	1196.97
2392.18				
Q Total (cfs)	12761.00	Flow (cfs)	3298.73	6669.68
2792.60				
Top Width (ft)	903.05	Top Width (ft)	363.10	104.94
435.01				

Vel Total (ft/s)	2.49	Avg. Vel. (ft/s)	2.14	5.57
1.17				
Max Chl Dpth (ft)	12.69	Hydr. Depth (ft)	4.25	11.41
5.50				
Conv. Total (cfs)	425942.7	Conv. (cfs)	110106.4	222623.6
93212.7				
Length Wtd. (ft)	274.26	Wetted Per. (ft)	363.63	106.85
436.20				
Min Ch El (ft)	249.85	Shear (lb/sq ft)	0.24	0.63
0.31				
Alpha	2.86	Stream Power (lb/ft s)	1167.33	0.00
0.00				
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	475.54	256.67
289.37				
C & E Loss (ft)	0.01	Cum SA (acres)	90.07	22.87
56.06				

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	265.14	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.28	Wt. n-Val.	0.054	0.040
0.119				
W.S. Elev (ft)	264.86	Reach Len. (ft)	327.44	303.61
203.08				
Crit W.S. (ft)	260.35	Flow Area (sq ft)	2446.26	1440.66
3414.30				
E.G. Slope (ft/ft)	0.000788	Area (sq ft)	2446.26	1440.66
3414.30				
Q Total (cfs)	19382.00	Flow (cfs)	6155.44	8513.24
4713.32				
Top Width (ft)	966.64	Top Width (ft)	416.34	104.94
445.36				
Vel Total (ft/s)	2.65	Avg. Vel. (ft/s)	2.52	5.91
1.38				
Max Chl Dpth (ft)	15.01	Hydr. Depth (ft)	5.88	13.73
7.67				
Conv. Total (cfs)	690241.4	Conv. (cfs)	219210.5	303177.8
167853.1				
Length Wtd. (ft)	272.66	Wetted Per. (ft)	416.96	106.85
446.81				
Min Ch El (ft)	249.85	Shear (lb/sq ft)	0.29	0.66
0.38				
Alpha	2.53	Stream Power (lb/ft s)	1167.33	0.00
0.00				

Frctn Loss (ft)	0.27	Cum Volume (acre-ft)	674.40	304.19
412.17				
C & E Loss (ft)	0.01	Cum SA (acres)	98.79	22.87
62.49				

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 11466.44

INPUT

Description: not interpolated

Station Elevation Data num= 426

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	269.63	.72	269.6	4.68	269.48	5.5	269.44	6.28	269.42
7.09	269.38	10.68	268.61	12.5	268.16	13.15	268.19	15.33	267.98
24.95	267.09	26.62	266.96	27.46	266.79	30.04	266.81	34.13	266.6
39.42	266.34	41.99	266.15	43.02	266.14	46.23	265.48	52.08	264.66
53.81	264.59	54.75	264.53	65.21	263.58	65.47	263.52	67.57	263.17
67.68	263.17	68.37	263.11	73.17	262.74	74.9	262.74	75.45	262.73
79.66	262.37	80.78	262.27	81.22	262.24	93.48	261.95	98.49	261.3
101.32	261.17	103.03	261.14	109.94	261.06	114.17	261.25	116.72	261.06
125.1	260.05	128.33	259.87	130.43	259.82	132.12	259.83	135.95	260.27
137.89	260.26	140.69	259.91	146.59	259.48	148.56	259.16	150.83	259.04
153.48	258.86	160.1	258.65	166.13	258.18	169.36	257.94	170.15	257.95
179.42	257.67	182.06	257.59	182.99	257.46	185.73	257.36	189.1	257.29
192.14	257.08	195.32	257.06	197.31	257.03	202.45	256.93	203.74	257.02
205.72	256.93	207.36	256.97	210.9	256.85	213.28	256.85	221.6	256.92
223.91	256.86	228.82	256.4	230.67	256.46	231.83	256.5	233.08	256.39
236.84	256.3	238.56	256.25	242.57	256.42	243.32	256.52	244.38	256.49
247.34	256.35	252.02	256.23	252.47	256.21	254.21	256.3	255.85	256.29
259.85	256.4	261.33	256.28	261.97	256.25	263.02	256.2	267.63	256.39
269.07	256.39	272.53	256.68	274.57	256.76	275.85	256.73	277.63	256.74
281.66	254.44	286.4	253.06	287.79	252.65	289.78	249.7	294.35	249.7
303.72	249.7	317.6	249.7	324.51	249.7	329.35	249.7	329.99	250.02
331.94	251.01	332.47	251.29	333.78	251.37	335.44	251.52	337.94	251.73
339.29	252.48	341.11	252.94	345.42	253.21	347.56	253.67	347.59	253.67
347.63	253.67	358.56	254.39	360.68	254.01	363.02	253.77	365.64	253.74
370.67	253.2	375.4	253.13	378.4	253	383	253.28	383.88	253.29
384.28	253.35	386.09	253.57	390.81	253.69	394.94	253.78	399.11	254.14
399.41	254.14	401.36	254.31	405.29	254.51	406.71	254.61	407.78	254.45
410.76	254.29	414.43	254.84	417.09	254.78	420.3	254.44	422.19	254.8
423.63	254.94	428.08	254.93	429.75	254.98	430.37	255	432.1	255.01
435.93	255.44	437.48	255.55	441.89	255.37	445.24	255.37	447.69	255.26
450.49	255.28	455.37	255.22	459.94	255.36	462.16	255.42	462.96	255.58

467.11	255.66	468.37	255.74	469.01	255.71	470.51	255.75	474.44	255.69
475.13	255.82	477.37	255.75	478.64	255.64	480.13	255.79	483.88	256.06
484.37	255.99	486.35	255.89	488.92	255.91	491.68	255.89	492.99	255.7
494.14	255.7	496.03	255.7	499.57	256.07	505.42	256.06	506.8	256.04
507.54	256.06	509.64	256.18	509.97	256.2	511.13	256.14	515.56	256.11
517.87	255.96	517.92	255.96	518.06	255.94	521.47	255.47	523.54	255.21
525.11	255.06	528.26	254.93	531.5	254.56	532.77	254.51	537.02	254.23
538.54	254.09	538.9	254.17	539.48	254.18	542.6	254.35	545.9	254.4
549.64	254.21	554.55	254.65	555.05	254.7	555.37	254.68	558.05	254.45
559.25	254.37	562.32	254.94	563.7	255.11	570.94	254.77	570.96	254.77
570.99	254.77	575.46	254.24	578.64	253.37	583.82	252.73	588.1	252.66
589.15	253.06	591.43	253.64	593.62	254.3	594.34	254.42	595.69	254.55
599.07	255.1	601.15	254.82	606.86	254.92	609.2	255.02	610.36	255.03
612.77	255.04	616.05	254.99	620.31	255.23	623.81	255.3	625.05	255.44
628.65	255.85	629.43	255.81	633.94	255.95	639.27	255.83	639.46	255.83
639.61	255.84	639.97	255.84	643.84	255.9	645.22	255.92	645.53	255.94
646.55	255.97	654.14	256.24	654.54	256.25	657.38	256.26	658.5	256.27
662.97	256.29	668.48	256.46	669.21	256.51	672.97	256.35	673.06	256.35
673.22	256.35	679.1	256.34	682.89	256.34	683.91	256.34	685.78	256.29
686.73	256.27	687.26	256.28	692.97	256.47	697.08	256.74	698.24	256.85
700.49	256.75	701.2	256.71	701.58	256.71	707.06	256.88	711.64	256.71
712.92	256.67	716.07	256.69	717.86	256.62	720.03	256.59	721.99	256.47
723.47	256.49	726.06	256.63	729.42	256.75	730.46	256.74	734.17	256.65
737.07	256.33	738.52	256.17	740.34	256.21	742.65	256.3	744.87	256.38
747.8	256.37	753.1	256.24	754.23	256.2	756.37	256.36	759.21	256.6
760.73	256.67	769.67	256.35	769.98	256.34	770.66	256.51	772.86	256.76
773.57	256.76	778.77	256.55	783.34	256.38	784.77	256.39	787.94	256.51
789.61	256.53	791.21	256.5	797.69	256.85	799.93	256.69	805.16	256.42
808.35	256.69	810.15	256.77	811.81	256.71	814.21	256.48	816.41	256.59
818.79	256.65	821.5	256.54	823.49	256.51	824.11	256.47	826.09	256.57
830.55	256.75	836.04	257.05	839.29	257.03	839.75	257.01	840.26	257.01
841.29	256.97	846.36	256.78	847.56	256.97	848.65	256.85	852.96	257.1
858.9	257.09	858.94	257.09	862.58	257.41	864.66	257.34	868.42	257.37
870.25	257.44	873.2	257.61	875.98	257.72	876.91	257.83	879.83	258.02
883.27	258.3	887.45	258.52	894.63	258.72	896.9	258.43	900.36	258.18
901.94	258.26	906.47	258.52	911.12	258.54	911.16	258.53	911.21	258.54
911.27	258.54	914.3	258.75	915.95	259	918.98	259.28	925.5	259.52
925.68	259.53	925.84	259.54	926.68	259.51	929.07	259.38	929.57	259.4
930.35	259.42	935.2	259.7	939.64	260.07	941.06	260.22	944.51	260.5
946.77	260.62	948.95	260.6	951.04	260.61	951.27	260.61	953.53	261.18
955.18	261.56	957.96	261.77	961.61	261.55	962.89	261.8	965.1	262.34
970.69	262.83	971.72	262.96	974.53	263.49	976.9	263.95	981.48	264.65
981.84	264.69	982.43	264.78	984.92	265.29	986.38	265.52	988.69	266.02
990.84	266.35	993.02	266.72	995.36	267	997.03	267.26	1000.27	267.78
1001.08	267.87	1003.15	268.19	1007.13	268.8	1009.3	269.05	1013.67	269.34
1014.34	269.37	1023.9	269.92	1026.02	270.05	1027.04	270.11	1028.88	270.18
1032.76	270.18	1037.77	270.97	1039.07	271.12	1040.37	271.36	1043.37	271.71
1043.68	271.8	1044.56	271.88	1049.39	272.47	1052.91	273.3	1054.71	273.49
1056.82	273.75	1059.87	274.25	1064.89	274.63	1065.12	274.65	1065.24	274.66
1065.45	274.67	1068.58	275.1	1070.81	275.19	1073.59	275.39	1076.58	275.76

1079.7	275.89	1080.84	275.93	1081.74	275.98	1085.29	276.15	1085.56	276.14
1086.02	276.17	1090.83	276.64	1094.63	277.26	1096.26	277.2	1098.38	277.22
1101.43	277.43	1102.62	277.46	1103.13	277.42	1103.49	277.39	1103.84	277.37
1107.56	277.53	1113.19	277.76	1113.21	277.76	1113.23	277.76	1113.3	277.76
1114.32	277.76								

Manning's n Values			num= 9								
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.03	34.13	.05	179.42	.12	277.63	.12	281.66	.04		
286.4	.04	329.99	.04	358.56	.12	951.04	.05				

Bank Sta:	Left	Right	Lengths:	Left	Channel	Right	Coeff	Contr.	Expan.
	281.66	358.56		368.75	335.64	110.7		.1	.3
Blocked Obstructions			num= 1						
Sta L	Sta R	Elev							
1050.99	1051.32	278.96							

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	257.07	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.35	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	256.72	Reach Len. (ft)	368.75	335.64
110.70				
Crit W.S. (ft)	254.65	Flow Area (sq ft)	20.94	422.06
581.21				
E.G. Slope (ft/ft)	0.002146	Area (sq ft)	20.94	422.06
581.21				
Q Total (cfs)	2671.00	Flow (cfs)	7.18	2211.36
452.46				
Top Width (ft)	574.76	Top Width (ft)	52.10	76.90
445.75				
Vel Total (ft/s)	2.61	Avg. Vel. (ft/s)	0.34	5.24
0.78				
Max Chl Dpth (ft)	7.02	Hydr. Depth (ft)	0.40	5.49
1.30				
Conv. Total (cfs)	57653.3	Conv. (cfs)	154.9	47732.1
9766.3				
Length Wtd. (ft)	285.71	Wetted Per. (ft)	52.78	79.46
447.12				
Min Ch El (ft)	249.70	Shear (lb/sq ft)	0.05	0.71
0.17				
Alpha	3.36	Stream Power (lb/ft s)	1114.32	0.00
0.00				
Frctn Loss (ft)	0.52	Cum Volume (acre-ft)	134.40	146.43
63.48				
C & E Loss (ft)	0.03	Cum SA (acres)	58.77	22.22
32.63				

Warning: Divided flow computed for this cross-section.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the

largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may

wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	261.69	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.37	Wt. n-Val.	0.102	0.040
0.120				
W.S. Elev (ft)	261.32	Reach Len. (ft)	368.75	335.64
110.70				
Crit W.S. (ft)	258.53	Flow Area (sq ft)	610.46	775.82
3110.75				
E.G. Slope (ft/ft)	0.001606	Area (sq ft)	610.46	775.82
3110.75				
Q Total (cfs)	10810.00	Flow (cfs)	879.99	5276.92
4653.10				
Top Width (ft)	855.79	Top Width (ft)	183.32	76.90
595.57				
Vel Total (ft/s)	2.40	Avg. Vel. (ft/s)	1.44	6.80
1.50				
Max Chl Dpth (ft)	11.62	Hydr. Depth (ft)	3.33	10.09
5.22				
Conv. Total (cfs)	269705.7	Conv. (cfs)	21955.3	131657.3
116093.1				
Length Wtd. (ft)	232.19	Wetted Per. (ft)	184.25	79.46
597.29				
Min Ch El (ft)	249.70	Shear (lb/sq ft)	0.33	0.98
0.52				
Alpha	4.10	Stream Power (lb/ft s)	1114.32	0.00
0.00				
Frctn Loss (ft)	0.38	Cum Volume (acre-ft)	401.03	233.04
236.26				
C & E Loss (ft)	0.01	Cum SA (acres)	84.66	22.24
51.14				

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largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	262.49	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.36	Wt. n-Val.	0.097	0.040
0.120				
W.S. Elev (ft)	262.13	Reach Len. (ft)	368.75	335.64
110.70				
Crit W.S. (ft)	259.03	Flow Area (sq ft)	762.71	838.37
3599.78				
E.G. Slope (ft/ft)	0.001503	Area (sq ft)	762.71	838.37
3599.78				
Q Total (cfs)	12761.00	Flow (cfs)	1222.71	5809.10
5729.19				
Top Width (ft)	878.49	Top Width (ft)	195.90	76.90
605.69				
Vel Total (ft/s)	2.45	Avg. Vel. (ft/s)	1.60	6.93
1.59				
Max Chl Dpth (ft)	12.43	Hydr. Depth (ft)	3.89	10.90
5.94				
Conv. Total (cfs)	329115.9	Conv. (cfs)	31534.6	149821.2
147760.1				
Length Wtd. (ft)	228.35	Wetted Per. (ft)	196.87	79.46
607.52				
Min Ch El (ft)	249.70	Shear (lb/sq ft)	0.36	0.99
0.56				
Alpha	3.86	Stream Power (lb/ft s)	1114.32	0.00
0.00				
Frctn Loss (ft)	0.36	Cum Volume (acre-ft)	466.88	249.58
275.40				
C & E Loss (ft)	0.01	Cum SA (acres)	87.97	22.24
53.63				

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largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may

wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	264.86	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.35	Wt. n-Val.	0.088	0.040
0.119				
W.S. Elev (ft)	264.51	Reach Len. (ft)	368.75	335.64
110.70				
Crit W.S. (ft)	260.24	Flow Area (sq ft)	1269.83	1020.84
5057.74				
E.G. Slope (ft/ft)	0.001291	Area (sq ft)	1269.83	1020.84
5057.74				
Q Total (cfs)	19382.00	Flow (cfs)	2608.85	7474.20
9298.95				
Top Width (ft)	925.51	Top Width (ft)	226.64	76.90
621.97				
Vel Total (ft/s)	2.64	Avg. Vel. (ft/s)	2.05	7.32
1.84				
Max Chl Dpth (ft)	14.81	Hydr. Depth (ft)	5.60	13.27
8.13				
Conv. Total (cfs)	539437.4	Conv. (cfs)	72609.2	208021.0
258807.2				
Length Wtd. (ft)	221.02	Wetted Per. (ft)	227.73	79.46
623.99				
Min Ch El (ft)	249.70	Shear (lb/sq ft)	0.45	1.04
0.65				
Alpha	3.29	Stream Power (lb/ft s)	1114.32	0.00
0.00				
Frctn Loss (ft)	0.32	Cum Volume (acre-ft)	660.43	295.61
392.42				
C & E Loss (ft)	0.02	Cum SA (acres)	96.37	22.24
60.00				

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Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 11130.8

INPUT

Description: not interpolated

Station Elevation Data num= 377

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	256.74	4.51	256.41	5.05	256.42	5.79	256.41	9.25	256.44
11.88	256.48	17.86	256.65	21.29	256.55	21.71	256.57	23.08	256.56
30.86	256.14	31.08	256.12	33	256.05	33.12	256.04	35.2	255.95
38.05	256.66	39.46	256.98	40.62	257.62	42.06	258.34	42.8	258.61
46.09	260.38	53.91	264.28	54.85	264.79	56.9	265.86	57.26	265.83
60.47	266.85	62.74	267.55	63.31	267.54	65.33	267.46	66.39	267.31
69.84	267.41	70.18	267.41	70.21	267.4	71.99	267.04	73.41	266.29
76.28	264.88	78.28	263.74	79.09	263.38	80.97	261.9	82.43	260.62
85.09	259.43	85.87	259.08	87.56	258.56	87.97	258.36	91.39	257.68
99.95	253.14	105.12	250.47	106.93	249.52	107.4	249.3	107.5	249.27
107.59	249.21	107.99	249.21	116.07	249.21	136.09	249.21	143.09	249.21
143.68	249.21	148.73	250.96	148.98	251.02	149.35	251.05	154.21	251.48
157.03	252	157.81	252.14	159.59	252.47	161.95	252.68	163.38	252.81
165.67	253.13	165.98	253.16	166.19	253.16	170.97	253.15	173	253.17
176.02	253.21	177.52	253.23	179.31	253.19	182.02	253.3	183.67	253.3
186.55	253.26	188.28	252.94	191.41	252.46	194.75	251.97	196.65	251.89
198.93	252.16	201.11	252.34	201.88	252.45	202.23	252.56	206.15	253.71
210.16	254.15	210.99	254.23	213.05	254.32	214.68	254.37	217.38	254.32
217.86	254.33	218.2	254.33	223.1	254.43	227.06	254.26	228.29	254.22
230.04	254.33	231.73	254.32	233.49	254.61	234.91	254.46	238.85	254.2
241.3	254.11	244.52	254.09	247.93	254.2	248.91	254.28	254.44	254.8
255.82	254.87	259.67	254.98	261.79	255.01	264.06	255.01	266.19	255.04
268.62	254.96	270.24	254.94	271.44	254.84	275.83	254.89	281.45	254.5
284.02	254.12	287.88	253.89	290.94	253.91	294.63	254.22	298.86	254.28
302.42	254.54	302.96	254.58	303.21	254.57	308.79	254.11	314.51	254.58
315.2	254.59	315.9	254.56	319.48	254.67	321.72	254.14	324.98	254.69
328.77	255.47	329.71	255.5	332.58	255.73	335.28	255.89	337.19	255.85
340.8	255.85	342.4	255.8	346.07	255.56	348.99	255.17	349.28	255.13
349.87	254.9	353.88	253.28	354.96	253.14	360.38	252.92	362.83	252.94
366.44	252.69	368.68	252.62	371.74	252.5	373.57	252.42	376.06	252.46
378.49	252.51	381.8	252.5	383.96	252.56	387.56	252.39	388.17	252.36
394.23	252.26	396.39	252.05	400.33	251.88	401.23	251.9	404.42	252.09
405.67	252.27	409.62	252.45	413.3	252.56	415.48	252.49	417.95	252.47
421.9	252.39	425.36	252.49	427.21	252.18	430.18	251.78	434.86	251.43
434.96	251.43	435.03	251.42	435.11	251.43	440.43	251.98	442.18	252.25
443.04	252.3	446.48	252.6	450.78	253.26	455.25	254.34	455.52	254.37
458.36	254.47	463.48	255.01	465.25	255.22	465.86	255.27	467.75	255.19
469.6	255.17	472.35	255.13	472.84	255.12	473.51	255.14	479.83	255.44
484.34	255.54	486.71	255.57	489.57	255.34	489.92	255.32	494.97	255.12
499.62	254.75	500.37	254.69	501.31	254.67	504.93	254.6	507.31	254.65
510.19	255.04	513.82	255.29	514.82	255.26	515.74	255.34	517.79	255.24
519.66	255.17	522.66	254.83	523	254.81	523.34	254.81	529.03	255.15
531.74	255.51	534.23	255.5	539.16	255.11	539.7	255.06	539.93	255.06
540.7	255.08	548.03	255.23	550.64	255.41	553.23	255.45	555.91	255.21
556.04	255.21	556.36	255.2	563.47	255.23	565.1	255.09	567.7	255.16
569.82	255.29	570.74	255.3	573.01	255.31	573.56	255.31	579.09	255.37

584.22	255.7	585.03	255.7	589.25	255.56	590.96	255.61	595.38	255.64
600.02	255.77	600.2	255.78	600.48	255.8	601.09	255.81	606.99	256.19
608.26	256.3	610.52	256.43	614.13	256.84	617.43	257.12	619.61	257.27
622.72	257	624.89	257.09	627.03	257.11	630.69	257.34	634.19	257.65
636.63	257.98	639.04	258.23	641.77	258.42	649.38	259.1	650.68	259.21
650.87	259.23	650.88	259.23	651	259.26	653.38	259.7	655.61	259.94
659.18	260.27	661.12	260.19	663.92	260.39	665.65	260.39	667.09	260.39
670.96	260.3	672.72	260.48	676.26	260.69	679.33	260.63	681.2	260.76
683.44	260.94	687.23	261.22	688.67	261.19	692.43	261.08	695.11	261.18
697.24	261.4	700.14	261.48	701.71	261.51	703.02	261.57	705.94	261.62
706.65	261.72	710.45	262.4	711.76	262.42	716.49	262.89	717.57	262.95
721.87	263.07	723.31	263.12	724.38	263.19	728.12	263.26	732.79	263.63
732.92	263.63	733.09	263.64	736.28	263.51	738.57	263.5	740.71	263.55
744.02	263.64	747.61	263.77	749.85	263.82	753.14	263.94	755.26	264.07
758.18	264.24	760.49	264.31	764.57	264.4	767.79	264.62	769.76	264.75
771.28	264.84	772.31	264.84	775.55	264.83	777.85	264.92	780.15	265.02
783.29	265.13	784.42	265.18	786.57	265.16	788.06	265.15	788.84	265.21
794	265.42	799.87	266.25	800.69	266.44	801.9	266.81	803.69	267.4
804.36	267.48	808.69	268.48	810.27	268.94	812.19	269.25	823.82	270.51
828.84	270.87	830.56	270.95	831.98	271.01	833.83	270.9	837.92	270.62
839.61	270.62	845.06	270.25	845.39	270.24	846.71	270.29	850.77	270.49
851.99	270.47	853.02	270.52	856.09	270.36	858.79	270.03	860.9	269.94
865.56	269.67	867.5	269.43	868.05	269.4	868.78	269.31	872.22	269.09
876.44	268.42	878.88	268.23	880.02	268.19	882.04	268.16	884.53	268.16
885.76	268.23	886.34	268.2	889.21	268.25	891.84	268.5	899.03	269.66
906.96	271.08	909.72	271.42	911.62	271.6	918.99	272.63	922.21	272.5
925.25	272.5	931.69	273.44	932.11	273.5	932.35	273.51	932.43	273.53
949.64	276.13	950.84	276.31	951.87	276.38	952.09	276.43	960.7	276.97
965.64	277.31	966.26	277.47	975.78	277.94	976.23	277.98	978.01	278.14
979.06	278.23	985.46	278.78						

Manning's n Values			num= 8								
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.12	33.12	.03	91.39	.045	99.95	.04	105.12	.04		
143.09	.04	165.98	.12	649.38	.05						

Bank Sta:	Left	Right	Lengths:		Left Channel	Right	Coeff	Contr.	Expan.
	99.95	165.98		561.91	505.91	229.13		.1	.3

Ineffective Flow			num= 1								
Sta L	Sta R	Elev	Permanent								
0	64.18	269.02	F								

Blocked Obstructions			num= 4								
Sta L	Sta R	Elev	Sta L	Sta R	Elev	Sta L	Sta R	Elev	Sta L	Sta R	Elev
816.65	827.22	276.56	67	900.54	912.04	278.56	99	940.5	974.21	280.12	292
981.13	985.46	280.42	64								

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	256.52	Element	Left OB	Channel

Right OB				
Vel Head (ft)	0.26	Wt. n-Val.	0.045	0.040
0.120				
W.S. Elev (ft)	256.26	Reach Len. (ft)	561.91	505.91
229.13				
Crit W.S. (ft)	253.94	Flow Area (sq ft)	9.17	397.22
918.30				
E.G. Slope (ft/ft)	0.001591	Area (sq ft)	10.42	397.22
918.30				
Q Total (cfs)	2671.00	Flow (cfs)	14.94	1919.44
736.62				
Top Width (ft)	521.47	Top Width (ft)	13.64	66.03
441.80				
Vel Total (ft/s)	2.02	Avg. Vel. (ft/s)	1.63	4.83
0.80				
Max Chl Dpth (ft)	7.05	Hydr. Depth (ft)	1.56	6.02
2.08				
Conv. Total (cfs)	66972.2	Conv. (cfs)	374.7	48127.7
18469.8				
Length Wtd. (ft)	453.02	Wetted Per. (ft)	6.65	67.44
443.60				
Min Ch El (ft)	249.21	Shear (lb/sq ft)	0.14	0.58
0.21				
Alpha	4.17	Stream Power (lb/ft s)	985.46	0.00
0.00				
Frctn Loss (ft)	0.58	Cum Volume (acre-ft)	134.27	143.28
61.58				
C & E Loss (ft)	0.02	Cum SA (acres)	58.50	21.67
31.51				

Warning: Divided flow computed for this cross-section.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	261.30	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.42	Wt. n-Val.	0.042	0.040
0.120				
W.S. Elev (ft)	260.88	Reach Len. (ft)	561.91	505.91
229.13				
Crit W.S. (ft)	257.66	Flow Area (sq ft)	64.66	702.42
3120.38				
E.G. Slope (ft/ft)	0.001693	Area (sq ft)	254.97	702.42
3120.38				

Q Total (cfs)	10810.00	Flow (cfs)	235.75	5120.28
5453.97				
Top Width (ft)	647.66	Top Width (ft)	64.91	66.03
516.72				
Vel Total (ft/s)	2.78	Avg. Vel. (ft/s)	3.65	7.29
1.75				
Max Chl Dpth (ft)	11.67	Hydr. Depth (ft)	3.63	10.64
6.04				
Conv. Total (cfs)	262746.7	Conv. (cfs)	5730.2	124453.0
132563.5				
Length Wtd. (ft)	408.63	Wetted Per. (ft)	19.56	67.44
518.79				
Min Ch El (ft)	249.21	Shear (lb/sq ft)	0.35	1.10
0.64				
Alpha	3.49	Stream Power (lb/ft s)	985.46	0.00
0.00				
Frctn Loss (ft)	0.62	Cum Volume (acre-ft)	397.37	227.34
228.34				
C & E Loss (ft)	0.00	Cum SA (acres)	83.61	21.69
49.72				

Warning: Divided flow computed for this cross-section.

Warning: The cross-section end points had to be extended vertically for the computed water surface.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	262.12	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.45	Wt. n-Val.	0.041	0.040
0.119				
W.S. Elev (ft)	261.68	Reach Len. (ft)	561.91	505.91
229.13				
Crit W.S. (ft)	258.12	Flow Area (sq ft)	79.20	754.94
3540.58				
E.G. Slope (ft/ft)	0.001691	Area (sq ft)	307.60	754.94
3540.58				
Q Total (cfs)	12761.00	Flow (cfs)	318.80	5771.55
6670.65				
Top Width (ft)	673.80	Top Width (ft)	67.41	66.03
540.36				
Vel Total (ft/s)	2.92	Avg. Vel. (ft/s)	4.03	7.65
1.88				
Max Chl Dpth (ft)	12.47	Hydr. Depth (ft)	4.23	11.43

6.55				
Conv. Total (cfs)	310305.5	Conv. (cfs)	7752.2	140345.0
162208.3				
Length Wtd. (ft)	404.24	Wetted Per. (ft)	20.77	67.44
542.46				
Min Ch El (ft)	249.21	Shear (lb/sq ft)	0.40	1.18
0.69				
Alpha	3.37	Stream Power (lb/ft s)	985.46	0.00
0.00				
Frctn Loss (ft)	0.61	Cum Volume (acre-ft)	462.35	243.44
266.33				
C & E Loss (ft)	0.00	Cum SA (acres)	86.85	21.69
52.18				

Warning: Divided flow computed for this cross-section.

Warning: The cross-section end points had to be extended vertically for the computed water surface.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	264.52	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.52	Wt. n-Val.	0.039	0.040
0.117				
W.S. Elev (ft)	264.00	Reach Len. (ft)	561.91	505.91
229.13				
Crit W.S. (ft)	259.48	Flow Area (sq ft)	126.20	908.25
4831.63				
E.G. Slope (ft/ft)	0.001678	Area (sq ft)	473.05	908.25
4831.63				
Q Total (cfs)	19382.00	Flow (cfs)	628.53	7823.63
10929.83				
Top Width (ft)	729.59	Top Width (ft)	75.47	66.03
588.10				
Vel Total (ft/s)	3.30	Avg. Vel. (ft/s)	4.98	8.61
2.26				
Max Chl Dpth (ft)	14.79	Hydr. Depth (ft)	5.70	13.76
8.22				
Conv. Total (cfs)	473159.8	Conv. (cfs)	15343.9	190993.1
266822.8				
Length Wtd. (ft)	392.88	Wetted Per. (ft)	24.91	67.44
590.32				
Min Ch El (ft)	249.21	Shear (lb/sq ft)	0.53	1.41
0.86				

Alpha	3.08	Stream Power (lb/ft s)	985.46	0.00
0.00				
Frctn Loss (ft)	0.59	Cum Volume (acre-ft)	653.05	288.18
379.85				
C & E Loss (ft)	0.00	Cum SA (acres)	95.09	21.69
58.46				

Warning: Divided flow computed for this cross-section.

Warning: The cross-section end points had to be extended vertically for the computed water surface.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 10624.89

INPUT

Description: not interpolated

Station Elevation Data num= 363

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	275.91	2.22	275.79	9.3	275.7	11.75	275.52	14.39	275.41
15.95	275.2	18.34	275.17	22.17	275.13	22.62	275.13	23.2	275.09
23.93	275.08	35.22	274.23	36.11	274.16	46.59	273.21	49.38	272.9
50.78	272.76	51.83	272.78	57.6	272.17	58.39	272.12	69.59	270.66
69.68	270.64	70.14	270.53	75.63	269.22	76.3	268.98	79.01	268.02
81.63	267.01	85.94	265.37	87.87	264.6	88.16	264.53	90.39	263.91
94.46	262.86	97.15	262.12	100.24	261.36	102.58	260.64	106.48	259.36
109.7	258.52	112.51	257.94	116.66	257.24	118.42	256.87	123.73	255.44
124.56	255.24	125.95	255.09	130.73	254.33	132.09	254.2	133.17	254.17
136.57	254.09	141.42	253.97	143.54	254.27	143.76	254.29	144.15	254.28
149.71	254.29	153.76	254.15	155.69	254.06	158.31	254.18	161.05	254.25
163.01	254.13	163.92	254.21	167.14	254.3	172.41	254.12	173.39	254.13
174.1	254.13	178.43	254.27	179.14	254.29	179.23	254.29	179.8	254.26
184.62	254.12	185.26	254.09	187.61	254.03	193.85	253.96	195.57	253.83
197.64	253.98	201.23	253.81	202.62	253.79	205.76	254.08	212.45	254.64
215.18	254.74	215.84	254.77	217.95	254.86	222.35	254.58	227.38	254.63
227.68	254.64	227.89	254.65	232.31	255.04	236.03	254.6	237.31	254.53
238.93	254.78	242.19	255.4	242.8	255.41	247.62	255.06	249.11	255.02
250.97	254.96	253.59	254.99	256.61	255.12	258.17	255.19	261.33	255.27
263.43	255.24	267.65	254.71	268.26	254.66	273.82	253.77	274.58	253.67
276.66	253.56	277.57	252.56	281.32	248.77	286.07	248.77	288.1	248.77
297.03	248.77	317.62	248.76	319.32	249.21	320.68	249.57	322.98	249.28
323.7	249.38	327.39	249.56	328.39	249.63	335.76	250.21	339.33	250.03
339.95	250.08	340.94	250.09	343.87	250.05	345.44	250.15	348.62	250.24

351.35	250.13	355.43	250.29	356.8	250.36	358.33	250.42	365.02	250.86
368.7	251.9	369.32	252.02	370.37	252.14	380.48	253.15	385	253.71
385.71	253.8	386.12	253.8	388.7	253.92	389.27	253.92	390.58	253.94
392.87	253.98	393.34	253.94	395.32	253.94	395.74	253.94	398.4	253.89
401.43	253.79	401.72	253.78	402.19	253.74	402.7	253.69	407.3	253.36
412.71	253.48	413.14	253.48	413.16	253.48	413.18	253.48	413.56	253.49
416.05	253.31	416.88	253.25	420.23	253.32	422.86	253.41	425.11	253.47
427.97	253.58	429.33	253.6	431.23	253.36	432.95	253.25	433.99	253.14
437.1	253.01	441.04	253.36	441.51	253.37	442.25	253.38	444.1	253.31
446.84	253.38	449.74	253.3	452.57	253.21	456.71	253.39	458.69	253.42
460.78	253.6	464.6	253.28	467.49	253.4	468.81	253.49	470.8	253.36
472.11	253.26	474.43	253.24	474.85	253.23	475.37	253.21	480.34	252.96
484.97	252.77	486.52	252.7	488.61	252.56	491.83	252.27	494.78	252.24
496.73	252.29	499.14	252.39	501.04	252.56	502.98	252.7	506.76	252.73
509.7	252.53	512.39	252.53	515.64	252.77	520.3	252.91	520.47	252.92
525.53	252.86	526.29	252.92	528.03	252.79	532.22	252.62	533.96	252.58
538.28	252.47	539.92	252.37	543.35	252.33	549.6	253.9	551.02	254.13
553.59	254.66	563.56	255.42	564.1	255.37	567.27	255.4	580.67	255.67
589.1	255.77	589.71	255.73	593.35	255.79	600.78	255.58	606.6	255.57
606.76	255.56	607.02	255.57	613.14	255.62	613.24	255.62	613.39	255.61
619.4	255.53	619.53	255.54	625.25	255.87	625.81	255.9	625.83	255.9
632.06	256.02	632.19	256.02	638.01	256.48	638.47	256.54	638.59	256.53
644.78	257.18	644.91	257.2	651.1	257.99	651.61	258.02	657.55	257.8
658.31	257.9	662.72	258.15	664.84	258.24	668.87	258.4	670.53	258.41
671.34	258.52	675.08	258.71	676.47	258.66	677.01	258.65	677.8	258.64
681.31	258.53	683.07	258.55	683.66	258.57	686.31	258.87	689.45	259.23
690.91	259.26	693.27	259.31	694.98	259.35	695.76	259.43	696.54	259.45
697.51	259.52	698.64	259.54	700.12	259.58	704.06	259.65	704.67	259.68
706.39	259.89	708.81	260.31	714.2	260.7	717.4	260.52	719.04	260.51
723.95	260.76	725.3	260.79	730.52	260.77	731.66	260.78	734.85	260.88
736.58	260.92	740.98	260.98	743.74	261.09	747.1	261.25	752.68	261.35
754.32	261.31	757.24	261.41	757.34	261.41	760.85	261.47	763.76	261.52
763.84	261.52	767.43	261.8	770.37	262.19	770.65	262.21	774.14	262.29
776.98	262.31	777.36	262.33	783.59	262.73	784.14	262.76	787.38	263.06
790.22	263.43	791	263.56	794.07	264.08	796.86	264.56	797.93	264.79
800.88	265.27	803.61	265.8	804.95	266.03	807.75	266.47	810.31	266.82
811.91	267.03	814.52	267.43	817.07	267.69	818.85	267.82	824.5	268.71
828.08	269.23	830.45	269.45	832.67	269.52	834.8	269.81	837.11	270.04
839.59	270.31	841.57	270.44	843.73	270.56	846.39	270.83	848.34	270.89
850.4	271.06	853.25	271.18	855.09	271.09	857.09	271.17	859.98	271.15
861.76	271.17	863.75	271.13	866.77	271.22	868.39	271.18	870.36	271.11
873.43	270.92	875.04	270.97	876.96	270.89	880.18	270.92	881.97	271.04
889.48	271.16	892.04	271.06	892.96	271.03	899.58	271.16	903.51	271.11
908.28	271.12	909.5	271.05	911.21	271	914.12	270.76	917.04	270.7
920.47	270.59	924.58	270.78	927.34	270.85	931.41	271.02	934.75	271.25
935.82	271.3	939.95	271.32	945	271.38	948.88	271.27	955.19	271.17
958.07	271.24	960.17	271.3	962.27	271.34	963.04	271.34	964.28	271.31
969.13	271.34	971.05	271.58	976.14	272.03	976.82	272.18	977.86	272.25
983.16	272.58	984.66	272.62	986.83	272.81				

Manning's n Values	num=	7
Sta n Val Sta n Val Sta n Val Sta n Val Sta n Val		
0 .05 18.34 .12 273.82 .04 286.07 .04 319.32 .04		
385.71 .12 690.91 .05		

Bank Sta: Left Right	Lengths: Left Channel Right	Coeff Contr.	Expan.
273.82 385.71	292.64 415.6 285.68	.1	.3

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	255.92	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.18	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	255.74	Reach Len. (ft)	292.64	415.60
285.68				
Crit W.S. (ft)	252.66	Flow Area (sq ft)	190.90	616.93
451.17				
E.G. Slope (ft/ft)	0.001043	Area (sq ft)	190.90	616.93
451.17				
Q Total (cfs)	2671.00	Flow (cfs)	88.99	2276.80
305.20				
Top Width (ft)	492.30	Top Width (ft)	151.20	111.89
229.21				
Vel Total (ft/s)	2.12	Avg. Vel. (ft/s)	0.47	3.69
0.68				
Max Chl Dpth (ft)	6.98	Hydr. Depth (ft)	1.26	5.51
1.97				
Conv. Total (cfs)	82692.8	Conv. (cfs)	2755.2	70488.7
9448.9				
Length Wtd. (ft)	394.27	Wetted Per. (ft)	151.70	114.37
229.72				
Min Ch El (ft)	248.76	Shear (lb/sq ft)	0.08	0.35
0.13				
Alpha	2.59	Stream Power (lb/ft s)	986.83	0.00
0.00				
Frctn Loss (ft)	0.52	Cum Volume (acre-ft)	132.97	137.39
57.98				
C & E Loss (ft)	0.02	Cum SA (acres)	57.43	20.64
29.74				

Warning: Divided flow computed for this cross-section.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the

largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may

wish to examine this cross section and enter a single n value for the

entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	260.68	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.41	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	260.27	Reach Len. (ft)	292.64	415.60
285.68				
Crit W.S. (ft)	256.59	Flow Area (sq ft)	920.16	1123.56
1714.57				
E.G. Slope (ft/ft)	0.001362	Area (sq ft)	920.16	1123.56
1714.57				
Q Total (cfs)	10810.00	Flow (cfs)	1290.49	7065.77
2453.74				
Top Width (ft)	604.84	Top Width (ft)	170.10	111.89
322.85				
Vel Total (ft/s)	2.88	Avg. Vel. (ft/s)	1.40	6.29
1.43				
Max Chl Dpth (ft)	11.51	Hydr. Depth (ft)	5.41	10.04
5.31				
Conv. Total (cfs)	292897.6	Conv. (cfs)	34965.8	191447.5
66484.3				
Length Wtd. (ft)	360.11	Wetted Per. (ft)	171.16	114.37
323.61				
Min Ch El (ft)	248.76	Shear (lb/sq ft)	0.46	0.84
0.45				
Alpha	3.21	Stream Power (lb/ft s)	986.83	0.00
0.00				
Frctn Loss (ft)	0.50	Cum Volume (acre-ft)	389.79	216.74
215.62				
C & E Loss (ft)	0.01	Cum SA (acres)	82.10	20.65
47.52				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	261.51	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.45	Wt. n-Val.	0.120	0.040
0.119				
W.S. Elev (ft)	261.06	Reach Len. (ft)	292.64	415.60
285.68				
Crit W.S. (ft)	257.07	Flow Area (sq ft)	1056.32	1212.48
1982.54				
E.G. Slope (ft/ft)	0.001372	Area (sq ft)	1056.32	1212.48
1982.54				
Q Total (cfs)	12761.00	Flow (cfs)	1613.76	8051.99
3095.25				
Top Width (ft)	641.81	Top Width (ft)	172.61	111.89
357.31				
Vel Total (ft/s)	3.00	Avg. Vel. (ft/s)	1.53	6.64
1.56				
Max Chl Dpth (ft)	12.30	Hydr. Depth (ft)	6.12	10.84
5.55				
Conv. Total (cfs)	344478.5	Conv. (cfs)	43562.9	217360.4
83555.2				
Length Wtd. (ft)	356.96	Wetted Per. (ft)	173.79	114.37
358.11				
Min Ch El (ft)	248.76	Shear (lb/sq ft)	0.52	0.91
0.47				
Alpha	3.19	Stream Power (lb/ft s)	986.83	0.00
0.00				
Frctn Loss (ft)	0.50	Cum Volume (acre-ft)	453.55	232.02
251.80				
C & E Loss (ft)	0.01	Cum SA (acres)	85.30	20.65
49.82				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	263.93	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.53	Wt. n-Val.	0.120	0.040
0.115				
W.S. Elev (ft)	263.40	Reach Len. (ft)	292.64	415.60
285.68				

Crit W.S. (ft)	258.26	Flow Area (sq ft)	1469.56	1473.72
2885.68				
E.G. Slope (ft/ft)	0.001364	Area (sq ft)	1469.56	1473.72
2885.68				
Q Total (cfs)	19382.00	Flow (cfs)	2695.94	11113.52
5572.55				
Top Width (ft)	697.58	Top Width (ft)	181.44	111.89
404.25				
Vel Total (ft/s)	3.33	Avg. Vel. (ft/s)	1.83	7.54
1.93				
Max Chl Dpth (ft)	14.64	Hydr. Depth (ft)	8.10	13.17
7.14				
Conv. Total (cfs)	524762.6	Conv. (cfs)	72991.8	300895.5
150875.2				
Length Wtd. (ft)	349.95	Wetted Per. (ft)	182.93	114.37
405.14				
Min Ch El (ft)	248.76	Shear (lb/sq ft)	0.68	1.10
0.61				
Alpha	3.09	Stream Power (lb/ft s)	986.83	0.00
0.00				
Frctn Loss (ft)	0.48	Cum Volume (acre-ft)	640.52	274.34
359.56				
C & E Loss (ft)	0.02	Cum SA (acres)	93.44	20.65
55.85				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 10209.28

INPUT

Description: not interpolated

Station Elevation Data num= 277

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	274.92	1.88	274.82	6.59	275	7.06	274.97	7.39	274.93
12.61	274.81	12.86	274.83	18.53	273.84	19.37	273.61	23.93	272.11
37.77	267.9	37.84	267.88	37.87	267.88	38.1	267.78	40.97	266.74
44.19	265.56	44.32	265.51	49.08	264.11	55.94	262.25	65.51	259.26
68.08	258.69	71.94	257.95	72.67	257.78	76.8	257.4	80.26	256.81

84.45	256.12	86.29	255.74	87.09	255.56	92.31	254.07	94.22	253.88
98.58	253.84	100.48	253.78	104.26	253.56	108.7	253.81	109.81	253.91
114.2	253.95	115.32	254.01	119.66	254.22	120.74	254.22	125.14	254.22
126.2	254.27	130.59	254.34	131.65	254.28	136.18	254.19	137.23	254.2
141.63	254.13	142.68	254.13	147.02	254.05	148.09	254.02	152.41	254.19
153.41	254.29	156.39	254.4	159.4	254.47	162.02	254.44	164.24	254.21
167.89	254.5	168.58	254.57	170.37	254.5	172.67	254.36	174.82	254.51
177.62	254.69	179.11	254.69	183.17	254.6	187.72	254.74	188.76	254.77
190.64	254.69	192.52	254.51	195.09	254.4	195.56	254.39	195.69	254.39
200.24	254.57	201.82	254.67	202.63	254.65	205.1	254.67	209.58	254.68
209.86	254.69	210.77	254.7	214.4	254.94	215.39	255.01	219.35	255.04
221.33	255.19	224.47	255.02	228.76	254.75	229.48	254.74	230.97	254.77
235.57	254.7	235.61	254.7	240.59	254.56	243.63	254.41	251.59	255
252.01	255.03	252.24	255.05	252.8	254.97	255.31	254.78	256.27	254.78
259.63	254.82	261.05	254.93	264.5	254.81	268.76	254.81	271.62	254.62
273.27	254.47	276.3	254.58	278.4	254.69	279.63	254.69	286.34	254.63
290.1	254.48	291.9	254.54	295.05	254.51	296.63	254.64	300.27	255.04
302.28	255.02	305.77	254.98	310.9	255.05	311.31	255.05	312.04	255.03
315.02	254.78	316.9	254.8	319.2	254.79	320.37	254.76	324.24	254.75
327.94	254.68	329.19	254.59	331.64	254.36	334.12	254.33	337.01	254.43
339.45	254.38	341.22	254.32	345.5	254.22	348.13	254.09	350.53	254.04
353.83	253.8	356.91	253.63	360.32	253.28	361.23	253.14	365.49	252.65
367.64	252.52	370.89	252.37	373.2	252.29	373.83	252.3	376.75	252.16
381.01	252.25	382.5	252.12	384.03	252.23	386.76	252.01	392.3	251.89
394.73	251.63	398.69	251.31	399.41	251.19	402.43	250.73	406.03	250.64
411.28	250.49	412.58	250.38	413.06	250.38	418.73	250.01	426.8	249.7
427.79	249.69	429.48	249.72	432.68	249.76	435.14	250.01	437.4	250.22
438.51	250.38	442.13	250.6	445.48	250.82	446.87	250.93	449.75	251.2
451.01	251.32	452.34	251.33	457.89	250.9	458.18	250.91	459.35	250.72
464.57	250.41	469.01	248.74	469.11	248.72	469.5	248.62	471.09	248.24
472.04	247.74	488.51	247.73	510.43	247.71	511	247.71	511.21	247.89
511.63	248.16	512.83	248.84	514.84	250.07	519.57	252.95	521.69	252.93
525.15	252.93	530.66	252.77	531.12	252.77	531.83	252.76	534.87	252.82
536.84	252.78	539.31	252.74	540.77	252.74	544.59	252.81	549.39	253.46
550.07	253.51	551.21	253.57	554.92	253.67	557.48	253.77	559.66	253.88
560.79	253.91	564.42	254	568.13	254.28	569.33	254.42	571.52	254.4
575.29	254.33	578.2	254.41	581.4	254.62	583.38	254.67	586.28	254.75
591.89	254.54	592	254.53	592.21	254.54	596.31	254.68	598.52	254.7
601.06	254.78	602.67	254.85	606.57	255.05	611.58	255.13	611.99	255.14
612.67	255.23	617.17	255.27	619.18	255.42	622.07	255.98	623.37	256.01
625.32	256.09	629.98	256.06	635.02	256.33	636.65	256.47	639.95	256.7
643.02	256.86	645.31	257.15	649.25	257.48	654.62	257.94	655.25	257.94
656.87	257.99	659.79	258.11	660.93	258.21	664.65	258.73	666.58	259.24
669.75	260.14	674.18	260.95	674.75	261.03	675.88	261.18	678.4	261.47
680.95	261.86	683.24	262.12	687.29	262.46	691.57	262.98	694.19	263.38
697.07	263.84	701.84	264.55	703.05	264.7	704.07	264.8	708.43	265.46
709.45	265.54	712.34	265.72	719.91	266.46	723.21	266.32	724.37	266.27
726.8	266.77	730.53	266.63	733.18	266.7	734.4	266.72	739.1	267.06
739.58	267.08	742.84	267.01	745.31	266.95	745.67	266.96	752.19	267.17
758.99	267.48	759.2	267.49	759.27	267.49	765.76	267.2	766.07	267.22

773.69 267.96 774.55 267.89

Manning's n Values		num=		5					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.12	452.34	.04	469.11	.04	514.84	.04	519.57	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	452.34	519.57		353.32 335.77	320.32		.1	.3

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	255.39	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.33	Wt. n-Val.	0.120	0.040
0.050				
W.S. Elev (ft)	255.05	Reach Len. (ft)	353.32	335.77
320.32				
Crit W.S. (ft)	252.30	Flow Area (sq ft)	514.10	421.86
104.70				
E.G. Slope (ft/ft)	0.001713	Area (sq ft)	514.10	421.86
104.70				
Q Total (cfs)	2671.00	Flow (cfs)	361.69	2163.85
145.47				
Top Width (ft)	513.45	Top Width (ft)	359.10	67.23
87.12				
Vel Total (ft/s)	2.57	Avg. Vel. (ft/s)	0.70	5.13
1.39				
Max Chl Dpth (ft)	7.34	Hydr. Depth (ft)	1.43	6.27
1.20				
Conv. Total (cfs)	64530.6	Conv. (cfs)	8738.3	52278.0
3514.4				
Length Wtd. (ft)	337.09	Wetted Per. (ft)	359.78	69.24
87.22				
Min Ch El (ft)	247.71	Shear (lb/sq ft)	0.15	0.65
0.13				
Alpha	3.26	Stream Power (lb/ft s)	774.55	0.00
0.00				
Frctn Loss (ft)	0.47	Cum Volume (acre-ft)	130.60	132.43
56.15				
C & E Loss (ft)	0.03	Cum SA (acres)	55.72	19.78
28.70				

Warning: Divided flow computed for this cross-section.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	260.17	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.38	Wt. n-Val.	0.120	0.040
0.050				
W.S. Elev (ft)	259.78	Reach Len. (ft)	353.32	335.77
320.32				
Crit W.S. (ft)	256.77	Flow Area (sq ft)	2292.75	739.79
703.69				
E.G. Slope (ft/ft)	0.001443	Area (sq ft)	2292.75	739.79
703.69				
Q Total (cfs)	10810.00	Flow (cfs)	3514.25	5063.46
2232.29				
Top Width (ft)	604.64	Top Width (ft)	388.50	67.23
148.92				
Vel Total (ft/s)	2.89	Avg. Vel. (ft/s)	1.53	6.84
3.17				
Max Chl Dpth (ft)	12.07	Hydr. Depth (ft)	5.90	11.00
4.73				
Conv. Total (cfs)	284619.7	Conv. (cfs)	92527.6	133317.4
58774.6				
Length Wtd. (ft)	338.75	Wetted Per. (ft)	389.68	69.24
149.35				
Min Ch El (ft)	247.71	Shear (lb/sq ft)	0.53	0.96
0.42				
Alpha	2.96	Stream Power (lb/ft s)	774.55	0.00
0.00				
Frctn Loss (ft)	0.45	Cum Volume (acre-ft)	379.00	207.85
207.69				
C & E Loss (ft)	0.00	Cum SA (acres)	80.22	19.80
45.97				

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	261.00	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.40	Wt. n-Val.	0.120	0.040
0.050				
W.S. Elev (ft)	260.60	Reach Len. (ft)	353.32	335.77
320.32				
Crit W.S. (ft)	257.24	Flow Area (sq ft)	2611.14	794.70
826.70				
E.G. Slope (ft/ft)	0.001407	Area (sq ft)	2611.14	794.70
826.70				
Q Total (cfs)	12761.00	Flow (cfs)	4290.82	5634.93

2835.25				
Top Width (ft)	611.02	Top Width (ft)	391.11	67.23
152.68				
Vel Total (ft/s)	3.01	Avg. Vel. (ft/s)	1.64	7.09
3.43				
Max Chl Dpth (ft)	12.89	Hydr. Depth (ft)	6.68	11.82
5.41				
Conv. Total (cfs)	340181.8	Conv. (cfs)	114384.5	150215.6
75581.8				
Length Wtd. (ft)	338.83	Wetted Per. (ft)	392.41	69.24
153.21				
Min Ch El (ft)	247.71	Shear (lb/sq ft)	0.58	1.01
0.47				
Alpha	2.83	Stream Power (lb/ft s)	774.55	0.00
0.00				
Frctn Loss (ft)	0.45	Cum Volume (acre-ft)	441.23	222.44
242.59				
C & E Loss (ft)	0.00	Cum SA (acres)	83.41	19.80
48.15				

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	263.43	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.46	Wt. n-Val.	0.120	0.040
0.050				
W.S. Elev (ft)	262.96	Reach Len. (ft)	353.32	335.77
320.32				
Crit W.S. (ft)	258.47	Flow Area (sq ft)	3545.61	953.77
1208.85				
E.G. Slope (ft/ft)	0.001374	Area (sq ft)	3545.61	953.77
1208.85				
Q Total (cfs)	19382.00	Flow (cfs)	6961.29	7545.81
4874.91				
Top Width (ft)	638.13	Top Width (ft)	399.03	67.23
171.87				
Vel Total (ft/s)	3.40	Avg. Vel. (ft/s)	1.96	7.91
4.03				
Max Chl Dpth (ft)	15.25	Hydr. Depth (ft)	8.89	14.19
7.03				
Conv. Total (cfs)	522968.1	Conv. (cfs)	187830.5	203602.1
131535.5				
Length Wtd. (ft)	338.92	Wetted Per. (ft)	400.68	69.24
172.55				
Min Ch El (ft)	247.71	Shear (lb/sq ft)	0.76	1.18

0.60				
Alpha	2.59	Stream Power (lb/ft s)	774.55	0.00
0.00				
Frctn Loss (ft)	0.45	Cum Volume (acre-ft)	623.68	262.76
346.13				
C & E Loss (ft)	0.00	Cum SA (acres)	91.49	19.80
53.97				

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 9873.511

INPUT

Description: not interpolated

Station Elevation Data num= 263

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	269.85	1.13	269.82	3.41	269.51	7.67	268.77	11.35	267.97
12.67	267.58	14.44	267.76	14.96	267.74	15.21	267.81	15.8	267.77
19.1	267.63	20.46	267.39	23.79	266.45	26.05	265.92	29.06	265.08
31.4	264.48	32.48	264.29	40.22	262.26	44.4	261.48	51.23	259.11
51.9	258.93	55.17	258.48	57.74	257.86	63.26	256.73	64.95	256.29
65.72	256.27	67.08	255.97	72.88	255.07	76.06	254.47	79.73	254
81.43	253.89	83.52	253.82	86.41	253.59	86.76	253.6	88.09	253.46
91.87	253.1	101.15	253.21	102.49	253.27	103.7	253.3	108.37	253.82
111.55	253.69	118.98	253.39	120.39	253.34	121.02	253.35	122.68	253.4
127.07	253.54	128.73	253.6	132.89	253.3	135.08	253.3	136.6	253.29
138.85	253.36	140.54	253.35	144.72	253.38	153.23	253.9	153.98	253.92
154.33	253.94	159.7	253.78	161.79	253.72	165.58	253.41	167.9	253.24
172.1	253.49	172.61	253.52	172.84	253.51	173.55	253.53	180.3	253.45
181.49	253.47	186.2	254	188.48	254.09	189.79	253.81	191.82	253.49
192.91	253.45	196.49	253.23	200.14	253.28	201.29	253.32	203.46	253.36
206.62	253.45	208.05	253.49	211.32	253.51	212.63	253.65	217.57	253.77
219.47	253.83	220.14	253.83	224.97	254.01	226.13	254.04	230.94	253.91
235.15	253.88	236.99	253.85	239.16	253.85	240.95	253.84	243.42	253.59
243.62	253.57	243.77	253.58	248.63	254.07	250.38	253.97	251.88	253.96
253.85	253.81	257	253.5	258.66	253.37	261.77	253.16	263.07	253.01
263.6	253.01	266.44	253	271.04	253.07	272.3	252.97	276.44	252.73
278.34	252.74	282.86	252.83	286.65	253.27	288.39	253.34	295.53	253.89
295.94	253.97	296.33	254	297.27	253.97	303.19	253.68	305.61	253.8
306.68	253.77	310.19	253.39	312.14	253.26	315.26	253.13	316.97	253.05
318.82	252.95	323.38	252.67	327.61	252.3	328.65	252.18	329.97	251.95
332.86	252	336.71	252.31	339.39	252.38	341.9	252.41	342.86	252.51
343.16	252.52	345.22	252.66	346.9	252.9	349.86	252.91	350.19	252.92
354.02	253.02	358.6	253.41	360.05	253.52	362.81	253.28	365.43	253.17

368.08	253.25	371.28	253.18	374.13	253.28	382.13	253.09	383.29	253.05
385.24	252.92	387.72	252.82	388.31	252.74	389.67	252.7	393.62	252.64
397.39	252.69	400.15	252.78	402.54	252.6	404.14	252.56	405.21	252.61
409.1	252.71	413.52	252.74	414.11	252.8	414.94	252.76	419.75	252.62
420.04	252.61	426.4	252.71	428.47	252.58	433.8	252.1	435.76	251.99
437.38	251.84	441.32	251.6	444.51	251.54	449.32	251.7	449.4	251.69
454.7	251.34	454.79	251.34	454.85	251.34	459.23	250.6	462.03	248.37
462.42	248.08	462.89	247.85	463.04	247.6	466.61	247.6	467.53	247.6
486.61	247.6	524.91	247.59	526.36	248.84	526.41	248.88	527.67	249.39
530.8	250.66	532.5	251.83	535.88	252.18	539.53	252.59	541.65	252.58
546.56	252.53	549.93	252.42	553.59	252.42	556.04	252.31	558.99	252.52
560.29	252.56	561.35	252.55	565.6	252.6	570.9	252.95	570.99	252.96
572.95	252.97	576.3	253	576.44	253.01	582.09	253.35	586.74	253.61
589.46	253.85	591.56	253.92	593.89	254.03	595.77	254.16	597.56	254.18
600.91	254.37	605.67	255.51	607.15	255.97	612.18	256.83	612.28	256.85
614.59	257.42	620.48	258.95	623.74	259.5	627.56	259.91	629.92	260.26
636.05	261.13	637.05	261.21	649.61	262.39	650.1	262.46	655.27	262.64
659.43	262.72	661.3	262.63	664.75	262.67	666.18	262.62	667.25	262.65
671.1	262.89	675.81	263.07	675.92	263.08	676.35	263.14	681.98	263.85
682.38	263.88	688.02	264.64	689.5	264.69	696.46	265.34	699.08	265.49
701.24	265.63	703.34	265.56	704.48	265.41	707	265.49	708.45	265.49
708.97	265.47	712.41	265.04	714.04	264.91	716.8	264.84	718.3	264.87
719.45	264.92	723.22	265.26	728.02	265.32	728.06	265.32	728.1	265.32
729.05	265.35	733.91	265.5	734.15	265.49	734.3	265.49	741.56	265.83
742.63	265.92	746.55	266.08	747.97	266.16				

Manning's n Values			num=		5				
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.12	449.32	.04	466.61	.04	526.36	.04	539.53	.05
Bank Sta: Left		Right	Lengths: Left		Channel	Right	Coeff Contr.		Expan.
449.32		539.53	329.3		398.49	409.07	.1		.3
Blocked Obstructions			num=		1				
Sta L	Sta R	Elev							
639.16	657.18	265.89							

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	254.87	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.22	Wt. n-Val.	0.120	0.040
0.050				
W.S. Elev (ft)	254.65	Reach Len. (ft)	329.30	398.49
409.07				
Crit W.S. (ft)	251.39	Flow Area (sq ft)	535.99	544.98
98.05				
E.G. Slope (ft/ft)	0.001162	Area (sq ft)	535.99	544.98
98.05				
Q Total (cfs)	2671.00	Flow (cfs)	287.13	2249.97

133.90				
Top Width (ft)	526.97	Top Width (ft)	374.21	90.21
62.55				
Vel Total (ft/s)	2.27	Avg. Vel. (ft/s)	0.54	4.13
1.37				
Max Chl Dpth (ft)	7.06	Hydr. Depth (ft)	1.43	6.04
1.57				
Conv. Total (cfs)	78351.1	Conv. (cfs)	8422.7	66000.6
3927.8				
Length Wtd. (ft)	388.29	Wetted Per. (ft)	374.92	92.58
62.65				
Min Ch El (ft)	247.59	Shear (lb/sq ft)	0.10	0.43
0.11				
Alpha	2.82	Stream Power (lb/ft s)	747.97	0.00
0.00				
Frctn Loss (ft)	0.73	Cum Volume (acre-ft)	126.34	128.70
55.41				
C & E Loss (ft)	0.03	Cum SA (acres)	52.74	19.18
28.15				

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the

largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may

wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	259.71	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.37	Wt. n-Val.	0.120	0.040
0.050				
W.S. Elev (ft)	259.33	Reach Len. (ft)	329.30	398.49
409.07				
Crit W.S. (ft)	255.82	Flow Area (sq ft)	2349.54	967.66
439.02				
E.G. Slope (ft/ft)	0.001249	Area (sq ft)	2349.54	967.66
439.02				
Q Total (cfs)	10810.00	Flow (cfs)	3347.50	6072.52
1389.98				
Top Width (ft)	572.18	Top Width (ft)	398.74	90.21
83.23				

Vel Total (ft/s)	2.88	Avg. Vel. (ft/s)	1.42	6.28
3.17				
Max Chl Dpth (ft)	11.74	Hydr. Depth (ft)	5.89	10.73
5.27				
Conv. Total (cfs)	305892.4	Conv. (cfs)	94724.9	171835.2
39332.4				
Length Wtd. (ft)	371.88	Wetted Per. (ft)	399.93	92.58
83.88				
Min Ch El (ft)	247.59	Shear (lb/sq ft)	0.46	0.81
0.41				
Alpha	2.90	Stream Power (lb/ft s)	747.97	0.00
0.00				
Frctn Loss (ft)	0.61	Cum Volume (acre-ft)	360.17	201.27
203.49				
C & E Loss (ft)	0.01	Cum SA (acres)	77.03	19.19
45.12				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	260.54	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.40	Wt. n-Val.	0.120	0.040
0.050				
W.S. Elev (ft)	260.14	Reach Len. (ft)	329.30	398.49
409.07				
Crit W.S. (ft)	256.24	Flow Area (sq ft)	2671.39	1040.26
508.56				
E.G. Slope (ft/ft)	0.001267	Area (sq ft)	2671.39	1040.26
508.56				
Q Total (cfs)	12761.00	Flow (cfs)	4158.61	6899.41
1702.98				
Top Width (ft)	580.85	Top Width (ft)	401.06	90.21
89.58				
Vel Total (ft/s)	3.02	Avg. Vel. (ft/s)	1.56	6.63
3.35				
Max Chl Dpth (ft)	12.55	Hydr. Depth (ft)	6.66	11.53
5.68				
Conv. Total (cfs)	358553.2	Conv. (cfs)	116846.9	193856.6
47849.6				

Length Wtd. (ft)	370.68	Wetted Per. (ft)	402.38	92.58
90.28				
Min Ch El (ft)	247.59	Shear (lb/sq ft)	0.52	0.89
0.45				
Alpha	2.85	Stream Power (lb/ft s)	747.97	0.00
0.00				
Frctn Loss (ft)	0.60	Cum Volume (acre-ft)	419.81	215.37
237.68				
C & E Loss (ft)	0.01	Cum SA (acres)	80.20	19.19
47.25				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	262.97	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.50	Wt. n-Val.	0.120	0.040
0.050				
W.S. Elev (ft)	262.47	Reach Len. (ft)	329.30	398.49
409.07				
Crit W.S. (ft)	257.54	Flow Area (sq ft)	3613.08	1250.06
733.31				
E.G. Slope (ft/ft)	0.001312	Area (sq ft)	3613.08	1250.06
733.31				
Q Total (cfs)	19382.00	Flow (cfs)	6895.71	9536.00
2950.29				
Top Width (ft)	599.72	Top Width (ft)	409.88	90.21
99.63				
Vel Total (ft/s)	3.46	Avg. Vel. (ft/s)	1.91	7.63
4.02				
Max Chl Dpth (ft)	14.88	Hydr. Depth (ft)	8.81	13.86
7.36				
Conv. Total (cfs)	535171.1	Conv. (cfs)	190402.6	263305.7
81462.7				
Length Wtd. (ft)	368.41	Wetted Per. (ft)	411.53	92.58
101.47				
Min Ch El (ft)	247.59	Shear (lb/sq ft)	0.72	1.11
0.59				
Alpha	2.70	Stream Power (lb/ft s)	747.97	0.00
0.00				

Frctn Loss (ft)	0.61	Cum Volume (acre-ft)	594.65	254.27
338.99				
C & E Loss (ft)	0.01	Cum SA (acres)	88.21	19.19
52.97				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1 RS: 9475.018

INPUT

Description: not interpolated

Station Elevation Data				num=	243				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	265.14	.53	265.1	3.65	264.87	12.12	263.26	12.59	263.19
13.06	263.09	14.77	262.81	17.96	262.29	22.25	261.7	23.05	261.61
23.17	261.58	23.55	261.55	29.17	260.97	29.97	260.85	37.1	260.65
44.02	259.71	45.82	259.2	51.33	258.61	57.28	257.93	57.91	257.87
62.02	257.62	65.25	257.12	69.14	256.67	77.19	256.29	81.49	256.01
83.31	255.89	84.3	255.8	85.17	255.72	86.79	255.54	94.17	254.78
94.22	254.77	97.04	254.6	99.69	254.46	100.68	254.35	103.91	254.14
105.8	254.09	110.49	254.07	111.04	254.07	120.69	253.37	121.03	253.34
121.72	253.32	126.59	253.19	128.08	253.16	130.25	253.23	132.87	253
136.74	252.72	138.26	252.67	146	252.52	149.09	252.5	149.9	252.45
152.09	252.51	155.33	252.62	156.16	252.65	156.37	252.67	162.15	252.7
168.15	252.54	173.52	252.48	178.11	252.58	180.08	252.64	183.41	252.95
185.95	252.96	187.22	252.91	189.22	252.9	191.91	252.93	192.72	252.92
197.59	253	200.12	252.94	203.24	252.77	207.51	252.73	209.78	252.81
213.49	252.94	214.49	252.95	214.93	253	220.59	253.23	224.32	252.96
224.57	252.92	225	252.92	230.75	252.91	233.38	252.8	236.97	252.59
239.04	252.44	247.05	252.44	249.15	252.44	249.37	252.43	249.72	252.45
250.1	252.46	253.53	252.62	255.63	252.71	256.92	252.69	261.2	252.59
262.07	252.66	263.27	252.67	267.83	252.76	271.71	252.76	274.04	252.81
280.08	252.6	280.21	252.61	282.3	252.83	283.68	252.69	290.72	252.73
294.81	252.7	296.03	252.78	300.27	253.04	303.06	253.03	305.59	252.89
312.08	252.49	314.36	252.39	323.94	251.31	325.85	251.12	326.95	250.93
328.46	250.66	331.22	250.45	339.3	249.72	340.05	249.61	341.42	249.58
346.27	249.96	346.82	249.99	347.58	250.04	353.04	250.06	357.13	250.57
359.44	250.71	360.33	250.75	365.81	250.87	369.27	251.06	372.18	251.21

377.06	252	380.17	252.47	383.63	252.24	386.08	251.95	387.96	251.9
392.83	251.97	397.85	251.7	400.03	251.7	401.23	251.56	408.64	252
412.1	252.39	413.89	252.28	414.63	252.3	419.33	252.52	424.68	253.38
424.92	253.41	425.05	253.41	425.14	253.4	431.83	252.7	435.45	252.28
439.17	251.93	440.42	251.98	445.67	252.35	445.9	252.36	446.21	252.37
452.15	252.21	456.55	251.91	458.21	251.77	458.91	251.76	464.36	251.72
465.21	251.57	469.53	251.41	489.38	250.42	492.2	250.3	496.41	250.47
499.51	250.02	504.34	248.47	504.87	248.3	508.46	247.44	511.3	247.44
541.65	247.45	544.49	247.45	545.57	247.45	547.14	248.03	554.04	250.8
558.48	252.59	561.95	252.78	564.44	252.55	568	252.22	569.94	252.28
573.35	252.76	577.27	253.24	580.02	252.84	582.45	253.03	585.61	253.73
589.33	254.2	591.68	254.6	596.83	255.82	599.26	256.16	602.53	256.75
606.83	257.39	608.19	257.48	612.3	258.01	614.25	258.26	617.12	258.69
621.35	259.28	624.21	259.46	627.43	259.59	628.52	259.72	632.88	260.12
635.77	260.38	638.33	260.65	642.44	261	648.76	261.8	650.13	261.97
653.15	262.36	657.51	262.79	659.38	263.04	662.83	263.28	666.33	263.81
671.82	264.34	676.09	264.52	676.9	264.54	680.23	264.57	682.72	264.59
684.45	264.62	687.74	264.8	692.77	265.54	692.9	265.55	692.97	265.56
699.98	265.86	701.23	265.94	704.77	266.04	707.09	266.33	710.97	266.65
713.62	267.11	716.28	267.28	721.33	267.95	722.36	268.02	722.43	268.03
726.37	268.55	727.98	268.76	728.55	268.86	733.7	269.52	736.21	269.72
739.33	270.04	743.9	270.41	745.02	270.56	748.16	270.87	751.46	271.22
754.91	271.62	758.84	271.99	760.6	272.02	765.39	272.01	767.54	272.17
771.35	272.53	773.29	272.61	776.32	272.82				

Manning's n Values			num=	7					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	94.22	.12	496.41	.04	511.3	.04	554.04	.04
561.95	.12	722.43	.05						

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
496.41	561.95	373.05	509.85	541.29		.1	.3

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	254.12	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.51	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	253.61	Reach Len. (ft)	373.05	509.85
541.29				
Crit W.S. (ft)	252.19	Flow Area (sq ft)	554.23	333.29
19.34				
E.G. Slope (ft/ft)	0.003501	Area (sq ft)	554.23	333.29
19.34				
Q Total (cfs)	2671.00	Flow (cfs)	522.41	2136.07
12.52				
Top Width (ft)	467.62	Top Width (ft)	378.98	65.54
23.10				

Vel Total (ft/s)	2.95	Avg. Vel. (ft/s)	0.94	6.41
0.65				
Max Chl Dpth (ft)	6.17	Hydr. Depth (ft)	1.46	5.09
0.84				
Conv. Total (cfs)	45143.6	Conv. (cfs)	8829.5	36102.5
211.6				
Length Wtd. (ft)	489.88	Wetted Per. (ft)	379.78	66.93
23.29				
Min Ch El (ft)	247.44	Shear (lb/sq ft)	0.32	1.09
0.18				
Alpha	3.81	Stream Power (lb/ft s)	776.32	0.00
0.00				
Frctn Loss (ft)	1.11	Cum Volume (acre-ft)	122.22	124.69
54.86				
C & E Loss (ft)	0.06	Cum SA (acres)	49.90	18.46
27.75				

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	259.09	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.52	Wt. n-Val.	0.118	0.040
0.120				
W.S. Elev (ft)	258.56	Reach Len. (ft)	373.05	509.85
541.29				
Crit W.S. (ft)	255.78	Flow Area (sq ft)	2617.82	658.21
206.38				
E.G. Slope (ft/ft)	0.002225	Area (sq ft)	2617.82	658.21
206.38				
Q Total (cfs)	10810.00	Flow (cfs)	5225.40	5293.32
291.28				
Top Width (ft)	564.54	Top Width (ft)	444.67	65.54
54.33				

Vel Total (ft/s)	3.10	Avg. Vel. (ft/s)	2.00	8.04
1.41				
Max Chl Dpth (ft)	11.12	Hydr. Depth (ft)	5.89	10.04
3.80				
Conv. Total (cfs)	229193.6	Conv. (cfs)	110788.9	112228.9
6175.7				
Length Wtd. (ft)	460.52	Wetted Per. (ft)	445.71	66.93
54.93				
Min Ch El (ft)	247.44	Shear (lb/sq ft)	0.82	1.37
0.52				
Alpha	3.49	Stream Power (lb/ft s)	776.32	0.00
0.00				
Frctn Loss (ft)	0.99	Cum Volume (acre-ft)	341.40	193.83
200.46				
C & E Loss (ft)	0.02	Cum SA (acres)	73.84	18.48
44.47				

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	259.93	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.55	Wt. n-Val.	0.117	0.040
0.120				
W.S. Elev (ft)	259.38	Reach Len. (ft)	373.05	509.85
541.29				
Crit W.S. (ft)	256.26	Flow Area (sq ft)	2982.64	711.54
252.95				
E.G. Slope (ft/ft)	0.002181	Area (sq ft)	2982.64	711.54
252.95				
Q Total (cfs)	12761.00	Flow (cfs)	6418.29	5967.66
375.05				
Top Width (ft)	577.70	Top Width (ft)	451.22	65.54
60.95				
Vel Total (ft/s)	3.23	Avg. Vel. (ft/s)	2.15	8.39
1.48				
Max Chl Dpth (ft)	11.94	Hydr. Depth (ft)	6.61	10.86

4.15				
Conv. Total (cfs)	273261.3	Conv. (cfs)	137439.8	127790.3
8031.3				
Length Wtd. (ft)	457.86	Wetted Per. (ft)	452.31	66.93
61.61				
Min Ch El (ft)	247.44	Shear (lb/sq ft)	0.90	1.45
0.56				
Alpha	3.38	Stream Power (lb/ft s)	776.32	0.00
0.00				
Frctn Loss (ft)	0.99	Cum Volume (acre-ft)	398.43	207.36
234.11				
C & E Loss (ft)	0.02	Cum SA (acres)	76.98	18.48
46.55				

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	262.35	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.64	Wt. n-Val.	0.115	0.040
0.120				
W.S. Elev (ft)	261.71	Reach Len. (ft)	373.05	509.85
541.29				
Crit W.S. (ft)	257.61	Flow Area (sq ft)	4057.14	864.24
427.88				
E.G. Slope (ft/ft)	0.002131	Area (sq ft)	4057.14	864.24
427.88				
Q Total (cfs)	19382.00	Flow (cfs)	10516.64	8157.19
708.17				
Top Width (ft)	625.83	Top Width (ft)	474.21	65.54
86.08				
Vel Total (ft/s)	3.62	Avg. Vel. (ft/s)	2.59	9.44
1.66				
Max Chl Dpth (ft)	14.27	Hydr. Depth (ft)	8.56	13.19
4.97				
Conv. Total (cfs)	419840.1	Conv. (cfs)	227804.5	176695.7
15340.0				

Length Wtd. (ft)	451.64	Wetted Per. (ft)	475.47	66.93
86.86				
Min Ch El (ft)	247.44	Shear (lb/sq ft)	1.14	1.72
0.66				
Alpha	3.14	Stream Power (lb/ft s)	776.32	0.00
0.00				
Frctn Loss (ft)	0.97	Cum Volume (acre-ft)	565.65	244.60
333.54				
C & E Loss (ft)	0.03	Cum SA (acres)	84.86	18.48
52.09				

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 8965.166

INPUT

Description: not interpolated

Station Elevation Data num= 268

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	268.09	3.86	267.76	3.87	267.76	3.88	267.76	6.95	267.43
9.02	267.33	12.12	267.28	15.22	267.79	15.26	267.79	15.52	267.79
24.79	267.67	26.51	267.4	29.69	266.91	32.31	266.85	34.21	266.7
38.15	266.49	40.55	266.58	42.42	266.65	44.52	266.48	46.52	266.23
51.45	266.04	54.87	266.37	57.04	266.13	65.64	265.44	65.7	265.43
65.72	265.43	65.93	265.43	74.65	265.39	75.55	265.39	76.02	265.35
81.48	264.7	82.59	264.71	96.07	263.4	101.09	262.96	103.25	262.55
109.67	261.87	112.11	261.39	120.55	260.84	122.26	260.75	127.56	260.27
129.97	259.89	131.22	259.96	134.48	260.13	136.74	259.77	144.16	258.74
145.26	258.68	146.48	258.58	147.69	258.51	149.32	258.41	151.43	258.28
155.01	258.24	156.6	258.14	169.84	257.47	170.94	257.39	171.64	257.36
172.07	257.33	174.79	256.98	176.94	256.68	177.63	256.64	179.05	256.59
183.89	256.39	186.4	256.29	187.5	256.27	194.67	255.99	195.88	255.9
196.85	255.79	198.7	255.51	200.55	255.51	203.3	255.36	204.51	255.3
208.55	255.06	211.55	254.78	214.89	254.49	219.37	254.42	220.56	254.4
224.21	254.87	225.4	255.02	231.42	254.3	237.06	253.88	238.89	253.81

239.34	253.81	244.56	254.12	245	254.14	245.27	254.15	245.65	254.14
245.98	254.1	257.95	253.26	260.83	253.41	262.95	253.41	263.62	253.41
268.94	253.28	269.18	253.27	269.87	253.19	273.91	252.91	277.18	252.71
278.77	252.52	279.37	252.49	281.57	252.66	285.68	252.92	289.34	253
294.26	252.79	294.37	252.76	295.15	252.7	297.8	252.25	300.39	252.07
305.04	251.89	306.1	251.87	309.79	251.79	312.77	251.71	317.09	251.84
319.44	251.89	324.45	251.41	325.58	251.44	328.78	251.72	329.53	251.68
334.44	251.44	337.84	251.65	340.16	251.6	345.04	252.12	346.06	252.15
351.44	251.39	352.88	251.37	356.4	251.02	358.06	250.9	362.03	250.95
362.5	250.98	364.51	250.82	366.78	250.5	378.02	249.09	379.85	248.81
384.26	248.5	386.61	248.56	391.39	248.19	393.43	248.17	393.64	248.19
399.67	249.41	403.84	249.59	406.1	249.69	417.75	249.38	419	249.35
419.2	249.36	425.17	249.45	425.91	249.44	427.18	249.45	434	249.25
435.27	249.06	439.54	249.3	440.84	249.19	442.78	248.78	444.71	248.71
448.41	248.41	454.54	246.52	455.29	246.24	455.95	245.99	459.25	246
460.55	246	460.75	246	462.81	246.01	464.77	247.08	465.59	247.49
468.06	246.87	471.26	246.01	492.85	246.02	502.49	246.01	502.74	246.01
507.73	246.01	515.76	246	517.93	247.97	525.2	250.7	525.46	250.74
526.23	250.79	531.26	250.87	533.88	251.11	535.26	251.22	537.07	251.17
540.68	250.88	546.78	250.92	547.63	250.92	550.67	251.17	554.28	251.57
554.92	251.53	558.78	251.75	562.21	251.66	563.88	251.65	567.77	251.78
568.89	251.84	570.68	251.83	573.63	251.9	575.49	252.02	579.12	252.37
581.08	252.41	585.05	252.52	590.3	252.73	591.04	252.73	592.34	253.03
596.73	253.99	600.27	255.45	607.5	258.87	611.95	261.14	612.72	261.48
614.47	262.27	619.24	264.01	623.85	265.96	625.42	266.79	627.48	267.44
633.42	269.78	634.8	270.25	636.34	270.81	640.63	272.21	643.08	273.24
646.8	275.29	649.54	276.64	653.5	278.25	657.8	280.61	660	281.77
664.85	284.16	666.96	285.09	668.21	285.69	669.4	286.26	672.79	287.64
675.2	288.86	676.6	289.73	679.54	291.53	682.03	292.96	682.94	293.28
685.04	293.66	686	293.84	686.57	294.09	691.92	296.22	694.71	297.97
699.26	300.48	702.87	302.54	708.87	303.38	710.38	303.36	714.02	304
749.8	310.45	753.82	311.31	758.68	311.21	759.74	311.3	761.13	311.23
762.58	311.1	766.13	310.85	771.96	311.04	772.39	311.06	773.5	311.09
778.21	311.19	779.45	311.13	782.59	311.41	786.59	311.88	788.99	312
793.51	312.23	794.33	312.29	795.94	312.36	798.84	312.47	801.97	312.65
803.12	312.64	804.23	312.61	808.92	312.47	810.39	312.25	812.9	312.03
814.53	312	820.39	311.99	821.45	312.03	823.67	312.08	826.46	312.19
827.05	312.2	828.87	312.16	832.18	312.05				

Manning's n Values			num=	7					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	262.95	.12	439.54	.04	455.29	.04	507.73	.04
525.2	.12	668.21	.05						

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
439.54	525.2	472.78	510.43	528.6		.1	.3
Blocked Obstructions		num=	1				
Sta L	Sta R	Elev					
720.82	755.78	309.24					

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	252.95	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.31	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	252.64	Reach Len. (ft)	472.78	510.43
528.60				
Crit W.S. (ft)	249.96	Flow Area (sq ft)	321.02	501.37
69.34				
E.G. Slope (ft/ft)	0.001584	Area (sq ft)	321.02	501.37
69.34				
Q Total (cfs)	2671.00	Flow (cfs)	268.85	2365.72
36.43				
Top Width (ft)	296.15	Top Width (ft)	147.61	85.66
62.88				
Vel Total (ft/s)	3.00	Avg. Vel. (ft/s)	0.84	4.72
0.53				
Max Chl Dpth (ft)	6.65	Hydr. Depth (ft)	2.17	5.85
1.10				
Conv. Total (cfs)	67121.7	Conv. (cfs)	6756.2	59450.1
915.5				
Length Wtd. (ft)	507.44	Wetted Per. (ft)	148.15	87.92
62.98				
Min Ch El (ft)	245.99	Shear (lb/sq ft)	0.21	0.56
0.11				
Alpha	2.21	Stream Power (lb/ft s)	832.18	0.00
0.00				
Frctn Loss (ft)	0.76	Cum Volume (acre-ft)	118.47	119.80
54.31				
C & E Loss (ft)	0.00	Cum SA (acres)	47.64	17.58
27.22				

Warning: Divided flow computed for this cross-section.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	258.08	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.70	Wt. n-Val.	0.106	0.040
0.120				
W.S. Elev (ft)	257.38	Reach Len. (ft)	472.78	510.43
528.60				
Crit W.S. (ft)	254.37	Flow Area (sq ft)	1369.94	907.07
417.16				

E.G. Slope (ft/ft)	0.002089	Area (sq ft)	1369.94	907.07
417.16				
Q Total (cfs)	10810.00	Flow (cfs)	2801.25	7299.40
709.35				
Top Width (ft)	433.11	Top Width (ft)	268.30	85.66
79.14				
Vel Total (ft/s)	4.01	Avg. Vel. (ft/s)	2.04	8.05
1.70				
Max Chl Dpth (ft)	11.39	Hydr. Depth (ft)	5.11	10.59
5.27				
Conv. Total (cfs)	236494.8	Conv. (cfs)	61284.0	159692.0
15518.8				
Length Wtd. (ft)	502.35	Wetted Per. (ft)	269.17	87.92
80.11				
Min Ch El (ft)	245.99	Shear (lb/sq ft)	0.66	1.35
0.68				
Alpha	2.80	Stream Power (lb/ft s)	832.18	0.00
0.00				
Frctn Loss (ft)	1.23	Cum Volume (acre-ft)	324.32	184.67
196.59				
C & E Loss (ft)	0.03	Cum SA (acres)	70.79	17.59
43.64				

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	258.92	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.76	Wt. n-Val.	0.104	0.040
0.120				
W.S. Elev (ft)	258.16	Reach Len. (ft)	472.78	510.43
528.60				
Crit W.S. (ft)	255.00	Flow Area (sq ft)	1585.21	973.98
479.62				
E.G. Slope (ft/ft)	0.002131	Area (sq ft)	1585.21	973.98
479.62				
Q Total (cfs)	12761.00	Flow (cfs)	3571.26	8299.36
890.37				
Top Width (ft)	449.69	Top Width (ft)	283.23	85.66
80.80				
Vel Total (ft/s)	4.20	Avg. Vel. (ft/s)	2.25	8.52
1.86				
Max Chl Dpth (ft)	12.17	Hydr. Depth (ft)	5.60	11.37

5.94				
Conv. Total (cfs)	276462.1	Conv. (cfs)	77370.0	179802.5
19289.6				
Length Wtd. (ft)	501.77	Wetted Per. (ft)	284.11	87.92
81.94				
Min Ch El (ft)	245.99	Shear (lb/sq ft)	0.74	1.47
0.78				
Alpha	2.77	Stream Power (lb/ft s)	832.18	0.00
0.00				
Frctn Loss (ft)	1.29	Cum Volume (acre-ft)	378.87	197.49
229.56				
C & E Loss (ft)	0.04	Cum SA (acres)	73.83	17.59
45.67				

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	261.35	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.92	Wt. n-Val.	0.097	0.040
0.120				
W.S. Elev (ft)	260.43	Reach Len. (ft)	472.78	510.43
528.60				
Crit W.S. (ft)	256.77	Flow Area (sq ft)	2265.80	1168.53
668.39				
E.G. Slope (ft/ft)	0.002187	Area (sq ft)	2265.80	1168.53
668.39				
Q Total (cfs)	19382.00	Flow (cfs)	6485.64	11389.83
1506.53				
Top Width (ft)	484.76	Top Width (ft)	313.74	85.66
85.36				
Vel Total (ft/s)	4.72	Avg. Vel. (ft/s)	2.86	9.75
2.25				
Max Chl Dpth (ft)	14.44	Hydr. Depth (ft)	7.22	13.64
7.83				
Conv. Total (cfs)	414473.1	Conv. (cfs)	138691.6	243565.2
32216.3				
Length Wtd. (ft)	500.30	Wetted Per. (ft)	314.79	87.92
87.03				
Min Ch El (ft)	245.99	Shear (lb/sq ft)	0.98	1.81
1.05				
Alpha	2.64	Stream Power (lb/ft s)	832.18	0.00
0.00				

Frctn Loss (ft)	1.45	Cum Volume (acre-ft)	538.58	232.70
326.73				
C & E Loss (ft)	0.08	Cum SA (acres)	81.49	17.59
51.03				

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 8454.733

INPUT

Description: not interpolated

Station Elevation Data				num=	304				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	260.47	.94	260.44	2.76	260.41	3.53	260.32	4.88	260.27
6.44	260.21	11.09	260.08	11.17	260.07	13.2	260.16	14.39	260.17
19.5	260.3	21.38	260.27	21.68	260.26	25.46	260.32	27.98	260.32
29.25	260.23	30.22	260.11	33.51	260.11	36.44	260.06	37.39	260.05
38.53	260.1	42.25	259.98	43.65	259.95	51.3	260	53.37	260.01
55.1	259.89	55.39	259.84	61.47	259.63	61.77	259.62	61.81	259.62
63.85	259.62	66.64	259.76	70.26	259.53	70.69	259.5	71.74	259.52
75.03	259.39	76.78	259.28	79.49	259.23	80.6	259.29	83.98	258.95
86.84	258.79	88.4	258.86	89.04	258.92	89.8	258.87	91.23	258.84
93.82	258.69	95.21	258.67	96.52	258.49	97.17	258.46	98.01	258.35
101.48	258.39	103.05	258.39	103.44	258.38	105.22	258.31	105.54	258.3
105.62	258.3	106.67	258.27	111.45	258.11	111.91	258.11	117.46	258.07
120.07	258.05	120.15	258.05	122.19	258.05	123.2	258	128.45	257.71
128.63	257.7	130.28	257.79	130.65	257.81	130.7	257.81	132.32	257.8
137.1	257.77	137.44	257.76	139.15	257.84	142.17	257.88	145.54	257.98
146.83	257.98	148.2	257.85	148.53	257.83	149.7	257.74	151.3	257.7
154.31	257.61	155.86	257.28	158.21	257.08	162.19	256.71	164.06	256.15
164.15	256.13	168.91	255.75	171.05	255.46	172.34	255.23	177.99	254.73
178.92	254.61	180.58	254.24	182.39	254.04	186.81	253.2	187.29	253.06
188.89	252.66	190.09	252.46	195.06	251.79	195.61	251.65	198.3	251.47
203.46	251.06	205.09	251.04	205.72	251.05	209.16	250.73	212	250.62
212.75	250.6	214.04	250.47	217.28	250.58	220.42	250.83	221.33	250.8
224.93	250.58	228.11	250.54	229.68	250.39	230.84	250.38	236.23	250.27
238.3	250.35	239.15	250.34	242.81	250.53	247.58	250.72	248.7	250.66
251.62	250.39	253.3	250.18	253.95	250.2	255.43	250.38	256.13	250.42
258.06	250.32	261.55	250.12	262.3	250.1	262.56	250.08	264.18	250.06

266.5	250.13	269.11	250.11	270.59	250.2	272.47	250.13	273.24	250.15
274.21	250.11	277.21	249.84	280.96	250.05	284.17	250.19	291.23	250.71
294.39	250.36	296.25	250.22	298.43	250.42	299.1	250.45	302.97	250.25
306.95	250.55	308.11	250.58	309.26	250.6	310.99	250.67	313.01	250.69
313.58	250.65	317.43	250.34	318.46	250.31	322.94	250.48	323.86	250.52
324.53	250.57	325.1	250.57	329.75	250.73	330.91	250.76	332.6	250.86
340.54	251.28	344.8	251.32	348.79	251.15	350.94	251.07	351.51	251.05
351.87	251.04	352.69	251.01	357.68	250.9	360.83	251.09	362.42	251.33
363.77	251.22	366.84	251.11	369.22	250.87	376.43	250.39	376.54	250.38
378.15	249.93	383.05	249.57	385.6	249.37	386.75	249.44	387.71	249.44
392.95	249.59	399.01	249.6	399.31	249.59	399.32	249.59	399.41	249.59
406.22	249.62	408.25	249.46	409.3	249.34	410.93	247.98	417.61	245.14
418.42	245.14	421.29	245.14	431.79	245.14	440.09	245.14	480.51	245.14
487.18	245.14	488.42	246.07	489.5	247.41	491.19	248.39	491.97	249.01
493.27	249.43	493.51	249.48	499.52	250.71	500.7	250.96	502.51	251.2
509.23	252.09	511.46	252.14	514.33	252.14	514.51	252.16	518.9	252.53
523.18	252.32	523.34	252.3	523.5	252.32	525.98	252.54	526.72	252.68
530.82	252.98	535.66	253.26	536.35	253.47	538.79	254.32	541.17	254.66
543.68	255.1	547.38	255.73	552.15	256.52	553.79	256.68	559.05	257.53
559.78	257.69	562.54	258.06	562.89	258.11	563.69	258.21	568.91	258.91
571.19	259.17	574.19	260	574.4	260.07	578.9	260.88	582.94	261.54
583.26	261.61	584.17	261.81	585.66	262.11	588.73	262.4	592.58	262.75
593.75	262.95	596.14	263.5	599.86	264.42	603.47	264.82	607.47	264.94
610.16	265.43	612.16	265.62	614.42	266.05	616.83	266.45	618.94	266.7
620.33	266.81	622.98	267.28	626.94	268.05	628.57	268.12	633.27	269.07
634.15	269.25	637.16	269.98	640.94	270.76	648.25	272.38	650.41	272.67
653.08	273.49	660.65	275.44	668.29	277.3	676.56	278.55	677.17	278.68
677.41	278.71	677.68	278.74	678.09	278.82	680.13	279.21	681.42	279.34
685.22	280.09	687.58	280.64	692.43	281.27	693.19	281.41	693.51	281.48
697.82	282.35	702.01	282.83	704.04	283.05	712.02	284.34	718.98	284.45
720.32	284.73	721.25	284.72	730.59	285.28	731.86	285.31	735.09	285.33
738.13	285.33	739.72	285.39	740.36	285.42	742.95	285.77	744.29	285.8
753.67	285.89	753.87	285.89	756.13	285.98	762.27	286.55	763.7	286.76
765.76	287.06	770	287.47	770.11	287.48	770.14	287.48	770.28	287.49
774.57	287.71	776.19	287.84	776.99	287.78	777.16	287.79		

Manning's n Values			num=	7					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	151.3	.12	406.22	.04	421.29	.04	493.51	.04
499.52	.12	588.73	.05						

Bank Sta:	Left	Right	Lengths:	Left	Channel	Right	Coeff	Contr.	Expan.
	406.22	499.52		376.1	499.4	534.3		.1	.3
Blocked Obstructions			num=	1					
Sta L	Sta R	Elev							
718.73	727.95	285.34	01						

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	252.19	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.29	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	251.89	Reach Len. (ft)	376.10	499.40
534.30				
Crit W.S. (ft)	248.59	Flow Area (sq ft)	297.98	555.67
4.54				
E.G. Slope (ft/ft)	0.001407	Area (sq ft)	297.98	555.67
4.54				
Q Total (cfs)	2671.00	Flow (cfs)	173.48	2496.11
1.41				
Top Width (ft)	313.46	Top Width (ft)	211.93	93.30
8.23				
Vel Total (ft/s)	3.11	Avg. Vel. (ft/s)	0.58	4.49
0.31				
Max Chl Dpth (ft)	6.75	Hydr. Depth (ft)	1.41	5.96
0.55				
Conv. Total (cfs)	71202.5	Conv. (cfs)	4624.5	66540.4
37.6				
Length Wtd. (ft)	483.82	Wetted Per. (ft)	212.38	96.01
8.32				
Min Ch El (ft)	245.14	Shear (lb/sq ft)	0.12	0.51
0.05				
Alpha	1.95	Stream Power (lb/ft s)	777.16	0.00
0.00				
Frctn Loss (ft)	0.71	Cum Volume (acre-ft)	115.11	113.61
53.86				
C & E Loss (ft)	0.02	Cum SA (acres)	45.69	16.53
26.79				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	256.82	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.99	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	255.83	Reach Len. (ft)	376.10	499.40
534.30				

Crit W.S. (ft)	253.42	Flow Area (sq ft)	1179.26	922.75
142.87				
E.G. Slope (ft/ft)	0.002896	Area (sq ft)	1179.26	922.75
142.87				
Q Total (cfs)	10810.00	Flow (cfs)	2277.04	8338.44
194.52				
Top Width (ft)	380.05	Top Width (ft)	238.29	93.30
48.45				
Vel Total (ft/s)	4.82	Avg. Vel. (ft/s)	1.93	9.04
1.36				
Max Chl Dpth (ft)	10.69	Hydr. Depth (ft)	4.95	9.89
2.95				
Conv. Total (cfs)	200877.8	Conv. (cfs)	42313.4	154949.8
3614.6				
Length Wtd. (ft)	471.89	Wetted Per. (ft)	239.07	96.01
48.92				
Min Ch El (ft)	245.14	Shear (lb/sq ft)	0.89	1.74
0.53				
Alpha	2.75	Stream Power (lb/ft s)	777.16	0.00
0.00				
Frctn Loss (ft)	1.24	Cum Volume (acre-ft)	310.49	173.95
193.19				
C & E Loss (ft)	0.15	Cum SA (acres)	68.04	16.55
42.87				

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	257.59	Element	Left OB	Channel
Right OB				
Vel Head (ft)	1.15	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	256.43	Reach Len. (ft)	376.10	499.40
534.30				
Crit W.S. (ft)	254.00	Flow Area (sq ft)	1325.33	979.20
173.30				
E.G. Slope (ft/ft)	0.003173	Area (sq ft)	1325.33	979.20

173.30				
Q Total (cfs)	12761.00	Flow (cfs)	2856.98	9636.46
267.56				
Top Width (ft)	388.52	Top Width (ft)	243.11	93.30
52.11				
Vel Total (ft/s)	5.15	Avg. Vel. (ft/s)	2.16	9.84
1.54				
Max Chl Dpth (ft)	11.29	Hydr. Depth (ft)	5.45	10.50
3.33				
Conv. Total (cfs)	226538.9	Conv. (cfs)	50718.4	171070.7
4749.9				
Length Wtd. (ft)	470.37	Wetted Per. (ft)	243.94	96.01
52.62				
Min Ch El (ft)	245.14	Shear (lb/sq ft)	1.08	2.02
0.65				
Alpha	2.80	Stream Power (lb/ft s)	777.16	0.00
0.00				
Frctn Loss (ft)	1.31	Cum Volume (acre-ft)	363.08	186.05
225.59				
C & E Loss (ft)	0.18	Cum SA (acres)	70.98	16.55
44.86				

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	259.82	Element	Left OB	Channel
Right OB				
Vel Head (ft)	1.69	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	258.13	Reach Len. (ft)	376.10	499.40
534.30				
Crit W.S. (ft)	255.73	Flow Area (sq ft)	1757.61	1137.42
271.52				
E.G. Slope (ft/ft)	0.004000	Area (sq ft)	1757.61	1137.42
271.52				

Q Total (cfs)	19382.00	Flow (cfs)	4938.22	13887.50
556.28				
Top Width (ft)	452.18	Top Width (ft)	295.35	93.30
63.53				
Vel Total (ft/s)	6.12	Avg. Vel. (ft/s)	2.81	12.21
2.05				
Max Chl Dpth (ft)	12.99	Hydr. Depth (ft)	5.95	12.19
4.27				
Conv. Total (cfs)	306451.9	Conv. (cfs)	78079.1	219577.5
8795.4				
Length Wtd. (ft)	466.42	Wetted Per. (ft)	296.31	96.01
64.17				
Min Ch El (ft)	245.14	Shear (lb/sq ft)	1.48	2.96
1.06				
Alpha	2.91	Stream Power (lb/ft s)	777.16	0.00
0.00				
Frctn Loss (ft)	1.45	Cum Volume (acre-ft)	516.74	219.19
321.02				
C & E Loss (ft)	0.32	Cum SA (acres)	78.19	16.55
50.13				

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 7955.335

INPUT

Description: not interpolated

Station Elevation Data num= 476

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	260.88	.27	260.86	1.47	260.66	4.32	260.56	6.27	260.47
7.78	260.58	8.24	260.57	10.2	260.41	13.08	260.12	13.44	260.09
15.08	260.1	16.52	260.01	19.94	259.51	20.97	259.5	22	259.57
23.9	259.58	26.84	259.52	28.64	259.46	29.14	259.42	33.72	259.25

34.73	259.23	37.82	258.95	40.57	258.9	42.37	258.61	42.68	258.63
47.43	258.87	48.35	258.73	49.38	258.6	54.11	258.44	55.72	258.49
56.17	258.43	57.48	258.29	61.09	257.73	62.87	257.7	63	257.7
66.4	257.59	68.27	257.5	70.3	257.44	71.92	257.35	76.19	257.48
76.56	257.45	77.58	257.37	80.29	257.06	82.77	256.74	83.32	256.73
85.75	256.68	88.17	256.65	89.97	256.76	90.12	256.76	90.47	256.78
94.9	256.6	95.45	256.54	96.9	256.47	101.48	256.71	101.75	256.72
101.95	256.68	103.85	256.36	107.76	256.49	108.77	256.52	108.96	256.51
110.76	256.26	115.34	256.46	115.64	256.47	115.95	256.45	117.54	256.25
119.82	256.29	122.45	256.32	123.8	256.31	126.24	256.36	129.31	256.38
130	256.33	131.31	256.17	134.17	256.23	136.11	256.23	137.73	256.15
138.1	256.12	138.38	256.12	144.31	256.05	148	255.88	149.69	255.89
150.91	255.75	153.21	255.64	156.51	255.56	158	255.83	158.66	255.87
161.11	255.77	164.48	255.57	165.59	255.53	168.72	255.34	170.39	255.28
171.82	255.31	172.45	255.29	173.51	255.28	177.24	255.09	178.28	254.92
179.26	254.74	185.98	254.57	186.11	254.56	186.36	254.55	191.56	254.22
192.83	254.16	195.92	254.19	198.19	254.21	199.72	254.04	203.64	253.99
204.55	254.01	205.58	253.96	206.49	253.97	209.67	254.06	211.37	254.09
211.57	254.11	214.02	254.01	217.67	253.86	218.65	253.84	220.17	253.84
224.95	253.7	224.99	253.7	225.36	253.68	231.34	253.35	231.82	253.3
235.7	253.27	238.22	253.24	238.48	253.22	240.4	253.51	245.28	253.38
245.39	253.38	248.17	253.12	252.16	253.46	253.64	253.35	254.01	253.32
254.71	253.28	258.92	252.96	259.39	253.02	260.88	253.17	263.87	252.98
265.91	253.04	267.66	252.82	267.9	252.81	272.75	252.97	274.11	252.87
276.61	252.79	279.26	252.74	279.54	252.73	281.28	252.58	281.53	252.57
283.21	252.56	287.68	252.69	288.38	252.51	290.2	252.2	293.3	251.74
294.46	251.69	296.77	251.72	300.03	251.63	301.17	251.61	304.31	251.54
306.83	251.39	307.44	251.45	308.71	251.27	312.29	250.92	313.59	250.68
314	250.61	315.57	250.74	320.08	250.91	320.42	250.93	324.08	250.99
326.77	251.01	327.38	251.04	334.16	249.91	334.17	249.91	334.18	249.91
336.03	248.94	339.96	247.78	340.9	247.5	341.99	247.48	345.99	247.35
347.85	247.4	349.28	247.17	349.63	247.09	354.57	246.97	354.71	246.98
354.83	246.98	356.65	246.96	360.21	247.37	361.68	247.5	367.35	247.61
367.86	247.68	368.57	247.67	368.95	247.62	370.45	247.56	373.71	247.7
377.13	247.97	377.5	247.98	381.4	248.08	382.42	248.11	382.48	248.12
384.34	247.9	388.55	247.92	391.2	248.06	392.71	248.2	396.16	248.5
397.73	248.6	399.05	248.6	403.16	248.49	404.16	248.49	405.07	248.56
407.89	248.76	410.45	248.7	411.69	248.7	412.26	248.7	413.17	248.69
417.69	248.56	418.73	248.6	422.15	248.62	423.59	248.65	425.11	248.61
425.52	248.58	426.63	248.63	430.47	248.87	431.27	248.94	432.35	248.94
435.69	249.04	439.06	249.2	439.29	249.22	439.65	249.2	443.98	249.04
445.38	248.94	446.02	248.91	448.42	248.86	450.78	248.82	457.35	249.32
457.71	249.31	458.51	249.22	459.71	249.02	463.5	248.88	464.49	248.83
464.64	248.81	466.43	248.59	469.94	248.88	473.28	248.77	473.37	248.77
473.44	248.77	478.5	248.99	479.37	249.07	482.73	248.96	485.34	248.78
486.66	248.62	487.25	248.67	490.26	248.52	494.23	248.56	496.2	248.41
506.09	247.15	511.49	246.41	512.88	246.43	514.05	246.28	516.67	246.4
519.82	246.44	521.67	246.62	521.79	246.65	522.15	246.66	526.84	246.86
531.09	247.04	531.23	247.05	540.04	246.19	540.24	246.17	541.26	246
546.28	245.98	547.77	245.83	549.1	245.62	550.37	245.47	553.72	245.09

555.22	244.84	555.71	244.77	564.79	244.77	573.85	244.77	577.76	244.77
581.08	244.77	585.33	244.77	590.1	246.36	591.49	246.82	598.58	248.35
599.84	248.88	601.37	248.94	605.11	249.23	605.94	249.15	612.93	249.39
614.03	249.45	614.17	249.46	614.52	249.48	621.36	250.1	626.48	250.22
626.59	250.22	626.65	250.23	628.39	249.88	632.86	249.94	633.75	249.96
633.82	249.97	635.56	249.83	639.16	249.81	640.79	249.84	641.19	249.82
642.74	249.67	644.76	249.84	648.7	249.92	654.55	249.64	654.65	249.63
654.83	249.63	654.92	249.63	656.82	249.59	660.53	249.01	661.85	248.86
662.03	248.82	662.99	248.78	668.9	248.6	670.22	248.41	670.8	248.4
672.47	248.39	676	248.5	677.26	248.24	678.63	247.91	682.98	247.12
687.69	247.12	688.51	247.11	690.05	246.95	691.15	247.01	693.56	247.1
697.17	247.19	698.5	247.54	699.2	247.67	700.95	247.8	704.43	247.91
705.52	247.91	706.39	247.9	710.27	247.85	711.58	247.79	712.86	247.95
713.58	248.02	715.68	248.28	718.85	248.6	719.17	248.71	720.88	248.79
725.1	248.95	726.03	248.93	727.86	248.62	727.97	248.62	728.28	248.63
730.37	248.93	733.3	249.35	733.6	249.38	735.26	249.41	739.53	249.83
740.53	249.92	742.35	249.69	742.48	249.68	742.72	249.7	747.71	250.08
748.05	250.06	749.66	249.94	752.92	250.12	754.96	250.34	756.62	250.46
756.93	250.49	757.9	250.56	763.04	250.85	764.28	250.95	767.24	251.14
769.6	251.42	775.85	251.78	777.37	251.8	778.47	251.87	781.45	252.34
784.13	252.62	785.69	252.79	786.83	253.03	791.47	254.14	791.87	254.19
793.34	254.31	797.79	254.85	798.77	254.96	798.9	255	800.64	255.25
804.83	255.79	806.08	255.96	807.42	256.09	808.07	256.15	808.59	256.21
812.27	256.54	818.29	257.05	819.35	257.18	820.32	257.27	832.57	260.64
837.77	261.4	839.99	261.55	841.55	261.57	854.05	262.77	864.68	263.02
867.9	262.99	869.21	263.05	873.77	262.73	878.13	262.56	880.32	262.43
887.2	262.02	888.24	261.97	889.46	261.83	893.69	261.62	894.77	261.5
895.38	261.4	896.85	261.31	900.84	261.11	901.97	261.24	902.67	261.09
904.83	260.97	908.08	260.58	908.97	260.47	912.09	260.44	915.39	260.39
916.35	260.27	917.2	260.36	919.08	260.27	922.66	260.13	923.64	260.1
924.77	259.96	927.08	260.04	928.87	260.06	929.95	260.09	931.37	260.07
931.86	260.07	932.51	260.11	937.25	260.25	937.61	260.25	939.11	260.28
943.74	260.2	944.49	260.21	946.41	260.45	946.42	260.45	946.44	260.45
951.74	260.58	952.32	260.68	954.69	261.1	957.22	261.41	958.37	261.5
959.92	261.49	960.23	261.51	965.53	261.79	966.9	261.96	968.3	262
972.09	262.43	973.7	262.51	975.38	262.65	975.64	262.65	975.72	262.66
976.04	262.69	981.06	262.95	981.95	262.93	982.96	262.99	985.87	263.33
988.26	263.44	990.18	263.57	990.24	263.58	990.29	263.58	995.26	264.05
996.66	264.1	997.51	264.17	1001.19	264.31	1002.45	264.36	1003.04	264.36
1004.6	264.4	1004.86	264.41	1009.77	264.23	1009.98	264.24	1010.52	264.26
1011.89	264.41	1017.03	265.17	1017.26	265.2	1017.32	265.21	1017.57	265.23
1019.4	265.43								

Manning's n Values			num= 8								
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	279.26	.12	531.23	.04	550.37	.04	590.1	.04		
591.49	.04	598.58	.12	730.37	.05						

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	531.23	598.58		259.83	305.85		.1	.3

Blocked Obstructions num= 1

Sta L Sta R Elev
843.27 853.38260.8018

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	251.45	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.22	Wt. n-Val.	0.120	0.040
0.109				
W.S. Elev (ft)	251.23	Reach Len. (ft)	259.83	305.85
157.89				
Crit W.S. (ft)	249.30	Flow Area (sq ft)	620.62	379.11
363.59				
E.G. Slope (ft/ft)	0.001542	Area (sq ft)	620.62	379.11
363.59				
Q Total (cfs)	2671.00	Flow (cfs)	596.69	1739.04
335.27				
Top Width (ft)	458.97	Top Width (ft)	222.16	67.35
169.46				
Vel Total (ft/s)	1.96	Avg. Vel. (ft/s)	0.96	4.59
0.92				
Max Chl Dpth (ft)	6.46	Hydr. Depth (ft)	2.79	5.63
2.15				
Conv. Total (cfs)	68021.9	Conv. (cfs)	15195.9	44287.8
8538.3				
Length Wtd. (ft)	278.73	Wetted Per. (ft)	223.20	67.98
170.23				
Min Ch El (ft)	244.77	Shear (lb/sq ft)	0.27	0.54
0.21				
Alpha	3.65	Stream Power (lb/ft s)	1019.40	0.00
0.00				
Frctn Loss (ft)	0.50	Cum Volume (acre-ft)	111.15	108.25
51.60				
C & E Loss (ft)	0.01	Cum SA (acres)	43.82	15.61
25.70				

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	255.43	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.50	Wt. n-Val.	0.115	0.040
0.096				
W.S. Elev (ft)	254.93	Reach Len. (ft)	259.83	305.85

157.89				
Crit W.S. (ft)	252.39	Flow Area (sq ft)	1659.61	627.91
1054.07				
E.G. Slope (ft/ft)	0.002401	Area (sq ft)	1659.61	627.91
1054.07				
Q Total (cfs)	10810.00	Flow (cfs)	3302.25	5031.17
2476.58				
Top Width (ft)	620.27	Top Width (ft)	353.00	67.35
199.91				
Vel Total (ft/s)	3.23	Avg. Vel. (ft/s)	1.99	8.01
2.35				
Max Chl Dpth (ft)	10.16	Hydr. Depth (ft)	4.70	9.32
5.27				
Conv. Total (cfs)	220628.0	Conv. (cfs)	67397.7	102684.3
50546.0				
Length Wtd. (ft)	253.08	Wetted Per. (ft)	354.34	67.98
200.97				
Min Ch El (ft)	244.77	Shear (lb/sq ft)	0.70	1.38
0.79				
Alpha	3.09	Stream Power (lb/ft s)	1019.40	0.00
0.00				
Frctn Loss (ft)	0.56	Cum Volume (acre-ft)	298.23	165.06
185.85				
C & E Loss (ft)	0.02	Cum SA (acres)	65.48	15.62
41.34				

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	256.10	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.54	Wt. n-Val.	0.113	0.040
0.095				
W.S. Elev (ft)	255.56	Reach Len. (ft)	259.83	305.85
157.89				
Crit W.S. (ft)	252.89	Flow Area (sq ft)	1884.63	670.17
1180.85				
E.G. Slope (ft/ft)	0.002450	Area (sq ft)	1884.63	670.17
1180.85				
Q Total (cfs)	12761.00	Flow (cfs)	4080.22	5665.82
3014.96				
Top Width (ft)	638.16	Top Width (ft)	366.37	67.35
204.44				
Vel Total (ft/s)	3.42	Avg. Vel. (ft/s)	2.16	8.45
2.55				
Max Chl Dpth (ft)	10.79	Hydr. Depth (ft)	5.14	9.95

5.78				
Conv. Total (cfs)	257789.6	Conv. (cfs)	82426.0	114457.3
60906.3				
Length Wtd. (ft)	250.85	Wetted Per. (ft)	367.73	67.98
205.54				
Min Ch El (ft)	244.77	Shear (lb/sq ft)	0.78	1.51
0.88				
Alpha	2.98	Stream Power (lb/ft s)	1019.40	0.00
0.00				
Frctn Loss (ft)	0.56	Cum Volume (acre-ft)	349.22	176.59
217.29				
C & E Loss (ft)	0.03	Cum SA (acres)	68.34	15.62
43.29				

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	258.05	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.63	Wt. n-Val.	0.106	0.040
0.093				
W.S. Elev (ft)	257.42	Reach Len. (ft)	259.83	305.85
157.89				
Crit W.S. (ft)	254.20	Flow Area (sq ft)	2665.84	795.73
1578.60				
E.G. Slope (ft/ft)	0.002490	Area (sq ft)	2665.84	795.73
1578.60				
Q Total (cfs)	19382.00	Flow (cfs)	6954.01	7604.51
4823.49				
Top Width (ft)	747.52	Top Width (ft)	457.88	67.35
222.29				
Vel Total (ft/s)	3.85	Avg. Vel. (ft/s)	2.61	9.56
3.06				
Max Chl Dpth (ft)	12.65	Hydr. Depth (ft)	5.82	11.81
7.10				
Conv. Total (cfs)	388392.2	Conv. (cfs)	139350.0	152385.3
96656.9				
Length Wtd. (ft)	246.08	Wetted Per. (ft)	459.44	67.98
223.50				
Min Ch El (ft)	244.77	Shear (lb/sq ft)	0.90	1.82
1.10				
Alpha	2.75	Stream Power (lb/ft s)	1019.40	0.00
0.00				
Frctn Loss (ft)	0.55	Cum Volume (acre-ft)	497.65	208.11
309.68				
C & E Loss (ft)	0.03	Cum SA (acres)	74.93	15.62

48.37

Warning: Divided flow computed for this cross-section.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 7649.488

INPUT

Description: not interpolated

Station Elevation Data num= 450

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	259.79	.34	259.8	.87	259.76	1.53	259.76	1.89	259.75
4.13	259.76	8.58	259.78	15.07	259.77	15.12	259.77	15.15	259.77
15.19	259.77	17.92	259.71	20.28	259.64	23.53	259.38	26.18	259.33
26.23	259.32	26.29	259.32	26.4	259.32	30.14	259.23	31.98	259.32
33.83	259.3	38.39	259.05	39.36	258.93	40.47	258.9	41.48	258.88
43.17	258.84	44.62	258.85	48.82	258.81	49.16	258.81	50.75	258.63
51.4	258.57	51.53	258.55	52.8	258.58	57.34	258.66	58.07	258.63
60.35	258.48	63.06	258.36	65.82	258.21	67.01	258.18	72.05	258.33
73.33	258.34	74.13	258.34	76.71	258.6	81.73	258.64	85	258.76
90.95	258.53	93.83	258.39	98.55	258.73	99.45	258.66	105.84	258.12
107.21	258.04	110.53	257.94	112.6	257.82	113.32	257.79	119.05	257.57
125.44	257.49	129.15	257.42	135.41	257.03	144.22	256.84	144.3	256.84
144.62	256.81	144.84	256.78	153.14	255.71	156.25	255.43	158.31	255.22
160	255.25	160.93	255.25	161.81	255.16	162.17	255.14	164.53	255.07
168.62	255.06	172.77	255.14	177.02	255.2	180.18	255.25	183.42	254.98
184.14	254.96	185.04	254.96	188.96	254.97	193.39	254.91	197.79	254.65
202.76	254.4	205.2	254.33	208.29	254.14	209.08	254.16	210.54	254.09
214.38	253.99	218.11	253.98	218.84	253.97	219.66	253.87	224.54	253.45
225.77	253.36	230	253.39	234.11	253.36	238.95	253.01	244.97	252.74
252.65	252.4	253.42	252.45	255.35	252.2	282.33	251.39	283.13	251.38
283.77	251.38	284.89	251.36	290.87	251.35	291.73	251.6	305.16	252.97
305.63	253.02	305.65	253.02	305.72	253.02	305.88	253.02	324.41	252.02
326.64	251.66	328.16	251.68	329.39	251.85	331.19	251.69	337.59	251.44
342.54	251.02	347.53	250.79	351.19	250.3	353.55	250.35	355.05	250.44
356.66	250.67	357.09	250.71	362.01	251.18	367.31	251.3	380.41	250.54
382.9	250.39	386.11	250.35	390.28	250.31	391.85	250.32	392.11	250.29
393.75	250.32	397.91	250.41	399.23	250.35	400.85	250.21	402.55	250.2
403.54	250.23	406.97	250.48	408.34	250.46	412.83	250.04	413.62	250.09
414.16	250.15	416.1	250.15	419.18	250.17	423.25	249.99	423.39	249.99
423.44	249.99	427.72	250.13	434.17	250.08	435	250.13	435.9	250.11
437.74	250.3	440.55	250.28	442.11	250.27	444.11	250.4	447.87	250.32
449.83	250.31	450.27	250.32	451.57	250.27	459.41	250.03	462.68	250.13
465.26	250.17	466.62	250.23	473.97	250.28	474	250.28	474.01	250.28

474.03	250.28	478.96	250.33	480.29	250.36	481.38	250.4	482.46	250.38
483.72	250.27	487.18	249.99	492.29	250.35	494.43	250.49	495.97	250.41
499.47	250.26	500.93	250.26	503	250.08	503.21	250.07	503.43	249.99
513.44	244.27	518.97	244.27	534.35	244.27	560.03	244.27	561.48	244.65
563.19	245.11	566.58	245.86	567.67	246.13	568.07	246.18	569.39	246.33
573.06	246.71	575.21	247.08	575.38	247.13	580.25	247.84	581.29	247.81
582.71	247.78	583.27	247.84	587.45	248.4	587.91	248.36	589.89	248.37
592.26	248.24	594.66	248.45	596.28	248.44	600.66	248.39	602.11	248.39
604.32	248.08	605.23	248.18	609.18	248.64	609.82	248.72	611.5	248.6
615.07	248.88	617.21	248.94	619.75	249.12	622.61	249.09	623.98	249.22
624.49	249.22	629.04	249.24	631.25	249.23	633.45	249.37	638.66	249.24
638.94	249.21	639.55	249.27	641.81	249.47	643.91	249.65	644.48	249.67
644.89	249.64	646.98	249.6	648.36	249.38	650.56	249.35	654.13	249.32
658.17	249.31	659.5	249.28	661.77	249.57	665.72	249.3	668.22	249.54
671.84	249.7	675.29	249.75	676.15	249.68	681.55	249.6	682.22	249.59
682.57	249.59	684.85	249.7	684.93	249.7	690.24	250.18	693.03	250.17
694.66	250.27	696.74	250.58	697.22	250.65	702.47	250.75	706.52	250.57
707.38	250.43	710.06	250.37	712.59	250.28	714.66	250.18	715.1	250.18
720.11	250.38	721.63	250.41	722.38	250.44	723.26	250.46	727.56	250.4
727.64	250.4	728.72	250.36	729.96	250.44	734.29	250.43	735.75	250.35
737.39	249.74	747.6	248.98	758.63	248.81	767	248.69	769.58	249.37
772.69	250	774.32	250.41	775.02	250.52	779.67	250.91	782.5	251.18
783.45	251.2	787.91	251.16	789.14	251.16	790.06	251.11	792.01	251.15
795.37	251.37	800.49	251.53	801.88	251.53	802.86	251.55	804.88	251.62
805	251.63	805.42	251.62	810.24	251.53	811.37	251.43	812.49	251.33
816.44	251.29	818.71	251.49	820.82	251.66	822.8	251.6	827.39	251.55
833.88	251.53	834.43	251.54	834.89	251.56	835.41	251.56	840.17	251.79
840.29	251.79	842.37	251.7	843.78	251.71	849.83	251.49	851.15	251.58
855.14	252.11	855.53	252.04	857.4	251.72	864.75	252.1	865.11	252.1
870.21	251.46	872.24	250.85	872.44	250.83	872.79	250.76	875.64	250.54
877.45	250.39	877.67	250.33	877.94	250.26	879.93	249.57	882.71	249.33
885.11	249.3	885.85	249.28	888.94	249.48	894.24	249.55	895	249.46
895.83	249.43	901.31	249.14	905.66	249.24	908.86	249.3	910.06	249.04
913.04	248.78	917.61	248.5	921.6	247.98	922.4	247.84	925.18	247.7
944.4	246.98	945.72	246.96	946.88	247.1	947.92	247.22	952.79	247.42
953.35	247.43	953.86	247.48	955.51	247.74	959.7	248.19	961.05	248.13
962.22	248.13	963.09	248.12	963.16	248.14	963.55	248.14	970.91	248.37
974.74	248.66	977.04	248.73	978.49	248.66	982.7	248.83	985.28	249.07
986.15	249.06	989.29	249.22	991.61	249.28	992.89	249.3	993.77	249.31
997.84	249.38	999.3	249.54	1001.26	250.11	1001.57	250.16	1007.05	250.69
1007.87	250.92	1009.27	251.26	1013.24	251.95	1014.87	252.21	1015.46	252.33
1017.02	252.45	1019.6	253.01	1022.61	253.54	1024.08	253.73	1029.54	254.4
1030.34	254.51	1030.41	254.52	1031.01	254.66	1032.32	254.95	1032.46	254.96
1033.27	255.01	1038.08	255.39	1039.94	255.44	1040.2	255.46	1044.69	256.01
1049.84	257.34	1055.05	258.67	1055.88	258.81	1061.31	259.62	1062.05	259.69
1070.37	260.23	1073.12	260.42	1076.92	260.17	1077.86	260.15	1079	260.14
1080	260.14	1084.65	260.1	1086.14	260.57	1086.75	260.68	1088.95	260.71
1092.41	260.82	1094.05	260.94	1094.53	260.98	1095.49	260.99	1100.13	261.18
1100.32	261.2	1102.3	261.35	1106.54	261.73	1107.91	261.84	1111.12	261.89
1113.85	261.95	1115.55	262.02	1116.06	262.03	1120.92	262.47	1123.2	262.47

1125.1	262.44	1130.32	261.9	1130.84	261.86	1132.25	261.87	1132.76	261.87
1132.88	261.87	1138.49	262.13	1139.75	262.13	1140.59	262.21	1142.03	262.35
1146.18	262.62	1146.76	262.54	1148.3	262.52	1151.24	262.66	1153.91	262.86
1155.15	263.05	1156.02	262.94	1159.83	263.07	1161.47	263.03	1162.4	263.14
1163.63	263.25	1168.6	263.56	1169.21	263.58	1171.13	263.38	1171.27	263.36
1171.32	263.36	1176.79	263.68	1178.47	263.59	1178.8	263.58	1181.09	263.65
1184.35	263.8	1184.96	263.83	1186.46	263.99	1188.92	264.15	1189.64	264.17

Manning's n Values			num= 7								
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	440.55	.12	503.43	.04	518.97	.04	561.48	.04		
587.45	.12	962.22	.05								

Bank Sta:	Left	Right	Lengths:			Left Channel	Right	Coeff	Contr.	Expan.
	503.43	587.45		322.31	271.74	189.84		.1		.3

Ineffective Flow			num= 1		
Sta L	Sta R	Elev	Permanent		
0	338.9	257.25	F		

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	250.94	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.32	Wt. n-Val.	0.070	0.040
0.100				
W.S. Elev (ft)	250.62	Reach Len. (ft)	322.31	271.74
189.84				
Crit W.S. (ft)	248.62	Flow Area (sq ft)	47.92	437.42
477.14				
E.G. Slope (ft/ft)	0.002086	Area (sq ft)	47.92	437.42
477.14				
Q Total (cfs)	2671.00	Flow (cfs)	23.75	2196.32
450.94				
Top Width (ft)	528.07	Top Width (ft)	131.92	84.02
312.13				
Vel Total (ft/s)	2.78	Avg. Vel. (ft/s)	0.50	5.02
0.95				
Max Chl Dpth (ft)	6.35	Hydr. Depth (ft)	0.36	5.21
1.53				
Conv. Total (cfs)	58477.5	Conv. (cfs)	519.9	48085.0
9872.7				
Length Wtd. (ft)	258.50	Wetted Per. (ft)	132.10	85.93
313.27				
Min Ch El (ft)	244.27	Shear (lb/sq ft)	0.05	0.66
0.20				
Alpha	2.71	Stream Power (lb/ft s)	1189.64	0.00
0.00				
Frctn Loss (ft)	0.47	Cum Volume (acre-ft)	109.15	105.38
50.08				

C & E Loss (ft)	0.03	Cum SA (acres)	42.76	15.08
24.82				

Warning: Divided flow computed for this cross-section.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	254.85	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.44	Wt. n-Val.	0.066	0.040
0.102				
W.S. Elev (ft)	254.42	Reach Len. (ft)	322.31	271.74
189.84				
Crit W.S. (ft)	252.39	Flow Area (sq ft)	659.82	756.25
2020.78				
E.G. Slope (ft/ft)	0.002053	Area (sq ft)	917.64	756.25
2020.78				
Q Total (cfs)	10810.00	Flow (cfs)	1708.95	5425.83
3675.22				
Top Width (ft)	827.19	Top Width (ft)	300.97	84.02
442.20				
Vel Total (ft/s)	3.15	Avg. Vel. (ft/s)	2.59	7.17
1.82				
Max Chl Dpth (ft)	10.15	Hydr. Depth (ft)	4.01	9.00
4.57				
Conv. Total (cfs)	238589.3	Conv. (cfs)	37718.6	119754.3
81116.4				
Length Wtd. (ft)	252.67	Wetted Per. (ft)	164.79	85.93
443.98				
Min Ch El (ft)	244.27	Shear (lb/sq ft)	0.51	1.13
0.58				
Alpha	2.83	Stream Power (lb/ft s)	1189.64	0.00
0.00				
Frctn Loss (ft)	0.47	Cum Volume (acre-ft)	290.54	160.20
180.28				
C & E Loss (ft)	0.02	Cum SA (acres)	63.53	15.09
40.18				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	255.51	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.45	Wt. n-Val.	0.065	0.040
0.102				
W.S. Elev (ft)	255.06	Reach Len. (ft)	322.31	271.74
189.84				
Crit W.S. (ft)	252.80	Flow Area (sq ft)	765.67	810.30
2306.43				
E.G. Slope (ft/ft)	0.002030	Area (sq ft)	1116.03	810.30
2306.43				
Q Total (cfs)	12761.00	Flow (cfs)	2183.04	6053.20
4524.76				
Top Width (ft)	851.40	Top Width (ft)	320.95	84.02
446.43				
Vel Total (ft/s)	3.29	Avg. Vel. (ft/s)	2.85	7.47
1.96				
Max Chl Dpth (ft)	10.79	Hydr. Depth (ft)	4.65	9.64
5.17				
Conv. Total (cfs)	283245.3	Conv. (cfs)	48455.2	134357.8
100432.3				
Length Wtd. (ft)	252.10	Wetted Per. (ft)	164.79	85.93
448.28				
Min Ch El (ft)	244.27	Shear (lb/sq ft)	0.59	1.19
0.65				
Alpha	2.71	Stream Power (lb/ft s)	1189.64	0.00
0.00				
Frctn Loss (ft)	0.46	Cum Volume (acre-ft)	340.27	171.40
210.97				
C & E Loss (ft)	0.03	Cum SA (acres)	66.29	15.09
42.11				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the

largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	257.47	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.52	Wt. n-Val.	0.065	0.040
0.102				
W.S. Elev (ft)	256.95	Reach Len. (ft)	322.31	271.74
189.84				
Crit W.S. (ft)	253.82	Flow Area (sq ft)	1077.26	969.42
3169.57				
E.G. Slope (ft/ft)	0.001985	Area (sq ft)	1781.35	969.42
3169.57				
Q Total (cfs)	19382.00	Flow (cfs)	3831.06	8070.71
7480.24				
Top Width (ft)	909.32	Top Width (ft)	364.41	84.02
460.89				
Vel Total (ft/s)	3.72	Avg. Vel. (ft/s)	3.56	8.33
2.36				
Max Chl Dpth (ft)	12.68	Hydr. Depth (ft)	6.55	11.54
6.88				
Conv. Total (cfs)	435034.9	Conv. (cfs)	85989.2	181149.5
167896.2				
Length Wtd. (ft)	250.89	Wetted Per. (ft)	164.79	85.93
462.90				
Min Ch El (ft)	244.27	Shear (lb/sq ft)	0.81	1.40
0.85				
Alpha	2.43	Stream Power (lb/ft s)	1189.64	0.00
0.00				
Frctn Loss (ft)	0.45	Cum Volume (acre-ft)	484.39	201.92
301.07				
C & E Loss (ft)	0.03	Cum SA (acres)	72.48	15.09
47.14				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the

largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may

wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 7377.751

INPUT

Description: not interpolated

Station Elevation Data num= 480

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	263.13	.45	263.11	2.04	262.9	3.09	262.94	8.45	263.04
11.9	262.52	15.11	260.89	16.9	260.37	19.34	260.07	25.02	258.62
29.16	258.65	31.85	258.62	32.72	258.55	36.92	258.05	44.39	259.82
45.19	260.04	46.53	260.46	50.31	261.67	51.13	261.99	53.63	261.67
55.12	261.68	59.74	261.13	62.34	260.96	65.91	260.73	66.66	260.69
69.63	260.46	72.25	260.45	75.83	260.34	82.51	260.71	85.83	260.58
87.7	260.45	90.08	260.47	93.06	259.84	98.4	259.67	101.61	259.33
106.4	259.07	110.88	258.89	115.95	258.81	116.95	258.75	119.66	258.56
122.32	258.39	124.55	258.29	126.85	258.14	130.34	258.09	133.63	258.07
138.38	257.93	141.73	257.85	142.71	257.86	145.58	257.85	146.26	257.78
148.01	257.47	150.16	257.15	150.76	257.21	154.87	256.83	157.05	256.65
159.67	256.55	162.26	256.63	163.61	256.45	169.19	256.28	170.94	256.03
173.43	256.02	178.02	255.64	180.19	255.66	186.88	255.49	191.97	255.23
194.3	255.5	203.73	254.47	206.44	254.06	208.36	253.97	208.92	253.87
210.04	253.64	212.93	252.86	215.37	252.26	220.37	251.01	221.65	250.67
222.64	250.52	228.35	248.67	233.38	248.34	237.32	248.53	244.47	248.47
246.55	248.38	251.28	248.59	256.82	248.73	260.44	248.94	264.65	249.15
266.93	249.05	268.81	248.88	271.15	248.82	272.12	248.88	273.21	248.92
284.83	248.93	288.02	248.73	288.96	248.64	291.09	248.51	294.53	248.19
297.5	248.43	298.78	248.35	310.83	248.62	318.08	248.8	325	249.23
330.21	249.04	332.94	248.88	334.01	248.79	338.25	248.42	341.51	248.59
347.15	248.47	354.2	248.26	356.82	248.17	358.11	248.17	363.73	248.14
366.15	247.99	369.35	247.86	372.4	247.5	374.51	247.53	381.05	247.07
392.19	245.35	396.35	244.92	403.25	245.1	403.9	245.12	404.24	245.11
413.48	245.09	418.97	244.91	432.2	249.38	434.4	250.18	436.79	250.06
438.29	250.22	448.64	250.13	450.19	250.05	452.88	250.11	454.75	250.13
457.75	250.12	458.6	250.1	460.93	250.15	464.2	250.27	465.98	250.27
473	249.97	476.91	249.98	489.07	249.84	489.47	249.82	490.02	249.85
495.01	250.01	497.31	250.19	499.7	250.33	503.63	250.2	504.73	250.17
506.55	250.02	508.93	250.13	511.12	249.92	513.86	250.02	518.81	250.08
520.92	250.07	522.03	250.18	524.48	250.16	525.08	250.16	527.98	250.12
530.11	250.13	530.45	250.09	532.09	250.19	536.51	250.39	538.3	250.23
540.63	249.99	543.81	250.13	546.75	250.24	549.37	250.14	550.21	250.19
554.68	250.51	556.94	250.5	560.88	250.58	562.21	250.59	562.97	250.56
565.5	250.38	571.39	250.27	572.77	250.31	578.05	250.55	580.96	250.34
581.87	250.3	587.14	250.21	587.98	250.21	588.31	250.19	593.84	250.21

596.13	250.42	597.15	250.52	600.89	250.61	604.57	250.57	607.11	250.51
612.27	250.24	612.51	250.24	615.36	249.88	615.73	249.85	619.34	250.05
620.89	249.91	623.76	249.83	624.85	249.75	630.81	249.74	632.12	249.72
633.45	249.64	637.37	249.53	639.17	249.52	640.02	249.65	642.88	249.44
646.57	249.67	649.13	249.59	651.79	249.54	658.71	249.76	661.67	249.71
662.1	249.74	663.92	249.83	665.86	250	668.4	250.35	671.24	250.29
675.77	249.77	678.82	249.51	681.4	249.51	681.7	249.53	686.71	249.5
688.7	249.22	689.75	249.15	693.56	249.36	695.15	249.08	697.29	248.67
702.92	248.34	703.11	248.32	705.29	248.44	706.38	248.44	707.8	248.58
711.88	248.88	713.64	248.84	714.83	248.87	718.62	248.75	720.33	248.84
722.07	249.16	723.34	249.23	725.78	249.46	729.18	249.38	734.46	249.25
736.99	249.45	738.18	249.44	741.48	249.36	743.49	249.26	745.33	249.09
747.06	248.92	748.22	248.86	753.29	248.63	753.82	248.6	754.54	248.3
763.06	245.22	763.95	243.99	770.79	243.97	773.28	243.97	787.29	243.96
788.9	243.96	810.07	243.95	813.24	244	814.04	244.09	814.14	244.1
818.14	244.98	819.48	245.3	820.06	245.49	828.69	245.47	829.81	245.51
830.01	245.53	831.33	245.77	832.76	246.02	834.14	246.01	839.14	247.06
840.01	247.41	849.65	247.72	850.29	247.75	851.14	247.89	858.5	248.8
859.33	248.82	864.04	248.77	866.62	248.78	867	248.75	870.97	249.15
873.76	249.09	880.87	249.11	881.11	249.12	883.71	249.34	887.99	249.39
892.39	249.43	893.76	249.29	896.93	248.75	897.89	248.68	900.31	248.3
902.07	248.36	906.17	248.47	906.66	248.44	908.97	248.19	910.33	248.2
914.52	248.03	917.41	248.24	921.4	248.61	923.01	248.87	925.27	249.29
930.86	250.25	931.25	250.29	931.82	250.42	934.46	250.96	937.53	251.27
940.14	251.24	941.76	251.07	945.08	251.08	946.92	251	948.51	251.06
950.27	250.97	951.3	250.98	957	251.31	959.83	251.37	962.18	251.4
965.48	251.19	966.88	251.41	968.38	251.56	971.52	251.23	974	251.18
975.33	251.23	981.37	251.48	982.56	251.48	983.16	251.39	985.43	250.98
987.16	250.95	990.99	250.87	991.91	250.95	994.7	250.88	999.57	250.93
1002.32	250.55	1003.35	250.53	1006.16	250.49	1007.5	250.48	1008	250.49
1009.7	250.49	1011.46	250.45	1016.44	250.06	1018.8	250.02	1019.26	249.98
1020.5	249.94	1024.98	249.86	1027.22	249.73	1028.54	249.72	1031.32	249.82
1033.32	249.88	1033.67	249.87	1036.14	249.76	1038.26	249.75	1042.24	249.77
1044.03	249.98	1045.03	250.09	1046.65	250.07	1050.78	250.05	1053.22	249.91
1053.61	249.91	1058.24	250.2	1059.42	250.35	1061.51	250.66	1062.17	250.67
1068.33	250.55	1070.38	250.28	1071.1	250.25	1073.89	250.39	1077.41	250.51
1077.97	250.55	1080.19	250.63	1082.33	250.77	1086.51	250.96	1087.36	250.78
1089.37	250.44	1091.82	250.43	1095.6	250.48	1096.4	250.45	1097.65	250.55
1100.77	250.44	1103.34	250.02	1112.92	245.99	1115.4	245.55	1119.14	245.7
1122.2	245.83	1123.1	245.96	1124.89	245.95	1128.57	246.59	1132.9	247.18
1135.95	248	1137.69	248.1	1141.75	247.91	1143.38	247.86	1145.23	247.72
1152.34	246.8	1153.27	246.52	1158.54	245.79	1158.62	245.76	1159.29	245.66
1161	245.38	1161.21	245.38	1164.74	245.23	1167.58	245.15	1167.96	245.09
1170.3	244.94	1175.57	247.1	1177.02	247.65	1183.8	249.36	1186.57	250.02
1189.24	250.56	1189.55	250.58	1195.8	250.59	1198.28	250.58	1201.49	250.38
1202.53	250.29	1207.4	250.16	1209.78	250.18	1213.88	250.23	1214.97	250.13
1216.55	249.93	1218.18	249.96	1221.8	249.83	1224.95	249.91	1225.67	249.8
1229.22	249.96	1233.31	249.85	1234.93	249.85	1236.79	249.85	1237.85	249.93
1241.37	249.84	1242.14	249.75	1244.07	249.47	1249.47	249.6	1250.52	249.66
1253.12	249.39	1254.62	249.37	1259.71	249.05	1261.85	248.5	1262.18	248.43

1266.25	248.18	1277.55	248.17	1281.92	248.32	1283.74	248.27	1288.83	249.11
1290.2	249.5	1291.31	250.15	1294.43	252.13	1296.45	253.14	1300.22	255.46
1306.46	259.94	1308.05	260.91	1309.04	261.42	1309.32	261.53	1309.68	261.55
1310.27	261.67	1321.6	263.31	1325	263.41	1327.82	263.75	1329.73	263.93
1336.49	264.77	1337.33	264.86	1344.72	265.56	1349.52	265.76	1352.35	265.84
1355.01	266.05	1357.81	266.52	1359.58	266.91	1361.46	266.85	1368.73	266.69
1369.12	266.69	1370.56	266.63	1372.56	266.44	1373.08	266.45	1378.4	266.38
1379.61	266.37	1380.28	266.21	1382.11	266	1384.41	265.99	1386.79	265.83
1391.25	265.86	1396.57	266.07	1397.34	266.13	1399.51	265.94	1400.33	265.94
1407.07	266.29	1408.02	266.22	1409.13	266.17	1413.19	266.51	1415.26	266.95

Manning's n Values			num= 9								
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.03	62.34	.12	754.54	.04	763.06	.04	770.79	.04		
814.04	.04	849.65	.04	851.14	.12	1234.93	.05				

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
754.54	851.14	434.15	459.29	437.92		.1	.3
Ineffective Flow		num= 1					
Sta L	Sta R	Elev	Permanent				
0	434.83	258.38	F				

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	250.45	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.24	Wt. n-Val.	0.120	0.040
0.105				
W.S. Elev (ft)	250.21	Reach Len. (ft)	434.15	459.29
437.92				
Crit W.S. (ft)	247.81	Flow Area (sq ft)	131.25	495.58
477.69				
E.G. Slope (ft/ft)	0.001576	Area (sq ft)	616.88	495.58
477.69				
Q Total (cfs)	2671.00	Flow (cfs)	57.53	2150.94
462.53				
Top Width (ft)	843.20	Top Width (ft)	453.26	96.60
293.33				
Vel Total (ft/s)	2.42	Avg. Vel. (ft/s)	0.44	4.34
0.97				
Max Chl Dpth (ft)	6.26	Hydr. Depth (ft)	0.54	5.13
1.63				
Conv. Total (cfs)	67271.5	Conv. (cfs)	1449.0	54173.4
11649.1				
Length Wtd. (ft)	455.30	Wetted Per. (ft)	242.51	98.18
296.37				
Min Ch El (ft)	243.95	Shear (lb/sq ft)	0.05	0.50
0.16				
Alpha	2.62	Stream Power (lb/ft s)	1415.26	0.00

0.00				
Frctn Loss (ft)	0.42	Cum Volume (acre-ft)	106.69	102.47
48.00				
C & E Loss (ft)	0.03	Cum SA (acres)	40.60	14.52
23.50				

Warning: Divided flow computed for this cross-section.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the

largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may

wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	254.36	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.35	Wt. n-Val.	0.120	0.040
0.100				
W.S. Elev (ft)	254.00	Reach Len. (ft)	434.15	459.29
437.92				
Crit W.S. (ft)	251.78	Flow Area (sq ft)	1329.69	861.65
2071.55				
E.G. Slope (ft/ft)	0.001678	Area (sq ft)	2644.59	861.65
2071.55				
Q Total (cfs)	10810.00	Flow (cfs)	1741.99	5578.24
3489.77				
Top Width (ft)	1090.21	Top Width (ft)	546.90	96.60
446.71				
Vel Total (ft/s)	2.54	Avg. Vel. (ft/s)	1.31	6.47
1.68				
Max Chl Dpth (ft)	10.05	Hydr. Depth (ft)	4.16	8.92
4.64				
Conv. Total (cfs)	263924.2	Conv. (cfs)	42530.3	136191.8
85202.1				
Length Wtd. (ft)	449.91	Wetted Per. (ft)	320.30	98.18
451.24				
Min Ch El (ft)	243.95	Shear (lb/sq ft)	0.43	0.92
0.48				
Alpha	3.55	Stream Power (lb/ft s)	1415.26	0.00

0.00				
Frctn Loss (ft)	0.73	Cum Volume (acre-ft)	277.37	155.16
171.36				
C & E Loss (ft)	0.01	Cum SA (acres)	60.40	14.53
38.24				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	255.03	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.37	Wt. n-Val.	0.120	0.040
0.100				
W.S. Elev (ft)	254.66	Reach Len. (ft)	434.15	459.29
437.92				
Crit W.S. (ft)	252.12	Flow Area (sq ft)	1538.14	924.64
2363.15				
E.G. Slope (ft/ft)	0.001661	Area (sq ft)	3003.13	924.64
2363.15				
Q Total (cfs)	12761.00	Flow (cfs)	2209.76	6243.84
4307.40				
Top Width (ft)	1096.88	Top Width (ft)	552.51	96.60
447.77				
Vel Total (ft/s)	2.64	Avg. Vel. (ft/s)	1.44	6.75
1.82				
Max Chl Dpth (ft)	10.71	Hydr. Depth (ft)	4.81	9.57
5.28				
Conv. Total (cfs)	313074.3	Conv. (cfs)	54213.5	153184.4
105676.5				
Length Wtd. (ft)	449.38	Wetted Per. (ft)	320.30	98.18
452.48				
Min Ch El (ft)	243.95	Shear (lb/sq ft)	0.50	0.98
0.54				
Alpha	3.40	Stream Power (lb/ft s)	1415.26	0.00
0.00				
Frctn Loss (ft)	0.76	Cum Volume (acre-ft)	325.03	165.99
200.79				
C & E Loss (ft)	0.02	Cum SA (acres)	63.06	14.53

40.16

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	256.99	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.43	Wt. n-Val.	0.120	0.040
0.100				
W.S. Elev (ft)	256.57	Reach Len. (ft)	434.15	459.29
437.92				
Crit W.S. (ft)	253.12	Flow Area (sq ft)	2148.74	1109.13
3221.15				
E.G. Slope (ft/ft)	0.001646	Area (sq ft)	4094.01	1109.13
3221.15				
Q Total (cfs)	19382.00	Flow (cfs)	3840.31	8417.42
7124.27				
Top Width (ft)	1139.93	Top Width (ft)	592.71	96.60
450.62				
Vel Total (ft/s)	2.99	Avg. Vel. (ft/s)	1.79	7.59
2.21				
Max Chl Dpth (ft)	12.62	Hydr. Depth (ft)	6.72	11.48
7.15				
Conv. Total (cfs)	477659.8	Conv. (cfs)	94642.5	207443.2
175574.2				
Length Wtd. (ft)	448.18	Wetted Per. (ft)	320.30	98.18
455.91				
Min Ch El (ft)	243.95	Shear (lb/sq ft)	0.69	1.16
0.73				
Alpha	3.07	Stream Power (lb/ft s)	1415.26	0.00
0.00				
Frctn Loss (ft)	0.82	Cum Volume (acre-ft)	462.65	195.43
287.15				
C & E Loss (ft)	0.03	Cum SA (acres)	68.94	14.53
45.15				

Warning: Divided flow computed for this cross-section.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the

largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may

wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 6919.301

INPUT

Description: not interpolated

Station Elevation Data num= 477

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	256.41	.33	256.43	6.39	257.49	7.49	257.61	10.34	257.41
11.38	257.35	14.3	257.11	16.54	256.9	22.52	255.58	25.54	254.96
25.61	254.95	29.02	254.64	31.21	254.66	34.86	254.59	36.74	254.24
40.42	253.83	40.86	253.78	44.33	253.36	45.25	253.29	46.04	253.29
47.32	253.14	52.93	252.6	61.29	251.56	62.38	251.39	63.52	251.28
64.16	251.23	65.57	251.1	69.07	250.92	79.75	250.38	79.95	250.36
88.53	249.97	89.77	249.95	92.95	249.73	95.33	249.51	97.97	249.52
103.8	247.65	112.55	245.98	119.98	244.02	124.22	243.73	131.93	244.22
135.32	244.31	138.94	245.02	143.24	245.36	145.93	245.83	154.55	247.38
156.83	247.84	162.2	248.1	165.42	248.01	170.3	247.43	171.18	247.41
176.86	247.91	181.05	248.27	182.39	248.19	186.12	247.92	189.62	248.15
190.92	248.07	193.47	247.94	194.06	247.96	198.01	248.23	200.32	248.15
205.38	248.22	209.52	248.36	212.3	248.41	213.33	248.6	216.16	248.29
217.71	248.21	218.72	248.3	221.17	248.43	223.6	248.43	227.24	248.85
229.05	248.92	236.1	248.07	236.77	247.98	237.27	247.98	240.55	247.95
242.46	247.89	245.44	247.96	248.97	248.21	250	248.01	252.27	248.18
254.3	248.3	256.67	248.33	258.36	248.38	264.04	248.21	266.37	248.12
272.03	248.49	275.64	248.58	277.78	248.59	280.12	248.78	282.65	248.84
283.61	248.89	286.98	249.03	287.94	249.06	288.29	249.01	298.51	248.62
301.83	248.44	303.76	248.18	305.14	248.03	308.28	247.73	309.98	247.64
313.18	247.51	317.87	247.5	318.96	247.5	319.59	247.48	321.96	247.45
324.37	247.54	327.42	247.51	330.98	247.48	334.71	247.74	337.94	247.69
338.86	247.7	346.34	247.95	346.73	247.95	350.77	247.71	351.38	247.68
353.95	247.99	355.01	248.06	359.3	247.85	360.34	247.78	362.58	247.69
363.17	247.72	364.51	247.62	370.59	247.5	372.54	247.63	375.36	247.69
376.58	247.56	378.67	247.62	381.95	247.66	383.37	247.63	386.22	247.82
393.08	248.01	398.35	248.09	399.25	248.09	401.01	248.51	402.1	248.53
403.77	248.5	410.81	248.32	411.18	248.3	418.7	248.3	419.36	248.33
420.7	248.32	424.74	248.31	426.54	248.38	435.53	248.5	437.94	248.35

443.71	248.48	445.61	248.5	446.82	248.49	451.81	248.31	455.18	248.26
456.51	248.27	458.32	248.19	459.89	248.15	463.62	247.99	464.61	247.96
465.4	247.96	467.97	248.07	475.53	247.95	475.98	247.91	479.65	247.71
480.84	247.69	483.94	247.71	484.13	247.73	484.3	247.69	488.84	247.37
490.75	247.49	495.82	247.75	497.91	247.62	501.61	247.42	504.96	247.5
511.07	247.76	512.29	247.76	513.05	247.74	513.53	247.7	517.3	247.86
521.07	247.72	522.16	248	523.81	248.21	525.56	248.24	530.35	247.48
533.96	247.19	536.37	246.89	540.32	246.74	544.77	246.33	548.39	246.88
549	246.85	553.03	245.88	553.88	245.86	556.37	245.53	557.52	245.57
562.94	245.59	568.39	245.33	570.09	245.35	572.54	245.32	575.76	245.42
577.5	245.39	578.7	245.43	580.96	245.65	582.84	245.56	585.7	245.65
587.17	245.48	589.3	245.53	592.02	245.44	593.86	245.37	596.28	245.3
600.34	245.12	602.04	244.76	606.73	242.73	608.88	242.73	615.72	242.73
626.46	242.73	671.06	242.75	684.25	242.75	684.84	242.92	701.62	247.71
711.05	249.46	711.76	249.5	712.27	249.45	714.17	249.54	717.94	249.75
723.56	249.67	725.62	249.69	726.84	249.64	732.25	249.34	733.3	249.24
733.79	249.27	736.23	249.35	736.98	249.44	739.69	249.47	741.98	249.38
743.56	249.34	747.01	249.48	752.36	249.53	753.42	249.62	758.48	249.87
758.59	249.87	765.19	249.97	774.53	249.87	775.29	249.84	778.21	249.79
783.43	250.03	786.03	249.82	786.49	249.77	786.86	249.8	791.68	250.13
791.73	250.13	801.12	250.49	807.43	251.17	808.24	251.26	808.91	251.28
811.64	251.3	813.43	251.29	817.72	250.99	822.07	251.25	825.13	251.42
826.53	251.36	830	251.44	833.48	252.18	834.26	252.17	836.6	251.85
840.24	251.99	841.7	252	842.41	252.07	844.81	252.23	849	252.4
850.09	252.43	851.02	252.39	853.08	252.32	856.66	252.31	858.27	252.38
860.54	252.52	861.35	252.5	864.44	252.67	866.57	252.71	866.95	252.75
868.34	252.75	872.66	252.7	874.91	252.76	877.71	252.67	881.9	252.64
883.1	252.64	886.23	253.07	886.29	253.07	891.37	253.26	893.79	253.15
894.45	253.17	895.37	253.18	896.46	253.25	903.16	253.53	907.69	253.54
908.6	253.37	910.87	253.48	913.75	253.65	916.99	253.63	919.1	253.58
920.99	253.66	924.17	253.93	925.3	253.85	930.57	253.59	933.42	253.63
935.46	253.72	939.03	253.66	941.61	253.87	943.72	254.19	947.7	254.37
948.97	254.39	951.79	254.34	952.02	254.37	953.4	254.37	957.28	254.39
958.38	254.35	960.29	254.31	963.95	254.74	968.32	254.16	968.51	254.14
973.69	254.23	976.52	254.25	977.38	254.29	982.05	254.52	985.18	254.52
985.67	254.53	989.48	254.65	990.34	254.65	992.09	254.7	994.31	254.77
998.59	254.81	1003.86	254.83	1005.26	254.89	1006.96	254.89	1009.84	255.18
1011	255.24	1015.09	255.23	1015.52	255.19	1018.06	255.32	1019.96	255.32
1023.38	255.42	1025.09	255.62	1026.36	255.55	1031.4	255.65	1031.96	255.63
1037.03	255.6	1039.98	255.73	1041.34	255.75	1042.82	255.75	1047.93	255.63
1048.34	255.65	1051.07	256.05	1053.92	256.27	1056.53	256.41	1058.05	256.27
1059.31	256.17	1064.64	256.27	1066.85	256.43	1067.64	256.42	1070.38	256.49
1073.18	256.59	1075.99	256.62	1080.19	256.93	1081.4	257.04	1083.95	256.98
1086.8	257.1	1089.76	257.27	1090.8	257.32	1092.48	257.33	1096.19	257.47
1097.97	257.52	1100.57	257.56	1100.9	257.56	1106.05	257.87	1106.36	257.88
1107.63	258	1109.24	258.14	1109.82	258.17	1114.67	258.2	1117.47	258.1
1117.71	258.11	1122.15	258.37	1122.87	258.36	1124.43	258.42	1125.78	258.43
1127.1	258.5	1131.29	258.78	1134.16	259.11	1136.38	259.07	1139.58	259.03
1140.62	259.06	1142.52	259.27	1144.47	259.27	1145.83	259.28	1150.9	259.57
1153.98	259.58	1157.51	259.64	1159.05	259.62	1161.04	259.79	1164.57	259.63

1166.02	259.52	1167.36	259.52	1171.36	260	1172.87	260.06	1175.14	259.82
1175.68	259.79	1179.23	259.77	1181.16	259.78	1182.16	259.77	1184.05	259.84
1185.83	259.92	1189.63	260.19	1191.04	260.02	1192.46	259.99	1197.02	260.51
1197.93	260.57	1200.26	260.45	1200.76	260.47	1204.88	260.46	1206.45	260.49
1208.04	260.56	1209.16	260.63	1213.22	260.94	1214.78	261.02	1217.02	261.17
1217.71	261.11	1223.07	260.98	1226.06	261.23	1232.35	261.56	1234.34	261.01
1236.33	261.12	1239.4	261.39	1242.73	261.55	1243.21	261.57	1248.23	261.84
1250.62	261.8	1251.15	261.75	1255.17	261.53	1256.61	261.68	1258.72	262.02
1259.47	262.11	1260.07	262.15	1265.02	261.82	1265.11	261.81	1267.84	261.63
1268.3	261.65	1273.35	261.93	1276.12	261.85	1276.44	261.88	1278.75	262.21
1281.37	262.56	1281.73	262.6	1283.16	262.68	1284.58	262.71	1285.13	262.73
1290.09	262.56	1293.03	262.76	1301.28	262.91	1302.41	262.97	1302.97	262.98
1309.6	263.29	1310.99	263.4	1316.57	263.79	1323.46	264.16	1327.7	264.19
1331.97	264.59	1333.67	264.77	1337.86	265	1340.47	265.14	1341.8	265.06
1343.26	265	1344.81	265.12	1350.55	265.41	1354.58	265.68	1357.13	265.79
1358.63	265.76	1359.9	265.86	1361.58	266.09	1367.63	266.43	1370.11	266.36
1372.15	266.42	1374.79	266.55						

Manning's n Values			num= 6								
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.03	40.42	.12	585.7	.04	615.72	.04	684.84	.04		
701.62	.12										

Bank Sta:	Left	Right	Lengths:	Left	Channel	Right	Coeff	Contr.	Expan.
	585.7	701.62		239.23	489.81	272.12		.1	.3
Ineffective Flow			num=	1					
Sta L	Sta R	Elev	Permanent						
0	212.4	259.72	F						

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	250.00	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.13	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	249.88	Reach Len. (ft)	239.23	489.81
272.12				
Crit W.S. (ft)	246.01	Flow Area (sq ft)	789.65	736.98
28.66				
E.G. Slope (ft/ft)	0.000594	Area (sq ft)	1138.75	736.98
28.66				
Q Total (cfs)	2671.00	Flow (cfs)	391.96	2273.73
5.31				
Top Width (ft)	677.17	Top Width (ft)	494.88	115.92
66.37				
Vel Total (ft/s)	1.72	Avg. Vel. (ft/s)	0.50	3.09
0.19				
Max Chl Dpth (ft)	7.15	Hydr. Depth (ft)	2.12	6.36
0.43				

Conv. Total (cfs)	109634.3	Conv. (cfs)	16088.5	93327.9
217.9				
Length Wtd. (ft)	450.01	Wetted Per. (ft)	374.14	117.09
66.60				
Min Ch El (ft)	242.73	Shear (lb/sq ft)	0.08	0.23
0.02				
Alpha	2.76	Stream Power (lb/ft s)	1374.79	0.00
0.00				
Frctn Loss (ft)	0.45	Cum Volume (acre-ft)	97.94	95.98
45.45				
C & E Loss (ft)	0.02	Cum SA (acres)	35.87	13.39
21.70				

Warning: Divided flow computed for this cross-section.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	253.61	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.48	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	253.14	Reach Len. (ft)	239.23	489.81
272.12				
Crit W.S. (ft)	250.10	Flow Area (sq ft)	2005.98	1114.68
444.99				
E.G. Slope (ft/ft)	0.001580	Area (sq ft)	2836.74	1114.68
444.99				
Q Total (cfs)	10810.00	Flow (cfs)	3025.05	7394.36
390.59				
Top Width (ft)	840.68	Top Width (ft)	538.33	115.92
186.42				
Vel Total (ft/s)	3.03	Avg. Vel. (ft/s)	1.51	6.63
0.88				
Max Chl Dpth (ft)	10.41	Hydr. Depth (ft)	5.37	9.62
2.39				
Conv. Total (cfs)	271914.1	Conv. (cfs)	76092.0	185997.3
9824.8				
Length Wtd. (ft)	390.52	Wetted Per. (ft)	374.14	117.09
186.90				
Min Ch El (ft)	242.73	Shear (lb/sq ft)	0.53	0.94
0.23				

Alpha 0.00	3.35	Stream Power (lb/ft s)	1374.79	0.00
Frctn Loss (ft) 158.71	0.75	Cum Volume (acre-ft)	250.05	144.74
C & E Loss (ft) 35.06	0.01	Cum SA (acres)	54.99	13.41

Note: Manning's n values were composited to a single value in the main channel.
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft) Right OB	254.25	Element	Left OB	Channel
Vel Head (ft) 0.120	0.55	Wt. n-Val.	0.120	0.040
W.S. Elev (ft) 272.12	253.70	Reach Len. (ft)	239.23	489.81
Crit W.S. (ft) 558.69	250.61	Flow Area (sq ft)	2215.28	1179.68
E.G. Slope (ft/ft) 558.69	0.001727	Area (sq ft)	3140.33	1179.68
Q Total (cfs) 533.98	12761.00	Flow (cfs)	3731.23	8495.79
Top Width (ft) 228.90	888.97	Top Width (ft)	544.15	115.92
Vel Total (ft/s) 0.96	3.23	Avg. Vel. (ft/s)	1.68	7.20
Max Chl Dpth (ft) 2.44	10.97	Hydr. Depth (ft)	5.93	10.18
Conv. Total (cfs) 12848.2	307047.3	Conv. (cfs)	89778.6	204420.4
Length Wtd. (ft) 229.43	384.65	Wetted Per. (ft)	374.14	117.09
Min Ch El (ft) 0.26	242.73	Shear (lb/sq ft)	0.64	1.09
Alpha 0.00	3.40	Stream Power (lb/ft s)	1374.79	0.00
Frctn Loss (ft) 186.11	0.76	Cum Volume (acre-ft)	294.42	154.89
C & E Loss (ft) 36.76	0.04	Cum SA (acres)	57.60	13.41

Warning: Divided flow computed for this cross-section.

Note: Manning's n values were composited to a single value in the main channel.
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	256.14	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.75	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	255.39	Reach Len. (ft)	239.23	489.81
272.12				
Crit W.S. (ft)	252.00	Flow Area (sq ft)	2847.70	1376.06
1026.26				
E.G. Slope (ft/ft)	0.002049	Area (sq ft)	4077.78	1376.06
1026.26				
Q Total (cfs)	19382.00	Flow (cfs)	6175.54	11959.35
1247.12				
Top Width (ft)	998.92	Top Width (ft)	562.26	115.92
320.75				
Vel Total (ft/s)	3.69	Avg. Vel. (ft/s)	2.17	8.69
1.22				
Max Chl Dpth (ft)	12.66	Hydr. Depth (ft)	7.63	11.87
3.20				
Conv. Total (cfs)	428226.5	Conv. (cfs)	136442.5	264230.2
27553.9				
Length Wtd. (ft)	371.49	Wetted Per. (ft)	374.14	117.09
321.43				
Min Ch El (ft)	242.73	Shear (lb/sq ft)	0.97	1.50
0.41				
Alpha	3.54	Stream Power (lb/ft s)	1374.79	0.00
0.00				
Frctn Loss (ft)	0.77	Cum Volume (acre-ft)	421.93	182.33
265.80				
C & E Loss (ft)	0.10	Cum SA (acres)	63.18	13.41
41.27				

Note: Manning's n values were composited to a single value in the main channel.
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 6428.657

INPUT

Description: not interpolated

Station Elevation Data num= 480

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	258.96	8.98	257.79	11.09	257.57	14.28	257.31	17.48	256.97
18.42	256.88	19.39	256.78	25.35	256.05	27.44	255.56	29.57	255.64
32.78	255.72	36.5	255.75	37.03	255.74	43.91	255.41	45.01	255.32
46.51	255.1	49.34	254.71	51.5	254.43	53.11	254.48	54.4	254.37
57.36	254	59.48	253.78	61.69	253.53	62.92	253.45	66.48	253.26
71.9	254.23	78.49	255.58	83.48	256.83	86.67	257.2	90.21	257.27
91.57	257.28	94.04	257	95.41	256.77	97.04	256.37	100.45	255.22
102.47	254.49	104.08	254.06	107.63	252.6	109.76	251.8	114.54	250.17
114.86	250.08	115.22	250.06	122.48	249.82	124.05	249.74	125.98	249.65
127.38	249.71	129.99	249.72	136.94	249.26	137.46	249.23	143.6	249.09
145.52	249.2	152.17	249.69	153.14	249.72	154.7	249.54	157.61	248.98
160.14	248.98	161.87	249.01	163.75	249	168.57	248.81	170.29	248.72
174.18	248.78	175.61	248.82	177.07	248.77	178.91	248.72	183.12	249.08
186.07	248.79	186.91	248.73	190.66	248.57	192.85	248.43	199.29	247.96
202.78	247.79	211.36	244.34	213.7	243.44	217.74	242.84	218.17	242.78
218.53	242.73	220.13	242.19	251.08	242.19	258.08	242.19	258.31	242.35
259.62	243.29	263.86	245.39	266.17	245.69	269.14	245.95	270.68	245.99
273.95	246.34	276.34	246.2	278.7	246.09	279.95	246.13	282.39	245.79
284.3	245.82	287.52	245.76	291.05	245.86	292.31	245.87	295.57	245.92
298.58	245.59	300.07	245.4	300.69	245.27	301.45	245.19	313.61	243.13
316.03	243.51	319.69	243.32	323.7	244.07	324.1	244.19	324.33	244.21
327.74	245.04	329.9	245.28	332.24	245.48	334.55	246.01	340.27	246.39
340.97	246.44	343.94	246.97	345.65	247.29	348.35	247.64	349.87	247.61
359.84	248.1	361.93	248.26	362.83	248.25	364.28	248.29	373.6	248.49
375.43	248.54	376.59	248.49	383.5	247.96	383.95	247.98	389.31	248.28
391.47	248.39	395.99	248.48	398.02	248.28	399.49	248.12	401.54	248.21
405.03	248.65	407.55	248.64	409.71	248.64	411.93	248.47	414.15	248.41
415.59	248.58	418.42	248.44	419.99	248.3	421.85	248.17	425.92	248.05
427.44	247.96	427.98	247.96	431.05	248	433.44	247.97	437.07	247.81
443.76	247.56	444.98	247.47	451.97	246.9	452.83	246.92	455.59	247.18
457.03	247.25	458.84	247.44	460.95	247.45	463.67	248.03	465.79	248.47
471.98	249.32	487.32	249.49	487.73	249.54	488.18	249.52	492.61	249.56
497.99	249.45	499.21	249.5	500.73	249.43	502.19	249.33	504.28	249.39
505.63	249.35	508.82	249.47	509.73	249.38	512.84	249.44	515.6	249.43
516.94	249.44	517.78	249.41	520.41	249.51	523.65	249.48	525.5	249.38
528.56	249.19	532.16	249.54	533.2	249.57	535.28	249.57	537.54	249.59
545.3	249.6	548.57	249.62	549.33	249.61	553.87	249.48	556.47	249.49
560.9	249.52	565.1	249.45	566.59	249.45	573.66	249.49	576	249.47
577.14	249.51	582.76	249.32	585.23	249.3	592.8	249.7	593.6	249.68
594.66	249.67	604.64	249.36	608.01	249.35	609.56	249.24	613.26	249.19
615.37	249.22	617.75	249.22	620.69	249.13	622.51	249.18	624.78	249.43
625.88	249.47	629.16	249.36	630.62	249.28	632.56	249.33	634.03	249.33
634.69	249.31	638.75	249.29	642.14	249.41	642.35	249.41	646.97	248.88
650.36	248.89	652.08	248.87	656.98	248.82	658.66	248.82	660.41	248.68
662.7	248.58	665.21	248.22	666.82	248.31	669.78	248.14	673.47	248.07
674.99	248.29	676.85	248.45	679.74	248.4	681.11	248.35	685.79	248.23

687.36	248.16	687.82	248.18	690.79	248.2	692.92	248.06	696.04	247.92
696.82	247.86	699.4	248.04	699.84	248.08	701.72	248.16	704.17	248.22
705.52	248.39	708.59	248.63	712.35	248.26	714.78	248.41	718.08	248.18
720.56	248.15	722.55	248.26	723.95	248.16	726.06	248.29	728.66	248.39
730.3	248.25	735.68	248.05	736.31	248.03	736.75	248.04	739.42	248.3
740.17	248.25	742.87	248.21	744.88	248.48	747.15	248.52	750.94	248.5
752.12	248.46	756.34	248.61	756.74	248.61	763.33	248.7	764.52	248.61
765.55	248.62	769.14	248.52	772.58	248.43	774.6	248.5	777.22	248.41
778.97	248.44	780.66	248.56	785.31	248.4	788.78	248.74	791.91	248.56
796.44	248.72	796.93	248.76	799.68	248.74	805.12	248.67	808.69	248.36
809.79	248.43	813.84	248.76	818.02	248.85	821.46	248.97	823.84	249.01
826.26	248.99	827.91	248.75	829.57	248.53	834.22	248.9	834.59	248.9
837.74	248.7	840.86	248.64	845.64	248.4	852.47	248.4	858.73	248.41
861.36	248.42	862.02	248.45	864.71	248.61	869.93	248.95	876.7	248.69
882.94	249.07	883.78	249.14	884.3	249.16	884.83	249.15	885.47	249.17
896.7	249.25	903.79	248.41	904.38	248.36	907.14	248.32	908.46	248.37
913.65	248.47	915.78	248.54	919.75	248.75	922.92	248.85	925.06	248.83
926.54	248.87	932.44	249.05	933.7	249.06	939.66	249.01	941.32	249.13
944.5	249.09	947.53	248.86	950.84	249.37	951.54	249.44	955.36	249.09
955.92	249.07	956.6	249.13	962.2	249.24	968.92	249	973.1	248.73
975.68	248.93	979.08	249.09	982.74	249.51	986.83	249.3	987.6	249.24
988.22	249.26	997.69	249.34	1002.99	248.98	1004.31	248.93	1005.6	248.93
1011.69	249.29	1013.44	249.21	1015.18	249.25	1019.46	249.27	1023.77	249.08
1024.64	249.06	1026.63	249.09	1027.15	249.14	1028.01	249.11	1029.57	249.07
1038.19	248.91	1040.32	248.9	1041.65	248.86	1043.49	248.71	1045.98	248.49
1050.68	248.39	1053.2	248.47	1055.91	248.45	1059.84	248.35	1060.71	248.32
1062.94	248.21	1063.76	248.19	1068.97	248.37	1071.87	248.45	1072.15	248.43
1074.64	248.15	1081.83	248.35	1083.62	248.36	1087.09	248.32	1093.2	248.5
1097.09	248.45	1099.95	248.27	1100.23	248.27	1103.96	248.36	1112.39	248.55
1117.09	248.6	1118.16	248.47	1119.92	248.55	1122.34	248.67	1124.36	248.49
1126.86	248.46	1132.01	248.41	1132.45	248.39	1134	248.44	1135.92	248.56
1143.7	248.44	1144.24	248.41	1148.41	248.21	1148.71	248.22	1153.66	248.51
1155.01	248.37	1160.81	248.45	1162.01	248.43	1168.48	248.77	1169.79	248.78
1171.83	248.67	1179.32	249.15	1180	249.21	1180.62	249.3	1185.12	249.85
1188.55	250.12	1189.87	250.2	1192.88	250.75	1196.48	251.42	1197.51	251.53
1201.08	251.98	1205.12	252.84	1205.89	252.95	1210.8	253.55	1212.21	253.58
1213.64	253.55	1217.69	253.95	1219.56	254.3	1222.16	254.41	1226.37	254.86
1230.75	255.36	1234.26	255.59	1236.48	255.69	1239.56	255.89	1241.02	255.99
1242.11	256.09	1245.98	256.18	1248.83	256.3	1250.77	256.06	1254.24	256.38
1257.39	256.56	1258.59	256.64	1262.23	257.02	1265.08	257.07	1270.74	257.32
1273.84	257.62	1276.64	257.92	1278.61	258.02	1280.71	258.02	1282.85	258.06
1285.7	258.27	1290.79	258.39	1292.84	258.45	1295.07	258.56	1297.92	258.62
1301.49	258.73	1302.24	258.76	1305.97	259.04	1306.75	259.13	1312.14	259.59
1315.08	259.57	1316.52	259.63	1319.24	259.77	1320.47	259.82	1324.38	259.79
1326.63	259.82	1326.94	259.83	1335.81	259.99	1337.4	260.03	1339.48	260.23
1341.98	260.29	1343.51	260.34	1348.06	260.71	1352.1	260.8	1355.24	261.07
1355.71	261.09	1361.18	261.29	1366.74	261.9	1367.95	261.96	1372.23	261.88
1375.9	262.41	1376.78	262.48	1380.01	262.2	1381.58	262.26	1388.09	262.75
1392.2	263.38	1395.1	263.43	1400.37	263.8	1401.82	264.03	1404.37	264.01
1407.01	264.12	1410.37	264.32	1413.86	264.61	1415.53	264.88	1418.03	265.2

Manning's n Values		num=		7							
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	18.42	.03	124.05	.12	202.78	.04	218.17	.04		
251.08	.04	273.95	.12								

Bank Sta:	Left	Right	Lengths:		Left Channel	Right	Coeff	Contr.	Expan.	
	202.78	273.95		515.23	476.49	147.78		.1	.3	
Ineffective Flow			num=	1						
Sta L	Sta R	Elev	Permanent							
0	92.43	258.29	F							

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	249.53	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.35	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	249.18	Reach Len. (ft)	515.23	476.49
147.78				
Crit W.S. (ft)	246.83	Flow Area (sq ft)	23.88	408.38
712.28				
E.G. Slope (ft/ft)	0.002028	Area (sq ft)	23.88	408.38
712.28				
Q Total (cfs)	2671.00	Flow (cfs)	8.42	2152.13
510.44				
Top Width (ft)	807.93	Top Width (ft)	51.88	71.17
684.88				
Vel Total (ft/s)	2.33	Avg. Vel. (ft/s)	0.35	5.27
0.72				
Max Chl Dpth (ft)	6.99	Hydr. Depth (ft)	0.46	5.74
1.04				
Conv. Total (cfs)	59312.2	Conv. (cfs)	187.0	47790.2
11334.9				
Length Wtd. (ft)	422.12	Wetted Per. (ft)	51.98	73.04
686.59				
Min Ch El (ft)	242.19	Shear (lb/sq ft)	0.06	0.71
0.13				
Alpha	4.13	Stream Power (lb/ft s)	1418.03	0.00
0.00				
Frctn Loss (ft)	0.94	Cum Volume (acre-ft)	94.75	89.54
43.14				
C & E Loss (ft)	0.00	Cum SA (acres)	34.37	12.34
19.35				

Warning: Divided flow computed for this cross-section.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	252.85	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.43	Wt. n-Val.	0.099	0.040
0.120				
W.S. Elev (ft)	252.42	Reach Len. (ft)	515.23	476.49
147.78				
Crit W.S. (ft)	250.99	Flow Area (sq ft)	301.38	638.87
3639.30				
E.G. Slope (ft/ft)	0.002360	Area (sq ft)	301.38	638.87
3639.30				
Q Total (cfs)	10810.00	Flow (cfs)	484.40	4894.47
5431.13				
Top Width (ft)	1095.04	Top Width (ft)	94.67	71.17
929.20				
Vel Total (ft/s)	2.36	Avg. Vel. (ft/s)	1.61	7.66
1.49				
Max Chl Dpth (ft)	10.23	Hydr. Depth (ft)	3.18	8.98
3.92				
Conv. Total (cfs)	222519.1	Conv. (cfs)	9971.2	100750.5
111797.4				
Length Wtd. (ft)	312.07	Wetted Per. (ft)	95.25	73.04
931.36				
Min Ch El (ft)	242.19	Shear (lb/sq ft)	0.47	1.29
0.58				
Alpha	4.99	Stream Power (lb/ft s)	1418.03	0.00
0.00				
Frctn Loss (ft)	0.70	Cum Volume (acre-ft)	241.43	134.88
145.95				
C & E Loss (ft)	0.02	Cum SA (acres)	53.25	12.36
31.57				

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	253.45	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.43	Wt. n-Val.	0.096	0.040
0.120				

W.S. Elev (ft)	253.02	Reach Len. (ft)	515.23	476.49
147.78				
Crit W.S. (ft)	251.31	Flow Area (sq ft)	358.84	681.72
4199.69				
E.G. Slope (ft/ft)	0.002278	Area (sq ft)	358.84	681.72
4199.69				
Q Total (cfs)	12761.00	Flow (cfs)	644.35	5358.37
6758.29				
Top Width (ft)	1099.89	Top Width (ft)	96.18	71.17
932.54				
Vel Total (ft/s)	2.44	Avg. Vel. (ft/s)	1.80	7.86
1.61				
Max Chl Dpth (ft)	10.83	Hydr. Depth (ft)	3.73	9.58
4.50				
Conv. Total (cfs)	267357.8	Conv. (cfs)	13499.9	112264.0
141593.9				
Length Wtd. (ft)	303.08	Wetted Per. (ft)	96.87	73.04
934.75				
Min Ch El (ft)	242.19	Shear (lb/sq ft)	0.53	1.33
0.64				
Alpha	4.63	Stream Power (lb/ft s)	1418.03	0.00
0.00				
Frctn Loss (ft)	0.66	Cum Volume (acre-ft)	284.81	144.43
171.24				
C & E Loss (ft)	0.01	Cum SA (acres)	55.84	12.36
33.13				

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	255.28	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.43	Wt. n-Val.	0.092	0.040
0.120				
W.S. Elev (ft)	254.85	Reach Len. (ft)	515.23	476.49
147.78				
Crit W.S. (ft)	252.21	Flow Area (sq ft)	538.49	811.42
5917.39				
E.G. Slope (ft/ft)	0.002086	Area (sq ft)	560.80	811.42
5917.39				
Q Total (cfs)	19382.00	Flow (cfs)	1234.45	6854.41
11293.14				
Top Width (ft)	1151.29	Top Width (ft)	127.84	71.17
952.28				

Vel Total (ft/s)	2.67	Avg. Vel. (ft/s)	2.29	8.45
1.91				
Max Chl Dpth (ft)	12.66	Hydr. Depth (ft)	5.32	11.40
6.21				
Conv. Total (cfs)	424357.5	Conv. (cfs)	27027.6	150073.2
247256.8				
Length Wtd. (ft)	285.41	Wetted Per. (ft)	102.31	73.04
954.61				
Min Ch El (ft)	242.19	Shear (lb/sq ft)	0.69	1.45
0.81				
Alpha	3.89	Stream Power (lb/ft s)	1418.03	0.00
0.00				
Frctn Loss (ft)	0.57	Cum Volume (acre-ft)	409.19	170.03
244.11				
C & E Loss (ft)	0.00	Cum SA (acres)	61.29	12.36
37.30				

Warning: Divided flow computed for this cross-section.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 5952.17

INPUT

Description: not interpolated

Station Elevation Data num= 480

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	255.04	3.67	254.88	10.67	254.66	12.12	254.52	13.31	254.5
19.4	254.04	22.16	253.83	24.06	253.67	31.41	253.06	32.39	252.96
32.58	252.95	32.96	252.89	36.79	252.59	39.85	252.3	40.81	252.19
42.29	251.97	44.71	251.84	46.27	251.63	50.17	251.17	50.35	251.15
53.06	251.26	56.86	251.34	60.06	250.8	60.95	250.76	64.28	251.13
66.47	251.14	70.12	251.29	75.04	251.44	77.97	251.52	79.83	251.65
82.89	252.05	86.52	252.11	87.31	252.08	87.93	252.11	89.15	252.14
90.97	252.16	91.96	252.17	98.47	252.27	99.21	252.28	99.76	252.31
104.76	252.76	105.43	252.73	107.92	252.71	111.31	252.65	113.65	252.75
116.91	252.72	120.76	252.56	121.19	252.52	125.95	252.01	127.13	251.74
131.3	250.87	135.16	249.96	136.99	249.59	141.2	248.47	143.82	247.76
146.4	247.58	148.65	247.45	150.77	247.43	155.9	247.62	157.98	247.8
159.89	248.46	165.38	250.61	168.61	253	169.89	253.66	174.95	255.27
179.35	256.21	183.18	256.58	185.53	256.54	186.21	256.49	188.52	256.46
188.87	256.44	190.4	255.82	191.1	255.71	195.42	255.1	201.38	253.05
201.86	252.88	206.07	250.37	207.49	249.51	207.65	249.44	208.01	249.22

215.02	245.19	217.52	243.1	217.93	242.34	218.24	242.07	219.48	242.07
227.1	242.07	255.94	242.06	267.4	242.06	271.41	242.06	275.19	242.06
275.91	242.46	288.43	246.36	288.91	246.52	295.61	246.7	296.6	246.75
297.7	246.86	301.01	247.26	302.53	247.31	308.08	247.26	310.47	247.47
316.52	247.29	320.7	246.93	322.57	246.86	326.47	246.62	330.54	246.43
332.76	246.35	336.01	246.41	338.74	246.56	343.14	246.31	343.37	246.31
343.6	246.26	347.37	245.72	348.02	245.81	348.63	245.79	353.7	246.58
356.87	246.56	358.52	246.44	361.06	246.47	365.08	246.37	366.71	246.44
370.25	246.3	370.94	246.31	371.32	246.27	376.67	246.47	380.38	246.35
381.78	246.38	383.61	246.43	390.09	246.38	392.74	246.49	397.65	246.44
400.19	246.5	405.85	246.83	409.46	246.84	414.63	247.01	418.62	246.83
419.41	246.83	424.06	246.68	424.93	246.68	426.76	246.71	428.16	246.81
430.44	246.83	433.01	246.58	441.53	246.87	442.78	246.88	443.88	246.85
447.61	246.43	450.89	246.66	452.21	246.73	453.26	246.72	456.46	246.8
457.1	246.82	462.14	246.73	462.94	246.68	464.46	246.62	467.21	246.45
470.69	246.59	471.06	246.58	471.58	246.61	475.34	246.56	478.09	246.8
480.6	246.96	484.24	246.97	486.32	246.94	487.09	246.88	489.48	247.18
493.35	247.56	495.07	247.35	499.47	246.96	504.51	247.26	507.12	247.34
508.62	247.39	509.09	247.42	509.8	247.43	511.29	247.43	513.75	247.56
517.29	247.63	518.17	247.68	518.77	247.66	523.37	248.07	525.9	247.87
528.4	248.19	535.32	248.27	536.18	248.21	537.21	248.13	538.65	248.09
543.49	247.65	544.72	247.55	553.38	247.48	555.19	247.63	559.44	247.72
561.28	247.8	565.59	248.3	568.58	248.44	571.57	248.38	578.56	248.81
579.29	248.84	579.7	248.82	587.55	248.33	592.45	248.46	593.22	248.51
594.54	248.55	598.02	248.57	600.02	248.46	605.13	248.03	608.21	247.92
613.58	247.87	617.57	248.06	619.42	248.13	621.5	248.13	624.11	248.17
626.77	247.9	630.43	247.76	632.9	248.06	635.91	248.02	640.43	248.1
641.22	248.08	642.86	248.16	645.17	248.28	646.24	248.13	651.41	248.01
653.9	248.22	658.34	248.34	659.79	248.3	662.86	248.17	667.39	248.26
670.82	248.22	672.63	248.17	673.16	248.22	679.51	248.47	680.83	248.47
686.09	248.08	686.71	248.05	690.84	248.23	694.49	248.43	695.66	248.4
696.4	248.35	699.78	248.19	705.04	247.84	708.01	247.87	710.66	247.95
713.89	247.84	715.5	247.85	721.37	248.03	723.23	248.08	728.96	248.18
731.3	248.06	733.46	247.98	735.07	248.06	738.52	248.02	746.86	248.16
749.18	248.24	749.55	248.23	749.99	248.31	752.9	248.41	754.2	248.45
758.89	248.25	763.71	248.33	766.05	248.16	767.63	248.14	771.72	248.33
775.63	248.32	776.7	248.37	779.77	248.41	780.86	248.42	781.23	248.43
786.41	248.3	789.11	248.23	798.31	248.48	803.1	248.21	803.41	248.22
808.49	248.43	809.95	248.36	810.5	248.28	811.57	248.36	817.33	248.26
829.75	248.12	830.71	248.11	833.2	247.97	835.21	247.94	846.63	248.03
848.75	248.01	852.5	247.92	856.79	248.01	857.49	247.99	858.88	247.89
861.19	247.8	862.35	247.82	867.32	248.03	870.63	247.81	873.18	247.79
876.03	247.69	878.86	247.71	883.85	248	883.99	248.01	887.58	247.51
888.37	247.52	889.47	247.55	893.54	247.61	895.1	247.56	902.2	247.84
902.93	247.85	903.16	247.84	910.13	247.77	911.5	247.83	916.73	247.92
918.4	247.88	927.43	248.26	929.09	248.26	929.54	248.33	933.69	248.15
936.88	248	941.01	248.07	942.22	248.1	943.6	247.96	946.45	247.7
947.74	247.7	948.32	247.71	948.7	247.7	951.13	247.69	951.9	247.69
957.58	247.53	959.38	247.51	960.43	247.52	965.13	247.95	968.46	247.93
970.75	247.9	973.42	247.75	975.83	247.6	976.9	247.67	979.95	247.69

983.85	247.83	987.85	247.91	990.02	247.85	991.29	247.95	997.3	247.87
998.77	247.86	999.65	247.84	1005.67	247.62	1007.27	247.65	1011.14	247.66
1014.01	247.72	1016.25	247.6	1019.05	247.28	1025.01	247.44	1025.65	247.48
1025.99	247.47	1026.9	247.4	1032.38	247.17	1038.69	247.2	1039.23	247.2
1042.29	247.34	1045.21	247.5	1045.54	247.49	1046.15	247.51	1050.6	247.57
1053.59	247.42	1055.44	247.39	1059.43	247.58	1065.58	246.94	1066.26	246.86
1066.85	246.89	1071.88	247.1	1077.45	247.22	1077.77	247.22	1081.53	247.29
1085.14	247.02	1085.67	246.99	1086.58	246.98	1093.22	246.86	1097.15	246.85
1100.41	246.86	1104.55	246.86	1106.43	246.82	1111.41	246.78	1116.04	247.04
1116.78	247.06	1121.14	246.86	1124.01	246.79	1126.52	246.86	1128.13	246.8
1133.56	246.93	1138.14	246.99	1139.95	247.21	1141.91	247.36	1147.5	247.59
1154.74	247.5	1155.25	247.5	1155.48	247.52	1155.92	247.51	1160.68	247.68
1163.19	247.71	1166.15	247.69	1168.54	247.84	1171.75	248.07	1173.76	248.11
1179.35	248.64	1180.58	248.79	1181.43	248.91	1183.01	249.17	1186.75	249.72
1189.92	249.95	1192.8	250.1	1196.19	250.55	1199.64	251.1	1201.72	251.5
1203.66	251.79	1205.95	252.12	1206.88	252.29	1208.43	252.66	1211.9	253.36
1214.6	253.88	1215.35	254.07	1216.7	254.29	1220.57	254.83	1223.73	255.24
1226.04	255.52	1231.5	255.52	1236.67	256.45	1236.86	256.5	1237.12	256.49
1239.48	256.33	1240.5	256.33	1245.47	256.65	1250.66	257.01	1252.66	257.16
1256.68	257.42	1258.22	257.59	1263.54	257.89	1264.38	257.94	1264.94	257.95
1269.44	258.17	1273.26	258.4	1274.44	258.52	1276.29	258.62	1279.47	258.75
1283.27	258.83	1284.79	258.88	1286.31	258.96	1291.18	259.18	1296.2	259.54
1296.92	259.6	1297.69	259.65	1303.75	260.35	1303.98	260.4	1304.4	260.4
1305.57	260.33	1310.57	260.15	1317.58	260.19	1322.01	260.3	1322.64	260.33
1328.45	260.84	1333.32	260.87	1334.5	260.83	1335.55	260.94	1340.07	261.35
1342.58	261.65	1347.34	262.15	1352.46	262.65	1356.01	262.94	1359.51	263.41
1362.51	263.38	1362.94	263.39	1363.97	263.46	1370.63	263.86	1372.55	264.08
1376.09	264.11	1377.35	264.13	1381.1	264.51	1382.02	264.64	1384.99	264.96
1387.95	264.9	1392.63	265.16	1398.87	265.59	1400.48	265.62	1401.26	265.6
1402.52	265.49	1405.52	265.38	1407.13	265.53	1410.25	265.86	1413.46	265.78

Manning's n Values			num= 7						
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	50.17	.05	90.97	.03	208.01	.04	219.48	.04
271.41	.04	302.53	.12						

Bank Sta:	Left	Right	Lengths:		Left Channel	Right	Coeff	Contr.	Expan.
	208.01	302.53			369.19	347.25		.1	.3
Ineffective Flow			num= 1						
Sta L	Sta R	Elev	Permanent						
0	184.85	258.36	F						

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	248.59	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.35	Wt. n-Val.		0.040
0.120				
W.S. Elev (ft)	248.23	Reach Len. (ft)	369.19	347.25

42.15				
Crit W.S. (ft)	245.99	Flow Area (sq ft)		446.09
591.31				
E.G. Slope (ft/ft)	0.002467	Area (sq ft)	10.17	446.09
591.31				
Q Total (cfs)	2671.00	Flow (cfs)		2296.81
374.19				
Top Width (ft)	841.55	Top Width (ft)	17.16	92.80
731.58				
Vel Total (ft/s)	2.57	Avg. Vel. (ft/s)		5.15
0.63				
Max Chl Dpth (ft)	6.17	Hydr. Depth (ft)		4.81
0.81				
Conv. Total (cfs)	53779.0	Conv. (cfs)		46244.9
7534.1				
Length Wtd. (ft)	305.34	Wetted Per. (ft)		95.69
732.52				
Min Ch El (ft)	242.06	Shear (lb/sq ft)		0.72
0.12				
Alpha	3.45	Stream Power (lb/ft s)	1413.46	0.00
0.00				
Frctn Loss (ft)	0.89	Cum Volume (acre-ft)	94.55	84.86
40.92				
C & E Loss (ft)	0.01	Cum SA (acres)	33.96	11.45
16.95				

Warning: Divided flow computed for this cross-section.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	252.13	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.38	Wt. n-Val.	0.030	0.040
0.120				
W.S. Elev (ft)	251.75	Reach Len. (ft)	369.19	347.25
42.15				
Crit W.S. (ft)	249.93	Flow Area (sq ft)	5.41	777.72
3694.39				
E.G. Slope (ft/ft)	0.002160	Area (sq ft)	133.10	777.72
3694.39				
Q Total (cfs)	10810.00	Flow (cfs)	13.20	5354.69
5442.11				
Top Width (ft)	1074.73	Top Width (ft)	79.34	94.52
900.87				

Vel Total (ft/s)	2.41	Avg. Vel. (ft/s)	2.44	6.89
1.47				
Max Chl Dpth (ft)	9.69	Hydr. Depth (ft)	1.27	8.23
4.10				
Conv. Total (cfs)	232580.1	Conv. (cfs)	284.0	115207.7
117088.4				
Length Wtd. (ft)	196.83	Wetted Per. (ft)	4.95	97.67
902.21				
Min Ch El (ft)	242.06	Shear (lb/sq ft)	0.15	1.07
0.55				
Alpha	4.22	Stream Power (lb/ft s)	1413.46	0.00
0.00				
Frctn Loss (ft)	0.42	Cum Volume (acre-ft)	238.86	127.13
133.51				
C & E Loss (ft)	0.00	Cum SA (acres)	52.22	11.45
28.47				

Warning: Divided flow computed for this cross-section.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the

largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may

wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	252.78	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.39	Wt. n-Val.	0.030	0.040
0.120				
W.S. Elev (ft)	252.39	Reach Len. (ft)	369.19	347.25
42.15				
Crit W.S. (ft)	250.27	Flow Area (sq ft)	8.48	838.23
4272.39				
E.G. Slope (ft/ft)	0.002080	Area (sq ft)	192.93	838.23
4272.39				
Q Total (cfs)	12761.00	Flow (cfs)	23.58	5953.17
6784.25				
Top Width (ft)	1111.81	Top Width (ft)	112.51	94.52
904.78				
Vel Total (ft/s)	2.49	Avg. Vel. (ft/s)	2.78	7.10
1.59				
Max Chl Dpth (ft)	10.33	Hydr. Depth (ft)	1.59	8.87

4.72				
Conv. Total (cfs)	279798.0	Conv. (cfs)	517.0	130529.4
148751.6				
Length Wtd. (ft)	188.25	Wetted Per. (ft)	6.20	97.67
906.16				
Min Ch El (ft)	242.06	Shear (lb/sq ft)	0.18	1.11
0.61				
Alpha	4.00	Stream Power (lb/ft s)	1413.46	0.00
0.00				
Frctn Loss (ft)	0.39	Cum Volume (acre-ft)	281.55	136.11
156.87				
C & E Loss (ft)	0.00	Cum SA (acres)	54.61	11.45
30.01				

Warning: Divided flow computed for this cross-section.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	254.70	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.42	Wt. n-Val.	0.030	0.040
0.120				
W.S. Elev (ft)	254.28	Reach Len. (ft)	369.19	347.25
42.15				
Crit W.S. (ft)	251.20	Flow Area (sq ft)	22.75	1016.94
5991.67				
E.G. Slope (ft/ft)	0.001928	Area (sq ft)	469.11	1016.94
5991.67				
Q Total (cfs)	19382.00	Flow (cfs)	78.13	7908.61
11395.26				
Top Width (ft)	1174.51	Top Width (ft)	165.87	94.52
914.12				
Vel Total (ft/s)	2.76	Avg. Vel. (ft/s)	3.44	7.78
1.90				
Max Ch1 Dpth (ft)	12.22	Hydr. Depth (ft)	2.23	10.76
6.55				
Conv. Total (cfs)	441467.6	Conv. (cfs)	1779.6	180135.9
259552.1				

Length Wtd. (ft)	171.30	Wetted Per. (ft)	11.46	97.67
915.70				
Min Ch El (ft)	242.06	Shear (lb/sq ft)	0.24	1.25
0.79				
Alpha	3.53	Stream Power (lb/ft s)	1413.46	0.00
0.00				
Frctn Loss (ft)	0.33	Cum Volume (acre-ft)	403.10	160.03
223.91				
C & E Loss (ft)	0.00	Cum SA (acres)	59.55	11.45
34.13				

Warning: Divided flow computed for this cross-section.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the

largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may

wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 5604.917

INPUT

Description: not interpolated

Station Elevation Data num= 480

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	267.75	5.05	266.98	7.09	267	8.66	267.15	12.84	267.41
14.32	267.46	15.25	267.59	16.12	267.79	20.44	268.67	23.96	268.78
29.4	268.63	31.31	268.6	50.85	268.54	54.56	268.65	57.5	268.77
72.96	268.62	78.31	268.67	82.07	268.16	83.74	267.98	88.11	267.78
89.34	267.74	95.43	267.07	96.76	266.9	98.13	266.78	102.61	266.18
105.96	266.02	110.23	265.95	111.71	265.87	113.54	266.04	116.53	266.35
125.93	266.36	126.82	266.38	132.92	266.16	134.25	266.16	140.49	266.15
141.77	266.11	148	266.14	149.28	266.15	155.52	265.87	156.81	265.81
158.11	265.79	162.76	265.78	166.17	265.77	170.65	265.43	171.93	265.39
179.35	265.33	185.54	264.9	186.84	264.83	188.16	264.8	192.73	264.82
196.12	264.72	200.63	264.6	208.22	264.37	209.52	264.35	215.82	264.24
217.11	264.21	223.32	264.14	224.48	264.06	225.85	264.03	228.85	263.86
232.09	263.68	238.34	263.55	239.65	263.5	245.9	263.47	247.22	263.47
253.54	263.17	254.86	263.13	256.18	263.07	262.39	262.96	268.54	262.66
269.86	262.67	271.19	262.6	277.4	262.39	283.64	262.28	284.99	262.24
291.13	261.74	292.51	261.68	293.91	261.63	300.16	261.66	301.53	261.65

307.75	261.53	309.07	261.6	315.3	261.76	316.58	261.72	322.81	261.55
324.1	261.5	330.37	261.25	331.68	261.23	337.97	261.42	339.2	261.43
345.59	261.08	346.84	260.97	348.05	260.87	353.13	260.47	359.13	259.61
360.6	259.35	362.19	259.28	367.54	259.08	368.01	259.09	368.92	259.14
369.69	259.16	375.75	259.53	380.94	259.25	384.53	258.98	387.55	258.61
392.11	257.98	396.55	256.16	398.49	255.35	400.47	255.85	406.07	256.78
407.83	257.03	411.8	257.73	415.5	257.98	416.47	257.97	420.08	257.4
421.4	257.21	421.96	257	422.45	256.83	428.84	255.03	430.8	255.28
436.21	255.57	437.43	255.69	440.05	255.54	445.87	255.38	451.18	255.24
453.14	254.91	462.23	253.46	464.96	253.24	466.7	252.84	467.88	252.5
471.63	251.49	475.78	250.48	485.6	248.46	487.9	247.88	490.1	247.61
493.77	247.31	496.99	247.19	500.21	247.02	504.58	246.98	507.88	246.8
512.28	246.31	515.66	245.85	519.83	245.25	521.8	244.61	523.96	243.77
528.62	241.97	529.75	241.46	537.35	241.46	558.38	241.46	568.68	241.45
577.88	241.45	578.14	241.69	579.32	242.5	581.41	243.91	583.37	244.07
588.19	244.39	593.53	244.86	594.91	244.95	595.77	244.99	597.07	245.03
597.95	245.18	603.53	245.61	605.32	245.49	608.91	245.19	610.6	244.98
616.1	245.41	618.1	245.49	619.28	245.69	625.24	245.83	626.42	245.87
627.31	245.89	633.9	246.1	641.06	246.14	642.01	246.14	649.25	245.92
649.5	245.92	656.92	245.63	656.97	245.63	659.28	245.51	664.34	245.27
664.44	245.27	671.83	245.03	672.1	245	679.25	245.01	679.58	245
679.86	245.02	687.18	245.08	687.58	245.06	694.8	245.41	695.15	245.44
701.57	245.29	702.77	245.27	709	245.15	710.4	245.16	716.38	244.86
717.93	244.76	723.81	244.72	725.59	244.6	731.33	244.32	733.22	244.2
736.54	243.71	742.6	244.16	746.97	243.97	753.7	246.12	755.23	246.48
756.11	246.6	760.51	246.9	763.72	247.12	767.83	247.43	771.36	247.42
775.25	247.35	778.95	247.29	781.08	247.37	785.37	247.47	786.61	247.5
788.48	247.57	790.02	247.61	794.19	247.94	798.64	248.26	803.31	248.43
804.59	248.29	807.93	248.05	812.81	248.13	815.5	247.97	816.86	247.82
819.46	247.75	824.49	247.69	826.93	247.6	830.7	247.5	835.27	247.5
839.66	247.44	841.68	247.55	845.09	247.85	848.92	248.09	853.16	248.34
854.68	248.42	855.51	248.47	856.19	248.39	862.33	248.23	863.05	248.24
869.88	248.05	870.52	248.06	871.04	248.16	877.42	248.23	878.34	248.2
884.89	248.17	885.27	248.13	892.38	248.52	892.89	248.52	899.94	247.99
900.33	247.97	907.75	247.96	915.07	247.66	915.13	247.66	922.65	247.99
929.64	247.72	929.91	247.73	930.2	247.71	936.53	247.77	939.56	247.66
943.58	247.63	943.88	247.62	944.77	247.62	951.67	247.68	955.68	247.66
958.31	247.78	959.46	247.84	964.97	247.8	966.54	247.72	967.13	247.78
972.23	247.67	973.55	247.59	977.37	247.73	978.24	247.72	979.66	247.67
982	247.63	983.29	247.55	985.61	247.58	989	247.61	990.28	247.63
992.99	247.65	994.29	247.64	997.62	247.71	1000.11	247.73	1002.57	247.92
1006	248.06	1007.38	248.11	1011.16	247.79	1013.66	247.51	1018.67	247.37
1020.05	247.34	1020.76	247.35	1025.5	247.54	1028.61	247.79	1030.8	247.92
1034.01	247.6	1036.27	247.36	1037.07	247.38	1038.6	247.33	1040.65	247.33
1043.54	247.46	1047.23	247.66	1050.74	247.75	1053.05	247.75	1056.91	247.68
1059.3	247.5	1061.67	247.4	1063.96	247.3	1066.37	247.47	1069.74	247.72
1073.63	247.44	1076.9	247.27	1079.81	247.59	1083.28	247.88	1084.55	247.99
1088.83	247.77	1089.24	247.75	1092.85	247.55	1095.38	247.54	1098.99	247.61
1102.94	247.72	1106.21	247.53	1109.23	247.67	1110.54	247.74	1112.08	247.62
1116.66	247.47	1121.89	247.47	1123.78	247.52	1129.29	247.47	1131.05	247.46

1132.68	247.52	1134.9	247.62	1138.66	247.76	1142.39	247.68	1147	247.49
1147.56	247.45	1148.48	247.47	1153.45	247.6	1155.23	247.57	1158.2	247.45
1158.58	247.42	1164.95	247.13	1171.24	247.27	1171.66	247.29	1172.93	247.33
1178.51	247.5	1180.34	247.54	1185.91	247.47	1192.83	247.67	1193.58	247.68
1193.8	247.69	1194.13	247.66	1195.26	247.66	1199.96	247.45	1203.18	247.45
1205.86	247.37	1207.75	247.39	1211.53	247.35	1216.96	247.3	1217.26	247.3
1219.48	247.35	1225.97	247.43	1233.07	247.39	1239.75	247.28	1240.26	247.28
1242.69	247.22	1247.59	247.15	1248.67	247.18	1252.93	247.42	1255.28	247.37
1257.92	247.34	1262.77	247.67	1263.46	247.68	1267.6	247.5	1271.03	247.6
1273.57	247.66	1278.93	247.58	1280.66	247.67	1285.65	247.51	1286.86	247.53
1290.54	247.69	1294.54	247.57	1294.97	247.55	1302.27	247.7	1308.27	247.34
1309.44	247.3	1311.73	247.32	1315.25	247.37	1317.03	247.33	1320.92	247.28
1323.47	247.19	1326.53	247.22	1331.18	246.93	1332.02	246.89	1333.17	246.87
1336.91	246.88	1339.6	246.67	1342.27	246.61	1344.16	246.63	1348.25	246.87
1354.37	246.81	1358.63	246.56	1362.14	246.7	1367.74	246.8	1370.24	246.81
1377.22	246.87	1378.14	246.85	1383.36	246.68	1385.44	246.75	1389.01	246.94
1391.2	247.07	1394.57	247.29	1400.05	247.14	1400.13	247.14	1403.21	247.08
1408.45	247.31	1409.51	247.38	1410.26	247.4	1415.65	247.58	1420.72	247.95
1421.61	248.05	1423.52	248.31	1428.41	248.93	1431.97	249.39	1434.4	249.72
1435.66	249.91	1439.51	250.4	1443.44	250.84	1447.07	251.55	1450.37	252.31
1451.21	252.47	1454.42	252.83	1455.31	252.95	1455.88	253.1	1461.37	254.38
1465.08	254.99	1466.79	255.12	1467.92	255.32	1471.35	255.72	1474.18	255.99
1475.33	256.08	1481.42	256.49	1485.33	256.82	1487.88	256.96	1494.66	257.39
1498.7	257.61	1502.97	258.21	1505.69	258.62	1507.37	258.64	1511.66	258.62
1517.26	258.78	1517.67	258.78	1518.32	258.8	1521.98	258.83	1525.81	258.97
1526.15	258.98	1532.9	259.32	1535.56	259.58	1540.1	259.76	1545.84	259.95
1546.69	260.07	1548.11	259.96	1553.73	259.62	1554.38	259.63	1557.64	259.87
1561.57	260.25	1562.61	260.39	1564.93	260.65	1568.64	261.08	1572.75	260.98
1572.96	261	1575.65	261.3	1580.21	261.6	1582.65	261.86	1583.82	261.98
1588.47	262.25	1589.13	262.31	1589.79	262.36	1591.26	262.61	1598.08	263.03

Manning's n Values			num=	9					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	228.85	.05	348.05	.03	445.87	.12	512.28	.04
523.96	.04	568.68	.04	603.53	.12	785.37	.12		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	512.28	603.53		444.43	427.14		.1	.3

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	247.68	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.46	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	247.23	Reach Len. (ft)	444.43	427.14
137.84				
Crit W.S. (ft)	245.90	Flow Area (sq ft)	5.47	396.92
337.55				

E.G. Slope (ft/ft)	0.003537	Area (sq ft)	5.47	396.92
337.55				
Q Total (cfs)	2671.00	Flow (cfs)	1.94	2309.29
359.76				
Top Width (ft)	363.56	Top Width (ft)	16.28	91.25
256.03				
Vel Total (ft/s)	3.61	Avg. Vel. (ft/s)	0.36	5.82
1.07				
Max Chl Dpth (ft)	5.78	Hydr. Depth (ft)	0.34	4.35
1.32				
Conv. Total (cfs)	44911.9	Conv. (cfs)	32.7	38829.9
6049.3				
Length Wtd. (ft)	402.74	Wetted Per. (ft)	16.32	92.88
256.70				
Min Ch El (ft)	241.45	Shear (lb/sq ft)	0.07	0.94
0.29				
Alpha	2.26	Stream Power (lb/ft s)	1598.08	0.00
0.00				
Frctn Loss (ft)	0.75	Cum Volume (acre-ft)	94.48	81.50
40.48				
C & E Loss (ft)	0.06	Cum SA (acres)	33.82	10.71
16.47				

Warning: Divided flow computed for this cross-section.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the

largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may

wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	251.71	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.40	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	251.30	Reach Len. (ft)	444.43	427.14
137.84				
Crit W.S. (ft)	249.40	Flow Area (sq ft)	129.34	768.82
3468.53				
E.G. Slope (ft/ft)	0.002150	Area (sq ft)	129.34	768.82
3468.53				

Q Total (cfs)	10810.00	Flow (cfs)	161.50	5418.91
5229.58				
Top Width (ft)	973.40	Top Width (ft)	39.88	91.25
842.27				
Vel Total (ft/s)	2.48	Avg. Vel. (ft/s)	1.25	7.05
1.51				
Max Chl Dpth (ft)	9.85	Hydr. Depth (ft)	3.24	8.43
4.12				
Conv. Total (cfs)	233144.4	Conv. (cfs)	3483.2	116872.3
112788.9				
Length Wtd. (ft)	324.02	Wetted Per. (ft)	40.32	92.88
843.70				
Min Ch El (ft)	241.45	Shear (lb/sq ft)	0.43	1.11
0.55				
Alpha	4.25	Stream Power (lb/ft s)	1598.08	0.00
0.00				
Frctn Loss (ft)	0.48	Cum Volume (acre-ft)	237.75	120.97
130.05				
C & E Loss (ft)	0.03	Cum SA (acres)	51.72	10.71
27.63				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	252.39	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.41	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	251.98	Reach Len. (ft)	444.43	427.14
137.84				
Crit W.S. (ft)	249.73	Flow Area (sq ft)	157.33	830.82
4041.86				
E.G. Slope (ft/ft)	0.002048	Area (sq ft)	157.33	830.82
4041.86				
Q Total (cfs)	12761.00	Flow (cfs)	209.31	6018.59
6533.09				
Top Width (ft)	979.14	Top Width (ft)	42.48	91.25
845.42				
Vel Total (ft/s)	2.54	Avg. Vel. (ft/s)	1.33	7.24
1.62				

Max Chl Dpth (ft)	10.53	Hydr. Depth (ft)	3.70	9.10
4.78				
Conv. Total (cfs)	281989.2	Conv. (cfs)	4625.3	132997.3
144366.6				
Length Wtd. (ft)	317.47	Wetted Per. (ft)	43.01	92.88
846.91				
Min Ch El (ft)	241.45	Shear (lb/sq ft)	0.47	1.14
0.61				
Alpha	4.06	Stream Power (lb/ft s)	1598.08	0.00
0.00				
Frctn Loss (ft)	0.45	Cum Volume (acre-ft)	280.06	129.46
152.85				
C & E Loss (ft)	0.03	Cum SA (acres)	53.95	10.71
29.17				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	254.37	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.44	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	253.93	Reach Len. (ft)	444.43	427.14
137.84				
Crit W.S. (ft)	250.75	Flow Area (sq ft)	248.61	1008.53
5699.20				
E.G. Slope (ft/ft)	0.001904	Area (sq ft)	248.61	1008.53
5699.20				
Q Total (cfs)	19382.00	Flow (cfs)	373.02	8017.22
10991.76				
Top Width (ft)	1000.15	Top Width (ft)	52.99	91.25
855.91				
Vel Total (ft/s)	2.79	Avg. Vel. (ft/s)	1.50	7.95
1.93				
Max Chl Dpth (ft)	12.48	Hydr. Depth (ft)	4.69	11.05
6.66				
Conv. Total (cfs)	444143.1	Conv. (cfs)	8547.8	183716.5
251878.7				
Length Wtd. (ft)	304.94	Wetted Per. (ft)	53.73	92.88
857.60				

Min Ch El (ft)	241.45	Shear (lb/sq ft)	0.55	1.29
0.79				
Alpha	3.64	Stream Power (lb/ft s)	1598.08	0.00
0.00				
Frctn Loss (ft)	0.41	Cum Volume (acre-ft)	400.06	151.96
218.25				
C & E Loss (ft)	0.04	Cum SA (acres)	58.63	10.71
33.27				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 5177.776

INPUT

Description: not interpolated

Station Elevation Data num= 413

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	258.84	1.77	258.67	4.37	258.23	7.16	258.24	8.94	258.21
12.99	258.73	15.19	258.9	23.26	257.97	24.77	257.95	25.88	258.08
36.65	259.64	40.92	260.14	42.63	259.92	44.19	259.72	46.17	259.46
46.88	259.4	49.76	258.95	52.08	258.65	58.35	257.63	60.55	257.78
62.05	257.63	65.98	257.61	68.02	257.47	82.84	256.45	85.36	256.26
86.18	256.18	87.24	256.14	88.9	256.21	91.05	256.26	91.87	256.21
93.59	256.14	97.35	255.86	98.25	255.8	99.78	255.72	103.01	255.38
106.46	255.18	111.55	254.87	113.57	254.78	116.38	254.71	118.91	254.62
120.74	254.52	125.52	254.24	127.33	254.06	133.43	253.73	137.52	253.43
141.02	253.23	142.82	253.01	147.67	252.37	148.89	252.25	155.82	252.16
156.6	252.16	156.67	252.16	156.71	252.15	156.79	252.14	161.12	251.52
165.11	251.1	165.46	251.06	165.83	251.02	173.34	250.54	175.9	250.23
177.38	250.13	182.05	249.91	184.01	249.87	188.69	249.83	193.38	249.56
195	249.41	197.17	249.19	200.05	248.89	202.23	248.66	204.79	248.61
207.15	248.29	209.28	248.22	211.57	248.2	215.19	248.2	220.23	248
222.15	247.84	223	247.85	225.44	247.68	228.07	247.56	231.48	247.63
233.77	247.5	238.21	247.42	239.77	247.37	245.79	247.12	247.18	247.07
247.54	247.06	251.98	247.27	256.11	247.12	256.71	247.06	257.31	247.06
261.46	246.95	265.59	246.99	266.42	246.97	270.27	246.8	273.45	246.66
274.12	246.7	280.03	247.18	283.46	247.09	285.79	246.98	288.93	246.82
290.74	246.71	292.05	246.72	298.15	246.98	301.46	247.06	306.55	247.23

309.79	247.25	312.6	247.12	315.34	247.27	317.25	247.31	319.23	247.19
323.23	246.98	325.19	247.05	332.36	246.99	336.78	247.13	336.91	247.13
337.11	247.13	343.48	247.2	347.43	247.33	349.02	247.43	355.21	247.17
356.89	247.08	358.91	247.1	365.65	247.24	368.59	247.12	372.98	247.1
376.61	247.19	379.04	247.1	381.69	247.44	381.96	247.42	382.1	247.43
382.41	247.45	398.38	247.3	401.4	247.05	402.58	247.01	411.92	246.72
420.33	246.35	421.56	246.19	424.35	245.98	426.35	245.76	430.56	245.62
438.22	245.36	438.88	245.21	441.46	245.19	447.11	244.91	449.83	244.73
454.08	244.56	454.86	244.49	455.73	244.54	459.97	244.76	463.77	244.22
465.45	243.93	466.27	243.78	470.39	242.59	471.73	242.21	471.95	242.16
472.12	242.17	477.56	242.17	482.13	242.41	484.48	242.38	490.14	241.92
493.77	241.03	495.73	240.71	498.59	240.5	501.08	240.32	503.79	240.32
528.1	240.29	546.83	240.26	566.92	240.23	567.84	240.22	570.7	240.22
574.95	240.21	575.43	240.56	576.32	240.88	578.92	242.31	582.73	242.86
586.11	242.87	591.5	242.87	594.05	242.88	597.3	242.8	600.18	242.71
602.66	242.74	604.94	243.05	607.48	243.61	610.99	244.66	614.73	245.7
617.6	246.31	620.24	246.59	623.14	246.96	627.33	247.42	628.63	247.41
631.97	247.15	634.99	246.94	640.76	246.86	641.72	246.84	642.22	246.86
646.24	247.2	649.82	247.08	650.78	247.02	651.66	247.02	655.7	246.98
659.95	246.85	660.94	246.87	667.65	246.66	668.23	246.59	668.46	246.59
668.93	246.6	673.85	246.75	676.35	246.65	679.41	246.64	682.94	246.55
684.31	246.5	684.68	246.5	685.41	246.53	691.53	246.68	695.61	246.54
697.49	246.58	700.06	246.7	701.82	246.8	704.98	246.8	710.34	247.4
711.44	247.49	713.41	247.39	717.53	246.96	721.05	247.08	723.71	247.06
724.26	247.14	728.92	246.95	732.5	247.09	735.38	247.28	739.01	247.08
740.59	247.03	744.15	247.1	747.91	247.13	749.54	247.15	752.94	247.17
754.74	246.98	757.81	247	761.41	246.89	764.85	246.86	767.43	246.84
768.01	246.83	771.09	247.07	774.01	247.24	774.57	247.23	781.12	246.77
785.37	246.85	787.09	246.84	789.8	246.67	791.49	246.59	792.55	246.67
798.14	246.97	800.18	246.89	806.13	246.88	808.31	246.77	810.41	246.78
812.84	246.77	814.13	246.76	818.57	246.76	822.4	246.73	823.88	246.87
826.09	247.05	830.88	247.09	836.86	246.97	837.62	246.96	838.07	246.97
841.98	246.94	847.4	246.97	848.34	246.87	852.04	247.04	856.66	246.75
856.76	246.74	856.87	246.75	860.52	247.17	863.03	247.08	864.65	247.08
865.74	247.07	871.96	247.3	873.2	247.32	877.53	247.23	879.89	247.25
882.2	247.29	892.24	247.37	893.87	247.37	895.74	247.3	901.17	247.28
903.25	247.38	908.48	247.3	910.79	247.28	915.86	247.14	920.54	247.27
921.7	247.24	921.87	247.23	923.22	247.19	925.93	247.28	929.07	247.29
930.81	247.3	934.73	247.4	937.67	247.41	940.88	247.28	944.97	247.05
948.5	246.9	952.27	246.87	956.1	246.76	959.64	246.81	963.5	247.11
966.84	247.01	971.07	246.68	974.07	246.54	978.66	246.24	981.35	246.19
986.02	246.53	988.53	246.58	993.44	246.7	995.78	246.74	1000.93	246.63
1003	246.7	1008.5	246.4	1010.3	246.33	1015.86	246.39	1017.4	246.38
1023.22	246.58	1024.58	246.56	1030.69	246.37	1031.75	246.39	1038.07	246.56
1038.95	246.56	1045.54	246.4	1046.16	246.37	1052.84	246.66	1053.26	246.69
1060.21	246.42	1060.36	246.41	1060.5	246.41	1068.17	246.21	1074.43	246.26
1074.64	246.26	1081.54	246.4	1081.87	246.42	1088.53	246.33	1088.86	246.29
1089.17	246.3	1089.52	246.3	1096.15	246.33	1102.46	246.23	1103.21	246.25
1109.44	246.36	1110.31	246.32	1116.42	246.33	1117.41	246.37	1123.46	246.4
1124.59	246.36	1130.42	246.62	1131.61	246.7	1132.8	246.8	1139.32	247.14

1144.27	247.05	1145.69	247.03	1151.15	247.1	1152.16	247.11	1153.12	247.25
1158.96	248.73	1159.45	248.73	1160.84	248.97	1167.19	249.79	1171.89	250.42
1173.25	250.78	1178.78	252.22	1180.04	252.38	1185.57	253.06	1186.81	253.3
1192.41	254.06	1193.66	254.22	1199.23	254.81	1200.53	254.92	1201.84	255.02
1208.24	255.98	1212.96	256.41	1214.27	256.48	1218.79	256.5	1220.89	256.78
1223.31	256.99	1227.46	257.16	1227.97	257.28	1233.35	257.54	1234.87	257.57
1240.17	257.99	1241.14	258.02	1242.18	258.12	1248.04	258.39	1248.66	258.46
1253.8	259.04	1255.42	259.21	1260.57	259.31	1262.3	259.37	1267.33	259.81
1269.13	259.8	1274.05	259.9	1275.94	260	1280.81	260.27	1282.77	260.41
1287.63	260.47	1289.64	260.59	1294.33	261.23	1296.37	261.34	1301.05	261.42
1302.3	261.47	1305.18	261.56	1312.22	261.8	1315.71	262.04	1316.65	262.13
1321.08	262.46	1323.38	262.6	1323.78	262.63				

Manning's n Values			num= 8						
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.03	68.02	.05	402.58	.12	484.48	.04	498.59	.04
566.92	.04	582.73	.12	764.85	.12				

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
484.48	582.73	310.89	335.22	338.41		.1	.3

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	246.87	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.25	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	246.62	Reach Len. (ft)	310.89	335.22
338.41				
Crit W.S. (ft)	243.45	Flow Area (sq ft)	145.52	593.60
141.48				
E.G. Slope (ft/ft)	0.001147	Area (sq ft)	145.52	593.60
141.48				
Q Total (cfs)	2671.00	Flow (cfs)	98.75	2475.48
96.77				
Top Width (ft)	363.86	Top Width (ft)	70.31	98.25
195.30				
Vel Total (ft/s)	3.03	Avg. Vel. (ft/s)	0.68	4.17
0.68				
Max Chl Dpth (ft)	6.41	Hydr. Depth (ft)	2.07	6.04
0.72				
Conv. Total (cfs)	78855.5	Conv. (cfs)	2915.4	73083.2
2856.9				
Length Wtd. (ft)	334.81	Wetted Per. (ft)	70.71	98.99
195.85				
Min Ch El (ft)	240.21	Shear (lb/sq ft)	0.15	0.43
0.05				
Alpha	1.76	Stream Power (lb/ft s)	1323.78	0.00
0.00				

Frctn Loss (ft)	0.33	Cum Volume (acre-ft)	93.71	76.65
39.72				
C & E Loss (ft)	0.02	Cum SA (acres)	33.38	9.78
15.75				

Warning: Divided flow computed for this cross-section.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	251.19	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.30	Wt. n-Val.	0.070	0.040
0.120				
W.S. Elev (ft)	250.89	Reach Len. (ft)	310.89	335.22
338.41				
Crit W.S. (ft)	248.44	Flow Area (sq ft)	1253.35	1013.20
2466.35				
E.G. Slope (ft/ft)	0.001096	Area (sq ft)	1253.35	1013.20
2466.35				
Q Total (cfs)	10810.00	Flow (cfs)	2302.93	5883.34
2623.73				
Top Width (ft)	1005.84	Top Width (ft)	316.64	98.25
590.95				
Vel Total (ft/s)	2.28	Avg. Vel. (ft/s)	1.84	5.81
1.06				
Max Chl Dpth (ft)	10.68	Hydr. Depth (ft)	3.96	10.31
4.17				
Conv. Total (cfs)	326548.4	Conv. (cfs)	69566.9	177723.9
79257.6				
Length Wtd. (ft)	330.73	Wetted Per. (ft)	317.33	98.99
592.27				
Min Ch El (ft)	240.21	Shear (lb/sq ft)	0.27	0.70
0.28				
Alpha	3.71	Stream Power (lb/ft s)	1323.78	0.00
0.00				
Frctn Loss (ft)	0.27	Cum Volume (acre-ft)	230.70	112.23
120.66				
C & E Loss (ft)	0.04	Cum SA (acres)	49.90	9.78
25.36				

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	251.90	Element	Left OB	Channel
Right OB				

Vel Head (ft)	0.30	Wt. n-Val.	0.068	0.040
0.120				
W.S. Elev (ft)	251.60	Reach Len. (ft)	310.89	335.22
338.41				
Crit W.S. (ft)	248.81	Flow Area (sq ft)	1481.90	1083.22
2888.46				
E.G. Slope (ft/ft)	0.001052	Area (sq ft)	1481.90	1083.22
2888.46				
Q Total (cfs)	12761.00	Flow (cfs)	2986.22	6442.19
3332.59				
Top Width (ft)	1015.89	Top Width (ft)	323.95	98.25
593.69				
Vel Total (ft/s)	2.34	Avg. Vel. (ft/s)	2.02	5.95
1.15				
Max Chl Dpth (ft)	11.39	Hydr. Depth (ft)	4.57	11.03
4.87				
Conv. Total (cfs)	393451.5	Conv. (cfs)	92072.2	198627.7
102751.6				
Length Wtd. (ft)	330.23	Wetted Per. (ft)	324.67	98.99
595.10				
Min Ch El (ft)	240.21	Shear (lb/sq ft)	0.30	0.72
0.32				
Alpha	3.50	Stream Power (lb/ft s)	1323.78	0.00
0.00				
Frctn Loss (ft)	0.26	Cum Volume (acre-ft)	271.70	120.08
141.88				
C & E Loss (ft)	0.04	Cum SA (acres)	52.08	9.78
26.89				

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	253.92	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.32	Wt. n-Val.	0.066	0.040
0.120				
W.S. Elev (ft)	253.60	Reach Len. (ft)	310.89	335.22
338.41				
Crit W.S. (ft)	249.77	Flow Area (sq ft)	2155.54	1279.75
4087.43				
E.G. Slope (ft/ft)	0.001004	Area (sq ft)	2155.54	1279.75
4087.43				
Q Total (cfs)	19382.00	Flow (cfs)	5349.88	8308.20
5723.92				
Top Width (ft)	1053.92	Top Width (ft)	349.34	98.25
606.32				
Vel Total (ft/s)	2.58	Avg. Vel. (ft/s)	2.48	6.49
1.40				

Max Chl Dpth (ft)	13.39	Hydr. Depth (ft)	6.17	13.03
6.74				
Conv. Total (cfs)	611595.6	Conv. (cfs)	168814.5	262163.9
180617.2				
Length Wtd. (ft)	329.23	Wetted Per. (ft)	350.18	98.99
607.91				
Min Ch El (ft)	240.21	Shear (lb/sq ft)	0.39	0.81
0.42				
Alpha	3.06	Stream Power (lb/ft s)	1323.78	0.00
0.00				
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	387.79	140.74
202.77				
C & E Loss (ft)	0.03	Cum SA (acres)	56.57	9.78
30.96				

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 4842.552

INPUT

Description: not interpolated

Station Elevation Data num= 449

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	268.8	2.73	268.47	3.89	268.41	5.3	268.33	8.87	268.32
12.14	268.36	13.87	268.36	15.74	268.36	20.39	268.16	26.04	268.93
27.48	269.19	29.43	269.61	33.14	270.24	36	270.6	39.17	270.83
40.59	270.78	44.03	270.27	51.06	269.22	58.05	266.72	58.41	266.59
58.69	266.51	63.38	265.48	67.63	264.91	68.28	264.84	69.07	264.75
74.18	263.88	77.2	263.64	78.5	263.54	85.06	263.02	85.81	262.98
88.69	263.08	90.51	263.07	90.98	263.06	95.93	262.94	97.77	262.9
100.45	262.86	103.49	262.96	106.65	263.12	108.3	263.15	109.13	263.2
111.29	263.16	114.39	263.19	117.19	262.94	120.08	263.02	122.71	263.28
125.17	263.23	126.02	263.23	132.26	263.55	132.77	263.6	136.76	263.67
139.19	262.78	146.99	260.99	149.22	261.32	153.08	261.23	156.82	261.27
157.72	261.1	160.75	261.3	161.85	261.49	166.57	260.61	168.53	260.41
170.65	260.51	175.22	261.94	177.57	261.62	177.87	261.58	181.04	261.54
185.22	261.28	187.56	260.97	189.98	260.77	192.4	260.54	195.09	260.52
197.34	260.46	199.51	260.33	202.56	260.17	205.77	259.96	208.25	259.75
212.43	259.62	214.67	259.53	216.02	259.42	220.77	259.07	222.46	258.84
226.7	258.29	226.91	258.27	230.72	258.34	232.64	258.2	237.15	258.04
238.18	257.99	238.98	257.96	242.92	257.79	247.43	257.85	247.62	257.86
247.87	257.87	254.83	257.98	257.79	257.87	260.91	257.79	263.6	257.7
266	257.76	268.76	257.71	271.51	257.78	272.95	257.69	278.08	257.56
282.38	258.02	284.35	258.22	289.27	258.27	290.95	258.28	291.52	258.21
293.49	257.95	300.57	256.68	302.36	256.66	303.54	256.58	309.87	256.33
310.01	256.34	310.12	256.33	315.67	256.08	318.71	255.77	321.57	255.41

328.07	254.19	330.68	253.92	334.18	253.45	336.72	253.26	341.67	252.79
342.74	252.67	343.35	252.61	348.51	252.03	351.75	251.44	355.62	251.01
356.49	250.88	357.87	250.74	365.02	250.13	366.06	250.06	367.83	249.92
375.43	249.53	377.83	249.25	381.61	248.75	382.86	248.72	388.9	248.89
395.23	248.92	395.55	248.92	395.85	248.88	397.38	248.41	404.96	248.17
405.22	248.18	405.43	248.15	410.29	247.91	414.5	247.95	415.29	247.96
416.27	247.98	422.17	248.07	425.89	247.95	428.86	247.91	429.81	247.82
432.25	247.83	434.94	247.82	437.83	247.7	440.63	247.58	442.45	247.56
445.29	247.48	445.95	247.47	446.25	247.47	451.02	247.57	453.12	247.63
458.19	247.83	458.91	247.88	459.61	247.81	463.7	247.56	467.88	247.47
468.55	247.48	469.13	247.51	473.93	247.72	479.29	247.48	479.56	247.49
485.83	247.46	488.95	247.29	492.03	247.25	493.24	247.25	495.31	247.43
498.08	247.54	500.74	247.4	504.07	247.14	510.02	246.93	510.11	246.93
514.92	246.88	518.55	246.85	521.67	246.83	526.1	246.72	527.97	246.59
531.07	246.61	533.09	246.6	534.69	246.57	538.2	246.43	541.58	246.26
547.47	246.14	549.11	246.1	549.64	246.1	552.66	245.99	555.92	245.95
558.87	246.12	561.79	246.05	565.78	245.71	568.08	245.65	573.1	245.9
574.12	245.95	575.88	245.93	581.39	245.82	584.62	245.79	588.95	245.77
594.01	245.82	595.95	245.8	597.76	245.8	601.63	245.92	605.76	245.9
607.57	245.95	613.29	245.98	614.23	246	614.53	245.99	620.76	246.07
626.56	245.94	627.02	245.94	627.61	245.95	632.08	246.31	635.57	246.34
637.94	246.44	641.86	246.52	645.44	246.55	647.63	246.49	650.61	246.29
653.22	246.38	654.88	246.4	656.72	246.45	659.96	246.43	661.17	246.5
662.68	246.4	665.55	246.33	668.81	246.26	671.39	246.17	676.16	246.3
677.13	246.32	677.37	246.32	677.99	246.3	683.78	246.32	690.08	246.12
690.19	246.11	690.35	246.12	695.52	246.32	699.19	246.45	700.66	246.53
701.29	246.53	701.85	246.49	707.25	246.49	709.97	246.5	712.82	246.59
715.88	246.68	717.86	246.66	718.8	246.7	720.22	246.63	723.99	246.57
727.11	246.92	729.45	247.15	732.79	246.92	739.78	245.57	740.38	245.51
740.62	245.48	741.6	245.15	753.05	241.6	755.21	240.5	757.15	239.55
765.56	239.55	773.7	239.55	799.85	239.55	805.63	239.55	810.21	239.55
840.5	239.55	854.52	239.56	857.06	241.92	859.24	243.94	859.64	244.99
864.33	245.67	868.47	246.05	871.76	245.77	872.67	245.79	874.9	245.77
880.94	246.04	881.06	246.03	885.18	245.78	889.01	245.74	889.69	245.72
890.21	245.74	895.2	245.86	899.88	246.07	900.61	246.1	908.64	245.87
914.83	245.95	921.36	246	922.3	245.99	924.71	245.97	927.54	246.05
929.08	246.09	930.37	246.12	933.98	246.18	936.38	246.28	939.03	246.38
941.22	246.45	942.23	246.48	943.95	246.53	945.22	246.6	948.82	246.41
951.28	246.29	958.08	246.15	959.96	246.15	964.29	245.8	964.32	245.8
967.79	246.05	969.41	245.95	972.64	245.65	977.87	246.09	981.62	246.42
985.34	246.05	987.43	245.79	990.11	245.86	992.02	245.94	993.42	246.12
998.53	246.5	1002.83	246.15	1010.33	246.03	1021.19	245.81	1026.05	245.78
1028.42	245.76	1032.03	245.89	1033.64	245.79	1038.06	245.5	1041.92	245.51
1043.54	245.41	1049.61	245.35	1049.94	245.36	1050.41	245.33	1054.62	245.27
1057.55	245.29	1059.4	245.34	1060.46	245.31	1064.4	245.15	1068.19	245.05
1071.29	245.04	1075.69	245.21	1077.42	245.27	1081.25	245.06	1085.42	245.07
1087.96	245.06	1092.57	245.15	1093.6	245.16	1095.84	245.24	1098.44	245.3
1100.47	245.37	1105.51	245.38	1110.56	245.48	1112.33	245.5	1114.09	245.44
1117.52	245.36	1121.97	245.43	1122.22	245.43	1122.37	245.42	1127.19	245.24
1130.64	245.38	1133.48	245.41	1137.61	245.55	1143.23	246.14	1143.91	246.23

1144.46	246.27	1149.77	246.97	1154.84	248.2	1155.47	248.36	1156.26	248.52
1160.42	249.11	1163.77	249.71	1165.88	250.15	1168.29	250.67	1172.9	251.5
1176.88	252.48	1178.47	252.74	1180.08	252.93	1182.23	253.14	1184.33	253.4
1186.69	253.84	1188.28	254.19	1192.05	255.01	1197.38	255.91	1197.47	255.94
1203.33	257.59	1203.71	257.62	1203.74	257.62	1204.2	257.63	1204.9	257.8
1209.32	258.44	1212.09	258.47	1215	258.36	1219.74	258.47	1220.5	258.49
1220.78	258.48	1221.1	258.49	1236.74	258.39	1248.19	258.48	1254.08	258.43
1255.31	258.49	1257.44	258.55	1259.69	258.45	1274.79	257.85	1277.57	257.9
1280.4	257.95	1282.89	257.87	1284.04	258.06	1288.37	258.18	1291.1	258.32
1293.62	258.03	1297.46	257.99	1298.11	257.94	1298.46	257.95	1301.84	257.91
1304.4	257.97	1309.28	258.06	1311.25	258.15	1319.41	258.49	1319.91	258.51
1325.9	258.21	1331.9	258.49	1332.42	258.48	1335.89	258.66	1338.22	258.59
1341.34	258.36	1342.81	258.16	1343.87	258.18	1348.62	258.39	1351.97	258.45
1354.8	258.52	1358.88	258.55	1360.42	258.58	1362.62	258.59	1364.97	258.68
1366.6	258.75	1370.08	258.89	1371.99	258.98	1375.5	258.98	1380.35	258.83
1380.92	258.83	1381.96	258.89	1387.67	259.11	1388.63	259.14	1389.66	259.19
1393.69	259.42	1396.02	259.63	1399.29	259.82	1404.68	260.16		

Manning's n Values			num= 9								
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	90.51	.03	177.57	.05	712.82	.12	729.45	.04		
765.56	.04	857.06	.04	868.47	.12	922.3	.05				

Bank Sta:	Left	Right	Lengths:	Left	Channel	Right	Coeff	Contr.	Expan.		
	729.45	868.47		383.76	532.05	503.01		.1	.3		
Blocked Obstructions			num= 1								
Sta L	Sta R	Elev									
1231.07	1256.82	256.46	43								

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	246.52	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.17	Wt. n-Val.	0.050	0.040
0.053				
W.S. Elev (ft)	246.35	Reach Len. (ft)	383.76	532.05
503.01				
Crit W.S. (ft)	242.36	Flow Area (sq ft)	40.05	752.28
166.67				
E.G. Slope (ft/ft)	0.000850	Area (sq ft)	40.05	752.28
166.67				
Q Total (cfs)	2671.00	Flow (cfs)	17.53	2543.42
110.05				
Top Width (ft)	522.23	Top Width (ft)	130.16	132.72
259.34				
Vel Total (ft/s)	2.79	Avg. Vel. (ft/s)	0.44	3.38
0.66				
Max Chl Dpth (ft)	6.80	Hydr. Depth (ft)	0.31	5.67
0.64				

Conv. Total (cfs)	91615.1	Conv. (cfs)	601.3	87238.9
3774.8				
Length Wtd. (ft)	521.03	Wetted Per. (ft)	130.24	136.39
259.62				
Min Ch El (ft)	239.55	Shear (lb/sq ft)	0.02	0.29
0.03				
Alpha	1.41	Stream Power (lb/ft s)	1404.68	0.00
0.00				
Frctn Loss (ft)	0.47	Cum Volume (acre-ft)	93.05	71.47
38.52				
C & E Loss (ft)	0.00	Cum SA (acres)	32.66	8.89
13.99				

Warning: Divided flow computed for this cross-section.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the

largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may

wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	250.88	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.17	Wt. n-Val.	0.052	0.040
0.056				
W.S. Elev (ft)	250.71	Reach Len. (ft)	383.76	532.05
503.01				
Crit W.S. (ft)	247.38	Flow Area (sq ft)	1367.71	1355.29
1423.72				
E.G. Slope (ft/ft)	0.000643	Area (sq ft)	1367.71	1355.29
1423.72				
Q Total (cfs)	10810.00	Flow (cfs)	2384.04	5724.59
2701.37				
Top Width (ft)	810.28	Top Width (ft)	371.22	139.02
300.04				
Vel Total (ft/s)	2.61	Avg. Vel. (ft/s)	1.74	4.22
1.90				
Max Chl Dpth (ft)	11.16	Hydr. Depth (ft)	3.68	9.75
4.75				
Conv. Total (cfs)	426275.9	Conv. (cfs)	94010.8	225740.6
106524.5				
Length Wtd. (ft)	478.54	Wetted Per. (ft)	371.62	142.75
300.77				
Min Ch El (ft)	239.55	Shear (lb/sq ft)	0.15	0.38

0.19				
Alpha	1.62	Stream Power (lb/ft s)	1404.68	0.00
0.00				
Frctn Loss (ft)	0.34	Cum Volume (acre-ft)	221.34	103.12
105.55				
C & E Loss (ft)	0.00	Cum SA (acres)	47.44	8.87
21.90				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	251.60	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.18	Wt. n-Val.	0.052	0.040
0.056				
W.S. Elev (ft)	251.43	Reach Len. (ft)	383.76	532.05
503.01				
Crit W.S. (ft)	247.69	Flow Area (sq ft)	1636.83	1455.21
1640.80				
E.G. Slope (ft/ft)	0.000618	Area (sq ft)	1636.83	1455.21
1640.80				
Q Total (cfs)	12761.00	Flow (cfs)	3118.53	6318.86
3323.61				
Top Width (ft)	820.64	Top Width (ft)	377.59	139.02
304.03				
Vel Total (ft/s)	2.70	Avg. Vel. (ft/s)	1.91	4.34
2.03				
Max Chl Dpth (ft)	11.88	Hydr. Depth (ft)	4.33	10.47
5.40				
Conv. Total (cfs)	513267.7	Conv. (cfs)	125432.3	254154.7
133680.7				
Length Wtd. (ft)	474.06	Wetted Per. (ft)	378.03	142.75
304.83				
Min Ch El (ft)	239.55	Shear (lb/sq ft)	0.17	0.39
0.21				
Alpha	1.55	Stream Power (lb/ft s)	1404.68	0.00
0.00				
Frctn Loss (ft)	0.32	Cum Volume (acre-ft)	260.57	110.31
124.29				
C & E Loss (ft)	0.00	Cum SA (acres)	49.58	8.87

23.40

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	253.64	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.20	Wt. n-Val.	0.051	0.040
0.056				
W.S. Elev (ft)	253.43	Reach Len. (ft)	383.76	532.05
503.01				
Crit W.S. (ft)	248.80	Flow Area (sq ft)	2409.03	1734.02
2260.56				
E.G. Slope (ft/ft)	0.000595	Area (sq ft)	2409.03	1734.02
2260.56				
Q Total (cfs)	19382.00	Flow (cfs)	5658.86	8306.19
5416.95				
Top Width (ft)	850.11	Top Width (ft)	395.05	139.02
316.04				
Vel Total (ft/s)	3.03	Avg. Vel. (ft/s)	2.35	4.79
2.40				
Max Chl Dpth (ft)	13.88	Hydr. Depth (ft)	6.10	12.47
7.15				
Conv. Total (cfs)	794283.8	Conv. (cfs)	231902.7	340391.8
221989.2				
Length Wtd. (ft)	465.59	Wetted Per. (ft)	395.62	142.75
317.02				
Min Ch El (ft)	239.55	Shear (lb/sq ft)	0.23	0.45
0.27				
Alpha	1.42	Stream Power (lb/ft s)	1404.68	0.00
0.00				
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	371.50	129.14
178.11				
C & E Loss (ft)	0.00	Cum SA (acres)	53.92	8.87
27.38				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the

largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 4310.577

INPUT

Description:

Station Elevation Data num= 466

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	264	2.5	263.74	4.29	263.41	8.89	262.06	12.38	261.46
13.56	261.59	15.21	261.56	18.93	261.78	23.85	261.44	24.05	261.43
24.3	261.36	27.17	260.51	28.91	261.22	35.92	262.26	39.38	263.61
42.79	264.94	43.92	265.23	44.5	265.1	45.93	264.87	51.38	263.82
53.48	263.14	54.8	262.72	57.46	262.63	66.39	262.2	69.32	262.03
73.25	261.84	74.52	261.81	77.84	261.67	82.25	261.55	83.29	261.51
84.95	261.46	91.28	261.33	95.3	261.31	98.7	261.28	104.12	260.82
105.64	260.68	106.58	260.62	111.08	260.43	114.12	260.14	116.31	260.08
119.05	260.35	123.66	260.14	125.65	260.13	126.89	260.13	132.35	259.98
133.75	259.86	138.19	259.66	139.04	259.62	143.24	259.61	145.9	259.56
153.65	259.13	154.24	259.1	155.72	259.05	159.66	258.85	162.15	258.72
164.63	258.51	168.66	258.42	169.99	258.38	170.23	258.35	175.73	258.15
178.42	258.09	182.96	257.78	184.06	257.81	188.95	257.81	196.76	257.4
199.26	257.21	202.23	257.11	203.24	257.08	204.47	257	209.93	256.64
212.21	256.56	216.92	256.21	217.34	256.19	217.44	256.18	217.5	256.17
217.73	256.14	224.5	255.43	228.82	255.17	230.89	255.03	231.61	255.02
239.16	254.05	240.7	253.83	241.1	253.8	241.38	253.77	241.93	253.69
247.15	253.24	249.06	252.84	252.69	252.83	252.93	252.83	253.14	252.81
259.96	252.33	264.43	252.09	265	252.05	265.27	252.04	266.19	251.92
270.32	251.42	273.61	251.1	275.09	251.01	277.04	251.17	281.8	251.09
285.03	250.47	289.48	250.16	294.67	250.09	297.01	250.01	300.28	249.65
303.09	249.39	305.5	249.25	310.59	249.36	312.01	249.29	314.47	249.19
319.4	248.86	324.6	248.69	326.73	248.64	328.25	248.67	331.79	248.52
336.73	248.45	340.61	248.33	341.67	248.28	342.7	248.32	347.27	248.35
349.25	248.21	354.12	247.96	356.87	247.86	359.53	248	360.71	248
364.4	247.78	367.45	247.57	368.04	247.55	371.91	247.46	374.14	247.56
377.02	247.5	379.48	247.35	380.85	247.36	383.32	247.45	388.27	247.19
391.11	247.1	394.53	247.12	395.09	247.12	401.59	247.11	402.16	247.13
403.57	247.08	407.26	247.23	411.02	247.1	414.56	247.07	415.69	247.12
421.7	246.97	422.69	246.9	426.48	246.92	429.35	246.89	430.26	246.91
434.33	246.88	439.52	246.89	441.68	246.83	446.59	246.67	447.95	246.66
452.2	246.64	454.17	246.64	454.6	246.65	460.36	246.67	462.17	246.61
466.6	246.68	469.81	246.79	472.89	246.62	477.46	246.55	479.14	246.56
485.16	246.41	485.48	246.41	486.87	246.46	492.53	246.6	494.89	246.53

499.78	246.34	505.19	246.46	507.06	246.42	511.49	246.45	514.2	246.43
514.44	246.42	514.86	246.42	521.1	246.36	521.95	246.37	523.38	246.4
527.96	246.48	529.52	246.5	531.94	246.41	534.8	246.36	537.02	246.41
540.49	246.24	541.71	246.27	544.47	246.44	548.41	246.18	548.97	246.18
551.92	246.33	554.68	246.47	557.58	246.53	559.39	246.49	561.05	246.56
566.24	246.41	566.87	246.35	567.42	246.37	570.73	246.41	574.2	246.45
575.11	246.49	582.5	246.47	587.1	246.52	588.46	246.64	592.97	246.47
595.57	246.39	601.83	246.49	602.67	246.51	605.9	246.64	609	246.77
610.08	246.78	611.31	246.66	617.84	246.65	623.08	246.7	625.79	246.83
626.67	246.82	629.45	246.57	632.88	246.25	633.55	246.24	639.11	246.47
641.1	246.57	643.56	246.52	647.72	246.42	651.16	246.34	656.01	245.87
657.19	245.82	663.67	245.75	663.99	245.73	664.2	245.73	670.95	245.46
675.73	245.31	677.61	245.26	679.19	245.15	682.61	244.99	683.92	244.93
685.6	244.85	685.72	244.84	685.88	244.83	690.34	244.51	691.53	244.42
693.07	244.33	693.27	244.3	693.66	244.3	699.93	244.44	700.65	244.41
702.09	244.34	706.79	243.99	708.02	243.9	710.37	243.99	713.51	244.15
715.29	244.14	715.94	244.17	718.62	244.3	720.23	244.27	722.59	244.05
726.87	244.2	726.99	244.2	729.91	243.95	733.23	244.01	735.25	244.09
739.17	244.37	743.6	244.53	744.37	244.5	745.17	244.63	749.12	244.91
751.56	245.09	752.04	245.08	758.39	245.25	760.61	245.1	765.57	244.13
766.25	244.03	768.51	243.78	773.57	243.17	777.73	243.44	779.49	243.55
786.13	243.7	786.25	243.7	786.31	243.7	787.08	243.74	792.14	244
793.92	244.07	797.91	244.38	801.21	244.47	806.2	244.81	809.29	245.08
809.33	245.08	812.86	244.79	816.21	244.22	821.94	243.63	824.22	243.52
828.11	243.38	831.55	243.4	834.25	243.3	838.92	243	839.72	243.14
841.58	242.86	851.89	242.32	859.13	242.27	860.73	242.27	863.12	242.96
867.78	244.19	868.81	244.14	874.22	244.53	875.1	244.57	880.87	244.37
883.12	244.34	887.41	244.46	889.38	244.56	892.06	244.31	896.8	243.96
899.2	243.95	900.5	244.04	906.56	244.26	906.89	244.25	908.75	243.95
913.78	243.17	914.35	243.17	920.41	243.93	924.58	243.74	926.26	243.7
930.41	243.26	933.03	243.02	933.56	242.99	940.12	242.42	942.14	242.2
945.06	241.92	947.91	241.78	950.82	241.66	953.69	240.81	954.11	240.28
955.15	239.52	955.66	239.52	985.59	238.69	988.35	238.69	991.1	238.69
1023.25	239.52	1023.76	239.52	1024.41	239.52	1024.82	239.52	1025.01	239.62
1025.07	239.66	1031.49	243.05	1032.66	243.23	1034.69	243.52	1038.36	243.92
1039.27	243.91	1043.91	243.66	1045.82	243.72	1050.77	243.95	1052.07	243.95
1052.76	243.93	1056.69	244.06	1060.11	244.14	1062.7	244.04	1067.53	243.89
1068.76	243.86	1074.18	243.85	1074.83	243.86	1075.22	243.86	1080.94	244.2
1085.08	244.47	1086.71	244.52	1090.42	244.57	1093.24	244.54	1093.92	244.57
1099.54	244.55	1101.75	244.62	1103.31	244.79	1105.67	244.9	1110.18	245.65
1111.62	245.89	1116.81	246.51	1117.59	246.65	1120.69	247.09	1123.1	247.52
1124.35	247.7	1128.04	248.54	1129.83	249.01	1131.35	249.26	1136.01	250.03
1138.35	250.2	1139.08	250.29	1144.19	250.76	1146.28	250.81	1150.11	250.87
1153.51	251.11	1155.98	251.28	1160.67	251.57	1161.78	251.67	1166.66	252.1
1167.58	252.15	1168.24	252.19	1174.12	252.29	1179.38	252.44	1180.57	252.49
1180.82	252.49	1181.23	252.49	1182.46	252.61	1186.53	252.83	1187.44	252.87
1192.33	252.85	1194.45	252.92	1198.02	253.11	1201.36	253.32	1203.74	253.41
1208.24	253.52	1209.38	253.57	1214.67	253.84	1215.04	253.85	1215.1	253.86
1221.18	254.19	1222.16	254.26	1225.39	254.38	1227.28	254.43	1230.07	254.6
1233.46	254.79	1234.3	254.82	1239.63	255.12	1241.94	255.21	1245.81	255.41

1249.5	255.63	1251.86	255.66	1257.05	255.89	1257.99	255.96	1261.84	256.26
1263.64	256.44	1264.55	256.45	1268.85	256.56	1272.17	256.72	1273.94	256.8
1277.5	257.15	1279.13	257.29	1279.42	257.31	1279.98	257.32	1286.05	257.16
1290.09	257.24	1292.6	257.24	1295.51	257.46	1299.05	257.64	1300.88	257.74
1305.54	258.11	1306.28	258.17	1309.96	258.39	1311.85	258.53	1313.12	258.55
1317.89	258.73	1323.13	259.11	1323.89	259.17	1325.03	259.18	1329.71	259.29
1330.7	259.3	1335.44	259.52	1337.02	259.58	1341.35	259.74	1344.49	260.03
1345.01	260.17	1350.6	260.3	1351.53	260.35	1357.65	260.88	1357.99	260.91
1358.23	260.92	1361.94	261.11	1363.96	261.25	1364.13	261.26	1380.11	261.71
1385.82	262								

Manning's n Values			num=	8					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.03	39.38	.05	715.94	.12	940.12	.04	942.14	.04
955.66	.04	1025.07	.04	1031.49	.05				

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
940.12	1031.49	279.48	327.09	326.13		.1	.3

Blocked Obstructions			num=	1
Sta L	Sta R	Elev		
1317.7	1320.07	266.2577		

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	246.05	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.19	Wt. n-Val.	0.108	0.040
0.050				
W.S. Elev (ft)	245.86	Reach Len. (ft)	279.48	327.09
326.13				
Crit W.S. (ft)	242.64	Flow Area (sq ft)	504.50	565.64
133.18				
E.G. Slope (ft/ft)	0.000964	Area (sq ft)	504.50	565.64
133.18				
Q Total (cfs)	2671.00	Flow (cfs)	324.24	2174.37
172.39				
Top Width (ft)	455.08	Top Width (ft)	283.79	91.37
79.93				
Vel Total (ft/s)	2.22	Avg. Vel. (ft/s)	0.64	3.84
1.29				
Max Chl Dpth (ft)	7.17	Hydr. Depth (ft)	1.78	6.19
1.67				
Conv. Total (cfs)	86048.4	Conv. (cfs)	10445.5	70049.2
5553.7				
Length Wtd. (ft)	319.76	Wetted Per. (ft)	284.81	92.93
80.12				
Min Ch El (ft)	238.69	Shear (lb/sq ft)	0.11	0.37
0.10				
Alpha	2.47	Stream Power (lb/ft s)	1385.82	0.00

0.00				
Frctn Loss (ft)	0.38	Cum Volume (acre-ft)	90.65	63.42
36.79				
C & E Loss (ft)	0.01	Cum SA (acres)	30.84	7.53
12.03				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	250.54	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.20	Wt. n-Val.	0.076	0.040
0.050				
W.S. Elev (ft)	250.34	Reach Len. (ft)	279.48	327.09
326.13				
Crit W.S. (ft)	246.80	Flow Area (sq ft)	2964.42	975.66
555.43				
E.G. Slope (ft/ft)	0.000772	Area (sq ft)	2964.42	975.66
555.43				
Q Total (cfs)	10810.00	Flow (cfs)	4622.29	4827.73
1359.98				
Top Width (ft)	852.82	Top Width (ft)	653.28	91.37
108.17				
Vel Total (ft/s)	2.40	Avg. Vel. (ft/s)	1.56	4.95
2.45				
Max Chl Dpth (ft)	11.65	Hydr. Depth (ft)	4.54	10.68
5.13				
Conv. Total (cfs)	389120.5	Conv. (cfs)	166385.5	173780.6
48954.3				
Length Wtd. (ft)	305.57	Wetted Per. (ft)	654.58	92.93
108.75				
Min Ch El (ft)	238.69	Shear (lb/sq ft)	0.22	0.51
0.25				
Alpha	2.20	Stream Power (lb/ft s)	1385.82	0.00
0.00				
Frctn Loss (ft)	0.32	Cum Volume (acre-ft)	202.26	88.88
94.12				
C & E Loss (ft)	0.02	Cum SA (acres)	42.93	7.46
19.54				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	251.28	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.20	Wt. n-Val.	0.074	0.040
0.050				
W.S. Elev (ft)	251.08	Reach Len. (ft)	279.48	327.09
326.13				
Crit W.S. (ft)	247.54	Flow Area (sq ft)	3449.14	1043.14
639.59				
E.G. Slope (ft/ft)	0.000743	Area (sq ft)	3449.14	1043.14
639.59				
Q Total (cfs)	12761.00	Flow (cfs)	5905.00	5294.64
1561.36				
Top Width (ft)	873.34	Top Width (ft)	660.35	91.37
121.63				
Vel Total (ft/s)	2.49	Avg. Vel. (ft/s)	1.71	5.08
2.44				
Max Chl Dpth (ft)	12.39	Hydr. Depth (ft)	5.22	11.42
5.26				
Conv. Total (cfs)	468225.4	Conv. (cfs)	216665.7	194270.3
57289.3				
Length Wtd. (ft)	304.10	Wetted Per. (ft)	661.72	92.93
122.23				
Min Ch El (ft)	238.69	Shear (lb/sq ft)	0.24	0.52
0.24				
Alpha	2.07	Stream Power (lb/ft s)	1385.82	0.00
0.00				
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	238.17	95.05
111.12				
C & E Loss (ft)	0.02	Cum SA (acres)	45.00	7.46
20.95				

Warning: Divided flow computed for this cross-section.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the

largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	253.33	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.22	Wt. n-Val.	0.071	0.040
0.050				
W.S. Elev (ft)	253.11	Reach Len. (ft)	279.48	327.09
326.13				
Crit W.S. (ft)	248.58	Flow Area (sq ft)	4822.50	1228.30
923.36				
E.G. Slope (ft/ft)	0.000726	Area (sq ft)	4822.50	1228.30
923.36				
Q Total (cfs)	19382.00	Flow (cfs)	10201.22	6871.14
2309.64				
Top Width (ft)	950.22	Top Width (ft)	692.34	91.37
166.51				
Vel Total (ft/s)	2.78	Avg. Vel. (ft/s)	2.12	5.59
2.50				
Max Chl Dpth (ft)	14.42	Hydr. Depth (ft)	6.97	13.44
5.55				
Conv. Total (cfs)	719530.2	Conv. (cfs)	378706.2	255081.7
85742.3				
Length Wtd. (ft)	301.15	Wetted Per. (ft)	693.82	92.93
167.18				
Min Ch El (ft)	238.69	Shear (lb/sq ft)	0.31	0.60
0.25				
Alpha	1.84	Stream Power (lb/ft s)	1385.82	0.00
0.00				
Frctn Loss (ft)	0.29	Cum Volume (acre-ft)	339.65	111.05
159.72				
C & E Loss (ft)	0.02	Cum SA (acres)	49.13	7.46
24.59				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 3983.411

INPUT

Description:

Station Elevation Data		num=		465					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	263.98	1.03	263.95	2.02	263.92	8.48	263.68	9.85	263.68
13.55	263.83	15.48	263.7	17.55	263.3	24.73	261.46	30.34	261.64
30.72	261.66	31.21	261.58	35.52	260.9	35.71	260.85	38.64	260.11
40.51	260.33	45.12	261.17	47.46	261.86	50.89	262.1	52.15	262.18
55.05	262.25	57.83	261.92	62.56	260.82	66.89	260.52	68.07	260.41
71.75	260.48	77.18	260.5	80.41	260.13	82.42	259.82	83.95	259.75
90.09	259.56	90.95	259.53	96.15	259.24	98.43	259.19	103.95	259.22
105.82	259.21	111.79	258.95	113.56	258.88	120.36	258.8	120.75	258.75
127.53	258.48	128.23	258.49	128.44	258.47	135.59	258.41	135.72	258.39
143.15	257.95	143.22	257.95	144.63	257.92	150.44	257.77	150.76	257.76
157.65	257.84	158.43	257.83	164.92	257.42	166.07	257.37	172.27	257.1
173.83	257.01	179.55	256.73	181.47	256.68	186.83	256.34	189.13	256.21
194.09	256.04	196.76	255.83	201.34	255.42	204.37	255.36	208.55	255.39
212.05	255.16	215.86	254.9	219.77	254.7	220.91	254.57	223.27	254.4
227.52	254.29	230.54	254.19	235.18	254.04	237.78	253.86	242.75	253.27
245.08	253.13	250.44	252.92	251.06	252.86	252.35	252.82	258.14	252.6
259.61	252.52	265.87	252.01	266.25	251.98	266.74	251.97	273.78	252.3
274.15	252.25	279.9	251.57	284.12	251.5	288.65	251.26	288.78	251.25
288.93	251.26	294.94	251.58	298.79	251.34	303.06	250.93	303.9	250.88
310.19	250.87	311.41	250.79	317.44	250.38	318.92	250.39	324.6	250.36
326.43	250.23	331.71	250.01	333.84	250.02	338.69	250.44	341.26	250.46
345.93	249.97	348.83	249.78	353.19	249.58	356.35	249.56	360.34	249.41
363.82	249.2	367.58	249.06	371.21	248.9	375.38	248.9	378.69	248.94
383.16	248.92	386.12	248.8	390.96	248.49	393.57	248.45	398.85	248.52
401.07	248.45	406.65	248.29	408.5	248.31	414.42	248.05	415.93	247.99
422.13	247.94	423.29	247.9	429.89	247.98	430.65	248.01	437.64	247.65
437.97	247.61	438.07	247.62	438.45	247.63	446.76	247.68	452.49	247.87
452.91	247.87	453.39	247.84	460.39	247.21	466.47	247.26	467.69	247.28
469.08	247.3	475.02	247.34	476.96	247.2	482.71	246.77	487.47	246.59
489.24	246.48	490.3	246.48	492.73	246.44	497.33	246.43	501.35	246.34
504.67	246.36	508.17	246.37	511.99	246.39	515.1	246.26	518.15	246.03
519.24	246	524.3	245.99	526.83	246	532.2	245.85	534.36	245.8
535.98	245.86	539.86	245.99	542.25	245.88	548	245.75	548.93	245.7
549.73	245.7	556.31	245.35	556.73	245.33	562.96	245.23	563.66	245.22
563.7	245.22	570.82	245.28	571.2	245.29	577.97	245.25	578.41	245.24
578.84	245.26	579.42	245.22	586.62	244.98	592.19	244.97	593.49	244.98
599.27	245.04	600.9	245.05	602.7	244.92	608.76	244.73	613.59	244.5
615.81	244.43	616.8	244.45	618.65	244.51	619.05	244.52	620.69	244.57
622.31	244.71	623.94	244.62	629.59	244.36	630.56	244.29	634.8	244.23
636.86	244.31	638.85	244.23	644.15	244.11	645.28	244.15	648.95	243.96
652.65	244.01	659.11	243.89	663.46	243.9	665.46	243.61	667.13	243.41

672.05	243.09	675.31	242.91	676.31	242.9	677.96	242.87	683.12	243
684.75	243.22	689.43	243.26	691.34	243.09	696.78	243.01	699.84	243.08
709.6	242.77	711.38	242.75	712.37	242.87	718.56	243.57	719.17	243.6
725.65	244.24	725.79	244.25	732.18	243.99	732.89	243.96	732.93	243.96
739.95	243.94	740.14	243.93	747.13	243.49	747.34	243.48	748.09	243.47
754.11	243.67	755.61	243.63	761.13	243.3	761.78	243.31	768.09	243.19
768.6	243.23	769.26	243.23	773.39	243.14	779.78	243.15	781.32	243.04
782.3	242.87	785.71	242.94	789.24	243.17	793.16	242.86	796.28	242.65
800.65	242.69	803.21	242.69	808.12	242.72	810.16	242.72	815.62	243.03
817.03	243.18	818.26	243.21	825.2	243.55	830.77	243.56	831.01	243.56
833.45	243.71	837.76	243.98	837.89	243.98	837.99	243.97	844.7	243.78
844.99	243.77	845.2	243.77	847.3	243.59	851.24	243.67	854.37	243.4
858.73	243.06	859.31	243.09	860.83	242.95	870.78	242.51	872.26	242.43
875.67	242.95	879.3	243.02	881.64	242.94	887.45	242.97	888.31	242.79
893.08	242.51	895.43	242.62	899.83	242.81	901.48	242.94	902.55	242.91
903.72	242.94	906.33	243.03	910.75	242.84	913.42	243.2	917.65	243.29
920.25	242.91	924.71	242.16	925.79	241.71	929.54	240.89	932.63	239.43
934.87	239.43	940.91	239.21	958.65	238.18	960.91	238.18	963.16	238.18
980.91	238.93	990.23	239.43	991.01	239.43	991.84	240.31	992.24	240.52
994.2	241.57	994.59	241.64	1000.52	242.59	1001.71	242.69	1007.05	242.65
1009.22	242.76	1012.29	242.99	1018.71	244.18	1024.62	245.23	1027.28	245.71
1030.25	246.05	1041.72	246.59	1047.23	246.71	1048.88	246.97	1053.35	246.87
1057.99	246.91	1060.33	247.06	1065.81	247.03	1067.36	247.1	1072.38	247.55
1074.33	247.62	1079.68	248.08	1083.16	248.34	1085.56	248.53	1087.96	248.45
1090.54	248.54	1094.86	248.65	1096.99	248.77	1101.68	249.46	1102.78	249.58
1104.12	249.66	1110.49	250.16	1114.66	250.42	1119.15	250.32	1121.39	250.72
1134.55	250.99	1135.14	250.97	1135.58	250.94	1141.6	251.04	1143.17	251.3
1144.74	251.49	1150.59	251.21	1151.5	251.26	1152.63	251.21	1157.28	251.1
1157.99	251.1	1158.74	251.09	1164.33	250.91	1164.89	250.92	1168.32	251.1
1170.99	251.26	1171.17	251.27	1173.46	251.64	1177.34	251.83	1182.44	251.74
1186.23	251.68	1189.19	251.97	1190.68	251.94	1191.09	251.9	1195.49	251.55
1197.32	251.61	1201.6	251.62	1203.83	251.57	1207.66	251.93	1210.26	252.12
1213.24	252.14	1216.71	252.07	1220.17	251.97	1223.23	251.87	1227.05	251.97
1228.18	252.01	1229.83	252.08	1231.81	252.13	1233.94	252.16	1236.93	252.13
1237.89	252.21	1241.36	252.39	1245.28	252.18	1245.66	252.13	1246.5	252.07
1248.39	251.93	1249.23	251.87	1253.1	252.04	1258.61	252	1258.66	252
1259.72	252.11	1262.36	252.4	1262.48	252.4	1268.48	252.85	1271.67	253.15
1274.49	253.38	1275.62	253.54	1280.14	253.99	1284.75	254.2	1285.5	254.12
1286.27	254.2	1290.04	254.27	1291.66	254.36	1292.65	254.35	1293.68	254.41
1295.19	254.44	1296.67	254.37	1298.22	254.36	1299.76	254.45	1302.04	254.5
1303.67	254.6	1305	254.64	1307.86	254.76	1311.35	254.98	1311.8	255.01
1312.92	255.04	1314.64	255.08	1315.33	255.1	1318.99	255.18	1322.79	255.43
1323.74	255.48	1324.64	255.53	1328.15	255.58	1328.53	255.57	1333.88	255.74
1337.78	255.92	1338.74	255.95	1341.58	256.44	1341.63	256.45	1341.67	256.45
1342.45	256.5	1349.92	256.92	1350.37	256.94	1350.49	256.95	1352.43	257.02
1354.79	257.08	1355.94	257.08	1357.88	257.22	1361.93	257.4	1364.27	257.57
1367.25	257.81	1369.81	258.06	1377.44	259.08	1378.29	259.21	1379.33	259.25
1379.73	259.27	1431.04	261.3	1431.12	261.33	1431.3	261.3	1438.79	261.3
1440.32	261.18	1443.39	260.82	1445.66	260.79	1447.9	261.39	1449.95	261.74
1454.2	261.99	1456.4	262.08	1457.44	262.19	1458.65	262.29	1461.07	262.57

1463.33	262.74	1464.98	262.9	1468.1	263.21	1470.24	263.39	1471.61	263.4
1473.16	263.55	1482.31	263.9	1482.83	263.95	1483.73	263.98	1485.79	264.11

Manning's n Values			num= 9						
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.03	50.89	.05	619.05	.12	924.71	.04	940.91	.04
990.23	.04	992.24	.04	1000.52	.12	1191.09	.05		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	924.71	1000.52		329.01	485.13		.1	.3

Blocked Obstructions			num= 1		

Sta L	Sta R	Elev
1383.66	1422.88	265.94
		26

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	245.66	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.28	Wt. n-Val.	0.118	0.040
0.120				
W.S. Elev (ft)	245.38	Reach Len. (ft)	329.01	485.13
520.50				
Crit W.S. (ft)	242.80	Flow Area (sq ft)	646.02	455.54
46.78				
E.G. Slope (ft/ft)	0.001503	Area (sq ft)	646.02	455.54
46.78				
Q Total (cfs)	2671.00	Flow (cfs)	493.78	2143.25
33.96				
Top Width (ft)	469.69	Top Width (ft)	368.95	75.81
24.93				
Vel Total (ft/s)	2.33	Avg. Vel. (ft/s)	0.76	4.70
0.73				
Max Chl Dpth (ft)	7.20	Hydr. Depth (ft)	1.75	6.01
1.88				
Conv. Total (cfs)	68892.5	Conv. (cfs)	12736.0	55280.4
876.0				
Length Wtd. (ft)	451.36	Wetted Per. (ft)	369.54	77.16
25.16				
Min Ch El (ft)	238.18	Shear (lb/sq ft)	0.16	0.55
0.17				
Alpha	3.30	Stream Power (lb/ft s)	1485.79	0.00
0.00				
Frctn Loss (ft)	0.55	Cum Volume (acre-ft)	86.96	59.59
36.12				
C & E Loss (ft)	0.02	Cum SA (acres)	28.75	6.90
11.64				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	250.21	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.37	Wt. n-Val.	0.095	0.040
0.120				
W.S. Elev (ft)	249.84	Reach Len. (ft)	329.01	485.13
520.50				
Crit W.S. (ft)	246.93	Flow Area (sq ft)	2779.84	793.47
348.67				
E.G. Slope (ft/ft)	0.001462	Area (sq ft)	2779.84	793.47
348.67				
Q Total (cfs)	10810.00	Flow (cfs)	5115.89	5329.70
364.41				
Top Width (ft)	758.41	Top Width (ft)	576.75	75.81
105.85				
Vel Total (ft/s)	2.76	Avg. Vel. (ft/s)	1.84	6.72
1.05				
Max Chl Dpth (ft)	11.66	Hydr. Depth (ft)	4.82	10.47
3.29				
Conv. Total (cfs)	282722.0	Conv. (cfs)	133799.7	139391.5
9530.7				
Length Wtd. (ft)	421.31	Wetted Per. (ft)	577.49	77.16
106.31				
Min Ch El (ft)	238.18	Shear (lb/sq ft)	0.44	0.94
0.30				
Alpha	3.14	Stream Power (lb/ft s)	1485.79	0.00
0.00				
Frctn Loss (ft)	0.63	Cum Volume (acre-ft)	183.83	82.24
90.73				
C & E Loss (ft)	0.01	Cum SA (acres)	38.98	6.83
18.74				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	250.96	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.38	Wt. n-Val.	0.092	0.040
0.120				
W.S. Elev (ft)	250.58	Reach Len. (ft)	329.01	485.13
520.50				
Crit W.S. (ft)	247.31	Flow Area (sq ft)	3218.65	849.70
431.91				
E.G. Slope (ft/ft)	0.001430	Area (sq ft)	3218.65	849.70
431.91				
Q Total (cfs)	12761.00	Flow (cfs)	6379.04	5908.49
473.47				
Top Width (ft)	806.08	Top Width (ft)	610.19	75.81
120.08				
Vel Total (ft/s)	2.84	Avg. Vel. (ft/s)	1.98	6.95
1.10				
Max Chl Dpth (ft)	12.40	Hydr. Depth (ft)	5.27	11.21
3.60				
Conv. Total (cfs)	337450.4	Conv. (cfs)	168686.7	156243.3
12520.4				
Length Wtd. (ft)	417.83	Wetted Per. (ft)	611.00	77.16
120.58				
Min Ch El (ft)	238.18	Shear (lb/sq ft)	0.47	0.98
0.32				
Alpha	3.03	Stream Power (lb/ft s)	1485.79	0.00
0.00				
Frctn Loss (ft)	0.59	Cum Volume (acre-ft)	216.78	87.95
107.11				
C & E Loss (ft)	0.00	Cum SA (acres)	40.93	6.83
20.04				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	253.02	Element	Left OB	Channel

Right OB				
Vel Head (ft)	0.40	Wt. n-Val.	0.087	0.040
0.117				
W.S. Elev (ft)	252.62	Reach Len. (ft)	329.01	485.13
520.50				
Crit W.S. (ft)	248.76	Flow Area (sq ft)	4524.46	1004.52
819.69				
E.G. Slope (ft/ft)	0.001354	Area (sq ft)	4524.46	1004.52
819.69				
Q Total (cfs)	19382.00	Flow (cfs)	10852.21	7598.03
931.76				
Top Width (ft)	1007.83	Top Width (ft)	667.11	75.81
264.90				
Vel Total (ft/s)	3.05	Avg. Vel. (ft/s)	2.40	7.56
1.14				
Max Chl Dpth (ft)	14.44	Hydr. Depth (ft)	6.78	13.25
3.09				
Conv. Total (cfs)	526801.8	Conv. (cfs)	294962.6	206514.1
25325.2				
Length Wtd. (ft)	411.31	Wetted Per. (ft)	668.05	77.16
265.63				
Min Ch El (ft)	238.18	Shear (lb/sq ft)	0.57	1.10
0.26				
Alpha	2.76	Stream Power (lb/ft s)	1485.79	0.00
0.00				
Frctn Loss (ft)	0.52	Cum Volume (acre-ft)	309.66	102.67
153.20				
C & E Loss (ft)	0.01	Cum SA (acres)	44.77	6.83
22.98				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1 RS: 3498.278

INPUT

Description:

Station Elevation Data num= 477

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

0	265.76	.42	265.76	2.64	265.65	7.02	265.68	10.83	265.66
13.74	266.13	18.24	266.33	19.94	265.96	26.23	265.05	30.85	263.77
31.08	263.7	31.27	263.66	37.19	261.03	43.75	260.78	45.47	260.88
49.04	261.1	49.22	261.11	49.68	261.07	54.46	260.62	55.2	260.51
55.75	260.38	57.55	260.05	58.79	259.77	62.9	259.53	65.34	259.41
70.99	259.72	71.1	259.73	72.51	259.73	73.38	259.9	77.68	260.54
82.13	260.43	83.85	260.47	84.65	260.47	87.19	260.49	88.42	260.53
91.79	260.32	94.04	260.07	97.8	260.15	99.81	260.18	100.49	260.18
100.99	260.15	108.26	260.11	109.55	259.92	111.56	259.7	114.22	259.25
116.71	259.11	119.3	259	122.18	258.77	124.52	258.66	125.45	258.54
127.73	258.38	129.91	258.24	132.99	258.15	135.39	258.09	139.48	257.94
140.49	257.9	140.97	257.88	150.35	257.74	150.78	257.71	150.98	257.71
151.2	257.7	153.46	257.45	165.15	256.3	171.16	256.06	171.68	256.03
172.16	255.97	176.72	255.63	181.75	255.2	181.76	255.2	181.83	255.2
186.94	254.89	190.01	254.85	193.71	254.54	198.12	254.36	199.9	254.44
203.67	253.96	205.31	253.89	207.17	253.87	208.61	253.78	211.37	253.5
214.56	253.22	221.26	252.82	222.11	252.78	222.53	252.75	229.01	252.49
231.7	252.28	234.77	252.04	237.36	251.9	239.84	251.87	242.87	251.89
244.94	251.89	247.43	251.72	249.97	251.56	254.27	251.45	255.82	251.22
258.32	251.11	270.03	250.6	270.29	250.64	271.16	250.58	272.36	250.53
275.68	250.44	278.14	250.34	280.45	250.21	283.64	250.12	285.63	250.09
286.54	250.04	289.31	249.92	291.52	249.83	295.17	249.62	297.67	249.62
303.53	249.42	303.74	249.41	303.84	249.4	304.1	249.41	308.59	249.34
312.82	248.88	313.45	248.86	314.51	248.82	320.48	248.69	324.12	248.64
327.22	248.59	332.77	248.44	333.39	248.42	333.93	248.39	338.64	248.42
343.62	248.36	343.86	248.35	344.12	248.33	348.75	248.1	352.95	248.13
353.83	248.12	354.95	248.12	360.26	248.14	361.02	248.24	364.19	247.99
373.33	247.98	375.46	247.92	376.72	247.85	381.38	247.65	383.87	247.51
384.88	247.52	390.71	247.33	393.41	247.22	396.49	247.11	399	247.02
401.62	246.96	404.81	246.72	406.51	246.7	407.9	246.64	410.16	246.6
416.64	246.72	422.89	246.7	424.37	246.67	424.67	246.68	431.68	246.75
432.62	246.71	433.62	246.74	437.37	246.62	438.8	246.74	440.41	246.64
442.18	246.62	445.18	246.56	447.84	246.5	448.87	246.51	452.45	246.74
453.11	246.77	457.35	246.59	464.02	246.53	468.58	246.4	471.7	246.51
473.77	246.64	479.44	246.68	485.64	246.85	486.81	246.92	487.16	246.89
497.01	246.65	500.24	246.68	502.24	246.67	502.95	246.67	503.76	246.64
511.58	246.44	515.01	246.35	515.68	246.38	520.62	246.47	521.43	246.43
534.18	246.37	534.3	246.37	534.34	246.37	534.37	246.37	539	246.22
540.9	246.3	544.16	246.15	548.73	246.09	549.75	246.1	553.46	246.21
554.08	246.22	559.28	246.19	564.17	246.18	564.99	246.16	565.34	246.16
569.24	245.9	569.76	245.87	570.73	245.81	572.81	245.79	576.2	245.6
577.6	245.65	582.89	245.84	587.34	245.93	588.43	245.92	591.25	246.06
594.12	246.17	595.96	246.21	596.45	246.16	602.56	245.14	606.63	244.01
608.57	243.29	609.27	243.03	613.59	242.36	619.17	242.04	623.36	241.79
627.09	241.76	629.67	241.6	631.63	241.14	636.79	240.13	639.55	240.31
644.16	240.56	645.4	240.6	650.51	240.82	651.56	240.8	656.09	240.72
657.38	240.61	659.68	240.63	661.55	240.64	664.24	241.01	666.62	241.05
670.95	241.41	671.24	241.45	671.36	241.45	671.6	241.47	677.69	241.63
680.44	241.76	684.09	241.82	687.59	241.21	692.09	240.77	695.88	240.85
698.93	241.34	701.06	241.38	703.91	241.07	706.09	241.31	707.15	241.36

709.83	241.26	710.62	241.24	710.85	241.21	714.48	241.03	716.51	240.98
720.8	240.96	721.75	240.98	722.35	241.04	722.76	241	725.85	241.03
731.5	241.02	735.52	240.87	737.92	241.08	744.09	241.59	745.04	241.61
745.36	241.61	748.78	241.44	750.85	241.31	751.38	241.35	756.19	241.54
757.51	241.52	760.82	241.22	764.35	241.04	766.48	240.78	770.93	240.98
771.08	240.98	771.12	240.97	777.96	240.01	781.45	240.34	783.8	240.06
790.6	241.34	791.09	241.41	791.34	241.39	797.55	241.4	803.95	241.28
804.87	241.21	807.29	240.59	811.68	239.58	814.87	238.53	817.49	237.77
818.02	237.62	818.05	237.62	839.64	236.85	841.18	236.85	842.71	236.85
861.18	237.52	867.54	237.65	867.92	237.65	870.13	241.44	871.1	241.9
875.39	242.88	879.68	243.88	880.75	243.96	882.31	244.05	884.89	244.14
886.52	244.3	892.63	244.4	896.65	244.54	898.74	244.53	901.42	244.2
903.79	244.16	904.74	244.2	907.07	244.09	908.05	244.05	908.35	244.06
912	244.28	913.93	244.4	917.88	244.41	919.22	244.39	919.76	244.45
921.66	244.46	928.31	244.49	928.47	244.49	928.68	244.5	930.83	244.6
967.59	246.25	970.19	246.51	973.17	246.73	976.18	246.85	977.97	246.92
979.07	247	982.79	247.33	984.19	247.49	985.9	247.49	987.99	247.62
992.11	248.03	996.77	248.23	998.96	248.29	1003.23	248.38	1005.35	248.43
1009.74	248.48	1010.71	248.52	1011.26	248.53	1015.56	248.7	1017.5	248.8
1018.85	248.86	1020.48	248.87	1023.37	248.82	1025.16	248.76	1026.41	248.75
1028.73	248.75	1029.49	248.77	1029.89	248.78	1035.31	249.05	1039.56	249.14
1040.87	249.15	1041.33	249.14	1043.6	249.28	1047.36	249.57	1050.05	249.74
1053.93	249.79	1058.37	249.69	1061.11	249.58	1063.51	249.68	1067.39	249.7
1069.66	249.65	1072.74	249.74	1074.62	249.85	1077.8	250.13	1082.81	250.11
1082.96	250.12	1083.21	250.12	1086.76	250.33	1089.83	250.63	1091.13	250.67
1092.55	250.62	1098.11	250.44	1103.19	250.67	1104.52	250.75	1109.68	250.95
1109.71	250.95	1109.72	250.95	1114.36	251.04	1116.89	251.15	1119.04	251.21
1123.01	251.17	1123.85	251.16	1124.25	251.17	1127.41	251.19	1128.83	251.22
1129.17	251.23	1134.26	251.62	1137.75	251.63	1139.78	251.68	1142.7	251.56
1144.32	251.57	1146.1	251.67	1147.69	251.79	1149.12	251.76	1152.76	251.75
1155.86	251.9	1159.01	252.05	1162.82	252.2	1164.93	252.14	1169.08	252.26
1170.31	252.35	1171.12	252.37	1175.77	252.55	1180.2	252.53	1181.22	252.5
1182.75	252.49	1185.36	252.56	1188.76	252.46	1189.12	252.46	1189.37	252.47
1194.88	252.9	1199.17	253.01	1200.66	253.07	1202.83	253.18	1206.49	253.29
1208.63	253.42	1211.76	253.65	1213.48	253.76	1214.33	253.75	1215.37	253.78
1216.63	253.91	1221.29	254.11	1242.87	255.38	1242.98	255.38	1243.24	255.37
1247.41	255.45	1248.14	255.49	1250.62	255.46	1252.27	255.45	1254.31	255.4
1256.89	255.13	1261.19	255.11	1261.47	255.12	1265.2	255.2	1269.66	255.6
1271.51	255.84	1275.59	255.97	1281.98	255.93	1284.34	256.23	1287.65	256.5
1287.71	256.5	1287.75	256.5	1293.89	256.79	1295.28	256.78	1300.2	256.69
1305	256.93	1305.99	257.02	1307.6	257.17	1312.26	257.52	1317.97	257.9
1318.67	257.95	1319.8	258.13	1322.53	258.71	1324.05	259.04	1327.53	259.28
1327.92	259.29	1328.03	259.29	1328.06	259.3	1332.46	259.46	1337.24	259.64
1348.06	259.74	1373.93	259.31	1375.91	259.23	1380.68	259.37	1382.15	259.47
1387.42	259.21	1393.47	259.21	1394.24	259.16	1394.8	259.2	1396.23	259.2
1397.53	259.15	1398.37	259.13						

Manning's	n Values		num=	9					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.03	70.99	.05	569.76	.12	804.87	.04	817.49	.04

867.54	.04	870.13	.05	1017.5	.03	1250.62	.05
Bank Sta: Left	Right	Lengths: Left Channel		Right	Coeff	Contr.	Expan.
804.87	870.13	473.48	474.45	417.37		.1	.3
Blocked Obstructions		num=	1				
Sta L	Sta R	Elev					
1338.23	1398.37	266.6335					

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	245.09	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.21	Wt. n-Val.	0.120	0.040
0.050				
W.S. Elev (ft)	244.88	Reach Len. (ft)	473.48	474.45
417.37				
Crit W.S. (ft)	241.85	Flow Area (sq ft)	735.29	463.94
49.67				
E.G. Slope (ft/ft)	0.000994	Area (sq ft)	735.29	463.94
49.67				
Q Total (cfs)	2671.00	Flow (cfs)	678.08	1954.97
37.96				
Top Width (ft)	333.67	Top Width (ft)	201.39	65.26
67.02				
Vel Total (ft/s)	2.14	Avg. Vel. (ft/s)	0.92	4.21
0.76				
Max Chl Dpth (ft)	8.03	Hydr. Depth (ft)	3.65	7.11
0.74				
Conv. Total (cfs)	84740.3	Conv. (cfs)	21512.7	62023.3
1204.2				
Length Wtd. (ft)	470.76	Wetted Per. (ft)	202.46	67.95
67.42				
Min Ch El (ft)	236.85	Shear (lb/sq ft)	0.23	0.42
0.05				
Alpha	2.89	Stream Power (lb/ft s)	1398.37	0.00
0.00				
Frctn Loss (ft)	0.37	Cum Volume (acre-ft)	81.75	54.47
35.54				
C & E Loss (ft)	0.01	Cum SA (acres)	26.59	6.11
11.09				

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	249.57	Element	Left OB	Channel

Right OB				
Vel Head (ft)	0.43	Wt. n-Val.	0.103	0.040
0.050				
W.S. Elev (ft)	249.14	Reach Len. (ft)	473.48	474.45
417.37				
Crit W.S. (ft)	245.77	Flow Area (sq ft)	2243.01	741.84
517.75				
E.G. Slope (ft/ft)	0.001541	Area (sq ft)	2243.01	741.84
517.75				
Q Total (cfs)	10810.00	Flow (cfs)	4114.81	5323.36
1371.84				
Top Width (ft)	729.56	Top Width (ft)	494.46	65.26
169.84				
Vel Total (ft/s)	3.09	Avg. Vel. (ft/s)	1.83	7.18
2.65				
Max Chl Dpth (ft)	12.29	Hydr. Depth (ft)	4.54	11.37
3.05				
Conv. Total (cfs)	275386.6	Conv. (cfs)	104825.3	135613.5
34947.8				
Length Wtd. (ft)	461.25	Wetted Per. (ft)	495.82	67.95
170.37				
Min Ch El (ft)	236.85	Shear (lb/sq ft)	0.44	1.05
0.29				
Alpha	2.89	Stream Power (lb/ft s)	1398.37	0.00
0.00				
Frctn Loss (ft)	0.55	Cum Volume (acre-ft)	164.86	73.69
85.56				
C & E Loss (ft)	0.03	Cum SA (acres)	34.94	6.05
17.09				

Warning: Divided flow computed for this cross-section.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	250.37	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.40	Wt. n-Val.	0.098	0.040
0.049				
W.S. Elev (ft)	249.97	Reach Len. (ft)	473.48	474.45
417.37				
Crit W.S. (ft)	246.02	Flow Area (sq ft)	2660.53	795.76
670.35				
E.G. Slope (ft/ft)	0.001395	Area (sq ft)	2660.53	795.76
670.35				
Q Total (cfs)	12761.00	Flow (cfs)	5162.71	5692.72
1905.57				

Top Width (ft)	787.77	Top Width (ft)	516.68	65.26
205.84				
Vel Total (ft/s)	3.09	Avg. Vel. (ft/s)	1.94	7.15
2.84				
Max Chl Dpth (ft)	13.12	Hydr. Depth (ft)	5.15	12.19
3.26				
Conv. Total (cfs)	341713.3	Conv. (cfs)	138246.8	152439.2
51027.3				
Length Wtd. (ft)	459.71	Wetted Per. (ft)	518.06	67.95
206.40				
Min Ch El (ft)	236.85	Shear (lb/sq ft)	0.45	1.02
0.28				
Alpha	2.67	Stream Power (lb/ft s)	1398.37	0.00
0.00				
Frctn Loss (ft)	0.50	Cum Volume (acre-ft)	194.57	78.78
100.53				
C & E Loss (ft)	0.03	Cum SA (acres)	36.67	6.05
18.09				

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	252.49	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.36	Wt. n-Val.	0.089	0.040
0.047				
W.S. Elev (ft)	252.13	Reach Len. (ft)	473.48	474.45
417.37				
Crit W.S. (ft)	248.17	Flow Area (sq ft)	3837.93	937.01
1205.21				
E.G. Slope (ft/ft)	0.001164	Area (sq ft)	3837.93	937.01
1205.21				
Q Total (cfs)	19382.00	Flow (cfs)	8586.20	6829.48
3966.32				
Top Width (ft)	927.53	Top Width (ft)	571.29	65.26
290.98				
Vel Total (ft/s)	3.24	Avg. Vel. (ft/s)	2.24	7.29
3.29				
Max Chl Dpth (ft)	15.28	Hydr. Depth (ft)	6.72	14.36
4.14				
Conv. Total (cfs)	568034.0	Conv. (cfs)	251638.4	200153.5
116242.1				
Length Wtd. (ft)	456.58	Wetted Per. (ft)	572.73	67.95
291.63				
Min Ch El (ft)	236.85	Shear (lb/sq ft)	0.49	1.00
0.30				

Alpha	2.20	Stream Power (lb/ft s)	1398.37	0.00
0.00				
Frctn Loss (ft)	0.45	Cum Volume (acre-ft)	278.08	91.86
141.10				
C & E Loss (ft)	0.01	Cum SA (acres)	40.09	6.05
19.65				

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 3023.827

INPUT

Description: not interpolated

Station Elevation Data num= 457

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	269.34	.76	269.27	4.41	268.65	12.08	267.32	13.52	267.11
14.42	266.81	17.39	266.25	19.79	265.78	22.07	265.59	25.78	264.94
26.57	264.79	27.78	264.57	29.68	264.21	31.57	263.95	33.72	263.69
37.18	262.66	37.33	262.61	37.4	262.58	37.44	262.56	43.12	260.2
48.19	257.61	48.83	257.49	49.7	257.33	50.67	257.12	50.9	257.11
55.3	257.4	57.96	257.4	60.36	257.38	61.24	257.49	66.31	257.21
67.49	257.18	68.17	257.16	69.72	257.19	71.02	257.16	76.64	257.28
78.05	257.24	81.22	257.27	83.62	257.56	84.38	257.57	87.55	257.62
91.81	257.62	94.46	257.46	95.24	257.44	96.93	257.28	109.44	256.24
113.97	255.98	123.15	255.33	126.89	254.92	133.55	254.11	138.6	253.35
140.09	252.97	141.34	252.79	147.33	252.23	153.97	253.4	154.38	253.46
154.52	253.52	155.22	253.81	159.93	255.59	162.27	256.87	164	257.46
168.23	257.94	170.33	257.79	170.56	257.79	173.23	257.78	174.45	257.36
179.15	255.59	184.63	253.16	185.84	252.63	186.26	252.45	186.7	252.23
194.07	248.72	199.18	248.07	203.36	247.66	205.99	247.67	215.66	246.99
217.36	246.71	218.28	246.66	220.55	246.77	232.13	247.77	236.65	247.42
240.2	247.58	243.3	247.46	246.96	247.47	251.14	247.5	253.42	247.53
255.51	247.51	259.41	247.41	260.2	247.34	261.64	247.31	267.12	247
270.24	247.31	270.59	247.33	271.09	247.3	272.7	247.17	277.16	246.7
278.36	246.63	279.63	246.63	282	246.48	285.1	246.32	288.05	246.06
290.08	246	293.96	245.87	301.79	244.91	301.81	244.91	301.84	244.91
309.2	244.49	314.52	244.72	316.07	244.73	316.46	244.77	317.04	244.75
323.26	244.34	325.91	244.21	330.03	244.08	334.8	243.88	336.85	243.78
338.11	243.8	340.25	243.81	343.63	243.79	343.65	243.79	347.57	243.8
349.79	243.53	350.81	243.51	353.21	243.55	354.86	243.63	355.84	243.6
357.9	243.54	361.77	243.7	362.6	243.67	364.95	243.49	367.06	243.53
371.7	243.59	373.01	243.55	379.46	243.35	384.77	243.4	387.04	243.4
389.83	243.39	393.78	243.38	397.97	243.48	400.13	243.51	402.11	243.5
406.03	243.43	406.89	243.38	408.01	243.5	411.7	243.65	413.69	243.51

416.56	243.58	416.92	243.57	417.46	243.59	420.63	243.42	422.95	243.34
424.42	243.4	425.97	243.51	427.54	243.57	428.36	243.55	431.97	243.31
434.23	243.5	435.41	243.5	441.38	243.36	446.45	243.33	446.98	243.32
447.17	243.3	448.38	243.32	452.24	243.27	454.56	243.33	461.79	243.4
462.36	243.4	463.87	243.34	469.91	243.16	477.43	243.12	477.47	243.12
477.49	243.12	477.52	243.12	483.42	243.6	485.06	243.53	489.03	243.49
489.36	243.47	492.8	243.18	495.58	243.04	496.62	243.02	498.91	242.99
500.51	243.03	501.77	243.15	503.86	243.44	507.87	243	508.17	242.99
508.48	243.06	511.03	243.57	513.26	243.72	515.55	243.67	517.99	243.39
518.29	243.34	518.54	243.34	522.94	243.2	524.78	243.22	527.86	243.51
530.22	243.74	531.1	243.88	535.75	243.91	538.82	243.87	542	243.64
544.77	243.45	546.4	243.52	552.47	243.78	553.63	243.69	567.28	240.39
568.44	240.05	569.79	239.14	573.62	236.11	573.92	236.11	584.07	236.11
589.23	236.11	603.31	236.11	609.27	236.11	618.68	236.11	626.63	236.11
627.59	236.12	628.31	236.12	628.46	236.19	629.74	236.42	630.31	236.56
632.1	236.98	640.52	239.17	641.21	239.08	642.5	239.34	644.22	239.67
650.48	239.96	651.6	240.14	652.33	240.16	656.97	240.42	664.6	241.82
666.02	241.99	667.87	242.18	667.95	242.18	668.05	242.18	674.83	242.01
678.65	242.19	681.69	242.25	687.09	242.32	688.57	242.34	690.44	242.43
695.22	242.64	698.86	242.59	702.07	242.55	704.04	242.6	709.32	242.87
715.57	243.01	716.61	243.04	718.35	243.04	722.6	242.91	724.27	243.06
726.61	243.02	728.2	243	732.07	243.01	734.53	242.83	737.11	242.69
739.95	242.73	741.25	242.61	747.25	242.93	747.88	242.98	749.19	243.1
753.85	243.52	754.52	243.58	760.87	243.65	761.06	243.65	761.2	243.66
768.19	243.89	772.3	243.65	775.32	243.42	780.48	243.59	782.14	243.62
783.98	243.62	788.28	243.61	792.17	243.75	794.39	243.88	794.75	243.85
795.34	243.87	800.32	244.13	801.64	244.2	803.78	244.33	806.26	244.38
808.48	244.36	812.26	244.71	812.29	244.71	812.35	244.71	815.34	244.56
817.48	244.67	819.29	244.69	821.71	244.54	822.26	244.51	822.67	244.54
823.87	244.53	828.81	244.63	830.56	244.71	833.13	245.01	834.56	244.95
839.05	245.24	840.58	245.31	845.66	245.28	847.65	245.34	850.26	245.39
853.81	245.43	855.68	245.51	859.78	245.68	861.33	245.68	865.47	245.62
869.17	245.97	871.12	246.05	876.34	246.12	876.83	246.1	877.41	246.12
882.68	246.18	887.03	245.94	888.46	245.92	889.03	245.91	894.26	245.95
897.18	245.93	898.59	245.92	900.23	245.94	905.35	246.1	906.08	246.16
907.98	246.17	910.85	246.2	912.82	246.11	915.17	246.08	918.63	246.25
919.81	246.3	920.32	246.31	926.06	246.24	929.4	246.27	932.37	246.3
938.43	246.53	938.67	246.54	939.21	246.54	944.91	246.58	949.62	246.46
951	246.42	951.5	246.44	956.48	246.76	957.62	246.73	958.94	246.65
962.07	246.52	964.17	246.5	966.59	246.46	967.69	246.44	970.72	246.49
976.27	246.69	977.22	246.7	978.07	246.74	980.92	246.81	983.21	246.89
987.9	247.02	1000.54	247.59	1003.08	247.41	1006.04	246.92	1007.99	246.62
1009.65	246.58	1014.96	246.48	1018.55	246.46	1021.78	246.55	1022.55	246.35
1024.51	246.12	1028.15	246.15	1031.86	246.49	1035.01	246.72	1036.8	246.78
1040.5	246.81	1043.71	246.92	1046.14	246.97	1047.02	246.96	1051.9	246.87
1055	246.67	1057.71	246.7	1062.87	246.79	1063.5	246.78	1065.24	246.74
1068.48	246.69	1071.07	246.87	1073.05	247.04	1075.5	247.03	1077.63	247.04
1077.84	247.02	1078.12	247.04	1079.01	247.05	1080.11	247.05	1086.73	246.86
1089.67	247.13	1096.25	247.08	1096.44	247.07	1096.5	247.08	1101.94	247.14
1102.98	247.12	1104.57	247.29	1107.58	247.74	1108.76	247.89	1108.94	247.9

VOLUME 2 OF 5

1109.1	247.95	1109.82	247.92	1132.43	249.26	1133.78	249.34	1159.27	249.82
1201.67	250.6	1330.8	252.64	1335.64	252.08	1339.49	253.13	1340.12	253.2
1341.67	253.51	1344.91	253.88	1350.43	254.34	1351.64	254.43	1352.31	254.54
1356.67	254.66	1358.51	254.75	1364.58	254.47	1364.77	254.46	1364.95	254.45
1365.05	254.45	1366.02	254.49	1371.06	254.68	1371.86	254.67	1375.29	254.84
1376.72	254.87	1378.18	254.8	1381.18	254.63	1384.14	254.7	1385.93	254.73
1386.22	254.73	1391.01	254.9	1392.62	255.01	1393.66	255.04	1395.09	255.03
1396.66	255.07	1397.42	255.11	1399.01	255.2	1401.39	255.25	1405.59	255.07
1406.93	255.11	1413.05	255.56	1413.51	255.57	1415.61	255.81	1418.56	256.08
1419.36	256.1	1420.44	256.16	1424.39	256.34	1424.89	256.38	1431.86	256.56
1449.28	257.3	1458.68	257.81	1462.94	257.7	1470.26	257.71	1472.25	257.67
1473.66	257.68	1474.22	257.76	1477.35	257.4	1479.36	257.47	1485.94	256.86
1487.45	256.81	1487.81	256.83						

Manning's n Values			num= 11								
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	48.83	.03	184.63	.12	567.28	.04	573.62	.04		
573.92	.04	618.68	.04	644.22	.04	651.6	.05	753.85	.05		
1397.42	.05										

Bank Sta:	Left	Right	Lengths:		Left Channel	Right	Coeff	Contr.	Expan.	
	567.28	651.6		348.54	326.6	206.58		.1	.3	
Ineffective Flow	num= 1									
Sta L	Sta R	Elev	Permanent							
994.09	1487.81	254.35	F							
Blocked Obstructions		num= 3								
Sta L	Sta R	Elev	Sta L	Sta R	Elev	Sta L	Sta R	Elev		
94.93	124.41	261.75	51115.96	1333.68	262.12	411429.92	1476.77	269.14	98	

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	244.71	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.17	Wt. n-Val.	0.120	0.040
0.050				
W.S. Elev (ft)	244.53	Reach Len. (ft)	348.54	326.60
206.58				
Crit W.S. (ft)	240.11	Flow Area (sq ft)	273.73	637.26
257.62				
E.G. Slope (ft/ft)	0.000646	Area (sq ft)	273.73	637.26
257.62				
Q Total (cfs)	2671.00	Flow (cfs)	92.08	2284.38
294.54				
Top Width (ft)	493.15	Top Width (ft)	248.73	84.32
160.11				
Vel Total (ft/s)	2.29	Avg. Vel. (ft/s)	0.34	3.58
1.14				
Max Chl Dpth (ft)	8.42	Hydr. Depth (ft)	1.10	7.56
1.61				

Conv. Total (cfs)	105069.7	Conv. (cfs)	3622.1	89861.2
11586.4				
Length Wtd. (ft)	310.13	Wetted Per. (ft)	249.47	86.17
160.40				
Min Ch El (ft)	236.11	Shear (lb/sq ft)	0.04	0.30
0.06				
Alpha	2.13	Stream Power (lb/ft s)	1487.81	0.00
0.00				
Frctn Loss (ft)	0.18	Cum Volume (acre-ft)	76.26	48.47
34.07				
C & E Loss (ft)	0.01	Cum SA (acres)	24.15	5.30
10.00				

Warning: Divided flow computed for this cross-section.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the

largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may

wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	248.98	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.32	Wt. n-Val.	0.120	0.040
0.050				
W.S. Elev (ft)	248.67	Reach Len. (ft)	348.54	326.60
206.58				
Crit W.S. (ft)	245.36	Flow Area (sq ft)	1538.85	985.73
1408.16				
E.G. Slope (ft/ft)	0.000960	Area (sq ft)	1538.85	985.73
1617.80				
Q Total (cfs)	10810.00	Flow (cfs)	1516.64	5761.44
3531.93				
Top Width (ft)	921.47	Top Width (ft)	372.79	84.32
464.36				
Vel Total (ft/s)	2.75	Avg. Vel. (ft/s)	0.99	5.84
2.51				
Max Chl Dpth (ft)	12.56	Hydr. Depth (ft)	4.13	11.69
4.11				
Conv. Total (cfs)	348821.9	Conv. (cfs)	48939.5	185912.6
113969.9				
Length Wtd. (ft)	290.36	Wetted Per. (ft)	373.87	86.17

342.93				
Min Ch El (ft)	236.11	Shear (lb/sq ft)	0.25	0.69
0.25				
Alpha	2.70	Stream Power (lb/ft s)	1487.81	0.00
0.00				
Frctn Loss (ft)	0.26	Cum Volume (acre-ft)	144.31	64.28
75.33				
C & E Loss (ft)	0.02	Cum SA (acres)	30.23	5.23
14.06				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	249.83	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.30	Wt. n-Val.	0.120	0.040
0.050				
W.S. Elev (ft)	249.53	Reach Len. (ft)	348.54	326.60
206.58				
Crit W.S. (ft)	245.68	Flow Area (sq ft)	1862.59	1058.72
1704.63				
E.G. Slope (ft/ft)	0.000880	Area (sq ft)	1862.59	1058.72
2019.77				
Q Total (cfs)	12761.00	Flow (cfs)	1987.25	6211.43
4562.32				
Top Width (ft)	923.59	Top Width (ft)	374.91	84.32
464.36				
Vel Total (ft/s)	2.76	Avg. Vel. (ft/s)	1.07	5.87
2.68				
Max Chl Dpth (ft)	13.42	Hydr. Depth (ft)	4.97	12.56
4.98				
Conv. Total (cfs)	430236.3	Conv. (cfs)	67000.1	209417.9
153818.3				
Length Wtd. (ft)	287.53	Wetted Per. (ft)	376.18	86.17
342.93				
Min Ch El (ft)	236.11	Shear (lb/sq ft)	0.27	0.67
0.27				
Alpha	2.56	Stream Power (lb/ft s)	1487.81	0.00

0.00				
Frctn Loss (ft)	0.24	Cum Volume (acre-ft)	169.99	68.68
87.64				
C & E Loss (ft)	0.02	Cum SA (acres)	31.83	5.23
14.88				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	252.04	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.33	Wt. n-Val.	0.120	0.040
0.050				
W.S. Elev (ft)	251.71	Reach Len. (ft)	348.54	326.60
206.58				
Crit W.S. (ft)	247.26	Flow Area (sq ft)	2683.50	1242.23
2450.00				
E.G. Slope (ft/ft)	0.000834	Area (sq ft)	2683.50	1242.23
3030.36				
Q Total (cfs)	19382.00	Flow (cfs)	3524.97	7895.07
7961.96				
Top Width (ft)	928.16	Top Width (ft)	379.48	84.32
464.36				
Vel Total (ft/s)	3.04	Avg. Vel. (ft/s)	1.31	6.36
3.25				
Max Chl Dpth (ft)	15.60	Hydr. Depth (ft)	7.07	14.73
7.15				
Conv. Total (cfs)	671051.0	Conv. (cfs)	122042.8	273346.3
275661.9				
Length Wtd. (ft)	282.45	Wetted Per. (ft)	381.25	86.17
342.93				
Min Ch El (ft)	236.11	Shear (lb/sq ft)	0.37	0.75
0.37				
Alpha	2.28	Stream Power (lb/ft s)	1487.81	0.00
0.00				
Frctn Loss (ft)	0.23	Cum Volume (acre-ft)	242.64	79.99
120.81				
C & E Loss (ft)	0.01	Cum SA (acres)	34.92	5.23

16.04

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 2697.228

INPUT

Description: not interpolated

Station Elevation Data				num=	324				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	276	.15	275.99	.6	275.97	8.65	275.83	12.75	275.99
17.39	275.46	25.75	273.89	25.77	273.89	32.02	272.52	33.27	272.26
34.47	272.01	40.86	270.39	46.12	263.98	51.96	258.52	53.08	258.5
54.07	258.49	56.32	258.46	57.69	258.13	58.5	258.1	59.07	258.12
62.52	258.44	65.47	258.78	66.85	258.71	72.46	258.56	76.8	258.53
79.45	258.46	81.74	258.26	84.37	258.01	85	258	86.55	257.67
86.64	257.67	93.17	257.04	94.26	256.93	95.27	256.78	99.86	256.43
103.84	255.82	104.88	255.46	108.32	255.37	109.42	255.31	134.83	254.63
139.63	254.42	140.96	254.35	142.66	254.56	144.83	254.27	147.39	254.39
152.02	254.48	152.84	254.48	152.99	254.48	153.12	254.48	154.37	254.44
157.99	254.35	159.62	254.19	161.69	253.93	168.01	253.16	168.84	253.05
168.96	253.02	170.83	252.13	176.07	249.63	176.74	249.26	179.69	248.67
187.46	246.27	194.47	245.14	199.96	245.4	201.21	245.2	206.27	244.71
209.18	244.47	212.65	244	217.09	243.93	218.88	243.91	224.97	243.85
225.07	243.85	225.46	243.82	232.14	243.52	235.33	243.5	239.34	243.61
245.98	243.57	246.41	243.57	247.45	243.54	253.13	243.4	254.77	243.34
259.75	243.25	264.09	243.6	272.94	244.13	276.09	243.83	281.85	243.61
282.87	243.51	286.11	243.58	291.8	243.73	292.54	243.8	298.47	243.52
299.32	243.49	299.38	243.49	305.83	243.77	306.94	243.74	308.42	243.67
311.99	243.59	317.87	243.07	320.5	243.09	326.01	243.66	329.41	243.31
333.47	243.44	335.6	243.31	339.55	242.94	343.98	242.57	345.61	242.53
349.89	242.28	351.54	242.2	351.93	242.19	352.62	242.21	359.45	242.36
363.32	242.69	366.65	242.85	380.6	242.63	381.54	242.63	386.56	241.69
388.53	241.28	389.83	241.43	395.24	242.41	397.74	242.42	402.08	242.54
405.6	242.68	409.76	242.92	412.6	242.84	416.36	242.63	420.99	242.84
422.93	242.89	431.09	243	434.12	242.88	436.14	242.96	439.11	242.88

442.79	242.79	444.7	242.72	449.57	241.44	451.1	241.38	456.15	241.23
457.75	241.14	468.97	241.4	475.04	240.77	479.05	240.61	481.97	241.18
492.28	241.43	494.72	241.45	500.98	241.95	501.07	241.96	501.58	241.99
508.46	242.28	510.74	242.46	514.68	242.63	517.37	242.5	523.32	243.03
524.85	243.07	529.77	243.1	534.55	243.17	537.66	242.95	538.32	242.93
544.03	242.87	545.45	242.86	545.64	242.86	550.96	242.91	551.01	242.91
551.27	242.91	553.41	242.72	557.16	242.72	561.2	242.55	564.04	239.57
566.5	236.99	567.15	236.75	567.94	236.65	568.35	236.02	573.42	236.02
605.91	236.02	620.94	236.02	622.88	237.07	623.28	237.29	624.39	237.91
629.34	238.16	631.13	238.27	637.73	238.27	637.89	238.27	637.95	238.27
643.45	238.56	645.81	238.57	649.09	238.69	653.75	238.84	654.74	238.86
657.03	239.11	660.53	239.4	661.18	239.5	661.91	239.64	667.17	240.92
672.9	241.2	676.25	241.39	678.37	241.44	683.78	241.44	684.44	241.46
687.35	241.38	690.83	241.31	692.71	241.37	697.55	241.46	703.13	241.57
704.25	241.63	705.64	241.71	706.91	241.77	711.13	242.08	716.68	242.61
729.02	243.56	733.91	243.94	734.2	243.97	734.74	243.97	735.23	244
753.52	244.69	753.71	244.69	755.59	244.65	759.6	244.59	760.57	244.59
761.78	244.6	767.36	244.61	770.49	244.74	772.47	244.85	776.52	244.9
778.54	244.78	782.01	244.71	787.67	245.2	787.7	245.2	787.74	245.19
796.15	244.26	800.53	244.43	802.14	244.54	809.56	244.13	810.01	244.18
810.57	244.18	817.52	244.71	822.39	245.34	830.01	245.06	831.19	245.06
831.85	244.97	832.42	244.94	838.23	244.02	838.46	244.02	839.51	244.01
843.63	244.01	845.32	243.92	848.61	243.99	852.29	244.15	853.57	244.16
856.64	244.23	858.93	244.24	859.47	244.24	865.14	244.43	867.1	244.48
871.38	244.35	874.76	244.16	877.69	244.02	882.28	244.37	883.69	244.46
889.75	244.52	889.81	244.52	890.07	244.54	895.61	245.01	898.76	245.24
901.41	245.44	905.88	245.9	907.42	246.04	907.84	246.08	914.16	246.73
916.39	247.05	919.23	247.42	921.61	247.7	926.5	248.46	927.45	248.54
928.85	248.79	933.14	248.52	941.35	249.45	942.72	249.44	962.16	249.21
986.34	249.22	1123.06	249.01	1125.96	249.18	1129.04	249.07	1150.99	249.38
1245.9	250.45	1308.24	252.47	1327.69	252.79	1328.48	252.69	1329.26	252.91
1330.68	253	1333.92	253.12	1338.04	252.97	1340.05	253.03	1342.58	253.08
1347.17	253.16	1348.5	253.17	1348.75	253.2	1351.5	253.42	1355.29	253.52
1358.47	253.72	1360.31	253.66	1362.22	253.76	1364.07	253.82	1365.46	253.86
1366.72	253.75	1368.66	253.98	1372.14	253.92	1376.82	253.92	1378.05	253.89
1383.76	253.94	1383.92	253.94	1384.03	253.94	1384.95	254.02	1389.31	254.36
1390.7	254.5	1392.96	254.62	1394.17	254.67	1394.7	254.69	1397.41	254.49
1397.58	254.5	1402.46	254.82	1403.42	254.89	1404.72	254.99	1408.1	255.25
1410.86	255.61	1412.36	255.67	1414.86	256	1417.31	256		

Manning's	n Values		num=	11					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	54.07	.03	170.83	.12	564.04	.04	568.35	.04
573.42	.04	623.28	.04	637.73	.04	637.95	.05	729.02	.05
1394.17	.05								

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	564.04	637.95		212.34	216.58		.3	.5
Ineffective Flow		num=	1					
Sta L	Sta R	Elev	Permanent					

930.42 1417.31 252.24 F
Blocked Obstructions num= 3
Sta L Sta R Elev Sta L Sta R Elev Sta L Sta R Elev
0 13.93274.8376 107.77 143.59 259.144 939.52 1327.65262.6258

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	244.51	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.14	Wt. n-Val.	0.120	0.040
0.050				
W.S. Elev (ft)	244.38	Reach Len. (ft)	212.34	216.58
214.85				
Crit W.S. (ft)	240.03	Flow Area (sq ft)	568.82	578.28
327.59				
E.G. Slope (ft/ft)	0.000549	Area (sq ft)	568.82	578.28
327.59				
Q Total (cfs)	2671.00	Flow (cfs)	225.45	1949.07
496.49				
Top Width (ft)	586.66	Top Width (ft)	354.16	73.91
158.59				
Vel Total (ft/s)	1.81	Avg. Vel. (ft/s)	0.40	3.37
1.52				
Max Chl Dpth (ft)	8.36	Hydr. Depth (ft)	1.61	7.82
2.07				
Conv. Total (cfs)	113985.3	Conv. (cfs)	9620.9	83176.6
21187.7				
Length Wtd. (ft)	215.65	Wetted Per. (ft)	356.31	75.90
159.00				
Min Ch El (ft)	236.02	Shear (lb/sq ft)	0.05	0.26
0.07				
Alpha	2.66	Stream Power (lb/ft s)	1417.31	0.00
0.00				
Frctn Loss (ft)	0.08	Cum Volume (acre-ft)	72.89	43.91
32.68				
C & E Loss (ft)	0.04	Cum SA (acres)	21.73	4.71
9.24				

Warning: Divided flow computed for this cross-section.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth

with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	248.70	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.25	Wt. n-Val.	0.120	0.040
0.050				
W.S. Elev (ft)	248.46	Reach Len. (ft)	212.34	216.58
214.85				
Crit W.S. (ft)	244.93	Flow Area (sq ft)	2094.36	879.90
1405.39				
E.G. Slope (ft/ft)	0.000827	Area (sq ft)	2094.36	879.90
1405.39				
Q Total (cfs)	10810.00	Flow (cfs)	2301.28	4813.97
3694.75				
Top Width (ft)	746.09	Top Width (ft)	383.66	73.91
288.53				
Vel Total (ft/s)	2.47	Avg. Vel. (ft/s)	1.10	5.47
2.63				
Max Chl Dpth (ft)	12.44	Hydr. Depth (ft)	5.46	11.90
4.87				
Conv. Total (cfs)	375968.1	Conv. (cfs)	80037.7	167428.3
128502.0				
Length Wtd. (ft)	215.04	Wetted Per. (ft)	386.29	75.90
289.38				
Min Ch El (ft)	236.02	Shear (lb/sq ft)	0.28	0.60
0.25				
Alpha	2.62	Stream Power (lb/ft s)	1417.31	0.00
0.00				
Frctn Loss (ft)	0.14	Cum Volume (acre-ft)	129.78	57.29
68.16				
C & E Loss (ft)	0.04	Cum SA (acres)	27.20	4.64
12.27				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	249.58	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.25	Wt. n-Val.	0.120	0.040
0.050				
W.S. Elev (ft)	249.33	Reach Len. (ft)	212.34	216.58
214.85				
Crit W.S. (ft)	245.42	Flow Area (sq ft)	2431.53	944.54
1660.41				
E.G. Slope (ft/ft)	0.000784	Area (sq ft)	2431.53	944.54
1665.25				
Q Total (cfs)	12761.00	Flow (cfs)	2854.68	5275.37
4630.95				
Top Width (ft)	762.91	Top Width (ft)	387.43	73.91
301.57				
Vel Total (ft/s)	2.53	Avg. Vel. (ft/s)	1.17	5.59
2.79				
Max Chl Dpth (ft)	13.31	Hydr. Depth (ft)	6.28	12.78
5.68				
Conv. Total (cfs)	455801.3	Conv. (cfs)	101964.4	188427.1
165409.8				
Length Wtd. (ft)	214.98	Wetted Per. (ft)	390.17	75.90
293.35				
Min Ch El (ft)	236.02	Shear (lb/sq ft)	0.30	0.61
0.28				
Alpha	2.50	Stream Power (lb/ft s)	1417.31	0.00
0.00				
Frctn Loss (ft)	0.14	Cum Volume (acre-ft)	152.81	61.17
78.90				
C & E Loss (ft)	0.04	Cum SA (acres)	28.78	4.64
13.07				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	251.80	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.30	Wt. n-Val.	0.120	0.040

0.050				
W.S. Elev (ft)	251.50	Reach Len. (ft)	212.34	216.58
214.85				
Crit W.S. (ft)	246.60	Flow Area (sq ft)	3277.09	1104.94
2295.12				
E.G. Slope (ft/ft)	0.000794	Area (sq ft)	3277.09	1104.94
2319.71				
Q Total (cfs)	19382.00	Flow (cfs)	4686.42	6897.84
7797.75				
Top Width (ft)	767.37	Top Width (ft)	391.89	73.91
301.57				
Vel Total (ft/s)	2.90	Avg. Vel. (ft/s)	1.43	6.24
3.40				
Max Chl Dpth (ft)	15.48	Hydr. Depth (ft)	8.36	14.95
7.85				
Conv. Total (cfs)	687635.8	Conv. (cfs)	166264.9	244721.9
276648.9				
Length Wtd. (ft)	214.87	Wetted Per. (ft)	395.13	75.90
293.35				
Min Ch El (ft)	236.02	Shear (lb/sq ft)	0.41	0.72
0.39				
Alpha	2.26	Stream Power (lb/ft s)	1417.31	0.00
0.00				
Frctn Loss (ft)	0.15	Cum Volume (acre-ft)	218.79	71.19
108.12				
C & E Loss (ft)	0.02	Cum SA (acres)	31.84	4.64
14.22				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1 RS: 2480.647

INPUT

Description:

Station Elevation Data num= 412

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

0	252.08	.11	252.07	1.36	251.85	6.29	251.59	6.46	251.58
6.59	251.61	12.14	252.15	15.66	254.8	19.1	257.29	23.53	258.68
24.54	259.21	26.55	260.25	31.33	261.03	33.38	261.24	39.19	260.95
40.39	260.84	40.81	260.86	46.05	261.02	48.59	260.8	51.88	260.1
56.5	258.42	62.58	257.14	64.03	256.89	64.37	256.86	64.96	256.87
71.89	256.81	75.3	256.94	79.48	257.06	80.8	257.16	90.24	257.61
97.71	257.44	105.54	257.36	116.12	258.25	119.46	258.08	121.75	257.88
122.9	258.02	126.57	257.7	129.48	257.36	134.9	257.65	135.83	257.69
139.26	257.35	142.42	257.08	143.82	257.12	148.88	257.36	153.5	257.36
155.49	257.37	159.54	257.47	162.16	257.51	162.39	257.54	168.39	257.81
169.81	257.85	172.16	258	174.2	258.06	175.81	258.15	181.35	258.35
182.63	258.38	186.53	258.49	189.06	258.56	190.17	258.62	194.96	258.79
199.72	257	205.72	254.11	207.47	253.02	220.17	245.88	222.34	244.62
223.46	244.29	226.27	243.71	229.36	242.97	230.97	242.59	236.03	242.59
238.34	242.66	245.28	242.31	245.63	242.29	245.76	242.3	250.98	242.31
253.23	242.32	256.4	242.42	260.78	242.39	261.83	242.38	264.37	242.43
267.77	242.41	268.29	242.44	268.77	242.43	274.38	242.18	275.9	242.2
277.3	242.2	280.95	242.16	283.44	242.17	285.75	242.08	287.53	242.1
291.04	242.16	294.06	242.02	294.15	242.02	294.32	242.03	298.64	242.19
300.54	242	304.17	241.92	306.22	241.99	307.1	242.01	312.69	241.85
313.62	241.82	313.9	241.85	320.7	242.04	325.13	241.62	327.22	241.66
331.58	241.84	332.82	241.88	334.05	241.86	340.51	241.76	340.7	241.76
341.88	241.78	346.71	241.84	348.93	241.72	350.75	241.59	352.7	241.6
357.65	241.77	358.41	241.8	360.6	241.76	364.56	241.7	365.56	241.69
370.47	241.73	379.59	241.95	380.61	241.98	381.37	241.99	382.47	242.01
387.89	242.44	388.33	242.45	388.39	242.44	395.97	242.18	395.98	242.18
395.99	242.18	402.28	242.15	405.5	242.08	408.7	241.96	411.1	241.88
415.77	241.67	417.68	241.72	422.06	241.68	424.39	241.5	428.68	241.43
433.51	241.3	434.6	241.25	439.06	241.22	441.46	241.08	446.42	241.11
447.48	241.2	452.41	241.15	454.03	241.11	456.85	241.09	460.86	241.02
462.02	241.04	467.68	241.23	470.87	241.36	474.43	241.44	479.6	240.94
481.32	240.75	500	240.1	520	236.5	540	235.5	560	236
580	239.6	584.64	240.26	586.44	240.32	587.71	240.34	590.03	240.35
591.79	240.36	592.52	240.4	595.07	240.65	598.71	240.64	599.36	240.6
605.24	240.51	605.89	240.67	607.64	240.68	612.89	240.86	616	240.7
618.18	240.72	624.26	240.82	624.45	240.81	624.63	240.82	625.88	240.97
630.04	241.41	630.93	241.55	631.82	241.51	637.59	240.92	640.82	241.2
640.86	241.2	640.9	241.2	641.06	241.2	646.82	241.03	648.14	241.12
652.66	241.28	655.45	241.26	658.63	241.22	662.77	241.23	664.5	241.24
669.92	241.16	670.3	241.16	671.93	241.15	676.7	241.14	680.4	241.24
683.28	241.33	686.94	241.35	689.81	241.34	690.56	241.39	696.2	241.27
697.08	241.19	698.67	241.25	702.52	241.36	703.92	241.44	706.94	241.55
710.76	241.56	714.56	241.13	715.15	241.13	717.39	241.12	720.82	241.15
722.73	241.23	726.19	241.44	731.21	241.49	731.44	241.5	731.65	241.49
732.44	241.46	737.26	241.27	738.91	241.26	739.24	241.25	745.8	241.2
748.08	241.28	752.69	241.48	757.41	241.25	758.41	241.21	759.08	241.2
763.42	241.21	765.33	241.22	765.74	241.25	770.07	241.12	773.61	240.92
775.28	240.89	778.13	240.85	780.43	240.85	784.38	241.09	786.45	241.01
788.31	241.1	792.19	241.21	795.38	241.25	797.99	241.3	802.43	241.5
803.69	241.55	809.45	241.28	809.53	241.28	809.59	241.29	815.5	241.49

819.94	241.23	821.61	241.28	823.88	241.33	827.87	241.53	828.97	241.59
835	242.03	839.22	241.85	841.02	241.75	845.57	241.97	846.56	242.06
848.79	242.11	854.04	242.21	857.31	242.22	857.86	242.16	860.01	242.21
869.11	242.73	870.91	242.83	871.09	242.83	871.4	242.85	877.44	242.8
878.12	242.82	879.04	242.88	884.87	242.94	887.45	243.02	891.31	243.49
894.31	243.45	898.17	243.57	902.97	243.52	904.66	243.47	910.68	243.61
910.97	243.65	912.07	243.72	914.29	244.01	917.03	244.34	917.66	244.36
925.98	244.36	931.06	244.43	933.6	244.35	939.56	244.43	944.31	244.42
945.62	244.59	949.37	244.5	957.11	244.27	957.63	244.28	957.83	244.28
957.96	244.28	958.74	244.31	976.23	244.61	979.59	244.66	980.83	244.64
981.97	244.64	985.1	244.8	989.56	244.79	990.33	244.79	992.17	244.63
996.68	243.89	999.59	244.06	1000.01	244.09	1000.06	244.09	1002.55	244.12
1004.46	244.14	1008.63	244.36	1008.84	244.36	1009.06	244.36	1009.46	244.36
1012.76	244.31	1014.86	244.35	1017.57	244.43	1019.99	244.49	1021.83	244.6
1024.23	244.96	1025.52	245.1	1028.46	245.06	1031.2	245.16	1032.79	245.18
1034.49	245.17	1037.93	245.22	1038.33	245.21	1038.56	245.22	1038.86	245.23
1043.71	245.31	1047.44	245.36	1048.56	245.3	1051.13	245.3	1053.3	245.4
1057.59	245.57	1059.29	245.62	1060.15	245.66	1063.42	245.37	1063.88	245.38
1070.19	245.8	1072.86	245.93	1075.78	246.1	1077.05	246.26	1077.59	246.33
1081.4	247.04	1083.1	247.2	1085.64	247.22	1092.3	247.41	1097.09	247.97
1097.98	248.08	1101.49	248.09	1102.13	248.12	1108.03	247.93	1111.51	248.05
1115.06	248.53	1115.12	248.54	1115.14	248.54	1120.41	248.66	1124.45	248.72
1125.7	248.72	1128.31	248.57	1131.16	248.47	1134.89	248.37	1136.39	248.38
1137.6	248.31	1140.18	248.44	1141.42	248.5	1144.15	248.44	1146.61	248.39
1150.63	248.37	1151.86	248.42	1153.32	248.52	1157.35	249.09	1161.17	249.47
1202.03	250.02	1243.8	250.4	1244.64	250.35	1245.39	250.4	1250.15	250.35
1254.84	250.51	1255.45	250.53	1257.99	250.6	1258.44	250.61	1258.54	250.61
1263.02	250.87	1267.56	251.04	1267.64	251.04	1267.77	251.04	1268.07	251.04
1271.38	251.01	1272.7	251.05	1274.58	250.97	1278.24	251	1280.79	251.18
1282.46	251.47	1284.15	251.4	1286.1	251.32	1287.67	251.42	1293.9	251.66
1294.59	251.71	1296.23	251.8	1296.89	251.88	1300.43	251.98	1302.65	252.23
1306.33	252.67	1309.33	253.02	1310.3	253.16	1313.69	253.49	1317.1	253.67
1320.28	253.49	1321.35	253.56						

Manning's n Values			num= 9								
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.03	24.54	.05	229.36	.12	408.7	.05	474.43	.05		
500	.04	520	.04	580	.05	1002.55	.05				

Bank Sta:	Left	Right	Lengths:		Left Channel	Right	Coeff	Contr.	Expan.
500		580	40.41	41.04		41.32		.3	.5

Ineffective Flow		num= 2	
Sta L	Sta R	Elev	Permanent
0	350.45	254.07	F
845.47	1321.35	252	F

Blocked Obstructions			num= 2		
Sta L	Sta R	Elev	Sta L	Sta R	Elev
81.11	117.73		1120.75	1241.09	264.3616

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	244.39	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.05	Wt. n-Val.	0.060	0.040
0.050				
W.S. Elev (ft)	244.33	Reach Len. (ft)	20.00	20.00
20.00				
Crit W.S. (ft)	240.25	Flow Area (sq ft)	430.03	589.69
839.34				
E.G. Slope (ft/ft)	0.000283	Area (sq ft)	701.29	589.69
940.40				
Q Total (cfs)	2671.00	Flow (cfs)	369.70	1397.78
903.52				
Top Width (ft)	715.77	Top Width (ft)	276.69	80.00
359.08				
Vel Total (ft/s)	1.44	Avg. Vel. (ft/s)	0.86	2.37
1.08				
Max Chl Dpth (ft)	8.83	Hydr. Depth (ft)	2.88	7.37
3.16				
Conv. Total (cfs)	158712.9	Conv. (cfs)	21967.8	83057.2
53687.9				
Length Wtd. (ft)	20.00	Wetted Per. (ft)	149.66	80.67
265.81				
Min Ch El (ft)	235.50	Shear (lb/sq ft)	0.05	0.13
0.06				
Alpha	1.66	Stream Power (lb/ft s)	1321.35	0.00
0.00				
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	69.80	41.01
29.55				
C & E Loss (ft)	0.01	Cum SA (acres)	20.20	4.32
7.97				

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	248.52	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.16	Wt. n-Val.	0.062	0.040
0.050				
W.S. Elev (ft)	248.36	Reach Len. (ft)	20.00	20.00
20.00				
Crit W.S. (ft)	243.71	Flow Area (sq ft)	1032.12	911.77
1908.12				

E.G. Slope (ft/ft)	0.000526	Area (sq ft)	1831.23	911.77
2898.11				
Q Total (cfs)	10810.00	Flow (cfs)	2045.48	3924.09
4840.44				
Top Width (ft)	898.04	Top Width (ft)	284.24	80.00
533.80				
Vel Total (ft/s)	2.81	Avg. Vel. (ft/s)	1.98	4.30
2.54				
Max Chl Dpth (ft)	12.86	Hydr. Depth (ft)	6.90	11.40
7.19				
Conv. Total (cfs)	471268.4	Conv. (cfs)	89173.9	171072.8
211021.6				
Length Wtd. (ft)	20.00	Wetted Per. (ft)	149.66	80.67
265.81				
Min Ch El (ft)	235.50	Shear (lb/sq ft)	0.23	0.37
0.24				
Alpha	1.31	Stream Power (lb/ft s)	1321.35	0.00
0.00				
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	120.21	52.83
57.54				
C & E Loss (ft)	0.00	Cum SA (acres)	25.57	4.26
10.24				

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	249.41	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.18	Wt. n-Val.	0.063	0.040
0.050				
W.S. Elev (ft)	249.23	Reach Len. (ft)	20.00	20.00
20.00				
Crit W.S. (ft)	244.05	Flow Area (sq ft)	1162.33	981.42
2139.25				
E.G. Slope (ft/ft)	0.000525	Area (sq ft)	2079.38	981.42
3367.42				
Q Total (cfs)	12761.00	Flow (cfs)	2479.99	4430.25
5850.76				
Top Width (ft)	906.54	Top Width (ft)	285.79	80.00
540.75				
Vel Total (ft/s)	2.98	Avg. Vel. (ft/s)	2.13	4.51
2.73				

Max Chl Dpth (ft)	13.73	Hydr. Depth (ft)	7.77	12.27
8.06				
Conv. Total (cfs)	556875.6	Conv. (cfs)	108224.1	193331.0
255320.5				
Length Wtd. (ft)	20.00	Wetted Per. (ft)	149.66	80.67
265.81				
Min Ch El (ft)	235.50	Shear (lb/sq ft)	0.25	0.40
0.26				
Alpha	1.28	Stream Power (lb/ft s)	1321.35	0.00
0.00				
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	141.82	56.39
66.49				
C & E Loss (ft)	0.00	Cum SA (acres)	27.14	4.26
10.99				

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	251.63	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.25	Wt. n-Val.	0.063	0.040
0.050				
W.S. Elev (ft)	251.38	Reach Len. (ft)	20.00	20.00
20.00				
Crit W.S. (ft)	245.01	Flow Area (sq ft)	1483.15	1153.04
2708.75				
E.G. Slope (ft/ft)	0.000598	Area (sq ft)	2696.55	1153.04
4553.48				
Q Total (cfs)	19382.00	Flow (cfs)	3944.48	6182.06
9255.47				
Top Width (ft)	953.41	Top Width (ft)	289.60	80.00
583.80				
Vel Total (ft/s)	3.63	Avg. Vel. (ft/s)	2.66	5.36
3.42				
Max Chl Dpth (ft)	15.88	Hydr. Depth (ft)	9.92	14.41
10.20				
Conv. Total (cfs)	792374.3	Conv. (cfs)	161257.9	252734.8
378381.6				
Length Wtd. (ft)	20.00	Wetted Per. (ft)	149.66	80.67
265.81				
Min Ch El (ft)	235.50	Shear (lb/sq ft)	0.37	0.53
0.38				

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
0	252.43				1.38	252.52				5.01	253.61			
8.87	257.36				19.79	262.06				20.75	262.39			
21.2	262.41				22.61	262.43				27.39	262.4			
29.17	262.62				33.37	262.82				37.54	262.69			
39.55	262.68				44.68	262.89				45.89	262.92			
46.34	262.93				53.22	263.14				56.31	263.22			
60.44	263.46				62.9	263.27				65.5	263.25			
73.14	260.82				79.4	258.29				81.31	258.15			
83.6	257.98				87.23	257.98				91.73	258.1			
93.09	258.09				96.49	258.19				99.02	258.23			
101.15	258.44				107.75	259.05				111.28	259.29			
115.72	259.1				116.69	259.08				121.68	259.09			
128.9	258.71				130.92	258.58				131.81	258.55			
133.8	258.45				137.52	258.37				144.01	257.93			
144.44	257.9				145.3	257.9				151.54	257.97			
153.7	258.04				158.69	258.06				163.25	258.3			
165.77	258.36				172.76	258.42				172.85	258.42			
173.1	258.44				178.45	258.82				180.34	258.93			
186.11	258.58				190.1	258.53				194.79	257.9			
201.68	255.62				203.92	254.4				206.46	253.1			
209.01	250.97				212.04	249.34				216.31	246.31			
219.83	244.53				221.06	244.33				222.21	244.1			
227.31	243.35				231.7	243.24				233.96	243.17			

234.45	243.14		234.89	243.13		241.39	242.71	
242.77	242.73		245.25	242.74		250.67	242.71	
250.86	242.71		251.35	242.67		257.15	242.38	
258.71	242.3		263.49	242.38		266.76	242.4	
269.76	242.35		274.72	242.19		276	242.23	
280.68	242.35		282.25	242.39		283.1	242.4	
288.98	242.46		293.43	242.36		295.36	242.24	
295.76	242.26		300.24	242.68		307.34	242.99	
308.75	242.98		311.99	243.01		315.8	242.75	
320.64	242.16		322.56	241.99		329.61	241.94	
332.44	242.01		335.22	242.2		338.28	242.21	
339.85	242.12		341.22	242.31		344.7	242.37	
352.96	242.64		354.55	242.73		356.61	243	
361.21	244.05		365.9	245.36		368.04	245.81	
374.8	245.96		375.04	245.96		375.08	245.96	
381.83	245.93		383	245.92		385.59	245.86	
389.51	245.7		390.33	245.73		390.46	245.73	
391.28	245.65		393.3	245.41		397.46	244.85	
398.53	244.74		404.01	244.18		405.64	244.05	
407.82	243.85		412.96	243.71		417.21	243.43	
423.14	242.89		423.48	242.83		424.79	242.77	
430.02	242.7		432.95	242.41		436.69	242.14	
443.22	241.81		443.25	241.81		443.3	241.81	
449.96	241.24		450.61	241.22		451.72	241.16	
456.61	241.04		457.96	241.12		460.12	241.02	
463.13	240.84		465.22	240.8		468.4	240.9	
469.59	240.93		472.36	241.19		474.69	241.19	
476.86	240.92		482.63	239.96		487.1	247.7	247
588.9	247.7	247	594.54	240.33		596.89	240.49	
600.98	240.6		605.13	240.87		607.38	241.02	
613.39	240.84		613.89	240.86		615.73	240.86	
619.62	240.91		621.69	240.86		625.1	240.91	
628.52	240.96		633.04	241.21		635.83	241.31	
639.45	241.1		641.9	241.14		644.31	241.13	
648.15	241.02		651.24	240.99		657.08	240.88	
658.18	240.9		661.81	241.08		664.18	241.27	
665.52	241.25		669.42	241.05		673.5	241.11	
674.55	241.13		676.48	241.17		680.26	241.22	
681.2	241.21		686.32	241.05		688.74	241.12	
692.38	241.17		696.26	241.04		698.4	241.05	
703.78	240.92		704.46	240.9		707.21	240.87	
710.58	240.81		711.12	240.84		716.85	240.9	
717.56	240.91		722.86	241.22		722.97	241.22	
723.09	241.25		729.01	241.86		731.17	241.84	
740.58	241.97		743.48	241.93		746.4	241.88	
747.58	241.91		752.12	242.09		753.82	242.16	
754.09	242.14		754.46	242.13		759.05	241.8	
763.26	241.58		764.07	241.57		764.59	241.61	
768.99	241.9		772.2	242.06		778.06	242.13	
779.7	242.12		790.41	241.23		791.64	241.11	

797.24	240.85	798.4	240.88	800.3	240.79
805.15	241.17	807.68	241.27	812.08	241.47
817.95	241.26	818.73	241.2	819.47	241.16
823.66	241.33	827.59	241.64	829.77	241.66
832.34	241.64	841.84	241.65	842.18	241.64
845.44	241.76	851.18	241.56	852.19	241.56
853.22	241.65	857.72	241.87	858.86	241.94
859.17	241.94	865.32	242.05	867.3	242.05
871.81	242.11	875.46	242.08	878.3	242.1
883.49	242.32	884.66	242.29	886.19	242.37
891.21	242.46	895.57	242.7	899.36	242.71
899.99	242.68	902.75	242.8	905.88	242.95
906.56	242.95	911.41	243.13	913.28	243.17
914.57	243.29	921.27	243.34	922.96	243.31
926.68	243.55	933.13	243.35	933.56	243.37
934.57	243.48	939.63	244.07	943.6	243.85
945.47	243.75	947.84	243.63	951.74	243.49
956.28	243.84	959.13	243.86	963.85	243.62
971.39	243.73	975.49	243.37	976.81	243.35
980.5	243.38	983.27	243.4	984.44	243.5
985.5	243.55	987.29	243.72	987.96	243.77
988.43	243.75	994.3	243.62	996.64	243.58
998.47	243.91	1000.39	243.99	1001.93	243.99
1002.2	244.08	1003.39	243.99	1008.64	244.03
1011.3	243.9	1013.54	243.89	1016.07	243.91
1021.76	244.06	1022.24	244.06	1025.42	243.72
1026.61	243.71	1028.56	243.71	1032.19	243.72
1034.36	243.79	1036.4	244.01	1037.95	244.19
1040.32	244.23	1042.48	244.21	1044.69	244.19
1047.06	244.3	1050.23	244.44	1050.65	244.45
1055.32	244.6	1059.8	244.74	1060.2	244.8
1063.4	245.26	1064.17	245.28	1064.88	245.29
1068.47	245.37	1072.42	245.53	1072.92	245.57
1076.15	245.84	1078.81	245.96	1081.97	246.03
1083.8	246.02	1085.32	246.02	1088.19	246.1
1088.92	246.14	1093.75	246.24	1098.02	246.43
1099.03	246.42	1101.66	246.26	1103.94	246.31
1110.72	246.75	1110.75	246.75	1110.81	246.75
1114.4	246.78	1116.89	246.89	1119.54	246.93
1121.65	246.97	1126.55	247.33	1126.82	247.34
1127.06	247.34	1127.25	247.35	1132.29	247.62
1136.52	247.97	1137.33	247.98	1140.14	247.68
1141.89	247.61	1145.83	247.72	1147.94	247.76
1148.89	247.77	1149.57	247.72	1151.68	247.5
1153.21	247.7	1155.16	247.79	1157.53	247.92
1160.32	248.02	1162.53	248.2	1163.77	248.37
1166.14	248.37	1169.82	248.42	1171.88	248.51
1179.26	249.03	1190.74	249.18	1192.22	249.24
1192.52	249.27	1196.82	249.33	1203.66	249.41
1221.99	249.71	1228.97	249.78	1236.8	249.97

1237.63	249.84	1238.24	249.88	1241.13	249.93
1244.01	250.29	1244.46	250.3	1248.43	250.23
1251.89	250.23	1252.61	250.26	1253.57	250.26
1255.77	250.27	1257.13	250.37	1259.48	250.45
1261.64	250.45	1264.11	250.37	1266.77	250.52
1268.81	250.43	1270.26	250.44	1273.94	250.76
1278.35	250.92	1279.16	250.95	1282.71	251.14
1283.25	251.14	1288.6	251.1	1289.77	251.43
1292.03	251.64	1294.75	251.93	1297.75	251.9
1299.51	252.1	1303.95	252.44	1305.69	252.39
1305.75	252.39	1310.84	252.8	1314.41	253.06
1316	253.22	1318.51	253.25	1320.19	253.35
1321.8	253.41	1325.1	253.49	1328.02	253.38
1330.61	253.19				

Upstream Bridge Cross Section Data

Station Elevation Data num= 412

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	252.08	.11	252.07	1.36	251.85	6.29	251.59	6.46	251.58
6.59	251.61	12.14	252.15	15.66	254.8	19.1	257.29	23.53	258.68
24.54	259.21	26.55	260.25	31.33	261.03	33.38	261.24	39.19	260.95
40.39	260.84	40.81	260.86	46.05	261.02	48.59	260.8	51.88	260.1
56.5	258.42	62.58	257.14	64.03	256.89	64.37	256.86	64.96	256.87
71.89	256.81	75.3	256.94	79.48	257.06	80.8	257.16	90.24	257.61
97.71	257.44	105.54	257.36	116.12	258.25	119.46	258.08	121.75	257.88
122.9	258.02	126.57	257.7	129.48	257.36	134.9	257.65	135.83	257.69
139.26	257.35	142.42	257.08	143.82	257.12	148.88	257.36	153.5	257.36
155.49	257.37	159.54	257.47	162.16	257.51	162.39	257.54	168.39	257.81
169.81	257.85	172.16	258	174.2	258.06	175.81	258.15	181.35	258.35
182.63	258.38	186.53	258.49	189.06	258.56	190.17	258.62	194.96	258.79
199.72	257	205.72	254.11	207.47	253.02	220.17	245.88	222.34	244.62
223.46	244.29	226.27	243.71	229.36	242.97	230.97	242.59	236.03	242.59
238.34	242.66	245.28	242.31	245.63	242.29	245.76	242.3	250.98	242.31
253.23	242.32	256.4	242.42	260.78	242.39	261.83	242.38	264.37	242.43
267.77	242.41	268.29	242.44	268.77	242.43	274.38	242.18	275.9	242.2
277.3	242.2	280.95	242.16	283.44	242.17	285.75	242.08	287.53	242.1
291.04	242.16	294.06	242.02	294.15	242.02	294.32	242.03	298.64	242.19
300.54	242	304.17	241.92	306.22	241.99	307.1	242.01	312.69	241.85
313.62	241.82	313.9	241.85	320.7	242.04	325.13	241.62	327.22	241.66
331.58	241.84	332.82	241.88	334.05	241.86	340.51	241.76	340.7	241.76
341.88	241.78	346.71	241.84	348.93	241.72	350.75	241.59	352.7	241.6
357.65	241.77	358.41	241.8	360.6	241.76	364.56	241.7	365.56	241.69
370.47	241.73	379.59	241.95	380.61	241.98	381.37	241.99	382.47	242.01
387.89	242.44	388.33	242.45	388.39	242.44	395.97	242.18	395.98	242.18
395.99	242.18	402.28	242.15	405.5	242.08	408.7	241.96	411.1	241.88
415.77	241.67	417.68	241.72	422.06	241.68	424.39	241.5	428.68	241.43
433.51	241.3	434.6	241.25	439.06	241.22	441.46	241.08	446.42	241.11
447.48	241.2	452.41	241.15	454.03	241.11	456.85	241.09	460.86	241.02
462.02	241.04	467.68	241.23	470.87	241.36	474.43	241.44	479.6	240.94
481.32	240.75	500	240.1	520	236.5	540	235.8	560	236

580	239.6	584.64	240.26	586.44	240.32	587.71	240.34	590.03	240.35
591.79	240.36	592.52	240.4	595.07	240.65	598.71	240.64	599.36	240.6
605.24	240.51	605.89	240.67	607.64	240.68	612.89	240.86	616	240.7
618.18	240.72	624.26	240.82	624.45	240.81	624.63	240.82	625.88	240.97
630.04	241.41	630.93	241.55	631.82	241.51	637.59	240.92	640.82	241.2
640.86	241.2	640.9	241.2	641.06	241.2	646.82	241.03	648.14	241.12
652.66	241.28	655.45	241.26	658.63	241.22	662.77	241.23	664.5	241.24
669.92	241.16	670.3	241.16	671.93	241.15	676.7	241.14	680.4	241.24
683.28	241.33	686.94	241.35	689.81	241.34	690.56	241.39	696.2	241.27
697.08	241.19	698.67	241.25	702.52	241.36	703.92	241.44	706.94	241.55
710.76	241.56	714.56	241.13	715.15	241.13	717.39	241.12	720.82	241.15
722.73	241.23	726.19	241.44	731.21	241.49	731.44	241.5	731.65	241.49
732.44	241.46	737.26	241.27	738.91	241.26	739.24	241.25	745.8	241.2
748.08	241.28	752.69	241.48	757.41	241.25	758.41	241.21	759.08	241.2
763.42	241.21	765.33	241.22	765.74	241.25	770.07	241.12	773.61	240.92
775.28	240.89	778.13	240.85	780.43	240.85	784.38	241.09	786.45	241.01
788.31	241.1	792.19	241.21	795.38	241.25	797.99	241.3	802.43	241.5
803.69	241.55	809.45	241.28	809.53	241.28	809.59	241.29	815.5	241.49
819.94	241.23	821.61	241.28	823.88	241.33	827.87	241.53	828.97	241.59
835	242.03	839.22	241.85	841.02	241.75	845.57	241.97	846.56	242.06
848.79	242.11	854.04	242.21	857.31	242.22	857.86	242.16	860.01	242.21
869.11	242.73	870.91	242.83	871.09	242.83	871.4	242.85	877.44	242.8
878.12	242.82	879.04	242.88	884.87	242.94	887.45	243.02	891.31	243.49
894.31	243.45	898.17	243.57	902.97	243.52	904.66	243.47	910.68	243.61
910.97	243.65	912.07	243.72	914.29	244.01	917.03	244.34	917.66	244.36
925.98	244.36	931.06	244.43	933.6	244.35	939.56	244.43	944.31	244.42
945.62	244.59	949.37	244.5	957.11	244.27	957.63	244.28	957.83	244.28
957.96	244.28	958.74	244.31	976.23	244.61	979.59	244.66	980.83	244.64
981.97	244.64	985.1	244.8	989.56	244.79	990.33	244.79	992.17	244.63
996.68	243.89	999.59	244.06	1000.01	244.09	1000.06	244.09	1002.55	244.12
1004.46	244.14	1008.63	244.36	1008.84	244.36	1009.06	244.36	1009.46	244.36
1012.76	244.31	1014.86	244.35	1017.57	244.43	1019.99	244.49	1021.83	244.6
1024.23	244.96	1025.52	245.1	1028.46	245.06	1031.2	245.16	1032.79	245.18
1034.49	245.17	1037.93	245.22	1038.33	245.21	1038.56	245.22	1038.86	245.23
1043.71	245.31	1047.44	245.36	1048.56	245.3	1051.13	245.3	1053.3	245.4
1057.59	245.57	1059.29	245.62	1060.15	245.66	1063.42	245.37	1063.88	245.38
1070.19	245.8	1072.86	245.93	1075.78	246.1	1077.05	246.26	1077.59	246.33
1081.4	247.04	1083.1	247.2	1085.64	247.22	1092.3	247.41	1097.09	247.97
1097.98	248.08	1101.49	248.09	1102.13	248.12	1108.03	247.93	1111.51	248.05
1115.06	248.53	1115.12	248.54	1115.14	248.54	1120.41	248.66	1124.45	248.72
1125.7	248.72	1128.31	248.57	1131.16	248.47	1134.89	248.37	1136.39	248.38
1137.6	248.31	1140.18	248.44	1141.42	248.5	1144.15	248.44	1146.61	248.39
1150.63	248.37	1151.86	248.42	1153.32	248.52	1157.35	249.09	1161.17	249.47
1202.03	250.02	1243.8	250.4	1244.64	250.35	1245.39	250.4	1250.15	250.35
1254.84	250.51	1255.45	250.53	1257.99	250.6	1258.44	250.61	1258.54	250.61
1263.02	250.87	1267.56	251.04	1267.64	251.04	1267.77	251.04	1268.07	251.04
1271.38	251.01	1272.7	251.05	1274.58	250.97	1278.24	251	1280.79	251.18
1282.46	251.47	1284.15	251.4	1286.1	251.32	1287.67	251.42	1293.9	251.66
1294.59	251.71	1296.23	251.8	1296.89	251.88	1300.43	251.98	1302.65	252.23
1306.33	252.67	1309.33	253.02	1310.3	253.16	1313.69	253.49	1317.1	253.67

1320.28 253.49 1321.35 253.56

Manning's n Values num= 11

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.03	24.54	.05	229.36	.12	408.7	.05	474.43	.04
500	.04	520	.04	580	.04	584.64	.04	586.44	.05
1002.55	.05								

Bank Sta: Left Right Coeff Contr. Expan.

500	580	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	350.45	254.07	F
845.47	1321.35	252	F

Blocked Obstructions num= 2

Sta L	Sta R	Elev	Sta L	Sta R	Elev
81.11	117.73		1120.75	1241.09	264.3616

Downstream Deck/Roadway Coordinates

num= 409											
Sta	Hi	Cord	Lo Cord	Sta	Hi	Cord	Lo Cord	Sta	Hi	Cord	Lo Cord
0	252.43			1.38	252.52			5.01	253.61		
8.87	257.36			19.79	262.06			20.75	262.39		
21.2	262.41			22.61	262.43			27.39	262.4		
29.17	262.62			33.37	262.82			37.54	262.69		
39.55	262.68			44.68	262.89			45.89	262.92		
46.34	262.93			53.22	263.14			56.31	263.22		
60.44	263.46			62.9	263.27			65.5	263.25		
73.14	260.82			79.4	258.29			81.31	258.15		
83.6	257.98			87.23	257.98			91.73	258.1		
93.09	258.09			96.49	258.19			99.02	258.23		
101.15	258.44			107.75	259.05			111.28	259.29		
115.72	259.1			116.69	259.08			121.68	259.09		
128.9	258.71			130.92	258.58			131.81	258.55		
133.8	258.45			137.52	258.37			144.01	257.93		
144.44	257.9			145.3	257.9			151.54	257.97		
153.7	258.04			158.69	258.06			163.25	258.3		
165.77	258.36			172.76	258.42			172.85	258.42		
173.1	258.44			178.45	258.82			180.34	258.93		
186.11	258.58			190.1	258.53			194.79	257.9		
201.68	255.62			203.92	254.4			206.46	253.1		
209.01	250.97			212.04	249.34			216.31	246.31		
219.83	244.53			221.06	244.33			222.21	244.1		
227.31	243.35			231.7	243.24			233.96	243.17		
234.45	243.14			234.89	243.13			241.39	242.71		
242.77	242.73			245.25	242.74			250.67	242.71		
250.86	242.71			251.35	242.67			257.15	242.38		
258.71	242.3			263.49	242.38			266.76	242.4		
269.76	242.35			274.72	242.19			276	242.23		
280.68	242.35			282.25	242.39			283.1	242.4		

288.98	242.46		293.43	242.36	295.36	242.24
295.76	242.26		300.24	242.68	307.34	242.99
308.75	242.98		311.99	243.01	315.8	242.75
320.64	242.16		322.56	241.99	329.61	241.94
332.44	242.01		335.22	242.2	338.28	242.21
339.85	242.12		341.22	242.31	344.7	242.37
352.96	242.64		354.55	242.73	356.61	243
361.21	244.05		365.9	245.36	368.04	245.81
374.8	245.96		375.04	245.96	375.08	245.96
381.83	245.93		383	245.92	385.59	245.86
389.51	245.7		390.33	245.73	390.46	245.73
391.28	245.65		393.3	245.41	397.46	244.85
398.53	244.74		404.01	244.18	405.64	244.05
407.82	243.85		412.96	243.71	417.21	243.43
423.14	242.89		423.48	242.83	424.79	242.77
430.02	242.7		432.95	242.41	436.69	242.14
443.22	241.81		443.25	241.81	443.3	241.81
449.96	241.24		450.61	241.22	451.72	241.16
456.61	241.04		457.96	241.12	460.12	241.02
463.13	240.84		465.22	240.8	468.4	240.9
469.59	240.93		472.36	241.19	474.69	241.19
476.86	240.92		482.63	239.96	487.1	247.7
588.9	247.7	247	594.54	240.33	596.89	240.49
600.98	240.6		605.13	240.87	607.38	241.02
613.39	240.84		613.89	240.86	615.73	240.86
619.62	240.91		621.69	240.86	625.1	240.91
628.52	240.96		633.04	241.21	635.83	241.31
639.45	241.1		641.9	241.14	644.31	241.13
648.15	241.02		651.24	240.99	657.08	240.88
658.18	240.9		661.81	241.08	664.18	241.27
665.52	241.25		669.42	241.05	673.5	241.11
674.55	241.13		676.48	241.17	680.26	241.22
681.2	241.21		686.32	241.05	688.74	241.12
692.38	241.17		696.26	241.04	698.4	241.05
703.78	240.92		704.46	240.9	707.21	240.87
710.58	240.81		711.12	240.84	716.85	240.9
717.56	240.91		722.86	241.22	722.97	241.22
723.09	241.25		729.01	241.86	731.17	241.84
740.58	241.97		743.48	241.93	746.4	241.88
747.58	241.91		752.12	242.09	753.82	242.16
754.09	242.14		754.46	242.13	759.05	241.8
763.26	241.58		764.07	241.57	764.59	241.61
768.99	241.9		772.2	242.06	778.06	242.13
779.7	242.12		790.41	241.23	791.64	241.11
797.24	240.85		798.4	240.88	800.3	240.79
805.15	241.17		807.68	241.27	812.08	241.47
817.95	241.26		818.73	241.2	819.47	241.16
823.66	241.33		827.59	241.64	829.77	241.66
832.34	241.64		841.84	241.65	842.18	241.64
845.44	241.76		851.18	241.56	852.19	241.56

853.22	241.65	857.72	241.87	858.86	241.94
859.17	241.94	865.32	242.05	867.3	242.05
871.81	242.11	875.46	242.08	878.3	242.1
883.49	242.32	884.66	242.29	886.19	242.37
891.21	242.46	895.57	242.7	899.36	242.71
899.99	242.68	902.75	242.8	905.88	242.95
906.56	242.95	911.41	243.13	913.28	243.17
914.57	243.29	921.27	243.34	922.96	243.31
926.68	243.55	933.13	243.35	933.56	243.37
934.57	243.48	939.63	244.07	943.6	243.85
945.47	243.75	947.84	243.63	951.74	243.49
956.28	243.84	959.13	243.86	963.85	243.62
971.39	243.73	975.49	243.37	976.81	243.35
980.5	243.38	983.27	243.4	984.44	243.5
985.5	243.55	987.29	243.72	987.96	243.77
988.43	243.75	994.3	243.62	996.64	243.58
998.47	243.91	1000.39	243.99	1001.93	243.99
1002.2	244.08	1003.39	243.99	1008.64	244.03
1011.3	243.9	1013.54	243.89	1016.07	243.91
1021.76	244.06	1022.24	244.06	1025.42	243.72
1026.61	243.71	1028.56	243.71	1032.19	243.72
1034.36	243.79	1036.4	244.01	1037.95	244.19
1040.32	244.23	1042.48	244.21	1044.69	244.19
1047.06	244.3	1050.23	244.44	1050.65	244.45
1055.32	244.6	1059.8	244.74	1060.2	244.8
1063.4	245.26	1064.17	245.28	1064.88	245.29
1068.47	245.37	1072.42	245.53	1072.92	245.57
1076.15	245.84	1078.81	245.96	1081.97	246.03
1083.8	246.02	1085.32	246.02	1088.19	246.1
1088.92	246.14	1093.75	246.24	1098.02	246.43
1099.03	246.42	1101.66	246.26	1103.94	246.31
1110.72	246.75	1110.75	246.75	1110.81	246.75
1114.4	246.78	1116.89	246.89	1119.54	246.93
1121.65	246.97	1126.55	247.33	1126.82	247.34
1127.06	247.34	1127.25	247.35	1132.29	247.62
1136.52	247.97	1137.33	247.98	1140.14	247.68
1141.89	247.61	1145.83	247.72	1147.94	247.76
1148.89	247.77	1149.57	247.72	1151.68	247.5
1153.21	247.7	1155.16	247.79	1157.53	247.92
1160.32	248.02	1162.53	248.2	1163.77	248.37
1166.14	248.37	1169.82	248.42	1171.88	248.51
1179.26	249.03	1190.74	249.18	1192.22	249.24
1192.52	249.27	1196.82	249.33	1203.66	249.41
1221.99	249.71	1228.97	249.78	1236.8	249.97
1237.63	249.84	1238.24	249.88	1241.13	249.93
1244.01	250.29	1244.46	250.3	1248.43	250.23
1251.89	250.23	1252.61	250.26	1253.57	250.26
1255.77	250.27	1257.13	250.37	1259.48	250.45
1261.64	250.45	1264.11	250.37	1266.77	250.52
1268.81	250.43	1270.26	250.44	1273.94	250.76

1278.35	250.92	1279.16	250.95	1282.71	251.14
1283.25	251.14	1288.6	251.1	1289.77	251.43
1292.03	251.64	1294.75	251.93	1297.75	251.9
1299.51	252.1	1303.95	252.44	1305.69	252.39
1305.75	252.39	1310.84	252.8	1314.41	253.06
1316	253.22	1318.51	253.25	1320.19	253.35
1321.8	253.41	1325.1	253.49	1328.02	253.38
1330.61	253.19				

Downstream Bridge Cross Section Data

Station Elevation Data num= 440

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	254.55	9.57	259.81	15.41	263.5	17.72	264	20.42	263.63
22.6	263.56	27.42	263.59	29.52	263.63	30.27	263.62	36.7	263.58
39.94	263.87	43.65	264.25	49.51	264.39	50.71	264.42	53.95	264.72
57.08	265.01	58.26	265.05	62.94	265.13	66.25	265.31	68.8	265.3
73.69	265.28	74.85	265.35	82.89	262.77	86.99	262.6	91.41	261.57
116.61	259.6	117.83	259.61	120.03	259.72	121.2	259.69	127.67	259.64
128.13	259.63	128.35	259.63	129.04	259.58	134.71	259.27	136.35	259.21
141.12	259.14	144.61	259.11	147.49	259.17	152.83	259.2	153.85	259.17
157.36	259.15	160.14	259.07	161.24	259.08	166.28	259.07	169.83	259.1
172.42	259.15	176.17	259.42	183.82	257.96	191.83	256.8	193.2	256.52
194.02	255.96	199.12	253.72	202.05	252.4	205.34	250.9	208.64	249.98
211.25	249.12	215.4	247.49	215.53	247.45	215.67	247.41	222.66	245.8
224.22	245.48	227.86	244.88	232.54	244.71	233.75	244.58	236.94	244.15
239.94	243.69	240.68	243.58	246.16	242.97	248.44	242.87	252.26	242.86
257.14	242.8	263.52	242.72	263.95	242.7	264.25	242.72	266.55	242.71
270.83	242.76	273.19	242.65	277.86	242.57	283.54	242.82	284.11	242.85
284.86	242.86	287.83	242.49	292.05	242.49	296.46	242.54	298.7	242.56
303.98	242.65	311.28	242.7	312.33	242.79	312.98	242.8	316.9	242.94
322.16	243.27	326.5	243.63	327.35	243.66	329.38	243.96	332.71	245.01
337.74	245.58	342.6	246.27	344.43	246.61	346.41	247.13	350.69	247.72
353.18	247.41	354.61	247.24	362.65	248.04	363.27	248.12	363.61	248.15
364.14	248.16	368.81	248.07	372.26	248.09	374.43	248.07	379.28	248.16
380.1	248.16	380.32	248.16	380.46	248.15	383.05	248.09	386.24	248.02
388.01	247.95	392.46	247.43	395.71	247.24	398.52	247.24	403.24	247.02
404.61	246.85	410.38	246.22	410.82	246.17	415.86	245.82	418.16	245.67
418.73	245.63	422.03	245.18	424.89	244.75	430.06	244.33	431.8	244.14
432	244.13	432.26	244.1	438.44	243.06	439.4	242.94	440.64	242.75
445.15	242.08	446.86	241.88	451.24	241.4	454.26	241.21	457.36	241.02
458.28	241	461.65	241.1	464.54	240.98	466.11	240.91	469.02	240.75
470.77	240.71	475.41	240.45	476.3	240.4	476.88	240.35	479.75	240.33
483.37	240.27	484.22	240.11	500	240.1	520	236.5	540	236.1
560	236.1	580	239.6	580.18	240.22	583.73	240.39	584.91	240.41
586.95	240.41	591.99	240.42	594.3	240.6	594.89	240.63	596.08	240.7
602.3	240.65	602.51	240.65	605.96	240.67	608.38	240.8	611.1	240.78
614.14	240.78	619.45	240.92	620.06	240.95	620.24	240.94	627.02	240.99
629.2	241.14	633.91	241.4	638.19	241.3	640.88	241.21	647.03	241.08
647.78	241.08	650.35	241.13	655.01	241.25	658.53	241.33	662.58	241.47
663.56	241.5	665.57	241.53	669.07	241.5	669.88	241.54	674.93	241.43

677.13	241.31	680.76	241.3	684.23	241.25	689.8	241.36	691.37	241.36
691.94	241.33	692.28	241.34	696.56	241.09	698.42	241.01	699.84	240.99
705.27	241.09	712.05	241.01	712.14	241.01	712.15	241.01	712.17	241.01
718.4	241.01	719.06	241	719.99	240.96	724.6	241.02	725.97	240.93
727.77	240.98	730.8	240.97	735.5	240.88	736.81	240.85	739.64	241.34
742.01	241.19	746.59	241.32	748.64	241.43	752.26	241.45	753.47	241.43
754.18	241.51	757.09	241.96	760.02	242.35	761.74	242.11	768.98	241.77
773.42	241.85	777.78	241.81	780.05	241.73	780.49	241.83	787.26	241.92
798.19	241.85	799.49	241.94	801.41	241.82	806.02	241.36	808.59	241.36
809.67	241.25	814.84	240.78	816.61	240.86	821.34	241.15	823.71	241.27
825.17	241.25	826.01	241.24	831.24	241.21	835.07	241.37	838.42	241.52
841.04	241.3	844.22	241	845.47	241.05	851.23	241.35	853.42	241.44
857.8	241.35	861.95	241.56	865.55	241.61	868.11	241.74	870.66	241.73
872.87	241.69	874.09	241.63	877.28	241.82	879.25	241.87	883.83	241.81
890.86	241.79	892.66	241.7	894.51	241.87	897.26	241.86	901.82	242.18
903.79	242.19	906.54	242.27	910.06	242.29	915.74	242.69	916.92	242.69
917.86	242.68	919.39	242.62	921.93	242.42	923.38	242.54	925.85	242.45
927.62	242.66	931.32	242.7	936.19	243.06	936.36	243.06	936.48	243.07
944.74	242.74	947.3	242.55	950.78	242.58	953.9	242.72	957.5	242.76
959.01	242.78	968	242.74	970.32	242.76	970.7	242.95	974.43	243.08
977.58	243.22	978.3	243.21	983.05	243.18	983.85	243.1	985.59	243.19
990.18	243.02	993.07	243.03	997.99	243.33	999.25	243.31	1002.03	243.44
1004.07	243.45	1008.98	243.37	1011.74	243.33	1012.58	243.35	1017.44	243.68
1022.73	243.81	1025.29	243.81	1029.26	243.61	1036.51	243.58	1037.2	243.63
1038.06	243.6	1038.37	243.61	1045.03	243.5	1047.29	243.48	1049.09	243.58
1050.91	243.57	1052.57	243.61	1054.84	243.73	1057.69	243.87	1059.77	243.94
1062.13	243.92	1063.3	243.97	1066.53	244.02	1067.12	244.02	1072.29	244.15
1072.43	244.17	1075.87	244.16	1076.05	244.16	1076.2	244.16	1080.26	244.49
1084.11	244.51	1084.53	244.52	1085.01	244.51	1085.77	244.52	1088.53	244.66
1090.52	244.72	1092.74	244.76	1095.34	244.95	1097.71	245.12	1099.77	245.36
1101.28	245.41	1103.97	245.46	1106.21	245.73	1108.11	245.83	1110.35	245.9
1113.81	245.89	1114.05	245.9	1118.78	246.14	1123.2	246.62	1123.47	246.63
1126.77	246.49	1128.06	246.52	1128.67	246.51	1132.88	246.95	1136.9	247.09
1138.23	247.17	1139.43	247.14	1144.07	247.19	1148.62	247.31	1149.43	247.34
1151.24	247.46	1151.9	247.49	1152.19	247.5	1156.23	247.5	1160.21	247.63
1160.87	247.64	1161.55	247.65	1162.84	247.61	1166.4	247.57	1167.16	247.56
1171.23	247.65	1174.77	247.82	1177.23	247.99	1182.53	248.21	1187.46	248.39
1188.04	248.4	1190.15	248.33	1193.66	248.44	1198.41	248.69	1199.31	248.75
1200.45	248.73	1202.5	248.91	1204.09	249.05	1204.86	249.06	1205.73	249.09
1209.84	249.25	1213.43	249.44	1214.38	249.41	1216.11	249.56	1220.49	249.79
1222.04	249.59	1226.13	249.56	1226.27	249.57	1226.73	249.58	1230.05	249.82
1233.62	249.77	1234.72	249.72	1237.05	249.82	1239.42	249.84	1241.57	249.94
1242.88	250.03	1246.94	250.22	1252.37	250.69	1252.51	250.71	1255.9	250.85
1256.71	250.86	1258.21	250.86	1262.84	250.88	1265.36	250.85	1266.96	250.83
1268.71	250.74	1271.19	250.69	1274.31	250.62	1275.03	250.63	1278.45	250.79
1279.24	250.92	1281.84	251.06	1283.11	251.06	1286.53	251.17	1290.12	251.26
1291.43	251.39	1293.74	251.47	1294.9	251.61	1297.48	251.91	1299.72	252.08
1301.95	252.11	1304.52	252.32	1306.58	252.48	1307.87	252.49	1310.2	252.63
1319.85	253.15	1324.21	253.17	1326.15	253.11	1330.57	252.96	1331.86	252.9
1332.11	252.92	1334.18	252.99	1335.08	253.09	1338.75	253.33	1339.87	253.39

Manning's n Values		num=		7							
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	283.54	.12	353.18	.05	483.37	.05	500	.04		
580	.05	1066.53	.05								

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	500	580		.3	.5

Ineffective Flow	num=	2	
Sta L	Sta R	Elev	Permanent
0	375.61	251.6	F
900.61	1339.87	252	F

Blocked Obstructions	num=	2	
Sta L	Sta R	Elev	Sta L
95.95	110.43	259.58	1225.14
			1225.92
			63.37
			04

Upstream Embankment side slope	=	0 horiz. to 1.0 vertical
Downstream Embankment side slope	=	0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow	=	.98
Elevation at which weir flow begins	=	
Energy head used in spillway design	=	
Spillway height used in design	=	
Weir crest shape	=	Broad Crested

Number of Piers = 2

Pier Data

Pier Station	Upstream=	492.6	Downstream=	492.6
Upstream	num=	2		
Width	Elev	Width	Elev	
.4	235.8	.4	247	
Downstream	num=	2		
Width	Elev	Width	Elev	
.4	236.1	.4	247	

Pier Data

Pier Station	Upstream=	581.7	Downstream=	581.7
Upstream	num=	2		
Width	Elev	Width	Elev	
.4	235.8	.4	247	
Downstream	num=	2		
Width	Elev	Width	Elev	
.4	236.1	.4	247	

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Selected Low Flow Methods = Highest Energy Answer

High Flow Method
Energy Only

Additional Bridge Parameters

Add Friction component to Momentum

Do not add Weight component to Momentum

Class B flow critical depth computations use critical depth
inside the bridge at the upstream end

Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT Profile #10%

E.G. US. (ft)	244.39	Element	Inside BR US
Inside BR DS			
W.S. US. (ft)	244.33	E.G. Elev (ft)	244.38
244.37			
Q Total (cfs)	2671.00	W.S. Elev (ft)	244.30
244.30			
Q Bridge (cfs)	1650.47	Crit W.S. (ft)	240.34
240.48			
Q Weir (cfs)		Max Chl Dpth (ft)	8.50
8.20			
Weir Sta Lft (ft)		Vel Total (ft/s)	1.68
1.63			
Weir Sta Rgt (ft)		Flow Area (sq ft)	1588.22
1642.41			
Weir Submerg		Froude # Chl	0.13
0.13			
Weir Max Depth (ft)		Specif Force (cu ft)	3833.47
3846.74			
Min El Weir Flow (ft)	240.59	Hydr Depth (ft)	3.54
3.53			
Min El Prs (ft)	247.00	W.P. Total (ft)	478.82
495.31			
Delta EG (ft)	0.03	Conv. Total (cfs)	139316.6
139124.9			
Delta WS (ft)	0.03	Top Width (ft)	663.16
706.09			
BR Open Area (sq ft)	931.82	Frctn Loss (ft)	0.00
0.00			
BR Open Vel (ft/s)	2.50	C & E Loss (ft)	0.00
0.01			
Coef of Q		Shear Total (lb/sq ft)	0.08
0.08			
Br Sel Method	Energy only	Power Total (lb/ft s)	0.00
0.00			

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

BRIDGE OUTPUT Profile #2%

E.G. US. (ft)	248.52	Element	Inside BR US
Inside BR DS			
W.S. US. (ft)	248.36	E.G. Elev (ft)	248.50
248.49			
Q Total (cfs)	10810.00	W.S. Elev (ft)	248.35
248.34			
Q Bridge (cfs)	3029.72	Crit W.S. (ft)	244.02
244.01			
Q Weir (cfs)		Max Chl Dpth (ft)	12.55
12.24			
Weir Sta Lft (ft)		Vel Total (ft/s)	3.12
3.04			
Weir Sta Rgt (ft)		Flow Area (sq ft)	3459.94
3552.04			
Weir Submerg		Froude # Chl	0.16
0.16			
Weir Max Depth (ft)		Specif Force (cu ft)	14937.62
15212.86			
Min El Weir Flow (ft)	240.59	Hydr Depth (ft)	6.99
6.77			
Min El Prs (ft)	247.00	W.P. Total (ft)	746.99
777.40			
Delta EG (ft)	0.04	Conv. Total (cfs)	323845.0
332663.1			
Delta WS (ft)	0.05	Top Width (ft)	897.91
950.12			
BR Open Area (sq ft)	931.82	Frctn Loss (ft)	0.01
0.01			
BR Open Vel (ft/s)	3.25	C & E Loss (ft)	0.00
0.00			
Coef of Q		Shear Total (lb/sq ft)	0.32
0.30			
Br Sel Method	Energy only	Power Total (lb/ft s)	0.00
0.00			

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

BRIDGE OUTPUT Profile #1%

E.G. US. (ft)	249.41	Element	Inside BR US
Inside BR DS			
W.S. US. (ft)	249.23	E.G. Elev (ft)	249.39
249.38			
Q Total (cfs)	12761.00	W.S. Elev (ft)	249.22
249.21			
Q Bridge (cfs)	3019.62	Crit W.S. (ft)	244.39
244.34			
Q Weir (cfs)		Max Chl Dpth (ft)	13.42
13.11			
Weir Sta Lft (ft)		Vel Total (ft/s)	3.28
3.18			
Weir Sta Rgt (ft)		Flow Area (sq ft)	3890.87
4010.13			
Weir Submerg		Froude # Chl	0.16
0.16			
Weir Max Depth (ft)		Specif Force (cu ft)	18394.08
18754.57			
Min El Weir Flow (ft)	240.59	Hydr Depth (ft)	7.86
7.64			
Min El Prs (ft)	247.00	W.P. Total (ft)	746.99
777.40			
Delta EG (ft)	0.04	Conv. Total (cfs)	391586.8
406810.7			
Delta WS (ft)	0.04	Top Width (ft)	906.51
979.37			
BR Open Area (sq ft)	931.82	Frctn Loss (ft)	0.01
0.01			
BR Open Vel (ft/s)	3.24	C & E Loss (ft)	0.01
0.00			
Coef of Q		Shear Total (lb/sq ft)	0.35
0.32			
Br Sel Method	Energy only	Power Total (lb/ft s)	0.00
0.00			

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

BRIDGE OUTPUT Profile #.2%

E.G. US. (ft)	251.63	Element	Inside BR US
Inside BR DS			

W.S. US. (ft)	251.38	E.G. Elev (ft)	251.61
251.59			
Q Total (cfs)	19382.00	W.S. Elev (ft)	251.36
251.36			
Q Bridge (cfs)	3144.47	Crit W.S. (ft)	245.44
245.39			
Q Weir (cfs)		Max Chl Dpth (ft)	15.56
15.26			
Weir Sta Lft (ft)		Vel Total (ft/s)	3.91
3.77			
Weir Sta Rgt (ft)		Flow Area (sq ft)	4951.13
5137.13			
Weir Submerg		Froude # Chl	0.18
0.17			
Weir Max Depth (ft)		Specif Force (cu ft)	28944.82
29597.49			
Min El Weir Flow (ft)	240.59	Hydr Depth (ft)	10.00
9.79			
Min El Prs (ft)	247.00	W.P. Total (ft)	746.99
777.40			
Delta EG (ft)	0.05	Conv. Total (cfs)	580339.4
615175.9			
Delta WS (ft)	0.04	Top Width (ft)	952.58
1080.22			
BR Open Area (sq ft)	931.82	Frctn Loss (ft)	0.01
0.01			
BR Open Vel (ft/s)	3.37	C & E Loss (ft)	0.01
0.00			
Coef of Q		Shear Total (lb/sq ft)	0.46
0.41			
Br Sel Method	Energy only	Power Total (lb/ft s)	0.00
0.00			

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 2439.608

INPUT

Description:

Station Elevation Data num= 440

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

0	254.55	9.57	259.81	15.41	263.5	17.72	264	20.42	263.63
22.6	263.56	27.42	263.59	29.52	263.63	30.27	263.62	36.7	263.58
39.94	263.87	43.65	264.25	49.51	264.39	50.71	264.42	53.95	264.72
57.08	265.01	58.26	265.05	62.94	265.13	66.25	265.31	68.8	265.3
73.69	265.28	74.85	265.35	82.89	262.77	86.99	262.6	91.41	261.57
116.61	259.6	117.83	259.61	120.03	259.72	121.2	259.69	127.67	259.64
128.13	259.63	128.35	259.63	129.04	259.58	134.71	259.27	136.35	259.21
141.12	259.14	144.61	259.11	147.49	259.17	152.83	259.2	153.85	259.17
157.36	259.15	160.14	259.07	161.24	259.08	166.28	259.07	169.83	259.1
172.42	259.15	176.17	259.42	183.82	257.96	191.83	256.8	193.2	256.52
194.02	255.96	199.12	253.72	202.05	252.4	205.34	250.9	208.64	249.98
211.25	249.12	215.4	247.49	215.53	247.45	215.67	247.41	222.66	245.8
224.22	245.48	227.86	244.88	232.54	244.71	233.75	244.58	236.94	244.15
239.94	243.69	240.68	243.58	246.16	242.97	248.44	242.87	252.26	242.86
257.14	242.8	263.52	242.72	263.95	242.7	264.25	242.72	266.55	242.71
270.83	242.76	273.19	242.65	277.86	242.57	283.54	242.82	284.11	242.85
284.86	242.86	287.83	242.49	292.05	242.49	296.46	242.54	298.7	242.56
303.98	242.65	311.28	242.7	312.33	242.79	312.98	242.8	316.9	242.94
322.16	243.27	326.5	243.63	327.35	243.66	329.38	243.96	332.71	245.01
337.74	245.58	342.6	246.27	344.43	246.61	346.41	247.13	350.69	247.72
353.18	247.41	354.61	247.24	362.65	248.04	363.27	248.12	363.61	248.15
364.14	248.16	368.81	248.07	372.26	248.09	374.43	248.07	379.28	248.16
380.1	248.16	380.32	248.16	380.46	248.15	383.05	248.09	386.24	248.02
388.01	247.95	392.46	247.43	395.71	247.24	398.52	247.24	403.24	247.02
404.61	246.85	410.38	246.22	410.82	246.17	415.86	245.82	418.16	245.67
418.73	245.63	422.03	245.18	424.89	244.75	430.06	244.33	431.8	244.14
432	244.13	432.26	244.1	438.44	243.06	439.4	242.94	440.64	242.75
445.15	242.08	446.86	241.88	451.24	241.4	454.26	241.21	457.36	241.02
458.28	241	461.65	241.1	464.54	240.98	466.11	240.91	469.02	240.75
470.77	240.71	475.41	240.45	476.3	240.4	476.88	240.35	479.75	240.33
483.37	240.27	484.22	240.11	500	240.1	520	236.5	540	236.1
560	236.1	580	239.6	580.18	240.22	583.73	240.39	584.91	240.41
586.95	240.41	591.99	240.42	594.3	240.6	594.89	240.63	596.08	240.7
602.3	240.65	602.51	240.65	605.96	240.67	608.38	240.8	611.1	240.78
614.14	240.78	619.45	240.92	620.06	240.95	620.24	240.94	627.02	240.99
629.2	241.14	633.91	241.4	638.19	241.3	640.88	241.21	647.03	241.08
647.78	241.08	650.35	241.13	655.01	241.25	658.53	241.33	662.58	241.47
663.56	241.5	665.57	241.53	669.07	241.5	669.88	241.54	674.93	241.43
677.13	241.31	680.76	241.3	684.23	241.25	689.8	241.36	691.37	241.36
691.94	241.33	692.28	241.34	696.56	241.09	698.42	241.01	699.84	240.99
705.27	241.09	712.05	241.01	712.14	241.01	712.15	241.01	712.17	241.01
718.4	241.01	719.06	241	719.99	240.96	724.6	241.02	725.97	240.93
727.77	240.98	730.8	240.97	735.5	240.88	736.81	240.85	739.64	241.34
742.01	241.19	746.59	241.32	748.64	241.43	752.26	241.45	753.47	241.43
754.18	241.51	757.09	241.96	760.02	242.35	761.74	242.11	768.98	241.77
773.42	241.85	777.78	241.81	780.05	241.73	780.49	241.83	787.26	241.92
798.19	241.85	799.49	241.94	801.41	241.82	806.02	241.36	808.59	241.36
809.67	241.25	814.84	240.78	816.61	240.86	821.34	241.15	823.71	241.27
825.17	241.25	826.01	241.24	831.24	241.21	835.07	241.37	838.42	241.52
841.04	241.3	844.22	241	845.47	241.05	851.23	241.35	853.42	241.44

857.8	241.35	861.95	241.56	865.55	241.61	868.11	241.74	870.66	241.73
872.87	241.69	874.09	241.63	877.28	241.82	879.25	241.87	883.83	241.81
890.86	241.79	892.66	241.7	894.51	241.87	897.26	241.86	901.82	242.18
903.79	242.19	906.54	242.27	910.06	242.29	915.74	242.69	916.92	242.69
917.86	242.68	919.39	242.62	921.93	242.42	923.38	242.54	925.85	242.45
927.62	242.66	931.32	242.7	936.19	243.06	936.36	243.06	936.48	243.07
944.74	242.74	947.3	242.55	950.78	242.58	953.9	242.72	957.5	242.76
959.01	242.78	968	242.74	970.32	242.76	970.7	242.95	974.43	243.08
977.58	243.22	978.3	243.21	983.05	243.18	983.85	243.1	985.59	243.19
990.18	243.02	993.07	243.03	997.99	243.33	999.25	243.31	1002.03	243.44
1004.07	243.45	1008.98	243.37	1011.74	243.33	1012.58	243.35	1017.44	243.68
1022.73	243.81	1025.29	243.81	1029.26	243.61	1036.51	243.58	1037.2	243.63
1038.06	243.6	1038.37	243.61	1045.03	243.5	1047.29	243.48	1049.09	243.58
1050.91	243.57	1052.57	243.61	1054.84	243.73	1057.69	243.87	1059.77	243.94
1062.13	243.92	1063.3	243.97	1066.53	244.02	1067.12	244.02	1072.29	244.15
1072.43	244.17	1075.87	244.16	1076.05	244.16	1076.2	244.16	1080.26	244.49
1084.11	244.51	1084.53	244.52	1085.01	244.51	1085.77	244.52	1088.53	244.66
1090.52	244.72	1092.74	244.76	1095.34	244.95	1097.71	245.12	1099.77	245.36
1101.28	245.41	1103.97	245.46	1106.21	245.73	1108.11	245.83	1110.35	245.9
1113.81	245.89	1114.05	245.9	1118.78	246.14	1123.2	246.62	1123.47	246.63
1126.77	246.49	1128.06	246.52	1128.67	246.51	1132.88	246.95	1136.9	247.09
1138.23	247.17	1139.43	247.14	1144.07	247.19	1148.62	247.31	1149.43	247.34
1151.24	247.46	1151.9	247.49	1152.19	247.5	1156.23	247.5	1160.21	247.63
1160.87	247.64	1161.55	247.65	1162.84	247.61	1166.4	247.57	1167.16	247.56
1171.23	247.65	1174.77	247.82	1177.23	247.99	1182.53	248.21	1187.46	248.39
1188.04	248.4	1190.15	248.33	1193.66	248.44	1198.41	248.69	1199.31	248.75
1200.45	248.73	1202.5	248.91	1204.09	249.05	1204.86	249.06	1205.73	249.09
1209.84	249.25	1213.43	249.44	1214.38	249.41	1216.11	249.56	1220.49	249.79
1222.04	249.59	1226.13	249.56	1226.27	249.57	1226.73	249.58	1230.05	249.82
1233.62	249.77	1234.72	249.72	1237.05	249.82	1239.42	249.84	1241.57	249.94
1242.88	250.03	1246.94	250.22	1252.37	250.69	1252.51	250.71	1255.9	250.85
1256.71	250.86	1258.21	250.86	1262.84	250.88	1265.36	250.85	1266.96	250.83
1268.71	250.74	1271.19	250.69	1274.31	250.62	1275.03	250.63	1278.45	250.79
1279.24	250.92	1281.84	251.06	1283.11	251.06	1286.53	251.17	1290.12	251.26
1291.43	251.39	1293.74	251.47	1294.9	251.61	1297.48	251.91	1299.72	252.08
1301.95	252.11	1304.52	252.32	1306.58	252.48	1307.87	252.49	1310.2	252.63
1319.85	253.15	1324.21	253.17	1326.15	253.11	1330.57	252.96	1331.86	252.9
1332.11	252.92	1334.18	252.99	1335.08	253.09	1338.75	253.33	1339.87	253.39

Manning's n Values			num=	7					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	283.54	.12	353.18	.05	483.37	.05	500	.04
580	.05	1066.53	.05						

Bank Sta:	Left	Right	Lengths:	Left	Channel	Right	Coeff	Contr.	Expan.
	500	580		287.35	265.85	71.47		.3	.5
Ineffective Flow		num=	2						
Sta L	Sta R	Elev	Permanent						
0	375.61	251.6	F						
900.61	1339.87	252	F						

Blocked Obstructions num= 2
 Sta L Sta R Elev Sta L Sta R Elev
 95.95 110.43259.5887 1225.14 1225.9263.3704

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	244.36	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.06	Wt. n-Val.	0.050	0.040
0.050				
W.S. Elev (ft)	244.30	Reach Len. (ft)	287.35	265.85
71.47				
Crit W.S. (ft)	240.53	Flow Area (sq ft)	214.50	573.26
960.44				
E.G. Slope (ft/ft)	0.000310	Area (sq ft)	346.96	573.26
1158.38				
Q Total (cfs)	2671.00	Flow (cfs)	242.27	1386.28
1042.46				
Top Width (ft)	742.32	Top Width (ft)	164.36	80.00
497.96				
Vel Total (ft/s)	1.53	Avg. Vel. (ft/s)	1.13	2.42
1.09				
Max Chl Dpth (ft)	8.20	Hydr. Depth (ft)	3.08	7.17
3.00				
Conv. Total (cfs)	151711.8	Conv. (cfs)	13760.6	78740.0
59211.3				
Length Wtd. (ft)	182.96	Wetted Per. (ft)	69.95	80.63
321.45				
Min Ch El (ft)	236.10	Shear (lb/sq ft)	0.06	0.14
0.06				
Alpha	1.55	Stream Power (lb/ft s)	1339.87	0.00
0.00				
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	69.36	40.46
28.65				
C & E Loss (ft)	0.00	Cum SA (acres)	19.99	4.25
7.58				

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	248.48	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.17	Wt. n-Val.	0.050	0.040

0.050				
W.S. Elev (ft)	248.31	Reach Len. (ft)	287.35	265.85
71.47				
Crit W.S. (ft)	243.75	Flow Area (sq ft)	583.07	894.01
2245.86				
E.G. Slope (ft/ft)	0.000553	Area (sq ft)	1209.05	894.01
3346.48				
Q Total (cfs)	10810.00	Flow (cfs)	1190.80	3883.21
5735.99				
Top Width (ft)	972.03	Top Width (ft)	286.69	80.00
605.34				
Vel Total (ft/s)	2.90	Avg. Vel. (ft/s)	2.04	4.34
2.55				
Max Chl Dpth (ft)	12.21	Hydr. Depth (ft)	4.69	11.18
7.00				
Conv. Total (cfs)	459700.1	Conv. (cfs)	50639.4	165135.4
243925.4				
Length Wtd. (ft)	153.87	Wetted Per. (ft)	124.84	80.63
321.45				
Min Ch El (ft)	236.10	Shear (lb/sq ft)	0.16	0.38
0.24				
Alpha	1.27	Stream Power (lb/ft s)	1339.87	0.00
0.00				
Frctn Loss (ft)	0.08	Cum Volume (acre-ft)	118.83	52.01
54.73				
C & E Loss (ft)	0.01	Cum SA (acres)	25.30	4.18
9.72				

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	249.37	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.18	Wt. n-Val.	0.050	0.040
0.050				
W.S. Elev (ft)	249.19	Reach Len. (ft)	287.35	265.85
71.47				
Crit W.S. (ft)	244.08	Flow Area (sq ft)	691.89	963.99
2526.35				
E.G. Slope (ft/ft)	0.000537	Area (sq ft)	1460.85	963.99
3888.15				
Q Total (cfs)	12761.00	Flow (cfs)	1541.76	4340.04
6879.20				
Top Width (ft)	997.19	Top Width (ft)	288.95	80.00
628.23				

Vel Total (ft/s)	3.05	Avg. Vel. (ft/s)	2.23	4.50
2.72				
Max Chl Dpth (ft)	13.09	Hydr. Depth (ft)	5.56	12.05
7.88				
Conv. Total (cfs)	550539.4	Conv. (cfs)	66515.2	187239.5
296784.7				
Length Wtd. (ft)	151.61	Wetted Per. (ft)	124.84	80.63
321.45				
Min Ch El (ft)	236.10	Shear (lb/sq ft)	0.19	0.40
0.26				
Alpha	1.23	Stream Power (lb/ft s)	1339.87	0.00
0.00				
Frctn Loss (ft)	0.08	Cum Volume (acre-ft)	140.21	55.50
63.21				
C & E Loss (ft)	0.01	Cum SA (acres)	26.87	4.18
10.45				

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	251.58	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.24	Wt. n-Val.	0.050	0.040
0.050				
W.S. Elev (ft)	251.34	Reach Len. (ft)	287.35	265.85
71.47				
Crit W.S. (ft)	245.07	Flow Area (sq ft)	959.10	1135.84
3215.06				
E.G. Slope (ft/ft)	0.000583	Area (sq ft)	2088.93	1135.84
5321.76				
Q Total (cfs)	19382.00	Flow (cfs)	2726.74	5943.70
10711.56				
Top Width (ft)	1085.74	Top Width (ft)	295.62	80.00
710.12				
Vel Total (ft/s)	3.65	Avg. Vel. (ft/s)	2.84	5.23
3.33				
Max Chl Dpth (ft)	15.24	Hydr. Depth (ft)	7.71	14.20
10.03				
Conv. Total (cfs)	802563.3	Conv. (cfs)	112907.9	246114.7
443540.6				
Length Wtd. (ft)	147.77	Wetted Per. (ft)	124.84	80.63
321.45				
Min Ch El (ft)	236.10	Shear (lb/sq ft)	0.28	0.51
0.36				
Alpha	1.18	Stream Power (lb/ft s)	1339.87	0.00

0.00				
Frctn Loss (ft)	0.08	Cum Volume (acre-ft)	202.04	64.53
86.68				
C & E Loss (ft)	0.01	Cum SA (acres)	29.90	4.18
11.44				

Warning: Divided flow computed for this cross-section.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: W Br Neshminy
REACH: 1 RS: 2173.758

INPUT
Description:

Station Elevation Data		num=		448					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	258	4.86	258.36	5.52	258.41	6.23	258.55	6.8	258.67
9.37	259.2	11.3	259.61	11.31	259.61	15.48	260.16	15.54	260.17
15.91	260.23	16.27	260.28	22.13	261.06	23.88	261.29	24.05	261.28
28.56	261.06	29.74	261.22	31.52	261.17	51.92	261.46	70.58	261.8
75.22	261.82	75.65	261.82	76.96	261.69	78.26	261.53	97.02	261.47
97.71	261.47	98.97	261.37	103.38	261.2	103.72	261.17	108.69	259.94
118.04	259.55	120.95	259.39	123.08	259.31	127.25	259.07	128.91	259.04
130.48	258.86	132.06	258.74	133.32	258.65	134.82	258.53	136.78	258.52
139.76	258.48	143.85	258.67	146.42	258.78	149.11	258.62	151.5	258.49
153.74	258.33	157.5	257.98	160.81	257.9	164.98	258.01	165.84	258.25
169.65	258.73	171.23	258.88	176.35	259.38	181.61	259.81	186.04	260.07
187.71	260.1	192.62	259.88	198.08	259.78	215.97	259.43	216.94	259.51
224.4	259.44	227.54	259.67	228.31	259.7	228.5	259.69	231.31	259.57
236.66	259.31	237.08	259.31	245.2	259.08	247.73	259.04	253.68	259.08
254.73	259.08	263.33	259.06	263.99	259.04	265.09	259.03	265.73	259
270.4	258.66	274.6	258.83	276.27	258.72	282.69	258.52	286.1	258.5
289.76	258.4	290.48	258.41	293.01	258.43	297.6	258.13	300.06	258.11
308.57	257.89	308.98	257.86	309.74	257.81	311.56	257.66	327.01	256.46
327.29	256.44	336.47	255.44	338.35	255.28	339.72	255.24	342.83	255.14
344.47	254.91	348.36	254.69	351.89	254.66	352.96	254.62	359.92	254
360.31	253.92	365.96	252.72	371.36	250.73	371.92	250.49	372.57	250.11
378.92	245.9	389.65	239.71	391.23	238.81	391.91	238.48	393.37	237.88
396.84	236.47	398.81	235.89	401.17	235.5	418.15	235.21	430.09	235.21
442.8	235.88	443.24	236.05	443.69	236.14	445.54	236.55	446.71	236.82
447.22	236.84	448.89	236.94	451.73	237.11	451.89	237.13	452.4	237.18
454.8	237.45	458.16	237.91	459.15	238.03	463.99	238.71	465.76	238.87
468.92	239.02	473.06	239.08	475.55	239.16	478.2	239.48	481.69	240.1
493.67	240.53	495.11	240.63	495.82	240.66	497	240.76	503.84	240.82

506.18	240.72	508.33	240.65	511.28	240.86	512.37	240.86	518.07	240.63
520.62	240.66	522.74	240.79	524.75	240.95	528.01	241.09	532.89	241.23
534.23	241.16	535.48	241.21	538.54	241.25	542.09	241.28	542.84	241.28
548.45	241.6	548.73	241.61	549.08	241.62	554.18	241.55	557.21	241.73
559	241.86	562.25	241.8	567.1	241.52	569.51	241.28	572.43	241.08
573.52	241.13	577.91	241.25	581.81	241.01	583.43	240.97	585.87	240.91
589.78	240.96	594.19	240.96	595.03	240.92	597.09	241.11	597.94	241.16
602.13	241	606.53	240.82	606.85	240.8	607.64	240.83	609.63	240.95
610.45	240.98	613.76	241.22	618.25	241.24	618.46	241.24	618.69	241.24
619.85	241.35	622.57	241.57	623.27	241.57	627.99	241.43	630.5	241.34
630.83	241.34	630.94	241.33	632.9	241.65	633.46	241.74	644.03	241.36
647.57	241.33	659.86	241.27	659.89	241.27	659.93	241.28	666.17	241.71
668.84	241.7	679.03	241.89	680.5	241.78	683.9	241.98	684.5	242
684.75	242.01	685.11	241.97	689.27	241.48	692.6	241.35	694.61	241.27
696.65	241.27	700.58	241.3	704.95	241.14	705.86	241.13	709.01	240.83
709.27	240.82	709.6	240.81	713.95	240.71	717.37	240.84	718.71	240.81
721.47	240.8	724.6	240.74	729.81	240.69	730.37	240.72	733.84	240.84
733.88	240.84	734.69	240.82	741.88	240.69	742.27	240.69	744.72	240.88
747.58	240.76	751.97	240.71	753.35	240.63	754.67	240.61	756.8	240.54
758.61	240.44	759.76	240.43	760.17	240.47	762.36	240.58	767.14	240.76
768.96	240.69	770.57	240.56	774.39	240.76	776.69	240.86	777.32	240.92
782.14	241.17	782.71	241.2	783.03	241.21	783.22	241.21	784.27	241.25
792.84	241.53	795.38	241.52	803.08	241.11	804.02	241.04	806.92	241.07
807.33	241.06	807.78	241.09	810.89	241.36	813.01	241.42	815.06	241.36
822.18	241.37	827.06	241.47	827.42	241.45	830.62	241.44	831.07	241.47
831.56	241.46	833.88	241.45	839.04	241.43	841.08	241.11	842.29	240.93
842.62	240.92	846.5	241.28	850.81	241.09	850.97	241.08	851.49	241.09
854.51	241.24	855.89	241.25	860.48	241.22	862.46	241.19	862.78	241.23
872.53	241.51	873.85	241.58	875.11	241.44	877.06	241.25	878.66	241.26
880.71	241.24	883.29	241.21	885.45	241.18	887.14	241.18	890.21	241.26
890.52	241.28	896.24	241.55	897.42	241.54	902.44	241.66	905.29	241.75
908.65	241.78	909.32	241.8	910.27	241.98	912.67	241.98	924.8	242.63
927.55	242.71	929.83	242.86	940.11	242.87	943.31	242.82	947.28	242.89
949.74	243.02	953.83	243.13	958.56	243.22	958.81	243.21	962.8	243.37
966.33	243.18	975.34	243.16	976.31	243.26	982.27	243.33	982.33	243.33
982.4	243.33	988.12	243.27	993.24	244	993.64	244.05	995.63	244.08
998.3	244.22	1002.56	244.38	1003.32	244.34	1008.27	244.1	1008.76	244.07
1009.31	244.06	1010.06	244.09	1016.12	244.36	1020.23	244.42	1021.18	244.45
1022.08	244.53	1025.34	244.94	1025.83	244.94	1030.5	244.95	1035.36	245.32
1035.61	245.34	1035.85	245.33	1039.48	245.52	1039.7	245.54	1043.73	245.49
1046.57	245.53	1047.95	245.7	1053.52	245.9	1053.72	245.92	1053.85	245.92
1053.91	245.92	1054.07	245.94	1060.51	246.87	1062.57	246.61	1063.19	246.65
1063.93	246.78	1067.49	247.13	1067.76	247.16	1071.55	248.07	1074.38	247.92
1077.88	247.85	1079.2	247.9	1082.12	248.11	1086.54	248.07	1090.53	248.19
1091.29	248.26	1092.18	248.29	1095.62	248.68	1095.92	248.68	1100.98	248.65
1106.27	248.6	1106.43	248.59	1110.1	248.54	1110.84	248.53	1111.99	248.59
1117.06	248.83	1120.4	248.68	1121.61	248.74	1124.29	248.61	1124.32	248.61
1124.35	248.61	1127.91	248.78	1132.16	248.81	1133.32	248.8	1134.77	248.76
1137.74	249.03	1139.04	249.1	1139.15	249.11	1139.34	249.12	1149.15	249.55
1149.19	249.55	1154.41	249.64	1156.81	250.03	1159.66	250.02	1165.21	250.33

1166.08	250.34	1167.13	250.43	1173.84	250.56	1176.21	250.5	1181.76	250.37
1181.87	250.37	1181.97	250.37	1186.71	250.57	1190.9	250.8	1191.51	250.81
1192.22	250.89	1195.12	251.12	1196.14	251.14	1201	251.34	1206.59	251.39
1207.46	251.37	1207.95	251.36	1213.67	251.58	1216.11	251.67	1218.23	251.65
1220.97	251.81	1222.72	251.98	1224.63	252.1	1227.77	252.26	1230.85	252.41
1233.08	252.55	1235.35	252.59	1237.74	252.74	1239.08	252.75	1243	252.84
1247.46	252.63	1248.68	252.64	1250.36	252.8	1252.15	252.77	1256.99	252.82
1258.45	252.88	1259.37	252.97	1260.25	252.86	1264.23	252.84	1264.57	252.85
1267.82	253.06	1268.08	253.06	1268.45	253.08	1274.44	253.14	1276.27	253.4
1278.39	253.3	1280.61	253.6	1282.31	253.92	1282.91	254.01	1287.06	253.97
1290.17	254.28	1291.34	254.36	1291.47	254.37	1293.12	254.51	1295.22	254.58
1300.38	254.71	1304.15	254.92	1314.53	256				

Manning's n Values			num= 7						
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	389.65	.04	393.37	.04	445.54	.04	468.92	.05
1003.32	.05	1291.47	.05						

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
389.65	468.92	245.81	240.7	107.6		.1	.3

Ineffective Flow	num= 1	
Sta L	Sta R	Elev
875.22	1314.53	253.18
		F

Blocked Obstructions	num= 2	
Sta L	Sta R	Elev
31.11	94.05	263.35
19	171	247.24
26	45	264.28
45		

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	244.31	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.05	Wt. n-Val.	0.050	0.040
0.050				
W.S. Elev (ft)	244.26	Reach Len. (ft)	245.81	240.70
107.60				
Crit W.S. (ft)	239.72	Flow Area (sq ft)	17.93	623.43
1285.58				
E.G. Slope (ft/ft)	0.000236	Area (sq ft)	17.93	623.43
1493.30				
Q Total (cfs)	2671.00	Flow (cfs)	12.86	1394.29
1263.85				
Top Width (ft)	626.38	Top Width (ft)	7.88	79.27
539.23				
Vel Total (ft/s)	1.39	Avg. Vel. (ft/s)	0.72	2.24
0.98				
Max Ch1 Dpth (ft)	9.05	Hydr. Depth (ft)	2.27	7.86
3.16				
Conv. Total (cfs)	173871.2	Conv. (cfs)	837.3	90762.7
82271.2				

Length Wtd. (ft)	189.99	Wetted Per. (ft)	9.10	80.35
406.83				
Min Ch El (ft)	235.21	Shear (lb/sq ft)	0.03	0.11
0.05				
Alpha	1.60	Stream Power (lb/ft s)	1314.53	0.00
0.00				
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	68.15	36.81
26.47				
C & E Loss (ft)	0.00	Cum SA (acres)	19.43	3.76
6.73				

Warning: Divided flow computed for this cross-section.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	248.39	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.15	Wt. n-Val.	0.050	0.040
0.050				
W.S. Elev (ft)	248.24	Reach Len. (ft)	245.81	240.70
107.60				
Crit W.S. (ft)	243.51	Flow Area (sq ft)	62.51	939.39
2905.06				
E.G. Slope (ft/ft)	0.000459	Area (sq ft)	62.51	939.39
3818.54				
Q Total (cfs)	10810.00	Flow (cfs)	96.24	3852.47
6861.29				
Top Width (ft)	715.73	Top Width (ft)	14.27	79.27
622.20				
Vel Total (ft/s)	2.77	Avg. Vel. (ft/s)	1.54	4.10
2.36				
Max Chl Dpth (ft)	13.03	Hydr. Depth (ft)	4.38	11.85
7.15				
Conv. Total (cfs)	504384.6	Conv. (cfs)	4490.6	179752.6
320141.4				
Length Wtd. (ft)	170.20	Wetted Per. (ft)	16.63	80.35
406.83				
Min Ch El (ft)	235.21	Shear (lb/sq ft)	0.11	0.34
0.20				
Alpha	1.25	Stream Power (lb/ft s)	1314.53	0.00
0.00				
Frctn Loss (ft)	0.07	Cum Volume (acre-ft)	114.64	46.42
48.85				
C & E Loss (ft)	0.00	Cum SA (acres)	24.31	3.70

8.71

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	249.28	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.16	Wt. n-Val.	0.050	0.040
0.050				
W.S. Elev (ft)	249.12	Reach Len. (ft)	245.81	240.70
107.60				
Crit W.S. (ft)	243.83	Flow Area (sq ft)	75.58	1008.83
3260.96				
E.G. Slope (ft/ft)	0.000458	Area (sq ft)	75.58	1008.83
4384.41				
Q Total (cfs)	12761.00	Flow (cfs)	124.10	4331.65
8305.25				
Top Width (ft)	765.28	Top Width (ft)	15.59	79.27
670.42				
Vel Total (ft/s)	2.94	Avg. Vel. (ft/s)	1.64	4.29
2.55				
Max Chl Dpth (ft)	13.91	Hydr. Depth (ft)	4.85	12.73
8.03				
Conv. Total (cfs)	596381.1	Conv. (cfs)	5800.0	202438.1
388143.0				
Length Wtd. (ft)	168.10	Wetted Per. (ft)	18.21	80.35
406.83				
Min Ch El (ft)	235.21	Shear (lb/sq ft)	0.12	0.36
0.23				
Alpha	1.22	Stream Power (lb/ft s)	1314.53	0.00
0.00				
Frctn Loss (ft)	0.07	Cum Volume (acre-ft)	135.14	49.48
56.42				
C & E Loss (ft)	0.00	Cum SA (acres)	25.86	3.70
9.38				

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	251.49	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.23	Wt. n-Val.	0.050	0.040
0.050				
W.S. Elev (ft)	251.26	Reach Len. (ft)	245.81	240.70
107.60				
Crit W.S. (ft)	244.80	Flow Area (sq ft)	112.75	1178.43
4130.25				
E.G. Slope (ft/ft)	0.000523	Area (sq ft)	112.75	1178.43
5880.48				
Q Total (cfs)	19382.00	Flow (cfs)	221.79	5998.46
13161.75				
Top Width (ft)	829.12	Top Width (ft)	19.73	79.27
730.13				
Vel Total (ft/s)	3.58	Avg. Vel. (ft/s)	1.97	5.09
3.19				
Max Chl Dpth (ft)	16.05	Hydr. Depth (ft)	5.72	14.87
10.17				
Conv. Total (cfs)	847475.4	Conv. (cfs)	9697.9	262281.8
575495.8				
Length Wtd. (ft)	164.45	Wetted Per. (ft)	22.90	80.35
406.83				
Min Ch El (ft)	235.21	Shear (lb/sq ft)	0.16	0.48
0.33				
Alpha	1.17	Stream Power (lb/ft s)	1314.53	0.00
0.00				
Frctn Loss (ft)	0.08	Cum Volume (acre-ft)	194.78	57.47
77.49				
C & E Loss (ft)	0.00	Cum SA (acres)	28.86	3.70
10.25				

Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 1933.057

INPUT

Description: not interpolated

Station Elevation Data num= 462

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	252	1.51	252.03	6.3	251.99	6.5	251.99	7.61	252.04
8.57	252.16	10.83	252.42	12.8	252.65	17.54	252.95	19.09	253.02

20.28	253.11	22.52	253.31	23.86	253.38	26.96	253.7	29.73	254.13
35.56	255.1	38.52	255.05	39.31	255.02	39.85	254.98	44.09	254.86
46.7	255.04	53.32	255.38	54.62	255.46	54.93	255.47	55.97	255.52
61.3	255.62	65.85	255.38	67.06	255.35	69.06	255.32	71.13	255.37
72.37	255.46	75.5	255.68	78.09	255.81	79.97	255.94	85.49	256.17
87.26	256.21	88.66	256.14	91.68	256.09	94.75	256.15	96.68	256.24
98.53	256.41	101.75	256.48	105.07	256.43	107.61	256.57	114.44	256.52
114.73	256.52	114.79	256.52	114.9	256.52	115.15	256.51	122.71	256.39
128.65	256.51	132.52	256.42	135.46	256.69	138.69	256.66	147.7	256.3
150.98	256.22	152.08	256.2	153.39	256.28	155.78	256.31	160.17	256.1
162.76	256.01	163.93	256.01	167.56	256.12	171.59	256	174.74	256.05
180.41	256.39	184.86	256.65	186.31	256.72	190.08	256.69	193.01	256.66
196.73	256.96	198.27	257.04	200.01	257.09	200.34	257.1	204.57	257.31
208.5	257.27	216.24	257.3	237.56	256.9	247.3	257.63	253.06	257.69
254.59	257.75	258.33	257.78	263.75	257.81	273.41	257.3	278.1	257.02
283.22	256.91	283.33	256.92	283.85	256.92	289.51	256.89	294.58	256.55
295.24	256.56	296.27	256.48	298.69	256.56	300.28	256.45	302.79	256.55
304.76	256.59	310.86	256.52	311.82	256.48	312.79	256.41	315.78	256.21
317.58	256.2	320.26	256.28	322.08	256.45	324.16	256.51	325.55	256.55
329.7	256.65	331.95	256.73	332.18	256.73	336.6	256.74	343.04	256.28
343.11	256.28	343.27	256.28	346.11	256.26	346.74	256.25	349.12	255.93
350.53	255.98	352.67	256.1	355.32	256.28	359.17	256.39	360.16	256.42
364.68	256.31	366.84	256.36	367.09	256.37	369.44	256.44	371.68	256.67
372.73	256.78	373.05	256.78	374.07	256.77	375.53	256.76	378.11	256.89
379.14	256.93	386.77	257.58	390.7	257.62	393.35	257.67	400.53	257.6
402.81	257.83	412.92	257.5	422.29	257.19	427.89	256.65	439.62	255.91
456.04	255.56	460.06	255.46	466.6	255.13	469.05	255.01	475.16	254.26
475.51	254.22	488.53	254	489.92	254	492.58	253.73	492.91	253.71
493.07	253.71	503.69	253.68	506.03	253.56	509.07	253.32	509.38	253.29
510.33	253.21	513.19	253.07	517.51	252.74	519.05	252.7	519.33	252.67
524.33	252.43	527.85	252.53	528.18	252.54	528.47	252.54	535.95	252.1
537.18	252.06	539.06	252.04	541.84	251.88	544.25	251.75	546.1	251.7
547.96	251.75	557.62	251.88	558.67	251.86	558.81	251.86	561.02	251.89
562.05	251.89	568.6	251.19	609.26	247.8	629.17	246.81	640.01	245.82
642.45	245.44	643.89	245.2	649.85	243.44	650.13	243.31	655.16	239.57
657.39	238.25	659.43	237.37	659.61	237.29	662.18	235.18	687.77	234.62
702.06	234.43	706.84	234.43	728.88	234.97	729.83	234.97	731.42	234.96
732.3	234.96	732.45	235	732.56	235.02	734.67	235.38	737.94	235.94
738.52	235.97	739.19	235.99	741.13	235.91	743.42	235.92	747.23	235.51
753.64	235.39	755.32	235.43	755.82	235.42	756.01	235.43	768.65	237.54
779.12	239.16	780.09	239.45	781.15	239.51	782.9	239.38	783.64	239.32
790.27	239.27	790.94	239.26	791.83	239.26	792.33	239.27	794.99	239.47
798.36	239.74	801.05	239.7	807.01	239.4	808.79	239.46	809.71	239.59
812.41	239.65	815.85	239.68	817.13	239.64	818.47	239.7	820.87	239.9
821.83	239.84	835.84	240.87	835.97	240.88	836.06	240.89	836.29	240.89
843.4	241.1	844.9	241.08	849.53	241.36	851.15	241.37	851.69	241.33
857.56	240.95	859.95	240.99	862.29	240.77	866.08	240.68	868.8	240.69
869.08	240.7	869.41	240.68	874.28	240.59	877.31	240.53	877.64	240.58
880.09	240.96	883.94	241.1	888.7	240.89	888.78	240.88	888.87	240.88
889.26	240.9	894.94	241.23	895.44	241.27	897.51	241.25	897.75	241.24

898.51	241.2	902.46	241.09	903.73	241.09	905.27	241.09	906.32	240.93
909.47	241.02	912.59	241.1	913.74	241.01	920.12	240.89	921.08	240.85
921.42	240.85	923.82	240.93	923.94	240.93	923.96	240.93	924	240.93
928.27	240.91	930.15	240.92	932.41	241.12	932.64	241.14	932.87	241.15
939.35	240.86	940.52	240.79	942.96	240.82	949.02	240.65	950.21	240.62
950.45	240.61	950.61	240.63	955.16	240.73	956.7	240.73	960.68	240.74
965.56	240.42	966.16	240.37	968.38	240.21	969.85	240.16	973.17	240.18
974.08	240.21	974.49	240.18	974.82	240.18	977.16	240.24	979.9	240.22
983.1	240.38	983.52	240.4	985.54	240.22	985.68	240.2	985.91	240.2
987.98	240.28	994.52	240.52	994.76	240.52	995.18	240.58	1000.72	240.94
1002.61	241.03	1004.6	241.11	1009.6	240.89	1010.29	240.75	1013.29	240.74
1016.81	240.73	1018.52	240.79	1019.44	240.95	1023.65	241.24	1029.57	241.18
1029.91	241.2	1030.46	241.2	1032.16	241.49	1035.05	241.92	1036.38	241.89
1042.9	241.16	1044.72	241	1053.66	241.38	1054.03	241.39	1055.9	241.49
1058.98	241.19	1063.33	240.76	1064.31	240.63	1064.64	240.65	1068.4	240.74
1072.42	240.72	1073.14	240.72	1074.24	240.7	1078.42	240.92	1079.05	240.96
1079.21	240.96	1079.44	240.93	1081.63	240.72	1084.97	240.79	1087.78	240.98
1089.6	241.17	1090.11	241.2	1093.39	241.3	1096.33	241.38	1097.97	241.37
1098.64	241.4	1104.28	241.6	1104.99	241.59	1110.27	241.78	1111.92	242.03
1113.54	242.22	1115.85	242.18	1119.77	242.33	1120.62	242.35	1122.82	242.33
1127.85	242.07	1129.95	242.28	1132.08	242.15	1133.84	242.18	1142.65	242.77
1146.65	242.88	1147.74	242.88	1149.18	242.87	1151.95	242.79	1165.56	243
1166.7	243	1167.27	243.06	1170.16	243.25	1171.61	243.41	1172.69	243.53
1176.01	244.7	1176.91	244.94	1179.25	245.8	1179.46	245.87	1179.62	245.92
1183.7	247.02	1186.2	247.68	1192.2	248.28	1192.97	248.32	1193.92	248.39
1196.14	248.46	1198.49	248.72	1202.16	248.82	1203.28	248.84	1205.6	248.8
1207.76	248.88	1212.05	249.07	1214.43	249.2	1215.63	249.28	1216.85	249.4
1219	249.59	1220.74	249.71	1222.77	250.09	1226.09	250.57	1228.98	250.34
1231.74	250.32	1232.36	250.14	1233.95	250.44	1242.12	250.13	1246.61	250.18
1250.52	250.18	1286.08	250.11	1308.62	250.24	1309.84	250.23	1316.09	249.91
1322.67	250.1	1323.47	250.09	1323.74	250.1	1324.71	250.13	1326.54	250.23
1328.37	250.3	1329.69	250.32	1330.75	250.29	1334.35	250.08	1338.74	250.17
1338.78	250.17	1342.23	250.21	1343.35	250.25	1344.4	250.3	1348.4	250.17
1352.51	250.53	1353.96	250.69	1356.59	250.69	1359.88	250.66	1368.5	250.32
1369.27	250.37	1370.86	250.65	1371.58	250.63	1375.13	250.67	1378.57	250.85
1379.25	250.85	1380.26	250.95	1382.08	251.19	1384.2	251.25	1386.67	251.17
1390.2	251.11	1394.29	251.48	1394.76	251.54	1397.7	251.39	1399.25	251.39
1400.95	251.5	1404.81	251.7	1406.55	251.9	1409.78	252	1411.8	252.05
1411.91	252.05	1416.75	252.43	1420.05	252.8	1421.01	252.82	1422.24	252.82
1424.48	252.71	1425.92	252.62	1426.7	252.61	1427.73	252.68	1433.21	253.01
1434.48	253.23	1438.03	254						

Manning's n Values			num= 12								
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	150.98	.03	200.01	.05	332.18	.03	346.11	.05		
509.38	.03	558.81	.05	655.16	.04	659.43	.04	734.67	.04		
779.12	.05	1171.61	.05								

Bank Sta:	Left	Right	Lengths:	Left	Channel	Right	Coeff	Contr.	Expan.
	655.16	779.12		147	158.7	207.02		.3	.5

Ineffective Flow num= 1
Sta L Sta R Elev Permanent
1053.66 1438.03 254.02 F

Blocked Obstructions num= 5
Sta L Sta R Elev Sta L Sta R Elev Sta L Sta R Elev
116.46 126.36 260.93 35 235.2 269.92 260.78 66 381.59 457.15 260.18 82
564.02 629.59 243.78 92 1239.46 1312.42 61.54 87

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	244.27	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.04	Wt. n-Val.	0.050	0.040
0.050				
W.S. Elev (ft)	244.23	Reach Len. (ft)	147.00	158.70
207.02				
Crit W.S. (ft)	237.83	Flow Area (sq ft)	15.36	1077.21
984.07				
E.G. Slope (ft/ft)	0.000127	Area (sq ft)	15.36	1077.21
1263.69				
Q Total (cfs)	2671.00	Flow (cfs)	7.16	1891.59
772.25				
Top Width (ft)	527.52	Top Width (ft)	8.00	123.96
395.57				
Vel Total (ft/s)	1.29	Avg. Vel. (ft/s)	0.47	1.76
0.78				
Max Chl Dpth (ft)	9.80	Hydr. Depth (ft)	1.92	8.69
3.58				
Conv. Total (cfs)	236622.5	Conv. (cfs)	634.2	167575.4
68413.0				
Length Wtd. (ft)	173.63	Wetted Per. (ft)	9.38	125.70
275.04				
Min Ch El (ft)	234.43	Shear (lb/sq ft)	0.01	0.07
0.03				
Alpha	1.43	Stream Power (lb/ft s)	1438.03	0.00
0.00				
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	68.06	32.11
23.07				
C & E Loss (ft)	0.02	Cum SA (acres)	19.38	3.20
5.58				

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the

largest [smallest] user entered n value. The n value has been set to the

largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	248.32	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.17	Wt. n-Val.	0.050	0.040
0.050				
W.S. Elev (ft)	248.15	Reach Len. (ft)	147.00	158.70
207.02				
Crit W.S. (ft)	242.29	Flow Area (sq ft)	105.68	1562.89
2059.72				
E.G. Slope (ft/ft)	0.000385	Area (sq ft)	105.68	1562.89
2838.74				
Q Total (cfs)	10810.00	Flow (cfs)	99.15	6113.68
4597.17				
Top Width (ft)	585.88	Top Width (ft)	50.12	123.96
411.80				
Vel Total (ft/s)	2.90	Avg. Vel. (ft/s)	0.94	3.91
2.23				
Max Chl Dpth (ft)	13.72	Hydr. Depth (ft)	2.11	12.61
7.50				
Conv. Total (cfs)	550949.8	Conv. (cfs)	5053.4	311594.0
234302.4				
Length Wtd. (ft)	177.82	Wetted Per. (ft)	51.77	125.70
275.04				
Min Ch El (ft)	234.43	Shear (lb/sq ft)	0.05	0.30
0.18				
Alpha	1.28	Stream Power (lb/ft s)	1438.03	0.00
0.00				
Frctn Loss (ft)	0.11	Cum Volume (acre-ft)	114.16	39.50
40.63				
C & E Loss (ft)	0.06	Cum SA (acres)	24.13	3.14
7.43				

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the

largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may

wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	249.21	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.19	Wt. n-Val.	0.050	0.040
0.050				
W.S. Elev (ft)	249.02	Reach Len. (ft)	147.00	158.70
207.02				
Crit W.S. (ft)	242.73	Flow Area (sq ft)	153.71	1670.52
2298.09				
E.G. Slope (ft/ft)	0.000400	Area (sq ft)	153.71	1670.52
3203.04				
Q Total (cfs)	12761.00	Flow (cfs)	167.04	6966.86
5627.10				
Top Width (ft)	616.29	Top Width (ft)	60.53	123.96
431.80				
Vel Total (ft/s)	3.10	Avg. Vel. (ft/s)	1.09	4.17
2.45				
Max Chl Dpth (ft)	14.59	Hydr. Depth (ft)	2.54	13.48
8.37				
Conv. Total (cfs)	637737.3	Conv. (cfs)	8347.8	348172.3
281217.1				
Length Wtd. (ft)	178.82	Wetted Per. (ft)	62.22	125.70
275.04				
Min Ch El (ft)	234.43	Shear (lb/sq ft)	0.06	0.33
0.21				
Alpha	1.27	Stream Power (lb/ft s)	1438.03	0.00
0.00				
Frctn Loss (ft)	0.11	Cum Volume (acre-ft)	134.49	42.08
47.05				
C & E Loss (ft)	0.06	Cum SA (acres)	25.65	3.14
8.02				

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the

largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may

wish to examine this cross section and enter a single n value for the

entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	251.40	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.28	Wt. n-Val.	0.050	0.040
0.050				
W.S. Elev (ft)	251.13	Reach Len. (ft)	147.00	158.70
207.02				
Crit W.S. (ft)	243.94	Flow Area (sq ft)	307.79	1931.58
2876.27				
E.G. Slope (ft/ft)	0.000492	Area (sq ft)	307.79	1931.58
4198.36				
Q Total (cfs)	19382.00	Flow (cfs)	469.24	9841.75
9071.01				
Top Width (ft)	740.41	Top Width (ft)	85.79	123.96
530.65				
Vel Total (ft/s)	3.79	Avg. Vel. (ft/s)	1.52	5.10
3.15				
Max Chl Dpth (ft)	16.70	Hydr. Depth (ft)	3.59	15.58
10.48				
Conv. Total (cfs)	873418.9	Conv. (cfs)	21145.5	443502.7
408770.7				
Length Wtd. (ft)	181.42	Wetted Per. (ft)	87.57	125.70
275.04				
Min Ch El (ft)	234.43	Shear (lb/sq ft)	0.11	0.47
0.32				
Alpha	1.25	Stream Power (lb/ft s)	1438.03	0.00
0.00				
Frctn Loss (ft)	0.13	Cum Volume (acre-ft)	193.59	48.88
65.04				
C & E Loss (ft)	0.04	Cum SA (acres)	28.56	3.14
8.70				

Warning: Divided flow computed for this cross-section.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the

largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may

wish to examine this cross section and enter a single n value for the

entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 1774.36

INPUT

Description:

Station Elevation Data num= 312

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
400	256.12	403.18	256.34	404	256.41	404.81	256.36	408.92	256.09
413.44	256.41	415.13	256.53	416.48	256.48	418.07	256.56	420.88	256.39
424.82	256.24	426.75	256.12	429.29	256.01	432.02	255.88	433.26	255.9
434.82	256.02	438.82	256.23	443.01	256.61	443.15	256.61	443.59	256.58
446.69	256.27	447.69	256.34	451.21	256.58	458.8	257.34	460.36	257.48
460.9	257.53	461.81	257.56	482.67	256.88	482.84	256.87	483.17	256.86
493.42	256.53	502.88	256.23	502.92	256.22	503.31	256.2	517.25	255.31
520.81	255.25	525.74	254.76	530.58	254.5	538.14	254.38	538.33	254.38
538.46	254.36	538.97	254.34	549.94	253.74	554.45	253.69	558.86	253.65
560.77	254.06	562.46	254.05	568.95	254	579.53	253.84	581.47	253.65
592.03	252.9	596.67	252.49	601.03	252.1	602.07	251.98	607.83	251.3
608.83	251.2	609.34	251.17	610.16	251.21	615.71	251.32	617.26	251.28
620.62	251.33	625.79	250.84	627.94	250.55	631.98	250.38	636.93	250.41
638.59	250.39	641.28	250.3	644.02	250.29	647.6	250	649.87	249.7
654.77	249.42	655.96	249.39	659.38	249.78	661.77	250.08	664.22	250
667.06	249.87	669.91	249.7	671.76	249.71	674.39	250.06	676.76	250
681.35	249.96	683.45	249.92	684.37	249.92	686.67	249.99	689.67	249.9
691.66	249.87	693.14	249.94	696.21	250.15	700.41	250.05	700.94	250.06
704.78	250.04	706.92	249.99	709.55	249.88	712.83	249.86	715.53	249.86
717.45	249.86	720	250.09	721.18	250.19	722.03	250.24	726.38	250.14
729.83	250.02	736.29	250.23	739.13	250.21	744.62	250.04	746.42	250.11
750.03	250.44	760.96	247.78	761.13	247.7	767.21	244.74	770.79	243.68
775.15	243.18	776.31	243.14	777.89	243.14	778.49	243.12	782.31	243.22
786.67	243.54	787.06	243.58	787.67	243.5	797.18	242.2	800.74	240.49
804.24	239.38	806.51	239.47	807.45	239.51	833	237.7	838	234.1
858	233.9	878	234.3	883	236.4	937.41	237.85	939.45	238.29
944.27	238.01	947.8	238.81	950.76	238.92	952.33	238.95	952.53	238.93
959.77	239.7	962.4	239.97	963.58	240.32	967.33	241.48	971.05	242.14
971.76	242.52	978.65	244.41	979.74	244.65	980.85	244.73	986.83	245.48
991.79	245.88	993.36	246.05	994.15	245.99	995.15	246.33	998.75	247.06
1001.77	247.65	1002.9	247.87	1003.27	247.93	1003.62	247.93	1004.17	247.97
1007.08	248.32	1007.33	248.32	1012.08	248.48	1014.78	248.54	1016.59	248.41
1018.62	248.24	1019.95	247.93	1022.3	247.65	1024.57	247.4	1026.92	247.15
1029.34	246.85	1031.09	246.35	1032.57	246.5	1036.3	246.41	1038.76	246.19
1042.08	246.03	1048.61	245.87	1049.79	245.92	1054.07	245.74	1054.27	245.72

1054.49	245.72	1055.02	245.75	1057.78	245.92	1059.14	245.92	1061.01	245.83
1064.61	245.72	1067.28	245.61	1069.12	245.66	1070.38	245.7	1073.06	245.74
1075.1	245.74	1077.25	245.78	1080.08	245.84	1080.76	245.84	1082.61	245.72
1082.96	245.68	1083.09	245.7	1087.24	245.93	1090.72	245.98	1091.62	246
1092.72	245.94	1095.05	245.68	1095.89	245.57	1096.42	245.56	1097.29	245.6
1102.49	245.73	1105.67	245.69	1107.17	245.55	1108.74	245.56	1112.21	245.51
1118.68	245.2	1119.01	245.18	1121.7	245.13	1123.81	245.14	1125.12	245.09
1127.68	245.18	1129.9	245.21	1131.45	245.18	1133.99	245.17	1134.63	245.17
1139.67	245.13	1144.5	245.25	1144.96	245.28	1146.79	245.18	1147.36	245.19
1147.51	245.18	1151.76	245.46	1155.62	245.7	1156.33	245.77	1157.14	245.75
1158.57	245.63	1160.44	245.51	1161.55	245.48	1162.76	245.47	1166.46	245.61
1170	245.59	1171.17	245.7	1173.06	245.81	1176.73	245.87	1182.66	245.61
1182.93	245.61	1183.51	245.59	1188.27	245.72	1189.73	245.81	1192.26	245.87
1196.63	245.83	1198.46	245.96	1198.81	245.97	1199.24	246.01	1204.11	246.34
1208.13	246.06	1208.89	246	1211.1	246.13	1212.32	246.06	1214.02	246.1
1217.33	245.97	1218.59	246.06	1220.86	246.18	1222.47	246.16	1223.83	246.02
1226.34	245.98	1228.17	246.09	1230.49	246.3	1233.77	246.15	1234.45	246.2
1236.61	246.37	1238.06	246.33	1239.65	246.36	1243.24	246.51	1246.46	246.6
1248.33	246.72	1249.38	246.68	1254.18	246.58	1259.41	246.96	1260	246.96
1261.3	247.01	1272.49	247.33	1273.56	247.36	1274	247.36	1274.29	247.37
1281.18	247.19	1284.02	247.7	1284.75	247.75	1286.03	247.85	1287.94	247.95
1293.27	248.12	1293.77	248.21	1296.56	248.42	1300.8	248.91	1305.51	248.85
1310.6	249.11	1339.62	250.54	1342.28	250.49	1344.87	250.56	1348.58	250.63
1348.79	250.66	1351.29	250.8	1351.75	250.77	1353.1	250.81	1355.33	250.92
1360.01	251.11	1360.04	251.11	1361.73	251.15	1365.49	251.27	1368.77	251.49
1369.83	251.56	1370.59	251.53	1374.27	251.86	1378.55	251.96	1379.2	251.9
1380.81	251.95	1386.09	252.42	1386.36	252.43	1388.01	252.5	1390.43	252.72
1391.23	252.74	1391.27	252.75						

Manning's n Values			num= 8						
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
400	.05	596.67	.03	806.51	.05	807.45	.045	833	.042
883	.05	947.8	.05	1001.77	.05				

Bank Sta:	Left	Right	Lengths:	Left	Channel	Right	Coeff	Contr.	Expan.
	833	883		86.88	88.52	80.94		.3	.5

Ineffective Flow	num= 2		
Sta L	Sta R	Elev	Permanent
400	792	247.6	F
968	1391.27	245.14	F

Blocked Obstructions	num= 6							
Sta L	Sta R	Elev	Sta L	Sta R	Elev	Sta L	Sta R	Elev
0	12.39	256.22	72.88	101.62	258.82	33	116.32	143.35
463.87	496.08	259.14	69	562.88	594.53	254.32	54	1298.01
								1350.43
								261.12
								17

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	244.22	Element	Left OB	Channel
Right OB				

Vel Head (ft)	0.09	Wt. n-Val.	0.042	0.042
0.050				
W.S. Elev (ft)	244.14	Reach Len. (ft)	25.00	25.00
25.00				
Crit W.S. (ft)	238.89	Flow Area (sq ft)	189.18	488.52
532.46				
E.G. Slope (ft/ft)	0.000313	Area (sq ft)	207.52	488.52
545.41				
Q Total (cfs)	2671.00	Flow (cfs)	341.01	1367.61
962.38				
Top Width (ft)	208.40	Top Width (ft)	63.75	50.00
94.65				
Vel Total (ft/s)	2.21	Avg. Vel. (ft/s)	1.80	2.80
1.81				
Max Chl Dpth (ft)	10.24	Hydr. Depth (ft)	4.61	9.77
6.26				
Conv. Total (cfs)	151083.5	Conv. (cfs)	19289.1	77357.8
54436.7				
Length Wtd. (ft)	25.00	Wetted Per. (ft)	41.68	51.59
85.46				
Min Ch El (ft)	233.90	Shear (lb/sq ft)	0.09	0.18
0.12				
Alpha	1.15	Stream Power (lb/ft s)	1391.27	0.00
0.00				
Frctn Loss (ft)		Cum Volume (acre-ft)	67.68	29.26
18.77				
C & E Loss (ft)		Cum SA (acres)	19.26	2.88
4.41				

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	248.15	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.37	Wt. n-Val.	0.038	0.042
0.050				
W.S. Elev (ft)	247.78	Reach Len. (ft)	25.00	25.00
25.00				
Crit W.S. (ft)	242.56	Flow Area (sq ft)	456.01	670.64
1402.57				
E.G. Slope (ft/ft)	0.001052	Area (sq ft)	456.01	670.64
1402.57				
Q Total (cfs)	10810.00	Flow (cfs)	2071.27	4255.47
4483.26				
Top Width (ft)	505.34	Top Width (ft)	72.04	50.00

383.30				
Vel Total (ft/s)	4.27	Avg. Vel. (ft/s)	4.54	6.35
3.20				
Max Chl Dpth (ft)	13.88	Hydr. Depth (ft)	6.33	13.41
3.66				
Conv. Total (cfs)	333220.2	Conv. (cfs)	63847.2	131175.6
138197.3				
Length Wtd. (ft)	25.00	Wetted Per. (ft)	73.65	51.59
384.91				
Min Ch El (ft)	233.90	Shear (lb/sq ft)	0.41	0.85
0.24				
Alpha	1.32	Stream Power (lb/ft s)	1391.27	0.00
0.00				
Frctn Loss (ft)		Cum Volume (acre-ft)	113.21	35.44
30.55				
C & E Loss (ft)		Cum SA (acres)	23.92	2.82
5.54				

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	249.04	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.38	Wt. n-Val.	0.038	0.042
0.050				
W.S. Elev (ft)	248.67	Reach Len. (ft)	25.00	25.00
25.00				
Crit W.S. (ft)	243.22	Flow Area (sq ft)	521.74	715.13
1758.26				
E.G. Slope (ft/ft)	0.001012	Area (sq ft)	521.74	715.13
1758.26				
Q Total (cfs)	12761.00	Flow (cfs)	2476.67	4643.45
5640.88				
Top Width (ft)	540.70	Top Width (ft)	75.69	50.00
415.01				
Vel Total (ft/s)	4.26	Avg. Vel. (ft/s)	4.75	6.49
3.21				
Max Chl Dpth (ft)	14.77	Hydr. Depth (ft)	6.89	14.30
4.24				
Conv. Total (cfs)	401229.9	Conv. (cfs)	77871.2	145999.0
177359.8				
Length Wtd. (ft)	25.00	Wetted Per. (ft)	77.41	51.59
416.82				
Min Ch El (ft)	233.90	Shear (lb/sq ft)	0.43	0.88
0.27				

Alpha	1.34	Stream Power (lb/ft s)	1391.27	0.00
0.00				
Frctn Loss (ft)		Cum Volume (acre-ft)	133.35	37.73
35.26				
C & E Loss (ft)		Cum SA (acres)	25.42	2.82
6.01				

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	251.23	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.43	Wt. n-Val.	0.039	0.042
0.050				
W.S. Elev (ft)	250.81	Reach Len. (ft)	25.00	25.00
25.00				
Crit W.S. (ft)	245.14	Flow Area (sq ft)	787.74	822.08
2646.05				
E.G. Slope (ft/ft)	0.001084	Area (sq ft)	787.74	822.08
2646.05				
Q Total (cfs)	19382.00	Flow (cfs)	3261.40	6062.87
10057.73				
Top Width (ft)	674.53	Top Width (ft)	206.96	50.00
417.57				
Vel Total (ft/s)	4.55	Avg. Vel. (ft/s)	4.14	7.37
3.80				
Max Chl Dpth (ft)	16.91	Hydr. Depth (ft)	3.81	16.44
6.34				
Conv. Total (cfs)	588781.3	Conv. (cfs)	99073.9	184176.3
305531.1				
Length Wtd. (ft)	25.00	Wetted Per. (ft)	209.10	51.59
421.58				
Min Ch El (ft)	233.90	Shear (lb/sq ft)	0.25	1.08
0.42				
Alpha	1.32	Stream Power (lb/ft s)	1391.27	0.00
0.00				
Frctn Loss (ft)		Cum Volume (acre-ft)	191.74	43.86
48.78				
C & E Loss (ft)		Cum SA (acres)	28.07	2.82
6.44				

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

BRIDGE

RIVER: W Br Neshminy

REACH: 1

RS: 1728.924

INPUT

Description: WBNES_01L - W. Butler Ave

Distance from Upstream XS = 25

Deck/Roadway Width = 32.6

Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num= 331

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
400	256.08		406.25	255.84		409.46	256.01	
411.71	256.06		416.33	256.12		422.73	255.65	
423.26	255.68		424.85	255.67		428.16	255.66	
429.39	255.7		430.54	255.72		433.81	255.61	
438.35	255.66		439.28	255.64		443.18	255.39	
444.59	255.27		445.36	255.3		448.99	255.48	
451.96	255.55		453.27	255.49		455.83	255.18	
458.06	255.08		459.31	255		461.25	254.96	
468.77	255.14		471.69	254.89		473.1	254.83	
475.67	254.73		476.71	254.7		479.81	254.72	
481.5	254.66		483.3	254.52		485.83	254.24	
488.21	254.43		489.07	254.42		490.36	254.38	
494.08	254.18		500.31	254.09		501.87	254.1	
502.9	253.95		505.61	253.73		509.67	253.79	
510.86	253.89		513.36	253.71		515.97	253.55	
516.54	253.51		517.11	253.49		520.67	253.29	
522.42	253.2		528.23	252.77		528.48	252.76	
529.04	252.83		532.02	253.18		532.82	253.16	
538.46	252.61		543.18	252.42		545.92	252.52	
547.19	252.47		547.91	252.43		552.49	252.09	
556.89	251.74		557.72	251.71		558.46	251.73	
562.01	251.98		562.92	251.92		568.11	251.84	
573.48	251.67		574.04	251.61		574.91	251.59	
576.17	251.58		577.72	251.53		578.23	251.54	
584.78	251.38		588.94	251.11		592.59	250.91	
593.66	250.9		599.31	250.59		604.34	250.5	
605.3	250.51		605.87	250.47		609.66	250.45	
611.67	250.32		616.31	249.99		619.48	249.81	
621.2	249.83		622.35	249.75		625	249.65	
629.54	249.44		633.3	249.27		634.93	249.3	
639.42	249.19		639.56	249.2		640.22	249.16	
646.12	248.74		650.11	248.69		651.35	248.66	
654.45	248.94		654.71	248.94		655.45	248.87	
661.44	248.22		665.11	248.13		666.39	248.13	
669	248.23		669.58	248.24		674.06	248.12	

677.7	247.73		680.19	247.56		682.24	247.49
685.22	247.57		686.49	247.58		690.75	247.74
695.73	247.75		696.04	247.73		697.76	247.41
699.31	247.16		699.66	247.15		703.32	247.2
707.54	247.2		713.48	247.36		715.23	247.37
720.56	247.2		721.36	247.27		723.69	247.38
724.59	247.39		725.64	247.32		728.88	247.41
729.97	247.52		734.88	247.2		740.92	247.47
741.17	247.5		742.07	247.49		744.53	247.48
745.24	247.43		748.72	247.39		751.43	247.51
752.99	247.6		754.86	247.56		758.34	247.88
758.45	247.88		765.94	247.99		768.89	248.04
769.79	247.95		780.9	247.97		781.12	248.01
783.34	248.2		784.32	248.22		787.31	248.2
794.13	248.37		795.3	248.39		796.55	248.44
802.01	248.49		814	249		814	252.5
817	252.5	244.9	942.5	252.5	244.9	945.5	252.5
945.5	249		965.16	248.51		966.25	248.48
969.52	248.45		971.32	248.26		974.27	248.16
977.77	248.41		979.49	248.35		982.47	248.11
984.98	247.86		986.75	247.94		988.15	247.87
992.74	247.91		993.13	247.93		1001.27	247.55
1001.87	247.53		1003.02	247.56		1004.19	247.51
1008.2	247.5		1012.15	247.4		1013.01	247.4
1015.33	247.35		1016.99	247.29		1018.28	247.21
1021.08	247.18		1024.79	246.87		1025.55	246.88
1027.2	246.94		1027.94	246.92		1031.15	246.76
1034.21	246.69		1035.8	246.61		1037.41	246.63
1040.2	246.82		1040.46	246.82		1045.08	246.45
1049.84	246.61		1053.04	246.34		1053.64	246.34
1054.11	246.3		1057.78	246.24		1061.54	246.02
1062.51	246.02		1064.73	246.25		1065.61	246.23
1068.47	246.22		1070.92	246.11		1072.8	246
1075.01	245.91		1076.76	245.72		1078.06	245.8
1081.94	245.87		1087.68	245.53		1088.32	245.52
1090.88	245.55		1091.09	245.56		1098.76	245.54
1099.32	245.55		1100.05	245.49		1101.74	245.16
1104.45	245.2		1107.41	245.08		1109.59	244.97
1112.88	245.1		1114.25	245.21		1115.8	245.27
1119.85	245.34		1125.69	245.26		1125.98	245.24
1126.89	245.29		1128.46	245.36		1131.98	245.34
1134.66	245.3		1138.33	245.27		1141.26	245.14
1146.6	245.06		1151.25	245.16		1152.14	245.2
1155.15	245.08		1155.71	245.04		1158.78	245.04
1162.06	244.99		1163.34	244.98		1164.81	244.89
1171.06	244.67		1173.17	244.78		1177.01	244.67
1178.05	244.72		1179.95	245.05		1186.14	245.05
1187.65	245.08		1188.57	245.03		1189.99	245.04
1191.62	245.17		1192.77	245.35		1194.96	245.34
1196.79	245.34		1199.49	245.27		1202.68	245.32

1204.24	245.43	1205.73	245.49	1209.29	245.3
1212.52	245.4	1213.94	245.4	1215.48	245.35
1218.32	245.68	1218.43	245.68	1220.03	245.48
1228.71	245.66	1230.21	245.58	1232.39	246.05
1233.25	246.18	1237.9	246.11	1239.85	246.07
1241.59	246.21	1243.65	246.49	1245.24	246.5
1247.53	246.5	1251.6	246.54	1253.96	246.65
1255.5	246.78	1259.73	247	1263.04	247.11
1263.79	246.99	1266.11	247.25	1268	247.21
1273.17	247.4	1273.43	247.42	1280.12	248.24
1281.27	248.23	1282.01	248.2	1285.3	248.17
1288.73	248.29	1289.52	248.38	1290.67	248.48
1295.32	248.61	1297.46	248.85	1298.85	249.1
1299.28	249.12	1303.04	249.09	1306.26	249.07
1308.08	249.12	1312.15	249.38	1316.83	249.58
1317.27	249.64	1320.49	249.83	1323.25	249.98
1325.49	250.24	1327.97	250.3	1330.43	250.33
1333.48	250.31	1334.18	250.21	1335.41	250.37
1339.18	250.65	1342.49	250.98	1343.04	251
1346.86	251.09	1351.19	251.3	1352.19	251.39
1354.88	251.49	1357.25	251.67	1357.82	251.68
1359.24	251.84	1360.39	251.89	1361.48	251.97
1365.55	252.35	1367.71	252.46	1369.02	252.52
1371.93	252.58	1372.96	252.68	1373.34	252.73
1376.11	252.99	1376.72	252.99	1378.35	252.9
1378.63	252.91				

Upstream Bridge Cross Section Data

Station Elevation Data num= 312

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
400	256.12	403.18	256.34	404	256.41	404.81	256.36	408.92	256.09
413.44	256.41	415.13	256.53	416.48	256.48	418.07	256.56	420.88	256.39
424.82	256.24	426.75	256.12	429.29	256.01	432.02	255.88	433.26	255.9
434.82	256.02	438.82	256.23	443.01	256.61	443.15	256.61	443.59	256.58
446.69	256.27	447.69	256.34	451.21	256.58	458.8	257.34	460.36	257.48
460.9	257.53	461.81	257.56	482.67	256.88	482.84	256.87	483.17	256.86
493.42	256.53	502.88	256.23	502.92	256.22	503.31	256.2	517.25	255.31
520.81	255.25	525.74	254.76	530.58	254.5	538.14	254.38	538.33	254.38
538.46	254.36	538.97	254.34	549.94	253.74	554.45	253.69	558.86	253.65
560.77	254.06	562.46	254.05	568.95	254	579.53	253.84	581.47	253.65
592.03	252.9	596.67	252.49	601.03	252.1	602.07	251.98	607.83	251.3
608.83	251.2	609.34	251.17	610.16	251.21	615.71	251.32	617.26	251.28
620.62	251.33	625.79	250.84	627.94	250.55	631.98	250.38	636.93	250.41
638.59	250.39	641.28	250.3	644.02	250.29	647.6	250	649.87	249.7
654.77	249.42	655.96	249.39	659.38	249.78	661.77	250.08	664.22	250
667.06	249.87	669.91	249.7	671.76	249.71	674.39	250.06	676.76	250
681.35	249.96	683.45	249.92	684.37	249.92	686.67	249.99	689.67	249.9
691.66	249.87	693.14	249.94	696.21	250.15	700.41	250.05	700.94	250.06
704.78	250.04	706.92	249.99	709.55	249.88	712.83	249.86	715.53	249.86
717.45	249.86	720	250.09	721.18	250.19	722.03	250.24	726.38	250.14

729.83	250.02	736.29	250.23	739.13	250.21	744.62	250.04	746.42	250.11
750.03	250.44	760.96	247.78	761.13	247.7	767.21	244.74	770.79	243.68
775.15	243.18	776.31	243.14	777.89	243.14	778.49	243.12	782.31	243.22
786.67	243.54	787.06	243.58	787.67	243.5	797.18	242.2	800.74	240.49
804.24	239.38	806.51	239.47	807.45	239.51	833	236.3	838	232.7
858	232.5	878	232.9	883	235	937.41	237.85	939.45	238.29
944.27	238.01	947.8	238.81	950.76	238.92	952.33	238.95	952.53	238.93
959.77	239.7	962.4	239.97	963.58	240.32	967.33	241.48	971.05	242.14
971.76	242.52	978.65	244.41	979.74	244.65	980.85	244.73	986.83	245.48
991.79	245.88	993.36	246.05	994.15	245.99	995.15	246.33	998.75	247.06
1001.77	247.65	1002.9	247.87	1003.27	247.93	1003.62	247.93	1004.17	247.97
1007.08	248.32	1007.33	248.32	1012.08	248.48	1014.78	248.54	1016.59	248.41
1018.62	248.24	1019.95	247.93	1022.3	247.65	1024.57	247.4	1026.92	247.15
1029.34	246.85	1031.09	246.35	1032.57	246.5	1036.3	246.41	1038.76	246.19
1042.08	246.03	1048.61	245.87	1049.79	245.92	1054.07	245.74	1054.27	245.72
1054.49	245.72	1055.02	245.75	1057.78	245.92	1059.14	245.92	1061.01	245.83
1064.61	245.72	1067.28	245.61	1069.12	245.66	1070.38	245.7	1073.06	245.74
1075.1	245.74	1077.25	245.78	1080.08	245.84	1080.76	245.84	1082.61	245.72
1082.96	245.68	1083.09	245.7	1087.24	245.93	1090.72	245.98	1091.62	246
1092.72	245.94	1095.05	245.68	1095.89	245.57	1096.42	245.56	1097.29	245.6
1102.49	245.73	1105.67	245.69	1107.17	245.55	1108.74	245.56	1112.21	245.51
1118.68	245.2	1119.01	245.18	1121.7	245.13	1123.81	245.14	1125.12	245.09
1127.68	245.18	1129.9	245.21	1131.45	245.18	1133.99	245.17	1134.63	245.17
1139.67	245.13	1144.5	245.25	1144.96	245.28	1146.79	245.18	1147.36	245.19
1147.51	245.18	1151.76	245.46	1155.62	245.7	1156.33	245.77	1157.14	245.75
1158.57	245.63	1160.44	245.51	1161.55	245.48	1162.76	245.47	1166.46	245.61
1170	245.59	1171.17	245.7	1173.06	245.81	1176.73	245.87	1182.66	245.61
1182.93	245.61	1183.51	245.59	1188.27	245.72	1189.73	245.81	1192.26	245.87
1196.63	245.83	1198.46	245.96	1198.81	245.97	1199.24	246.01	1204.11	246.34
1208.13	246.06	1208.89	246	1211.1	246.13	1212.32	246.06	1214.02	246.1
1217.33	245.97	1218.59	246.06	1220.86	246.18	1222.47	246.16	1223.83	246.02
1226.34	245.98	1228.17	246.09	1230.49	246.3	1233.77	246.15	1234.45	246.2
1236.61	246.37	1238.06	246.33	1239.65	246.36	1243.24	246.51	1246.46	246.6
1248.33	246.72	1249.38	246.68	1254.18	246.58	1259.41	246.96	1260	246.96
1261.3	247.01	1272.49	247.33	1273.56	247.36	1274	247.36	1274.29	247.37
1281.18	247.19	1284.02	247.7	1284.75	247.75	1286.03	247.85	1287.94	247.95
1293.27	248.12	1293.77	248.21	1296.56	248.42	1300.8	248.91	1305.51	248.85
1310.6	249.11	1339.62	250.54	1342.28	250.49	1344.87	250.56	1348.58	250.63
1348.79	250.66	1351.29	250.8	1351.75	250.77	1353.1	250.81	1355.33	250.92
1360.01	251.11	1360.04	251.11	1361.73	251.15	1365.49	251.27	1368.77	251.49
1369.83	251.56	1370.59	251.53	1374.27	251.86	1378.55	251.96	1379.2	251.9
1380.81	251.95	1386.09	252.42	1386.36	252.43	1388.01	252.5	1390.43	252.72
1391.23	252.74	1391.27	252.75						

Manning's	n Values		num=	7					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
400	.05	596.67	.03	806.51	.05	833	.042	883	.05
947.8	.05	1001.77	.05						

Bank Sta:	Left	Right	Coeff	Contr.	Expan.

833	883	.3	.5					
Ineffective Flow	num=	2						
Sta L	Sta R	Elev	Permanent					
400	792	247.6	F					
968	1391.27	245.14	F					
Blocked Obstructions	num=	6						
Sta L	Sta R	Elev	Sta L	Sta R	Elev	Sta L	Sta R	Elev
0	12.39	256.2287	72.88	101.62	258.8233	116.32	143.35	259.6797
463.87	496.08	259.1469	562.88	594.53	254.3254	1298.01	1350.43	261.1217

Downstream Deck/Roadway Coordinates

num=	331													
Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
400	256.08				406.25	255.84				409.46	256.01			
411.71	256.06				416.33	256.12				422.73	255.65			
423.26	255.68				424.85	255.67				428.16	255.66			
429.39	255.7				430.54	255.72				433.81	255.61			
438.35	255.66				439.28	255.64				443.18	255.39			
444.59	255.27				445.36	255.3				448.99	255.48			
451.96	255.55				453.27	255.49				455.83	255.18			
458.06	255.08				459.31	255				461.25	254.96			
468.77	255.14				471.69	254.89				473.1	254.83			
475.67	254.73				476.71	254.7				479.81	254.72			
481.5	254.66				483.3	254.52				485.83	254.24			
488.21	254.43				489.07	254.42				490.36	254.38			
494.08	254.18				500.31	254.09				501.87	254.1			
502.9	253.95				505.61	253.73				509.67	253.79			
510.86	253.89				513.36	253.71				515.97	253.55			
516.54	253.51				517.11	253.49				520.67	253.29			
522.42	253.2				528.23	252.77				528.48	252.76			
529.04	252.83				532.02	253.18				532.82	253.16			
538.46	252.61				543.18	252.42				545.92	252.52			
547.19	252.47				547.91	252.43				552.49	252.09			
556.89	251.74				557.72	251.71				558.46	251.73			
562.01	251.98				562.92	251.92				568.11	251.84			
573.48	251.67				574.04	251.61				574.91	251.59			
576.17	251.58				577.72	251.53				578.23	251.54			
584.78	251.38				588.94	251.11				592.59	250.91			
593.66	250.9				599.31	250.59				604.34	250.5			
605.3	250.51				605.87	250.47				609.66	250.45			
611.67	250.32				616.31	249.99				619.48	249.81			
621.2	249.83				622.35	249.75				625	249.65			
629.54	249.44				633.3	249.27				634.93	249.3			
639.42	249.19				639.56	249.2				640.22	249.16			
646.12	248.74				650.11	248.69				651.35	248.66			
654.45	248.94				654.71	248.94				655.45	248.87			
661.44	248.22				665.11	248.13				666.39	248.13			
669	248.23				669.58	248.24				674.06	248.12			
677.7	247.73				680.19	247.56				682.24	247.49			
685.22	247.57				686.49	247.58				690.75	247.74			

695.73	247.75		696.04	247.73		697.76	247.41
699.31	247.16		699.66	247.15		703.32	247.2
707.54	247.2		713.48	247.36		715.23	247.37
720.56	247.2		721.36	247.27		723.69	247.38
724.59	247.39		725.64	247.32		728.88	247.41
729.97	247.52		734.88	247.2		740.92	247.47
741.17	247.5		742.07	247.49		744.53	247.48
745.24	247.43		748.72	247.39		751.43	247.51
752.99	247.6		754.86	247.56		758.34	247.88
758.45	247.88		765.94	247.99		768.89	248.04
769.79	247.95		780.9	247.97		781.12	248.01
783.34	248.2		784.32	248.22		787.31	248.2
794.13	248.37		795.3	248.39		796.55	248.44
802.01	248.49		814	249		814	252.5
817	252.5	244.9	942.5	252.5	244.9	945.5	252.5
945.5	249		965.16	248.51		966.25	248.48
969.52	248.45		971.32	248.26		974.27	248.16
977.77	248.41		979.49	248.35		982.47	248.11
984.98	247.86		986.75	247.94		988.15	247.87
992.74	247.91		993.13	247.93		1001.27	247.55
1001.87	247.53		1003.02	247.56		1004.19	247.51
1008.2	247.5		1012.15	247.4		1013.01	247.4
1015.33	247.35		1016.99	247.29		1018.28	247.21
1021.08	247.18		1024.79	246.87		1025.55	246.88
1027.2	246.94		1027.94	246.92		1031.15	246.76
1034.21	246.69		1035.8	246.61		1037.41	246.63
1040.2	246.82		1040.46	246.82		1045.08	246.45
1049.84	246.61		1053.04	246.34		1053.64	246.34
1054.11	246.3		1057.78	246.24		1061.54	246.02
1062.51	246.02		1064.73	246.25		1065.61	246.23
1068.47	246.22		1070.92	246.11		1072.8	246
1075.01	245.91		1076.76	245.72		1078.06	245.8
1081.94	245.87		1087.68	245.53		1088.32	245.52
1090.88	245.55		1091.09	245.56		1098.76	245.54
1099.32	245.55		1100.05	245.49		1101.74	245.16
1104.45	245.2		1107.41	245.08		1109.59	244.97
1112.88	245.1		1114.25	245.21		1115.8	245.27
1119.85	245.34		1125.69	245.26		1125.98	245.24
1126.89	245.29		1128.46	245.36		1131.98	245.34
1134.66	245.3		1138.33	245.27		1141.26	245.14
1146.6	245.06		1151.25	245.16		1152.14	245.2
1155.15	245.08		1155.71	245.04		1158.78	245.04
1162.06	244.99		1163.34	244.98		1164.81	244.89
1171.06	244.67		1173.17	244.78		1177.01	244.67
1178.05	244.72		1179.95	245.05		1186.14	245.05
1187.65	245.08		1188.57	245.03		1189.99	245.04
1191.62	245.17		1192.77	245.35		1194.96	245.34
1196.79	245.34		1199.49	245.27		1202.68	245.32
1204.24	245.43		1205.73	245.49		1209.29	245.3
1212.52	245.4		1213.94	245.4		1215.48	245.35

1218.32	245.68	1218.43	245.68	1220.03	245.48
1228.71	245.66	1230.21	245.58	1232.39	246.05
1233.25	246.18	1237.9	246.11	1239.85	246.07
1241.59	246.21	1243.65	246.49	1245.24	246.5
1247.53	246.5	1251.6	246.54	1253.96	246.65
1255.5	246.78	1259.73	247	1263.04	247.11
1263.79	246.99	1266.11	247.25	1268	247.21
1273.17	247.4	1273.43	247.42	1280.12	248.24
1281.27	248.23	1282.01	248.2	1285.3	248.17
1288.73	248.29	1289.52	248.38	1290.67	248.48
1295.32	248.61	1297.46	248.85	1298.85	249.1
1299.28	249.12	1303.04	249.09	1306.26	249.07
1308.08	249.12	1312.15	249.38	1316.83	249.58
1317.27	249.64	1320.49	249.83	1323.25	249.98
1325.49	250.24	1327.97	250.3	1330.43	250.33
1333.48	250.31	1334.18	250.21	1335.41	250.37
1339.18	250.65	1342.49	250.98	1343.04	251
1346.86	251.09	1351.19	251.3	1352.19	251.39
1354.88	251.49	1357.25	251.67	1357.82	251.68
1359.24	251.84	1360.39	251.89	1361.48	251.97
1365.55	252.35	1367.71	252.46	1369.02	252.52
1371.93	252.58	1372.96	252.68	1373.34	252.73
1376.11	252.99	1376.72	252.99	1378.35	252.9
1378.63	252.91				

Downstream Bridge Cross Section Data

Station	Elevation	Data	num=	318					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
400	256.34	404.86	256.29	409.17	256.3	410.49	256.13	413.42	256.24
415.04	256.28	416.98	256.23	418.16	256.1	421.76	255.68	424.38	255.48
425.95	255.21	426.9	255.2	428.66	255.15	432.62	255.08	433.38	255.26
440.67	255.64	444.67	255.57	446.51	255.79	449.2	255.54	453.72	255.14
455.08	255.07	456.59	255.04	458.36	255.02	462.51	255.24	467.24	255.13
469.54	255.15	472.54	255.03	473.51	254.97	482.03	254.73	483.96	254.23
485.26	253.99	487.53	253.89	488.26	253.93	488.68	253.92	492.8	253.86
496.3	253.84	497.56	253.81	502.44	253.94	503.54	253.93	509.17	253.81
510.98	253.8	512.69	253.82	514.49	253.82	519.44	253.72	520.55	253.86
528.46	253.7	547.06	252.61	551.76	252.52	552.16	252.5	554.5	252.41
559.96	252.15	561.54	252.08	563.11	252	580.37	251.22	589.54	251.02
589.79	251	590.66	250.99	592	250.81	594.66	250.56	597.72	250.41
601.3	250.16	603.36	250.07	605.51	249.9	607.86	250	609	249.98
610.1	250	614.25	249.94	618.48	249.82	619.36	249.81	622.69	249.97
623.82	249.98	625.02	249.99	626.56	250	637.87	250.17	645.18	249.81
646.18	249.74	658.36	248.94	664.08	248.65	666.82	248.44	668.07	248.39
669.65	248.34	683.27	247.82	686.07	247.61	687.2	247.58	694.12	247.34
694.38	247.33	694.77	247.36	700.46	247.91	702.85	247.85	706.53	247.83
709.4	247.83	711.17	247.7	713.59	247.61	715.36	247.6	715.61	247.65
725.19	247.48	727.38	247.5	728.79	247.38	732.12	247.29	732.59	247.27
733.74	247.35	735.78	247.44	737.56	247.51	738.68	247.48	740.98	247.61
742.23	247.53	745.92	247.07	747.97	247.07	749.96	246.96	751.71	246.87

753.9	246.95	755.2	246.95	758.42	246.74	760.48	246.78	765.87	246.63
768.29	247.03	768.52	247.03	768.76	247.01	773.4	246.54	777.73	246.5
778.01	246.53	781.31	246.47	782.56	246.4	785.25	246.39	789.08	246.38
791.19	246.58	792.43	246.59	793.75	246.47	800.71	244.76	801.64	244.44
804.54	243.12	807.4	242.27	807.86	242.21	808.09	242.11	813.36	240.46
818.09	239.05	818.83	238.77	821.84	238.07	833	237.7	838	234.1
858	233.7	878	234.3	883	236.4	905.71	235.51	907	235.59
909.41	235.45	911.52	235.39	913.61	235.33	915.49	235.17	916.81	235.15
918.74	234.91	921.66	234.74	924.51	234.75	927.09	234.78	928.47	234.92
930.16	234.86	934	234.85	936.31	235.09	941.66	235.48	941.84	235.51
942.01	235.56	942.11	235.62	944.74	236.59	951.39	239.03	955.54	240.09
961.4	240.36	968.37	240	972.97	240.7	973.35	240.73	973.7	240.76
976.31	240.57	980.52	241.32	986.03	241.87	988.75	241.58	993.2	242.17
998.34	242	1002.29	240.28	1003.07	240.21	1011.11	240.86	1013.53	241.13
1017.59	242.14	1019.56	242.09	1024.24	241.08	1026.15	240.86	1027.58	241.03
1030.57	241.51	1031.26	241.47	1035.48	240.71	1037.02	240.75	1039.15	240.76
1040.15	240.78	1042.75	241.51	1045.6	241.14	1050.71	241.48	1052.62	241.38
1053.51	241.59	1054.03	241.54	1062.41	241.99	1062.87	241.86	1065.14	241.92
1068.13	242.1	1074.35	242.55	1074.48	242.56	1074.5	242.56	1074.58	242.56
1080.43	242.86	1082.87	242.82	1084.45	242.87	1088.96	242.89	1089.37	242.89
1089.98	242.96	1093.94	242.87	1097.37	243.01	1098.41	242.98	1102.45	242.87
1102.51	242.87	1102.52	242.87	1106.32	243.34	1109.09	243.4	1110.32	243.3
1111.97	243.58	1113.37	243.84	1114.89	243.78	1116.71	243.71	1119.7	243.85
1124.76	243.96	1127.22	244.05	1128.62	244.11	1129.55	244	1131.73	244.05
1134.97	243.92	1136.95	244.04	1138.84	244.05	1142.99	244.14	1146.84	243.8
1149.27	244.33	1150.88	244.31	1152.27	244.24	1155.9	244.34	1159.38	244.61
1160.66	244.57	1161.99	244.56	1164.02	244.75	1164.73	244.76	1165.32	244.78
1169.04	244.51	1172.27	244.83	1175.81	244.75	1177.36	244.79	1178.39	244.78
1179	244.82	1182.55	244.96	1185.8	245.09	1186.43	245.09	1188.57	245.24
1190.07	245.26	1191.56	245.39	1193.16	245.4	1196.77	245.38	1200.19	245.48
1201.27	245.55	1202.85	245.56	1205.99	245.46	1210.28	245.43	1211.94	245.38
1212.74	245.34	1213.13	245.26	1214.14	245.11	1215.85	244.92	1217.99	244.74
1218.97	244.83	1221.35	245.05	1222.8	245.17	1223.64	245.15	1225.83	245.21
1229.55	245.31	1230.27	245.37	1230.49	245.39	1232.18	245.42	1238.13	245.64
1238.85	245.66	1239.07	245.7	1240.81	245.9	1243.12	245.9	1251.19	246.05
1253.93	246.05	1256.13	246.13	1263.67	246.62	1268.99	246.97	1271.03	247.17
1275.16	247.41	1277.75	247.62	1282.02	248.05	1282.37	248.07	1284.04	248.46
1290.95	250.9	1291.07	250.94	1291.09	250.94	1291.2	250.95	1292.96	251.02
1293.2	251.09	1293.42	251.12	1296.26	251.48	1297.55	251.29	1300.25	251.39
1305.42	251.62	1316.69	252.2	1331.33	252.91	1336.49	252.86	1340.6	252.5
1344.58	252.92	1348.79	252.67	1350.23	252.68	1358.41	253.32	1360.75	253.35
1364.38	253.41	1369.47	253.23	1369.5	253.23				

Manning's	n Values		num=	8					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
400	.05	732.12	.03	808.09	.05	833	.042	883	.12
907	.05	951.39	.05	1225.83	.05				

Bank Sta:	Left	Right	Coeff Contr.	Expan.
	833	883	.3	.5

Ineffective Flow num= 2
Sta L Sta R Elev Permanent
400 807 246.65 F
972.5 1369.5 244.1 F

Blocked Obstructions num= 7
Sta L Sta R Elev Sta L Sta R Elev Sta L Sta R Elev
0 10.49254.6451 49.53 68.82255.5246 86.57 117.46256.9026
137.41 171.1257.3667 238.29 280.03257.4501 521.89 585.75252.1089
633.51 665.15242.6655

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .98
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Piers = 2

Pier Data

Pier Station Upstream= 858.25 Downstream= 858.25
Upstream num= 2
Width Elev Width Elev
3.5 232.5 3.5 244.9
Downstream num= 2
Width Elev Width Elev
3.5 233.7 3.5 244.9

Pier Data

Pier Station Upstream= 901.25 Downstream= 901.25
Upstream num= 2
Width Elev Width Elev
3.5 232.5 3.5 244.9
Downstream num= 2
Width Elev Width Elev
3.5 233.7 3.5 244.9

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy
Momentum Cd = 1
Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Pressure and Weir flow
Submerged Inlet Cd =
Submerged Inlet + Outlet Cd = .8
Max Low Cord =

Additional Bridge Parameters

Add Friction component to Momentum

Do not add Weight component to Momentum

Class B flow critical depth computations use critical depth
inside the bridge at the upstream end

Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT Profile #10%

E.G. US. (ft)	244.22	Element	Inside BR US
Inside BR DS			
W.S. US. (ft)	244.14	E.G. Elev (ft)	243.63
243.81			
Q Total (cfs)	2671.00	W.S. Elev (ft)	243.50
243.68			
Q Bridge (cfs)	2671.00	Crit W.S. (ft)	237.77
237.84			
Q Weir (cfs)		Max Chl Dpth (ft)	10.98
9.95			
Weir Sta Lft (ft)		Vel Total (ft/s)	2.74
2.71			
Weir Sta Rgt (ft)		Flow Area (sq ft)	973.08
987.16			
Weir Submerg		Froude # Chl	0.15
0.16			
Weir Max Depth (ft)		Specif Force (cu ft)	4475.86
4454.02			
Min El Weir Flow (ft)	245.17	Hydr Depth (ft)	8.21
8.33			
Min El Prs (ft)	244.90	W.P. Total (ft)	167.94
168.53			
Delta EG (ft)	0.43	Conv. Total (cfs)	104997.0
98713.1			
Delta WS (ft)	0.44	Top Width (ft)	118.51
118.51			
BR Open Area (sq ft)	1131.79	Frctn Loss (ft)	
BR Open Vel (ft/s)	2.74	C & E Loss (ft)	
Coef of Q		Shear Total (lb/sq ft)	0.23
0.27			
Br Sel Method	Momentum	Power Total (lb/ft s)	400.00
400.00			

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

BRIDGE OUTPUT Profile #2%

E.G. US. (ft)	248.15	Element	Inside BR US
Inside BR DS			
W.S. US. (ft)	247.78	E.G. Elev (ft)	248.15
247.69			
Q Total (cfs)	10810.00	W.S. Elev (ft)	247.78
247.02			
Q Bridge (cfs)	8740.63	Crit W.S. (ft)	242.06
242.05			
Q Weir (cfs)	2069.37	Max Chl Dpth (ft)	15.26
13.29			
Weir Sta Lft (ft)	759.44	Vel Total (ft/s)	6.43
6.01			
Weir Sta Rgt (ft)	1279.39	Flow Area (sq ft)	1682.06
1799.56			
Weir Submerg	0.35	Froude # Chl	0.35
0.40			
Weir Max Depth (ft)	2.99	Specif Force (cu ft)	11905.71
10879.38			
Min El Weir Flow (ft)	245.17	Hydr Depth (ft)	6.44
7.56			
Min El Prs (ft)	244.90	W.P. Total (ft)	556.45
532.70			
Delta EG (ft)	1.06	Conv. Total (cfs)	
Delta WS (ft)	1.08	Top Width (ft)	261.16
237.99			
BR Open Area (sq ft)	1131.79	Frctn Loss (ft)	
BR Open Vel (ft/s)	7.72	C & E Loss (ft)	
Coef of Q		Shear Total (lb/sq ft)	
Br Sel Method	Press/Weir	Power Total (lb/ft s)	400.00
400.00			

Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

Note: Multiple critical depths were found at this location. The critical depth

with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from

the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy are based on critical depth over the weir.

BRIDGE OUTPUT Profile #1%

E.G. US. (ft)	249.04	Element	Inside BR US
Inside BR DS			
W.S. US. (ft)	248.67	E.G. Elev (ft)	249.04
248.58			
Q Total (cfs)	12761.00	W.S. Elev (ft)	248.67
247.77			
Q Bridge (cfs)	9021.34	Crit W.S. (ft)	242.84
242.86			
Q Weir (cfs)	3739.66	Max Chl Dpth (ft)	16.15
14.04			
Weir Sta Lft (ft)	755.76	Vel Total (ft/s)	6.34
5.77			
Weir Sta Rgt (ft)	1298.01	Flow Area (sq ft)	2014.06
2209.77			
Weir Submerg	0.46	Froude # Chl	0.33
0.40			
Weir Max Depth (ft)	3.89	Specif Force (cu ft)	13846.08
12609.93			
Min El Weir Flow (ft)	245.17	Hydr Depth (ft)	5.22
6.46			
Min El Prs (ft)	244.90	W.P. Total (ft)	681.47
636.72			
Delta EG (ft)	1.15	Conv. Total (cfs)	
Delta WS (ft)	1.16	Top Width (ft)	385.87
341.85			
BR Open Area (sq ft)	1131.79	Frctn Loss (ft)	
BR Open Vel (ft/s)	7.97	C & E Loss (ft)	
Coef of Q		Shear Total (lb/sq ft)	
Br Sel Method	Press/Weir	Power Total (lb/ft s)	400.00
400.00			

Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy are based on critical depth over the weir.

BRIDGE OUTPUT Profile #.2%

E.G. US. (ft)	251.23	Element	Inside BR US
Inside BR DS			
W.S. US. (ft)	250.81	E.G. Elev (ft)	251.23
250.46			
Q Total (cfs)	19382.00	W.S. Elev (ft)	250.81
249.67			
Q Bridge (cfs)	9071.15	Crit W.S. (ft)	248.22
248.37			
Q Weir (cfs)	10310.85	Max Chl Dpth (ft)	18.29
15.94			
Weir Sta Lft (ft)	608.51	Vel Total (ft/s)	6.31
5.73			
Weir Sta Rgt (ft)	1298.01	Flow Area (sq ft)	3069.89
3379.79			
Weir Submerg	0.62	Froude # Chl	0.29
0.35			
Weir Max Depth (ft)	6.07	Specif Force (cu ft)	20096.61
18011.86			
Min El Weir Flow (ft)	245.17	Hydr Depth (ft)	5.68
6.64			
Min El Prs (ft)	244.90	W.P. Total (ft)	841.98
805.40			
Delta EG (ft)	1.17	Conv. Total (cfs)	
Delta WS (ft)	1.13	Top Width (ft)	540.47
508.76			
BR Open Area (sq ft)	1131.79	Frctn Loss (ft)	

BR Open Vel (ft/s)	8.01	C & E Loss (ft)	
Coef of Q		Shear Total (lb/sq ft)	
Br Sel Method	Press/Weir	Power Total (lb/ft s)	400.00
400.00			

Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the energy is based on critical depth over the weir. The water surface has been projected.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 1685.841

INPUT

Description:

Station	Elevation	Data	num=	318						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
400	256.34	404.86	256.29	409.17	256.3	410.49	256.13	413.42	256.24	
415.04	256.28	416.98	256.23	418.16	256.1	421.76	255.68	424.38	255.48	
425.95	255.21	426.9	255.2	428.66	255.15	432.62	255.08	433.38	255.26	
440.67	255.64	444.67	255.57	446.51	255.79	449.2	255.54	453.72	255.14	
455.08	255.07	456.59	255.04	458.36	255.02	462.51	255.24	467.24	255.13	
469.54	255.15	472.54	255.03	473.51	254.97	482.03	254.73	483.96	254.23	
485.26	253.99	487.53	253.89	488.26	253.93	488.68	253.92	492.8	253.86	
496.3	253.84	497.56	253.81	502.44	253.94	503.54	253.93	509.17	253.81	
510.98	253.8	512.69	253.82	514.49	253.82	519.44	253.72	520.55	253.86	
528.46	253.7	547.06	252.61	551.76	252.52	552.16	252.5	554.5	252.41	
559.96	252.15	561.54	252.08	563.11	252	580.37	251.22	589.54	251.02	
589.79	251	590.66	250.99	592	250.81	594.66	250.56	597.72	250.41	
601.3	250.16	603.36	250.07	605.51	249.9	607.86	250	609	249.98	

610.1	250	614.25	249.94	618.48	249.82	619.36	249.81	622.69	249.97
623.82	249.98	625.02	249.99	626.56	250	637.87	250.17	645.18	249.81
646.18	249.74	658.36	248.94	664.08	248.65	666.82	248.44	668.07	248.39
669.65	248.34	683.27	247.82	686.07	247.61	687.2	247.58	694.12	247.34
694.38	247.33	694.77	247.36	700.46	247.91	702.85	247.85	706.53	247.83
709.4	247.83	711.17	247.7	713.59	247.61	715.36	247.6	715.61	247.65
725.19	247.48	727.38	247.5	728.79	247.38	732.12	247.29	732.59	247.27
733.74	247.35	735.78	247.44	737.56	247.51	738.68	247.48	740.98	247.61
742.23	247.53	745.92	247.07	747.97	247.07	749.96	246.96	751.71	246.87
753.9	246.95	755.2	246.95	758.42	246.74	760.48	246.78	765.87	246.63
768.29	247.03	768.52	247.03	768.76	247.01	773.4	246.54	777.73	246.5
778.01	246.53	781.31	246.47	782.56	246.4	785.25	246.39	789.08	246.38
791.19	246.58	792.43	246.59	793.75	246.47	800.71	244.76	801.64	244.44
804.54	243.12	807.4	242.27	807.86	242.21	808.09	242.11	813.36	240.46
818.09	239.05	818.83	238.77	821.84	238.07	833	237.7	838	234.1
858	233.7	878	234.3	883	236.4	905.71	235.51	907	235.59
909.41	235.45	911.52	235.39	913.61	235.33	915.49	235.17	916.81	235.15
918.74	234.91	921.66	234.74	924.51	234.75	927.09	234.78	928.47	234.92
930.16	234.86	934	234.85	936.31	235.09	941.66	235.48	941.84	235.51
942.01	235.56	942.11	235.62	944.74	236.59	951.39	239.03	955.54	240.09
961.4	240.36	968.37	240	972.97	240.7	973.35	240.73	973.7	240.76
976.31	240.57	980.52	241.32	986.03	241.87	988.75	241.58	993.2	242.17
998.34	242	1002.29	240.28	1003.07	240.21	1011.11	240.86	1013.53	241.13
1017.59	242.14	1019.56	242.09	1024.24	241.08	1026.15	240.86	1027.58	241.03
1030.57	241.51	1031.26	241.47	1035.48	240.71	1037.02	240.75	1039.15	240.76
1040.15	240.78	1042.75	241.51	1045.6	241.14	1050.71	241.48	1052.62	241.38
1053.51	241.59	1054.03	241.54	1062.41	241.99	1062.87	241.86	1065.14	241.92
1068.13	242.1	1074.35	242.55	1074.48	242.56	1074.5	242.56	1074.58	242.56
1080.43	242.86	1082.87	242.82	1084.45	242.87	1088.96	242.89	1089.37	242.89
1089.98	242.96	1093.94	242.87	1097.37	243.01	1098.41	242.98	1102.45	242.87
1102.51	242.87	1102.52	242.87	1106.32	243.34	1109.09	243.4	1110.32	243.3
1111.97	243.58	1113.37	243.84	1114.89	243.78	1116.71	243.71	1119.7	243.85
1124.76	243.96	1127.22	244.05	1128.62	244.11	1129.55	244	1131.73	244.05
1134.97	243.92	1136.95	244.04	1138.84	244.05	1142.99	244.14	1146.84	243.8
1149.27	244.33	1150.88	244.31	1152.27	244.24	1155.9	244.34	1159.38	244.61
1160.66	244.57	1161.99	244.56	1164.02	244.75	1164.73	244.76	1165.32	244.78
1169.04	244.51	1172.27	244.83	1175.81	244.75	1177.36	244.79	1178.39	244.78
1179	244.82	1182.55	244.96	1185.8	245.09	1186.43	245.09	1188.57	245.24
1190.07	245.26	1191.56	245.39	1193.16	245.4	1196.77	245.38	1200.19	245.48
1201.27	245.55	1202.85	245.56	1205.99	245.46	1210.28	245.43	1211.94	245.38
1212.74	245.34	1213.13	245.26	1214.14	245.11	1215.85	244.92	1217.99	244.74
1218.97	244.83	1221.35	245.05	1222.8	245.17	1223.64	245.15	1225.83	245.21
1229.55	245.31	1230.27	245.37	1230.49	245.39	1232.18	245.42	1238.13	245.64
1238.85	245.66	1239.07	245.7	1240.81	245.9	1243.12	245.9	1251.19	246.05
1253.93	246.05	1256.13	246.13	1263.67	246.62	1268.99	246.97	1271.03	247.17
1275.16	247.41	1277.75	247.62	1282.02	248.05	1282.37	248.07	1284.04	248.46
1290.95	250.9	1291.07	250.94	1291.09	250.94	1291.2	250.95	1292.96	251.02
1293.2	251.09	1293.42	251.12	1296.26	251.48	1297.55	251.29	1300.25	251.39
1305.42	251.62	1316.69	252.2	1331.33	252.91	1336.49	252.86	1340.6	252.5
1344.58	252.92	1348.79	252.67	1350.23	252.68	1358.41	253.32	1360.75	253.35

1364.38 253.41 1369.47 253.23 1369.5 253.23

Manning's n Values num= 8
Sta n Val Sta n Val Sta n Val Sta n Val Sta n Val
400 .05 732.12 .03 818.09 .045 833 .042 838 .042
883 .12 905.71 .05 1225.83 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
833 883 197.77 196.87 193.67 .3 .5

Ineffective Flow num= 2
Sta L Sta R Elev Permanent
400 807 246.65 F
972.5 1369.5 244.1 F

Blocked Obstructions num= 7
Sta L Sta R Elev Sta L Sta R Elev Sta L Sta R Elev
0 10.49254.6451 49.53 68.82255.5246 86.57 117.46256.9026
137.41 171.1257.3667 238.29 280.03257.4501 521.89 585.75252.1089
633.51 665.15242.6655

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	243.79	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.09	Wt. n-Val.	0.041	0.042
0.061				
W.S. Elev (ft)	243.70	Reach Len. (ft)	197.77	196.87
193.67				
Crit W.S. (ft)	237.74	Flow Area (sq ft)	117.19	470.56
624.18				
E.G. Slope (ft/ft)	0.000363	Area (sq ft)	119.87	470.56
884.59				
Q Total (cfs)	2671.00	Flow (cfs)	229.45	1384.15
1057.40				
Top Width (ft)	309.32	Top Width (ft)	29.73	50.00
229.60				
Vel Total (ft/s)	2.20	Avg. Vel. (ft/s)	1.96	2.94
1.69				
Max Chl Dpth (ft)	10.00	Hydr. Depth (ft)	4.51	9.41
6.97				
Conv. Total (cfs)	140228.4	Conv. (cfs)	12046.0	72668.5
55514.1				
Length Wtd. (ft)	196.08	Wetted Per. (ft)	26.64	51.60
90.42				
Min Ch El (ft)	233.70	Shear (lb/sq ft)	0.10	0.21
0.16				
Alpha	1.22	Stream Power (lb/ft s)	1369.50	0.00
0.00				
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	67.45	28.31
17.71				

C & E Loss (ft)	0.00	Cum SA (acres)	19.21	2.79
4.23				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	247.09	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.39	Wt. n-Val.	0.040	0.042
0.057				
W.S. Elev (ft)	246.70	Reach Len. (ft)	197.77	196.87
193.67				
Crit W.S. (ft)	242.08	Flow Area (sq ft)	227.85	620.72
1838.07				
E.G. Slope (ft/ft)	0.001393	Area (sq ft)	227.85	620.72
1838.07				
Q Total (cfs)	10810.00	Flow (cfs)	963.88	4303.99
5542.14				
Top Width (ft)	495.97	Top Width (ft)	64.09	50.00
381.88				
Vel Total (ft/s)	4.02	Avg. Vel. (ft/s)	4.23	6.93
3.02				
Max Chl Dpth (ft)	13.00	Hydr. Depth (ft)	3.56	12.41
4.81				
Conv. Total (cfs)	289587.3	Conv. (cfs)	25821.1	115298.8
148467.4				
Length Wtd. (ft)	195.91	Wetted Per. (ft)	65.42	51.60
384.32				
Min Ch El (ft)	233.70	Shear (lb/sq ft)	0.30	1.05
0.42				
Alpha	1.57	Stream Power (lb/ft s)	1369.50	0.00
0.00				
Frctn Loss (ft)	0.30	Cum Volume (acre-ft)	112.84	34.30
28.28				
C & E Loss (ft)	0.09	Cum SA (acres)	23.88	2.79
4.95				

Warning: Divided flow computed for this cross-section.

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the

largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	247.89	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.39	Wt. n-Val.	0.039	0.042
0.056				
W.S. Elev (ft)	247.50	Reach Len. (ft)	197.77	196.87
193.67				
Crit W.S. (ft)	242.71	Flow Area (sq ft)	296.24	660.90
2149.46				
E.G. Slope (ft/ft)	0.001321	Area (sq ft)	296.24	660.90
2149.46				
Q Total (cfs)	12761.00	Flow (cfs)	1189.90	4651.62
6919.49				
Top Width (ft)	555.43	Top Width (ft)	112.13	50.00
393.31				
Vel Total (ft/s)	4.11	Avg. Vel. (ft/s)	4.02	7.04
3.22				
Max Chl Dpth (ft)	13.80	Hydr. Depth (ft)	2.64	13.22
5.47				
Conv. Total (cfs)	351154.6	Conv. (cfs)	32743.3	128002.4
190409.0				
Length Wtd. (ft)	195.87	Wetted Per. (ft)	113.56	51.60
395.78				
Min Ch El (ft)	233.70	Shear (lb/sq ft)	0.22	1.06
0.45				
Alpha	1.49	Stream Power (lb/ft s)	1369.50	0.00
0.00				
Frctn Loss (ft)	0.29	Cum Volume (acre-ft)	132.91	36.57
32.47				
C & E Loss (ft)	0.10	Cum SA (acres)	25.28	2.79
5.32				

Warning: Divided flow computed for this cross-section.

Warning: When the Manning's n value for the channel was composited, the computed n

value was larger [smaller] than the
largest [smallest] user entered n value. The n value has been set to the
largest [smallest] entered value. The user may
wish to examine this cross section and enter a single n value for the
entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth
with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	250.07	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.39	Wt. n-Val.	0.037	0.042
0.055				
W.S. Elev (ft)	249.67	Reach Len. (ft)	197.77	196.87
193.67				
Crit W.S. (ft)	245.36	Flow Area (sq ft)	651.97	769.35
3018.49				
E.G. Slope (ft/ft)	0.001158	Area (sq ft)	651.97	769.35
3018.49				
Q Total (cfs)	19382.00	Flow (cfs)	2607.90	5611.07
11163.04				
Top Width (ft)	640.26	Top Width (ft)	185.79	50.00
404.47				
Vel Total (ft/s)	4.37	Avg. Vel. (ft/s)	4.00	7.29
3.70				
Max Chl Dpth (ft)	15.97	Hydr. Depth (ft)	3.51	15.39
7.46				
Conv. Total (cfs)	569585.2	Conv. (cfs)	76639.1	164894.3
328051.8				
Length Wtd. (ft)	195.82	Wetted Per. (ft)	187.32	51.60
407.22				
Min Ch El (ft)	233.70	Shear (lb/sq ft)	0.25	1.08
0.54				
Alpha	1.33	Stream Power (lb/ft s)	1369.50	0.00
0.00				
Frctn Loss (ft)	0.26	Cum Volume (acre-ft)	190.76	42.63
44.47				
C & E Loss (ft)	0.10	Cum SA (acres)	27.70	2.79
5.70				

Warning: When the Manning's n value for the channel was composited, the computed n
value was larger [smaller] than the
largest [smallest] user entered n value. The n value has been set to the
largest [smallest] entered value. The user may
wish to examine this cross section and enter a single n value for the

entire channel.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 1488.97

INPUT

Description: not interpolated

Station Elevation Data num= 409

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	255.3	5.19	255.23	5.32	255.23	5.35	255.23	5.65	255.26
8.9	255.69	16.08	255.55	18.29	255.51	19.27	255.49	20.13	255.36
24.06	255.37	27.26	255.56	30.3	255.67	32.52	255.68	37.69	255.61
38.56	255.69	41.7	255.69	41.93	255.68	42.86	255.66	59.25	255.27
66.57	255.67	67.83	255.73	72.81	255.22	76.58	254.56	78.42	254.38
81.14	254.02	82.77	253.88	84.48	253.7	88.48	253.47	91.56	253.23
95	253.19	96.19	253.29	100.24	253.16	102.58	253.1	106.03	253.16
119.81	253.33	125.91	253.28	128.04	253.38	130.61	253.34	133.37	253.24
134.08	253.25	140.21	253.36	140.48	253.37	145.03	253.69	146.79	253.81
147.04	253.82	148.44	253.64	152.19	253.61	158.7	253.49	165.17	253.63
166.76	253.76	167.79	253.58	170.53	253.51	174.58	253.62	176.4	253.69
181.29	253.78	181.54	253.79	181.81	253.78	182.84	253.71	193.46	253.13
194.66	253.25	200.22	253.34	200.83	253.36	202.02	253.34	208.37	253.01
214.25	253.08	215.89	253.01	220.47	252.69	222.77	252.75	226.88	252.83
229.68	252.62	232.84	252.52	237.53	251.12	240.32	250.27	244.17	250.39
246.64	250.55	250.98	250.42	253.1	250.28	257.85	250.03	259.5	249.93
264.76	249.77	265.92	249.89	271.49	249.9	271.98	249.83	272.9	249.85
282.11	250.23	286.7	250.31	298.08	250.52	304.41	250.59	313.87	249.73
314.9	249.67	332.37	249.41	332.72	249.4	332.98	249.37	333.54	249.36
339.14	248.84	340.15	248.82	345.34	248.6	346.8	248.54	351.5	248.27
353.35	248.22	357.55	248.15	359.79	248	362.95	247.99	364.29	248.05
367.78	247.85	372.38	247.67	374.88	247.57	377	247.45	386.59	247.36
386.81	247.34	387.26	247.35	388.5	247.3	389.9	247.25	407.96	246.3
412.87	246.05	414.71	246.1	419.38	246.2	425.41	245.94	426.21	245.92
426.53	245.92	429.83	245.72	436.6	245.82	439.69	245.83	441.27	245.98
445.31	245.59	445.45	245.58	445.78	245.54	448.69	245.57	451.72	245.8
454.03	245.69	457.08	245.61	457.22	245.61	460.31	245.58	461.91	245.6
462.64	245.57	463.41	245.5	466.3	245.36	482.27	244.65	483.77	244.75
484.94	244.74	487.22	244.64	490.56	244.45	492.89	244.35	495.53	244.2
499.9	243.85	504.1	243.57	504.97	243.57	507.39	243.55	507.55	243.54
507.78	243.54	512.38	243.55	515.67	243.88	517.3	243.85	518.4	243.73
522.31	243.82	527.37	243.6	527.45	243.6	527.5	243.6	532.24	243.68
538.23	243.33	538.99	243.29	539.3	243.29	542.33	243.47	545.58	243.43
549.09	243.2	554.19	243.28	562.63	243.29	564.87	243.19	566.75	243.21
568.45	242.98	569.1	242.96	571.11	242.92	571.85	242.88	574.44	242.75

575.64	242.75	577.41	242.86	578.5	242.87	579.58	242.81	582.82	242.65
586.14	242.68	586.56	242.65	587.44	242.67	588.75	242.67	593.34	242.58
597.9	242.21	598.69	242.13	600.78	242.16	602.84	242.09	608.25	242
609.25	241.98	609.64	241.98	611.71	242.06	612.32	242.04	615.67	241.9
619.3	242.03	620.24	242.06	621.09	242.04	622.54	241.87	623.88	241.75
624.88	241.73	626.75	241.77	630.6	241.88	632.63	241.97	634.94	242.01
635.48	242	641.43	242.25	642.62	242.33	646.5	242.54	647.01	242.61
651.57	243.16	655.51	243.02	657.13	242.75	658.35	242.71	661.45	242.16
664.19	241.55	665.72	241.26	667.52	240.57	669.05	239.94	671.79	238.8
673.62	237.94	676.45	236.83	679.09	235.4	680.26	234.76	682.12	233.69
685.41	233.69	690.55	233.69	693.81	233.69	703.24	233.69	704.81	233.69
743.17	233.68	750.21	233.68	751.17	233.68	752.01	234.82	754.52	235.66
756.57	237.11	761.04	237.46	761.31	237.46	762.66	237.58	763.07	237.62
769.22	237.99	772.44	238.2	772.61	238.18	772.67	238.17	776.77	237.53
777.82	237.41	781.62	237.48	784.51	237.55	785.59	237.41	788.65	237.49
791.75	237.77	792.86	237.79	795.43	237.79	796.24	237.71	797.97	237.76
799.11	237.84	806.98	238.12	807.24	238.14	807.66	238.24	812.18	238.63
814.5	239.32	820.5	240.03	820.8	240.08	821.25	240.07	821.56	240.06
828.1	239.88	830.37	239.84	836.36	239.57	840.76	239.34	842.24	239.32
844.82	239.36	848.31	239.68	853.38	239.8	865.72	240.77	872.23	240.77
874.67	240.74	875.91	240.7	877.05	240.59	878.98	240.64	881.86	240.49
885.09	240.5	892.95	240.56	893.17	240.56	893.21	240.57	893.26	240.57
899.69	241.85	900.87	242.01	903.26	242.79	905.4	243.49	908.73	244.83
909.92	244.89	912.2	244.99	916.17	245.58	916.54	245.64	918.04	245.72
920.8	245.53	924.35	245.61	924.59	245.56	926.15	245.47	926.43	245.48
927.7	245.49	931.62	245.53	932.47	245.55	932.99	245.55	934.2	245.56
936.27	245.56	936.76	245.56	940.45	245.6	941.4	245.68	942.43	245.74
945.9	246	948.75	246.19	950.3	246.17	950.62	246.11	954.52	246.06
956.84	246.22	958.36	246.38	958.74	246.4	962.36	246.28	964.77	246.21
966.59	246.12	966.89	246.12	967.39	246.13	970.18	246.35	972.71	246.55
973.16	246.57	973.97	246.44	975.07	246.29	975.7	246.27	980.03	246.41
981.17	246.46	981.34	246.45	981.45	246.46	983.1	246.43	986.79	246.56
989.37	246.7	990.57	246.63	991.39	246.59	995.03	246.67	997.64	246.75
999.08	246.66	999.61	246.61	1004.31	246.98	1005.77	247.08	1006.6	246.99
1007.82	247.02	1010.99	247.34	1013.88	247.74	1015.11	247.69	1018.62	247.97
1018.88	247.99	1018.92	247.98	1019.65	247.98	1023.39	247.98	1024.27	248.06
1026.91	248.33	1030.47	248.8	1030.9	248.79	1032.56	248.94	1033.32	248.96
1037.97	249.03	1038.62	249.04	1039.25	248.93	1040.71	248.94	1045.36	249.18
1048.96	249.05	1050.72	249.19	1052.94	249.17	1053.46	249.24	1065.16	250.71
1079.19	252.52	1080.3	252.56	1081.56	252.56	1082.28	252.57	1085.93	252.44
1088.28	252.58	1089.95	252.55	1090.57	252.6	1094.07	253.04	1096.6	253.36
1098.64	253.7	1098.89	253.73	1099.42	253.76	1106.03	254.31	1107.18	254.26
1110.05	254.48	1117.8	255.21	1119.18	255.46	1121.41	255.83	1124.03	256
1128.37	256.54	1144.71	257.7	1149.35	259.19	1155.14	259.63	1159.96	260.82
1160.63	260.87	1170.59	261.25	1170.9	261.27	1171.34	261.34	1179.03	262.29
1180.53	262.34	1182.62	262.53	1184.53	262.67	1187.37	262.69	1189.37	263.25
1195.37	263.66	1195.45	263.67	1196.87	263.92	1197.32	264		

Manning's	n Values		num=	10					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val

0	.05	673.62	.04	676.45	.04	685.41	.04	750.21	.04
752.01	.04	756.57	.12	936.27	.05	1037.97	.05	1196.87	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	673.62	756.57		252.1	270.8		.1	.3

Ineffective Flow	num=	1
Sta L	Sta R	Elev
0	602.05	245.49
		F

Blocked Obstructions	num=	5						
Sta L	Sta R	Elev	Sta L	Sta R	Elev	Sta L	Sta R	Elev
0	2.61	255.86	56	28.25	35.81	255.64	46	44.1
303.93	332.32	247.49	84	1124.84	1151.76	272.32	5	

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	243.72	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.10	Wt. n-Val.	0.050	0.040
0.120				
W.S. Elev (ft)	243.62	Reach Len. (ft)	252.10	270.80
273.04				
Crit W.S. (ft)	237.19	Flow Area (sq ft)	122.19	794.47
633.95				
E.G. Slope (ft/ft)	0.000291	Area (sq ft)	166.77	794.47
633.95				
Q Total (cfs)	2671.00	Flow (cfs)	87.80	2232.83
350.38				
Top Width (ft)	383.76	Top Width (ft)	151.66	82.95
149.15				
Vel Total (ft/s)	1.72	Avg. Vel. (ft/s)	0.72	2.81
0.55				
Max Ch1 Dpth (ft)	9.94	Hydr. Depth (ft)	1.71	9.58
4.25				
Conv. Total (cfs)	156473.2	Conv. (cfs)	5143.4	130803.9
20525.9				
Length Wtd. (ft)	269.08	Wetted Per. (ft)	72.49	85.15
149.94				
Min Ch El (ft)	233.68	Shear (lb/sq ft)	0.03	0.17
0.08				
Alpha	2.24	Stream Power (lb/ft s)	1197.32	0.00
0.00				
Frctn Loss (ft)	0.07	Cum Volume (acre-ft)	66.80	25.45
14.33				
C & E Loss (ft)	0.01	Cum SA (acres)	18.80	2.49
3.38				

Warning: Divided flow computed for this cross-section.

Note: Manning's n values were composited to a single value in the main channel.
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	246.70	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.70	Wt. n-Val.	0.050	0.040
0.120				
W.S. Elev (ft)	246.01	Reach Len. (ft)	252.10	270.80
273.04				
Crit W.S. (ft)	242.36	Flow Area (sq ft)	636.02	992.62
1014.19				
E.G. Slope (ft/ft)	0.001674	Area (sq ft)	636.02	992.62
1014.19				
Q Total (cfs)	10810.00	Flow (cfs)	1437.66	7756.42
1615.92				
Top Width (ft)	522.16	Top Width (ft)	249.77	82.95
189.44				
Vel Total (ft/s)	4.09	Avg. Vel. (ft/s)	2.26	7.81
1.59				
Max Chl Dpth (ft)	12.33	Hydr. Depth (ft)	2.55	11.97
5.35				
Conv. Total (cfs)	264217.5	Conv. (cfs)	35139.1	189582.1
39496.3				
Length Wtd. (ft)	267.15	Wetted Per. (ft)	250.91	85.15
190.55				
Min Ch El (ft)	233.68	Shear (lb/sq ft)	0.26	1.22
0.56				
Alpha	2.68	Stream Power (lb/ft s)	1197.32	0.00
0.00				
Frctn Loss (ft)	0.36	Cum Volume (acre-ft)	110.88	30.65
21.94				
C & E Loss (ft)	0.09	Cum SA (acres)	23.17	2.49
3.68				

Note: Manning's n values were composited to a single value in the main channel.
 Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	247.51	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.71	Wt. n-Val.	0.050	0.040

0.119				
W.S. Elev (ft)	246.80	Reach Len. (ft)	252.10	270.80
273.04				
Crit W.S. (ft)	243.02	Flow Area (sq ft)	846.69	1058.30
1187.04				
E.G. Slope (ft/ft)	0.001654	Area (sq ft)	846.69	1058.30
1187.04				
Q Total (cfs)	12761.00	Flow (cfs)	2158.68	8578.31
2024.01				
Top Width (ft)	603.54	Top Width (ft)	275.15	82.95
245.44				
Vel Total (ft/s)	4.13	Avg. Vel. (ft/s)	2.55	8.11
1.71				
Max Chl Dpth (ft)	13.12	Hydr. Depth (ft)	3.08	12.76
4.84				
Conv. Total (cfs)	313803.1	Conv. (cfs)	53083.7	210947.4
49772.0				
Length Wtd. (ft)	266.32	Wetted Per. (ft)	276.32	85.15
246.65				
Min Ch El (ft)	233.68	Shear (lb/sq ft)	0.32	1.28
0.50				
Alpha	2.68	Stream Power (lb/ft s)	1197.32	0.00
0.00				
Frctn Loss (ft)	0.34	Cum Volume (acre-ft)	130.32	32.68
25.05				
C & E Loss (ft)	0.10	Cum SA (acres)	24.40	2.49
3.90				

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	249.70	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.73	Wt. n-Val.	0.050	0.040
0.112				
W.S. Elev (ft)	248.97	Reach Len. (ft)	252.10	270.80
273.04				
Crit W.S. (ft)	245.13	Flow Area (sq ft)	1512.88	1238.44
1756.44				
E.G. Slope (ft/ft)	0.001585	Area (sq ft)	1512.88	1238.44
1756.44				
Q Total (cfs)	19382.00	Flow (cfs)	4869.35	10912.18
3600.47				
Top Width (ft)	698.59	Top Width (ft)	335.89	82.95

279.75				
Vel Total (ft/s)	4.30	Avg. Vel. (ft/s)	3.22	8.81
2.05				
Max Chl Dpth (ft)	15.29	Hydr. Depth (ft)	4.50	14.93
6.28				
Conv. Total (cfs)	486901.0	Conv. (cfs)	122324.4	274128.2
90448.4				
Length Wtd. (ft)	264.49	Wetted Per. (ft)	337.11	85.15
281.09				
Min Ch El (ft)	233.68	Shear (lb/sq ft)	0.44	1.44
0.62				
Alpha	2.55	Stream Power (lb/ft s)	1197.32	0.00
0.00				
Frctn Loss (ft)	0.30	Cum Volume (acre-ft)	185.85	38.09
33.86				
C & E Loss (ft)	0.12	Cum SA (acres)	26.51	2.49
4.18				

Warning: Divided flow computed for this cross-section.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 1218.175

INPUT

Description: not interpolated

Station Elevation Data num= 461

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	250.61	1.96	250.56	5.94	250.57	8.63	250.65	11.42	250.62
21.66	250.15	22.25	250.1	25.11	250.08	27.57	249.98	29.68	249.9
33.3	249.7	34.47	249.69	39.78	249.82	41.93	249.73	46.06	249.42
49.13	249.34	50.38	249.33	54.63	249.19	55.79	249.14	56.64	249.18
60.29	249.38	64.33	249.29	64.7	249.28	65.2	249.28	70.59	249.27
72.29	249.26	76.76	249.09	80.4	248.99	82.89	248.96	87.16	248.87
89.59	248.78	93.67	248.67	95.52	248.77	101.02	248.43	102.12	248.32
102.51	248.31	108.27	248.17	111.9	248.13	114.67	248.14	116.63	247.97
119.92	247.96	123.76	247.98	127.05	247.93	128.1	247.89	132.33	247.68
136.12	247.75	137.62	247.76	138.06	247.75	143.3	247.87	143.93	247.93
145.54	248.01	150.12	247.99	152.75	247.84	154.78	247.74	160.31	247.53
160.6	247.51	161.59	247.55	165.18	247.66	168.09	247.31	169.55	247.12
170.06	247.09	171.22	247.01	174.73	246.9	175.78	246.82	180.42	246.83
183.08	246.75	186.16	246.66	190.58	246.48	191.96	246.41	196.85	246.52
197.62	246.51	197.76	246.53	203.22	246.21	204.45	246.14	208.74	245.93

209.4	245.91	214.38	245.69	216.63	245.7	219.97	245.71	223.85	245.74
225.62	245.71	230.99	245.68	231.21	245.69	232.04	245.69	235.38	245.68
237.63	245.57	239.24	245.47	241.62	245.45	243.95	245.44	244.65	245.42
249.63	245.27	253.28	245.35	255.98	245.4	260.24	245.49	261.97	245.5
267.78	245.26	268.05	245.25	268.43	245.25	273.33	245.26	276.94	245.22
278.59	245.23	279.01	245.23	283.99	245.16	285.77	245.17	289.29	245.26
292.49	245.12	294.67	245.03	299.16	245.17	299.99	245.19	303.28	245
305.09	244.85	306.73	244.86	309.45	244.82	312.41	244.71	314.27	244.67
314.57	244.66	319.33	244.8	321.06	244.7	324.58	244.55	327.54	244.61
329.75	244.59	334.04	244.55	334.99	244.56	338.96	244.57	339.94	244.62
340.7	244.6	343.87	244.59	347.74	244.54	347.79	244.54	347.85	244.54
352.66	244.46	353.77	244.39	357.1	244.36	358.71	244.41	359.92	244.46
360.6	244.45	361.77	244.46	363.88	244.5	364.93	244.46	366.13	244.46
370.39	244.42	374.02	244.14	375.37	244.03	377.34	244.1	379.87	244.12
382.35	244.04	384.87	243.99	387.47	243.98	388.89	244.04	390.64	244.06
393.46	244.06	398.63	244.08	400.01	244.1	400.77	244.08	402.9	244.01
404.08	244.04	406.36	244.1	408.25	244	410.93	243.88	414.15	244.06
415.04	244.05	417.4	243.99	418.59	244.01	419.52	243.95	421.62	243.72
427.48	243.33	427.57	243.32	427.59	243.32	427.68	243.32	427.82	243.33
430.82	243.55	432.75	243.52	434.5	243.41	437.62	243.13	441.05	243.1
442.01	243.07	444.25	243.06	446.44	243.08	449.8	242.86	452.65	242.66
454.5	242.65	456.41	242.6	457.72	242.5	459.93	242.43	461.39	242.44
464.07	242.51	468.15	242.48	468.28	242.48	470.34	242.46	471.23	242.35
474.06	242.26	476.26	242.15	478.68	242.03	481.75	242.06	483.23	242.01
484.87	241.97	488.61	241.84	493.19	241.83	494.31	241.79	495.23	241.75
497.16	241.64	498.1	241.69	500.48	241.65	502	241.67	504.66	241.63
508.84	241.56	508.87	241.56	508.95	241.56	510.92	241.47	511.7	241.39
514.85	241.26	517.58	241.21	519.82	241.11	522.35	241.16	523.65	241.24
525.02	241.19	528.06	241.11	529.66	241.21	529.93	241.22	530.3	241.23
532.17	241.22	535.76	241.22	539.05	241.18	540.07	241.17	540.98	241.01
543.15	240.99	547.81	241.1	547.85	241.1	549.8	240.98	551.07	240.95
554.26	240.84	555.9	240.77	556.59	240.78	557.83	240.69	558.68	240.63
559.04	240.62	559.55	240.66	562.92	240.75	565.36	240.81	567.17	240.95
567.52	240.94	568.15	240.92	570.3	240.88	573.26	240.74	574.15	240.73
574.96	240.78	576.26	240.75	578.69	240.7	583.1	240.46	584.85	240.58
585.09	240.59	585.63	240.57	591.92	240.36	592.2	240.33	593.82	240.47
594.13	240.47	595.06	240.47	599.23	240.44	600.63	240.36	601.79	240.47
602.67	240.45	604.24	240.47	609.65	240.32	610.12	240.28	611.51	240.22
612.3	240.2	615.15	240.08	617.61	239.97	618.31	239.97	619.16	240.1
620.38	240.31	622.01	240.25	627.09	240.1	628.39	240.14	629.18	240.1
632.12	240.13	636.02	240.31	636.08	240.31	636.86	240.37	638.08	240.45
638.17	240.46	643.38	240.57	644.91	240.6	644.93	240.6	646.97	240.72
647.11	240.72	647.32	240.73	651.06	240.91	653.71	241.16	655.43	241.53
655.9	241.56	658.94	241.69	662.65	241.76	663.28	241.75	664.72	241.71
669.13	241.75	671.43	241.79	673.18	241.94	673.44	241.9	680.8	241.52
681.52	241.52	682.14	241.51	683.07	241.38	693.72	239.92	696.83	238.52
696.95	238.46	697.49	238.34	697.95	238.14	702.08	237.05	706.41	236
707.9	235.78	709.23	235.48	714.57	234.81	714.82	234.77	716.57	234.31
718.4	234.08	719.9	233.95	721.17	233.84	722.2	233.67	722.66	233.52
734.51	233.52	739.39	233.52	747.47	233.52	764.56	233.52	776.51	233.52

776.73	233.6	785.75	237.06	786	237.05	786.41	237.29	786.48	237.3
788.1	237.7	789.36	238.04	791.32	238.53	791.87	238.62	793.83	238.92
794.66	239.06	798.27	239	800.13	239.18	802.09	239.28	803.86	239.32
805.18	239.39	810.74	239.44	811.25	239.38	813.13	239.34	814.01	239.31
816.24	239.38	818.62	239.49	819.54	239.46	820.82	239.44	822.63	239.48
828.23	239.69	828.86	239.71	830.53	239.65	831.88	239.62	833.11	239.36
836.8	238.98	837.75	239	839.27	238.74	840.84	238.81	845.56	239.03
846.12	238.87	847.88	238.58	852.86	238.51	854.18	238.41	854.67	238.38
859.34	238.18	862.71	238.42	864.37	238.51	867.79	238.7	873.42	239.2
874.5	239.1	890.91	239.93	891.61	239.99	892.23	239.93	892.73	239.83
900.2	238.63	901.11	238.63	906.52	238.49	907	238.42	908.99	238.54
909.48	238.55	911.2	238.64	914.32	238.75	915.19	238.76	921.66	240.07
924.12	240.71	931.43	242.76	932.46	243.14	933.09	243.39	935.27	243.99
935.57	244.19	940.87	247.14	943.49	248.11	944.85	248.84	945.98	249.42
946.32	249.62	952.1	252.48	954.69	253.68	956.09	254.47	958.25	254.86
961.83	255.53	963.06	255.73	965.78	256.01	968.33	256.23	970.68	256.62
971.68	256.7	972.65	256.69	973.44	256.68	978.07	256.5	978.12	256.5
978.13	256.5	985.55	257.01	988.7	257.03	989.29	257.07	989.59	257.05
989.77	257.02	993.28	256.6	996.42	256.88	1000.65	256.97	1004.21	257.32
1005.33	257.51	1013.04	258.79	1013.27	258.81	1015.63	258.68	1017.96	258.97
1020.98	259.27	1022.9	259.54	1024.38	259.95	1026.95	260.93	1032.14	261.44
1038.8	264.26	1042.4	265.43	1045.49	265.92	1050.8	267.4	1052.39	267.63
1053.75	267.84	1062.34	269.81	1067.93	271.77	1081.33	280.05	1083.96	280.8
1084.7	280.96	1088.14	282.03	1089.69	282.62	1094.76	283.59	1095.54	283.81
1097.35	284.25	1102.15	285.46	1103.64	285.59	1106.01	285.82	1106.08	285.83
1110.11	286.57	1112.43	286.86	1114.93	286.78	1115.15	286.79	1115.34	286.83
1119.22	287.63	1121.43	287.7	1122.44	287.65	1123.99	287.73	1125.92	287.92
1129.06	288.23								

Manning's n Values			num= 7								
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	170.06	.05	702.08	.04	706.41	.04	719.9	.04		
776.73	.04	785.75	.12								

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	702.08	785.75		344.72 378.52	389.6		.1	.3

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	243.64	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.06	Wt. n-Val.	0.050	0.040
0.120				
W.S. Elev (ft)	243.58	Reach Len. (ft)	344.72	378.52
389.60				
Crit W.S. (ft)	237.26	Flow Area (sq ft)	642.57	792.52
640.56				
E.G. Slope (ft/ft)	0.000208	Area (sq ft)	642.57	792.52
640.56				

Q Total (cfs)	2671.00	Flow (cfs)	480.53	1888.05
302.42				
Top Width (ft)	510.06	Top Width (ft)	278.36	83.67
148.03				
Vel Total (ft/s)	1.29	Avg. Vel. (ft/s)	0.75	2.38
0.47				
Max Chl Dpth (ft)	10.06	Hydr. Depth (ft)	2.31	9.47
4.33				
Conv. Total (cfs)	184986.0	Conv. (cfs)	33280.3	130760.7
20944.9				
Length Wtd. (ft)	365.83	Wetted Per. (ft)	279.29	84.67
149.28				
Min Ch El (ft)	233.52	Shear (lb/sq ft)	0.03	0.12
0.06				
Alpha	2.50	Stream Power (lb/ft s)	1129.06	0.00
0.00				
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	64.46	20.52
10.34				
C & E Loss (ft)	0.01	Cum SA (acres)	17.55	1.97
2.45				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	246.25	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.39	Wt. n-Val.	0.050	0.040
0.120				
W.S. Elev (ft)	245.86	Reach Len. (ft)	344.72	378.52
389.60				
Crit W.S. (ft)	242.47	Flow Area (sq ft)	1502.11	983.30
984.21				
E.G. Slope (ft/ft)	0.001120	Area (sq ft)	1502.11	983.30
984.21				
Q Total (cfs)	10810.00	Flow (cfs)	3141.08	6268.26
1400.66				
Top Width (ft)	728.04	Top Width (ft)	491.55	83.67
152.82				
Vel Total (ft/s)	3.12	Avg. Vel. (ft/s)	2.09	6.37
1.42				

Max Chl Dpth (ft)	12.34	Hydr. Depth (ft)	3.06	11.75
6.44				
Conv. Total (cfs)	323057.3	Conv. (cfs)	93871.4	187327.1
41858.7				
Length Wtd. (ft)	363.28	Wetted Per. (ft)	492.60	84.67
154.62				
Min Ch El (ft)	233.52	Shear (lb/sq ft)	0.21	0.81
0.44				
Alpha	2.59	Stream Power (lb/ft s)	1129.06	0.00
0.00				
Frctn Loss (ft)	0.30	Cum Volume (acre-ft)	104.70	24.51
15.68				
C & E Loss (ft)	0.06	Cum SA (acres)	21.02	1.97
2.61				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	247.06	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.37	Wt. n-Val.	0.050	0.040
0.120				
W.S. Elev (ft)	246.70	Reach Len. (ft)	344.72	378.52
389.60				
Crit W.S. (ft)	243.05	Flow Area (sq ft)	1922.07	1053.27
1112.63				
E.G. Slope (ft/ft)	0.001029	Area (sq ft)	1922.07	1053.27
1112.63				
Q Total (cfs)	12761.00	Flow (cfs)	4389.29	6736.92
1634.79				
Top Width (ft)	755.15	Top Width (ft)	517.16	83.67
154.32				
Vel Total (ft/s)	3.12	Avg. Vel. (ft/s)	2.28	6.40
1.47				
Max Chl Dpth (ft)	13.18	Hydr. Depth (ft)	3.72	12.59
7.21				
Conv. Total (cfs)	397904.3	Conv. (cfs)	136863.8	210065.6
50974.9				
Length Wtd. (ft)	362.21	Wetted Per. (ft)	518.24	84.67
156.34				

Min Ch El (ft)	233.52	Shear (lb/sq ft)	0.24	0.80
0.46				
Alpha	2.43	Stream Power (lb/ft s)	1129.06	0.00
0.00				
Frctn Loss (ft)	0.29	Cum Volume (acre-ft)	122.31	26.12
17.84				
C & E Loss (ft)	0.05	Cum SA (acres)	22.11	1.97
2.65				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	249.28	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.34	Wt. n-Val.	0.050	0.040
0.120				
W.S. Elev (ft)	248.94	Reach Len. (ft)	344.72	378.52
389.60				
Crit W.S. (ft)	244.41	Flow Area (sq ft)	3190.67	1240.99
1464.57				
E.G. Slope (ft/ft)	0.000870	Area (sq ft)	3190.67	1240.99
1464.57				
Q Total (cfs)	19382.00	Flow (cfs)	8913.98	8144.58
2323.44				
Top Width (ft)	861.20	Top Width (ft)	618.24	83.67
159.29				
Vel Total (ft/s)	3.29	Avg. Vel. (ft/s)	2.79	6.56
1.59				
Max Chl Dpth (ft)	15.42	Hydr. Depth (ft)	5.16	14.83
9.19				
Conv. Total (cfs)	657054.9	Conv. (cfs)	302186.1	276103.5
78765.2				
Length Wtd. (ft)	359.91	Wetted Per. (ft)	619.41	84.67
161.81				
Min Ch El (ft)	233.52	Shear (lb/sq ft)	0.28	0.80
0.49				
Alpha	2.04	Stream Power (lb/ft s)	1129.06	0.00
0.00				
Frctn Loss (ft)	0.27	Cum Volume (acre-ft)	172.24	30.38
23.76				

C & E Loss (ft)	0.02	Cum SA (acres)	23.75	1.97
2.80				

Warning: When the Manning's n value for the channel was composited, the computed n value was larger [smaller] than the

largest [smallest] user entered n value. The n value has been set to the largest [smallest] entered value. The user may

wish to examine this cross section and enter a single n value for the entire channel.

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 839.6553

INPUT

Description: not interpolated

Station Elevation Data				num=	480				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	246.05	2.93	245.73	6.52	245.49	7.65	245.36	12.25	244.98
17.24	244.91	18.72	244.79	22.09	244.59	23.93	244.64	25.54	244.49
28.42	244.34	31.7	244.11	33.78	244.05	38.32	244.06	40.04	244.03
43.07	243.92	46.31	243.97	47.35	243.91	48.63	243.96	50.98	243.83
55.87	243.69	56.55	243.63	60.67	243.81	62.69	243.8	64.25	243.84
67.98	243.79	70.29	243.82	72.65	243.81	77.24	243.86	80.03	243.84
82.02	243.76	84.34	243.86	87.43	244.06	90.19	244.04	94.69	243.93
101.12	243.87	106.89	244.27	108.7	244.17	113.1	243.67	119.81	243.23
121.46	243.37	123.69	243.25	125.99	243.36	131.53	243.42	133.67	243.4
138.07	243.14	145.67	243.03	148.08	243.01	152.28	242.66	155.72	242.72
160.72	242.59	164.55	242.4	167.43	242.43	171.81	243.37	174.61	244.57
175.95	245.11	180.97	245.98	183.85	245.9	188.64	245.4	189.68	245.45
193.68	244.83	198.16	244	199.87	243.92	204.74	244.19	205.97	244.16
208.3	244.21	209.11	244.23	214.43	244.12	215.69	244.17	218.88	244.5
224.27	244.07	225.93	243.63	228.66	243.18	231.99	242.84	233.42	242.6
235.08	242.54	237.28	242.34	239.04	242.08	246.12	241.94	248.17	241.95
249.65	241.91	251.68	241.67	253.69	241.74	256.01	241.77	260.29	242.02
261.69	241.95	269.71	242.42	273.85	242.46	279.05	242.15	282.8	241.57
285.04	241.28	288.35	241	291.21	240.68	293.16	240.72	296.48	240.72
298.16	240.78	301.28	240.8	305.11	240.51	306.27	240.45	307.6	240.48
311.3	240.74	314.63	240.87	317.52	240.88	322.21	240.78	326	240.75
330.34	240.61	334.05	240.24	337.49	240.04	340.39	239.85	344.2	240
347.33	239.89	349.12	239.89	352.79	240.08	355.03	239.97	361.32	240.04
366.04	240.19	366.76	240.18	369.68	239.91	371.53	239.87	373.12	239.91
376.57	240.07	381.17	240.24	384.21	240.17	389.11	240.19	394.48	240.18
397.55	240.29	398.89	240.18	401.41	240.1	404.06	240.23	407.09	240.31
409.93	240.17	413.53	240.19	417.92	240.06	421.5	240.15	424.54	240.26

426.28	240.22	428.15	240.07	431.37	240.12	435.22	240.22	439.91	239.84
442.23	239.89	442.78	239.84	445.94	239.76	447.86	239.82	450.14	239.82
454.22	239.59	457.17	239.77	461.9	239.52	466.78	239.34	468.41	239.43
470.43	239.47	477.22	239.68	481.44	239.52	485.21	239.59	489.39	239.57
494.06	239.59	497.77	239.95	498.36	239.97	501.24	239.73	506.25	239.73
510.95	239.76	517.31	239.89	519.3	239.89	523.56	239.84	527.07	239.83
528.61	239.79	530.31	239.69	532.8	239.62	537.59	239.82	542.17	239.78
548.36	239.96	550.05	239.85	555.18	239.94	556.13	239.94	560.08	240.26
564.39	240.18	566.85	240.17	572.18	240.04	573.99	239.98	575.27	240.01
580.03	239.95	581.57	240.01	583.79	239.99	586.14	240.19	588.46	240.21
591.38	240.04	592.71	239.92	593.8	239.9	596.2	239.94	602.2	240.23
603.93	240.22	606.24	239.93	610.31	239.98	613.98	240.17	616.18	239.97
619.89	239.85	623.86	239.81	626.18	239.65	633.12	240.07	634.05	240.06
636.01	239.9	639.69	239.85	643.52	239.93	645.85	239.93	647.67	240
649.19	239.92	654.19	239.81	656.23	239.82	661.53	239.91	665.01	239.87
665.29	239.89	669.85	239.9	672.57	239.94	673.84	240	677.72	239.84
682.5	240.01	684.55	239.87	687.28	239.89	691.59	240.06	693.87	239.74
695.43	239.76	699.57	239.91	700.97	239.93	703.42	240.09	710.48	239.96
712.86	239.88	718.52	240.07	721.9	240.14	726.1	240.13	729.42	240.27
730.27	240.25	731.82	240.09	734.72	240.01	739.06	240.11	741.24	240.02
742.85	240.1	747.3	239.9	748.42	239.87	751.07	239.94	752.6	239.89
759.21	239.84	760.35	239.73	765.42	239.89	769.25	240.11	769.96	240.07
774.05	240.09	778.48	239.95	779.4	240.02	782.49	240.06	785.62	240.02
787.26	239.97	789.14	240.08	792.49	240.23	796.14	240.19	798.71	240.08
800.89	240.09	801.98	239.93	808.19	239.86	809.35	239.95	813.82	239.83
817.96	239.84	825.11	239.98	827.54	239.71	832.36	239.68	834.67	239.71
837.19	239.86	844.34	239.9	846.82	239.69	851.23	239.56	854.06	239.75
855.46	239.72	859.18	239.88	863.62	239.83	866.21	239.7	869.29	239.69
873.47	239.62	875.91	239.23	877.22	239.13	882.8	238.92	883.54	238.95
885.61	239.17	887.14	239.07	892.68	238.85	895.27	238.62	899.13	238.86
902.44	238.75	904.8	238.84	909.85	238.52	912.16	238.46	914.67	238.12
917.92	238.15	921.74	238.09	922.78	238.04	924.21	238.15	928.44	238.36
930.94	238.38	934.2	238.53	937.27	238.54	941.46	238.74	941.9	238.83
944.03	238.9	945.53	238.88	949.88	238.74	951.17	238.77	953.89	239.06
955.41	239.05	961.08	239.25	963.67	239.22	964.84	239.29	969.25	239.43
971.84	239.42	973.56	239.24	974.64	239.23	977.71	239.11	983.05	239.08
983.31	239.06	992.21	237.69	992.82	237.51	996.41	236.84	1000.29	236.55
1001.27	236.37	1003.33	236.27	1007.84	235.84	1010.87	235.89	1014.87	235.83
1019.46	235.69	1020.29	235.71	1023.1	235.59	1027.95	236.3	1029.32	236.33
1031.35	236.17	1033.34	236.06	1039.09	235.82	1049.09	235.76	1051.72	235.32
1053.27	235.24	1058.66	235.21	1059.9	235.25	1062.29	235.26	1071.47	234.91
1073.88	234.62	1078.32	233.98	1080.65	233.49	1082	233.43	1084.18	233.21
1115.73	233.21	1119.29	233.22	1119.65	233.57	1120.02	233.94	1124.46	236.49
1129.79	239.54	1130.7	239.79	1131.08	239.77	1134.98	239.83	1139.76	240.22
1140.81	240.24	1147.32	240.68	1150.79	240.65	1154.67	240.35	1158.12	240.52
1159.67	240.44	1160.53	240.52	1163.6	240.43	1167.3	240.51	1170.31	240.69
1177.85	240.92	1180.17	240.79	1185.61	241.16	1188.29	241.3	1189.98	241.32
1195.95	241.58	1197.89	241.64	1199.78	241.63	1203.52	242.01	1207.49	242.07
1208.91	242.24	1213.05	242.85	1214.18	242.99	1218.25	243.71	1219.5	243.79
1225.79	245.68	1227.63	246.43	1231.95	248.6	1235.77	248.7	1238.2	248.83

1239.75	248.74	1246.48	249.3	1248.88	249.46	1249.61	249.43	1252.56	249.44
1257.11	249.87	1258.61	249.92	1260.31	250.12	1261.53	250	1266.27	250.39
1267.06	250.37	1269.5	250.62	1276.14	251.06	1279.25	251.14	1282.9	251.49
1285.94	251.62	1287.39	251.6	1289.15	251.8	1291.54	251.99	1293.05	252.05
1296.65	252.4	1298.96	252.37	1302.62	252.8	1305.65	253.18	1308.77	253.3
1312	254.02	1315.52	254.54	1316.94	254.53	1323.62	257.23	1327.13	258.49
1336.99	262.43	1338.33	262.56	1340.62	262.39	1343.18	262.5	1348.23	263.04
1348.82	263	1352.61	262.93	1357.07	262.51	1358.65	262.32	1365.08	262.33
1372.18	262	1375.91	262.1	1378.01	262.09	1381.47	261.92	1384.57	262.08
1386.49	262.13	1387.71	262	1393.91	261.78	1397.31	261.77	1402.43	262.2
1406.15	261.95	1407.05	261.97	1413.7	262.39	1416.51	262.08	1419.8	262.13
1431.09	262.37	1432.58	262.46	1436.6	262.52	1439.86	262.44	1444.38	262.58
1448.77	262.51	1450.31	262.41	1453.79	262.4	1459.05	262.48	1459.94	262.44
1465.25	262.87	1466.01	263.06	1472.65	263.16	1474.89	262.17	1475.29	262.09
1480.4	262.36	1481.11	262.33	1484.65	262.68	1489.56	262.55	1490.72	262.57
1493.48	262.78	1494.97	262.84	1498.1	262.67	1506.02	262.85	1534.25	264.79
1541.47	264.3	1545.14	264.57	1550.74	264.39	1553.58	264.68	1554.88	264.69
1558.75	264.56	1560.24	264.6	1563.98	264.82	1568.37	264.74	1570.64	264.74
1575.5	264.93	1577.98	264.93	1579.71	265.12	1581.51	265.16	1583.03	265.13

Manning's n Values			num= 9								
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	208.3	.05	337.49	.05	1071.47	.04	1078.32	.04		
1082	.04	1124.46	.12	1130.7	.12	1197.89	.05				

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
1071.47	1124.46	538.37	598.45	533.67		.1	.3

Ineffective Flow	num= 1	
Sta L	Sta R	Elev
0	692.35	253
		F

Blocked Obstructions	num= 1	
Sta L	Sta R	Elev
1508.47	1551.65	272.83
		89

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	243.58	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.03	Wt. n-Val.	0.050	0.040
0.112				
W.S. Elev (ft)	243.55	Reach Len. (ft)	538.37	598.45
533.67				
Crit W.S. (ft)	237.53	Flow Area (sq ft)	1833.98	528.47
250.56				
E.G. Slope (ft/ft)	0.000112	Area (sq ft)	3380.75	528.47
250.56				
Q Total (cfs)	2671.00	Flow (cfs)	1648.58	950.39
72.03				
Top Width (ft)	1048.30	Top Width (ft)	902.41	52.99

92.90				
Vel Total (ft/s)	1.02	Avg. Vel. (ft/s)	0.90	1.80
0.29				
Max Chl Dpth (ft)	10.34	Hydr. Depth (ft)	4.84	9.97
2.70				
Conv. Total (cfs)	252270.9	Conv. (cfs)	155705.7	89762.2
6803.0				
Length Wtd. (ft)	561.42	Wetted Per. (ft)	379.81	54.09
93.97				
Min Ch El (ft)	233.21	Shear (lb/sq ft)	0.03	0.07
0.02				
Alpha	1.58	Stream Power (lb/ft s)	1583.03	0.00
0.00				
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	48.54	14.78
6.35				
C & E Loss (ft)	0.00	Cum SA (acres)	12.88	1.37
1.38				

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	245.89	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.18	Wt. n-Val.	0.050	0.040
0.104				
W.S. Elev (ft)	245.71	Reach Len. (ft)	538.37	598.45
533.67				
Crit W.S. (ft)	241.58	Flow Area (sq ft)	2650.27	642.56
460.98				
E.G. Slope (ft/ft)	0.000630	Area (sq ft)	5556.32	642.56
460.98				
Q Total (cfs)	10810.00	Flow (cfs)	7220.19	3120.75
469.07				
Top Width (ft)	1216.23	Top Width (ft)	1061.85	52.99
101.39				
Vel Total (ft/s)	2.88	Avg. Vel. (ft/s)	2.72	4.86
1.02				
Max Chl Dpth (ft)	12.50	Hydr. Depth (ft)	6.99	12.13
4.55				
Conv. Total (cfs)	430600.3	Conv. (cfs)	287605.5	124310.3
18684.5				
Length Wtd. (ft)	558.14	Wetted Per. (ft)	379.81	54.09
102.76				
Min Ch El (ft)	233.21	Shear (lb/sq ft)	0.27	0.47

0.18				
Alpha	1.42	Stream Power (lb/ft s)	1583.03	0.00
0.00				
Frctn Loss (ft)	0.32	Cum Volume (acre-ft)	76.77	17.45
9.22				
C & E Loss (ft)	0.01	Cum SA (acres)	14.88	1.37
1.47				

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	246.73	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.20	Wt. n-Val.	0.050	0.040
0.101				
W.S. Elev (ft)	246.53	Reach Len. (ft)	538.37	598.45
533.67				
Crit W.S. (ft)	241.93	Flow Area (sq ft)	2961.86	686.11
545.14				
E.G. Slope (ft/ft)	0.000627	Area (sq ft)	6435.30	686.11
545.14				
Q Total (cfs)	12761.00	Flow (cfs)	8668.19	3472.40
620.41				
Top Width (ft)	1227.82	Top Width (ft)	1071.47	52.99
103.36				
Vel Total (ft/s)	3.04	Avg. Vel. (ft/s)	2.93	5.06
1.14				
Max Chl Dpth (ft)	13.32	Hydr. Depth (ft)	7.81	12.95
5.27				
Conv. Total (cfs)	509577.3	Conv. (cfs)	346141.6	138661.0
24774.6				
Length Wtd. (ft)	557.23	Wetted Per. (ft)	379.81	54.09
104.90				
Min Ch El (ft)	233.21	Shear (lb/sq ft)	0.31	0.50
0.20				
Alpha	1.39	Stream Power (lb/ft s)	1583.03	0.00
0.00				
Frctn Loss (ft)	0.32	Cum Volume (acre-ft)	89.24	18.56
10.43				
C & E Loss (ft)	0.01	Cum SA (acres)	15.82	1.37
1.50				

Warning: The cross-section end points had to be extended vertically for the computed water surface.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	248.98	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.27	Wt. n-Val.	0.050	0.040
0.098				
W.S. Elev (ft)	248.72	Reach Len. (ft)	538.37	598.45
533.67				
Crit W.S. (ft)	242.91	Flow Area (sq ft)	3791.84	802.12
776.44				
E.G. Slope (ft/ft)	0.000675	Area (sq ft)	8781.01	802.12
776.44				
Q Total (cfs)	19382.00	Flow (cfs)	13569.89	4672.00
1140.10				
Top Width (ft)	1236.08	Top Width (ft)	1071.47	52.99
111.62				
Vel Total (ft/s)	3.61	Avg. Vel. (ft/s)	3.58	5.82
1.47				
Max Chl Dpth (ft)	15.51	Hydr. Depth (ft)	10.00	15.14
6.96				
Conv. Total (cfs)	746252.8	Conv. (cfs)	522472.9	179883.2
43896.7				
Length Wtd. (ft)	555.47	Wetted Per. (ft)	379.81	54.09
113.65				
Min Ch El (ft)	233.21	Shear (lb/sq ft)	0.42	0.62
0.29				
Alpha	1.33	Stream Power (lb/ft s)	1583.03	0.00
0.00				
Frctn Loss (ft)	0.37	Cum Volume (acre-ft)	124.87	21.50
13.74				
C & E Loss (ft)	0.01	Cum SA (acres)	17.07	1.37
1.59				

Warning: The cross-section end points had to be extended vertically for the computed water surface.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 241.2043

INPUT

Description: not interpolated

Station Elevation Data		num=		480					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	249.83	6.39	249.78	7.92	249.73	12.62	249.8	15.31	249.74
19.97	249.3	26.64	248.78	30.19	248.66	37.6	248.24	37.97	248.24
44.01	248.66	49.67	248.18	51.59	248.16	57.9	247.93	64.54	247.85
68.83	248.01	72.13	247.84	76.88	247.85	81.31	247.43	84.26	247.38
87.29	247.38	93.37	247.3	97.28	247.55	99.33	247.48	103.93	246.93
105.55	246.93	110.41	246.85	112.26	246.78	117.74	247.22	129.92	246.76
135.69	246.59	141.14	246.32	142.16	246.3	145.25	246.24	147.96	246.26
151.75	246.41	155.58	246.43	159.86	246.2	161.48	246.16	166.2	246.39
172.27	246.03	172.77	246.05	179.21	245.96	184.13	246.17	189.7	246.17
192.85	246.12	195.68	245.94	202.78	245.86	207.73	245.96	217.8	246.21
220.99	246.05	223.91	245.75	227.07	245.63	229.75	245.74	231.19	245.75
236.96	245.68	242.08	245.68	242.62	245.7	248.26	245.63	251.06	245.38
257.93	245.51	265.95	244.89	271.62	245.02	280.63	244.88	281.25	244.84
286.68	244.72	290.54	244.42	294.46	244.59	298.84	244.59	303.97	244.63
308.51	244.57	309.95	244.63	314.57	244.48	315.84	244.47	317.47	244.32
323.61	244.17	327.22	243.93	329.76	243.95	331.8	243.88	333.88	244.02
335.66	244.04	338.6	244	341.88	244	344.27	243.93	349.74	244.34
351.48	244.22	356.12	244.17	360.29	243.84	362.19	243.86	372.42	243.67
377.94	243.13	383.49	243.13	388.13	242.91	389.33	242.94	395.19	243
397.9	242.89	401.04	242.72	402.83	242.73	407.34	242.82	412.69	242.67
417.86	242.63	423.04	242.65	429.24	242.49	433.55	242.35	435.3	242.33
437.31	242.38	440.03	242.2	441.16	242.06	444.19	242.01	447.36	242.12
453.34	242.07	457.35	241.99	459.21	241.9	462.05	241.92	463.51	241.86
471.01	241.94	480.43	241.88	481.3	241.89	485.64	241.79	489.39	241.83
491.89	241.79	495.31	241.67	500.55	241.72	503.36	241.58	504.75	241.38
507.23	241.31	508.87	241.32	513.12	241.46	518.55	241.33	523.7	241.26
527.53	241.29	538.34	242.22	542.04	242.48	543.48	242.54	547.21	242.52
548.66	242.47	553.03	242.64	560.01	242.01	567.83	241.53	570.27	241.6
574.21	241.19	575.96	241.05	586.87	240.67	589.76	240.51	595.44	240.61
605.3	240.4	612.06	240.24	617.87	240.55	623.42	240.36	625.92	240.34
628.95	240.23	635.48	240.25	645.83	240.2	649.29	240.21	659.71	240.65
665.61	241.13	668.15	241.05	676.97	241.24	678.98	241.31	682.5	240.92
685.44	240.76	686.21	240.81	692.46	240.75	702.12	240.62	703.84	240.73
707.04	240.61	711.95	240.54	714.03	240.68	719.4	240.39	723.66	240.34
727.7	240.47	732.41	240.35	739.11	240.34	741.57	240.08	749.2	239.88
750.72	239.88	757.43	239.51	766.25	239.41	769.79	239.49	777.61	240.07
779.8	240.41	785.31	239.46	788.44	239.14	795.66	239.28	800.03	238.98
803.22	238.8	808.66	237.84	811.99	237.74	813.19	237.75	818.64	238.46
821.71	238.75	824.59	238.71	826.33	238.65	828.78	238.63	831.33	238.74
832.77	238.91	835.54	238.85	839.43	239.04	843.24	239.5	850.22	239.92
850.94	239.88	859.84	239.93	863.44	240.24	866.72	240.4	875.15	241.02
881.91	241.04	886.9	241.3	887.9	241.38	894.32	241.42	897.17	241.52
899.44	241.99	912.21	242.64	913.49	242.65	913.93	242.56	917.56	241.44
928.13	238.35	929.6	238.2	930.94	237.66	935.96	236.09	937.01	235.72

939.78	235.11	941.97	235.24	952.51	234.99	956.09	234.86	960.46	234.87
961.04	234.79	967.25	232.42	972.31	232.41	995.22	232.4	1011.77	232.38
1013.08	232.38	1014.47	233.09	1017.07	234.03	1023.17	236.54	1024.35	236.83
1024.94	236.65	1029.81	236.54	1034.64	236.35	1039.52	236.35	1041.92	236.47
1043.16	236.64	1043.58	236.56	1048.3	237	1049.33	237.04	1052.24	236.93
1056.28	237.17	1058.42	237.36	1061.27	237.39	1065.89	237.86	1067.51	238.05
1070.43	238.15	1073.99	238.38	1078.96	238.45	1079.96	238.49	1085.48	238.85
1088.28	238.8	1090.92	239.07	1094.46	239.34	1096.04	239.32	1097.3	239.23
1103.75	239.47	1106.24	239.3	1108.68	238.89	1112.15	238.42	1120.95	237.83
1121.15	237.68	1127.16	231.89	1129.24	231.89	1139	231.89	1157.54	231.9
1173.81	231.9	1175.36	231.9	1179.69	232.89	1181.96	233.4	1191.75	235.03
1194.06	234.92	1200.13	234.44	1202.84	233.98	1207.6	232.74	1208.82	232.56
1212.94	232.88	1217.69	233.99	1226.54	236.25	1236.53	237.96	1239.43	238.29
1241.67	238.45	1243.13	238.49	1248.18	238.83	1250.11	238.85	1252.45	238.93
1258.84	239.49	1262.08	239.47	1265	239.61	1270.9	239.93	1272.85	240.21
1273.84	240.25	1275.76	240.52	1279.85	240.87	1281.45	240.81	1290.69	244.03
1291.54	244.29	1297.7	247.16	1301.1	248.87	1304.36	250.65	1306.93	251.57
1310.12	253.07	1314.56	254.95	1316.17	255.52	1321.09	256.26	1326.53	257.15
1330.22	257.6	1333.16	257.86	1336.46	258.02	1340.66	258.44	1345.13	258.77
1351.43	258.94	1352.78	258.96	1355.75	259.2	1360.11	259.51	1363.09	259.67
1366.32	259.97	1368.71	260.05	1371.14	260.03	1371.77	259.95	1373.11	260.07
1377.19	260.34	1378.66	260.22	1380.25	260.18	1382.26	260.37	1387.77	260.43
1388.82	260.51	1392.12	260.64	1394.21	260.67	1397.06	260.46	1397.6	260.49
1402.63	260.99	1405.8	261.28	1407.4	261.22	1412.73	261.99	1413.41	262.06
1413.88	262.27	1416.82	262.73	1419.86	263.22	1422.28	263.43	1423.55	263.71
1425.16	263.76	1429.16	264.43	1430.76	264.84	1437.87	265	1438.99	265.18
1442.2	265.57	1448.65	266.42	1450.07	266.56	1454.38	266.81	1457.94	266.87
1461.22	267.32	1463.02	267.33	1464.23	267.4	1467.1	267.68	1470.11	268.04
1472.67	268.23	1478.94	268.99	1481.17	269.33	1483.58	269.39	1486.5	269.53
1487.33	269.66	1494.99	270.65	1496.41	270.8	1498.1	270.9	1500.01	271.2
1505.08	271.84	1506.57	272.12	1509.91	272.82	1512	273.19	1515.02	273.48
1516.11	273.76	1539.34	276.96	1541.44	277.15	1543.66	277.46	1554.12	278.09
1558.27	278.61	1559.74	278.84	1563.13	278.96	1567.02	279.31	1571.05	279.64
1573.5	280.03	1577.79	280.5	1580.26	280.93	1582.52	281.03	1584.8	281.35
1588.85	282.05	1590.36	282.28	1591.96	282.34	1597.18	283.02	1600.52	283.75
1603.6	284.37	1606.06	284.53	1607.11	284.54	1609.1	284.8	1610.73	285.09
1611.47	285.07	1617.65	285.45	1619.84	285.7	1623.12	285.96	1626.18	286.08
1629.76	286.03	1633.71	286.18	1636.35	286.35	1638	286.69	1643.59	286.92
1648.83	287.55	1651.71	287.7	1657.36	288.68	1658.52	288.76	1660.84	289.21
1665.87	289.94	1667.99	290.22	1669.15	290.23	1672.24	290.48	1674.49	290.88
1677.19	291.42	1678.78	291.56	1683.15	291.79	1684.32	291.92	1686.37	291.97
1688.19	292.16	1693.74	292.51	1697.3	292.81	1700.43	293.44	1704.13	293.68
1709.7	294.21	1717.51	294.77	1718.3	294.85	1720.94	294.77	1723.31	294.6
1728.71	294.49	1729.33	294.42	1736.08	294.68	1738.09	294.67	1740.15	294.6
1743.2	294.91	1744.98	295.04	1746.24	294.99	1746.83	295.05	1752.73	295.34
1755.02	295.51	1758.26	295.87	1762	296.24	1763.73	296.54	1772.28	297.04
1777.41	297.19	1780.78	297.51	1782.73	297.64	1785.94	297.68	1789.47	298.13
1792.26	298.28	1794.72	298.56	1798.33	298.86	1801.07	299.05	1803.4	299.02
1805.11	299.08	1811.58	299.56	1831.29	300.32	1854.37	299.78	1859.88	299.56
1862.81	299.59	1866.14	299.74	1871.27	299.44	1872.64	299.51	1874.64	299.76

1876.12	299.6	1879.75	299.39	1883.15	299.43	1886.61	299.7	1889.45	299.86
1892.45	300.33	1897.23	301.16	1898.43	301.3	1902.08	301.84	1903.6	302.15

Manning's n Values			num= 12								
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	142.16	.12	360.29	.05	538.34	.12	972.31	.05		
1011.77	.05	1121.15	.04	1139	.04	1173.81	.04	1181.96	.04		
1191.75	.12	1416.82	.05								

Bank Sta:	Left	Right	Lengths:		Left Channel	Right	Coeff	Contr.	Expan.
	1121.15	1191.75		176.62	183.19	177.62		.1	.3
Ineffective Flow			num=	1					
Sta L	Sta R	Elev	Permanent						
0	667.55	251.97	F						

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	243.53	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.02	Wt. n-Val.	0.066	0.040
0.120				
W.S. Elev (ft)	243.51	Reach Len. (ft)	176.62	183.19
177.62				
Crit W.S. (ft)	234.99	Flow Area (sq ft)	2345.49	775.03
586.00				
E.G. Slope (ft/ft)	0.000065	Area (sq ft)	2899.24	775.03
586.00				
Q Total (cfs)	2671.00	Flow (cfs)	1359.21	1119.97
191.83				
Top Width (ft)	915.17	Top Width (ft)	747.11	70.60
97.45				
Vel Total (ft/s)	0.72	Avg. Vel. (ft/s)	0.58	1.45
0.33				
Max Chl Dpth (ft)	11.62	Hydr. Depth (ft)	5.17	10.98
6.01				
Conv. Total (cfs)	330960.3	Conv. (cfs)	168417.8	138773.4
23769.1				
Length Wtd. (ft)	180.91	Wetted Per. (ft)	456.91	73.24
98.84				
Min Ch El (ft)	231.89	Shear (lb/sq ft)	0.02	0.04
0.02				
Alpha	2.03	Stream Power (lb/ft s)	1903.60	0.00
0.00				
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	9.73	5.83
1.23				
C & E Loss (ft)	0.00	Cum SA (acres)	2.69	0.52
0.21				

Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	245.56	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.15	Wt. n-Val.	0.070	0.040
0.120				
W.S. Elev (ft)	245.41	Reach Len. (ft)	176.62	183.19
177.62				
Crit W.S. (ft)	238.38	Flow Area (sq ft)	3208.10	909.29
776.19				
E.G. Slope (ft/ft)	0.000511	Area (sq ft)	4438.49	909.29
776.19				
Q Total (cfs)	10810.00	Flow (cfs)	5884.37	4095.43
830.20				
Top Width (ft)	1036.92	Top Width (ft)	864.11	70.60
102.20				
Vel Total (ft/s)	2.21	Avg. Vel. (ft/s)	1.83	4.50
1.07				
Max Chl Dpth (ft)	13.52	Hydr. Depth (ft)	7.07	12.88
7.59				
Conv. Total (cfs)	478048.9	Conv. (cfs)	260223.5	181111.6
36713.8				
Length Wtd. (ft)	180.58	Wetted Per. (ft)	456.91	73.24
103.97				
Min Ch El (ft)	231.89	Shear (lb/sq ft)	0.22	0.40
0.24				
Alpha	1.97	Stream Power (lb/ft s)	1903.60	0.00
0.00				
Frctn Loss (ft)	0.08	Cum Volume (acre-ft)	15.00	6.79
1.64				
C & E Loss (ft)	0.00	Cum SA (acres)	2.97	0.52
0.22				

Warning: Divided flow computed for this cross-section.

Note: Manning's n values were composited to a single value in the main channel.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	246.39	Element	Left OB	Channel

Right OB				
Vel Head (ft)	0.17	Wt. n-Val.	0.071	0.040
0.120				
W.S. Elev (ft)	246.22	Reach Len. (ft)	176.62	183.19
177.62				
Crit W.S. (ft)	239.31	Flow Area (sq ft)	3576.17	966.58
859.82				
E.G. Slope (ft/ft)	0.000542	Area (sq ft)	5169.59	966.58
859.82				
Q Total (cfs)	12761.00	Flow (cfs)	7091.42	4668.24
1001.34				
Top Width (ft)	1130.12	Top Width (ft)	955.58	70.60
103.94				
Vel Total (ft/s)	2.36	Avg. Vel. (ft/s)	1.98	4.83
1.16				
Max Chl Dpth (ft)	14.33	Hydr. Depth (ft)	7.88	13.69
8.27				
Conv. Total (cfs)	548152.2	Conv. (cfs)	304613.7	200525.6
43012.9				
Length Wtd. (ft)	180.46	Wetted Per. (ft)	456.91	73.24
105.89				
Min Ch El (ft)	231.89	Shear (lb/sq ft)	0.26	0.45
0.27				
Alpha	1.94	Stream Power (lb/ft s)	1903.60	0.00
0.00				
Frctn Loss (ft)	0.08	Cum Volume (acre-ft)	17.52	7.21
1.82				
C & E Loss (ft)	0.00	Cum SA (acres)	3.29	0.52
0.23				

Warning: Divided flow computed for this cross-section.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	248.60	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.24	Wt. n-Val.	0.073	0.040
0.120				
W.S. Elev (ft)	248.36	Reach Len. (ft)	176.62	183.19
177.62				
Crit W.S. (ft)	241.02	Flow Area (sq ft)	4546.87	1117.66
1087.06				
E.G. Slope (ft/ft)	0.000663	Area (sq ft)	7359.04	1117.66
1087.06				

Q Total (cfs)	19382.00	Flow (cfs)	11216.32	6577.14
1588.54				
Top Width (ft)	1256.98	Top Width (ft)	1078.03	70.60
108.35				
Vel Total (ft/s)	2.87	Avg. Vel. (ft/s)	2.47	5.88
1.46				
Max Chl Dpth (ft)	16.47	Hydr. Depth (ft)	10.02	15.83
10.03				
Conv. Total (cfs)	752755.8	Conv. (cfs)	435618.1	255442.2
61695.5				
Length Wtd. (ft)	180.21	Wetted Per. (ft)	456.91	73.24
110.78				
Min Ch El (ft)	231.89	Shear (lb/sq ft)	0.41	0.63
0.41				
Alpha	1.87	Stream Power (lb/ft s)	1903.60	0.00
0.00				
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)	25.13	8.32
2.32				
C & E Loss (ft)	0.01	Cum SA (acres)	3.78	0.52
0.24				

Warning: Divided flow computed for this cross-section.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: W Br Neshminy

REACH: 1

RS: 58.01602

INPUT

Description:

Station Elevation Data		num= 279							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	252.34	4.96	252.2	9.92	252.14	14.88	252.23	19.84	252.29
24.8	252.04	29.76	251.84	34.72	252.14	39.68	252.31	44.64	252.21
49.6	252.14	54.56	252.1	59.52	252.08	64.48	251.98	69.44	251.89
74.4	251.84	79.36	251.81	84.32	251.75	89.28	251.6	94.24	251.57
99.2	251.52	104.16	251.25	109.12	251.12	114.08	250.99	119.04	250.79
124	250.52	128.96	250.21	133.92	249.89	138.88	249.54	143.84	249.32
148.8	249.06	153.76	248.75	158.72	248.43	163.68	248.26	168.64	248.28
173.6	248.14	178.56	247.83	183.52	247.57	188.48	247.43	193.45	247.23
198.41	247.1	203.37	246.99	208.33	247.15	213.29	247.02	218.25	246.91
223.21	246.74	228.17	246.6	233.13	246.49	238.09	246.38	243.05	246.3
248.01	246.15	252.97	245.9	257.93	245.75	262.89	245.64	265.23	245.61
267.85	245.58	272.81	245.44	277.77	245.39	282.73	245.45	286.77	245.45

287.69	245.45	292.65	245.51	297.61	245.7	302.57	245.99	307.53	246.21
312.49	246.61	317.45	246.83	322.41	246.94	327.37	246.92	332.33	246.83
337.29	246.58	342.25	246.34	347.21	246.05	352.17	245.55	357.13	245.28
362.09	244.99	367.05	244.8	372.01	244.2	376.97	243.73	381.93	243.4
386.89	243.07	391.85	242.65	396.81	242.29	401.77	241.93	406.73	241.52
411.69	241.37	416.65	241.33	421.61	241.1	426.57	241.03	431.53	241.17
436.49	241.13	441.45	241.03	446.41	241.02	451.37	240.82	456.33	240.87
461.29	241.07	466.25	240.88	471.21	240.44	476.17	240.23	481.13	240.03
486.09	239.79	491.05	239.67	496.01	239.61	500.97	239.64	505.93	239.66
510.89	239.77	515.85	239.63	520.81	239.8	525.77	239.96	530.73	239.93
535.69	239.85	540.65	239.85	545.61	239.9	550.57	240.06	555.54	240.15
560.5	240.24	565.46	240.47	570.42	240.77	575.38	240.88	580.34	240.89
585.3	240.84	590.26	241.01	595.22	241.04	600.18	240.81	605.14	240.92
610.1	241.11	615.08	241.29	620.07	241.31	625.06	241.2	630.05	241.36
635.04	241.3	640.03	241.2	645.01	240.96	650	241.02	654.99	240.91
659.98	240.87	664.97	241.1	669.95	241.22	674.94	240.96	679.93	240.58
684.92	240.32	689.91	240.3	694.89	240.15	699.88	239.86	704.87	239.55
709.86	239.23	714.85	239.08	719.84	239.11	724.82	239.24	729.81	239.44
734.8	239.38	739.79	239.46	744.78	239.77	749.76	239.74	754.75	238.93
759.74	237.84	764.73	237.2	769.72	237.22	774.7	237.47	779.69	237.86
784.68	238.26	789.67	238.38	794.66	238.63	799.65	238.39	804.63	238.33
809.62	238.33	814.61	238.43	819.6	238.46	824.59	238.55	829.57	238.79
834.56	239.08	839.55	239.4	844.54	239.7	849.53	240.02	854.51	240.03
859.5	239.95	864.49	240.16	869.48	240.62	874.47	241.03	879.46	241.26
884.44	241.3	889.43	241.35	894.42	241.35	899.41	241.29	904.4	241.13
909.38	241.04	914.37	241.01	919.36	240.98	924.35	240.94	929.34	240.93
934.32	241.11	937.34	240.84	939.31	240.67	944.3	239.9	949.29	239.31
954.28	238.39	959.27	236.97	964.25	235.38	969.24	233.85	974.23	232.58
979.22	232.05	984.21	232.02	989.19	232	994.18	232	999.17	232
1004.16	232	1009.15	232	1014.13	231.99	1019.12	231.99	1024.11	231.97
1029.1	231.95	1034.09	231.94	1039.07	231.93	1044.06	231.92	1049.05	231.92
1054.04	231.91	1059.03	232.4	1064.02	233	1069	232.85	1073.96	232.02
1078.91	231.86	1083.86	231.86	1088.81	231.86	1093.77	231.86	1098.72	231.86
1103.67	231.86	1108.62	231.86	1113.58	231.86	1118.53	231.86	1123.48	231.86
1124.06	231.86	1128.43	231.86	1133.38	233.13	1138.34	237.86	1143.29	242.93
1148.24	247.69	1153.19	252.28	1158.15	256.67	1163.1	260.57	1168.05	262.94
1173	265.05	1177.96	267.4	1182.91	269.89	1187.86	272.23	1192.81	273.77
1197.77	275.03	1202.72	276.56	1207.67	277.89	1212.62	278.88	1217.58	279.88
1222.53	280.58	1227.48	281.32	1232.43	282.34	1237.39	282.9	1242.34	283.49
1247.29	284.12	1252.24	284.87	1257.19	285.61	1262.15	286.19	1267.1	286.86
1272.05	287.4	1277	288.01	1280.9	288.44	1281.96	288.56	1286.91	288.82
1291.86	289.23	1296.81	289.77	1301.77	290.33	1306.72	290.77	1311.67	290.78
1316.62	291.05	1321.58	291.24	1326.53	291.76	1331.48	292.08	1336.43	292.39
1341.39	292.51	1346.34	292.59	1351.29	292.49	1356.24	292.41		

Manning's	n Values		num=	5					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	265.23	.12	959.27	.04	1138.34	.12	1280.9	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.

959.27	1138.34	89.48	58.02	101.77	.1	.3
Ineffective Flow		num=	1			
Sta L	Sta R	Elev	Permanent			
0	364.83	252.18	F			
Blocked Obstructions		num=	1			
Sta L	Sta R	Elev				
0	33.63	257.68	37			

CROSS SECTION OUTPUT Profile #10%

E.G. Elev (ft)	243.52	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.02	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	243.50	Reach Len. (ft)		
Crit W.S. (ft)	234.10	Flow Area (sq ft)	1900.27	1996.19
15.54				
E.G. Slope (ft/ft)	0.000041	Area (sq ft)	1900.27	1996.19
15.54				
Q Total (cfs)	2671.00	Flow (cfs)	331.42	2337.66
1.93				
Top Width (ft)	763.46	Top Width (ft)	578.84	179.07
5.54				
Vel Total (ft/s)	0.68	Avg. Vel. (ft/s)	0.17	1.17
0.12				
Max Chl Dpth (ft)	11.64	Hydr. Depth (ft)	3.28	11.15
2.80				
Conv. Total (cfs)	418382.8	Conv. (cfs)	51912.6	366168.3
301.9				
Length Wtd. (ft)		Wetted Per. (ft)	579.89	181.92
7.91				
Min Ch El (ft)	231.86	Shear (lb/sq ft)	0.01	0.03
0.00				
Alpha	2.58	Stream Power (lb/ft s)	1356.24	0.00
0.00				
Frctn Loss (ft)		Cum Volume (acre-ft)		
C & E Loss (ft)		Cum SA (acres)		

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #2%

E.G. Elev (ft)	245.48	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.18	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	245.30	Reach Len. (ft)		
Crit W.S. (ft)	237.18	Flow Area (sq ft)	2959.62	2318.52
27.20				
E.G. Slope (ft/ft)	0.000351	Area (sq ft)	2961.43	2318.52
27.20				
Q Total (cfs)	10810.00	Flow (cfs)	1998.46	8799.65
11.89				
Top Width (ft)	788.99	Top Width (ft)	602.51	179.07
7.41				
Vel Total (ft/s)	2.04	Avg. Vel. (ft/s)	0.68	3.80
0.44				
Max Chl Dpth (ft)	13.44	Hydr. Depth (ft)	4.98	12.95
3.67				
Conv. Total (cfs)	577282.3	Conv. (cfs)	106722.8	469924.3
635.1				
Length Wtd. (ft)		Wetted Per. (ft)	595.56	181.92
10.51				
Min Ch El (ft)	231.86	Shear (lb/sq ft)	0.11	0.28
0.06				
Alpha	2.84	Stream Power (lb/ft s)	1356.24	0.00
0.00				
Frctn Loss (ft)		Cum Volume (acre-ft)		
C & E Loss (ft)		Cum SA (acres)		

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #1%

E.G. Elev (ft)	246.31	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.21	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	246.10	Reach Len. (ft)		
Crit W.S. (ft)	237.77	Flow Area (sq ft)	3435.17	2461.77
33.47				
E.G. Slope (ft/ft)	0.000377	Area (sq ft)	3474.11	2461.77
33.47				
Q Total (cfs)	12761.00	Flow (cfs)	2657.44	10087.30

16.26				
Top Width (ft)	856.28	Top Width (ft)	668.96	179.07
8.25				
Vel Total (ft/s)	2.15	Avg. Vel. (ft/s)	0.77	4.10
0.49				
Max Chl Dpth (ft)	14.24	Hydr. Depth (ft)	5.78	13.75
4.06				
Conv. Total (cfs)	656952.3	Conv. (cfs)	136808.3	519307.1
836.9				
Length Wtd. (ft)		Wetted Per. (ft)	595.56	181.92
11.66				
Min Ch El (ft)	231.86	Shear (lb/sq ft)	0.14	0.32
0.07				
Alpha	2.89	Stream Power (lb/ft s)	1356.24	0.00
0.00				
Frctn Loss (ft)		Cum Volume (acre-ft)		
C & E Loss (ft)		Cum SA (acres)		

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #.2%

E.G. Elev (ft)	248.50	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.30	Wt. n-Val.	0.120	0.040
0.120				
W.S. Elev (ft)	248.20	Reach Len. (ft)		
Crit W.S. (ft)	239.71	Flow Area (sq ft)	4683.49	2837.82
53.08				
E.G. Slope (ft/ft)	0.000475	Area (sq ft)	5035.76	2837.82
53.08				
Q Total (cfs)	19382.00	Flow (cfs)	4999.93	14348.35
33.72				
Top Width (ft)	977.32	Top Width (ft)	787.80	179.07
10.45				
Vel Total (ft/s)	2.56	Avg. Vel. (ft/s)	1.07	5.06
0.64				
Max Chl Dpth (ft)	16.34	Hydr. Depth (ft)	7.88	15.85
5.08				
Conv. Total (cfs)	889028.1	Conv. (cfs)	229340.6	658140.7
1546.8				
Length Wtd. (ft)		Wetted Per. (ft)	595.56	181.92

14.70				
Min Ch El (ft)	231.86	Shear (lb/sq ft)	0.23	0.46
0.11				
Alpha	2.94	Stream Power (lb/ft s)	1356.24	0.00
0.00				
Frctn Loss (ft)		Cum Volume (acre-ft)		
C & E Loss (ft)		Cum SA (acres)		

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

SUMMARY OF MANNING'S N VALUES

River:W Br Neshminy

n14	Reach		River Sta. n8	n9	n1		n11	n12	n4	n13	n5
	n6	n7 n15			n10	n2					
1	.038	.038	18937.81 .05	.05	.05	.03		.05		.05	.038
1	.038	.05	18500.98 .12	.05	.05	.03	.05	.05	.03	.038	.038
1			18437.76	Bridge							
1	.05	.03	18388.17 .05		.05	.12		.04		.05	.12
1	.013	.03	18288.75 .013		.05	.12		.042		.12	.05
1	.12	.05	17911.97 .03	.013	.05	.12		.04		.04	.04
1	.12	.05	17408.13 .03	.013	.05	.05	.013	.12		.04	.04

1			17013.07		.013	.03	.05	.12	.04
	.04	.04	.12	.05	.03	.013			
1			16436.43		.05	.12	.04	.04	.04
	.04	.04	.12	.05	.03	.013			
1			15916.41		.05	.05	.12	.04	.04
	.01	.04	.04	.12	.05	.013	.03	.013	
.03	.013								
1			15388.21		.05	.05	.05	.04	.04
	.04	.04	.04	.12	.05	.03			
1			15308.34		.05	.05	.05	.04	.04
	.04	.04	.04	.12	.05				
1			15257.58	Bridge					
1			15200.99		.05	.12	.12	.04	.04
	.05	.05	.05						
1			14915.63		.05	.05	.12	.04	.04
	.05	.12	.05	.12					
1			14578.26		.05	.12	.04	.04	.04
	.04	.04	.12	.03					
1			14203.75		.12	.04	.04	.04	.12
	.12	.03							
1			14145.82	Bridge					
1			14099.93		.05	.12	.12	.04	.04
	.045	.03							
1			13997.64		.05	.12	.04	.04	.04
	.04	.04	.12	.03					
1			13592.2		.05	.12	.04	.12	.03
	.03	.03	.05						
1			12998.26		.05	.12	.04	.12	.05
	.05								
1			12717.34		.05	.12	.04	.04	.04
	.12	.05							
1			12347.56		.05	.12	.04	.04	.04
	.04	.05	.12	.05					

1			11770.05	.05	.12	.04	.04	.04
	.04	.04	.12	.05				
1			11466.44	.03	.05	.12	.12	.04
	.04	.04	.12	.05				
1			11130.8	.12	.03	.045	.04	.04
	.04	.12	.05					
1			10624.89	.05	.12	.04	.04	.04
	.12	.05						
1			10209.28	.12	.04	.04	.04	.05
1			9873.511	.12	.04	.04	.04	.05
1			9475.018	.05	.12	.04	.04	.04
	.12	.05						
1			8965.166	.05	.12	.04	.04	.04
	.12	.05						
1			8454.733	.05	.12	.04	.04	.04
	.12	.05						
1			7955.335	.05	.12	.04	.04	.04
	.04	.12	.05					
1			7649.488	.05	.12	.04	.04	.04
	.12	.05						
1			7377.751	.03	.12	.04	.04	.04
	.04	.04	.12	.05				
1			6919.301	.03	.12	.04	.04	.04
	.12							
1			6428.657	.05	.03	.12	.04	.04
	.04	.12						
1			5952.17	.05	.05	.03	.04	.04
	.04	.12						
1			5604.917	.05	.05	.03	.12	.04
	.04	.04	.12	.12				
1			5177.776	.03	.05	.12	.04	.04

	.04	.12	.12							
1			4842.552	.05	.03	.05	.12	.04		
	.04	.04	.12	.05						
1			4310.577	.03	.05	.12	.04	.04		
	.04	.04	.05							
1			3983.411	.03	.05	.12	.04	.04		
	.04	.04	.12	.05						
1			3498.278	.03	.05	.12	.04	.04		
	.04	.05	.03	.05						
1			3023.827	.05	.03	.12	.04	.04		
	.04	.04	.04	.05	.05	.05				
1			2697.228	.05	.03	.12	.04	.04		
	.04	.04	.04	.05	.05	.05				
1			2480.647	.03	.05	.12	.05	.05		
	.04	.04	.05	.05						
1			2460.118	Bridge						
1			2439.608	.05	.12	.05	.05	.04		
	.05	.05								
1			2173.758	.05	.04	.04	.04	.05		
	.05	.05								
1			1933.057	.05	.03	.05	.03	.05		
	.03	.05	.04	.04	.04	.05	.05			
1			1774.36	.05	.03	.05	.045	.042		
	.05	.05	.05							
1			1728.924	Bridge						
1			1685.841	.05	.03	.045	.042	.042		
	.12	.05	.05							
1			1488.97	.05	.04	.04	.04	.04		
	.04	.12	.05	.05	.12					
1			1218.175	.05	.05	.04	.04	.04		
	.04	.12								

1			839.6553	.05	.05	.05	.04	.04
	.04	.12	.12	.05				
1			241.2043	.05	.12	.05	.12	.05
	.05	.04	.04	.04	.04	.12	.05	
1			58.01602	.05	.12	.04	.12	.05

SUMMARY OF REACH LENGTHS

River: W Br Neshminy

Reach	River Sta.	Left	Channel	Right
1	18937.81	428.53	436.83	443.78
1	18500.98	106.27	112.81	117.07
1	18437.76	Bridge		
1	18388.17	104.32	99.42	99.99
1	18288.75	348.88	376.78	384.56
1	17911.97	454.17	503.84	444.58
1	17408.13	417.6	395.07	266.22
1	17013.07	561.56	574.74	500.62
1	16436.43	528.61	521.92	543.43
1	15916.41	491.14	528.2	507.1
1	15388.21	60.8	79.86	85.92
1	15308.34	106.89	107.35	102.82
1	15257.58	Bridge		
1	15200.99	332.95	285.36	267.29
1	14915.63	363.66	337.37	261.75
1	14578.26	431.74	374.5	152.77
1	14203.75	94.32	103.83	103.09
1	14145.82	Bridge		
1	14099.93	93.64	102.28	123.71
1	13997.64	378.67	405.44	424.26
1	13592.2	260.8	593.93	588.98
1	12998.26	137.16	280.93	307.93
1	12717.34	124.15	369.78	428.59
1	12347.56	207	577.5	465.88
1	11770.05	327.44	303.61	203.08
1	11466.44	368.75	335.64	110.7
1	11130.8	561.91	505.91	229.13
1	10624.89	292.64	415.6	285.68
1	10209.28	353.32	335.77	320.32

1	9873.511	329.3	398.49	409.07
1	9475.018	373.05	509.85	541.29
1	8965.166	472.78	510.43	528.6
1	8454.733	376.1	499.4	534.3
1	7955.335	259.83	305.85	157.89
1	7649.488	322.31	271.74	189.84
1	7377.751	434.15	459.29	437.92
1	6919.301	239.23	489.81	272.12
1	6428.657	515.23	476.49	147.78
1	5952.17	369.19	347.25	42.15
1	5604.917	444.43	427.14	137.84
1	5177.776	310.89	335.22	338.41
1	4842.552	383.76	532.05	503.01
1	4310.577	279.48	327.09	326.13
1	3983.411	329.01	485.13	520.5
1	3498.278	473.48	474.45	417.37
1	3023.827	348.54	326.6	206.58
1	2697.228	212.34	216.58	214.85
1	2480.647	40.41	41.04	41.32
1	2460.118	Bridge		
1	2439.608	287.35	265.85	71.47
1	2173.758	245.81	240.7	107.6
1	1933.057	147	158.7	207.02
1	1774.36	86.88	88.52	80.94
1	1728.924	Bridge		
1	1685.841	197.77	196.87	193.67
1	1488.97	252.1	270.8	273.04
1	1218.175	344.72	378.52	389.6
1	839.6553	538.37	598.45	533.67
1	241.2043	176.62	183.19	177.62
1	58.01602	89.48	58.02	101.77

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS

River: W Br Neshminy

Reach	River Sta.	Contr.	Expan.
1	18937.81	.3	.5
1	18500.98	.3	.5
1	18437.76	Bridge	
1	18388.17	.3	.5
1	18288.75	.1	.3
1	17911.97	.1	.3
1	17408.13	.1	.3
1	17013.07	.1	.3
1	16436.43	.1	.3

1	15916.41	.1	.3
1	15388.21	.3	.5
1	15308.34	.3	.5
1	15257.58 Bridge		
1	15200.99	.3	.5
1	14915.63	.1	.3
1	14578.26	.3	.5
1	14203.75	.3	.5
1	14145.82 Bridge		
1	14099.93	.3	.5
1	13997.64	.1	.3
1	13592.2	.1	.3
1	12998.26	.1	.3
1	12717.34	.1	.3
1	12347.56	.1	.3
1	11770.05	.1	.3
1	11466.44	.1	.3
1	11130.8	.1	.3
1	10624.89	.1	.3
1	10209.28	.1	.3
1	9873.511	.1	.3
1	9475.018	.1	.3
1	8965.166	.1	.3
1	8454.733	.1	.3
1	7955.335	.1	.3
1	7649.488	.1	.3
1	7377.751	.1	.3
1	6919.301	.1	.3
1	6428.657	.1	.3
1	5952.17	.1	.3
1	5604.917	.1	.3
1	5177.776	.1	.3
1	4842.552	.1	.3
1	4310.577	.1	.3
1	3983.411	.1	.3
1	3498.278	.1	.3
1	3023.827	.1	.3
1	2697.228	.3	.5
1	2480.647	.3	.5
1	2460.118 Bridge		
1	2439.608	.3	.5
1	2173.758	.1	.3
1	1933.057	.3	.5
1	1774.36	.3	.5
1	1728.924 Bridge		
1	1685.841	.3	.5
1	1488.97	.1	.3
1	1218.175	.1	.3
1	839.6553	.1	.3
1	241.2043	.1	.3

1

58.01602

.1

.3

Appendix C

National Flood Hazard Layer FIRMette



75°15'W 40°16'51"N

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE)
Zone A, V, A99
- With BFE or Depth
Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile
Zone X
- Future Conditions 1% Annual Chance Flood Hazard
Zone X
- Area with Reduced Flood Risk due to Levee. See Notes.
Zone X
- Area with Flood Risk due to Levee
Zone D

OTHER AREAS

- NO SCREEN
- Area of Minimal Flood Hazard
Zone X
- Effective LOMR
- Area of Undetermined Flood Hazard
Zone D

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

Cross Sections with 1% Annual Chance Water Surface Elevation

- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

OTHER FEATURES

- Digital Data Available
- No Digital Data Available
- Unmapped

MAP PANELS

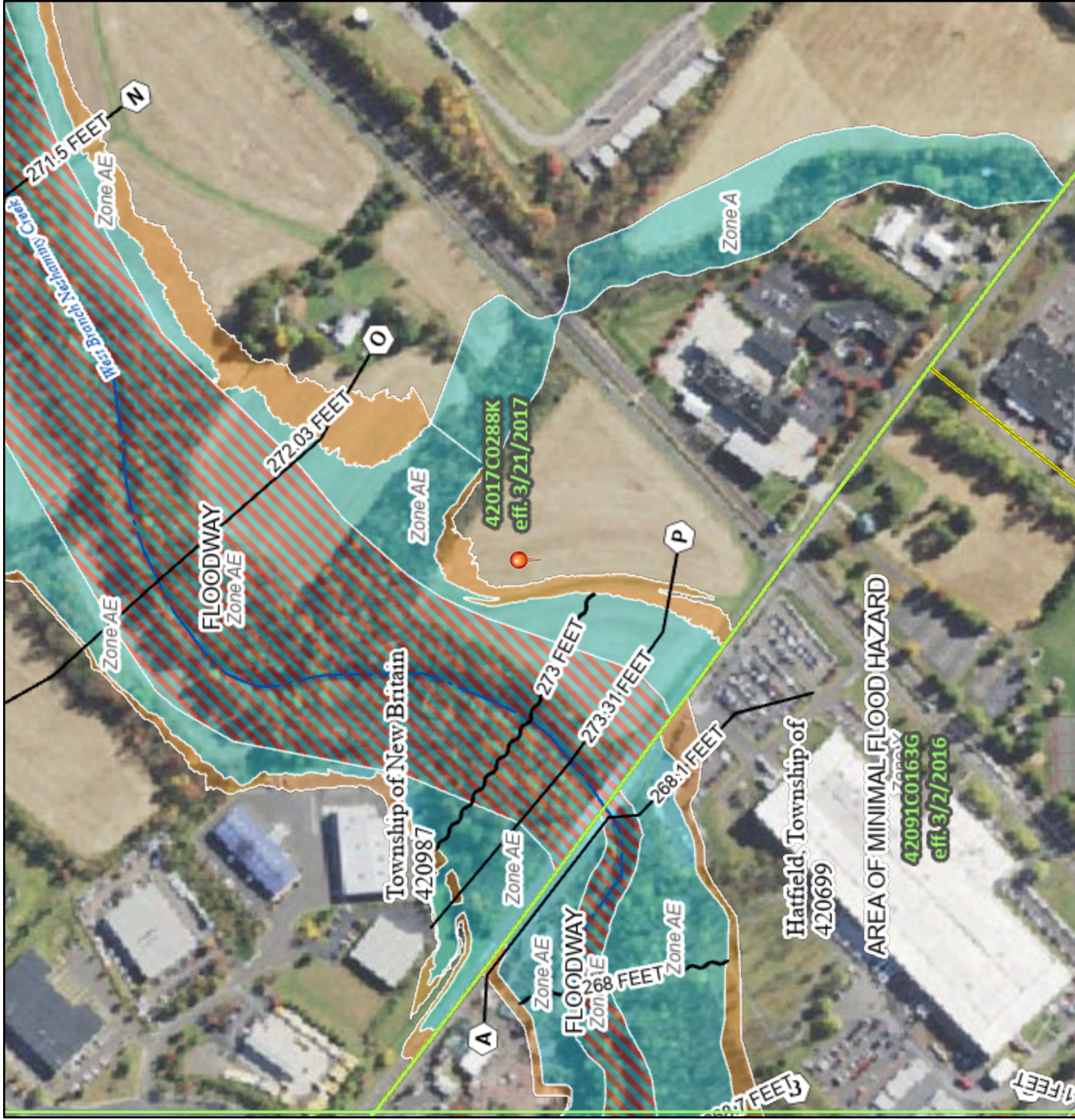
- Digital Data Available
- No Digital Data Available
- Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

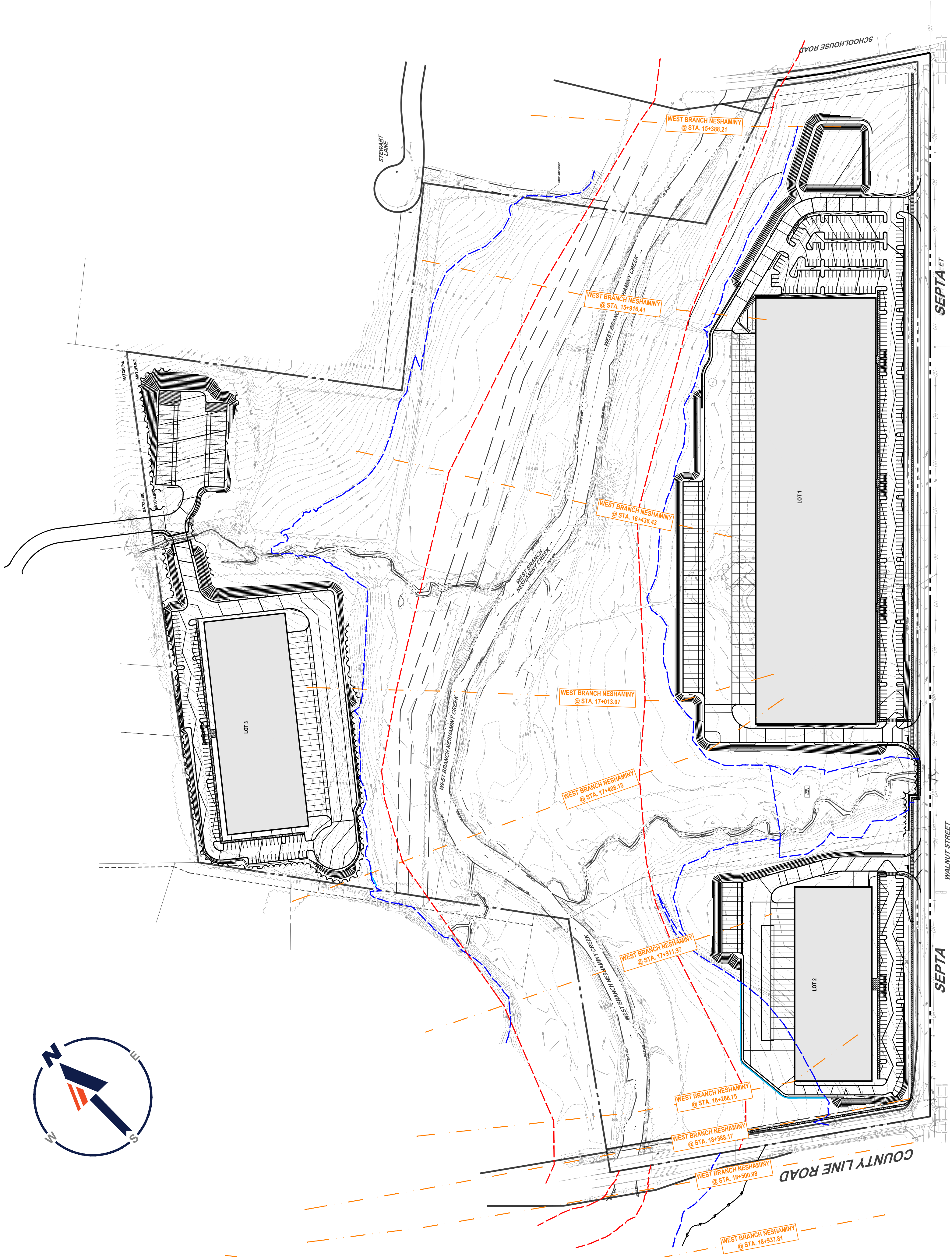
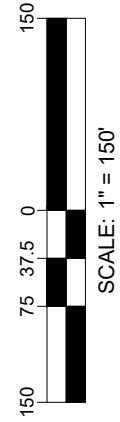
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/24/2025 at 5:00 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



Appendix D



	CURB
	UTILITY POLE
	TYPICAL SIGN
	BOLLARD
	UTILITY POLE W/ LIGHT
	TYPICAL LIGHT
	PARKING COUNT

DRAWING LEGEND

- CROSS-SECTION LINE & STA
- CALCULATED EXISTING FLOOD HAZARD ZONE
- CALCULATED PROPOSED FLOOD HAZARD ZONE
- FEMA EFFECTIVE FLOODWAY

[illegible]

FOR EXHIBIT

PURPOSES ONLY

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.:

DRAWN BY:

CHECKED BY:

DATE:

CAD ID.:

PAC250095, 00-0A

LLZ

NCR

07/24/2025

P-ENV/HNVR

PROJECT:

BOHLER INC.

**1600 MANOR DRIVE, SUITE 200
CHALFONT, PA 18914**

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SHEET TITLE:	PROPOSED CONDITIONS	2	ORG. DATE -- 07/24/2025
SHEET NUMBER:			

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ESTIMABLE DESIGN

PERMITTING SERVICES

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EXHIBIT 3

Post-Construction Stormwater Management Report

POST-CONSTRUCTION STORMWATER MANAGEMENT REPORT

Prepared for:

HCI DP LAND ACQUISITION LLC INDUSTRIAL DEVELOPMENT

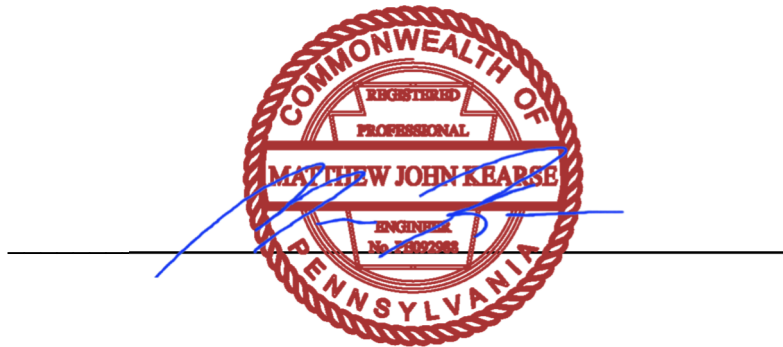
NEW BRITAIN TOWNSHIP
BUCKS COUNTY
PENNSYLVANIA

Prepared by:

BOHLER //

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Bohler Project No. PAC250095.00



MATTHEW KEARSE
Pennsylvania Professional Engineer License No. PE092988

Dated: April 6, 2026
Revised: July 28, 2026

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Appendix 2.0: Stormwater Infiltration Report, prepared by Geo-Technology Associates, Inc. for Walnut Street - Chalfont, New Britain Township, Bucks County, PA, dated 9/9/2025, last revised 1/08/2026.	
Appendix 3.0: Pre, Post, and Inlet Drainage Area Plans	
Appendix 4.0: Soil Report	

General Project Description/Stormwater Management

GENERAL PROJECT DESCRIPTION

HCI DP Land Acquisition LLC proposes to develop the existing property located between Walnut Street, Schoolhouse Road, County Line Road and Independence Lane. The existing site is vacant with the West Branch of Neshaminy Creek travelling through the center of the property. The existing site also contains various woodland areas, wetlands, floodplain and riparian buffer areas. Currently the entire project consists of four (4) lots totaling 85.11 acres. The four (4) lots will be consolidated into one (1) lot. The proposal for the property is to develop the site with three (3) industrial buildings. The proposal also includes utilities and stormwater management controls necessary to support the development. Pertinent data characterizing the existing and future site conditions are shown on the accompanying Preliminary Land Development Plans.

STORMWATER MANAGEMENT

The proposed development has been designed to manage the increase in the 2-year volume generated by the on-site runoff as well as reduce peak rates getting to three (3) points of interest in accordance with the New Britain Township Stormwater Management Ordinance for the Neshaminy Creek Watershed. The proposed development has been designed to maintain existing drainage patterns to the greatest extent possible.

The SCS Method as defined in the computer watershed software HydroCAD Version 10.50-7a (HydroCAD) was the method utilized for calculating the peak runoff rates and generating hydrographs for existing conditions and post-development. Precipitation data used for generating hydrographs was generated using NOAA Atlas 14, Volume 2, Version 3 rainfall data obtained on November 18, 2025 for Chalfont, PA.

Pre-Development Conditions

The pre-development condition of the site consists of three (3) Points of Analysis (POAs), which are indicated on the attached Pre-Development Drainage Area Plan. In the existing condition, the site drains directly into the West Branch Neshaminy Creek via POA #1, Unnamed Tributary 02875 to West Branch Neshaminy Creek via POA #2, and Unnamed Tributary 02874 to West Branch Neshaminy Creek via POA #3. West Branch Neshaminy Creek and the Unnamed Tributaries 02875 and 02874 to West Branch Neshaminy Creek have a Designated Use classification of Warm Water Fishes (WWF), Migratory Fishes (MF). The on-site area tributary to each POA has been delineated and broken down by various ground covers for analysis. Hydrographs have been generated for the 1, 2, 5, 10, 25, 50 and 100-year design storms.

Post-Development Conditions

The post-development condition of the site maintains the same POAs and relative drainage patterns. A network of inlets, storm piping, and roof drains are proposed to capture runoff and direct it to underground detention basin systems and an aboveground infiltration basin. The underground detention basins and the aboveground infiltration basin provide stormwater rate control to be in compliance with Township and PADEP standards. The on-site area tributary to each POA has been delineated and broken down by various ground covers for analysis. Hydrographs have been generated for the 1, 2, 5, 10, 25, 50 and 100-year design storms.

Stormwater Volume & Water Quality Requirements

PADEP CG-1 requires that the 2-year, 24-hour storm net runoff volume increase resulting from development of a project site be managed while considering 20% of the existing impervious area as

meadow. The Township requires that the 2-year, 24-hour storm net runoff volume increase resulting from development of a project site be managed while considering 50% of the existing impervious area as meadow. In order to comply with PADEP CG-1 and the Township requirements, the net runoff increase for the 2-year, 24-hour storm was evaluated for the Pre- and Post-Development conditions. When considering 50% of existing impervious area as meadow, there is an increase in net runoff volume for the 2-year, 24-hour storm. Geo-Technology Associates, Inc. conducted infiltration testing throughout the site, and their findings are included within this report under Appendix 1.0. Based on GTA's results of the preliminary and supplemental subsurface testing, GTA considers stormwater infiltration within proposed infiltration basins to be very limited due to shallow limiting zones and slow inconsistent and variable infiltration rates. Issues related to stormwater management include the relatively shallow bedrock observed in the central and northern portions of the site and areas of slower infiltration. GTA recommends alternative SCMs to be considered for this project. Unlined systems, such as MRC, could be considered to maximize infiltration potential without relying on it for complete stormwater management. However, in an effort to include green infrastructure in the design strategy, riparian forested buffers have been implemented instead of MRCs.

Based on the limited infiltration results across the site, the existing riparian forest buffer (RFB) will be improved and utilized to provide the necessary stormwater volume and water quality requirements needed for the site. Additionally, one (1) surface infiltration basin will be utilized on site where infiltration test results were most desirable.

The existing RFB provides a depth of approximately 100 feet of stormwater runoff volume and water quality treatment prior to entering the stream. The RFB will be improved to include an additional 50 feet of native species plantings that comply with the Township and PADEP requirements. The additional plantings will improve the RFB to provide a total depth of 150 feet of stormwater runoff volume and water quality treatment.

The riparian forest buffer will be utilized in such a way that complies with the latest PADEP regulations. This means that a majority of stormwater runoff from the site, for all design storms up to the 100-year / 24-hour storm, will be collected into subsurface stormwater detention basins to control the rate of stormwater runoff entering the RFB. The subsurface detention systems will also control the runoff duration following the storms routed to the RFB by ensuring that the system is fully dewatered within the required timespan. After entering the subsurface systems, flows enter isolator rows of the ADS chamber system. These isolator rows serve the purpose of a forebay for the underground basins. The subsurface detention basins will discharge to level spreaders that will provide stormwater runoff inflow velocity and flow depth attenuation by creating a sheet flow condition for flows entering the RFB.

Building #1 has an aboveground infiltration basin. This is proposed in an area where GTA got suitable infiltration rates. A factor of safety was applied to the test results to determine a design infiltration rate.

Stormwater Peak Rate Requirements

Based on the New Britain Township Stormwater Management Ordinance, the proposed development site falls within stormwater management District "New Britain Township" of the Neshaminy Creek Watershed. Table 26-124.1 - Peak Rate Runoff Control Standards by Stormwater Management Districts In The Neshaminy Creek Watershed (includes Little Neshaminy Creek) specifies that in management District "New Britain Township", the post-development peak flow rate for each storm shall be reduced to the next lowest storm pre-development peak flow rate with the exception for the 1-year post-development peak flow rate, which is not to exceed the 1-year pre-development peak flow rate. The hydrographs generated for the post-development conditions have been routed through the subsurface detention basin systems & the aboveground infiltration basin and added to the hydrographs generated for bypass drainage areas within the limit of disturbance to determine the total post-development peak rate. The subsurface detention basin systems & the aboveground infiltration basin have been designed such that the peak rate requirements are met.

141 Independence Lane Stormwater Impact

There are existing detention basins situated at 141 Independence Lane that act as regional facilities for New Britain Business Park. There is an approved plan to develop the property. That plan proposed to modify the outfalls from the existing northerly detention basin (basin 1) and modify the existing southerly detention basin (basin 2). That plan also includes new underground stormwater management basins to support proposed improvements on the lot. The design is documented in the Post Construction Stormwater Management Report prepared by Rettew Associates, Inc. for 141 Independence Lane and detailed in the Preliminary/Final Land Development Plan for 141 Independence Lane.

The construction of the Building #3 access will affect the exiting detention basin 2 by reducing its storage volume. This will be mitigated through the installation of ADS MC-3500 subsurface detention basin chambers located underneath the access. Four (4) equalization pipes have been designed to be at the same bottom elevation as the existing surface basin. These culverts will allow runoff to enter the subsurface basin and equalize between the two systems.

The storage volume provided in the subsurface basin will mitigate the volume lost within the surface basin due to construction of the access. This added storage volume prevents any impact on the runoff rate leaving Modified Detention Basin 2. An analysis of the basin is included in an appendix which confirms this. The analysis uses the Rettew PCSM report as its basis so that the full impacts of both the access drive and the 141 Independence Lane development were considered. Note that the storage volume replaced by the underground system is comparable to the storage volume displaced by the access drive, so no impact is expected in the interim condition before 141 Independence Lane is developed.

The construction of the access drive for the 141 Independence Lane development will displace the emergency spillway for existing detention basin 1. That plan included a new emergency spillway design for a triple inlet box structure. That structure is proposed to be installed as part of this development as the access drive to building 3 will also affect the emergency spillway from existing basin 1.

The new impervious area of the access drive is managed within the HCI DP Land Acquisition site. The new access drive will not contribute runoff to the existing detention basins on 141 Independence Lane.

Please refer to Appendix 1.0 for runoff rate and volume calculations for the revised Modified Detention Basin 2.

STORM DRAINAGE SYSTEM

The storm drainage system has been designed to intercept runoff at topographic low points and areas of significant runoff quantities and convey stormwater to the underground detention basin systems and aboveground infiltration basin.

CONCLUSION

Based on the calculations provided within this report, the area of the site being re-developed under this application meets the standards and requirements set forth by the New Britain Township Stormwater Management Ordinance and NPDES CG-1.

Stormwater Management Calculations



NOAA Atlas 14, Volume 2, Version 3
Location name: Chalfont, Pennsylvania, USA*
Latitude: 40.2781°, Longitude: -75.2439°
Elevation: 272 ft**
 * source: ESRI Maps
 ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M. Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aerals](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.337 (0.309-0.369)	0.401 (0.367-0.439)	0.472 (0.431-0.515)	0.522 (0.476-0.570)	0.583 (0.528-0.636)	0.624 (0.563-0.682)	0.664 (0.598-0.726)	0.700 (0.626-0.767)	0.742 (0.658-0.815)	0.773 (0.681-0.851)
10-min	0.539 (0.493-0.589)	0.642 (0.588-0.702)	0.756 (0.690-0.825)	0.835 (0.761-0.912)	0.929 (0.842-1.01)	0.994 (0.897-1.09)	1.06 (0.950-1.15)	1.11 (0.992-1.22)	1.17 (1.04-1.29)	1.22 (1.07-1.34)
15-min	0.673 (0.617-0.736)	0.807 (0.739-0.883)	0.956 (0.872-1.04)	1.06 (0.963-1.15)	1.18 (1.07-1.28)	1.26 (1.14-1.37)	1.33 (1.20-1.46)	1.40 (1.25-1.53)	1.48 (1.31-1.62)	1.53 (1.35-1.68)
30-min	0.923 (0.845-1.01)	1.11 (1.02-1.22)	1.36 (1.24-1.48)	1.53 (1.40-1.67)	1.74 (1.58-1.90)	1.90 (1.71-2.07)	2.04 (1.84-2.23)	2.18 (1.95-2.39)	2.35 (2.09-2.58)	2.47 (2.18-2.72)
60-min	1.15 (1.05-1.26)	1.40 (1.28-1.53)	1.74 (1.59-1.90)	1.99 (1.82-2.18)	2.32 (2.10-2.53)	2.57 (2.32-2.80)	2.82 (2.53-3.08)	3.06 (2.73-3.35)	3.37 (2.99-3.70)	3.61 (3.18-3.98)
2-hr	1.37 (1.25-1.50)	1.66 (1.52-1.82)	2.08 (1.89-2.28)	2.40 (2.18-2.63)	2.83 (2.55-3.10)	3.17 (2.84-3.47)	3.52 (3.13-3.84)	3.86 (3.42-4.23)	4.33 (3.79-4.76)	4.69 (4.06-5.16)
3-hr	1.50 (1.36-1.65)	1.82 (1.65-2.00)	2.28 (2.06-2.51)	2.63 (2.38-2.90)	3.11 (2.80-3.42)	3.49 (3.12-3.83)	3.88 (3.44-4.26)	4.26 (3.75-4.70)	4.79 (4.17-5.30)	5.20 (4.48-5.76)
6-hr	1.87 (1.71-2.07)	2.26 (2.06-2.51)	2.83 (2.57-3.12)	3.29 (2.98-3.62)	3.93 (3.53-4.33)	4.46 (3.97-4.90)	5.01 (4.43-5.50)	5.59 (4.89-6.14)	6.41 (5.51-7.06)	7.06 (5.99-7.80)
12-hr	2.28 (2.08-2.54)	2.76 (2.52-3.06)	3.46 (3.15-3.84)	4.06 (3.67-4.49)	4.91 (4.41-5.41)	5.64 (5.01-6.21)	6.43 (5.65-7.08)	7.28 (6.31-8.02)	8.52 (7.24-9.42)	9.56 (7.99-10.6)
24-hr	2.70 (2.48-2.94)	3.24 (2.99-3.55)	4.08 (3.75-4.45)	4.77 (4.36-5.20)	5.78 (5.25-6.27)	6.62 (5.99-7.18)	7.54 (6.78-8.17)	8.53 (7.61-9.23)	9.97 (8.78-10.8)	11.2 (9.74-12.1)
2-day	3.12 (2.84-3.44)	3.76 (3.43-4.16)	4.74 (4.31-5.23)	5.52 (5.01-6.09)	6.65 (6.00-7.31)	7.58 (6.81-8.32)	8.57 (7.64-9.41)	9.63 (8.52-10.6)	11.1 (9.76-12.2)	12.4 (10.8-13.6)
3-day	3.29 (3.01-3.62)	3.97 (3.63-4.36)	4.97 (4.54-5.46)	5.79 (5.28-6.35)	6.94 (6.30-7.60)	7.90 (7.14-8.64)	8.91 (8.00-9.74)	9.98 (8.91-10.9)	11.5 (10.2-12.6)	12.8 (11.2-14.0)
4-day	3.46 (3.19-3.79)	4.17 (3.84-4.57)	5.21 (4.78-5.70)	6.05 (5.54-6.61)	7.24 (6.60-7.89)	8.21 (7.46-8.95)	9.24 (8.36-10.1)	10.3 (9.29-11.3)	11.9 (10.6-13.0)	13.1 (11.6-14.4)
7-day	4.05 (3.75-4.40)	4.85 (4.49-5.28)	5.98 (5.54-6.51)	6.92 (6.39-7.52)	8.25 (7.58-8.95)	9.35 (8.57-10.1)	10.5 (9.58-11.4)	11.7 (10.6-12.7)	13.5 (12.1-14.6)	14.9 (13.3-16.2)
10-day	4.59 (4.28-4.96)	5.49 (5.10-5.92)	6.68 (6.21-7.21)	7.64 (7.09-8.24)	8.97 (8.30-9.67)	10.0 (9.26-10.8)	11.2 (10.2-12.0)	12.3 (11.2-13.2)	13.9 (12.6-15.0)	15.2 (13.7-16.4)
20-day	6.20 (5.79-6.66)	7.36 (6.87-7.90)	8.77 (8.19-9.42)	9.88 (9.21-10.6)	11.4 (10.6-12.2)	12.5 (11.6-13.5)	13.7 (12.7-14.7)	14.9 (13.7-16.0)	16.5 (15.1-17.7)	17.7 (16.1-19.1)
30-day	7.73 (7.30-8.19)	9.10 (8.59-9.65)	10.6 (10.0-11.2)	11.8 (11.1-12.5)	13.3 (12.5-14.1)	14.4 (13.6-15.3)	15.6 (14.6-16.5)	16.7 (15.6-17.7)	18.1 (16.8-19.3)	19.2 (17.8-20.4)
45-day	9.81 (9.31-10.4)	11.5 (10.9-12.2)	13.2 (12.6-14.0)	14.5 (13.8-15.3)	16.2 (15.3-17.0)	17.4 (16.4-18.3)	18.5 (17.5-19.5)	19.6 (18.4-20.6)	20.9 (19.6-22.1)	21.8 (20.4-23.1)
60-day	11.8 (11.2-12.4)	13.8 (13.1-14.5)	15.7 (15.0-16.6)	17.2 (16.3-18.1)	19.0 (18.0-20.0)	20.3 (19.2-21.3)	21.5 (20.4-22.6)	22.6 (21.4-23.8)	24.0 (22.6-25.3)	24.9 (23.5-26.3)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

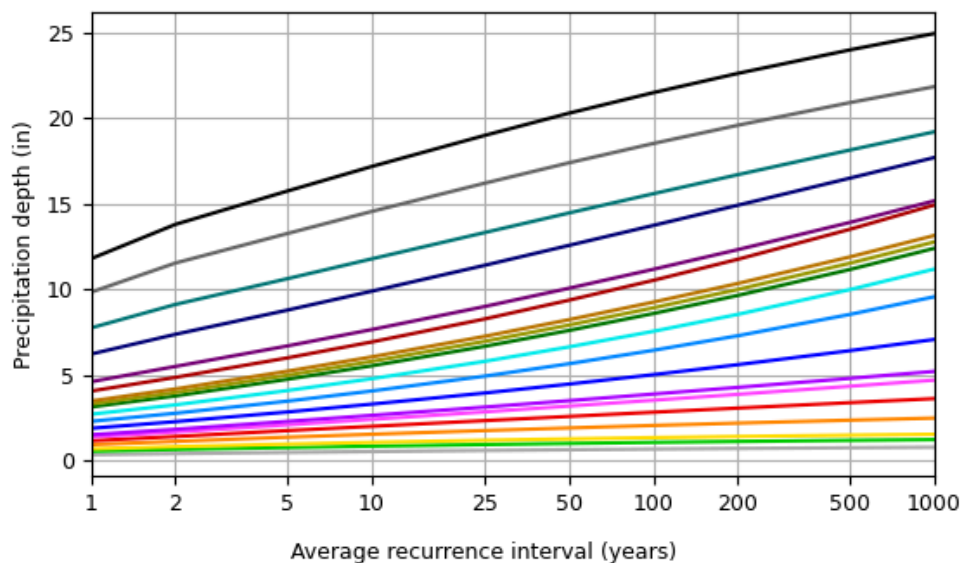
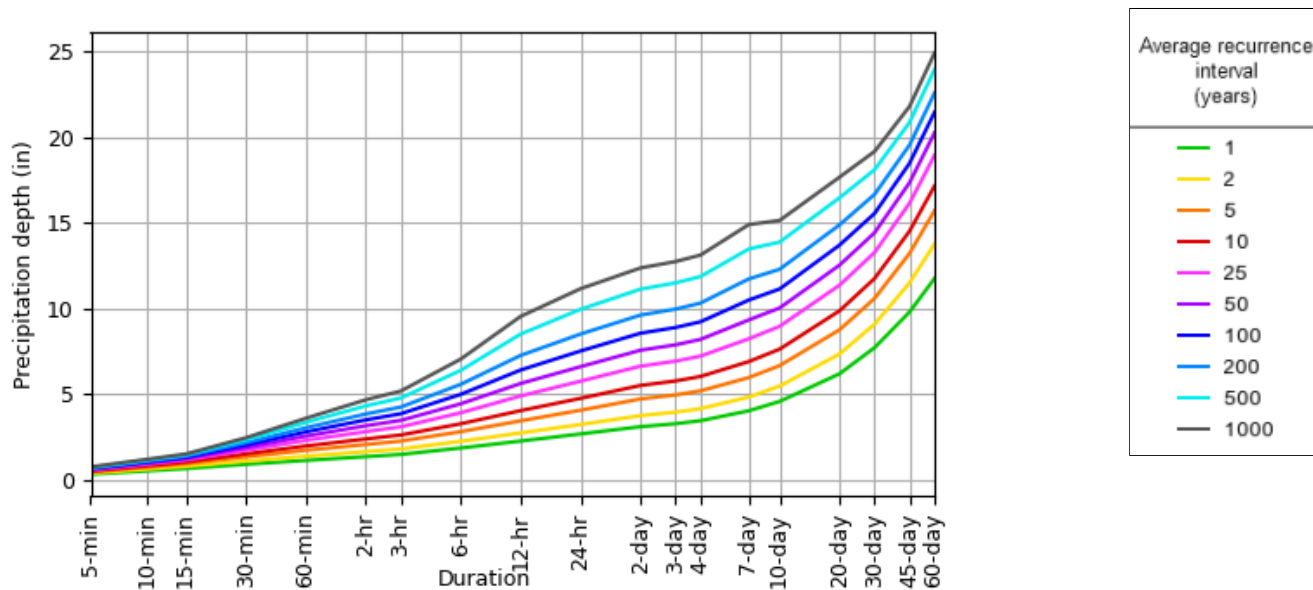
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PF graphical

PDS-based depth-duration-frequency (DDF) curves

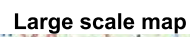
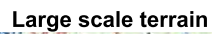
Latitude: 40.2781°, Longitude: -75.2439°



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NOAA Atlas 14, Volume 2, Version 3
Location name: Chalfont, Pennsylvania, USA*
Latitude: 40.2781°, Longitude: -75.2439°
Elevation: 272 ft**
 * source: ESRI Maps
 ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M. Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aerals](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	4.04 (3.71-4.43)	4.81 (4.40-5.27)	5.66 (5.17-6.18)	6.26 (5.71-6.84)	7.00 (6.34-7.63)	7.49 (6.76-8.18)	7.97 (7.18-8.71)	8.40 (7.51-9.20)	8.90 (7.90-9.78)	9.28 (8.17-10.2)
10-min	3.23 (2.96-3.53)	3.85 (3.53-4.21)	4.54 (4.14-4.95)	5.01 (4.57-5.47)	5.57 (5.05-6.08)	5.96 (5.38-6.52)	6.34 (5.70-6.92)	6.66 (5.95-7.29)	7.04 (6.25-7.73)	7.30 (6.44-8.04)
15-min	2.69 (2.47-2.94)	3.23 (2.96-3.53)	3.82 (3.49-4.18)	4.22 (3.85-4.62)	4.71 (4.27-5.14)	5.04 (4.54-5.50)	5.34 (4.80-5.83)	5.60 (5.01-6.13)	5.91 (5.24-6.49)	6.11 (5.38-6.73)
30-min	1.85 (1.69-2.02)	2.23 (2.04-2.44)	2.72 (2.48-2.97)	3.06 (2.79-3.34)	3.49 (3.16-3.80)	3.79 (3.42-4.14)	4.09 (3.68-4.47)	4.36 (3.90-4.77)	4.70 (4.17-5.16)	4.95 (4.36-5.45)
60-min	1.15 (1.05-1.26)	1.40 (1.28-1.53)	1.74 (1.59-1.90)	1.99 (1.82-2.18)	2.32 (2.10-2.53)	2.57 (2.32-2.80)	2.82 (2.53-3.08)	3.06 (2.73-3.35)	3.37 (2.99-3.70)	3.61 (3.18-3.98)
2-hr	0.684 (0.623-0.751)	0.831 (0.757-0.911)	1.04 (0.945-1.14)	1.20 (1.09-1.31)	1.42 (1.28-1.55)	1.59 (1.42-1.73)	1.76 (1.56-1.92)	1.93 (1.71-2.11)	2.16 (1.89-2.38)	2.34 (2.03-2.58)
3-hr	0.499 (0.452-0.550)	0.605 (0.549-0.667)	0.758 (0.687-0.836)	0.877 (0.792-0.965)	1.04 (0.930-1.14)	1.16 (1.04-1.28)	1.29 (1.14-1.42)	1.42 (1.25-1.56)	1.60 (1.39-1.76)	1.73 (1.49-1.92)
6-hr	0.312 (0.285-0.346)	0.378 (0.344-0.418)	0.472 (0.429-0.521)	0.549 (0.497-0.605)	0.656 (0.589-0.722)	0.743 (0.663-0.817)	0.836 (0.739-0.918)	0.933 (0.816-1.02)	1.07 (0.920-1.18)	1.18 (1.00-1.30)
12-hr	0.189 (0.172-0.210)	0.228 (0.208-0.253)	0.287 (0.261-0.318)	0.336 (0.304-0.372)	0.407 (0.365-0.449)	0.468 (0.416-0.515)	0.533 (0.468-0.587)	0.604 (0.523-0.665)	0.707 (0.601-0.782)	0.793 (0.663-0.878)
24-hr	0.112 (0.103-0.122)	0.135 (0.124-0.147)	0.169 (0.156-0.185)	0.198 (0.181-0.216)	0.240 (0.218-0.261)	0.275 (0.249-0.299)	0.314 (0.282-0.340)	0.355 (0.317-0.384)	0.415 (0.365-0.449)	0.465 (0.405-0.504)
2-day	0.064 (0.059-0.071)	0.078 (0.071-0.086)	0.098 (0.089-0.108)	0.115 (0.104-0.126)	0.138 (0.124-0.152)	0.157 (0.141-0.173)	0.178 (0.159-0.196)	0.200 (0.177-0.220)	0.232 (0.203-0.254)	0.257 (0.223-0.283)
3-day	0.045 (0.041-0.050)	0.055 (0.050-0.060)	0.069 (0.063-0.075)	0.080 (0.073-0.088)	0.096 (0.087-0.105)	0.109 (0.099-0.119)	0.123 (0.111-0.135)	0.138 (0.123-0.151)	0.159 (0.141-0.174)	0.177 (0.155-0.194)
4-day	0.036 (0.033-0.039)	0.043 (0.039-0.047)	0.054 (0.049-0.059)	0.063 (0.057-0.068)	0.075 (0.068-0.082)	0.085 (0.077-0.093)	0.096 (0.087-0.104)	0.107 (0.096-0.117)	0.123 (0.110-0.135)	0.136 (0.121-0.149)
7-day	0.024 (0.022-0.026)	0.028 (0.026-0.031)	0.035 (0.032-0.038)	0.041 (0.038-0.044)	0.049 (0.045-0.053)	0.055 (0.050-0.060)	0.062 (0.057-0.067)	0.069 (0.063-0.075)	0.080 (0.072-0.087)	0.088 (0.079-0.096)
10-day	0.019 (0.017-0.020)	0.022 (0.021-0.024)	0.027 (0.025-0.030)	0.031 (0.029-0.034)	0.037 (0.034-0.040)	0.041 (0.038-0.045)	0.046 (0.042-0.050)	0.051 (0.046-0.055)	0.057 (0.052-0.062)	0.063 (0.056-0.068)
20-day	0.012 (0.012-0.013)	0.015 (0.014-0.016)	0.018 (0.017-0.019)	0.020 (0.019-0.022)	0.023 (0.022-0.025)	0.026 (0.024-0.028)	0.028 (0.026-0.030)	0.031 (0.028-0.033)	0.034 (0.031-0.036)	0.036 (0.033-0.039)
30-day	0.010 (0.010-0.011)	0.012 (0.011-0.013)	0.014 (0.013-0.015)	0.016 (0.015-0.017)	0.018 (0.017-0.019)	0.020 (0.018-0.021)	0.021 (0.020-0.022)	0.023 (0.021-0.024)	0.025 (0.023-0.026)	0.026 (0.024-0.028)
45-day	0.009 (0.008-0.009)	0.010 (0.010-0.011)	0.012 (0.011-0.012)	0.013 (0.012-0.014)	0.014 (0.014-0.015)	0.016 (0.015-0.016)	0.017 (0.016-0.018)	0.018 (0.017-0.019)	0.019 (0.018-0.020)	0.020 (0.018-0.021)
60-day	0.008 (0.007-0.008)	0.009 (0.009-0.010)	0.010 (0.010-0.011)	0.011 (0.011-0.012)	0.013 (0.012-0.013)	0.014 (0.013-0.014)	0.014 (0.014-0.015)	0.015 (0.014-0.016)	0.016 (0.015-0.017)	0.017 (0.016-0.018)

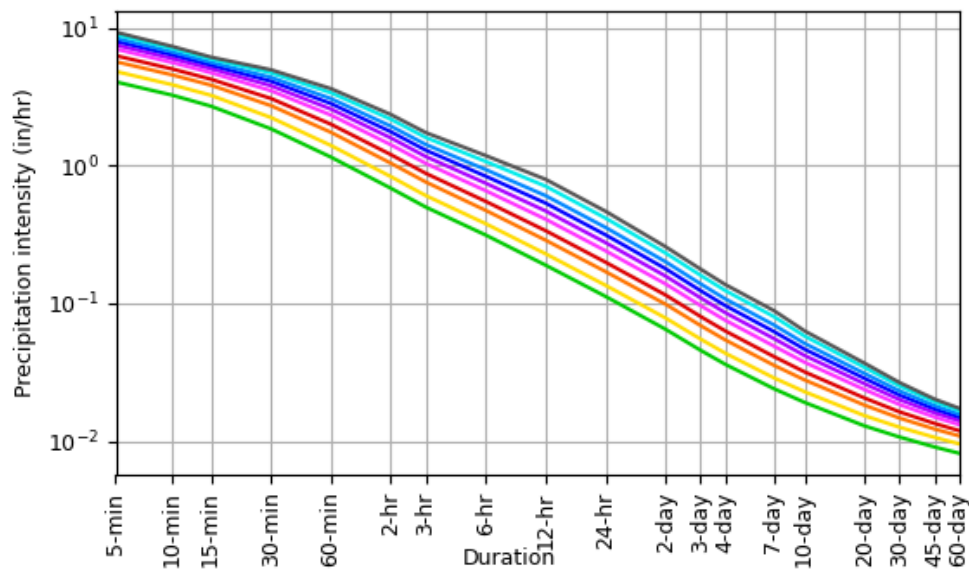
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).
 Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.
 Please refer to NOAA Atlas 14 document for more information.

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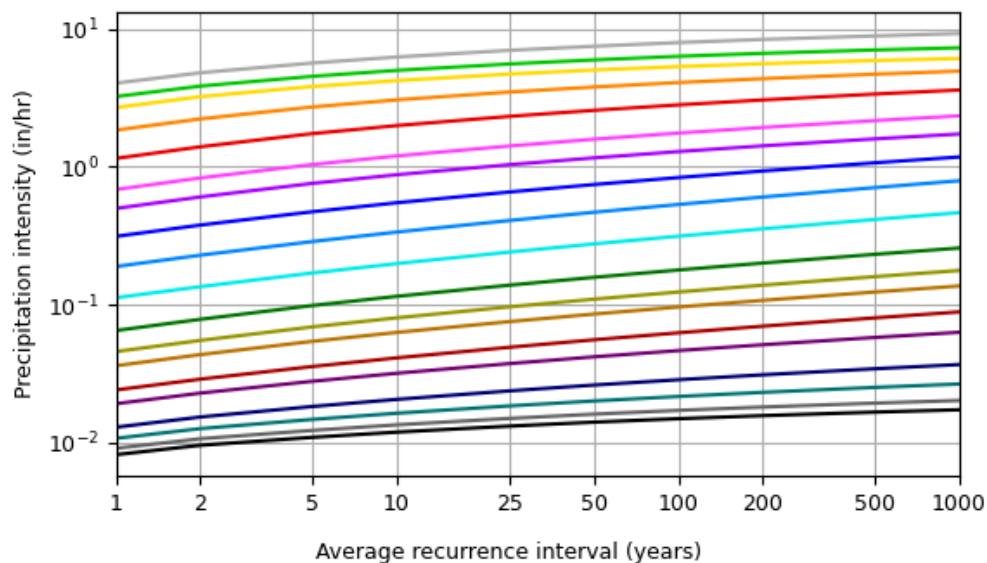
PF graphical

PDS-based intensity-duration-frequency (IDF) curves

Latitude: 40.2781°, Longitude: -75.2439°



Average recurrence interval (years)
1
2
5
10
25
50
100
200
500
1000



Duration	
5-min	2-day
10-min	3-day
15-min	4-day
30-min	7-day
60-min	10-day
2-hr	20-day
3-hr	30-day
6-hr	45-day
12-hr	60-day
24-hr	

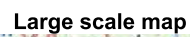
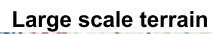
NOAA Atlas 14, Volume 2, Version 3

Created (GMT): Tue Nov 18 16:45:01 2025

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Maps & aerials

Small scale terrain





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1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

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Runoff Calculation CN Worksheets

Project: [PAC250095.00: Hanover Industrial - Chalfont](#)

Description: [Pre-Development](#)

$Q = [(P - 0.2S)^2 / (P + 0.8S)] * 1/12 * 43,560$, where $S = (1000/CN) - 10$ and:

P = Rainfall (in)

Catchment Areas

Description	HSG C / CN		HSG D / CN		Impervious			Total Area (Ac)	Composite CN	Runoff Q (cuft)
	Meadow	Woods, Good Condition	Meadow	Woods, Good Condition	Impervious	Impervious as Meadow	Impervious as Meadow			
	71	70	78	77	98	71	78			
POA #1 to West Branch Neshaminy Creek										
POA #1	0.620	0.204	25.830	2.517	0.292	0.292		29.755	78	140,288
Total	0.620	0.204	25.830	2.517	0.292	0.292		29.755		140,288
POA #2 to UNT 02875 to West Branch Neshaminy Creek										
POA #2			4.899	1.156	0.142		0.142	6.339	78	30,594
Total			4.899	1.156	0.142		0.142	6.339		30,594
POA #3 to UNT 02874 to West Branch Neshaminy Creek										
POA #3	0.257		3.339	0.750				4.346	77	20,009
Total	0.257		3.339	0.750				4.346		20,009
Totals										
POA #2 to UNT 02875 to West	Totals:	0.877	0.204	34.068	4.423	0.434	0.292	0.284	40.440	190,891

Runoff Calculation CN Worksheets

Project: PAC250095.00: Hanover Industrial - Chalfont

Description: Post-Development

Q = $[(P - 0.2S)^2 / (P + 0.8S)] * 1/12 * 43,560$, where $S = (1000/CN) - 10$ and:
P = 3.24

Catchment Areas

Description	HSG C / CN		HSG D / CN		Impervious	Total Area (Ac)	Composite CN	Runoff Q (cuft)
	Open Space (Lawns), Good Condition	Woods, Good Condition	Open Space (Lawns), Good Condition	Woods, Good Condition	Impervious			
	74	70	80	77	98			
POA #1 to West Branch Neshaminy Creek								
DA-1	0.222		1.658		4.859	6.739	93	62,524
DA-2			0.137		7.977	8.114	98	87,795
DA-3			0.587		3.830	4.417	96	44,864
DA-4			0.310	3.275		3.585	77	16,359
DA-5			0.381		2.500	2.881	96	29,273
DA-6	0.255	0.084	0.328	0.089	2.580	3.336	93	31,516
DA-7			0.299		3.954	4.253	97	44,719
DA-8	0.374		3.905		0.101	4.380	80	22,855
Total	0.851	0.084	7.605	3.364	25.801	37.705		339,905
POA #2 to UNT 02875 to West Branch Neshaminy Creek								
Bypass POA #2			1.462		0.030	1.492	80	7,931
Total			1.462		0.030	1.492		7,931
POA #3 to UNT 02874 to West Branch Neshaminy Creek								
Bypass to POA #3	0.072		1.171			1.243	80	6,368
Total	0.072		1.171			1.243		6,368
Totals								
Total	0.923	0.084	10.238	3.364	25.831	40.440		354,205

Time of Concentration (Tc) or (Tt) Calculations

Project: **PAC250095.00: Hanover Industrial - Chalfont**

Description: **POA #1**

Note: Space for as many as three segments per flow type can be used for each worksheet.

Sheet Flow (Applicable to Tc only)

	Segment ID	AB			
1. Surface Description (table 3-1)		Cultivated soils (residue cover ≤ 20%)			
2. Manning's roughness coeff., n (table 3-1)		0.060			
3. Flow length, L (total L ≤ 150 ft)	ft	100			
4. Two-yr 24-hr rainfall, P ₂	in	3.24			
5. Land slope, s*	ft/ft	0.0260			
6. Tt = 0.007(nL) ^{0.8} / P ₂ ^{0.5} s ^{0.4}	hr	0.0702	+		+
*S is averaged					= 0.0702

Shallow Concentrated Flow

	Segment ID	BC			
7. Surface Description (paved or unpaved)		Unpaved			
8. Flow length, L	ft	532			
9. Watercourse slope, s*	ft/ft	0.0205			
10. Average velocity, V	ft/sec	2.30			
11. Tt = L / 3600V		0.0642	+		+
					= 0.0642

Channel Flow

	Segment ID				
12. Cross sectional flow area, a	ft ²				
13. Wetted perimeter, p	ft				
14. Hydraulic radius, r = a/wp	ft				
15. Channel Slope, s	ft/ft				
16. Manning's roughness coeff., n					
17. V = 1.49r ^{2/3} s ^{1/2} / n					
18. Flow length, L	ft				
19. Tt = L / 3600V			+		+
20. Watershed or subarea T _c or T _t (add T _t in steps 6,11, and 19)					= 0.1344

Tc = **8.06** minutes

Time of Concentration (Tc) or (Tt) Calculations

Project: **PAC250095.00: Hanover Industrial - Chalfont**

Description: **POA #2**

Note: Space for as many as three segments per flow type can be used for each worksheet.

Sheet Flow (Applicable to Tc only)

	Segment ID	AB			
1. Surface Description (table 3-1)		Cultivated soils (residue cover ≤ 20%)			
2. Manning's roughness coeff., n (table 3-1)		0.060			
3. Flow length, L (total L ≤ 150 ft)	ft	100			
4. Two-yr 24-hr rainfall, P ₂	in	3.24			
5. Land slope, s*	ft/ft	0.0250			
6. Tt = 0.007(nL) ^{0.8} / P ₂ ^{0.5} s ^{0.4}	hr	0.0713	+		+
*S is averaged					= 0.0713

Shallow Concentrated Flow

	Segment ID	BC	CD		
7. Surface Description (paved or unpaved)		Unpaved	Unpaved		
8. Flow length, L	ft	481	61		
9. Watercourse slope, s*	ft/ft	0.0177	0.1475		
10. Average velocity, V	ft/sec	2.14	6.23		
11. Tt = L / 3600V		0.0625	0.0027	+	+
					= 0.0652

Channel Flow

	Segment ID				
12. Cross sectional flow area, a	ft ²				
13. Wetted perimeter, p	ft				
14. Hydraulic radius, r = a/wp	ft				
15. Channel Slope, s	ft/ft				
16. Manning's roughness coeff., n					
17. V = 1.49r ^{2/3} s ^{1/2} / n					
18. Flow length, L	ft				
19. Tt = L / 3600V			+	+	
20. Watershed or subarea T _c or T _t (add T _t in steps 6,11, and 19)					= 0.1365

Tc = **8.19** minutes

Time of Concentration (Tc) or (Tt) Calculations

Project: **PAC250095.00: Hanover Industrial - Chalfont**

Description: **POA #3**

Note: Space for as many as three segments per flow type can be used for each worksheet.

Sheet Flow (Applicable to Tc only)

Segment ID

AB		BC		
Woods (light underbrush)		Cultivated soils (residue cover <= 20%)		
0.400		0.06		
42		58		
3.24		3.24		
0.0648		0.0174		
0.1119	+	0.0531	+	0.1650

1. Surface Description (*table 3-1*)
 2. Manning's roughness coeff., n (*table 3-1*)
 3. Flow length, L (*total* $L \leq 150$ ft)
 4. Two-yr 24-hr rainfall, P_2
 5. Land slope, s^*
 6. $Tt = 0.007(nL)^{0.8} / P_2^{0.5} s^{0.4}$
- * S is averaged

Shallow Concentrated Flow

Segment ID

CD				
Unpaved				
540.58				
0.0338				
2.96				
0.0507	+		+	
				= 0.0507

7. Surface Description (paved or unpaved)
8. Flow length, L
9. Watercourse slope, s^*
10. Average velocity, V
11. $T_t = L / 3600V$

Channel Flow

Segment ID

	+		+		=	
						0.2157

nd 19)

12. Cross sectional flow area, a
13. Wetted perimeter, p
14. Hydraulic radius, $r = a/wp$
15. Channel Slope, s
16. Manning's roughness coeff., n
17. $V = 1.49 r^{2/3} s^{1/2} / n$
18. Flow length, L
19. $T_t = L / 3600V$

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)

T_c = 12.94 minutes

Peak Flow Summary

Project: PAC250095.00 Hanover - New Britain Township

Description: _____

POA #1

	Peak Flows (cfs)						
Pre-development	1-year	2-year	5-year	10-year	25-year	50-year	100-year
DA-1	44.650	63.800	95.700	123.090	164.300	199.140	237.520
Post-development							
Routed from SCM 1	0.230	0.230	0.720	1.160	2.930	4.760	7.230
Routed from SCM 2	5.300	6.230	9.330	12.590	17.750	22.420	29.010
Routed from SCM 3	4.310	5.950	9.140	12.070	16.440	20.020	25.750
Routed from SCM 4	4.110	4.960	6.600	8.130	10.590	13.100	16.650
Routed from SCM 5	4.480	6.090	8.990	11.530	15.380	18.000	21.810
Routed from SCM 6	3.810	4.890	7.510	9.980	13.900	16.920	20.550
Routed from SCM 7	4.450	5.840	8.370	10.670	14.330	17.040	20.310
Routed from DA-8	8.370	11.630	16.980	21.530	28.310	34.010	40.280
Totals							
Total Post-Dev Flow to POI *	31.810	40.510	59.240	77.120	106.280	130.300	163.190
Post-development Reductions							
POA #1	44.650	63.800	95.700	123.090	164.300	199.140	237.520
Total Post-Dev Flow to POI *	40.510	59.240	77.120	106.280	130.300	163.190	
Post- to Pre- Comparison	-4.140	-4.560	-18.580	-16.810	-34.000	-35.950	

*Based on HydroCAD Routing

The on-site post development peak flows must be reduced as follows per Section 26-124.A.:

- 2-year storm post-development must be less than 1-year storm pre-development
- 5-year storm post-development must be less than 2-year storm pre-development
- 10-year storm post-development must be less than 5-year storm pre-development
- 50-year storm post-development must be less than 25-year storm pre-development
- 100-year storm post-development must be less than 50-year storm pre-development

Peak Flow Summary

Project: PAC250095.00 Hanover - New Britain Township

Description: _____

POA #2

	Peak Flows (cfs)						
Pre-development	1-year	2-year	5-year	10-year	25-year	50-year	100-year
DA-2	9.690	13.770	20.560	26.390	35.160	42.560	50.730
Post-development							
Bypass	2.920	4.040	5.880	7.440	9.760	11.700	13.840
Total Post-Dev Flow to POI *	2.920	4.040	5.880	7.440	9.760	11.700	13.840
Post-development Reductions							
POA #2	9.690	13.770	20.560	26.390	35.160	42.560	50.730
Total Post-Dev Flow to POI *	4.040	5.880	7.440	9.760	11.700	13.840	
Post- to Pre- Comparison	-5.650	-7.890	-13.120	-16.630	-23.460	-28.720	

*Based on HydroCAD Routing

The on-site post development peak flows must be reduced as follows per Section 26-124.A.:

- 2-year storm post-development must be less than 1-year storm pre-development
- 5-year storm post-development must be less than 2-year storm pre-development
- 10-year storm post-development must be less than 5-year storm pre-development
- 50-year storm post-development must be less than 25-year storm pre-development
- 100-year storm post-development must be less than 50-year storm pre-development

Peak Flow Summary

Project: PAC250095.00 Hanover - New Britain Township

Description: _____

POA #3

	Peak Flows (cfs)						
Pre-development	1-year	2-year	5-year	10-year	25-year	50-year	100-year
DA-3	5.230	7.580	11.520	14.930	20.060	24.420	29.240
Post-development							
Bypass	2.340	3.270	4.790	6.080	8.010	9.630	11.410
Total Post-Dev Flow to POI *	2.340	3.270	4.790	6.080	8.010	9.630	11.410
Post-development Reductions							
POA #3	5.230	7.580	11.520	14.930	20.060	24.420	29.240
Total Post-Dev Flow to POI *	3.270	4.790	6.080	8.010	9.630	11.410	
Post- to Pre- Comparison	-1.960	-2.790	-5.440	-6.920	-10.430	-13.010	

**Based on HydroCAD Routing*

The on-site post development peak flows must be reduced as follows per Section 26-124.A.:

- 2-year storm post-development must be less than 1-year storm pre-development
- 5-year storm post-development must be less than 2-year storm pre-development
- 10-year storm post-development must be less than 5-year storm pre-development
- 50-year storm post-development must be less than 25-year storm pre-development
- 100-year storm post-development must be less than 50-year storm pre-development

General Information

Instructions

General

Volume

Rate

Quality

Project Name:	Hanover Industrial - Chalfont	Application Type:	PAG-02 NOI
County:	Bucks	Municipality:	New Britain Township
Project Type:	Other	☒ New Project ☐ Minor / Major Amendment	
Area: (In Watershed)	37.705 acres	Total Earth Disturbance: (In Watershed)	37.705 acres
No. of Post-Construction Points of Analysis:	1	at:	001

Point of Analysis (POA) No.	Total Drainage Area (DA) (acres)	Project Site DA (acres)	Existing Imp., Project Site DA (acres)	Proposed Imp., Project Site DA (acres)	Receiving Waters	Ch. 93 Class	Structural SCM(s)
001	37.705	37.705	0.584	28.801	Wetst Branch Neshaminy Creek	WWF, MF	Yes
Undetained Areas					West Branch Neshaminy Creek	WWF, MF	
Totals:	37.705	37.705	0.584	28.801			

Volume Management

Project: Hanover Industrial - Chalfont

Instructions General **Volume** Rate Quality

2-Year / 24-Hour Storm Event (NOAA Atlas 14): inches Alternative 2-Year / 24-Hour Storm Event inches

Alternative Source:

Pre-Construction Conditions: No. Rows: ☐ Exempt from Meadow in Good Condition ☒ Automatically Calculate CN, Ia, Runoff and Volume

Land Cover	Area (acres)	Soil Group	Outside LOD	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Pervious as Meadow	0.620	C	☐	71	0.817	0.90	2,031
Woods (Good Condition)	0.204	C	☐	70	0.857	0.85	631
Pervious as Meadow	25.830	D	☐	78	0.564	1.30	122,149
Woods (Good Condition)	2.517	D	☐	77	0.597	1.24	11,334
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	0.292	N/A	☐	98	0.041	3.01	3,188
Impervious as Meadow	0.292	C	☐	71	0.817	0.90	956
TOTAL (ACRES):		29.755		TOTAL (CF):		140,288	

Post-Construction Conditions: No. Rows:

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	0.851	C	74	0.703	1.06	3,287
Woods (Good Condition)	0.084	C	70	0.857	0.85	260

Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	7.605	D	80	0.500	1.43	39,553
Woods (Good Condition)	3.364	D	77	0.597	1.24	15,148
Impervious Areas: Industrial	25.801	N/A	98	0.041	3.01	281,660

TOTAL (ACRES): 37.705

TOTAL (CF): 339,907

IET CHANGE IN VOLUME TO MANAGE (CF): 199,619

Non-Structural SCM Volume Credits:

☐ Tree Planting Credit

☐ Other (attach calculations):

Structural SCM Volume Credits:

No. Structural SCMs: **3**

Start SCM Numbering at: **1**

POA No.	SCM No.	SCM Name	MRC?	Discharge	Incremental SCM DA (acres)	Total Vol. Routed to SCM (CF)	Off-Site Vol. Routed to SCM (CF)	Infiltration / Vegetated Area (SF)	Infil. Rate (in/hr)	Infil. Period (hrs)	Vegetated?	Media Depth (ft)	Stored Volume (CF)	Infiltration Credit (CF)	ET Credit (CF)
001	1	Dry Extended Detention Basin		to SCM No. 3	26.586	275,255									
001	2	Infiltration Basin		to SCM No. 3	6.739	62,524		24,939	0.353	84	No		46,060	53,916	
001	3	Riparian Forest Buffer (Min 150 Ft)		Off-Site	4.380	179,657									

Totals: 53,916 0

INFILTRATION & ET CREDITS - PROJECT SITE (CF): 53,916

RIPARIAN FOREST BUFFER CREDIT (CF): 179,657

NET CHANGE IN VOLUME TO MANAGE (CF): 199,619

TOTAL CREDITS (CF): 233,573

Rate Control

Project: Hanover Industrial - Chalfont

Instructions General Volume **Rate** Quality

Precipitation Amounts:

NOAA 2-Year 24-Hour Storm Event (in):

3.24

NOAA 10-Year 24-Hour Storm Event (in):

NOAA 50-Year 24-Hour Storm Event (in):

NOAA 100-Year 24-Hour Storm Event (in):

Alternative 2-Year 24-Hour Storm Event (in):

Alternative 10-Year 24-Hour Storm Event (in):

Alternative 50-Year 24-Hour Storm Event (in):

Alternative 100-Year 24-Hour Storm Event (in):

☒ Report Summary of Peak Rates Only

Attach model input and output data or other calculations to support the rates reported below.

	<i>Peak Discharge Rates (cfs)</i>			
	Pre-Construction	Post-Construction	Net Change	
2-Year Storm:	63.80	40.51	-23.29	Rate Control Satisfied
10-Year Storm:	123.09	77.12	-45.97	Rate Control Satisfied
50-Year Storm:	199.14	130.30	-68.84	Rate Control Satisfied
100-Year Storm:	237.52	163.19	-74.33	Rate Control Satisfied

Water Quality

Project: Hanover Industrial - Chalfont

[PRINT](#)

Instructions

General

Volume

Rate

Quality

Pre-Construction Pollutant Loads:

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Pervious as Meadow	Grassland/Herbaceous	0.62	C	2,031	48.8	0.22	2.30	6.19	0.03	0.29
Woods (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	0.20	C	631	45.0	0.13	1.05	1.77	0.01	0.04
Pervious as Meadow	Grassland/Herbaceous	25.83	D	122,149	48.8	0.22	2.30	372.21	1.68	17.54
Woods (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	2.52	D	11,334	45.0	0.13	1.05	31.85	0.09	0.74
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	0.29	N/A	3,188	65.0	0.29	2.05	12.94	0.06	0.41
Impervious as Meadow	Grassland/Herbaceous	0.29	C	956	48.8	0.22	2.30	2.91	0.01	0.14

TOTAL (ACRES): 29.76

TOTALS: 427.87 1.87 19.16

Post-Construction Pollutant Loads (without SCMs):

Land Cover (from Volume Worksheet)	Land Cover for Water	Area	Soil	Runoff Volume	Pollutant Conc. (mg/L)	Pollutant Loads (lbs)

Land Cover (from Volume Worksheet)	Quality	(acres)	Group	Volume (cf)	TSS	TP	TN	TSS	TP	TN
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	0.85	C	3,287	78.0	0.25	1.25	16.01	0.05	0.26
Woods (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	0.08	C	260	45.0	0.13	1.05	0.73	0.00	0.02
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	7.61	D	39,553	78.0	0.25	1.25	192.64	0.62	3.09
Woods (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	3.36	D	15,148	45.0	0.13	1.05	42.56	0.12	0.99
Impervious Areas: Industrial	Industrial	25.80	N/A	281,660	81.0	0.24	2.01	#####	4.22	35.35

TOTAL (ACRES): 37.71

TOTALS: ##### 5.01 39.71

POLLUTANT LOAD REDUCTION REQUIREMENTS (LBS):

#####	3.14	20.54

☐ **Characterize Undetained Areas (for Untreated Stormwater)**

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)

Non-Structural SCM Water Quality Credits:

☐ Pervious Undetained Area Credit

☒ Other (attach calculations)

Description:

PA DEP SCM 3.4.2 Spreadsheet

TSS	TP	TN
#####	2.83	18.49

Structural SCM Water Quality Credits:

☒ Use default SCM Outflows and Median SCM Outflow Concentrations

POA No.	SCM No.	SCM Name	MRC?	SCM DA (acres)	Vol. Routed to SCM (CF)	Inf. & ET Credits (CF)	Capture & Buffer Credits (CF)	Outflow (CF)	Outflow Conc. (mg/L)			Pollutant Loads (lbs)		
									TSS	TP	TN	TSS	TP	TN
001	1	Dry Extended Detention Basin		26.59	275,255			275,255	-	-	-	-	-	-
001	2	Infiltration Basin		6.74	62,524	53,916		8,608	-	-	-	-	-	-
001	3	Riparian Forest Buffer (Min 150 Ft)		4.38	179,657		179,657	0	0.00	0.00	0.00	0.00	0.00	0.00

POLLUTANT LOADS FROM STRUCTURAL SCM (TREATED) OUTFLOWS (LBS):

POLLUTANT LOADS FROM UNTREATED STORMWATER (LBS):

NON-STRUCTURAL SCM WATER QUALITY CREDITS (LBS):

NET POLLUTANT LOADS FROM SITE, POST-CONSTRUCTION (LBS):

POLLUTANT LOADS FROM SITE, PRE-CONSTRUCTION (LBS):

TSS	TP	TN
0.00	0.00	0.00
524.48	1.57	12.42
#####	2.83	18.49
0.00	0.00	0.00
427.87	1.87	19.16

WATER QUALITY REQUIREMENT SATISFIED

CERTIFICATION

I certify under penalty of law and subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities) that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I further certify that the structure, function, and calculations contained in this spreadsheet have not been modified in comparison to the spreadsheet DEP has posted to its website or, if modifications were made, an explanation of the modifications made is attached to this spreadsheet.

Judd Dayton

Spreadsheet User Name

7/28/2026

Date

General Information

Instructions

General

Volume

Rate

Quality

Project Name:	Hanover Industrial - Chalfont	Application Type:	PAG-02 NOI
County:	Bucks	Municipality:	New Britain Township
Project Type:	Other	☒ New Project ☐ Minor / Major Amendment	
Area: (In Watershed)	6.339 acres	Total Earth Disturbance: (In Watershed)	6.339 acres
No. of Post-Construction Points of Analysis:	1	at:	002

Point of Analysis (POA) No.	Total Drainage Area (DA) (acres)	Project Site DA (acres)	Existing Imp., Project Site DA (acres)	Proposed Imp., Project Site DA (acres)	Receiving Waters	Ch. 93 Class	Structural SCM(s)
002			0.284		UNT 02875 to West Branch Neshaminy Creek	WWF, MF	Yes
Undetained Areas	6.339	6.339		0.030	UNT 02875 to West Branch Neshaminy Creek	WWF, MF	
Totals:	6.339	6.339	0.284	0.030			

Volume Management

Project: Hanover Industrial - Chalfont

Instructions General **Volume** Rate Quality

2-Year / 24-Hour Storm Event (NOAA Atlas 14): inches Alternative 2-Year / 24-Hour Storm Event inches

Alternative Source:

Pre-Construction Conditions: No. Rows: ☐ Exempt from Meadow in Good Condition ☒ Automatically Calculate CN, Ia, Runoff and Volume

Land Cover	Area (acres)	Soil Group	Outside LOD	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Pervious as Meadow	4.899	D	☐	78	0.564	1.30	23,167
Woods (Good Condition)	1.156	D	☐	77	0.597	1.24	5,205
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	0.142	N/A	☐	98	0.041	3.01	1,550
Impervious as Meadow	0.142	D	☐	78	0.564	1.30	672
TOTAL (ACRES):		6.339		TOTAL (CF):		30,594	

Post-Construction Conditions: No. Rows:

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	1.462	D	80	0.500	1.43	7,604
Impervious Areas: Industrial	0.030	N/A	98	0.041	3.01	327
TOTAL (ACRES):		1.492		TOTAL (CF):		7,931

IET CHANGE IN VOLUME TO MANAGE (CF):

Non-Structural SCM Volume Credits:

- ☐ Tree Planting Credit
- ☐ Other (attach calculations):

Structural SCM Volume Credits:

No. Structural SCMs:

Start SCM Numbering at:

POA No.	SCM No.	SCM Name	MRC?	Discharge	Incremental SCM DA (acres)	Total Vol. Routed to SCM (CF)	Off-Site Vol. Routed to SCM (CF)	Infiltration / Vegetated Area (SF)	Infil. Rate (in/hr)	Infil. Period (hrs)	Vegetated?	Media Depth (ft)	Stored Volume (CF)	Infiltration Credit (CF)	ET Credit (CF)
	1														
Totals:														0	0

INFILTRATION & ET CREDITS - PROJECT SITE (CF):

NET CHANGE IN VOLUME TO MANAGE (CF):

TOTAL CREDITS (CF):

Rate Control

Project: Hanover Industrial - Chalfont

Instructions General Volume **Rate** Quality

Precipitation Amounts:

NOAA 2-Year 24-Hour Storm Event (in):

3.24

NOAA 10-Year 24-Hour Storm Event (in):

NOAA 50-Year 24-Hour Storm Event (in):

NOAA 100-Year 24-Hour Storm Event (in):

Alternative 2-Year 24-Hour Storm Event (in):

Alternative 10-Year 24-Hour Storm Event (in):

Alternative 50-Year 24-Hour Storm Event (in):

Alternative 100-Year 24-Hour Storm Event (in):

☒ Report Summary of Peak Rates Only

Attach model input and output data or other calculations to support the rates reported below.

	Peak Discharge Rates (cfs)			
	Pre-Construction	Post-Construction	Net Change	
2-Year Storm:	13.77	4.04	-9.73	Rate Control Satisfied
10-Year Storm:	26.39	7.44	-18.95	Rate Control Satisfied
50-Year Storm:	42.56	11.70	-30.86	Rate Control Satisfied
100-Year Storm:	50.73	13.84	-36.89	Rate Control Satisfied

Water Quality

Project: Hanover Industrial - Chalfont

PRINT

Instructions

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Pre-Construction Pollutant Loads:

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Pervious as Meadow	Grassland/Herbaceous	4.90	D	23,167	48.8	0.22	2.30	70.60	0.32	3.33
Woods (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	1.16	D	5,205	45.0	0.13	1.05	14.63	0.04	0.34
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	0.14	N/A	1,550	65.0	0.29	2.05	6.29	0.03	0.20
Impervious as Meadow	Grassland/Herbaceous	0.14	D	672	48.8	0.22	2.30	2.05	0.01	0.10
TOTAL (ACRES):		6.34			TOTALS:			93.56	0.40	3.96

Post-Construction Pollutant Loads (without SCMs):

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	1.46	D	7,604	78.0	0.25	1.25	37.03	0.12	0.59

Impervious Areas: Industrial	Industrial	0.03	N/A	327	81.0	0.24	2.01	1.66	0.00	0.04

TOTAL (ACRES): 1.49

TOTALS: 38.69 0.12 0.63

POLLUTANT LOAD REDUCTION REQUIREMENTS (LBS):

0.00	0.00	0.00

☐ **Characterize Undetained Areas (for Untreated Stormwater)**

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)

Non-Structural SCM Water Quality Credits:

☐ Pervious Undetained Area Credit

☐ Other (attach calculations)

Structural SCM Water Quality Credits:

☒ *Use default SCM Outflows and Median SCM Outflow Concentrations*

POA No.	SCM No.	SCM Name	MRC?	SCM DA (acres)	Vol. Routed to SCM (CF)	Inf. & ET Credits (CF)	Capture & Buffer Credits (CF)	Outflow (CF)	Outflow Conc. (mg/L)			Pollutant Loads (lbs)		
									TSS	TP	TN	TSS	TP	TN
	1													

POLLUTANT LOADS FROM STRUCTURAL SCM (TREATED) OUTFLOWS (LBS):

POLLUTANT LOADS FROM UNTREATED STORMWATER (LBS):

NON-STRUCTURAL SCM WATER QUALITY CREDITS (LBS):

NET POLLUTANT LOADS FROM SITE, POST-CONSTRUCTION (LBS):

POLLUTANT LOADS FROM SITE, PRE-CONSTRUCTION (LBS):

TSS	TP	TN
0.00	0.00	0.00
38.69	0.12	0.63
38.69	0.12	0.63
93.56	0.40	3.96

CERTIFICATION

I certify under penalty of law and subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities) that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I further certify that the structure, function, and calculations contained in this spreadsheet have not been modified in comparison to the spreadsheet DEP has posted to its website or, if modifications were made, an explanation of the modifications made is attached to this spreadsheet.

Judd Dayton

Spreadsheet User Name

7/28/2026

Date

General Information

Instructions **General** Volume Rate Quality

Project Name: **Hanover Industrial - Chalfont**

Application Type: **PAG-02 NOI**

County: **Bucks**

Municipality: **New Britain Township**

Project Type: **Other**

☒ New Project ☐ Minor / Major Amendment

Area: **4.346** acres
(In Watershed)

Total Earth Disturbance: **4.346** acres
(In Watershed)

No. of Post-Construction Points of Analysis: **1**

at: **002**

Point of Analysis (POA) No.	Total Drainage Area (DA) (acres)	Project Site DA (acres)	Existing Imp., Project Site DA (acres)	Proposed Imp., Project Site DA (acres)	Receiving Waters	Ch. 93 Class	Structural SCM(s)
002					UNT 02874 to West Branch Neshaminy Creek	WWF, MF	Yes
Undetained Areas	4.346	4.346			UNT 02874 to West Branch Neshaminy Creek	WWF, MF	
Totals:	4.346	4.346	0.000	0.000			

PROJECT SITE MEETS SMALL SITE EXCEPTION - RATE WORKSHEET NOT REQUIRED

Volume Management

Project: Hanover Industrial - Chalfont

Instructions General **Volume** Rate Quality

2-Year / 24-Hour Storm Event (NOAA Atlas 14): inches Alternative 2-Year / 24-Hour Storm Event inches

Alternative Source:

Pre-Construction Conditions: No. Rows: ☐ Exempt from Meadow in Good Condition ☒ Automatically Calculate CN, Ia, Runoff and Volume

Land Cover	Area (acres)	Soil Group	Outside LOD	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Pervious as Meadow	0.257	C	☐	71	0.817	0.90	842
Pervious as Meadow	3.339	D	☐	78	0.564	1.30	15,790
Woods (Good Condition)	0.750	D	☐	77	0.597	1.24	3,377

TOTAL (ACRES): 4.346 **TOTAL (CF): 20,009**

Post-Construction Conditions: No. Rows:

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	0.072	C	74	0.703	1.06	278
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	1.171	D	80	0.500	1.43	6,090

TOTAL (ACRES): 1.243 **TOTAL (CF): 6,368**

IET CHANGE IN VOLUME TO MANAGE (CF):

Non-Structural SCM Volume Credits:

☐ Tree Planting Credit

☐ Other (attach calculations):

Structural SCM Volume Credits: No. Structural SCMs: Start SCM Numbering at:

POA No.	SCM No.	SCM Name	MRC?	Discharge	Incremental SCM DA (acres)	Total Vol. Routed to SCM (CF)	Off-Site Vol. Routed to SCM (CF)	Infiltration / Vegetated Area (SF)	Infil. Rate (in/hr)	Infil. Period (hrs)	Vegetated?	Media Depth (ft)	Stored Volume (CF)	Infiltration Credit (CF)	ET Credit (CF)
Totals:														0	0

INFILTRATION & ET CREDITS - PROJECT SITE (CF):

NET CHANGE IN VOLUME TO MANAGE (CF):

TOTAL CREDITS (CF):

Rate Control

Project: Hanover Industrial - Chalfont

Instructions General Volume **Rate** Quality

SMALL SITE EXCEPTION SATISFIED: RATE CONTROL NOT REQUIRED

Precipitation Amounts:

NOAA 2-Year 24-Hour Storm Event (in):

3.24

NOAA 10-Year 24-Hour Storm Event (in):

NOAA 50-Year 24-Hour Storm Event (in):

NOAA 100-Year 24-Hour Storm Event (in):

Alternative 2-Year 24-Hour Storm Event (in):

Alternative 10-Year 24-Hour Storm Event (in):

Alternative 50-Year 24-Hour Storm Event (in):

Alternative 100-Year 24-Hour Storm Event (in):

☒ Report Summary of Peak Rates Only

Attach model input and output data or other calculations to support the rates reported below.

	Peak Discharge Rates (cfs)			
	Pre-Construction	Post-Construction	Net Change	
2-Year Storm:	7.58	3.27	-4.31	Rate Control Satisfied
10-Year Storm:	14.96	6.08	-8.88	Rate Control Satisfied
50-Year Storm:	24.42	9.63	-14.79	Rate Control Satisfied
100-Year Storm:	29.24	11.41	-17.83	Rate Control Satisfied

Water Quality

Project: Hanover Industrial - Chalfont

PRINT

Instructions

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Pre-Construction Pollutant Loads:

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Pervious as Meadow	Grassland/Herbaceous	0.26	C	842	48.8	0.22	2.30	2.56	0.01	0.12
Pervious as Meadow	Grassland/Herbaceous	3.34	D	15,790	48.8	0.22	2.30	48.12	0.22	2.27
Woods (Good Condition)	Deciduous Forest/Evergreen Forest/Mixed Forest	0.75	D	3,377	45.0	0.13	1.05	9.49	0.03	0.22
TOTAL (ACRES):		4.35			TOTALS:			60.17	0.26	2.61

Post-Construction Pollutant Loads (without SCMs):

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	0.07	C	278	78.0	0.25	1.25	1.35	0.00	0.02
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	1.17	D	6,090	78.0	0.25	1.25	29.66	0.10	0.48

TOTAL (ACRES): 1.24

TOTALS: 31.02 0.10 0.50

POLLUTANT LOAD REDUCTION REQUIREMENTS (LBS):

0.00

0.00

0.00

☐ Characterize Undetained Areas (for Untreated Stormwater)

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)

Non-Structural SCM Water Quality Credits:

☐ Pervious Undetained Area Credit☐ Other (attach calculations)

Structural SCM Water Quality Credits:

☒ Use default SCM Outflows and Median SCM Outflow Concentrations

POA No.	SCM No.	SCM Name	MRC?	SCM DA (acres)	Vol. Routed to SCM (CF)	Inf. & ET Credits (CF)	Capture & Buffer Credits (CF)	Outflow (CF)	Outflow Conc. (mg/L)			Pollutant Loads (lbs)		
									TSS	TP	TN	TSS	TP	TN

POLLUTANT LOADS FROM STRUCTURAL SCM (TREATED) OUTFLOWS (LBS):

POLLUTANT LOADS FROM UNTREATED STORMWATER (LBS):

NON-STRUCTURAL SCM WATER QUALITY CREDITS (LBS):

NET POLLUTANT LOADS FROM SITE, POST-CONSTRUCTION (LBS):

POLLUTANT LOADS FROM SITE, PRE-CONSTRUCTION (LBS):

TSS	TP	TN
0.00	0.00	0.00
31.02	0.10	0.50
31.02	0.10	0.50
60.17	0.26	2.61

WATER QUALITY REQUIREMENT SATISFIED

CERTIFICATION

I certify under penalty of law and subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities) that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I further certify that the structure, function, and calculations contained in this spreadsheet have not been modified in comparison to the spreadsheet DEP has posted to its website or, if modifications were made, an explanation of the modifications made is attached to this spreadsheet.

Judd Dayton

Spreadsheet User Name

7/28/2026

Date

SCM 3.4.2 Riparian Forest Buffers (RFBs)

Project Name: **PAC250095.00: Hanover Industrial - Chalfont**

SCM ID: **1** ☒ Chapter 102 SCM Type: **Converted RFB**

2-year/24-hour Precipitation Depth: **3.24** in SCM Contributing Drainage Area: **37.705** ac

Has the Riparian Forest Buffer area been investigated in the field? ☒ Yes ☐ No

Are color photographs of the Riparian Forest Buffer area attached? ☒ Yes ☐ No

Do preferential flow paths through the SCM currently exist? ☐ Yes ☒ No

Will flow be concentrated upslope of the Riparian Forest Buffer? ☒ Yes ☐ No

How will flow be distributed across the length of the SCM? **Level Spreader**

☑ Drainage Areas

Pre-Construction Drainage Area Rows: **6**

Pre-Construction Drainage Area Cover Type	Area (ac)	HSG	Off-Site	Hour Runoff (CF)
Pervious as Meadow	0.620	C	☐	2,031
Woods (Good Condition)	0.204	C	☐	631
Pervious as Meadow	25.830	D	☐	122,149
Woods (Good Condition)	2.517	D	☐	11,334
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	0.292	N/A	☐	3,188
Impervious as Meadow	0.292	C	☐	956

29.755

Runoff Volume (CF):
TSS Load (lbs):
TP Load (lbs):
TN Load (lbs):

Pre-Construction Values		
Total	Off-Site	Project Site
140,288		140,288
427.9		427.9
1.874		1.874
19.164		19.164

Post-Construction Drainage Area Rows: **5**

Post-Construction Drainage Area Cover Type	Area (ac)	HSG	Off-Site	2-Year/24-Hour Runoff
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	0.851	C	☐	3,287
Woods (Good Condition)	0.084	C	☐	260
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	7.605	D	☐	39,553
Woods (Good Condition)	3.364	D	☐	15,148
Impervious Areas: Industrial	25.801	N/A	☐	281,660

Runoff Volume (CF):
TSS Load (lbs):
TP Load (lbs):
TN Load (lbs):

Post-Construction Values		
Total	Off-Site	Project Site
339,907		339,907
1,676.5		1,676.5
5.015		5.015
39.705		39.705

Parameter	Standard	Design Value
Maximum Storm Event Routed to RFB		> 10-Year/24-Hour Storm
RFB Length (ft)		3,590
RFB Drainage Area Length (ft)		3345
RFB Inflow Length (ft)		3,345
RFB Average Width, Minimum (ft)	150	150
RFB Area (ac)		11.52
Average Slope within RFB, Maximum (ft/ft)	15%	8.0%
Peak inflow velocity @ 2-year/24-hour storm, maximum (fps)	1.5	1.5
Peak inflow velocity @ 10-year/24-hour storm, maximum (fps)	2.0	2.0
Flow depth @ 10-year/24-hour storm, Maximum (ft)	0.10	0.09
Runoff duration following storm routed to SCM, Maximum (hr)	48	48
Method used for long-term protection of SCM	Select One	Deed Restriction
Pretreatment:	Select One	Meadow
Width, Minimum (ft)	10	10
Length (ft)	3345	3,345
Average Slope of Meadow (ft/ft)	5.0%	5.0%
Uniform Canopy Cover (%)	60%	60%
Converted Riparian Forest Buffer Species Composition (Top	Percent (%)	Inundation Tolerance
White Ash (Fraxinus americana)	30%	Intermediate
Cherries (Prunus spp.)	19%	Intolerant
Black Walnut (Juglans nigra)	14%	Intermediate

☒ **Volume and Water Quality Management Credit**

Analysis Method: ☒ Default ☐ Design Storm (Event Based) ☐ Continuous Simulation

Does the RFB Drainage Area contain residential land use? ☐ Yes ☒ No

Volume Management Credit (CF):	179,657
WQM Credit, TSS (lbs):	1,123.8
WQM Credit, TP (lbs):	2.83
WQM Credit, TN (lbs):	18.487

CERTIFICATION

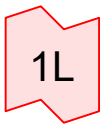
I certify under penalty of law and subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities) that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I further certify that the structure, function, and calculations contained in this spreadsheet have not been modified in comparison to the spreadsheet DEP has

User Name: **Judd Dayton, P.E.**

User Company: **Bohler Engineering**



DA-1



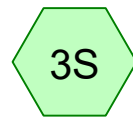
POA #1



DA-2



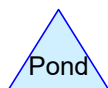
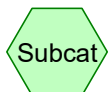
POA #2



DA-3



POA #3



Routing Diagram for PAC250095.00_Hanover Warehouses PRE

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PAC250095.00_Hanover Warehouses PRE*Type II 24-hr 1-yr Rainfall=2.70"*

Prepared by Bohler Engineering, PC

Printed 7/27/2026

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Page 2

Time span=0.00-192.00 hrs, dt=0.01 hrs, 19201 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: DA-1

Runoff Area=29.755 ac 0.98% Impervious Runoff Depth=0.92"

Tc=8.1 min CN=WQ Runoff=44.65 cfs 99,580 cf

Subcatchment2S: DA-2

Runoff Area=6.339 ac 2.24% Impervious Runoff Depth=0.95"

Tc=8.2 min CN=WQ Runoff=9.69 cfs 21,761 cf

Subcatchment3S: DA-3

Runoff Area=4.346 ac 0.00% Impervious Runoff Depth=0.89"

Tc=12.9 min CN=WQ Runoff=5.23 cfs 14,075 cf

Link 1L: POA #1

Inflow=44.65 cfs 99,580 cf

Primary=44.65 cfs 99,580 cf

Link 2L: POA #2

Inflow=9.69 cfs 21,761 cf

Primary=9.69 cfs 21,761 cf

Link 3L: POA #3

Inflow=5.23 cfs 14,075 cf

Primary=5.23 cfs 14,075 cf

Total Runoff Area = 1,761,566 sf Runoff Volume = 135,416 cf Average Runoff Depth = 0.92"
98.93% Pervious = 1,742,661 sf 1.07% Impervious = 18,905 sf

Summary for Subcatchment 1S: DA-1

Runoff = 44.65 cfs @ 12.00 hrs, Volume= 99,580 cf, Depth= 0.92"
Routed to Link 1L : POA #1

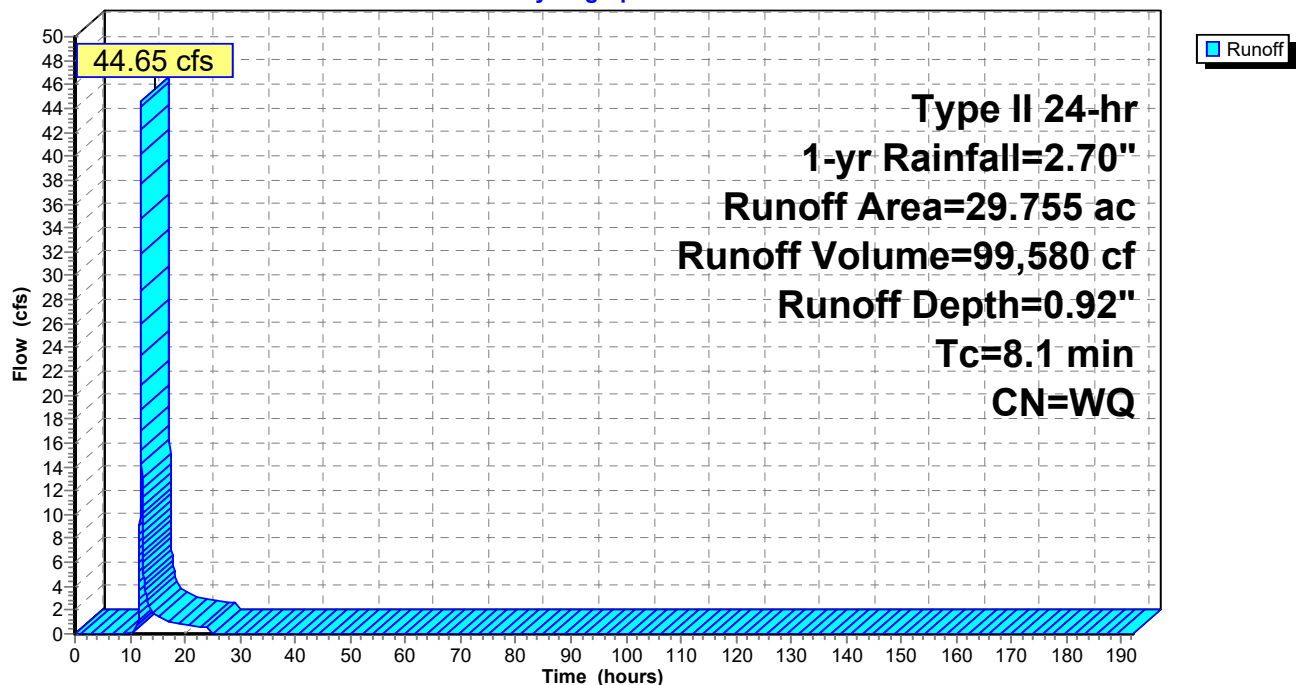
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.70"

Area (ac)	CN	Description
25.830	78	Meadow, non-grazed, HSG D
0.620	71	Meadow, non-grazed, HSG C
2.517	77	Woods, Good, HSG D
0.204	70	Woods, Good, HSG C
* 0.292	98	Impervious
* 0.292	78	Impervious as Meadow D
29.755		Weighted Average
29.463		99.02% Pervious Area
0.292		0.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1					Direct Entry,

Subcatchment 1S: DA-1

Hydrograph



PAC250095.00_Hanover Warehouses PRE

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Type II 24-hr 1-yr Rainfall=2.70"

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Summary for Subcatchment 2S: DA-2

Runoff = 9.69 cfs @ 12.00 hrs, Volume= 21,761 cf, Depth= 0.95"
Routed to Link 2L : POA #2

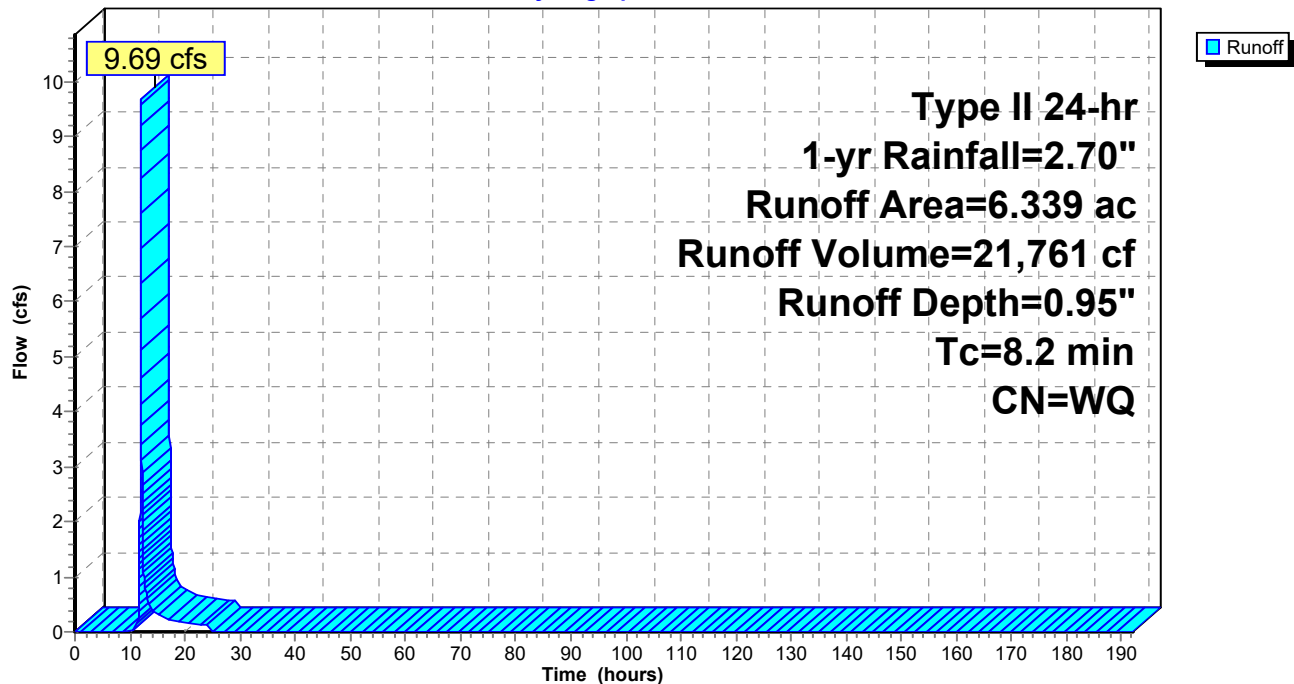
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.70"

Area (ac)	CN	Description
4.899	78	Meadow, non-grazed, HSG D
1.156	77	Woods, Good, HSG D
* 0.142	98	Impervious
* 0.142	78	Impervious as Meadow D
6.339		Weighted Average
6.197		97.76% Pervious Area
0.142		2.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2					Direct Entry,

Subcatchment 2S: DA-2

Hydrograph



Summary for Subcatchment 3S: DA-3

Runoff = 5.23 cfs @ 12.06 hrs, Volume= 14,075 cf, Depth= 0.89"
Routed to Link 3L : POA #3

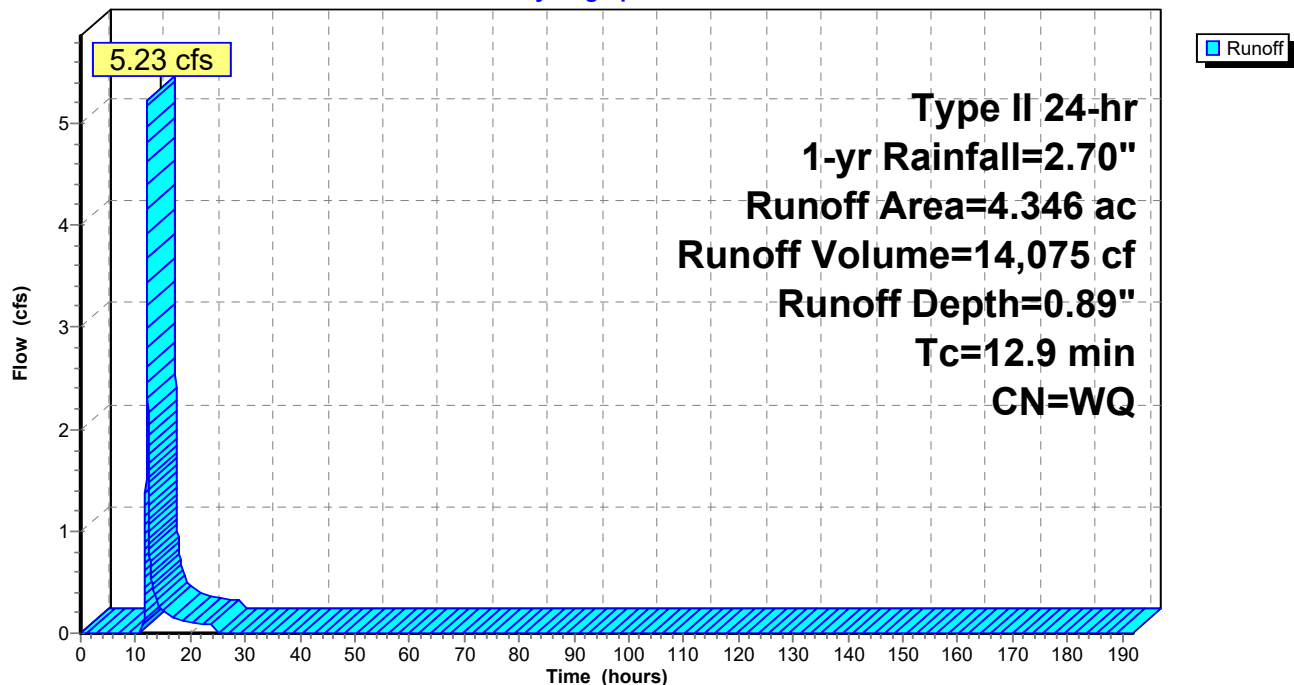
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.70"

Area (ac)	CN	Description
3.339	78	Meadow, non-grazed, HSG D
0.750	77	Woods, Good, HSG D
0.257	71	Meadow, non-grazed, HSG C
4.346		Weighted Average
4.346		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9					Direct Entry,

Subcatchment 3S: DA-3

Hydrograph



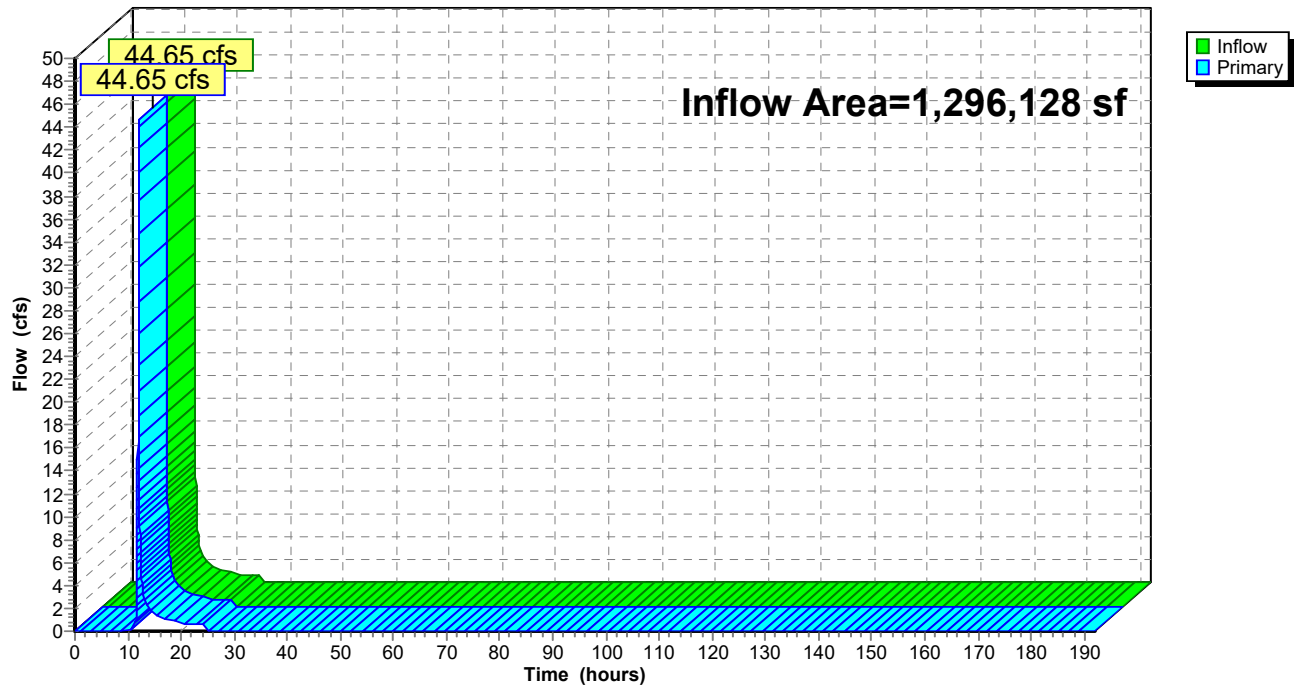
Summary for Link 1L: POA #1

Inflow Area = 1,296,128 sf, 0.98% Impervious, Inflow Depth = 0.92" for 1-yr event
Inflow = 44.65 cfs @ 12.00 hrs, Volume= 99,580 cf
Primary = 44.65 cfs @ 12.00 hrs, Volume= 99,580 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs

Link 1L: POA #1

Hydrograph



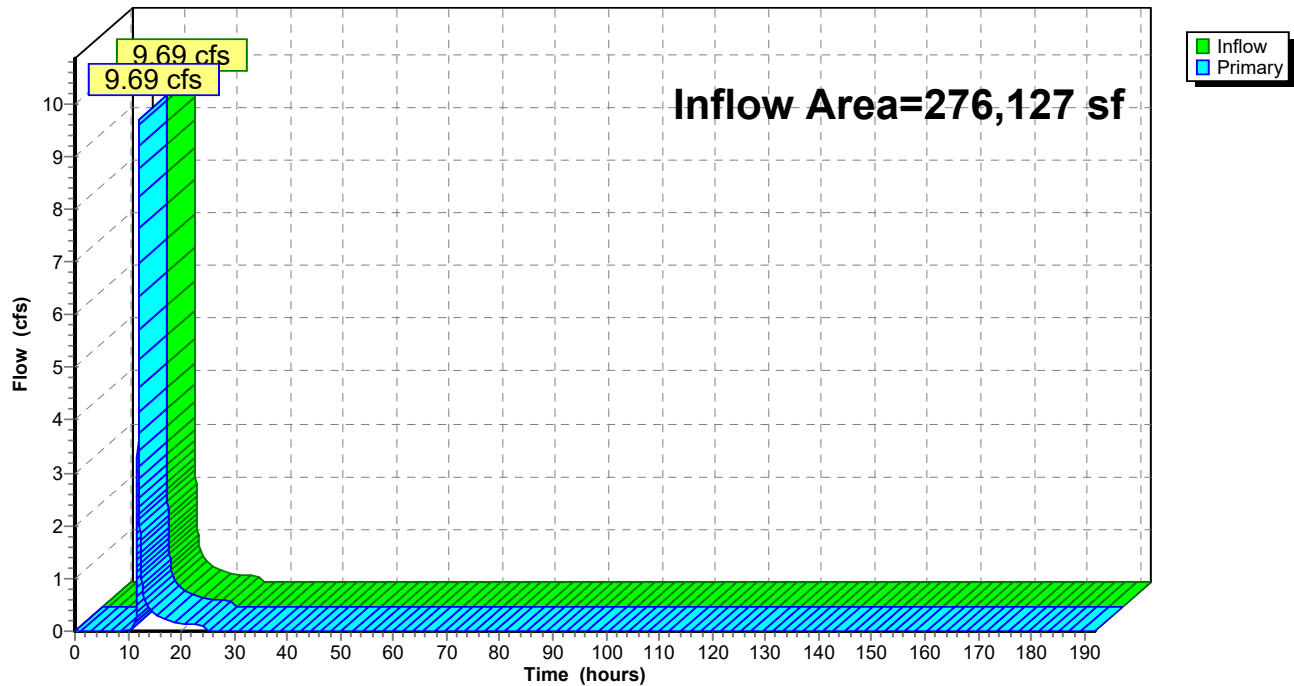
Summary for Link 2L: POA #2

Inflow Area = 276,127 sf, 2.24% Impervious, Inflow Depth = 0.95" for 1-yr event
Inflow = 9.69 cfs @ 12.00 hrs, Volume= 21,761 cf
Primary = 9.69 cfs @ 12.00 hrs, Volume= 21,761 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs

Link 2L: POA #2

Hydrograph



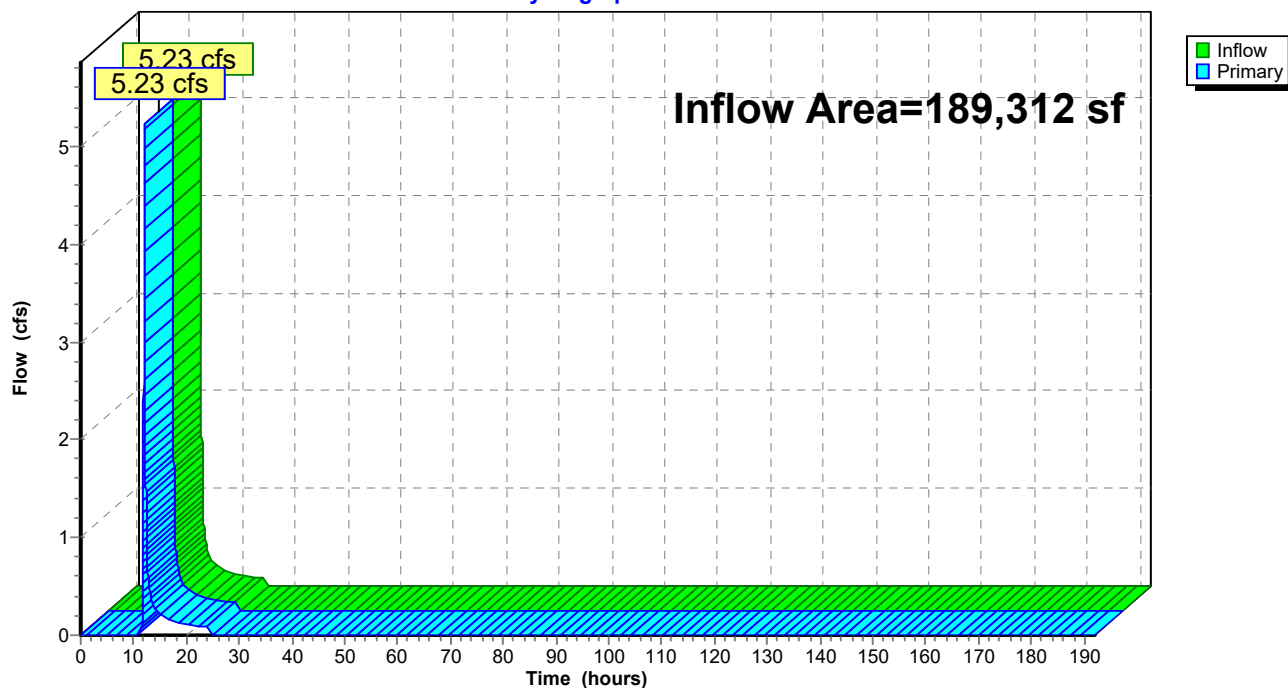
Summary for Link 3L: POA #3

Inflow Area = 189,312 sf, 0.00% Impervious, Inflow Depth = 0.89" for 1-yr event
Inflow = 5.23 cfs @ 12.06 hrs, Volume= 14,075 cf
Primary = 5.23 cfs @ 12.06 hrs, Volume= 14,075 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs

Link 3L: POA #3

Hydrograph



PAC250095.00_Hanover Warehouses PRE*Type II 24-hr 2-yr Rainfall=3.24"*

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Time span=0.00-192.00 hrs, dt=0.01 hrs, 19201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: DA-1 Runoff Area=29.755 ac 0.98% Impervious Runoff Depth=1.30"
Tc=8.1 min CN=WQ Runoff=63.80 cfs 140,713 cf

Subcatchment2S: DA-2 Runoff Area=6.339 ac 2.24% Impervious Runoff Depth=1.33"
Tc=8.2 min CN=WQ Runoff=13.77 cfs 30,594 cf

Subcatchment3S: DA-3 Runoff Area=4.346 ac 0.00% Impervious Runoff Depth=1.27"
Tc=12.9 min CN=WQ Runoff=7.58 cfs 20,009 cf

Link 1L: POA #1 Inflow=63.80 cfs 140,713 cf
Primary=63.80 cfs 140,713 cf

Link 2L: POA #2 Inflow=13.77 cfs 30,594 cf
Primary=13.77 cfs 30,594 cf

Link 3L: POA #3 Inflow=7.58 cfs 20,009 cf
Primary=7.58 cfs 20,009 cf

Total Runoff Area = 1,761,566 sf Runoff Volume = 191,316 cf Average Runoff Depth = 1.30"
98.93% Pervious = 1,742,661 sf 1.07% Impervious = 18,905 sf

Summary for Subcatchment 1S: DA-1

Runoff = 63.80 cfs @ 12.00 hrs, Volume= 140,713 cf, Depth= 1.30"
Routed to Link 1L : POA #1

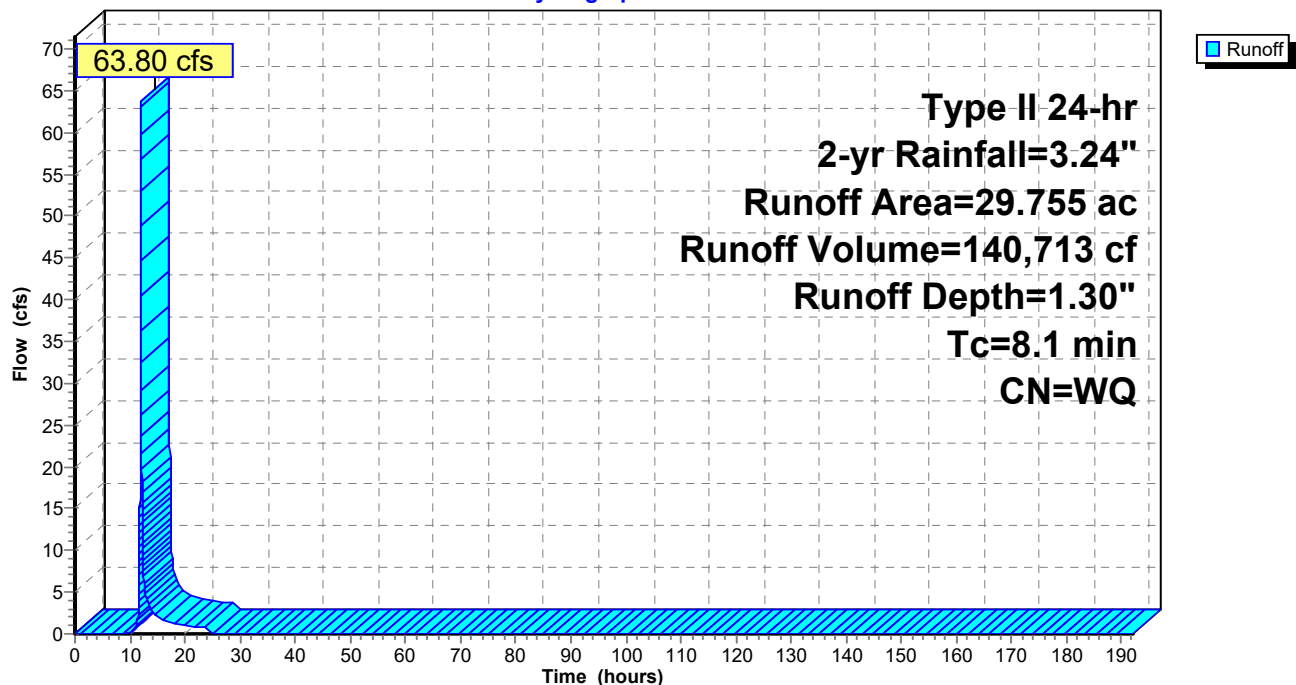
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=3.24"

Area (ac)	CN	Description
25.830	78	Meadow, non-grazed, HSG D
0.620	71	Meadow, non-grazed, HSG C
2.517	77	Woods, Good, HSG D
0.204	70	Woods, Good, HSG C
* 0.292	98	Impervious
* 0.292	78	Impervious as Meadow D
29.755		Weighted Average
29.463		99.02% Pervious Area
0.292		0.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1					Direct Entry,

Subcatchment 1S: DA-1

Hydrograph



PAC250095.00_Hanover Warehouses PRE

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Type II 24-hr 2-yr Rainfall=3.24"

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Summary for Subcatchment 2S: DA-2

Runoff = 13.77 cfs @ 12.00 hrs, Volume= 30,594 cf, Depth= 1.33"
Routed to Link 2L : POA #2

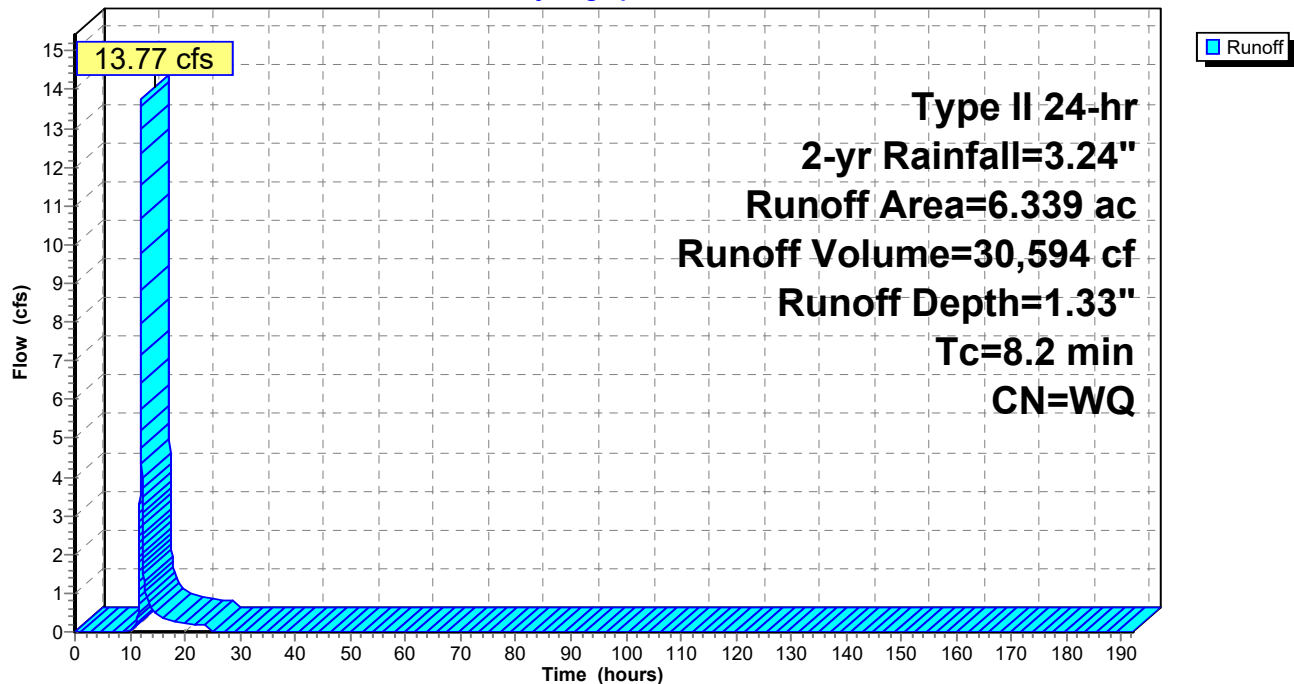
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=3.24"

Area (ac)	CN	Description
4.899	78	Meadow, non-grazed, HSG D
1.156	77	Woods, Good, HSG D
* 0.142	98	Impervious
* 0.142	78	Impervious as Meadow D
6.339		Weighted Average
6.197		97.76% Pervious Area
0.142		2.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2					Direct Entry,

Subcatchment 2S: DA-2

Hydrograph



Summary for Subcatchment 3S: DA-3

Runoff = 7.58 cfs @ 12.05 hrs, Volume= 20,009 cf, Depth= 1.27"
Routed to Link 3L : POA #3

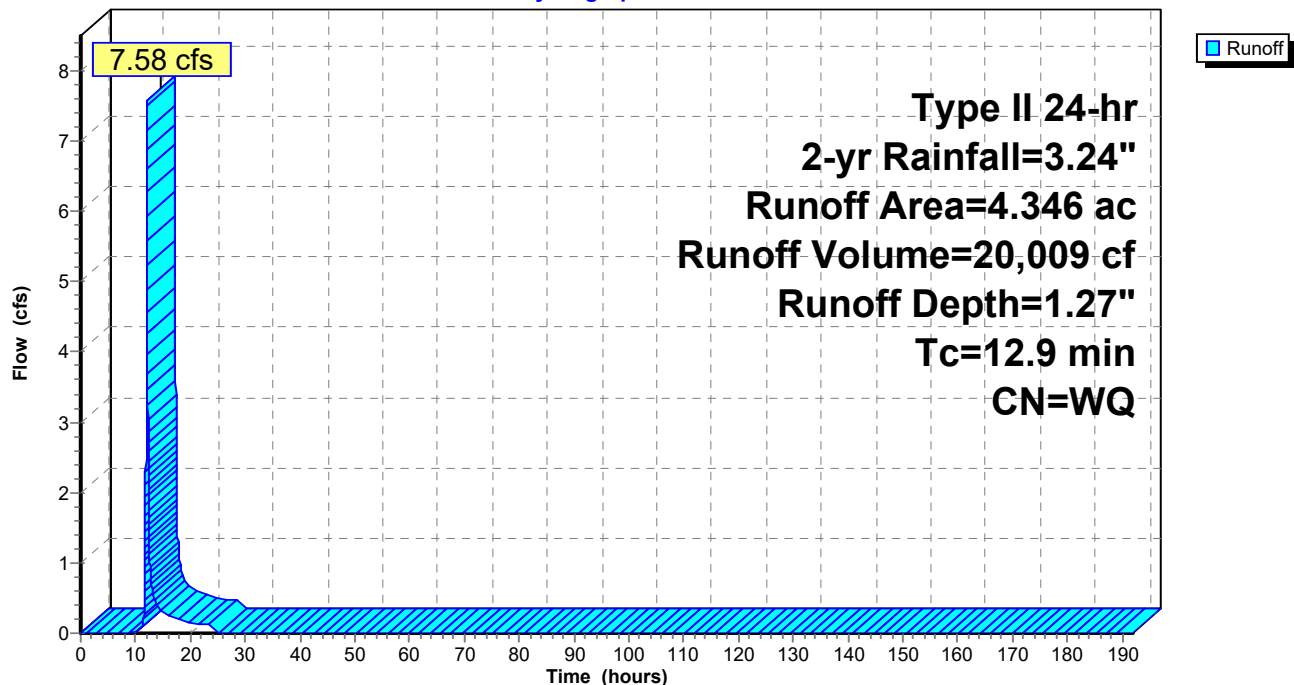
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=3.24"

Area (ac)	CN	Description
3.339	78	Meadow, non-grazed, HSG D
0.750	77	Woods, Good, HSG D
0.257	71	Meadow, non-grazed, HSG C
4.346		Weighted Average
4.346		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9					Direct Entry,

Subcatchment 3S: DA-3

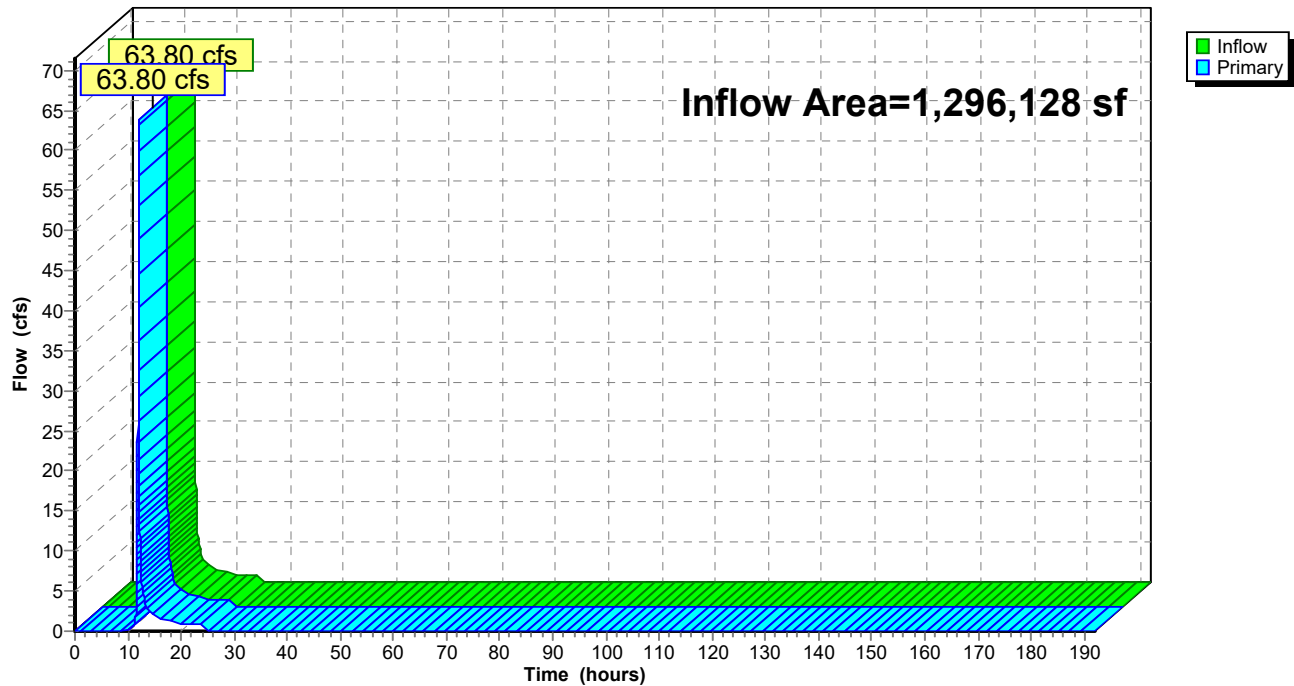
Hydrograph



Summary for Link 1L: POA #1

Inflow Area = 1,296,128 sf, 0.98% Impervious, Inflow Depth = 1.30" for 2-yr event
Inflow = 63.80 cfs @ 12.00 hrs, Volume= 140,713 cf
Primary = 63.80 cfs @ 12.00 hrs, Volume= 140,713 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs

Link 1L: POA #1**Hydrograph**

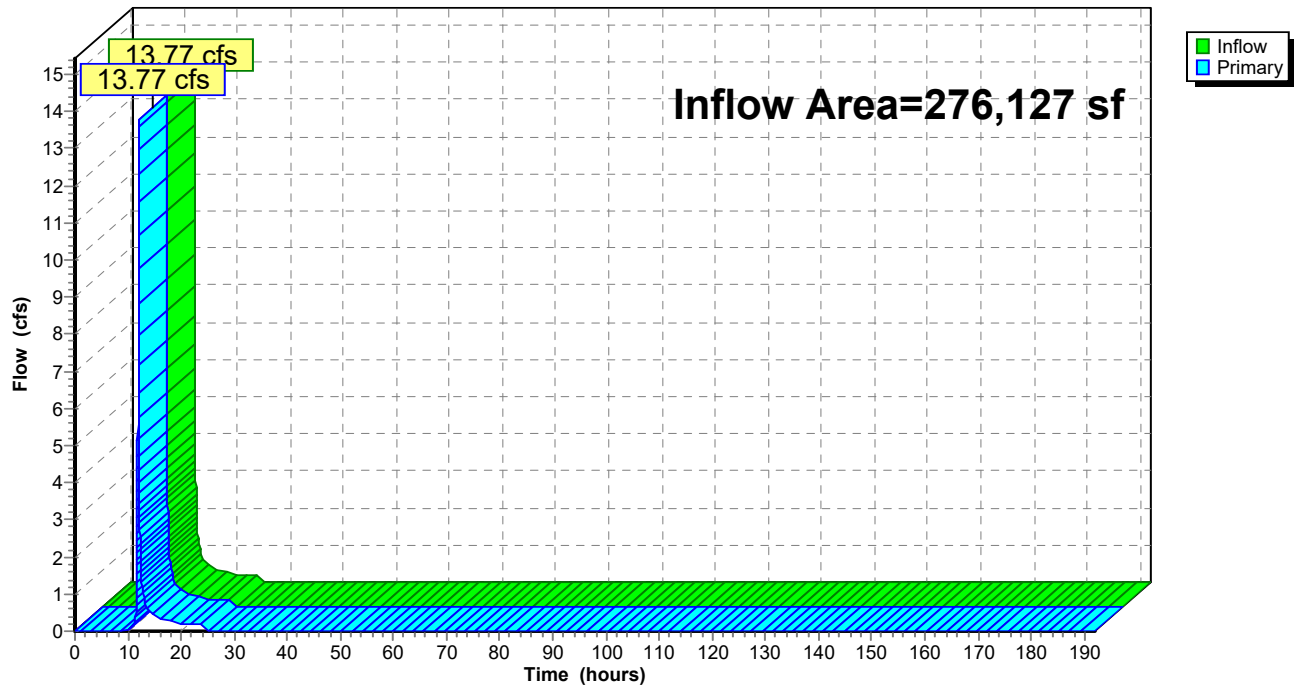
Summary for Link 2L: POA #2

Inflow Area = 276,127 sf, 2.24% Impervious, Inflow Depth = 1.33" for 2-yr event
Inflow = 13.77 cfs @ 12.00 hrs, Volume= 30,594 cf
Primary = 13.77 cfs @ 12.00 hrs, Volume= 30,594 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs

Link 2L: POA #2

Hydrograph



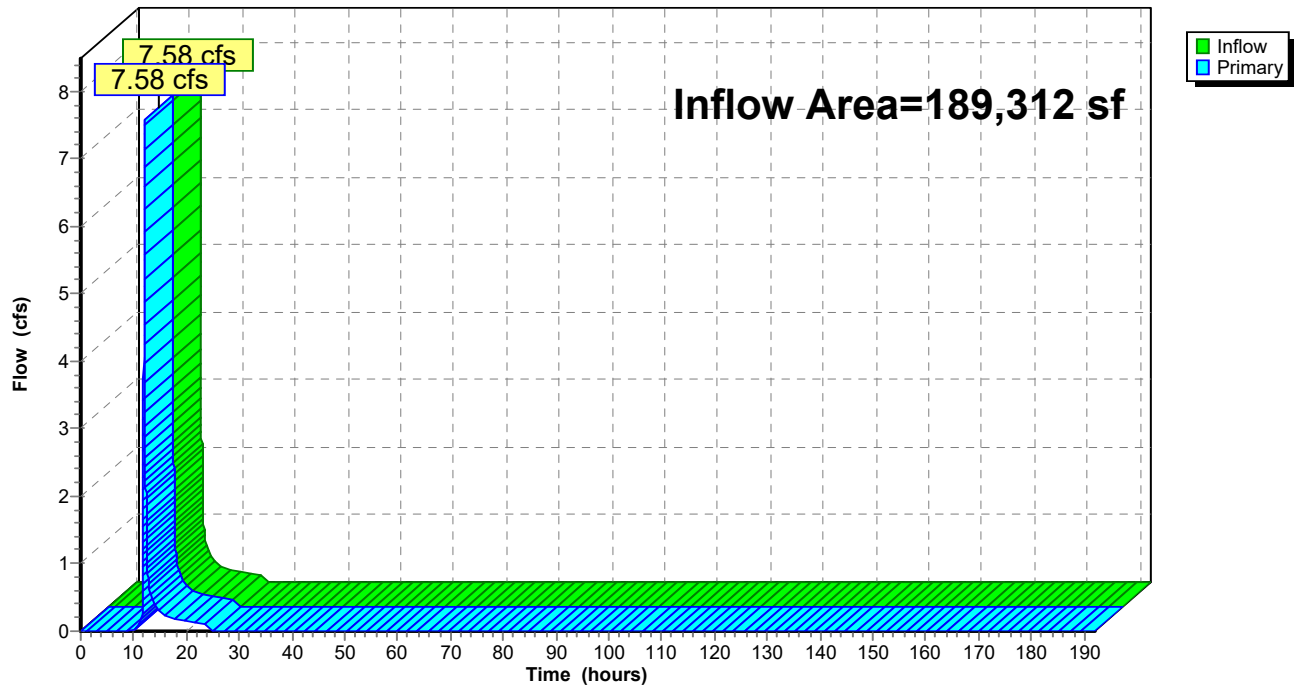
Summary for Link 3L: POA #3

Inflow Area = 189,312 sf, 0.00% Impervious, Inflow Depth = 1.27" for 2-yr event
Inflow = 7.58 cfs @ 12.05 hrs, Volume= 20,009 cf
Primary = 7.58 cfs @ 12.05 hrs, Volume= 20,009 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs

Link 3L: POA #3

Hydrograph



PAC250095.00_Hanover Warehouses PRE*Type II 24-hr 5-yr Rainfall=4.08"*

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Time span=0.00-192.00 hrs, dt=0.01 hrs, 19201 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: DA-1Runoff Area=29.755 ac 0.98% Impervious Runoff Depth=1.95"
Tc=8.1 min CN=WQ Runoff=95.70 cfs 210,477 cf**Subcatchment2S: DA-2**Runoff Area=6.339 ac 2.24% Impervious Runoff Depth=1.98"
Tc=8.2 min CN=WQ Runoff=20.56 cfs 45,547 cf**Subcatchment3S: DA-3**Runoff Area=4.346 ac 0.00% Impervious Runoff Depth=1.91"
Tc=12.9 min CN=WQ Runoff=11.52 cfs 30,101 cf**Link 1L: POA #1**Inflow=95.70 cfs 210,477 cf
Primary=95.70 cfs 210,477 cf**Link 2L: POA #2**Inflow=20.56 cfs 45,547 cf
Primary=20.56 cfs 45,547 cf**Link 3L: POA #3**Inflow=11.52 cfs 30,101 cf
Primary=11.52 cfs 30,101 cf**Total Runoff Area = 1,761,566 sf Runoff Volume = 286,126 cf Average Runoff Depth = 1.95"**
98.93% Pervious = 1,742,661 sf 1.07% Impervious = 18,905 sf

Summary for Subcatchment 1S: DA-1

Runoff = 95.70 cfs @ 12.00 hrs, Volume= 210,477 cf, Depth= 1.95"
Routed to Link 1L : POA #1

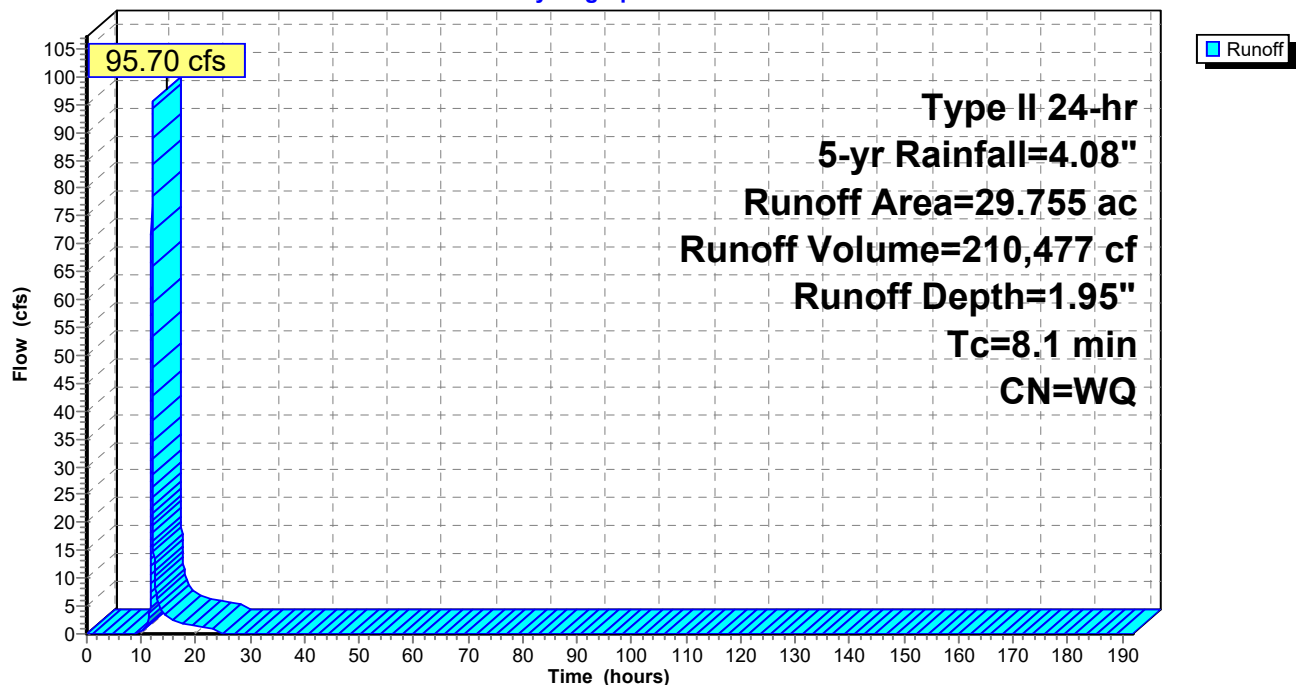
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-yr Rainfall=4.08"

Area (ac)	CN	Description
25.830	78	Meadow, non-grazed, HSG D
0.620	71	Meadow, non-grazed, HSG C
2.517	77	Woods, Good, HSG D
0.204	70	Woods, Good, HSG C
* 0.292	98	Impervious
* 0.292	78	Impervious as Meadow D
29.755		Weighted Average
29.463		99.02% Pervious Area
0.292		0.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1					Direct Entry,

Subcatchment 1S: DA-1

Hydrograph



PAC250095.00_Hanover Warehouses PRE

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Type II 24-hr 5-yr Rainfall=4.08"

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Summary for Subcatchment 2S: DA-2

Runoff = 20.56 cfs @ 12.00 hrs, Volume= 45,547 cf, Depth= 1.98"
Routed to Link 2L : POA #2

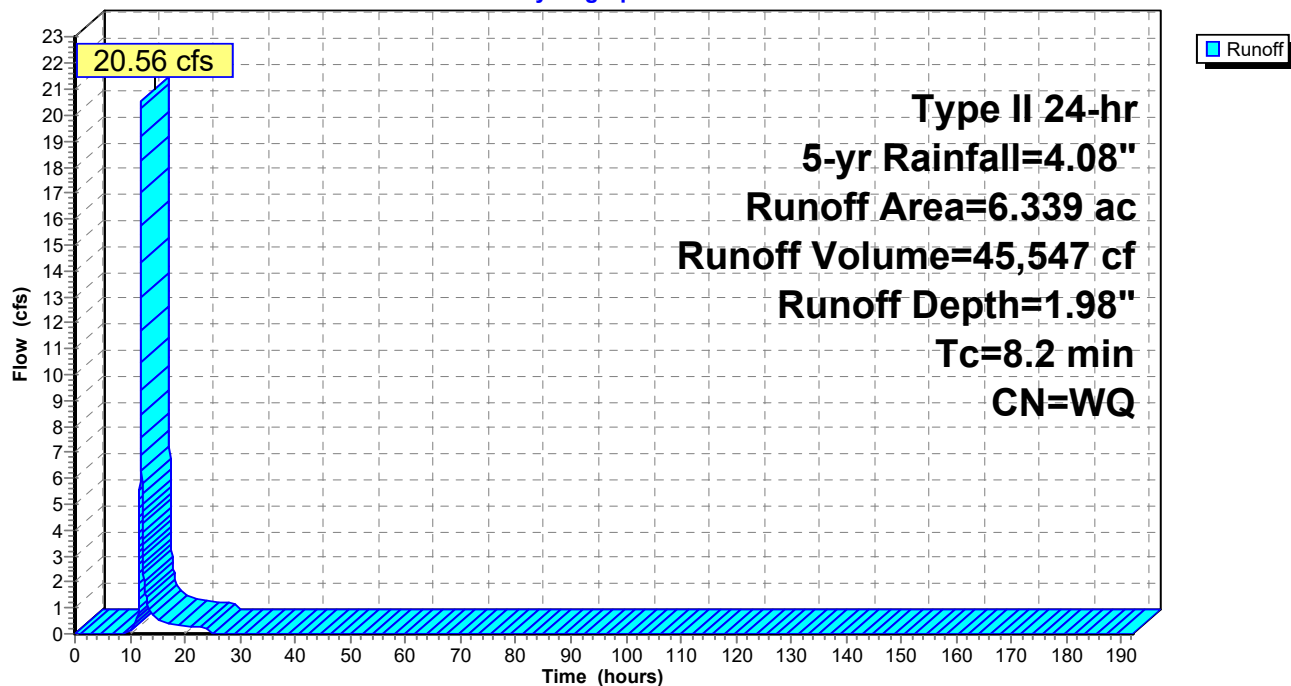
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-yr Rainfall=4.08"

Area (ac)	CN	Description
4.899	78	Meadow, non-grazed, HSG D
1.156	77	Woods, Good, HSG D
* 0.142	98	Impervious
* 0.142	78	Impervious as Meadow D
6.339		Weighted Average
6.197		97.76% Pervious Area
0.142		2.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2					Direct Entry,

Subcatchment 2S: DA-2

Hydrograph



Summary for Subcatchment 3S: DA-3

Runoff = 11.52 cfs @ 12.05 hrs, Volume= 30,101 cf, Depth= 1.91"
Routed to Link 3L : POA #3

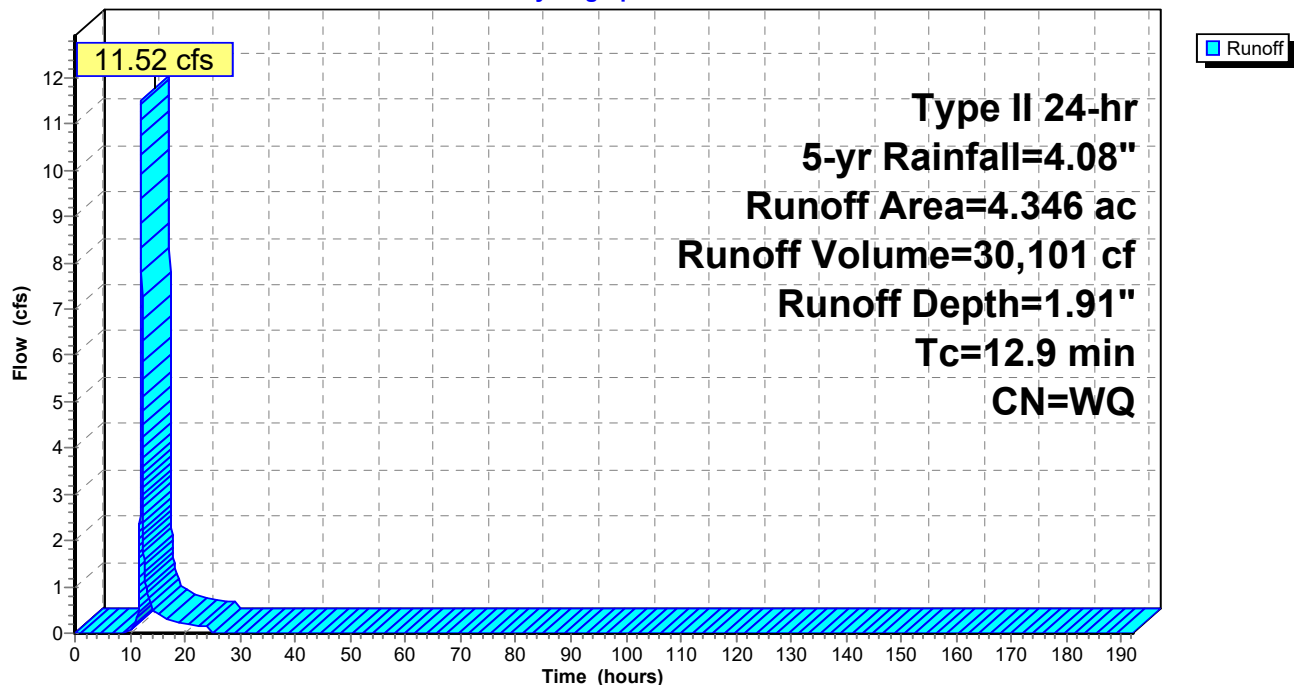
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-yr Rainfall=4.08"

Area (ac)	CN	Description
3.339	78	Meadow, non-grazed, HSG D
0.750	77	Woods, Good, HSG D
0.257	71	Meadow, non-grazed, HSG C
4.346		Weighted Average
4.346		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9					Direct Entry,

Subcatchment 3S: DA-3

Hydrograph



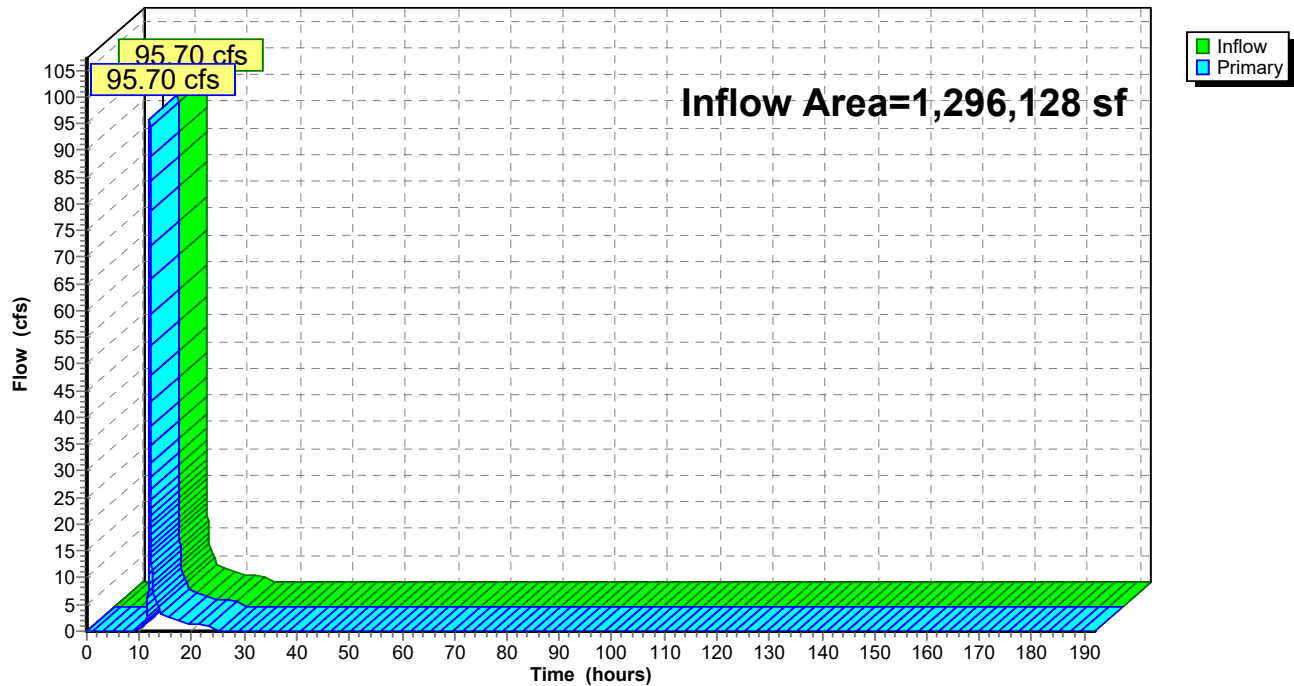
Summary for Link 1L: POA #1

Inflow Area = 1,296,128 sf, 0.98% Impervious, Inflow Depth = 1.95" for 5-yr event
Inflow = 95.70 cfs @ 12.00 hrs, Volume= 210,477 cf
Primary = 95.70 cfs @ 12.00 hrs, Volume= 210,477 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs

Link 1L: POA #1

Hydrograph



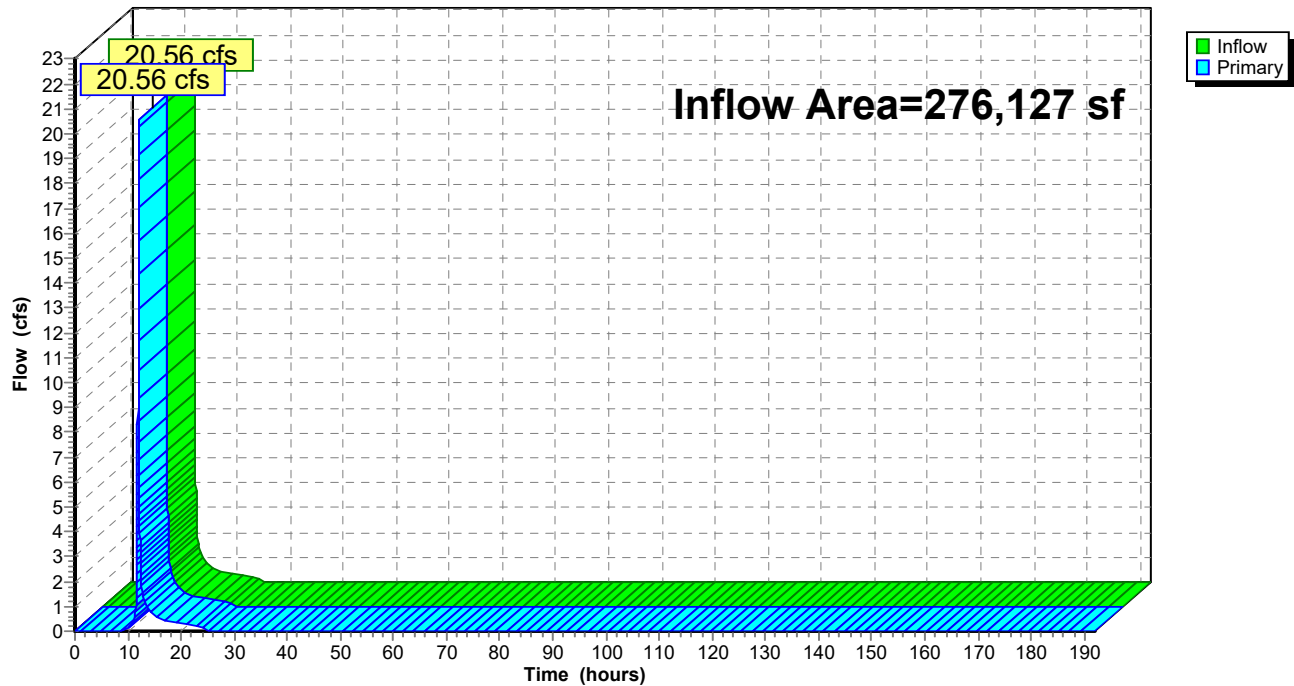
Summary for Link 2L: POA #2

Inflow Area = 276,127 sf, 2.24% Impervious, Inflow Depth = 1.98" for 5-yr event
Inflow = 20.56 cfs @ 12.00 hrs, Volume= 45,547 cf
Primary = 20.56 cfs @ 12.00 hrs, Volume= 45,547 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs

Link 2L: POA #2

Hydrograph



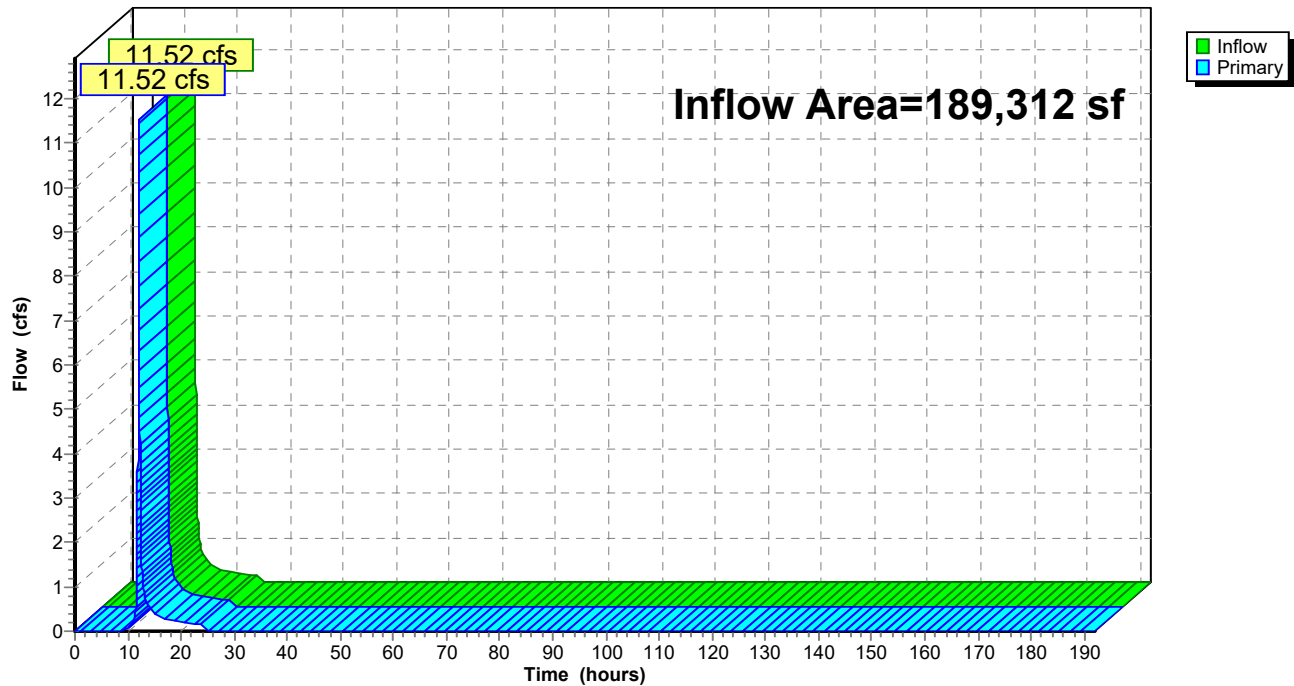
Summary for Link 3L: POA #3

Inflow Area = 189,312 sf, 0.00% Impervious, Inflow Depth = 1.91" for 5-yr event
Inflow = 11.52 cfs @ 12.05 hrs, Volume= 30,101 cf
Primary = 11.52 cfs @ 12.05 hrs, Volume= 30,101 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs

Link 3L: POA #3

Hydrograph



PAC250095.00_Hanover Warehouses PRE*Type II 24-hr 10-yr Rainfall=4.77"*

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Time span=0.00-192.00 hrs, dt=0.01 hrs, 19201 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: DA-1

Runoff Area=29.755 ac 0.98% Impervious Runoff Depth=2.51"

Tc=8.1 min CN=WQ Runoff=123.09 cfs 271,507 cf

Subcatchment2S: DA-2

Runoff Area=6.339 ac 2.24% Impervious Runoff Depth=2.55"

Tc=8.2 min CN=WQ Runoff=26.39 cfs 58,610 cf

Subcatchment3S: DA-3

Runoff Area=4.346 ac 0.00% Impervious Runoff Depth=2.47"

Tc=12.9 min CN=WQ Runoff=14.93 cfs 38,949 cf

Link 1L: POA #1

Inflow=123.09 cfs 271,507 cf

Primary=123.09 cfs 271,507 cf

Link 2L: POA #2

Inflow=26.39 cfs 58,610 cf

Primary=26.39 cfs 58,610 cf

Link 3L: POA #3

Inflow=14.93 cfs 38,949 cf

Primary=14.93 cfs 38,949 cf

Total Runoff Area = 1,761,566 sf Runoff Volume = 369,066 cf Average Runoff Depth = 2.51"
98.93% Pervious = 1,742,661 sf 1.07% Impervious = 18,905 sf

Summary for Subcatchment 1S: DA-1

Runoff = 123.09 cfs @ 12.00 hrs, Volume= 271,507 cf, Depth= 2.51"
Routed to Link 1L : POA #1

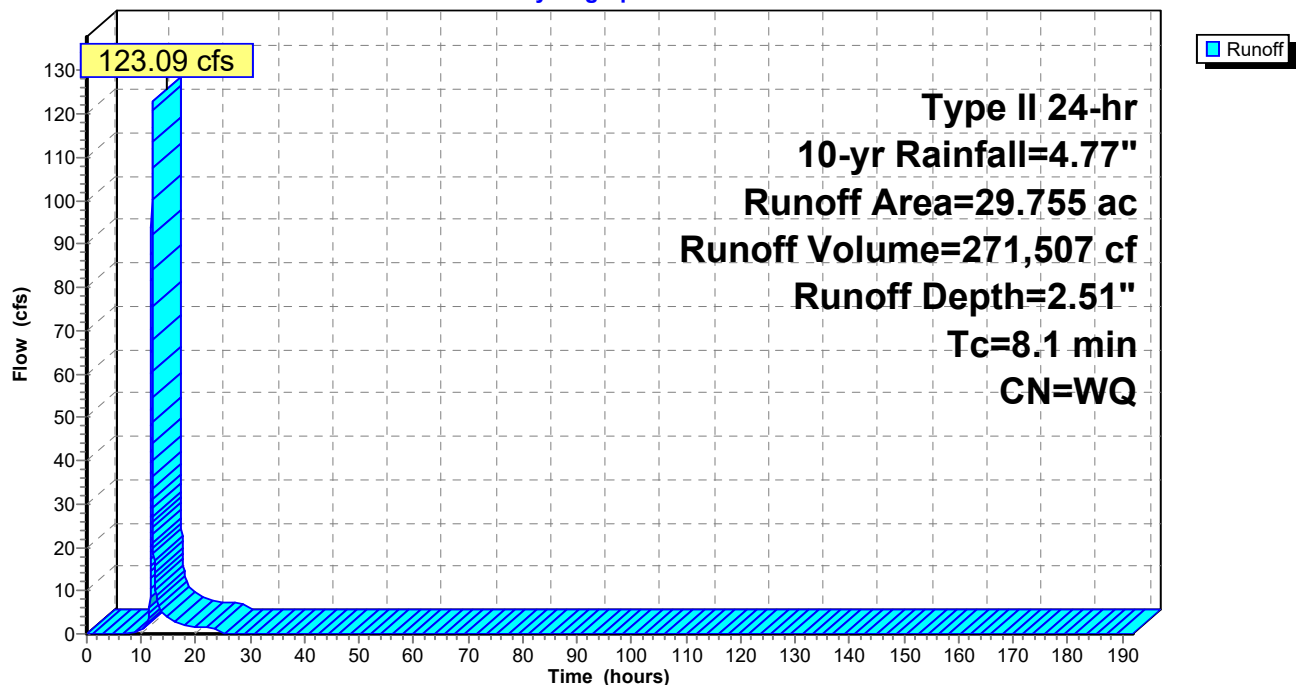
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=4.77"

Area (ac)	CN	Description
25.830	78	Meadow, non-grazed, HSG D
0.620	71	Meadow, non-grazed, HSG C
2.517	77	Woods, Good, HSG D
0.204	70	Woods, Good, HSG C
* 0.292	98	Impervious
* 0.292	78	Impervious as Meadow D
29.755		Weighted Average
29.463		99.02% Pervious Area
0.292		0.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1					Direct Entry,

Subcatchment 1S: DA-1

Hydrograph



Summary for Subcatchment 2S: DA-2

Runoff = 26.39 cfs @ 12.00 hrs, Volume= 58,610 cf, Depth= 2.55"
Routed to Link 2L : POA #2

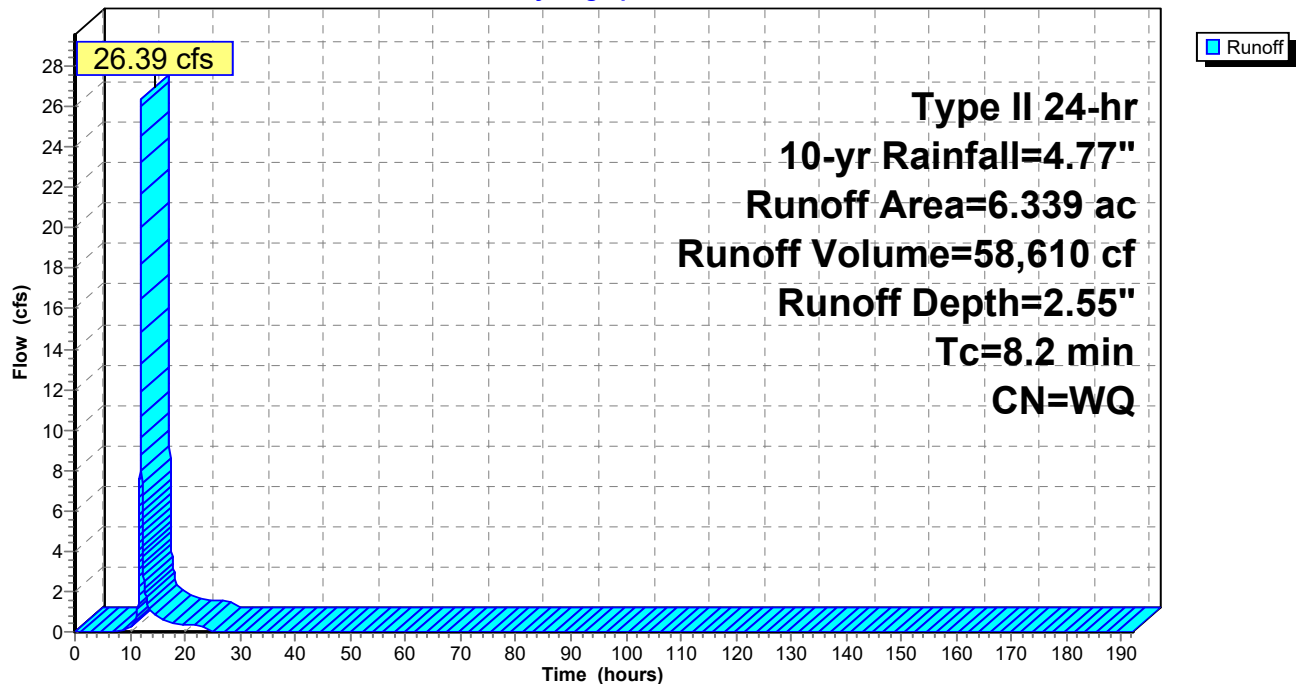
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=4.77"

Area (ac)	CN	Description
4.899	78	Meadow, non-grazed, HSG D
1.156	77	Woods, Good, HSG D
* 0.142	98	Impervious
* 0.142	78	Impervious as Meadow D
6.339		Weighted Average
6.197		97.76% Pervious Area
0.142		2.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2					Direct Entry,

Subcatchment 2S: DA-2

Hydrograph



Summary for Subcatchment 3S: DA-3

Runoff = 14.93 cfs @ 12.05 hrs, Volume= 38,949 cf, Depth= 2.47"
Routed to Link 3L : POA #3

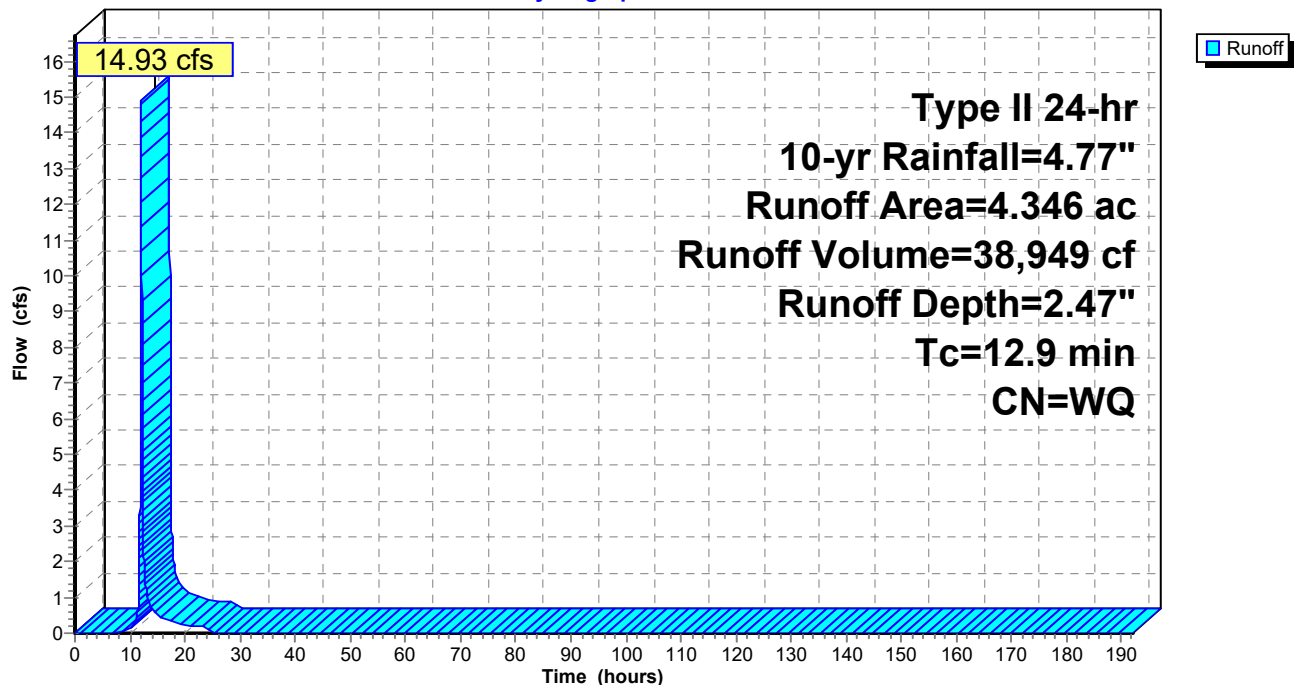
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=4.77"

Area (ac)	CN	Description
3.339	78	Meadow, non-grazed, HSG D
0.750	77	Woods, Good, HSG D
0.257	71	Meadow, non-grazed, HSG C
4.346		Weighted Average
4.346		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9					Direct Entry,

Subcatchment 3S: DA-3

Hydrograph



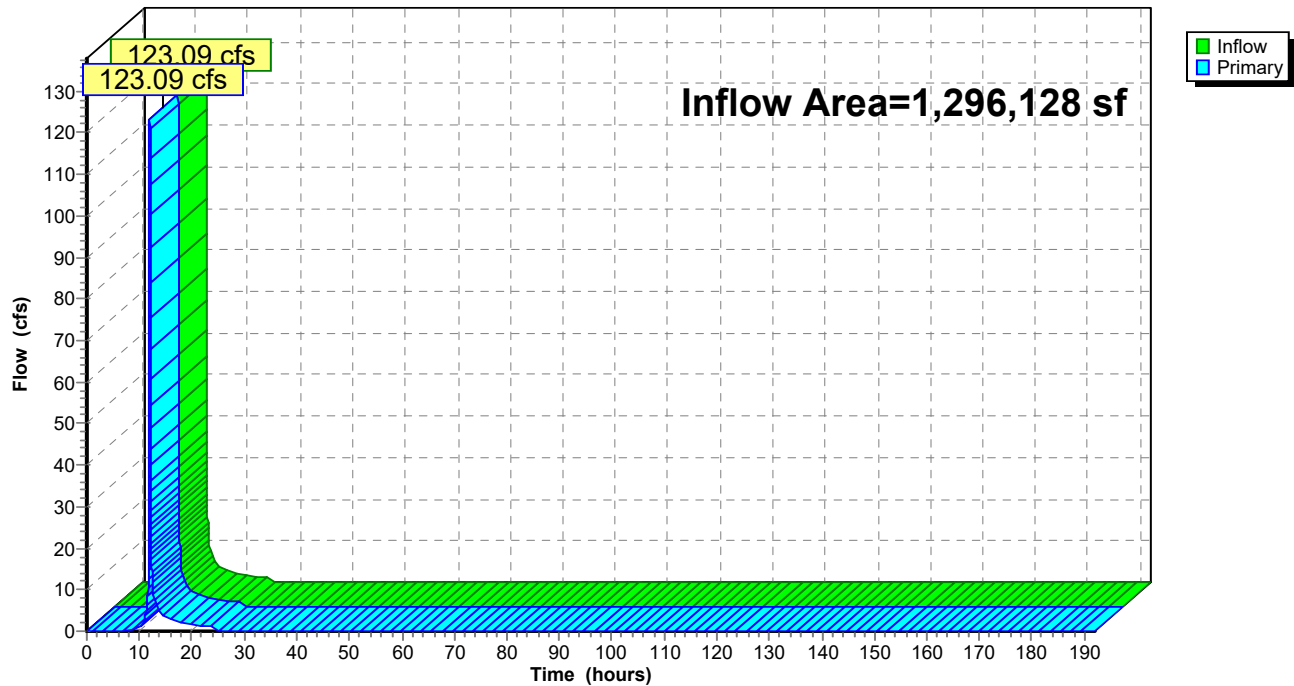
Summary for Link 1L: POA #1

Inflow Area = 1,296,128 sf, 0.98% Impervious, Inflow Depth = 2.51" for 10-yr event
Inflow = 123.09 cfs @ 12.00 hrs, Volume= 271,507 cf
Primary = 123.09 cfs @ 12.00 hrs, Volume= 271,507 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs

Link 1L: POA #1

Hydrograph



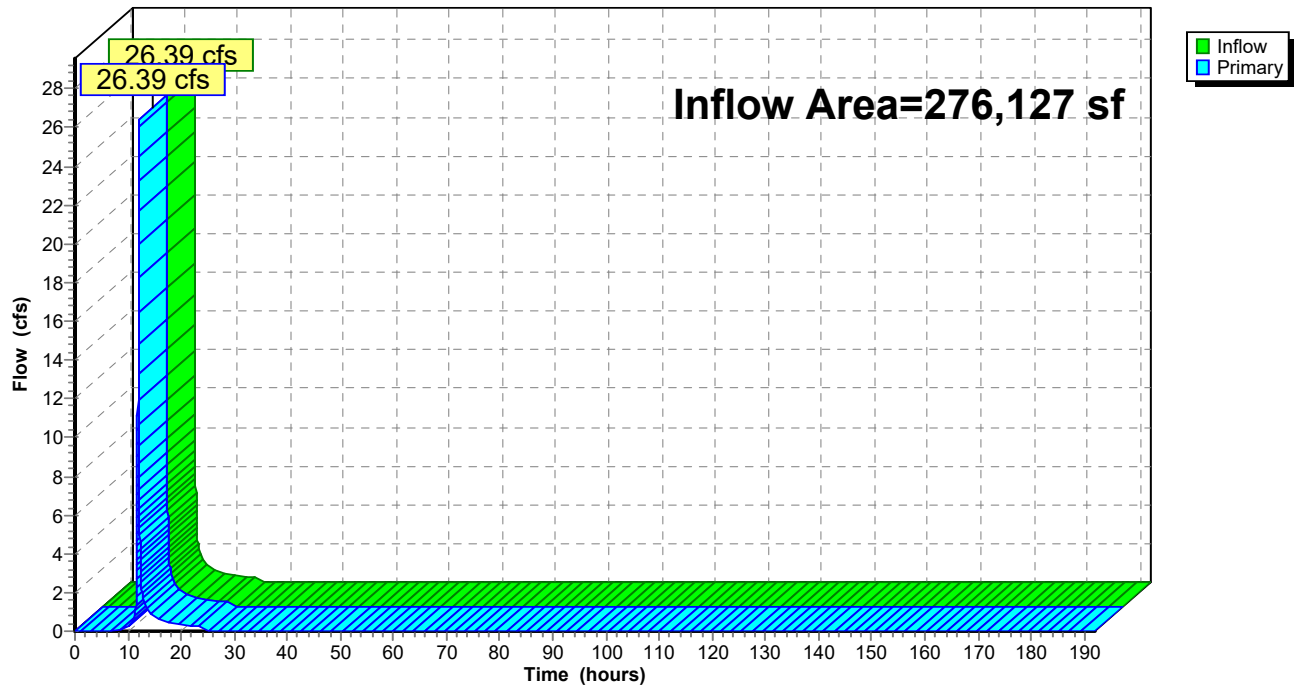
Summary for Link 2L: POA #2

Inflow Area = 276,127 sf, 2.24% Impervious, Inflow Depth = 2.55" for 10-yr event
Inflow = 26.39 cfs @ 12.00 hrs, Volume= 58,610 cf
Primary = 26.39 cfs @ 12.00 hrs, Volume= 58,610 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs

Link 2L: POA #2

Hydrograph



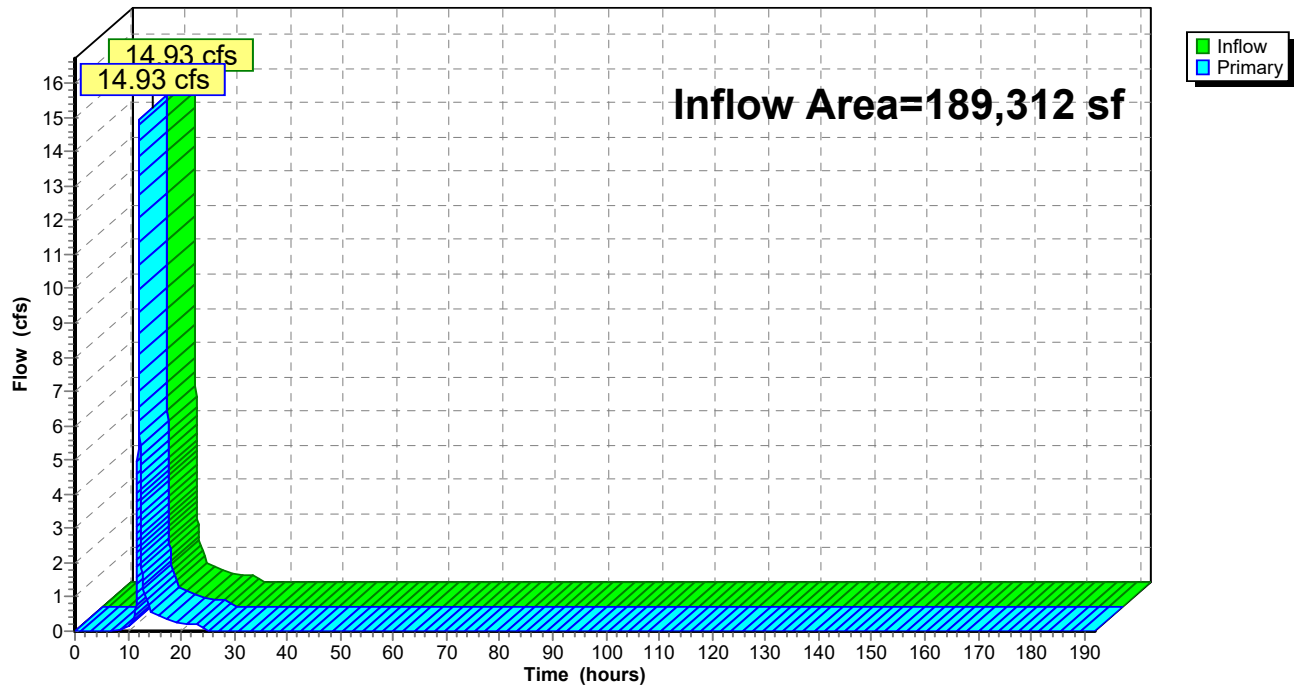
Summary for Link 3L: POA #3

Inflow Area = 189,312 sf, 0.00% Impervious, Inflow Depth = 2.47" for 10-yr event
 Inflow = 14.93 cfs @ 12.05 hrs, Volume= 38,949 cf
 Primary = 14.93 cfs @ 12.05 hrs, Volume= 38,949 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs

Link 3L: POA #3

Hydrograph



PAC250095.00_Hanover Warehouses PRE*Type II 24-hr 25-yr Rainfall=5.78"*

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Time span=0.00-192.00 hrs, dt=0.01 hrs, 19201 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: DA-1

Runoff Area=29.755 ac 0.98% Impervious Runoff Depth=3.38"

Tc=8.1 min CN=WQ Runoff=164.30 cfs 364,992 cf

Subcatchment2S: DA-2

Runoff Area=6.339 ac 2.24% Impervious Runoff Depth=3.42"

Tc=8.2 min CN=WQ Runoff=35.16 cfs 78,600 cf

Subcatchment3S: DA-3

Runoff Area=4.346 ac 0.00% Impervious Runoff Depth=3.33"

Tc=12.9 min CN=WQ Runoff=20.06 cfs 52,522 cf

Link 1L: POA #1

Inflow=164.30 cfs 364,992 cf

Primary=164.30 cfs 364,992 cf

Link 2L: POA #2

Inflow=35.16 cfs 78,600 cf

Primary=35.16 cfs 78,600 cf

Link 3L: POA #3

Inflow=20.06 cfs 52,522 cf

Primary=20.06 cfs 52,522 cf

Total Runoff Area = 1,761,566 sf Runoff Volume = 496,114 cf Average Runoff Depth = 3.38"
98.93% Pervious = 1,742,661 sf 1.07% Impervious = 18,905 sf

Summary for Subcatchment 1S: DA-1

Runoff = 164.30 cfs @ 12.00 hrs, Volume= 364,992 cf, Depth= 3.38"
Routed to Link 1L : POA #1

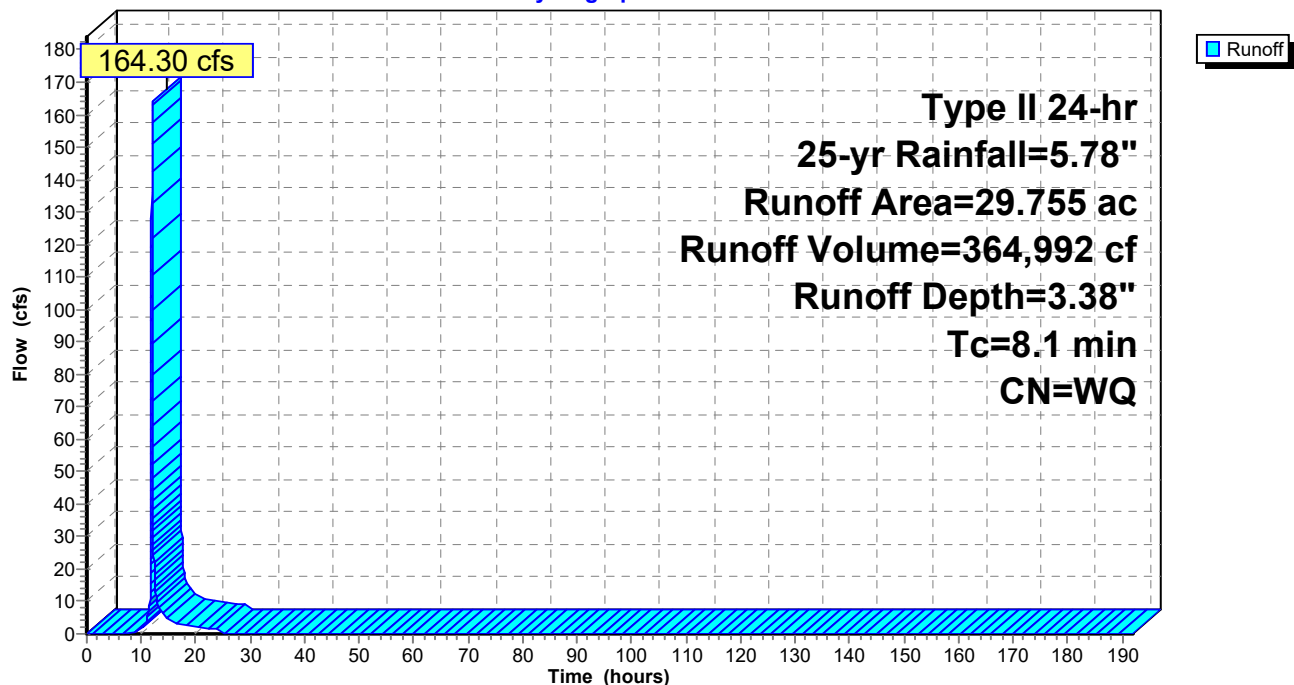
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-yr Rainfall=5.78"

Area (ac)	CN	Description
25.830	78	Meadow, non-grazed, HSG D
0.620	71	Meadow, non-grazed, HSG C
2.517	77	Woods, Good, HSG D
0.204	70	Woods, Good, HSG C
* 0.292	98	Impervious
* 0.292	78	Impervious as Meadow D
29.755		Weighted Average
29.463		99.02% Pervious Area
0.292		0.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1					Direct Entry,

Subcatchment 1S: DA-1

Hydrograph



Summary for Subcatchment 2S: DA-2

Runoff = 35.16 cfs @ 12.00 hrs, Volume= 78,600 cf, Depth= 3.42"
Routed to Link 2L : POA #2

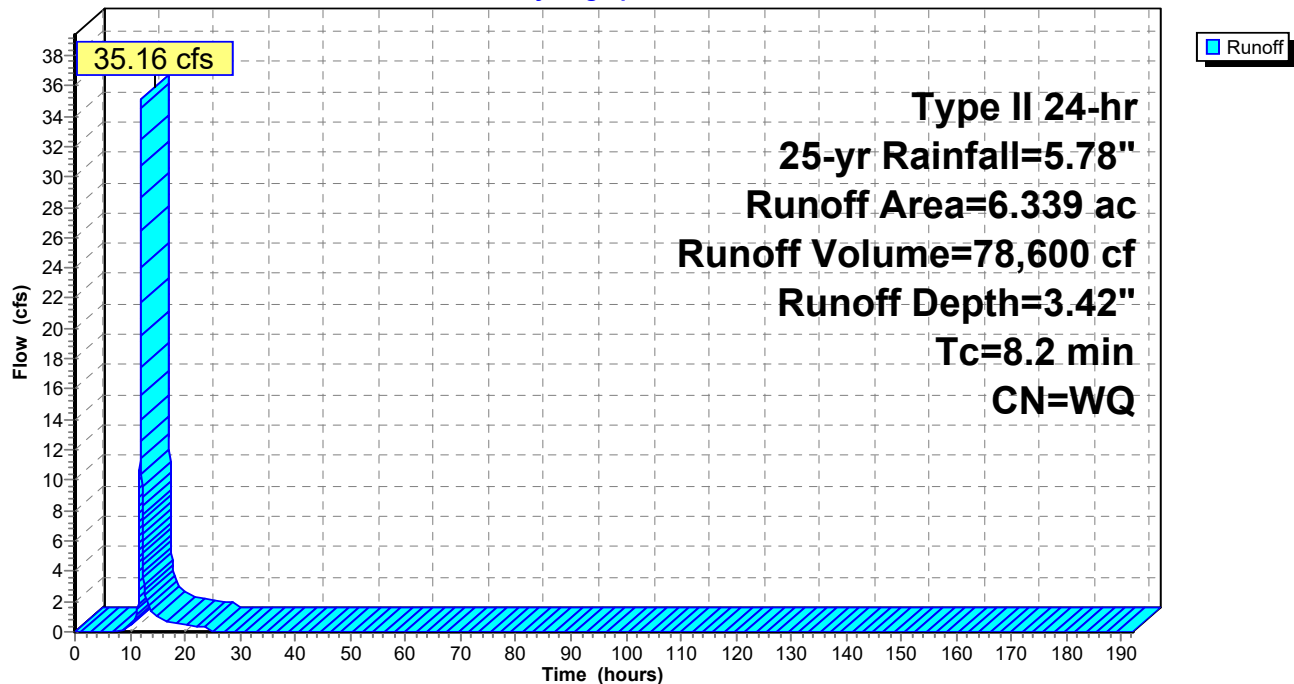
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-yr Rainfall=5.78"

Area (ac)	CN	Description
4.899	78	Meadow, non-grazed, HSG D
1.156	77	Woods, Good, HSG D
* 0.142	98	Impervious
* 0.142	78	Impervious as Meadow D
6.339		Weighted Average
6.197		97.76% Pervious Area
0.142		2.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2					Direct Entry,

Subcatchment 2S: DA-2

Hydrograph



Summary for Subcatchment 3S: DA-3

Runoff = 20.06 cfs @ 12.05 hrs, Volume= 52,522 cf, Depth= 3.33"
Routed to Link 3L : POA #3

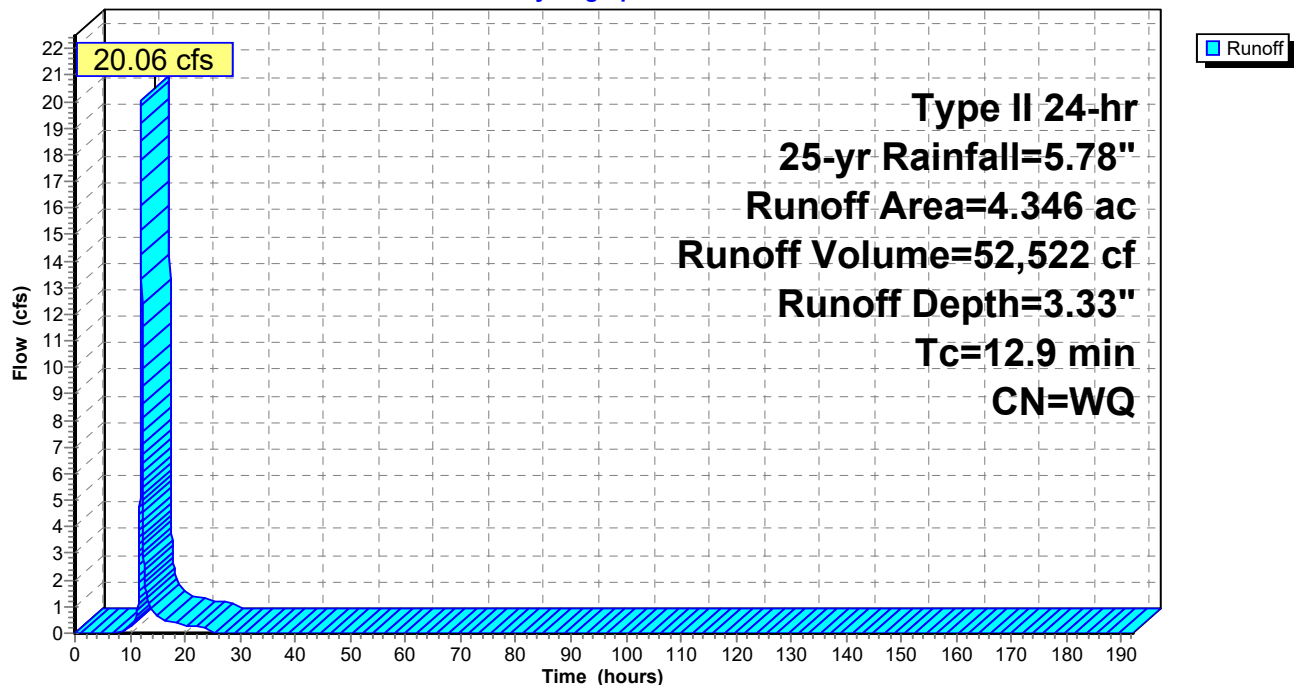
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-yr Rainfall=5.78"

Area (ac)	CN	Description
3.339	78	Meadow, non-grazed, HSG D
0.750	77	Woods, Good, HSG D
0.257	71	Meadow, non-grazed, HSG C
4.346		Weighted Average
4.346		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9					Direct Entry,

Subcatchment 3S: DA-3

Hydrograph



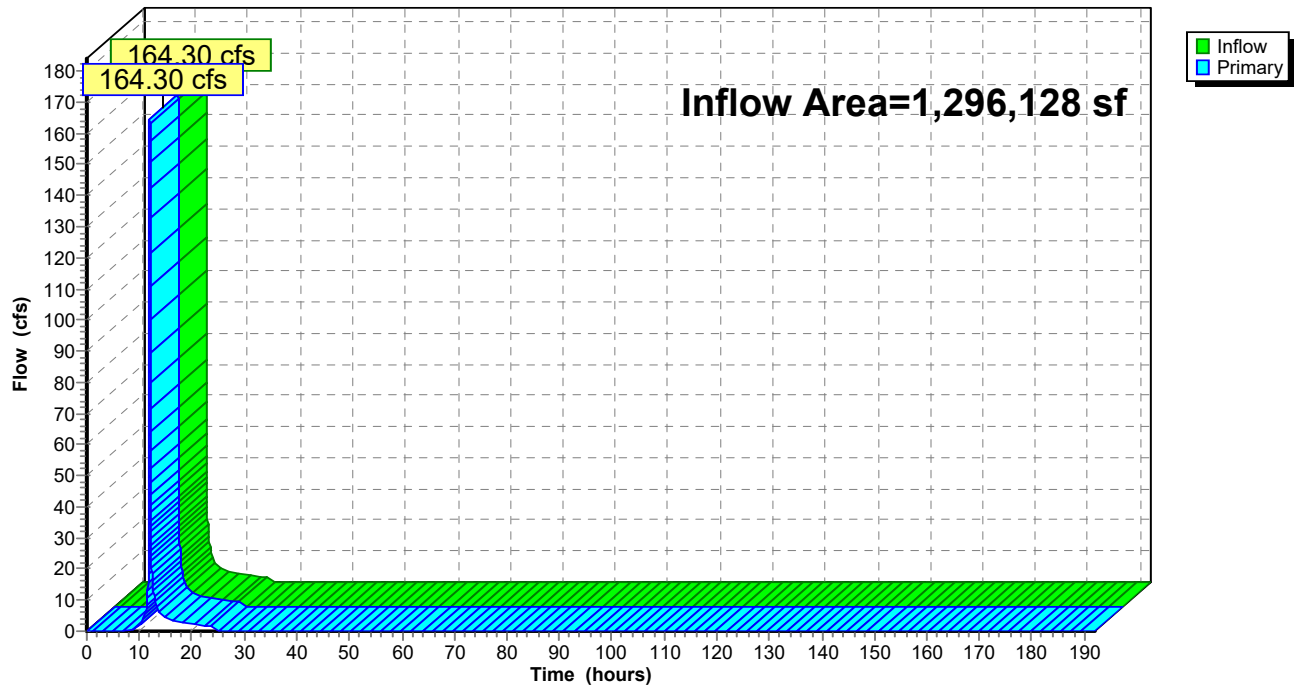
Summary for Link 1L: POA #1

Inflow Area = 1,296,128 sf, 0.98% Impervious, Inflow Depth = 3.38" for 25-yr event
Inflow = 164.30 cfs @ 12.00 hrs, Volume= 364,992 cf
Primary = 164.30 cfs @ 12.00 hrs, Volume= 364,992 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs

Link 1L: POA #1

Hydrograph



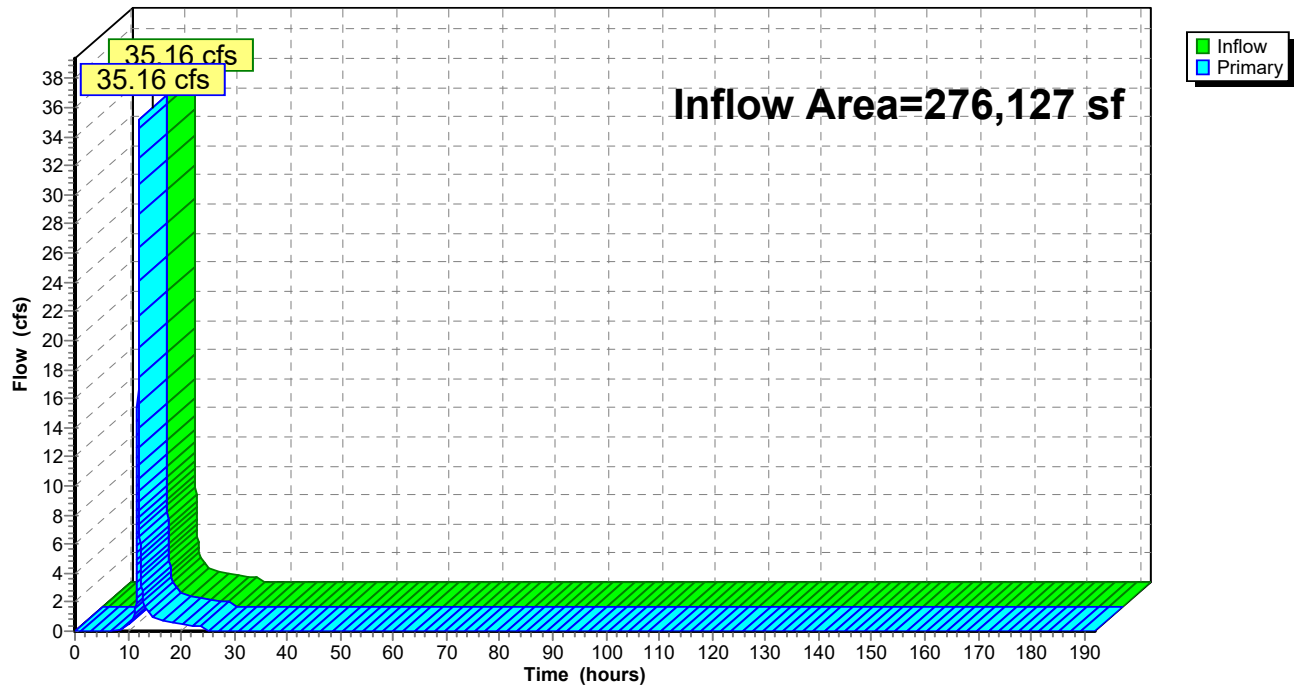
Summary for Link 2L: POA #2

Inflow Area = 276,127 sf, 2.24% Impervious, Inflow Depth = 3.42" for 25-yr event
 Inflow = 35.16 cfs @ 12.00 hrs, Volume= 78,600 cf
 Primary = 35.16 cfs @ 12.00 hrs, Volume= 78,600 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs

Link 2L: POA #2

Hydrograph



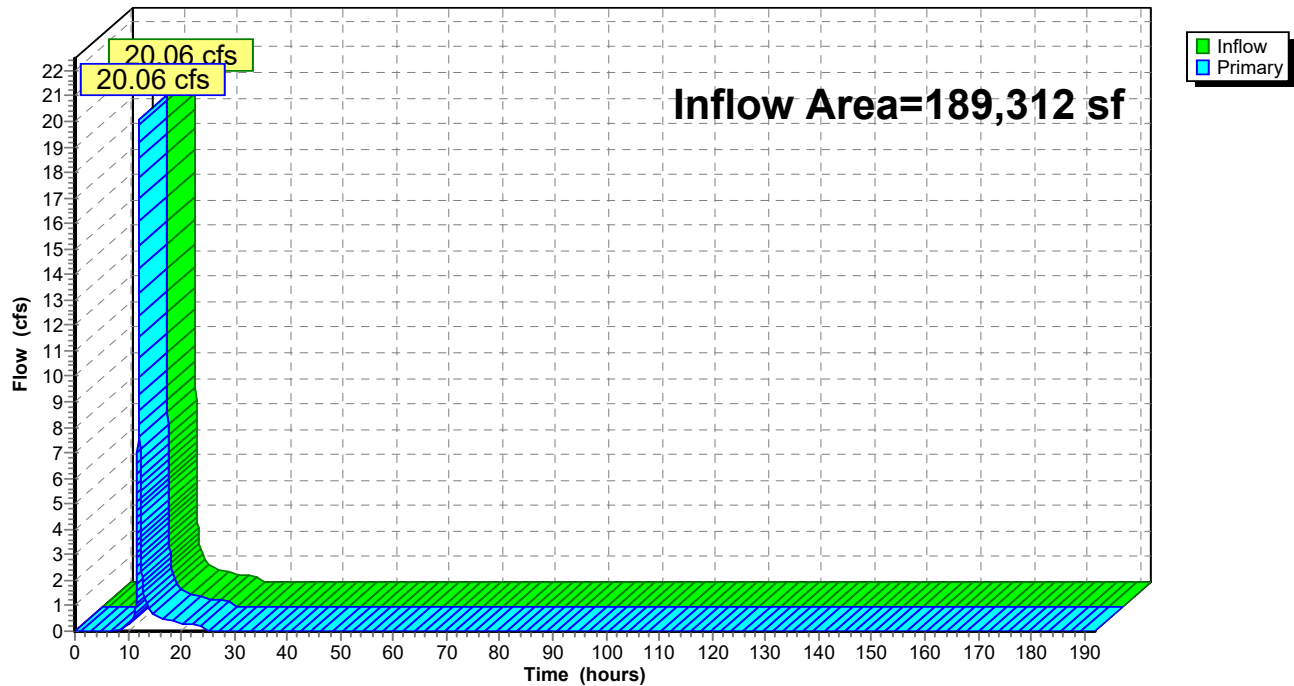
Summary for Link 3L: POA #3

Inflow Area = 189,312 sf, 0.00% Impervious, Inflow Depth = 3.33" for 25-yr event
 Inflow = 20.06 cfs @ 12.05 hrs, Volume= 52,522 cf
 Primary = 20.06 cfs @ 12.05 hrs, Volume= 52,522 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs

Link 3L: POA #3

Hydrograph



PAC250095.00_Hanover Warehouses PRE*Type II 24-hr 50-yr Rainfall=6.62"*

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Time span=0.00-192.00 hrs, dt=0.01 hrs, 19201 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: DA-1

Runoff Area=29.755 ac 0.98% Impervious Runoff Depth=4.12"

Tc=8.1 min CN=WQ Runoff=199.14 cfs 445,431 cf

Subcatchment2S: DA-2

Runoff Area=6.339 ac 2.24% Impervious Runoff Depth=4.16"

Tc=8.2 min CN=WQ Runoff=42.56 cfs 95,787 cf

Subcatchment3S: DA-3

Runoff Area=4.346 ac 0.00% Impervious Runoff Depth=4.07"

Tc=12.9 min CN=WQ Runoff=24.42 cfs 64,215 cf

Link 1L: POA #1

Inflow=199.14 cfs 445,431 cf

Primary=199.14 cfs 445,431 cf

Link 2L: POA #2

Inflow=42.56 cfs 95,787 cf

Primary=42.56 cfs 95,787 cf

Link 3L: POA #3

Inflow=24.42 cfs 64,215 cf

Primary=24.42 cfs 64,215 cf

Total Runoff Area = 1,761,566 sf Runoff Volume = 605,433 cf Average Runoff Depth = 4.12"
98.93% Pervious = 1,742,661 sf 1.07% Impervious = 18,905 sf

Summary for Subcatchment 1S: DA-1

Runoff = 199.14 cfs @ 12.00 hrs, Volume= 445,431 cf, Depth= 4.12"
Routed to Link 1L : POA #1

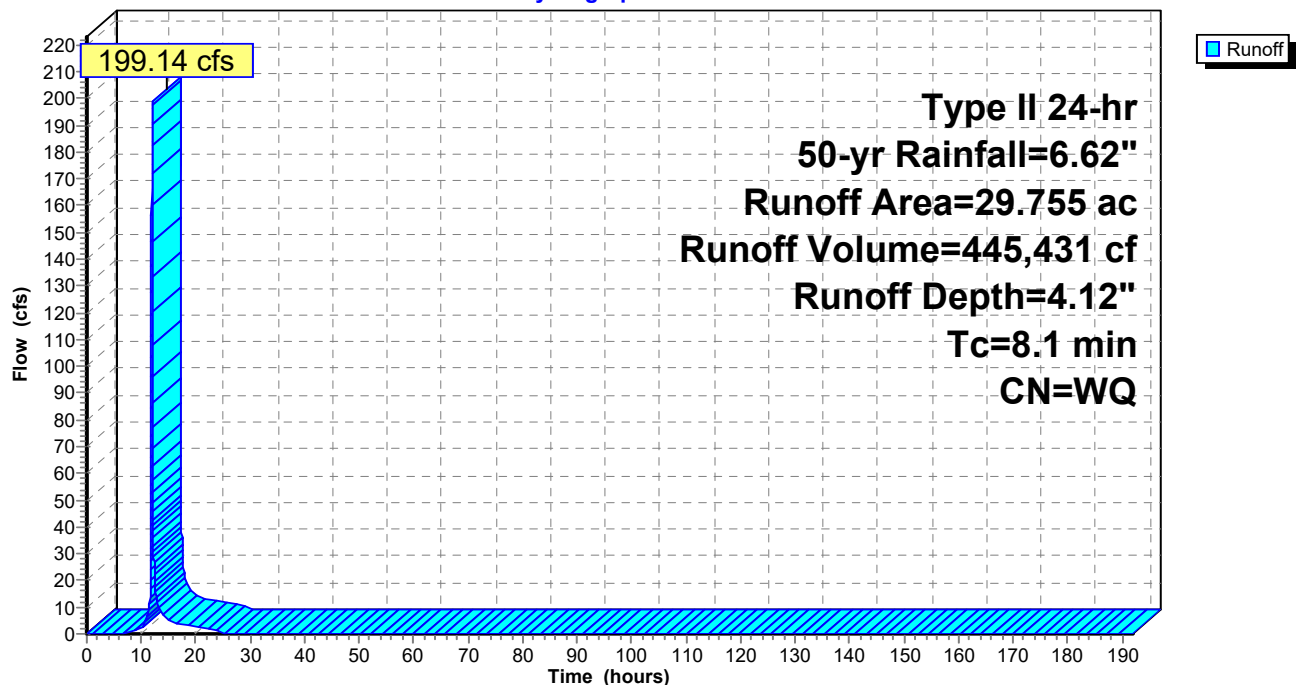
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-yr Rainfall=6.62"

Area (ac)	CN	Description
25.830	78	Meadow, non-grazed, HSG D
0.620	71	Meadow, non-grazed, HSG C
2.517	77	Woods, Good, HSG D
0.204	70	Woods, Good, HSG C
* 0.292	98	Impervious
* 0.292	78	Impervious as Meadow D
29.755		Weighted Average
29.463		99.02% Pervious Area
0.292		0.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1					Direct Entry,

Subcatchment 1S: DA-1

Hydrograph



Summary for Subcatchment 2S: DA-2

Runoff = 42.56 cfs @ 12.00 hrs, Volume= 95,787 cf, Depth= 4.16"
Routed to Link 2L : POA #2

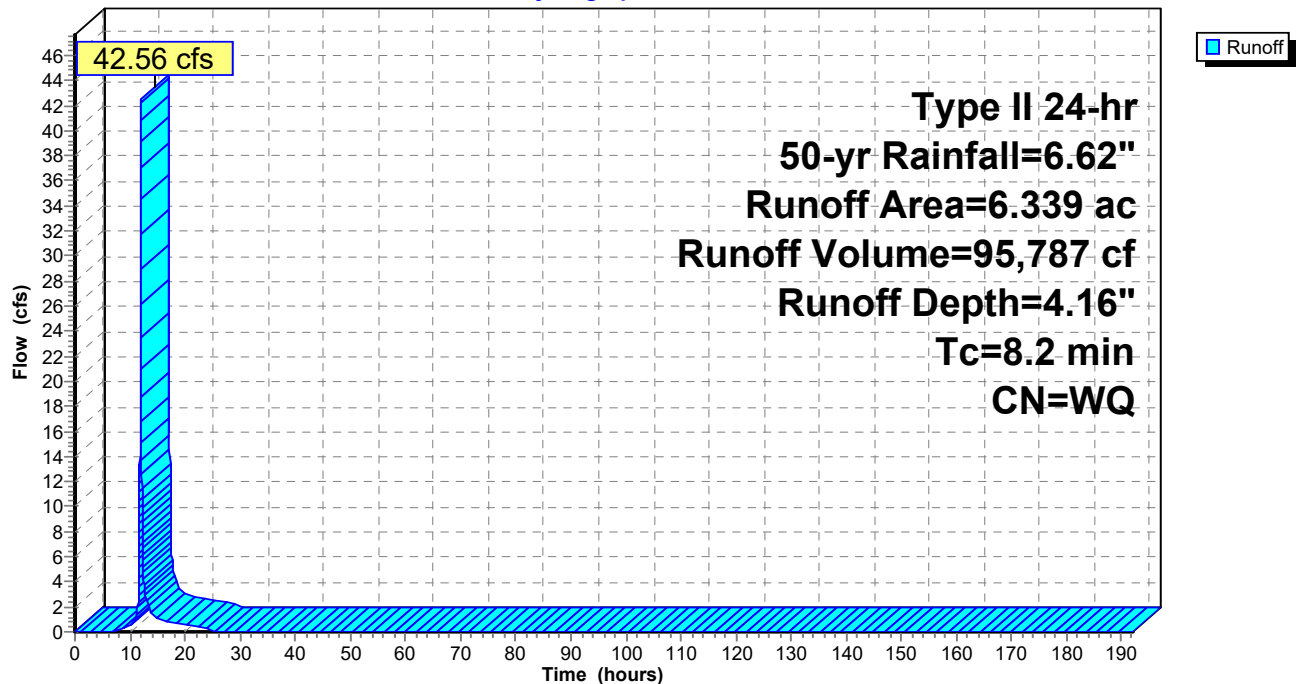
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-yr Rainfall=6.62"

Area (ac)	CN	Description
4.899	78	Meadow, non-grazed, HSG D
1.156	77	Woods, Good, HSG D
* 0.142	98	Impervious
* 0.142	78	Impervious as Meadow D
6.339		Weighted Average
6.197		97.76% Pervious Area
0.142		2.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2					Direct Entry,

Subcatchment 2S: DA-2

Hydrograph



Summary for Subcatchment 3S: DA-3

Runoff = 24.42 cfs @ 12.05 hrs, Volume= 64,215 cf, Depth= 4.07"
Routed to Link 3L : POA #3

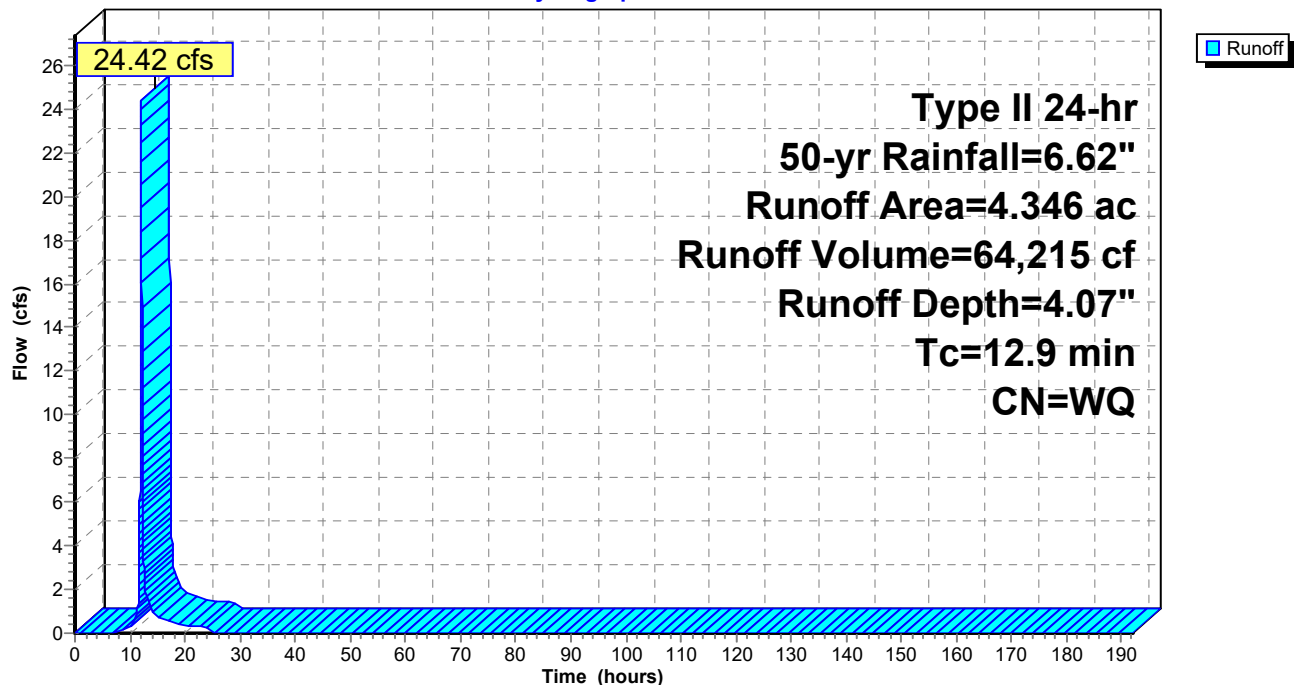
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-yr Rainfall=6.62"

Area (ac)	CN	Description
3.339	78	Meadow, non-grazed, HSG D
0.750	77	Woods, Good, HSG D
0.257	71	Meadow, non-grazed, HSG C
4.346		Weighted Average
4.346		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9					Direct Entry,

Subcatchment 3S: DA-3

Hydrograph



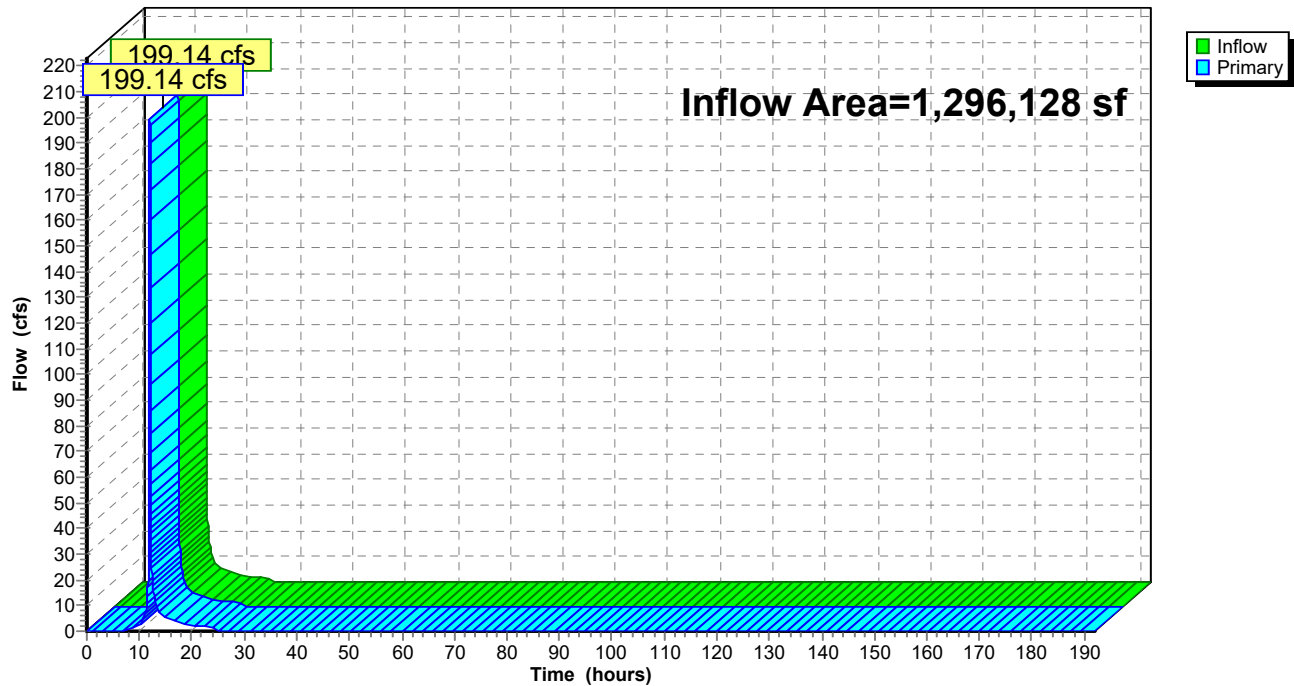
Summary for Link 1L: POA #1

Inflow Area = 1,296,128 sf, 0.98% Impervious, Inflow Depth = 4.12" for 50-yr event
 Inflow = 199.14 cfs @ 12.00 hrs, Volume= 445,431 cf
 Primary = 199.14 cfs @ 12.00 hrs, Volume= 445,431 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs

Link 1L: POA #1

Hydrograph



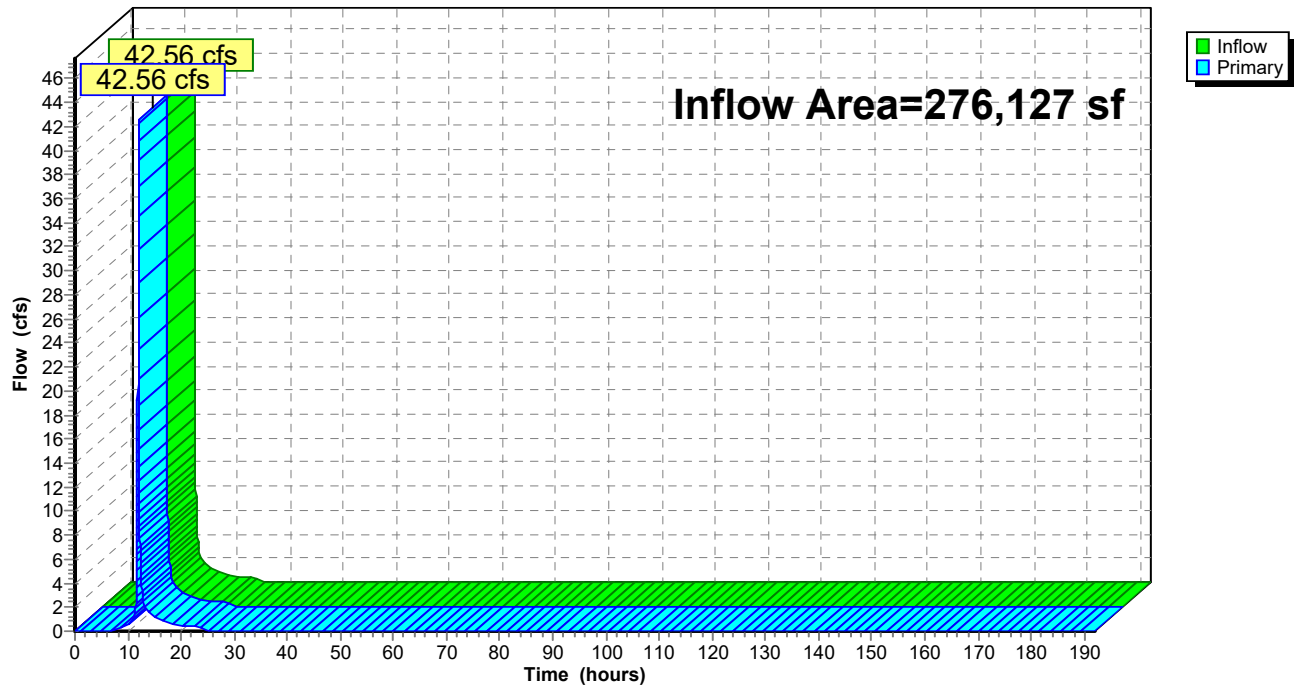
Summary for Link 2L: POA #2

Inflow Area = 276,127 sf, 2.24% Impervious, Inflow Depth = 4.16" for 50-yr event
 Inflow = 42.56 cfs @ 12.00 hrs, Volume= 95,787 cf
 Primary = 42.56 cfs @ 12.00 hrs, Volume= 95,787 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs

Link 2L: POA #2

Hydrograph



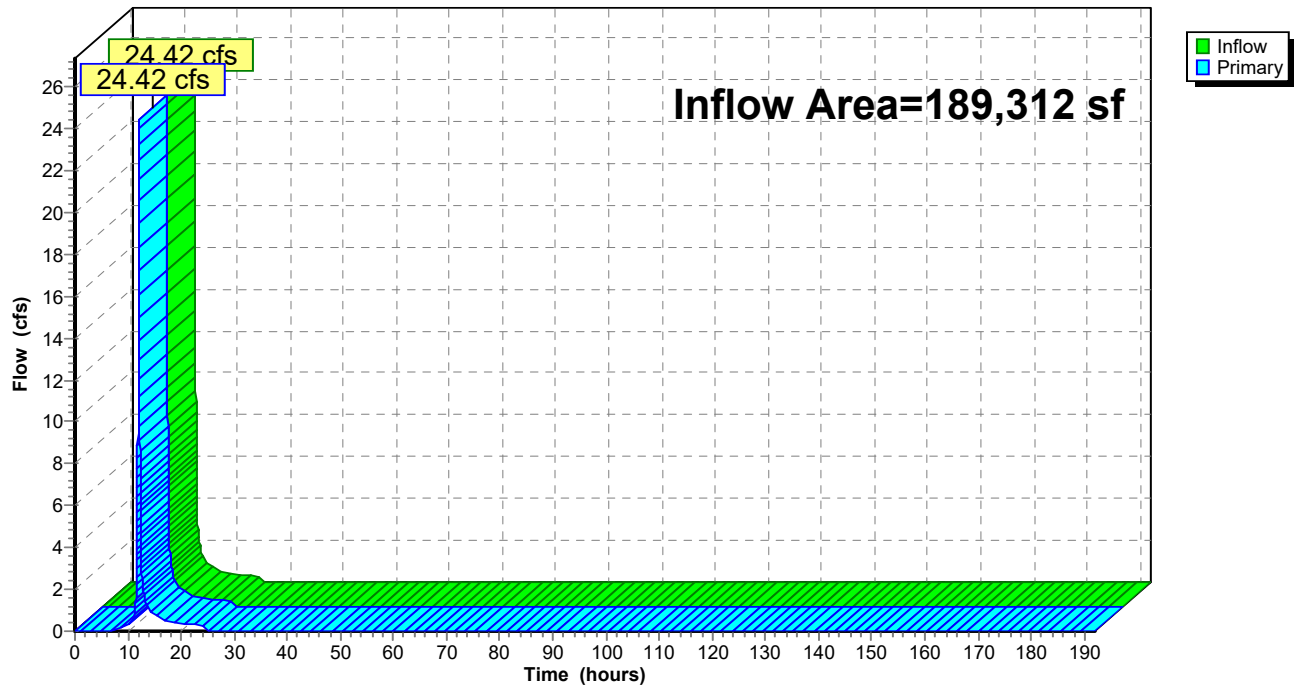
Summary for Link 3L: POA #3

Inflow Area = 189,312 sf, 0.00% Impervious, Inflow Depth = 4.07" for 50-yr event
 Inflow = 24.42 cfs @ 12.05 hrs, Volume= 64,215 cf
 Primary = 24.42 cfs @ 12.05 hrs, Volume= 64,215 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs

Link 3L: POA #3

Hydrograph



PAC250095.00_Hanover Warehouses PRE*Type II 24-hr 100-yr Rainfall=7.54"*

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Time span=0.00-192.00 hrs, dt=0.01 hrs, 19201 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: DA-1Runoff Area=29.755 ac 0.98% Impervious Runoff Depth=4.96"
Tc=8.1 min CN=WQ Runoff=237.52 cfs 535,544 cf**Subcatchment2S: DA-2**Runoff Area=6.339 ac 2.24% Impervious Runoff Depth=5.00"
Tc=8.2 min CN=WQ Runoff=50.73 cfs 115,031 cf**Subcatchment3S: DA-3**Runoff Area=4.346 ac 0.00% Impervious Runoff Depth=4.90"
Tc=12.9 min CN=WQ Runoff=29.24 cfs 77,325 cf**Link 1L: POA #1**Inflow=237.52 cfs 535,544 cf
Primary=237.52 cfs 535,544 cf**Link 2L: POA #2**Inflow=50.73 cfs 115,031 cf
Primary=50.73 cfs 115,031 cf**Link 3L: POA #3**Inflow=29.24 cfs 77,325 cf
Primary=29.24 cfs 77,325 cf**Total Runoff Area = 1,761,566 sf Runoff Volume = 727,900 cf Average Runoff Depth = 4.96"**
98.93% Pervious = 1,742,661 sf 1.07% Impervious = 18,905 sf

Summary for Subcatchment 1S: DA-1

Runoff = 237.52 cfs @ 11.99 hrs, Volume= 535,544 cf, Depth= 4.96"
Routed to Link 1L : POA #1

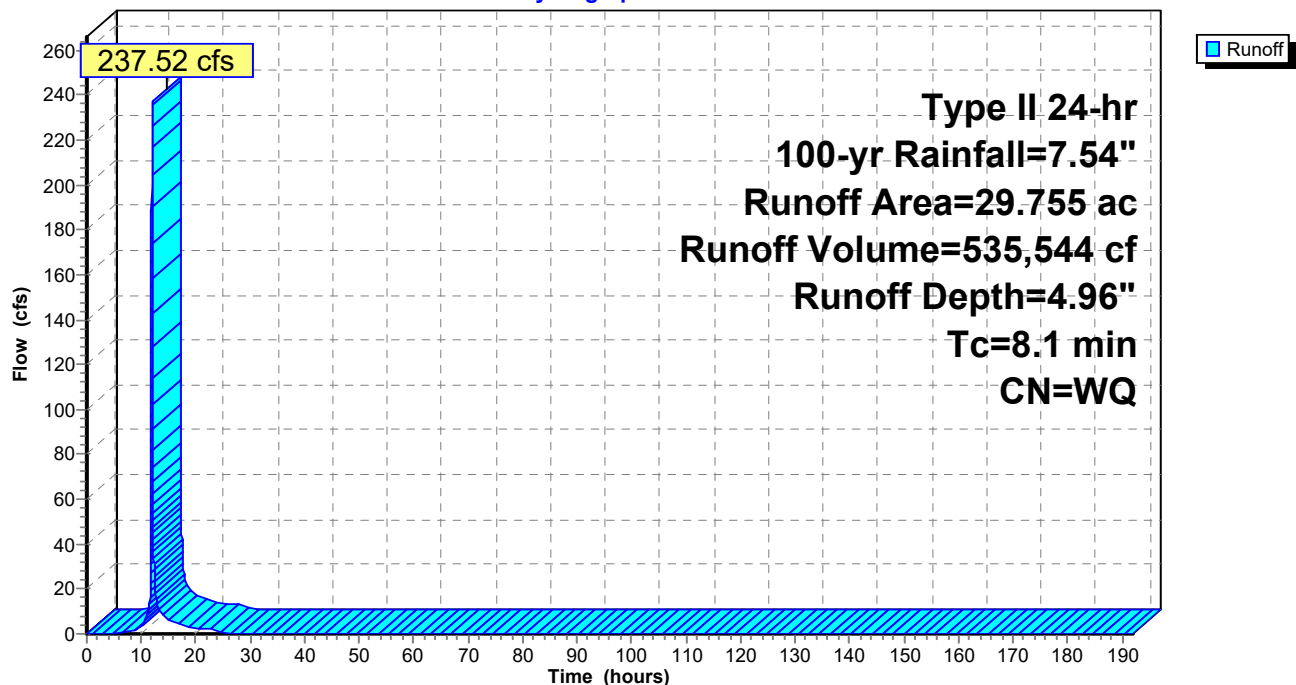
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=7.54"

Area (ac)	CN	Description
25.830	78	Meadow, non-grazed, HSG D
0.620	71	Meadow, non-grazed, HSG C
2.517	77	Woods, Good, HSG D
0.204	70	Woods, Good, HSG C
* 0.292	98	Impervious
* 0.292	78	Impervious as Meadow D
29.755		Weighted Average
29.463		99.02% Pervious Area
0.292		0.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1					Direct Entry,

Subcatchment 1S: DA-1

Hydrograph



PAC250095.00_Hanover Warehouses PRE

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Type II 24-hr 100-yr Rainfall=7.54"

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Summary for Subcatchment 2S: DA-2

Runoff = 50.73 cfs @ 12.00 hrs, Volume= 115,031 cf, Depth= 5.00"
Routed to Link 2L : POA #2

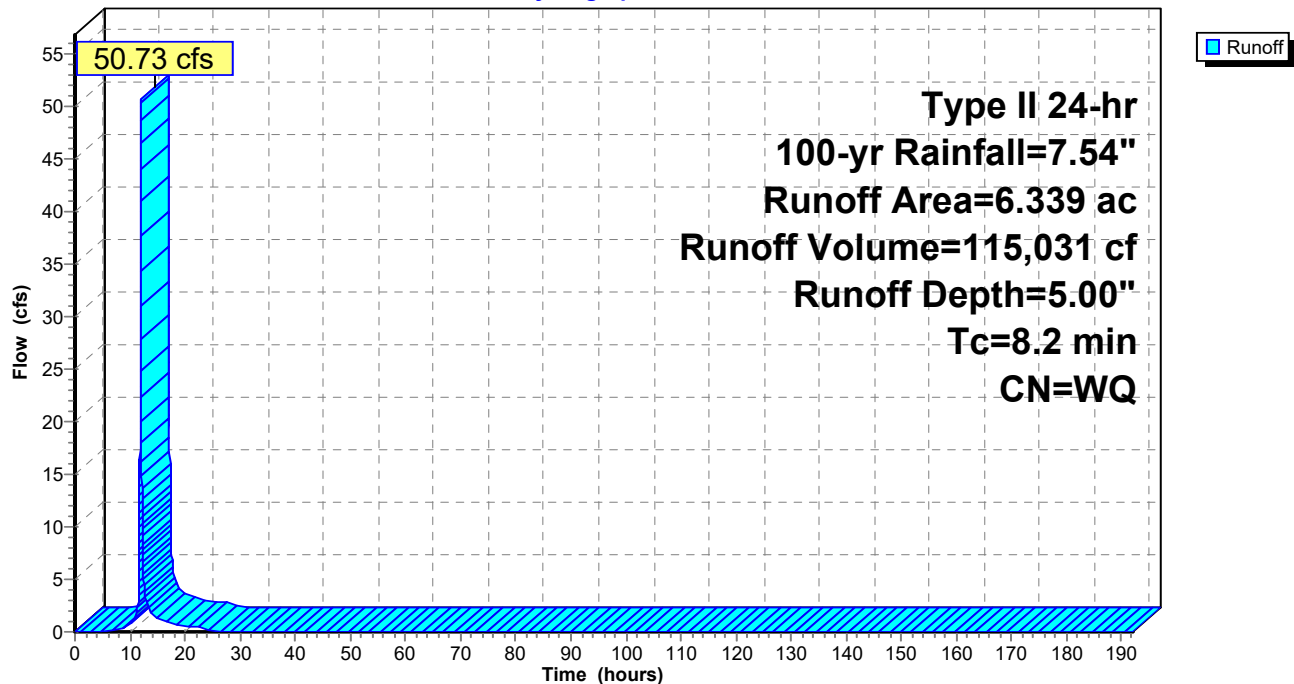
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=7.54"

Area (ac)	CN	Description
4.899	78	Meadow, non-grazed, HSG D
1.156	77	Woods, Good, HSG D
* 0.142	98	Impervious
* 0.142	78	Impervious as Meadow D
6.339		Weighted Average
6.197		97.76% Pervious Area
0.142		2.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2					Direct Entry,

Subcatchment 2S: DA-2

Hydrograph



Summary for Subcatchment 3S: DA-3

Runoff = 29.24 cfs @ 12.05 hrs, Volume= 77,325 cf, Depth= 4.90"
Routed to Link 3L : POA #3

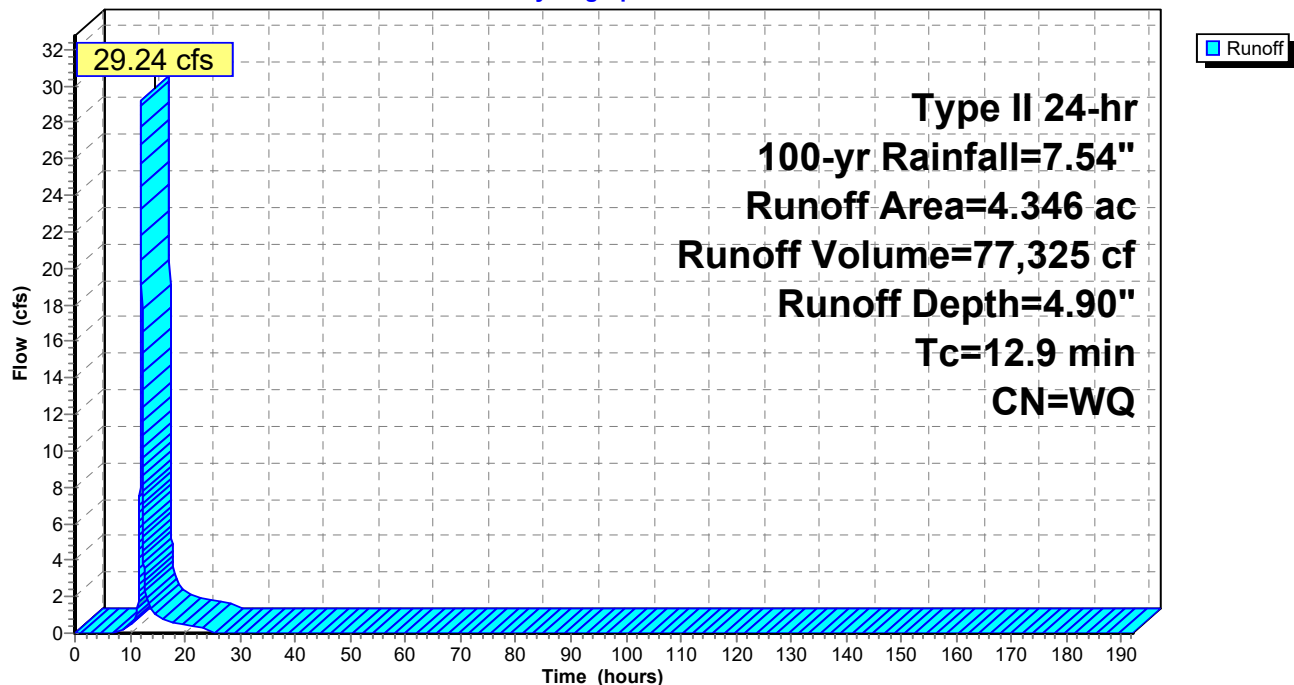
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=7.54"

Area (ac)	CN	Description
3.339	78	Meadow, non-grazed, HSG D
0.750	77	Woods, Good, HSG D
0.257	71	Meadow, non-grazed, HSG C
4.346		Weighted Average
4.346		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9					Direct Entry,

Subcatchment 3S: DA-3

Hydrograph



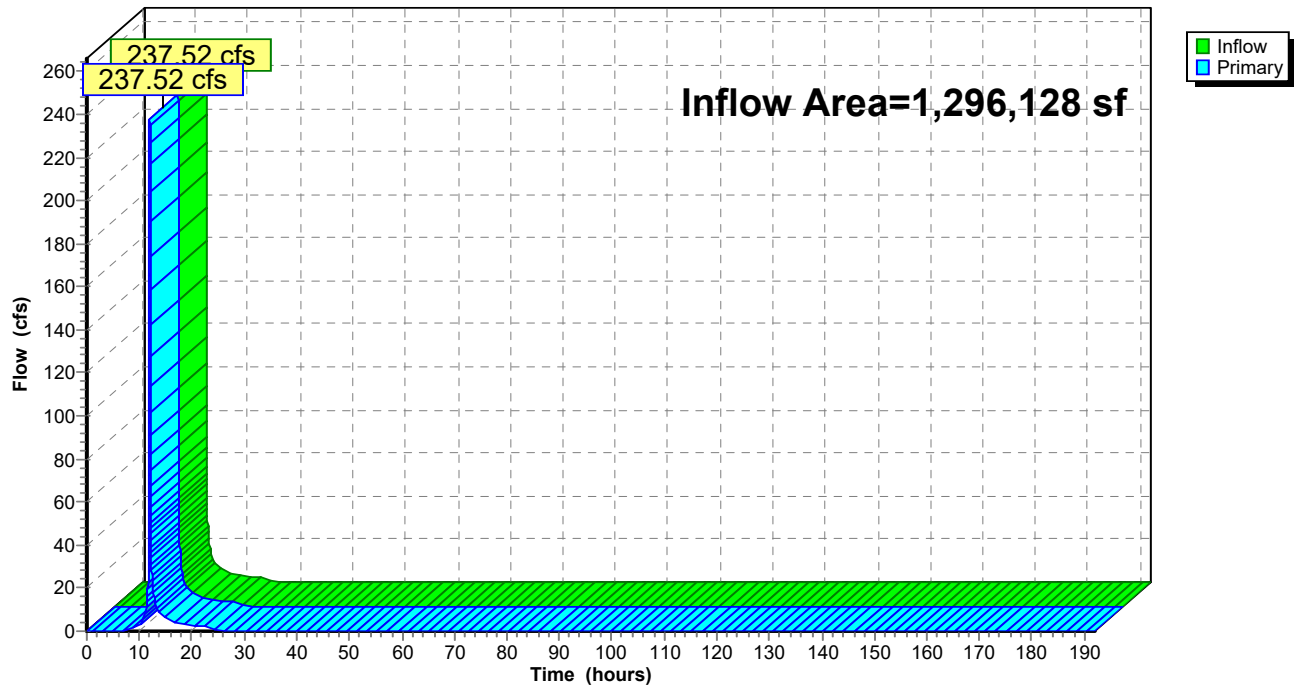
Summary for Link 1L: POA #1

Inflow Area = 1,296,128 sf, 0.98% Impervious, Inflow Depth = 4.96" for 100-yr event
Inflow = 237.52 cfs @ 11.99 hrs, Volume= 535,544 cf
Primary = 237.52 cfs @ 11.99 hrs, Volume= 535,544 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs

Link 1L: POA #1

Hydrograph



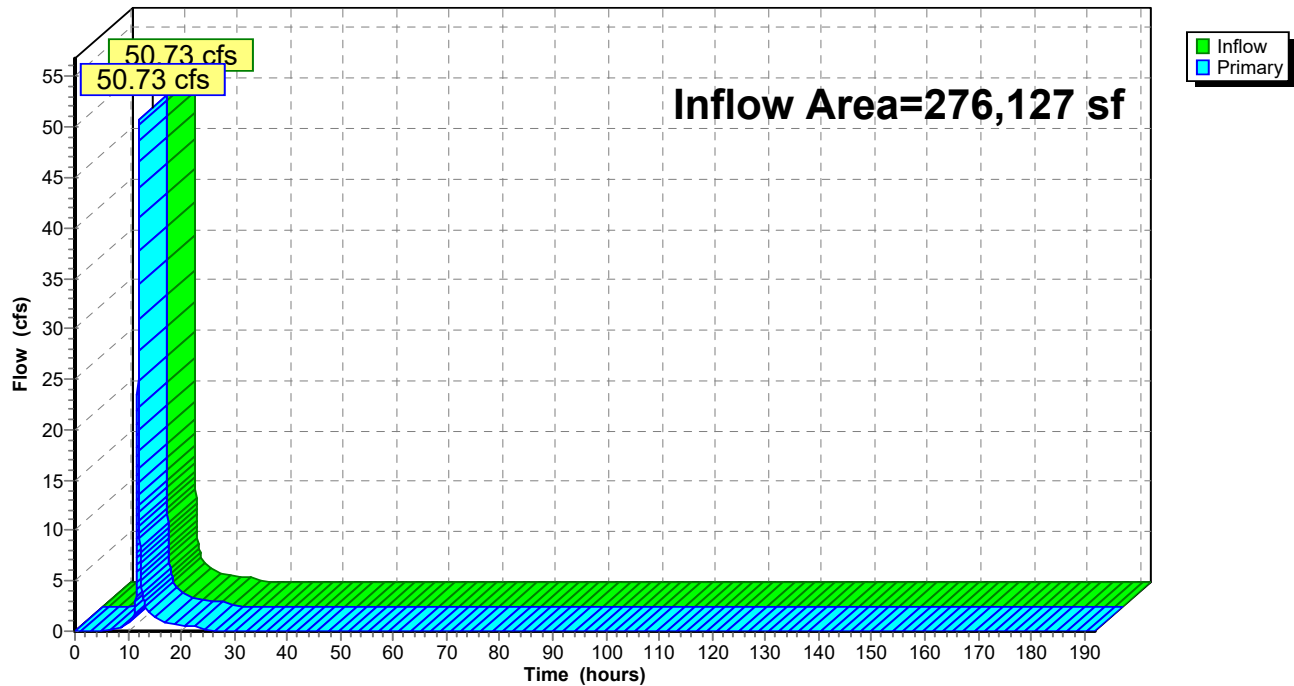
Summary for Link 2L: POA #2

Inflow Area = 276,127 sf, 2.24% Impervious, Inflow Depth = 5.00" for 100-yr event
Inflow = 50.73 cfs @ 12.00 hrs, Volume= 115,031 cf
Primary = 50.73 cfs @ 12.00 hrs, Volume= 115,031 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs

Link 2L: POA #2

Hydrograph



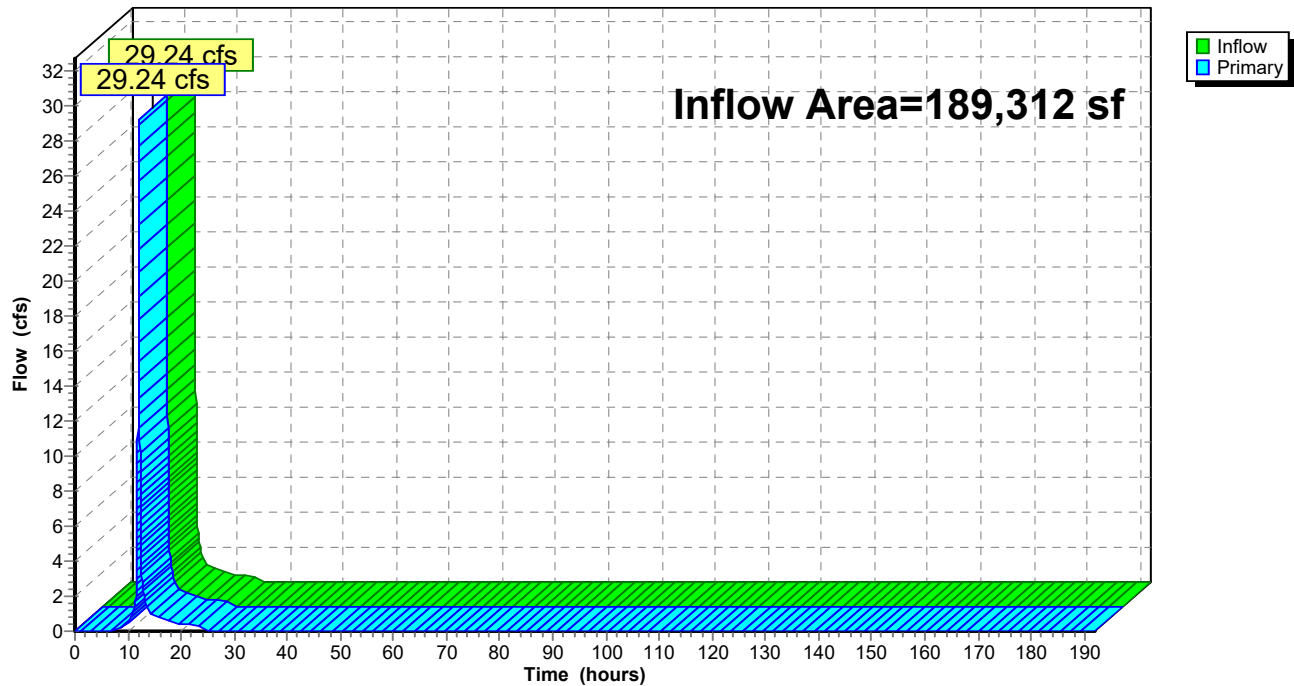
Summary for Link 3L: POA #3

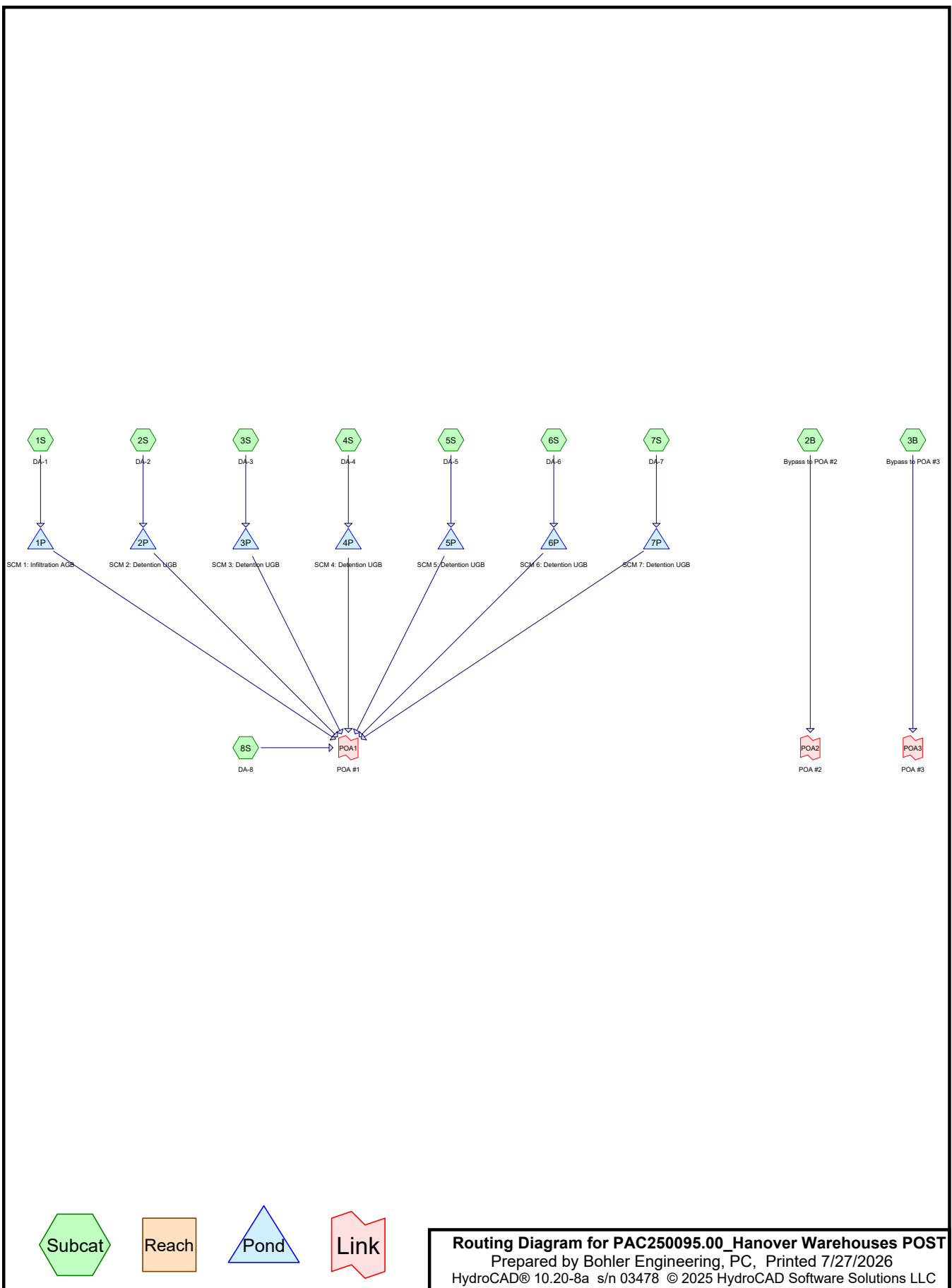
Inflow Area = 189,312 sf, 0.00% Impervious, Inflow Depth = 4.90" for 100-yr event
Inflow = 29.24 cfs @ 12.05 hrs, Volume= 77,325 cf
Primary = 29.24 cfs @ 12.05 hrs, Volume= 77,325 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-192.00 hrs, dt= 0.01 hrs

Link 3L: POA #3

Hydrograph





PAC250095.00_Hanover Warehouses POST

Type II 24-hr 1-yr Rainfall=2.70"

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Time span=0.00-96.00 hrs, dt=0.01 hrs, 9601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: DA-1	Runoff Area=6.739 ac 72.10% Impervious Runoff Depth=2.06" Tc=5.0 min CN=WQ Runoff=22.50 cfs 50,341 cf
Subcatchment2B: Bypass to POA #2	Runoff Area=1.492 ac 2.01% Impervious Runoff Depth=1.06" Tc=5.0 min CN=WQ Runoff=2.92 cfs 5,734 cf
Subcatchment2S: DA-2	Runoff Area=8.114 ac 98.31% Impervious Runoff Depth=2.45" Tc=5.0 min CN=WQ Runoff=31.55 cfs 72,025 cf
Subcatchment3B: Bypass to POA #3	Runoff Area=1.243 ac 0.00% Impervious Runoff Depth=1.01" Tc=5.0 min CN=WQ Runoff=2.34 cfs 4,567 cf
Subcatchment3S: DA-3	Runoff Area=4.417 ac 86.71% Impervious Runoff Depth=2.28" Tc=5.0 min CN=WQ Runoff=16.14 cfs 36,530 cf
Subcatchment4S: DA-4	Runoff Area=3.585 ac 91.35% Impervious Runoff Depth=2.35" Tc=5.0 min CN=WQ Runoff=13.44 cfs 30,519 cf
Subcatchment5S: DA-5	Runoff Area=2.881 ac 86.78% Impervious Runoff Depth=2.28" Tc=5.0 min CN=WQ Runoff=10.53 cfs 23,836 cf
Subcatchment6S: DA-6	Runoff Area=3.336 ac 77.34% Impervious Runoff Depth=2.10" Tc=5.0 min CN=WQ Runoff=11.29 cfs 25,475 cf
Subcatchment7S: DA-7	Runoff Area=4.253 ac 92.97% Impervious Runoff Depth=2.37" Tc=5.0 min CN=WQ Runoff=16.08 cfs 36,565 cf
Subcatchment8S: DA-8	Runoff Area=4.380 ac 2.31% Impervious Runoff Depth=1.04" Tc=5.0 min CN=WQ Runoff=8.37 cfs 16,486 cf
Pond 1P: SCM 1: Infiltration AGB	Peak Elev=275.34' Storage=35,213 cf Inflow=22.50 cfs 50,341 cf Discarded=0.23 cfs 50,343 cf Primary=0.00 cfs 0 cf Outflow=0.23 cfs 50,343 cf
Pond 2P: SCM 2: Detention UGB	Peak Elev=270.36' Storage=32,565 cf Inflow=31.55 cfs 72,025 cf Outflow=5.30 cfs 71,887 cf
Pond 3P: SCM 3: Detention UGB	Peak Elev=273.29' Storage=14,681 cf Inflow=16.14 cfs 36,530 cf Outflow=4.31 cfs 36,491 cf
Pond 4P: SCM 4: Detention UGB	Peak Elev=274.02' Storage=11,096 cf Inflow=13.44 cfs 30,519 cf Outflow=4.11 cfs 30,477 cf
Pond 5P: SCM 5: Detention UGB	Peak Elev=277.81' Storage=7,574 cf Inflow=10.53 cfs 23,836 cf Outflow=4.48 cfs 23,827 cf
Pond 6P: SCM 6: Detention UGB	Peak Elev=281.17' Storage=9,188 cf Inflow=11.29 cfs 25,475 cf Outflow=3.81 cfs 25,459 cf

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Pond 7P: SCM 7: Detention UGBPeak Elev=274.31' Storage=14,372 cf Inflow=16.08 cfs 36,565 cf
Outflow=4.45 cfs 36,533 cf**Link POA1: POA #1**Inflow=31.81 cfs 241,160 cf
Primary=31.81 cfs 241,160 cf**Link POA2: POA #2**Inflow=2.92 cfs 5,734 cf
Primary=2.92 cfs 5,734 cf**Link POA3: POA #3**Inflow=2.34 cfs 4,567 cf
Primary=2.34 cfs 4,567 cf**Total Runoff Area = 1,761,566 sf Runoff Volume = 302,076 cf Average Runoff Depth = 2.06"**
28.03% Pervious = 493,709 sf 71.97% Impervious = 1,267,857 sf

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Type II 24-hr 1-yr Rainfall=2.70"

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Summary for Subcatchment 1S: DA-1

Runoff = 22.50 cfs @ 11.96 hrs, Volume= 50,341 cf, Depth= 2.06"
Routed to Pond 1P : SCM 1: Infiltration AGB

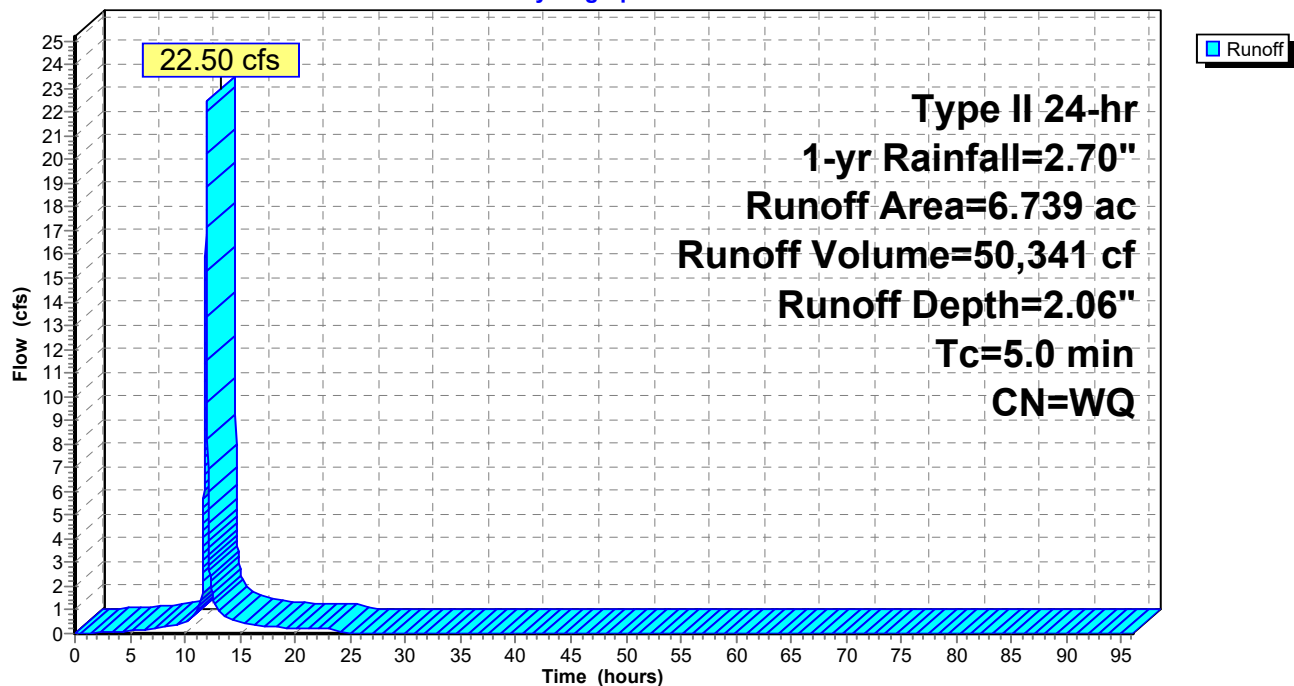
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.70"

Area (ac)	CN	Description
0.222	74	>75% Grass cover, Good, HSG C
1.658	80	>75% Grass cover, Good, HSG D
4.859	98	Paved parking, HSG D
6.739		Weighted Average
1.880		27.90% Pervious Area
4.859		72.10% Impervious Area

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

Subcatchment 1S: DA-1

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.70"

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Summary for Subcatchment 2B: Bypass to POA #2

Runoff = 2.92 cfs @ 11.97 hrs, Volume= 5,734 cf, Depth= 1.06"
Routed to Link POA2 : POA #2

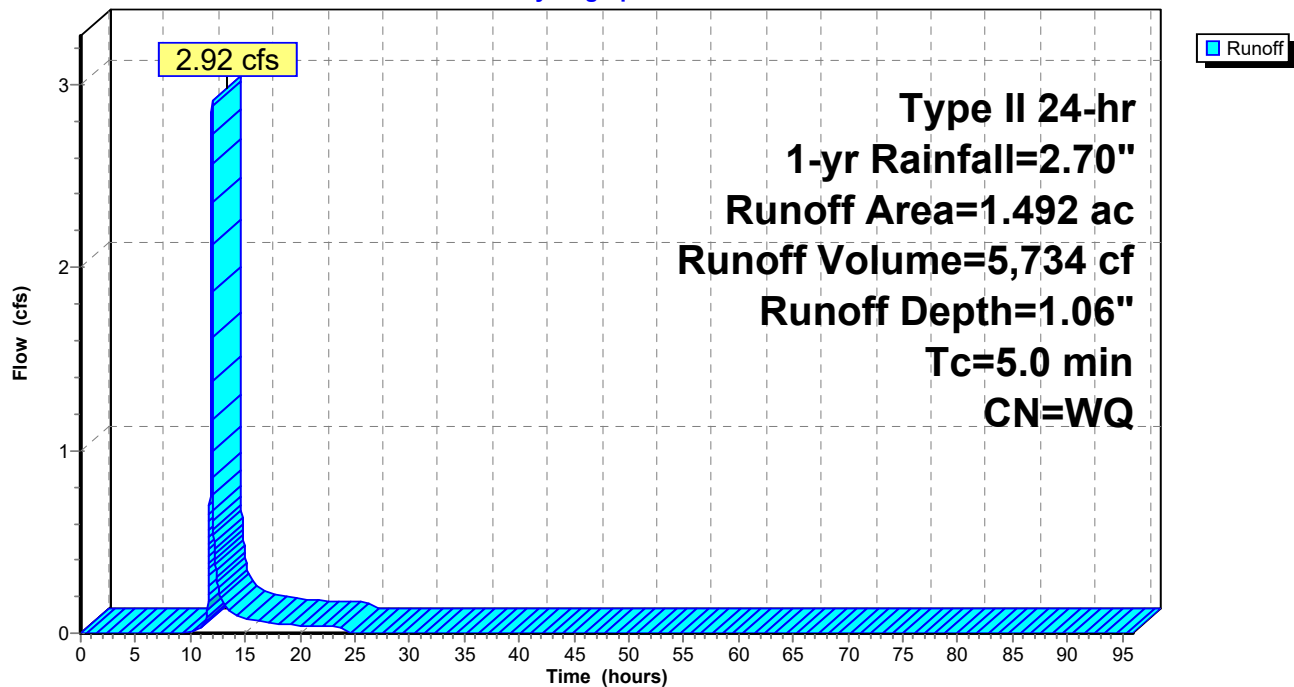
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.70"

Area (ac)	CN	Description
1.462	80	>75% Grass cover, Good, HSG D
0.030	98	Paved parking, HSG D
1.492		Weighted Average
1.462		97.99% Pervious Area
0.030		2.01% Impervious Area

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

Subcatchment 2B: Bypass to POA #2

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.70"

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Summary for Subcatchment 2S: DA-2

Runoff = 31.55 cfs @ 11.96 hrs, Volume= 72,025 cf, Depth= 2.45"
Routed to Pond 2P : SCM 2: Detention UGB

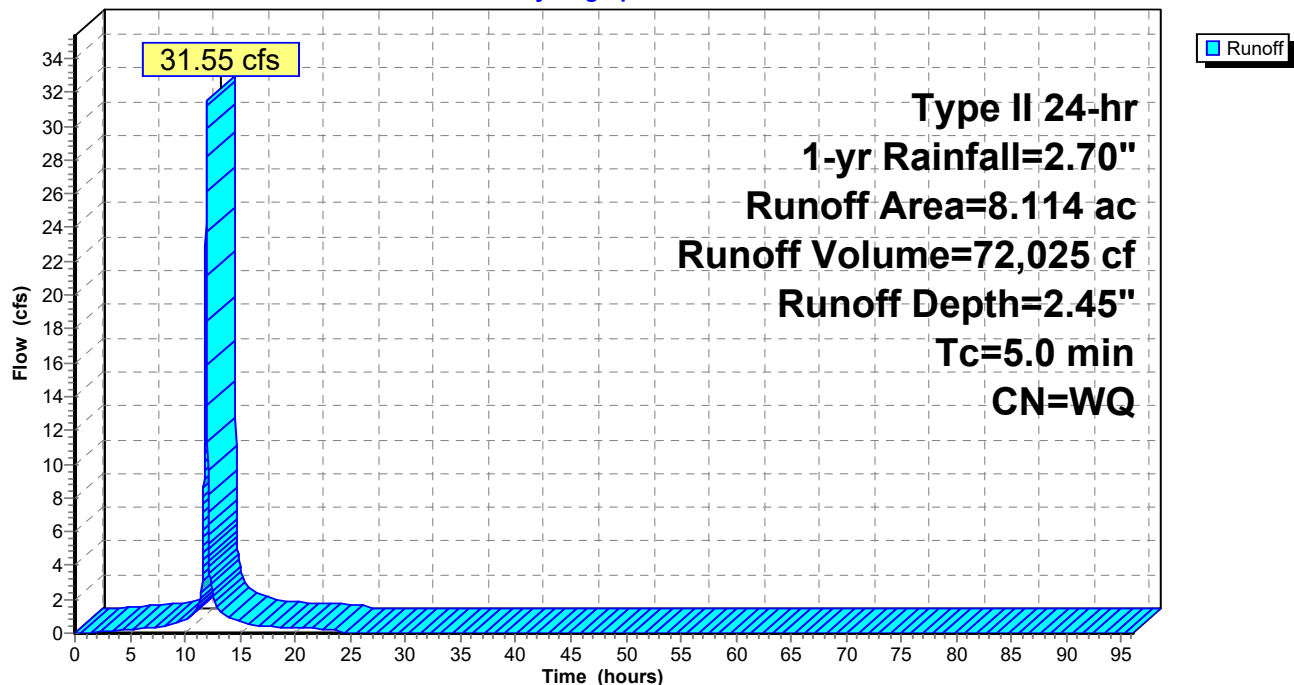
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.70"

Area (ac)	CN	Description
0.137	80	>75% Grass cover, Good, HSG D
7.977	98	Paved parking, HSG D
8.114		Weighted Average
0.137		1.69% Pervious Area
7.977		98.31% Impervious Area

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

Subcatchment 2S: DA-2

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.70"

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Summary for Subcatchment 3B: Bypass to POA #3

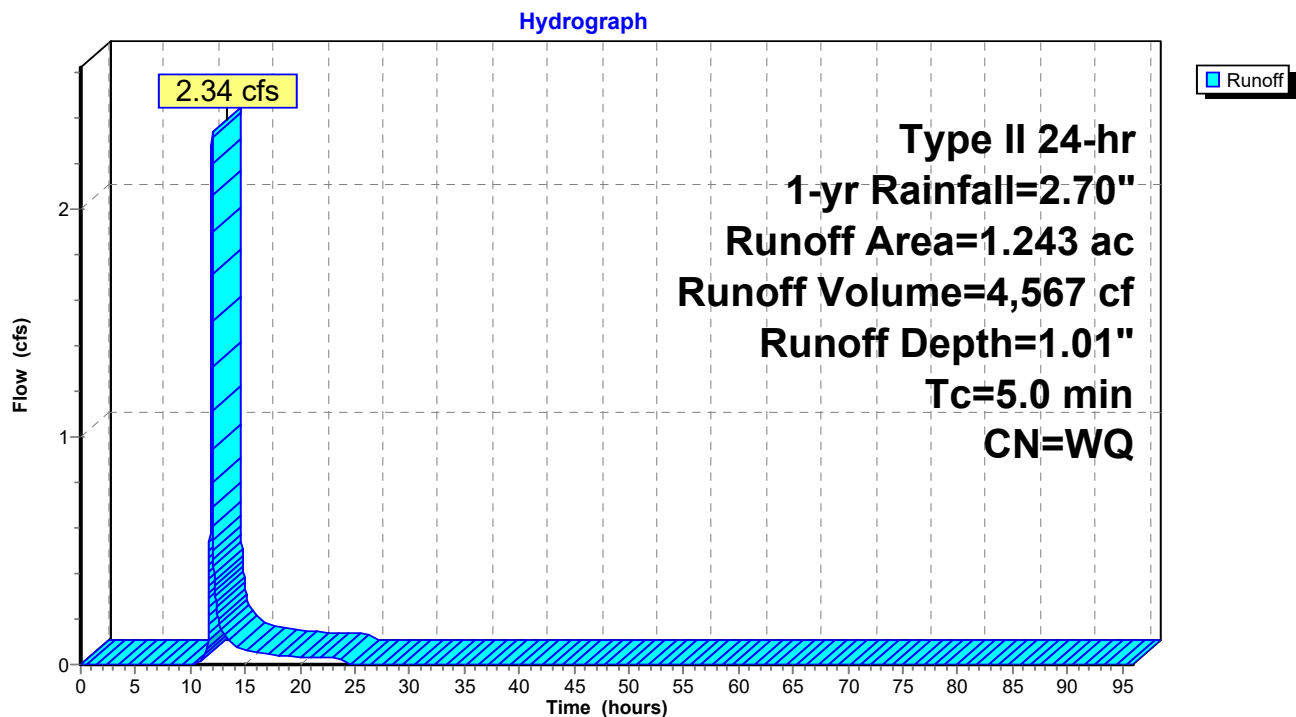
Runoff = 2.34 cfs @ 11.97 hrs, Volume= 4,567 cf, Depth= 1.01"
Routed to Link POA3 : POA #3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.70"

Area (ac)	CN	Description
0.072	74	>75% Grass cover, Good, HSG C
1.171	80	>75% Grass cover, Good, HSG D
1.243		Weighted Average
1.243		100.00% Pervious Area

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

Subcatchment 3B: Bypass to POA #3



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Type II 24-hr 1-yr Rainfall=2.70"

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Summary for Subcatchment 3S: DA-3

Runoff = 16.14 cfs @ 11.96 hrs, Volume= 36,530 cf, Depth= 2.28"
Routed to Pond 3P : SCM 3: Detention UGB

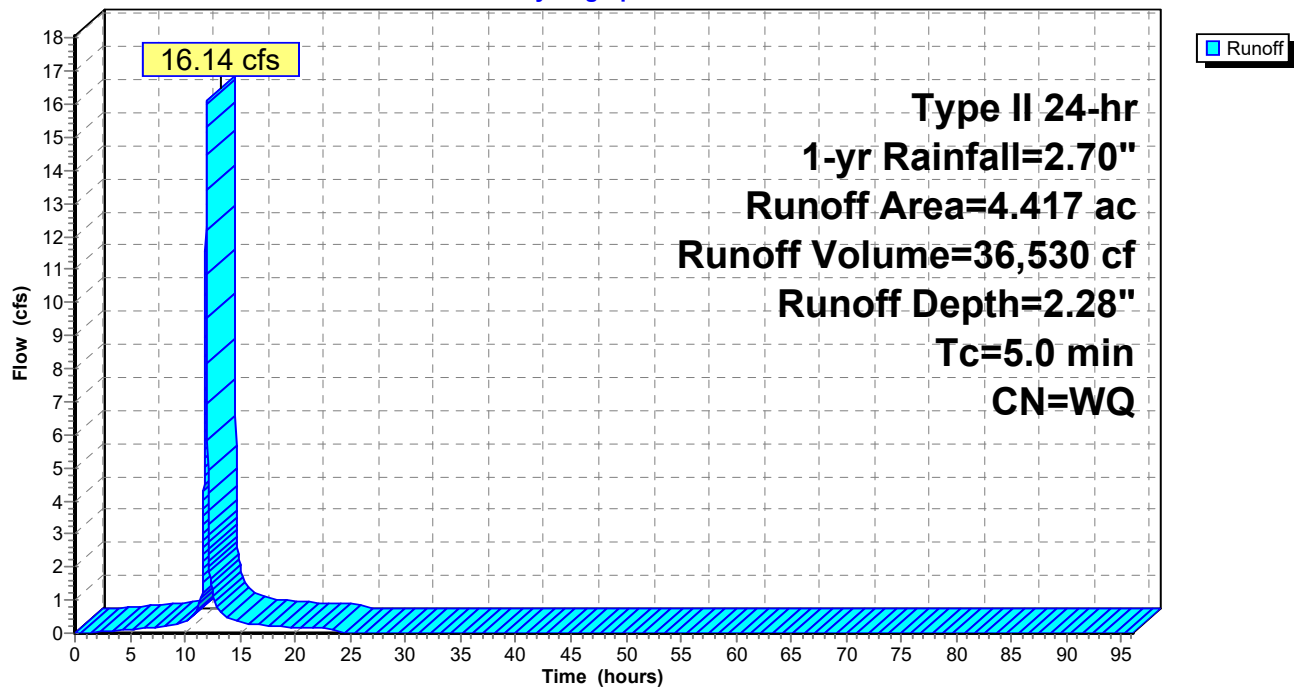
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.70"

Area (ac)	CN	Description
0.587	80	>75% Grass cover, Good, HSG D
3.830	98	Paved parking, HSG D
4.417		Weighted Average
0.587		13.29% Pervious Area
3.830		86.71% Impervious Area

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

Subcatchment 3S: DA-3

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.70"

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Summary for Subcatchment 4S: DA-4

Runoff = 13.44 cfs @ 11.96 hrs, Volume= 30,519 cf, Depth= 2.35"
Routed to Pond 4P : SCM 4: Detention UGB

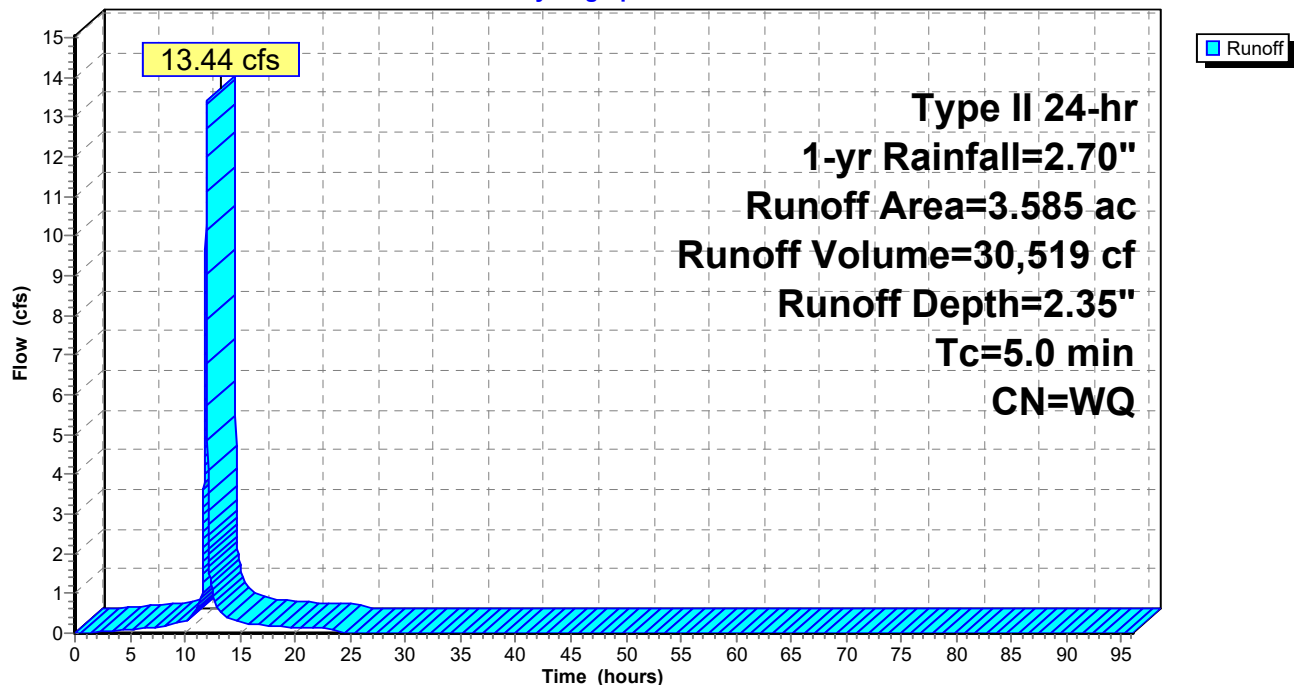
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.70"

Area (ac)	CN	Description
0.310	80	>75% Grass cover, Good, HSG D
3.275	98	Paved parking, HSG D
3.585		Weighted Average
0.310		8.65% Pervious Area
3.275		91.35% Impervious Area

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

Subcatchment 4S: DA-4

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.70"

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Summary for Subcatchment 5S: DA-5

Runoff = 10.53 cfs @ 11.96 hrs, Volume= 23,836 cf, Depth= 2.28"
Routed to Pond 5P : SCM 5: Detention UGB

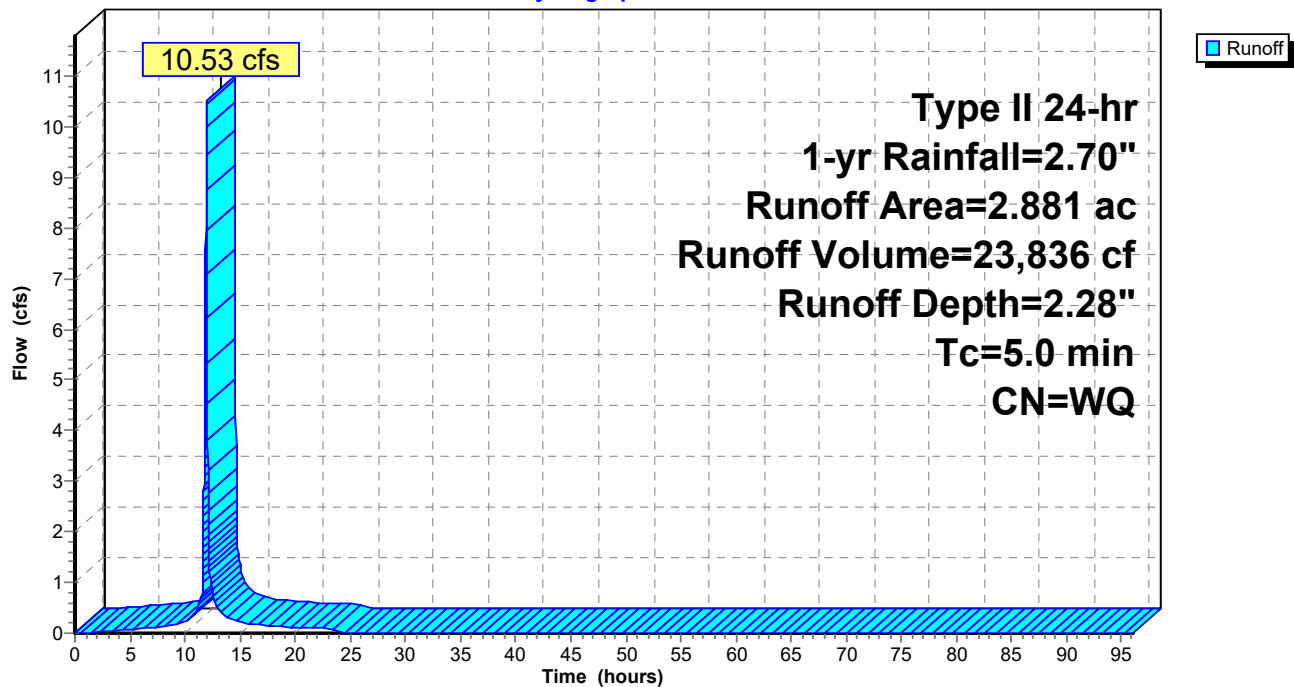
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.70"

Area (ac)	CN	Description
0.381	80	>75% Grass cover, Good, HSG D
2.500	98	Paved parking, HSG D
2.881		Weighted Average
0.381		13.22% Pervious Area
2.500		86.78% Impervious Area

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

Subcatchment 5S: DA-5

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.70"

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Summary for Subcatchment 6S: DA-6

Runoff = 11.29 cfs @ 11.96 hrs, Volume= 25,475 cf, Depth= 2.10"
Routed to Pond 6P : SCM 6: Detention UGB

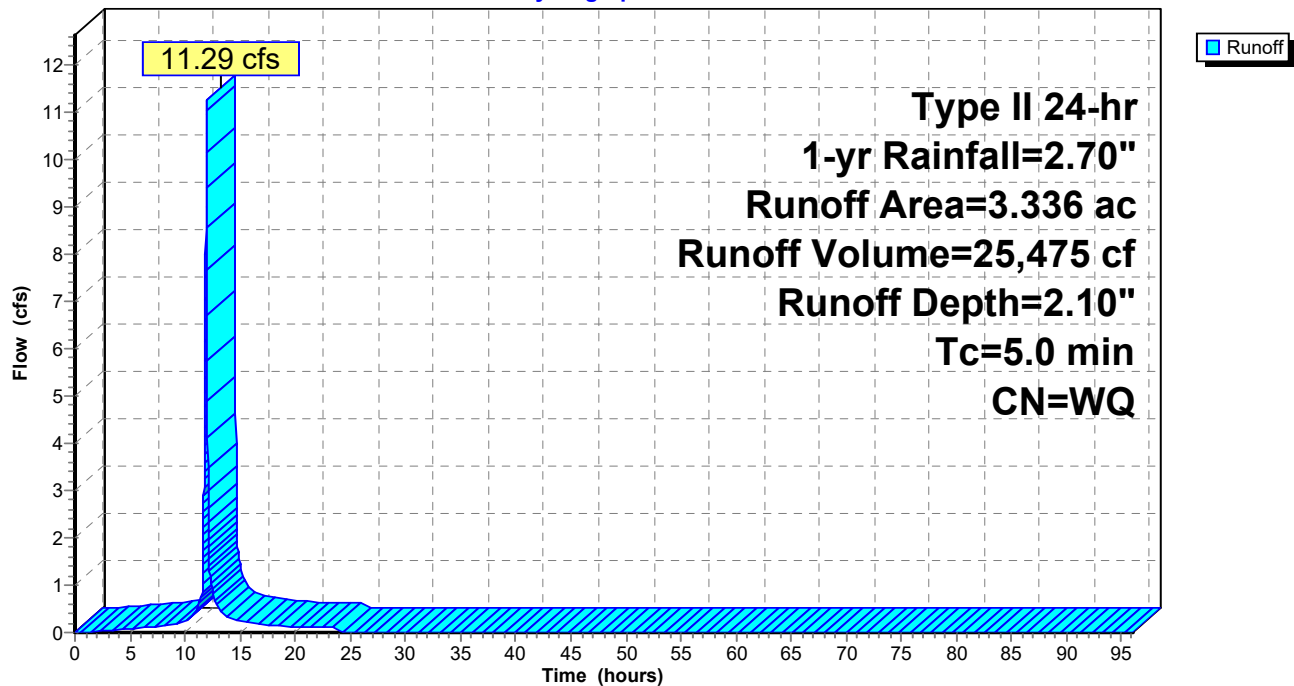
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.70"

Area (ac)	CN	Description
0.255	74	>75% Grass cover, Good, HSG C
0.084	70	Woods, Good, HSG C
0.328	80	>75% Grass cover, Good, HSG D
2.580	98	Paved parking, HSG D
0.089	77	Woods, Good, HSG D
3.336		Weighted Average
0.756		22.66% Pervious Area
2.580		77.34% Impervious Area

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

Subcatchment 6S: DA-6

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.70"

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Summary for Subcatchment 7S: DA-7

Runoff = 16.08 cfs @ 11.96 hrs, Volume= 36,565 cf, Depth= 2.37"
Routed to Pond 7P : SCM 7: Detention UGB

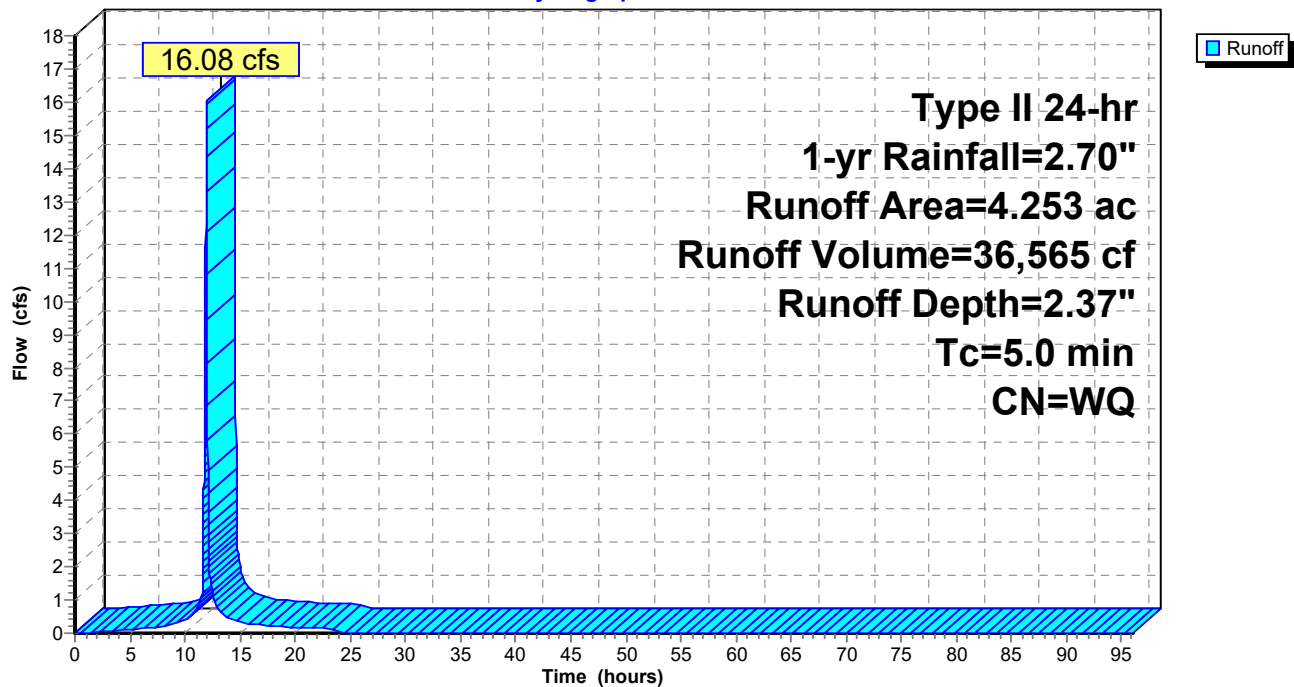
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.70"

Area (ac)	CN	Description
0.299	80	>75% Grass cover, Good, HSG D
3.954	98	Paved parking, HSG D
4.253		Weighted Average
0.299		7.03% Pervious Area
3.954		92.97% Impervious Area

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

Subcatchment 7S: DA-7

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.70"

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Summary for Subcatchment 8S: DA-8

Runoff = 8.37 cfs @ 11.97 hrs, Volume= 16,486 cf, Depth= 1.04"
Routed to Link POA1 : POA #1

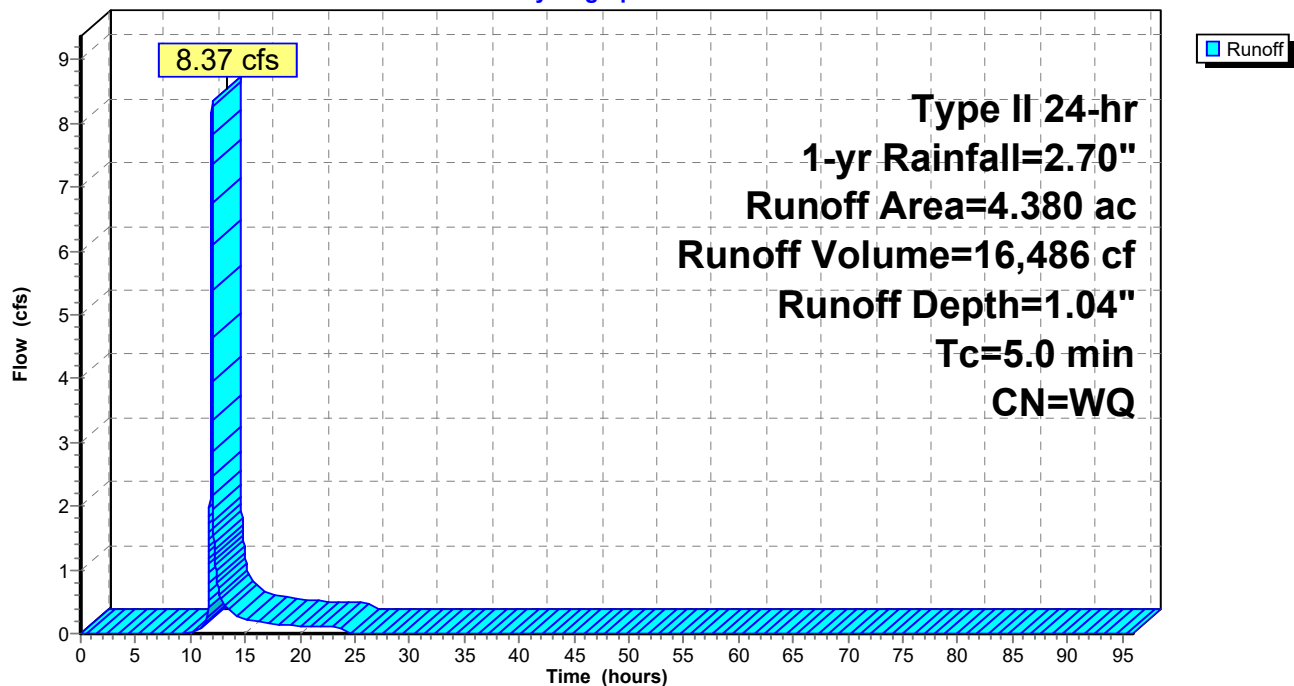
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.70"

Area (ac)	CN	Description
3.905	80	>75% Grass cover, Good, HSG D
0.374	74	>75% Grass cover, Good, HSG C
0.101	98	Paved parking, HSG D
4.380		Weighted Average
4.279		97.69% Pervious Area
0.101		2.31% Impervious Area

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

Subcatchment 8S: DA-8

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.70"

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Summary for Pond 1P: SCM 1: Infiltration AGB

Inflow Area = 293,551 sf, 72.10% Impervious, Inflow Depth = 2.06" for 1-yr event
 Inflow = 22.50 cfs @ 11.96 hrs, Volume= 50,341 cf
 Outflow = 0.23 cfs @ 19.87 hrs, Volume= 50,343 cf, Atten= 99%, Lag= 474.8 min
 Discarded = 0.23 cfs @ 19.87 hrs, Volume= 50,343 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Link POA1 : POA #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 275.34' @ 19.87 hrs Surf.Area= 27,559 sf Storage= 35,213 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 1,419.4 min (2,187.4 - 768.1)

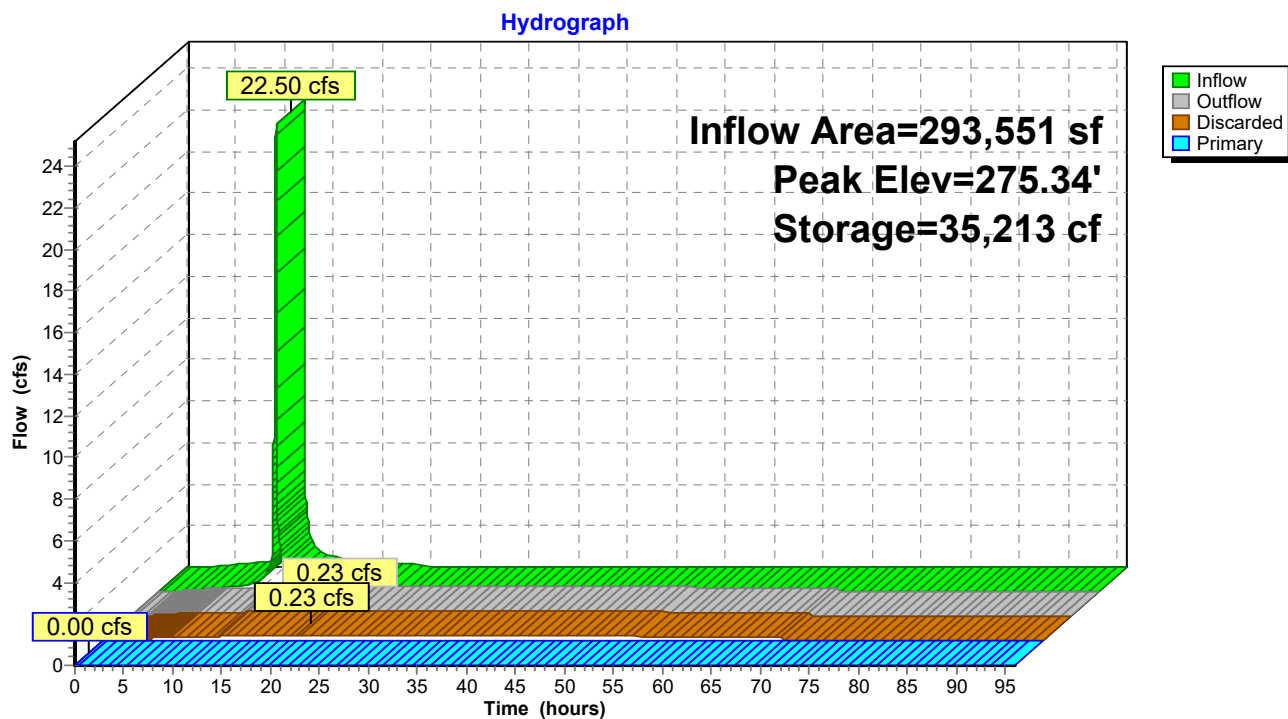
Volume	Invert	Avail.Storage	Storage Description
#1	274.00'	186,083 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
274.00	24,939	0	0
275.00	26,877	25,908	25,908
276.00	28,873	27,875	53,783
277.00	30,924	29,899	83,682
278.00	33,033	31,979	115,660
279.00	35,197	34,115	149,775
280.00	37,419	36,308	186,083

Device	Routing	Invert	Outlet Devices
#1	Discarded	274.00'	0.353 in/hr Exfiltration over Surface area
#2	Primary	274.00'	30.0" Round Culvert L= 52.0' Ke= 0.500 Inlet / Outlet Invert= 274.00' / 272.00' S= 0.0385 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#3	Device 2	275.75'	12.0" W x 3.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 2	276.25'	24.0" W x 6.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Device 2	277.00'	24.0" W x 4.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#6	Primary	277.50'	24.0" x 48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.23 cfs @ 19.87 hrs HW=275.34' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=274.00' TW=0.00' (Dynamic Tailwater)
 ↑ **2=Culvert** (Controls 0.00 cfs)
 ↑ **3=Orifice/Grate** (Controls 0.00 cfs)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)
 ↑ **5=Orifice/Grate** (Controls 0.00 cfs)
 ↑ **6=Orifice/Grate** (Controls 0.00 cfs)

Pond 1P: SCM 1: Infiltration AGB



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Type II 24-hr 1-yr Rainfall=2.70"

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Summary for Pond 2P: SCM 2: Detention UGB

Inflow Area = 353,446 sf, 98.31% Impervious, Inflow Depth = 2.45" for 1-yr event
 Inflow = 31.55 cfs @ 11.96 hrs, Volume= 72,025 cf
 Outflow = 5.30 cfs @ 12.12 hrs, Volume= 71,887 cf, Atten= 83%, Lag= 9.9 min
 Primary = 5.30 cfs @ 12.12 hrs, Volume= 71,887 cf
 Routed to Link POA1 : POA #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 270.36' @ 12.12 hrs Surf.Area= 30,988 sf Storage= 32,565 cf

Plug-Flow detention time= 146.0 min calculated for 71,887 cf (100% of inflow)
 Center-of-Mass det. time= 144.7 min (900.7 - 756.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	268.75'	41,546 cf	63.75'W x 486.09'L x 5.50'H Field A 170,435 cf Overall - 66,569 cf Embedded = 103,866 cf x 40.0% Voids
#2A	269.50'	66,569 cf	ADS_StormTech MC-3500 d +Capx 603 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 603 Chambers in 9 Rows Cap Storage= 14.9 cf x 2 x 9 rows = 268.2 cf
		108,116 cf	Total Available Storage

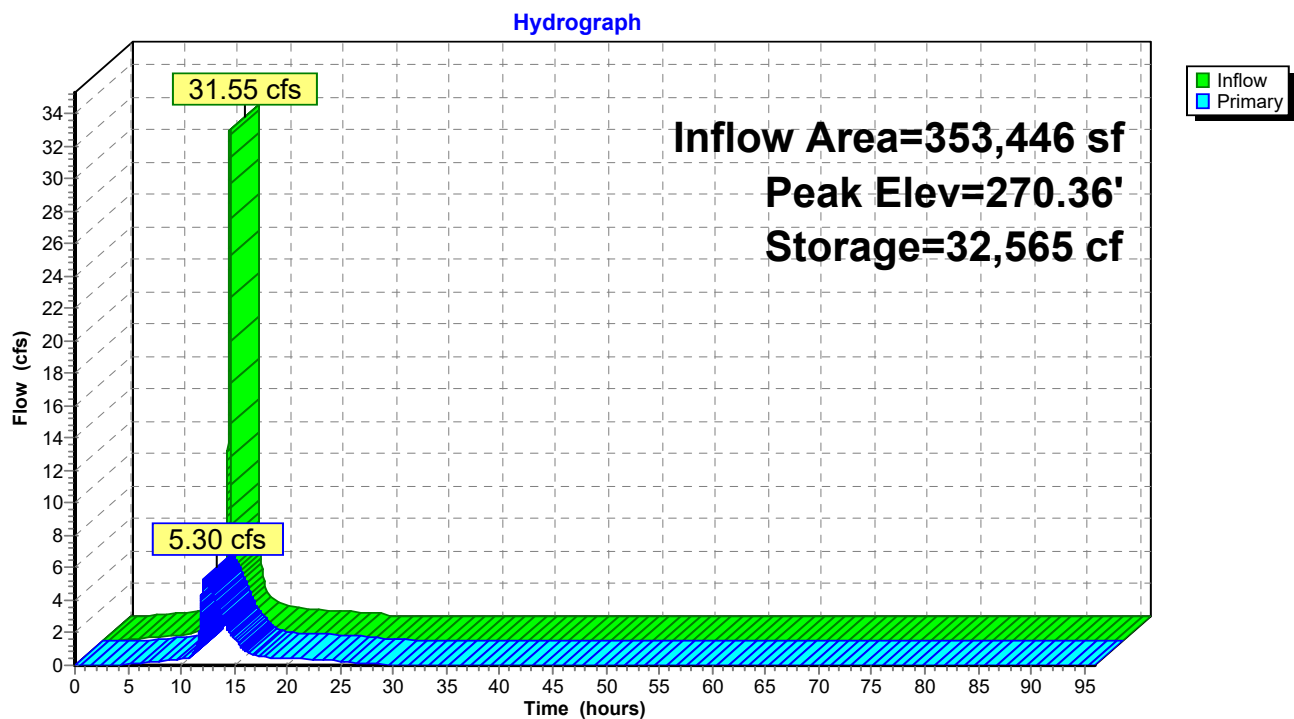
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	268.75'	36.0" Round Outlet Pipe L= 112.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 268.75' / 268.25' S= 0.0045 ' / Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 7.07 sf
#2	Device 1	268.75'	3.0" Vert. Orifice X 3.00 C= 0.600 Limited to weir flow at low heads
#3	Device 1	269.25'	24.0" W x 6.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 1	270.50'	30.0" W x 12.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#5	Device 1	271.75'	42.0" W x 6.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#6	Device 1	272.50'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=5.30 cfs @ 12.12 hrs HW=270.36' TW=0.00' (Dynamic Tailwater)

- 1=Outlet Pipe (Passes 5.30 cfs of 12.19 cfs potential flow)
- 2=Orifice (Orifice Controls 0.86 cfs @ 5.86 fps)
- 3=Orifice (Orifice Controls 4.44 cfs @ 4.44 fps)
- 4=Orifice (Controls 0.00 cfs)
- 5=Orifice (Controls 0.00 cfs)
- 6=Sharp-Crested Rectangular Weir(Controls 0.00 cfs)

Pond 2P: SCM 2: Detention UGB



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Type II 24-hr 1-yr Rainfall=2.70"

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Summary for Pond 3P: SCM 3: Detention UGB

Inflow Area = 192,405 sf, 86.71% Impervious, Inflow Depth = 2.28" for 1-yr event
 Inflow = 16.14 cfs @ 11.96 hrs, Volume= 36,530 cf
 Outflow = 4.31 cfs @ 12.08 hrs, Volume= 36,491 cf, Atten= 73%, Lag= 7.4 min
 Primary = 4.31 cfs @ 12.08 hrs, Volume= 36,491 cf
 Routed to Link POA1 : POA #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 273.29' @ 12.08 hrs Surf.Area= 16,811 sf Storage= 14,681 cf

Plug-Flow detention time= 100.7 min calculated for 36,487 cf (100% of inflow)
 Center-of-Mass det. time= 100.3 min (861.3 - 760.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	272.00'	15,071 cf	46.75'W x 359.60'L x 3.75'H Field A 63,042 cf Overall - 25,365 cf Embedded = 37,678 cf x 40.0% Voids
#2A	272.50'	25,365 cf	ADS_StormTech SC-800 +Cap x 500 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 500 Chambers in 10 Rows Cap Storage= 3.4 cf x 2 x 10 rows = 68.4 cf
		40,436 cf	Total Available Storage

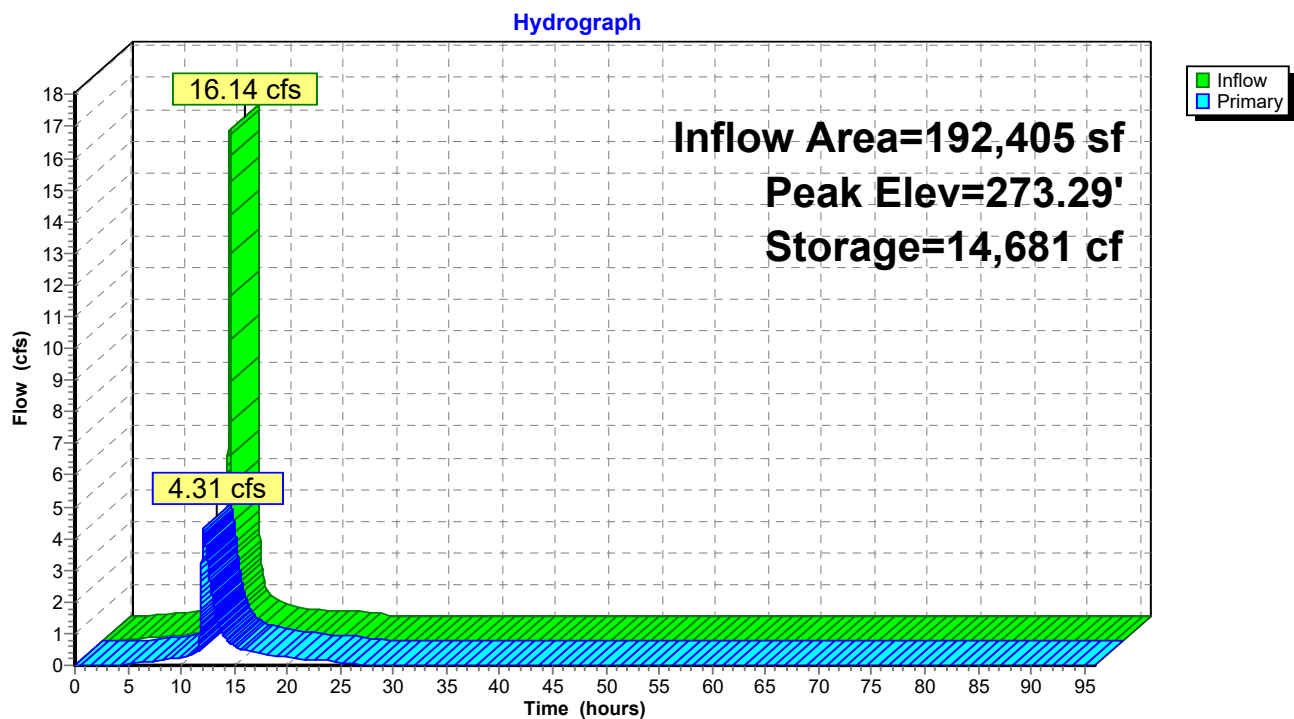
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	272.00'	36.0" Round Outlet Pipe L= 628.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 272.00' / 268.25' S= 0.0060 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 7.07 sf
#2	Device 1	272.00'	3.0" Vert. Orifice X 3.00 C= 0.600 Limited to weir flow at low heads
#3	Device 1	272.50'	24.0" W x 6.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 1	273.25'	30.0" W x 12.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#5	Device 1	274.50'	42.0" W x 6.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#6	Device 1	275.25'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=4.31 cfs @ 12.08 hrs HW=273.29' TW=0.00' (Dynamic Tailwater)

- 1=Outlet Pipe (Passes 4.31 cfs of 8.83 cfs potential flow)
 2=Orifice (Orifice Controls 0.76 cfs @ 5.19 fps)
 3=Orifice (Orifice Controls 3.49 cfs @ 3.49 fps)
 4=Orifice (Orifice Controls 0.06 cfs @ 0.61 fps)
 5=Orifice (Controls 0.00 cfs)
 6=Sharp-Crested Rectangular Weir(Controls 0.00 cfs)

Pond 3P: SCM 3: Detention UGB



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Type II 24-hr 1-yr Rainfall=2.70"

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Summary for Pond 4P: SCM 4: Detention UGB

Inflow Area = 156,163 sf, 91.35% Impervious, Inflow Depth = 2.35" for 1-yr event
 Inflow = 13.44 cfs @ 11.96 hrs, Volume= 30,519 cf
 Outflow = 4.11 cfs @ 12.07 hrs, Volume= 30,477 cf, Atten= 69%, Lag= 6.8 min
 Primary = 4.11 cfs @ 12.07 hrs, Volume= 30,477 cf
 Routed to Link POA1 : POA #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 274.02' @ 12.07 hrs Surf.Area= 20,685 sf Storage= 11,096 cf

Plug-Flow detention time= 95.8 min calculated for 30,477 cf (100% of inflow)
 Center-of-Mass det. time= 94.9 min (853.8 - 758.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	273.00'	27,875 cf	49.92'W x 414.39'L x 5.50'H Field A 113,767 cf Overall - 44,079 cf Embedded = 69,688 cf x 40.0% Voids
#2A	273.75'	44,079 cf	ADS_StormTech MC-3500 d +Cap x 399 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 399 Chambers in 7 Rows Cap Storage= 14.9 cf x 2 x 7 rows = 208.6 cf
		71,955 cf	Total Available Storage

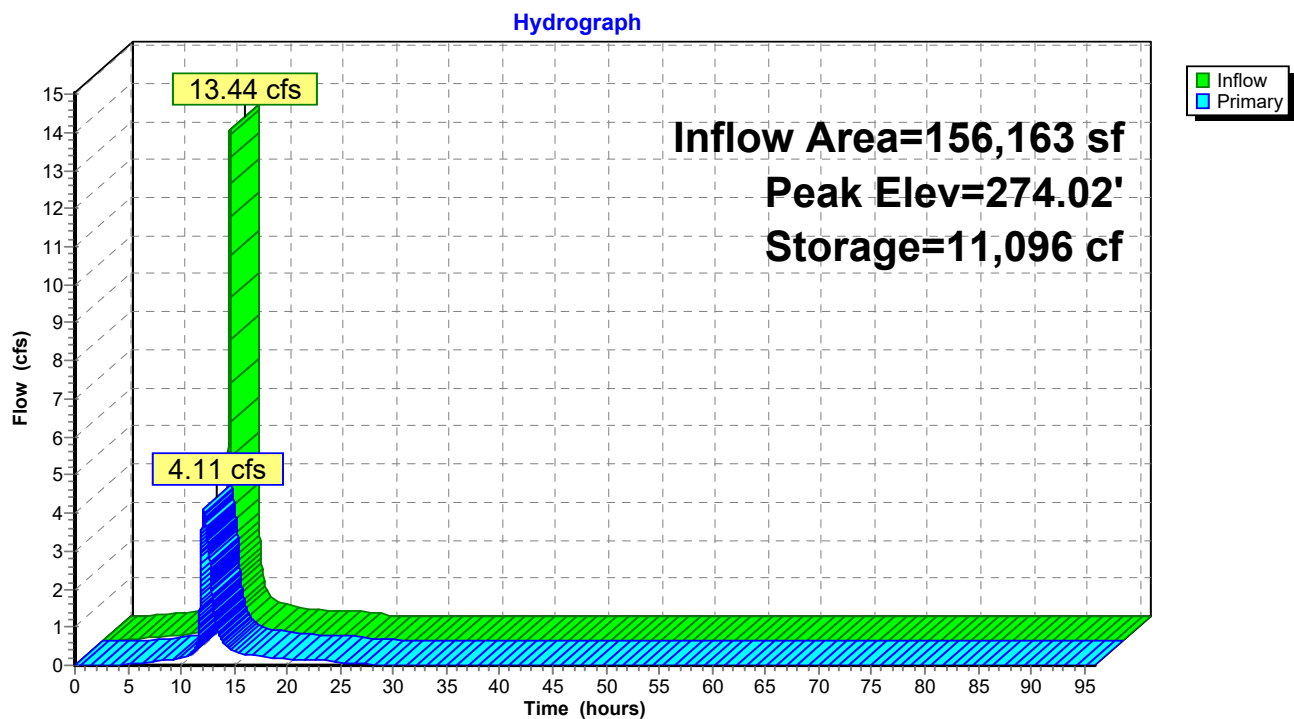
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	273.00'	36.0" Round Outlet Pipe L= 105.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 273.00' / 269.00' S= 0.0381 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 7.07 sf
#2	Device 1	273.00'	3.0" Vert. Orifice X 3.00 C= 0.600 Limited to weir flow at low heads
#3	Device 1	273.25'	24.0" W x 6.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 1	274.00'	30.0" W x 12.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#5	Device 1	274.75'	42.0" W x 4.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#6	Device 1	275.09'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=4.11 cfs @ 12.07 hrs HW=274.02' TW=0.00' (Dynamic Tailwater)

- 1=Outlet Pipe (Passes 4.11 cfs of 5.72 cfs potential flow)
 2=Orifice (Orifice Controls 0.67 cfs @ 4.55 fps)
 3=Orifice (Orifice Controls 3.43 cfs @ 3.43 fps)
 4=Orifice (Orifice Controls 0.02 cfs @ 0.42 fps)
 5=Orifice (Controls 0.00 cfs)
 6=Sharp-Crested Rectangular Weir(Controls 0.00 cfs)

Pond 4P: SCM 4: Detention UGB



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Summary for Pond 5P: SCM 5: Detention UGB

Inflow Area = 125,496 sf, 86.78% Impervious, Inflow Depth = 2.28" for 1-yr event
 Inflow = 10.53 cfs @ 11.96 hrs, Volume= 23,836 cf
 Outflow = 4.48 cfs @ 12.05 hrs, Volume= 23,827 cf, Atten= 57%, Lag= 5.6 min
 Primary = 4.48 cfs @ 12.05 hrs, Volume= 23,827 cf
 Routed to Link POA1 : POA #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 277.81' @ 12.05 hrs Surf.Area= 8,494 sf Storage= 7,574 cf

Plug-Flow detention time= 53.9 min calculated for 23,824 cf (100% of inflow)
 Center-of-Mass det. time= 54.0 min (814.9 - 760.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	276.50'	7,654 cf	46.75'W x 181.68'L x 3.75'H Field A 31,851 cf Overall - 12,716 cf Embedded = 19,135 cf x 40.0% Voids
#2A	277.00'	12,716 cf	ADS_StormTech SC-800 +Cap x 250 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 250 Chambers in 10 Rows Cap Storage= 3.4 cf x 2 x 10 rows = 68.4 cf
			20,370 cf Total Available Storage

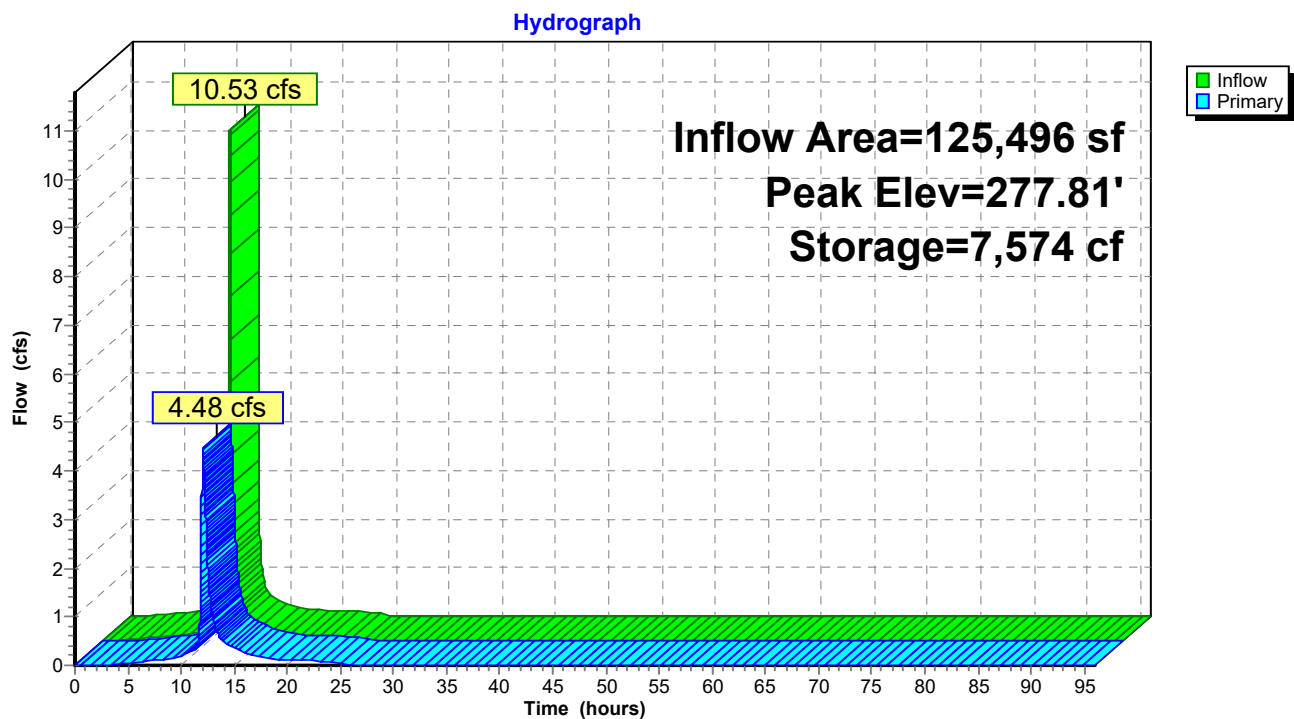
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	276.50'	36.0" Round Outlet Pipe L= 900.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 276.50' / 269.00' S= 0.0083 ' / Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 7.07 sf
#2	Device 1	276.50'	3.0" Vert. Orifice X 3.00 C= 0.600 Limited to weir flow at low heads
#3	Device 1	277.00'	24.0" W x 6.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 1	277.75'	30.0" W x 12.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#5	Device 1	279.00'	36.0" W x 4.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#6	Device 1	279.60'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=4.48 cfs @ 12.05 hrs HW=277.81' TW=0.00' (Dynamic Tailwater)

- 1=Outlet Pipe (Passes 4.48 cfs of 9.15 cfs potential flow)
 2=Orifice (Orifice Controls 0.77 cfs @ 5.25 fps)
 3=Orifice (Orifice Controls 3.58 cfs @ 3.58 fps)
 4=Orifice (Orifice Controls 0.12 cfs @ 0.80 fps)
 5=Orifice (Controls 0.00 cfs)
 6=Sharp-Crested Rectangular Weir(Controls 0.00 cfs)

Pond 5P: SCM 5: Detention UGB



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Summary for Pond 6P: SCM 6: Detention UGB

Inflow Area = 145,316 sf, 77.34% Impervious, Inflow Depth = 2.10" for 1-yr event
 Inflow = 11.29 cfs @ 11.96 hrs, Volume= 25,475 cf
 Outflow = 3.81 cfs @ 12.06 hrs, Volume= 25,459 cf, Atten= 66%, Lag= 6.4 min
 Primary = 3.81 cfs @ 12.06 hrs, Volume= 25,459 cf
 Routed to Link POA1 : POA #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 281.17' @ 12.06 hrs Surf.Area= 11,821 sf Storage= 9,188 cf

Plug-Flow detention time= 75.9 min calculated for 25,457 cf (100% of inflow)
 Center-of-Mass det. time= 75.9 min (840.7 - 764.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	280.00'	10,621 cf	46.75'W x 252.85'L x 3.75'H Field A 44,328 cf Overall - 17,776 cf Embedded = 26,552 cf x 40.0% Voids
#2A	280.50'	17,776 cf	ADS_StormTech SC-800 +Cap x 350 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 350 Chambers in 10 Rows Cap Storage= 3.4 cf x 2 x 10 rows = 68.4 cf
		28,397 cf	Total Available Storage

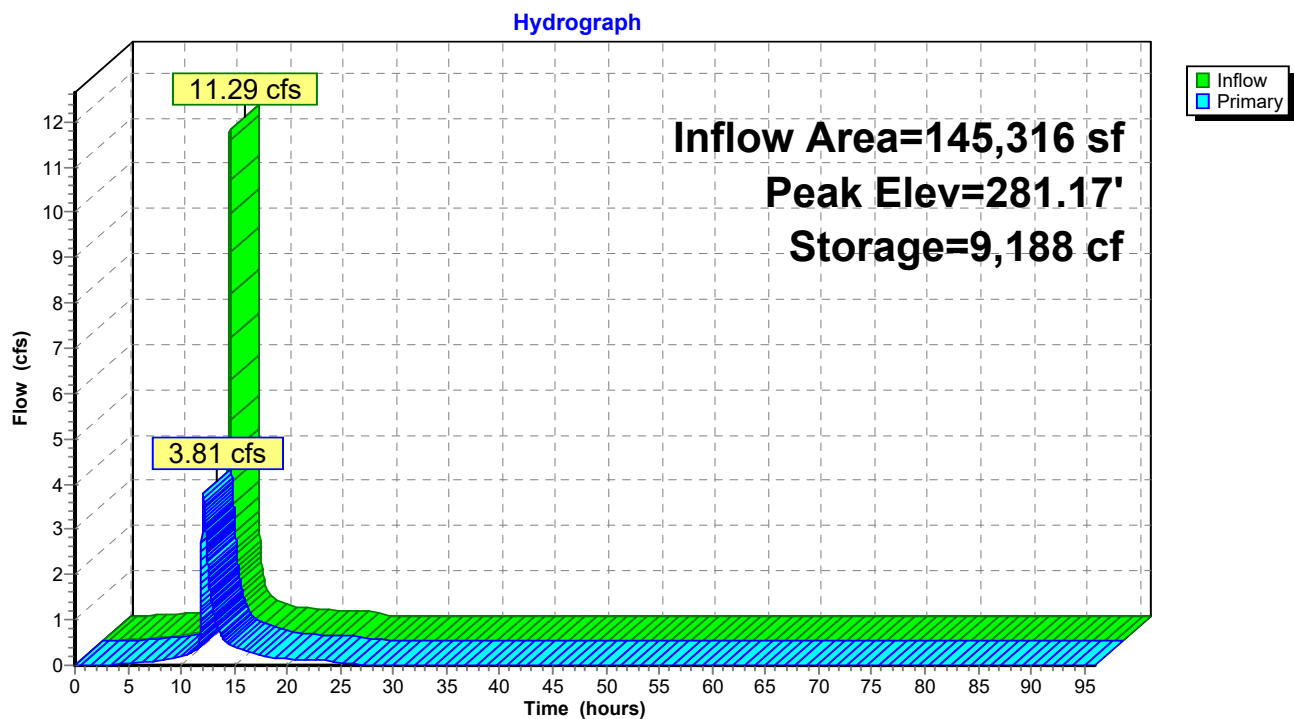
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	280.00'	36.0" Round Outlet Pipe L= 800.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 280.00' / 271.00' S= 0.0112 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 7.07 sf
#2	Device 1	280.00'	3.0" Vert. Orifice X 3.00 C= 0.600 Limited to weir flow at low heads
#3	Device 1	280.50'	24.0" W x 6.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 1	281.25'	30.0" W x 12.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#5	Device 1	282.50'	42.0" W x 3.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#6	Device 1	283.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=3.81 cfs @ 12.06 hrs HW=281.17' TW=0.00' (Dynamic Tailwater)

- 1=Outlet Pipe (Passes 3.81 cfs of 7.45 cfs potential flow)
- 2=Orifice (Orifice Controls 0.73 cfs @ 4.93 fps)
- 3=Orifice (Orifice Controls 3.08 cfs @ 3.08 fps)
- 4=Orifice (Controls 0.00 cfs)
- 5=Orifice (Controls 0.00 cfs)
- 6=Sharp-Crested Rectangular Weir(Controls 0.00 cfs)

Pond 6P: SCM 6: Detention UGB



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Summary for Pond 7P: SCM 7: Detention UGB

Inflow Area = 185,261 sf, 92.97% Impervious, Inflow Depth = 2.37" for 1-yr event
 Inflow = 16.08 cfs @ 11.96 hrs, Volume= 36,565 cf
 Outflow = 4.45 cfs @ 12.08 hrs, Volume= 36,533 cf, Atten= 72%, Lag= 7.2 min
 Primary = 4.45 cfs @ 12.08 hrs, Volume= 36,533 cf
 Routed to Link POA1 : POA #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 274.31' @ 12.08 hrs Surf.Area= 18,180 sf Storage= 14,372 cf

Plug-Flow detention time= 97.4 min calculated for 36,529 cf (100% of inflow)
 Center-of-Mass det. time= 97.2 min (855.4 - 758.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	273.00'	24,519 cf	49.92'W x 364.20'L x 5.50'H Field A 99,988 cf Overall - 38,692 cf Embedded = 61,296 cf x 40.0% Voids
#2A	273.75'	38,692 cf	ADS_StormTech MC-3500 d +Capx 350 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 350 Chambers in 7 Rows Cap Storage= 14.9 cf x 2 x 7 rows = 208.6 cf
		63,210 cf	Total Available Storage

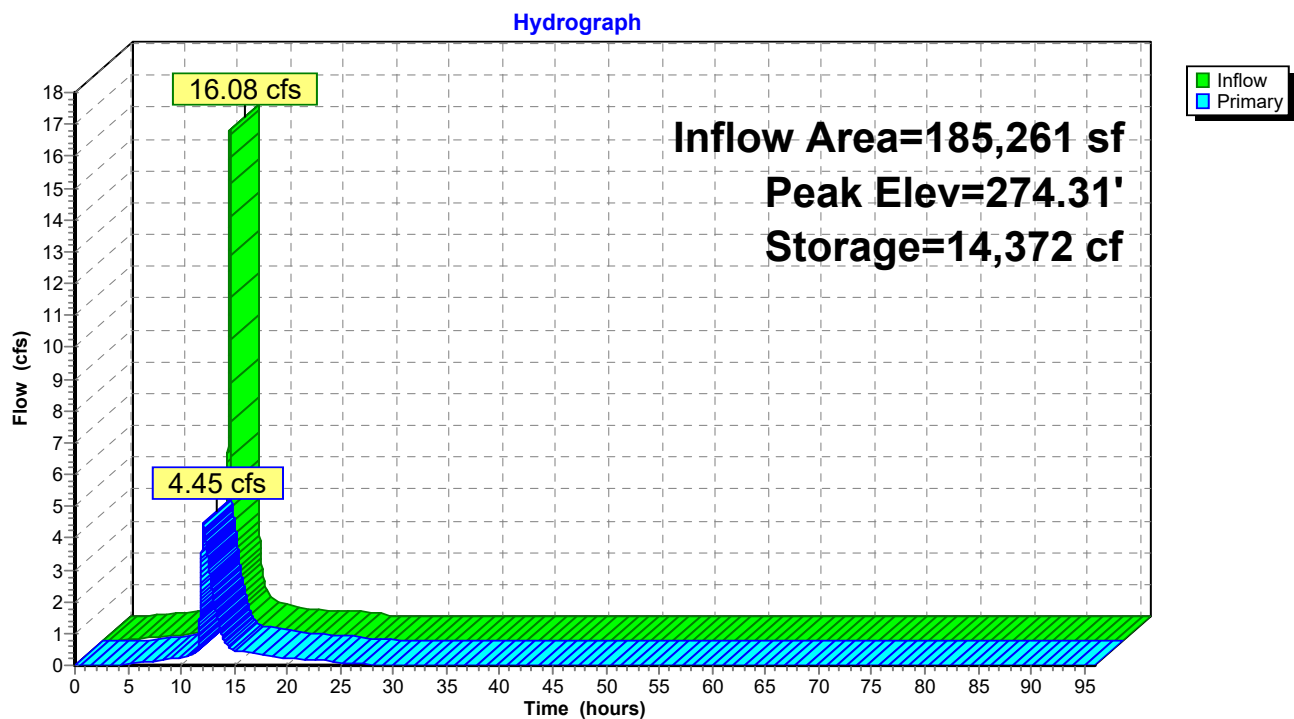
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	273.00'	36.0" Round Outlet Pipe L= 105.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 273.00' / 271.00' S= 0.0190 ' /' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 7.07 sf
#2	Device 1	273.00'	3.0" Vert. Orifice X 3.00 C= 0.600 Limited to weir flow at low heads
#3	Device 1	273.50'	24.0" W x 6.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 1	274.25'	30.0" W x 12.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#5	Device 1	275.50'	42.0" W x 3.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#6	Device 1	276.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=4.45 cfs @ 12.08 hrs HW=274.31' TW=0.00' (Dynamic Tailwater)

- 1=Outlet Pipe (Passes 4.45 cfs of 9.10 cfs potential flow)
- 2=Orifice (Orifice Controls 0.77 cfs @ 5.24 fps)
- 3=Orifice (Orifice Controls 3.56 cfs @ 3.56 fps)
- 4=Orifice (Orifice Controls 0.11 cfs @ 0.77 fps)
- 5=Orifice (Controls 0.00 cfs)
- 6=Sharp-Crested Rectangular Weir(Controls 0.00 cfs)

Pond 7P: SCM 7: Detention UGB



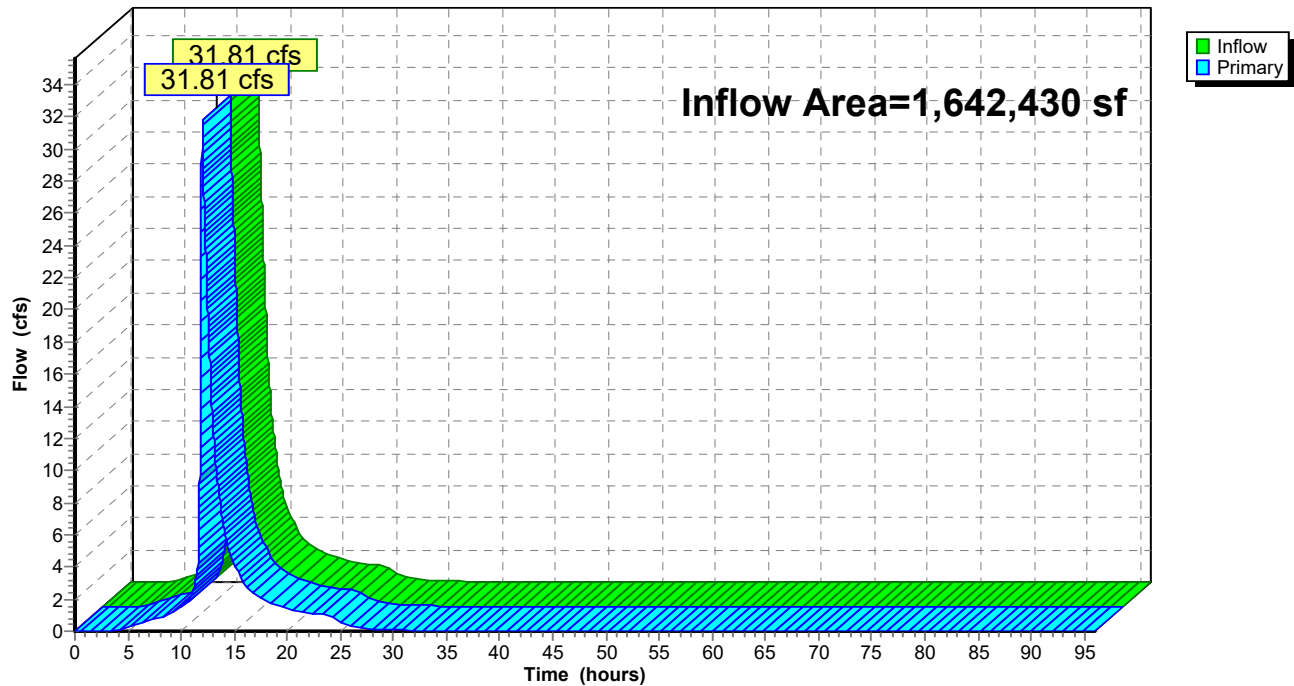
Summary for Link POA1: POA #1

Inflow Area = 1,642,430 sf, 77.11% Impervious, Inflow Depth = 1.76" for 1-yr event
Inflow = 31.81 cfs @ 12.00 hrs, Volume= 241,160 cf
Primary = 31.81 cfs @ 12.00 hrs, Volume= 241,160 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA1: POA #1

Hydrograph



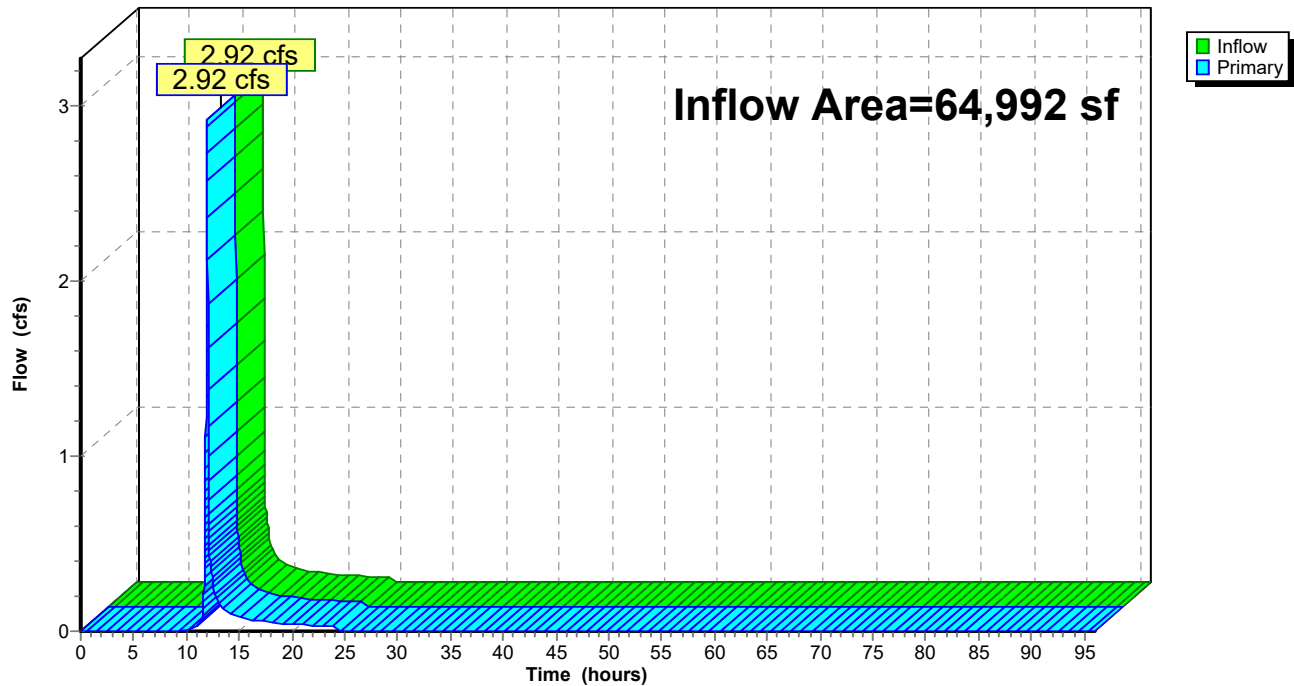
Summary for Link POA2: POA #2

Inflow Area = 64,992 sf, 2.01% Impervious, Inflow Depth = 1.06" for 1-yr event
Inflow = 2.92 cfs @ 11.97 hrs, Volume= 5,734 cf
Primary = 2.92 cfs @ 11.97 hrs, Volume= 5,734 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA2: POA #2

Hydrograph



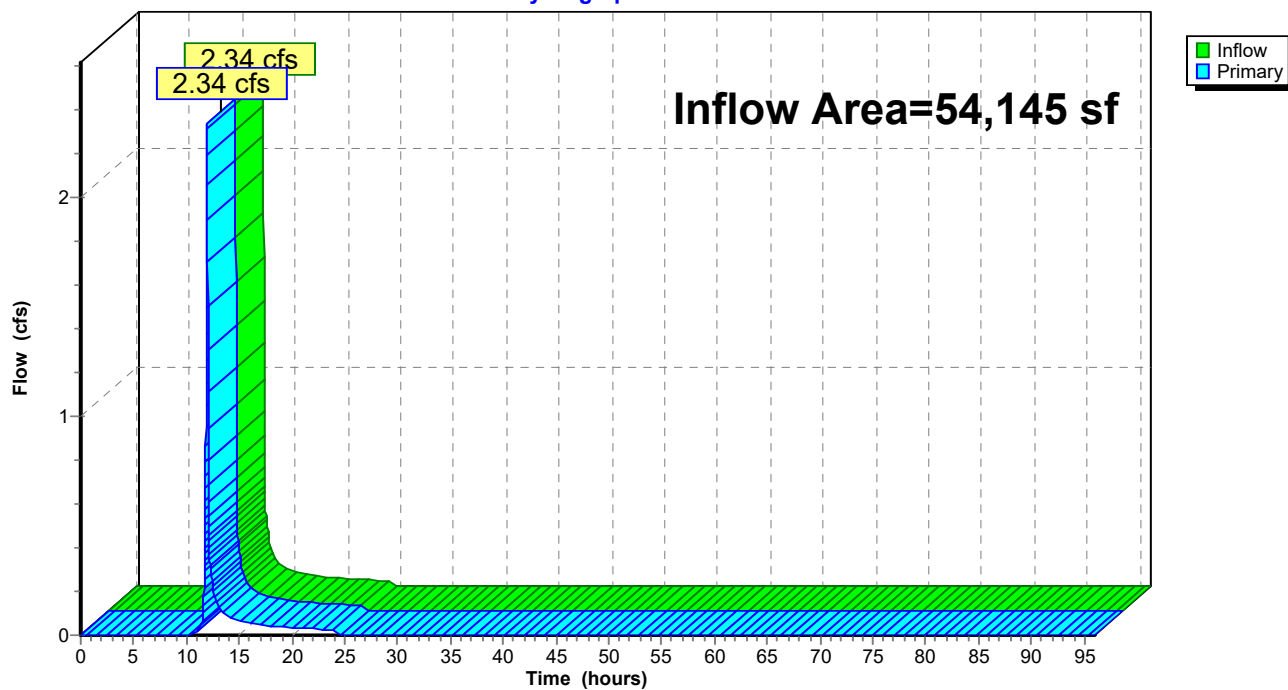
Summary for Link POA3: POA #3

Inflow Area = 54,145 sf, 0.00% Impervious, Inflow Depth = 1.01" for 1-yr event
Inflow = 2.34 cfs @ 11.97 hrs, Volume= 4,567 cf
Primary = 2.34 cfs @ 11.97 hrs, Volume= 4,567 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA3: POA #3

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.24"

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Time span=0.00-96.00 hrs, dt=0.01 hrs, 9601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: DA-1	Runoff Area=6.739 ac 72.10% Impervious Runoff Depth=2.56" Tc=5.0 min CN=WQ Runoff=27.81 cfs 62,524 cf
Subcatchment2B: Bypass to POA #2	Runoff Area=1.492 ac 2.01% Impervious Runoff Depth=1.46" Tc=5.0 min CN=WQ Runoff=4.04 cfs 7,931 cf
Subcatchment2S: DA-2	Runoff Area=8.114 ac 98.31% Impervious Runoff Depth=2.98" Tc=5.0 min CN=WQ Runoff=38.09 cfs 87,795 cf
Subcatchment3B: Bypass to POA #3	Runoff Area=1.243 ac 0.00% Impervious Runoff Depth=1.41" Tc=5.0 min CN=WQ Runoff=3.27 cfs 6,368 cf
Subcatchment3S: DA-3	Runoff Area=4.417 ac 86.71% Impervious Runoff Depth=2.80" Tc=5.0 min CN=WQ Runoff=19.67 cfs 44,864 cf
Subcatchment4S: DA-4	Runoff Area=3.585 ac 91.35% Impervious Runoff Depth=2.87" Tc=5.0 min CN=WQ Runoff=16.31 cfs 37,364 cf
Subcatchment5S: DA-5	Runoff Area=2.881 ac 86.78% Impervious Runoff Depth=2.80" Tc=5.0 min CN=WQ Runoff=12.83 cfs 29,273 cf
Subcatchment6S: DA-6	Runoff Area=3.336 ac 77.34% Impervious Runoff Depth=2.60" Tc=5.0 min CN=WQ Runoff=13.90 cfs 31,516 cf
Subcatchment7S: DA-7	Runoff Area=4.253 ac 92.97% Impervious Runoff Depth=2.90" Tc=5.0 min CN=WQ Runoff=19.49 cfs 44,719 cf
Subcatchment8S: DA-8	Runoff Area=4.380 ac 2.31% Impervious Runoff Depth=1.44" Tc=5.0 min CN=WQ Runoff=11.63 cfs 22,856 cf
Pond 1P: SCM 1: Infiltration AGB	Peak Elev=275.73' Storage=46,163 cf Inflow=27.81 cfs 62,524 cf Discarded=0.23 cfs 62,526 cf Primary=0.00 cfs 0 cf Outflow=0.23 cfs 62,526 cf
Pond 2P: SCM 2: Detention UGB	Peak Elev=270.60' Storage=39,056 cf Inflow=38.09 cfs 87,795 cf Outflow=6.23 cfs 87,656 cf
Pond 3P: SCM 3: Detention UGB	Peak Elev=273.50' Storage=17,575 cf Inflow=19.67 cfs 44,864 cf Outflow=5.95 cfs 44,825 cf
Pond 4P: SCM 4: Detention UGB	Peak Elev=274.14' Storage=13,314 cf Inflow=16.31 cfs 37,364 cf Outflow=4.96 cfs 37,323 cf
Pond 5P: SCM 5: Detention UGB	Peak Elev=278.01' Storage=8,951 cf Inflow=12.83 cfs 29,273 cf Outflow=6.09 cfs 29,264 cf
Pond 6P: SCM 6: Detention UGB	Peak Elev=281.37' Storage=11,121 cf Inflow=13.90 cfs 31,516 cf Outflow=4.89 cfs 31,500 cf

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Pond 7P: SCM 7: Detention UGBPeak Elev=274.48' Storage=17,138 cf Inflow=19.49 cfs 44,719 cf
Outflow=5.84 cfs 44,687 cf**Link POA1: POA #1**Inflow=40.51 cfs 298,112 cf
Primary=40.51 cfs 298,112 cf**Link POA2: POA #2**Inflow=4.04 cfs 7,931 cf
Primary=4.04 cfs 7,931 cf**Link POA3: POA #3**Inflow=3.27 cfs 6,368 cf
Primary=3.27 cfs 6,368 cf**Total Runoff Area = 1,761,566 sf Runoff Volume = 375,212 cf Average Runoff Depth = 2.56"**
28.03% Pervious = 493,709 sf 71.97% Impervious = 1,267,857 sf

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Type II 24-hr 2-yr Rainfall=3.24"

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Summary for Subcatchment 1S: DA-1

Runoff = 27.81 cfs @ 11.96 hrs, Volume= 62,524 cf, Depth= 2.56"
Routed to Pond 1P : SCM 1: Infiltration AGB

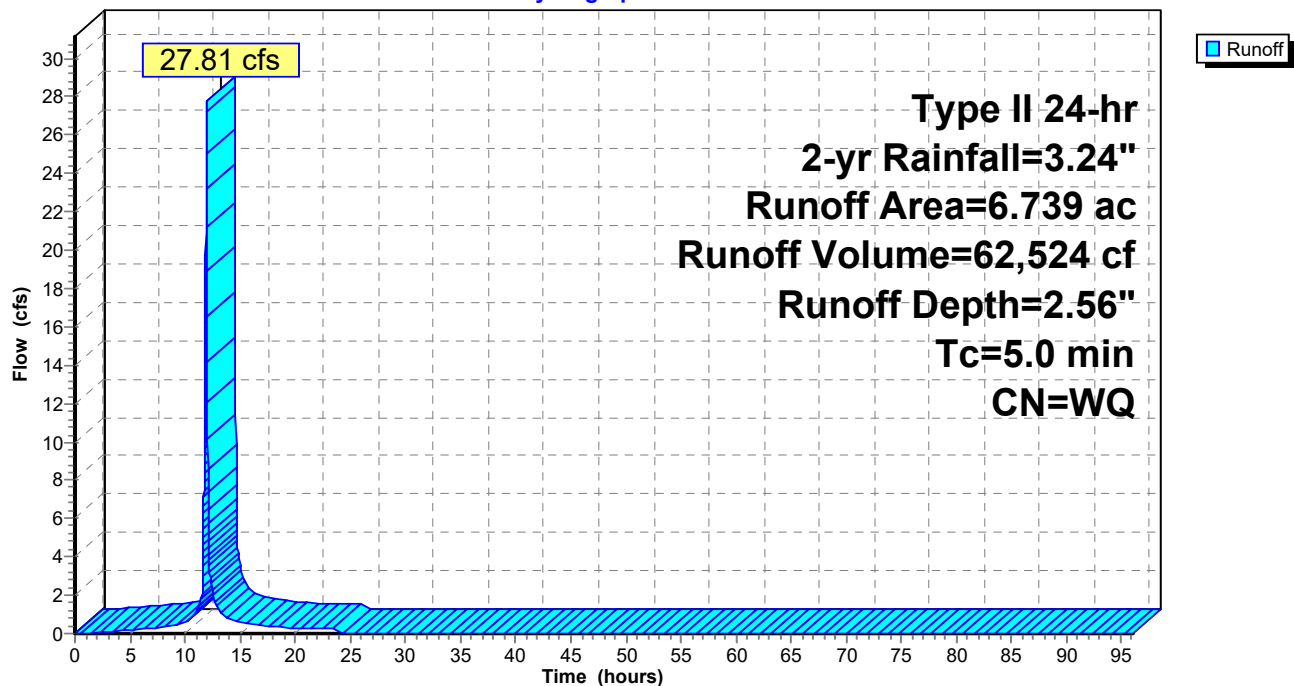
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=3.24"

Area (ac)	CN	Description
0.222	74	>75% Grass cover, Good, HSG C
1.658	80	>75% Grass cover, Good, HSG D
4.859	98	Paved parking, HSG D
6.739		Weighted Average
1.880		27.90% Pervious Area
4.859		72.10% Impervious Area

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

Subcatchment 1S: DA-1

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.24"

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Summary for Subcatchment 2B: Bypass to POA #2

Runoff = 4.04 cfs @ 11.96 hrs, Volume= 7,931 cf, Depth= 1.46"
Routed to Link POA2 : POA #2

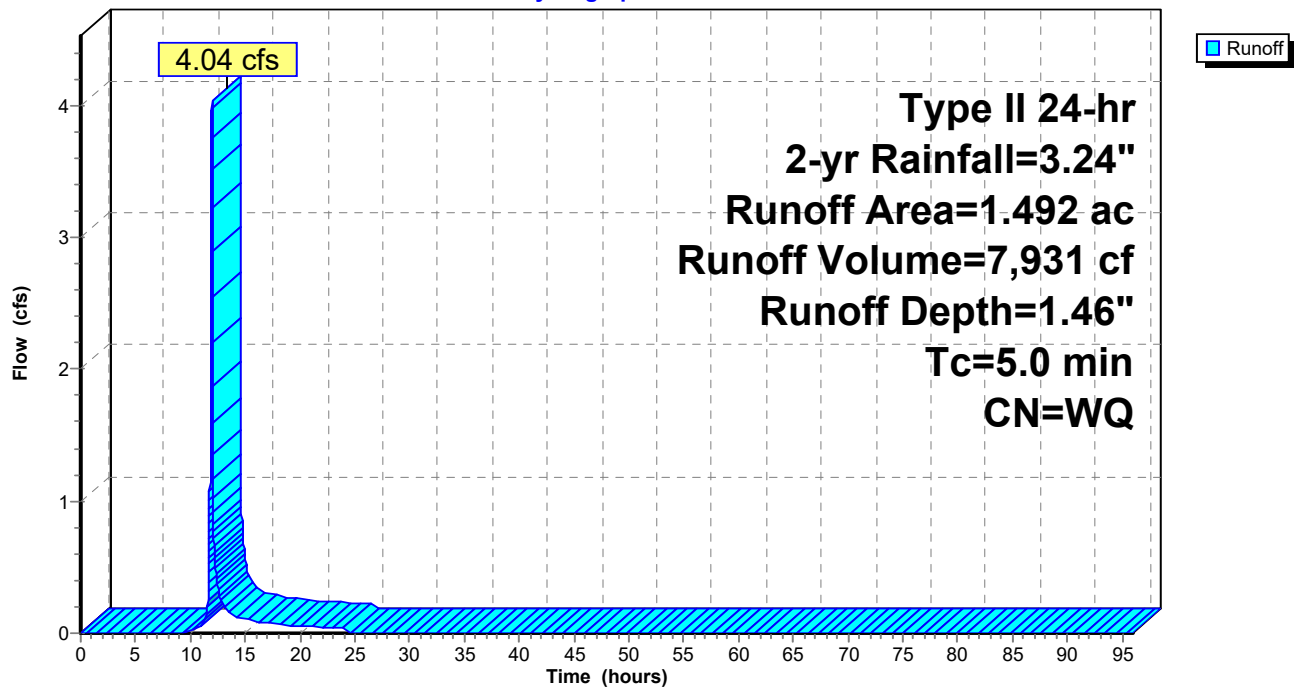
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=3.24"

Area (ac)	CN	Description
1.462	80	>75% Grass cover, Good, HSG D
0.030	98	Paved parking, HSG D
1.492		Weighted Average
1.462		97.99% Pervious Area
0.030		2.01% Impervious Area

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

Subcatchment 2B: Bypass to POA #2

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Type II 24-hr 2-yr Rainfall=3.24"

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Summary for Subcatchment 2S: DA-2

Runoff = 38.09 cfs @ 11.96 hrs, Volume= 87,795 cf, Depth= 2.98"
Routed to Pond 2P : SCM 2: Detention UGB

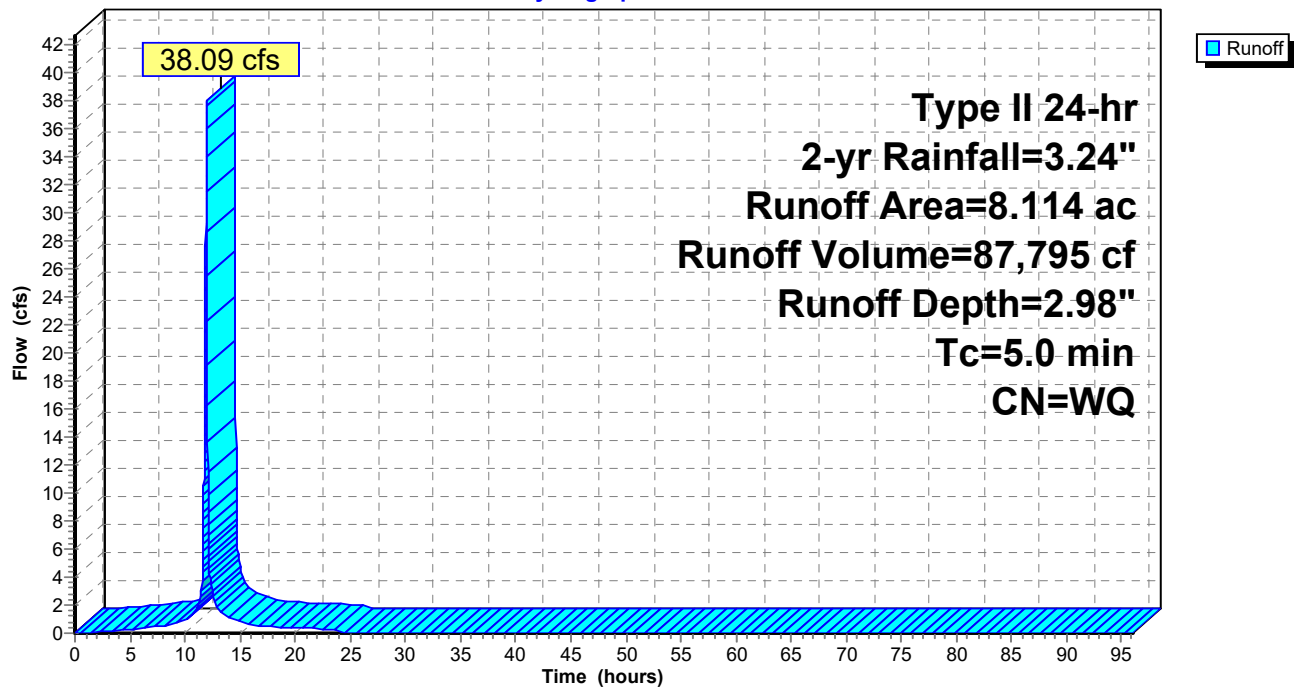
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=3.24"

Area (ac)	CN	Description
0.137	80	>75% Grass cover, Good, HSG D
7.977	98	Paved parking, HSG D
8.114		Weighted Average
0.137		1.69% Pervious Area
7.977		98.31% Impervious Area

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

Subcatchment 2S: DA-2

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Type II 24-hr 2-yr Rainfall=3.24"

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Summary for Subcatchment 3B: Bypass to POA #3

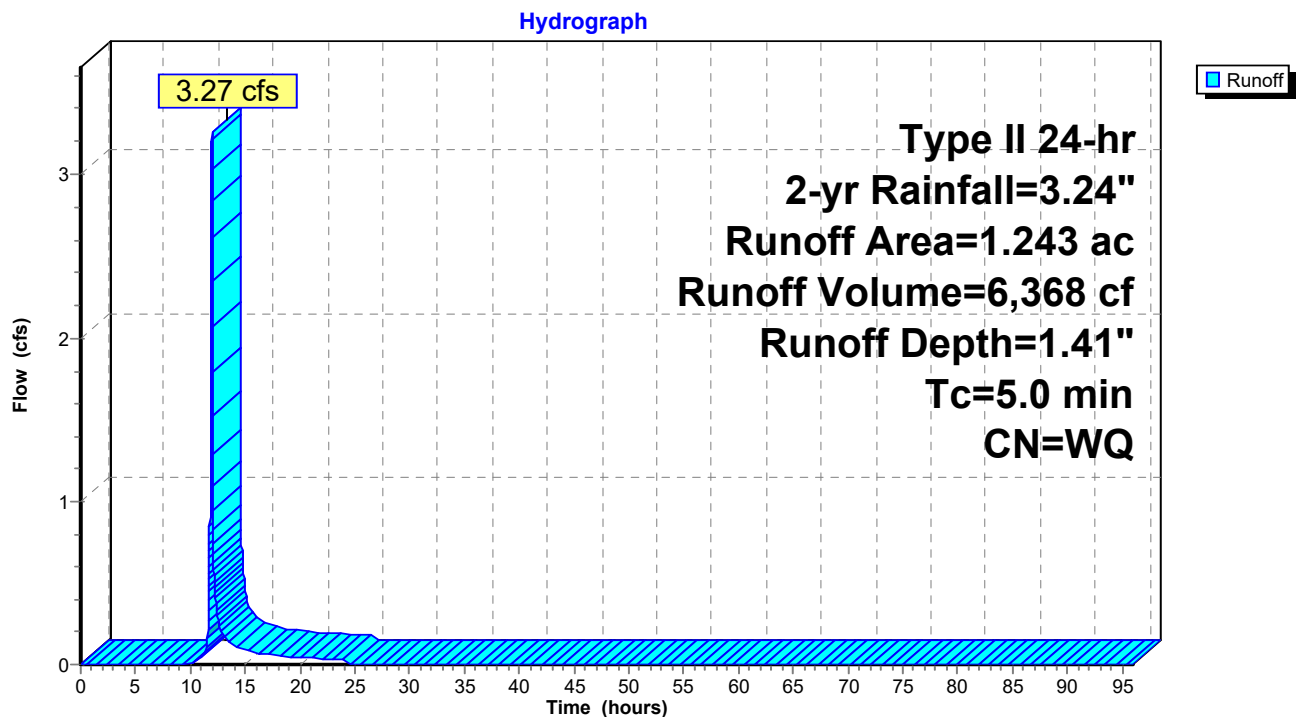
Runoff = 3.27 cfs @ 11.96 hrs, Volume= 6,368 cf, Depth= 1.41"
Routed to Link POA3 : POA #3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=3.24"

Area (ac)	CN	Description
0.072	74	>75% Grass cover, Good, HSG C
1.171	80	>75% Grass cover, Good, HSG D
1.243		Weighted Average
1.243		100.00% Pervious Area

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

Subcatchment 3B: Bypass to POA #3



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Type II 24-hr 2-yr Rainfall=3.24"

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Summary for Subcatchment 3S: DA-3

Runoff = 19.67 cfs @ 11.96 hrs, Volume= 44,864 cf, Depth= 2.80"
Routed to Pond 3P : SCM 3: Detention UGB

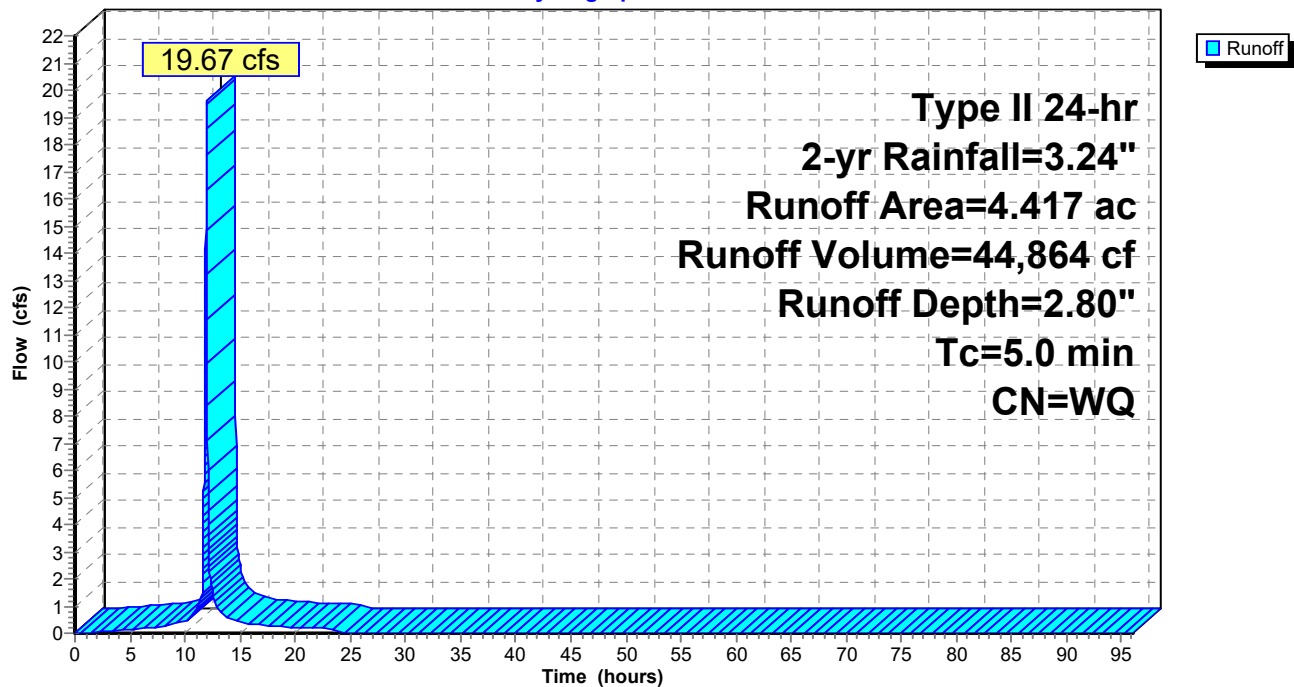
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=3.24"

Area (ac)	CN	Description
0.587	80	>75% Grass cover, Good, HSG D
3.830	98	Paved parking, HSG D
4.417		Weighted Average
0.587		13.29% Pervious Area
3.830		86.71% Impervious Area

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

Subcatchment 3S: DA-3

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.24"

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Summary for Subcatchment 4S: DA-4

Runoff = 16.31 cfs @ 11.96 hrs, Volume= 37,364 cf, Depth= 2.87"
Routed to Pond 4P : SCM 4: Detention UGB

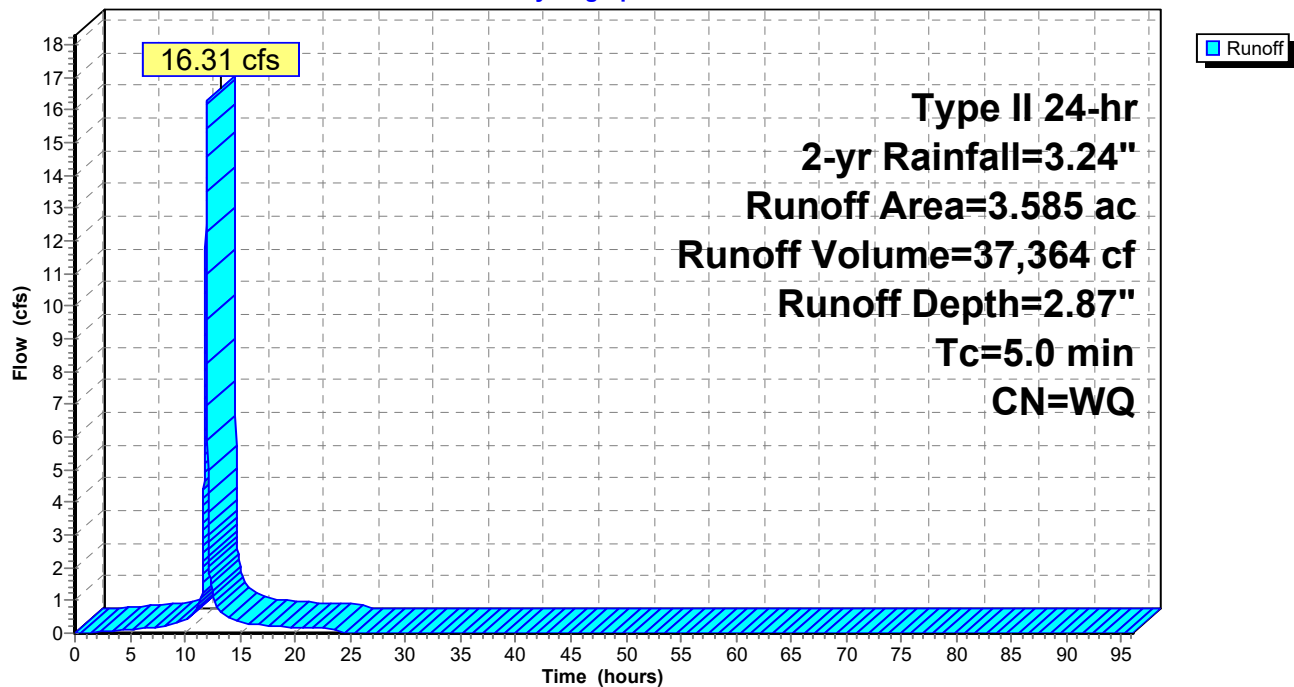
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=3.24"

Area (ac)	CN	Description
0.310	80	>75% Grass cover, Good, HSG D
3.275	98	Paved parking, HSG D
3.585		Weighted Average
0.310		8.65% Pervious Area
3.275		91.35% Impervious Area

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

Subcatchment 4S: DA-4

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.24"

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Summary for Subcatchment 5S: DA-5

Runoff = 12.83 cfs @ 11.96 hrs, Volume= 29,273 cf, Depth= 2.80"
Routed to Pond 5P : SCM 5: Detention UGB

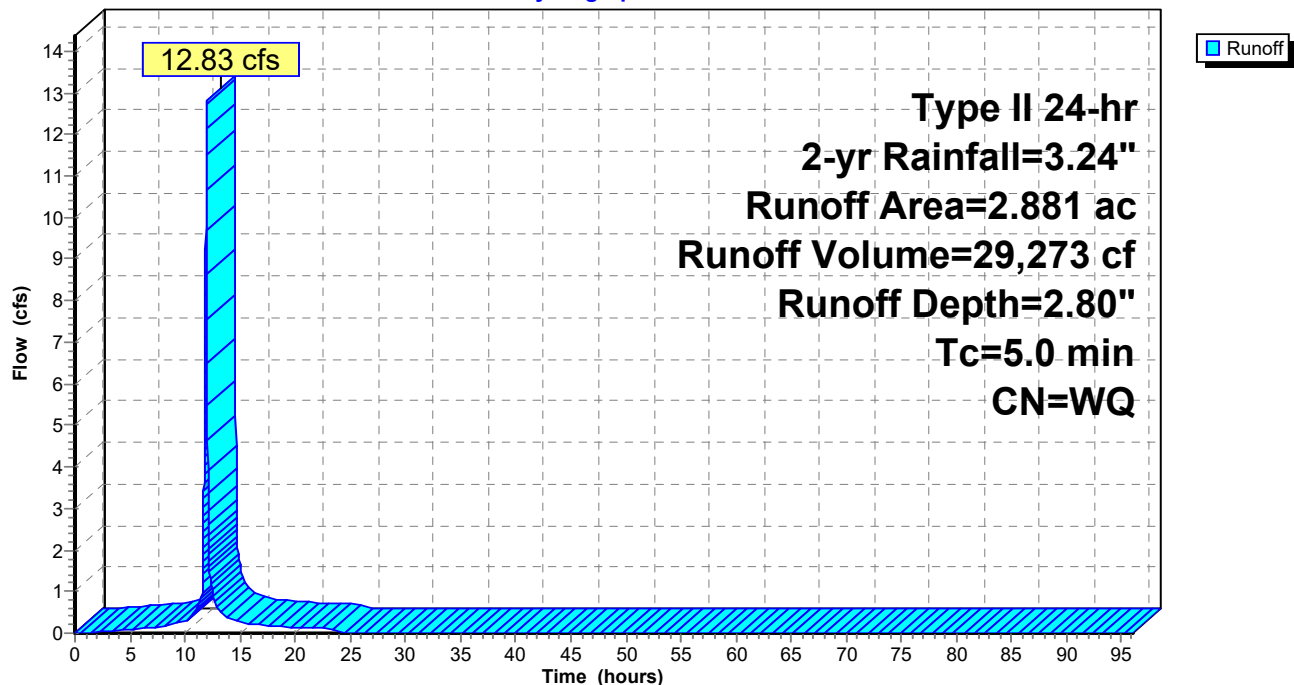
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=3.24"

Area (ac)	CN	Description
0.381	80	>75% Grass cover, Good, HSG D
2.500	98	Paved parking, HSG D
2.881		Weighted Average
0.381		13.22% Pervious Area
2.500		86.78% Impervious Area

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

Subcatchment 5S: DA-5

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.24"

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Summary for Subcatchment 6S: DA-6

Runoff = 13.90 cfs @ 11.96 hrs, Volume= 31,516 cf, Depth= 2.60"
Routed to Pond 6P : SCM 6: Detention UGB

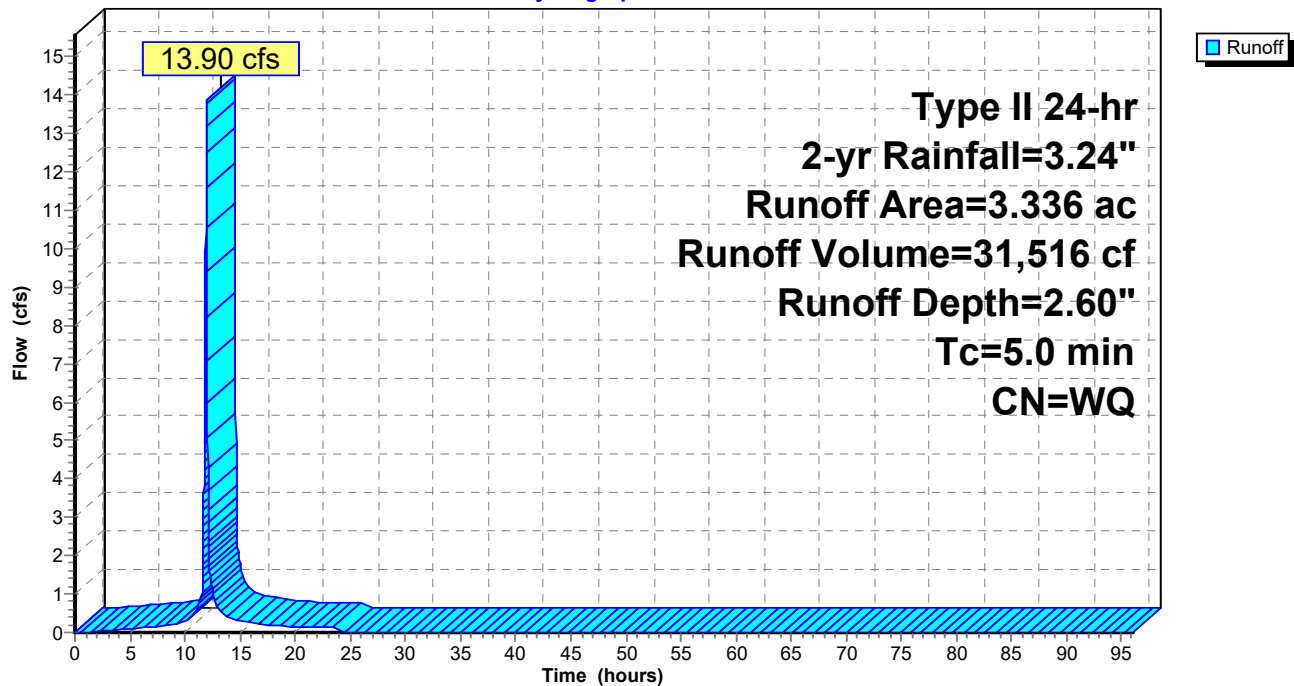
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=3.24"

Area (ac)	CN	Description
0.255	74	>75% Grass cover, Good, HSG C
0.084	70	Woods, Good, HSG C
0.328	80	>75% Grass cover, Good, HSG D
2.580	98	Paved parking, HSG D
0.089	77	Woods, Good, HSG D
3.336		Weighted Average
0.756		22.66% Pervious Area
2.580		77.34% Impervious Area

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

Subcatchment 6S: DA-6

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.24"

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Summary for Subcatchment 7S: DA-7

Runoff = 19.49 cfs @ 11.96 hrs, Volume= 44,719 cf, Depth= 2.90"
Routed to Pond 7P : SCM 7: Detention UGB

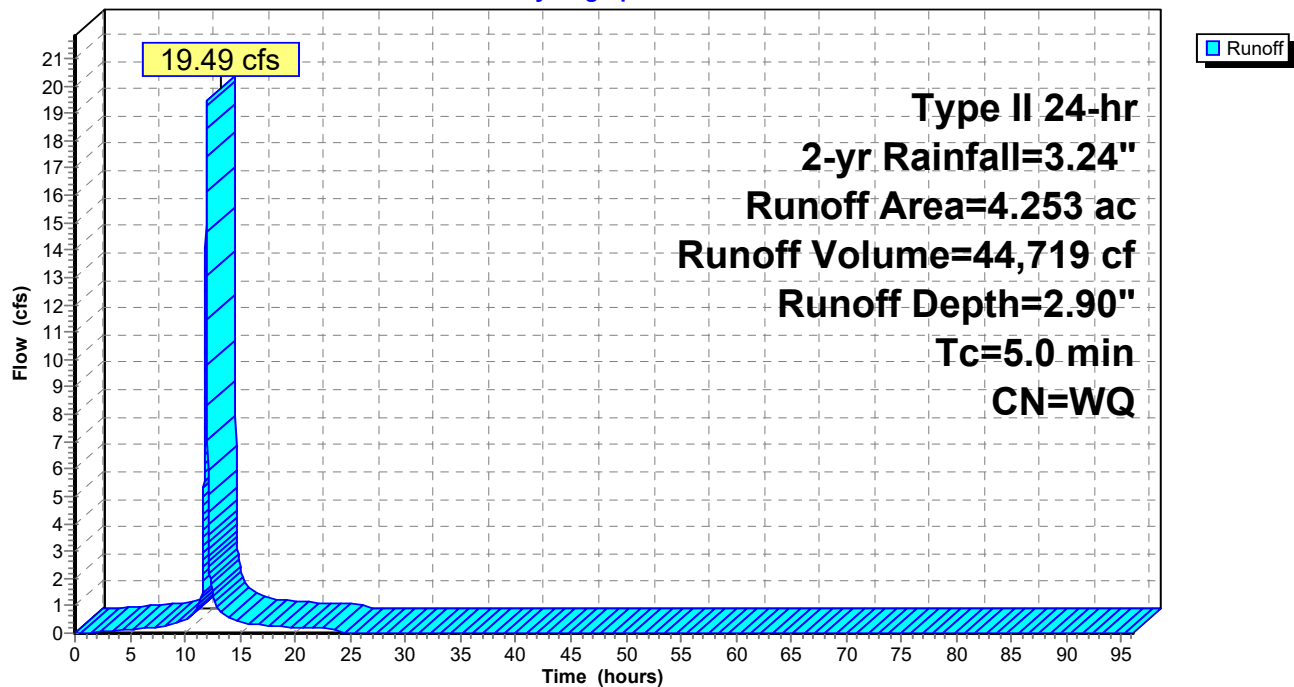
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=3.24"

Area (ac)	CN	Description
0.299	80	>75% Grass cover, Good, HSG D
3.954	98	Paved parking, HSG D
4.253		Weighted Average
0.299		7.03% Pervious Area
3.954		92.97% Impervious Area

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

Subcatchment 7S: DA-7

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.24"

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Summary for Subcatchment 8S: DA-8

Runoff = 11.63 cfs @ 11.96 hrs, Volume= 22,856 cf, Depth= 1.44"
Routed to Link POA1 : POA #1

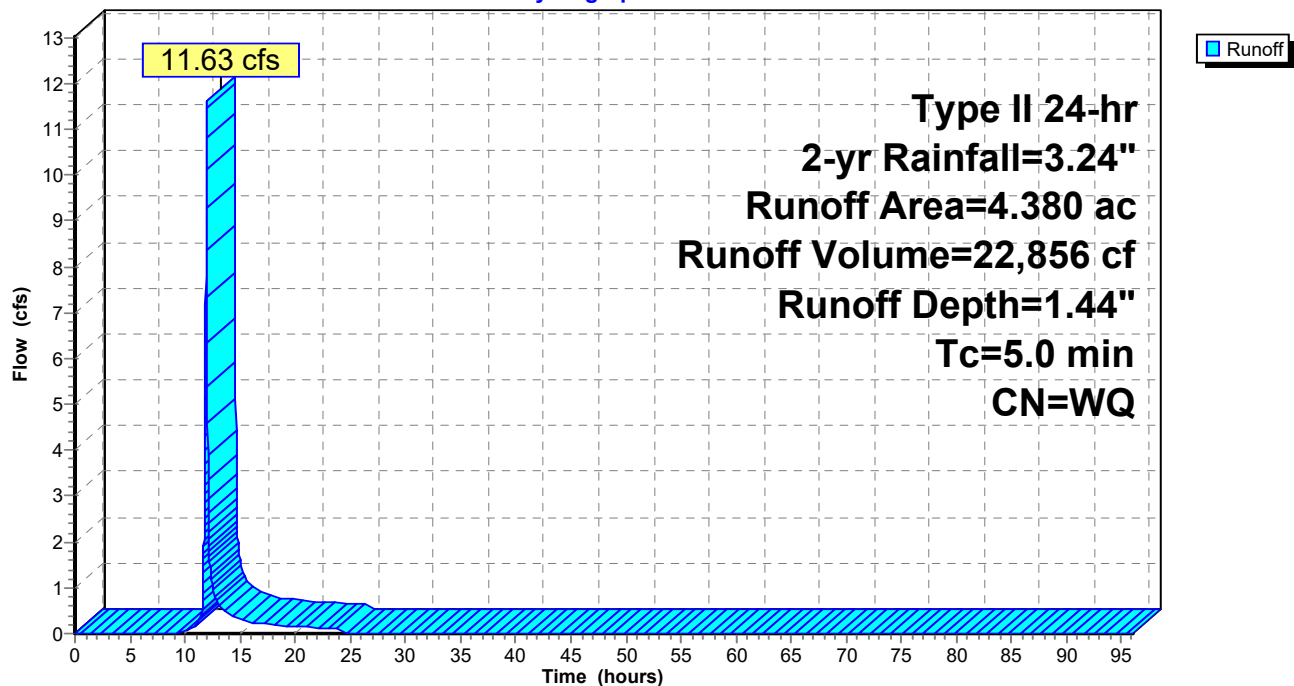
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=3.24"

Area (ac)	CN	Description
3.905	80	>75% Grass cover, Good, HSG D
0.374	74	>75% Grass cover, Good, HSG C
0.101	98	Paved parking, HSG D
4.380		Weighted Average
4.279		97.69% Pervious Area
0.101		2.31% Impervious Area

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

Subcatchment 8S: DA-8

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.24"

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Summary for Pond 1P: SCM 1: Infiltration AGB

Inflow Area = 293,551 sf, 72.10% Impervious, Inflow Depth = 2.56" for 2-yr event
 Inflow = 27.81 cfs @ 11.96 hrs, Volume= 62,524 cf
 Outflow = 0.23 cfs @ 23.45 hrs, Volume= 62,526 cf, Atten= 99%, Lag= 689.6 min
 Discarded = 0.23 cfs @ 23.45 hrs, Volume= 62,526 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Link POA1 : POA #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 275.73' @ 23.45 hrs Surf.Area= 28,341 sf Storage= 46,163 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 1,798.9 min (2,563.6 - 764.7)

Volume	Invert	Avail.Storage	Storage Description
#1	274.00'	186,083 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

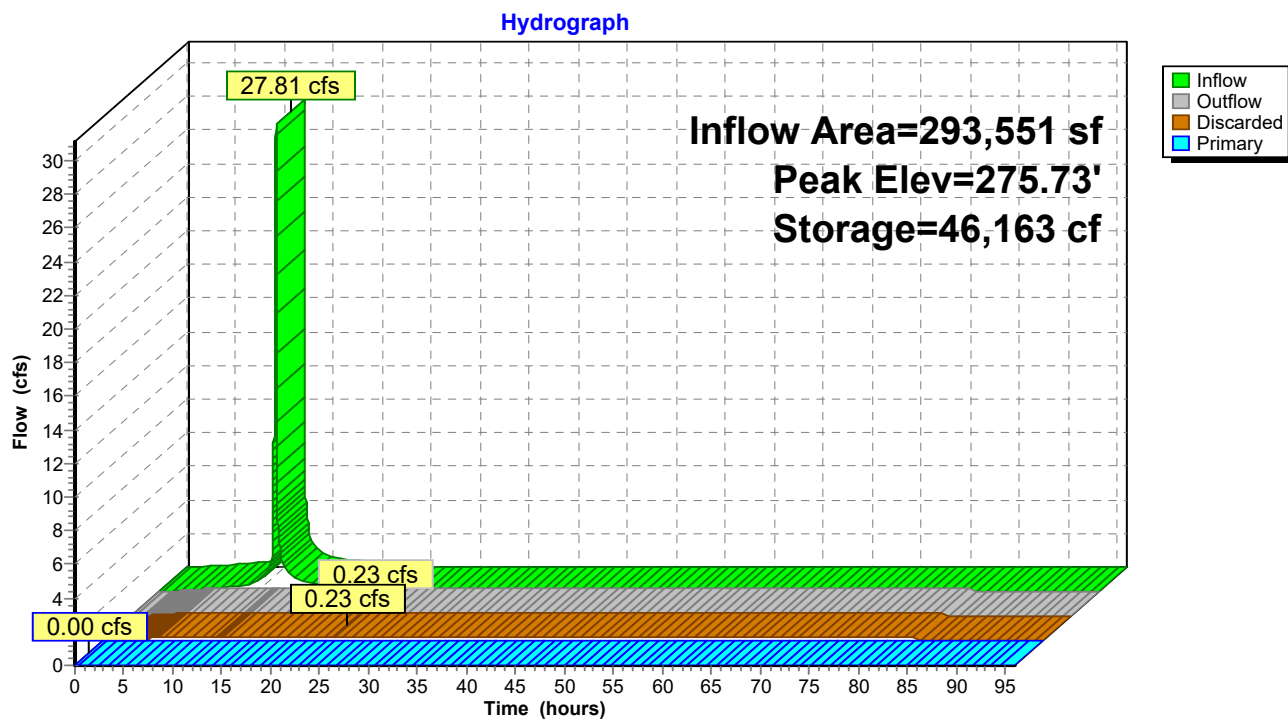
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
274.00	24,939	0	0
275.00	26,877	25,908	25,908
276.00	28,873	27,875	53,783
277.00	30,924	29,899	83,682
278.00	33,033	31,979	115,660
279.00	35,197	34,115	149,775
280.00	37,419	36,308	186,083

Device	Routing	Invert	Outlet Devices
#1	Discarded	274.00'	0.353 in/hr Exfiltration over Surface area
#2	Primary	274.00'	30.0" Round Culvert L= 52.0' Ke= 0.500 Inlet / Outlet Invert= 274.00' / 272.00' S= 0.0385 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#3	Device 2	275.75'	12.0" W x 3.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 2	276.25'	24.0" W x 6.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Device 2	277.00'	24.0" W x 4.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#6	Primary	277.50'	24.0" x 48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.23 cfs @ 23.45 hrs HW=275.73' (Free Discharge)
 1=Exfiltration (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=274.00' TW=0.00' (Dynamic Tailwater)
 2=Culvert (Controls 0.00 cfs)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Orifice/Grate (Controls 0.00 cfs)
 5=Orifice/Grate (Controls 0.00 cfs)
 6=Orifice/Grate (Controls 0.00 cfs)

Pond 1P: SCM 1: Infiltration AGB



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Type II 24-hr 2-yr Rainfall=3.24"

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Summary for Pond 2P: SCM 2: Detention UGB

Inflow Area = 353,446 sf, 98.31% Impervious, Inflow Depth = 2.98" for 2-yr event
 Inflow = 38.09 cfs @ 11.96 hrs, Volume= 87,795 cf
 Outflow = 6.23 cfs @ 12.12 hrs, Volume= 87,656 cf, Atten= 84%, Lag= 10.1 min
 Primary = 6.23 cfs @ 12.12 hrs, Volume= 87,656 cf
 Routed to Link POA1 : POA #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 270.60' @ 12.12 hrs Surf.Area= 30,988 sf Storage= 39,056 cf

Plug-Flow detention time= 140.5 min calculated for 87,656 cf (100% of inflow)
 Center-of-Mass det. time= 139.5 min (891.5 - 752.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	268.75'	41,546 cf	63.75'W x 486.09'L x 5.50'H Field A 170,435 cf Overall - 66,569 cf Embedded = 103,866 cf x 40.0% Voids
#2A	269.50'	66,569 cf	ADS_StormTech MC-3500 d +Capx 603 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 603 Chambers in 9 Rows Cap Storage= 14.9 cf x 2 x 9 rows = 268.2 cf
		108,116 cf	Total Available Storage

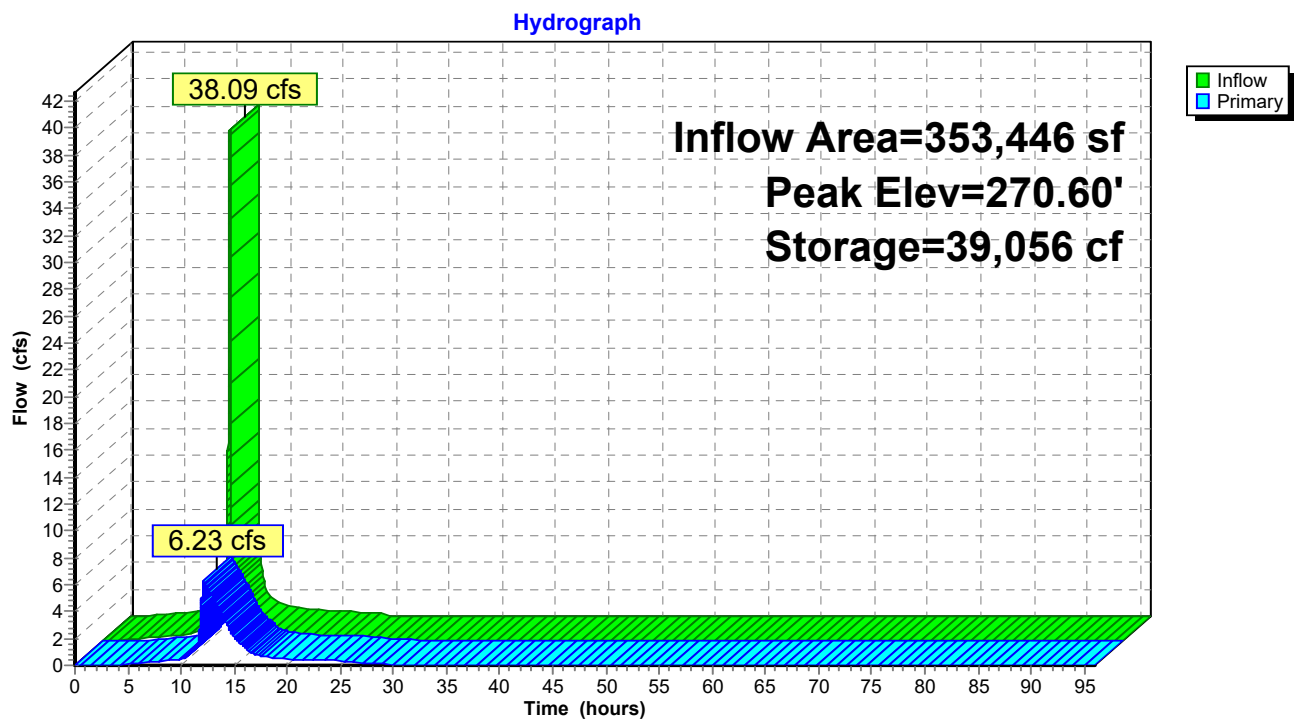
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	268.75'	36.0" Round Outlet Pipe L= 112.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 268.75' / 268.25' S= 0.0045 ' / Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 7.07 sf
#2	Device 1	268.75'	3.0" Vert. Orifice X 3.00 C= 0.600 Limited to weir flow at low heads
#3	Device 1	269.25'	24.0" W x 6.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 1	270.50'	30.0" W x 12.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#5	Device 1	271.75'	42.0" W x 6.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#6	Device 1	272.50'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=6.23 cfs @ 12.12 hrs HW=270.60' TW=0.00' (Dynamic Tailwater)

- 1=Outlet Pipe (Passes 6.23 cfs of 15.50 cfs potential flow)
- 2=Orifice (Orifice Controls 0.93 cfs @ 6.33 fps)
- 3=Orifice (Orifice Controls 5.04 cfs @ 5.04 fps)
- 4=Orifice (Orifice Controls 0.26 cfs @ 1.02 fps)
- 5=Orifice (Controls 0.00 cfs)
- 6=Sharp-Crested Rectangular Weir(Controls 0.00 cfs)

Pond 2P: SCM 2: Detention UGB



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Summary for Pond 3P: SCM 3: Detention UGB

Inflow Area = 192,405 sf, 86.71% Impervious, Inflow Depth = 2.80" for 2-yr event
 Inflow = 19.67 cfs @ 11.96 hrs, Volume= 44,864 cf
 Outflow = 5.95 cfs @ 12.07 hrs, Volume= 44,825 cf, Atten= 70%, Lag= 6.9 min
 Primary = 5.95 cfs @ 12.07 hrs, Volume= 44,825 cf
 Routed to Link POA1 : POA #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 273.50' @ 12.07 hrs Surf.Area= 16,811 sf Storage= 17,575 cf

Plug-Flow detention time= 95.0 min calculated for 44,825 cf (100% of inflow)
 Center-of-Mass det. time= 94.4 min (851.6 - 757.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	272.00'	15,071 cf	46.75'W x 359.60'L x 3.75'H Field A 63,042 cf Overall - 25,365 cf Embedded = 37,678 cf x 40.0% Voids
#2A	272.50'	25,365 cf	ADS_StormTech SC-800 +Cap x 500 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 500 Chambers in 10 Rows Cap Storage= 3.4 cf x 2 x 10 rows = 68.4 cf
		40,436 cf	Total Available Storage

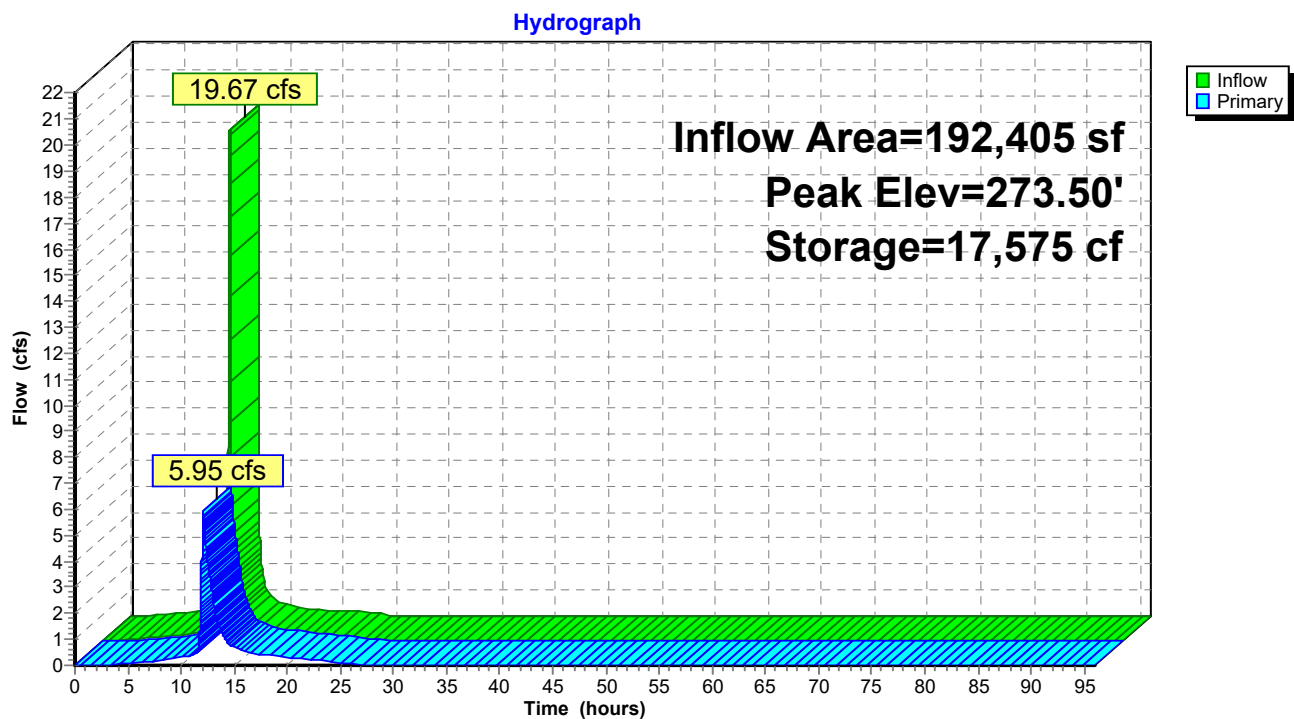
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	272.00'	36.0" Round Outlet Pipe L= 628.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 272.00' / 268.25' S= 0.0060 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 7.07 sf
#2	Device 1	272.00'	3.0" Vert. Orifice X 3.00 C= 0.600 Limited to weir flow at low heads
#3	Device 1	272.50'	24.0" W x 6.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 1	273.25'	30.0" W x 12.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#5	Device 1	274.50'	42.0" W x 6.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#6	Device 1	275.25'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=5.95 cfs @ 12.07 hrs HW=273.50' TW=0.00' (Dynamic Tailwater)

- 1=Outlet Pipe (Passes 5.95 cfs of 11.59 cfs potential flow)
 2=Orifice (Orifice Controls 0.83 cfs @ 5.64 fps)
 3=Orifice (Orifice Controls 4.14 cfs @ 4.14 fps)
 4=Orifice (Orifice Controls 0.98 cfs @ 1.59 fps)
 5=Orifice (Controls 0.00 cfs)
 6=Sharp-Crested Rectangular Weir(Controls 0.00 cfs)

Pond 3P: SCM 3: Detention UGB



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Summary for Pond 4P: SCM 4: Detention UGB

Inflow Area = 156,163 sf, 91.35% Impervious, Inflow Depth = 2.87" for 2-yr event
 Inflow = 16.31 cfs @ 11.96 hrs, Volume= 37,364 cf
 Outflow = 4.96 cfs @ 12.07 hrs, Volume= 37,323 cf, Atten= 70%, Lag= 6.9 min
 Primary = 4.96 cfs @ 12.07 hrs, Volume= 37,323 cf
 Routed to Link POA1 : POA #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 274.14' @ 12.07 hrs Surf.Area= 20,685 sf Storage= 13,314 cf

Plug-Flow detention time= 88.8 min calculated for 37,319 cf (100% of inflow)
 Center-of-Mass det. time= 88.5 min (843.5 - 755.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	273.00'	27,875 cf	49.92'W x 414.39'L x 5.50'H Field A 113,767 cf Overall - 44,079 cf Embedded = 69,688 cf x 40.0% Voids
#2A	273.75'	44,079 cf	ADS_StormTech MC-3500 d +Capx 399 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 399 Chambers in 7 Rows Cap Storage= 14.9 cf x 2 x 7 rows = 208.6 cf
			71,955 cf Total Available Storage

Storage Group A created with Chamber Wizard

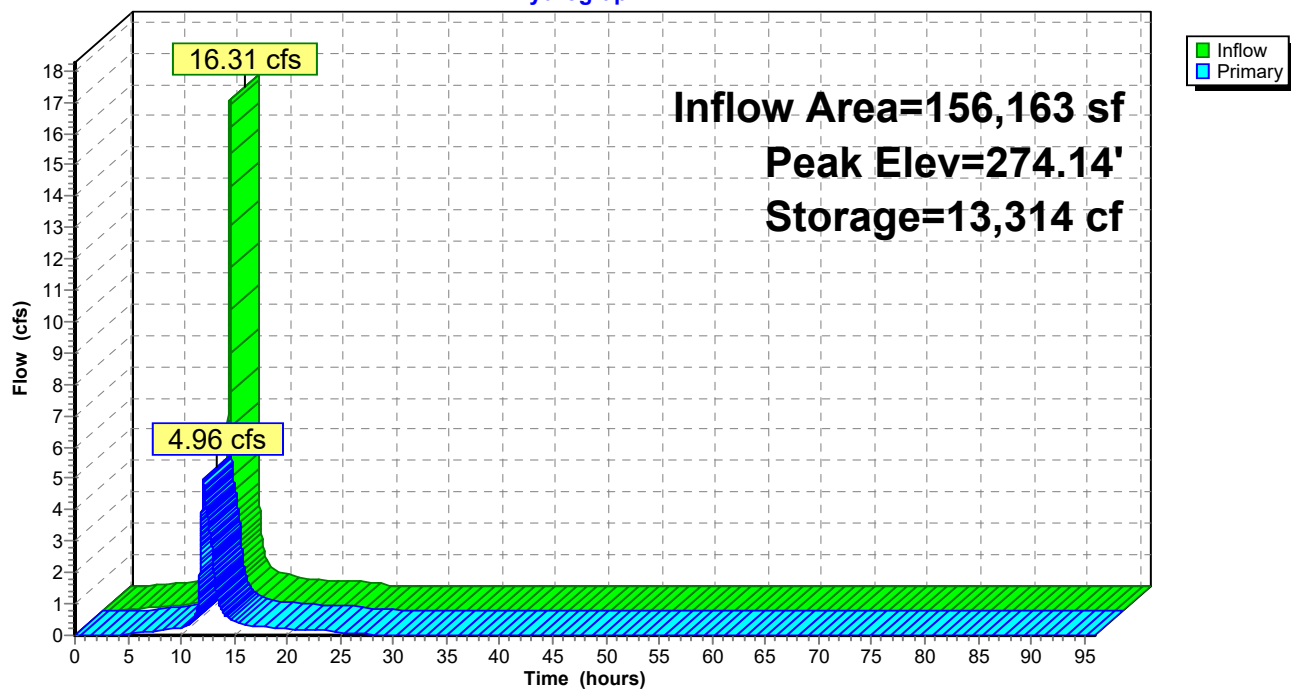
Device	Routing	Invert	Outlet Devices
#1	Primary	273.00'	36.0" Round Outlet Pipe L= 105.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 273.00' / 269.00' S= 0.0381 ' / Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 7.07 sf
#2	Device 1	273.00'	3.0" Vert. Orifice X 3.00 C= 0.600 Limited to weir flow at low heads
#3	Device 1	273.25'	24.0" W x 6.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 1	274.00'	30.0" W x 12.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#5	Device 1	274.75'	42.0" W x 4.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#6	Device 1	275.09'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=4.95 cfs @ 12.07 hrs HW=274.14' TW=0.00' (Dynamic Tailwater)

- 1=Outlet Pipe (Passes 4.95 cfs of 7.06 cfs potential flow)
- 2=Orifice (Orifice Controls 0.71 cfs @ 4.85 fps)
- 3=Orifice (Orifice Controls 3.82 cfs @ 3.82 fps)
- 4=Orifice (Orifice Controls 0.42 cfs @ 1.20 fps)
- 5=Orifice (Controls 0.00 cfs)
- 6=Sharp-Crested Rectangular Weir(Controls 0.00 cfs)

Pond 4P: SCM 4: Detention UGB

Hydrograph



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Summary for Pond 5P: SCM 5: Detention UGB

Inflow Area = 125,496 sf, 86.78% Impervious, Inflow Depth = 2.80" for 2-yr event
 Inflow = 12.83 cfs @ 11.96 hrs, Volume= 29,273 cf
 Outflow = 6.09 cfs @ 12.04 hrs, Volume= 29,264 cf, Atten= 53%, Lag= 5.2 min
 Primary = 6.09 cfs @ 12.04 hrs, Volume= 29,264 cf
 Routed to Link POA1 : POA #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 278.01' @ 12.04 hrs Surf.Area= 8,494 sf Storage= 8,951 cf

Plug-Flow detention time= 50.5 min calculated for 29,261 cf (100% of inflow)
 Center-of-Mass det. time= 50.6 min (807.8 - 757.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	276.50'	7,654 cf	46.75'W x 181.68'L x 3.75'H Field A 31,851 cf Overall - 12,716 cf Embedded = 19,135 cf x 40.0% Voids
#2A	277.00'	12,716 cf	ADS_StormTech SC-800 +Cap x 250 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 250 Chambers in 10 Rows Cap Storage= 3.4 cf x 2 x 10 rows = 68.4 cf
		20,370 cf	Total Available Storage

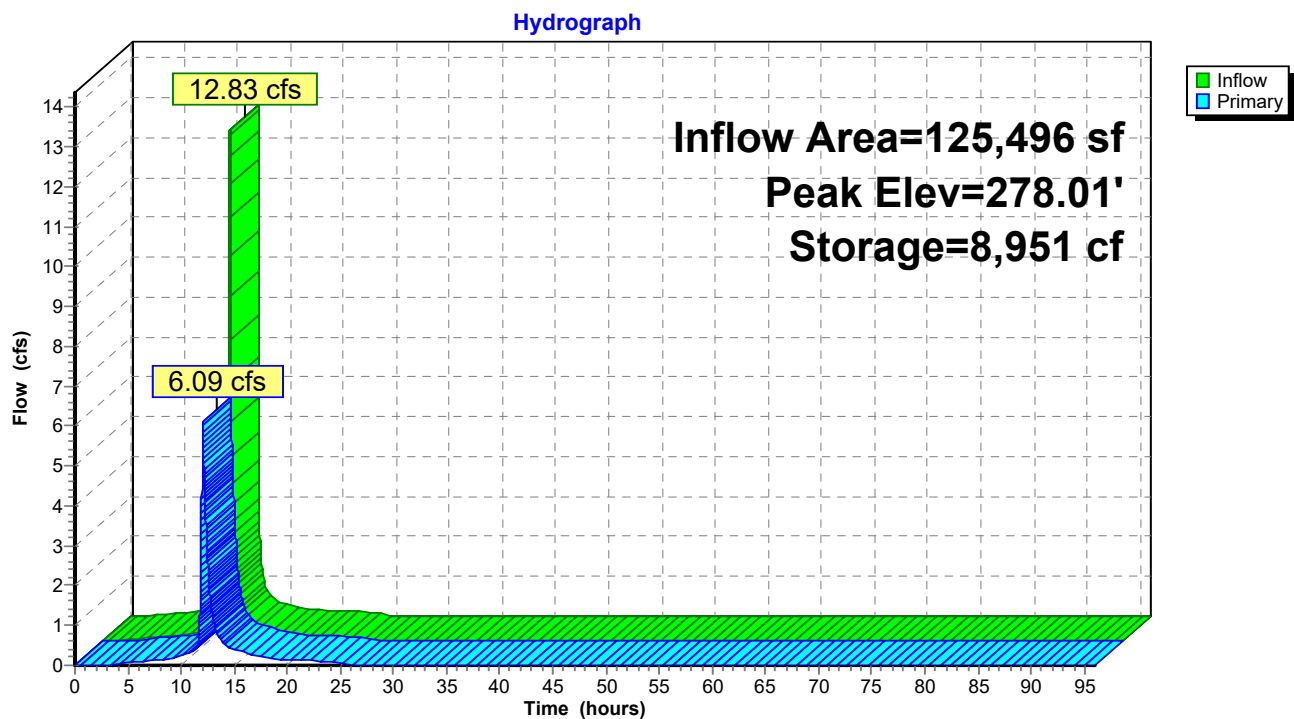
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	276.50'	36.0" Round Outlet Pipe L= 900.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 276.50' / 269.00' S= 0.0083 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 7.07 sf
#2	Device 1	276.50'	3.0" Vert. Orifice X 3.00 C= 0.600 Limited to weir flow at low heads
#3	Device 1	277.00'	24.0" W x 6.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 1	277.75'	30.0" W x 12.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#5	Device 1	279.00'	36.0" W x 4.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#6	Device 1	279.60'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=6.08 cfs @ 12.04 hrs HW=278.01' TW=0.00' (Dynamic Tailwater)

- 1=Outlet Pipe (Passes 6.08 cfs of 11.78 cfs potential flow)
- 2=Orifice (Orifice Controls 0.83 cfs @ 5.67 fps)
- 3=Orifice (Orifice Controls 4.18 cfs @ 4.18 fps)
- 4=Orifice (Orifice Controls 1.07 cfs @ 1.64 fps)
- 5=Orifice (Controls 0.00 cfs)
- 6=Sharp-Crested Rectangular Weir(Controls 0.00 cfs)

Pond 5P: SCM 5: Detention UGB



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Type II 24-hr 2-yr Rainfall=3.24"

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Summary for Pond 6P: SCM 6: Detention UGB

Inflow Area = 145,316 sf, 77.34% Impervious, Inflow Depth = 2.60" for 2-yr event
 Inflow = 13.90 cfs @ 11.96 hrs, Volume= 31,516 cf
 Outflow = 4.89 cfs @ 12.06 hrs, Volume= 31,500 cf, Atten= 65%, Lag= 6.3 min
 Primary = 4.89 cfs @ 12.06 hrs, Volume= 31,500 cf
 Routed to Link POA1 : POA #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 281.37' @ 12.06 hrs Surf.Area= 11,821 sf Storage= 11,121 cf

Plug-Flow detention time= 71.4 min calculated for 31,500 cf (100% of inflow)
 Center-of-Mass det. time= 71.1 min (832.6 - 761.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	280.00'	10,621 cf	46.75'W x 252.85'L x 3.75'H Field A 44,328 cf Overall - 17,776 cf Embedded = 26,552 cf x 40.0% Voids
#2A	280.50'	17,776 cf	ADS_StormTech SC-800 +Cap x 350 Inside #1 Effective Size= 45.0"W x 33.0"H => 7.11 sf x 7.12'L = 50.6 cf Overall Size= 51.0"W x 33.0"H x 7.55'L with 0.43' Overlap 350 Chambers in 10 Rows Cap Storage= 3.4 cf x 2 x 10 rows = 68.4 cf
		28,397 cf	Total Available Storage

Storage Group A created with Chamber Wizard

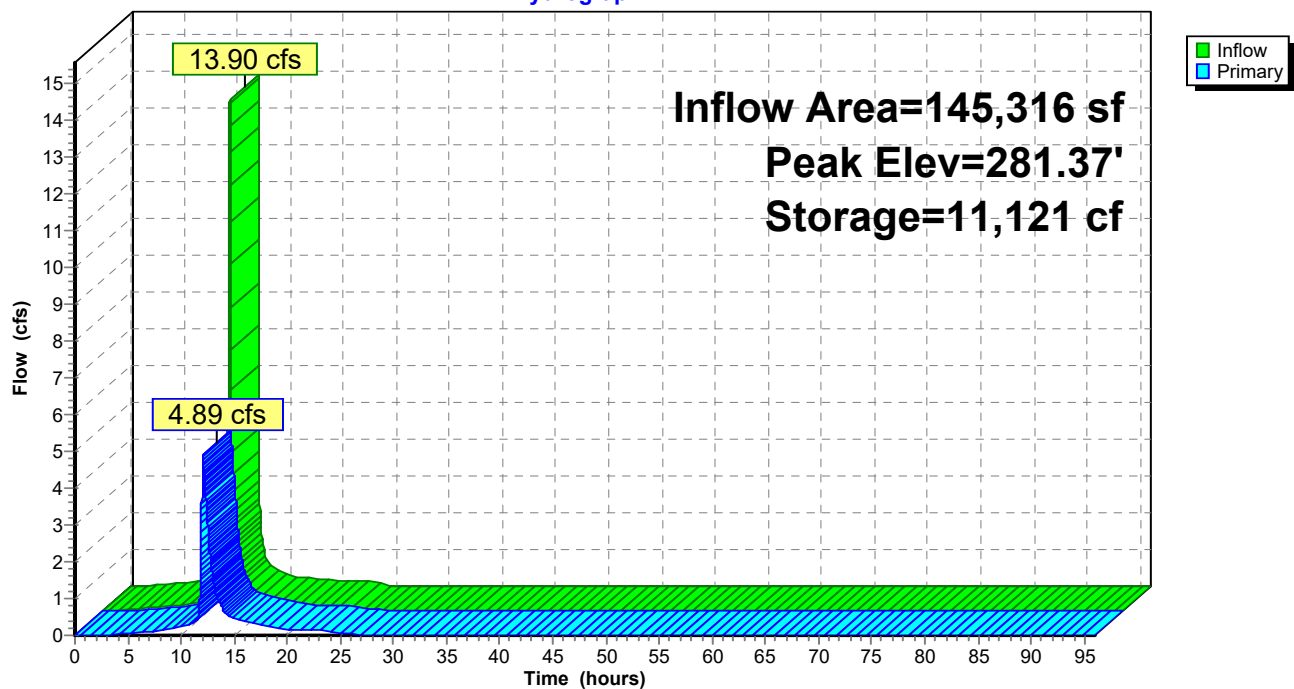
Device	Routing	Invert	Outlet Devices
#1	Primary	280.00'	36.0" Round Outlet Pipe L= 800.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 280.00' / 271.00' S= 0.0112 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 7.07 sf
#2	Device 1	280.00'	3.0" Vert. Orifice X 3.00 C= 0.600 Limited to weir flow at low heads
#3	Device 1	280.50'	24.0" W x 6.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 1	281.25'	30.0" W x 12.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#5	Device 1	282.50'	42.0" W x 3.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#6	Device 1	283.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=4.89 cfs @ 12.06 hrs HW=281.37' TW=0.00' (Dynamic Tailwater)

- 1=Outlet Pipe (Passes 4.89 cfs of 9.89 cfs potential flow)
 2=Orifice (Orifice Controls 0.79 cfs @ 5.37 fps)
 3=Orifice (Orifice Controls 3.76 cfs @ 3.76 fps)
 4=Orifice (Orifice Controls 0.33 cfs @ 1.11 fps)
 5=Orifice (Controls 0.00 cfs)
 6=Sharp-Crested Rectangular Weir(Controls 0.00 cfs)

Pond 6P: SCM 6: Detention UGB

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.24"

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Summary for Pond 7P: SCM 7: Detention UGB

Inflow Area = 185,261 sf, 92.97% Impervious, Inflow Depth = 2.90" for 2-yr event
 Inflow = 19.49 cfs @ 11.96 hrs, Volume= 44,719 cf
 Outflow = 5.84 cfs @ 12.07 hrs, Volume= 44,687 cf, Atten= 70%, Lag= 6.9 min
 Primary = 5.84 cfs @ 12.07 hrs, Volume= 44,687 cf
 Routed to Link POA1 : POA #1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 274.48' @ 12.07 hrs Surf.Area= 18,180 sf Storage= 17,138 cf

Plug-Flow detention time= 92.4 min calculated for 44,687 cf (100% of inflow)
 Center-of-Mass det. time= 91.9 min (846.2 - 754.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	273.00'	24,519 cf	49.92'W x 364.20'L x 5.50'H Field A 99,988 cf Overall - 38,692 cf Embedded = 61,296 cf x 40.0% Voids
#2A	273.75'	38,692 cf	ADS_StormTech MC-3500 d +Capx 350 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 350 Chambers in 7 Rows Cap Storage= 14.9 cf x 2 x 7 rows = 208.6 cf
			63,210 cf Total Available Storage

Storage Group A created with Chamber Wizard

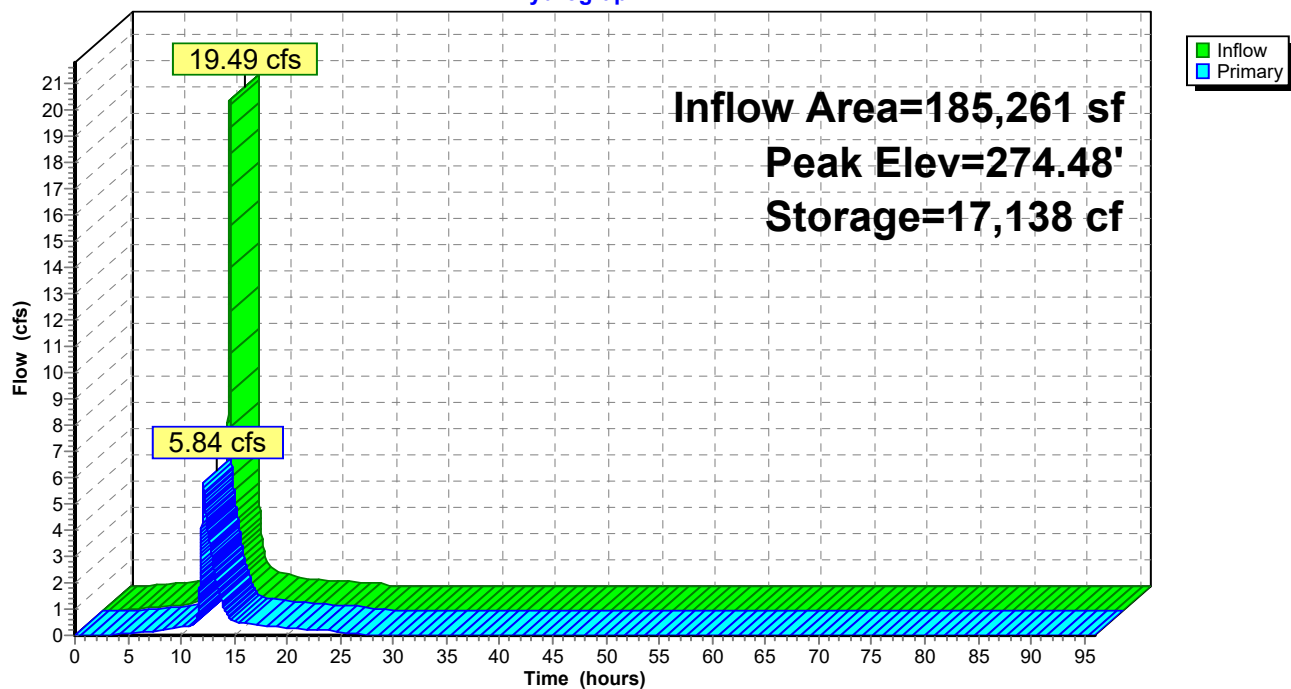
Device	Routing	Invert	Outlet Devices
#1	Primary	273.00'	36.0" Round Outlet Pipe L= 105.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 273.00' / 271.00' S= 0.0190 ' / Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 7.07 sf
#2	Device 1	273.00'	3.0" Vert. Orifice X 3.00 C= 0.600 Limited to weir flow at low heads
#3	Device 1	273.50'	24.0" W x 6.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 1	274.25'	30.0" W x 12.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#5	Device 1	275.50'	42.0" W x 3.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#6	Device 1	276.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=5.84 cfs @ 12.07 hrs HW=274.48' TW=0.00' (Dynamic Tailwater)

- 1=Outlet Pipe (Passes 5.84 cfs of 11.41 cfs potential flow)
 2=Orifice (Orifice Controls 0.83 cfs @ 5.61 fps)
 3=Orifice (Orifice Controls 4.10 cfs @ 4.10 fps)
 4=Orifice (Orifice Controls 0.91 cfs @ 1.55 fps)
 5=Orifice (Controls 0.00 cfs)
 6=Sharp-Crested Rectangular Weir(Controls 0.00 cfs)

Pond 7P: SCM 7: Detention UGB

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.24"

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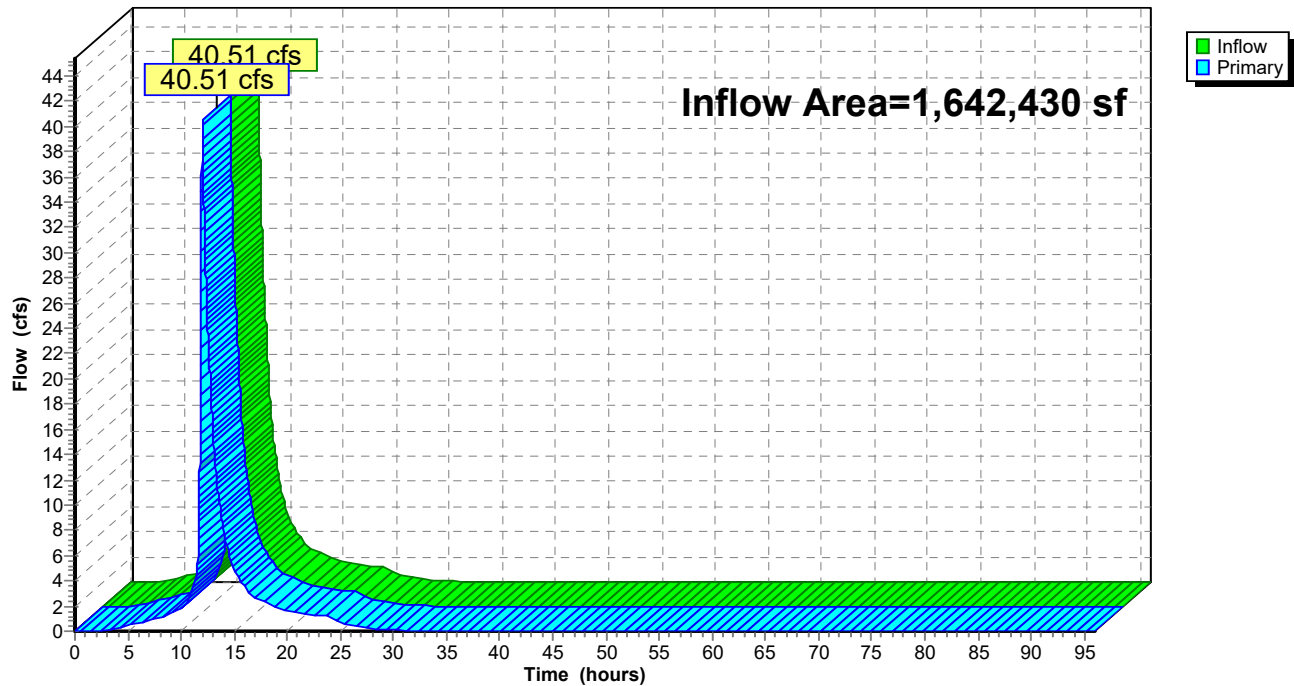
Summary for Link POA1: POA #1

Inflow Area = 1,642,430 sf, 77.11% Impervious, Inflow Depth = 2.18" for 2-yr event
Inflow = 40.51 cfs @ 12.01 hrs, Volume= 298,112 cf
Primary = 40.51 cfs @ 12.01 hrs, Volume= 298,112 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA1: POA #1

Hydrograph



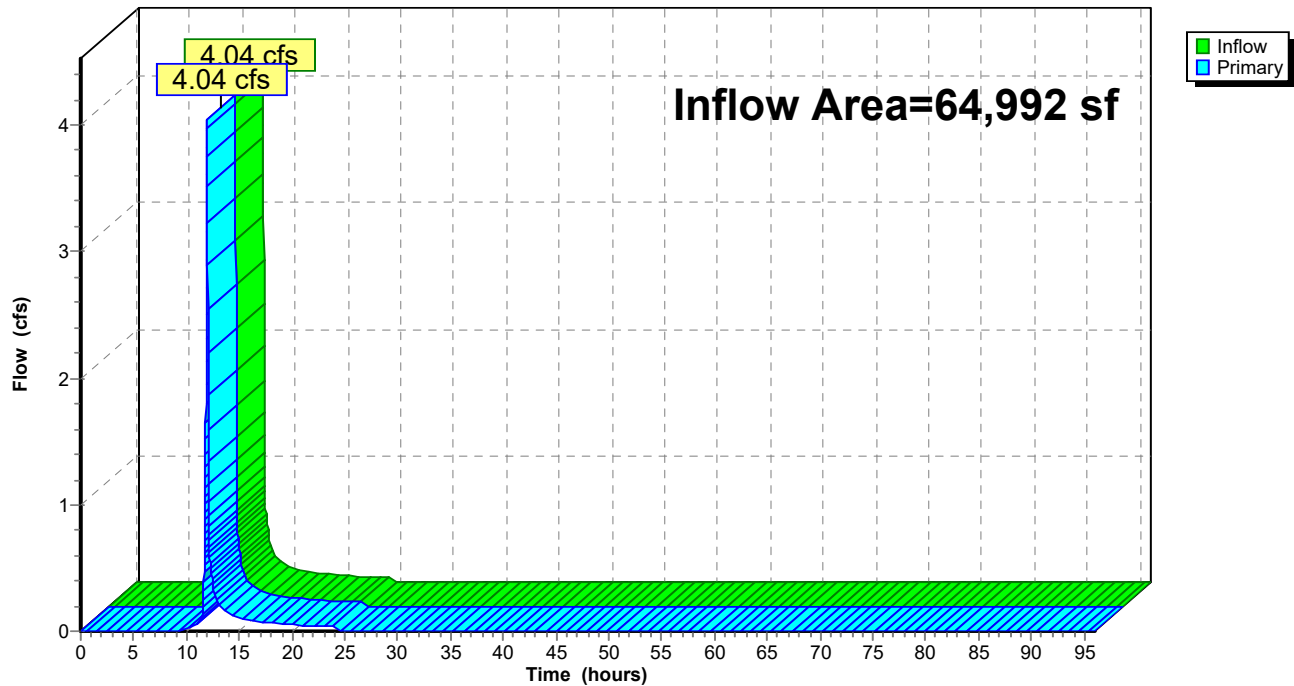
Summary for Link POA2: POA #2

Inflow Area = 64,992 sf, 2.01% Impervious, Inflow Depth = 1.46" for 2-yr event
Inflow = 4.04 cfs @ 11.96 hrs, Volume= 7,931 cf
Primary = 4.04 cfs @ 11.96 hrs, Volume= 7,931 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA2: POA #2

Hydrograph



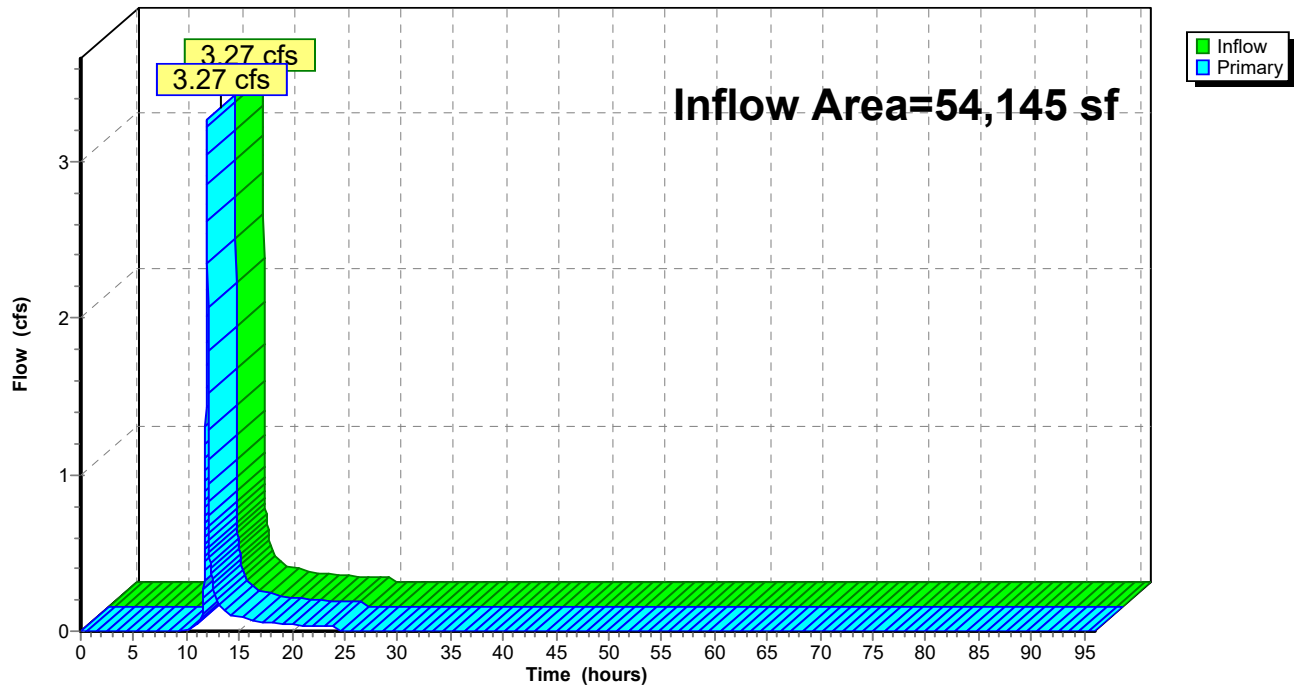
Summary for Link POA3: POA #3

Inflow Area = 54,145 sf, 0.00% Impervious, Inflow Depth = 1.41" for 2-yr event
Inflow = 3.27 cfs @ 11.96 hrs, Volume= 6,368 cf
Primary = 3.27 cfs @ 11.96 hrs, Volume= 6,368 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link POA3: POA #3

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Time span=0.00-96.00 hrs, dt=0.01 hrs, 9601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: DA-1	Runoff Area=6.739 ac 72.10% Impervious Runoff Depth=3.35" Tc=5.0 min CN=WQ Runoff=36.18 cfs 81,838 cf
Subcatchment2B: Bypass to POA #2	Runoff Area=1.492 ac 2.01% Impervious Runoff Depth=2.14" Tc=5.0 min CN=WQ Runoff=5.88 cfs 11,606 cf
Subcatchment2S: DA-2	Runoff Area=8.114 ac 98.31% Impervious Runoff Depth=3.82" Tc=5.0 min CN=WQ Runoff=48.23 cfs 112,384 cf
Subcatchment3B: Bypass to POA #3	Runoff Area=1.243 ac 0.00% Impervious Runoff Depth=2.08" Tc=5.0 min CN=WQ Runoff=4.79 cfs 9,393 cf
Subcatchment3S: DA-3	Runoff Area=4.417 ac 86.71% Impervious Runoff Depth=3.61" Tc=5.0 min CN=WQ Runoff=25.18 cfs 57,947 cf
Subcatchment4S: DA-4	Runoff Area=3.585 ac 91.35% Impervious Runoff Depth=3.69" Tc=5.0 min CN=WQ Runoff=20.79 cfs 48,081 cf
Subcatchment5S: DA-5	Runoff Area=2.881 ac 86.78% Impervious Runoff Depth=3.62" Tc=5.0 min CN=WQ Runoff=16.43 cfs 37,808 cf
Subcatchment6S: DA-6	Runoff Area=3.336 ac 77.34% Impervious Runoff Depth=3.39" Tc=5.0 min CN=WQ Runoff=18.00 cfs 41,079 cf
Subcatchment7S: DA-7	Runoff Area=4.253 ac 92.97% Impervious Runoff Depth=3.72" Tc=5.0 min CN=WQ Runoff=24.80 cfs 57,474 cf
Subcatchment8S: DA-8	Runoff Area=4.380 ac 2.31% Impervious Runoff Depth=2.11" Tc=5.0 min CN=WQ Runoff=16.98 cfs 33,538 cf
Pond 1P: SCM 1: Infiltration AGB	Peak Elev=276.04' Storage=55,029 cf Inflow=36.18 cfs 81,838 cf Discarded=0.24 cfs 67,014 cf Primary=0.48 cfs 14,827 cf Outflow=0.72 cfs 81,841 cf
Pond 2P: SCM 2: Detention UGB	Peak Elev=270.96' Storage=48,342 cf Inflow=48.23 cfs 112,384 cf Outflow=9.33 cfs 112,244 cf
Pond 3P: SCM 3: Detention UGB	Peak Elev=273.80' Storage=21,656 cf Inflow=25.18 cfs 57,947 cf Outflow=9.14 cfs 57,908 cf
Pond 4P: SCM 4: Detention UGB	Peak Elev=274.32' Storage=16,626 cf Inflow=20.79 cfs 48,081 cf Outflow=6.60 cfs 48,040 cf
Pond 5P: SCM 5: Detention UGB	Peak Elev=278.29' Storage=10,821 cf Inflow=16.43 cfs 37,808 cf Outflow=8.99 cfs 37,798 cf
Pond 6P: SCM 6: Detention UGB	Peak Elev=281.66' Storage=13,842 cf Inflow=18.00 cfs 41,079 cf Outflow=7.51 cfs 41,063 cf

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Type II 24-hr 5-yr Rainfall=4.08"

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Pond 7P: SCM 7: Detention UGB

Peak Elev=274.73' Storage=21,043 cf Inflow=24.80 cfs 57,474 cf
Outflow=8.37 cfs 57,442 cf

Link POA1: POA #1

Inflow=59.24 cfs 402,860 cf
Primary=59.24 cfs 402,860 cf

Link POA2: POA #2

Inflow=5.88 cfs 11,606 cf
Primary=5.88 cfs 11,606 cf

Link POA3: POA #3

Inflow=4.79 cfs 9,393 cf
Primary=4.79 cfs 9,393 cf

Total Runoff Area = 1,761,566 sf Runoff Volume = 491,147 cf Average Runoff Depth = 3.35"
28.03% Pervious = 493,709 sf 71.97% Impervious = 1,267,857 sf

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Type II 24-hr 5-yr Rainfall=4.08"

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Summary for Subcatchment 1S: DA-1

Runoff = 36.18 cfs @ 11.96 hrs, Volume= 81,838 cf, Depth= 3.35"
Routed to Pond 1P : SCM 1: Infiltration AGB

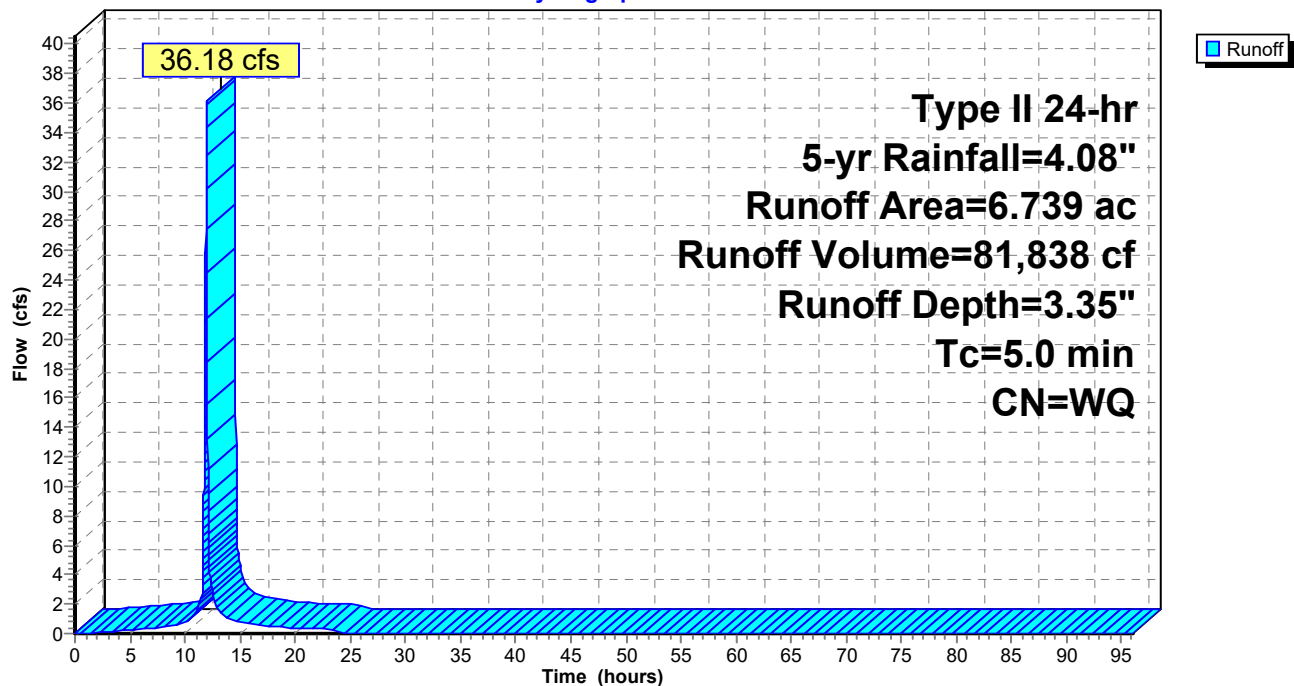
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-yr Rainfall=4.08"

Area (ac)	CN	Description
0.222	74	>75% Grass cover, Good, HSG C
1.658	80	>75% Grass cover, Good, HSG D
4.859	98	Paved parking, HSG D
6.739		Weighted Average
1.880		27.90% Pervious Area
4.859		72.10% Impervious Area

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

Subcatchment 1S: DA-1

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Type II 24-hr 5-yr Rainfall=4.08"

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Summary for Subcatchment 2B: Bypass to POA #2

Runoff = 5.88 cfs @ 11.96 hrs, Volume= 11,606 cf, Depth= 2.14"
Routed to Link POA2 : POA #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-yr Rainfall=4.08"

Area (ac)	CN	Description
1.462	80	>75% Grass cover, Good, HSG D
0.030	98	Paved parking, HSG D
1.492		Weighted Average
1.462		97.99% Pervious Area
0.030		2.01% Impervious Area

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

Subcatchment 2B: Bypass to POA #2

Hydrograph

