

Appendix 1.
USGS and DWQ Monitoring Data

Table 1-1. Selected USGS Water Discharge Stations for the Irwin, Sugar, Little Sugar and McAlpine Creek Watersheds

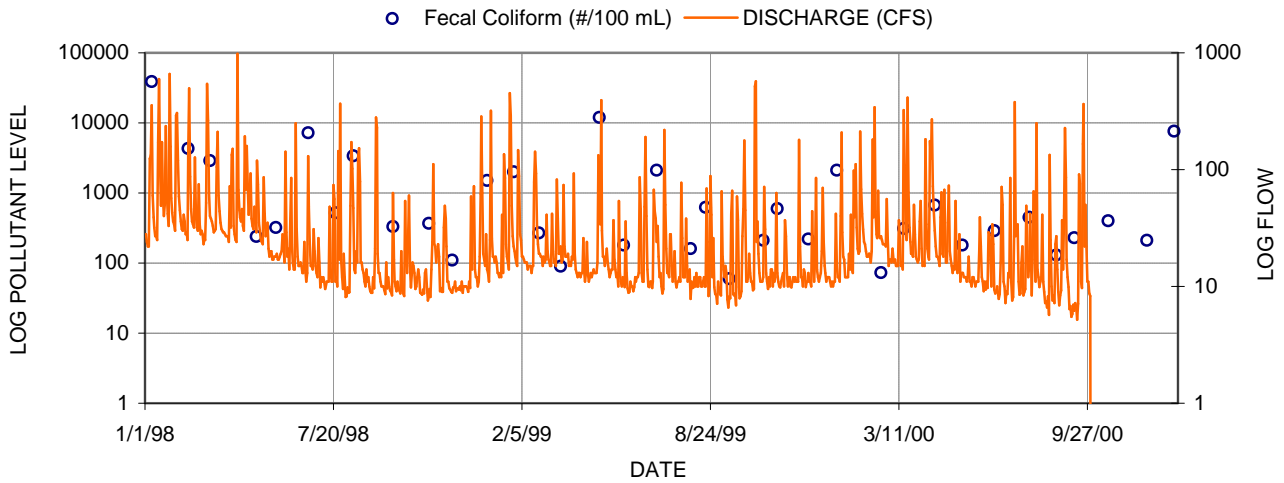
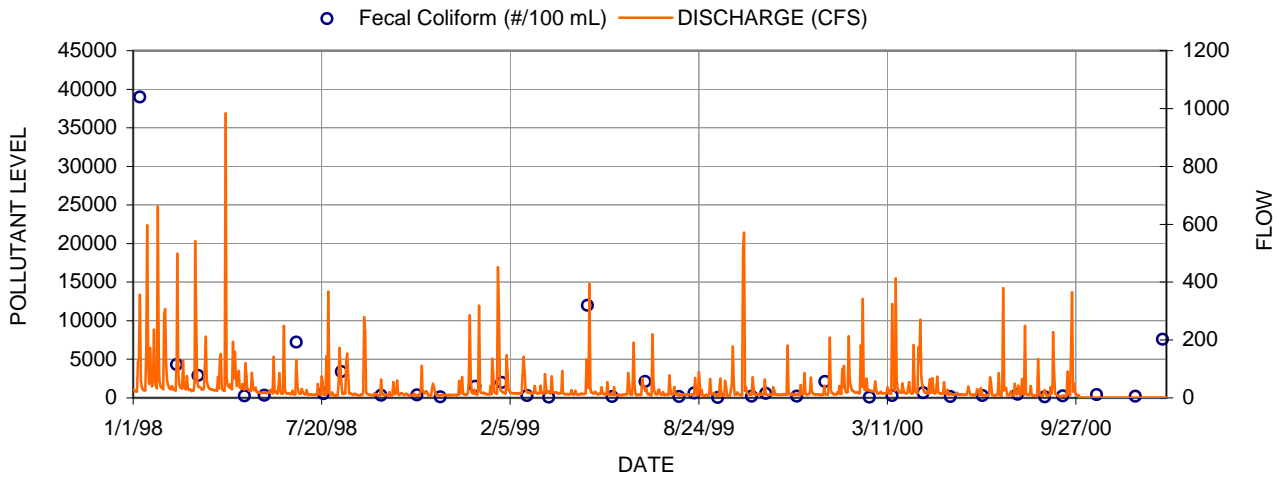
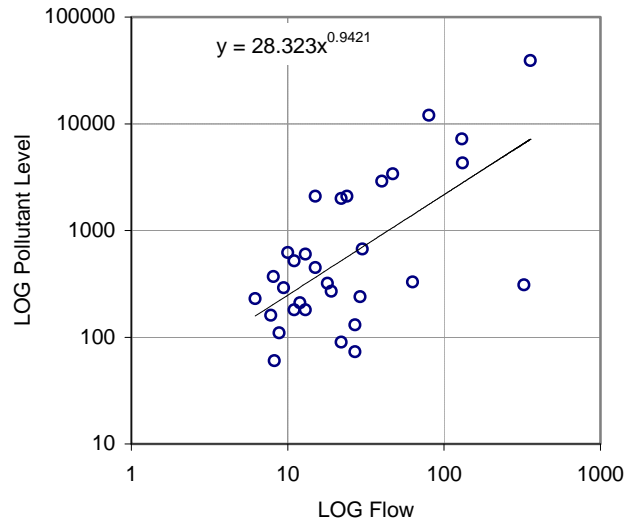
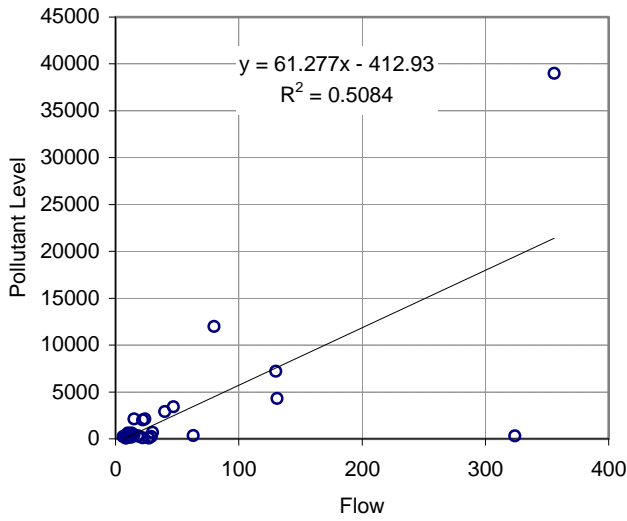
Station number	Description	Period of record	Mean flow, cfs (a)
02146300	Irwin Creek near Charlotte, NC	May 1962 to current year	44.3
02146381	Sugar Creek at NC 51 near Pineville, NC	October 1994 to current year	97.8
02146530	Little Sugar Creek at Highway 51 at Pineville	June 1997 to current year	92.3
02146600	McAlpine Creek at Sardis Road near Charlotte, NC	April 1962 to current year	44.1
02146750	McAlpine Creek below McMullen Creek near Pineville, NC	April 1974 to current year	137

(a) Water year annual mean flow for the period of record.

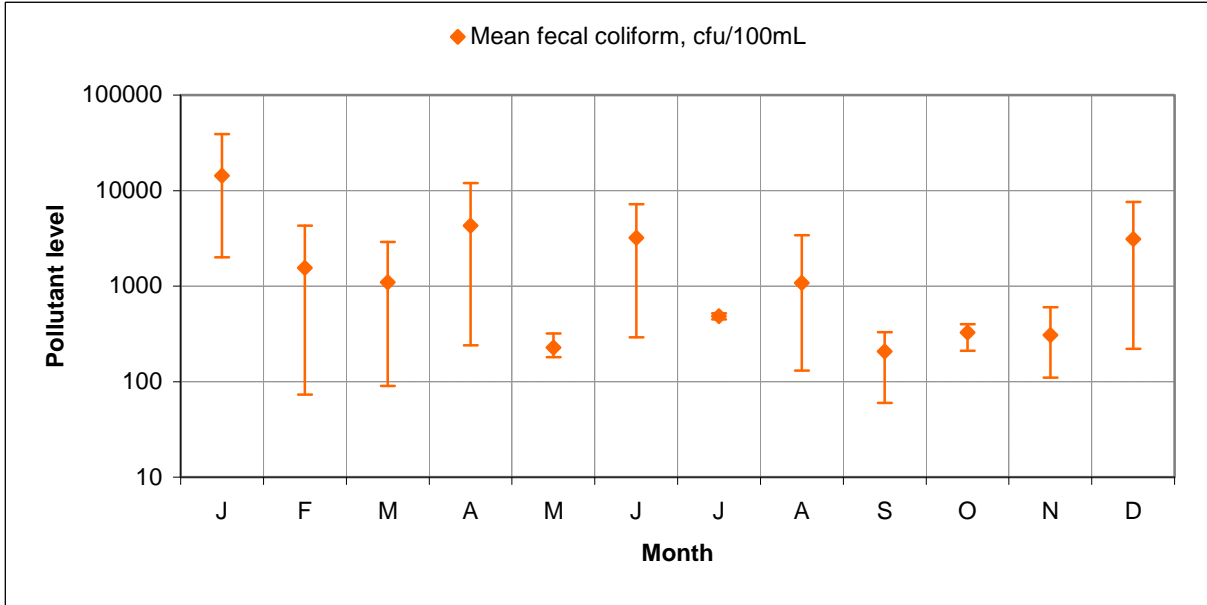
Table 1-2. DWQ Ambient Monitoring Locations for the Irwin, Sugar, Little Sugar and McAlpine Creek Watersheds

Station number	Description
C8896500	Irwin Creek @ Irwin Cr WWTP nr Charlotte
C9050000	Sugar Creek @ NC Hwy 51 @ Pineville
C9210000	Little Sugar Creek @ NC Hwy 51 @ Pineville
C9370000	McAlpine Creek @ Sardis Rd nr Charlotte
C9680000	McAlpine Creek @ SC SR 2964 nr Camp Cox, SC

FLOW INFLUENCE ANALYSIS, 1998-2000
Station# C8896500 Irwin Creek



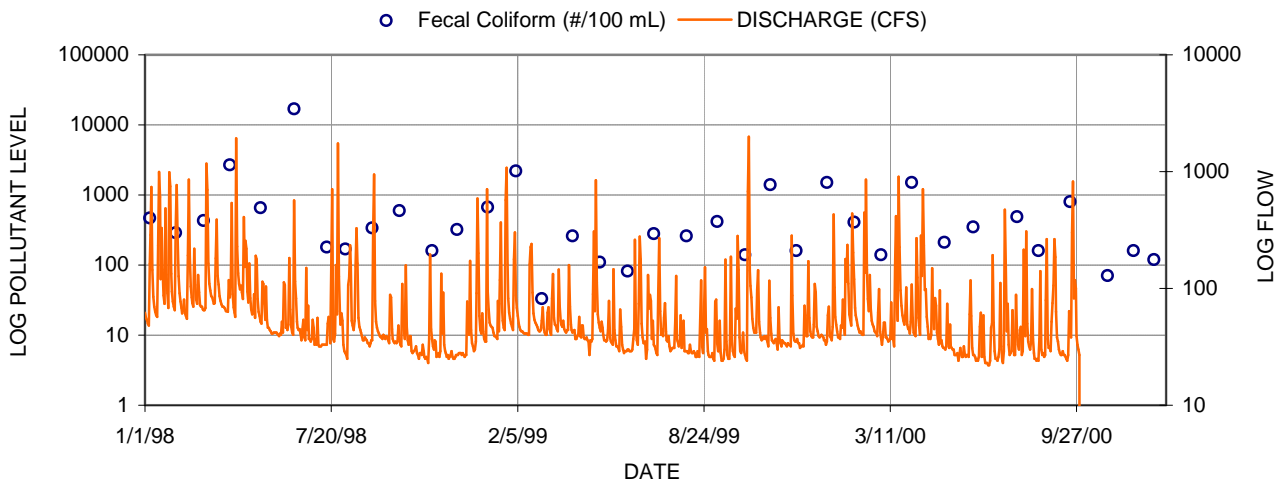
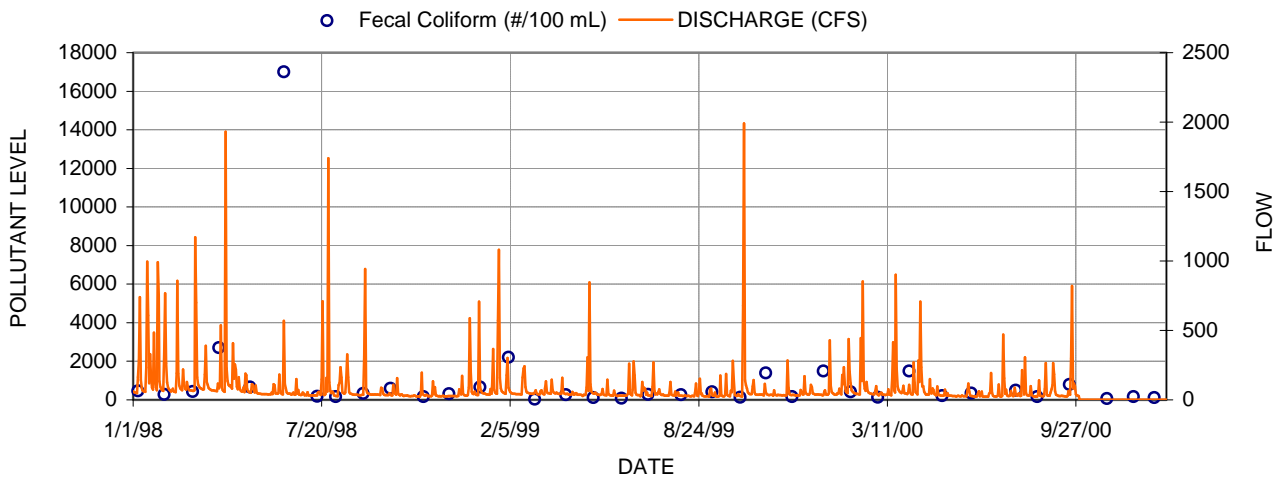
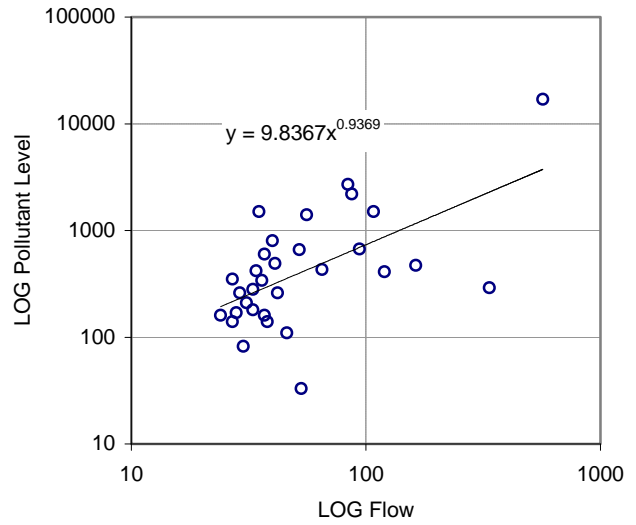
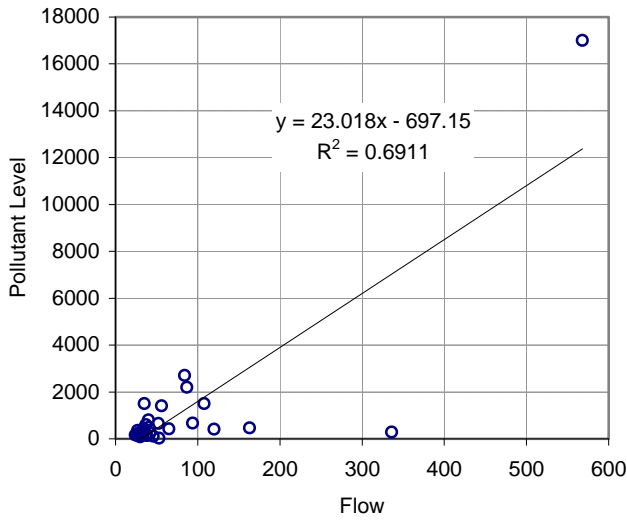
SEASONAL ANALYSIS, 1998-2000
Station# C8896500 Irwin Creek



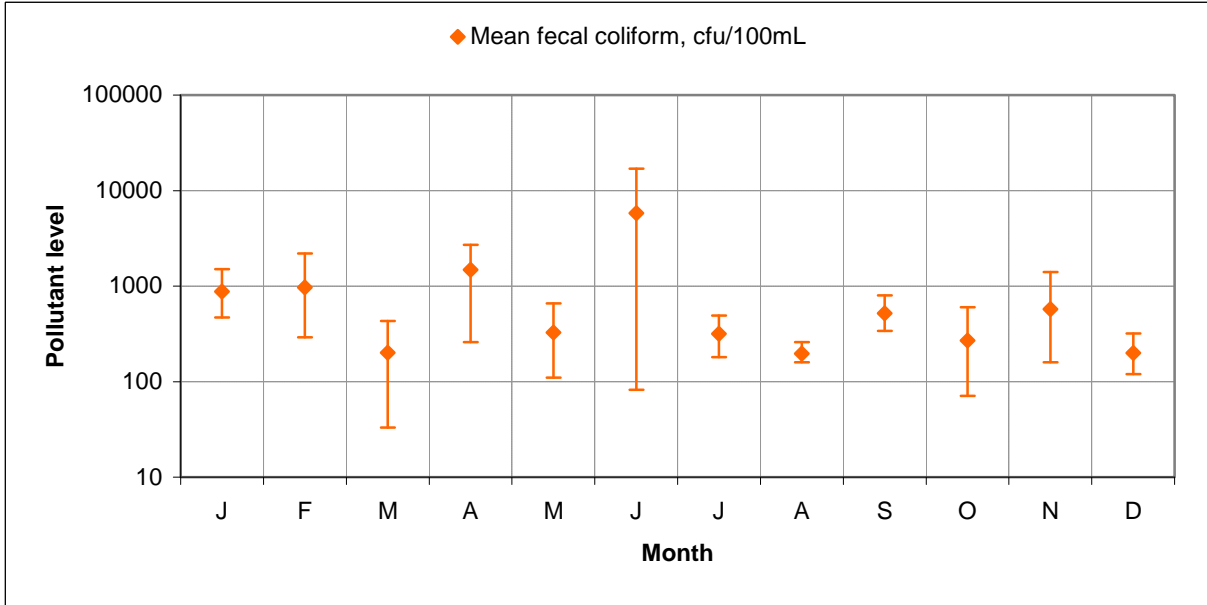
NUMBER OF OBSERVATIONS: 36
DATA RANGE: 1/8/1998 to 12/28/2000

(Error bars display maximum and minimum levels for the month.)

FLOW INFLUENCE ANALYSIS, 1998-2000
Station# C9050000 Sugar Creek



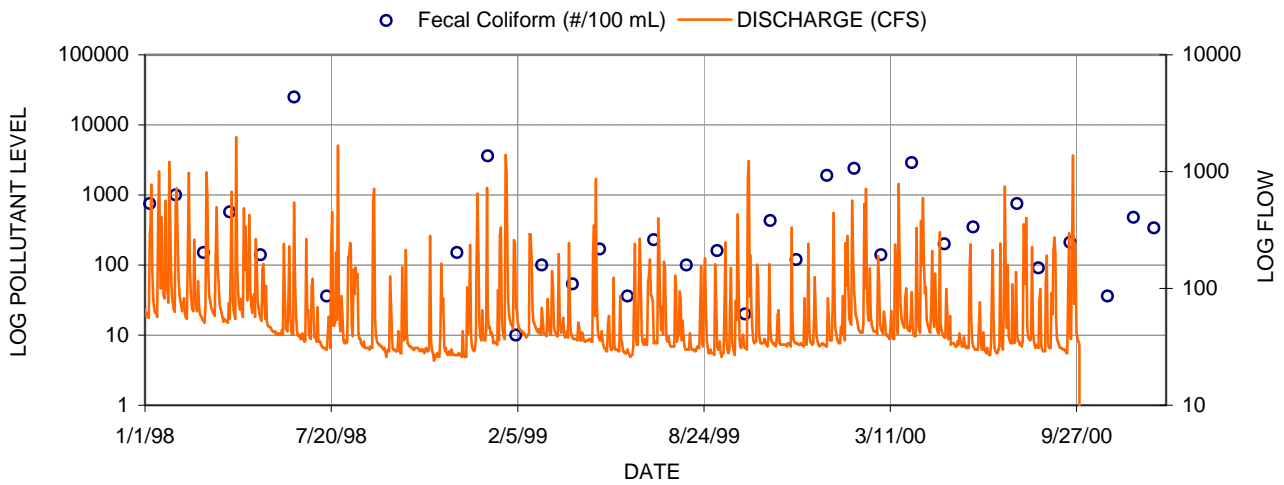
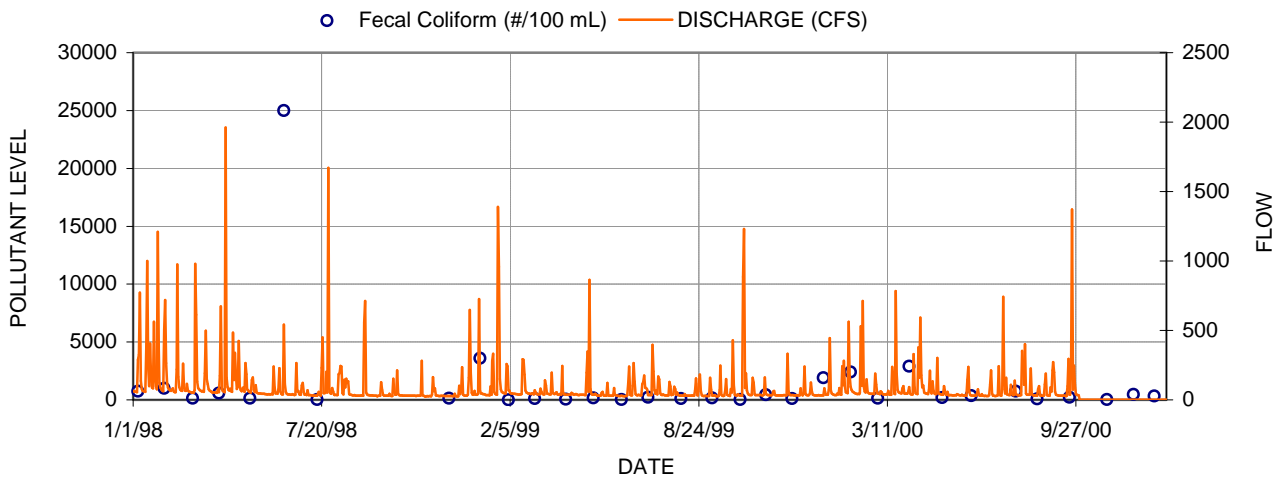
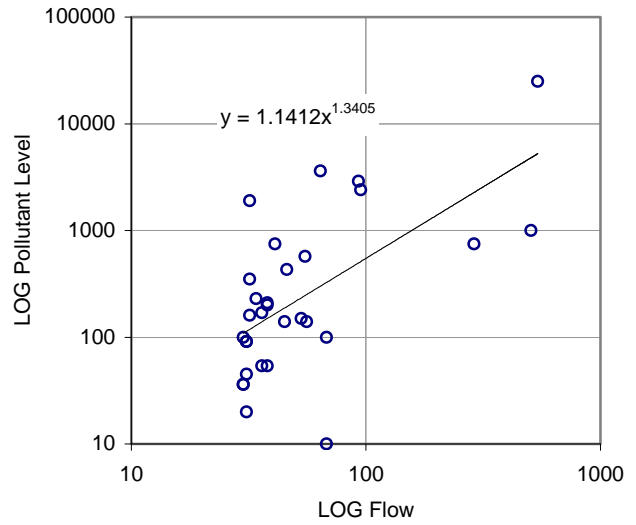
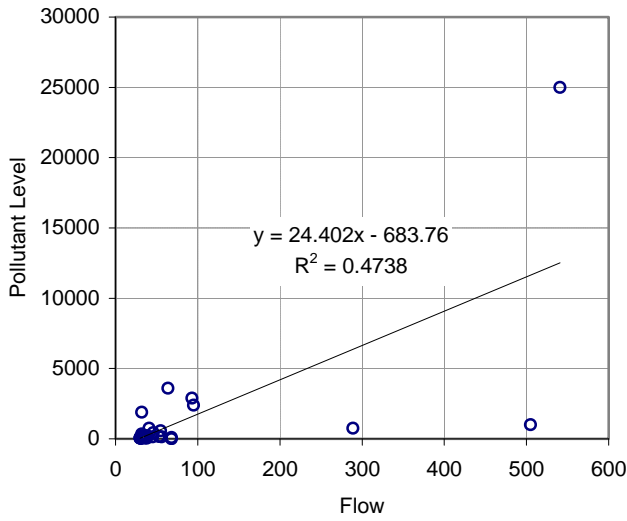
SEASONAL ANALYSIS, 1998-2000
Station# C9050000 Sugar Creek



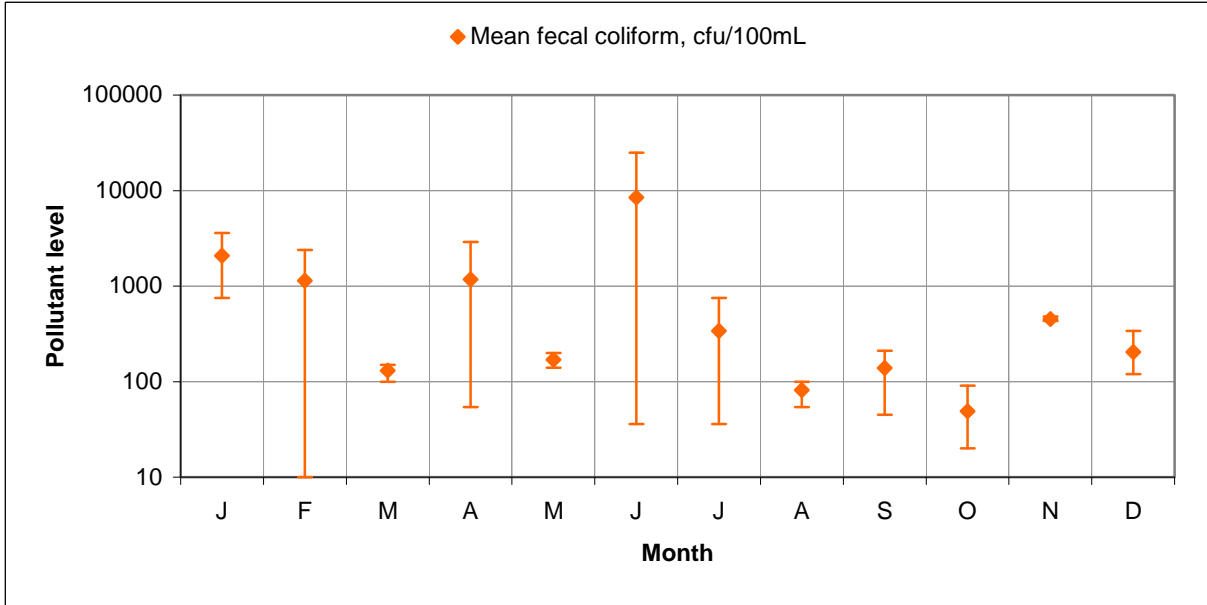
NUMBER OF OBSERVATIONS: 36
DATA RANGE: 1/6/1998 to 12/19/2000

(Error bars display maximum and minimum levels for the month.)

FLOW INFLUENCE ANALYSIS, 1998-2000
Station# C9210000 Little Sugar Creek



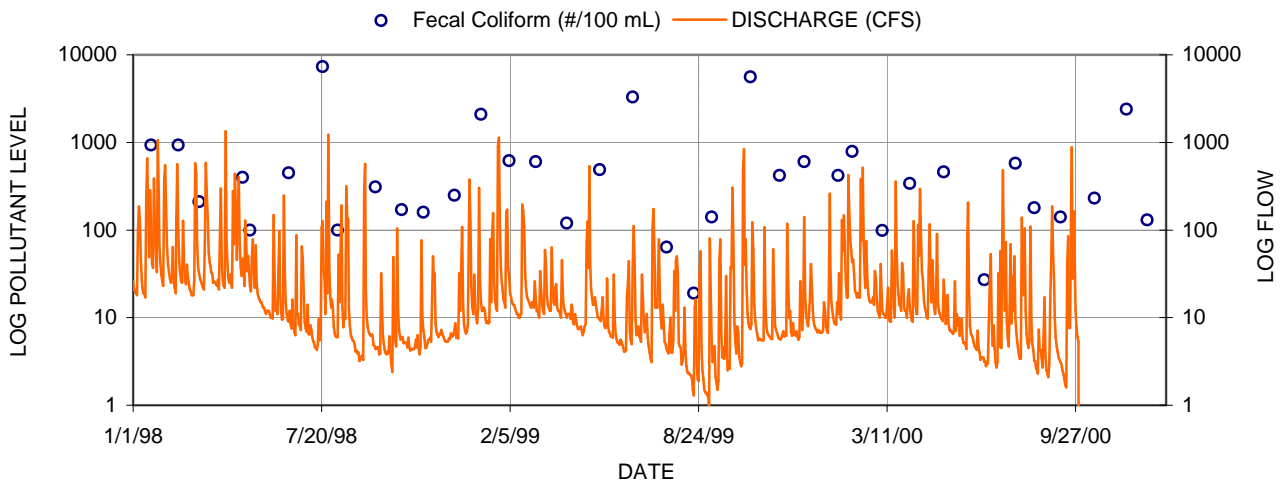
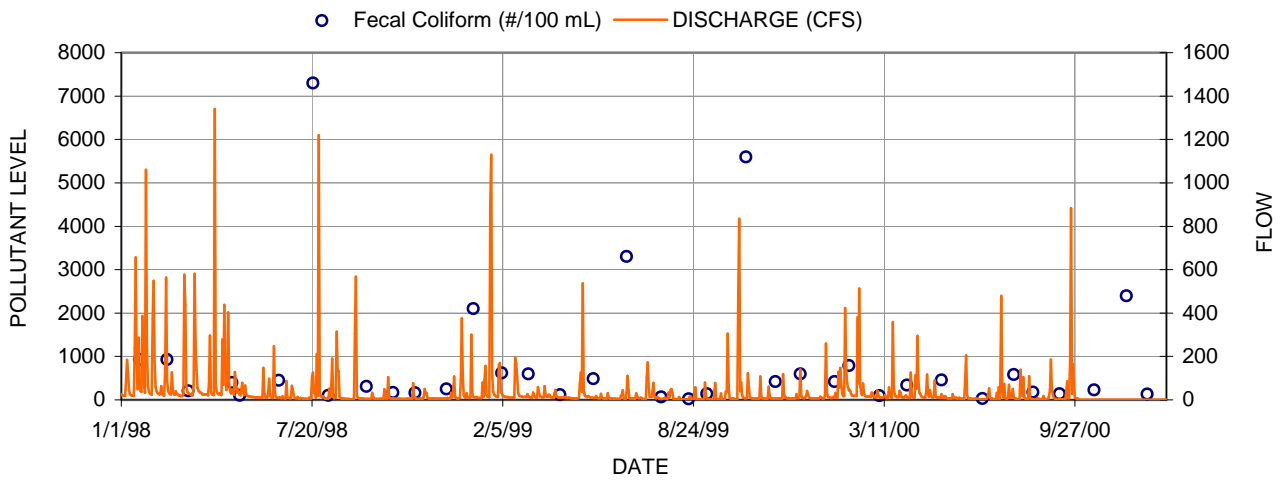
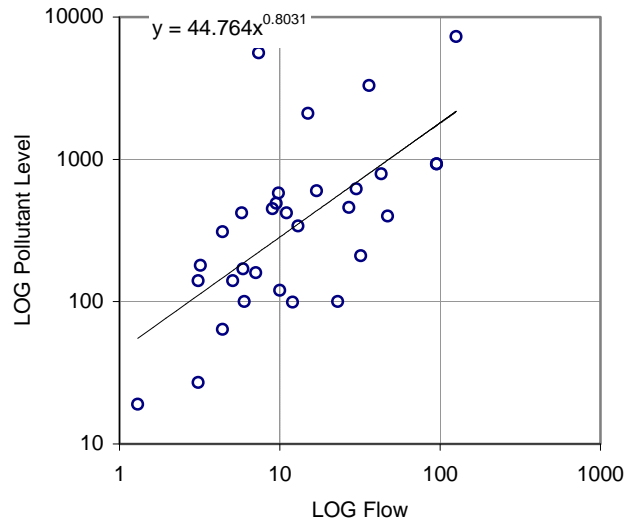
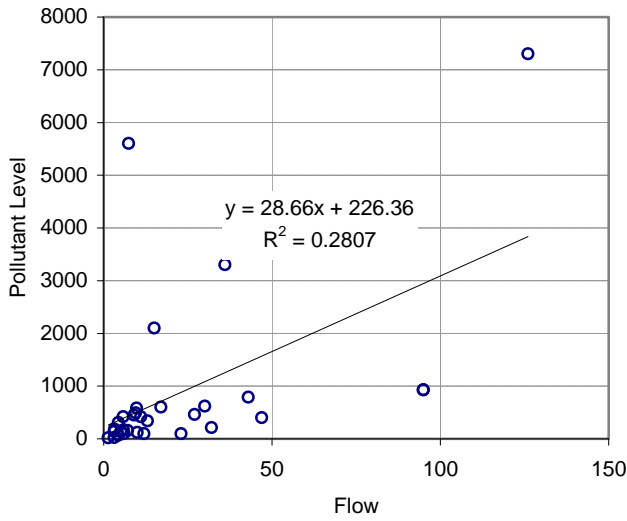
SEASONAL ANALYSIS, 1998-2000
Station# C9210000 Little Sugar Creek



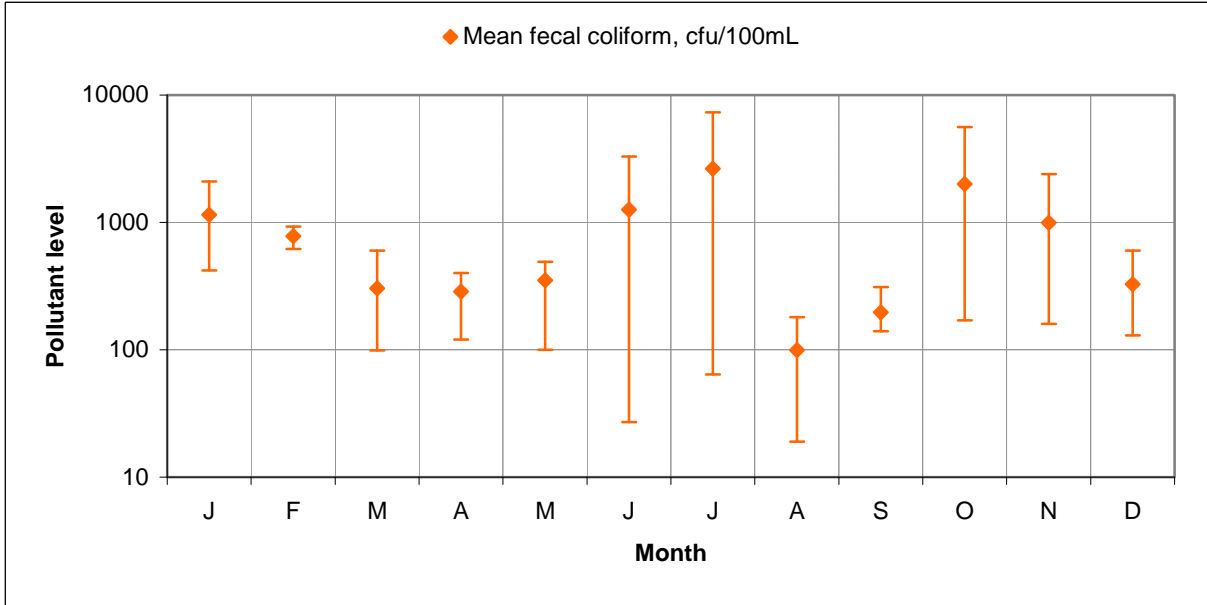
NUMBER OF OBSERVATIONS: 36
DATA RANGE: 1/6/1998 to 12/19/2000

(Error bars display maximum and minimum levels for the month.)

FLOW INFLUENCE ANALYSIS, 1998-2000
Station# C9370000 McAlpine Creek at Sardis Rd



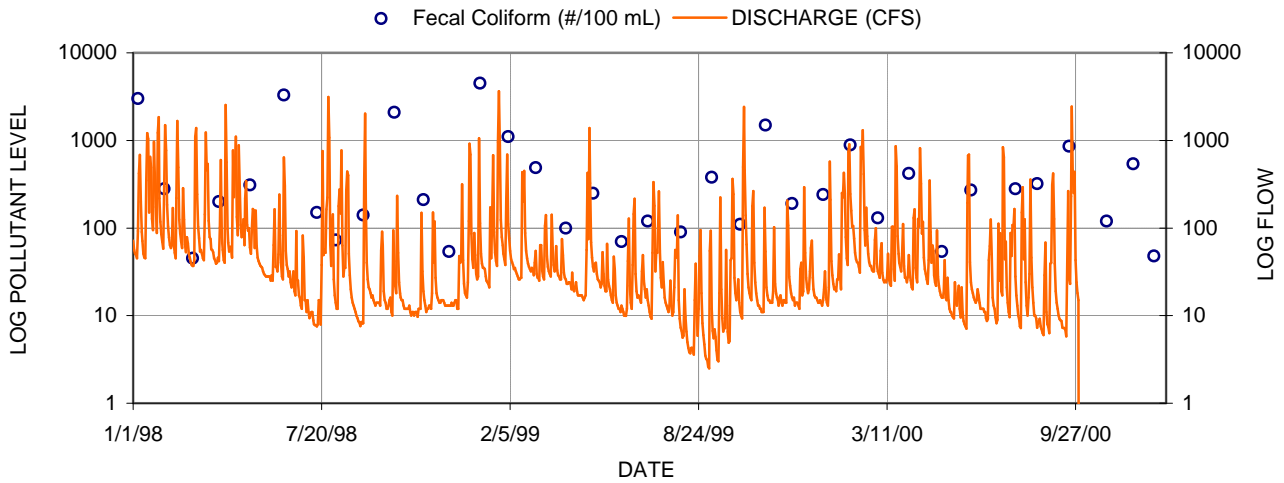
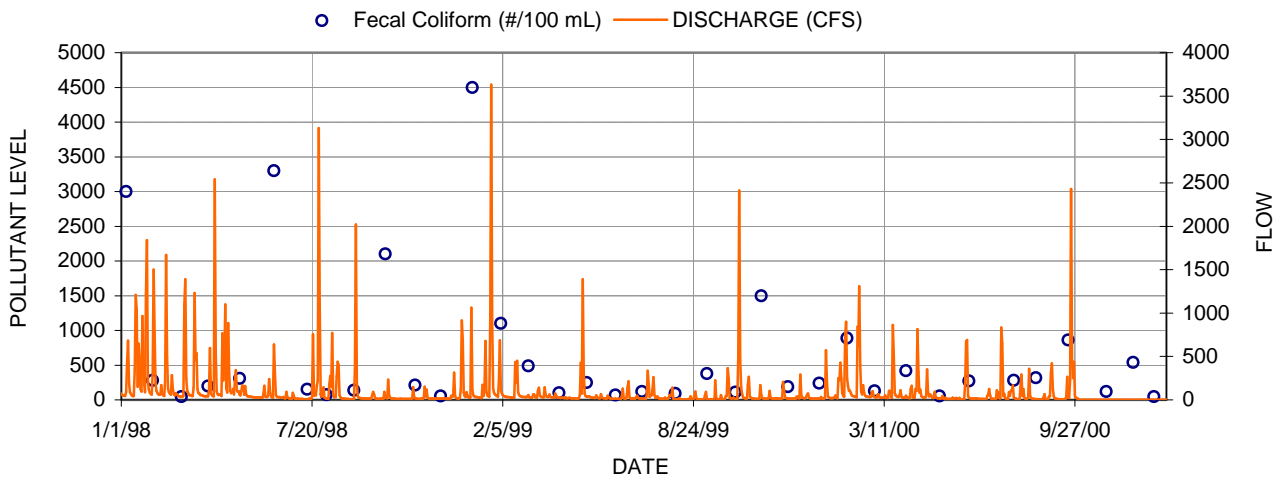
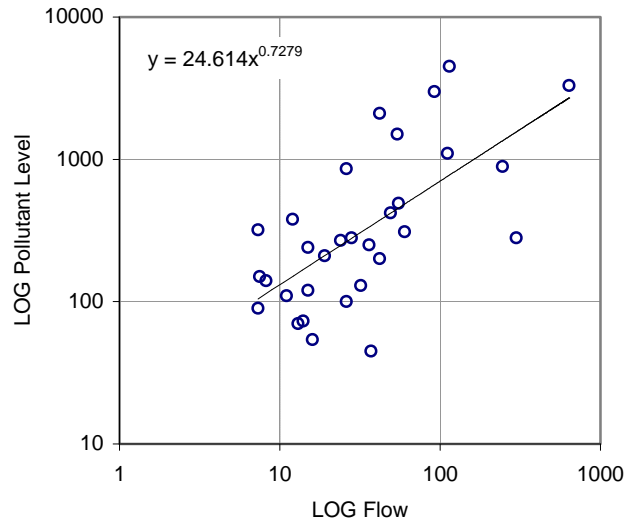
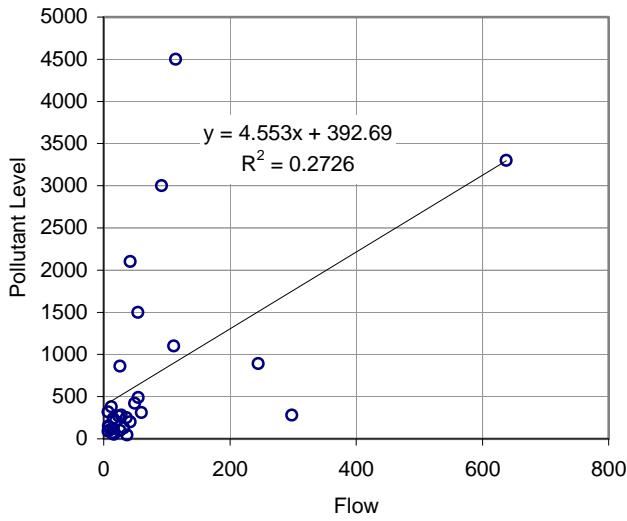
SEASONAL ANALYSIS, 1998-2000
Station# C9370000 McAlpine Creek at Sardis Rd



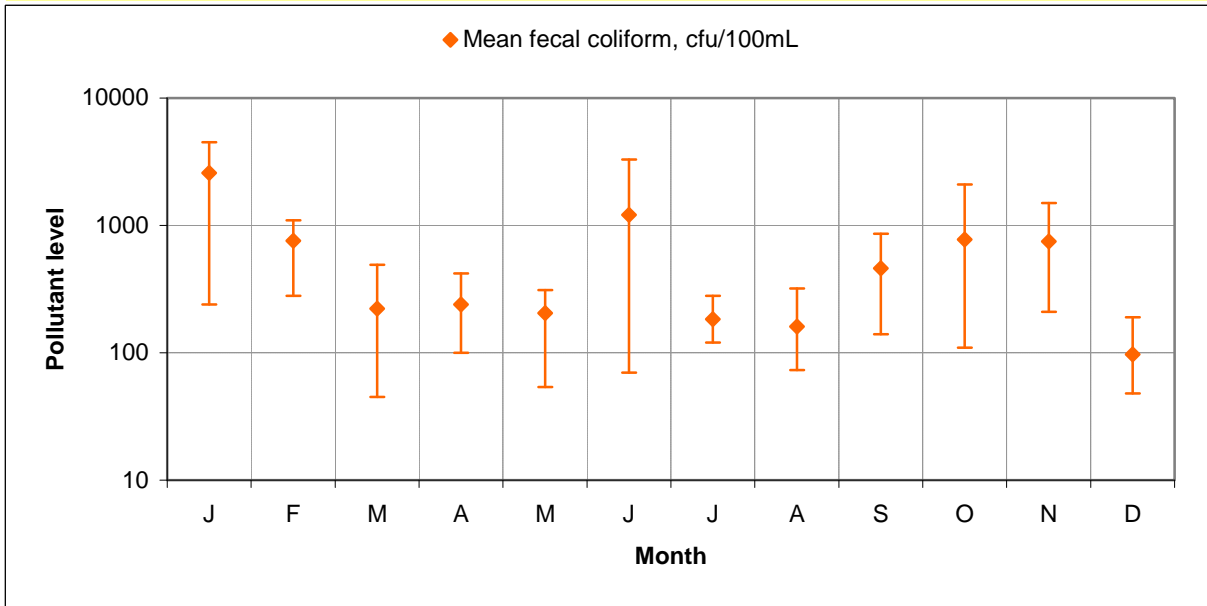
NUMBER OF OBSERVATIONS: 36
DATA RANGE: 1/20/1998 to 12/12/2000

(Error bars display maximum and minimum levels for the month.)

FLOW INFLUENCE ANALYSIS, 1998-2000
Station# C9680000 McAlpine Creek at SC SR 2964



SEASONAL ANALYSIS, 1998-2000
Station# C9680000 McAlpine Creek at SC SR 2964



NUMBER OF OBSERVATIONS: 36
DATA RANGE: 1/6/1998 to 12/19/2000

(Error bars display maximum and minimum levels for the month.)

Note: The water quality monitoring location (C9680000) and the USGS discharge measurements (02146750) are not co-located. However, they were considered spatially close enough for this rough analysis.

Table A1-1. DWQ Fecal Coliform Ambient Monitoring Data

Station Number	Station	Date	Result	Remarks
C8896500	Irwin Creek at Irwin Creek WWTF	1/8/98	39000	
C8896500	Irwin Creek at Irwin Creek WWTF	2/16/98	4300	
C8896500	Irwin Creek at Irwin Creek WWTF	3/11/98	2900	
C8896500	Irwin Creek at Irwin Creek WWTF	4/29/98	240	
C8896500	Irwin Creek at Irwin Creek WWTF	5/20/98	320	
C8896500	Irwin Creek at Irwin Creek WWTF	6/23/98	7200	
C8896500	Irwin Creek at Irwin Creek WWTF	7/22/98	520	A
C8896500	Irwin Creek at Irwin Creek WWTF	8/10/98	3400	
C8896500	Irwin Creek at Irwin Creek WWTF	9/21/98	330	
C8896500	Irwin Creek at Irwin Creek WWTF	10/29/98	370	
C8896500	Irwin Creek at Irwin Creek WWTF	11/23/98	110	
C8896500	Irwin Creek at Irwin Creek WWTF	12/30/98	1500	
C8896500	Irwin Creek at Irwin Creek WWTF	1/27/99	2000	
C8896500	Irwin Creek at Irwin Creek WWTF	2/23/99	270	
C8896500	Irwin Creek at Irwin Creek WWTF	3/18/99	90	J
C8896500	Irwin Creek at Irwin Creek WWTF	4/28/99	12000	L
C8896500	Irwin Creek at Irwin Creek WWTF	5/24/99	180	
C8896500	Irwin Creek at Irwin Creek WWTF	6/28/99	2100	
C8896500	Irwin Creek at Irwin Creek WWTF	8/3/99	160	
C8896500	Irwin Creek at Irwin Creek WWTF	8/19/99	620	
C8896500	Irwin Creek at Irwin Creek WWTF	9/13/99	60	
C8896500	Irwin Creek at Irwin Creek WWTF	10/19/99	210	
C8896500	Irwin Creek at Irwin Creek WWTF	11/3/99	600	L
C8896500	Irwin Creek at Irwin Creek WWTF	12/6/99	220	
C8896500	Irwin Creek at Irwin Creek WWTF	1/5/00	2100	
C8896500	Irwin Creek at Irwin Creek WWTF	2/21/00	73	
C8896500	Irwin Creek at Irwin Creek WWTF	3/16/00	310	
C8896500	Irwin Creek at Irwin Creek WWTF	4/18/00	670	
C8896500	Irwin Creek at Irwin Creek WWTF	5/17/00	180	
C8896500	Irwin Creek at Irwin Creek WWTF	6/20/00	290	
C8896500	Irwin Creek at Irwin Creek WWTF	7/27/00	450	
C8896500	Irwin Creek at Irwin Creek WWTF	8/25/00	130	
C8896500	Irwin Creek at Irwin Creek WWTF	9/13/00	230	
C8896500	Irwin Creek at Irwin Creek WWTF	10/19/00	400	A
C8896500	Irwin Creek at Irwin Creek WWTF	11/29/00	210	
C8896500	Irwin Creek at Irwin Creek WWTF	12/28/00	7600	
C9210000	Little Sugar Cr @ NC 51 at Pineville	11/5/97	450	
C9210000	Little Sugar Cr @ NC 51 at Pineville	1/6/98	750	
C9210000	Little Sugar Cr @ NC 51 at Pineville	2/3/98	1000	
C9210000	Little Sugar Cr @ NC 51 at Pineville	3/5/98	150	
C9210000	Little Sugar Cr @ NC 51 at Pineville	4/2/98	570	
C9210000	Little Sugar Cr @ NC 51 at Pineville	5/5/98	140	
C9210000	Little Sugar Cr @ NC 51 at Pineville	6/10/98	25000	L
C9210000	Little Sugar Cr @ NC 51 at Pineville	7/15/98	36	
C9210000	Little Sugar Cr @ NC 51 at Pineville	8/4/98	54	
C9210000	Little Sugar Cr @ NC 51 at Pineville	9/2/98	45	
C9210000	Little Sugar Cr @ NC 51 at Pineville	10/1/98	91	
C9210000	Little Sugar Cr @ NC 51 at Pineville	12/2/98	150	
C9210000	Little Sugar Cr @ NC 51 at Pineville	1/4/99	3600	
C9210000	Little Sugar Cr @ NC 51 at Pineville	2/3/99	10	K
C9210000	Little Sugar Cr @ NC 51 at Pineville	3/3/99	100	
C9210000	Little Sugar Cr @ NC 51 at Pineville	4/5/99	54	
C9210000	Little Sugar Cr @ NC 51 at Pineville	5/4/99	170	
C9210000	Little Sugar Cr @ NC 51 at Pineville	6/3/99	36	
C9210000	Little Sugar Cr @ NC 51 at Pineville	7/1/99	230	
C9210000	Little Sugar Cr @ NC 51 at Pineville	8/5/99	100	J
C9210000	Little Sugar Cr @ NC 51 at Pineville	9/7/99	160	J
C9210000	Little Sugar Cr @ NC 51 at Pineville	10/7/99	20	J
C9210000	Little Sugar Cr @ NC 51 at Pineville	11/3/99	430	
C9210000	Little Sugar Cr @ NC 51 at Pineville	12/1/99	120	J
C9210000	Little Sugar Cr @ NC 51 at Pineville	1/3/00	1900	J
C9210000	Little Sugar Cr @ NC 51 at Pineville	2/1/00	2400	
C9210000	Little Sugar Cr @ NC 51 at Pineville	3/1/00	140	
C9210000	Little Sugar Cr @ NC 51 at Pineville	4/3/00	2900	
C9210000	Little Sugar Cr @ NC 51 at Pineville	5/8/00	200	
C9210000	Little Sugar Cr @ NC 51 at Pineville	6/8/00	350	
C9210000	Little Sugar Cr @ NC 51 at Pineville	7/25/00	750	
C9210000	Little Sugar Cr @ NC 51 at Pineville	8/17/00	91	

Table A1-1. DWQ Fecal Coliform Ambient Monitoring Data

Station Number	Station	Date	Result	Remarks
C9210000	Little Sugar Cr @ NC 51 at Pineville	9/20/00	210	
C9210000	Little Sugar Cr @ NC 51 at Pineville	10/30/00	36	
C9210000	Little Sugar Cr @ NC 51 at Pineville	11/27/00	480	
C9210000	Little Sugar Cr @ NC 51 at Pineville	12/19/00	340	
C9370000	McAlpine Cr at Sardis Rc	1/20/98	930	
C9370000	McAlpine Cr at Sardis Rc	2/18/98	930	
C9370000	McAlpine Cr at Sardis Rc	3/12/98	210	
C9370000	McAlpine Cr at Sardis Rc	4/27/98	400	
C9370000	McAlpine Cr at Sardis Rc	5/5/98	100	
C9370000	McAlpine Cr at Sardis Rc	6/15/98	450	
C9370000	McAlpine Cr at Sardis Rc	7/21/98	7300	A
C9370000	McAlpine Cr at Sardis Rc	8/6/98	100	
C9370000	McAlpine Cr at Sardis Rc	9/15/98	310	
C9370000	McAlpine Cr at Sardis Rc	10/13/98	170	
C9370000	McAlpine Cr at Sardis Rc	11/5/98	160	
C9370000	McAlpine Cr at Sardis Rc	12/8/98	250	
C9370000	McAlpine Cr at Sardis Rc	1/5/99	2100	
C9370000	McAlpine Cr at Sardis Rc	2/4/99	620	
C9370000	McAlpine Cr at Sardis Rc	3/4/99	600	
C9370000	McAlpine Cr at Sardis Rc	4/6/99	120	
C9370000	McAlpine Cr at Sardis Rc	5/11/99	490	
C9370000	McAlpine Cr at Sardis Rc	6/15/99	3300	
C9370000	McAlpine Cr at Sardis Rc	7/21/99	64	
C9370000	McAlpine Cr at Sardis Rc	8/19/99	19	
C9370000	McAlpine Cr at Sardis Rc	9/7/99	140	J
C9370000	McAlpine Cr at Sardis Rc	10/18/99	5600	
C9370000	McAlpine Cr at Sardis Rc	11/18/99	420	
C9370000	McAlpine Cr at Sardis Rc	12/14/99	600	L
C9370000	McAlpine Cr at Sardis Rc	1/19/00	420	
C9370000	McAlpine Cr at Sardis Rc	2/3/00	790	
C9370000	McAlpine Cr at Sardis Rc	3/6/00	99	
C9370000	McAlpine Cr at Sardis Rc	4/4/00	340	A
C9370000	McAlpine Cr at Sardis Rc	5/10/00	460	
C9370000	McAlpine Cr at Sardis Rc	6/22/00	27	
C9370000	McAlpine Cr at Sardis Rc	7/25/00	580	
C9370000	McAlpine Cr at Sardis Rc	8/14/00	180	
C9370000	McAlpine Cr at Sardis Rc	9/11/00	140	
C9370000	McAlpine Cr at Sardis Rc	10/17/00	230	
C9370000	McAlpine Cr at Sardis Rc	11/20/00	2400	
C9370000	McAlpine Cr at Sardis Rc	12/12/00	130	
C9680000	McAlpine Cr at SC SR 2964	1/6/98	3000	
C9680000	McAlpine Cr at SC SR 2964	2/3/98	280	
C9680000	McAlpine Cr at SC SR 2964	3/5/98	45	
C9680000	McAlpine Cr at SC SR 2964	4/2/98	200	
C9680000	McAlpine Cr at SC SR 2964	5/5/98	310	
C9680000	McAlpine Cr at SC SR 2964	6/10/98	3300	
C9680000	McAlpine Cr at SC SR 2964	7/15/98	150	
C9680000	McAlpine Cr at SC SR 2964	8/4/98	73	
C9680000	McAlpine Cr at SC SR 2964	9/2/98	140	
C9680000	McAlpine Cr at SC SR 2964	10/5/98	2100	
C9680000	McAlpine Cr at SC SR 2964	11/5/98	210	
C9680000	McAlpine Cr at SC SR 2964	12/2/98	54	
C9680000	McAlpine Cr at SC SR 2964	1/4/99	4500	
C9680000	McAlpine Cr at SC SR 2964	2/3/99	1100	
C9680000	McAlpine Cr at SC SR 2964	3/4/99	490	
C9680000	McAlpine Cr at SC SR 2964	4/5/99	100	
C9680000	McAlpine Cr at SC SR 2964	5/4/99	250	
C9680000	McAlpine Cr at SC SR 2964	6/3/99	70	J
C9680000	McAlpine Cr at SC SR 2964	7/1/99	120	J
C9680000	McAlpine Cr at SC SR 2964	8/5/99	90	J
C9680000	McAlpine Cr at SC SR 2964	9/7/99	380	
C9680000	McAlpine Cr at SC SR 2964	10/7/99	110	J
C9680000	McAlpine Cr at SC SR 2964	11/3/99	1500	L
C9680000	McAlpine Cr at SC SR 2964	12/1/99	190	J
C9680000	McAlpine Cr at SC SR 2964	1/3/00	240	
C9680000	McAlpine Cr at SC SR 2964	2/1/00	890	
C9680000	McAlpine Cr at SC SR 2964	3/1/00	130	
C9680000	McAlpine Cr at SC SR 2964	4/3/00	420	

Table A1-1. DWQ Fecal Coliform Ambient Monitoring Data				
Station Number	Station	Date	Result	Remarks
C9680000	McAlpine Cr at SC SR 2964	5/8/00	54	
C9680000	McAlpine Cr at SC SR 2964	6/8/00	270	
C9680000	McAlpine Cr at SC SR 2964	7/25/00	280	
C9680000	McAlpine Cr at SC SR 2964	8/17/00	320	A
C9680000	McAlpine Cr at SC SR 2964	9/20/00	860	
C9680000	McAlpine Cr at SC SR 2964	10/30/00	120	
C9680000	McAlpine Cr at SC SR 2964	11/27/00	540	
C9680000	McAlpine Cr at SC SR 2964	12/19/00	48	
C9050000	Sugar Creek @ NC 51 at Pineville	1/6/98	470	
C9050000	Sugar Creek @ NC 51 at Pineville	2/3/98	290	
C9050000	Sugar Creek @ NC 51 at Pineville	3/5/98	430	
C9050000	Sugar Creek @ NC 51 at Pineville	4/2/98	2700	
C9050000	Sugar Creek @ NC 51 at Pineville	5/5/98	660	
C9050000	Sugar Creek @ NC 51 at Pineville	6/10/98	17000	L
C9050000	Sugar Creek @ NC 51 at Pineville	7/15/98	180	
C9050000	Sugar Creek @ NC 51 at Pineville	8/4/98	170	
C9050000	Sugar Creek @ NC 51 at Pineville	9/2/98	340	
C9050000	Sugar Creek @ NC 51 at Pineville	10/1/98	600	
C9050000	Sugar Creek @ NC 51 at Pineville	11/5/98	160	
C9050000	Sugar Creek @ NC 51 at Pineville	12/2/98	320	
C9050000	Sugar Creek @ NC 51 at Pineville	1/4/99	670	
C9050000	Sugar Creek @ NC 51 at Pineville	2/3/99	2200	
C9050000	Sugar Creek @ NC 51 at Pineville	3/3/99	33	
C9050000	Sugar Creek @ NC 51 at Pineville	4/5/99	260	A
C9050000	Sugar Creek @ NC 51 at Pineville	5/4/99	110	
C9050000	Sugar Creek @ NC 51 at Pineville	6/3/99	82	
C9050000	Sugar Creek @ NC 51 at Pineville	7/1/99	280	
C9050000	Sugar Creek @ NC 51 at Pineville	8/5/99	260	
C9050000	Sugar Creek @ NC 51 at Pineville	9/7/99	420	
C9050000	Sugar Creek @ NC 51 at Pineville	10/7/99	140	J
C9050000	Sugar Creek @ NC 51 at Pineville	11/3/99	1400	L
C9050000	Sugar Creek @ NC 51 at Pineville	12/1/99	160	J
C9050000	Sugar Creek @ NC 51 at Pineville	1/3/00	1500	
C9050000	Sugar Creek @ NC 51 at Pineville	2/1/00	410	
C9050000	Sugar Creek @ NC 51 at Pineville	3/1/00	140	
C9050000	Sugar Creek @ NC 51 at Pineville	4/3/00	1500	
C9050000	Sugar Creek @ NC 51 at Pineville	5/8/00	210	
C9050000	Sugar Creek @ NC 51 at Pineville	6/8/00	350	
C9050000	Sugar Creek @ NC 51 at Pineville	7/25/00	490	A
C9050000	Sugar Creek @ NC 51 at Pineville	8/17/00	160	
C9050000	Sugar Creek @ NC 51 at Pineville	9/20/00	800	
C9050000	Sugar Creek @ NC 51 at Pineville	10/30/00	71	
C9050000	Sugar Creek @ NC 51 at Pineville	11/27/00	160	
C9050000	Sugar Creek @ NC 51 at Pineville	12/19/00	120	

Appendix 2.
Implementation Plan Outline

DRAFT Outline
Fecal Coliform TMDL Implementation Strategy

1.0 MONITORING

- 1.1 DWQ Sampling
 - 1.1.1 Location of Sites
 - 1.1.2 Frequency of Sampling
 - 1.1.3 Flow Conditions During Sample Collection
 - 1.1.4 Sample Collection and Laboratory Analyses
- 1.2 MCDEP Sampling
 - 1.2.1 Location of Sites
 - 1.2.2 Frequency of Sampling
 - 1.2.3 Flow Conditions During Sample Collection
 - 1.2.4 Sample Collection and Laboratory Analyses
- 1.3 Other Sampling
 - 1.3.1 Location of Sites
 - 1.3.2 Frequency of Sampling
 - 1.3.3 Flow Conditions During Sample Collection
 - 1.3.4 Sample Collection and Laboratory Analyses

2.0 SOURCE REDUCTION

- 2.1 WWTP (1000 cfu/100ml maximum)
 - 2.1.1 Actions Necessary to Achieve Reduction
 - 2.1.2 Time Frame for Completion
- 2.2 SSO (Reduced by 33% in Sugar and Upper McAlpine Creeks; 25% in Little Sugar and Lower McAlpine Creeks; and 3 hours maximum flow for all TMDL watersheds)
 - 2.2.1 Actions Necessary to Achieve Reduction
 - 2.2.2 Time Frame for Completion
- 2.3 Failing Septic Tanks (Reduced by 60% in Sugar and Little Sugar Creeks; 80% in Upper McAlpine Creek; and 40% in Lower McAlpine Creek)
 - 2.3.1 Actions Necessary to Achieve Reduction
 - 2.3.2 Time Frame for Completion
- 2.4 Dry Weather Flow (Reduced by 60% in Sugar and Little Sugar Creeks; 80% in Upper McAlpine Creek; and 40% in Lower McAlpine Creek)
 - 2.4.1 Actions Necessary to Achieve Reduction
 - 2.4.2 Time Frame for Completion
- 2.5 Sanitary Sewer Exfiltration (5 cfu/100 ml average)
 - 2.5.1 Actions Necessary to Achieve Reduction
 - 2.5.2 Time Frame for Completion

3.0 MEASURING SUCCESS

- 3.1 Measuring Success in Meeting Reduction Targets
- 3.2 Measuring Success Toward Meeting TMDL

4.0 DOCUMENTATION

- 4.1 Records
 - 4.1.1 Documentation Methods
 - 4.1.2 Maintaining Records
- 4.2 Reporting
 - 4.2.1 Frequency
 - 4.2.2 Sharing Information Among All Stakeholders
 - 4.2.3 Public Reporting
 - 4.2.4 Reports to the State/EPA

5.0 ADAPTIVE MANAGEMENT

- 5.1 Oversight Committee
- 5.2 Adaption of TMDL in Response to More/Better Data

6.0 PUBLIC PROCESS

- 6.1 Community Education
- 6.2 Long and Short Term Community Involvement/Input in Implementation Strategy

7.0 SCHEDULE

- 7.1 Implementation Strategy and Source Reduction Milestones
- 7.2 TMDL Milestones and Compliance

Appendix 3. Land Use Tables

Table A3-1. Sugar Creek Watershed Land-Use Distribution												
	Total	001	002	003	004	005	006	007	008	009	010	011
Heavy Residential	7590.263	320.727	167.773	949.727	2495.811	1250.89	13.356	462.845	239.56	681.883	789.596	218.095
Light Residential	10947.79	965.325	1086.742	634.929	1467.742	757.767	434.884	380.999	445.07	1117.451	1388.839	2268.043
Light Commercial/Industrial	5563.069	155.732	136.896	354.595	1099.594	1065.089	109.196	595.25	585.187	564.904	621.687	274.939
Woods/Brush	13485.88	1752.05	590.47	52.355	1465	932.875	531.552	1101.71	673.9387	1764.81	1312.96	3308.16
Heavy Industrial	2731.901	709.628	2.72	240.717	553.785	298.091	217.128	182.002	161.889	8.125	282.585	75.231
Heavy Commercial	1307.129	11.036	19.582	213.514	176.751	124.554	3.525	103.812	10.432	132.922	152.597	358.404

Table A3-2. Little Sugar Creek Watershed Land-Use Distribution

	Watershed								
Pervious Land-Use Name	001	002	003	004	005	006	008	009	Total
Heavy Residential	696	2344	918	2307	1657	1224	459	1566	0
Light Residential	684	273	306	1186	589	346	79	403	11170
Light Commercial/Industrial	173	179	272	218	96	72	50	78	3865
Woods/Brush	427	211	47	555	478	451	170	629	1139
Institutional	7	81	57	84	68	23	19	35	2967
Heavy Industrial	379	19	221	8	2	11	35	25	374
Heavy Commercial	6	13	47	32	2	5	5	13	700
Total Pervious	2372	3122	1866	4390	2891	2133	817	2749	20215
Impervious Land-Use Name									
Heavy Residential	291	981	384	965	693	512	192	655	0
Light Residential	159	64	71	277	137	81	18	94	4674
Light Commercial/Industrial	350	362	550	442	194	147	102	159	901
Woods/Brush	37	18	4	48	41	39	15	54	2306
Institutional	9	106	74	110	88	30	25	46	254
Heavy Industrial	402	21	235	8	2	12	37	26	488
Heavy Commercial	74	157	551	376	28	64	59	155	743
Total Impervious	1323	1709	1870	2225	1184	884	448	1188	9367
Total Watershed Area	3695	4831	3736	6615	4075	3017	1265	3937	29582

Note: Area in Acres

Table A3-3. McAlpine Creek Watershed Land-Use Distribution

Watershed											
Pervious Land-Use Name	001	003	006	007	008	010	013	009	002	012	Total
Heavy Residential	3213	317	158	1701	799	2023	2423	1417	611	959	13621
Light Residential	1856	713	56	791	1935	873	2533	581	3453	1467	14259
Light Commercial/Industrial	198	9	3	90	30	58	88	53	181	54	763
Woods/Brush	2356	2181	461	460	2611	899	1877	679	3391	1785	16701
Institutional	68	-	4	74	16	31	74	27	17	18	328
Heavy Industrial	264	-	75	1	55	22	-	16	136	-	569
Heavy Commercial	-	-	-	8	7	10	2	1	15	6	49
Total Pervious	7955	3220	757	3125	5454	3916	6996	2773	7804	4289	46290
Impervious Land-Use Name											
Heavy Residential	1345	132	66	712	334	847	1014	593	256	401	5700
Light Residential	433	166	13	184	451	204	590	135	805	342	3323
Light Commercial/Industrial	379	2	6	175	61	109	164	106	357	68	1427
Woods/Brush	202	187	40	39	224	77	161	58	291	153	1433
Institutional	88	3	5	96	21	40	97	35	22	23	430
Heavy Industrial	280	-	68	1	35	23	-	17	94	-	519
Heavy Commercial	-	-	-	92	82	117	18	16	181	71	576
Total Impervious	2727	491	198	1300	1209	1416	2044	960	2005	1059	13407
Total Watershed Area	10682	3712	954	4425	6663	5331	9041	3734	9809	5348	59697

Note: Area in Acres

Appendix 4.
WWTP Flows and Fecal Coliform Loading

Table A4-1. Sugar Creek Wastewater Treatment Plant - 1000 cfu/100 ml Max									
Year	Month	Day	Hour	Minute	Flow (mgd)	Measured fecal (cfu/100 ml)	Fecal (cfu/hour)	Flow (cfs)	Fecal conc used in calcs
							1000		
1998	1	5	1	0	9.3	16	234,675,221	14.39	16
1998	1	6	1	0	11.91	17	319,319,166	18.42	17
1998	1	7	1	0	13.31	6	125,948,677	20.59	6
1998	1	8	1	0	16.67	2,300	26,290,564,020	25.79	1000
1998	1	9	1	0	10.26	7	113,268,645	15.87	7
1998	1	12	1	0	10.71	20	337,818,765	16.57	20
1998	1	13	1	0	10.92	82	1,412,214,916	16.89	82
1998	1	14	1	0	9.72	200	3,065,918,204	15.04	200
1998	1	15	1	0	13.61	55	1,180,551,991	21.05	55
1998	1	16	1	0	19.56	5	154,242,181	30.26	5
1998	1	20	1	0	10.48	19	314,035,819	16.21	19
1998	1	21	1	0	9.96	146	2,293,382,518	15.41	146
1998	1	22	1	0	10.7	44	742,507,351	16.55	44
1998	1	23	1	0	14.28	100	2,252,125,100	22.09	100
1998	1	26	1	0	11.27	12	213,289,495	17.43	12
1998	1	27	1	0	21.66	230	7,856,888,532	33.51	230
1998	1	28	1	0	15.18	85	2,034,955,894	23.48	85
1998	1	29	1	0	10.53	12	199,284,683	16.29	12
1998	2	2	1	0	10.05	20	317,000,802	15.55	20
1998	2	3	1	0	19.12	55	1,658,497,728	29.58	55
1998	2	4	1	0	20.44	119	3,836,119,754	31.62	119
1998	2	5	1	0	19.21	13	393,853,782	29.72	13
1998	2	6	1	0	9.56	7	105,540,765	14.79	7
1998	2	9	1	0	12.2	16	307,853,515	18.87	16
1998	2	10	1	0	14.99	4	94,564,020	23.19	4
1998	2	11	1	0	16.18	7	178,624,432	25.03	7
1998	2	12	1	0	15.69	25	618,624,699	24.27	25
1998	2	13	1	0	13.56	28	598,800,321	20.98	28
1998	2	16	1	0	18.16	25	716,011,762	28.09	25
1998	2	17	1	0	24.98	100	3,939,641,807	38.64	100
1998	2	18	1	0	22.55	4	142,256,081	34.88	4
1998	2	19	1	0	16.21	48	1,227,124,298	25.08	48
1998	2	20	1	0	14.76	155	3,608,131,516	22.83	155
1998	2	23	1	0	15.65	57	1,406,868,484	24.21	57
1998	2	24	1	0	14.05	59	1,307,352,312	21.73	59
1998	2	25	1	0	14.56	320	7,348,110,131	22.52	320
1998	2	26	1	0	15.55	280	6,866,773,590	24.05	280
1998	2	27	1	0	14.32	560	12,647,228,014	22.15	560
1998	3	2	1	0	15.06	21	498,779,471	23.30	21
1998	3	3	1	0	13.28	430	9,005,977,011	20.54	430
1998	3	4	1	0	14.26	530	11,919,545,576	22.06	530
1998	3	5	1	0	13.41	155	3,278,119,487	20.74	155
1998	3	6	1	0	15.07	450	10,695,228,549	23.31	450
1998	3	9	1	0	25.54	4	161,118,418	39.51	4
1998	3	10	1	0	17.81	109	3,061,644,213	27.55	109
1998	3	11	1	0	15.25	91	2,188,646,084	23.59	91
1998	3	12	1	0	15.26	64	1,540,276,931	23.61	64
1998	3	13	1	0	14.22	43	964,344,828	22.00	43
1998	3	16	1	0	19.42	55	1,684,520,182	30.04	55
1998	3	17	1	0	24.7	11	428,503,074	38.21	11
1998	3	18	1	0	15.63	60	1,479,021,652	24.18	60
1998	3	19	1	0	16.06	585	14,817,185,245	24.84	585
1998	3	20	1	0	14.25	23	516,900,561	22.04	23
1998	3	23	1	0	15.09	15	356,980,754	23.34	15
1998	3	24	1	0	15.4	8	194,300,989	23.82	8
1998	3	25	1	0	13.94	10	219,850,307	21.56	10
1998	3	26	1	0	14.13	845	18,830,557,338	21.86	845
1998	3	27	1	0	14.63	45	1,038,295,910	22.63	45
1998	3	30	1	0	15	20	473,135,525	23.20	20
1998	3	31	1	0	15.14	25	596,939,321	23.42	25
1998	4	2	1	0	14.72	31	719,670,676	22.77	31
1998	4	3	1	0	19.84	18	563,220,529	30.69	18

Table A4-1. Sugar Creek Wastewater Treatment Plant - 1000 cfu/100 ml Max									
Year	Month	Day	Hour	Minute	Flow (mgd)	Measured fecal (cfu/100 ml)	Fecal (cfu/hour)	Flow (cfs)	Fecal conc used in calcs
1998	4	6	1	0	16.39	53	1,369,995,456	25.35	53
1998	4	7	1	0	15.19	14	335,390,003	23.50	14
1998	4	8	1	0	21.17	45	1,502,441,860	32.75	45
1998	4	9	1	0	29.07	1,350	45,846,832,398	44.97	1000
1998	4	13	1	0	15.72	2	49,584,603	24.32	2
1998	4	14	1	0	15.08	10	237,829,457	23.33	10
1998	4	15	1	0	15.04	6	142,319,166	23.27	6
1998	4	16	1	0	15.71	9	222,988,773	24.30	9
1998	4	17	1	0	19.07	33	992,496,391	29.50	33
1998	4	20	1	0	15.3	18	434,338,412	23.67	18
1998	4	21	1	0	14.74	11	255,713,980	22.80	11
1998	4	22	1	0	19.59	23	710,602,245	30.30	23
1998	4	23	1	0	17.83	47	1,321,641,005	27.58	47
1998	4	24	1	0	15	10	236,567,763	23.20	10
1998	4	27	1	0	12.54	26	514,203,689	19.40	26
1998	4	28	1	0	15.23	55	1,321,073,242	23.56	55
1998	4	29	1	0	15.07	58	1,378,496,124	23.31	58
1998	4	30	1	0	17.75	28	783,827,854	27.46	28
1998	5	1	1	0	16.16	11	280,348,570	25.00	11
1998	5	4	1	0	15.06	137	3,253,942,261	23.30	137
1998	5	5	1	0	14.86	91	2,132,674,151	22.99	91
1998	5	6	1	0	16.44	470	12,186,078,589	25.43	470
1998	5	7	1	0	23.65	14	522,183,908	36.58	14
1998	5	8	1	0	17.34	19	519,597,434	26.82	19
1998	5	11	1	0	14	43	962,988,506	21.97	43
1998	5	12	1	0	15	57	1,367,314,354	23.53	57
1998	5	13	1	0	14	14	306,686,447	21.49	14
1998	5	14	1	0	15	25	581,956,696	22.83	25
1998	5	15	1	0	15	35	839,578,990	23.53	35
1998	5	18	1	0	14	29	645,341,085	21.83	29
1998	5	19	1	0	15	6,000	23,025,928,896	22.59	1000
1998	5	20	1	0	15	590	14,301,782,946	23.78	590
1998	5	21	1	0	14	30	657,185,245	21.49	30
1998	5	22	1	0	15	182	4,233,774,392	22.82	182
1998	5	26	1	0	16	27	671,095,429	24.38	27
1998	5	27	1	0	14	26	574,481,155	21.67	26
1998	5	28	1	0	15	12	279,149,960	22.82	12
1998	5	29	1	0	15	9	219,440,257	23.92	9
1998	6	1	1	0	14.63	220	5,076,113,339	22.63	220
1998	6	2	1	0	14.92	82	1,929,509,757	23.08	82
1998	6	3	1	0	15.34	1	24,192,997	23.73	1
1998	6	4	1	0	13.91	110	2,413,148,891	21.52	110
1998	6	5	1	0	14.08	110	2,442,641,005	21.78	110
1998	6	8	1	0	14.15	200	4,463,245,122	21.89	200
1998	6	9	1	0	14.3	26	586,372,628	22.12	26
1998	6	10	1	0	23	28	1,015,664,261	35.58	28
1998	6	11	1	0	22.05	19	660,733,761	34.11	19
1998	6	12	1	0	14.96	20	471,873,831	23.14	20
1998	6	15	1	0	14	300	6,623,897,354	21.66	300
1998	6	16	1	0	18.99	380	11,380,801,925	29.38	380
1998	6	17	1	0	11.22	54	955,544,507	17.36	54
1998	6	18	1	0	15.05	37	878,218,391	23.28	37
1998	6	19	1	0	10	23	362,737,236	15.47	23
1998	6	22	1	0	15.84	57	1,423,948,677	24.50	57
1998	6	23	1	0	15.52	82	2,007,103,983	24.01	82
1998	6	24	1	0	15.07	37	879,385,458	23.31	37
1998	6	25	1	0	14.73	91	2,114,016,840	22.79	91
1998	6	26	1	0	15.5	119	2,908,994,921	23.98	119
1998	6	29	1	0	14.55	41	940,829,992	22.51	41
1998	6	30	1	0	13.3	57	1,195,613,472	20.57	57
1998	7	1	1	0	15.01	73	1,728,095,964	23.22	73
1998	7	2	1	0	14.85	82	1,920,457,097	22.97	82
1998	7	3	1	0	14.85	56	1,311,531,676	22.97	56
1998	7	7	1	0	14.55	28	642,518,043	22.51	28

Table A4-1. Sugar Creek Wastewater Treatment Plant - 1000 cfu/100 ml Max									
Year	Month	Day	Hour	Minute	Flow (mgd)	Measured fecal (cfu/100 ml)	Fecal (cfu/hour)	Flow (cfs)	Fecal conc used in calcs
1998	7	8	1	0	15.34	82	1,983,825,715	23.73	82
1998	7	9	1	0	13.77	10	217,169,206	21.30	10
1998	7	10	1	0	13.72	26	562,589,682	21.22	26
1998	7	13	1	0	13.41	110	2,326,407,378	20.74	110
1998	7	14	1	0	14	110	2,428,762,363	21.66	110
1998	7	15	1	0	12.98	60	1,228,259,824	20.08	60
1998	7	16	1	0	14.28	28	630,595,028	22.09	28
1998	7	17	1	0	14.52	34	778,591,820	22.46	34
1998	7	20	1	0	13.02	1	20,534,082	20.14	1
1998	7	21	1	0	16.98	40	1,071,178,829	26.27	40
1998	7	22	1	0	16.81	64	1,696,727,078	26.00	64
1998	7	23	1	0	15.76	1	24,855,386	24.38	1
1998	7	24	1	0	13.98	6	132,288,693	21.63	6
1998	7	27	1	0	25.02	20	789,190,056	38.70	20
1998	7	28	1	0	14.78	31	722,604,117	22.86	31
1998	7	29	1	0	14.45	36	820,417,001	22.35	36
1998	7	30	1	0	14.51	9	205,955,894	22.45	9
1998	7	31	1	0	14.92	13	305,897,888	23.08	13
1998	8	3	1	0	13.51	9	191,761,828	20.90	9
1998	8	4	1	0	15.67	58	1,433,379,845	24.24	58
1998	8	5	1	0	14.27	82	1,845,449,345	22.07	82
1998	8	6	1	0	14.81	29	677,356,589	22.91	29
1998	8	7	1	0	13.81	20	435,600,107	21.36	20
1998	8	10	1	0	14.39	25	567,368,351	22.26	25
1998	8	11	1	0	15.14	38	907,347,768	23.42	38
1998	8	12	1	0	14.37	26	589,242,983	22.23	26
1998	8	13	1	0	15.02	26	615,896,284	23.23	26
1998	8	14	1	0	18.43	17	494,126,971	28.51	17
1998	8	17	1	0	14	30	672,798,717	22.00	30
1998	8	18	1	0	16	57	1,468,896,552	25.28	57
1998	8	19	1	0	13	19	402,732,959	20.79	19
1998	8	20	1	0	16	11	270,460,037	24.12	11
1998	8	21	1	0	13	10	199,820,904	19.60	10
1998	8	24	1	0	14	28	614,697,674	21.53	28
1998	8	25	1	0	14	73	1,585,335,204	21.30	73
1998	8	26	1	0	14	38	846,817,963	21.86	38
1998	8	27	1	0	14	22	494,426,624	22.04	22
1998	8	28	1	0	15	28	650,908,313	22.80	28
1998	8	31	1	0	15	35	808,667,469	22.66	35
1998	9	1	1	0	14	200	4,551,563,753	22.32	200
1998	9	2	1	0	15	42	1,012,131,516	23.64	42
1998	9	3	1	0	27	38	1,633,106,121	42.15	38
1998	9	4	1	0	19	38	1,113,508,688	28.74	38
1998	9	8	1	0	11	54	972,577,386	17.67	54
1998	9	9	1	0	15	59	1,365,043,304	22.69	59
1998	9	10	1	0	14	82	1,813,118,418	21.69	82
1998	9	11	1	0	14	26	583,092,221	22.00	26
1998	9	14	1	0	14	37	811,112,002	21.50	37
1998	9	15	1	0	14	33	754,130,714	22.41	33
1998	9	16	1	0	12	48	921,289,495	18.83	48
1998	9	17	1	0	11	58	979,674,419	16.57	58
1998	9	18	1	0	14	52	1,144,041,700	21.58	52
1998	9	21	1	0	15	210	4,938,115,477	23.06	210
1998	9	22	1	0	12	137	2,670,566,159	19.12	137
1998	9	23	1	0	15	146	3,529,874,900	23.71	146
1998	9	24	1	0	14	20	446,639,936	21.90	20
1998	9	25	1	0	13	58	1,233,054,264	20.85	58
1998	9	28	1	0	15	119	2,726,948,142	22.48	119
1998	9	29	1	0	14	82	1,873,900,561	22.41	82
1998	9	30	1	0	14	100	2,207,965,785	21.66	100
1998	10	1	1	0	14	59	1,333,406,308	22.17	59
1998	10	2	1	0	14	64	1,446,406,843	22.17	64
1998	10	5	1	0	14	64	1,428,238,439	21.89	64
1998	10	6	1	0	14	35	754,020,315	21.13	35

Table A4-1. Sugar Creek Wastewater Treatment Plant - 1000 cfu/100 ml Max									
Year	Month	Day	Hour	Minute	Flow (mgd)	Measured fecal (cfu/100 ml)	Fecal (cfu/hour)	Flow (cfs)	Fecal conc used in calcs
1998	10	7	1	0	16	31	770,516,974	24.38	31
1998	10	8	1	0	15	27	645,546,111	23.45	27
1998	10	9	1	0	14	35	751,812,350	21.07	35
1998	10	12	1	0	13	30	629,270,249	20.57	30
1998	10	13	1	0	14	52	1,181,766,373	22.29	52
1998	10	14	1	0	13	33	691,156,375	20.54	33
1998	10	15	1	0	17	25	669,486,768	26.27	25
1998	10	16	1	0	10	14	209,756,750	14.70	14
1998	10	19	1	0	14	29	626,131,783	21.18	29
1998	10	20	1	0	14	200	4,438,011,227	21.77	200
1998	10	21	1	0	14	220	4,725,677,626	21.07	220
1998	10	22	1	0	14	55	1,190,960,973	21.24	55
1998	10	23	1	0	13	27	565,065,758	20.53	27
1998	10	26	1	0	14	50	1,132,371,024	22.21	50
1998	10	27	1	0	13	82	1,698,020,315	20.31	82
1998	10	28	1	0	14	119	2,548,654,905	21.01	119
1998	10	29	1	0	14	28	619,996,792	21.72	28
1998	10	30	1	0	13	30	617,914,996	20.20	30
1998	11	2	1	0	13	20	411,943,331	20.20	20
1998	11	3	1	0	13	55	1,132,844,159	20.20	55
1998	11	4	1	0	13	146	3,007,186,314	20.20	146
1998	11	5	1	0	13	46	947,469,661	20.20	46
1998	11	6	1	0	13	42	865,080,994	20.20	42
1998	11	9	1	0	13	24	494,331,997	20.20	24
1998	11	10	1	0	13	15	308,957,498	20.20	15
1998	11	11	1	0	13	16	329,554,665	20.20	16
1998	11	12	1	0	13	280	5,767,206,629	20.20	280
1998	11	13	1	0	13	350	7,209,008,287	20.20	350
1998	11	16	1	0	13	12	247,165,998	20.20	12
1998	11	17	1	0	13	9	185,374,499	20.20	9
1998	11	18	1	0	13	26	535,526,330	20.20	26
1998	11	19	1	0	13	17	350,151,831	20.20	17
1998	11	20	1	0	13	18	370,748,998	20.20	18
1998	11	23	1	0	13	14	288,360,331	20.20	14
1998	11	24	1	0	13	32	659,109,329	20.20	32
1998	11	25	1	0	13	21	432,540,497	20.20	21
1998	11	27	1	0	13	34	700,303,662	20.20	34
1998	11	30	1	0	13	91	1,874,342,155	20.20	91
1998	12	1	1	0	14	520	11,194,386,528	21.12	520
1998	12	2	1	0	13	580	11,909,767,442	20.14	580
1998	12	3	1	0	14	56	1,275,321,037	22.34	56
1998	12	4	1	0	13	30	637,786,688	20.85	30
1998	12	7	1	0	14	59	1,280,367,816	21.29	59
1998	12	8	1	0	17	64	1,725,998,396	26.45	64
1998	12	9	1	0	15	52	1,209,649,826	22.82	52
1998	12	10	1	0	13	31	652,201,550	20.64	31
1998	12	11	1	0	14	55	1,190,960,973	21.24	55
1998	12	14	1	0	14	13	295,236,568	22.28	13
1998	12	15	1	0	19	1,700	29,933,707,565	29.36	1000
1998	12	16	1	0	14	900	20,070,408,982	21.87	900
1998	12	17	1	0	14	40	869,938,519	21.33	40
1998	12	18	1	0	14	21	469,965,517	21.95	21
1998	12	21	1	0	14	21	462,016,840	21.58	21
1998	12	22	1	0	14	20	445,378,241	21.84	20
1998	12	23	1	0	19	49	1,493,799,252	29.90	49
1998	12	28	1	0	13	20	424,875,702	20.84	20
1998	12	29	1	0	14	28	618,230,420	21.66	28
1998	12	30	1	0	16	24	602,585,405	24.63	24
1998	12	31	1	0	16	22	555,145,683	24.75	22
1999	1	4	1	0	13.27	23	481,352,312	20.53	23
1999	1	5	1	0	14.49	23	525,606,255	22.41	23
1999	1	6	1	0	18.2	20	574,071,104	28.15	20
1999	1	7	1	0	12.74	20	401,849,773	19.71	20
1999	1	8	1	0	13.69	4	86,363,005	21.18	4

Table A4-1. Sugar Creek Wastewater Treatment Plant - 1000 cfu/100 ml Max									
Year	Month	Day	Hour	Minute	Flow (mgd)	Measured fecal (cfu/100 ml)	Fecal (cfu/hour)	Flow (cfs)	Fecal conc used in calcs
1999	1	11	1	0	12.85	21	425,585,405	19.88	21
1999	1	12	1	0	13.21	14	291,672,280	20.43	14
1999	1	13	1	0	13.492	17	361,734,189	20.87	17
1999	1	14	1	0	13.821	21	457,744,427	21.38	21
1999	1	15	1	0	13.67	24	517,421,010	21.15	24
1999	1	19	1	0	13.75	26	563,819,834	21.27	26
1999	1	20	1	0	13.15	1	20,739,107	20.34	1
1999	1	21	1	0	12.69	7	140,095,429	19.63	7
1999	1	22	1	0	13.2	22	457,995,188	20.42	22
1999	1	25	1	0	21.939	182	6,297,272,975	33.94	182
1999	1	26	1	0	16.45	100	2,594,359,797	25.45	100
1999	1	27	1	0	10.89	14	240,447,474	16.85	14
1999	1	28	1	0	13.16	9	186,793,905	20.36	9
1999	1	29	1	0	12.73	7	140,537,022	19.69	7
1999	2	1	1	0	14.38	25	566,974,071	22.24	25
1999	2	2	1	0	13.88	1600	21,890,403,635	21.47	1000
1999	2	3	1	0	14.28	59	1,328,753,809	22.09	59
1999	2	4	1	0	13.57	137	2,932,005,079	20.99	137
1999	2	5	1	0	13.07	48	989,421,010	20.22	48
1999	2	8	1	0	12.97	48	981,850,842	20.06	48
1999	2	9	1	0	13.64	10	215,118,952	21.10	10
1999	2	10	1	0	13.69	10	215,907,511	21.18	10
1999	2	11	1	0	12.54	41	810,859,663	19.40	41
1999	2	12	1	0	12.98	15	307,064,956	20.08	15
1999	2	15	1	0	13.61	6	128,787,490	21.05	6
1999	2	16	1	0	13.6	12	257,385,726	21.04	12
1999	2	17	1	0	14.13	20	445,693,665	21.86	20
1999	2	18	1	0	14.716	10	232,088,746	22.76	10
1999	2	19	1	0	21.843	15	516,734,964	33.79	15
1999	2	22	1	0	13.97	18	396,582,197	21.61	18
1999	2	23	1	0	13.05	13	267,558,140	20.19	13
1999	2	24	1	0	15.42	12	291,829,992	23.85	12
1999	2	25	1	0	14.15	20	446,324,512	21.89	20
1999	2	26	1	0	11.67	48	883,438,653	18.05	48
1999	2	27	1	0	13.51	48	1,022,729,751	20.90	48
1999	2	28	1	0	13.32	48	1,008,346,431	20.61	48
1999	3	1	1	0	13.28	1500	20,944,132,585	20.54	1000
1999	3	2	1	0	13.18	280	5,820,197,808	20.39	280
1999	3	3	1	0	12.51	56	1,104,866,079	19.35	56
1999	3	4	1	0	12.74	22	442,034,750	19.71	22
1999	3	5	1	0	13.52	700	14,925,848,704	20.91	700
1999	3	8	1	0	12.67	52	1,039,068,698	19.60	52
1999	3	9	1	0	13.44	30	635,894,146	20.79	30
1999	3	10	1	0	13.333	23	483,637,557	20.63	23
1999	3	11	1	0	14.198	25	559,798,182	21.96	25
1999	3	12	1	0	11.71	23	424,765,303	18.11	23
1999	3	13	1	0	13.29	9	188,639,134	20.56	9
1999	3	14	1	0	13.329	9	189,192,702	20.62	9
1999	3	15	1	0	13.09	100	2,064,448,009	20.25	100
1999	3	16	1	0	12.85	2600	20,265,971,665	19.88	1000
1999	3	17	1	0	12.84	24	486,004,812	19.86	24
1999	3	18	1	0	12.86	520	10,546,506,282	19.89	520
1999	3	19	1	0	13.19	91	1,892,999,465	20.40	91
1999	3	22	1	0	13.74	9	195,026,464	21.25	9
1999	3	23	1	0	12.55	9	178,135,525	19.41	9
1999	3	24	1	0	13.57	8	171,211,975	20.99	8
1999	3	25	1	0	16.44	7	181,494,787	25.43	7
1999	3	26	1	0	10.28	6	97,276,664	15.90	6
1999	3	29	1	0	12.93	21	428,234,964	20.00	21
1999	3	30	1	0	17.239	9	244,691,500	26.67	9
1999	3	31	1	0	13.56	32	684,343,224	20.98	32
1999	4	1	1	0	17.649	10	278,345,630	27.30	10
1999	4	5	1	0	13.204	16	333,188,345	20.43	16
1999	4	6	1	0	11.287	12	213,611,227	17.46	12

Table A4-1. Sugar Creek Wastewater Treatment Plant - 1000 cfu/100 ml Max									
Year	Month	Day	Hour	Minute	Flow (mgd)	Measured fecal (cfu/100 ml)	Fecal (cfu/hour)	Flow (cfs)	Fecal conc used in calcs
1999	4	7	1	0	13.7	8	172,852,179	21.19	8
1999	4	8	1	0	12.23	10	192,881,582	18.92	10
1999	4	9	1	0	12.01	5	94,705,961	18.58	5
1999	4	12	1	0	12.29	24	465,186,848	19.01	24
1999	4	13	1	0	12.806	50	1,009,828,923	19.81	50
1999	4	14	1	0	12.709	20	400,871,959	19.66	20
1999	4	15	1	0	12.93	13	265,097,835	20.00	13
1999	4	16	1	0	13.774	18	391,018,123	21.31	18
1999	4	19	1	0	12.52	83	1,638,878,375	19.37	83
1999	4	20	1	0	14.4	31	704,025,662	22.28	31
1999	4	21	1	0	14.44	27	614,886,929	22.34	27
1999	4	22	1	0	14.32	21	474,271,051	22.15	21
1999	4	23	1	0	14.55	19	435,994,387	22.51	19
1999	4	26	1	0	11.893	35	656,483,427	18.40	35
1999	4	27	1	0	16.936	38	1,014,982,946	26.20	38
1999	4	28	1	0	17.156	26	703,483,133	26.54	26
1999	4	29	1	0	18.578	73	2,138,878,535	28.74	73
1999	4	30	1	0	26.147	46	1,896,898,102	40.45	46
1999	5	1	1	0	14.672	46	1,064,416,145	22.70	46
1999	5	2	1	0	13.893	46	1,007,901,684	21.49	46
1999	5	3	1	0	14.518	212	4,854,080,299	22.46	212
1999	5	4	1	0	14.475	22	502,233,360	22.39	22
1999	5	5	1	0	13.88	18	394,027,265	21.47	18
1999	5	6	1	0	14.32	240	5,420,240,577	22.15	240
1999	5	7	1	0	13.52	58	1,236,713,178	20.91	58
1999	5	8	1	0	13.89	58	1,270,558,140	21.49	58
1999	5	9	1	0	13.96	58	1,276,961,240	21.60	58
1999	5	10	1	0	13.74	100	2,166,960,706	21.25	100
1999	5	11	1	0	12.51	64	1,262,704,090	19.35	64
1999	5	12	1	0	13.92	91	1,997,767,442	21.53	91
1999	5	13	1	0	15.979	73	1,839,656,589	24.72	73
1999	5	14	1	0	18.59	25	732,965,785	28.76	25
1999	5	15	1	0	14.92	25	588,265,170	23.08	25
1999	5	16	1	0	13.92	25	548,837,209	21.53	25
1999	5	17	1	0	14.08	6000	22,205,827,319	21.78	1000
1999	5	18	1	0	14.8	4300	23,341,352,580	22.89	1000
1999	5	19	1	0	14.56	380	8,725,880,781	22.52	380
1999	5	20	1	0	13.53	100	2,133,841,219	20.93	100
1999	5	21	1	0	13.65	60	1,291,659,984	21.12	60
1999	5	22	1	0	14.02	23	508,557,605	21.69	23
1999	5	23	1	0	13.74	28	606,748,998	21.25	28
1999	5	24	1	0	13.71	30	648,668,805	21.21	30
1999	5	25	1	0	14.69	20	463,357,391	22.72	20
1999	5	26	1	0	16.4	14	362,106,389	25.37	14
1999	5	27	1	0	13.67	8	172,473,670	21.15	8
1999	5	28	1	0	17.38	10	274,103,181	26.89	10
1999	6	1	1	0	13.81	21	457,380,112	21.36	21
1999	6	2	1	0	15.35	220	5,325,928,896	23.75	220
1999	6	3	1	0	14.11	50	1,112,657,044	21.83	50
1999	6	4	1	0	13.54	137	2,925,523,122	20.95	137
1999	6	7	1	0	13.79	37	804,693,130	21.33	37
1999	6	8	1	0	13.89	28	613,372,895	21.49	28
1999	6	9	1	0	14.77	35	815,291,366	22.85	35
1999	6	10	1	0	18.436	73	2,122,530,126	28.52	73
1999	6	11	1	0	14.59	17	391,172,681	22.57	17
1999	6	14	1	0	13.59	36	771,589,415	21.02	36
1999	6	15	1	0	15.83	19	474,349,906	24.49	19
1999	6	16	1	0	19.69	600	18,632,076,985	30.46	600
1999	6	17	1	0	14.03	34	752,317,028	21.70	34
1999	6	18	1	0	14.63	91	2,099,665,063	22.63	91
1999	6	21	1	0	13.65	10	215,276,664	21.12	10
1999	6	22	1	0	11.38	20	358,952,152	17.60	20
1999	6	23	1	0	13.93	37	812,862,604	21.55	37
1999	6	24	1	0	13.82	10	217,957,765	21.38	10

Table A4-1. Sugar Creek Wastewater Treatment Plant - 1000 cfu/100 ml Max									
Year	Month	Day	Hour	Minute	Flow (mgd)	Measured fecal (cfu/100 ml)	Fecal (cfu/hour)	Flow (cfs)	Fecal conc used in calcs
1999	6	25	1	0	16.708	8	210,803,956	25.85	8
1999	6	28	1	0	14.33	33	745,803,528	22.17	33
1999	6	29	1	0	14.33	1950	22,600,106,923	22.17	1000
1999	6	30	1	0	13.37	16	337,377,172	20.68	16
1999	7	1	1	0	12.409	17	332,697,862	19.20	17
1999	7	2	1	0	15.53	2	48,985,298	24.02	2
1999	7	6	1	0	21.809	44	1,513,396,525	33.74	44
1999	7	7	1	0	18.037	21	597,376,183	27.90	21
1999	7	8	1	0	18.91	28	835,052,660	29.25	28
1999	7	9	1	0	18.417	37	1,074,694,226	28.49	37
1999	7	12	1	0	21.345	34	1,144,562,149	33.02	34
1999	7	13	1	0	20.102	33	1,046,206,736	31.10	33
1999	7	14	1	0	18.14	46	1,316,010,692	28.06	46
1999	7	15	1	0	15.35	27	653,636,728	23.75	27
1999	7	16	1	0	15.123	21	500,865,998	23.39	21
1999	7	19	1	0	15.35	9	217,878,909	23.75	9
1999	7	20	1	0	15.9	10	250,761,828	24.60	10
1999	7	21	1	0	14.09	9	199,994,387	21.80	9
1999	7	22	1	0	15.14	11	262,653,301	23.42	11
1999	7	23	1	0	15.73	12	297,696,872	24.33	12
1999	7	26	1	0	15.16	33	789,000,802	23.45	33
1999	7	27	1	0	15.89	40	1,002,416,466	24.58	40
1999	7	28	1	0	15.33	56	1,353,924,619	23.71	56
1999	7	29	1	0	19.216	58	1,757,742,636	29.73	58
1999	7	30	1	0	17.74	191	5,343,813,419	27.44	191
1999	7	31	1	0	14.5	191	4,367,829,457	22.43	191
1999	8	1	1	0	13.48	191	4,060,575,247	20.85	191
1999	8	2	1	0	14.43	330	7,510,080,192	22.32	330
1999	8	3	1	0	14.59	270	6,212,742,582	22.57	270
1999	8	4	1	0	14.59	210	4,832,133,119	22.57	210
1999	8	5	1	0	14.69	124	2,872,815,825	22.72	124
1999	8	6	1	0	14.02	28	619,113,606	21.69	28
1999	8	7	1	0	14.17	28	625,737,503	21.92	28
1999	8	8	1	0	14.42	28	636,777,332	22.31	28
1999	8	9	1	0	14.12	142	3,162,185,512	21.84	142
1999	8	10	1	0	14.65	250	5,776,196,204	22.66	250
1999	8	11	1	0	13.99	128	2,824,177,493	21.64	128
1999	8	12	1	0	14.5	37	846,124,031	22.43	37
1999	8	13	1	0	14.55	48	1,101,459,503	22.51	48
1999	8	16	1	0	15.10	51	1,214,538,893	23.36	51
1999	8	17	1	0	15.15	14	334,506,816	23.44	14
1999	8	18	1	0	15.25	46	1,106,348,570	23.59	46
1999	8	19	1	0	15.14	34	811,837,477	23.42	34
1999	8	20	1	0	15.88	30	751,339,214	24.57	30
1999	8	23	1	0	15.29	31	747,538,359	23.65	31
1999	8	24	1	0	19.75	48	1,495,108,260	30.55	48
1999	8	25	1	0	13.14	37	766,763,432	20.33	37
1999	8	26	1	0	14.90	13	305,487,837	23.05	13
1999	8	27	1	0	14.96	27	637,029,671	23.14	27
1999	8	30	1	0	14.72	24	557,164,395	22.77	24
1999	8	31	1	0	16.22	24	613,940,658	25.09	24
1999	9	1	1	0	14.98	25	590,630,847	23.17	25
1999	9	2	1	0	14.77	35	815,291,366	22.85	35
1999	9	7	1	0	14.81	41	957,642,074	22.91	41
1999	9	8	1	0	14.70	30	695,603,849	22.74	30
1999	9	9	1	0	15.10	57	1,357,425,822	23.36	57
1999	9	10	1	0	16.31	33	848,696,311	25.23	33
1999	9	11	1	0	13.45	33	699,795,830	20.80	33
1999	9	12	1	0	13.25	33	689,490,938	20.49	33
1999	9	13	1	0	14.90	59	1,386,165,651	23.04	59
1999	9	14	1	0	14.24	22	493,906,175	22.02	22
1999	9	15	1	0	20.90	91	2,999,234,483	32.33	91
1999	9	16	1	0	14.66	37	855,227,159	22.67	37
1999	9	17	1	0	16.32	47	1,209,861,160	25.25	47

Table A4-1. Sugar Creek Wastewater Treatment Plant - 1000 cfu/100 ml Max									
Year	Month	Day	Hour	Minute	Flow (mgd)	Measured fecal (cfu/100 ml)	Fecal (cfu/hour)	Flow (cfs)	Fecal conc used in calcs
1999	9	18	1	0	13.85	47	1,026,402,860	21.42	47
1999	9	19	1	0	13.42	47	994,529,297	20.76	47
1999	9	20	1	0	17.91	520	14,691,299,652	27.71	520
1999	9	21	1	0	20.94	51	1,684,267,843	32.39	51
1999	9	22	1	0	19.41	20	612,331,997	30.03	20
1999	9	23	1	0	17.89	43	1,213,229,885	27.67	43
1999	9	24	1	0	17.02	23	617,378,776	26.33	23
1999	9	27	1	0	19.66	36	1,116,221,331	30.41	36
1999	9	28	1	0	21.91	73	2,522,605,640	33.89	73
1999	9	29	1	0	23.53	51	1,892,589,415	36.40	51
1999	9	30	1	0	15.44	27	657,554,290	23.89	27
1999	10	1	1	0	14.19	196	4,384,799,252	21.94	196
1999	10	4	1	0	14.15	46	1,026,546,378	21.89	46
1999	10	5	1	0	15.44	142	3,457,800,588	23.88	142
1999	10	6	1	0	14.57	91	2,091,053,996	22.54	91
1999	10	7	1	0	14.95	64	1,508,986,902	23.13	64
1999	10	8	1	0	14.75	26	604,824,913	22.82	26
1999	10	9	1	0	14.27	26	585,142,475	22.07	26
1999	10	10	1	0	28.33	26	1,161,673,884	43.82	26
1999	10	11	1	0	24.65	215	8,358,333,333	38.13	215
1999	10	12	1	0	22.23	6000	35,059,342,422	34.39	1000
1999	10	13	1	0	22.21	60	2,101,289,495	34.35	60
1999	10	14	1	0	15.61	49	1,206,399,385	24.15	49
1999	10	15	1	0	17.20	25	678,160,920	26.61	25
1999	10	16	1	0	12.64	25	498,369,420	19.55	25
1999	10	17	1	0	14.13	25	557,117,081	21.86	25
1999	10	18	1	0	13.58	245	5,247,230,687	21.01	245
1999	10	19	1	0	15.30	300	7,238,973,536	23.67	300
1999	10	20	1	0	20.58	850	27,588,532,478	31.84	850
1999	10	21	1	0	17.71	500	13,963,017,910	27.39	500
1999	10	22	1	0	13.00	410	8,406,041,165	20.11	410
1999	10	23	1	0	13.40	410	8,664,688,586	20.73	410
1999	10	24	1	0	13.40	410	8,664,688,586	20.73	410
1999	10	25	1	0	13.83	560	12,214,466,720	21.39	560
1999	10	26	1	0	14.89	200	4,696,658,647	23.03	200
1999	10	27	1	0	14.34	23	520,165,196	22.18	23
1999	10	28	1	0	18.31	14	404,278,535	28.32	14
1999	10	29	1	0	14.71	13	301,592,355	22.76	13
1999	11	1	1	0	19.14	20	603,720,930	29.61	20
1999	11	2	1	0	20.54	19	615,546,164	31.78	19
1999	11	3	1	0	16.53	9	234,642,101	25.57	9
1999	11	4	1	0	16.30	10	257,070,302	25.21	10
1999	11	5	1	0	14.60	27	621,700,080	22.59	27
1999	11	8	1	0	13.76	28	607,543,865	21.28	28
1999	11	9	1	0	17.16	21	568,462,871	26.55	21
1999	11	10	1	0	17.44	35	962,673,082	26.98	35
1999	11	11	1	0	18.71	42	1,239,331,195	28.94	42
1999	11	12	1	0	14.00	41	905,265,972	21.66	41
1999	11	15	1	0	14.73	40	929,238,172	22.79	40
1999	11	16	1	0	13.59	40	857,321,572	21.02	40
1999	11	17	1	0	14.93	36	847,669,607	23.10	36
1999	11	18	1	0	13.76	29	629,333,333	21.29	29
1999	11	19	1	0	14.70	36	834,611,067	22.74	36
1999	11	22	1	0	13.54	28	597,917,134	20.95	28
1999	11	23	1	0	15.15	44	1,051,307,137	23.44	44
1999	11	24	1	0	13.87	47	1,028,107,725	21.46	47
1999	11	26	1	0	14.51	46	1,052,663,459	22.45	46
1999	11	29	1	0	13.38	69	1,456,027,265	20.70	69
1999	11	30	1	0	15.45	255	6,213,452,285	23.90	255
1999	12	1	1	0	13.90	290	6,357,364,341	21.50	290
1999	12	2	1	0	14.80	119	2,777,620,957	22.89	119
1999	12	3	1	0	14.30	150	3,382,919,006	22.12	150
1999	12	6	1	0	13.79	119	2,588,067,094	21.33	119
1999	12	7	1	0	14.10	1550	22,237,369,687	21.81	1000

Table A4-1. Sugar Creek Wastewater Treatment Plant - 1000 cfu/100 ml Max									
Year	Month	Day	Hour	Minute	Flow (mgd)	Measured fecal (cfu/100 ml)	Fecal (cfu/hour)	Flow (cfs)	Fecal conc used in calcs
1999	12	8	1	0	14.45	1000	22,789,361,133	22.35	1000
1999	12	9	1	0	14.50	33	754,651,163	22.43	33
1999	12	10	1	0	16.14	23	585,457,899	24.97	23
1999	12	13	1	0	14.35	18	407,369,687	22.20	18
1999	12	14	1	0	14.95	18	424,402,566	23.13	18
1999	12	15	1	0	13.77	20	434,338,412	21.30	20
1999	12	16	1	0	14.09	14	311,102,379	21.80	14
1999	12	17	1	0	13.27	22	460,423,951	20.53	22
1999	12	18	1	0	13.87	22	481,241,914	21.46	22
1999	12	19	1	0	13.68	22	474,649,559	21.16	22
1999	12	20	1	0	13.53	1300	21,338,412,189	20.93	1000
1999	12	21	1	0	18.28	12	345,956,696	28.28	12
1999	12	22	1	0	14.70	10	231,836,407	22.74	10
1999	12	23	1	0	14.20	33	739,037,690	21.97	33
1999	12	28	1	0	14.03	38	840,824,913	21.70	38
1999	12	29	1	0	14.67	64	1,480,724,940	22.69	64
1999	12	30	1	0	14.16	64	1,429,247,795	21.90	64
1999	12	31	1	0	13.66	46	990,998,129	21.13	46

Table A4-2. Sugar Creek Wastewater Treatment Plant - Observed Values								
Year	Month	Day	Hour	Minute	Flow (mgd)	fecal (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)
							1000000	
1998	1	5	1	0	9.3	16	234,675,221	14.39
1998	1	6	1	0	11.91	17	319,319,166	18.42
1998	1	7	1	0	13.31	6	125,948,677	20.59
1998	1	8	1	0	16.67	2,300	60,468,297,247	25.79
1998	1	9	1	0	10.26	7	113,268,645	15.87
1998	1	12	1	0	10.71	20	337,818,765	16.57
1998	1	13	1	0	10.92	82	1,412,214,916	16.89
1998	1	14	1	0	9.72	200	3,065,918,204	15.04
1998	1	15	1	0	13.61	55	1,180,551,991	21.05
1998	1	16	1	0	19.56	5	154,242,181	30.26
1998	1	20	1	0	10.48	19	314,035,819	16.21
1998	1	21	1	0	9.96	146	2,293,382,518	15.41
1998	1	22	1	0	10.7	44	742,507,351	16.55
1998	1	23	1	0	14.28	100	2,252,125,100	22.09
1998	1	26	1	0	11.27	12	213,289,495	17.43
1998	1	27	1	0	21.66	230	7,856,888,532	33.51
1998	1	28	1	0	15.18	85	2,034,955,894	23.48
1998	1	29	1	0	10.53	12	199,284,683	16.29
1998	2	2	1	0	10.05	20	317,000,802	15.55
1998	2	3	1	0	19.12	55	1,658,497,728	29.58
1998	2	4	1	0	20.44	119	3,836,119,754	31.62
1998	2	5	1	0	19.21	13	393,853,782	29.72
1998	2	6	1	0	9.56	7	105,540,765	14.79
1998	2	9	1	0	12.2	16	307,853,515	18.87
1998	2	10	1	0	14.99	4	94,564,020	23.19
1998	2	11	1	0	16.18	7	178,624,432	25.03
1998	2	12	1	0	15.69	25	618,624,699	24.27
1998	2	13	1	0	13.56	28	598,800,321	20.98
1998	2	16	1	0	18.16	25	716,011,762	28.09
1998	2	17	1	0	24.98	100	3,939,641,807	38.64
1998	2	18	1	0	22.55	4	142,256,081	34.88
1998	2	19	1	0	16.21	48	1,227,124,298	25.08
1998	2	20	1	0	14.76	155	3,608,131,516	22.83
1998	2	23	1	0	15.65	57	1,406,868,484	24.21
1998	2	24	1	0	14.05	59	1,307,352,312	21.73
1998	2	25	1	0	14.56	320	7,348,110,131	22.52
1998	2	26	1	0	15.55	280	6,866,773,590	24.05
1998	2	27	1	0	14.32	560	12,647,228,014	22.15
1998	3	2	1	0	15.06	21	498,779,471	23.30
1998	3	3	1	0	13.28	430	9,005,977,011	20.54
1998	3	4	1	0	14.26	530	11,919,545,576	22.06
1998	3	5	1	0	13.41	155	3,278,119,487	20.74
1998	3	6	1	0	15.07	450	10,695,228,549	23.31
1998	3	9	1	0	25.54	4	161,118,418	39.51
1998	3	10	1	0	17.81	109	3,061,644,213	27.55
1998	3	11	1	0	15.25	91	2,188,646,084	23.59
1998	3	12	1	0	15.26	64	1,540,276,931	23.61
1998	3	13	1	0	14.22	43	964,344,828	22.00
1998	3	16	1	0	19.42	55	1,684,520,182	30.04
1998	3	17	1	0	24.7	11	428,503,074	38.21
1998	3	18	1	0	15.63	60	1,479,021,652	24.18
1998	3	19	1	0	16.06	585	14,817,185,245	24.84
1998	3	20	1	0	14.25	23	516,900,561	22.04
1998	3	23	1	0	15.09	15	356,980,754	23.34
1998	3	24	1	0	15.4	8	194,300,989	23.82
1998	3	25	1	0	13.94	10	219,850,307	21.56
1998	3	26	1	0	14.13	845	18,830,557,338	21.86
1998	3	27	1	0	14.63	45	1,038,295,910	22.63
1998	3	30	1	0	15	20	473,135,525	23.20
1998	3	31	1	0	15.14	25	596,939,321	23.42
1998	4	1	4	1	15.08	34	808,620,155	23.33
1998	4	2	1	0	14.72	31	719,670,676	22.77
1998	4	3	1	0	19.84	18	563,220,529	30.69

Table A4-2. Sugar Creek Wastewater Treatment Plant - Observed Values								
Year	Month	Day	Hour	Minute	Flow (mgd)	fecal (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)
1998	4	6	1	0	16.39	53	1,369,995,456	25.35
1998	4	7	1	0	15.19	14	335,390,003	23.50
1998	4	8	1	0	21.17	45	1,502,441,860	32.75
1998	4	9	1	0	29.07	1,350	61,893,223,737	44.97
1998	4	13	1	0	15.72	2	49,584,603	24.32
1998	4	14	1	0	15.08	10	237,829,457	23.33
1998	4	15	1	0	15.04	6	142,319,166	23.27
1998	4	16	1	0	15.71	9	222,988,773	24.30
1998	4	17	1	0	19.07	33	992,496,391	29.50
1998	4	20	1	0	15.3	18	434,338,412	23.67
1998	4	21	1	0	14.74	11	255,713,980	22.80
1998	4	22	1	0	19.59	23	710,602,245	30.30
1998	4	23	1	0	17.83	47	1,321,641,005	27.58
1998	4	24	1	0	15	10	236,567,763	23.20
1998	4	27	1	0	12.54	26	514,203,689	19.40
1998	4	28	1	0	15.23	55	1,321,073,242	23.56
1998	4	29	1	0	15.07	58	1,378,496,124	23.31
1998	4	30	1	0	17.75	28	783,827,854	27.46
1998	5	1	1	0	16.16	11	280,348,570	25.00
1998	5	4	1	0	15.06	137	3,253,942,261	23.30
1998	5	5	1	0	14.86	91	2,132,674,151	22.99
1998	5	6	1	0	16.44	470	12,186,078,589	25.43
1998	5	7	1	0	23.65	14	522,183,908	36.58
1998	5	8	1	0	17.34	19	519,597,434	26.82
1998	5	11	1	0	14	43	962,988,506	21.97
1998	5	12	1	0	15	57	1,367,314,354	23.53
1998	5	13	1	0	14	14	306,686,447	21.49
1998	5	14	1	0	15	25	581,956,696	22.83
1998	5	15	1	0	15	35	839,578,990	23.53
1998	5	18	1	0	14	29	645,341,085	21.83
1998	5	19	1	0	15	6,000	138,155,573,376	22.59
1998	5	20	1	0	15	590	14,301,782,946	23.78
1998	5	21	1	0	14	30	657,185,245	21.49
1998	5	22	1	0	15	182	4,233,774,392	22.82
1998	5	26	1	0	16	27	671,095,429	24.38
1998	5	27	1	0	14	26	574,481,155	21.67
1998	5	28	1	0	15	12	279,149,960	22.82
1998	5	29	1	0	15	9	219,440,257	23.92
1998	6	1	1	0	14.63	220	5,076,113,339	22.63
1998	6	2	1	0	14.92	82	1,929,509,757	23.08
1998	6	3	1	0	15.34	1	24,192,997	23.73
1998	6	4	1	0	13.91	110	2,413,148,891	21.52
1998	6	5	1	0	14.08	110	2,442,641,005	21.78
1998	6	8	1	0	14.15	200	4,463,245,122	21.89
1998	6	9	1	0	14.3	26	586,372,628	22.12
1998	6	10	1	0	23	28	1,015,664,261	35.58
1998	6	11	1	0	22.05	19	660,733,761	34.11
1998	6	12	1	0	14.96	20	471,873,831	23.14
1998	6	15	1	0	14	300	6,623,897,354	21.66
1998	6	16	1	0	18.99	380	11,380,801,925	29.38
1998	6	17	1	0	11.22	54	955,544,507	17.36
1998	6	18	1	0	15.05	37	878,218,391	23.28
1998	6	19	1	0	10	23	362,737,236	15.47
1998	6	22	1	0	15.84	57	1,423,948,677	24.50
1998	6	23	1	0	15.52	82	2,007,103,983	24.01
1998	6	24	1	0	15.07	37	879,385,458	23.31
1998	6	25	1	0	14.73	91	2,114,016,840	22.79
1998	6	26	1	0	15.5	119	2,908,994,921	23.98
1998	6	29	1	0	14.55	41	940,829,992	22.51
1998	6	30	1	0	13.3	57	1,195,613,472	20.57
1998	7	1	1	0	15.01	73	1,728,095,964	23.22
1998	7	2	1	0	14.85	82	1,920,457,097	22.97
1998	7	3	1	0	14.85	56	1,311,531,676	22.97
1998	7	7	1	0	14.55	28	642,518,043	22.51

Table A4-2. Sugar Creek Wastewater Treatment Plant - Observed Values								
Year	Month	Day	Hour	Minute	Flow (mgd)	fecal (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)
1998	7	8	1	0	15.34	82	1,983,825,715	23.73
1998	7	9	1	0	13.77	10	217,169,206	21.30
1998	7	10	1	0	13.72	26	562,589,682	21.22
1998	7	13	1	0	13.41	110	2,326,407,378	20.74
1998	7	14	1	0	14	110	2,428,762,363	21.66
1998	7	15	1	0	12.98	60	1,228,259,824	20.08
1998	7	16	1	0	14.28	28	630,595,028	22.09
1998	7	17	1	0	14.52	34	778,591,820	22.46
1998	7	20	1	0	13.02	1	20,534,082	20.14
1998	7	21	1	0	16.98	40	1,071,178,829	26.27
1998	7	22	1	0	16.81	64	1,696,727,078	26.00
1998	7	23	1	0	15.76	1	24,855,386	24.38
1998	7	24	1	0	13.98	6	132,288,693	21.63
1998	7	27	1	0	25.02	20	789,190,056	38.70
1998	7	28	1	0	14.78	31	722,604,117	22.86
1998	7	29	1	0	14.45	36	820,417,001	22.35
1998	7	30	1	0	14.51	9	205,955,894	22.45
1998	7	31	1	0	14.92	13	305,897,888	23.08
1998	8	3	1	0	13.51	9	191,761,828	20.90
1998	8	4	1	0	15.67	58	1,433,379,845	24.24
1998	8	5	1	0	14.27	82	1,845,449,345	22.07
1998	8	6	1	0	14.81	29	677,356,589	22.91
1998	8	7	1	0	13.81	20	435,600,107	21.36
1998	8	10	1	0	14.39	25	567,368,351	22.26
1998	8	11	1	0	15.14	38	907,347,768	23.42
1998	8	12	1	0	14.37	26	589,242,983	22.23
1998	8	13	1	0	15.02	26	615,896,284	23.23
1998	8	14	1	0	18.43	17	494,126,971	28.51
1998	8	17	1	0	14	30	672,798,717	22.00
1998	8	18	1	0	16	57	1,468,896,552	25.28
1998	8	19	1	0	13	19	402,732,959	20.79
1998	8	20	1	0	16	11	270,460,037	24.12
1998	8	21	1	0	13	10	199,820,904	19.60
1998	8	24	1	0	14	28	614,697,674	21.53
1998	8	25	1	0	14	73	1,585,335,204	21.30
1998	8	26	1	0	14	38	846,817,963	21.86
1998	8	27	1	0	14	22	494,426,624	22.04
1998	8	28	1	0	15	28	650,908,313	22.80
1998	8	31	1	0	15	35	808,667,469	22.66
1998	9	1	1	0	14	200	4,551,563,753	22.32
1998	9	2	1	0	15	42	1,012,131,516	23.64
1998	9	3	1	0	27	38	1,633,106,121	42.15
1998	9	4	1	0	19	38	1,113,508,688	28.74
1998	9	8	1	0	11	54	972,577,386	17.67
1998	9	9	1	0	15	59	1,365,043,304	22.69
1998	9	10	1	0	14	82	1,813,118,418	21.69
1998	9	11	1	0	14	26	583,092,221	22.00
1998	9	14	1	0	14	37	811,112,002	21.50
1998	9	15	1	0	14	33	754,130,714	22.41
1998	9	16	1	0	12	48	921,289,495	18.83
1998	9	17	1	0	11	58	979,674,419	16.57
1998	9	18	1	0	14	52	1,144,041,700	21.58
1998	9	21	1	0	15	210	4,938,115,477	23.06
1998	9	22	1	0	12	137	2,670,566,159	19.12
1998	9	23	1	0	15	146	3,529,874,900	23.71
1998	9	24	1	0	14	20	446,639,936	21.90
1998	9	25	1	0	13	58	1,233,054,264	20.85
1998	9	28	1	0	15	119	2,726,948,142	22.48
1998	9	29	1	0	14	82	1,873,900,561	22.41
1998	9	30	1	0	14	100	2,207,965,785	21.66
1998	10	1	1	0	14	59	1,333,406,308	22.17
1998	10	2	1	0	14	64	1,446,406,843	22.17
1998	10	5	1	0	14	64	1,428,238,439	21.89
1998	10	6	1	0	14	35	754,020,315	21.13

Table A4-2. Sugar Creek Wastewater Treatment Plant - Observed Values								
Year	Month	Day	Hour	Minute	Flow (mgd)	fecal (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)
1998	10	7	1	0	16	31	770,516,974	24.38
1998	10	8	1	0	15	27	645,546,111	23.45
1998	10	9	1	0	14	35	751,812,350	21.07
1998	10	12	1	0	13	30	629,270,249	20.57
1998	10	13	1	0	14	52	1,181,766,373	22.29
1998	10	14	1	0	13	33	691,156,375	20.54
1998	10	15	1	0	17	25	669,486,768	26.27
1998	10	16	1	0	10	14	209,756,750	14.70
1998	10	19	1	0	14	29	626,131,783	21.18
1998	10	20	1	0	14	200	4,438,011,227	21.77
1998	10	21	1	0	14	220	4,725,677,626	21.07
1998	10	22	1	0	14	55	1,190,960,973	21.24
1998	10	23	1	0	13	27	565,065,758	20.53
1998	10	26	1	0	14	50	1,132,371,024	22.21
1998	10	27	1	0	13	82	1,698,020,315	20.31
1998	10	28	1	0	14	119	2,548,654,905	21.01
1998	10	29	1	0	14	28	619,996,792	21.72
1998	10	30	1	0	13	30	617,914,996	20.20
1998	11	2	1	0	13	20	411,943,331	20.20
1998	11	3	1	0	13	55	1,132,844,159	20.20
1998	11	4	1	0	13	146	3,007,186,314	20.20
1998	11	5	1	0	13	46	947,469,661	20.20
1998	11	6	1	0	13	42	865,080,994	20.20
1998	11	9	1	0	13	24	494,331,997	20.20
1998	11	10	1	0	13	15	308,957,498	20.20
1998	11	11	1	0	13	16	329,554,665	20.20
1998	11	12	1	0	13	280	5,767,206,629	20.20
1998	11	13	1	0	13	350	7,209,008,287	20.20
1998	11	16	1	0	13	12	247,165,998	20.20
1998	11	17	1	0	13	9	185,374,499	20.20
1998	11	18	1	0	13	26	535,526,330	20.20
1998	11	19	1	0	13	17	350,151,831	20.20
1998	11	20	1	0	13	18	370,748,998	20.20
1998	11	23	1	0	13	14	288,360,331	20.20
1998	11	24	1	0	13	32	659,109,329	20.20
1998	11	25	1	0	13	21	432,540,497	20.20
1998	11	27	1	0	13	34	700,303,662	20.20
1998	11	30	1	0	13	91	1,874,342,155	20.20
1998	12	1	1	0	14	520	11,194,386,528	21.12
1998	12	2	1	0	13	580	11,909,767,442	20.14
1998	12	3	1	0	14	56	1,275,321,037	22.34
1998	12	4	1	0	13	30	637,786,688	20.85
1998	12	7	1	0	14	59	1,280,367,816	21.29
1998	12	8	1	0	17	64	1,725,998,396	26.45
1998	12	9	1	0	15	52	1,209,649,826	22.82
1998	12	10	1	0	13	31	652,201,550	20.64
1998	12	11	1	0	14	55	1,190,960,973	21.24
1998	12	14	1	0	14	13	295,236,568	22.28
1998	12	15	1	0	19	1,700	50,887,302,860	29.36
1998	12	16	1	0	14	900	20,070,408,982	21.87
1998	12	17	1	0	14	40	869,938,519	21.33
1998	12	18	1	0	14	21	469,965,517	21.95
1998	12	21	1	0	14	21	462,016,840	21.58
1998	12	22	1	0	14	20	445,378,241	21.84
1998	12	23	1	0	19	49	1,493,799,252	29.90
1998	12	28	1	0	13	20	424,875,702	20.84
1998	12	29	1	0	14	28	618,230,420	21.66
1998	12	30	1	0	16	24	602,585,405	24.63
1998	12	31	1	0	16	22	555,145,683	24.75
1999	1	4	1	0	13.27	23	481,352,312	20.53
1999	1	5	1	0	14.49	23	525,606,255	22.41
1999	1	6	1	0	18.2	20	574,071,104	28.15
1999	1	7	1	0	12.74	20	401,849,773	19.71
1999	1	8	1	0	13.69	4	86,363,005	21.18

Table A4-2. Sugar Creek Wastewater Treatment Plant - Observed Values								
Year	Month	Day	Hour	Minute	Flow (mgd)	fecal (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)
1999	1	11	1	0	12.85	21	425,585,405	19.88
1999	1	12	1	0	13.21	14	291,672,280	20.43
1999	1	13	1	0	13.492	17	361,734,189	20.87
1999	1	14	1	0	13.821	21	457,744,427	21.38
1999	1	15	1	0	13.67	24	517,421,010	21.15
1999	1	19	1	0	13.75	26	563,819,834	21.27
1999	1	20	1	0	13.15	1	20,739,107	20.34
1999	1	21	1	0	12.69	7	140,095,429	19.63
1999	1	22	1	0	13.2	22	457,995,188	20.42
1999	1	25	1	0	21.939	182	6,297,272,975	33.94
1999	1	26	1	0	16.45	100	2,594,359,797	25.45
1999	1	27	1	0	10.89	14	240,447,474	16.85
1999	1	28	1	0	13.16	9	186,793,905	20.36
1999	1	29	1	0	12.73	7	140,537,022	19.69
1999	2	1	1	0	14.38	25	566,974,071	22.24
1999	2	2	1	0	13.88	1600	35,024,645,817	21.47
1999	2	3	1	0	14.28	59	1,328,753,809	22.09
1999	2	4	1	0	13.57	137	2,932,005,079	20.99
1999	2	5	1	0	13.07	48	989,421,010	20.22
1999	2	8	1	0	12.97	48	981,850,842	20.06
1999	2	9	1	0	13.64	10	215,118,952	21.10
1999	2	10	1	0	13.69	10	215,907,511	21.18
1999	2	11	1	0	12.54	41	810,859,663	19.40
1999	2	12	1	0	12.98	15	307,064,956	20.08
1999	2	15	1	0	13.61	6	128,787,490	21.05
1999	2	16	1	0	13.6	12	257,385,726	21.04
1999	2	17	1	0	14.13	20	445,693,665	21.86
1999	2	18	1	0	14.716	10	232,088,746	22.76
1999	2	19	1	0	21.843	15	516,734,964	33.79
1999	2	22	1	0	13.97	18	396,582,197	21.61
1999	2	23	1	0	13.05	13	267,558,140	20.19
1999	2	24	1	0	15.42	12	291,829,992	23.85
1999	2	25	1	0	14.15	20	446,324,512	21.89
1999	2	26	1	0	11.67	48	883,438,653	18.05
1999	2	27	1	0	13.51	48	1,022,729,751	20.90
1999	2	28	1	0	13.32	48	1,008,346,431	20.61
1999	3	1	1	0	13.28	1500	31,416,198,877	20.54
1999	3	2	1	0	13.18	280	5,820,197,808	20.39
1999	3	3	1	0	12.51	56	1,104,866,079	19.35
1999	3	4	1	0	12.74	22	442,034,750	19.71
1999	3	5	1	0	13.52	700	14,925,848,704	20.91
1999	3	8	1	0	12.67	52	1,039,068,698	19.60
1999	3	9	1	0	13.44	30	635,894,146	20.79
1999	3	10	1	0	13.333	23	483,637,557	20.63
1999	3	11	1	0	14.198	25	559,798,182	21.96
1999	3	12	1	0	11.71	23	424,765,303	18.11
1999	3	13	1	0	13.29	9	188,639,134	20.56
1999	3	14	1	0	13.329	9	189,192,702	20.62
1999	3	15	1	0	13.09	100	2,064,448,009	20.25
1999	3	16	1	0	12.85	2600	52,691,526,330	19.88
1999	3	17	1	0	12.84	24	486,004,812	19.86
1999	3	18	1	0	12.86	520	10,546,506,282	19.89
1999	3	19	1	0	13.19	91	1,892,999,465	20.40
1999	3	22	1	0	13.74	9	195,026,464	21.25
1999	3	23	1	0	12.55	9	178,135,525	19.41
1999	3	24	1	0	13.57	8	171,211,975	20.99
1999	3	25	1	0	16.44	7	181,494,787	25.43
1999	3	26	1	0	10.28	6	97,276,664	15.90
1999	3	29	1	0	12.93	21	428,234,964	20.00
1999	3	30	1	0	17.239	9	244,691,500	26.67
1999	3	31	1	0	13.56	32	684,343,224	20.98
1999	4	1	1	0	17.649	10	278,345,630	27.30
1999	4	5	1	0	13.204	16	333,188,345	20.43
1999	4	6	1	0	11.287	12	213,611,227	17.46

Table A4-2. Sugar Creek Wastewater Treatment Plant - Observed Values								
Year	Month	Day	Hour	Minute	Flow (mgd)	fecal (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)
1999	4	7	1	0	13.7	8	172,852,179	21.19
1999	4	8	1	0	12.23	10	192,881,582	18.92
1999	4	9	1	0	12.01	5	94,705,961	18.58
1999	4	12	1	0	12.29	24	465,186,848	19.01
1999	4	13	1	0	12.806	50	1,009,828,923	19.81
1999	4	14	1	0	12.709	20	400,871,959	19.66
1999	4	15	1	0	12.93	13	265,097,835	20.00
1999	4	16	1	0	13.774	18	391,018,123	21.31
1999	4	19	1	0	12.52	83	1,638,878,375	19.37
1999	4	20	1	0	14.4	31	704,025,662	22.28
1999	4	21	1	0	14.44	27	614,886,929	22.34
1999	4	22	1	0	14.32	21	474,271,051	22.15
1999	4	23	1	0	14.55	19	435,994,387	22.51
1999	4	26	1	0	11.893	35	656,483,427	18.40
1999	4	27	1	0	16.936	38	1,014,982,946	26.20
1999	4	28	1	0	17.156	26	703,483,133	26.54
1999	4	29	1	0	18.578	73	2,138,878,535	28.74
1999	4	30	1	0	26.147	46	1,896,898,102	40.45
1999	5	1	1	0	14.672	46	1,064,416,145	22.70
1999	5	2	1	0	13.893	46	1,007,901,684	21.49
1999	5	3	1	0	14.518	212	4,854,080,299	22.46
1999	5	4	1	0	14.475	22	502,233,360	22.39
1999	5	5	1	0	13.88	18	394,027,265	21.47
1999	5	6	1	0	14.32	240	5,420,240,577	22.15
1999	5	7	1	0	13.52	58	1,236,713,178	20.91
1999	5	8	1	0	13.89	58	1,270,558,140	21.49
1999	5	9	1	0	13.96	58	1,276,961,240	21.60
1999	5	10	1	0	13.74	100	2,166,960,706	21.25
1999	5	11	1	0	12.51	64	1,262,704,090	19.35
1999	5	12	1	0	13.92	91	1,997,767,442	21.53
1999	5	13	1	0	15.979	73	1,839,656,589	24.72
1999	5	14	1	0	18.59	25	732,965,785	28.76
1999	5	15	1	0	14.92	25	588,265,170	23.08
1999	5	16	1	0	13.92	25	548,837,209	21.53
1999	5	17	1	0	14.08	6000	133,234,963,913	21.78
1999	5	18	1	0	14.8	4300	100,367,816,092	22.89
1999	5	19	1	0	14.56	380	8,725,880,781	22.52
1999	5	20	1	0	13.53	100	2,133,841,219	20.93
1999	5	21	1	0	13.65	60	1,291,659,984	21.12
1999	5	22	1	0	14.02	23	508,557,605	21.69
1999	5	23	1	0	13.74	28	606,748,998	21.25
1999	5	24	1	0	13.71	30	648,668,805	21.21
1999	5	25	1	0	14.69	20	463,357,391	22.72
1999	5	26	1	0	16.4	14	362,106,389	25.37
1999	5	27	1	0	13.67	8	172,473,670	21.15
1999	5	28	1	0	17.38	10	274,103,181	26.89
1999	6	1	1	0	13.81	21	457,380,112	21.36
1999	6	2	1	0	15.35	220	5,325,928,896	23.75
1999	6	3	1	0	14.11	50	1,112,657,044	21.83
1999	6	4	1	0	13.54	137	2,925,523,122	20.95
1999	6	7	1	0	13.79	37	804,693,130	21.33
1999	6	8	1	0	13.89	28	613,372,895	21.49
1999	6	9	1	0	14.77	35	815,291,366	22.85
1999	6	10	1	0	18.436	73	2,122,530,126	28.52
1999	6	11	1	0	14.59	17	391,172,681	22.57
1999	6	14	1	0	13.59	36	771,589,415	21.02
1999	6	15	1	0	15.83	19	474,349,906	24.49
1999	6	16	1	0	19.69	600	18,632,076,985	30.46
1999	6	17	1	0	14.03	34	752,317,028	21.70
1999	6	18	1	0	14.63	91	2,099,665,063	22.63
1999	6	21	1	0	13.65	10	215,276,664	21.12
1999	6	22	1	0	11.38	20	358,952,152	17.60
1999	6	23	1	0	13.93	37	812,862,604	21.55
1999	6	24	1	0	13.82	10	217,957,765	21.38

Table A4-2. Sugar Creek Wastewater Treatment Plant - Observed Values								
Year	Month	Day	Hour	Minute	Flow (mgd)	fecal (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)
1999	6	25	1	0	16.708	8	210,803,956	25.85
1999	6	28	1	0	14.33	33	745,803,528	22.17
1999	6	29	1	0	14.33	1950	44,070,208,500	22.17
1999	6	30	1	0	13.37	16	337,377,172	20.68
1999	7	1	1	0	12.409	17	332,697,862	19.20
1999	7	2	1	0	15.53	2	48,985,298	24.02
1999	7	6	1	0	21.809	44	1,513,396,525	33.74
1999	7	7	1	0	18.037	21	597,376,183	27.90
1999	7	8	1	0	18.91	28	835,052,660	29.25
1999	7	9	1	0	18.417	37	1,074,694,226	28.49
1999	7	12	1	0	21.345	34	1,144,562,149	33.02
1999	7	13	1	0	20.102	33	1,046,206,736	31.10
1999	7	14	1	0	18.14	46	1,316,010,692	28.06
1999	7	15	1	0	15.35	27	653,636,728	23.75
1999	7	16	1	0	15.123	21	500,865,998	23.39
1999	7	19	1	0	15.35	9	217,878,909	23.75
1999	7	20	1	0	15.9	10	250,761,828	24.60
1999	7	21	1	0	14.09	9	199,994,387	21.80
1999	7	22	1	0	15.14	11	262,653,301	23.42
1999	7	23	1	0	15.73	12	297,696,872	24.33
1999	7	26	1	0	15.16	33	789,000,802	23.45
1999	7	27	1	0	15.89	40	1,002,416,466	24.58
1999	7	28	1	0	15.33	56	1,353,924,619	23.71
1999	7	29	1	0	19.216	58	1,757,742,636	29.73
1999	7	30	1	0	17.74	191	5,343,813,419	27.44
1999	7	31	1	0	14.5	191	4,367,829,457	22.43
1999	8	1	1	0	13.48	191	4,060,575,247	20.85
1999	8	2	1	0	14.43	330	7,510,080,192	22.32
1999	8	3	1	0	14.59	270	6,212,742,582	22.57
1999	8	4	1	0	14.59	210	4,832,133,119	22.57
1999	8	5	1	0	14.69	124	2,872,815,825	22.72
1999	8	6	1	0	14.02	28	619,113,606	21.69
1999	8	7	1	0	14.17	28	625,737,503	21.92
1999	8	8	1	0	14.42	28	636,777,332	22.31
1999	8	9	1	0	14.12	142	3,162,185,512	21.84
1999	8	10	1	0	14.65	250	5,776,196,204	22.66
1999	8	11	1	0	13.99	128	2,824,177,493	21.64
1999	8	12	1	0	14.5	37	846,124,031	22.43
1999	8	13	1	0	14.55	48	1,101,459,503	22.51
1999	8	16	1	0	15.10	51	1,214,538,893	23.36
1999	8	17	1	0	15.15	14	334,506,816	23.44
1999	8	18	1	0	15.25	46	1,106,348,570	23.59
1999	8	19	1	0	15.14	34	811,837,477	23.42
1999	8	20	1	0	15.88	30	751,339,214	24.57
1999	8	23	1	0	15.29	31	747,538,359	23.65
1999	8	24	1	0	19.75	48	1,495,108,260	30.55
1999	8	25	1	0	13.14	37	766,763,432	20.33
1999	8	26	1	0	14.90	13	305,487,837	23.05
1999	8	27	1	0	14.96	27	637,029,671	23.14
1999	8	30	1	0	14.72	24	557,164,395	22.77
1999	8	31	1	0	16.22	24	613,940,658	25.09
1999	9	1	1	0	14.98	25	590,630,847	23.17
1999	9	2	1	0	14.77	35	815,291,366	22.85
1999	9	7	1	0	14.81	41	957,642,074	22.91
1999	9	8	1	0	14.70	30	695,603,849	22.74
1999	9	9	1	0	15.10	57	1,357,425,822	23.36
1999	9	10	1	0	16.31	33	848,696,311	25.23
1999	9	11	1	0	13.45	33	699,795,830	20.80
1999	9	12	1	0	13.25	33	689,490,938	20.49
1999	9	13	1	0	14.90	59	1,386,165,651	23.04
1999	9	14	1	0	14.24	22	493,906,175	22.02
1999	9	15	1	0	20.90	91	2,999,234,483	32.33
1999	9	16	1	0	14.66	37	855,227,159	22.67
1999	9	17	1	0	16.32	47	1,209,861,160	25.25

Table A4-2. Sugar Creek Wastewater Treatment Plant - Observed Values								
Year	Month	Day	Hour	Minute	Flow (mgd)	fecal (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)
1999	9	18	1	0	13.85	47	1,026,402,860	21.42
1999	9	19	1	0	13.42	47	994,529,297	20.76
1999	9	20	1	0	17.91	520	14,691,299,652	27.71
1999	9	21	1	0	20.94	51	1,684,267,843	32.39
1999	9	22	1	0	19.41	20	612,331,997	30.03
1999	9	23	1	0	17.89	43	1,213,229,885	27.67
1999	9	24	1	0	17.02	23	617,378,776	26.33
1999	9	27	1	0	19.66	36	1,116,221,331	30.41
1999	9	28	1	0	21.91	73	2,522,605,640	33.89
1999	9	29	1	0	23.53	51	1,892,589,415	36.40
1999	9	30	1	0	15.44	27	657,554,290	23.89
1999	10	1	1	0	14.19	196	4,384,799,252	21.94
1999	10	4	1	0	14.15	46	1,026,546,378	21.89
1999	10	5	1	0	15.44	142	3,457,800,588	23.88
1999	10	6	1	0	14.57	91	2,091,053,996	22.54
1999	10	7	1	0	14.95	64	1,508,986,902	23.13
1999	10	8	1	0	14.75	26	604,824,913	22.82
1999	10	9	1	0	14.27	26	585,142,475	22.07
1999	10	10	1	0	28.33	26	1,161,673,884	43.82
1999	10	11	1	0	24.65	215	8,358,333,333	38.13
1999	10	12	1	0	22.23	6000	210,356,054,531	34.39
1999	10	13	1	0	22.21	60	2,101,289,495	34.35
1999	10	14	1	0	15.61	49	1,206,399,385	24.15
1999	10	15	1	0	17.20	25	678,160,920	26.61
1999	10	16	1	0	12.64	25	498,369,420	19.55
1999	10	17	1	0	14.13	25	557,117,081	21.86
1999	10	18	1	0	13.58	245	5,247,230,687	21.01
1999	10	19	1	0	15.30	300	7,238,973,536	23.67
1999	10	20	1	0	20.58	850	27,588,532,478	31.84
1999	10	21	1	0	17.71	500	13,963,017,910	27.39
1999	10	22	1	0	13.00	410	8,406,041,165	20.11
1999	10	23	1	0	13.40	410	8,664,688,586	20.73
1999	10	24	1	0	13.40	410	8,664,688,586	20.73
1999	10	25	1	0	13.83	560	12,214,466,720	21.39
1999	10	26	1	0	14.89	200	4,696,658,647	23.03
1999	10	27	1	0	14.34	23	520,165,196	22.18
1999	10	28	1	0	18.31	14	404,278,535	28.32
1999	10	29	1	0	14.71	13	301,592,355	22.76
1999	11	1	1	0	19.14	20	603,720,930	29.61
1999	11	2	1	0	20.54	19	615,546,164	31.78
1999	11	3	1	0	16.53	9	234,642,101	25.57
1999	11	4	1	0	16.30	10	257,070,302	25.21
1999	11	5	1	0	14.60	27	621,700,080	22.59
1999	11	8	1	0	13.76	28	607,543,865	21.28
1999	11	9	1	0	17.16	21	568,462,871	26.55
1999	11	10	1	0	17.44	35	962,673,082	26.98
1999	11	11	1	0	18.71	42	1,239,331,195	28.94
1999	11	12	1	0	14.00	41	905,265,972	21.66
1999	11	15	1	0	14.73	40	929,238,172	22.79
1999	11	16	1	0	13.59	40	857,321,572	21.02
1999	11	17	1	0	14.93	36	847,669,607	23.10
1999	11	18	1	0	13.76	29	629,333,333	21.29
1999	11	19	1	0	14.70	36	834,611,067	22.74
1999	11	22	1	0	13.54	28	597,917,134	20.95
1999	11	23	1	0	15.15	44	1,051,307,137	23.44
1999	11	24	1	0	13.87	47	1,028,107,725	21.46
1999	11	26	1	0	14.51	46	1,052,663,459	22.45
1999	11	29	1	0	13.38	69	1,456,027,265	20.70
1999	11	30	1	0	15.45	255	6,213,452,285	23.90
1999	12	1	1	0	13.90	290	6,357,364,341	21.50
1999	12	2	1	0	14.80	119	2,777,620,957	22.89
1999	12	3	1	0	14.30	150	3,382,919,006	22.12
1999	12	6	1	0	13.79	119	2,588,067,094	21.33
1999	12	7	1	0	14.10	1550	34,467,923,015	21.81

Table A4-2. Sugar Creek Wastewater Treatment Plant - Observed Values								
Year	Month	Day	Hour	Minute	Flow (mgd)	fecal (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)
1999	12	8	1	0	14.45	1000	22,789,361,133	22.35
1999	12	9	1	0	14.50	33	754,651,163	22.43
1999	12	10	1	0	16.14	23	585,457,899	24.97
1999	12	13	1	0	14.35	18	407,369,687	22.20
1999	12	14	1	0	14.95	18	424,402,566	23.13
1999	12	15	1	0	13.77	20	434,338,412	21.30
1999	12	16	1	0	14.09	14	311,102,379	21.80
1999	12	17	1	0	13.27	22	460,423,951	20.53
1999	12	18	1	0	13.87	22	481,241,914	21.46
1999	12	19	1	0	13.68	22	474,649,559	21.16
1999	12	20	1	0	13.53	1300	27,739,935,846	20.93
1999	12	21	1	0	18.28	12	345,956,696	28.28
1999	12	22	1	0	14.70	10	231,836,407	22.74
1999	12	23	1	0	14.20	33	739,037,690	21.97
1999	12	28	1	0	14.03	38	840,824,913	21.70
1999	12	29	1	0	14.67	64	1,480,724,940	22.69
1999	12	30	1	0	14.16	64	1,429,247,795	21.90
1999	12	31	1	0	13.66	46	990,998,129	21.13

Table A4-3. Irwin Creek Wastewater Treatment Plant - 1000 cfu/100ml Max									
Year	Month	Day	Hour	Minute	Flow (mgd)	Obs. fecal (cfu/100ml)	Fecal (cfu/hour) 1000.00	Flow (cfs)	Fecal used in calcs (cfu/100 ml)
1998	1	5	1	0	4.29	13.00	87,955,894	6.64	13
1998	1	6	1	0	4.26	100.00	671,063,887	6.58	100
1998	1	7	1	0	4.05	39.00	249,228,869	6.27	39
1998	1	8	1	0	5.32	128.00	1,074,560,171	8.23	128
1998	1	9	1	0	5.94	500.00	4,684,830,259	9.19	500
1998	1	12	1	0	5.79	1700.00	9,128,361,401	8.95	1000
1998	1	13	1	0	5.60	2200.00	8,838,171,612	8.67	1000
1998	1	14	1	0	8.98	1100.00	14,154,637,797	13.88	1000
1998	1	15	1	0	6.23	29.00	284,800,775	9.63	29
1998	1	16	1	0	5.71	21.00	189,211,628	8.84	21
1998	1	17	1	0	5.80	16.00	146,280,887	8.97	16
1998	1	20	1	0	5.62	11.00	97,497,461	8.69	11
1998	1	21	1	0	5.76	20.00	181,684,042	8.91	20
1998	1	22	1	0	5.73	25.00	225,725,074	8.86	25
1998	1	23	1	0	5.24	146.00	1,205,637,637	8.10	146
1998	1	26	1	0	4.91	10.00	77,436,514	7.60	10
1998	1	27	1	0	5.52	45.00	391,827,185	8.54	45
1998	1	28	1	0	5.08	10.00	80,117,616	7.86	10
1998	1	29	1	0	4.38	14.00	96,797,220	6.78	14
1998	1	30	1	0	4.82	82.00	623,081,636	7.45	82
1998	2	2	1	0	4.06	23.00	147,380,139	6.29	23
1998	2	3	1	0	4.72	18.00	133,991,981	7.30	18
1998	2	4	1	0	10.52	24.00	398,266,560	16.28	24
1998	2	5	1	0	8.54	119.00	1,602,762,363	13.21	119
1998	2	6	1	0	10.15	91.00	1,456,561,909	15.70	91
1998	2	9	1	0	10.58	290.00	4,836,627,907	16.36	290
1998	2	11	1	0	8.72	30.00	412,574,178	13.49	30
1998	2	12	1	0	8.33	46.00	604,610,425	12.89	46
1998	2	13	1	0	8.15	119.00	1,528,817,589	12.60	119
1998	2	16	1	0	7.81	22.00	270,980,487	12.08	22
1998	2	17	1	0	8.71	51.00	700,410,906	13.47	51
1998	2	18	1	0	9.04	14.00	199,688,426	13.99	14
1998	2	19	1	0	8.70	19.00	260,697,674	13.46	19
1998	2	20	1	0	8.40	24.00	317,947,073	12.99	24
1998	2	23	1	0	8.03	20.00	253,379,845	12.43	20
1998	2	24	1	0	8.79	155.00	2,148,989,441	13.60	155
1998	2	25	1	0	10.19	200.00	3,214,167,335	15.76	200
1998	2	26	1	0	8.50	1150.00	13,411,815,023	13.16	1000
1998	2	27	1	0	9.56	2100.00	15,070,943,598	14.78	1000
1998	3	2	1	0	9.10	9.00	129,165,998	14.08	9
1998	3	3	1	0	8.80	86.00	1,193,563,218	13.61	86
1998	3	4	1	0	10.20	73.00	1,174,322,374	15.78	73
1998	3	5	1	0	9.00	1500.00	14,194,065,758	13.92	1000
1998	3	6	1	0	9.60	164.00	2,483,015,237	14.85	164
1998	3	9	1	0	11.80	51.00	949,109,864	18.25	51
1998	3	10	1	0	10.20	73.00	1,174,322,374	15.78	73
1998	3	11	1	0	10.40	5.00	82,010,158	16.09	5
1998	3	12	1	0	9.40	13.00	192,723,871	14.54	13
1998	3	13	1	0	9.70	22.00	336,557,070	15.01	22
1998	3	16	1	0	9.80	56.00	865,522,588	15.16	56
1998	3	17	1	0	10.00	300.00	4,731,355,253	15.47	300
1998	3	18	1	0	10.90	31.00	532,908,313	16.86	31
1998	3	19	1	0	12.70	25.00	500,735,098	19.65	25
1998	3	20	1	0	9.80	137.00	2,117,439,187	15.16	137
1998	3	23	1	0	10.70	73.00	1,231,887,196	16.55	73
1998	3	24	1	0	9.20	200.00	2,901,897,888	14.23	200
1998	3	25	1	0	10.10	48.00	764,587,009	15.62	48
1998	3	26	1	0	9.80	30.00	463,672,815	15.16	30
1998	3	27	1	0	11.30	37.00	659,393,210	17.48	37
1998	3	30	1	0	7.60	9.00	107,874,900	11.76	9
1998	3	31	1	0	8.10	5.00	63,873,296	12.53	5
1998	4	1	1	0	7.70	3.00	36,431,435	11.91	3
1998	4	2	1	0	7.10	25.00	279,938,519	10.98	25

Table A4-3. Irwin Creek Wastewater Treatment Plant - 1000 cfu/100ml Max									
Year	Month	Day	Hour	Minute	Flow (mgd)	Obs. fecal (cfu/100ml)	Fecal (cfu/hour)	Flow (cfs)	Fecal used in calcs (cfu/100 ml)
1998	4	3	1	0	7.70	25.00	303,595,295	11.91	25
1998	4	6	1	0	7.60	19.00	227,735,899	11.76	19
1998	4	7	1	0	7.70	119.00	1,445,113,606	11.91	119
1998	4	8	1	0	8.00	42.00	529,911,788	12.38	42
1998	4	9	1	0	8.30	270.00	3,534,322,374	12.84	270
1998	4	10	1	0	9.10	14.00	200,924,886	14.08	14
1998	4	13	1	0	9.10	6.00	86,110,666	14.08	6
1998	4	14	1	0	8.50	25.00	335,137,664	13.15	25
1998	4	15	1	0	9.50	3.00	44,947,875	14.70	3
1998	4	16	1	0	8.40	14.00	185,469,126	12.99	14
1998	4	17	1	0	9.30	8.00	117,337,610	14.39	8
1998	4	20	1	0	8.40	6.00	79,486,768	12.99	6
1998	4	21	1	0	8.10	11.00	140,521,251	12.53	11
1998	4	22	1	0	8.20	9.00	116,391,339	12.68	9
1998	4	23	1	0	8.40	13.00	172,221,331	12.99	13
1998	4	24	1	0	8.30	12.00	157,080,994	12.84	12
1998	4	27	1	0	7.90	6.00	74,755,413	12.22	6
1998	4	28	1	0	8.00	11.00	138,786,421	12.38	11
1998	4	29	1	0	8.00	8.00	100,935,579	12.38	8
1998	4	30	1	0	6.90	15.00	163,231,756	10.67	15
1998	5	1	1	0	7.65	9.00	108,598,797	11.84	9
1998	5	4	1	0	7.56	2.00	23,830,259	11.69	2
1998	5	5	1	0	7.25	9.00	102,836,006	11.21	9
1998	5	6	1	0	7.04	300.00	3,330,874,098	10.89	300
1998	5	7	1	0	6.77	15.00	160,156,375	10.47	15
1998	5	8	1	0	7.07	24.00	267,756,856	10.94	24
1998	5	11	1	0	6.84	13.00	140,298,877	10.59	13
1998	5	12	1	0	7.23	10.00	113,978,348	11.18	10
1998	5	13	1	0	7.33	21.00	242,865,196	11.34	21
1998	5	14	1	0	6.89	16.00	173,861,534	10.66	16
1998	5	15	1	0	6.80	19.00	203,853,595	10.52	19
1998	5	18	1	0	7.05	82.00	911,085,539	10.90	82
1998	5	19	1	0	7.67	25.00	302,294,173	11.86	25
1998	5	20	1	0	7.76	19.00	232,440,444	12.00	19
1998	5	21	1	0	7.78	29.00	355,692,248	12.03	29
1998	5	22	1	0	7.24	109.00	1,244,426,864	11.20	109
1998	5	26	1	0	7.73	18.00	219,440,257	11.96	18
1998	5	27	1	0	7.85	22.00	272,368,351	12.14	22
1998	5	28	1	0	7.40	45.00	524,825,581	11.44	45
1998	5	29	1	0	6.92	44.00	480,270,409	10.71	44
1998	6	1	1	0	6.72	91.00	963,721,866	10.39	91
1998	6	2	1	0	7.10	51.00	570,672,414	10.98	51
1998	6	3	1	0	7.04	91.00	1,009,934,590	10.89	91
1998	6	4	1	0	6.18	41.00	399,674,926	9.56	41
1998	6	5	1	0	6.75	44.00	468,681,743	10.45	44
1998	6	8	1	0	5.78	16.00	145,725,742	8.93	16
1998	6	9	1	0	7.78	21.00	257,504,010	12.03	21
1998	6	10	1	0	9.85	400.00	6,213,846,565	15.24	400
1998	6	11	1	0	10.79	240.00	4,082,213,312	16.68	240
1998	6	12	1	0	11.52	73.00	1,325,717,856	17.81	73
1998	6	15	1	0	9.11	450.00	6,466,816,359	14.10	450
1998	6	16	1	0	9.23	14.00	203,751,083	14.28	14
1998	6	17	1	0	7.71	17.00	206,578,856	11.92	17
1998	6	18	1	0	9.16	2.00	28,905,426	14.18	2
1998	6	19	1	0	6.79	10.00	107,023,256	10.50	10
1998	6	22	1	0	9.24	91.00	1,325,386,661	14.29	91
1998	6	23	1	0	10.26	500.00	8,090,617,482	15.87	500
1998	6	24	1	0	10.20	5500.00	16,086,607,859	15.78	1000
1998	6	25	1	0	9.61	460.00	6,968,182,304	14.86	460
1998	6	26	1	0	9.46	182.00	2,713,921,144	14.63	182
1998	6	27	1	0	10.68	36.00	606,086,608	16.51	36
1998	6	29	1	0	11.03	28.00	487,077,252	17.06	28
1998	6	30	1	0	7.98	54.00	679,186,047	12.34	54
1998	7	1	1	0	9.31	82.00	1,204,133,066	14.40	82

Table A4-3. Irwin Creek Wastewater Treatment Plant - 1000 cfu/100ml Max									
Year	Month	Day	Hour	Minute	Flow (mgd)	Obs. fecal (cfu/100ml)	Fecal (cfu/hour)	Flow (cfs)	Fecal used in calcs (cfu/100 ml)
1998	7	2	1	0	9.30	43.00	630,960,920	14.39	43
1998	7	3	1	0	8.84	43.00	599,426,437	13.67	43
1998	7	7	1	0	9.42	56.00	831,961,508	14.57	56
1998	7	8	1	0	8.84	6000.00	13,933,841,219	13.67	1000
1998	7	9	1	0	8.30	355.00	4,644,739,909	12.83	355
1998	7	10	1	0	9.91	56.00	874,972,681	15.33	56
1998	7	11	1	0	10.83	45.00	768,750,601	16.76	45
1998	7	13	1	0	10.09	44.00	700,177,493	15.61	44
1998	7	14	1	0	10.50	56.00	927,345,630	16.24	56
1998	7	15	1	0	10.38	182.00	2,979,429,030	16.06	182
1998	7	16	1	0	11.10	10.00	175,091,687	17.17	10
1998	7	17	1	0	10.19	46.00	739,403,582	15.77	46
1998	7	20	1	0	9.85	19.00	295,067,816	15.23	19
1998	7	21	1	0	12.36	210.00	4,093,568,565	19.12	210
1998	7	22	1	0	10.69	91.00	1,533,487,437	16.53	91
1998	7	23	1	0	9.48	45.00	672,869,687	14.67	45
1998	7	24	1	0	10.28	48.00	778,213,312	15.90	48
1998	7	27	1	0	11.36	4100.00	17,916,065,223	17.57	1000
1998	7	28	1	0	10.40	127.00	2,083,058,006	16.09	127
1998	7	29	1	0	10.94	230.00	3,968,345,362	16.92	230
1998	7	30	1	0	9.09	100.00	1,433,127,506	14.06	100
1998	7	31	1	0	10.01	19.00	299,832,291	15.48	19
1998	8	1	1	0	9.02	22.00	312,963,379	13.95	22
1998	8	3	1	0	9.41	22.00	326,495,055	14.56	22
1998	8	4	1	0	10.46	21.00	346,429,832	16.18	21
1998	8	5	1	0	9.84	40.00	620,753,809	15.22	40
1998	8	6	1	0	9.08	24.00	343,647,795	14.04	24
1998	8	7	1	0	10.03	45.00	711,477,546	15.51	45
1998	8	10	1	0	10.39	35.00	573,243,117	16.06	35
1998	8	11	1	0	7.14	2000.00	11,252,739,909	11.04	1000
1998	8	12	1	0	10.82	34.00	580,190,323	16.74	34
1998	8	13	1	0	9.94	24.00	376,048,115	15.37	24
1998	8	14	1	0	10.67	119.00	2,001,576,183	16.50	119
1998	8	17	1	0	12.36	23.00	448,343,224	19.12	23
1998	8	18	1	0	11.90	26.00	487,960,438	18.41	26
1998	8	19	1	0	11.25	34.00	603,247,795	17.40	34
1998	8	20	1	0	10.03	182.00	2,878,966,586	15.52	182
1998	8	21	1	0	11.10	28.00	490,168,404	17.17	28
1998	8	24	1	0	10.80	44.00	749,446,672	16.71	44
1998	8	25	1	0	11.60	82.00	1,500,155,039	17.94	82
1998	8	26	1	0	10.00	119.00	1,876,770,917	15.47	119
1998	8	27	1	0	9.60	46.00	696,455,493	14.85	46
1998	8	28	1	0	8.80	21.00	291,451,484	13.61	21
1998	8	31	1	0	10.00	73.00	1,151,296,445	15.47	73
1998	9	1	1	0	10.10	35.00	557,511,361	15.62	35
1998	9	2	1	0	9.90	25.00	390,336,808	15.31	25
1998	9	3	1	0	11.30	5.00	89,107,191	17.48	5
1998	9	4	1	0	13.10	14.00	289,243,518	20.26	14
1998	9	8	1	0	10.20	28.00	450,425,020	15.78	28
1998	9	9	1	0	9.60	52.00	787,297,514	14.85	52
1998	9	10	1	0	9.50	24.00	359,582,999	14.70	24
1998	9	11	1	0	10.90	22.00	378,192,997	16.86	22
1998	9	14	1	0	10.20	25.00	402,165,196	15.78	25
1998	9	15	1	0	11.20	27.00	476,920,609	17.33	27
1998	9	16	1	0	10.90	109.00	1,873,774,392	16.86	109
1998	9	17	1	0	10.10	240.00	3,822,935,044	15.62	240
1998	9	18	1	0	11.00	119.00	2,064,448,009	17.02	119
1998	9	21	1	0	10.30	6.00	97,465,918	15.93	6
1998	9	22	1	0	9.90	24.00	374,723,336	15.31	24
1998	9	23	1	0	10.80	38.00	647,249,399	16.71	38
1998	9	24	1	0	9.20	7.00	101,566,426	14.23	7
1998	9	25	1	0	12.10	55.00	1,049,572,307	18.72	55
1998	9	28	1	0	10.70	50.00	843,758,353	16.55	50
1998	9	29	1	0	12.20	1800.00	19,240,844,694	18.87	1000

Table A4-3. Irwin Creek Wastewater Treatment Plant - 1000 cfu/100ml Max									
Year	Month	Day	Hour	Minute	Flow (mgd)	Obs. fecal (cfu/100ml)	Fecal (cfu/hour)	Flow (cfs)	Fecal used in calcs (cfu/100 ml)
1998	9	30	1	0	9.60	430.00	6,510,344,828	14.85	430
1998	10	1	1	0	9.70	330.00	5,048,356,055	15.01	330
1998	10	2	1	0	9.90	200.00	3,122,694,467	15.31	200
1998	10	5	1	0	10.30	800.00	12,995,455,760	15.93	800
1998	10	6	1	0	10.20	260.00	4,182,518,043	15.78	260
1998	10	7	1	0	10.60	200.00	3,343,491,045	16.40	200
1998	10	8	1	0	10.10	50.00	796,444,801	15.62	50
1998	10	9	1	0	10.70	20.00	337,503,341	16.55	20
1998	10	12	1	0	9.00	3300.00	14,194,065,758	13.92	1000
1998	10	13	1	0	10.40	4.00	65,608,126	16.09	4
1998	10	15	1	0	9.40	11.00	163,074,044	14.54	11
1998	10	16	1	0	10.20	34.00	546,944,667	15.78	34
1998	10	17	1	0	7.80	57.00	701,186,848	12.07	57
1998	10	19	1	0	9.50	22.00	329,617,749	14.70	22
1998	10	20	1	0	10.60	260.00	4,346,538,359	16.40	260
1998	10	21	1	0	8.20	46.00	594,889,067	12.68	46
1998	10	22	1	0	8.50	6.00	80,433,039	13.15	6
1998	10	23	1	0	10.00	14.00	220,796,578	15.47	14
1998	10	26	1	0	10.00	2.00	31,542,368	15.47	2
1998	10	27	1	0	11.40	6000.00	17,979,149,960	17.63	1000
1998	10	28	1	0	10.30	11.00	178,687,517	15.93	11
1998	10	29	1	0	10.10	14.00	223,004,544	15.62	14
1998	10	30	1	0	8.50	24.00	321,732,157	13.15	24
1998	11	2	1	0	10.10	1.00	15,928,896	15.62	1
1998	11	3	1	0	12.10	4.00	76,332,531	18.72	4
1998	11	4	1	0	10.40	12.00	196,824,379	16.09	12
1998	11	5	1	0	9.20	37.00	536,851,109	14.23	37
1998	11	6	1	0	10.10	19.00	302,649,024	15.62	19
1998	11	9	1	0	9.70	5.00	76,490,243	15.01	5
1998	11	10	1	0	10.30	22.00	357,375,033	15.93	22
1998	11	11	1	0	10.20	11.00	176,952,686	15.78	11
1998	11	12	1	0	9.20	24.00	348,227,747	14.23	24
1998	11	13	1	0	10.00	33.00	520,449,078	15.47	33
1998	11	16	1	0	10.60	10.00	167,174,552	16.40	10
1998	11	17	1	0	11.00	37.00	641,887,196	17.02	37
1998	11	18	1	0	9.50	37.00	554,357,124	14.70	37
1998	11	19	1	0	9.40	41.00	607,821,438	14.54	41
1998	11	20	1	0	9.30	28.00	410,681,636	14.39	28
1998	11	23	1	0	9.90	10.00	156,134,723	15.31	10
1998	11	24	1	0	9.90	35.00	546,471,532	15.31	35
1998	11	25	1	0	9.70	13.00	198,874,632	15.01	13
1998	11	27	1	0	8.00	48.00	605,613,472	12.38	48
1998	11	30	1	0	9.40	13.00	192,723,871	14.54	13
1998	12	1	1	0	10.20	25.00	402,165,196	15.78	25
1998	12	2	1	0	9.70	42.00	642,518,043	15.01	42
1998	12	3	1	0	8.60	22.00	298,390,805	13.30	22
1998	12	4	1	0	10.10	29.00	461,937,984	15.62	29
1998	12	7	1	0	9.30	8.00	117,337,610	14.39	8
1998	12	8	1	0	10.20	28.00	450,425,020	15.78	28
1998	12	9	1	0	9.90	42.00	655,765,838	15.31	42
1998	12	10	1	0	9.10	35.00	502,312,216	14.08	35
1998	12	11	1	0	9.80	35.00	540,951,617	15.16	35
1998	12	14	1	0	9.50	11.00	164,808,875	14.70	11
1998	12	15	1	0	10.50	8.00	132,477,947	16.24	8
1998	12	16	1	0	11.10	32.00	560,192,462	17.17	32
1998	12	17	1	0	9.40	10.00	148,249,131	14.54	10
1998	12	18	1	0	9.70	13.00	198,874,632	15.01	13
1998	12	22	1	0	10.40	9.00	147,618,284	16.09	9
1998	12	23	1	0	8.10	15.00	191,619,888	12.53	15
1998	12	24	1	0	8.60	23.00	311,954,023	13.30	23
1998	12	28	1	0	9.00	5.00	70,970,329	13.92	5
1998	12	29	1	0	10.30	10.00	162,443,197	15.93	10
1998	12	30	1	0	9.80	10.00	154,557,605	15.16	10
1998	12	31	1	0	9.30	16.00	234,675,221	14.39	16

Table A4-3. Irwin Creek Wastewater Treatment Plant - 1000 cfu/100ml Max									
Year	Month	Day	Hour	Minute	Flow (mgd)	Obs. fecal (cfu/100ml)	Fecal (cfu/hour)	Flow (cfs)	Fecal used in calcs (cfu/100 ml)
1999	1	4	1	0	10.30	9.00	146,198,877	15.93	9
1999	1	5	1	0	10.20	4700.00	16,086,607,859	15.78	1000
1999	1	6	1	0	10.20	2.00	32,173,216	15.78	2
1999	1	7	1	0	10.70	3.00	50,625,501	16.55	3
1999	1	8	1	0	12.50	9.00	177,425,822	19.34	9
1999	1	11	1	0	9.80	2.00	30,911,521	15.16	2
1999	1	12	1	0	10.70	5.00	84,375,835	16.55	5
1999	1	13	1	0	10.10	9.00	143,360,064	15.62	9
1999	1	14	1	0	10.30	8.00	129,954,558	15.93	8
1999	1	15	1	0	10.80	7.00	119,230,152	16.71	7
1999	1	19	1	0	11.40	2.00	35,958,300	17.63	2
1999	1	20	1	0	10.50	3.00	49,679,230	16.24	3
1999	1	21	1	0	9.20	9.00	130,585,405	14.23	9
1999	1	22	1	0	10.90	26.00	446,955,360	16.86	26
1999	1	25	1	0	13.50	91.00	1,937,489,976	20.88	91
1999	1	26	1	0	11.90	40.00	750,708,367	18.41	40
1999	1	27	1	0	10.90	230.00	3,953,835,873	16.86	230
1999	1	28	1	0	10.00	12.00	189,254,210	15.47	12
1999	1	29	1	0	9.60	21.00	317,947,073	14.85	21
1999	2	1	1	0	10.50	12.00	198,716,921	16.24	12
1999	2	2	1	0	13.00	14.00	287,035,552	20.11	14
1999	2	3	1	0	11.20	10.00	176,637,263	17.33	10
1999	2	4	1	0	9.90	9.00	140,521,251	15.31	9
1999	2	5	1	0	11.60	27.00	493,953,488	17.94	27
1999	2	8	1	0	9.80	25.00	386,394,012	15.16	25
1999	2	9	1	0	10.80	12.00	204,394,547	16.71	12
1999	2	10	1	0	10.30	12.00	194,931,836	15.93	12
1999	2	11	1	0	9.30	17.00	249,342,422	14.39	17
1999	2	12	1	0	9.90	16.00	249,815,557	15.31	16
1999	2	15	1	0	8.40	7.00	92,734,563	12.99	7
1999	2	16	1	0	10.40	10.00	164,020,315	16.09	10
1999	2	17	1	0	9.50	9.00	134,843,625	14.70	9
1999	2	18	1	0	12.40	12.00	234,675,221	19.18	12
1999	2	19	1	0	10.80	14.00	238,460,305	16.71	14
1999	2	22	1	0	10.30	20.00	324,886,394	15.93	20
1999	2	23	1	0	10.60	6.00	100,304,731	16.40	6
1999	2	24	1	0	10.40	14.00	229,628,442	16.09	14
1999	2	25	1	0	10.30	55.00	893,437,584	15.93	55
1999	2	26	1	0	10.30	20.00	324,886,394	15.93	20
1999	3	1	1	0	10.30	9.00	146,198,877	15.93	9
1999	3	2	1	0	11.00	18.00	312,269,447	17.02	18
1999	3	3	1	0	10.40	16.00	262,432,505	16.09	16
1999	3	4	1	0	10.30	110.00	1,786,875,167	15.93	110
1999	3	5	1	0	11.30	39.00	695,036,087	17.48	39
1999	3	8	1	0	9.50	26.00	389,548,249	14.70	26
1999	3	10	1	0	9.90	21.00	327,882,919	15.31	21
1999	3	11	1	0	10.00	19.00	299,652,499	15.47	19
1999	3	12	1	0	8.30	82.00	1,073,386,795	12.84	82
1999	3	13	1	0	8.90	35.00	491,272,387	13.77	35
1999	3	15	1	0	10.90	64.00	1,100,197,808	16.86	64
1999	3	16	1	0	11.40	31.00	557,353,649	17.63	31
1999	3	17	1	0	8.50	32.00	428,976,210	13.15	32
1999	3	18	1	0	11.10	43.00	752,758,621	17.17	43
1999	3	19	1	0	12.10	38.00	725,159,048	18.72	38
1999	3	22	1	0	12.10	19.00	362,579,524	18.72	19
1999	3	23	1	0	12.40	12.00	234,675,221	19.18	12
1999	3	24	1	0	11.80	10.00	186,099,973	18.25	10
1999	3	25	1	0	12.00	20.00	378,508,420	18.56	20
1999	3	26	1	0	12.30	73.00	1,416,094,627	19.03	73
1999	3	29	1	0	11.00	20.00	346,966,052	17.02	20
1999	3	30	1	0	11.00	49.00	850,066,827	17.02	49
1999	3	31	1	0	12.20	16.00	307,853,515	18.87	16
1999	4	1	1	0	12.60	10.00	198,716,921	19.49	10
1999	4	5	1	0	12.40	15.00	293,344,026	19.18	15

Table A4-3. Irwin Creek Wastewater Treatment Plant - 1000 cfu/100ml Max									
Year	Month	Day	Hour	Minute	Flow (mgd)	Obs. fecal (cfu/100ml)	Fecal (cfu/hour)	Flow (cfs)	Fecal used in calcs (cfu/100 ml)
1999	4	6	1	0	12.43	23.00	450,882,384	19.23	23
1999	4	7	1	0	12.54	20.00	395,541,299	19.40	20
1999	4	9	1	0	9.41	55.00	816,584,603	14.56	55
1999	4	12	1	0	11.55	32.00	582,902,967	17.87	32
1999	4	13	1	0	12.35	21.00	409,025,662	19.10	21
1999	4	14	1	0	10.04	31.00	490,862,336	15.53	31
1999	4	15	1	0	12.03	31.00	588,154,771	18.61	31
1999	4	16	1	0	11.93	260.00	4,891,905,908	18.45	260
1999	4	19	1	0	11.61	110.00	2,014,137,931	17.96	110
1999	4	20	1	0	12.62	73.00	1,452,936,113	19.52	73
1999	4	21	1	0	9.23	210.00	3,056,928,629	14.28	210
1999	4	22	1	0	2.38	210.00	789,568,565	3.69	210
1999	4	23	1	0	6.07	6000.00	9,565,223,202	9.38	1000
1999	4	24	1	0	11.08	115.00	2,009,020,182	17.14	115
1999	4	25	1	0	9.83	115.00	1,783,578,990	15.21	115
1999	4	26	1	0	11.32	146.00	2,606,535,151	17.51	146
1999	4	27	1	0	11.90	230.00	4,316,573,109	18.41	230
1999	4	28	1	0	14.30	75.00	1,691,459,503	22.12	75
1999	4	29	1	0	12.20	109.00	2,097,252,072	18.87	109
1999	4	30	1	0	17.27	500.00	13,618,417,535	26.72	500
1999	5	3	1	0	10.50	64.00	1,059,823,577	16.24	64
1999	5	4	1	0	11.70	46.00	848,805,132	18.10	46
1999	5	5	1	0	11.10	128.00	2,240,769,848	17.17	128
1999	5	6	1	0	11.20	800.00	14,130,981,021	17.33	800
1999	5	7	1	0	10.90	2100.00	17,190,590,751	16.86	1000
1999	5	10	1	0	10.60	70.00	1,170,221,866	16.40	70
1999	5	11	1	0	11.30	91.00	1,621,750,869	17.48	91
1999	5	12	1	0	11.20	164.00	2,896,851,109	17.33	164
1999	5	13	1	0	11.10	200.00	3,501,202,887	17.17	200
1999	5	14	1	0	10.70	250.00	4,218,791,767	16.55	250
1999	5	17	1	0	10.50	110.00	1,821,571,772	16.24	110
1999	5	18	1	0	10.90	55.00	945,482,491	16.86	55
1999	5	19	1	0	11.90	119.00	2,233,357,391	18.41	119
1999	5	20	1	0	10.50	46.00	761,748,196	16.24	46
1999	5	21	1	0	10.50	164.00	2,715,797,915	16.24	164
1999	5	24	1	0	10.00	100.00	1,577,118,418	15.47	100
1999	5	25	1	0	6.60	119.00	1,238,668,805	10.21	119
1999	5	26	1	0	11.30	164.00	2,922,715,851	17.48	164
1999	5	27	1	0	11.00	1.00	17,348,303	17.02	1
1999	5	28	1	0	9.80	10.00	154,557,605	15.16	10
1999	5	29	1	0	11.10	10.00	175,060,144	17.17	10
1999	5	30	1	0	9.00	10.00	141,940,658	13.92	10
1999	5	31	1	0	9.50	10.00	149,826,250	14.70	10
1999	6	1	1	0	10.00	91.00	1,435,177,760	15.47	91
1999	6	2	1	0	10.10	164.00	2,612,338,947	15.62	164
1999	6	3	1	0	10.80	200.00	3,406,575,782	16.71	200
1999	6	4	1	0	10.10	350.00	5,575,113,606	15.62	350
1999	6	5	1	0	9.70	350.00	5,354,317,028	15.01	350
1999	6	6	1	0	9.30	350.00	5,133,520,449	14.39	350
1999	6	7	1	0	10.30	500.00	8,122,159,850	15.93	500
1999	6	8	1	0	10.40	91.00	1,492,584,870	16.09	91
1999	6	9	1	0	10.90	560.00	9,626,730,821	16.86	560
1999	6	10	1	0	11.10	1300.00	17,506,014,435	17.17	1000
1999	6	11	1	0	12.00	300.00	5,677,626,303	18.56	300
1999	6	14	1	0	10.50	182.00	3,013,873,296	16.24	182
1999	6	15	1	0	11.70	210.00	3,874,979,952	18.10	210
1999	6	16	1	0	12.70	200.00	4,005,880,781	19.65	200
1999	6	17	1	0	12.60	19.00	377,562,149	19.49	19
1999	6	18	1	0	10.00	900.00	14,194,065,758	15.47	900
1999	6	21	1	0	9.80	58.00	896,434,109	15.16	58
1999	6	22	1	0	7.10	91.00	1,018,976,210	10.98	91
1999	6	23	1	0	2.70	900.00	3,832,397,755	4.18	900
1999	6	24	1	0	10.50	200.00	3,311,948,677	16.24	200
1999	6	25	1	0	11.80	280.00	5,210,799,252	18.25	280

Table A4-3. Irwin Creek Wastewater Treatment Plant - 1000 cfu/100ml Max									
Year	Month	Day	Hour	Minute	Flow (mgd)	Obs. fecal (cfu/100ml)	Fecal (cfu/hour)	Flow (cfs)	Fecal used in calcs (cfu/100 ml)
1999	6	28	1	0	10.70	380.00	6,412,563,486	16.55	380
1999	6	29	1	0	11.10	442.50	7,746,411,387	17.17	443
1999	6	30	1	0	10.20	12.00	193,039,294	15.78	12
1999	7	1	1	0	10.30	7.00	113,710,238	15.93	7
1999	7	2	1	0	10.10	4.00	63,715,584	15.62	4
1999	7	6	1	0	11.70	7.00	129,165,998	18.10	7
1999	7	7	1	0	10.50	2.00	33,119,487	16.24	2
1999	7	8	1	0	11.00	2.00	34,696,605	17.02	2
1999	7	9	1	0	10.80	3.00	51,098,637	16.71	3
1999	7	12	1	0	9.90	4.00	62,453,889	15.31	4
1999	7	13	1	0	10.70	10.00	168,751,671	16.55	10
1999	7	14	1	0	9.00	8.00	113,552,526	13.92	8
1999	7	15	1	0	11.60	1.00	18,294,574	17.94	1
1999	7	16	1	0	9.90	4.00	62,453,889	15.31	4
1999	7	19	1	0	10.10	2.00	31,857,792	15.62	2
1999	7	20	1	0	10.60	11.00	183,892,007	16.40	11
1999	7	21	1	0	10.50	64.00	1,059,823,577	16.24	64
1999	7	22	1	0	11.10	164.00	2,870,986,367	17.17	164
1999	7	23	1	0	10.00	110.00	1,734,830,259	15.47	110
1999	7	26	1	0	10.10	37.00	589,369,153	15.62	37
1999	7	27	1	0	10.90	1600.00	17,190,590,751	16.86	1000
1999	7	28	1	0	10.60	1800.00	16,717,455,226	16.40	1000
1999	7	29	1	0	11.60	400.00	7,317,829,457	17.94	400
1999	7	30	1	0	10.70	250.00	4,218,791,767	16.55	250
1999	7	31	1	0	9.50	9.00	134,843,625	14.70	9
1999	8	1	1	0	10.00	2.00	31,542,368	15.47	2
1999	8	2	1	0	10.20	1.00	16,086,608	15.78	1
1999	8	3	1	0	10.60	1.00	16,717,455	16.40	1
1999	8	4	1	0	10.20	8.00	128,692,863	15.78	8
1999	8	5	1	0	10.20	22.00	353,905,373	15.78	22
1999	8	6	1	0	11.10	270.00	4,726,623,897	17.17	270
1999	8	9	1	0	8.50	370.00	4,960,037,423	13.15	370
1999	8	10	1	0	10.40	191.00	3,132,788,025	16.09	191
1999	8	11	1	0	10.50	82.00	1,357,898,957	16.24	82
1999	8	12	1	0	11.50	128.00	2,321,518,311	17.79	128
1999	8	13	1	0	9.90	420.00	6,557,658,380	15.31	420
1999	8	16	1	0	9.70	91.00	1,392,122,427	15.01	91
1999	8	17	1	0	11.20	8.00	141,309,810	17.33	8
1999	8	18	1	0	10.20	91.00	1,463,881,315	15.78	91
1999	8	19	1	0	10.90	270.00	4,641,459,503	16.86	270
1999	8	20	1	0	11.40	100.00	1,797,914,996	17.63	100
1999	8	23	1	0	10.30	7.00	113,710,238	15.93	7
1999	8	24	1	0	11.40	91.00	1,636,102,646	17.63	91
1999	8	25	1	0	13.00	64.00	1,312,162,523	20.11	64
1999	8	26	1	0	11.50	73.00	1,323,990,912	17.79	73
1999	8	27	1	0	12.70	1.00	20,029,404	19.65	1
1999	8	30	1	0	10.10	1.00	15,928,896	15.62	1
1999	8	31	1	0	10.80	22.00	374,723,336	16.71	22
1999	9	1	1	0	10.80	29.00	493,953,488	16.71	29
1999	9	2	1	0	10.90	10.00	171,905,908	16.86	10
1999	9	3	1	0	10.50	30.00	496,792,302	16.24	30
1999	9	7	1	0	10.00	10.00	157,711,842	15.47	10
1999	9	8	1	0	9.80	2.00	30,911,521	15.16	2
1999	9	9	1	0	12.10	20.00	381,662,657	18.72	20
1999	9	10	1	0	10.00	91.00	1,435,177,760	15.47	91
1999	9	13	1	0	10.70	33.00	556,880,513	16.55	33
1999	9	14	1	0	10.40	270.00	4,428,548,516	16.09	270
1999	9	15	1	0	11.80	182.00	3,387,019,513	18.25	182
1999	9	16	1	0	14.10	44.00	978,444,266	21.81	44
1999	9	17	1	0	10.00	37.00	583,533,814	15.47	37
1999	9	20	1	0	8.50	9.00	120,649,559	13.15	9
1999	9	21	1	0	10.70	27.00	455,629,511	16.55	27
1999	9	22	1	0	12.10	37.00	706,075,916	18.72	37
1999	9	23	1	0	10.80	8.00	136,263,031	16.71	8

Table A4-3. Irwin Creek Wastewater Treatment Plant - 1000 cfu/100ml Max									
Year	Month	Day	Hour	Minute	Flow (mgd)	Obs. fecal (cfu/100ml)	Fecal (cfu/hour)	Flow (cfs)	Fecal used in calcs (cfu/100 ml)
1999	9	24	1	0	9.70	5.00	76,490,243	15.01	5
1999	9	25	1	0	10.50	5.00	82,798,717	16.24	5
1999	9	26	1	0	8.70	5.00	68,604,651	13.46	5
1999	9	27	1	0	11.50	1100.00	18,136,861,802	17.79	1000
1999	9	28	1	0	11.20	1000.00	17,663,726,276	17.33	1000
1999	9	29	1	0	15.30	800.00	19,303,929,431	23.67	800
1999	9	30	1	0	11.10	57.00	997,842,823	17.17	57
1999	10	1	1	0	10.00	6.00	94,627,105	15.47	6
1999	10	2	1	0	9.60	7.00	105,982,358	14.85	7
1999	10	4	1	0	10.40	21.00	344,442,662	16.09	21
1999	10	5	1	0	10.20	15.00	241,299,118	15.78	15
1999	10	6	1	0	10.70	24.00	405,004,010	16.55	24
1999	10	7	1	0	10.00	16.00	252,338,947	15.47	16
1999	10	8	1	0	9.60	22.00	333,087,410	14.85	22
1999	10	11	1	0	17.00	35.00	938,385,458	26.30	35
1999	10	12	1	0	10.40	2.00	32,804,063	16.09	2
1999	10	13	1	0	13.00	14.00	287,035,552	20.11	14
1999	10	14	1	0	12.10	20.00	381,662,657	18.72	20
1999	10	15	1	0	8.80	1.00	13,878,642	13.61	1
1999	10	18	1	0	10.40	4.00	65,608,126	16.09	4
1999	10	19	1	0	10.20	16.00	257,385,726	15.78	16
1999	10	20	1	0	13.30	46.00	964,881,048	20.57	46
1999	10	21	1	0	11.00	8.00	138,786,421	17.02	8
1999	10	22	1	0	9.70	50.00	764,902,433	15.01	50
1999	10	25	1	0	9.90	9.00	140,521,251	15.31	9
1999	10	26	1	0	9.90	73.00	1,139,783,480	15.31	73
1999	10	27	1	0	10.60	51.00	852,590,217	16.40	51
1999	10	28	1	0	9.20	1.00	14,509,489	14.23	1
1999	10	29	1	0	10.60	10.00	167,174,552	16.40	10
1999	11	1	1	0	8.30	7.00	91,630,580	12.84	7
1999	11	2	1	0	11.10	16.00	280,096,231	17.17	16
1999	11	3	1	0	10.50	11.00	182,157,177	16.24	11
1999	11	4	1	0	10.10	5.00	79,644,480	15.62	5
1999	11	5	1	0	11.30	17.00	302,964,448	17.48	17
1999	11	8	1	0	10.00	2.00	31,542,368	15.47	2
1999	11	9	1	0	9.90	16.00	249,815,557	15.31	16
1999	11	10	1	0	5.80	2.00	18,294,574	8.97	2
1999	11	11	1	0	9.80	1.00	15,455,760	15.16	1
1999	11	12	1	0	10.80	11.00	187,361,668	16.71	11
1999	11	13	1	0	8.80	11.00	152,665,063	13.61	11
1999	11	14	1	0	8.30	11.00	143,990,912	12.84	11
1999	11	15	1	0	9.50	173.00	2,591,994,119	14.70	173
1999	11	16	1	0	9.90	10.00	156,134,723	15.31	10
1999	11	17	1	0	10.20	11.00	176,952,686	15.78	11
1999	11	18	1	0	9.40	1.00	14,824,913	14.54	1
1999	11	19	1	0	9.20	5.00	72,547,447	14.23	5
1999	11	22	1	0	9.40	3.00	44,474,739	14.54	3
1999	11	23	1	0	9.40	5.00	74,124,566	14.54	5
1999	11	24	1	0	11.40	1.00	17,979,150	17.63	1
1999	11	26	1	0	10.00	4.00	63,084,737	15.47	4
1999	11	29	1	0	10.20	28.00	450,425,020	15.78	28
1999	11	30	1	0	9.90	1.00	15,613,472	15.31	1
1999	12	1	1	0	10.10	4.00	63,715,584	15.62	4
1999	12	2	1	0	8.80	1.00	13,878,642	13.61	1
1999	12	3	1	0	10.00	1.00	15,771,184	15.47	1
1999	12	6	1	0	10.00	7.00	110,398,289	15.47	7
1999	12	7	1	0	7.20	16.00	181,684,042	11.14	16
1999	12	8	1	0	10.10	20.00	318,577,920	15.62	20
1999	12	9	1	0	9.50	27.00	404,530,874	14.70	27
1999	12	10	1	0	10.70	1.00	16,875,167	16.55	1
1999	12	13	1	0	10.50	1.00	16,559,743	16.24	1
1999	12	14	1	0	12.90	1.00	20,344,828	19.96	1
1999	12	15	1	0	11.90	1.00	18,767,709	18.41	1
1999	12	16	1	0	11.10	4.00	70,024,058	17.17	4

Table A4-3. Irwin Creek Wastewater Treatment Plant - 1000 cfu/100ml Max									
Year	Month	Day	Hour	Minute	Flow (mgd)	Obs. fecal (cfu/100ml)	Fecal (cfu/hour)	Flow (cfs)	Fecal used in calcs (cfu/100 ml)
1999	12	17	1	0	8.80	8.00	111,029,137	13.61	8
1999	12	20	1	0	10.20	1.00	16,086,608	15.78	1
1999	12	21	1	0	11.60	1.00	18,294,574	17.94	1
1999	12	22	1	0	10.00	7.00	110,398,289	15.47	7
1999	12	23	1	0	9.40	23.00	340,973,002	14.54	23
1999	12	28	1	0	9.30	8.00	117,337,610	14.39	8
1999	12	29	1	0	9.60	7.00	105,982,358	14.85	7
1999	12	30	1	0	9.40	4.00	59,299,652	14.54	4
1999	12	31	1	0	11.40	1.00	17,979,150	17.63	1
2000	1	1	1	0	11.40	1.00	17,979,150	17.63	1

Table A4-4. Irwin Creek Wastewater Treatment Plant - Observed Values								
Year	Month	Day	Hour	Min	Flow (mgd)	Observed fecal (cfu/100ml)	Fecal load (cfu/hour)	Flow (cfs)
							1000000.00	
1998	1	5	1	0	4.29	13.00	87,955,894	6.64
1998	1	6	1	0	4.26	100.00	671,063,887	6.58
1998	1	7	1	0	4.05	39.00	249,228,869	6.27
1998	1	8	1	0	5.32	128.00	1,074,560,171	8.23
1998	1	9	1	0	5.94	500.00	4,684,830,259	9.19
1998	1	12	1	0	5.79	1700.00	15,518,214,381	8.95
1998	1	13	1	0	5.60	2200.00	19,443,977,546	8.67
1998	1	14	1	0	8.98	1100.00	15,570,101,577	13.88
1998	1	15	1	0	6.23	29.00	284,800,775	9.63
1998	1	16	1	0	5.71	21.00	189,211,628	8.84
1998	1	17	1	0	5.80	16.00	146,280,887	8.97
1998	1	20	1	0	5.62	11.00	97,497,461	8.69
1998	1	21	1	0	5.76	20.00	181,684,042	8.91
1998	1	22	1	0	5.73	25.00	225,725,074	8.86
1998	1	23	1	0	5.24	146.00	1,205,637,637	8.10
1998	1	26	1	0	4.91	10.00	77,436,514	7.60
1998	1	27	1	0	5.52	45.00	391,827,185	8.54
1998	1	28	1	0	5.08	10.00	80,117,616	7.86
1998	1	29	1	0	4.38	14.00	96,797,220	6.78
1998	1	30	1	0	4.82	82.00	623,081,636	7.45
1998	2	2	1	0	4.06	23.00	147,380,139	6.29
1998	2	3	1	0	4.72	18.00	133,991,981	7.30
1998	2	4	1	0	10.52	24.00	398,266,560	16.28
1998	2	5	1	0	8.54	119.00	1,602,762,363	13.21
1998	2	6	1	0	10.15	91.00	1,456,561,909	15.70
1998	2	9	1	0	10.58	290.00	4,836,627,907	16.36
1998	2	11	1	0	8.72	30.00	412,574,178	13.49
1998	2	12	1	0	8.33	46.00	604,610,425	12.89
1998	2	13	1	0	8.15	119.00	1,528,817,589	12.60
1998	2	16	1	0	7.81	22.00	270,980,487	12.08
1998	2	17	1	0	8.71	51.00	700,410,906	13.47
1998	2	18	1	0	9.04	14.00	199,688,426	13.99
1998	2	19	1	0	8.70	19.00	260,697,674	13.46
1998	2	20	1	0	8.40	24.00	317,947,073	12.99
1998	2	23	1	0	8.03	20.00	253,379,845	12.43
1998	2	24	1	0	8.79	155.00	2,148,989,441	13.60
1998	2	25	1	0	10.19	200.00	3,214,167,335	15.76
1998	2	26	1	0	8.50	1150.00	15,423,587,276	13.16
1998	2	27	1	0	9.56	2100.00	31,648,981,556	14.78
1998	3	2	1	0	9.10	9.00	129,165,998	14.08
1998	3	3	1	0	8.80	86.00	1,193,563,218	13.61
1998	3	4	1	0	10.20	73.00	1,174,322,374	15.78
1998	3	5	1	0	9.00	1500.00	21,291,098,637	13.92
1998	3	6	1	0	9.60	164.00	2,483,015,237	14.85
1998	3	9	1	0	11.80	51.00	949,109,864	18.25
1998	3	10	1	0	10.20	73.00	1,174,322,374	15.78
1998	3	11	1	0	10.40	5.00	82,010,158	16.09
1998	3	12	1	0	9.40	13.00	192,723,871	14.54
1998	3	13	1	0	9.70	22.00	336,557,070	15.01
1998	3	16	1	0	9.80	56.00	865,522,588	15.16
1998	3	17	1	0	10.00	300.00	4,731,355,253	15.47
1998	3	18	1	0	10.90	31.00	532,908,313	16.86
1998	3	19	1	0	12.70	25.00	500,735,098	19.65
1998	3	20	1	0	9.80	137.00	2,117,439,187	15.16
1998	3	23	1	0	10.70	73.00	1,231,887,196	16.55
1998	3	24	1	0	9.20	200.00	2,901,897,888	14.23
1998	3	25	1	0	10.10	48.00	764,587,009	15.62
1998	3	26	1	0	9.80	30.00	463,672,815	15.16
1998	3	27	1	0	11.30	37.00	659,393,210	17.48
1998	3	30	1	0	7.60	9.00	107,874,900	11.76
1998	3	31	1	0	8.10	5.00	63,873,296	12.53
1998	4	1	1	0	7.70	3.00	36,431,435	11.91
1998	4	2	1	0	7.10	25.00	279,938,519	10.98

Table A4-4. Irwin Creek Wastewater Treatment Plant - Observed Values								
Year	Month	Day	Hour	Min	Flow (mgd)	Observed fecal (cfu/100ml)	Fecal load (cfu/hour)	Flow (cfs)
1998	4	3	1	0	7.70	25.00	303,595,295	11.91
1998	4	6	1	0	7.60	19.00	227,735,899	11.76
1998	4	7	1	0	7.70	119.00	1,445,113,606	11.91
1998	4	8	1	0	8.00	42.00	529,911,788	12.38
1998	4	9	1	0	8.30	270.00	3,534,322,374	12.84
1998	4	10	1	0	9.10	14.00	200,924,886	14.08
1998	4	13	1	0	9.10	6.00	86,110,666	14.08
1998	4	14	1	0	8.50	25.00	335,137,664	13.15
1998	4	15	1	0	9.50	3.00	44,947,875	14.70
1998	4	16	1	0	8.40	14.00	185,469,126	12.99
1998	4	17	1	0	9.30	8.00	117,337,610	14.39
1998	4	20	1	0	8.40	6.00	79,486,768	12.99
1998	4	21	1	0	8.10	11.00	140,521,251	12.53
1998	4	22	1	0	8.20	9.00	116,391,339	12.68
1998	4	23	1	0	8.40	13.00	172,221,331	12.99
1998	4	24	1	0	8.30	12.00	157,080,994	12.84
1998	4	27	1	0	7.90	6.00	74,755,413	12.22
1998	4	28	1	0	8.00	11.00	138,786,421	12.38
1998	4	29	1	0	8.00	8.00	100,935,579	12.38
1998	4	30	1	0	6.90	15.00	163,231,756	10.67
1998	5	1	1	0	7.65	9.00	108,598,797	11.84
1998	5	4	1	0	7.56	2.00	23,830,259	11.69
1998	5	5	1	0	7.25	9.00	102,836,006	11.21
1998	5	6	1	0	7.04	300.00	3,330,874,098	10.89
1998	5	7	1	0	6.77	15.00	160,156,375	10.47
1998	5	8	1	0	7.07	24.00	267,756,856	10.94
1998	5	11	1	0	6.84	13.00	140,298,877	10.59
1998	5	12	1	0	7.23	10.00	113,978,348	11.18
1998	5	13	1	0	7.33	21.00	242,865,196	11.34
1998	5	14	1	0	6.89	16.00	173,861,534	10.66
1998	5	15	1	0	6.80	19.00	203,853,595	10.52
1998	5	18	1	0	7.05	82.00	911,085,539	10.90
1998	5	19	1	0	7.67	25.00	302,294,173	11.86
1998	5	20	1	0	7.76	19.00	232,440,444	12.00
1998	5	21	1	0	7.78	29.00	355,692,248	12.03
1998	5	22	1	0	7.24	109.00	1,244,426,864	11.20
1998	5	26	1	0	7.73	18.00	219,440,257	11.96
1998	5	27	1	0	7.85	22.00	272,368,351	12.14
1998	5	28	1	0	7.40	45.00	524,825,581	11.44
1998	5	29	1	0	6.92	44.00	480,270,409	10.71
1998	6	1	1	0	6.72	91.00	963,721,866	10.39
1998	6	2	1	0	7.10	51.00	570,672,414	10.98
1998	6	3	1	0	7.04	91.00	1,009,934,590	10.89
1998	6	4	1	0	6.18	41.00	399,674,926	9.56
1998	6	5	1	0	6.75	44.00	468,681,743	10.45
1998	6	8	1	0	5.78	16.00	145,725,742	8.93
1998	6	9	1	0	7.78	21.00	257,504,010	12.03
1998	6	10	1	0	9.85	400.00	6,213,846,565	15.24
1998	6	11	1	0	10.79	240.00	4,082,213,312	16.68
1998	6	12	1	0	11.52	73.00	1,325,717,856	17.81
1998	6	15	1	0	9.11	450.00	6,466,816,359	14.10
1998	6	16	1	0	9.23	14.00	203,751,083	14.28
1998	6	17	1	0	7.71	17.00	206,578,856	11.92
1998	6	18	1	0	9.16	2.00	28,905,426	14.18
1998	6	19	1	0	6.79	10.00	107,023,256	10.50
1998	6	22	1	0	9.24	91.00	1,325,386,661	14.29
1998	6	23	1	0	10.26	500.00	8,090,617,482	15.87
1998	6	24	1	0	10.20	5500.00	88,476,343,224	15.78
1998	6	25	1	0	9.61	460.00	6,968,182,304	14.86
1998	6	26	1	0	9.46	182.00	2,713,921,144	14.63
1998	6	27	1	0	10.68	36.00	606,086,608	16.51
1998	6	29	1	0	11.03	28.00	487,077,252	17.06
1998	6	30	1	0	7.98	54.00	679,186,047	12.34
1998	7	1	1	0	9.31	82.00	1,204,133,066	14.40

Table A4-4. Irwin Creek Wastewater Treatment Plant - Observed Values								
Year	Month	Day	Hour	Min	Flow (mgd)	Observed fecal (cfu/100ml)	Fecal load (cfu/hour)	Flow (cfs)
1998	7	2	1	0	9.30	43.00	630,960,920	14.39
1998	7	3	1	0	8.84	43.00	599,426,437	13.67
1998	7	7	1	0	9.42	56.00	831,961,508	14.57
1998	7	8	1	0	8.84	6000.00	83,603,047,314	13.67
1998	7	9	1	0	8.30	355.00	4,644,739,909	12.83
1998	7	10	1	0	9.91	56.00	874,972,681	15.33
1998	7	11	1	0	10.83	45.00	768,750,601	16.76
1998	7	13	1	0	10.09	44.00	700,177,493	15.61
1998	7	14	1	0	10.50	56.00	927,345,630	16.24
1998	7	15	1	0	10.38	182.00	2,979,429,030	16.06
1998	7	16	1	0	11.10	10.00	175,091,687	17.17
1998	7	17	1	0	10.19	46.00	739,403,582	15.77
1998	7	20	1	0	9.85	19.00	295,067,816	15.23
1998	7	21	1	0	12.36	210.00	4,093,568,565	19.12
1998	7	22	1	0	10.69	91.00	1,533,487,437	16.53
1998	7	23	1	0	9.48	45.00	672,869,687	14.67
1998	7	24	1	0	10.28	48.00	778,213,312	15.90
1998	7	27	1	0	11.36	4100.00	73,455,867,415	17.57
1998	7	28	1	0	10.40	127.00	2,083,058,006	16.09
1998	7	29	1	0	10.94	230.00	3,968,345,362	16.92
1998	7	30	1	0	9.09	100.00	1,433,127,506	14.06
1998	7	31	1	0	10.01	19.00	299,832,291	15.48
1998	8	1	1	0	9.02	22.00	312,963,379	13.95
1998	8	3	1	0	9.41	22.00	326,495,055	14.56
1998	8	4	1	0	10.46	21.00	346,429,832	16.18
1998	8	5	1	0	9.84	40.00	620,753,809	15.22
1998	8	6	1	0	9.08	24.00	343,647,795	14.04
1998	8	7	1	0	10.03	45.00	711,477,546	15.51
1998	8	10	1	0	10.39	35.00	573,243,117	16.06
1998	8	11	1	0	7.14	2000.00	22,505,479,818	11.04
1998	8	12	1	0	10.82	34.00	580,190,323	16.74
1998	8	13	1	0	9.94	24.00	376,048,115	15.37
1998	8	14	1	0	10.67	119.00	2,001,576,183	16.50
1998	8	17	1	0	12.36	23.00	448,343,224	19.12
1998	8	18	1	0	11.90	26.00	487,960,438	18.41
1998	8	19	1	0	11.25	34.00	603,247,795	17.40
1998	8	20	1	0	10.03	182.00	2,878,966,586	15.52
1998	8	21	1	0	11.10	28.00	490,168,404	17.17
1998	8	24	1	0	10.80	44.00	749,446,672	16.71
1998	8	25	1	0	11.60	82.00	1,500,155,039	17.94
1998	8	26	1	0	10.00	119.00	1,876,770,917	15.47
1998	8	27	1	0	9.60	46.00	696,455,493	14.85
1998	8	28	1	0	8.80	21.00	291,451,484	13.61
1998	8	31	1	0	10.00	73.00	1,151,296,445	15.47
1998	9	1	1	0	10.10	35.00	557,511,361	15.62
1998	9	2	1	0	9.90	25.00	390,336,808	15.31
1998	9	3	1	0	11.30	5.00	89,107,191	17.48
1998	9	4	1	0	13.10	14.00	289,243,518	20.26
1998	9	8	1	0	10.20	28.00	450,425,020	15.78
1998	9	9	1	0	9.60	52.00	787,297,514	14.85
1998	9	10	1	0	9.50	24.00	359,582,999	14.70
1998	9	11	1	0	10.90	22.00	378,192,997	16.86
1998	9	14	1	0	10.20	25.00	402,165,196	15.78
1998	9	15	1	0	11.20	27.00	476,920,609	17.33
1998	9	16	1	0	10.90	109.00	1,873,774,392	16.86
1998	9	17	1	0	10.10	240.00	3,822,935,044	15.62
1998	9	18	1	0	11.00	119.00	2,064,448,009	17.02
1998	9	21	1	0	10.30	6.00	97,465,918	15.93
1998	9	22	1	0	9.90	24.00	374,723,336	15.31
1998	9	23	1	0	10.80	38.00	647,249,399	16.71
1998	9	24	1	0	9.20	7.00	101,566,426	14.23
1998	9	25	1	0	12.10	55.00	1,049,572,307	18.72
1998	9	28	1	0	10.70	50.00	843,758,353	16.55
1998	9	29	1	0	12.20	1800.00	34,633,520,449	18.87

Table A4-4. Irwin Creek Wastewater Treatment Plant - Observed Values								
Year	Month	Day	Hour	Min	Flow (mgd)	Observed fecal (cfu/100ml)	Fecal load (cfu/hour)	Flow (cfs)
1998	9	30	1	0	9.60	430.00	6,510,344,828	14.85
1998	10	1	1	0	9.70	330.00	5,048,356,055	15.01
1998	10	2	1	0	9.90	200.00	3,122,694,467	15.31
1998	10	5	1	0	10.30	800.00	12,995,455,760	15.93
1998	10	6	1	0	10.20	260.00	4,182,518,043	15.78
1998	10	7	1	0	10.60	200.00	3,343,491,045	16.40
1998	10	8	1	0	10.10	50.00	796,444,801	15.62
1998	10	9	1	0	10.70	20.00	337,503,341	16.55
1998	10	12	1	0	9.00	3300.00	46,840,417,001	13.92
1998	10	13	1	0	10.40	4.00	65,608,126	16.09
1998	10	15	1	0	9.40	11.00	163,074,044	14.54
1998	10	16	1	0	10.20	34.00	546,944,667	15.78
1998	10	17	1	0	7.80	57.00	701,186,848	12.07
1998	10	19	1	0	9.50	22.00	329,617,749	14.70
1998	10	20	1	0	10.60	260.00	4,346,538,359	16.40
1998	10	21	1	0	8.20	46.00	594,889,067	12.68
1998	10	22	1	0	8.50	6.00	80,433,039	13.15
1998	10	23	1	0	10.00	14.00	220,796,578	15.47
1998	10	26	1	0	10.00	2.00	31,542,368	15.47
1998	10	27	1	0	11.40	6000.00	107,874,899,759	17.63
1998	10	28	1	0	10.30	11.00	178,687,517	15.93
1998	10	29	1	0	10.10	14.00	223,004,544	15.62
1998	10	30	1	0	8.50	24.00	321,732,157	13.15
1998	11	2	1	0	10.10	1.00	15,928,896	15.62
1998	11	3	1	0	12.10	4.00	76,332,531	18.72
1998	11	4	1	0	10.40	12.00	196,824,379	16.09
1998	11	5	1	0	9.20	37.00	536,851,109	14.23
1998	11	6	1	0	10.10	19.00	302,649,024	15.62
1998	11	9	1	0	9.70	5.00	76,490,243	15.01
1998	11	10	1	0	10.30	22.00	357,375,033	15.93
1998	11	11	1	0	10.20	11.00	176,952,686	15.78
1998	11	12	1	0	9.20	24.00	348,227,747	14.23
1998	11	13	1	0	10.00	33.00	520,449,078	15.47
1998	11	16	1	0	10.60	10.00	167,174,552	16.40
1998	11	17	1	0	11.00	37.00	641,887,196	17.02
1998	11	18	1	0	9.50	37.00	554,357,124	14.70
1998	11	19	1	0	9.40	41.00	607,821,438	14.54
1998	11	20	1	0	9.30	28.00	410,681,636	14.39
1998	11	23	1	0	9.90	10.00	156,134,723	15.31
1998	11	24	1	0	9.90	35.00	546,471,532	15.31
1998	11	25	1	0	9.70	13.00	198,874,632	15.01
1998	11	27	1	0	8.00	48.00	605,613,472	12.38
1998	11	30	1	0	9.40	13.00	192,723,871	14.54
1998	12	1	1	0	10.20	25.00	402,165,196	15.78
1998	12	2	1	0	9.70	42.00	642,518,043	15.01
1998	12	3	1	0	8.60	22.00	298,390,805	13.30
1998	12	4	1	0	10.10	29.00	461,937,984	15.62
1998	12	7	1	0	9.30	8.00	117,337,610	14.39
1998	12	8	1	0	10.20	28.00	450,425,020	15.78
1998	12	9	1	0	9.90	42.00	655,765,838	15.31
1998	12	10	1	0	9.10	35.00	502,312,216	14.08
1998	12	11	1	0	9.80	35.00	540,951,617	15.16
1998	12	14	1	0	9.50	11.00	164,808,875	14.70
1998	12	15	1	0	10.50	8.00	132,477,947	16.24
1998	12	16	1	0	11.10	32.00	560,192,462	17.17
1998	12	17	1	0	9.40	10.00	148,249,131	14.54
1998	12	18	1	0	9.70	13.00	198,874,632	15.01
1998	12	22	1	0	10.40	9.00	147,618,284	16.09
1998	12	23	1	0	8.10	15.00	191,619,888	12.53
1998	12	24	1	0	8.60	23.00	311,954,023	13.30
1998	12	28	1	0	9.00	5.00	70,970,329	13.92
1998	12	29	1	0	10.30	10.00	162,443,197	15.93
1998	12	30	1	0	9.80	10.00	154,557,605	15.16
1998	12	31	1	0	9.30	16.00	234,675,221	14.39

Table A4-4. Irwin Creek Wastewater Treatment Plant - Observed Values								
Year	Month	Day	Hour	Min	Flow (mgd)	Observed fecal (cfu/100ml)	Fecal load (cfu/hour)	Flow (cfs)
1999	1	4	1	0	10.30	9.00	146,198,877	15.93
1999	1	5	1	0	10.20	4700.00	75,607,056,937	15.78
1999	1	6	1	0	10.20	2.00	32,173,216	15.78
1999	1	7	1	0	10.70	3.00	50,625,501	16.55
1999	1	8	1	0	12.50	9.00	177,425,822	19.34
1999	1	11	1	0	9.80	2.00	30,911,521	15.16
1999	1	12	1	0	10.70	5.00	84,375,835	16.55
1999	1	13	1	0	10.10	9.00	143,360,064	15.62
1999	1	14	1	0	10.30	8.00	129,954,558	15.93
1999	1	15	1	0	10.80	7.00	119,230,152	16.71
1999	1	19	1	0	11.40	2.00	35,958,300	17.63
1999	1	20	1	0	10.50	3.00	49,679,230	16.24
1999	1	21	1	0	9.20	9.00	130,585,405	14.23
1999	1	22	1	0	10.90	26.00	446,955,360	16.86
1999	1	25	1	0	13.50	91.00	1,937,489,976	20.88
1999	1	26	1	0	11.90	40.00	750,708,367	18.41
1999	1	27	1	0	10.90	230.00	3,953,835,873	16.86
1999	1	28	1	0	10.00	12.00	189,254,210	15.47
1999	1	29	1	0	9.60	21.00	317,947,073	14.85
1999	2	1	1	0	10.50	12.00	198,716,921	16.24
1999	2	2	1	0	13.00	14.00	287,035,552	20.11
1999	2	3	1	0	11.20	10.00	176,637,263	17.33
1999	2	4	1	0	9.90	9.00	140,521,251	15.31
1999	2	5	1	0	11.60	27.00	493,953,488	17.94
1999	2	8	1	0	9.80	25.00	386,394,012	15.16
1999	2	9	1	0	10.80	12.00	204,394,547	16.71
1999	2	10	1	0	10.30	12.00	194,931,836	15.93
1999	2	11	1	0	9.30	17.00	249,342,422	14.39
1999	2	12	1	0	9.90	16.00	249,815,557	15.31
1999	2	15	1	0	8.40	7.00	92,734,563	12.99
1999	2	16	1	0	10.40	10.00	164,020,315	16.09
1999	2	17	1	0	9.50	9.00	134,843,625	14.70
1999	2	18	1	0	12.40	12.00	234,675,221	19.18
1999	2	19	1	0	10.80	14.00	238,460,305	16.71
1999	2	22	1	0	10.30	20.00	324,886,394	15.93
1999	2	23	1	0	10.60	6.00	100,304,731	16.40
1999	2	24	1	0	10.40	14.00	229,628,442	16.09
1999	2	25	1	0	10.30	55.00	893,437,584	15.93
1999	2	26	1	0	10.30	20.00	324,886,394	15.93
1999	3	1	1	0	10.30	9.00	146,198,877	15.93
1999	3	2	1	0	11.00	18.00	312,269,447	17.02
1999	3	3	1	0	10.40	16.00	262,432,505	16.09
1999	3	4	1	0	10.30	110.00	1,786,875,167	15.93
1999	3	5	1	0	11.30	39.00	695,036,087	17.48
1999	3	8	1	0	9.50	26.00	389,548,249	14.70
1999	3	10	1	0	9.90	21.00	327,882,919	15.31
1999	3	11	1	0	10.00	19.00	299,652,499	15.47
1999	3	12	1	0	8.30	82.00	1,073,386,795	12.84
1999	3	13	1	0	8.90	35.00	491,272,387	13.77
1999	3	15	1	0	10.90	64.00	1,100,197,808	16.86
1999	3	16	1	0	11.40	31.00	557,353,649	17.63
1999	3	17	1	0	8.50	32.00	428,976,210	13.15
1999	3	18	1	0	11.10	43.00	752,758,621	17.17
1999	3	19	1	0	12.10	38.00	725,159,048	18.72
1999	3	22	1	0	12.10	19.00	362,579,524	18.72
1999	3	23	1	0	12.40	12.00	234,675,221	19.18
1999	3	24	1	0	11.80	10.00	186,099,973	18.25
1999	3	25	1	0	12.00	20.00	378,508,420	18.56
1999	3	26	1	0	12.30	73.00	1,416,094,627	19.03
1999	3	29	1	0	11.00	20.00	346,966,052	17.02
1999	3	30	1	0	11.00	49.00	850,066,827	17.02
1999	3	31	1	0	12.20	16.00	307,853,515	18.87
1999	4	1	1	0	12.60	10.00	198,716,921	19.49
1999	4	5	1	0	12.40	15.00	293,344,026	19.18

Table A4-4. Irwin Creek Wastewater Treatment Plant - Observed Values								
Year	Month	Day	Hour	Min	Flow (mgd)	Observed fecal (cfu/100ml)	Fecal load (cfu/hour)	Flow (cfs)
1999	4	6	1	0	12.43	23.00	450,882,384	19.23
1999	4	7	1	0	12.54	20.00	395,541,299	19.40
1999	4	9	1	0	9.41	55.00	816,584,603	14.56
1999	4	12	1	0	11.55	32.00	582,902,967	17.87
1999	4	13	1	0	12.35	21.00	409,025,662	19.10
1999	4	14	1	0	10.04	31.00	490,862,336	15.53
1999	4	15	1	0	12.03	31.00	588,154,771	18.61
1999	4	16	1	0	11.93	260.00	4,891,905,908	18.45
1999	4	19	1	0	11.61	110.00	2,014,137,931	17.96
1999	4	20	1	0	12.62	73.00	1,452,936,113	19.52
1999	4	21	1	0	9.23	210.00	3,056,928,629	14.28
1999	4	22	1	0	2.38	210.00	789,568,565	3.69
1999	4	23	1	0	6.07	6000.00	57,391,339,214	9.38
1999	4	24	1	0	11.08	115.00	2,009,020,182	17.14
1999	4	25	1	0	9.83	115.00	1,783,578,990	15.21
1999	4	26	1	0	11.32	146.00	2,606,535,151	17.51
1999	4	27	1	0	11.90	230.00	4,316,573,109	18.41
1999	4	28	1	0	14.30	75.00	1,691,459,503	22.12
1999	4	29	1	0	12.20	109.00	2,097,252,072	18.87
1999	4	30	1	0	17.27	500.00	13,618,417,535	26.72
1999	5	3	1	0	10.50	64.00	1,059,823,577	16.24
1999	5	4	1	0	11.70	46.00	848,805,132	18.10
1999	5	5	1	0	11.10	128.00	2,240,769,848	17.17
1999	5	6	1	0	11.20	800.00	14,130,981,021	17.33
1999	5	7	1	0	10.90	2100.00	36,100,240,577	16.86
1999	5	10	1	0	10.60	70.00	1,170,221,866	16.40
1999	5	11	1	0	11.30	91.00	1,621,750,869	17.48
1999	5	12	1	0	11.20	164.00	2,896,851,109	17.33
1999	5	13	1	0	11.10	200.00	3,501,202,887	17.17
1999	5	14	1	0	10.70	250.00	4,218,791,767	16.55
1999	5	17	1	0	10.50	110.00	1,821,571,772	16.24
1999	5	18	1	0	10.90	55.00	945,482,491	16.86
1999	5	19	1	0	11.90	119.00	2,233,357,391	18.41
1999	5	20	1	0	10.50	46.00	761,748,196	16.24
1999	5	21	1	0	10.50	164.00	2,715,797,915	16.24
1999	5	24	1	0	10.00	100.00	1,577,118,418	15.47
1999	5	25	1	0	6.60	119.00	1,238,668,805	10.21
1999	5	26	1	0	11.30	164.00	2,922,715,851	17.48
1999	5	27	1	0	11.00	1.00	17,348,303	17.02
1999	5	28	1	0	9.80	10.00	154,557,605	15.16
1999	5	29	1	0	11.10	10.00	175,060,144	17.17
1999	5	30	1	0	9.00	10.00	141,940,658	13.92
1999	5	31	1	0	9.50	10.00	149,826,250	14.70
1999	6	1	1	0	10.00	91.00	1,435,177,760	15.47
1999	6	2	1	0	10.10	164.00	2,612,338,947	15.62
1999	6	3	1	0	10.80	200.00	3,406,575,782	16.71
1999	6	4	1	0	10.10	350.00	5,575,113,606	15.62
1999	6	5	1	0	9.70	350.00	5,354,317,028	15.01
1999	6	6	1	0	9.30	350.00	5,133,520,449	14.39
1999	6	7	1	0	10.30	500.00	8,122,159,850	15.93
1999	6	8	1	0	10.40	91.00	1,492,584,870	16.09
1999	6	9	1	0	10.90	560.00	9,626,730,821	16.86
1999	6	10	1	0	11.10	1300.00	22,757,818,765	17.17
1999	6	11	1	0	12.00	300.00	5,677,626,303	18.56
1999	6	14	1	0	10.50	182.00	3,013,873,296	16.24
1999	6	15	1	0	11.70	210.00	3,874,979,952	18.10
1999	6	16	1	0	12.70	200.00	4,005,880,781	19.65
1999	6	17	1	0	12.60	19.00	377,562,149	19.49
1999	6	18	1	0	10.00	900.00	14,194,065,758	15.47
1999	6	21	1	0	9.80	58.00	896,434,109	15.16
1999	6	22	1	0	7.10	91.00	1,018,976,210	10.98
1999	6	23	1	0	2.70	900.00	3,832,397,755	4.18
1999	6	24	1	0	10.50	200.00	3,311,948,677	16.24
1999	6	25	1	0	11.80	280.00	5,210,799,252	18.25

Table A4-4. Irwin Creek Wastewater Treatment Plant - Observed Values								
Year	Month	Day	Hour	Min	Flow (mgd)	Observed fecal (cfu/100ml)	Fecal load (cfu/hour)	Flow (cfs)
1999	6	28	1	0	10.70	380.00	6,412,563,486	16.55
1999	6	29	1	0	11.10	442.50	7,746,411,387	17.17
1999	6	30	1	0	10.20	12.00	193,039,294	15.78
1999	7	1	1	0	10.30	7.00	113,710,238	15.93
1999	7	2	1	0	10.10	4.00	63,715,584	15.62
1999	7	6	1	0	11.70	7.00	129,165,998	18.10
1999	7	7	1	0	10.50	2.00	33,119,487	16.24
1999	7	8	1	0	11.00	2.00	34,696,605	17.02
1999	7	9	1	0	10.80	3.00	51,098,637	16.71
1999	7	12	1	0	9.90	4.00	62,453,889	15.31
1999	7	13	1	0	10.70	10.00	168,751,671	16.55
1999	7	14	1	0	9.00	8.00	113,552,526	13.92
1999	7	15	1	0	11.60	1.00	18,294,574	17.94
1999	7	16	1	0	9.90	4.00	62,453,889	15.31
1999	7	19	1	0	10.10	2.00	31,857,792	15.62
1999	7	20	1	0	10.60	11.00	183,892,007	16.40
1999	7	21	1	0	10.50	64.00	1,059,823,577	16.24
1999	7	22	1	0	11.10	164.00	2,870,986,367	17.17
1999	7	23	1	0	10.00	110.00	1,734,830,259	15.47
1999	7	26	1	0	10.10	37.00	589,369,153	15.62
1999	7	27	1	0	10.90	1600.00	27,504,945,202	16.86
1999	7	28	1	0	10.60	1800.00	30,091,419,407	16.40
1999	7	29	1	0	11.60	400.00	7,317,829,457	17.94
1999	7	30	1	0	10.70	250.00	4,218,791,767	16.55
1999	7	31	1	0	9.50	9.00	134,843,625	14.70
1999	8	1	1	0	10.00	2.00	31,542,368	15.47
1999	8	2	1	0	10.20	1.00	16,086,608	15.78
1999	8	3	1	0	10.60	1.00	16,717,455	16.40
1999	8	4	1	0	10.20	8.00	128,692,863	15.78
1999	8	5	1	0	10.20	22.00	353,905,373	15.78
1999	8	6	1	0	11.10	270.00	4,726,623,897	17.17
1999	8	9	1	0	8.50	370.00	4,960,037,423	13.15
1999	8	10	1	0	10.40	191.00	3,132,788,025	16.09
1999	8	11	1	0	10.50	82.00	1,357,898,957	16.24
1999	8	12	1	0	11.50	128.00	2,321,518,311	17.79
1999	8	13	1	0	9.90	420.00	6,557,658,380	15.31
1999	8	16	1	0	9.70	91.00	1,392,122,427	15.01
1999	8	17	1	0	11.20	8.00	141,309,810	17.33
1999	8	18	1	0	10.20	91.00	1,463,881,315	15.78
1999	8	19	1	0	10.90	270.00	4,641,459,503	16.86
1999	8	20	1	0	11.40	100.00	1,797,914,996	17.63
1999	8	23	1	0	10.30	7.00	113,710,238	15.93
1999	8	24	1	0	11.40	91.00	1,636,102,646	17.63
1999	8	25	1	0	13.00	64.00	1,312,162,523	20.11
1999	8	26	1	0	11.50	73.00	1,323,990,912	17.79
1999	8	27	1	0	12.70	1.00	20,029,404	19.65
1999	8	30	1	0	10.10	1.00	15,928,896	15.62
1999	8	31	1	0	10.80	22.00	374,723,336	16.71
1999	9	1	1	0	10.80	29.00	493,953,488	16.71
1999	9	2	1	0	10.90	10.00	171,905,908	16.86
1999	9	3	1	0	10.50	30.00	496,792,302	16.24
1999	9	7	1	0	10.00	10.00	157,711,842	15.47
1999	9	8	1	0	9.80	2.00	30,911,521	15.16
1999	9	9	1	0	12.10	20.00	381,662,657	18.72
1999	9	10	1	0	10.00	91.00	1,435,177,760	15.47
1999	9	13	1	0	10.70	33.00	556,880,513	16.55
1999	9	14	1	0	10.40	270.00	4,428,548,516	16.09
1999	9	15	1	0	11.80	182.00	3,387,019,513	18.25
1999	9	16	1	0	14.10	44.00	978,444,266	21.81
1999	9	17	1	0	10.00	37.00	583,533,814	15.47
1999	9	20	1	0	8.50	9.00	120,649,559	13.15
1999	9	21	1	0	10.70	27.00	455,629,511	16.55
1999	9	22	1	0	12.10	37.00	706,075,916	18.72
1999	9	23	1	0	10.80	8.00	136,263,031	16.71

Table A4-4. Irwin Creek Wastewater Treatment Plant - Observed Values								
Year	Month	Day	Hour	Min	Flow (mgd)	Observed fecal (cfu/100ml)	Fecal load (cfu/hour)	Flow (cfs)
1999	9	24	1	0	9.70	5.00	76,490,243	15.01
1999	9	25	1	0	10.50	5.00	82,798,717	16.24
1999	9	26	1	0	8.70	5.00	68,604,651	13.46
1999	9	27	1	0	11.50	1100.00	19,950,547,982	17.79
1999	9	28	1	0	11.20	1000.00	17,663,726,276	17.33
1999	9	29	1	0	15.30	800.00	19,303,929,431	23.67
1999	9	30	1	0	11.10	57.00	997,842,823	17.17
1999	10	1	1	0	10.00	6.00	94,627,105	15.47
1999	10	2	1	0	9.60	7.00	105,982,358	14.85
1999	10	4	1	0	10.40	21.00	344,442,662	16.09
1999	10	5	1	0	10.20	15.00	241,299,118	15.78
1999	10	6	1	0	10.70	24.00	405,004,010	16.55
1999	10	7	1	0	10.00	16.00	252,338,947	15.47
1999	10	8	1	0	9.60	22.00	333,087,410	14.85
1999	10	11	1	0	17.00	35.00	938,385,458	26.30
1999	10	12	1	0	10.40	2.00	32,804,063	16.09
1999	10	13	1	0	13.00	14.00	287,035,552	20.11
1999	10	14	1	0	12.10	20.00	381,662,657	18.72
1999	10	15	1	0	8.80	1.00	13,878,642	13.61
1999	10	18	1	0	10.40	4.00	65,608,126	16.09
1999	10	19	1	0	10.20	16.00	257,385,726	15.78
1999	10	20	1	0	13.30	46.00	964,881,048	20.57
1999	10	21	1	0	11.00	8.00	138,786,421	17.02
1999	10	22	1	0	9.70	50.00	764,902,433	15.01
1999	10	25	1	0	9.90	9.00	140,521,251	15.31
1999	10	26	1	0	9.90	73.00	1,139,783,480	15.31
1999	10	27	1	0	10.60	51.00	852,590,217	16.40
1999	10	28	1	0	9.20	1.00	14,509,489	14.23
1999	10	29	1	0	10.60	10.00	167,174,552	16.40
1999	11	1	1	0	8.30	7.00	91,630,580	12.84
1999	11	2	1	0	11.10	16.00	280,096,231	17.17
1999	11	3	1	0	10.50	11.00	182,157,177	16.24
1999	11	4	1	0	10.10	5.00	79,644,480	15.62
1999	11	5	1	0	11.30	17.00	302,964,448	17.48
1999	11	8	1	0	10.00	2.00	31,542,368	15.47
1999	11	9	1	0	9.90	16.00	249,815,557	15.31
1999	11	10	1	0	5.80	2.00	18,294,574	8.97
1999	11	11	1	0	9.80	1.00	15,455,760	15.16
1999	11	12	1	0	10.80	11.00	187,361,668	16.71
1999	11	13	1	0	8.80	11.00	152,665,063	13.61
1999	11	14	1	0	8.30	11.00	143,990,912	12.84
1999	11	15	1	0	9.50	173.00	2,591,994,119	14.70
1999	11	16	1	0	9.90	10.00	156,134,723	15.31
1999	11	17	1	0	10.20	11.00	176,952,686	15.78
1999	11	18	1	0	9.40	1.00	14,824,913	14.54
1999	11	19	1	0	9.20	5.00	72,547,447	14.23
1999	11	22	1	0	9.40	3.00	44,474,739	14.54
1999	11	23	1	0	9.40	5.00	74,124,566	14.54
1999	11	24	1	0	11.40	1.00	17,979,150	17.63
1999	11	26	1	0	10.00	4.00	63,084,737	15.47
1999	11	29	1	0	10.20	28.00	450,425,020	15.78
1999	11	30	1	0	9.90	1.00	15,613,472	15.31
1999	12	1	1	0	10.10	4.00	63,715,584	15.62
1999	12	2	1	0	8.80	1.00	13,878,642	13.61
1999	12	3	1	0	10.00	1.00	15,771,184	15.47
1999	12	6	1	0	10.00	7.00	110,398,289	15.47
1999	12	7	1	0	7.20	16.00	181,684,042	11.14
1999	12	8	1	0	10.10	20.00	318,577,920	15.62
1999	12	9	1	0	9.50	27.00	404,530,874	14.70
1999	12	10	1	0	10.70	1.00	16,875,167	16.55
1999	12	13	1	0	10.50	1.00	16,559,743	16.24
1999	12	14	1	0	12.90	1.00	20,344,828	19.96
1999	12	15	1	0	11.90	1.00	18,767,709	18.41
1999	12	16	1	0	11.10	4.00	70,024,058	17.17

Table A4-4. Irwin Creek Wastewater Treatment Plant - Observed Values								
Year	Month	Day	Hour	Min	Flow (mgd)	Observed fecal (cfu/100ml)	Fecal load (cfu/hour)	Flow (cfs)
1999	12	17	1	0	8.80	8.00	111,029,137	13.61
1999	12	20	1	0	10.20	1.00	16,086,608	15.78
1999	12	21	1	0	11.60	1.00	18,294,574	17.94
1999	12	22	1	0	10.00	7.00	110,398,289	15.47
1999	12	23	1	0	9.40	23.00	340,973,002	14.54
1999	12	28	1	0	9.30	8.00	117,337,610	14.39
1999	12	29	1	0	9.60	7.00	105,982,358	14.85
1999	12	30	1	0	9.40	4.00	59,299,652	14.54
1999	12	31	1	0	11.40	1.00	17,979,150	17.63
2000	1	1	1	0	11.40	1.00	17,979,150	17.63

Table A4-5. McAlpine Wastewater Treatment Plant - 1000 cfu/100 ml max									
Year	Month	Day	Hour	Minute	Observed Fecal Conc (cfu/100 ml)	Flow(mgd)	Fecal used in calcs (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)
1998	1	1	1	0	27.00	44.20	27	1,882,133,119	68.37397408
1998	1	5	1	0	4.00	47.40	4	299,021,652	73.32412605
1998	1	6	1	0	59.00	46.00	59	4,280,299,385	71.15843456
1998	1	9	1	0	28.00	53.40	28	2,358,107,458	82.60566099
1998	1	12	1	0	20.00	46.90	20	1,479,337,076	72.55066481
1998	1	13	1	0	4.00	49.10	4	309,746,057	75.95389428
1998	1	14	1	0	38.00	56.50	38	3,386,073,242	87.40112071
1998	1	16	1	0	105.00	56.20	105	9,306,575,782	86.93704397
1998	1	20	1	0	700.00	63.10	700	69,661,320,503	97.61080915
1998	1	23	1	0	28.00	58.00	28	2,561,240,310	89.72150445
1998	1	26	1	0	25.00	56.80	25	2,239,508,153	87.86519746
1998	1	27	1	0	46.00	59.40	46	4,309,318,364	91.88719594
1998	1	28	1	0	300.00	58.40	300	27,631,114,675	90.34027345
1998	1	29	1	0	600.00	61.50	600	58,195,669,607	95.13573317
1998	1	30	1	0	290.00	59.90	290	27,396,124,031	92.66065718
1998	2	4	1	0	250.00	63.35	250	24,977,612,938	97.99753977
1998	2	5	1	0	250.00	60.79	250	23,968,257,150	94.0374182
1998	2	6	1	0	37.00	56.84	37	3,316,806,202	87.92707436
1998	2	9	1	0	58.00	44.71	58	4,089,751,938	69.16290455
1998	2	10	1	0	19.00	45.71	19	1,369,711,574	70.70982704
1998	2	11	1	0	155.00	44.59	155	10,900,175,087	68.97727385
1998	2	12	1	0	91.00	43.94	91	6,306,171,077	67.97177423
1998	2	13	1	0	11.00	42.38	11	735,221,064	65.55857515
1998	2	16	1	0	17.00	43.18	17	1,157,699,546	66.79611314
1998	2	17	1	0	200.00	47.57	200	15,004,704,624	73.58710287
1998	2	20	1	0	465.00	50.24	465	36,844,009,623	77.71738592
1998	2	23	1	0	200.00	50.61	200	15,963,592,622	78.28974725
1998	2	24	1	0	59.00	48.70	59	4,531,534,349	75.33512529
1998	2	25	1	0	23.00	45.18	23	1,638,846,832	69.88995812
1998	2	26	1	0	46.00	46.21	46	3,352,417,535	71.48328829
1998	2	27	1	0	22.00	44.19	22	1,533,242,983	68.35850486
1998	3	4	1	0	4.00	42.00	4	264,955,894	64.9707446
1998	3	5	1	0	2.00	40.60	2	128,062,016	62.80505312
1998	3	6	1	0	1.00	37.50	1	59,141,941	58.00959339
1998	3	9	1	0	20.00	56.70	20	1,788,452,285	87.71050521
1998	3	16	1	0	3.00	38.10	3	180,264,635	58.93774689
1998	3	17	1	0	10.00	40.10	10	632,424,485	62.03159187
1998	3	18	1	0	26.00	44.70	26	1,832,927,025	69.14743533
1998	3	19	1	0	5.00	49.80	5	392,702,486	77.03674003
1998	3	20	1	0	10.00	51.10	10	805,907,511	79.04773927
1998	3	23	1	0	9.00	47.10	9	668,540,497	72.8600493
1998	3	24	1	0	13.00	52.20	13	1,070,232,558	80.74935401
1998	3	25	1	0	5.00	46.40	5	365,891,473	71.77720356
1998	3	30	1	0	13.00	38.80	13	795,498,530	60.02059263
1998	3	31	1	0	11.00	43.80	11	759,855,654	67.75520508
1998	4	1	1	0	20.00	43.40	20	1,368,938,786	67.13643609
1998	4	2	1	0	27.00	38.40	27	1,635,156,375	59.40182364
1998	4	3	1	0	12.00	37.60	12	711,595,830	58.16428564
1998	4	8	1	0	30.00	43.60	30	2,062,870,890	67.44582059
1998	4	9	1	0	17.00	52.40	17	1,404,897,086	81.0587385
1998	4	13	1	0	15.00	45.50	15	1,076,383,320	70.38497332
1998	4	14	1	0	28.00	48.80	28	2,154,974,606	75.48981754
1998	4	15	1	0	25.00	49.90	25	1,967,455,226	77.19143228
1998	4	20	1	0	42.00	51.20	42	3,391,435,445	79.20243151
1998	4	21	1	0	10.00	50.20	10	791,713,446	77.65550902
1998	4	22	1	0	20.00	53.80	20	1,696,979,417	83.22442999
1998	4	23	1	0	25.00	55.90	25	2,204,022,989	86.47296722
1998	4	24	1	0	14.00	54.60	14	1,205,549,318	84.46196798
1998	4	29	1	0	12.00	42.90	12	811,900,561	66.36297484
1998	4	30	1	0	7.00	37.90	7	418,409,516	58.62836239
1998	5	1	1	0	310.00	51.80	310	25,325,367,549	80.13058501
1998	5	4	1	0	20.00	43.00	20	1,356,321,839	66.51766709
1998	5	5	1	0	40.00	43.70	40	2,756,802,994	67.60051284

Table A4-5. McAlpine Wastewater Treatment Plant - 1000 cfu/100 ml max									
Year	Month	Day	Hour	Minute	Observed Fecal Conc (cfu/100 ml)	Flow(mgd)	Fecal used in calcs (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)
1998	5	11	1	0	23.00	46.00	23	1,668,591,286	71.15843456
1998	5	12	1	0	37.00	42.90	37	2,503,360,064	66.36297484
1998	5	13	1	0	22.00	40.90	22	1,419,091,152	63.26912986
1998	5	14	1	0	23.00	41.10	23	1,490,850,040	63.57851436
1998	5	19	1	0	91.00	38.20	91	5,482,379,043	59.09243914
1998	5	20	1	0	40.00	33.20	40	2,094,413,258	51.35782669
1998	5	21	1	0	18.00	39.00	18	1,107,137,129	60.32997713
1998	5	22	1	0	100.00	36.60	100	5,772,253,408	56.61736315
1998	5	26	1	0	39.00	37.80	39	2,324,987,971	58.47367014
1998	5	27	1	0	49.00	35.90	49	2,774,309,008	55.53451741
1998	6	1	1	0	290.00	42.20	290	19,300,775,194	65.2801291
1998	6	2	1	0	1250.00	41.20	1000	64,977,278,802	63.73320661
1998	6	3	1	0	119.00	37.70	119	7,075,426,357	58.31897789
1998	6	4	1	0	40.00	38.50	40	2,428,762,363	59.55651589
1998	6	5	1	0	44.00	44.10	44	3,060,240,577	68.21928183
1998	6	10	1	0	210.00	32.30	210	10,697,594,226	49.96559644
1998	6	11	1	0	2500.00	31.00	1000	48,890,670,944	47.95459721
1998	6	12	1	0	73.00	35.10	73	4,041,050,521	54.29697942
1998	6	15	1	0	137.00	33.10	137	7,151,758,888	51.20313444
1998	6	18	1	0	155.00	33.90	155	8,286,968,725	52.44067243
1998	6	19	1	0	59.00	41.30	59	3,842,964,448	63.88789886
1998	6	22	1	0	64.00	32.70	64	3,300,593,424	50.58436544
1998	6	23	1	0	46.00	38.90	46	2,822,095,696	60.17528488
1998	6	24	1	0	47.00	34.80	47	2,579,534,884	53.83290267
1998	6	25	1	0	53.00	36.70	53	3,067,653,034	56.7720554
1998	6	30	1	0	119.00	37.60	119	7,056,658,647	58.16428564
1998	7	1	1	0	580.00	34.60	580	31,649,612,403	53.52351817
1998	7	2	1	0	60.00	31.40	60	2,971,291,099	48.5733662
1998	7	3	1	0	46.00	32.60	46	2,365,046,779	50.42967319
1998	7	9	1	0	450.00	33.00	450	23,420,208,500	51.04844219
1998	7	10	1	0	43.00	36.80	43	2,495,632,184	56.92674765
1998	7	13	1	0	58.00	33.40	58	3,055,193,798	51.66721118
1998	7	14	1	0	26.00	38.00	26	1,558,192,997	58.78305464
1998	7	17	1	0	73.00	33.00	73	3,799,278,268	51.04844219
1998	7	20	1	0	59.00	31.80	59	2,958,989,575	49.1921352
1998	7	21	1	0	59.00	36.60	59	3,405,629,511	56.61736315
1998	7	22	1	0	38.00	32.40	38	1,941,748,196	50.12028869
1998	7	23	1	0	64.00	32.80	64	3,310,686,982	50.73905769
1998	7	28	1	0	73.00	49.60	73	5,710,430,366	76.72735553
1998	7	29	1	0	54.00	51.70	54	4,402,999,198	79.97589276
1998	7	30	1	0	33.00	43.90	33	2,284,771,451	67.90989733
1998	7	31	1	0	128.00	35.90	128	7,247,174,552	55.53451741
1998	8	3	1	0	51.00	31.00	51	2,493,424,218	47.95459721
1998	8	6	1	0	47.00	38.00	47	2,816,733,494	58.78305464
1998	8	7	1	0	56.00	25.60	56	2,260,956,963	39.60121576
1998	8	10	1	0	42.00	44.20	42	2,927,762,630	68.37397408
1998	8	11	1	0	57.00	43.70	57	3,928,444,266	67.60051284
1998	8	12	1	0	46.00	35.60	46	2,582,689,121	55.07044066
1998	8	17	1	0	91.00	43.20	91	6,199,967,923	66.82705159
1998	8	18	1	0	56.00	36.00	56	3,179,470,730	55.68920966
1998	8	19	1	0	6.00	35.70	6	337,818,765	55.22513291
1998	8	20	1	0	9.00	31.40	9	445,693,665	48.5733662
1998	8	21	1	0	450.00	23.40	450	16,607,056,937	36.19798628
1998	8	24	1	0	500.00	35.90	500	28,309,275,595	55.53451741
1998	8	27	1	0	29.00	33.30	29	1,523,023,256	51.51251893
1998	8	28	1	0	55.00	34.60	55	3,001,256,349	53.52351817
1998	8	31	1	0	55.00	33.30	55	2,888,492,382	51.51251893
1998	9	1	1	0	64.00	30.80	64	3,108,815,825	47.64521271
1998	9	2	1	0	36.00	32.80	36	1,862,261,427	50.73905769
1998	9	8	1	0	37.00	33.60	37	1,960,673,617	51.97659568
1998	9	9	1	0	23.00	33.50	23	1,215,169,741	51.82190343
1998	9	10	1	0	26.00	32.80	26	1,344,966,586	50.73905769
1998	9	11	1	0	32.00	32.00	32	1,614,969,260	49.5015197

Table A4-5. McAlpine Wastewater Treatment Plant - 1000 cfu/100 ml max										
Year	Month	Day	Hour	Minute	Observed Fecal Conc (cfu/100 ml)	Flow(mgd)	Fecal used in calcs (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)	
1998	9	14	1	0	38.00	34.80	38	2,085,581,395	53.83290267	
1998	9	17	1	0	55.00	38.40	55	3,330,874,098	59.40182364	
1998	9	18	1	0	36.00	36.90	36	2,095,044,106	57.0814399	
1998	9	21	1	0	82.00	38.90	82	5,030,692,328	60.17528488	
1998	9	22	1	0	36.00	42.30	36	2,401,635,926	65.43482135	
1998	9	23	1	0	45.00	37.60	45	2,668,484,362	58.16428564	
1998	9	28	1	0	19.00	35.40	19	1,060,769,848	54.76105616	
1998	9	29	1	0	13.00	34.80	13	713,488,372	53.83290267	
1998	9	30	1	0	23.00	36.00	23	1,305,854,050	55.68920966	
1998	10	1	1	0	23.00	36.30	23	1,316,736,167	56.15328641	
1998	10	2	1	0	9.00	35.60	9	505,308,741	55.07044066	
1998	10	7	1	0	7.00	38.40	7	423,929,431	59.40182364	
1998	10	8	1	0	4.00	43.30	4	273,156,910	66.98174384	
1998	10	9	1	0	1.00	36.80	1	58,037,958	56.92674765	
1998	10	12	1	0	3.00	37.00	3	175,060,144	57.23613215	
1998	10	13	1	0	1.00	37.00	1	58,353,381	57.23613215	
1998	10	14	1	0	10.00	42.80	10	675,006,683	66.20828259	
1998	10	19	1	0	2.00	37.80	2	119,230,152	58.47367014	
1998	10	20	1	0	400.00	34.20	400	21,574,979,952	52.90474918	
1998	10	21	1	0	2.00	36.30	2	114,498,797	56.15328641	
1998	10	22	1	0	1.00	36.60	1	57,722,534	56.61736315	
1998	10	23	1	0	2.00	35.40	2	111,659,984	54.76105616	
1998	10	26	1	0	3.00	31.80	3	150,457,097	49.1921352	
1998	10	29	1	0	1.00	32.80	1	51,729,484	50.73905769	
1998	10	30	1	0	25.00	20.00	25	788,559,209	30.93844981	
1998	11	2	1	0	26.00	42.10	26	1,726,313,820	65.12543685	
1998	11	3	1	0	1.00	43.80	1	69,077,787	67.75520508	
1998	11	4	1	0	4.00	34.90	4	220,165,731	53.98759492	
1998	11	5	1	0	13.00	35.30	13	723,739,642	54.60636392	
1998	11	10	1	0	1.00	33.90	1	53,464,314	52.44067243	
1998	11	11	1	0	1.00	35.20	1	55,514,568	54.45167167	
1998	11	12	1	0	1.00	34.60	1	54,568,297	53.52351817	
1998	11	13	1	0	191.00	33.00	191	9,940,577,386	51.04844219	
1998	11	16	1	0	34.00	34.40	34	1,844,597,701	53.21413367	
1998	11	17	1	0	1.00	38.80	1	61,192,195	60.02059263	
1998	11	18	1	0	10.00	37.90	10	597,727,880	58.62836239	
1998	11	19	1	0	1.00	37.60	1	59,299,652	58.16428564	
1998	11	20	1	0	6.00	32.50	6	307,538,091	50.27498094	
1998	11	23	1	0	230.00	37.20	230	13,493,825,180	57.54551665	
1998	11	24	1	0	29.00	34.70	29	1,587,054,264	53.67821042	
1998	11	25	1	0	2.00	36.90	2	116,391,339	57.0814399	
1998	11	27	1	0	5.00	31.40	5	247,607,592	48.5733662	
1998	11	30	1	0	5.00	35.00	5	275,995,723	54.14228717	
1998	12	1	1	0	4.00	33.50	4	211,333,868	51.82190343	
1998	12	2	1	0	15.00	33.40	15	790,136,327	51.66721118	
1998	12	3	1	0	8.00	34.10	8	430,237,904	52.75005693	
1998	12	4	1	0	55.00	34.30	55	2,975,233,895	53.05944142	
1998	12	7	1	0	220.00	34.50	220	11,970,328,789	53.36882592	
1998	12	8	1	0	110.00	36.00	110	6,245,388,933	55.68920966	
1998	12	9	1	0	56.00	35.00	56	3,091,152,098	54.14228717	
1998	12	10	1	0	15.00	34.10	15	806,696,071	52.75005693	
1998	12	11	1	0	73.00	31.50	73	3,626,583,801	48.72805845	
1998	12	14	1	0	2000.00	35.70	1000	56,303,127,506	55.22513291	
1998	12	15	1	0	42.00	34.20	42	2,265,372,895	52.90474918	
1998	12	16	1	0	1.00	41.50	1	65,450,414	64.19728336	
1998	12	17	1	0	10.00	40.10	10	632,424,485	62.03159187	
1998	12	18	1	0	3.00	37.60	3	177,898,957	58.16428564	
1998	12	21	1	0	10.00	33.30	10	525,180,433	51.51251893	
1998	12	22	1	0	164.00	37.40	164	9,673,413,526	57.85490115	
1998	12	23	1	0	7.00	34.70	7	383,082,064	53.67821042	
1998	12	28	1	0	20.00	37.20	20	1,173,376,103	57.54551665	
1998	12	29	1	0	3000.00	36.30	1000	57,249,398,557	56.15328641	
1998	12	30	1	0	35.00	37.40	35	2,064,448,009	57.85490115	

Table A4-5. McAlpine Wastewater Treatment Plant - 1000 cfu/100 ml max									
Year	Month	Day	Hour	Minute	Observed Fecal Conc (cfu/100 ml)	Flow(mgd)	Fecal used in calcs (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)
1998	12	31	1	0	1.00	34.00	1	53,622,026	52.59536468
1999	1	4	1	0	56.00	39.45	56	3,484,170,008	61.02609225
1999	1	5	1	0	4.00	43.06	4	271,642,876	66.61048244
1999	1	6	1	0	10.00	42.28	10	666,805,667	65.4038829
1999	1	7	1	0	11.00	37.10	11	643,622,026	57.3908244
1999	1	8	1	0	19.00	39.46	19	1,182,428,762	61.04156148
1999	1	11	1	0	20.00	38.87	20	1,226,051,858	60.12887721
1999	1	12	1	0	5.00	38.98	5	307,380,380	60.29903868
1999	1	13	1	0	13.00	32.31	13	662,437,049	49.98106567
1999	1	14	1	0	29.00	38.49	29	1,760,395,349	59.54104666
1999	1	15	1	0	19.00	30.44	19	912,142,208	47.08832061
1999	1	19	1	0	52.00	41.22	52	3,380,458,701	63.76414506
1999	1	20	1	0	54.00	42.87	54	3,650,997,594	66.31656717
1999	1	21	1	0	5.00	43.19	5	340,578,722	66.81158237
1999	1	22	1	0	6.00	44.55	6	421,563,753	68.91539695
1999	1	25	1	0	7.00	56.85	7	627,614,274	87.94254359
1999	1	26	1	0	5.00	55.38	5	436,704,090	85.66856753
1999	1	27	1	0	8.00	54.78	8	691,156,375	84.74041403
1999	1	28	1	0	7.00	53.32	7	588,643,678	82.48190719
1999	1	29	1	0	8.00	45.44	8	573,314,087	70.29215797
1999	2	1	1	0	58.00	41.15	58	3,764,108,527	63.65586048
1999	2	2	1	0	4.00	53.58	4	338,008,019	82.88410704
1999	2	3	1	0	10.00	49.21	10	776,099,973	76.12405576
1999	2	4	1	0	2.00	46.72	2	147,365,945	72.27221876
1999	2	5	1	0	82.00	41.71	82	5,394,091,954	64.52213708
1999	2	8	1	0	58.00	43.43	58	3,972,666,667	67.18284376
1999	2	9	1	0	21.00	42.40	21	1,404,266,239	65.5895136
1999	2	10	1	0	14.00	40.72	14	899,083,667	62.99068381
1999	2	11	1	0	37.00	39.01	37	2,276,365,410	60.34544636
1999	2	12	1	0	109.00	41.40	109	7,116,904,571	64.04259111
1999	2	15	1	0	58.00	34.61	58	3,165,875,969	53.5389874
1999	2	16	1	0	25.00	37.39	25	1,474,211,441	57.83943192
1999	2	17	1	0	47.00	41.01	47	3,039,848,436	63.43929134
1999	2	18	1	0	27.00	46.63	27	1,985,607,859	72.13299573
1999	2	19	1	0	200.00	48.88	200	15,417,909,650	75.61357134
1999	2	22	1	0	24.00	43.02	24	1,628,343,224	66.54860554
1999	2	23	1	0	6.00	44.80	6	423,929,431	69.30212758
1999	2	24	1	0	9.00	38.55	9	547,181,235	59.63386201
1999	2	25	1	0	1.00	38.49	1	60,703,288	59.54104666
1999	2	26	1	0	33.00	40.22	33	2,093,246,191	62.21722257
1999	2	27	1	0	33.00	40.91	33	2,129,157,177	63.28459909
1999	2	28	1	0	33.00	41.53	33	2,161,425,020	64.24369103
1999	3	1	1	0	380.00	40.65	380	24,361,748,196	62.88239924
1999	3	2	1	0	31.00	37.82	31	1,849,045,175	58.50460859
1999	3	3	1	0	47.00	39.90	47	2,957,570,168	61.72220737
1999	3	4	1	0	34.00	39.34	34	2,109,490,511	60.85593078
1999	3	5	1	0	82.00	38.75	82	5,011,293,772	59.94324651
1999	3	8	1	0	64.00	40.82	64	4,120,190,323	63.14537606
1999	3	9	1	0	46.00	38.84	46	2,817,742,850	60.08246953
1999	3	10	1	0	28.00	42.87	28	1,893,109,864	66.31656717
1999	3	11	1	0	39.00	38.77	39	2,384,650,361	59.97418496
1999	3	12	1	0	82.00	39.28	82	5,079,835,338	60.76311543
1999	3	13	1	0	13.00	38.81	13	795,703,555	60.03606186
1999	3	14	1	0	13.00	39.85	13	817,026,196	61.64486125
1999	3	15	1	0	1800.00	43.16	1000	68,068,430,901	66.76517469
1999	3	16	1	0	520.00	44.33	520	36,355,102,914	68.575074
1999	3	17	1	0	52.00	38.39	52	3,148,369,955	59.38635441
1999	3	18	1	0	5.00	38.18	5	301,071,906	59.06150069
1999	3	19	1	0	1.00	39.21	1	61,838,813	60.65483085
1999	3	22	1	0	53.00	45.42	53	3,796,534,082	70.26121952
1999	3	23	1	0	41.00	32.88	41	2,126,081,796	50.86281149
1999	3	24	1	0	100.00	38.14	100	6,015,129,644	58.99962379
1999	3	25	1	0	37.00	40.03	37	2,335,885,859	61.9233073

Table A4-5. McAlpine Wastewater Treatment Plant - 1000 cfu/100 ml max									
Year	Month	Day	Hour	Minute	Observed Fecal Conc (cfu/100 ml)	Flow(mgd)	Fecal used in calcs (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)
1999	3	26	1	0	23.00	39.70	23	1,440,066,827	61.41282287
1999	3	29	1	0	1.00	38.76	1	61,129,110	59.95871573
1999	3	30	1	0	60.00	26.11	60	2,470,713,713	40.39014623
1999	3	31	1	0	310.00	44.02	310	21,521,673,349	68.09552803
1999	4	1	1	0	210.00	39.26	210	13,002,710,505	60.73217698
1999	4	5	1	0	137.00	36.50	137	7,886,380,647	56.4626709
1999	4	6	1	0	37.00	34.43	37	2,009,106,923	53.26054135
1999	4	7	1	0	2.00	37.81	2	119,261,695	58.48913937
1999	4	8	1	0	119.00	38.16	119	7,161,757,819	59.03056224
1999	4	9	1	0	26.00	43.02	26	1,764,038,492	66.54860554
1999	4	10	1	0	26.00	38.02	26	1,559,013,098	58.81399309
1999	4	11	1	0	26.00	36.39	26	1,492,174,820	56.29250943
1999	4	12	1	0	119.00	38.48	119	7,221,814,488	59.52557744
1999	4	13	1	0	45.00	35.98	45	2,553,512,430	55.65827121
1999	4	14	1	0	43.00	37.42	43	2,537,678,161	57.8858396
1999	4	15	1	0	44.00	37.41	44	2,596,000,000	57.87037037
1999	4	16	1	0	82.00	37.25	82	4,817,308,206	57.62286277
1999	4	17	1	0	82.00	36.20	82	4,681,518,311	55.99859416
1999	4	18	1	0	82.00	34.75	82	4,493,998,931	53.75555655
1999	4	19	1	0	146.00	37.92	146	8,731,432,237	58.65930084
1999	4	20	1	0	146.00	37.29	146	8,586,368,885	57.68473967
1999	4	21	1	0	200.00	36.51	200	11,516,118,685	56.47814013
1999	4	22	1	0	50.00	40.83	50	3,219,687,249	63.16084529
1999	4	23	1	0	30.00	45.40	30	2,148,035,285	70.23028107
1999	4	24	1	0	30.00	34.33	30	1,624,274,258	53.1058491
1999	4	25	1	0	30.00	35.79	30	1,693,352,045	55.36435594
1999	4	26	1	0	200.00	38.61	200	12,178,508,420	59.72667736
1999	4	27	1	0	70.00	42.33	70	4,673,159,583	65.48122902
1999	4	28	1	0	55.00	49.04	55	4,253,803,796	75.86107894
1999	4	29	1	0	64.00	42.61	64	4,300,865,009	65.91436732
1999	4	30	1	0	3800.00	50.11	1000	79,029,403,903	77.516286
1999	5	3	1	0	82.00	42.82	82	5,537,641,272	66.23922104
1999	5	4	1	0	40.00	41.81	40	2,637,572,841	64.67682933
1999	5	5	1	0	164.00	39.32	164	10,170,016,573	60.82499233
1999	5	6	1	0	800.00	40.89	800	51,590,697,674	63.25366064
1999	5	7	1	0	164.00	40.68	164	10,521,777,065	62.92880691
1999	5	10	1	0	18.00	34.66	18	983,932,638	53.61633352
1999	5	11	1	0	10.00	39.52	10	623,277,199	61.13437683
1999	5	12	1	0	45.00	38.57	45	2,737,325,581	59.66480046
1999	5	13	1	0	340.00	39.37	340	21,110,991,713	60.90233845
1999	5	14	1	0	13.00	38.63	13	792,013,098	59.75761581
1999	5	17	1	0	16.00	39.18	16	988,663,994	60.60842318
1999	5	18	1	0	430.00	39.50	430	26,787,356,322	61.10343838
1999	5	19	1	0	14.00	39.41	14	870,159,316	60.96421535
1999	5	20	1	0	4800.00	41.16	1000	64,914,194,066	63.67132971
1999	5	21	1	0	200.00	37.77	200	11,913,552,526	58.42726247
1999	5	24	1	0	51.00	36.20	51	2,911,676,022	55.99859416
1999	5	25	1	0	119.00	40.72	119	7,642,211,173	62.99068381
1999	5	26	1	0	300.00	37.75	300	17,860,866,079	58.39632402
1999	5	27	1	0	23.00	40.10	23	1,454,576,316	62.03159187
1999	5	28	1	0	17.00	36.04	17	966,268,912	55.75108656
1999	6	1	1	0	28.00	37.58	28	1,659,507,084	58.13334719
1999	6	2	1	0	82.00	38.72	82	5,007,414,060	59.89683883
1999	6	3	1	0	200.00	37.81	200	11,926,169,473	58.48913937
1999	6	4	1	0	44.00	35.54	44	2,466,234,697	54.97762531
1999	6	5	1	0	44.00	35.74	44	2,480,113,339	55.28700981
1999	6	6	1	0	44.00	35.96	44	2,495,379,845	55.62733276
1999	6	7	1	0	2200.00	36.37	1000	57,359,796,846	56.26157098
1999	6	8	1	0	119.00	36.00	119	6,756,375,301	55.68920966
1999	6	9	1	0	7.00	36.40	7	401,849,773	56.30797865
1999	6	10	1	0	38.00	37.50	38	2,247,393,745	58.00959339
1999	6	11	1	0	8.00	39.27	8	495,467,522	60.7476462
1999	6	12	1	0	8.00	37.90	8	478,182,304	58.62836239

Table A4-5. McAlpine Wastewater Treatment Plant - 1000 cfu/100 ml max									
Year	Month	Day	Hour	Minute	Observed Fecal Conc (cfu/100 ml)	Flow(mgd)	Fecal used in calcs (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)
1999	6	13	1	0	8.00	37.88	8	477,929,965	58.59742394
1999	6	14	1	0	900.00	38.84	900	55,129,751,403	60.08246953
1999	6	15	1	0	17.00	38.39	17	1,029,274,793	59.38635441
1999	6	16	1	0	26.00	42.33	26	1,735,744,988	65.48122902
1999	6	17	1	0	10.00	46.99	10	741,087,944	72.68988783
1999	6	18	1	0	24.00	38.23	24	1,447,037,690	59.13884681
1999	6	19	1	0	24.00	35.67	24	1,350,139,535	55.17872524
1999	6	20	1	0	24.00	36.60	24	1,385,340,818	56.61736315
1999	6	21	1	0	200.00	37.78	200	11,916,706,763	58.44273169
1999	6	22	1	0	3.00	38.07	3	180,122,694	58.89133921
1999	6	23	1	0	4.00	41.63	4	262,621,759	64.39838328
1999	6	24	1	0	8.00	44.97	8	567,384,122	69.5651044
1999	6	25	1	0	10.00	37.82	10	596,466,186	58.50460859
1999	6	28	1	0	10.00	39.04	10	615,707,030	60.39185403
1999	6	29	1	0	11.00	42.43	11	736,088,479	65.63592127
1999	6	30	1	0	16.00	38.67	16	975,794,707	59.81949271
1999	7	1	1	0	8.00	39.66	8	500,388,132	61.35094597
1999	7	2	1	0	55.00	40.00	55	3,469,660,519	61.87689962
1999	7	6	1	0	40.00	38.37	40	2,420,561,347	59.35541596
1999	7	7	1	0	10.00	44.64	10	704,025,662	69.05461998
1999	7	8	1	0	35.00	38.16	35	2,106,399,358	59.03056224
1999	7	9	1	0	600.00	34.59	600	32,731,515,638	53.50804895
1999	7	12	1	0	500.00	38.19	500	30,115,076,183	59.07696991
1999	7	13	1	0	275.00	38.25	275	16,589,314,354	59.16978526
1999	7	14	1	0	460.00	38.13	460	27,662,341,620	58.98415456
1999	7	15	1	0	3.00	37.31	3	176,526,864	57.71567812
1999	7	16	1	0	4.00	35.53	4	224,140,070	54.96215609
1999	7	19	1	0	9.00	34.55	9	490,404,972	53.44617205
1999	7	20	1	0	11.00	39.21	11	680,226,945	60.65483085
1999	7	21	1	0	19.00	33.92	19	1,016,421,278	52.47161088
1999	7	22	1	0	17.00	37.16	17	996,297,247	57.48363975
1999	7	23	1	0	19.00	38.21	19	1,144,972,200	59.10790836
1999	7	24	1	0	19.00	33.69	19	1,009,529,270	52.11581871
1999	7	25	1	0	19.00	37.34	19	1,118,902,433	57.7620858
1999	7	26	1	0	372.00	32.66	372	19,161,231,756	50.52248854
1999	7	27	1	0	173.00	26.01	173	7,096,607,057	40.23545398
1999	7	28	1	0	24.00	28.50	24	1,078,748,998	44.08729098
1999	7	29	1	0	500.00	28.63	500	22,576,450,147	44.2883909
1999	7	30	1	0	29.00	36.73	29	1,679,899,225	56.81846308
1999	7	31	1	0	29.00	39.54	29	1,808,418,605	61.16531528
1999	8	1	1	0	29.00	40.11	29	1,834,488,372	62.04706109
1999	8	2	1	0	6000.00	42.22	1000	66,585,939,588	65.31106755
1999	8	3	1	0	58.00	42.09	58	3,850,093,023	65.10996763
1999	8	4	1	0	119.00	37.88	119	7,109,208,233	58.59742394
1999	8	5	1	0	64.00	33.08	64	3,338,948,944	51.17219599
1999	8	6	1	0	72.00	36.18	72	4,108,330,393	55.96765571
1999	8	7	1	0	72.00	35.37	72	4,016,352,847	54.71464849
1999	8	8	1	0	72.00	35.32	72	4,010,675,221	54.63730237
1999	8	9	1	0	2000.00	37.56	1000	59,236,567,763	58.10240874
1999	8	10	1	0	96.00	38.61	96	5,845,684,042	59.72667736
1999	8	11	1	0	100.00	38.03	100	5,997,781,342	58.82946231
1999	8	12	1	0	55.00	34.68	55	3,008,195,670	53.64727197
1999	8	13	1	0	22.00	37.45	22	1,299,387,864	57.93224727
1999	8	14	1	0	22.00	36.06	22	1,251,159,583	55.78202501
1999	8	15	1	0	22.00	36.18	22	1,255,323,176	55.96765571
1999	8	16	1	0	430.00	38.48	430	26,095,632,184	59.52557744
1999	8	17	1	0	73.00	37.08	73	4,269,007,217	57.35988595
1999	8	18	1	0	10.00	36.12	10	569,655,172	55.87484036
1999	8	19	1	0	46.00	36.13	46	2,621,139,268	55.89030958
1999	8	20	1	0	35.00	35.20	35	1,943,009,890	54.45167167
1999	8	21	1	0	35.00	37.86	35	2,089,839,615	58.56648549
1999	8	22	1	0	35.00	34.47	35	1,902,714,515	53.32241825
1999	8	23	1	0	84.00	37.32	84	4,944,076,985	57.73114735

Table A4-5. McAlpine Wastewater Treatment Plant - 1000 cfu/100 ml max									
Year	Month	Day	Hour	Minute	Observed Fecal Conc (cfu/100 ml)	Flow(mgd)	Fecal used in calcs (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)
1999	8	24	1	0	17.00	37.40	17	1,002,731,890	57.85490115
1999	8	25	1	0	28.00	39.51	28	1,744,734,563	61.1189076
1999	8	26	1	0	64.00	41.45	64	4,183,779,738	64.11993723
1999	8	27	1	0	59.00	39.09	59	3,637,323,978	60.46920015
1999	8	28	1	0	59.00	36.54	59	3,400,046,512	56.5245478
1999	8	29	1	0	59.00	36.35	59	3,382,367,014	56.23063253
1999	8	30	1	0	73.00	38.02	73	4,377,229,083	58.81399309
1999	8	31	1	0	220.00	35.39	220	12,279,128,575	54.74558694
1999	9	1	1	0	480.00	34.20	480	25,889,975,942	52.90474918
1999	9	2	1	0	146.00	33.48	146	7,709,080,994	51.79096498
1999	9	3	1	0	42.00	34.31	42	2,272,659,182	53.07491065
1999	9	4	1	0	42.00	33.41	42	2,213,044,106	51.68268041
1999	9	5	1	0	42.00	31.26	42	2,070,630,313	48.35679705
1999	9	6	1	0	42.00	35.63	42	2,360,094,627	55.11684834
1999	9	7	1	0	510.00	39.66	510	31,899,743,384	61.35094597
1999	9	8	1	0	110.00	37.61	110	6,524,696,605	58.17975487
1999	9	9	1	0	21.00	36.39	21	1,205,218,123	56.29250943
1999	9	10	1	0	8.00	35.25	8	444,747,394	54.52901779
1999	9	11	1	0	8.00	31.62	8	398,947,875	48.91368915
1999	9	12	1	0	8.00	34.40	8	434,022,989	53.21413367
1999	9	13	1	0	240.00	34.82	240	13,179,663,192	53.86384112
1999	9	14	1	0	30.00	36.01	30	1,703,761,026	55.70467888
1999	9	15	1	0	32.00	37.85	32	1,910,205,827	58.55101627
1999	9	16	1	0	14.00	38.78	14	856,249,131	59.98965418
1999	9	17	1	0	42.00	38.66	42	2,560,798,717	59.80402348
1999	9	18	1	0	42.00	32.80	42	2,172,638,332	50.73905769
1999	9	19	1	0	42.00	33.66	42	2,229,603,849	52.06941103
1999	9	20	1	0	410.00	35.49	410	22,948,492,382	54.90027919
1999	9	21	1	0	60.00	33.53	60	3,172,846,832	51.86831111
1999	9	22	1	0	17.00	34.34	17	920,690,190	53.12131832
1999	9	23	1	0	22.00	32.19	22	1,116,883,721	49.79543497
1999	9	24	1	0	39.00	33.17	39	2,040,207,698	51.31141901
1999	9	25	1	0	39.00	33.30	39	2,048,203,689	51.51251893
1999	9	26	1	0	39.00	34.89	39	2,146,000,802	53.97212569
1999	9	27	1	0	1000.00	37.11	1000	58,526,864,475	57.40629362
1999	9	28	1	0	265.00	35.31	265	14,757,333,601	54.62183314
1999	9	29	1	0	64.00	37.15	64	3,749,756,750	57.46817052
1999	9	30	1	0	46.00	34.89	46	2,531,180,433	53.97212569
1999	10	1	1	0	38.00	37.15	38	2,226,418,070	57.46817052
1999	10	2	1	0	38.00	39.18	38	2,348,076,985	60.60842318
1999	10	3	1	0	38.00	35.52	38	2,128,731,355	54.94668686
1999	10	4	1	0	220.00	36.11	220	12,528,944,133	55.85937113
1999	10	5	1	0	100.00	37.31	100	5,884,228,816	57.71567812
1999	10	6	1	0	55.00	35.56	55	3,084,528,201	55.00856376
1999	10	7	1	0	82.00	35.51	82	4,592,284,951	54.93121764
1999	10	8	1	0	100.00	35.51	100	5,600,347,501	54.93121764
1999	10	11	1	0	22.00	56.16	22	1,948,561,347	86.87516707
1999	10	12	1	0	36.00	57.21	36	3,248,170,008	88.49943568
1999	10	13	1	0	2.00	53.39	2	168,404,705	82.59019177
1999	10	14	1	0	2700.00	47.22	1000	74,471,531,676	73.04568
1999	10	15	1	0	1.00	35.82	1	56,492,382	55.41076361
1999	10	16	1	0	1.00	37.09	1	58,495,322	57.37535517
1999	10	17	1	0	1.00	37.09	1	58,495,322	57.37535517
1999	10	18	1	0	330.00	34.89	330	18,158,468,324	53.97212569
1999	10	19	1	0	500.00	35.81	500	28,238,305,266	55.39529439
1999	10	20	1	0	210.00	38.98	210	12,909,975,942	60.29903868
1999	10	21	1	0	49.00	44.63	49	3,448,952,954	69.03915075
1999	10	22	1	0	30.00	33.38	30	1,579,326,383	51.63627273
1999	10	25	1	0	15.00	39.21	15	927,582,197	60.65483085
1999	10	26	1	0	17.00	33.45	17	896,828,388	51.74455731
1999	10	27	1	0	260.00	39.54	260	16,213,408,180	61.16531528
1999	10	28	1	0	2.00	36.84	2	116,202,085	56.98862455
1999	10	29	1	0	1.00	34.15	1	53,858,594	52.82740305

Table A4-5. McAlpine Wastewater Treatment Plant - 1000 cfu/100 ml max									
Year	Month	Day	Hour	Minute	Observed Fecal Conc (cfu/100 ml)	Flow(mgd)	Fecal used in calcs (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)
1999	10	30	1	0	1.00	34.44	1	54,315,958	53.27601057
1999	10	31	1	0	1.00	36.73	1	57,927,559	56.81846308
1999	11	1	1	0	109.00	38.67	109	6,647,601,443	59.81949271
1999	11	2	1	0	57.00	36.40	57	3,272,205,293	56.30797865
1999	11	3	1	0	30.00	34.25	30	1,620,489,174	52.9820953
1999	11	4	1	0	580.00	33.83	580	30,945,271,318	52.33238785
1999	11	5	1	0	20.00	35.30	20	1,113,445,603	54.60636392
1999	11	8	1	0	41.00	36.90	41	2,386,022,454	57.0814399
1999	11	9	1	0	2100.00	37.69	1000	59,441,593,157	58.30350867
1999	11	10	1	0	3.00	34.50	3	163,231,756	53.36882592
1999	11	11	1	0	1.00	36.67	1	57,832,932	56.72564773
1999	11	12	1	0	200.00	36.18	200	11,412,028,869	55.96765571
1999	11	15	1	0	37.00	37.22	37	2,171,912,858	57.5764551
1999	11	16	1	0	1.00	36.61	1	57,738,305	56.63283238
1999	11	17	1	0	1.00	34.92	1	55,072,975	54.01853337
1999	11	18	1	0	1.00	34.42	1	54,284,416	53.24507212
1999	11	19	1	0	1.00	36.15	1	57,012,831	55.92124803
1999	11	22	1	0	18.00	36.16	18	1,026,514,836	55.93671726
1999	11	23	1	0	2500.00	35.40	1000	55,829,991,981	54.76105616
1999	11	24	1	0	220.00	34.54	220	11,984,207,431	53.43070282
1999	11	25	1	0	1.00	38.13	1	60,135,525	58.98415456
1999	11	26	1	0	3.00	34.65	3	163,941,460	53.6008643
1999	11	29	1	0	4.00	28.17	4	177,709,703	43.57680656
1999	11	30	1	0	3.00	40.71	3	192,613,472	62.97521459
1999	12	1	1	0	1.00	33.93	1	53,511,628	52.4870801
1999	12	2	1	0	6.00	38.92	6	368,288,693	60.20622333
1999	12	3	1	0	1.00	37.47	1	59,094,627	57.96318572
1999	12	6	1	0	1.00	34.11	1	53,795,509	52.76552615
1999	12	7	1	0	1.00	37.68	1	59,425,822	58.28803944
1999	12	8	1	0	4.00	38.47	4	242,686,982	59.51010821
1999	12	9	1	0	6000.00	35.37	1000	55,782,678,428	54.71464849
1999	12	10	1	0	1.00	31.80	1	50,152,366	49.1921352
1999	12	13	1	0	9.00	37.56	9	533,129,110	58.10240874
1999	12	14	1	0	7.00	41.23	7	455,172,146	63.77961428
1999	12	15	1	0	13.00	45.86	13	940,246,458	70.94186542
1999	12	16	1	0	4.00	45.17	4	284,953,756	69.8744889
1999	12	17	1	0	850.00	42.39	850	56,825,942,261	65.57404437
1999	12	20	1	0	46.00	39.35	46	2,854,742,048	60.8714
1999	12	21	1	0	102.00	39.59	102	6,368,688,051	61.2426614
1999	12	22	1	0	38.00	38.95	38	2,334,292,970	60.25263101
1999	12	23	1	0	290.00	37.57	290	17,183,178,295	58.11787797
1999	12	28	1	0	6.00	39.34	6	372,263,031	60.85593078
1999	12	29	1	0	1.00	36.29	1	57,233,627	56.13781718
1999	12	30	1	0	1.00	33.80	1	53,306,603	52.28598018
1999	12	31	1	0	9.00	36.27	9	514,818,765	56.10687873
2000	1	1	1	0	9.00	36.27	9	514,818,765	56.10687873

Table A4-6. McAlpine Wastewater Treatment Plant - Observed Values

Year	Month	Day	Hour	Minute	Obs Fecal Conc (cfu/100 ml)	Flow(mgpd)	Obs fecal conc (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)
1998	1	1	1	0	27.00	44.20	27	1,882,133,119	68.37
1998	1	5	1	0	4.00	47.40	4	299,021,652	73.32
1998	1	6	1	0	59.00	46.00	59	4,280,299,385	71.16
1998	1	9	1	0	28.00	53.40	28	2,358,107,458	82.61
1998	1	12	1	0	20.00	46.90	20	1,479,337,076	72.55
1998	1	13	1	0	4.00	49.10	4	309,746,057	75.95
1998	1	14	1	0	38.00	56.50	38	3,386,073,242	87.40
1998	1	16	1	0	105.00	56.20	105	9,306,575,782	86.94
1998	1	20	1	0	700.00	63.10	700	69,661,320,503	97.61
1998	1	23	1	0	28.00	58.00	28	2,561,240,310	89.72
1998	1	26	1	0	25.00	56.80	25	2,239,508,153	87.87
1998	1	27	1	0	46.00	59.40	46	4,309,318,364	91.89
1998	1	28	1	0	300.00	58.40	300	27,631,114,675	90.34
1998	1	29	1	0	600.00	61.50	600	58,195,669,607	95.14
1998	1	30	1	0	290.00	59.90	290	27,396,124,031	92.66
1998	2	4	1	0	250.00	63.35	250	24,977,612,938	98.00
1998	2	5	1	0	250.00	60.79	250	23,968,257,150	94.04
1998	2	6	1	0	37.00	56.84	37	3,316,806,202	87.93
1998	2	9	1	0	58.00	44.71	58	4,089,751,938	69.16
1998	2	10	1	0	19.00	45.71	19	1,369,711,574	70.71
1998	2	11	1	0	155.00	44.59	155	10,900,175,087	68.98
1998	2	12	1	0	91.00	43.94	91	6,306,171,077	67.97
1998	2	13	1	0	11.00	42.38	11	735,221,064	65.56
1998	2	16	1	0	17.00	43.18	17	1,157,699,546	66.80
1998	2	17	1	0	200.00	47.57	200	15,004,704,624	73.59
1998	2	20	1	0	465.00	50.24	465	36,844,009,623	77.72
1998	2	23	1	0	200.00	50.61	200	15,963,592,622	78.29
1998	2	24	1	0	59.00	48.70	59	4,531,534,349	75.34
1998	2	25	1	0	23.00	45.18	23	1,638,846,832	69.89
1998	2	26	1	0	46.00	46.21	46	3,352,417,535	71.48
1998	2	27	1	0	22.00	44.19	22	1,533,242,983	68.36
1998	3	4	1	0	4.00	42.00	4	264,955,894	64.97
1998	3	5	1	0	2.00	40.60	2	128,062,016	62.81
1998	3	6	1	0	1.00	37.50	1	59,141,941	58.01
1998	3	9	1	0	20.00	56.70	20	1,788,452,285	87.71
1998	3	16	1	0	3.00	38.10	3	180,264,635	58.94
1998	3	17	1	0	10.00	40.10	10	632,424,485	62.03
1998	3	18	1	0	26.00	44.70	26	1,832,927,025	69.15
1998	3	19	1	0	5.00	49.80	5	392,702,486	77.04
1998	3	20	1	0	10.00	51.10	10	805,907,511	79.05
1998	3	23	1	0	9.00	47.10	9	668,540,497	72.86
1998	3	24	1	0	13.00	52.20	13	1,070,232,558	80.75
1998	3	25	1	0	5.00	46.40	5	365,891,473	71.78
1998	3	30	1	0	13.00	38.80	13	795,498,530	60.02
1998	3	31	1	0	11.00	43.80	11	759,855,654	67.76
1998	4	1	1	0	20.00	43.40	20	1,368,938,786	67.14
1998	4	2	1	0	27.00	38.40	27	1,635,156,375	59.40
1998	4	3	1	0	12.00	37.60	12	711,595,830	58.16
1998	4	8	1	0	30.00	43.60	30	2,062,870,890	67.45
1998	4	9	1	0	17.00	52.40	17	1,404,897,086	81.06
1998	4	13	1	0	15.00	45.50	15	1,076,383,320	70.38
1998	4	14	1	0	28.00	48.80	28	2,154,974,606	75.49
1998	4	15	1	0	25.00	49.90	25	1,967,455,226	77.19
1998	4	20	1	0	42.00	51.20	42	3,391,435,445	79.20
1998	4	21	1	0	10.00	50.20	10	791,713,446	77.66
1998	4	22	1	0	20.00	53.80	20	1,696,979,417	83.22
1998	4	23	1	0	25.00	55.90	25	2,204,022,989	86.47
1998	4	24	1	0	14.00	54.60	14	1,205,549,318	84.46
1998	4	29	1	0	12.00	42.90	12	811,900,561	66.36
1998	4	30	1	0	7.00	37.90	7	418,409,516	58.63
1998	5	1	1	0	310.00	51.80	310	25,325,367,549	80.13
1998	5	4	1	0	20.00	43.00	20	1,356,321,839	66.52
1998	5	5	1	0	40.00	43.70	40	2,756,802,994	67.60
1998	5	11	1	0	23.00	46.00	23	1,668,591,286	71.16

Table A4-6. McAlpine Wastewater Treatment Plant - Observed Values									
Year	Month	Day	Hour	Minute	Obs Fecal Conc (cfu/100 ml)	Flow(mgd)	Obs fecal conc (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)
1998	5	12	1	0	37.00	42.90	37	2,503,360,064	66.36
1998	5	13	1	0	22.00	40.90	22	1,419,091,152	63.27
1998	5	14	1	0	23.00	41.10	23	1,490,850,040	63.58
1998	5	19	1	0	91.00	38.20	91	5,482,379,043	59.09
1998	5	20	1	0	40.00	33.20	40	2,094,413,258	51.36
1998	5	21	1	0	18.00	39.00	18	1,107,137,129	60.33
1998	5	22	1	0	100.00	36.60	100	5,772,253,408	56.62
1998	5	26	1	0	39.00	37.80	39	2,324,987,971	58.47
1998	5	27	1	0	49.00	35.90	49	2,774,309,008	55.53
1998	6	1	1	0	290.00	42.20	290	19,300,775,194	65.28
1998	6	2	1	0	1250.00	41.20	1250	81,221,598,503	63.73
1998	6	3	1	0	119.00	37.70	119	7,075,426,357	58.32
1998	6	4	1	0	40.00	38.50	40	2,428,762,363	59.56
1998	6	5	1	0	44.00	44.10	44	3,060,240,577	68.22
1998	6	10	1	0	210.00	32.30	210	10,697,594,226	49.97
1998	6	11	1	0	2500.00	31.00	2500	122,226,677,359	47.95
1998	6	12	1	0	73.00	35.10	73	4,041,050,521	54.30
1998	6	15	1	0	137.00	33.10	137	7,151,758,888	51.20
1998	6	18	1	0	155.00	33.90	155	8,286,968,725	52.44
1998	6	19	1	0	59.00	41.30	59	3,842,964,448	63.89
1998	6	22	1	0	64.00	32.70	64	3,300,593,424	50.58
1998	6	23	1	0	46.00	38.90	46	2,822,095,696	60.18
1998	6	24	1	0	47.00	34.80	47	2,579,534,884	53.83
1998	6	25	1	0	53.00	36.70	53	3,067,653,034	56.77
1998	6	30	1	0	119.00	37.60	119	7,056,658,647	58.16
1998	7	1	1	0	580.00	34.60	580	31,649,612,403	53.52
1998	7	2	1	0	60.00	31.40	60	2,971,291,099	48.57
1998	7	3	1	0	46.00	32.60	46	2,365,046,779	50.43
1998	7	9	1	0	450.00	33.00	450	23,420,208,500	51.05
1998	7	10	1	0	43.00	36.80	43	2,495,632,184	56.93
1998	7	13	1	0	58.00	33.40	58	3,055,193,798	51.67
1998	7	14	1	0	26.00	38.00	26	1,558,192,997	58.78
1998	7	17	1	0	73.00	33.00	73	3,799,278,268	51.05
1998	7	20	1	0	59.00	31.80	59	2,958,989,575	49.19
1998	7	21	1	0	59.00	36.60	59	3,405,629,511	56.62
1998	7	22	1	0	38.00	32.40	38	1,941,748,196	50.12
1998	7	23	1	0	64.00	32.80	64	3,310,686,982	50.74
1998	7	28	1	0	73.00	49.60	73	5,710,430,366	76.73
1998	7	29	1	0	54.00	51.70	54	4,402,999,198	79.98
1998	7	30	1	0	33.00	43.90	33	2,284,771,451	67.91
1998	7	31	1	0	128.00	35.90	128	7,247,174,552	55.53
1998	8	3	1	0	51.00	31.00	51	2,493,424,218	47.95
1998	8	6	1	0	47.00	38.00	47	2,816,733,494	58.78
1998	8	7	1	0	56.00	25.60	56	2,260,956,963	39.60
1998	8	10	1	0	42.00	44.20	42	2,927,762,630	68.37
1998	8	11	1	0	57.00	43.70	57	3,928,444,266	67.60
1998	8	12	1	0	46.00	35.60	46	2,582,689,121	55.07
1998	8	17	1	0	91.00	43.20	91	6,199,967,923	66.83
1998	8	18	1	0	56.00	36.00	56	3,179,470,730	55.69
1998	8	19	1	0	6.00	35.70	6	337,818,765	55.23
1998	8	20	1	0	9.00	31.40	9	445,693,665	48.57
1998	8	21	1	0	450.00	23.40	450	16,607,056,937	36.20
1998	8	24	1	0	500.00	35.90	500	28,309,275,595	55.53
1998	8	27	1	0	29.00	33.30	29	1,523,023,256	51.51
1998	8	28	1	0	55.00	34.60	55	3,001,256,349	53.52
1998	8	31	1	0	55.00	33.30	55	2,888,492,382	51.51
1998	9	1	1	0	64.00	30.80	64	3,108,815,825	47.65
1998	9	2	1	0	36.00	32.80	36	1,862,261,427	50.74
1998	9	8	1	0	37.00	33.60	37	1,960,673,617	51.98
1998	9	9	1	0	23.00	33.50	23	1,215,169,741	51.82
1998	9	10	1	0	26.00	32.80	26	1,344,966,586	50.74
1998	9	11	1	0	32.00	32.00	32	1,614,969,260	49.50
1998	9	14	1	0	38.00	34.80	38	2,085,581,395	53.83
1998	9	17	1	0	55.00	38.40	55	3,330,874,098	59.40

Table A4-6. McAlpine Wastewater Treatment Plant - Observed Values									
Year	Month	Day	Hour	Minute	Obs Fecal Conc (cfu/100 ml)	Flow(mgd)	Obs fecal conc (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)
1998	9	18	1	0	36.00	36.90	36	2,095,044,106	57.08
1998	9	21	1	0	82.00	38.90	82	5,030,692,328	60.18
1998	9	22	1	0	36.00	42.30	36	2,401,635,926	65.43
1998	9	23	1	0	45.00	37.60	45	2,668,484,362	58.16
1998	9	28	1	0	19.00	35.40	19	1,060,769,848	54.76
1998	9	29	1	0	13.00	34.80	13	713,488,372	53.83
1998	9	30	1	0	23.00	36.00	23	1,305,854,050	55.69
1998	10	1	1	0	23.00	36.30	23	1,316,736,167	56.15
1998	10	2	1	0	9.00	35.60	9	505,308,741	55.07
1998	10	7	1	0	7.00	38.40	7	423,929,431	59.40
1998	10	8	1	0	4.00	43.30	4	273,156,910	66.98
1998	10	9	1	0	1.00	36.80	1	58,037,958	56.93
1998	10	12	1	0	3.00	37.00	3	175,060,144	57.24
1998	10	13	1	0	1.00	37.00	1	58,353,381	57.24
1998	10	14	1	0	10.00	42.80	10	675,006,683	66.21
1998	10	19	1	0	2.00	37.80	2	119,230,152	58.47
1998	10	20	1	0	400.00	34.20	400	21,574,979,952	52.90
1998	10	21	1	0	2.00	36.30	2	114,498,797	56.15
1998	10	22	1	0	1.00	36.60	1	57,722,534	56.62
1998	10	23	1	0	2.00	35.40	2	111,659,984	54.76
1998	10	26	1	0	3.00	31.80	3	150,457,097	49.19
1998	10	29	1	0	1.00	32.80	1	51,729,484	50.74
1998	10	30	1	0	25.00	20.00	25	788,559,209	30.94
1998	11	2	1	0	26.00	42.10	26	1,726,313,820	65.13
1998	11	3	1	0	1.00	43.80	1	69,077,787	67.76
1998	11	4	1	0	4.00	34.90	4	220,165,731	53.99
1998	11	5	1	0	13.00	35.30	13	723,739,642	54.61
1998	11	10	1	0	1.00	33.90	1	53,464,314	52.44
1998	11	11	1	0	1.00	35.20	1	55,514,568	54.45
1998	11	12	1	0	1.00	34.60	1	54,568,297	53.52
1998	11	13	1	0	191.00	33.00	191	9,940,577,386	51.05
1998	11	16	1	0	34.00	34.40	34	1,844,597,701	53.21
1998	11	17	1	0	1.00	38.80	1	61,192,195	60.02
1998	11	18	1	0	10.00	37.90	10	597,727,880	58.63
1998	11	19	1	0	1.00	37.60	1	59,299,652	58.16
1998	11	20	1	0	6.00	32.50	6	307,538,091	50.27
1998	11	23	1	0	230.00	37.20	230	13,493,825,180	57.55
1998	11	24	1	0	29.00	34.70	29	1,587,054,264	53.68
1998	11	25	1	0	2.00	36.90	2	116,391,339	57.08
1998	11	27	1	0	5.00	31.40	5	247,607,592	48.57
1998	11	30	1	0	5.00	35.00	5	275,995,723	54.14
1998	12	1	1	0	4.00	33.50	4	211,333,868	51.82
1998	12	2	1	0	15.00	33.40	15	790,136,327	51.67
1998	12	3	1	0	8.00	34.10	8	430,237,904	52.75
1998	12	4	1	0	55.00	34.30	55	2,975,233,895	53.06
1998	12	7	1	0	220.00	34.50	220	11,970,328,789	53.37
1998	12	8	1	0	110.00	36.00	110	6,245,388,933	55.69
1998	12	9	1	0	56.00	35.00	56	3,091,152,098	54.14
1998	12	10	1	0	15.00	34.10	15	806,696,071	52.75
1998	12	11	1	0	73.00	31.50	73	3,626,583,801	48.73
1998	12	14	1	0	2000.00	35.70	2000	112,606,255,012	55.23
1998	12	15	1	0	42.00	34.20	42	2,265,372,895	52.90
1998	12	16	1	0	1.00	41.50	1	65,450,414	64.20
1998	12	17	1	0	10.00	40.10	10	632,424,485	62.03
1998	12	18	1	0	3.00	37.60	3	177,898,957	58.16
1998	12	21	1	0	10.00	33.30	10	525,180,433	51.51
1998	12	22	1	0	164.00	37.40	164	9,673,413,526	57.85
1998	12	23	1	0	7.00	34.70	7	383,082,064	53.68
1998	12	28	1	0	20.00	37.20	20	1,173,376,103	57.55
1998	12	29	1	0	3000.00	36.30	3000	171,748,195,670	56.15
1998	12	30	1	0	35.00	37.40	35	2,064,448,009	57.85
1998	12	31	1	0	1.00	34.00	1	53,622,026	52.60
1999	1	4	1	0	56.00	39.45	56	3,484,170,008	61.03
1999	1	5	1	0	4.00	43.06	4	271,642,876	66.61

Table A4-6. McAlpine Wastewater Treatment Plant - Observed Values									
Year	Month	Day	Hour	Minute	Obs Fecal Conc (cfu/100 ml)	Flow(mgd)	Obs fecal conc (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)
1999	1	6	1	0	10.00	42.28	10	666,805,667	65.40
1999	1	7	1	0	11.00	37.10	11	643,622,026	57.39
1999	1	8	1	0	19.00	39.46	19	1,182,428,762	61.04
1999	1	11	1	0	20.00	38.87	20	1,226,051,858	60.13
1999	1	12	1	0	5.00	38.98	5	307,380,380	60.30
1999	1	13	1	0	13.00	32.31	13	662,437,049	49.98
1999	1	14	1	0	29.00	38.49	29	1,760,395,349	59.54
1999	1	15	1	0	19.00	30.44	19	912,142,208	47.09
1999	1	19	1	0	52.00	41.22	52	3,380,458,701	63.76
1999	1	20	1	0	54.00	42.87	54	3,650,997,594	66.32
1999	1	21	1	0	5.00	43.19	5	340,578,722	66.81
1999	1	22	1	0	6.00	44.55	6	421,563,753	68.92
1999	1	25	1	0	7.00	56.85	7	627,614,274	87.94
1999	1	26	1	0	5.00	55.38	5	436,704,090	85.67
1999	1	27	1	0	8.00	54.78	8	691,156,375	84.74
1999	1	28	1	0	7.00	53.32	7	588,643,678	82.48
1999	1	29	1	0	8.00	45.44	8	573,314,087	70.29
1999	2	1	1	0	58.00	41.15	58	3,764,108,527	63.66
1999	2	2	1	0	4.00	53.58	4	338,008,019	82.88
1999	2	3	1	0	10.00	49.21	10	776,099,973	76.12
1999	2	4	1	0	2.00	46.72	2	147,365,945	72.27
1999	2	5	1	0	82.00	41.71	82	5,394,091,954	64.52
1999	2	8	1	0	58.00	43.43	58	3,972,666,667	67.18
1999	2	9	1	0	21.00	42.40	21	1,404,266,239	65.59
1999	2	10	1	0	14.00	40.72	14	899,083,667	62.99
1999	2	11	1	0	37.00	39.01	37	2,276,365,410	60.35
1999	2	12	1	0	109.00	41.40	109	7,116,904,571	64.04
1999	2	15	1	0	58.00	34.61	58	3,165,875,969	53.54
1999	2	16	1	0	25.00	37.39	25	1,474,211,441	57.84
1999	2	17	1	0	47.00	41.01	47	3,039,848,436	63.44
1999	2	18	1	0	27.00	46.63	27	1,985,607,859	72.13
1999	2	19	1	0	200.00	48.88	200	15,417,909,650	75.61
1999	2	22	1	0	24.00	43.02	24	1,628,343,224	66.55
1999	2	23	1	0	6.00	44.80	6	423,929,431	69.30
1999	2	24	1	0	9.00	38.55	9	547,181,235	59.63
1999	2	25	1	0	1.00	38.49	1	60,703,288	59.54
1999	2	26	1	0	33.00	40.22	33	2,093,246,191	62.22
1999	2	27	1	0	33.00	40.91	33	2,129,157,177	63.28
1999	2	28	1	0	33.00	41.53	33	2,161,425,020	64.24
1999	3	1	1	0	380.00	40.65	380	24,361,748,196	62.88
1999	3	2	1	0	31.00	37.82	31	1,849,045,175	58.50
1999	3	3	1	0	47.00	39.90	47	2,957,570,168	61.72
1999	3	4	1	0	34.00	39.34	34	2,109,490,511	60.86
1999	3	5	1	0	82.00	38.75	82	5,011,293,772	59.94
1999	3	8	1	0	64.00	40.82	64	4,120,190,323	63.15
1999	3	9	1	0	46.00	38.84	46	2,817,742,850	60.08
1999	3	10	1	0	28.00	42.87	28	1,893,109,864	66.32
1999	3	11	1	0	39.00	38.77	39	2,384,650,361	59.97
1999	3	12	1	0	82.00	39.28	82	5,079,835,338	60.76
1999	3	13	1	0	13.00	38.81	13	795,703,555	60.04
1999	3	14	1	0	13.00	39.85	13	817,026,196	61.64
1999	3	15	1	0	1800.00	43.16	1800	122,523,175,621	66.77
1999	3	16	1	0	520.00	44.33	520	36,355,102,914	68.58
1999	3	17	1	0	52.00	38.39	52	3,148,369,955	59.39
1999	3	18	1	0	5.00	38.18	5	301,071,906	59.06
1999	3	19	1	0	1.00	39.21	1	61,838,813	60.65
1999	3	22	1	0	53.00	45.42	53	3,796,534,082	70.26
1999	3	23	1	0	41.00	32.88	41	2,126,081,796	50.86
1999	3	24	1	0	100.00	38.14	100	6,015,129,644	59.00
1999	3	25	1	0	37.00	40.03	37	2,335,885,859	61.92
1999	3	26	1	0	23.00	39.70	23	1,440,066,827	61.41
1999	3	29	1	0	1.00	38.76	1	61,129,110	59.96
1999	3	30	1	0	60.00	26.11	60	2,470,713,713	40.39
1999	3	31	1	0	310.00	44.02	310	21,521,673,349	68.10

Table A4-6. McAlpine Wastewater Treatment Plant - Observed Values

Year	Month	Day	Hour	Minute	Obs Fecal Conc (cfu/100 ml)	Flow(mgd)	Obs fecal conc (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)
1999	4	1	1	0	210.00	39.26	210	13,002,710,505	60.73
1999	4	5	1	0	137.00	36.50	137	7,886,380,647	56.46
1999	4	6	1	0	37.00	34.43	37	2,009,106,923	53.26
1999	4	7	1	0	2.00	37.81	2	119,261,695	58.49
1999	4	8	1	0	119.00	38.16	119	7,161,757,819	59.03
1999	4	9	1	0	26.00	43.02	26	1,764,038,492	66.55
1999	4	10	1	0	26.00	38.02	26	1,559,013,098	58.81
1999	4	11	1	0	26.00	36.39	26	1,492,174,820	56.29
1999	4	12	1	0	119.00	38.48	119	7,221,814,488	59.53
1999	4	13	1	0	45.00	35.98	45	2,553,512,430	55.66
1999	4	14	1	0	43.00	37.42	43	2,537,678,161	57.89
1999	4	15	1	0	44.00	37.41	44	2,596,000,000	57.87
1999	4	16	1	0	82.00	37.25	82	4,817,308,206	57.62
1999	4	17	1	0	82.00	36.20	82	4,681,518,311	56.00
1999	4	18	1	0	82.00	34.75	82	4,493,998,931	53.76
1999	4	19	1	0	146.00	37.92	146	8,731,432,237	58.66
1999	4	20	1	0	146.00	37.29	146	8,586,368,885	57.68
1999	4	21	1	0	200.00	36.51	200	11,516,118,685	56.48
1999	4	22	1	0	50.00	40.83	50	3,219,687,249	63.16
1999	4	23	1	0	30.00	45.40	30	2,148,035,285	70.23
1999	4	24	1	0	30.00	34.33	30	1,624,274,258	53.11
1999	4	25	1	0	30.00	35.79	30	1,693,352,045	55.36
1999	4	26	1	0	200.00	38.61	200	12,178,508,420	59.73
1999	4	27	1	0	70.00	42.33	70	4,673,159,583	65.48
1999	4	28	1	0	55.00	49.04	55	4,253,803,796	75.86
1999	4	29	1	0	64.00	42.61	64	4,300,865,009	65.91
1999	4	30	1	0	3800.00	50.11	3800	300,311,734,830	77.52
1999	5	3	1	0	82.00	42.82	82	5,537,641,272	66.24
1999	5	4	1	0	40.00	41.81	40	2,637,572,841	64.68
1999	5	5	1	0	164.00	39.32	164	10,170,016,573	60.82
1999	5	6	1	0	800.00	40.89	800	51,590,697,674	63.25
1999	5	7	1	0	164.00	40.68	164	10,521,777,065	62.93
1999	5	10	1	0	18.00	34.66	18	983,932,638	53.62
1999	5	11	1	0	10.00	39.52	10	623,277,199	61.13
1999	5	12	1	0	45.00	38.57	45	2,737,325,581	59.66
1999	5	13	1	0	340.00	39.37	340	21,110,991,713	60.90
1999	5	14	1	0	13.00	38.63	13	792,013,098	59.76
1999	5	17	1	0	16.00	39.18	16	988,663,994	60.61
1999	5	18	1	0	430.00	39.50	430	26,787,356,322	61.10
1999	5	19	1	0	14.00	39.41	14	870,159,316	60.96
1999	5	20	1	0	4800.00	41.16	4800	311,588,131,516	63.67
1999	5	21	1	0	200.00	37.77	200	11,913,552,526	58.43
1999	5	24	1	0	51.00	36.20	51	2,911,676,022	56.00
1999	5	25	1	0	119.00	40.72	119	7,642,211,173	62.99
1999	5	26	1	0	300.00	37.75	300	17,860,866,079	58.40
1999	5	27	1	0	23.00	40.10	23	1,454,576,316	62.03
1999	5	28	1	0	17.00	36.04	17	966,268,912	55.75
1999	6	1	1	0	28.00	37.58	28	1,659,507,084	58.13
1999	6	2	1	0	82.00	38.72	82	5,007,414,060	59.90
1999	6	3	1	0	200.00	37.81	200	11,926,169,473	58.49
1999	6	4	1	0	44.00	35.54	44	2,466,234,697	54.98
1999	6	5	1	0	44.00	35.74	44	2,480,113,339	55.29
1999	6	6	1	0	44.00	35.96	44	2,495,379,845	55.63
1999	6	7	1	0	2200.00	36.37	2200	126,191,553,061	56.26
1999	6	8	1	0	119.00	36.00	119	6,756,375,301	55.69
1999	6	9	1	0	7.00	36.40	7	401,849,773	56.31
1999	6	10	1	0	38.00	37.50	38	2,247,393,745	58.01
1999	6	11	1	0	8.00	39.27	8	495,467,522	60.75
1999	6	12	1	0	8.00	37.90	8	478,182,304	58.63
1999	6	13	1	0	8.00	37.88	8	477,929,965	58.60
1999	6	14	1	0	900.00	38.84	900	55,129,751,403	60.08
1999	6	15	1	0	17.00	38.39	17	1,029,274,793	59.39
1999	6	16	1	0	26.00	42.33	26	1,735,744,988	65.48
1999	6	17	1	0	10.00	46.99	10	741,087,944	72.69

Table A4-6. McAlpine Wastewater Treatment Plant - Observed Values

Year	Month	Day	Hour	Minute	Obs Fecal Conc (cfu/100 ml)	Flow(mgd)	Obs fecal conc (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)
1999	6	18	1	0	24.00	38.23	24	1,447,037,690	59.14
1999	6	19	1	0	24.00	35.67	24	1,350,139,535	55.18
1999	6	20	1	0	24.00	36.60	24	1,385,340,818	56.62
1999	6	21	1	0	200.00	37.78	200	11,916,706,763	58.44
1999	6	22	1	0	3.00	38.07	3	180,122,694	58.89
1999	6	23	1	0	4.00	41.63	4	262,621,759	64.40
1999	6	24	1	0	8.00	44.97	8	567,384,122	69.57
1999	6	25	1	0	10.00	37.82	10	596,466,186	58.50
1999	6	28	1	0	10.00	39.04	10	615,707,030	60.39
1999	6	29	1	0	11.00	42.43	11	736,088,479	65.64
1999	6	30	1	0	16.00	38.67	16	975,794,707	59.82
1999	7	1	1	0	8.00	39.66	8	500,388,132	61.35
1999	7	2	1	0	55.00	40.00	55	3,469,660,519	61.88
1999	7	6	1	0	40.00	38.37	40	2,420,561,347	59.36
1999	7	7	1	0	10.00	44.64	10	704,025,662	69.05
1999	7	8	1	0	35.00	38.16	35	2,106,399,358	59.03
1999	7	9	1	0	600.00	34.59	600	32,731,515,638	53.51
1999	7	12	1	0	500.00	38.19	500	30,115,076,183	59.08
1999	7	13	1	0	275.00	38.25	275	16,589,314,354	59.17
1999	7	14	1	0	460.00	38.13	460	27,662,341,620	58.98
1999	7	15	1	0	3.00	37.31	3	176,526,864	57.72
1999	7	16	1	0	4.00	35.53	4	224,140,070	54.96
1999	7	19	1	0	9.00	34.55	9	490,404,972	53.45
1999	7	20	1	0	11.00	39.21	11	680,226,945	60.65
1999	7	21	1	0	19.00	33.92	19	1,016,421,278	52.47
1999	7	22	1	0	17.00	37.16	17	996,297,247	57.48
1999	7	23	1	0	19.00	38.21	19	1,144,972,200	59.11
1999	7	24	1	0	19.00	33.69	19	1,009,529,270	52.12
1999	7	25	1	0	19.00	37.34	19	1,118,902,433	57.76
1999	7	26	1	0	372.00	32.66	372	19,161,231,756	50.52
1999	7	27	1	0	173.00	26.01	173	7,096,607,057	40.24
1999	7	28	1	0	24.00	28.50	24	1,078,748,998	44.09
1999	7	29	1	0	500.00	28.63	500	22,576,450,147	44.29
1999	7	30	1	0	29.00	36.73	29	1,679,899,225	56.82
1999	7	31	1	0	29.00	39.54	29	1,808,418,605	61.17
1999	8	1	1	0	29.00	40.11	29	1,834,488,372	62.05
1999	8	2	1	0	6000.00	42.22	6000	399,515,637,530	65.31
1999	8	3	1	0	58.00	42.09	58	3,850,093,023	65.11
1999	8	4	1	0	119.00	37.88	119	7,109,208,233	58.60
1999	8	5	1	0	64.00	33.08	64	3,338,948,944	51.17
1999	8	6	1	0	72.00	36.18	72	4,108,330,393	55.97
1999	8	7	1	0	72.00	35.37	72	4,016,352,847	54.71
1999	8	8	1	0	72.00	35.32	72	4,010,675,221	54.64
1999	8	9	1	0	2000.00	37.56	2000	118,473,135,525	58.10
1999	8	10	1	0	96.00	38.61	96	5,845,684,042	59.73
1999	8	11	1	0	100.00	38.03	100	5,997,781,342	58.83
1999	8	12	1	0	55.00	34.68	55	3,008,195,670	53.65
1999	8	13	1	0	22.00	37.45	22	1,299,387,864	57.93
1999	8	14	1	0	22.00	36.06	22	1,251,159,583	55.78
1999	8	15	1	0	22.00	36.18	22	1,255,323,176	55.97
1999	8	16	1	0	430.00	38.48	430	26,095,632,184	59.53
1999	8	17	1	0	73.00	37.08	73	4,269,007,217	57.36
1999	8	18	1	0	10.00	36.12	10	569,655,172	55.87
1999	8	19	1	0	46.00	36.13	46	2,621,139,268	55.89
1999	8	20	1	0	35.00	35.20	35	1,943,009,890	54.45
1999	8	21	1	0	35.00	37.86	35	2,089,839,615	58.57
1999	8	22	1	0	35.00	34.47	35	1,902,714,515	53.32
1999	8	23	1	0	84.00	37.32	84	4,944,076,985	57.73
1999	8	24	1	0	17.00	37.40	17	1,002,731,890	57.85
1999	8	25	1	0	28.00	39.51	28	1,744,734,563	61.12
1999	8	26	1	0	64.00	41.45	64	4,183,779,738	64.12
1999	8	27	1	0	59.00	39.09	59	3,637,323,978	60.47
1999	8	28	1	0	59.00	36.54	59	3,400,046,512	56.52
1999	8	29	1	0	59.00	36.35	59	3,382,367,014	56.23

Table A4-6. McAlpine Wastewater Treatment Plant - Observed Values									
Year	Month	Day	Hour	Minute	Obs Fecal Conc (cfu/100 ml)	Flow(mgd)	Obs fecal conc (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)
1999	8	30	1	0	73.00	38.02	73	4,377,229,083	58.81
1999	8	31	1	0	220.00	35.39	220	12,279,128,575	54.75
1999	9	1	1	0	480.00	34.20	480	25,889,975,942	52.90
1999	9	2	1	0	146.00	33.48	146	7,709,080,994	51.79
1999	9	3	1	0	42.00	34.31	42	2,272,659,182	53.07
1999	9	4	1	0	42.00	33.41	42	2,213,044,106	51.68
1999	9	5	1	0	42.00	31.26	42	2,070,630,313	48.36
1999	9	6	1	0	42.00	35.63	42	2,360,094,627	55.12
1999	9	7	1	0	510.00	39.66	510	31,899,743,384	61.35
1999	9	8	1	0	110.00	37.61	110	6,524,696,605	58.18
1999	9	9	1	0	21.00	36.39	21	1,205,218,123	56.29
1999	9	10	1	0	8.00	35.25	8	444,747,394	54.53
1999	9	11	1	0	8.00	31.62	8	398,947,875	48.91
1999	9	12	1	0	8.00	34.40	8	434,022,989	53.21
1999	9	13	1	0	240.00	34.82	240	13,179,663,192	53.86
1999	9	14	1	0	30.00	36.01	30	1,703,761,026	55.70
1999	9	15	1	0	32.00	37.85	32	1,910,205,827	58.55
1999	9	16	1	0	14.00	38.78	14	856,249,131	59.99
1999	9	17	1	0	42.00	38.66	42	2,560,798,717	59.80
1999	9	18	1	0	42.00	32.80	42	2,172,638,332	50.74
1999	9	19	1	0	42.00	33.66	42	2,229,603,849	52.07
1999	9	20	1	0	410.00	35.49	410	22,948,492,382	54.90
1999	9	21	1	0	60.00	33.53	60	3,172,846,832	51.87
1999	9	22	1	0	17.00	34.34	17	920,690,190	53.12
1999	9	23	1	0	22.00	32.19	22	1,116,883,721	49.80
1999	9	24	1	0	39.00	33.17	39	2,040,207,698	51.31
1999	9	25	1	0	39.00	33.30	39	2,048,203,689	51.51
1999	9	26	1	0	39.00	34.89	39	2,146,000,802	53.97
1999	9	27	1	0	1000.00	37.11	1000	58,526,864,475	57.41
1999	9	28	1	0	265.00	35.31	265	14,757,333,601	54.62
1999	9	29	1	0	64.00	37.15	64	3,749,756,750	57.47
1999	9	30	1	0	46.00	34.89	46	2,531,180,433	53.97
1999	10	1	1	0	38.00	37.15	38	2,226,418,070	57.47
1999	10	2	1	0	38.00	39.18	38	2,348,076,985	60.61
1999	10	3	1	0	38.00	35.52	38	2,128,731,355	54.95
1999	10	4	1	0	220.00	36.11	220	12,528,944,133	55.86
1999	10	5	1	0	100.00	37.31	100	5,884,228,816	57.72
1999	10	6	1	0	55.00	35.56	55	3,084,528,201	55.01
1999	10	7	1	0	82.00	35.51	82	4,592,284,951	54.93
1999	10	8	1	0	100.00	35.51	100	5,600,347,501	54.93
1999	10	11	1	0	22.00	56.16	22	1,948,561,347	86.88
1999	10	12	1	0	36.00	57.21	36	3,248,170,008	88.50
1999	10	13	1	0	2.00	53.39	2	168,404,705	82.59
1999	10	14	1	0	2700.00	47.22	2700	201,073,135,525	73.05
1999	10	15	1	0	1.00	35.82	1	56,492,382	55.41
1999	10	16	1	0	1.00	37.09	1	58,495,322	57.38
1999	10	17	1	0	1.00	37.09	1	58,495,322	57.38
1999	10	18	1	0	330.00	34.89	330	18,158,468,324	53.97
1999	10	19	1	0	500.00	35.81	500	28,238,305,266	55.40
1999	10	20	1	0	210.00	38.98	210	12,909,975,942	60.30
1999	10	21	1	0	49.00	44.63	49	3,448,952,954	69.04
1999	10	22	1	0	30.00	33.38	30	1,579,326,383	51.64
1999	10	25	1	0	15.00	39.21	15	927,582,197	60.65
1999	10	26	1	0	17.00	33.45	17	896,828,388	51.74
1999	10	27	1	0	260.00	39.54	260	16,213,408,180	61.17
1999	10	28	1	0	2.00	36.84	2	116,202,085	56.99
1999	10	29	1	0	1.00	34.15	1	53,858,594	52.83
1999	10	30	1	0	1.00	34.44	1	54,315,958	53.28
1999	10	31	1	0	1.00	36.73	1	57,927,559	56.82
1999	11	1	1	0	109.00	38.67	109	6,647,601,443	59.82
1999	11	2	1	0	57.00	36.40	57	3,272,205,293	56.31
1999	11	3	1	0	30.00	34.25	30	1,620,489,174	52.98
1999	11	4	1	0	580.00	33.83	580	30,945,271,318	52.33
1999	11	5	1	0	20.00	35.30	20	1,113,445,603	54.61

Table A4-6. McAlpine Wastewater Treatment Plant - Observed Values									
Year	Month	Day	Hour	Minute	Obs Fecal Conc (cfu/100 ml)	Flow(mgd)	Obs fecal conc (cfu/100 ml)	Fecal load (cfu/hour)	Flow (cfs)
1999	11	8	1	0	41.00	36.90	41	2,386,022,454	57.08
1999	11	9	1	0	2100.00	37.69	2100	124,827,345,630	58.30
1999	11	10	1	0	3.00	34.50	3	163,231,756	53.37
1999	11	11	1	0	1.00	36.67	1	57,832,932	56.73
1999	11	12	1	0	200.00	36.18	200	11,412,028,869	55.97
1999	11	15	1	0	37.00	37.22	37	2,171,912,858	57.58
1999	11	16	1	0	1.00	36.61	1	57,738,305	56.63
1999	11	17	1	0	1.00	34.92	1	55,072,975	54.02
1999	11	18	1	0	1.00	34.42	1	54,284,416	53.25
1999	11	19	1	0	1.00	36.15	1	57,012,831	55.92
1999	11	22	1	0	18.00	36.16	18	1,026,514,836	55.94
1999	11	23	1	0	2500.00	35.40	2500	139,574,979,952	54.76
1999	11	24	1	0	220.00	34.54	220	11,984,207,431	53.43
1999	11	25	1	0	1.00	38.13	1	60,135,525	58.98
1999	11	26	1	0	3.00	34.65	3	163,941,460	53.60
1999	11	29	1	0	4.00	28.17	4	177,709,703	43.58
1999	11	30	1	0	3.00	40.71	3	192,613,472	62.98
1999	12	1	1	0	1.00	33.93	1	53,511,628	52.49
1999	12	2	1	0	6.00	38.92	6	368,288,693	60.21
1999	12	3	1	0	1.00	37.47	1	59,094,627	57.96
1999	12	6	1	0	1.00	34.11	1	53,795,509	52.77
1999	12	7	1	0	1.00	37.68	1	59,425,822	58.29
1999	12	8	1	0	4.00	38.47	4	242,686,982	59.51
1999	12	9	1	0	6000.00	35.37	6000	334,696,070,569	54.71
1999	12	10	1	0	1.00	31.80	1	50,152,366	49.19
1999	12	13	1	0	9.00	37.56	9	533,129,110	58.10
1999	12	14	1	0	7.00	41.23	7	455,172,146	63.78
1999	12	15	1	0	13.00	45.86	13	940,246,458	70.94
1999	12	16	1	0	4.00	45.17	4	284,953,756	69.87
1999	12	17	1	0	850.00	42.39	850	56,825,942,261	65.57
1999	12	20	1	0	46.00	39.35	46	2,854,742,048	60.87
1999	12	21	1	0	102.00	39.59	102	6,368,688,051	61.24
1999	12	22	1	0	38.00	38.95	38	2,334,292,970	60.25
1999	12	23	1	0	290.00	37.57	290	17,183,178,295	58.12
1999	12	28	1	0	6.00	39.34	6	372,263,031	60.86
1999	12	29	1	0	1.00	36.29	1	57,233,627	56.14
1999	12	30	1	0	1.00	33.80	1	53,306,603	52.29
1999	12	31	1	0	9.00	36.27	9	514,818,765	56.11
2000	1	1	1	0	9.00	36.27	9	514,818,765	56.11

Appendix 5.
Sanitary Sewer Overflow Database

Table A5-1. Sugar Creek SSO Data

Sub-Watershed ID	Start Date	Start Time	End Date	End Time	Estimated	Fecal Loading	Flow (cfs)
					Gallons	(c.f.u./hour)	
001	09/17/98	0.49	09/30/98	0.54	2000	1.55E+09	0.000237076
001	09/28/98	0.68	09/28/98	0.78	1000	1.01E+11	0.015469225
001	10/07/98	0.6	10/07/98	0.63	2000	6.73E+11	0.103128166
001	01/12/99	0.44	01/12/99	0.51	500	7.21E+10	0.011049446
001	01/27/99	0.58	01/27/99	0.63	1000	2.02E+11	0.03093845
001	02/24/99	0.55	02/24/99	0.69	250	1.80E+10	0.002762362
001	02/25/99	0.79	02/25/99	0.84	1000	2.02E+11	0.03093845
001	03/04/99	0.52	03/04/99	0.56	200	5.05E+10	0.007734612
001	03/11/99	0.8	03/11/99	0.9	28600	2.89E+12	0.442419832
001	03/31/99	0.44	03/31/99	0.79	750000	2.16E+13	3.314833908
001	04/22/99	0.31	04/22/99	0.42	500	4.59E+10	0.007031466
001	05/01/99	0.82	05/01/99	0.86	200	5.05E+10	0.007734612
001	05/13/99	0.42	05/13/99	0.49	1000	1.44E+11	0.022098893
001	06/14/99	0.69	06/14/99	0.7	500	5.05E+11	0.077346125
001	08/25/99	0.78	08/25/99	0.93	500	3.36E+10	0.005156408
001	09/24/99	0.36	09/24/99	0.41	1000	2.02E+11	0.03093845
001	12/27/99	0.57	12/27/99	0.65	700	8.83E+10	0.013535572
001	02/20/00	0.57	02/20/00	0.63	2650	4.46E+11	0.06832241
002	08/30/98	0.3	08/30/98	0.72	400	9.61E+09	0.00147326
002	09/23/98	0.64	09/23/98	0.7	1000	1.68E+11	0.025782042
002	12/21/98	0.63	12/21/98	0.74	500	4.59E+10	0.007031466
002	03/11/99	0.63	03/11/99	0.66	549000	1.85E+14	28.30868157
002	04/27/99	0.4	04/27/99	0.5	2000	2.02E+11	0.03093845
002	06/23/99	0.49	06/23/99	0.52	4500	1.51E+12	0.232038374
002	12/06/99	0.48	12/06/99	0.56	10600	1.34E+12	0.20496723
003	07/29/98	0.52	07/29/98	0.91	63400	1.64E+12	0.251474066
003	12/10/98	0.83	12/10/98	0.86	2000	6.73E+11	0.103128166
003	12/22/98	0.53	12/22/98	0.6	10400	1.50E+12	0.229828484
003	05/12/99	0.53	05/13/99	0.56	40000	3.92E+11	0.06007466
003	06/14/99	0.59	06/14/99	0.69	1899	1.92E+11	0.029376058
003	08/26/99	0.41	08/26/99	0.51	6650	6.71E+11	0.102870346
003	09/14/99	0.36	09/14/99	0.45	375	4.21E+10	0.00644551
003	10/11/99	0.33	10/11/99	0.47	15000	1.08E+12	0.165741695
003	11/01/99	0.35	11/01/99	0.38	200	6.73E+10	0.010312817
003	11/02/99	0.46	11/02/99	0.54	300	3.79E+10	0.005800959
003	11/18/99	0.65	11/18/99	0.7	400	8.07E+10	0.01237538
003	11/23/99	0.65	11/23/99	0.69	4150	1.05E+12	0.160493208
003	02/15/00	0.56	02/15/00	0.61	400	8.07E+10	0.01237538
003	03/06/00	0.58	03/06/00	0.64	3975	6.69E+11	0.102483615
003	04/19/00	0.7	04/19/00	0.78	800	1.01E+11	0.015469225
004	07/31/98	0.78	07/31/98	0.87	500	5.61E+10	0.008594014
004	08/25/98	0.37	08/26/98	0.83	21316	1.47E+11	0.022585068
004	09/11/98	0.67	09/11/98	0.76	800	8.97E+10	0.013750422
004	09/27/98	0.54	09/27/98	0.62	500	6.31E+10	0.009668266
004	10/27/98	0.67	10/27/98	0.79	20000	1.68E+12	0.257820415
004	11/22/98	0.69	11/22/98	0.82	1000	7.76E+10	0.011899404
004	12/12/98	0.65	12/12/98	0.83	1000	5.61E+10	0.008594014
004	12/14/98	0.53	12/14/98	0.55	150	7.57E+10	0.011601919
004	12/22/98	0.58	12/22/98	0.67	1000	1.12E+11	0.017188028
004	01/05/99	0.71	01/05/99	0.78	100	1.44E+10	0.002209889
004	01/20/99	0.47	01/20/99	0.49	15750	7.95E+12	1.218201461
004	02/02/99	0.69	02/02/99	0.82	1000	7.76E+10	0.011899404
004	02/07/99	0.55	02/07/99	0.63	1000	1.26E+11	0.019336531
004	02/10/99	0.5	02/10/99	0.54	200	5.05E+10	0.007734612
004	02/17/99	0.5	02/17/99	0.55	500	1.01E+11	0.015469225
004	02/22/99	0.64	02/22/99	0.72	3500	4.42E+11	0.067677859
004	03/01/99	0.48	03/01/99	0.58	2000	2.02E+11	0.03093845
004	03/23/99	0.51	03/23/99	0.78	500	1.87E+10	0.002864671
004	03/28/99	0.51	03/28/99	0.54	250	8.41E+10	0.012891021
004	03/31/99	0.4	03/31/99	0.51	500	4.59E+10	0.007031466
004	04/27/99	0.62	04/27/99	0.69	3000	4.33E+11	0.066296678
004	04/28/99	0.63	04/28/99	0.68	350	7.07E+10	0.010828457
004	05/20/99	0.65	05/20/99	0.72	500	7.21E+10	0.011049446
004	06/07/99	0.35	06/07/99	0.5	2000	1.35E+11	0.020625633
004	06/08/99	0.58	06/08/99	0.77	10000	5.31E+11	0.081416973
004	10/04/99	0.4	10/04/99	0.5	500	5.05E+10	0.007734612
004	12/03/99	0.75	12/03/99	0.77	1800	9.08E+11	0.139223024
004	12/13/99	0.41	12/13/99	0.49	7950	1.00E+12	0.153725423
004	01/02/00	0.51	01/02/00	0.55	4150	1.05E+12	0.160493208
004	02/24/00	0.79	02/24/00	0.83	400	1.01E+11	0.015469225
004	03/03/00	0.49	03/03/00	0.73	5200	2.19E+11	0.033516654
004	03/07/00	0.47	03/07/00	0.58	1000	9.18E+10	0.014062932
004	04/27/00	0.61	04/27/00	0.96	2240	6.46E+10	0.009900304
004	05/24/00	0.44	05/24/00	0.48	1325	3.34E+11	0.051241807

Table A5-1. Sugar Creek SSO Data

Sub-Watershed ID	Start Date	Start Time	End Date	End Time	Estimated	Fecal Loading	Flow (cfs)
					Gallons	(c.f.u./hour)	
005	08/19/98	0.56	08/19/98	0.79	3000	1.32E+11	0.02017725
005	08/24/98	0.58	08/24/98	0.61	442	1.49E+11	0.022791325
005	09/06/98	0.43	09/06/98	0.5	1500	2.16E+11	0.033148339
005	11/02/98	0.34	11/02/98	0.83	2650	5.46E+10	0.008366009
005	11/17/98	0.8	11/17/98	0.88	500	6.31E+10	0.009668266
005	01/26/99	0.57	01/26/99	0.63	2000	3.36E+11	0.051564083
005	03/17/99	0.41	03/17/99	0.5	500	5.61E+10	0.008594014
005	05/18/99	0.41	05/18/99	0.48	1300	1.87E+11	0.028728561
005	05/29/99	0.64	05/29/99	0.73	2000	2.24E+11	0.034376055
005	06/01/99	0.47	06/01/99	0.59	15900	1.34E+12	0.20496723
005	06/04/99	0.79	06/04/99	0.81	500	2.52E+11	0.038673062
005	07/06/99	0.56	07/06/99	0.67	2000	1.84E+11	0.028125863
005	08/10/99	0.35	08/10/99	0.6	600	2.42E+10	0.003712614
005	11/29/99	0.37	11/29/99	0.48	1000	9.18E+10	0.014062932
005	01/13/00	0.66	01/13/00	0.96	6000	2.02E+11	0.03093845
005	01/15/00	0.66	01/15/00	0.75	300	3.36E+10	0.005156408
005	02/04/00	0.76	02/04/00	0.79	400	1.35E+11	0.020625633
005	02/05/00	0.37	02/05/00	0.41	300	7.57E+10	0.011601919
005	02/07/00	0.44	02/07/00	0.48	400	1.01E+11	0.015469225
005	02/14/00	0.35	02/14/00	0.44	800	8.97E+10	0.013750422
005	02/24/00	0.35	02/24/00	0.43	400	5.05E+10	0.007734612
005	04/03/00	0.69	04/03/00	0.75	625	1.05E+11	0.016113776
005	06/24/00	0.57	06/24/00	0.71	800	5.77E+10	0.008839557
007	08/12/98	0.83	08/12/98	0.9	500	7.21E+10	0.011049446
007	02/15/99	0.73	02/15/99	0.81	2000	2.52E+11	0.038673062
007	03/20/99	0.45	03/20/99	0.53	1000	1.26E+11	0.019336531
007	04/22/99	0.51	04/22/99	0.6	500	5.61E+10	0.008594014
007	10/05/99	0.47	10/05/99	0.57	134400	1.36E+13	2.079063827
007	10/25/99	0.54	10/25/99	0.61	500	7.21E+10	0.011049446
007	02/15/00	0.59	02/15/00	0.73	1200	8.65E+10	0.013259336
008	08/31/98	0.64	08/31/98	0.69	500	1.01E+11	0.015469225
008	09/16/98	0.34	09/16/98	0.46	110000	9.25E+12	1.418012283
008	11/01/98	0.34	11/01/98	0.4	13800	2.32E+12	0.355792173
008	01/07/99	0.58	01/07/99	0.68	100000	1.01E+13	1.546922491
008	05/10/99	0.34	05/10/99	0.43	1000	1.12E+11	0.017188028
008	11/26/99	0.76	11/26/99	0.85	11250	1.26E+12	0.193365311
008	12/13/99	0.56	12/13/99	0.6	9200	2.32E+12	0.355792173
008	02/16/00	0.69	02/16/00	0.73	2650	6.69E+11	0.102483615
009	11/07/98	0.74	11/07/98	0.75	850	8.58E+11	0.131488412
009	12/08/98	0.36	12/08/98	0.41	600	1.21E+11	0.01856307
009	12/20/98	0.61	12/20/98	0.91	500	1.68E+10	0.002578204
009	01/13/99	0.65	01/13/99	0.76	5000	4.59E+11	0.070314659
009	02/04/99	0.7	02/04/99	0.9	1000	5.05E+10	0.007734612
009	02/14/99	0.4	02/14/99	0.52	500	4.21E+10	0.00644551
009	05/10/99	0.45	05/10/99	0.52	500	7.21E+10	0.011049446
009	08/19/99	0.44	08/19/99	0.66	39750	1.82E+12	0.279500768
009	03/29/00	0.74	03/29/00	0.78	400	1.01E+11	0.015469225
010	10/03/98	0.42	10/03/98	0.51	1000	1.12E+11	0.017188028
010	10/12/98	0.63	10/12/98	0.7	250	3.60E+10	0.005524723
010	12/03/98	0.57	12/03/98	0.66	100000	1.12E+13	1.718802767
010	12/04/98	0.39	12/04/98	0.54	164700	1.11E+13	1.698520895
010	01/07/99	0.7	01/07/99	0.8	1000	1.01E+11	0.015469225
010	03/01/99	0.41	03/01/99	0.51	2000	2.02E+11	0.03093845
010	03/30/99	0.34	03/30/99	0.46	4000	3.36E+11	0.051564083
010	04/08/99	0.76	04/08/99	0.8	800	2.02E+11	0.03093845
010	05/12/99	0.58	05/12/99	0.71	30000	2.33E+12	0.356982113
010	06/02/99	0.6	06/02/99	0.64	250	6.31E+10	0.009668266
010	06/03/99	0.38	06/03/99	0.66	24900	8.98E+11	0.137565607
010	07/15/99	0.85	07/15/99	0.93	22888	2.89E+12	0.442574525
010	08/18/99	0.44	08/18/99	0.77	21200	6.48E+11	0.099378051
010	08/25/99	0.55	08/25/99	0.61	300	5.05E+10	0.007734612
010	08/26/99	0.72	08/26/99	0.85	1000	7.76E+10	0.011899404
010	09/10/99	0.72	09/10/99	0.79	1600	2.31E+11	0.035358228
010	10/20/99	0.58	10/20/99	0.6	100	5.05E+10	0.007734612
010	11/01/99	0.41	11/01/99	0.56	7950	5.35E+11	0.081986892
010	11/28/99	0.56	11/28/99	0.64	4600	5.80E+11	0.088948043
010	02/19/00	0.49	02/19/00	0.53	400	1.01E+11	0.015469225
010	03/07/00	0.63	03/07/00	0.69	6900	1.16E+12	0.177896086
010	04/24/00	0.69	04/24/00	0.79	5300	5.35E+11	0.081986892
010	06/01/00	0.64	06/01/00	0.75	800	7.34E+10	0.011250345
011	03/07/99	0.67	03/07/99	0.7	100	3.36E+10	0.005156408
011	08/02/99	0.76	08/02/99	0.85	11500	1.29E+12	0.197662318
011	01/07/00	0.39	01/07/00	0.58	11925	6.34E+11	0.097089741

Table A5-2. Little Sugar Creek SSO Data

Sub-Watershed					Estimated	Fecal Loading	
ID	Start Date	Start Time	End Date	End Time	Gallons	(c.f.u./hour)	Flow (cfs)
001	07/22/98	0.62	07/22/98	0.65	1000	3.36E+11	0.0516
001	07/23/98	0.54	07/23/98	0.6	500	8.41E+10	0.0129
001	08/12/98	0.76	08/12/98	0.88	500	4.21E+10	0.0064
001	08/20/98	0.74	08/21/98	0.54	48583	6.13E+11	0.0939
001	09/29/98	0.61	09/29/98	0.69	500	6.31E+10	0.0097
001	10/13/98	0.44	10/13/98	0.85	200	4.92E+09	0.0008
001	10/16/98	0.47	10/20/98	0.71	40700	9.69E+10	0.0148
001	02/24/99	0.6	02/24/99	0.67	600	8.65E+10	0.0133
001	03/09/99	0.5	03/09/99	0.55	800	1.61E+11	0.0248
001	05/08/99	0.42	05/08/99	0.45	800	2.69E+11	0.0413
001	05/24/99	0.69	05/24/99	0.79	14525	1.47E+12	0.2247
001	05/27/99	0.57	05/27/99	0.6	500	1.68E+11	0.0258
001	11/05/99	0.47	11/05/99	0.52	800	1.61E+11	0.0248
001	12/17/99	0.77	12/17/99	0.84	11700	1.69E+12	0.2586
001	01/19/00	0.5	01/19/00	0.53	500	1.68E+11	0.0258
001	02/25/00	0.64	02/25/00	0.71	938	1.35E+11	0.0207
001	05/01/00	0.33	05/01/00	0.42	800	8.97E+10	0.0138
001	05/21/00	0.54	05/21/00	0.59	200	4.04E+10	0.0062
002	07/27/98	0.51	07/27/98	0.56	350	7.07E+10	0.0108
002	08/31/98	0.59	08/31/98	0.75	50000	3.15E+12	0.4834
002	11/05/98	0.32	11/05/98	0.41	100	1.12E+10	0.0017
002	11/15/98	0.38	11/15/98	0.44	500	8.41E+10	0.0129
002	12/04/98	0.78	12/04/98	0.87	500	5.61E+10	0.0086
002	12/09/98	0.69	12/09/98	0.78	2000	2.24E+11	0.0344
002	12/20/98	0.72	12/20/98	0.77	500	1.01E+11	0.0155
002	01/03/99	0.49	01/03/99	0.52	5850	1.97E+12	0.3016
002	01/09/99	0.54	01/09/99	0.57	300	1.01E+11	0.0155
002	01/23/99	0.7	01/24/99	0.52	5000	6.15E+10	0.0094
002	03/02/99	0.49	03/02/99	0.56	150	2.16E+10	0.0033
002	04/18/99	0.54	04/18/99	0.96	6000	1.44E+11	0.0221
002	05/01/99	0.73	05/01/99	0.78	200	4.04E+10	0.0062
002	07/01/99	0.64	07/02/99	0.75	20000	1.82E+11	0.0279
002	07/04/99	0.61	07/04/99	0.67	500	8.41E+10	0.0129
002	09/28/99	0.65	09/28/99	0.85	250	1.26E+10	0.0019
002	11/23/99	0.43	11/23/99	0.62	3250	1.73E+11	0.0265
002	12/03/99	0.4	12/03/99	0.49	1000	1.12E+11	0.0172
002	12/05/99	0.61	12/05/99	0.69	100	1.26E+10	0.0019
002	01/24/00	0.76	01/24/00	0.84	8300	1.05E+12	0.1605
002	02/29/00	0.43	02/29/00	0.48	600	1.21E+11	0.0186
002	03/23/00	0.73	03/23/00	0.8	800	1.15E+11	0.0177
002	05/31/00	0.35	05/31/00	0.43	600	7.57E+10	0.0116
002	06/16/00	0.38	06/16/00	0.45	625	9.01E+10	0.0138
003	07/08/98	0.35	07/08/98	0.4	500	1.01E+11	0.0155
003	09/28/98	0.46	09/28/98	0.52	2000	3.36E+11	0.0516
003	12/11/98	0.44	12/11/98	0.56	850	7.15E+10	0.0110
003	12/06/99	0.45	12/06/99	0.53	100	1.26E+10	0.0019
003	01/04/00	0.63	01/04/00	0.69	650	1.09E+11	0.0168
003	01/07/00	0.53	01/07/00	0.58	400	8.07E+10	0.0124
003	02/05/00	0.68	02/05/00	0.78	18300	1.85E+12	0.2831
003	02/14/00	0.61	02/15/00	0	73000	1.89E+12	0.2896
003	05/19/00	0.41	05/19/00	0.46	400	8.07E+10	0.0124
004	07/01/98	0.86	07/02/98	0.06	1000	5.05E+10	0.0077
004	07/27/98	0.38	07/27/98	0.58	350	1.77E+10	0.0027
004	07/28/98	0.37	07/29/98	0.65	140400	1.11E+12	0.1697
004	08/13/98	0.58	08/13/98	0.68	2000	2.02E+11	0.0309
004	10/01/98	0.64	10/01/98	0.7	500	8.41E+10	0.0129
004	11/20/98	0.45	11/20/98	0.59	650	4.69E+10	0.0072
004	11/29/98	0.46	11/29/98	0.57	1500	1.38E+11	0.0211
004	11/30/98	0.32	11/30/98	0.42	300	3.03E+10	0.0046
004	12/02/98	0.73	12/02/98	0.87	2000	1.44E+11	0.0221
004	12/14/98	0.59	12/14/98	0.7	1000	9.18E+10	0.0141
004	12/24/98	0.42	12/24/98	0.52	120000	1.21E+13	1.8563
004	01/21/99	0.6	01/21/99	0.88	10000	3.60E+11	0.0552
004	01/25/99	0.35	01/25/99	0.44	2000	2.24E+11	0.0344
004	02/10/99	0.68	02/10/99	0.99	100	3.26E+09	0.0005
004	02/25/99	0.46	02/25/99	0.52	500	8.41E+10	0.0129
004	03/03/99	0.69	03/03/99	0.92	10000	4.39E+11	0.0673
004	03/06/99	0.74	03/07/99	0.76	500	4.95E+09	0.0008
004	03/09/99	0.46	03/09/99	0.57	100	9.18E+09	0.0014

Table A5-2. Little Sugar Creek SSO Data

Sub-Watershed					Estimated	Fecal Loading	
ID	Start Date	Start Time	End Date	End Time	Gallons	(c.f.u./hour)	Flow (cfs)
004	03/12/99	0.49	03/12/99	0.58	400	4.49E+10	0.0069
004	03/17/99	0.33	03/17/99	0.38	500	1.01E+11	0.0155
004	03/31/99	0.58	03/31/99	0.69	1500	1.38E+11	0.0211
004	04/13/99	0.69	04/14/99	0.65	6000	6.31E+10	0.0097
004	04/23/99	0.54	04/23/99	0.64	4000	4.04E+11	0.0619
004	05/07/99	0.97	05/08/99	0.36	3000	7.76E+10	0.0119
004	05/12/99	0.66	05/12/99	0.8	20000	1.44E+12	0.2210
004	05/18/99	0.31	05/18/99	0.33	500	2.52E+11	0.0387
004	06/06/99	0.56	06/06/99	0.6	400	1.01E+11	0.0155
004	06/06/99	0.8	06/06/99	0.94	800	5.77E+10	0.0088
004	06/14/99	0.47	06/14/99	0.48	5000	5.05E+12	0.7735
004	06/29/99	0.51	06/29/99	0.54	9200	3.10E+12	0.4744
004	06/29/99	0.7	06/29/99	0.8	5000	5.05E+11	0.0773
004	07/21/99	0.47	07/21/99	0.77	2000	6.73E+10	0.0103
004	08/02/99	0.68	08/02/99	0.75	700	1.01E+11	0.0155
004	08/13/99	0.45	08/13/99	0.5	7300	1.47E+12	0.2259
004	08/27/99	0.7	08/27/99	0.76	25	4.21E+09	0.0006
004	09/09/99	0.26	09/09/99	0.37	12450	1.14E+12	0.1751
004	10/30/99	0.57	10/30/99	0.63	200	3.36E+10	0.0052
004	10/31/99	0.44	10/31/99	0.52	200	2.52E+10	0.0039
004	11/05/99	0.43	11/05/99	0.5	2000	2.88E+11	0.0442
004	11/05/99	0.74	11/05/99	0.76	2400	1.21E+12	0.1856
004	12/05/99	0.43	12/05/99	0.49	13500	2.27E+12	0.3481
004	01/21/00	0.5	01/21/00	0.58	5300	6.69E+11	0.1025
004	02/01/00	0.48	02/01/00	0.58	1000	1.01E+11	0.0155
004	02/06/00	0.79	02/06/00	0.96	18400	1.09E+12	0.1674
004	02/21/00	0.43	02/21/00	0.5	600	8.65E+10	0.0133
004	02/21/00	0.75	02/21/00	0.8	400	8.07E+10	0.0124
004	03/01/00	0.5	03/01/00	0.6	1000	1.01E+11	0.0155
004	03/24/00	0.38	03/24/00	0.46	600	7.57E+10	0.0116
004	05/22/00	0.44	05/22/00	0.48	400	1.01E+11	0.0155
004	05/31/00	0.63	05/31/00	0.81	1800	1.01E+11	0.0155
004	06/08/00	0.47	06/08/00	0.55	1300	1.64E+11	0.0251
004	06/24/00	0.27	06/24/00	0.36	400	4.49E+10	0.0069
005	07/12/98	0.58	07/12/98	0.6	550	2.78E+11	0.0425
005	08/19/98	0.37	08/19/98	0.54	2000	1.19E+11	0.0182
005	08/21/98	0.67	08/21/98	0.88	1000	4.81E+10	0.0074
005	08/26/98	0.62	08/26/98	0.68	55000	9.25E+12	1.4180
005	09/14/98	0.66	09/15/98	0.83	750	6.47E+09	0.0010
005	09/19/98	0.45	09/19/98	0.57	500	4.21E+10	0.0064
005	10/06/98	0.64	10/07/98	0.02	1000	2.66E+10	0.0041
005	10/14/98	0.71	10/14/98	0.93	10000	4.59E+11	0.0703
005	11/17/98	0.63	11/17/98	0.77	1500	1.08E+11	0.0166
005	11/28/98	0.49	11/28/98	0.54	500	1.01E+11	0.0155
005	11/28/98	0.53	11/28/98	0.84	600	1.95E+10	0.0030
005	12/01/98	0.65	12/01/98	0.74	500	5.61E+10	0.0086
005	12/02/98	0.58	12/02/98	0.68	1000	1.01E+11	0.0155
005	12/07/98	0.46	12/07/98	0.48	500	2.52E+11	0.0387
005	12/07/98	0.46	12/07/98	0.48	500	2.52E+11	0.0387
005	12/28/98	0.33	12/28/98	0.42	1000	1.12E+11	0.0172
005	01/03/99	0.68	01/03/99	0.73	400	8.07E+10	0.0124
005	01/16/99	0.56	01/16/99	0.68	1000	8.41E+10	0.0129
005	02/02/99	0.34	02/02/99	0.58	2000	8.41E+10	0.0129
005	02/25/99	0.4	02/25/99	0.43	500	1.68E+11	0.0258
005	03/10/99	0.49	03/10/99	0.53	1000	2.52E+11	0.0387
005	03/20/99	0.34	03/20/99	0.46	900	7.57E+10	0.0116
005	03/23/99	0.58	03/23/99	0.62	41500	1.05E+13	1.6049
005	05/01/99	0.47	05/01/99	0.58	2000	1.84E+11	0.0281
005	05/27/99	0.9	05/27/99	0.93	500	1.68E+11	0.0258
005	07/28/99	0.51	07/28/99	0.71	11925	6.02E+11	0.0922
005	08/13/99	0.55	08/13/99	0.63	500	6.31E+10	0.0097
005	10/11/99	0.28	10/11/99	0.37	11600	1.30E+12	0.1994
005	11/18/99	0.47	11/18/99	0.63	2000	1.26E+11	0.0193
005	01/19/00	0.64	01/19/00	0.71	100	1.44E+10	0.0022
005	01/31/00	0.5	01/31/00	0.56	4150	6.98E+11	0.1070
005	02/24/00	0.83	02/25/00	0	1600	9.50E+10	0.0146
005	03/23/00	0.68	03/23/00	0.85	7625	4.53E+11	0.0694
005	05/18/00	0.63	05/18/00	0.85	8300	3.81E+11	0.0584
005	05/19/00	0.8	05/19/00	1	1200	6.06E+10	0.0093

Table A5-2. Little Sugar Creek SSO Data

Sub-Watershed					Estimated	Fecal Loading	
ID	Start Date	Start Time	End Date	End Time	Gallons	(c.f.u./hour)	Flow (cfs)
006	07/23/98	0.3	07/23/98	0.41	500	4.59E+10	0.0070
006	08/04/98	0.81	08/04/98	0.83	250	1.26E+11	0.0193
006	08/15/98	0.86	08/16/98	0.5	1000	1.58E+10	0.0024
006	09/14/98	0.37	09/14/98	0.5	4600	3.57E+11	0.0547
006	10/03/98	0.4	10/03/98	0.46	1000	1.68E+11	0.0258
006	11/30/98	0.34	11/30/98	0.42	500	6.31E+10	0.0097
006	11/30/98	0.43	11/30/98	0.51	100	1.26E+10	0.0019
006	12/18/98	0.61	12/18/98	0.73	6000	5.05E+11	0.0773
006	12/19/98	0.36	12/19/98	0.47	5000	4.59E+11	0.0703
006	01/01/99	0.63	01/01/99	0.66	300	1.01E+11	0.0155
006	01/11/99	0.35	01/11/99	0.38	500	1.68E+11	0.0258
006	01/23/99	0.65	01/23/99	0.73	5000	6.31E+11	0.0967
006	02/08/99	0.5	02/08/99	0.57	500	7.21E+10	0.0110
006	02/11/99	0.48	02/11/99	0.51	3000	1.01E+12	0.1547
006	02/24/99	0.58	02/24/99	0.64	10000	1.68E+12	0.2578
006	03/25/99	0.42	03/25/99	0.45	1000	3.36E+11	0.0516
006	04/05/99	0.38	04/05/99	0.44	500	8.41E+10	0.0129
006	06/16/99	0.76	06/16/99	0.81	500	1.01E+11	0.0155
006	09/11/99	0.71	09/11/99	0.77	42400	7.13E+12	1.0932
006	11/05/99	0.03	11/05/99	0.15	800	6.73E+10	0.0103
006	11/22/99	0.33	11/22/99	0.51	1000	5.61E+10	0.0086
006	12/14/99	0.54	12/14/99	0.63	7950	8.92E+11	0.1366
006	02/18/00	0.88	02/18/00	0.98	600	6.06E+10	0.0093
006	03/30/00	0.5	03/30/00	0.76	25000	9.71E+11	0.1487
006	04/23/00	0.9	04/24/00	0.06	2000	1.26E+11	0.0193
006	05/13/00	0.4	05/13/00	0.5	4150	4.19E+11	0.0642
006	05/27/00	0.4	05/27/00	0.49	900	1.01E+11	0.0155
008	07/13/98	0.63	07/14/98	0.74	1000	9.09E+09	0.0014
008	07/24/98	0.61	07/24/98	0.88	360000	1.35E+13	2.0626
008	08/22/98	0.75	08/22/98	0.81	300	5.05E+10	0.0077
008	11/12/98	0.65	11/12/98	0.97	2000	6.31E+10	0.0097
008	12/26/98	0.78	12/26/98	0.82	800	2.02E+11	0.0309
008	01/01/99	0.61	01/01/99	0.62	500	5.05E+11	0.0773
008	02/02/99	0.87	02/02/99	0.97	500	5.05E+10	0.0077
008	02/23/99	0.49	02/23/99	0.58	1000	1.12E+11	0.0172
008	02/24/99	0.74	02/24/99	0.79	1000	2.02E+11	0.0309
008	03/25/99	0.36	03/25/99	0.5	1500	1.08E+11	0.0166
008	04/06/99	0.59	04/06/99	0.63	500	1.26E+11	0.0193
008	07/31/99	0.7	07/31/99	0.78	2300	2.90E+11	0.0445
008	10/18/99	0.61	10/18/99	0.65	5600	1.41E+12	0.2166
008	05/14/00	0.8	05/14/00	0.95	1875	1.26E+11	0.0193
009	07/28/98	0.38	07/30/98	0.04	630000	3.83E+12	0.5871
009	08/21/98	0.87	08/22/98	0.08	1000	4.81E+10	0.0074
009	08/27/98	0.88	08/27/98	0.95	200	2.88E+10	0.0044
009	08/31/98	0.58	09/02/98	0.52	106000	5.52E+11	0.0845
009	09/10/98	0.7	09/10/98	0.83	2000	1.55E+11	0.0238
009	09/20/98	0.45	09/20/98	0.53	2000	2.52E+11	0.0387
009	09/26/98	0.52	09/26/98	0.6	2000	2.52E+11	0.0387
009	01/13/99	0.43	01/13/99	0.7	200	7.48E+09	0.0011
009	01/30/99	0.38	01/30/99	0.45	500	7.21E+10	0.0110
009	02/11/99	0.56	02/11/99	0.6	3900	9.84E+11	0.1508
009	03/22/99	0.78	03/22/99	0.89	2500	2.29E+11	0.0352
009	04/27/99	0.6	04/27/99	0.67	500	7.21E+10	0.0110
009	08/15/99	0.67	08/15/99	0.72	600	1.21E+11	0.0186
009	11/19/99	0.61	11/19/99	0.72	5760	5.29E+11	0.0810
009	11/28/99	0.42	11/28/99	0.47	4600	9.29E+11	0.1423
009	11/29/99	0.38	11/29/99	0.43	2650	5.35E+11	0.0820
009	12/28/99	0.67	12/28/99	0.75	400	5.05E+10	0.0077
009	01/06/00	0.35	01/06/00	0.36	200	2.02E+11	0.0309
009	01/14/00	0.44	01/14/00	0.56	1950	1.64E+11	0.0251
009	02/02/00	0.29	02/02/00	0.36	600	8.65E+10	0.0133
009	02/08/00	0.43	02/08/00	0.65	2650	1.22E+11	0.0186
009	02/11/00	0.57	02/11/00	0.66	400	4.49E+10	0.0069
009	04/24/00	0.44	04/24/00	0.56	600	5.05E+10	0.0077
009	04/26/00	0.55	04/26/00	0.71	2650	1.67E+11	0.0256

Table A5-3. McAlpine Creek SSO Data

Sub-Watershed ID	Start Date	Start Time	End Date	End Time	Estimated	Fecal Loading	Flow (cfs)
					Gallons	(c.f.u./hour)	
1	07/25/98	0.44	07/25/98	0.5	300	5.05E+10	0.0077
1	08/17/98	0.82	08/17/98	0.94	1000	8.41E+10	0.0129
1	09/02/98	0.63	09/02/98	0.88	1000	4.04E+10	0.0062
1	09/19/98	0.47	09/19/98	0.88	2000	4.92E+10	0.0075
1	10/15/98	0.62	10/15/98	0.7	1000	1.26E+11	0.0193
1	11/08/98	0.41	11/08/98	0.67	100	3.88E+09	0.0006
1	12/02/98	0.51	12/02/98	0.71	2000	1.01E+11	0.0155
1	12/19/98	0.83	12/19/98	0.91	500	6.31E+10	0.0097
1	12/23/98	0.57	12/23/98	0.82	10000	4.04E+11	0.0619
1	01/07/99	0.55	01/07/99	0.64	2000	2.24E+11	0.0344
1	01/14/99	0.62	01/14/99	0.71	500	5.61E+10	0.0086
1	01/23/99	0.71	01/23/99	0.74	5000	1.68E+12	0.2578
1	01/26/99	0.69	01/26/99	0.8	500	4.59E+10	0.0070
1	02/06/99	0.63	02/06/99	0.73	4000	4.04E+11	0.0619
1	03/08/99	0.52	03/08/99	0.54	200	1.01E+11	0.0155
1	03/30/99	0.62	03/30/99	0.76	5000	3.60E+11	0.0552
1	04/04/99	0.86	04/04/99	0.92	200	3.36E+10	0.0052
1	05/03/99	0.54	05/03/99	0.6	900	1.51E+11	0.0232
1	05/12/99	0.58	05/12/99	0.71	3000	2.33E+11	0.0357
1	05/20/99	0.89	05/20/99	0.92	300	1.01E+11	0.0155
1	05/21/99	0.6	05/21/99	0.66	1500	2.52E+11	0.0387
1	05/25/99	0.67	05/25/99	0.76	500	5.61E+10	0.0086
1	06/26/99	0.41	06/26/99	0.45	300	7.57E+10	0.0116
1	07/03/99	0.55	07/03/99	0.7	1000	6.73E+10	0.0103
1	07/09/99	0.47	07/09/99	0.52	4000	8.07E+11	0.1238
1	08/12/99	0.58	08/12/99	0.61	2300	7.74E+11	0.1186
1	08/14/99	0.47	08/14/99	0.52	2650	5.35E+11	0.0820
1	08/19/99	0.81	08/19/99	0.89	18300	2.31E+12	0.3539
1	10/03/99	0.31	10/03/99	0.37	400	6.73E+10	0.0103
1	10/23/99	0.37	10/23/99	0.46	2650	2.97E+11	0.0455
1	12/02/99	0.72	12/02/99	0.79	200	2.88E+10	0.0044
1	12/22/99	0.59	12/22/99	0.61	500	2.52E+11	0.0387
1	12/28/99	0.51	12/28/99	0.6	5300	5.94E+11	0.0911
1	01/14/00	0.42	01/14/00	0.5	400	5.05E+10	0.0077
1	02/09/00	0.42	02/11/00	0.65	1000	4.53E+09	0.0007
1	06/07/00	0.38	06/07/00	0.42	400	1.01E+11	0.0155
2	07/17/98	0.79	07/17/98	0.92	20000	1.55E+12	0.2380
2	03/18/99	0.58	03/18/99	0.65	550	7.93E+10	0.0122
2	09/03/99	0.56	09/03/99	0.6	300	7.57E+10	0.0116
2	09/10/99	0.75	09/10/99	0.8	1197	2.42E+11	0.0370
2	01/03/00	0.55	01/03/00	0.59	300	7.57E+10	0.0116
3	08/29/98	0.67	08/29/98	0.69	400	2.02E+11	0.0309
3	05/23/99	0.39	05/23/99	0.52	12450	9.67E+11	0.1481
3	08/22/99	0.55	08/22/99	0.68	1000	7.76E+10	0.0119
3	10/03/99	0.42	10/03/99	0.53	400	3.67E+10	0.0056
7	11/24/98	0.4	11/24/98	0.66	1500	5.82E+10	0.0089
7	11/25/98	0.35	11/25/98	0.36	350	3.53E+11	0.0541
7	11/28/98	0.5	11/28/98	0.89	2100	5.43E+10	0.0083
7	12/01/98	0.7	12/01/98	0.94	1000	4.21E+10	0.0064
7	02/06/99	0.59	02/06/99	0.65	300	5.05E+10	0.0077
7	03/11/99	0.73	03/11/99	0.84	25	2.29E+09	0.0004
7	04/16/99	0.33	04/16/99	0.48	500	3.36E+10	0.0052
7	04/24/99	0.79	04/24/99	0.87	200	2.52E+10	0.0039
7	09/18/99	0.78	09/18/99	0.98	2500	1.26E+11	0.0193
7	11/05/99	0.78	11/06/99	0.1	10600	3.34E+11	0.0512
7	01/08/00	0.44	01/08/00	0.5	6900	1.16E+12	0.1779
7	01/10/00	0.33	01/10/00	0.38	11725	2.37E+12	0.3628
7	01/14/00	0.71	01/14/00	0.78	800	1.15E+11	0.0177
7	01/15/00	0.56	01/15/00	0.65	200	2.24E+10	0.0034
7	02/25/00	0.47	02/25/00	0.67	5300	2.67E+11	0.0410
7	03/24/00	0.37	03/24/00	0.57	1600	8.07E+10	0.0124
8	08/15/98	0.38	08/15/98	0.45	500	7.21E+10	0.0110
8	09/24/98	0.72	09/24/98	0.85	500	3.88E+10	0.0059
8	09/26/98	0.58	09/26/98	0.69	500	4.59E+10	0.0070
8	10/15/98	0.69	10/15/98	0.79	50	5.05E+09	0.0008
8	07/29/99	0.63	07/29/99	0.64	300	3.03E+11	0.0464
8	08/14/99	0.48	08/14/99	0.52	500	1.26E+11	0.0193
8	10/01/99	0.68	10/01/99	0.74	3600	6.06E+11	0.0928
8	12/06/99	0.36	12/06/99	0.4	5300	1.34E+12	0.2050
8	01/31/00	0.62	01/31/00	0.68	800	1.35E+11	0.0206
8	05/25/00	0.55	05/25/00	0.74	9600	5.10E+11	0.0782

Table A5-3. McAlpine Creek SSO Data

Sub-Watershed ID	Start Date	Start Time	End Date	End Time	Estimated	Fecal Loading	Flow (cfs)
					Gallons	(c.f.u./hour)	
9	09/01/98	0.89	09/01/98	0.96	500	7.21E+10	0.0110
9	11/24/98	0.58	11/24/98	0.59	100	1.01E+11	0.0155
9	12/10/98	0.72	12/11/98	0.04	2000	6.31E+10	0.0097
9	12/26/98	0.69	12/26/98	0.78	8250	9.25E+11	0.1418
9	01/05/99	0.68	01/06/99	0.19	25000	4.95E+11	0.0758
9	01/13/99	0.35	01/13/99	0.37	100	5.05E+10	0.0077
9	01/16/99	0.77	01/16/99	0.86	1000	1.12E+11	0.0172
9	01/24/99	0.54	01/24/99	0.79	10000	4.04E+11	0.0619
9	01/24/99	0.89	01/24/99	0.95	2000	3.36E+11	0.0516
9	01/28/99	0.68	01/28/99	0.76	2000	2.52E+11	0.0387
9	03/22/99	0.69	03/22/99	0.8	5000	4.59E+11	0.0703
9	07/16/99	0.72	07/16/99	0.78	500	8.41E+10	0.0129
9	07/16/99	0.8	07/18/99	0.56	549312	3.15E+12	0.4828
9	08/17/99	0.83	08/17/99	0.92	500	5.61E+10	0.0086
9	10/11/99	0.56	10/11/99	0.63	2000	2.88E+11	0.0442
9	10/11/99	0.58	10/11/99	0.62	3000	7.57E+11	0.1160
9	10/25/99	0.39	10/25/99	0.59	6500	3.28E+11	0.0503
9	01/17/00	0.67	01/17/00	0.73	1500	2.52E+11	0.0387
9	05/31/00	0.56	05/31/00	0.61	600	1.21E+11	0.0186
10	08/03/98	0.37	08/03/98	0.5	1500	1.16E+11	0.0178
10	09/05/98	0.51	09/05/98	0.63	5000	4.21E+11	0.0645
10	09/30/98	0.64	09/30/98	0.74	500	5.05E+10	0.0077
10	10/19/98	0.57	10/19/98	0.63	2650	4.46E+11	0.0683
10	10/25/98	0.47	10/25/98	0.53	200	3.36E+10	0.0052
10	11/20/98	0.71	11/20/98	0.74	30	1.01E+10	0.0015
10	11/25/98	0.56	11/25/98	0.88	1500	4.73E+10	0.0073
10	12/13/98	0.52	12/13/98	0.63	1000	9.18E+10	0.0141
10	03/10/99	0.36	03/10/99	0.48	1000	8.41E+10	0.0129
10	07/18/99	0.39	07/18/99	0.43	400	1.01E+11	0.0155
10	08/30/99	0.46	08/30/99	0.59	400	3.11E+10	0.0048
10	10/21/99	0.59	10/21/99	0.64	800	1.61E+11	0.0248
10	12/27/99	0.42	12/27/99	0.5	5300	6.69E+11	0.1025
10	01/31/00	0.41	01/31/00	0.54	1500	1.16E+11	0.0178
10	02/20/00	0.63	02/20/00	0.66	400	1.35E+11	0.0206
10	03/03/00	0.81	03/04/00	0.02	1200	5.77E+10	0.0088
10	03/05/00	0.57	03/05/00	0.6	200	6.73E+10	0.0103
12	12/21/98	0.49	12/21/98	0.58	500	5.61E+10	0.0086
12	06/22/99	0.56	06/22/99	0.64	500	6.31E+10	0.0097
12	08/09/99	0.62	08/09/99	0.84	30713	1.41E+12	0.2160
12	01/30/00	0.51	01/30/00	0.69	10600	5.94E+11	0.0911
13	08/02/98	0.9	08/02/98	1	500	5.05E+10	0.0077
13	10/03/98	0.52	10/03/98	0.65	1000	7.76E+10	0.0119
13	10/04/98	0.44	10/04/98	0.49	9150	1.85E+12	0.2831
13	10/06/98	0.74	10/07/98	0.01	500	1.87E+10	0.0029
13	12/26/98	0.68	12/27/98	0.1	21400	5.14E+11	0.0788
13	01/12/99	0.63	01/12/99	0.87	10000	4.21E+11	0.0645
13	01/13/99	0.48	01/13/99	0.51	500	1.68E+11	0.0258
13	01/14/99	0.47	01/15/99	0.03	2000	3.60E+10	0.0055
13	01/25/99	0.61	01/25/99	0.75	500	3.60E+10	0.0055
13	02/06/99	0.56	02/06/99	0.62	200	3.36E+10	0.0052
13	03/02/99	0.65	03/02/99	0.75	4000	4.04E+11	0.0619
13	03/07/99	0.75	03/07/99	0.96	500	2.40E+10	0.0037
13	03/08/99	0.31	03/08/99	0.38	100	1.44E+10	0.0022
13	03/10/99	0.78	03/10/99	0.88	1000	1.01E+11	0.0155
13	03/26/99	0.43	03/26/99	0.5	1500	2.16E+11	0.0331
13	03/28/99	0.42	03/28/99	0.45	500	1.68E+11	0.0258
13	05/02/99	0.43	05/02/99	0.6	5000	2.97E+11	0.0455
13	05/18/99	0.43	05/18/99	0.51	500	6.31E+10	0.0097
13	05/27/99	0.77	05/27/99	0.89	1500	1.26E+11	0.0193
13	06/07/99	0.68	06/07/99	0.74	600	1.01E+11	0.0155
13	07/16/99	0.78	07/17/99	0.05	91552	3.42E+12	0.5245
13	10/11/99	0.41	10/11/99	0.47	2000	3.36E+11	0.0516
13	10/17/99	0.38	10/17/99	0.46	800	1.01E+11	0.0155
13	10/23/99	0.6	10/23/99	0.65	1325	2.67E+11	0.0410
13	12/02/99	0.45	12/02/99	0.5	100	2.02E+10	0.0031
13	01/29/00	0.4	01/29/00	0.48	400	5.05E+10	0.0077
13	04/22/00	0.39	04/22/00	0.51	600	5.05E+10	0.0077
13	04/30/00	0.76	04/30/00	0.86	800	8.07E+10	0.0124
13	06/21/00	0.59	06/21/00	0.65	600	1.01E+11	0.0155

Appendix 6.
Results of TMDL Field Study of Storm Drains

Table A6-1. Results of TMDL Study of Storm Drain Outfalls

Easting	Northing	Address	Date	Time	DW Flow Present	Flow (cfs)	Fecal coliform concentration (cfu/100 ml)	Fecal Coliform Concentration Used in Calculations
1461862	498943	3807 Dunlanwood	7/31/00		N			
1438014.136	546460.328	2601 Freedom Dr	8/21/00	850	N			
1479321.127	552731.575	906 Ferndale Dr.	8/23/00	806	N			
1451876.394	550817.506	2103 Statesville Ave.	6/1/00	1236	N			
1439032.102	532324.583	3417 Trade Park Ct.	6/1/00	1405	N			
1453787.537	549069.954	444 Wolfberry	6/8/00	1420	N			
1455851.729	551869.36	2600 Grimes	6/8/00	1410	N			
1459248.402	555245.818	600 Johnson Rd.	6/8/00	1145	N			
1464156.428	560580.947	5104 N. I85 Service Rd.	6/8/00	1000	N			
1463062.54	560051.921	4012 Wilson Ln	6/8/00	1005	N			
1463675.308	564082.5	1801 Dutchess	6/8/00	950	N			
1461423.956	555957.878	830 W. Craighead	6/8/00	1115	N			
1454843.733	548300.275	1801 N. Tryon	6/8/00	1425	N			
1446581.069	512859.308	3124 Archdale	6/22/00	1130	N			
1445630.365	511339.796	6101 Kingstree Dr	6/22/00	1137	N			
1444489.216	505152.053	2513 Robin Hill Dr	6/22/00	1210	N			
1442722.496	508607.789	2301 Red Barn	6/22/00	1234	N			
1451011.931	513024.735	4816 Fairheath	6/22/00	1245	N			
1451017.368	532834.229	1300 Blythe	6/22/00	1410	N			
1489573	498766	Tank Town Rd	7/3/00	1112	N			
		12900 East	7/3/00	1129	N			
1497715	521233	5430 Beaver Dam	7/3/00	1314	N			
1441587.068	491093.505	10618 King Fisher rd.	7/18/00	1345	N			
1445821.924	491125.283	10801 Johnston Rd.	7/18/00	1425	N			
1446368.738	489151.392	10817 Painted Tree Rd.	7/18/00	1431	N			
1477532.381	521038.583	1932 Summerhill Rd.	7/31/00	1013	N			
1476743.984	518142.038	1610 Renard Ridge	7/31/00	1020	N			
1479278.315	518238.306	2200 Village Lake Dr	7/31/00	1027	N			
1471170.365	509750.998	7600 Sardis Rd	7/31/00	1037	N			
1465080.52	512393.546	1215 E Barden Rd.	7/31/00	1057	N			
1464257.979	505898.049	5700 Sharonview Rd.	7/31/00	1114	N			
1491535.511	535692.061	8788 Albemarle Rd	8/7/00	1400	N			
1486438.409	533912.643	7212 Albemarle Rd	8/7/00	1410	N			
1482960.945	538912.644	6838 Wagon Oak	8/7/00	1448	N			
1441809.618	547488.809	601 States st.	8/21/00	826	N			
1439653.828	544531.021	1505Berryhill Rd	8/21/00	841	N			
1438532.641	546028.015	2437 Freedom Dr	8/21/00	845	N			
1437410.441	547748.916	1540 Enderly st	8/21/00	858	N			
1437089.557	550216.537	3716 Glenwood Dr	8/21/00	904	N			
1443839.321	552796.659	2617 Pitts Dr	8/21/00	927	N			
1444812.248	550315.726	207 French st	8/21/00	943	N			
1444231.06	564621.776	1304 Vasser	8/21/00	1243	N			
1444550.401	561740.966	1823 Northbrook	8/21/00	1258	N			
1440513.177	559401.171	724 Hoskins Rd	8/21/00	1338	N			
1438595.691	560444.187	515 Lawton Rd.	8/21/00	1352	N			
1477521.46	554177.776	Viewmont Dr.	8/23/00	759	N			
1478857.578	549669.208	6316 Barrington	8/23/00		N			
1475821.746	546823.879	4213 Tipperary Pl	8/23/00		N			
1473811.442	546081	3837 Foxford Pl	8/23/00		N			
1477981.036	544010.925	4515 Strandford ave	8/23/00		N			
1471166.978	551927.688	4708 Highland Dr	8/23/00		N			
1475178.367	551659.512	6110 Bridlewood Ln	8/23/00		N			
1473305.849	551319.661	5401 Verando St	8/23/00		N			
1453771.598	554405.865	825 Holland ave			N			
1451690.15	555309.345	Irwin @ statesville			N			
1447797.561	563381.982	2700 Cindy Lane			N			
1450265.632	566689.325	5227 Milhaven Ln			N			
1449428.866	569897.815	2420 Dellinger C			N			
1457216.469	562132.669	3200 Dalecrest			N			
1460532.399	565808.108	5300 Twin Lane			N			
1453967.773	571859.996	4255 Garvin Dr			N			
1462335.969	534935.883	Briar Creek Rd			N			
1471464.862	532927.481	1032 Pierson Dr			N			
1469391.766	531647.476	200 Pierson Dr			N			

Table A6-1. Results of TMDL Study of Storm Drain Outfalls

Eastings	Northing	Address	Date	Time	DW Flow Present	Flow (cfs)	Fecal coliform concentration (cfu/100 ml)	Fecal Coliform Concentration Used in Calculations
1470201.153	531026.409	Eaton Rd			N			
1468869.409	530360.841	2112 Shade Valley			N			
1459568.984	534389.857	2620 7th St			N			
1458030.593	531418.6	500 Museum Dr			N			
1460836.828	525023.674	Ty Wyng Ln			N			
1456225.801	526469.07	1727 Providence Rd			N			
1459926.139	531090.396	3110 Leroy St			N			
1454454.62	529048.162	2600 Portland Ave			N			
1458113.272	522746.289	2601 Woodbrook Ln			N			
1456852.198	520484.156	2300 Ferncliff			N			
1454180.931	520912.033	Rockbrook & Runneymead			N			
1453288.129	520050.784	3000 Colony			N			
1426282.796	514970.355	7312 Bramblewood	9/11/00		N			
1428642.501	511166.886	Arrowwood Rd	9/11/00		N			
1434676.772	522830.128	511 Ruthland	9/11/00		N			
1430963.324	522892.001	Renaissance Park	9/11/00		N			
1426697.997	527286.173	Tyvola rd	9/11/00		N			
1428133.322	529725.964	Yorkmont rd	9/11/00		N			
1472590.323	528702.969	4816 Yardley Pl			N			
1467759.113	525905.205	4247 Castleton Rd			N			
1464627.93	526323.216	4527 Water Oak Drive			N			
1463618.308	525970.251	800 Queen Charlotte's Ct			N			
1465216.709	523876.303	4723 Stafford			N			
1465966.878	522590.558	4918 Addison			N			
1464744.81	519910.426	101 Shasta			N			
1464679.682	521471.497	300 Hunter Ln			N			
1462443.956	520007.833	1323 Kingscross Dr			N			
1462056.611	521186.677	1331 Ruthledge			N			
1459683.887	512856.433	Simsbury @ silo	9/13/00		N			
1458962.681	512556.736	2526 Valencia	9/13/00		N			
1451384.316	508615.857	5722 Bellechase	9/13/00		N			
1452926.937	505379.749	6616 Wynfare	9/13/00		N			
1455428.97	510139.326	Shaker @ Cambria	9/13/00		N			
1455385.676	503707.238	4200 Wild Partridge	9/13/00		N			
1456704.997	506344.413	4267 Buckhurst Dr.	9/13/00	1022	N			
1446109.863	532165.046	2700 Dorchester Pl	9/18/00		N			
1449142.688	537061.128	2418 Cumberland ave	9/18/00		N			
1447525.704	520041.064	1516 Seneca dr.	9/18/00		N			
1442174.518	522358.261	4901 Zephyr Ln	9/18/00		N			
1442840.115	527957.654	939 Hartford Pl	9/18/00		N			
1446394.121	528101.372	Park & Marsh	9/18/00		N			
1447917.74	525323.752	Hillside @ Willow Oak	9/18/00		N			
		8912 Rittenhouse Rd	10/11/00		N			
		~7500 Sardis Rd	10/11/00		N			
		6407 Honegger Rd	10/11/00		N			
		1114 Bearmore	10/11/00		N			
		1512 Piccadilly	10/11/00		N			
		630 Wheeler	10/11/00		N			
1460377.976	541345.487				N			
1462823.865	544399.936				N			
1464157.102	545959.301				N			
1477014.342	542076.384				N			
1436098.399	506710.251				N			
1436322.724	507336.549				N			
1440954.893	503646.064				N			
1442394.493	503084.955				N			
1443323.655	501369.62				N			
1446831.705	503066.917				N			
1447321.788	503962.678				N			
1451019.358	503786.934				N			
1449686.721	497775.647				N			
1447942.576	495547.123				N			
1448204.039	494624.123				N			
1447483.569	493971.407				N			

Table A6-1. Results of TMDL Study of Storm Drain Outfalls

Easting	Northing	Address	Date	Time	DW Flow Present	Flow (cfs)	Fecal coliform concentration (cfu/100 ml)	Fecal Coliform Concentration Used in Calculations
1450398.249	494740.665				N			
1451729.602	494308.088				N			
1455660.822	502159.529				N			
1446469.786	506438.068				N			
1449697.239	546646.103	700 Seaboard	6/1/00	1050	Y	0.02	>6000	6000
1458035.442	559861.854	1901 Cottonwood	6/1/00	1300	Y	0.13	<100	100
1441389.304	537893.143	2213 Toomey St.	6/1/00	1340	Y	0.02	100	100
1459018.887	552717.966	332 Atando and Robinson	6/8/00	1220	Y	0.002	15000	15000
1467142.508	555052.874	401 Kentbrook	6/8/00	1045	Y	0.018	<100	100
1471009.809	559459.549	6512 Elgywood	6/8/00	1115	Y	0.0002	2700	2700
1460488.285	551140.524	36th St @ Little Sugar	6/8/00	1450	Y	0.001	600	600
1440051.625	518624.937	186 Tyvola Dr	6/22/00	1010	Y	0.014	4600	4600
1440074.957	512476.34	6606 Wisteria	6/22/00	1055	Y	0.008	<100	100
1443119.908	533759.951	309 Ideal Way	6/22/00	1320	Y	0.011	<100	100
1441262.118	489291.86	11521 Park Road	7/18/00	1353	Y	0.0055	>6000	6000
1470872.042	505583.98	7438 Leharna Dr.	7/31/00	1237	Y	0.0417	<100	100
1445116.579	563098.967	1809 Griers Grove	8/21/00	1229	Y	0.009	200	200
1440333.321	558925.458	601 Hoskins Rd.	8/21/00	1330	Y	0.0007	>6000	6000
1479731.271	546745.649	7015 Lanecrest	8/23/00	930	Y	0.0001	8000	8000
1476845.774	548360.958	Milton & Perth	8/23/00	938	Y	0.0005	>6000	6000
1462703.449	552220.8	Craighead@concrete supply	8/23/00	1030	Y	0.035	6600	6600
1465012.33	535426.852	3350 Commonwealth Av	8/24/00	1415	Y	0.008	<100	100
1466661.487	528014.399	Craig Ave			Y	0.0006	<100	100
1446285.856	534343.183	Lennox & Brookside	9/18/00		Y	0.0002	<1200	1200
1444226.913	532533.544	Poindexter	9/18/00		Y	0.0035	100	100
1460995.297	501718.174	1932 Summerhill	7/31/00	1134	Y	0.0052	<100	100
1441561.904	537021.908	516 Tremont	6/22/00	1350	Y			
1461277.447	528001.846	Churchhill @ Barmettler			Y	0.0005	*	
1428220.835	541269.372	4348 Connelly	6/1/00	1450	Y			
1433866.373	522760.625	5136 Queen Anne Rd	9/11/00		Y		3900	3900
1480737.667	543313.285	3139 Amity Ct	8/7/00	1459	Y			
1491245.948	534723.617	8132 Nathaniel green ln	8/7/00	1428	Y			
1461610.522	506884.851	2400 Rock Creek Dr	8/7/00	1423	Y	0.065		
1439967.657	522894.475	4914 Baylor Ln	9/18/00		Y			
1442273.284	529991.683	728 Belton Dr.	9/18/00		Y			
		800 Regency Rd	10/11/00		Y			4400
1441863.547	511235.44	6632 Brookcrest Dr	6/22/00	1114	na			
1450788.246	513400.668	2819 Eastburn Ave	6/22/00	1240	na			
1440743.051	555096.652	312 Centre st.	8/21/00	936	na			
1431760.552	525664.378		9/11/00					

Appendix 7.
Groundwater Concentration Data

Table A7-1. Fecal Coliform Sample Data for Ground Water Investigation

Site	Date	MW-2 (Upgradient) FC	MW-1 (Downgradient) FC	Fecal Coliform
		Concentration (cfu/100 ml)	Concentration (cfu/100 ml)	Concentration Used In Calculations
Beatties Ford Roac	11/13/00	<200	<200	10
Beatties Ford Roac	11/20/00	<10	<200	10
Beatties Ford Roac	11/28/00	<10	<10	10
Beatties Ford Roac	12/5/00	<10	<10	10
Latta Park	11/16/00	-	<200	
Latta Park	11/20/00	-	<10	10
Latta Park	11/28/00	-	<10	10
Latta Park	12/5/00	-	<10	10
Latta Park	12/13/00	-	<10	10
Latta Park	12/20/00	-	<10	10
Latta Park	12/27/00	-	<10	10
Masonic	11/16/00	<200	<200	
Masonic	11/20/00	<200	<200	
Masonic	11/28/00	<10	1700	1700
Masonic	12/5/00	<10	80	80
Masonic	12/14/00	<10	<10	10
Masonic	12/20/00	<10	<10	10
Masonic	12/27/00	<10	<10	10
McDonald	11/13/00	<200	330	330
McDonald	11/20/00	<10	<200	
McDonald	11/28/00	<20	30	30
McDonald	12/5/00	<10	<10	10
McDonald	12/13/00	<10	<10	10
McDonald	12/20/00	<10	20	20
McDonald	12/27/00	<10	<10	10
Meadowbrook	11/13/00	2000	<200	10
Meadowbrook	11/20/00	30	<200	10
Meadowbrook	11/28/00	<10	<10	10
Meadowbrook	12/6/00	<10	<10	10
Meadowbrook	12/20/00	<10	<10	10
Meadowbrook	12/27/00	<10	<10	10
Mint Museum	11/13/00	<200	<200	10
Mint Museum	11/20/00	<200	<200	10
Mint Museum	11/28/00	<10	<10	10
Mint Museum	12/6/00	<10	<10	10
Sharon View	11/16/00	<200	<200	10
Sharon View	11/20/00	<10	<10	10
Sharon View	11/28/00	<10	<10	10
Sharon View	12/5/00	<10	<10	10
Sharon View	12/21/00	<10	<10	10
Sharon View	12/27/00	<10	<10	10
Southwest Blvd.	11/13/00	<200	<200	10
Southwest Blvd.	11/20/00	<200	<200	10
Southwest Blvd.	11/28/00	<10	<10	10
Southwest Blvd.	12/5/00	<10	<10	10
Thermal Roac	11/16/00	<200	<200	10
Thermal Roac	11/21/00	<200	<200	10
Thermal Roac	11/29/00	<10	140	140
Thermal Roac	12/5/00	<10	30	30
Thermal Roac	12/21/00	<10	<10	10
Thermal Roac	12/27/00	<10	<10	10

NS = Not Sampled

Appendix 8. Model Selection Criteria

FIGURE A8-1: TMDL Model Selection Criteria, Mecklenburg County, NC

Model	Ease of Use	Derensibility (Acceptability)	Accuracy	Available Sources	Baseflow/Stormwater	User Interface	Tools
Simple Method	Simple	Generally used as an indicator or planning tool.	Limited Screening Level Tool	non-point	Baseflow formulation exists but is rarely (if ever used). Used extensively for stormwater load planning	Current version of WIS contains a functional simple method routine (pre and post processor)	NA
Watershed Management Model	Simple/Moderately Complex	Planning tool.	Screening Level Tool	Point (limited) and non-point	Limited Baseflow and Runoff Simulation (uses averages). Unable to simulate individual events	Pre and Post processor based in arcview available (free)	NA
SLAMM	Moderately Complex	Generally used as an indicator or planning tool.	Uses statistical averaging for hydrograph generation. No in-stream water quality process considered.	Point and non-point	Very Limited Baseflow capabilities.	Good user interface	NA
P8-UCM	Moderately Complex	Screening Applications	Moderately high	Point and non-point	Limited baseflow simulation	Pre and Post processor (free)	NA
HSPF(Basins)	Very Complex	Industry standard for water quality modeling	High (data is limiting factor)	Point and non-point	Most highly advanced baseflow simulation available. Very good non-urban stormwater.	Somewhat user friendly pre/post processors available for free.	very neutral parameter database (free). Calibration tools (free). GIS based multiple scenario input engine (free)
SWMM	Very Complex	Excellent urban hydrology and hydraulics, limited water quality	High (data is limiting factor)	Point and non-point	Limited Baseflow Simulation. Industry standard for urban stormwater	Highly advanced pre/post processors for sale (\$400 - \$10K) some platforms have user interactive help. DOS version is free.	Generally tools are dependant on the supplier selected

FIGURE A8-1: cont.

Model	Support	Data Requirements	Dynamic	Other
Simple Method	Good documentation (HSMM provides support for WIS)	Minimal	no (generally use average data over some specified interval)	We (mcdep) are set up to run with this method.
Watershed Management Model	Not as good as other simple models	Minimal	no	No seasonality (annual only)
SLAMM	Incomplete documentation on model use.	Moderate	pseudo-dynamic (no baseflow conditions modeled)	
P8-UCM	Limited (excellent manual)	Moderate	Dynamic	Primarily used to model BMP's
HSPF(Basins)	Active List Server. USEPA Tech Support.	Very Data Intensive	Fully Dynamic	The basins suite has been developed specifically for the TMDL process
SWMM	Active List Server. Support generally through GUI provider.	Very Data Intensive	Fully Dynamic	The transport block (water quality) of SWMM is being "phased out" of use in favor of coupling with other models

Note: If we decide to model sewer overflows as individual point sources, a dynamic model will be required that allows for the inclusion of point sources will need to be used (rules out simple models).

Note: According to Huber (1999), linkage of SWMM to BASINS platform is currently underwa

Note: P8 not able to handle coliforms "out of the box"

References Used in the preparation of this table

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Appendix 9. Public Notice



Michael F. Easley
Governor

Sherri Evans-Stanton, Acting Secretary
North Carolina Department of Environment and Natural Resources

Kerr T. Stevens, Director
Division of Water Quality

Irwin, Little Sugar, Sugar, and McAlpine Creeks, Catawba River Basin

Now Available Upon Request

Copies of the draft TMDL study:

Irwin, Little Sugar, Sugar, and McAlpine Creeks (in Subbasin 030834) Fecal Coliform Total Maximum Daily Load

Are now available upon request from the North Carolina Division of Water Quality. This TMDL study was prepared as a requirement of the Federal Water Pollution Control Act, Section 303(d). The study identifies the sources of pollution, determines allowable loads to the surface waters, and suggests allocations for pollutants of concern.

TO OBTAIN A FREE COPY OF THE TMDL REPORT:

Please contact Ms. Jamie Smith (919) 733-5083, extension 558 or write to:

Ms. Michelle Woolfolk
TMDL Coordinator
Water Quality Planning Branch
NC Division of Water Quality
1617 Mail Service Center
Raleigh, NC 27699-1617

Interested parties are invited to comment on the draft TMDL study by May 31, 2001. Comments and questions concerning the report should be directed to Ms. Michelle Woolfolk at the above number (extension 505) and address. The draft TMDL is also located on the following website:
<http://h2o.enr.state.nc.us/tmdl>

