

Appendix A
Study Area Land Use by Subbasin

Apalachicola Study Area Existing Land Use

Subbasin	Total area (acres)	Land Use Type	Area (acres)	Percent of Subbasin
1	4.1	Medium Density Residential	4.1	100
2	18.3	Medium Density Residential Institutional	15.9 2.4	87 13
3	3.4	Medium Density Residential	3.4	100
4	2.9	Medium Density Residential	2.9	100
5	2.1	Medium Density Residential	2.1	100
6	5.1	Medium Density Residential	5.1	100
7	5.2	Medium Density Residential	5.2	100
8	2.6	Medium Density Residential	2.6	100
9	2.7	Medium Density Residential Commercial	1.1 1.6	41 59
10	1.9	Medium Density Residential Commercial	1.6 0.3	84 16
11	2.8	Commercial	2.8	100
12	2.9	Commercial	2.9	100
13	1.3	Commercial	1.3	100
14	1.1	Commercial	1.1	100
15	3.6	Medium Density Residential Commercial	1.2 2.4	33 67
16	3.6	Medium Density Residential Commercial	0.4 3.2	11 89
17	10.8	Medium Density Residential Institutional	9.8 1.0	91 9
18	10.5	Medium Density Residential	10.5	100
19	2.9	Medium Density Residential	2.9	100
20	2.8	Medium Density Residential	2.8	100
21	1.0	Medium Density Residential	1.0	100
22	5.0	Medium Density Residential Commercial	2.0 3.0	40 60
23	2.8	Medium Density Residential Commercial	1.0 1.8	36 64
24	3.8	Medium Density Residential Commercial	2.1 1.7	55 45
25	2.5	Commercial	2.5	100
26	2.5	Medium Density Residential Commercial	0.9 1.6	36 64
27	2.7	Medium Density Residential Commercial	1.2 1.5	44 56
28	2.6	Medium Density Residential Commercial	1.2 1.4	46 54

29	1.9	Medium Density Residential Commercial	1.1 0.8	58 42
30	0.5	Medium Density Residential	0.5	100
31	2.7	Medium Density Residential	2.7	100
32	2.9	Medium Density Residential	2.9	100
33	3.6	Medium Density Residential	3.6	100
34	3.4	Medium Density Residential	3.4	100
35	2.9	Medium Density Residential	2.9	100
36	2.5	Medium Density Residential	2.5	100
37	1.2	Medium Density Residential	1.2	100
38	1.5	Recreational	1.5	100

Carabelle Study Area Existing Land Use

Subbasin	Total area (acres)	Land Use Type	Area (acres)
C1	34.5	Low Density Residential	15.0
		Medium Density Residential	19.5
C2	78.3	Medium Density Residential	14.9
		Institutional	54.6
		Forest	8.8
C3	257.7	Low Density Residential	32.8
		Medium Density Residential	18.9
		Forest	170.4
		Sand Other Than Beaches	5.0
		Water	30.6

Eastpoint Study Area Existing Land Use

Subbasin	Total area (acres)	Land Use Type	Area (acres)
EP2	33.5	Low Density Residential	4.9
		Medium Density Residential	9.4
		Commercial	1.7
		Forest	17.5
EP3	39.5	Low Density Residential	6.8
		Commercial	3.8
		Forest	28.8
EP4	22.0	Low Density Residential	6.3
		Medium Density Residential	3.9
		Forest	8.7
		Wetlands	3.1

EP5	321.7	Medium Density Residential	21.9
		Institutional	5.8
		Utilities	12.3
		Forest	205.3
		Wetlands	76.4
EP6	20.9	Low Density Residential	1.6
		Medium Density Residential	1.9
		Extractive	7.1
		Forest	10.3
EP7	19.5	Forest	19.5
EP8	8.5	Low Density Residential	1.5
		Forest	7.0
EP9	228.2	Low Density Residential	49.2
		Recreational	8.9
		Forest	166.6
		Wetlands	3.5
EP10	34.2	Low Density Residential	28.4
		Forest	5.8
EP11	4.0	Low Density Residential	4.0
EP12	23.5	Medium Density Residential	16.4
		Forest	7.1
EP13	86.4	Low Density Residential	24.3
		Extractive	5.6
		Utilities	5.3
		Forest	29.4
		Wetlands	21.8

Lanark Village Study Area Existing Land Use

Subbasin	Total area (acres)	Land Use Type	Area (acres)
LV1	48.3	Medium Density Residential	14.6
		Golf Course	10.6
		Forest	22.5

Appendix B
Storm Flow Statistics

Storm Flow Statistics							
Parameter/ Storet Code/ units	Station Number	Number of Samples	Minimum	Maximum	Average	Median	Standard Deviation
Turbidity 76 (NTU)	S523	4	0.85	5.6	3.24	3.25	2.15
	S524	4	3	4.9	3.90	3.85	1.04
	S525	4	4.7	83	43.43	43.00	32.23
	S526	3	12	17	13.67	12.00	2.89
	S527	3	20	22	21.00	21.00	1.00
Total Suspended Solids 530 (mg/L)	S523	4	4	23	11.00	8.50	8.29
	S524	4	4	5	4.25	4.00	0.50
	S525	4	4	15	10.40	11.30	4.81
	S526	3	15	32	23.67	24.00	8.50
	S527	3	22	70	48.67	54.00	24.44
Ammonia Nitrogen 610 (mg N/L)	S523	4	0.01	0.26	0.07	0.01	0.12
	S524	5	0.10	0.18	0.15	0.17	0.03
	S525	5	0.03	0.06	0.04	0.04	0.01
	S526	4	0.07	0.19	0.12	0.11	0.05
	S527	4	0.08	0.11	0.10	0.10	0.01
Total Kjeldahl Nitrogen 625 (mg N/L)	S523	5	0.35	0.78	0.63	0.70	0.17
	S524	5	1.20	1.30	1.24	1.20	0.05
	S525	5	0.96	1.30	1.09	1.10	0.13
	S526	4	0.55	0.87	0.72	0.74	0.13
	S527	4	0.74	1.40	1.03	0.99	0.29
Nitrate+Nitrite 630 (mg N/L)	S523	5	0.01	0.06	0.03	0.02	0.02
	S524	5	0.03	0.11	0.06	0.04	0.03
	S525	5	0.01	0.04	0.02	0.03	0.01
	S526	4	0.15	0.36	0.28	0.30	0.09
	S527	4	0.08	0.28	0.19	0.21	0.09
Total Phosphorous 665 (mg P/L)	S523	5	0.02	0.07	0.05	0.05	0.02
	S524	5	0.02	0.04	0.03	0.03	0.01
	S525	5	0.05	0.15	0.10	0.10	0.04
	S526	4	0.07	0.22	0.15	0.16	0.07
	S527	4	0.07	0.35	0.25	0.29	0.13
Orthophosphate 671 (mg P/L)	S523	5	0.01	0.04	0.02	0.02	0.01
	S524	5	0.01	0.02	0.01	0.01	0.00
	S525	5	0.04	0.08	0.05	0.05	0.02
	S526	4	0.06	0.10	0.07	0.07	0.02
	S527	4	0.06	0.14	0.10	0.09	0.04
Magnesium 927 (mg/L)	S523	3	1.21	1.67	1.39	1.28	0.25
	S524	5	0.81	1.13	0.93	0.92	0.12
	S525	5	1.83	2.92	2.29	2.22	0.41
	S526	4	4.81	25.00	13.26	11.62	8.87
	S527	4	4.48	31.60	12.38	6.71	12.96
Zinc 1092 (ug/L)	S523	4	5.00	21.00	11.25	9.50	6.85
	S524	4	12.00	20.00	16.75	17.50	3.40
	S525	5	8.00	60.00	22.20	14.00	21.34
	S526	4	8.00	48.00	30.25	32.50	17.13
	S527	4	38.00	117.00	68.25	59.00	34.94

APPENDIX C – LONG TERM FECAL COLIFORM DATA

The following is a statistical summary of the long-term fecal coliform data in the Apalachicola Bay shellfish harvesting area received from the Department of Environmental Protection.

**SUMMARY OF LONG TERM FECAL COLIFORM DATA
IN THE APALACHICOLA BAY SHELLFISH HARVESTING AREA
JANUARY, 1979 THROUGH DECEMBER, 1995**

Station ID Number	Num. of Samples	Mean (MPN/100ML)	Minimum Value	Maximum Value	Std. Deviation
53	2	1	1	1	N/A
70	427	9	1	220	21.98
72	212	10	1	540	40.40
73	1	1	1	1	N/A
74	98	7	1	170	23.87
75	103	4	1	79	11.66
76	88	4	1	79	10.40
77	24	4	1	49	9.87
79	21	6	1	79	17.09
80	427	7	1	170	17.23
81	418	8	1	240	20.74
82	304	7	1	220	21.31
83	301	12	1	540	44.44
84	36	5	1	70	14.11
85	28	3	1	33	6.51
86	25	2	1	13	2.54
87	6	1	1	2	0.52
90	12	144	1	1700	490.17
100	490	16	1	920	66.42
109	1	540	540	540	N/A
140	530	16	1	350	35.59
150	197	12	1	240	25.34
151	196	11	1	350	31.49
152	203	9	1	110	17.66
153	155	8	1	79	13.91
155	30	4	1	49	9.10
160	534	17	1	1600	74.84
162	291	19	1	240	38.46
163	172	14	1	350	36.72
190	238	53	1	1700	142.28
200	8	4	1	17	5.84
210	1	79	79	79	N/A
221	445	46	1	1700	134.96
222	1	11	11	11	N/A
223	1	11	11	11	N/A
224	130	37	1	350	58.78
225	133	35	1	350	57.09
230	212	57	1	1700	167.99
231	120	59	1	1600	157.63
232	119	74	1	1700	181.23
233	127	85	1	1700	234.50
234	154	50	1	540	90.19
235	135	48	1	920	123.99
240	460	44	1	920	79.43

**SUMMARY OF LONG TERM FECAL COLIFORM DATA
IN THE APALACHICOLA BAY SHELLFISH HARVESTING AREA
JANUARY, 1979 THROUGH DECEMBER, 1995
(continued)**

Station ID Number	Num. of Samples	Mean (MPN/100ML)	Minimum Value	Maximum Value	Std. Deviation
242	130	72	1	1700	165.42
244	88	38	1	220	49.74
246	89	37	1	540	75.71
250	389	71	1	1700	155.30
251	1	49	49	49	N/A
252	1	13	13	13	N/A
253	100	64	2	540	85.43
254	134	73	1	1700	164.78
255	103	59	1	1700	179.08
257	95	60	1	540	98.83
259	92	55	1	540	93.06
260	590	29	1	540	50.90
265	7	7	1	33	11.51
270	277	69	1	1600	122.33
272	153	57	1	540	75.80
275	5	33	1	130	55.18
280	598	63	1	1700	123.08
281	2	90	70	110	28.28
285	17	18	1	79	25.70
289	1	23	23	23	N/A
295	15	38	1	240	66.98
320	331	42	1	350	59.08
321	333	15	1	180	27.00
322	41	50	1	350	73.08
323	353	9	1	350	26.54
325	39	60	1	540	103.17
330	2	23	23	23	0.00
340	549	12	1	350	27.81
341	560	28	1	1600	86.20
342	461	15	1	350	36.79
343	443	8	1	350	21.18
344	239	10	1	130	18.08
345	47	34	1	350	65.66
346	210	8	1	240	22.10
349	10	19	1	94	30.21
350	468	5	1	170	13.49
351	194	5	1	110	12.34
352	477	18	1	350	44.55
353	536	8	1	240	18.81
354	154	20	1	540	53.17
355	47	11	1	240	34.97
356	47	8	1	49	11.78
359	108	3	1	49	6.47
360	240	6	1	130	15.04
370	6	7	1	33	12.83

**SUMMARY OF LONG TERM FECAL COLIFORM DATA
IN THE APALACHICOLA BAY SHELLFISH HARVESTING AREA
JANUARY, 1979 THROUGH DECEMBER, 1995
(continued)**

Station ID Number	Num. of Samples	Mean (MPN/100ML)	Minimum Value	Maximum Value	Std. Deviation
371	552	16	1	220	27.33
372	539	17	1	920	53.14
373	242	18	1	540	46.48
374	346	13	1	240	26.16
375	10	16	1	110	34.01
380	494	28	1	1700	96.54
390	236	19	1	170	32.07
400	14	5	1	33	9.75
410	473	20	1	920	61.25
482	1	8	8	8	N/A
578	143	7	1	110	14.15

APPENDIX D -- Study Area Soils Index

Types and Descriptions

(3) Beaches. Beaches consist of narrow strips of nearly level land areas along the Gulf of Mexico and adjacent bays. These soils are covered daily with saltwater at high tides. Beaches are used intensively for recreation. Homes and commercial buildings have been built on the fringes of beaches in many places. Beaches are not suitable for homesite development, however, because of frequent tidal flooding.

(4) Dirego and Bayvi soils, tidal. These very poorly drained, nearly level soils are in gulf coast tidal marshes and in estuarine marshes along the lower reaches of the Apalachicola River. In areas where these soils occur they are comprised of approximately 50 percent Dirego soil and 40 percent Bayvi soil with slopes less than 1 percent. These soils have a water table at or near the surface throughout the year and are flooded daily by normal high tides. Permeability is rapid. In most areas the natural vegetation consists of black needlerush, marshhay cordgrass, and smooth cordgrass. These soils are unsuitable for development.

(5) Aquents, nearly level. These are poorly drained and somewhat poorly drained soils are in low landscape positions adjacent to rivers, coastal bays, marshes, and in shallow excavated areas. Slopes range from 0 to 2 percent. These soils formed in recent fill of variable composition. They generally contain fragments of brick, oyster shells, woody material, and assorted human artifacts. A seasonal high water table is generally within a depth of 20 inches throughout the year, but it may be slightly above the surface during periods of unseasonably high rainfall. Onsite investigation is needed to determine the suitability of the soils for most land uses.

(7) Bohicket and Tisonia soils, tidal. These very poorly drained, nearly level soils are in gulf coast tidal marshes and in estuarine marshes along the lower reaches of the Apalachicola River. In areas where these soils occur they are comprised of approximately 45 percent Bohicket soil and 40 percent Tisonia soil with slopes less than 1 percent. These soils have a water table at or near the surface throughout the year and are flooded daily by normal high tides. The available water capacity is high. Permeability is very slow. In most areas the natural vegetation consists of black needlerush, marshhay cordgrass, and smooth cordgrass. These soils are unsuitable for development.

(8) Ridgewood Sand, 0 to 5 percent slopes. This somewhat poorly drained, nearly level or gently sloping soil is on slightly convex knolls in the uplands and in the flatwoods. Slopes range from 0 to 5 percent. The Ridgewood soil has a seasonal high water table at a depth of 24 to 42 inches for 2 to 4 months in most years. The water table is at a depth of 15 to 24 inches for less than 3 weeks in some years. The available water capacity is low in the surface layer and very low or low in the rest of the profile. Permeability is rapid. This soil is only moderately suited to homesite development because of the seasonal wetness and the occasional droughtiness. It is only moderately suited to use as a site for small commercial buildings because of the wetness. Because of the rapid permeability, areas for onsite waste disposal should be carefully selected to prevent contamination of ground water. Homes should not be clustered together, and the waste disposal site should not be located adjacent to any body of water.

(10) Corolla sand, 0 to 5 percent slopes. This somewhat poorly drained, nearly level or gently sloping soil is on flats and small dunes and in swales on large dunes along the gulf

coast beaches. Slopes range from 0 to 5 percent but are generally less than 3 percent. The Corolla soil has a seasonal high water table at a depth of 18 to 36 inches for 3 to 6 months in most years. Flooding can occur during severe coastal storm. The available water capacity is low. Permeability is very rapid. The soil is poorly suited to use as a site for homes, small commercial buildings, sewage lagoons, and sanitary landfills. It is moderately suited to use as a site for local roads and streets. The major limitations are seasonal droughtiness and wetness, the hazard of flooding, and the very rapid permeability.

(11) Dorovan-Pamlico complex, depressional. These very poorly drained, nearly level soils are in depressions and poorly defined drainage ways. In areas where these soils occur they are comprised of approximately 55 percent Dorovan soil and 30 percent Pamlico soil with slopes ranging from 0 to 2 percent. These soils have a seasonal high water table ponded on the surface or within a depth of 24 inches for 3 to 6 months in most years. The available water capacity is and the permeability ranges from moderate to rapid. These soils are unsuitable for development.

(15) Ortega fine sand, 0 to 5 percent slopes. This moderately well drained, nearly level or gently sloping soil is on side slopes or in concave areas in the sandy uplands. Slopes range from 0 to 5 percent. This soil has a seasonal high water table at a depth of 60 to 72 inches for as long as 6 months in most years. The available water capacity is low in the surface layer and very low in the underlying material. Permeability is rapid. This soil is well suited to use as a site for homes, small commercial buildings, and local streets. It is poorly suited to sewage lagoons and landfills because of seepage. Homes should not be clustered together, and the waste disposal site should not be located adjacent to any body of water.

(19) Kureb fine sand, 3 to 8 percent slopes. This excessively drained, gently sloping or sloping soil is on convex coastal ridges and remnant dunes. Slopes range from 3 to 8 percent. This soil does not have a seasonal high water table within a depth of 72 inches. The available water capacity is very low. Permeability is very rapid. This soil is well suited to use as a site for homes, small commercial buildings, and local streets. It is poorly suited to sewage lagoons and landfills because of seepage. Homes should not be clustered together, and the waste disposal site should not be located adjacent to any body of water.

(20) Lynn Haven sand. This poorly drained, nearly level soil is in broad, very slightly depressional areas in the flatwoods. Slopes range from 0 to 2 percent. Lynn Haven soil has a seasonal high water table within a depth of 12 inches for 4 to 6 months each year and within a depth of 30 inches for the rest of the year. The available water capacity is low in the surface layer, moderate or high in the subsoil, and very low in the substratum. Permeability is moderate or moderately rapid in the subsoil and rapid or very rapid in the rest of the profile. This soil is poorly suited to development because of the wetness.

(22) Leon sand. This poorly drained, nearly level soil is in broad areas in the flatwoods and on knolls or low ridges in titi bogs. Slopes range from 0 to 2 percent. Leon soil has a seasonal high water table within a depth of 6 to 12 inches for 4 months in most years. The water table recedes to a depth of more than 40 inches during dry periods. The available water capacity is very low in the surface and subsurface layers and low in the subsoil. Permeability is rapid in the surface and subsurface layers and moderate or

moderately rapid in the subsoil. This soil is poorly suited to development because of the wetness.

(23) Maurepas muck, frequently flooded. This very poorly drained, nearly level, organic soil is in slightly brackish swamps and marshes. Slopes are generally less than 1 percent. Maurepas soil has a high water table 12 inches above the surface to a depth of 6 inches throughout the year. The water table fluctuates with the rising and falling tide. The available water capacity is very high. Permeability is rapid. This soil is not suited to development because of the high water table, a lack of drainage outlets, and the low strength of the soil.

(24) Mandarin fine sand. This somewhat poorly drained, nearly level soil is on low coastal ridges and knolls in the flatwoods. Slopes range from 0 to 3 percent. Mandarin soil has a seasonal high water table at a depth of 18 to 36 inches for 3 to 6 months in most years. The available water capacity is very low in the surface and subsurface layers and moderate in the subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. This soil is only moderately suited to homesite, small commercial, and road development because of the seasonal wetness and the occasional droughtiness. Because of the rapid permeability, areas for onsite waste disposal should be carefully selected to prevent contamination of ground water. Homes should not be clustered together, and the waste disposal site should not be located adjacent to any body of water.

(26) Duckston sand, occasionally flooded. This somewhat poorly drained, nearly level soil is on level flats adjacent to coastal dunes and marshes and in low swales between dunes. Slopes range from 0 to 2 percent. Duckston soil has a high water table within a depth of 12 inches throughout most years. The water table may fluctuate with the rising and falling tide. Flooding is likely during periods of heavy rainfall in combination with high tides or during strong coastal storms. The available water capacity is very low. Permeability is very rapid. This soil is poorly suited to use as a site for homes, small commercial, and road development.

(29) Resota fine sand, 0 to 5 percent slopes. This moderately well drained, nearly level or gently sloping soil is on coastal ridges and remnant dunes. Slopes range from 0 to 5 percent. The Resota soil has a seasonal high water table at a depth of 40 to 60 inches for as long as 6 months in most years. The water table is below a depth of 60 inches during dry periods. The available water capacity is very low. Permeability is very rapid. The soil is well suited to use as a site for homes, small commercial buildings, and local roads and streets. It is poorly suited to sewage lagoons and landfills. Because of the very rapid permeability, areas for onsite waste disposal should be carefully selected to prevent contamination of ground water. Homes should not be clustered together, and the waste disposal site should not be located adjacent to any body of water.

(30) Rutlege loamy fine sand, depressional. This very poorly drained, nearly level soil is in depressions. Slopes are generally less than 2 percent. The Rutlege soil has a seasonal high water table ponded on the surface or within a depth of 24 inches 3 to 6 months in most years. The available water capacity is low. Permeability is rapid. This soil is poorly suited to local roads and streets and is generally unsuited to use as a site for small commercial buildings because of the seasonal high water table.

(31) Rutlege fine sand. This very poorly drained, nearly level soil is on broad low-lying flats and on narrow flats adjacent to streams. Slopes range from 0 to 2 percent. The

Rutlege soil has a seasonal high water table at or slightly above the surface for 3 to 6 months in most years. The water table is within a depth of 20 inches during the rest of most years. The available water capacity is low. Permeability is rapid. This soil is poorly suited to use as a site for homes, local roads and streets and is generally unsuited to use as a site for small commercial buildings because of the seasonal high water table.

(33) Scranton fine sand. This very poorly drained, nearly level soil is in broad areas in the flatwoods. Slopes range from 0 to 2 percent. The Scranton soil has a seasonal high water table at a depth of 6 to 18 inches for 3 to 6 months in most years.. The available water capacity is low. Permeability is rapid. This soil is poorly suited to use as a site for homes, local roads and streets and is generally unsuited to use as a site for small commercial buildings because of the seasonal high water table.

(36) Pickney-Pamlico complex, depressional. These very poorly drained, nearly level soils are in depressions, freshwater swamps, and poorly defined drainageways. In areas where these soils occur they are comprised of approximately 45 percent Pickney soil and 40 percent Pamlico soil with slopes generally less than 1 percent. These soils have a seasonal high water table within a depth of 18 inches for as much as 5 months each year. The water table is generally within a depth of less than 6 inches for the rest of most years. The available water capacity ranges from very low to very high in the Pamlico soil and from very low to moderate in the Pickney soil. Permeability ranges from moderate to rapid in both soils. These soils are unsuitable for development.

(38) Meadowbrook sand. This poorly drained, nearly level soil is in the flatwoods. Slopes range from 0 to 2 percent. The Meadowbrook soil has a seasonal high water table at a depth of 12 inches for 3 to 6 months in most years.. The available water capacity is low or very low in the surface and subsurface layers and moderate in the subsoil. Permeability is rapid in the surface and subsurface layers and moderately slow in the subsoil. This soil is poorly suited to use as a site for homes, local roads and streets and is generally unsuited to use as a site for small commercial buildings because of the wetness.

(39) Scranton sand, slough. This very poorly drained, nearly level soil is in broad sloughs. Slopes are generally less than 2 percent. The Scranton soil has a seasonal high water table within a depth of 6 inches for 3 to 6 months in most years. The water table is within a depth of 30 inches for the rest of most years, but recedes to a depth of more than 30 inches during extended dry periods. After periods of heavy rainfall, the surface is covered by shallow, slow moving water for as long as 3 weeks. The available water capacity is low. Permeability is rapid. This soil is poorly suited to use as a site for homes, local roads and streets and is generally unsuited to use as a site for small commercial buildings because of the wetness.

(41) Pamlico-Pickney complex, frequently flooded. These very poorly drained, nearly level soils are on flood plains along rivers and major streams. In areas where these soils occur they are comprised of approximately 45 percent Pickney soil and 55 percent Pamlico soil with slopes generally less than 1 percent. These soils have a seasonal high water table at or above the surface for much of the year. They are flooded during periods of heavy rainfall, mainly from December to April. The available water capacity is very high in the organic layers and very low to moderate in the mineral layers. Permeability is rapid or moderately rapid. These soils are unsuitable for development because of the seasonal high water table.

(48) Udorthents, nearly level. These somewhat poorly drained to moderately well drained soils are on high, nearly level deposits of dredge spoil. Slopes generally range from 0 to 3 percent. These soils have a seasonal high water table at a depth of 20 to 60 inches for 3 months or longer during most years. Other soil properties are so variable that they cannot be determined without onsite investigation. The suitability of this soil for development must be determined by onsite investigation.

Appendix E – Runoff Parameters Used in the SWIM Models

SWMM RUNOFF PARAMETERS FOR THE CITY OF APALACHICOLA STUDY AREA

Subbasin No.	W	A	PI	S	n _i	n _p	d _i	d _p	Su	Ks	IMD
1	208.00	4.066	26.488	0.006	0.20	0.013	0.035	0.10	4.0	6.0	0.34
2	528.00	18.183	23.978	0.002	0.20	0.013	0.035	0.10	4.0	6.0	0.34
3	409.00	3.183	28.976	0.005	0.20	0.013	0.035	0.10	4.0	6.0	0.34
4	426.00	2.860	16.329	0.045	0.20	0.013	0.035	0.10	4.0	6.0	0.34
5	250.00	2.099	22.153	0.026	0.20	0.013	0.035	0.10	4.0	6.0	0.34
6	319.00	5.127	23.093	0.014	0.20	0.013	0.035	0.10	4.0	6.0	0.34
7	309.00	5.155	18.642	0.022	0.20	0.013	0.035	0.10	4.0	6.0	0.34
8	338.00	2.566	26.228	0.020	0.20	0.013	0.035	0.10	4.0	6.0	0.34
9	342.00	3.211	29.897	0.011	0.20	0.013	0.035	0.10	4.0	6.0	0.34
10	200.00	1.958	13.432	0.013	0.20	0.013	0.035	0.10	4.0	6.0	0.34
11	260.00	2.875	27.722	0.015	0.20	0.013	0.035	0.10	4.0	6.0	0.34
12	280.00	2.246	36.376	0.017	0.20	0.013	0.035	0.10	4.0	6.0	0.34
13	207.00	1.430	30.699	0.034	0.20	0.013	0.035	0.10	4.0	6.0	0.34
14	160.00	1.152	32.205	0.008	0.20	0.013	0.035	0.10	4.0	6.0	0.34
15	988.40	13.614	41.083	0.013	0.20	0.013	0.035	0.10	4.0	6.0	0.34
16	355.90	3.677	32.200	0.006	0.20	0.013	0.035	0.10	4.0	6.0	0.34
17	466.75	10.715	23.565	0.007	0.20	0.013	0.035	0.10	4.0	6.0	0.34
18	571.80	10.501	17.332	0.011	0.20	0.013	0.035	0.10	4.0	6.0	0.34
19	300.00	2.893	21.120	0.013	0.20	0.013	0.035	0.10	4.0	6.0	0.34
20	300.00	2.806	19.066	0.005	0.20	0.013	0.035	0.10	4.0	6.0	0.34
21	121.50	0.976	27.869	0.004	0.20	0.013	0.035	0.10	4.0	6.0	0.34
22	369.75	5.093	30.964	0.017	0.20	0.013	0.035	0.10	4.0	6.0	0.34
23	300.00	2.888	31.891	0.001	0.20	0.013	0.035	0.10	4.0	6.0	0.34
24	239.27	3.845	16.697	0.011	0.20	0.013	0.035	0.10	4.0	6.0	0.34
25	142.40	2.452	23.695	0.014	0.20	0.013	0.035	0.10	4.0	6.0	0.34
26	266.37	2.446	27.105	0.019	0.20	0.013	0.035	0.10	4.0	6.0	0.34
27	254.80	2.632	29.597	0.013	0.20	0.013	0.035	0.10	4.0	6.0	0.34
28	267.40	2.762	20.927	0.010	0.20	0.013	0.035	0.10	4.0	6.0	0.34
29	218.20	2.004	23.902	0.015	0.20	0.013	0.035	0.10	4.0	6.0	0.34
30	153.60	0.529	34.594	0.010	0.20	0.013	0.035	0.10	4.0	6.0	0.34
31	332.02	2.744	25.255	0.022	0.20	0.013	0.035	0.10	4.0	6.0	0.34
32	272.30	2.813	26.271	0.002	0.20	0.013	0.035	0.10	4.0	6.0	0.34
33	513.14	3.534	20.855	0.023	0.20	0.013	0.035	0.10	4.0	6.0	0.34
34	293.25	3.366	26.708	0.012	0.20	0.013	0.035	0.10	4.0	6.0	0.34
35	320.17	2.940	21.837	0.020	0.20	0.013	0.035	0.10	4.0	6.0	0.34
36	314.50	2.527	34.230	0.014	0.20	0.013	0.035	0.10	4.0	6.0	0.34
37	157.40	1.265	26.482	0.023	0.20	0.013	0.035	0.10	4.0	6.0	0.34
38	182.20	1.464	14.071	0.012	0.20	0.013	0.035	0.10	4.0	6.0	0.34

W = subbasin width (feet)

A = subbasin area (acres)

PI = percent imperviousness (acres/acres)

S = average basin slope

n_i = Manning's n for impervious areas (feet)

n_p = Manning's n for pervious areas

d_i = depression storage in impervious areas (feet)

d_p = depression storage in pervious areas (feet)

Su = capillary suction (inches)

Ks = saturated hydraulic conductivity (in/hr)

IMD = initial moisture deficit

Appendix F – Physical Characteristics of Conduits in the Apalachicola Study Area

Physical Characteristics of Conduits				
conduit type = circular pipe				
Conduit No.	Length (feet)	Diameter (feet)	Slope (ft/ft)	Manning's n
PA2-3	110	1.5	0.360	0.015
PA3-4	230	4.0	0.360	0.015
PA4-6	120	4.0	0.360	0.015
PA6-7	400	4.0	1.325	0.015
PA7-9	300	4.0	0.0	0.015
PA9-11	100	4.0	0.0	0.015
PBA15-7	200	3.5	0.0	0.015
PA8-9	200	1.0	0.435	0.015
PA15-16	700	2.0	0.780	0.015
PB16-15	100	1.0	0.100	0.015
PB14-15	120	3.5	0.0	0.015
PB13-14	100	3.5	0.0	0.015
PB12-13	100	3.5	0.135	0.015
PB18-12	100	3.5	0.135	0.015
PB19-18	130	3.0	0.308	0.015
PB10-11	100	1.5	0.610	0.015
PB11-12	250	1.5	0.702	0.015
PB21-19	100	3.0	0.490	0.015
PB8-9	100	1.0	0.670	0.015
PB7-8	100	1.0	0.670	0.015
PB3-7	100	1.0	0.670	0.015
PB4-3	200	1.0	0.670	0.015
PB24-21	100	2.0	0.173	0.015
PB23-24	100	1.0	0.100	0.015
PB25-24	200	2.0	0.173	0.015
PB28-25	100	1.0	0.100	0.015
PB26-25	100	2.0	0.173	0.015
PB6-7	150	1.0	0.100	0.015
PC12-11	100	1.0	0.100	0.015
PC11-9	100	2.0	0.100	0.015
PC8-9	100	1.0	0.100	0.015
PC9-6	100	2.0	0.150	0.015
PC7-5	100	2.0	0.158	0.015
PC5-4	100	2.0	0.158	0.015
PC4-3	100	2.0	0.158	0.015
PC3-2	100	2.0	0.158	0.015
PC2-1	260	2.0	0.292	0.015
PC1-B26	150	2.0	0.913	0.015
PC7-6	60	1.0	0.100	0.015
PA11A-12A	50	3.0	0.0	0.015
PA11A-12B	50	3.0	0.0	0.015

Physical Characteristics of Conduits				
conduit type = circular pipe				
Conduit No.	Length (feet)	Diameter (feet)	Slope (ft/ft)	Manning's n
PA2-3	110	1.5	0.360	0.015
PA3-4	230	4.0	0.360	0.015
PA4-6	120	4.0	0.360	0.015
PA6-7	400	4.0	1.325	0.015
PA7-9	300	4.0	0.0	0.015
PA9-11	100	4.0	0.0	0.015
PBA15-7	200	3.5	0.0	0.015
PA8-9	200	1.0	0.435	0.015
PA15-16	700	2.0	0.780	0.015
PB16-15	100	1.0	0.100	0.015
PB14-15	120	3.5	0.0	0.015
PB13-14	100	3.5	0.0	0.015
PB12-13	100	3.5	0.135	0.015
PB18-12	100	3.5	0.135	0.015
PB19-18	130	3.0	0.308	0.015
PB10-11	100	1.5	0.610	0.015
PB11-12	250	1.5	0.702	0.015
PB21-19	100	3.0	0.490	0.015
PB8-9	100	1.0	0.670	0.015
PB7-8	100	1.0	0.670	0.015
PB3-7	100	1.0	0.670	0.015
PB4-3	200	1.0	0.670	0.015
PB24-21	100	2.0	0.173	0.015
PB23-24	100	1.0	0.100	0.015
PB25-24	200	2.0	0.173	0.015
PB28-25	100	1.0	0.100	0.015
PB26-25	100	2.0	0.173	0.015
PB6-7	150	1.0	0.100	0.015
PC12-11	100	1.0	0.100	0.015
PC11-9	100	2.0	0.100	0.015
PC8-9	100	1.0	0.100	0.015
PC9-6	100	2.0	0.150	0.015
PC7-5	100	2.0	0.158	0.015
PC5-4	100	2.0	0.158	0.015
PC4-3	100	2.0	0.158	0.015
PC3-2	100	2.0	0.158	0.015
PC2-1	260	2.0	0.292	0.015
PC1-B26	150	2.0	0.913	0.015
PC7-6	60	1.0	0.100	0.015
PA11A-12A	50	3.0	0.0	0.015
PA11A-12B	50	3.0	0.0	0.015

Appendix G – Average Runoff and Volume by Subbasin

Average Runoff and Average Volume (1962 - 1992)				
Sub-Basin	Area (Acres)	Percent Impervious	Average Runoff (Inches)	Average Runoff Volume (cubic feet)
1	4.1	26.5	1.62	23,945
2	18.2	24.0	5.94	392,071
3	3.2	29.0	1.56	18,037
4	2.9	16.3	0.95	9,831
5	2.1	22.2	0.84	6,433
6	5.1	23.1	2.01	15,344
7	5.2	18.6	1.83	13,919
8	2.6	26.2	1.15	8,727
9	3.2	29.9	1.52	11,586
10	2.0	13.4	0.60	4,538
11	2.9	27.7	1.30	9,915
12	2.2	36.4	1.23	9,392
13	1.4	30.7	0.70	5,369
14	1.2	32.2	0.57	4,378
15	13.6	41.1	14.29	10,8914
16	3.7	32.2	3.35	25,526
17	10.7	23.6	3.94	29,994
18	10.5	17.3	3.42	26,052
19	2.9	21.1	1.12	8,520
20	2.8	19.1	0.99	7,555
21	1.0	27.9	0.42	3,227
22	5.1	31.0	2.44	18,569
23	2.9	31.9	1.28	9,756
24	3.9	16.7	1.20	9,114
25	2.5	23.7	1.84	14,000
26	2.4	27.1	2.10	15,966
27	2.6	29.6	2.13	16,208
28, 31, 32	8.3	24.2	6.40	48,790
29	2.0	23.9	1.58	12,068
30	0.5	34.6	0.53	4,073
33	3.5	20.9	2.59	19,736
34	3.4	26.7	2.79	21,228
35	2.9	21.8	2.21	16,865
36	2.5	34.2	2.51	19,099
37	1.3	26.5	1.07	8,180
38	1.5	14.1	0.79	6,029

APPENDIX H -- Average Annual Pollutant Loadings

Average annual pollutants estimated using the average concentration and average annual runoff.

Total Suspended Solids						
Sub-basin	Average Runoff Volume		Average Concentration (mg/L)	Land Use Type	Average Load per Year	
	(cu.ft.)	% of Total			(lbs.)	% of Total
1	23,945	2.4%	48.67	MDR	72.7	3.0%
2	39,2071	39.9%	48.67	MDR, I	1190	48.4%
3	18,037	1.8%	48.67	MDR	54.7	2.2%
4	9,831	1.0%	48.67	MDR	29.8	1.2%
5	6,433	0.7%	48.67	MDR	19.5	0.8%
6	15,344	1.6%	48.67	MDR	46.6	1.9%
7	13,919	1.4%	48.67	MDR	42.2	1.7%
8	8,727	0.9%	48.67	MDR	26.5	1.1%
9	11,586	1.2%	48.67	MDR, C	35.2	1.4%
10	4,538	0.5%	48.67	MDR, C	13.7	0.6%
11	9,915	1.0%	48.67	C	30.1	1.2%
12	9,392	1.0%	48.67	C	28.5	1.2%
13	5,369	0.5%	48.67	C	16.3	0.7%
14	4,378	0.4%	48.67	C	13.3	0.5%
15	10,8914	11.1%	23.67	MDR, C	160.8	6.5%
16	25,526	2.6%	23.67	MDR, C	37.6	1.5%
17	29,994	3.1%	48.67	MDR, I	91.0	3.7%
18	26,052	2.7%	48.67	MDR	79.1	3.2%
19	8,520	0.9%	48.67	MDR	25.9	1.1%
20	7,555	0.8%	48.67	MDR	22.9	0.9%
21	3,227	0.3%	48.67	MDR	9.8	0.4%
22	18,569	1.9%	48.67	MDR, C	56.4	2.3%
23	9,756	1.0%	48.67	MDR, C	29.6	1.2%
24	9,114	0.9%	48.67	MDR, C	27.7	1.1%
25	14,000	1.4%	23.67	C	20.7	0.8%
26	15,966	1.6%	23.67	MDR, C	23.6	1.0%
27	16,208	1.6%	23.67	MDR, C	23.9	1.0%
28, 31, 32	48,790	5.0%	23.67	MDR, C	72.0	2.9%
29	12,068	1.2%	23.67	MDR, C	17.8	0.7%
30	4,073	0.4%	23.67	MDR	6.0	0.2%
33	19,736	2.0%	23.67	MDR	29.1	1.2%
34	21,228	2.2%	23.67	MDR	31.3	1.3%
35	16,865	1.7%	23.67	MDR	24.9	1.0%
36	19,099	1.9%	23.67	MDR	28.2	1.1%
37	8,180	0.8%	23.67	MDR	12.1	0.5%
38	6,029	0.6%	23.67	R	8.9	0.4%
TOTAL	982,952				2,458.5	

LEGEND: MDR - Medium Density Residential R - Recreational
C - Commercial I - Institutional

Total Kjeldahl Nitrogen, as N						
Sub-basin	Average Runoff Volume		Average Concentration (mg/L)	Land Use Type	Average Load per Year	
	(cu.ft.)	% of Total			(lbs.)	% of Total
1	23,945	2.4%	1.03	MDR	1.5	2.7%
2	392,071	39.9%	1.03	MDR, I	25.2	44.5%
3	18,037	1.8%	1.03	MDR	1.2	2.0%
4	9,831	1.0%	1.03	MDR	0.6	1.1%
5	6,433	0.7%	1.03	MDR	0.4	0.7%
6	15,344	1.6%	1.03	MDR	1.0	1.7%
7	13,919	1.4%	1.03	MDR	0.9	1.6%
8	8,727	0.9%	1.03	MDR	0.6	1.0%
9	11,586	1.2%	1.03	MDR, C	0.7	1.3%
10	4,538	0.5%	1.03	MDR, C	0.3	0.5%
11	9,915	1.0%	1.03	C	0.6	1.1%
12	9,392	1.0%	1.03	C	0.6	1.1%
13	5,369	0.5%	1.03	C	0.3	0.6%
14	4,378	0.4%	1.03	C	0.3	0.5%
15	108,914	11.1%	0.72	MDR, C	4.9	8.6%
16	25,526	2.6%	0.72	MDR, C	1.1	2.0%
17	29,994	3.1%	1.03	MDR, I	1.9	3.4%
18	26,052	2.7%	1.03	MDR	1.7	3.0%
19	8,520	0.9%	1.03	MDR	0.5	1.0%
20	7,555	0.8%	1.03	MDR	0.5	0.9%
21	3,227	0.3%	1.03	MDR	0.2	0.4%
22	18,569	1.9%	1.03	MDR, C	1.2	2.1%
23	9,756	1.0%	1.03	MDR, C	0.6	1.1%
24	9,114	0.9%	1.03	MDR, C	0.6	1.0%
25	14,000	1.4%	0.72	C	0.6	1.1%
26	15,966	1.6%	0.72	MDR, C	0.7	1.3%
27	16,208	1.6%	0.72	MDR, C	0.7	1.3%
28, 31, 32	48,790	5.0%	0.72	MDR, C	2.2	3.9%
29	12,068	1.2%	0.72	MDR, C	0.5	1.0%
30	4,073	0.4%	0.72	MDR	0.2	0.3%
33	19,736	2.0%	0.72	MDR	0.9	1.6%
34	21,228	2.2%	0.72	MDR	1.0	1.7%
35	16,865	1.7%	0.72	MDR	0.8	1.3%
36	19,099	1.9%	0.72	MDR	0.9	1.5%
37	8,180	0.8%	0.72	MDR	0.4	0.6%
38	6,029	0.6%	0.72	R	0.3	0.5%
TOTAL	982,952				56.6	

LEGEND: MDR – Medium Density Residential R - Recreational
C - Commercial I - Institutional

Nitrate + Nitrite, as N						
Sub-basin	Average Runoff Volume		Average Concentration (mg N/L)	Land Use Type	Average Load per Year	
	Volume (cu.ft.)	% of Total			per Year (lbs.)	% of Total
1	23,945	2.4%	0.19	MDR	0.3	2.1%
2	392,071	39.9%	0.19	MDR, I	4.6	34.3%
3	18,037	1.8%	0.19	MDR	0.2	1.6%
4	9,831	1.0%	0.19	MDR	0.1	0.9%
5	6,433	0.7%	0.19	MDR	0.1	0.6%
6	15,344	1.6%	0.19	MDR	0.2	1.3%
7	13,919	1.4%	0.19	MDR	0.2	1.2%
8	8,727	0.9%	0.19	MDR	0.1	0.8%
9	11,586	1.2%	0.19	MDR, C	0.1	1.0%
10	4,538	0.5%	0.19	MDR, C	0.1	0.4%
11	9,915	1.0%	0.19	C	0.1	0.9%
12	9,392	1.0%	0.19	C	0.1	0.8%
13	5,369	0.5%	0.19	C	0.1	0.5%
14	4,378	0.4%	0.19	C	0.1	0.4%
15	108,914	11.1%	0.28	MDR, C	1.9	14.0%
16	25,526	2.6%	0.28	MDR, C	0.4	3.3%
17	29,994	3.1%	0.19	MDR, I	0.4	2.6%
18	26,052	2.7%	0.19	MDR	0.3	2.3%
19	8,520	0.9%	0.19	MDR	0.1	0.7%
20	7,555	0.8%	0.19	MDR	0.1	0.7%
21	3,227	0.3%	0.19	MDR	0.04	0.3%
22	18,569	1.9%	0.19	MDR, C	0.2	1.6%
23	9,756	1.0%	0.19	MDR, C	0.1	0.9%
24	9,114	0.9%	0.19	MDR, C	0.1	0.8%
25	14,000	1.4%	0.28	C	0.2	1.8%
26	15,966	1.6%	0.28	MDR, C	0.3	2.1%
27	16,208	1.6%	0.28	MDR, C	0.3	2.1%
28, 31, 32	48,790	5.0%	0.28	MDR, C	0.9	6.3%
29	12,068	1.2%	0.28	MDR, C	0.2	1.6%
30	4,073	0.4%	0.28	MDR	0.1	0.5%
33	19,736	2.0%	0.28	MDR	0.3	2.5%
34	21,228	2.2%	0.28	MDR	0.4	2.7%
35	16,865	1.7%	0.28	MDR	0.3	2.2%
36	19,099	1.9%	0.28	MDR	0.3	2.5%
37	8,180	0.8%	0.28	MDR	0.1	1.1%
38	6,029	0.6%	0.28	R	0.1	0.8%
TOTAL	982,952				13.5	

LEGEND: MDR - Medium Density Residential R - Recreational
C - Commercial I - Institutional

Phosphorus, Total as P						
Sub-basin	Average Runoff Volume		Average Concentration (mg P/L)	Land Use Type	Average Load per Year	
	(cu.ft.)	% of Total			(lbs.)	% of Total
1	23,945	2.4%	0.25	MDR	0.4	2.8%
2	392,071	39.9%	0.25	MDR, I	6.1	46.2%
3	18,037	1.8%	0.25	MDR	0.3	2.1%
4	9,831	1.0%	0.25	MDR	0.2	1.2%
5	6,433	0.7%	0.25	MDR	0.1	0.8%
6	15,344	1.6%	0.25	MDR	0.2	1.8%
7	13,919	1.4%	0.25	MDR	0.2	1.6%
8	8,727	0.9%	0.25	MDR	0.1	1.0%
9	11,586	1.2%	0.25	MDR, C	0.2	1.4%
10	4,538	0.5%	0.25	MDR, C	0.1	0.5%
11	9,915	1.0%	0.25	C	0.2	1.2%
12	9,392	1.0%	0.25	C	0.1	1.1%
13	5,369	0.5%	0.25	C	0.1	0.6%
14	4,378	0.4%	0.25	C	0.1	0.5%
15	108,914	11.1%	0.15	MDR, C	1.0	7.7%
16	25,526	2.6%	0.15	MDR, C	0.2	1.8%
17	29,994	3.1%	0.25	MDR, I	0.5	3.5%
18	26,052	2.7%	0.25	MDR	0.4	3.1%
19	8,520	0.9%	0.25	MDR	0.1	1.0%
20	7,555	0.8%	0.25	MDR	0.1	0.9%
21	3,227	0.3%	0.25	MDR	0.05	0.4%
22	18,569	1.9%	0.25	MDR, C	0.3	2.2%
23	9,756	1.0%	0.25	MDR, C	0.2	1.2%
24	9,114	0.9%	0.25	MDR, C	0.1	1.1%
25	14,000	1.4%	0.15	C	0.1	1.0%
26	15,966	1.6%	0.15	MDR, C	0.1	1.1%
27	16,208	1.6%	0.15	MDR, C	0.2	1.1%
28, 31, 32	48,790	5.0%	0.15	MDR, C	0.5	3.5%
29	12,068	1.2%	0.15	MDR, C	0.1	0.9%
30	4,073	0.4%	0.15	MDR	0.04	0.3%
33	19,736	2.0%	0.15	MDR	0.2	1.4%
34	21,228	2.2%	0.15	MDR	0.2	1.5%
35	16,865	1.7%	0.15	MDR	0.2	1.2%
36	19,099	1.9%	0.15	MDR	0.2	1.4%
37	8,180	0.8%	0.15	MDR	0.1	0.6%
38	6,029	0.6%	0.15	R	0.1	0.4%
TOTAL	982,952				13.2	

LEGEND: MDR - Medium Density Residential R - Recreational
C - Commercial I - Institutional

Orthophosphate, as P						
Sub-basin	Average Runoff Volume		Average Concentration (mg P/L)	Land Use Type	Average Load per Year	
	(cu.ft.)	% of Total			(lbs.)	% of Total
1	23,945	2.4%	0.10	MDR	0.1	2.7%
2	39,2071	39.9%	0.10	MDR, I	2.4	44.5%
3	18,037	1.8%	0.10	MDR	0.1	2.0%
4	9,831	1.0%	0.10	MDR	0.1	1.1%
5	6,433	0.7%	0.10	MDR	0.04	0.7%
6	15,344	1.6%	0.10	MDR	0.1	1.7%
7	13,919	1.4%	0.10	MDR	0.1	1.6%
8	8,727	0.9%	0.10	MDR	0.05	1.0%
9	11,586	1.2%	0.10	MDR, C	0.1	1.3%
10	4,538	0.5%	0.10	MDR, C	0.02	0.5%
11	9,915	1.0%	0.10	C	0.1	1.1%
12	9,392	1.0%	0.10	C	0.06	1.1%
13	5,369	0.5%	0.10	C	0.03	0.6%
14	4,378	0.4%	0.10	C	0.03	0.5%
15	10,8914	11.1%	0.07	MDR, C	0.5	8.6%
16	25,526	2.6%	0.07	MDR, C	0.1	2.0%
17	29,994	3.1%	0.10	MDR, I	0.2	3.4%
18	26,052	2.7%	0.10	MDR	0.2	3.0%
19	8,520	0.9%	0.10	MDR	0.05	1.0%
20	7,555	0.8%	0.10	MDR	0.05	0.9%
21	3,227	0.3%	0.10	MDR	0.02	0.4%
22	18,569	1.9%	0.10	MDR, C	0.1	2.1%
23	9,756	1.0%	0.10	MDR, C	0.1	1.1%
24	9,114	0.9%	0.10	MDR, C	0.06	1.0%
25	14,000	1.4%	0.07	C	0.06	1.1%
26	15,966	1.6%	0.07	MDR, C	0.07	1.3%
27	16,208	1.6%	0.07	MDR, C	0.07	1.3%
28, 31, 32	48,790	5.0%	0.07	MDR, C	0.2	3.9%
29	12,068	1.2%	0.07	MDR, C	0.05	1.0%
30	4,073	0.4%	0.07	MDR	0.02	0.3%
33	19,736	2.0%	0.07	MDR	0.09	1.6%
34	21,228	2.2%	0.07	MDR	0.09	1.7%
35	16,865	1.7%	0.07	MDR	0.07	1.3%
36	19,099	1.9%	0.07	MDR	0.08	1.5%
37	8,180	0.8%	0.07	MDR	0.03	0.6%
38	6,029	0.6%	0.07	R	0.03	0.5%
TOTAL	982,952				5.5	

LEGEND: MDR - Medium Density Residential R - Recreational
C - Commercial I - Institutional

Magnesium						
Sub-basin	Average Runoff Volume		Average Concentration (mg/L)	Land Use Type	Average Load per Year	
	(cu.ft.)	% of Total			(lbs.)	% of Total
1	23,945	2.4%	12.38	MDR	18.5	2.4%
2	392,071	39.9%	12.38	MDR, I	302.7	38.9%
3	18,037	1.8%	12.38	MDR	13.9	1.8%
4	9,831	1.0%	12.38	MDR	7.6	1.0%
5	6,433	0.7%	12.38	MDR	5.0	0.6%
6	15,344	1.6%	12.38	MDR	11.8	1.5%
7	13,919	1.4%	12.38	MDR	10.7	1.4%
8	8,727	0.9%	12.38	MDR	6.7	0.9%
9	11,586	1.2%	12.38	MDR, C	8.9	1.2%
10	4,538	0.5%	12.38	MDR, C	3.5	0.5%
11	9,915	1.0%	12.38	C	7.7	1.0%
12	9,392	1.0%	12.38	C	7.3	0.9%
13	5,369	0.5%	12.38	C	4.1	0.5%
14	4,378	0.4%	12.38	C	3.4	0.4%
15	108,914	11.1%	13.26	MDR, C	90.1	11.6%
16	25,526	2.6%	13.26	MDR, C	21.1	2.7%
17	29,994	3.1%	12.38	MDR, I	23.2	3.0%
18	26,052	2.7%	12.38	MDR	20.1	2.6%
19	8,520	0.9%	12.38	MDR	6.6	0.8%
20	7,555	0.8%	12.38	MDR	5.8	0.8%
21	3,227	0.3%	12.38	MDR	2.5	0.3%
22	18,569	1.9%	12.38	MDR, C	14.3	1.8%
23	9,756	1.0%	12.38	MDR, C	7.5	1.0%
24	9,114	0.9%	12.38	MDR, C	7.0	0.9%
25	14,000	1.4%	13.26	C	11.6	1.5%
26	15,966	1.6%	13.26	MDR, C	13.2	1.7%
27	16,208	1.6%	13.26	MDR, C	13.4	1.7%
28, 31, 32	48,790	5.0%	13.26	MDR, C	40.3	5.2%
29	12,068	1.2%	13.26	MDR, C	10.0	1.3%
30	4,073	0.4%	13.26	MDR	3.4	0.4%
33	19,736	2.0%	13.26	MDR	16.3	2.1%
34	21,228	2.2%	13.26	MDR	17.6	2.3%
35	16,865	1.7%	13.26	MDR	13.9	1.8%
36	19,099	1.9%	13.26	MDR	15.8	2.0%
37	8,180	0.8%	13.26	MDR	6.8	0.9%
38	6,029	0.6%	13.26	R	5.0	0.6%
TOTAL	982,952				777.3	

LEGEND: MDR - Medium Density Residential R - Recreational
C - Commercial I - Institutional

Zinc						
Sub-basin	Average Runoff Volume		Average Concentration (ug/L)	Land Use Type	Average Load per Year	
	(cu.ft.)	% of Total			(lbs.)	% of Total
1	23,945	2.4%	68.25	MDR	0.010	3.0%
2	392,071	39.9%	68.25	MDR, I	0.167	49.3%
3	18,037	1.8%	68.25	MDR	0.008	2.3%
4	9,831	1.0%	68.25	MDR	0.004	1.2%
5	6,433	0.7%	68.25	MDR	0.003	0.8%
6	15,344	1.6%	68.25	MDR	0.006	1.9%
7	13,919	1.4%	68.25	MDR	0.006	1.7%
8	8,727	0.9%	68.25	MDR	0.004	1.1%
9	11,586	1.2%	68.25	MDR, C	0.005	1.5%
10	4,538	0.5%	68.25	MDR, C	0.002	0.6%
11	9,915	1.0%	68.25	C	0.004	1.2%
12	9,392	1.0%	68.25	C	0.004	1.2%
13	5,369	0.5%	68.25	C	0.002	0.7%
14	4,378	0.4%	68.25	C	0.002	0.6%
15	108,914	11.1%	30.25	MDR, C	0.020	6.1%
16	25,526	2.6%	30.25	MDR, C	0.005	1.4%
17	29,994	3.1%	68.25	MDR, I	0.013	3.8%
18	26,052	2.7%	68.25	MDR	0.011	3.3%
19	8,520	0.9%	68.25	MDR	0.004	1.1%
20	7,555	0.8%	68.25	MDR	0.003	0.9%
21	3,227	0.3%	68.25	MDR	0.001	0.4%
22	18,569	1.9%	68.25	MDR, C	0.008	2.3%
23	9,756	1.0%	68.25	MDR, C	0.004	1.2%
24	9,114	0.9%	68.25	MDR, C	0.004	1.1%
25	14,000	1.4%	30.25	C	0.003	0.8%
26	15,966	1.6%	30.25	MDR, C	0.003	0.9%
27	16,208	1.6%	30.25	MDR, C	0.003	0.9%
28, 31, 32	48,790	5.0%	30.25	MDR, C	0.009	2.7%
29	12,068	1.2%	30.25	MDR, C	0.002	0.7%
30	4,073	0.4%	30.25	MDR	0.001	0.2%
33	19,736	2.0%	30.25	MDR	0.004	1.1%
34	21,228	2.2%	30.25	MDR	0.004	1.2%
35	16,865	1.7%	30.25	MDR	0.003	0.9%
36	19,099	1.9%	30.25	MDR	0.004	1.1%
37	8,180	0.8%	30.25	MDR	0.002	0.5%
38	6,029	0.6%	30.25	R	0.001	0.3%
TOTAL	982,952				0.339	

LEGEND: MDR - Medium Density Residential R - Recreational
C - Commercial I - Institutional

APPENDIX I –SURCHARGED AND FLOODED TIMES FOR DESIGN STORMS

Surcharged and flooded times at different junctions for each design storm.

Junction Surge and Flooding Times for 5yr1hr Synthetic Storm

Junction Name	Surcharged Time (minutes)	Flooded Time (minutes)
MHA2 SB2	15.63	0.00
MHA3	0.00	0.00
MHA4	0.00	0.00
MHA6 SB3	0.00	0.00
MHA7	0.00	0.00
MHA9	0.00	0.00
MHA11	0.00	0.00
MHA12	0.00	0.00
MHB15	1.33	0.00
MHA8 SB4	29.40	0.00
MHA15 SB1	0.00	0.00
MHA16	0.00	0.00
MHB16 SB5	41.63	0.00
MHB14 SB6	2.70	0.00
MHB13 SB8	3.33	0.00
MHB12	2.68	0.00
MHB18	1.63	0.00
MHB19	3.87	0.00
MHB10 SB11	0.00	0.00
MHB11	17.30	0.00
MHB21	0.00	0.00
MHB9	0.00	28.78
MHB8 SB9	42.80	0.83
MHB7	38.42	1.40
MHB3 SB12	21.18	6.73
MHB4 SB14	14.20	9.20
MHB24 SB7	21.63	0.00
MHB23 SB10	42.75	0.00
MHB25	24.28	0.00
MHB28 SB21	42.72	0.00
MHB26 SB18	24.95	0.00
MHB6 SB13	33.85	6.25
MHC12 SB17	42.20	16.13
MHC11 SB22	15.77	5.70
MHC9	15.88	3.05
MHC8 SB19	30.78	6.58
MHC6	16.17	2.83
MHC5	16.10	2.75
MHC4 SB24	16.02	2.67
MHC3	15.50	0.60
MHC2 SB20	14.92	0.20
MHC1	15.50	0.00
MHC7 SB23	37.22	7.08
MHE4 SB15	43.35	17.80
MHE6 SB16	40.78	0.00
MHD27	0.00	0.00
MHE7	0.00	0.00

Junction Name	Surcharged Time (minutes)	Flooded Time (minutes)
MHE8	0.00	0.00
MHE9	0.00	0.00
MHD1 SB26	10.90	3.22
MHD2	5.53	0.23
MHD4	5.90	0.37
MHD7 SB27	4.87	0.00
MHD6	6.58	0.17
MHD5 SB25	7.50	3.55
MHD14	9.03	0.00
MHD12	0.00	0.00
MHD13 SB30	0.00	0.00
MHD16	9.27	0.00
MHD17	9.67	0.00
MHD20	0.00	0.00
MHD18 SB29	28.42	0.00
MHD19	33.70	0.00
MHD22	0.00	0.00
MHD21 SB34	31.70	0.00
MHD23 SB36	0.00	0.00
MHD26 SB38	38.40	1.37
MHD25 SB37	39.40	0.33
MHD24 SB35	39.68	0.00
MHE5	40.87	0.00
MHD28 SB33	31.83	0.00

Junction Surge and Flooding Time for 5yr3hr Synthetic Storm

Junction Name	Surcharged Time (minutes)	Flooded Time (minutes)
MHA2 SB2	46.75	26.58
MHA3	0.00	0.00
MHA4	0.00	0.00
MHA6 SB3	0.00	0.00
MHA7	0.00	0.00
MHA9	0.00	0.00
MHA11	0.00	0.00
MHA12	0.00	0.00
MHB15	28.93	0.00
MHA8 SB4	62.95	0.00
MHA15 SB1	0.00	0.00
MHA16	0.00	0.00
MHB16 SB5	137.12	0.00
MHB14 SB6	30.80	0.00
MHB13 SB8	31.90	0.00
MHB12	30.88	0.00
MHB18	29.65	0.00
MHB19	32.52	0.00
MHB10 SB11	22.22	0.00
MHB11	47.90	0.00
MHB21	27.22	0.00
MHB9	0.00	63.20
MHB8 SB9	123.08	0.00
MHB7	77.42	0.00
MHB3 SB12	58.35	36.25
MHB4 SB14	45.95	38.58
MHB24 SB7	53.85	0.00
MHB23 SB10	95.85	0.00
MHB25	57.55	0.00
MHB28 SB21	96.47	0.00
MHB26 SB18	58.55	0.00
MHB6 SB13	70.35	33.58
MHC12 SB17	89.37	47.20
MHC11 SB22	46.50	32.65
MHC9	46.70	22.18
MHC8 SB19	69.13	34.70
MHC6	47.12	21.67
MHC5	46.93	18.65
MHC4 SB24	46.63	21.32
MHC3	45.87	0.00
MHC2 SB20	45.40	0.00
MHC1	46.95	0.00
MHC7 SB23	75.78	34.80
MHE4 SB15	93.60	49.05
MHE6 SB16	81.10	0.00
MHD27	0.00	0.00
MHE7	0.00	0.00

Junction Name	Surcharged Time (minutes)	Flooded Time (minutes)
MHE8	0.00	0.00
MHE9	0.00	0.00
MHD1 SB26	37.45	25.33
MHD2	29.93	0.00
MHD4	30.47	0.00
MHD7 SB27	28.55	0.00
MHD6	31.03	0.00
MHD5 SB25	31.93	25.82
MHD14	34.47	0.00
MHD12	0.00	0.00
MHD13 SB30	0.00	0.00
MHD16	34.95	0.00
MHD17	35.52	0.00
MHD20	0.00	0.00
MHD18 SB29	65.35	0.00
MHD19	74.25	0.00
MHD22	0.00	0.00
MHD21 SB34	69.22	0.00
MHD23 SB36	9.20	0.00
MHD26 SB38	75.02	16.70
MHD25 SB37	80.70	0.00
MHD24 SB35	87.27	0.00
MHE5	86.08	0.00
MHD28 SB33	68.60	0.00

Junction Surcharge and Flooding Times for 10yr1hr Synthetic Storm

Junction Name	Surcharged Time (minutes)	Flooded Time (minutes)
MHA2 SB2	17.12	1.47
MHA3	0.00	0.00
MHA4	0.00	0.00
MHA6 SB3	0.00	0.00
MHA7	0.00	0.00
MHA9	0.00	0.00
MHA11	0.00	0.00
MHA12	0.00	0.00
MHB15	3.67	0.00
MHA8 SB4	32.32	0.00
MHA15 SB1	0.00	0.00
MHA16	0.00	0.00
MHB16 SB5	42.70	0.00
MHB14 SB6	4.73	0.00
MHB13 SB8	5.67	0.00
MHB12	4.85	0.00
MHB18	4.07	0.00
MHB19	6.27	0.00
MHB10 SB11	0.00	0.00
MHB11	19.68	0.00
MHB21	2.93	0.00
MHB9	0.00	33.87
MHB8 SB9	43.83	1.95
MHB7	40.08	2.53
MHB3 SB12	24.38	7.37
MHB4 SB14	15.38	10.93
MHB24 SB7	23.80	0.00
MHB23 SB10	43.88	0.00
MHB25	26.62	0.00
MHB28 SB21	43.92	0.00
MHB26 SB18	27.33	0.00
MHB6 SB13	37.95	6.80
MHC12 SB17	44.05	17.15
MHC11 SB22	16.90	6.38
MHC9	17.02	4.18
MHC8 SB19	35.67	8.07
MHC6	17.37	4.02
MHC5	17.30	3.93
MHC4 SB24	17.20	3.85
MHC3	16.65	2.02
MHC2 SB20	16.12	1.85
MHC1	16.92	0.00
MHC7 SB23	41.05	9.08
MHE4 SB15	44.52	18.93

Junction Name	Surcharged Time (minutes)	Flooded Time (minutes)
MHE6 SB16	41.90	0.00
MHD27	0.00	0.00
MHE7	0.00	0.00
MHE8	0.00	0.00
MHE9	0.00	0.00
MHD1 SB26	12.27	4.28
MHD2	6.60	0.15
MHD4	7.07	0.70
MHD7 SB27	5.83	0.00
MHD6	7.78	0.50
MHD5 SB25	8.62	4.58
MHD14	10.52	0.00
MHD12	0.25	0.00
MHD13 SB30	1.23	0.00
MHD16	10.82	0.00
MHD17	11.22	0.00
MHD20	0.00	0.00
MHD18 SB29	31.28	0.00
MHD19	37.58	0.00
MHD22	0.00	0.00
MHD21 SB34	35.10	1.65
MHD23 SB36	0.00	0.00
MHD26 SB38	39.78	2.75
MHD25 SB37	40.20	1.45
MHD24 SB35	40.63	0.00
MHE5	41.98	0.00
MHD28 SB33	34.90	0.00

Junction Surcharge and Flooding Times for 10yr3hr Synthetic Storm

Junction Name	Surcharged Time (minutes)	Flooded Time (minutes)
MHA2 SB2	49.35	29.68
MHA3	0.00	0.00
MHA4	0.00	0.00
MHA6 SB3	0.00	0.00
MHA7	0.00	0.00
MHA9	0.00	0.00
MHA11	0.00	0.00
MHA12	0.00	0.00
MHB15	31.38	0.00
MHA8 SB4	67.17	0.00
MHA15 SB1	0.00	0.00
MHA16	0.00	0.00
MHB16 SB5	139.93	0.00
MHB14 SB6	33.18	0.00
MHB13 SB8	34.27	0.00
MHB12	33.20	0.00
MHB18	31.98	0.00
MHB19	35.10	0.00
MHB10 SB11	26.38	0.00
MHB11	51.58	0.00
MHB21	29.78	0.00
MHB9	0.00	69.80
MHB8 SB9	130.87	0.00
MHB7	86.17	0.00
MHB3 SB12	63.10	37.98
MHB4 SB14	49.22	42.28
MHB24 SB7	57.60	0.00
MHB23 SB10	104.63	0.00
MHB25	61.48	0.00
MHB28 SB21	105.52	0.00
MHB26 SB18	62.98	0.00
MHB6 SB13	77.05	35.48
MHC12 SB17	99.90	49.77
MHC11 SB22	49.52	34.68
MHC9	49.72	25.52
MHC8 SB19	74.97	36.85
MHC6	50.22	25.02
MHC5	49.97	14.10
MHC4 SB24	49.65	24.75
MHC3	49.00	2.02
MHC2 SB20	48.53	0.62
MHC1	50.40	0.00
MHC7 SB23	83.50	37.38
MHE4 SB15	102.38	53.58
MHE6 SB16	87.18	0.00
MHD27	15.67	0.00
MHE7	0.00	0.00

Junction Name	Surcharged Time (minutes)	Flooded Time (minutes)
MHE8	0.00	0.00
MHE9	0.00	0.00
MHD1 SB26	39.90	27.97
MHD2	32.12	2.83
MHD4	32.62	16.20
MHD7 SB27	30.88	0.00
MHD6	33.20	16.47
MHD5 SB25	34.18	28.37
MHD14	37.00	0.00
MHD12	0.00	0.00
MHD13 SB30	21.33	0.00
MHD16	37.50	0.00
MHD17	38.03	0.00
MHD20	14.80	0.00
MHD18 SB29	66.02	0.00
MHD19	73.57	0.00
MHD22	12.97	0.00
MHD21 SB34	71.05	19.35
MHD23 SB36	20.12	0.00
MHD26 SB38	79.22	23.05
MHD25 SB37	85.42	0.07
MHD24 SB35	92.22	0.00
MHE5	93.65	0.00
MHD28 SB33	69.92	0.00

Junction Surcharge and Flooding Times for 25yr1hr Synthetic Storm

Junction Name	Surcharged Time (minutes)	Flooded Time (minutes)
MHA2 SB2	20.87	4.92
MHA3	0.00	0.00
MHA4	0.00	0.00
MHA6 SB3	0.00	0.00
MHA7	0.00	0.00
MHA9	0.00	0.00
MHA11	0.00	0.00
MHA12	0.00	0.00
MHB15	5.73	0.00
MHA8 SB4	36.25	0.00
MHA15 SB1	0.00	0.00
MHA16	0.00	0.00
MHB16 SB5	44.23	0.00
MHB14 SB6	7.60	0.00
MHB13 SB8	8.73	0.00
MHB12	7.67	0.00
MHB18	6.45	0.00
MHB19	9.27	0.00
MHB10 SB11	2.53	0.00
MHB11	23.22	0.00
MHB21	4.70	0.00
MHB9	0.00	36.53
MHB8 SB9	45.45	3.50
MHB7	42.53	4.02
MHB3 SB12	29.65	9.58
MHB4 SB14	17.40	13.63
MHB24 SB7	27.58	0.00
MHB23 SB10	45.53	0.00
MHB25	30.82	0.00
MHB28 SB21	45.55	0.00
MHB26 SB18	31.67	1.55
MHB6 SB13	40.90	7.65
MHC12 SB17	46.92	19.20
MHC11 SB22	19.42	7.47
MHC9	19.62	5.45
MHC8 SB19	41.95	10.92
MHC6	20.10	5.42
MHC5	19.98	5.30
MHC4 SB24	19.85	5.28
MHC3	19.12	3.80
MHC2 SB20	18.42	3.65
MHC1	20.07	1.58
MHC7 SB23	44.00	11.57
MHE4 SB15	46.72	22.70
MHE6 SB16	43.55	0.00
MHD27	0.00	0.00
MHE7	0.00	0.00

Junction Name	Surcharged Time (minutes)	Flooded Time (minutes)
MHE8	0.00	0.00
MHE9	0.00	0.00
MHD1 SB26	14.47	5.50
MHD2	8.45	0.80
MHD4	9.02	3.48
MHD7 SB27	7.35	0.00
MHD6	9.82	3.15
MHD5 SB25	10.55	5.90
MHD14	12.85	0.00
MHD12	1.08	0.00
MHD13 SB30	1.67	0.03
MHD16	13.17	0.00
MHD17	13.58	0.00
MHD20	0.00	0.00
MHD18 SB29	36.92	0.00
MHD19	41.47	0.00
MHD22	0.00	0.00
MHD21 SB34	41.83	3.63
MHD23 SB36	0.00	0.00
MHD26 SB38	41.45	4.37
MHD25 SB37	41.87	3.33
MHD24 SB35	42.30	0.00
MHE5	43.65	0.00
MHD28 SB33	41.03	0.00

Junction Surcharge and Flooding Time for 25yr3hr Synthetic Storm

Junction Name	Surcharged Time (minutes)	Flooded Time (minutes)
MHA2 SB2	53.98	33.32
MHA3	0.00	0.00
MHA4	0.00	0.00
MHA6 SB3	0.00	0.00
MHA7	0.00	0.00
MHA9	0.00	0.00
MHA11	0.00	0.00
MHA12	0.00	0.00
MHB15	34.48	0.00
MHA8 SB4	74.42	0.00
MHA15 SB1	0.00	0.00
MHA16	0.00	0.00
MHB16 SB5	143.77	0.00
MHB14 SB6	36.65	0.00
MHB13 SB8	38.22	0.00
MHB12	36.77	0.00
MHB18	35.12	0.00
MHB19	39.20	0.00
MHB10 SB11	30.33	0.00
MHB11	56.48	0.00
MHB21	32.93	0.00
MHB9	0.00	82.12
MHB8 SB9	139.12	21.85
MHB7	99.13	22.62
MHB3 SB12	70.75	42.37
MHB4 SB14	55.82	46.85
MHB24 SB7	63.63	0.00
MHB23 SB10	116.47	0.00
MHB25	68.50	0.00
MHB28 SB21	116.98	0.00
MHB26 SB18	70.00	0.28
MHB6 SB13	89.98	37.78
MHC12 SB17	111.08	56.50
MHC11 SB22	54.37	37.28
MHC9	54.58	29.57
MHC8 SB19	86.23	41.77
MHC6	55.07	29.13
MHC5	54.87	14.93
MHC4 SB24	54.70	28.85
MHC3	54.22	24.22
MHC2 SB20	53.72	24.15
MHC1	55.85	0.40
MHC7 SB23	97.27	42.10
MHE4 SB15	114.08	60.50
MHE6 SB16	99.47	0.00
MHD27	23.22	0.00
MHE7	16.97	0.00

Junction Name	Surcharged Time (minutes)	Flooded Time (minutes)
MHE8	0.00	0.00
MHE9	0.00	0.00
MHD1 SB26	43.53	31.13
MHD2	35.20	4.50
MHD4	35.90	24.53
MHD7 SB27	33.75	0.00
MHD6	36.57	24.28
MHD5 SB25	37.48	31.50
MHD14	40.80	0.00
MHD12	19.33	0.00
MHD13 SB30	25.57	0.00
MHD16	41.33	0.00
MHD17	41.97	0.00
MHD20	22.93	0.00
MHD18 SB29	73.58	0.00
MHD19	83.03	0.00
MHD22	22.37	0.00
MHD21 SB34	79.38	25.32
MHD23 SB36	25.60	0.00
MHD26 SB38	89.17	27.08
MHD25 SB37	96.30	24.35
MHD24 SB35	103.80	0.00
MHE5	105.68	0.00
MHD28 SB33	78.25	0.00

Junction Surge and Flooding times for 25yr24hr Synthetic Storm

Junction Name	Surcharged Time (minutes)	Flooded Time (minutes)
MHA2 SB2	72.58	0
MHA3	0	0
MHA4	0	0
MHA6 SB3	0	0
MHA7	0	0
MHA9	0	0
MHA11	0	0
MHA12	0	0
MHB15	0	0
MHA8 SB4	161	0
MHA15 SB1	0	0
MHA16	0	0
MHB16 SB5	1102.58	0
MHB14 SB6	0	0
MHB13 SB8	0	0
MHB12	0	0
MHB18	0	0
MHB19	0	0
MHB10 SB11	0	0
MHB11	43.8	0
MHB21	0	0
MHB9	0	210.6
MHB8 SB9	442.92	0
MHB7	234.3	0
MHB3 SB12	178.53	0
MHB4 SB14	102.27	38.33
MHB24 SB7	124.38	0
MHB23 SB10	271.58	0
MHB25	141.87	0
MHB28 SB21	276.98	0
MHB26 SB18	146.98	0
MHB6 SB13	221.2	0
MHC12 SB17	249.87	91.17
MHC11 SB22	87.32	0
MHC9	87.78	0
MHC8 SB19	204.77	0
MHC6	89.12	0
MHC5	88.5	0
MHC4 SB24	87.72	0
MHC3	84.72	0
MHC2 SB20	81.35	0

Junction Name	Surcharged Time (minutes)	Flooded Time (minutes)
MHC1	91.8	0
MHC7 SB23	221.37	0
MHE4 SB15	263.77	119.65
MHE6 SB16	234.62	0
MHD27	0	0
MHE7	0	0
MHE8	0	0
MHE9	0	0
MHD1 SB26	0	0
MHD2	0	0
MHD4	0	0
MHD7 SB27	0	0
MHD6	0	0
MHD5 SB25	0	0
MHD14	0	0
MHD12	0	0
MHD13 SB30	0	0
MHD16	0	0
MHD17	0	0
MHD20	0	0
MHD18 SB29	202.03	0
MHD19	231.05	0
MHD22	0	0
MHD21 SB34	208.47	0
MHD23 SB36	0	0
MHD26 SB38	222.68	0
MHD25 SB37	239.5	0
MHD24 SB35	266.43	0
MHE5	248.25	0
MHD28 SB33	209.28	0

Junction Surcharge and Flooding Times for 50yr1hr Synthetic Storm

Junction Name	Surcharged Time (minutes)	Flooded Time (minutes)
MHA2 SB2	24.47	7.72
MHA3	0	0
MHA4	0	0
MHA6 SB3	0	0
MHA7	0.4	0
MHA9	0	0
MHA11	0	0
MHA12	0	0
MHB15	8.37	0
MHA8 SB4	38.65	0
MHA15 SB1	0	0
MHA16	0	0
MHB16 SB5	45.05	0
MHB14 SB6	10.63	0
MHB13 SB8	11.95	0
MHB12	10.7	0
MHB18	8.98	0
MHB19	12.5	0
MHB10 SB11	6.1	0
MHB11	27.33	0
MHB21	6.48	0
MHB9	0	36.57
MHB8 SB9	46.57	4.82
MHB7	43.23	5.3
MHB3 SB12	36.47	13.57
MHB4 SB14	20.88	16.5
MHB24 SB7	32.32	0
MHB23 SB10	46.77	0
MHB25	36.05	0
MHB28 SB21	46.75	1.33
MHB26 SB18	37.08	3.3
MHB6 SB13	41.67	9.25
MHC12 SB17	48.52	23.8
MHC11 SB22	23.37	9.62
MHC9	23.62	6.97
MHC8 SB19	43.9	13.82
MHC6	24.18	6.83
MHC5	24	6.8
MHC4 SB24	23.77	6.78
MHC3	22.92	5.4
MHC2 SB20	22.15	5.28
MHC1	24.67	2.37
MHC7 SB23	45.77	14.28
MHE4 SB15	48.27	27.13
MHE6 SB16	44.67	0.00
MHD27	0.00	0.00
MHE7	0.00	0.00

Junction Name	Surcharged Time (minutes)	Flooded Time (minutes)
MHE8	0.00	0.00
MHE9	0.00	0.00
MHD1 SB26	16.07	6.33
MHD2	10.02	0.98
MHD4	10.67	4.77
MHD7 SB27	8.73	0.00
MHD6	11.45	4.57
MHD5 SB25	12.12	6.72
MHD14	14.52	0.00
MHD12	1.38	0.00
MHD13 SB30	3.83	0.28
MHD16	14.83	0.00
MHD17	15.27	0.00
MHD20	1.35	0.00
MHD18 SB29	42.10	1.27
MHD19	42.83	0.00
MHD22	0.00	0.00
MHD21 SB34	43.08	4.88
MHD23 SB36	2.95	0.00
MHD26 SB38	42.62	5.33
MHD25 SB37	43.00	4.47
MHD24 SB35	43.42	0.13
MHE5	45.00	0.00
MHD28 SB33	42.32	0.00

Junction Surge and Flooding times for 50yr3hr Synthetic Storm

Junction Name	Surcharged Time (minutes)	Flooded Time (minutes)
MHA2 SB2	56.62	34.70
MHA3	0.00	0.00
MHA4	0.00	0.00
MHA6 SB3	0.00	0.00
MHA7	13.57	0.00
MHA9	0.00	0.00
MHA11	0.00	0.00
MHA12	0.00	0.00
MHB15	35.98	0.00
MHA8 SB4	78.20	0.00
MHA15 SB1	0.00	0.00
MHA16	0.00	0.00
MHB16 SB5	145.53	0.00
MHB14 SB6	38.63	0.00
MHB13 SB8	40.33	0.00
MHB12	38.72	0.00
MHB18	36.90	0.00
MHB19	41.23	0.00
MHB10 SB11	32.07	0.00
MHB11	58.70	0.00
MHB21	34.22	0.00
MHB9	0.00	88.38
MHB8 SB9	140.90	23.90
MHB7	104.65	24.63
MHB3 SB12	75.17	44.90
MHB4 SB14	58.90	49.48
MHB24 SB7	66.80	0.00
MHB23 SB10	121.92	0.00
MHB25	71.80	0.00
MHB28 SB21	122.58	0.00
MHB26 SB18	73.32	21.18
MHB6 SB13	96.00	38.77
MHC12 SB17	115.57	59.55
MHC11 SB22	56.87	38.78
MHC9	57.08	30.92
MHC8 SB19	92.45	43.92
MHC6	57.57	30.60
MHC5	57.40	15.18
MHC4 SB24	57.37	30.43
MHC3	56.85	26.15
MHC2 SB20	56.23	26.08
MHC1	58.57	20.30
MHC7 SB23	103.12	44.20
MHE4 SB15	114.08	60.50
MHE6 SB16	99.47	0.00
MHD27	23.22	0.00
MHE7	16.97	0.00

Junction Name	Surcharged Time (minutes)	Flooded Time (minutes)
MHE8	0.00	0.00
MHE9	0.00	0.00
MHD1 SB26	43.53	31.13
MHD2	35.20	4.50
MHD4	35.90	24.53
MHD7 SB27	33.75	0.00
MHD6	36.57	24.28
MHD5 SB25	37.48	31.50
MHD14	40.80	0.00
MHD12	19.33	0.00
MHD13 SB30	25.57	0.00
MHD16	41.33	0.00
MHD17	41.97	0.00
MHD20	22.93	0.00
MHD18 SB29	73.58	0.00
MHD19	83.03	0.00
MHD22	22.37	0.00
MHD21 SB34	79.38	25.32
MHD23 SB36	25.60	0.00
MHD26 SB38	89.17	27.08
MHD25 SB37	96.30	24.35
MHD24 SB35	103.80	0.00
MHE5	105.68	0.00
MHD28 SB33	78.25	0.00