

EIGHT MILE CREEK/GUM TREE BRANCH MONITORING PROGRAM SUMMARY REPORT

**Eight Mile Creek
Gum Tree Branch
2005-06**

*Mobile Bay National Estuary Program
Alabama Department of Environmental Management
Gulf of Mexico Program
US Environmental Protection Agency*



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April 2006

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Executive Summary

In 2005 the Mobile Bay National Estuary Program (MBNEP) initiated a monitoring program within the Eight Mile Creek and Gum Tree Branch watersheds. Gum Tree Branch is a tributary to Eight Mile Creek. Eight Mile Creek is a tributary of Chickasaw Creek, and Chickasaw Creek flows into the Mobile River just north of Magazine Point. The program was a multi-phase effort to examine the hydrology and drainage basin characteristics, pathogen load, and source identification for pathogens in Eight Mile Creek and Gum Tree Branch in the cities of Mobile and Prichard in Mobile County, Alabama.

The program also provided support for specific components of the Mobile Bay National Estuary Program Plan (August 2000) and was consistent with the MBNEP Comprehensive Conservation and Management Plan (CCMP) and supported implementation of CCMP Action Plans: WQ-A1 and WQ-C1.

This report covers actions initiated by the MBNEP in an agreement between the Alabama Department of Environmental Management (ADEM) and the Dauphin Island Sea Lab pursuant to an appropriation by the Environmental Protection Agency and on behalf of the MBNEP. The agreement detailed actions that pertained to "Phase One" of a multi-phase project to address the possible removal of the impaired stream segments of Eight Mile Creek and Gum Tree Branch from the Alabama §303(d) list. The pathogen TMDL for Eight Mile Creek/Gum Tree Branch was approved by EPA in October 2004. Implementation is ongoing. Completion of implementation is expected to bring the waterbodies into compliance with their use classifications. The use classification of Gum Tree Branch is Fish & Wildlife (F&W). All of Eight Mile Creek is classified F&W as well. In addition to the F&W classification, Eight Mile Creek has a Public Water Supply (PWS) use classification from Gum Tree Branch upstream to U.S. Highway 45 (St. Stephens Road).

Phase One involved verifying the effectiveness of ongoing corrective actions to address sanitary sewer overflows in Eight Mile Creek and Gum Tree Branch through water quality monitoring conducted by ADEM. Based on the sampling effort in Phase One, only 1 out of 10 sites is supporting its use classification: EM-1 Eight Mile Creek near the confluence with Gum Tree Branch.

The data will also be employed in Phases 2 and 3 (MBNEP, Mobile Engineering, Inc., and the South Alabama Regional Planning Commission), to identify any additional potential sources not considered in the TMDL. The ADEM was responsible for Phase 1 of the project and served as Co-Principal Investigator for the project. The MBNEP served as the Primary Investigator.

Introduction

An agreement between the Alabama Department of Environmental Management (ADEM) and the Dauphin Island Sea Lab (DISL) pursuant to an appropriation by the US Environmental Protection Agency (EPA) and on behalf of the Mobile Bay National Estuary Program (MBNEP) will provide support for initiating specific portions of the Mobile Bay National Estuary Program Plan (August 2000). The program is consistent with the MBNEP Comprehensive Conservation and Management Plan (CCMP) and supports implementation of Action Plans: WQ-A1 and WQ-C1.

The project is Phase One of a multi-phase effort to examine the hydrology and drainage basin characteristics, pathogen load, and source identification for pathogens in Eight Mile Creek and Gum Tree Branch in the cities of Mobile and Prichard, Alabama.

Objectives

The objective of this project is to provide data to the MBNEP on Eight Mile Creek and Gum Tree Branch for phase 1 of a 3 phase program to evaluate potential water quality improvements and the extent to which these streams support their designated use relative to pathogens. This objective will be accomplished by:

1. Assessing the effectiveness of corrective actions taken to address sanitary sewer overflows through water quality monitoring conducted by ADEM during Phase 1.
2. Should the data suggest the corrective actions were ineffective, the participants of Phases 2 and 3 (MBNEP, Mobile Engineering, Inc., and the South Alabama Regional Planning Commission), will identify additional potential sources not considered in the TMDL through actions outlined in Phases 2 and 3.

* The Mobile Bay NEP served as Primary Investigator for the project. The ADEM was responsible for Phase 1 of the project and served as Co-Principle Investigator. All field measurements and analyses were conducted by ADEM.

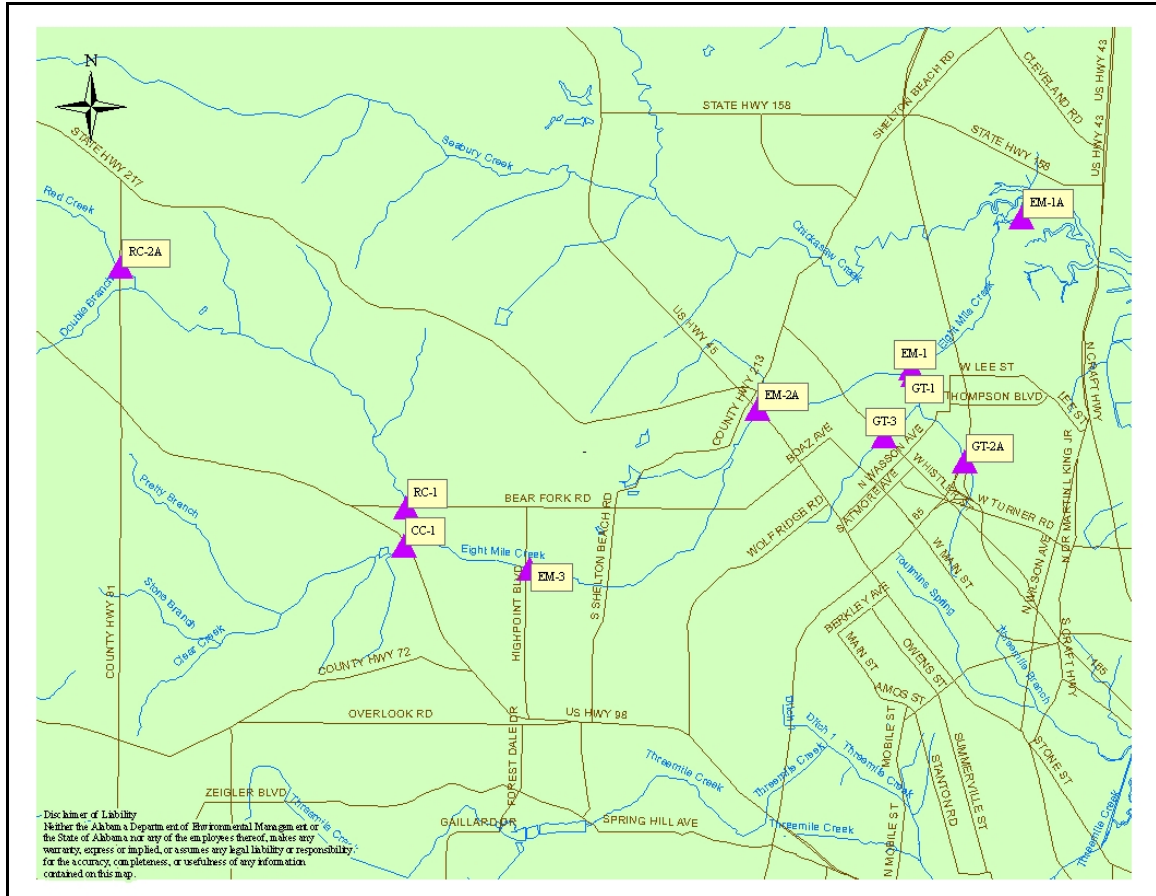
Water Quality Monitoring

The ADEM conducted water quality monitoring within the aforementioned watersheds which involved the following:

- A total of ten monitoring stations were located on Eight Mile Creek, Gum Tree Branch, an unnamed tributary to Gum Tree Branch, Clear Creek, and Red Creek.
- Sampling was conducted once a month along with intensive bacterial surveys (geometric mean), at each station using fecal coliform as an indicator.
- Stream flow was measured to determine loadings.
- In-situ and laboratory parameters analyzed at each monitoring location included: in situ data, turbidity, pH, dissolved oxygen, TSS, TDS, Alk. Ammonia (NH₃-N), nitrate-nitrite (NO₂+NO₃-N), TKN, orthophosphate, total phosphate, CBOD(5), Hardness, and fecal coliform data.

Monitoring Locations

Ten monitoring stations were established: one near the mouth of Eight Mile Creek, two in Gum Tree Branch, one in an unnamed tributary to Gum Tree Branch, and the six remaining monitoring locations were in Eight Mile, Clear, and Red Creeks.



Station ID	Location Description	Latitude	Longitude
GT-1	Gum Tree Branch at its mouth	30.7672	-88.1015
GT-2A	Gum Tree Branch at I-65	30.7555	-88.0933
GT-3	UT to Gum Tree Branch at Culvert Street	30.7588	-88.1061
EM-1A	Mouth of Eight Mile Creek, north end of Robbers Is.	30.7885	-88.0848
EM-1	Eight Mile Creek just upstream of Gum Tree Branch	30.7680	-88.1018
EM-2A	Eight Mile Creek east of U.S. 45 (St Stephens Rd)	30.7624	-88.1259
EM-3	Eight Mile Creek at Highpoint Blvd	30.7405	-88.1612
RC-1	Red Creek at Bear Fork Road	30.7486	-88.1805
RC-2A	Red Creek at county road east of Semmes	30.7806	-88.2257
CC-1	Clear Creek at U.S. 98 (Moffat Road)	30.7434	-88.1808

Figure 1. Map of Monitoring Locations.

Methods

Standardized methods were used in this project, to assure consistency, quality, and reliability of data and results generated by this program. These methods were developed for use by the ADEM as the Standard Operating Procedures (SOPs) and are specified in the Quality Assurance Management Plan (QAMP, 2003).

In-situ data was collected at each site with a water quality meter. Dissolved Oxygen (mg/l), Temperature (C), pH, Salinity (ppt), Specific Conductance (mS/cm) and Depth (m) were collected with a 650MDS and 600QS multiparameter water quality meter manufactured by the YSI Corporation. Measurements were recorded through the water column at the non-wadeable site (EM-1A) and at mid depth for all other sites.

Flow data was collected using an ADCP Doppler flow meter at the non-wadeable site (EM-1A) and with a USGS type rotating meter mounted on a top-setting rod at the other sites requiring flow.

Water quality samples were collected in such a way as to be representative of existing conditions. After collection, the samples were preserved in the field and the Chain of Custody was maintained at all times. The samples were then transported to the ADEM Mobile Branch Laboratory for analysis.

Laboratory Analysis

The ADEM Mobile Branch Laboratory performed analysis of all samples collected during Phase One of the program. Analysis were performed and reported to Mobile Branch Field Staff.

Data Management

Field records were entered directly onto ADEM Field Sheets or in a bound Field Book. Field records were then transferred into the appropriate electronic format as required by the Mobile Bay NEP.

A final written report summarizing the results of the monitoring effort was prepared and provided to the NEP. All raw data, field records, and laboratory reports will be provided in hard copy to the NEP. Copies will remain on file at the ADEM Mobile Branch Office.

The data collected during this study will help satisfy the goals of the MBNEP CCMP. The ADEM can employ the data for use support assessment. The ADEM may use the data for use support assessment.

Analytical Requirements

The ADEM gathered data collected from sample locations and compare the data to ADEM's Specific Water Quality Criteria as set forth in ADEM Administrative Code R. 335-6 (September 21, 2005) and Alabama's Water Quality Assessment and Listing Methodology (2005). Section 335-6-10-.09(2) lists water quality criteria for the PWS use classification; 335-6-10-.09(5) covers criteria for F&W.

Results

At numerous times during the monitoring program, fecal coliform standards, in both Eight Mile Creek and Gum Tree Branch, were exceeded for their use categories. Table 1 is a summary of fecal coliform results. Data acquired in June 2005 and January 2006 was employed for geomean criteria assessment which consisted of 5 bacteria samples with in a 30 day period at each station. However, this does not preclude use of the same data for single sample criteria assessment as well.

Month		EM-1A	GT-1	EM-1	EM-2A	RC-1	CC-1	EM-3	RC-2A	GT-3	GT-2A
February 2005		340	190	56	180	100	42	130	500	860	190
March 2005		70	90	46	28	120	80	210	120	290	110
April 2005		950	35000	8000	290	250	540	2400	1700	2500	2100
May 2005		84	58	64	58	64	40	200	84	1000	340
June 2005		180	21000	160	1600	1900	520	80	88	570	12000
July 2005	G e o m e a n	11000	12000	1700	1200	1300	1600	1800	2800	2900	57000
July 2005		360	900	110	330	260	200	100	220	1100	1800
July 2005		460	1100	120	82	92	76	54	90	590	1300
July 2005		350	460	100	110	300	82	100	74	900	590
August 2005		360	1300	110	2700	1300	2900	1600	450	2900	2000
September 2005		2600	80	108	90	96	40	68	80	360	230
October 2005		110	40	230	84	58	40	92	46	1300	1000
November 2005		1200	210	260	120	94	300	94	88	84	310
December 2005		74	16	40	18	24	22	18	54	120	110
January 2006	G e o m e a n	88	130	68	46	44	54	52	22	150	200
January 2006		90	330	58	70	60	62	100	44	92	140
January 2006		330	3000	400	460	110	260	210	70	1800	3000
January 2006		54	58	64	58	12	60	56	32	120	40
January 2006		380	64	86	84	16	34	50	100	490	390

Table 1. Monthly Fecal Coliform Results in col/DL.

Gum Tree Branch

GT-2A. This station is on Gum Tree Branch near the bridge on Wasson Ave. in Prichard, Alabama. Figure 2 is a summary of results for fecal coliform bacteria for GT-2A. Figure 3 is upstream of GT-2A. Note the shallow depth when compared to the downstream view in Figure 4.

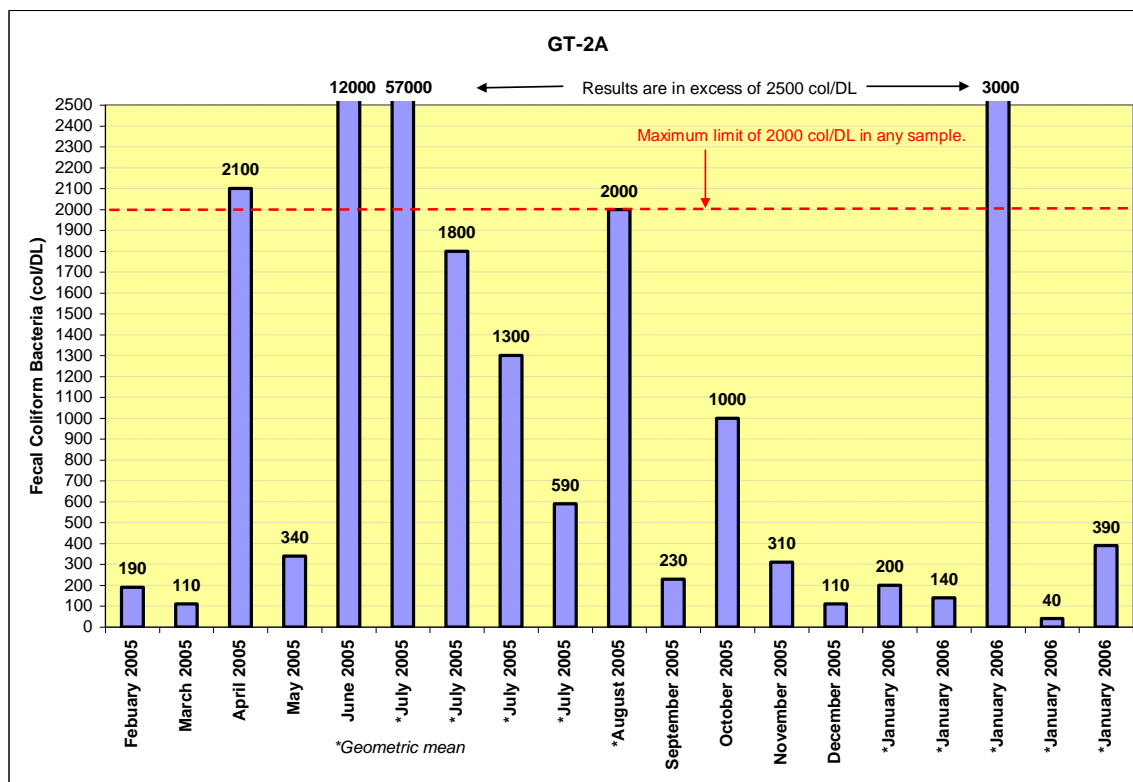


Figure 2. Fecal coliform results for GT-2A.



Figure 3. Upstream view of GT-2A.



Figure 4. Downstream view of GT-2A.

GT-1. This station is located on Gum Tree Branch near the confluence with Eight Mile Creek (EM-1). Figure 5 is a summary of results for fecal coliform bacteria for GT-1. Figure 6 is an Upstream view of GT-1 and Figure 7 is a Downstream view of GT-1 (also a view of the confluence of Gum Tree Branch and Eight Mile Creek).

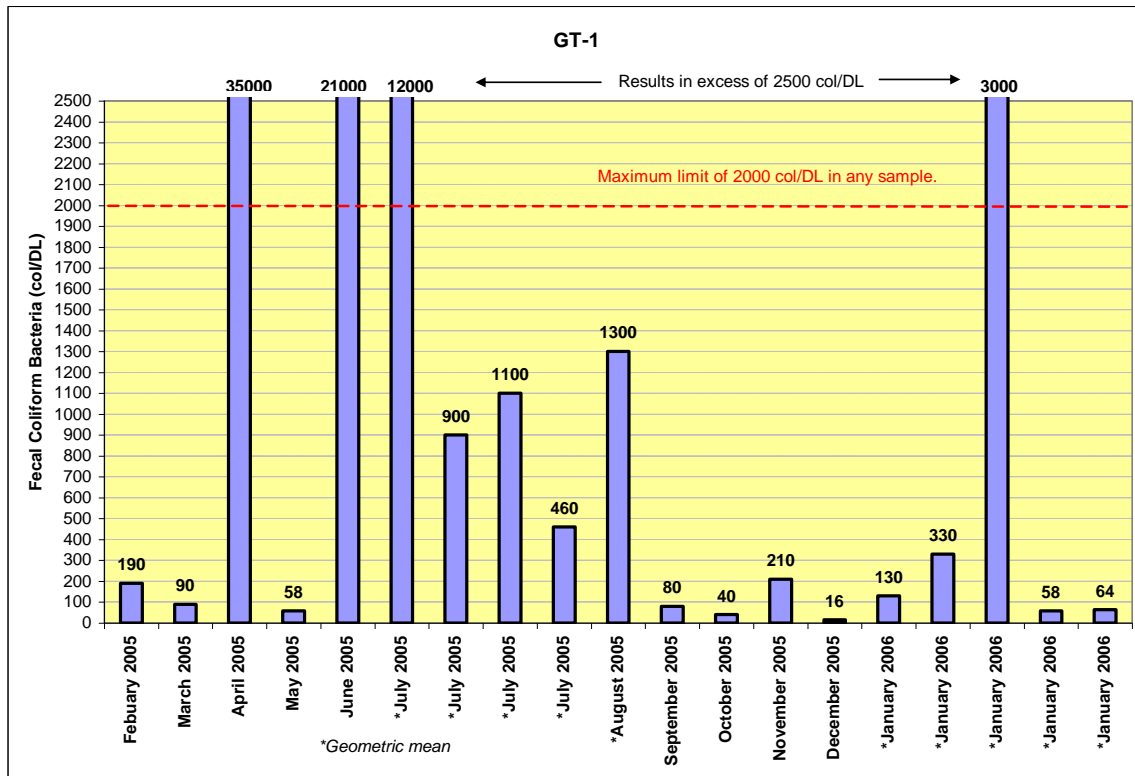


Figure 5. Fecal coliform results for GT-1.



Figure 6. Upstream view of GT-1.



Figure 7. Downstream view of GT-1.

GT-3. This station is located on an unnamed tributary to Gum Tree Branch at Culvert Street. Figure 8 is a summary of results for fecal coliform bacteria for GT-3. Figure 9 is an Upstream view of GT-3 and Figure 10 is a Downstream view of GT-3.

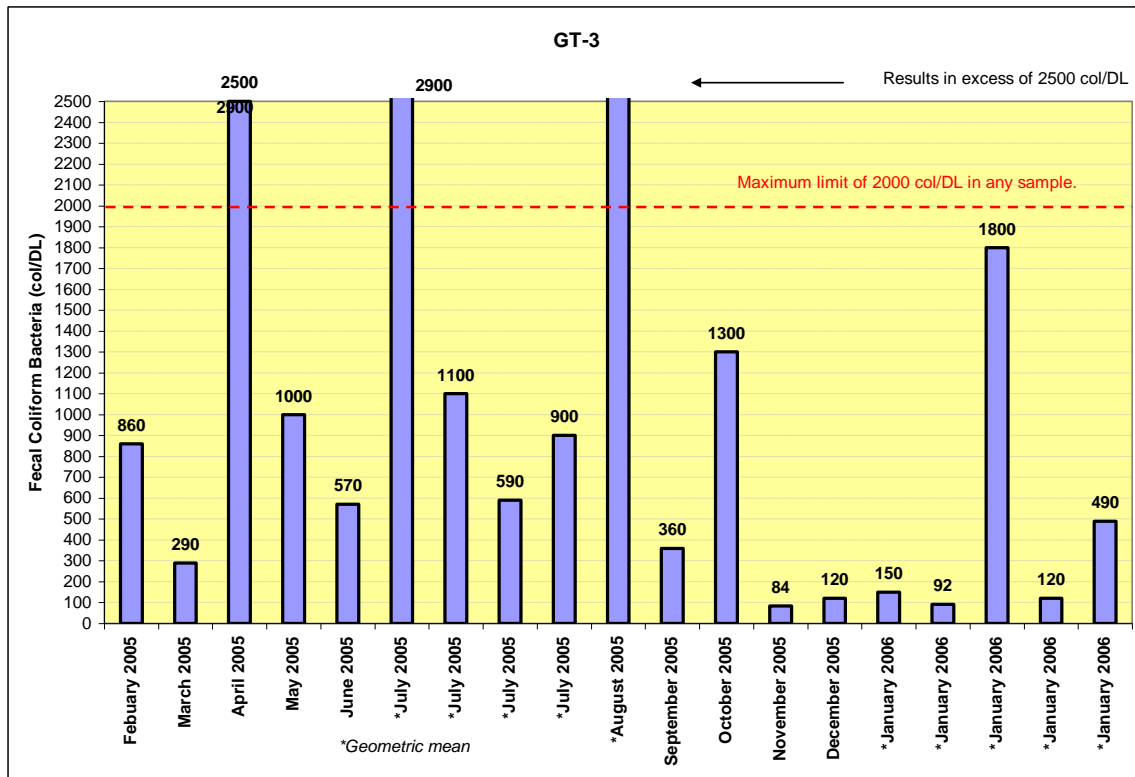


Figure 8. Fecal coliform results for GT-3.

Figure 9. Upstream view of GT-3.

Figure 10. Upstream view of GT-3.



Eight Mile Creek

EM-1A. This station is located near the confluence with Chickasaw Creek. Figure 11 is a summary of results for fecal coliform bacteria for EM-1A. Figure 12 is an aerial view of EM-1A.

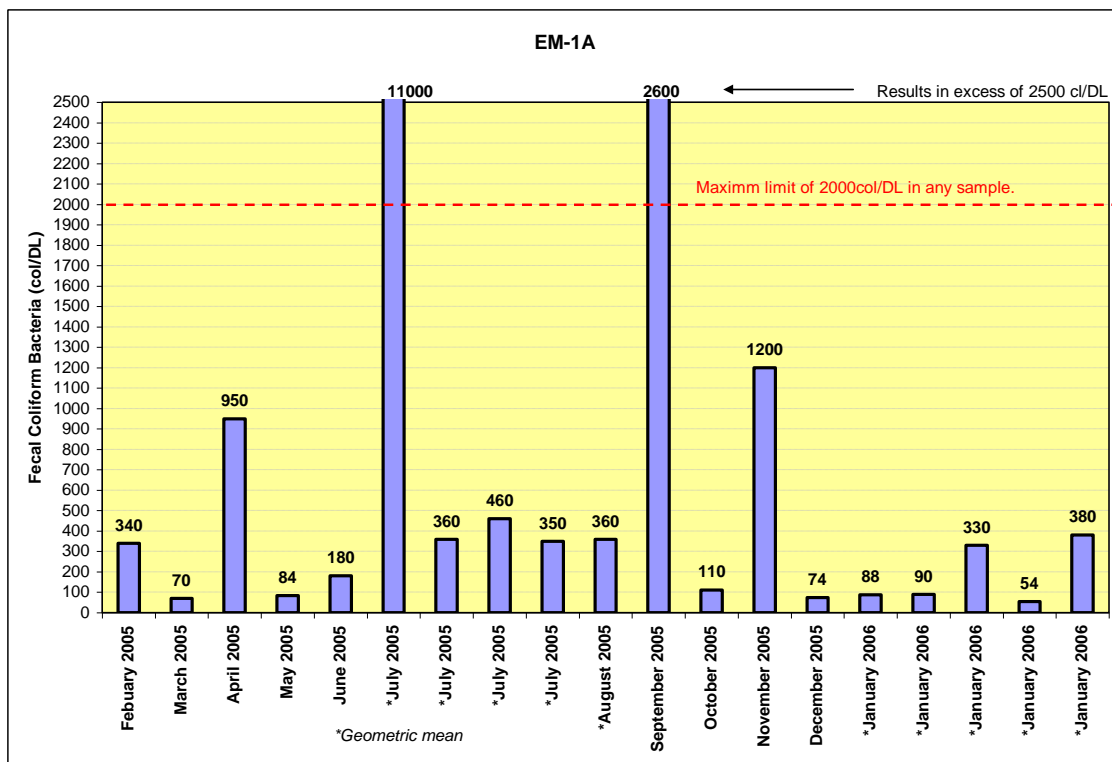


Figure 11. Fecal coliform results for EM-1A.



Figure 12. Aerial view of EM-1A. (USGS 2002).

EM-1. This station is located near the confluence with Gum Tree Branch (GT-1). Figure 13 is a summary of results for fecal coliform bacteria for EM-1. Figure 14 is an Upstream view of EM-1 and Figure 15 is a Downstream view of EM-1.

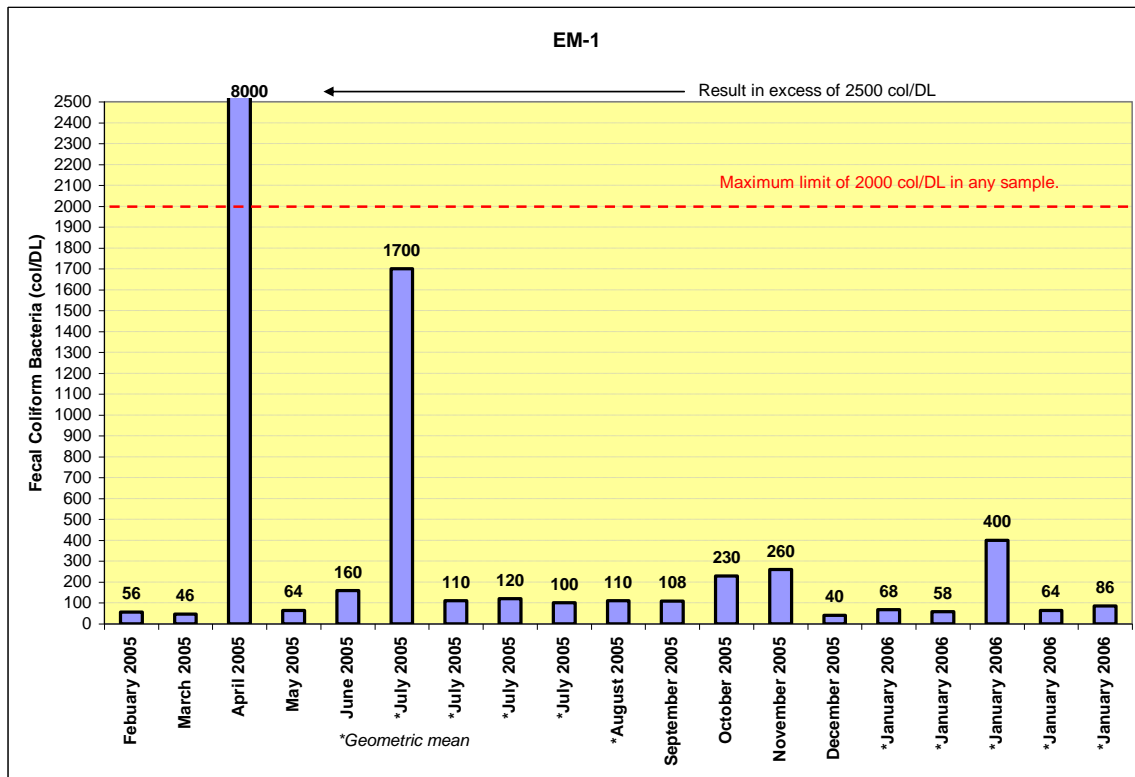


Figure 13. Fecal coliform results for EM-1.



Figure 14. Upstream view of EM-1.

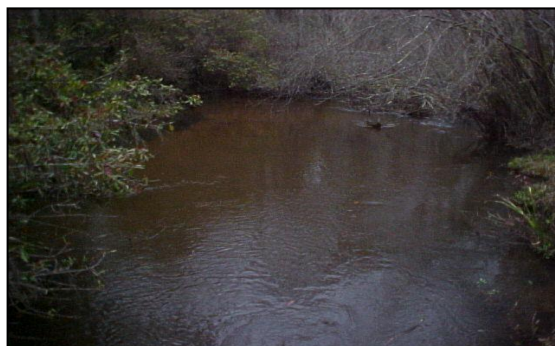


Figure 15. Downstream view of EM-1.

EM-2A. This station is located near Hwy 45 on Winchester Street. Figure 16 is a summary of results for fecal coliform bacteria for EM-2A. Figure 17 is an Upstream view of EM-2A and Figure 18 is a Downstream view of EM-2A.

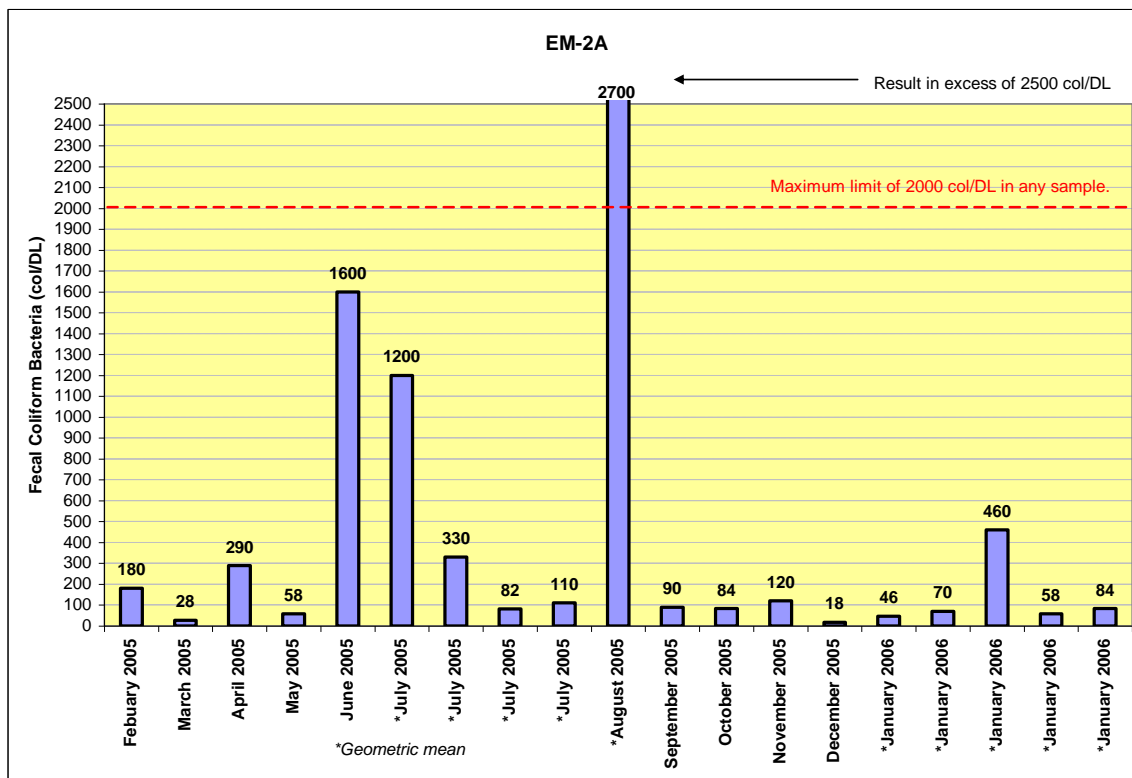


Figure 16. Fecal coliform results for EM-2A.



Figure 17. EM-2A Downstream view.



Figure 18. EM-2A Upstream view.

EM-3. This station is located on Highpoint Blvd. Figure 19 is a summary of results for fecal coliform bacteria for EM-3. Figure 20 is an Upstream view of EM-3 and Figure 21 is a Downstream view of EM-3.

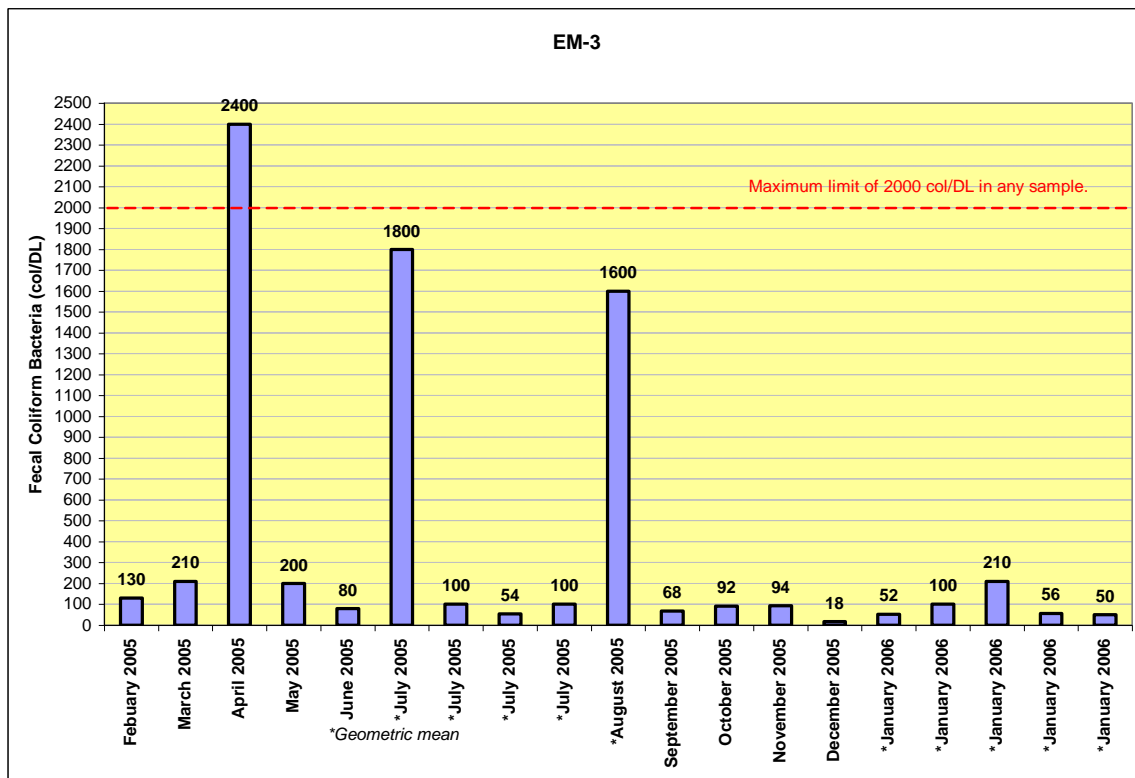


Figure 19. Fecal coliform results for EM-3.

Figure 20. EM-3 Upstream view.

Figure 21. EM-3 Downstream view.

Clear Creek

CC-1. This station is located on Hwy 98. Figure 22 is a summary of results for fecal coliform bacteria for CC-1. Figure 23 is an Upstream view of CC-1 and Figure 24 is a Downstream view of CC-1.



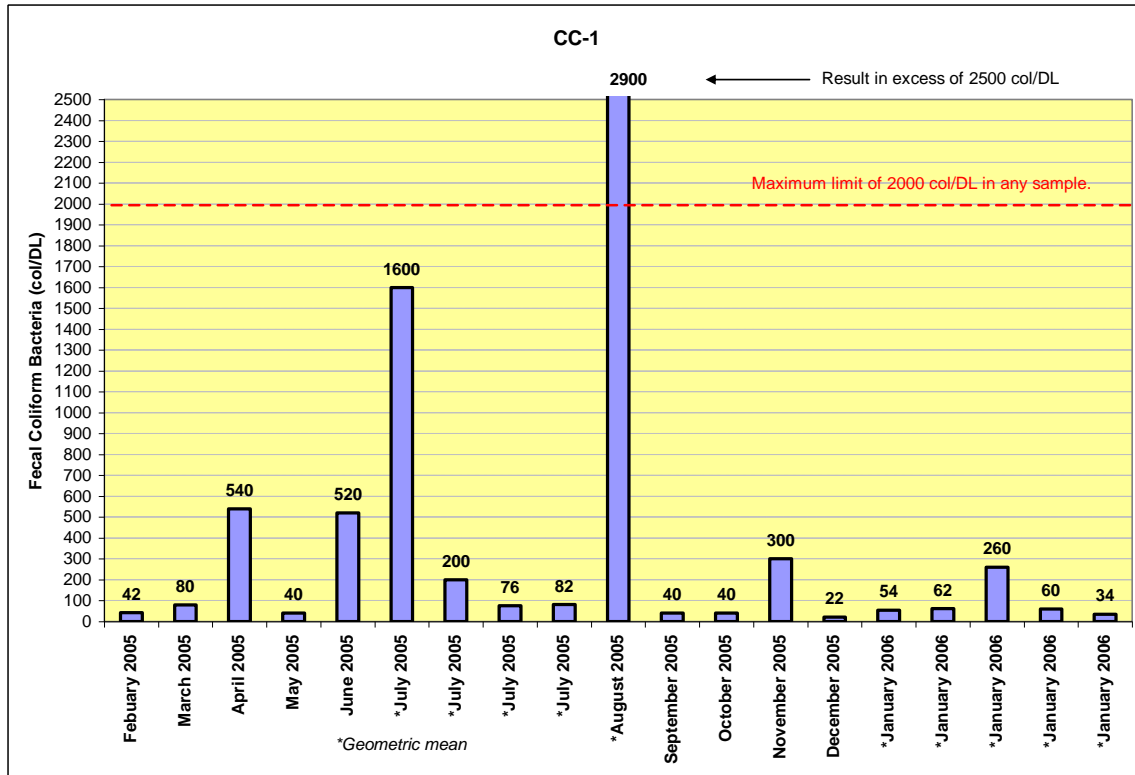


Figure 22. Fecal coliform results for CC-1.



Figure 23. Upstream view of CC-1.

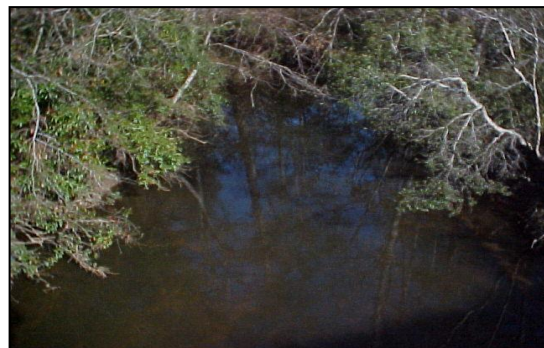


Figure 24. Downstream view of CC-1.

Red Creek

RC-1. This station is located on Bearfork Road. Figure 25 is a summary of results for fecal coliform bacteria for RC-1. Figure 26 is an Upstream view of RC-1 and Figure 27 is a Downstream view of RC-1.

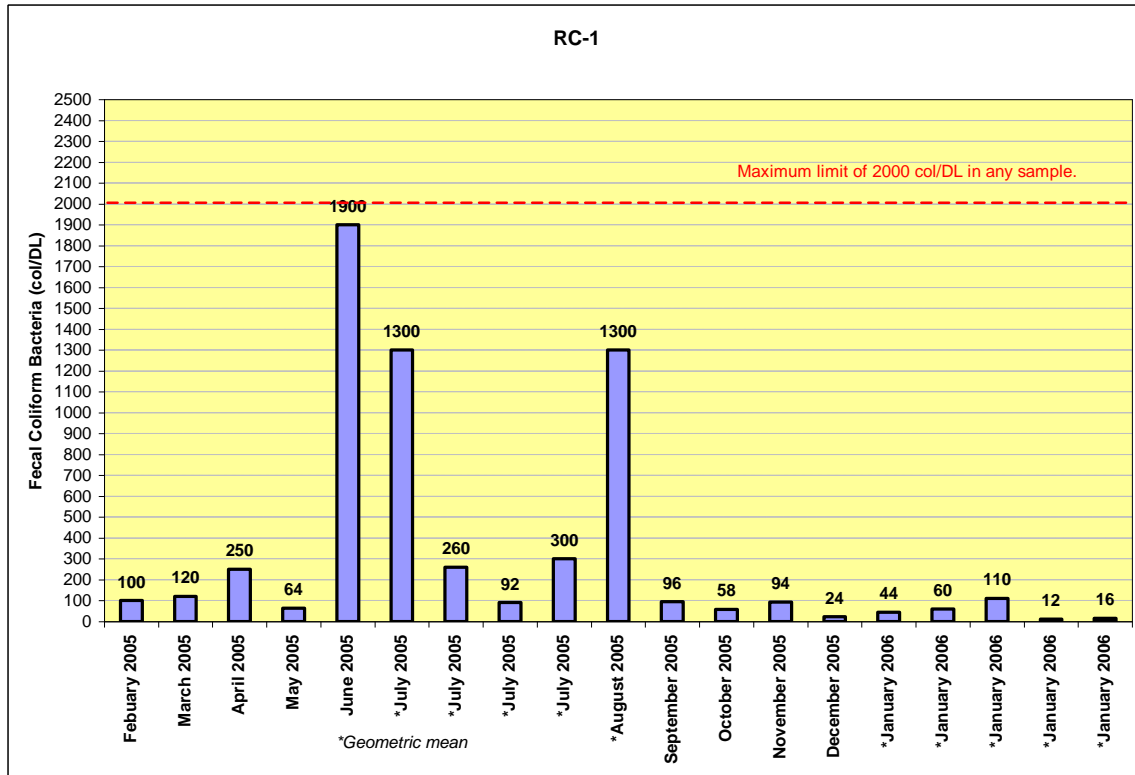


Figure 25. Fecal coliform results for RC-1.



Figure 26. Downstream view.



Figure 27. Upstream view.

RC-2A. This station is located on Shillingers Road. Figure 28 is a summary of results for fecal coliform bacteria for RC-2A. Figure 29 is an Upstream view of RC-2A and Figure 30 is a Downstream view of RC-2A.

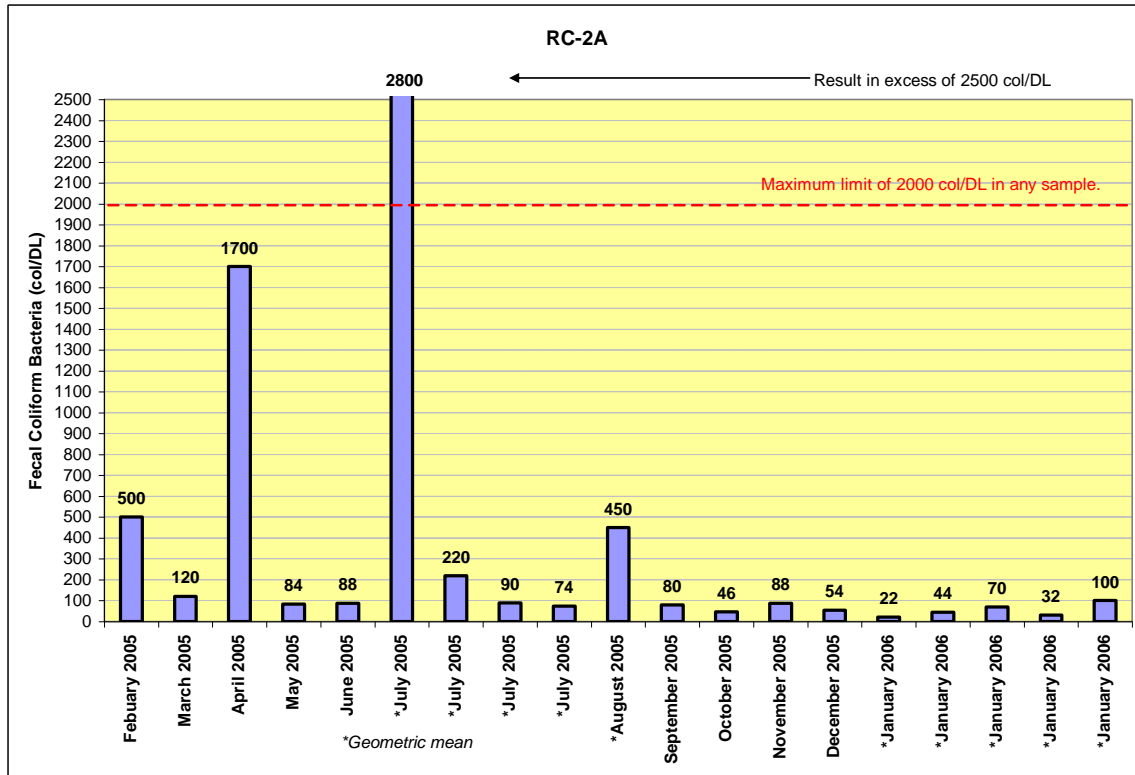


Figure 28. Fecal coliform results for RC-2A.



Figure 29. Upstream view of RC-2A.



Figure 30. Downstream view of RC-2A.

Discussion

The main indicator of impairment for this study is the presence of pathogens that may lead to waterborne disease. Fecal coliform bacteria are normally prevalent in the intestines and feces of warm-blooded animals and are used as an "indicator species" for pathogens (enterococcus in coastal areas). While fecal coliforms are not themselves

agents of disease, they do indicate the potential presence of other disease causing organisms from sewage, wildlife, and/or agricultural contamination. Contamination may also occur from failed sewer systems, failed septic systems, and illicit discharges (Burton, 2001).

Monitoring took place over a one year period with intensive monitoring (5 samples within a 30 day period). While results for fecal coliform can be higher than normal during rain events, some stations had high results during dry periods (baseflows). This is usually an indicator of inappropriate sewage discharges, regardless of the source(s).

Once pathogens have entered streams, water temperature, nutrients, and adverse pH values may alter the relationship between pathogens and their indicator species. Therefore, other parameters were also collected to monitor their effects on the indicator species. During the course of the monitoring program, there were no significant results that would affect the relationship of pathogens and fecal coliform. The results are listed in the appendix (Burton, 2001).

ADEM has documented frequent and major sewer system failures and sanitary sewer overflows in both Eight Mile Creek and Gum Tree Branch. Illicit discharges of effluent pumped from septic tanks have also been documented in Eight Mile Creek. Regardless of the potential source, the monitoring effort has evaluated segments of both water bodies that have been included on the Alabama §303(d) list.

Alabama's pathogen water quality criteria are identical for the PWS and F&W use classifications. For tidally-influenced waterbodies, the indicator species is enterococcus; for upland (or nontidal) waterbodies, it is fecal coliform. The Eight Mile Creek and GumTree Branch watersheds are both considered to be nontidal. Hence, fecal coliform would be the indicator species of interest. There are two criteria for fecal coliform – a single sample instream maximum and a geomean instream maximum. The single sample criterion is 2,000 cols/DL and is applicable year-round. The geomean criteria are seasonal. For the four-month period from June through September during which incidental water contact and recreation may occur, the criterion is 200 cols/DL. The criterion is 1,000 cols/DL for the other eight months.

Table 2 shows the assessment of sampling stations within the study area. The Use Support Result column of Table 2 indicates whether those stations are supporting or not supporting their use classification as based on the ADEM water quality pathogen criteria listed above.

Base on the sampling effort in Phase One, only 1 out of 10 sites is supporting its use classification: EM-1 Eight Mile Creek near the confluence with Gum Tree Branch.

Station	Single Sample Exceedance Rate (%)	Geomean Summer	Geomean Winter	Use Support Result
EM-1A	9.1	747	146	Non-Supporting
EM-1	4.5	190	97	Supporting
GT-1	18.2	1480	217	Non-Supporting
GT-2A	18.2	2750	265	Non-Supporting
GT-3	13.6	1375	271	Non-Supporting
EM-2A	4.5	395	94	Non-Supporting
EM-3	4.8	274	79	Non-Supporting
CC-1	4.5	357	71	Non-Supporting
RC-1	0	414	35	Non-Supporting
RC-2A	4.8	284	46	Non-Supporting

Table 2. Use Support Summary for Pathogens (Fecal Coliform).

Table 3 depicts the maximum, minimum, and average of fecal results. Figure 31 is a graph of those results.

Station	# of Sampling Events	Maximum Fecal Concentration	Minimum Fecal Concentration	Average Fecal Concentration
EM-1A	22	11000	54	894
EM-1	22	8000	40	545
GT-1	22	35000	10	3479
GT-2A	22	57000	40	3803
GT-3	22	2900	78	842
EM-2A	22	2700	18	356
EM-3	21	2400	18	357
CC-1	22	2900	22	324
RC-1	22	1900	12	287
RC-2A	21	2800	18	313

Table 3. Maximum, Minimum, and Average Fecal Results.

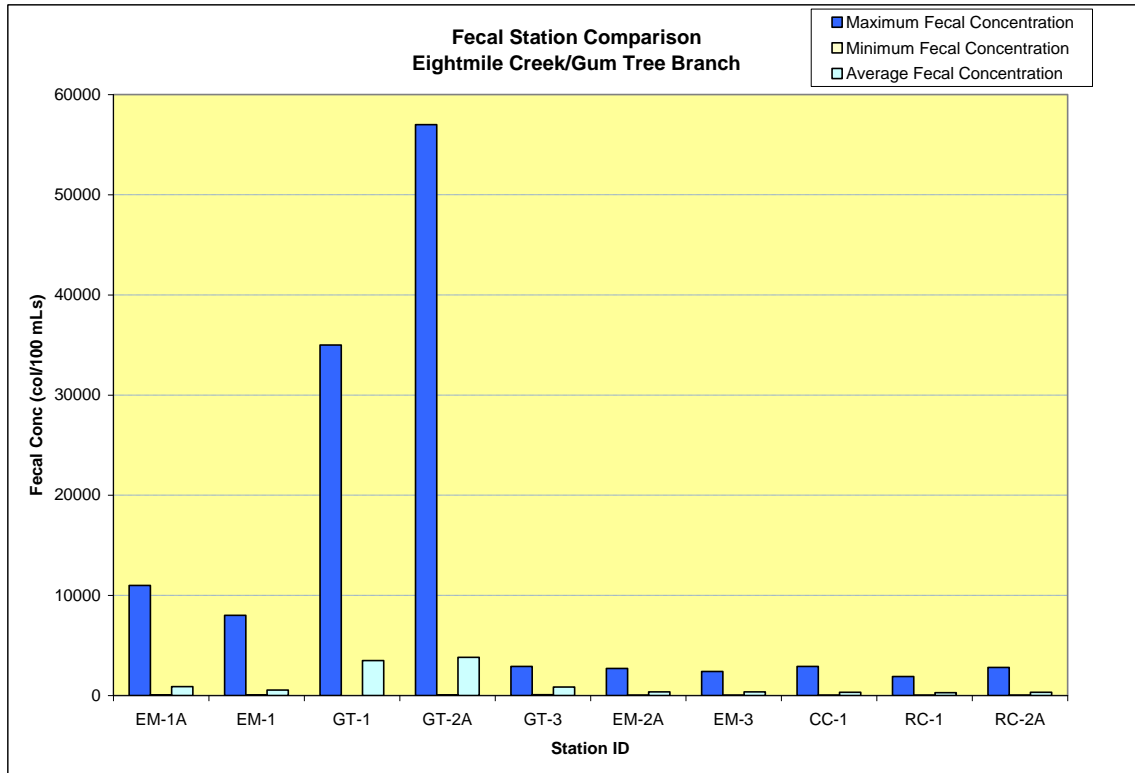


Figure 31. Comparison of Maximum, Minimum, and Average Fecal Results.

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Appendix

EM-1A Profile data							
DateTime	Depth	Temp	Salinity	SpCond	DO %	DO Conc	pH
M/D/Y	m	C	ppt	uS/cm	%	mg/L	
2/9/2005 12:10	0.50	16.0	0.03	64.0	nd	6.70	6.2
2/9/2005 12:10	1.00	15.8	0.03	65.0	nd	6.70	6.3
2/9/2005 12:10	1.50	15.8	0.03	65.0	nd	6.70	6.3
2/9/2005 12:10	2.00	15.8	0.03	65.0	nd	6.60	6.3
2/9/2005 12:10	2.20	15.8	0.03	65.0	nd	6.30	6.3
3/2/2005 9:45	0.50	12.8	0.02	45.0	nd	9.67	6.5
3/2/2005 9:45	1.00	12.4	0.02	45.0	nd	9.63	6.4
3/2/2005 9:45	1.50	12.6	0.02	45.0	nd	9.59	6.4
3/2/2005 9:45	2.00	12.6	0.02	46.0	nd	9.57	6.4
4/13/2005 10:15	0.63	19.6	0.01	27.6	75.3	6.90	5.9
4/13/2005 10:16	0.82	19.6	0.01	27.5	75.1	6.88	5.9
4/13/2005 10:16	1.54	19.6	0.01	27.5	75.0	6.88	5.9
4/13/2005 10:17	1.96	19.6	0.01	27.5	75.1	6.88	5.9
4/13/2005 10:17	2.48	19.6	0.01	27.4	75.0	6.87	5.9
5/26/2005 9:41	0.48	24.7	0.06	133.3	74.2	6.16	6.1
5/26/2005 9:41	1.03	24.5	0.07	144.9	73.2	6.11	6.0
5/26/2005 9:42	1.47	23.9	0.06	128.5	71.7	6.05	6.0
5/26/2005 9:42	1.64	23.9	0.08	173.3	69.3	5.84	6.0
6/7/2005 9:14	0.48	24.7	0.03	75.1	69.1	5.74	5.5
6/7/2005 9:14	1.08	24.6	0.03	69.9	67.1	5.58	5.5
6/7/2005 9:14	1.54	24.3	0.03	65.4	63.6	5.32	5.5
6/7/2005 9:15	1.99	24.1	0.03	57.3	63.8	5.37	5.6
6/7/2005 9:15	2.13	24.1	0.03	57.6	64.0	5.38	5.6
7/7/2005 8:57	0.44	23.8	0.01	27.9	95.1	8.04	5.3
7/7/2005 8:58	0.94	23.6	0.01	27.6	79.8	6.78	4.8
7/7/2005 8:58	1.45	23.6	0.01	27.5	75.5	6.41	4.9
7/7/2005 8:58	1.59	23.5	0.01	27.5	71.4	6.06	4.9
7/12/2005 9:40	0.27	24.3	0.01	29.1	76.7	6.42	5.4
7/12/2005 9:40	1.24	24.2	0.01	29.3	76.2	6.38	5.3
7/12/2005 9:40	2.19	24.2	0.01	29.5	76.1	6.38	5.3
7/12/2005 9:40	2.10	24.2	0.01	29.6	75.8	6.36	5.3
7/12/2005 9:40	2.64	24.2	0.01	29.6	75.8	6.35	5.3
7/12/2005 9:41	3.01	24.2	0.01	29.7	75.7	6.35	5.3
7/18/2005 10:01	0.55	25.9	0.01	31.2	74.4	6.05	5.1
7/18/2005 10:02	1.02	25.8	0.01	31.0	72.2	5.89	5.1
7/18/2005 10:02	1.58	25.6	0.01	30.8	71.3	5.83	5.1
7/18/2005 10:02	2.10	25.6	0.01	30.5	71.3	5.83	5.1
7/18/2005 10:02	2.73	25.6	0.01	30.6	71.1	5.82	5.1
7/20/2005 8:19	0.63	26.7	0.02	50.4	64.2	5.14	5.3
7/20/2005 8:19	1.09	26.7	0.02	50.4	63.6	5.09	5.3

7/20/2005 8:19	1.53	26.7	0.02	50.4	62.5	5.01	5.2
7/20/2005 8:19	2.03	26.7	0.02	50.3	62.3	4.99	5.2
7/20/2005 8:19	2.66	26.7	0.02	50.1	62.1	4.97	5.2
7/20/2005 8:20	2.05	26.7	0.02	50.3	62.0	4.97	5.4
8/1/2005 9:37	0.59	26.1	0.02	36.6	75.9	6.15	5.0
8/1/2005 9:37	1.05	26.0	0.02	38.4	75.4	6.12	4.9
8/1/2005 9:37	1.38	25.8	0.02	41.0	72.8	5.94	5.0
8/1/2005 9:37	2.00	25.7	0.02	46.8	71.3	5.82	5.1
8/1/2005 9:38	2.38	25.6	0.02	49.1	69.5	5.68	5.1
9/22/2005 9:59	0.51	26.2	0.84	1665.1	96.4	7.77	5.1
9/22/2005 10:00	1.11	26.3	0.95	1876.2	78.2	6.28	5.3
9/22/2005 10:00	2.02	26.4	1.79	3432.6	66.2	5.28	5.3
9/22/2005 10:00	2.39	26.8	7.8	13563.4	59.8	4.58	5.3
11/3/2005 10:25	0.67	15.8	0.65	1286.0	86.1	8.51	5.7
11/3/2005 10:26	1.13	15.7	0.88	1735.8	84.5	8.36	5.6
11/3/2005 10:26	1.51	15.6	0.96	1883.8	84.1	8.32	5.7
11/3/2005 10:26	2.03	15.8	1.87	3536.5	85.6	8.39	5.5
11/3/2005 10:27	2.04	16.0	1.91	3613.2	70.6	6.89	5.8
11/22/2005 9:30	0.80	12.9	0.07	161.0	nd	10.18	5.3
11/29/2005 9:33	0.32	17.7	0.08	168.0	100.0	9.52	5.3
11/29/2005 9:33	0.72	17.7	0.08	168.7	96.1	9.15	5.3
11/30/2005 10:25	0.33	15.3	0.07	139.1	150.7	15.08	5.2
11/30/2005 10:25	1.05	15.0	0.08	165.2	131.1	13.22	5.0
11/30/2005 10:26	1.54	15.0	0.08	177.7	122.8	12.39	5.1
11/30/2005 10:26	1.67	15.0	0.09	188.9	119.9	12.10	5.1
12/21/2005 13:28	1.26	9.2	0.03	56.5	63.80	7.3	6.2
12/21/2005 13:28	1.02	9.0	0.03	55.8	64.80	7.5	6.1
12/21/2005 13:28	0.18	9.1	0.03	56.2	68.40	7.9	6.1
12/29/2005 11:02	0.29	12.9	12.94	80.8	113.3	11.95	5.2
12/29/2005 11:02	1.00	12.6	12.61	83.9	108.6	11.54	5.2
12/29/2005 11:02	1.49	12.4	12.35	86.5	109.1	11.66	5.2
12/29/2005 11:02	1.88	12.3	12.3	86.4	110.3	11.80	5.3
1/10/2006 9:18	0.29	13.5	0.02	52.9	90.4	9.43	6.1
1/10/2006 9:19	1.05	13.4	0.02	53.0	93.5	9.77	5.9
1/10/2006 9:19	1.45	13.4	0.02	53.1	92.8	9.70	5.8
1/19/2006 11:42	0.54	11.0	0.03	64.9	82.30	9.1	6.2
1/19/2006 11:43	0.97	10.8	0.03	65.7	82.30	9.1	6.1
1/19/2006 11:43	1.53	10.8	0.03	64.3	82.40	9.1	6.0
1/19/2006 11:43	2.13	10.8	0.03	64.7	82.50	9.1	6.0
1/25/2006 11:04	0.31	15.7	0.04	79.9	90.4	8.99	5.3
1/25/2006 11:04	1.07	15.8	0.03	75.9	87.9	8.72	5.1
1/25/2006 11:05	1.33	15.6	0.03	75.9	84.5	8.40	5.1
1/31/2006 10:16	0.21	15.0	0.04	77.7	84.8	8.56	5.5
1/31/2006 10:17	1.05	15.0	0.04	77.7	82.1	8.29	5.4
1/31/2006 10:17	1.58	14.9	0.04	80.1	81.7	8.25	5.3
1/31/2006 10:17	1.96	14.9	0.04	81.3	80.8	8.15	5.3
1/31/2006 10:18	2.04	14.9	0.04	81.4	79.7	8.05	5.4

