



ANNUAL REPORT

2018-2019

**STORM WATER
MANAGEMENT AUTHORITY,
INC.**

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1 General Information

1.1 Introduction

The passage of **Legislative Act 95-775** in 1997 enabled the mayors of municipalities within Jefferson County to establish Storm Water Management Authority, Inc. (SWMA). The requirements of the National Pollution Discharge Elimination System (NPDES) permit # ALS000001, issued by Alabama Department of Environmental Management (ADEM), and the United States Environmental Protection Agency's (EPA) Title 40 Code of Federal Regulations Part 122 (40 CFR 122), charged that SWMA, in coordination with all co-permittees of the permit, would work to meet the obligations of the approved Storm Water Management Program (SWMP). The permit was renewed in 2001.

Over the 2016-2017 fiscal year, ADEM ended the co-permittee arrangement and issued 15 individual Phase 1 permits to member cities of SWMA. Listed below are the cities, their new NPDES permit number, and the date of their issuance:

Permit Number	Permittee	Permit Issuance Date
ALS000015	Trussville	January 1, 2017
ALS000016	Homewood	July 1, 2017
ALS000019	Irondale	July 1, 2017
ALS000018	Mountain Brook	July 1, 2017
ALS000020	Tarrant	July 1, 2017
ALS000017	Vestavia Hills	July 1, 2017
ALS000026	Gardendale	August 1, 2017
ALS000028	Hueytown	August 1, 2017
ALS000030	Midfield	August 1, 2017
ALS000031	Pleasant Grove	August 1, 2017
ALS000021	Adamsville	September 1, 2017
ALS000023	Brighton	September 1, 2017
ALS000024	Brookside	September 1, 2017
ALS000025	Fairfield	September 1, 2017
ALS000029	Lipscomb	October 1, 2017

While the municipalities of Center Point, Clay and Pinson are members of SWMA, they do not have a permit at this time. All elements of the MS4 permit were addressed for these cities, however, the information was not included in this report. Documentation is available upon request.

SWMA continues to function on behalf of all the permittees listed above to meet the compliance requirements of each NPDES permit. SWMA has subcontracted with the Jefferson County Department of Health (JCDH) to perform certain responsibilities. SWMA members, the Board of Directors, and mayors are aware that the ultimate responsibility toward permit

compliance lies with the municipality. SWMA's contract with JCDH and SWMA Bylaws are found in **Appendix A**.

Therefore, the primary objective of SWMA, JCDH, and all permittees (hereinafter referred to as "**Program**") is to implement the SWMP in such a manner as to effectively prohibit the discharge of non-stormwater into the MS4 and to reduce the discharge of pollutants from the MS4 to Maximum Extent Practicable (MEP).

The 2018-2019 annual report covers the reporting period from October 1st, 2018 through September 30th, 2019. The five year permit cycle for the members of SWMA will expire in 2022.

Submission of this report to ADEM is pursuant to Part IV of the permit.

1.2 Contact Lists

1.2.1 Municipality Contacts

Municipality	Name	Title	Work #	E-mail Address	Address
Adamsville	Pam Palmer	Mayor	674-5671	pyropam@charter.net	4828 Main St., Adamsville, AL 35005
Adamsville	Ron Mosley	Public Works Dir.	674-8177	rmosley@cityofadamsville.org	4828 Main St., Adamsville, AL 35005
Brighton	Eddie Cooper	Mayor	428-9547	cityofbrighton@att.net	3700 Main St., Brighton AL 35020
Brighton	Hazel Williams	City Clerk	428-9547	cityofbrighton@att.net	3700 Main St., Brighton AL 35020
Brookside	Roger McCondichie	Mayor	674-9275	rogermccondichie@townofbrookside.net	2711 Municipal Ln, Brookside, AL 35036
Brookside	Debbie Keedy	City Clerk	674-9275	dkeedy@townofbrookside.net	2711 Municipal Ln, Brookside, AL 35036
Fairfield	Eddie Penny	Mayor	788-2492	eddiep75@gmail.com	4701 Gary Ave., Fairfield, AL 35064
Fairfield	Mary Roberson	City Manager	788-2492	mroberson@fairfieldal.us	4701 Gary Ave., Fairfield, AL 35064
Gardendale	Stan Hogeland	Mayor	631-8789	stan@cityofgardendale.com	960 Main St., Gardendale, AL 35071
Gardendale	Robert Ryant	Public Works Dir.	369-9923	rryant@cityofgardendale.com	960 Main St., Gardendale, AL 35071
Graysville	Clark-Julio Davis	Mayor	674-5643		246 S Main St., Graysville, AL 35073
Graysville	Frank Barnes	Public Works Sup.	674-5643	fbarnes9251@bellsouth.net	246 S Main St., Graysville, AL 35073
Homewood	Scott McBrayer	Mayor	332-6107	Scott.McBrayer@DignityMemorial.com	187 Citation Ct., Homewood, AL 35209
Homewood	J.J. Bischoff	Chief of Staff	332-6112		187 Citation Ct., Homewood, AL 35209
Hueytown	Steve Ware	Mayor	491-7010	mayorsteveware@hueytownal.org	1318 Hueytown Rd., Hueytown, AL 35023
Hueytown	Mike Butts	Public Works Sup.	491-9113	publicworks@hueytownal.org	1318 Hueytown Rd., Hueytown, AL 35023
Irondale	Charles Moore	Mayor	956-9200	mayor@cityofirondaleal.gov	101 20th St. S, Irondale, AL 35210

Municipality	Name	Title	Work #	E-mail Address	Address
Irondale	Frank Pennington	Public Works Director	951-1420	fpennington@cityofirondaleal.gov	101 20th St. S, Irondale, AL 35210
Lipscomb	Brenda Renz	Mayor	428-6374	bghrenz@att.net	5512 Avenue H, Lipscomb, AL 35020
Lipscomb	Jacquelyn Robertson	City Council	428-6374	jacquelynrobertson22@yahoo.com	5512 Avenue H, Lipscomb, AL 35020
Midfield	Garry Richardson	Mayor	923-7578	grichardson@cityofmidfield.com	725 Bessemer Super Hwy Midfield, AL 35228
Midfield	Jeff Zissette	Public Works Director	923-2071	zissettej@gmail.com	725 Bessemer Super Hwy Midfield, AL 35228
Mountain Brook	Stewart H. Welch, III	Mayor	802-3825	Stewart@welchgroup.com	56 Church St., Mountain Brook, AL 35213
Mountain Brook	Sam Gaston	City Manager	802-3879	gastons@mtnbrook.org	56 Church St., Mountain Brook, AL 35213
Pleasant Grove	Jerry Brasseale	Mayor	744-1724	pgmayor@cityofpg.net	501 Park Rd., Pleasant Grove, AL 35127
Pleasant Grove	Tom (Doug) Hyche	Inspector	744-1726	dhyche.inspections@yahoo.com	501 Park Rd., Pleasant Grove, AL 35127
Tarrant	Loxcil Tuck	Mayor	849-2800	ltuck@cityoftarrant.com	1604 Pinson Valley Pkwy., Birmingham, AL 35217
Tarrant	Chris O'Rear	Parks and Recreation Supervisor	849-2800	corear@cityoftarrant.com	1604 Pinson Valley Pkwy., Birmingham, AL 35217
Trussville	Buddy Choat	Mayor	655-7478	bchoat@trussville.org	131 Main St., Trussville, AL 35173
Trussville	David Arnette	Building Inspections Superintendent	655-5483	darnett@trussville.org	131 Main St., Trussville, AL 35173
Vestavia Hills	Ashley C. Curry	Mayor	978-3675	acurry@vhal.org	513 Montgomery Hwy., Vestavia Hills, AL 35216
Vestavia Hills	Jeff Downes	City Manager	978-0195	jdownes@vhal.org	513 Montgomery Hwy., Vestavia Hills, AL 35216

1.2.2 JCDH Contacts

Name	Title	Work #	E-mail Address	Address
Jeff Swinney	Program Manager	930-1279	Jeff.Swinney@jcdh.org	1400 Sixth Ave S Birmingham, AL 35233
Scott Hofer	Public Health Engineer	930-1274	Scott.Hofer@jcdh.org	1400 Sixth Ave S Birmingham, AL 35233
Jonika Smith	Environmental Health Specialist	558-2103	Jonika.Smith@jcdh.org	1400 Sixth Ave S Birmingham, AL 35233

2 Program Evaluation

2.1 *Objective of Program*

The Purpose of the SWMA program is to comply with the requirements of the NPDES permits to reduce the discharge of pollutants from the municipal separate storm sewer system (MS4) to the maximum extent practical.

2.2 *Major Findings*

The Fish Bioassessment Program has been a valuable longitudinal study in determining the water quality of the watersheds within SWMA municipalities. The program has been in existence since the fall of 2010. Each major stream has two sites; one located high in the watershed and one located lower in the watershed. The procedures used for capturing fish are electrofishing and seining. After processing, all of the fish were released back into the stream. Some of the criteria used to determine the health of a stream include the number of fish species present, the species percentage of the total number present and a physical habitat assessment. The major finding of this study is that no significant trends in water quality have been identified. Therefore, the health of the streams appears to be stable with no signs of improvement or degradation over the length of the study.

2.3 *Major Accomplishments*

- All SWMA members enacted ordinances regarding illicit discharges, post-construction, and erosion and sedimentation control.
- SWMPPs were completed and made available to the public by each SWMA member.

2.4 *Overall Strengths and Weaknesses*

2.4.1 Strengths

Industrial Storm Water Runoff – JCDH uses a mobile application to document inspections of industrial and high-risk runoff sites. The inspections increase awareness of stormwater as well as confirm proper BMPs are in place to prevent and effectively respond to an illicit discharge.

Water Quality Monitoring – Five USGS continuous monitoring sites provide real time data on temperature, pH, turbidity, specific conductance, dissolved oxygen, and water level in real time. The data is subject to a rigorous review and approval process by USGS. In addition, this information is available for public viewing.

Complaints and Investigations - The complaint system used by JCDH allows inspectors to efficiently investigate and resolve violations. The system also provides useful documentation of the number and types of complaints received.

Member Reporting - The online program called Stormwater Online Activity Report (SOAR) allows standardized reporting of stormwater related activities from member cities. City personnel submit activity information remotely that is stored in a centralized database. Standardization of the data allows for better reporting and statistical information.

GIS Mapping of Storm Drains – JCDH and SWMA have been mapping the storm drain systems of member cities. Mapping provides a structural inventory allowing for better maintenance and fiscal planning. This data will also allow for future modeling of the watersheds. At this time, the database includes over 28,000 structures, 88 miles of pipe, and 156 miles of open channel.

Dry Weather Screening – The illicit discharge program utilizes efficient and precise technology to map and record findings about each outfall. JCDH uses a smart phone to complete an electronic questionnaire and record a photo along with the physical description, and pertinent water quality data. The data is stored in the electronic cloud allowing for quick access on any device.

Education –SWMA has collaborated with Bessemer, Birmingham, and Unincorporated Jefferson County stormwater programs to develop and implement a video contest called “Litter Quitters”. A stormwater commercial that aired on local television stations resulted from this program. This partnership has allowed SMWA to more effectively engage with high school students and provide a message to county residents in a new and exciting way.

2.4.2 Weakness

Standard Operating Procedure (SOP) Manual- The current SOP manual was completed in 2011. Updates are needed to include new SWMPP protocols and revisions to existing protocols.

2.5 *Future Direction of the Program*

SWMA will continue to provide services to help member cities meet MS4 permit requirements. Accomplishing permit compliance among all members is the ultimate goal for the Program.

2.6 *SWMPP Overall Effectiveness*

The SWMPP serves as a guide for the Members identifying both the actions required and the responsible personnel needed to accomplish compliance with the permit. All Cities accomplished the major requirement of enacting ordinances in regards to their permit during the reporting period. The SWMPPs were effective overall.

2.7 *Actions Not Accomplished*

Member cities accomplished all permit requirements.

3 Narrative Report

3.1 *Storm Water Collections System Operations*

3.1.1 Objective

The objective of the Storm Water Collections System Operation Program is to inspect and maintain structural controls in order to minimize the contamination of the local waterways by stormwater runoff.

3.1.2 Activities Complete or in Progress

Activity 1: Permittees shall maintain a map of the structural controls. This activity has been completed for the all member cities.

Activity 2: Inspect existing and newly constructed structural controls on a semi-annual basis as well as maintain the structural control and remove any litter or sedimentation so that the structural control functions as designed. This activity has been completed for the all member cities.

Activity 3: Develop a checklist for inspection and maintenance of structural controls. This activity has been completed.

Activity 4: Maintain an inventory of structural controls as well as the inspection and maintenance records for each structural control. This activity has been completed. Currently, members have reported 11 structural controls owned or maintained by the municipality.

3.1.3 General Discussion

During this reporting period the member cities have built as well as discovered publically owned or maintained structural controls within their jurisdictions. The SOAR Program allows cities to store inspections and maintenance documentation online in an organized fashion.

3.1.4 Status

The members are in compliance at this time. Mechanisms are in place for inspections and maintenance. A program is in place to allow documentation of structural controls when needed.

3.1.5 Assessment

Activities for this element will be assessed once a publically-owned structural control is constructed.

3.1.6 Proposed Revisions

There are no proposed revisions at this time.

3.1.7 Annual Reporting

Annual Report Requirements for Storm Water Collection Operations		
	# of Structural Controls	# of Inspections Performed
Adamsville	0	N/A
Brighton	0	N/A
Brookside	0	N/A
Fairfield	0	N/A
Gardendale	1	3
Homewood	0	N/A
Hueytown	1	
Irondale	0	N/A
Lipscomb	0	N/A
Midfield	0	N/A
Mountain Brook	3	
Pleasant Grove	0	N/A
Tarrant	1	12
Trussville	1	2
Vestavia Hills	4	8

3.2 Public Education and Public Involvement on Storm Water Impacts

3.2.1 Objective

The Public Education and Public Involvement Program was designed to inform the community about the impacts from stormwater discharges on water bodies and how different segments of the community can reduce possible stormwater pollutants.

3.2.2 Description of Educational Programs

Informational Handouts

The Program employs a campaign to educate citizens on the importance of proper stormwater pollution prevention through the use of brochures, calendars and pamphlets. The use of these materials is an effective way to reach people that visit JCDH, SWMA, or the various member cities. Brochure holders have been dispensed to allow members the capability to distribute all materials published by SWMA and JCDH. This will allow for the distribution of brochures covering a wide variety of topics. Approximately 1100 brochures were distributed this reporting period.

SWMA and JCDH have developed eight brochures since 2010 covering the following issues: Stormwater Fees, Household Hazardous Waste, Pet Waste Disposal, Fertilizers, Pesticides, Watershed Protection, and Erosion and Sedimentation Control. These can be found in **Appendix C**.

JCDH provided a stormwater calendar for 2018 and 2019. The calendar depicts photos of local creeks and wildlife. Additionally, information is included on various stormwater topics along with links to informational sites, recycling services and community events. A copy of the calendar can be found in **Appendix C**.

Outreach Materials

Education and outreach materials have been developed in an effort to reach primary and secondary school students. Topics presented include: watershed protection, safety tips to reduce and/or eliminate litter, excess stormwater runoff and household chemicals' entry into storm drains within SWMA member cities. The formats that have been distributed include stickers, bookmarks, magnets, branded carabiners, coloring books/activity sheets, t-shirts, and backpacks. Samples of some of these items can be found in **Appendix C**.

Signage

During the 2018-2019 reporting period, JCDH distributed new road signs denoting the local watershed with an anti-litter message. The signs were designed to bring attention to the local waterways as well as convey an educational message to citizens. See **Appendix C** for pictures of this signage.

Website

For cities that have websites, SWMA and JCDH developed a template webpage containing information on many aspects of stormwater. The template informs citizens of their cities' program with information links, educational downloads, hotline numbers, and other pertinent stormwater documents as required by the permit.

Reporting Hotline

For citizens who do not have the time or transportation to meet with SWMA or JCDH employees during regular business hours, the JCDH hotline number, 205-930-1999, provides a means to register complaints, express their concerns and to get information on watershed management in their local area.

Watershed Meetings

JCDH and SWMA are involved in multiple cooperative meetings regarding environmental hazards within Jefferson County, and collaborative efforts to improve stormwater awareness. These meetings include committees such as the Environmental Quality and Assessment, Valley Creek Cleanup, Litter Quitters, SWMA Board of Directors, Martin Luther King Day of Service Cleanup Committee, Shades Creek Watershed Management Plan (SCWMP) Steering Committee and SCWMP – Data Group .

Public Presentations

JCDH personnel spoke at multiple events throughout the reporting period. Each presentation was customized toward the host's agenda but the objective was to raise awareness of the impacts of stormwater. Some of the events attended include UAB's Watershed Forum and the Turkey Creek Nature Preserve Field Day.

Public Outreach Events

Throughout the reporting period, numerous events provided JCDH and SWMA opportunities to present educational information to a variety of people of diverse economic and cultural backgrounds. Informational brochures and outreach materials were distributed at these events. Some of the events attended include Fiesta Birmingham, Cahaba River Fry-Down, Birmingham Area Municipal Association, Valley Creek Clean-Up and JCDH Public Health Week. Additionally, brochures, T-shirts, and backpacks were issued to the Cities for their individual outreach events.

School Presentations

JCDH conducts a variety presentation to students of all grade levels. Some of the topics covered this year were hydrologic water cycle, watersheds, and nonpoint source pollution. JCDH also supported and participated in the Jefferson County Water Festival.

Jefferson County Erosion and Sedimentation Control Workshop

On April 8, 2019, an erosion and sedimentation control workshop was offered in a cooperative effort with the Home Builders Association of Alabama, JCDH, the City of Birmingham, the City of Bessemer, SWMA members, and Unincorporated Jefferson County. Information on

construction best management practices (BMP) was presented to contractors, homebuilders, developers, engineers, and municipal staff. The workshop was held at the Bessemer Civic Center and had 18 participants.

Cleanup Events

Twenty-five cleanup events were held throughout the member cities during the reporting period. The events resulted in the removal of a combined total of approximately 19.5 tons and 1,033 bags of trash and debris from the watersheds.

3.2.3 General Discussion

This program is a combined effort by JCDH and the SWMA members. JCDH offers educational materials, educational presentations, training materials, personnel, and limited cleanup supplies. The member cities organize the cleanups and community events that provide a venue to educate citizens as well as cleanup the waterways. While the new permit requirements are similar to previous permits, the new permit requires the program to reach out to additional segments of the community.

The cities all have printed material for their stormwater program. Cities that have utilized the website template have added material with specific information in regards to businesses and proper construction practices.

For cities that do not have a website, JCDH composed a calendar that includes educational information and links to information covered by the website template.

3.2.4 Status

The cities comply with the general public component of this element.

3.2.5 Assessment

The educational program for the member cities is engaging and robust. The information has reached the intended audience and has produced a positive impact. The cleanup events have been well received by the communities as reflected by the number of volunteers. A common goal is for future events to have a reduction in the trash and debris removed from the watersheds. Cities have been encouraged to include a visitor counter for their website.

3.2.6 Proposed Revisions

There are no proposed revisions at this time.

3.2.7 Annual Reporting

Prior to adoption of the SWMPP, the members offered a public comment period to encourage input and participation from the citizens.

A detailed list of the public education events and participants can be found in **Appendix C**.

Communication mechanisms distributed include 250 stickers, 150 bookmarks, 150 magnets, 100 branded carabiners, 1000 coloring books/activity sheets, 500 t-shirts, and 500 backpacks.

3.3 Illicit Discharge Detection and Elimination (IDDE)

3.3.1 Objective

The objective of the Illicit Discharge Detection and Elimination Program is to eliminate illicit discharges into the MS4 to the maximum extent practicable.

3.3.2 Activities Complete or in Progress

Activity 1: Develop and annually update an MS4 map that includes the latitude/longitude of all known major outfalls as well as the names of the waters of the state contiguous to the MS4. This activity was completed for all cities.

Activity 2: Enact an ordinance that prohibits non-stormwater discharges to the MS4. This activity is complete for all cities.

Activity 3: Have a dry weather screening program designed to detect and address non-stormwater discharges into the MS4. A minimum of 20% of the major outfalls must be screened each year. This activity was completed for all cities.

Activity 4: Procedures for tracing the source of a suspect illicit discharge. This activity was completed. Procedures can be found the 2011 SOP manual adopted by SWMA cities.

Activity 5: Procedures for eliminating an illicit discharge. This activity has been completed. Procedures can be found in the 2011 SOP manual adopted by SWMA cities.

Activity 6: Procedures to notify ADEM of suspect illicit discharge discovered within the Permittee's MS4 from an adjacent MS4. This activity was completed for all cities.

Activity 7: A mechanism for the public to report illicit discharges and procedures for appropriate investigation. This activity is complete for all cities.

Activity 8: A training program for appropriate personnel on identification, reporting and corrective action of illicit discharges. SWMA and JCDH has an annual training program. This activity is complete.

Activity 9: Post ordinances or other regulatory mechanisms on their website. This activity is complete for the cities that have websites. The cities without websites have ordinances available at city hall.

3.3.3 General Discussion

The current permits require the Permittees to map the outfalls that lead to the waters of the state. SWMA and JCDH use the National Hydrography Dataset (NHD) to identify waters of the state. With many unmapped waterways and unknown outfalls, JCDH attempts to inspect 20% of the total waters of the state within each Permittee's municipal boundary annually. The goal is to inspect 100% of the waters of the state within the five - year permit cycle. SWMA has also documented their procedures for mapping, tracing sources and eliminating illicit discharges in the 2011 SOP Manual.

Cities with active websites have posted digital material in regards to illicit discharges. Cities without websites have informative posters and brochures at multiple public locations that include contact information for reporting complaints. SWMA members can refer these complaints to JCDH for further investigation. JCDH also advertises (205) 930-1999 in all SWMA literature as a number to report illicit discharges.

JCDH offered a half-day training program to SWMA members to educate municipal workers on different aspects of stormwater including illicit discharges. This class was held on the 14th and 15th of November, 2018.

3.3.4 Status

SWMA members are in compliance with the mapping and screening outfalls requirement. All cities have either brochures, published webpage material, or both in regards to illicit discharges.

3.3.5 Assessment

The screening program and complaint systems have helped members effectively reduce discharges.

3.3.6 Proposed Revisions

JCDH has no proposed revisions at this time.

3.3.7 Annual Reporting

Below is a table showing links to City ordinances. The ordinances for cities without a website can be found in Appendix D

Ordinance Hyperlinks for Member Cities	
Adamsville	See Appendix D.
Brighton	See Appendix D.
Brookside	See Appendix D.
Fairfield	See Appendix D.
Gardendale	https://library.municode.com/al/gardendale/codes/code_of_ordinances?nodeId=PTIIA_USDE_CH103ERSECO
Homewood	https://library.municode.com/al/homewood/codes/code_of_ordinances?nodeId=COOR_CH5BUCOREAC_ARTIVSOERSECO
Hueytown	https://library.municode.com/al/hueytown/codes/code_of_ordinances?nodeId=COOR_CH34EN_ARTIIISTMAERSECO
Irondale	http://cityofirondaleal.gov/
Lipscomb	See Appendix D.
Midfield	http://www.cityofmidfield.com/?page_id=53
Mountain Brook	http://www.mtnbrook.org/Default.asp?ID=261&pg=City+Ordinances+%28Codified%29&hilite=ordinances
Pleasant Grove	https://library.municode.com/al/pleasant_grove/codes/code_of_ordinances?nodeId=PTIICO_CH39EN_ARTIIERSECO
Tarrant	http://www.cityoftarrant.com
Trussville	http://trussville.org/government/ordinances/
Vestavia Hills	http://vhal.org/departments/city-clerk/ordinances/

Maps of the stream sections walked during 2018 - 2019 and proposed stream sections for 2019-2020 can be found in **Appendix D**. The table below lists the total number of stream miles walked, the proposed miles for the next reporting period and the number of illicit discharges investigated for the current reporting period. All investigations are documented in JCDH's SOAR Program which includes sampling results, corrective actions taken and dates. These complaint reports are available from JCDH upon request.

Annual Report Requirements for Illicit Discharge Detection and Elimination				
	Total Number of Stream Mileage in City	Stream Mileage to be Walked Each Year (20%)	Stream Mileage Walked during 2018-2019 (percentage walked)	Number of Illicit Discharges Investigated
Adamsville	31.87	6.37	6.23 (19%)	12
Brighton	3.66	0.73	0.81 (22%)	3
Brookside	15.31	3.06	3.17(21%)	2
Fairfield	1.07	0.21	0.24 (22%)	17
Gardendale	23.53	4.71	5.25 (22%)	13
Homewood	10.15	2.03	1.91 (19%)	27
Hueytown	24.21	4.84	3.48 (14%)	44
Irondale	22.12	4.42	6.12 (28%)	24
Lipscomb	2.87	0.57	0.50 (17%)	1
Midfield	3.18	0.64	0.62 (19%)	14
Mountain Brook	16.30	3.26	2.80 (17%)	43
Pleasant Grove	12.70	2.54	3.10 (24%)	18
Tarrant	5.31	1.06	1.45 (27%)	18
Trussville	38.27	7.65	6.98 (18%)	13
Vestavia Hills	27.39	5.48	5.92 (22%)	49

3.4 *Construction Site Storm Water Runoff Control*

3.4.1 Objective

The objective of the Construction Site Storm Water Runoff Program is to reduce, to the maximum extent practicable, stormwater runoff into the MS4 from qualifying construction sites.

3.4.2 Activities Complete or in Progress

Activity 1: Procedures to require all applicable construction sites to obtain the applicable NPDES permits. This activity is complete for all cities.

Activity 2: Having an ordinance that requires effective erosion and sedimentation control. This activity is complete for all cities.

Activity 3: Requiring construction site operators to control waste at a construction site that may cause adverse impacts to water quality. This activity is complete for all cities.

Activity 4: Enacting procedures for site plan review to ensure effective erosion and sedimentation controls. This activity is complete for members that have construction activity. It is still in progress for members with no construction.

Activity 5: A mechanism for the public to report construction site pollution. This activity is complete for all cities.

Activity 6: Inspect sites in accordance with frequency specified in the permit. This activity is complete.

Activity 7: Training for the construction site inspection staff in the identification of appropriate construction best management practices. The cities with active construction programs have trained personnel regarding proper construction practices.

Activity 8: Development of a construction site inspection checklist. This activity is complete for all cities.

Activity 9: Implementation of an enforcement response plan. This activity is complete for all cities.

Activity 10: Availability of educational and training materials and resources for construction site operators. This activity is complete for all cities.

Activity: 11 Posting ordinances or other regulatory mechanisms on their website. This activity is complete for cities with websites. The cities without websites have their ordinances available at city hall.

3.4.3 General Discussion

The cities with active construction have a site plan review process. While the cities that do not currently have construction activity have a site plan review process in place, it has not been tested at this time. Changes may be necessary.

The member cities are aware of the prescribed frequency for inspections. Since the inspectors for the cities inspect multiple aspects of the construction sites, some sites are inspected more frequently than required. The cities are evaluating their program in terms of how to effectively document inspections.

Most cities with active construction programs have an employee trained as a Qualified Credentialed Inspector (QCI). JCDH also has QCI certified staff members who can assist with inspections. Municipal personnel are also invited to attend Jefferson County's ESC Workshop which is an abbreviated version of the QCI training program. Additionally, several cities either contract with a Qualified Certified Professional (QCP) or have a QCP on staff.

All municipalities receive complaints through their city hall. The complaints may be worked by the municipality or referred to JCDH for further investigation. The municipalities that have websites have published the city's designated party for taking construction complaints.

The members with websites list training materials on their Stormwater page. The Cities without websites have educational materials available at designated locations.

3.4.4 Status

Cities are in compliance in terms of ordinances. Some cities may revise their site plan review process and inspection services as needs are identified. Education materials are available to construction site operators in the form of pamphlets and webpages.

3.4.5 Assessment

This element is effective but can be improved in terms of inspection documentation and training. Due to the lack of construction in some cities, some unforeseen changes may be needed.

3.4.6 Proposed Revisions

There are no proposed revisions at this time.

3.4.7 Annual Reporting

Below is a table showing links to City ordinances. The ordinances for cities without a website can be found in Appendix E.

Ordinance Hyperlinks for Member Cities	
Adamsville	See Appendix E.
Brighton	See Appendix E.
Brookside	See Appendix E.
Fairfield	See Appendix E.
Gardendale	https://library.municode.com/al/gardendale/codes/code_of_ordinances?nodeId=PTIIA_USDE_CH103ERSECO
Homewood	https://library.municode.com/al/homewood/codes/code_of_ordinances?nodeId=COOR_CH5BUCOREAC_ARTIVSOERSECO
Hueytown	https://library.municode.com/al/hueytown/codes/code_of_ordinances?nodeId=COOR_CH34EN_ARTIIISTMAERSECO
Irondale	http://cityofirondaleal.gov/
Lipscomb	See Appendix E.
Midfield	http://www.cityofmidfield.com/?page_id=53
Mountain Brook	http://www.mtnbrook.org/Default.asp?ID=261&pg=City+Ordinances+%28Codified%29&hilite=ordinances
Pleasant Grove	https://library.municode.com/al/pleasant_grove/codes/code_of_ordinances?nodeId=PTIICO_CH39EN_ARTIIERSECO
Tarrant	http://www.cityoftarrant.com
Trussville	http://trussville.org/government/ordinances/
Vestavia Hills	http://vhal.org/departments/city-clerk/ordinances/

The following table summarizes construction related activities provided by each member to JCDH.

Construction Sites Summary					
City	# of Construction Sites	# of Construction Site Inspections	# of Formal Enforcement Actions Description of Violations	# of Construction Site Complaints Received	# of Trained Staff (QCI/QCP/ESC)
Adamsville	0	0	0	0	1 (Contracted QCP)
Brighton	0	0	0	0	0
Brookside	0	0	0	0	0
Fairfield	0	0	0	0	0
Gardendale	63	252	7	7	1 (QCI) 1 (Contracted QCP)
Homewood	29	292	None Reported	0	3 (QCI) 1 (Contracted QCP)
Hueytown	11	38	None Reported	0	1 (QCI) 1 (Contracted QCP)
Irondale	107	700	None Reported	0	2 (QCI) 1 (Contracted QCP)
Lipscomb	0	0	0	0	0
Midfield	0	0	0	0	1 (Contracted QCP)
Mountain Brook	39	156	None Reported	10	3 (QCI) 1 (Contracted QCP)
Pleasant Grove	24	63	None Reported	4	1 (QCI) 1 (Contracted QCP)
Tarrant	0	0	None Reported	0	1 (CSI) 1 (Contracted QCP)
Trussville	217	726	None Reported	28	1 (QCI) 1 (QCP)
Vestavia Hills	116	463	None Reported	21	2 (QCI) 2 (QCP)

A list of the construction sites is found in the **Appendix E**.

3.5 Post Construction Storm Water Management in New Development and Re-Development

3.5.1 Objective

The objective of the Post Construction Site Program is to address the discharge of pollutants in post construction stormwater to the MS4 from new development and re-development.

3.5.2 Activities Complete or in Progress

Activity 1: Require landowners and developers to implement systems to reduce the discharge of pollutants. This activity is complete for all cities.

Activity 2: Require landowners and developers to mimic pre-construction hydrology runoff in post-construction using permit guidelines. This activity is complete for all cities.

Activity 3: Encourage landowners and developers to incorporate Low Impact Development. This activity is complete for all cities.

Activity 4: Adopt or amend an ordinance to ensure applicability and enforceability of post-construction BMPs. This activity is complete for all cities.

Activity 5: Require the submittal of a post-construction BMP plan. This activity is complete for all cities.

Activity 6: Require an “as built” certification within 120 days of completion. This activity is complete for all cities.

Activity 7: Perform and/or require the performance of, at a minimum, an annual post-construction inspection and maintenance of BMPs on new construction sites. This activity is complete for all cities.

Activity 8: Require the developer/owner/operator to keep records of the inspection and maintenance activities. This activity is complete for all cities.

Activity 9: Require and/or perform adequate long-term operation and maintenance of post-construction BMPs through legal means. This activity is complete for all cities.

3.5.3 General Discussion

All members have passed a Post Construction Ordinance meeting the permit requirements. BMPs meeting the requirements of the permit have been constructed but they did not meet the one - year inspection requirement during this reporting period.

The cities with active construction have established a process for this requirement. While the cities that do not currently have construction activity have a process in place, it has not been tested at this time. Due to the lack of construction in some cities, changes may be necessary.

3.5.4 Status

Post-construction ordinances are in place. Full Implementation of the requirements has not occurred because the post construction BMPs have recently been completed.

3.5.5 Assessment

The ordinance is effect in all cities. Some cities have not had any construction that meets the criteria to date.

3.5.6 Proposed Revisions

There are no proposed revisions at this time.

3.5.7 Annual Reporting

Below is a table showing links to City ordinances. The ordinances for cities without a website can be found in Appendix F.

Ordinance Hyperlinks for Member Cities	
Adamsville	See Appendix F.
Brighton	See Appendix F.
Brookside	See Appendix F.
Fairfield	See Appendix F.
Gardendale	https://library.municode.com/al/gardendale/codes/code_of_ordinances?nodeId=PTIILA_USDE_CH103ERSECO
Homewood	https://library.municode.com/al/homewood/codes/code_of_ordinances?nodeId=COOR_CH5BUCOREAC_ARTIVSOERSECO
Hueytown	https://library.municode.com/al/hueytown/codes/code_of_ordinances?nodeId=COOR_CH34EN_ARTIIISTMAERSECO
Irondale	http://cityofirondaleal.gov/
Lipscomb	See Appendix F.
Midfield	http://www.cityofmidfield.com/?page_id=53
Mountain Brook	http://www.mtnbrook.org/Default.asp?ID=261&pg=City+Ordinances+%28Codified%29&hilite=ordinances
Pleasant Grove	https://library.municode.com/al/pleasant_grove/codes/code_of_ordinances?nodeId=PTIICO_CH39EN_ARTIIERSECO
Tarrant	http://www.cityoftarrant.com
Trussville	http://trussville.org/government/ordinances/
Vestavia Hills	http://vhal.org/departments/city-clerk/ordinances/

The following table summarizes construction related activities for each member.

Post-Construction Controls Summary			
City	Post-Construction Controls Installed and Inspected	# of Inspections Performed	Enforcement Actions
Adamsville	0	0	0
Brighton	0	0	0
Brookside	0	0	0
Fairfield	0	0	0
Gardendale	0	0	0
Homewood	0	0	0
Hueytown	0	0	0
Irondale	0	0	0
Lipscomb	0	0	0
Midfield	0	0	0
Mountain Brook	0	0	0
Pleasant Grove	0	0	0
Tarrant	0	0	0
Trussville	0	0	0
Vestavia Hills	0	0	0

3.6 *Spill Prevention and Response*

3.6.1 Objective

The objective of the Spill Prevention and Response Program is to prevent, contain, and respond to spills that may discharge into the MS4.

3.6.2 Activities Complete or in Progress

Activity 1: Investigate, respond and conduct response actions or coordinate with other agencies that may provide response actions. This activity was completed.

Activity 2: Develop a mechanism to track spills, responses, and clean-up activities for all spills. This activity was completed.

Activity 3: Use an acceptable mapping scheme to identify spill locations, inspection locations and chronic problem areas. This activity has been completed.

Activity 4: Implement a spill prevention/spill response plan. This activity was completed.

Activity 5: Provide training to appropriate personnel in spill and response procedures. This activity was completed.

Activity 6: Establish procedures to ensure that all spills are promptly reported. This activity has been completed.

3.6.3 General Discussion

Member cities have a local mechanism to investigate, respond, and conduct response actions with other agencies. All cities have either a fire department or are part of a fire district. Jefferson County also has an Emergency Management Agency (EMA) that coordinates and assists cities with spills and clean-up. EMA also documents spills, response, and clean-up activities. JCDH has the capability to exhibit spill locations, locations for inspections, and chronic problem areas in GIS. While all fire response units have training to respond to spills, JCDH offers a training program for non-first responder personnel on spill prevention and response.

3.6.4 Status

SWMA members are in compliance with this program element.

3.6.5 Assessment

The program has proven effective in terms of responding to spills.

3.6.6 Proposed Revisions

There are no proposed revisions at this time.

3.6.7 Annual Reporting

The following table summarizes spill response related activities.

Spill Response Summary				
City	Location of Spills	Spill Substance	Incident Dates and Times to Resolution	Enforcement Actions
Adamsville	I-22 EB On Ramp	500 gal. of Organic Sewage, 14 qt. Hydraulic Fluid, 20 gal. of Diesel	06/03/19	None Reported
Adamsville	Minor Parkway at Hwy 78 On Ramp	30 gal. of Used Cooking Oil	06/17/19	None Reported
Adamsville	Flat Top Rd @ U.S. 78	50 gal. of Diesel	07/22/19	None Reported
Fairfield	I-59 Exit 119-A Lloyd Nolan Pkwy	60 gal. of Diesel	12/11/18	None Reported
Fairfield	I-59 SB at MM 117	1500 gal. of Gasoline	04/06/19	None Reported
Gardendale	I-65 NB at MM 274.5	50 gal. of Gem Patch and Diesel	02/05/19	None Reported
Gardendale	I-65 SB at MM 269	150 gal. of Diesel	03/04/19	None Reported
Homewood	Urology Centers of Alabama	12 gal. of Xylene	11/01/18	None Reported
Hueytown	6176 Johns Rd	60 gal. of Diesel	01/14/19	None Reported
Irondale	I459 NB at MM 26.9 / Grants Mill Road Exit	20 gal. of Diesel and ~ 50lbs. of Carbon Black Powder	06/09/18	None Reported
Irondale	I20 EB Ramp from I459 NB	10 gal. of Diesel and 39,000 lbs. of Chicken Parts	06/13/18	None Reported
Midfield	50th St at RR Crossing	10 gal. of Hydraulic Fluid	04/19/19	None Reported
Midfield	1513 Midfield Industrial Blvd	4,000 lbs. of Calcium Silicon with Barium Aluminum	07/30/19	None Reported
Mountain Brook	Overton Rd at River Run Dr	< 100 gal. of Diesel	09/24/19	None Reported
Mountain Brook	I-459 NB at MM 23	20 gal. of Diesel	05/02/19	None Reported
Mountain Brook	I-459 NB at MM 22	200 gal. of Diesel and 11,000 lbs. Carbon Black	05/05/19	None Reported
Tarrant	365 Pinson Valley Pkwy	75 gal. of Oil, Diesel and Gasoline	04/09/19	None Reported
Vestavia Hills	I-65 Near Alford Ave. at MM 254	25 gal. of Diesel	11/13/18	None Reported
Vestavia Hills	I-459 NB exit 23 Liberty Park	300 gal. of Diesel	12/11/18	None Reported
Vestavia Hills	Birmingham Water Works Board, 2990 Shades Crest Rd	Sodium Hypochlorite and Ferric Sulfate Mixture, Gas Release	02/27/19	None Reported
Vestavia Hills	I-459 NB at MM 23, Liberty Park	80 gal. of Diesel	09/13/19	None Reported

3.7 Pollution Prevention/Good Housekeeping for Municipal Operations

3.7.1 Objective

The objective of the Pollution Prevention/Good Housekeeping Program is to prevent and reduce the discharge in stormwater run-off from municipal operations to the MEP.

3.7.2 Activities Complete or in Progress

Activity 1: An inventory of all Municipal facilities. This activity is completed for all cities.

Activity 2: Develop and implement a short and long term strategy and program for removal of trash from waterways and tributaries. This activity has been completed.

Activity 3: Require appropriate Best Management Practices for events. This activity is completed for all cities.

Activity 4: Provide trash receptacles for high trash generated areas. This activity has been completed.

Activity 5: Develop a Standard Operating Procedure detailing good housekeeping practices. This activity was completed.

Activity 6: Develop a program to inspect municipal facilities with checklists and procedures for correcting noted deficiencies. This activity was completed.

Activity 7: Develop a training program for municipal staff on good housekeeping. This activity is complete.

Activity 8: Assess the water quality impacts of flood management projects. This activity is complete.

3.7.3 General Discussion

Members document their pollution prevention/good housekeeping activities and municipal operations inspections in the SOAR program. The cities have active programs for removing trash from their watershed. Newly constructed flood management projects include constructed wetlands and off-line storage features which address water quality. In 2011 SWMA adopted a SOP manual that contains procedures regarding this program element. A SOP for special events is included in the SWMPP for SWMA cities. SWMA and JCDH offer a half-day training program for municipal employees that covered this program element.

3.7.4 Status

The cities are in compliance with this program element.

3.7.5 Assessment

The members have been successful in removing trash to prevent it from entering waterways and tributaries. Several members sponsor citywide clean ups which also serve to educate the public on importance of clean water. Member cities have adopted a SOP Manual that outlines procedures for numerous pollution prevention/good housekeeping activities.

3.7.6 Proposed Revisions

There are no proposed revisions at this time.

3.7.7 Annual Reporting

The following table summarizes floatable material collected by each member.

City	Amount of Floatable Materials Collected from The MS4	Amount of Leaves Collected	# of Inspections Performed
Adamsville	1,355 tons	1,300 tons	2
Brighton	380 bags	None Reported	None Reported
Brookside	67 bags	None Reported	None Reported
Fairfield	178 bags	None Reported	None Reported
Gardendale	1,114 bags	None Reported	1
Homewood	950 cu. yards and 911 bags	4,779 cubic yd.	10
Hueytown	102 bags	4,611 bags	3
Irondale	853 bags	3,468 bags	3
Lipscomb	None Reported	None Reported	None Reported
Midfield	6,551 bags	180 cu. yards	3
Mountain Brook	186.5 cu. Yards and 373 bags	2,340 cu. yards	8
Pleasant Grove	79 bags	None Reported	0
Tarrant	124 tons and 1,298 bags	42.5 tons	8
Trussville	2,259 bags	4,966 cu. yards	11
Vestavia Hills	749 bags	None Reported	3

All permitted members updated to their municipal inventory, inspection plan or SOP of good housekeeping. The updates can be found in each SWMPP.

3.8 *Application of Pesticides, Herbicides and Fertilizers (PHFs)*

3.8.1 Objective

The objective of the Pesticides, Herbicides and Fertilizers Program is to reduce, to the maximum extent practicable, the discharge of pollutants related to the storage and application of PHFs applied by employees or contractors, to public rights of way, parks, and other public property.

3.8.2 Activities Complete or in Progress

Activity 1: Identify all areas known to receive high application of PHFs and develop a program to detect improper usage. This activity is in progress.

Activity 2: Require evidence of proper certification and licensing for all applicators. This activity is complete.

Activity 3: Maintain an inventory of on-hand PHFs with information about the formulation of the product. This activity is complete.

Activity 4: Maintain information on equipment use and maintenance. This activity is complete.

Activity 5: Have training on safe usage, storage and disposal of PHFs. This activity is complete.

Activity 6: Inspect and monitor facilities where PHFs are stored. This activity is complete.

Activity 7: Have recordkeeping. This activity is complete.

3.8.3 General Discussion

SWMA members that have active PHF programs are in compliance with keeping records on usage, storage, and disposal of PHFs. The maintenance and use of equipment is addressed in their SWMPP. A plan to inspect and monitor PHF storage facilities in similar fashion to the required municipal facilities inspections of the Good Housekeeping program element is also included in the SWMPP. Members that spray provide the proper training to the personnel involved. JCDH also offered training for city employees on general usage of PHFs. Cities record all PHF related activities in SOAR.

3.8.4 Status

The members comply with the documentation of application and storage of PHFs. The storage facility inspection requirement is addressed in the SWMPP.

3.8.5 Assessment

Members are documenting areas of PHFs application and storage inventory. Inspection of storage facilities was included in the SWMPP.

3.8.6 Proposed Revisions

There are no proposed revisions at this time.

3.8.7 Annual Reporting

All records for PHFs are housed in the SOAR program.

3.9 *Oils, Toxics, and Household Hazardous Waste Control*

3.9.1 Objective

The objective of oil, toxics and household hazardous waste control program is to prohibit, to the maximum extent practicable, the discharge of used engine fluids and household hazardous waste into the MS4.

3.9.2 Activities Complete or in Progress

Activity 1: making educational materials on this program available to the public. This activity is complete.

Activity 2: Advertise the location of used oil collection facilities. This activity is complete.

Activity 3: Provide employee training on spill prevention related to this program. This activity is complete.

3.9.3 General Discussion

Currently JCDH and SWMA provide information addressing oils, toxics, and household hazardous wastes that are distributed at each member's city hall. Stormwater calendars, website materials and brochures are tools that members use to address these topics including used oil collection facilities. Determining the quantity of used oil collected within each city is difficult due to large number of municipalities located within Jefferson County. Citizens can easily drop off their used oil anywhere regardless of the municipality. Currently, information on the total gallons of recycled oil for Jefferson County is received from the largest used oil collector. JCDH and SWMA also offered a half-day training program for municipal employees that covers this program element. Many cities offered electronics takeback days independently. JCDH sponsored a Household Hazardous Waste Day Event at two sites in Jefferson County on April 20, 2019 for all Jefferson County residents.

3.9.4 Status

Members are in compliance with all components of this element.

3.9.5 Assessment

Training for employees on Household Hazardous Waste was offered during the 2018-2019 reporting period.

3.9.6 Proposed Revisions

There are no proposed revisions at this time.

3.9.7 Annual Reporting

Universal Environmental Services received 498,934 gallons of recycled oil from Jefferson County area Express Oil Change Services, Inc., during this reporting period. Amounts for individual cities were not available. Additionally, 328 gallons of used oil motor oil and 61.5 gallons of antifreeze were received during the 2019 Household Hazardous Waste Event.

Regional Electronics takeback events were held in Adamsville and Center Point. The City of Vestavia Hills also held a takeback event. Additionally, the U.S. Drug Enforcement Administration held two prescription drug takeback events throughout Jefferson County.

JCDH presented a MS4 training class that included discussion of oils, toxics, and household hazardous waste control on October 17 and 24, 2018. The attendance sheet and agenda can be found in **Appendix G**.

3.10 *Industrial Storm Water Runoff*

3.10.1 Objective

The objective of the industrial stormwater runoff program is to inspect, monitor, and control pollutants in the stormwater runoff from high-risk facilities.

3.10.2 Activities Complete or in Progress

Activity 1: Annual inspection of Municipal waste landfills, hazardous waste treatment, storage, disposal (TSD) and recovery facilities. This activity is complete.

Activity 2: Annual inspections of industrial facilities and high-risk commercial facilities. This activity is complete.

Activity 3: Use data collected from NPDES permitted facility to review sites. This activity is complete.

3.10.3 General Discussion

JCDH and SWMA implemented a standalone program to inspect the sites from a more stormwater-focused perspective. With the completion of each cities' SWMPP, a list of industrial and high-risk commercial facilities is compiled. Facilities within those cities were inspected or documented during the 2018-2019 reporting period. Lists will be updated as needed.

3.10.4 Status

This element is complete for all cities.

3.10.5 Assessment

This element is effective. No illicit discharges were found during this process.

3.10.6 Proposed Revisions

There are no proposed revisions at this time.

3.10.7 Annual Reporting

Member Cities	# of Inspections
Adamsville	35
Brighton	2
Brookside	1
Fairfield	37
Gardendale	47
Homewood	53
Hueytown	79
Irondale	44
Lipscomb	4
Midfield	18
Mountain Brook	14
Pleasant Grove	17
Tarrant	88
Trussville	17
Vestavia Hills	54

The inspections are in the in **Appendix H**. JCDH also reviewed the 20 NPDES Permits and found a total of 43 instances of exceedance. The Discharge Monitoring Reports for the Permitted sites can be found in **Appendix H**.

4 Monitoring

4.1 Objective

The objective of the Monitoring Program is to provide data necessary to assess the effectiveness and adequacy of BMPs implemented under the SWMPP.

4.2 Monitoring Program

Monitoring is accomplished by using both continuous monitoring stations and grab samples collected during a qualifying rain event (wet samples). Grab samples are collected as described, and at the frequency determined by the Member's permit. Analysis of the sampling data is used to assess the water quality of the streams and to identify potential water quality impairments. During this reporting period dry weather samples were also collected.

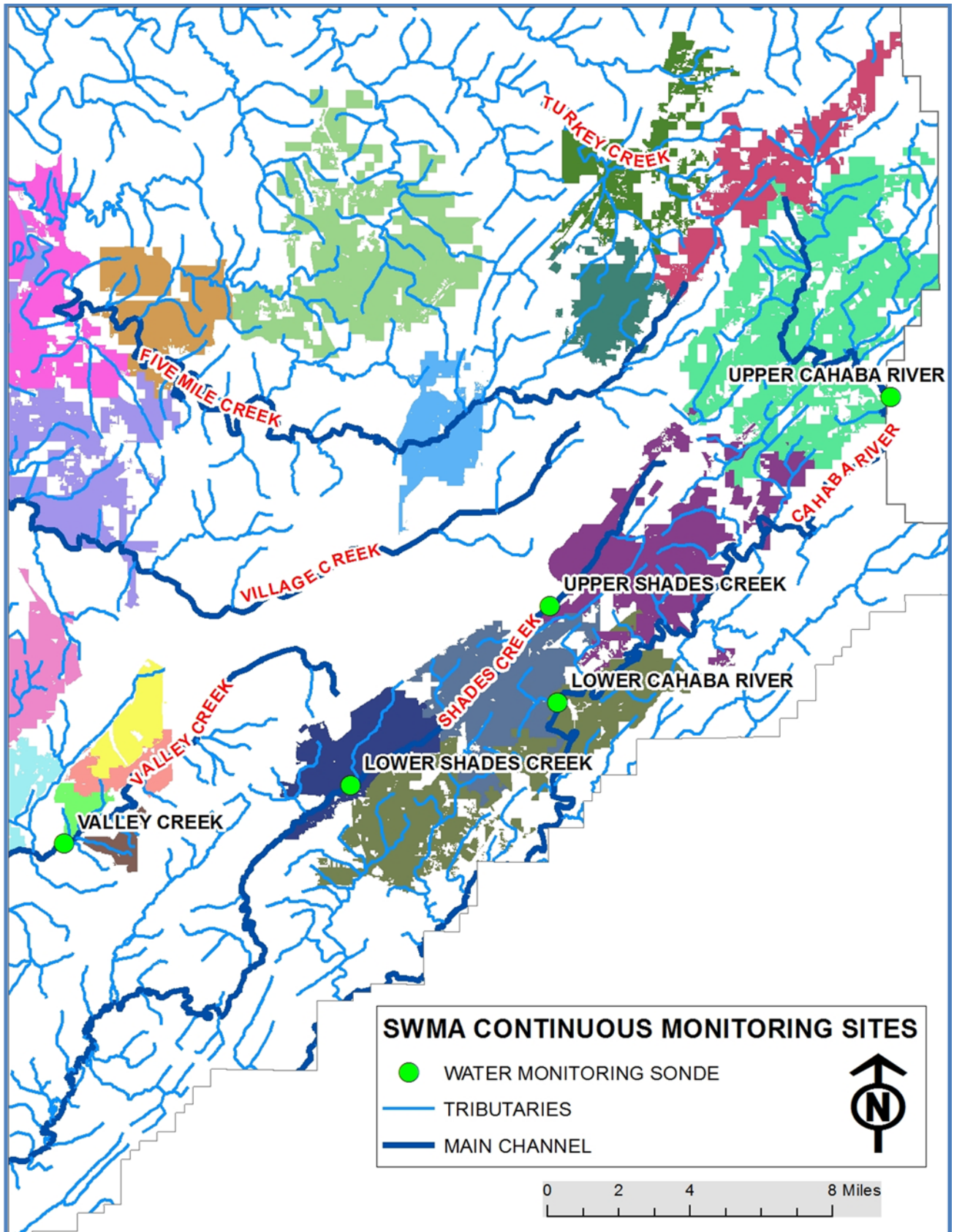
4.2.1 Continuous Monitoring

There are five continuous monitoring sites strategically placed throughout SWMA members on Shades Creek, Cahaba River and Valley Creek. The sites are maintained, calibrated, and the data is approved by USGS. The data is available to the public through USGS's website (<https://www.usgs.gov/>). The continuous monitors test for six parameters: temperature, pH/ORP turbidity, conductivity, dissolved oxygen and water level.

The continuous monitoring sites are shown in the table below:

WATERSHED	SITE NAME	USGS NAME	LONGITUDE	LATITUDE	APPROXIMATE WATERSHED SIZE (SQ. MI.)*
UPPER SHADES CREEK	MOU-SHC-065M	SHADES CREEK AT ELDER ST NEAR SPRINGDALE AL (02423571)	-86.716126	33.521084	9.1
LOWER SHADES CREEK	HOM-SHC-087M	SHADES CREEK NR HOMEWOOD ALA (02423586)	-86.813676	33.448607	26.9
UPPER CAHABA RIVER	LEE-CAR-053M	CAHABA RIVER NEAR WHITES CHAPEL AL (02423160)	-86.549324	33.605167	50.8
LOWER CAHABA RIVER	VES-CAR-085M	CAHABA RIVER NEAR MOUNTAIN BROOK (02423380)	-86.712765	33.481772	140.3
VALLEY CREEK	BRI-VAC-015M	VALLEY CREEK BELOW BRIGHTON, ALA (02461405)	-86.95317	33.425456	35.0

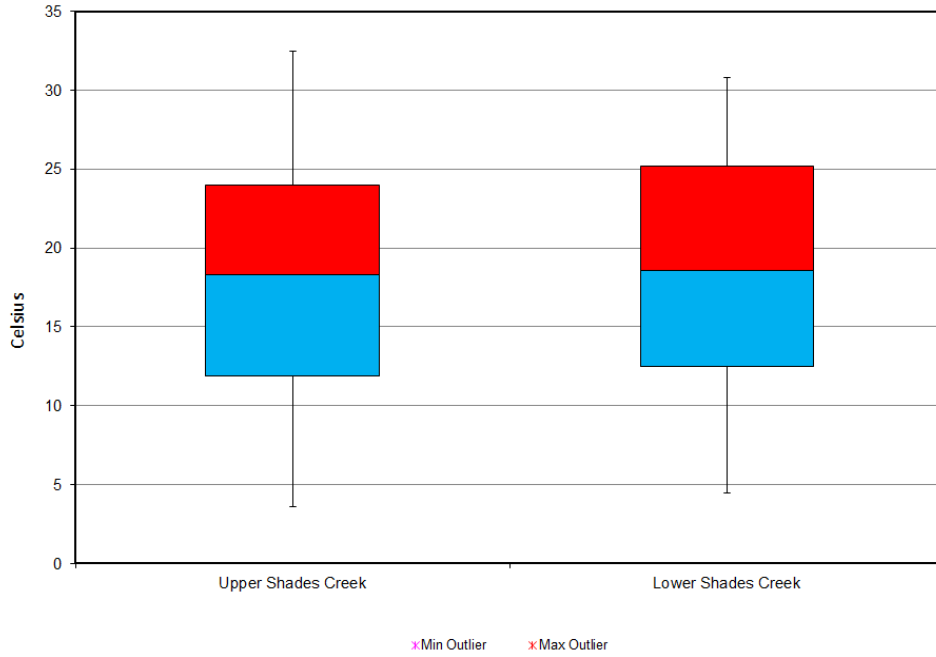
*The watershed size was derived from the USGS Watershed Boundary Dataset in conjunction with USGS topographical maps. The information shown approximates watershed size.



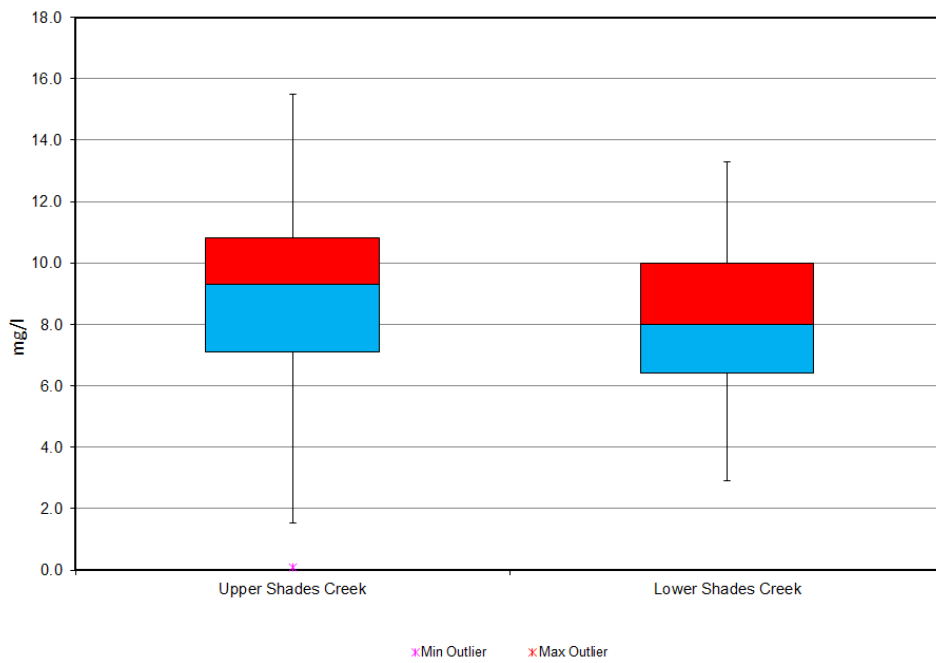
4.2.2 Continuous Monitoring Data

4.2.2.1 Shades Creek Data

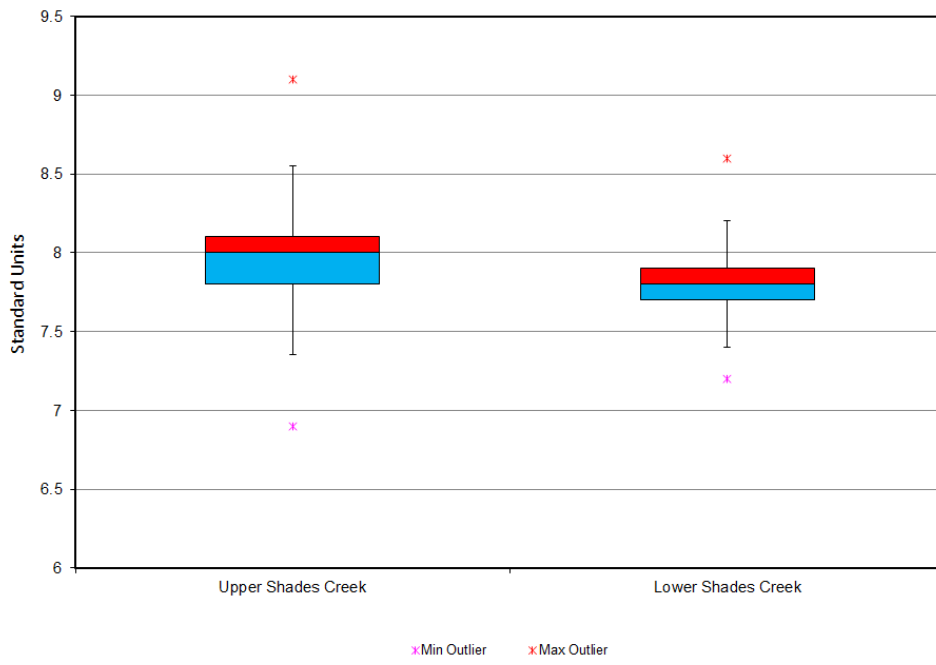
Temperature



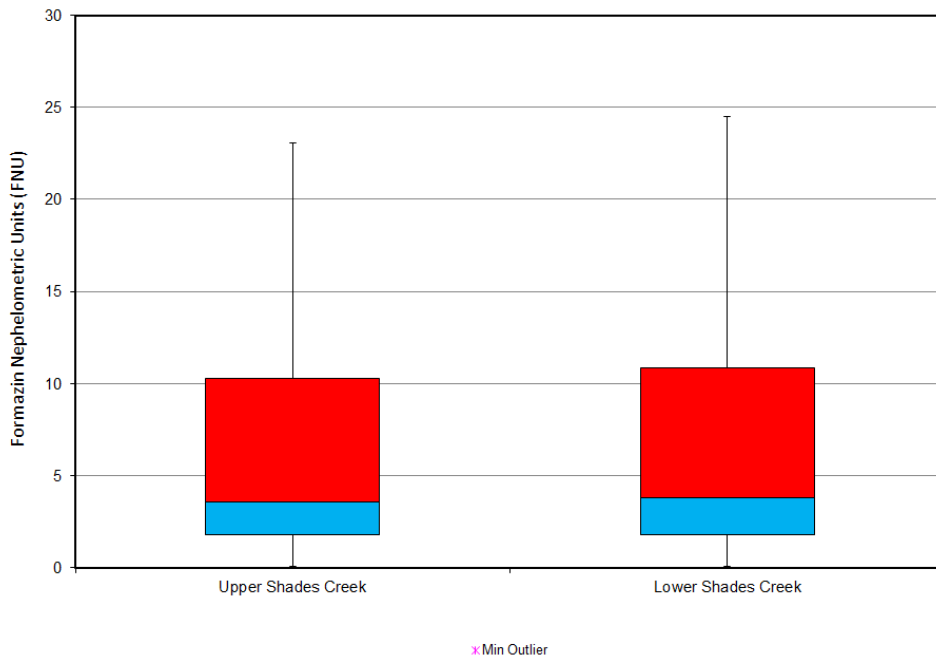
Dissolved Oxygen



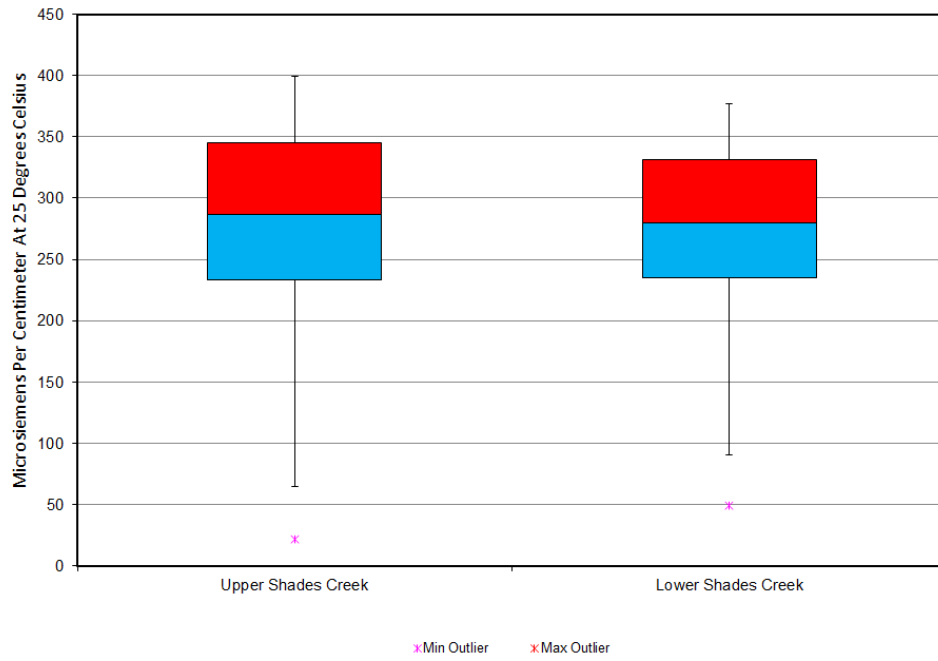
pH



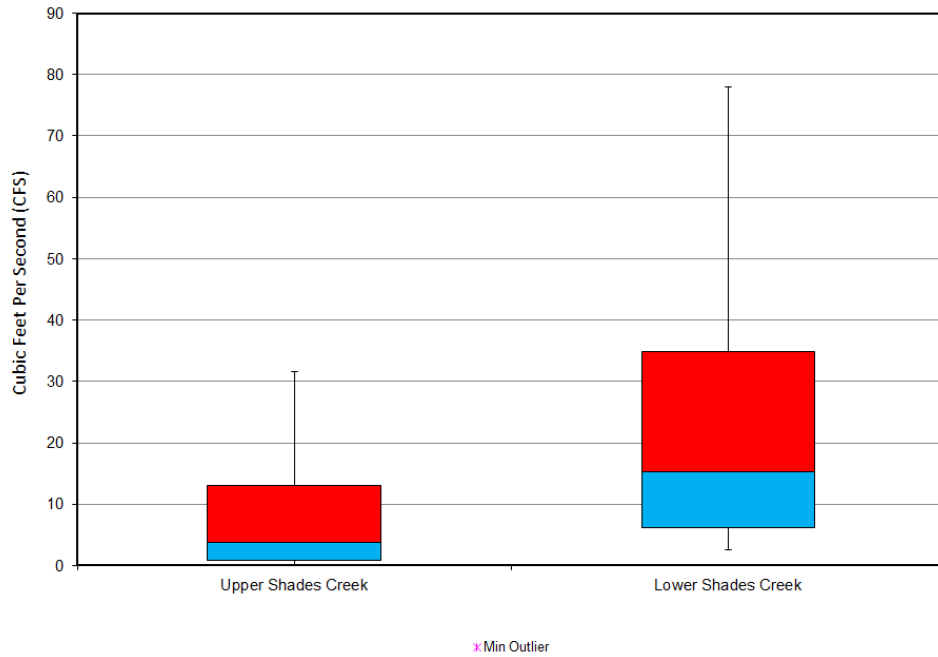
Turbidity



Specific Conductance

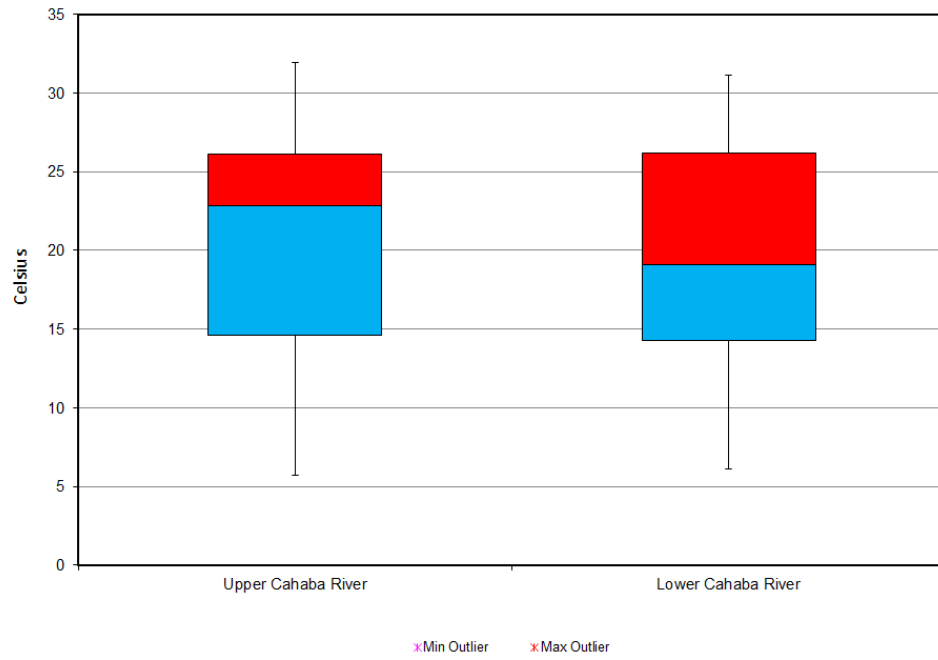


Discharge

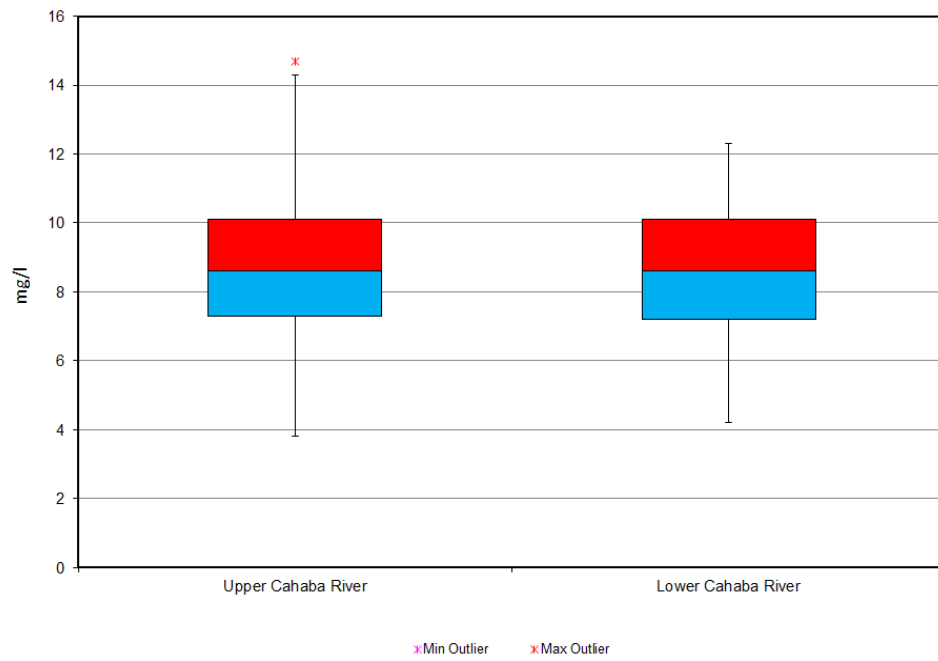


4.2.2.2 Cahaba River Data

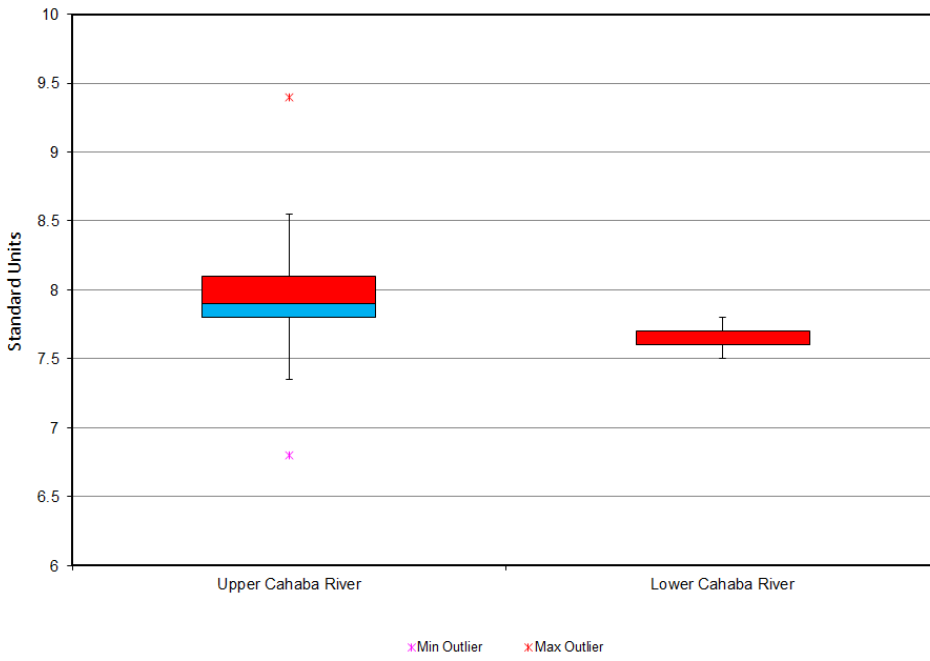
Temperature



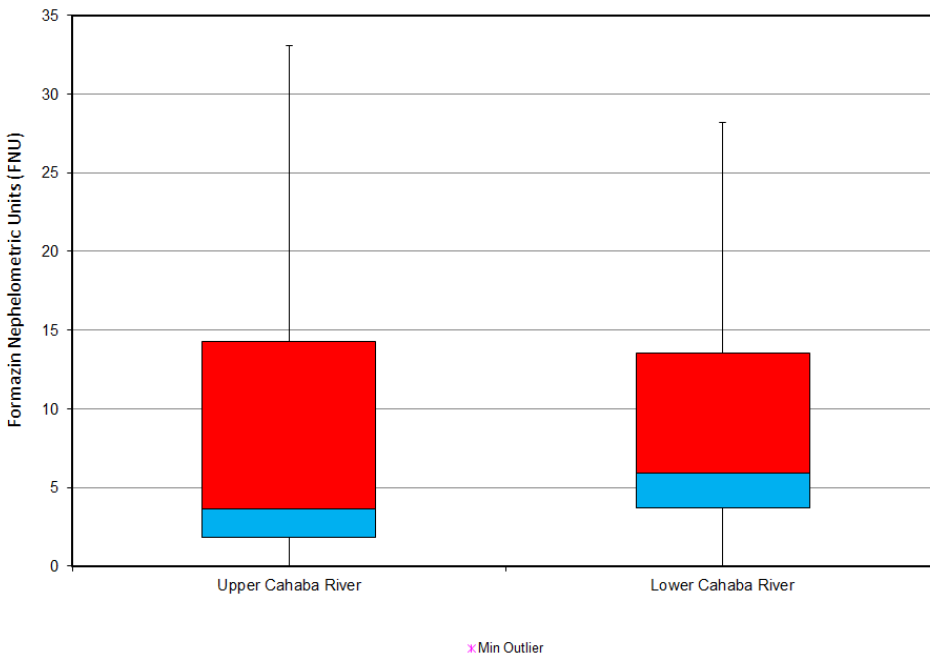
Dissolved Oxygen



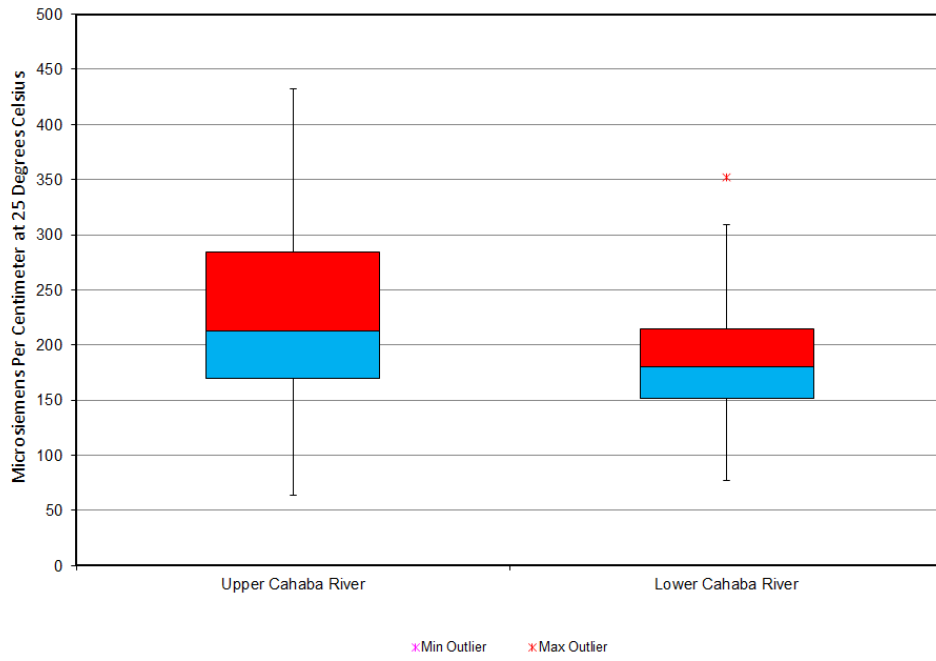
pH



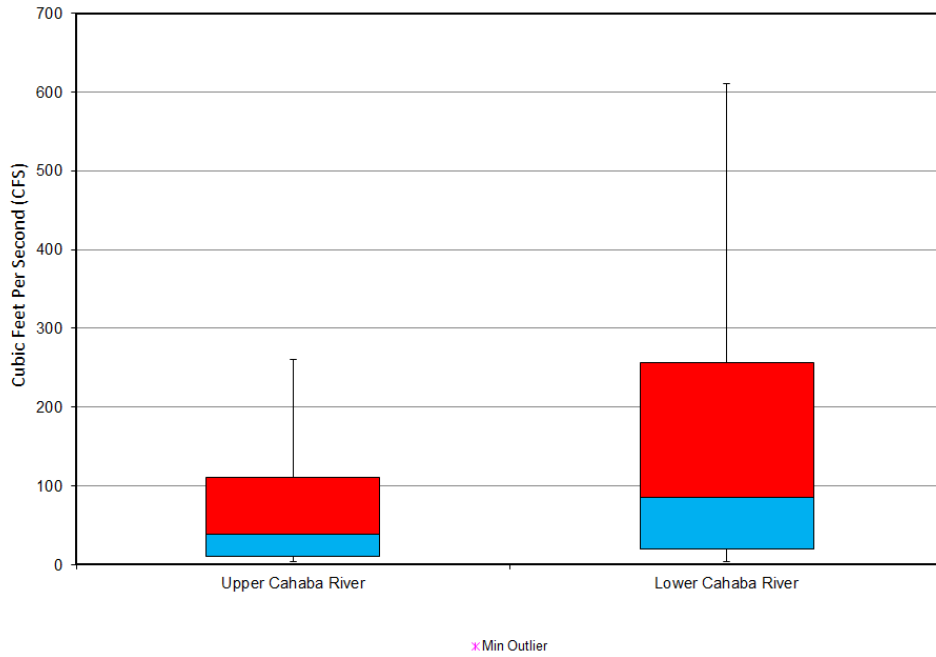
Turbidity



Specific Conductance

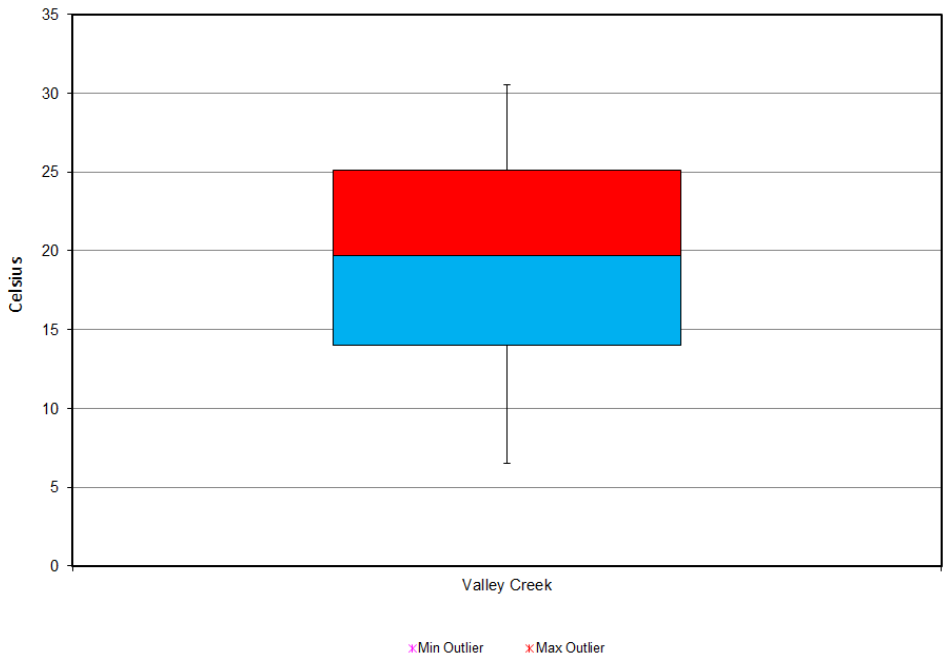


Discharge

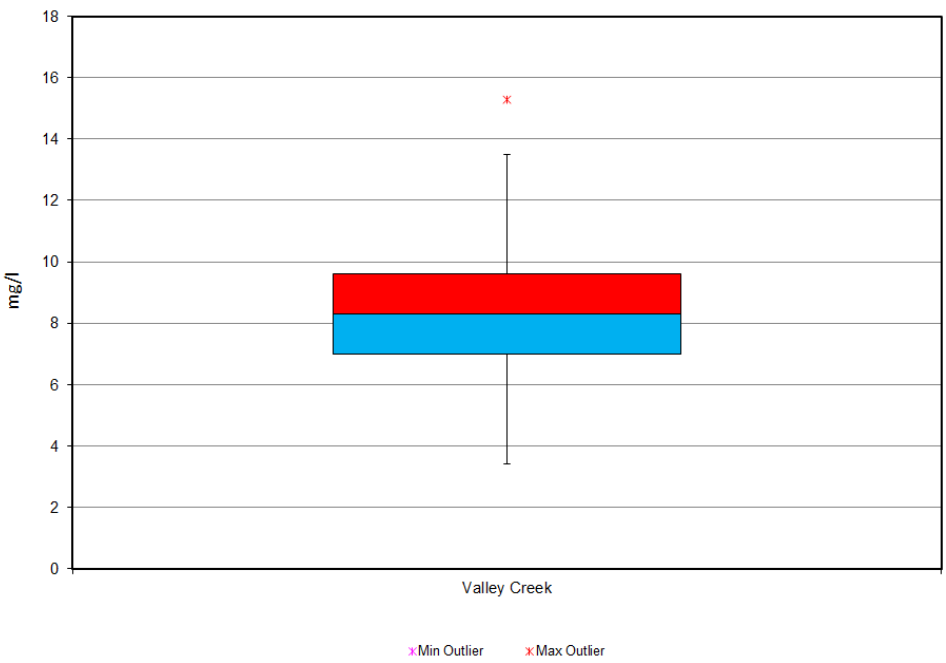


4.2.2.3 Valley Creek Data

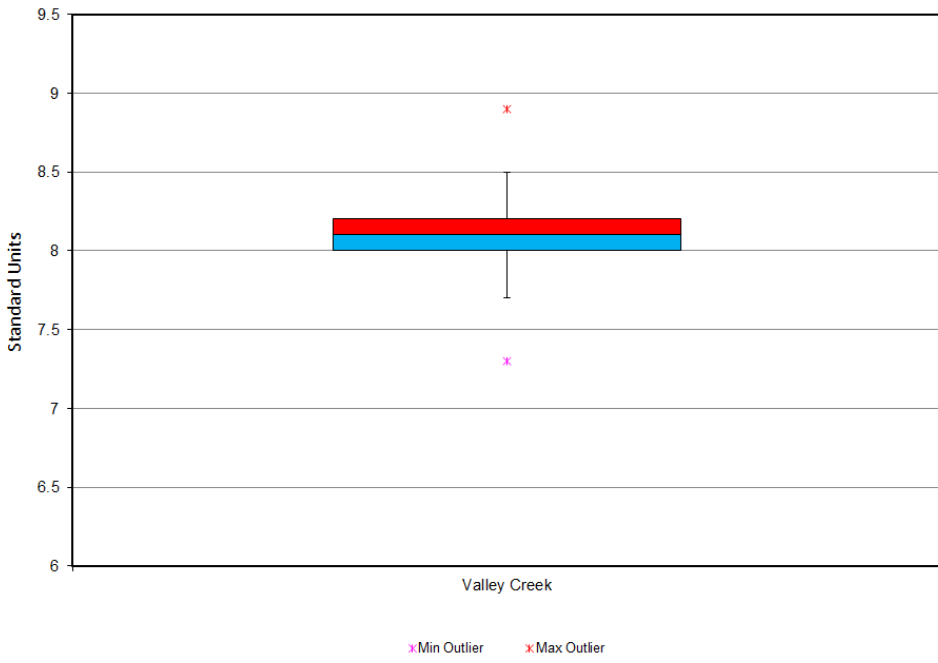
Temperature



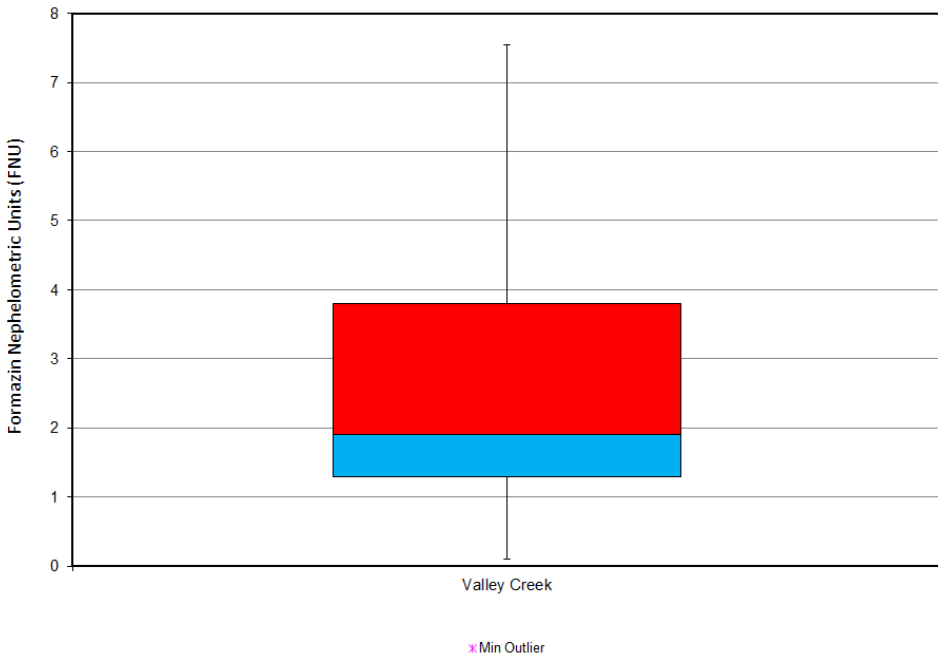
Dissolved Oxygen



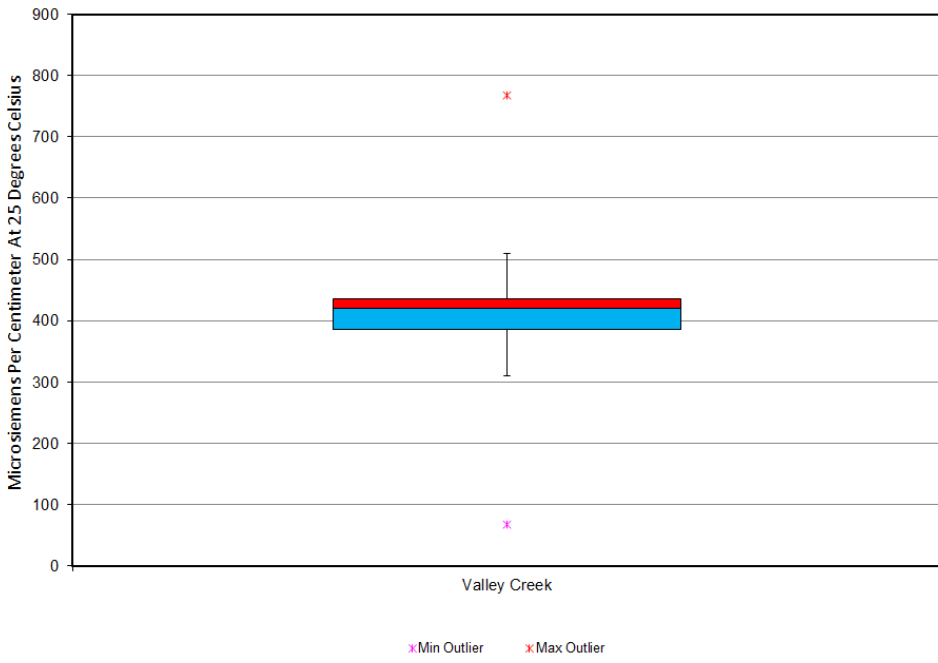
pH



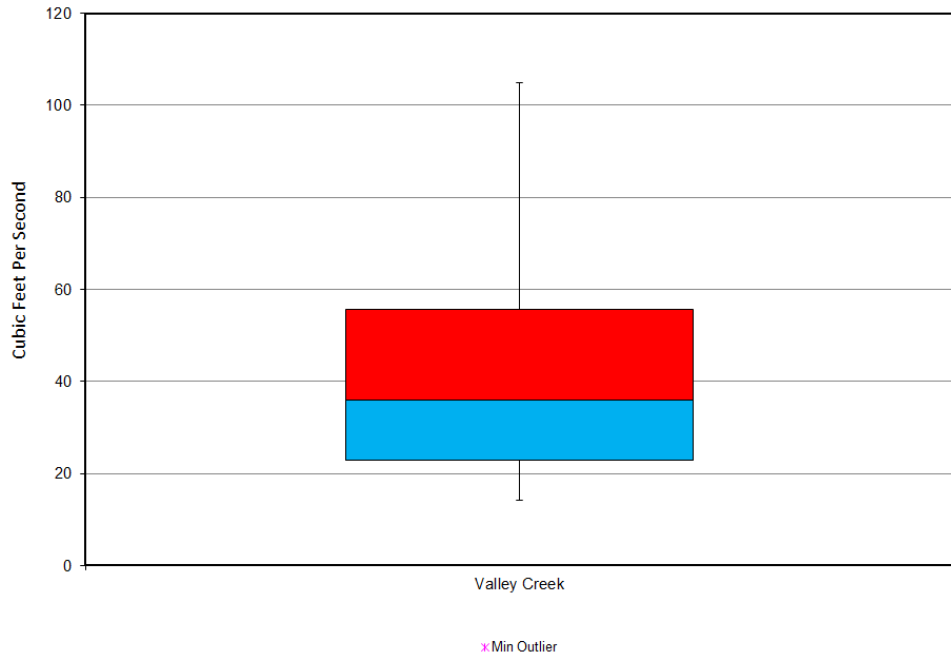
Turbidity



Specific Conductance



Discharge



4.2.3 Grab Sampling

The locations of sampling stations are based upon multiple factors that include, past sampling sites for longevity studies of water quality, accessibility, and strategically located sampling sites to reduce duplication of sampling on the same water body.

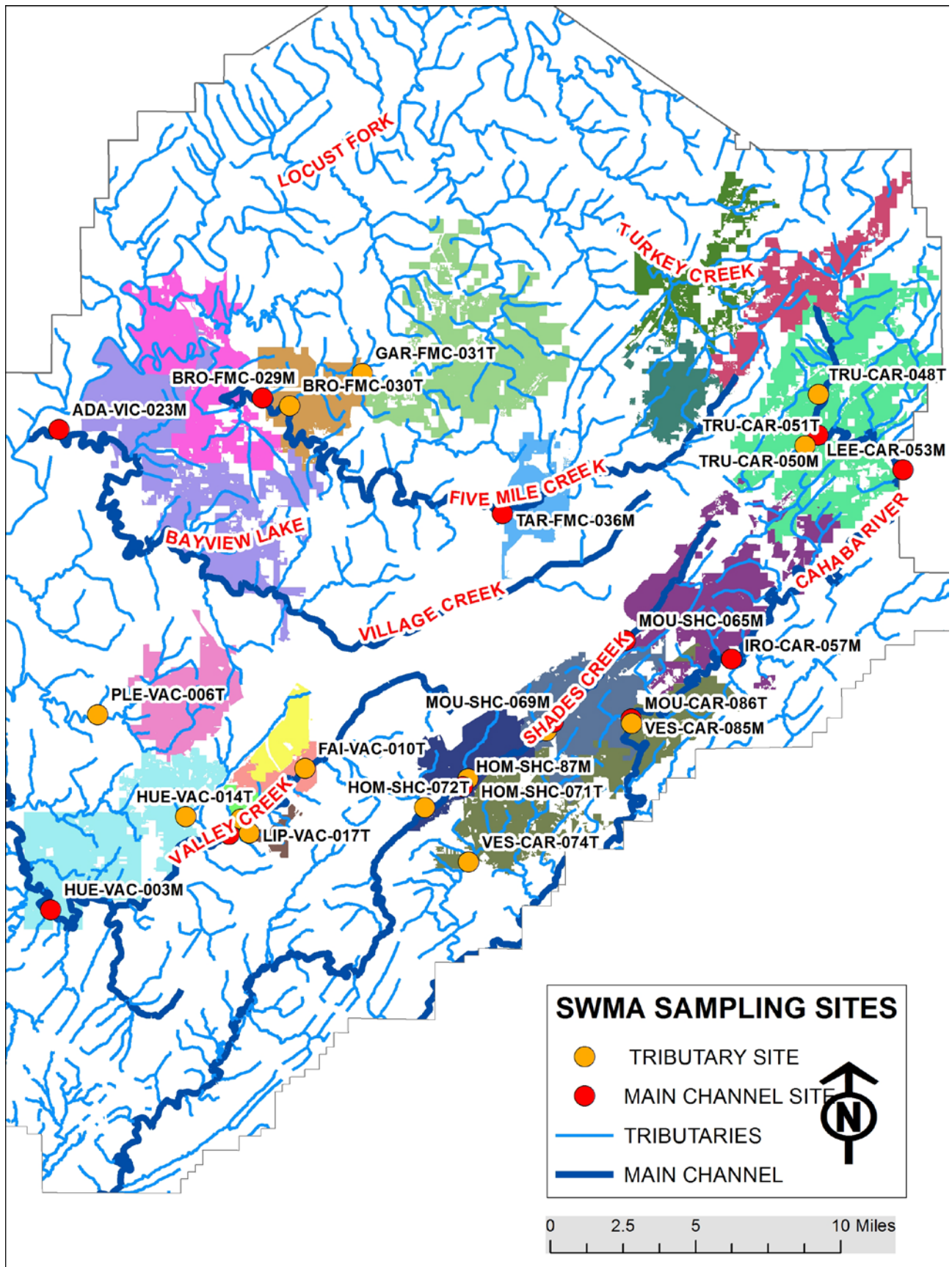
The table below describes the member cities and the sites that receive runoff from them. Note the use of color coding to signify sites that have receive runoff from multiple municipalities.

CITY	WATERSHED	ADEM PERMIT REQUIREMENTS	SITE NAME	LONGITUDE	LATITUDE	APPROXIMATE WATERSHED SIZE (SQ. MI.)*
ADAMSVILLE	VILLAGE CREEK	VILLAGE CREEK	ADA-VAC-023M	-87.053491	33.628143	94.4
BRIGHTON	VALLEY CREEK	TRIB TO VALLEY CREEK	BRI-VAC-018T	-86.946071	33.43316	1.4
BRIGHTON	VALLEY CREEK		BRI-VAC-015M	-86.95317	33.425456	35.0
BROOKSIDE	FIVE MILE CREEK	NEWFOUND CREEK	BRO-FMC-030T	-86.915614	33.63953	15.7
BROOKSIDE	FIVE MILE CREEK	FIVE MILE CREEK	BRO-FMC-029M	-86.932013	33.643603	81.6
FAIRFIELD	VALLEY CREEK	TRIB TO VALLEY CREEK	FAI-VAC-010T	-86.907794	33.45815	0.7
FAIRFIELD	VALLEY CREEK		BRI-VAC-018T	-86.946071	33.43316	1.4
FAIRFIELD	VALLEY CREEK		BRI-VAC-015M	-86.95317	33.425456	35.0
GARDENDALE	FIVE MILE CREEK	TRIB TO FIVE MILE CREEK	GAR-FMC-031T	-86.872087	33.655549	7.7
HOMEWOOD	SHADES CREEK	SHADES CREEK	HOM-SHC-087M	-86.813676	33.448607	26.9
HOMEWOOD	SHADES CREEK	TRIBUTARIES TO SHADES CREEK	HOM-SHC-072T	-86.83654	33.438338	3.7
HOMEWOOD	SHADES CREEK	TRIBUTARIES TO SHADES CREEK	HOM-SHC-071T	-86.810539	33.452564	4.0
HUEYTOWN	VALLEY CREEK	VALLEY CREEK	HUE-VAC-003M	-87.059665	33.388139	93.2
HUEYTOWN	VALLEY CREEK	TRIB TO VALLEY CREEK	HUE-VAC-014T	-86.978983	33.434358	2.4
IRONDALE	SHADES CREEK	SHADES CREEK	MOU-SHC-065M	-86.716126	33.521084	9.1

CITY	WATERSHED	ADEM PERMIT REQUIREMENTS	SITE NAME	LONGITUDE	LATITUDE	APPROXIMATE WATERSHED SIZE (SQ. MI.)*
IRONDALE	CAHABA RIVER	CAHABA RIVER	IRO-CAR-057M	-86.652636	33.511484	128.6
LIPSCOMB	VALLEY CREEK	TRIB TO VALLEY CREEK	LIP-VAC-017T	-86.941052	33.425927	0.7
LIPSCOMB	VALLEY CREEK		BRI-VAC-015M	-86.95317	33.425456	35.0
MIDFIELD	VALLEY CREEK	VALLEY CREEK	BRI-VAC-015M	-86.95317	33.425456	35.0
MIDFIELD	VALLEY CREEK		FAI-VAC-010T	-86.907794	33.45815	0.7
MIDFIELD	VALLEY CREEK		BRI-VAC-018T	-86.946071	33.43316	1.4
MOUNTAIN BROOK	SHADES CREEK	SHADES CREEK	MOU-SHC-069M	-86.759513	33.48057	16.5
MOUNTAIN BROOK	SHADES CREEK	TRIBUTARIES TO SHADES CREEK	MOU-SHC-068T	-86.763681	33.476147	3.0
MOUNTAIN BROOK	CAHABA RIVER	TRIBUTARIES TO SHADES CREEK**	MOU-CAR-086T	-86.712698	33.479676	2.4
PLEASANT GROVE	VALLEY CREEK	ROCK CREEK	PLE-VAC-006T	-87.03124	33.485591	16.2
TARRANT	FIVE MILE CREEK	FIVE MILE CREEK	TAR-FMC-036M	-86.788948	33.584886	28.8
TRUSSVILLE	CAHABA RIVER	CABABA RIVER	LEE-CAR-053M	-86.549324	33.605167	50.8
TRUSSVILLE	CAHABA RIVER	PINCHGUT CREEK	TRU-CAR-051T	-86.607729	33.617775	6.8
TRUSSVILLE	CAHABA RIVER	DRY CREEK	TRU-CAR-048T	-86.599393	33.643242	3.1
VESTAVIA HILLS	CAHABA RIVER	CAHABA RIVER	VES-CAR-085M	-86.712765	33.481772	140.3
VESTAVIA HILLS	PATTON CREEK	PATTON CREEK	VES-CAR-074T	-86.810525	33.410772	6.7

*The watershed size was derived from the United State Geological Survey's (USGS) Watershed Boundary Dataset in conjunction with USGS topographical maps. This information shown is an approximation of watershed size.

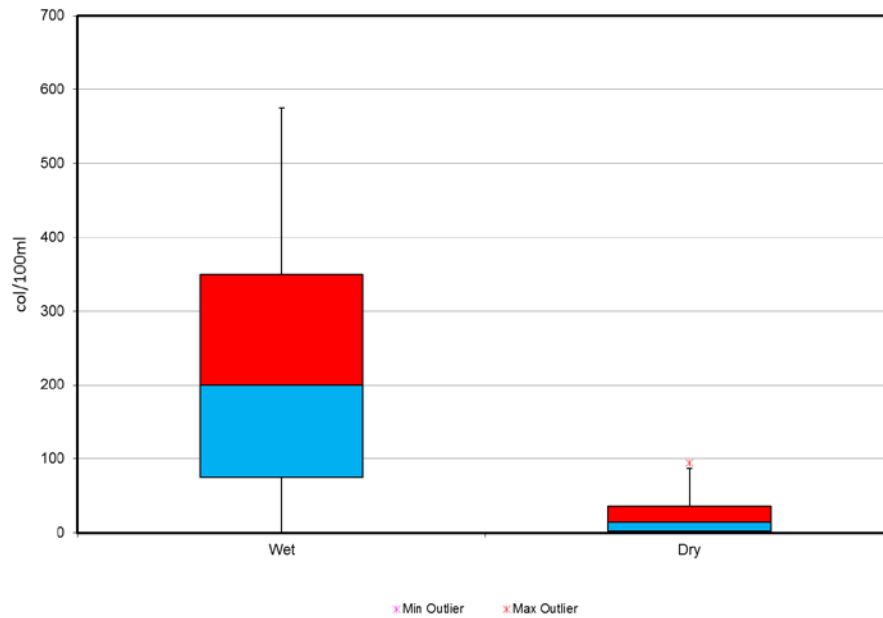
**Needs to be modified to be a part of Cahaba River.



4.2.4 Wet and Dry Sampling Data

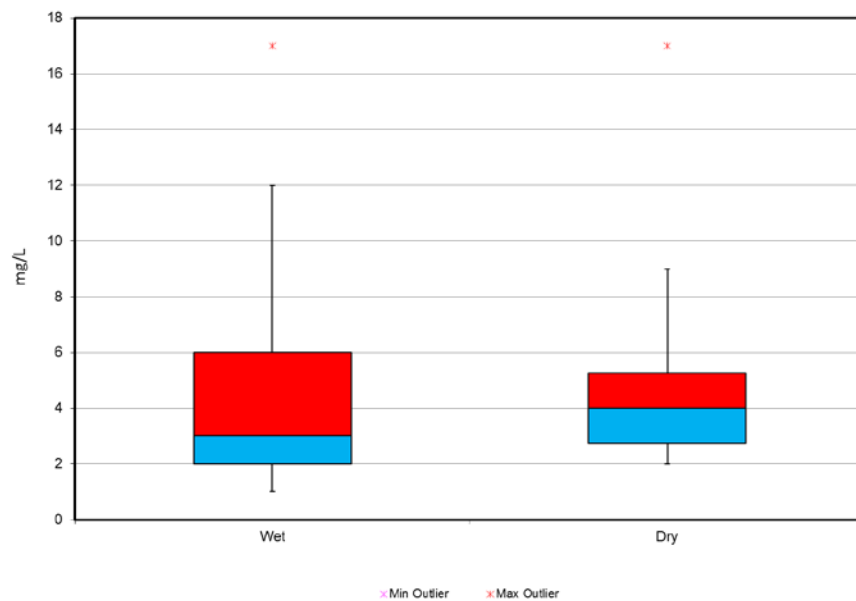
E. Coli

The box plots in the figure below summarize the *E.coli* data for the wet and dry samples. There was a significant difference in the number of high vs. low *E. coli* count values between the wet and dry samples at each site ($p < 0.001$, sign test).



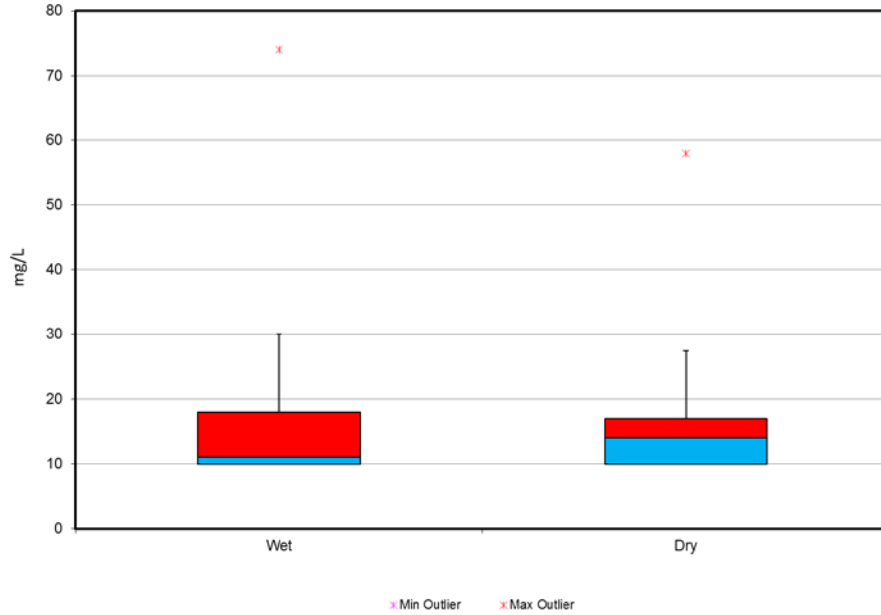
Biological Oxygen Demand (BOD)

The box plots in the figure below summarize the BOD data for the wet and dry samples. There was no significant difference in the number of high vs. low BOD count values between the wet and dry samples at each site ($p = 0.189$, sign test).



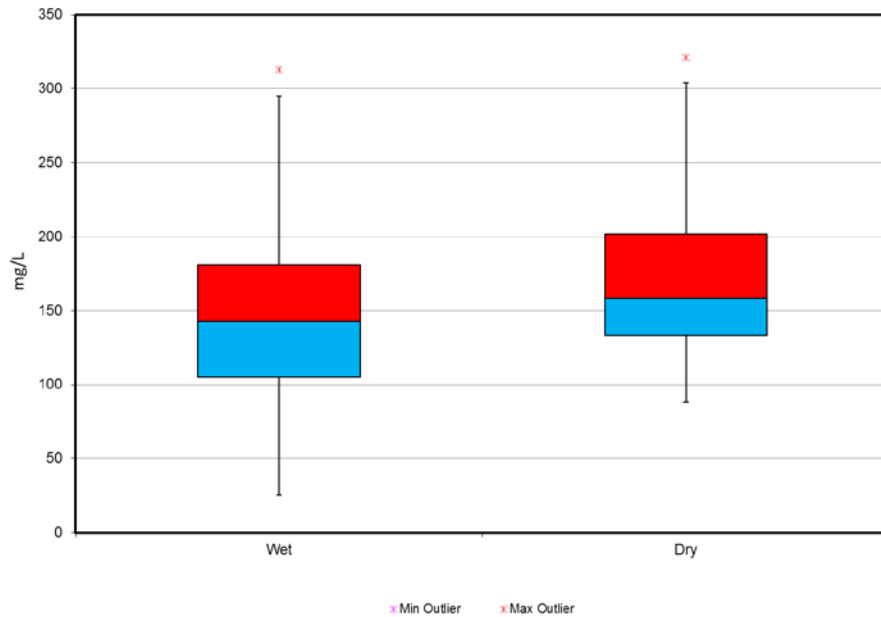
Chemical Oxygen Demand (COD)

The box plots in the figure below summarize the COD data for the wet and dry samples. There was no significant difference in the number of high vs. low COD values between the wet and dry samples at each site ($p = 1.176$, sign test).



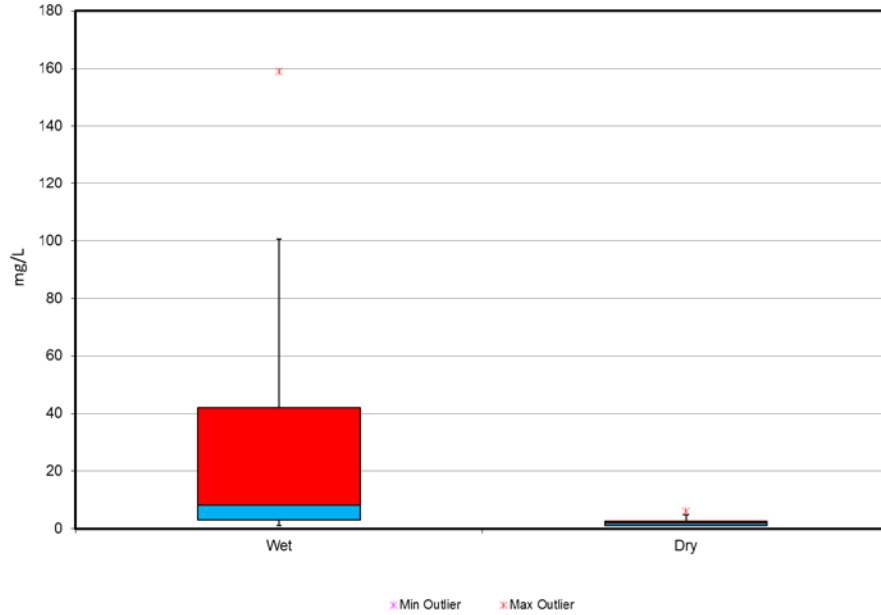
Hardness

The box plots in the figure below summarize the hardness data for the wet and dry samples. There was no significant difference in the number of high vs. low hardness values between the wet and dry samples at each site ($p = 0.541$, sign test).



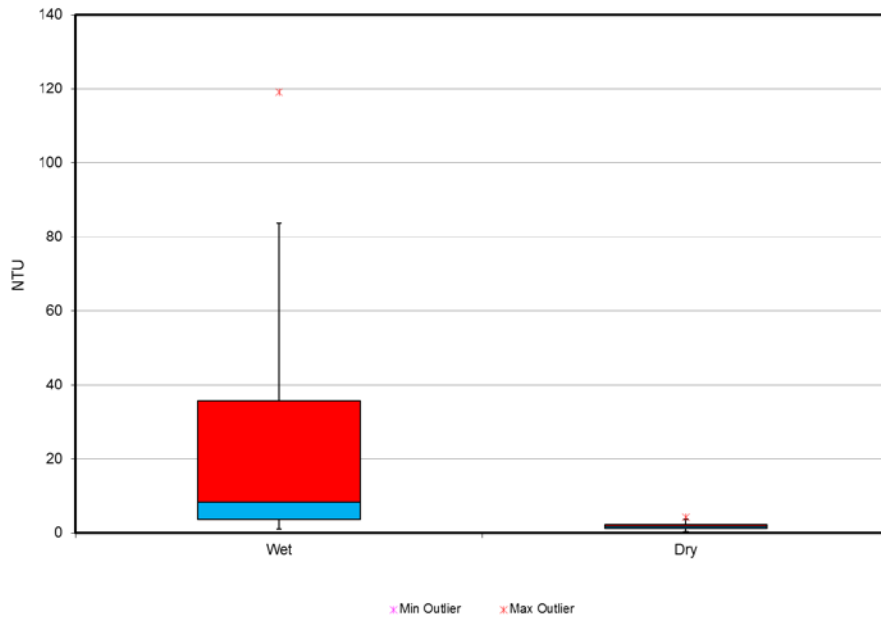
Total Suspended Solids (TSS)

The box plots in the figure below summarize the TSS data for the wet and dry samples. There was a significant difference in the number of high vs. low TSS values between the wet and dry samples at each site ($p < 0.001$, sign test).



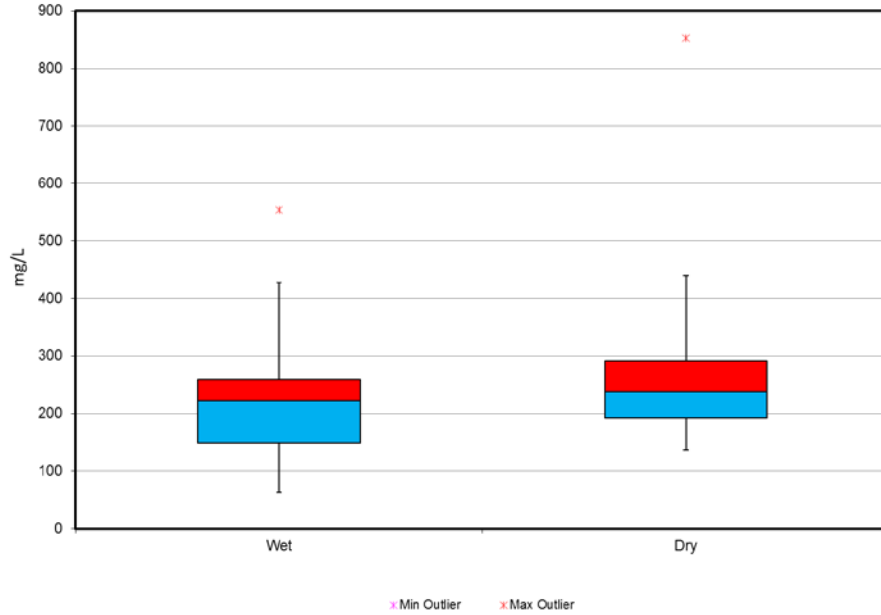
Turbidity

The box plots in the figure below summarize the turbidity data for the wet and dry samples. There was a significant difference in the number of high vs. low turbidity values between the wet and dry samples at each site ($p < 0.001$, sign test).



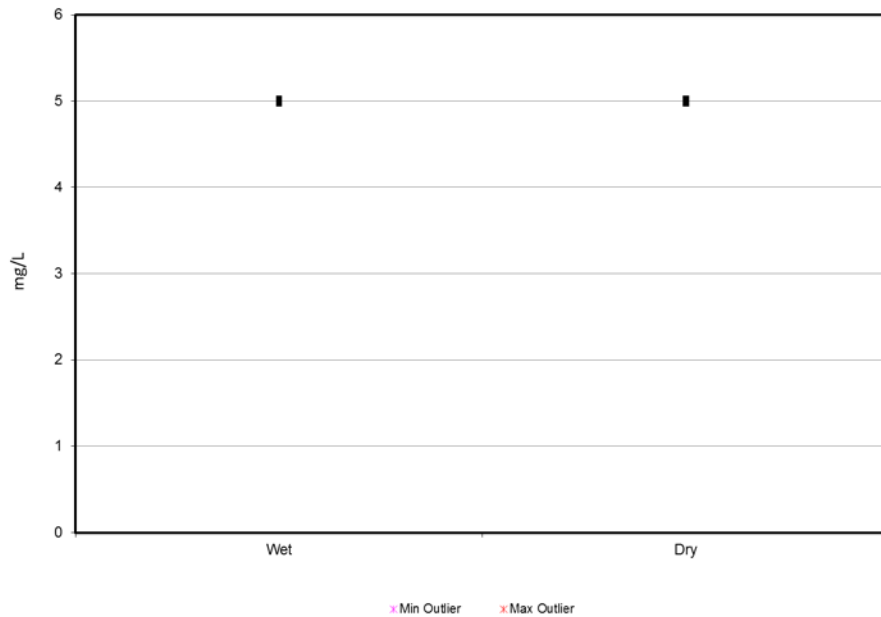
Total Dissolved Solids (TDS)

The box plots in the figure below summarize the TDS data for the wet and dry samples. There was no significant difference in the number of high vs. low TDS values between the wet and dry samples at each site ($p = 0.307$ sign test).



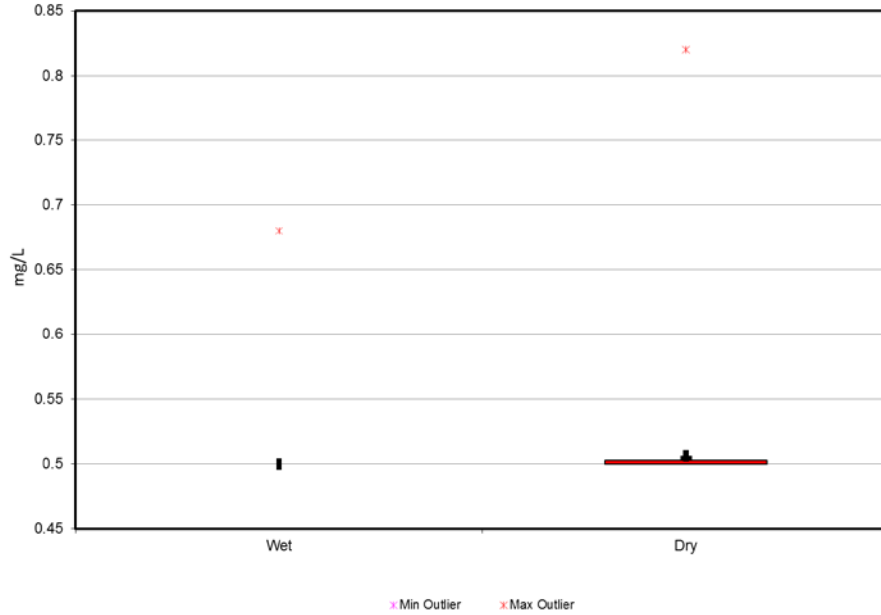
Oil and Grease

The box plots in the figure below summarize the oil and grease data for the wet and dry samples. There was no significant difference in the number of high vs. low oil and grease values between the wet and dry samples at each site. All samples were less than 5 mg/l.



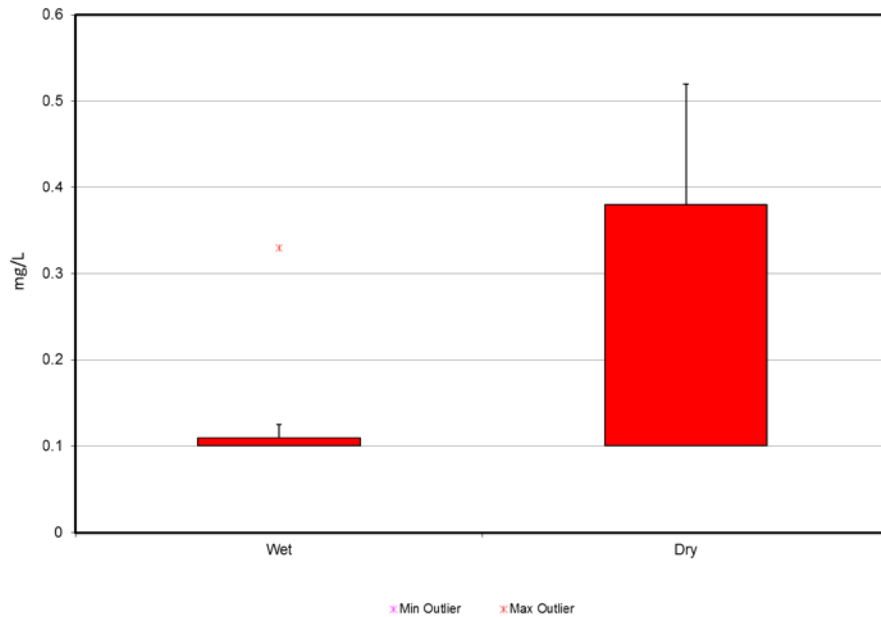
Total Kjeldahl Nitrogen (TKN)

The box plots in the figure below summarize the TKN data for the wet and dry samples. There was no significant difference in the number of high vs. low TKN values between the wet and dry samples at each site ($p = 1.000$, sign test).



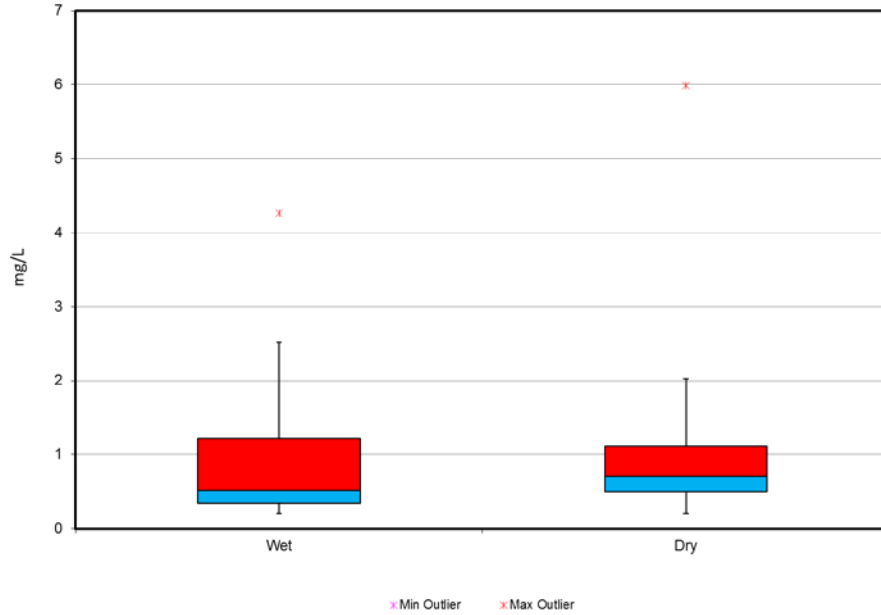
Ammonia

The box plots in the figure below summarize the ammonia data for the wet and dry samples. There was no significant difference in the number of high vs. low ammonia values between the wet and dry samples at each site ($p = 0.267$, sign test).



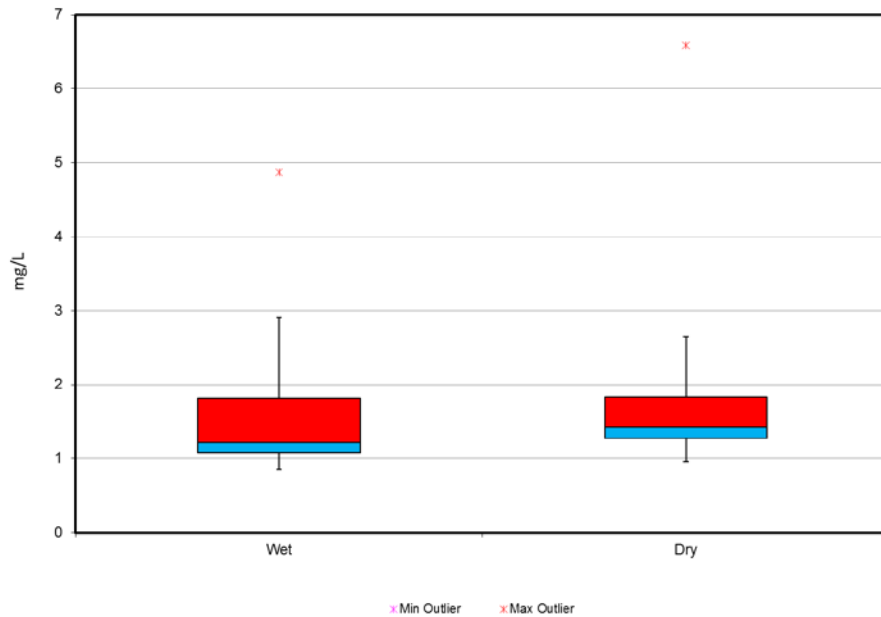
Nitrate Plus Nitrite

The box plots in the figure below summarize the nitrate plus nitrite data for the wet and dry samples. There was no significant difference in the number of high vs. low nitrate plus nitrite values between the wet and dry samples at each site ($p = 0.210$, sign test).



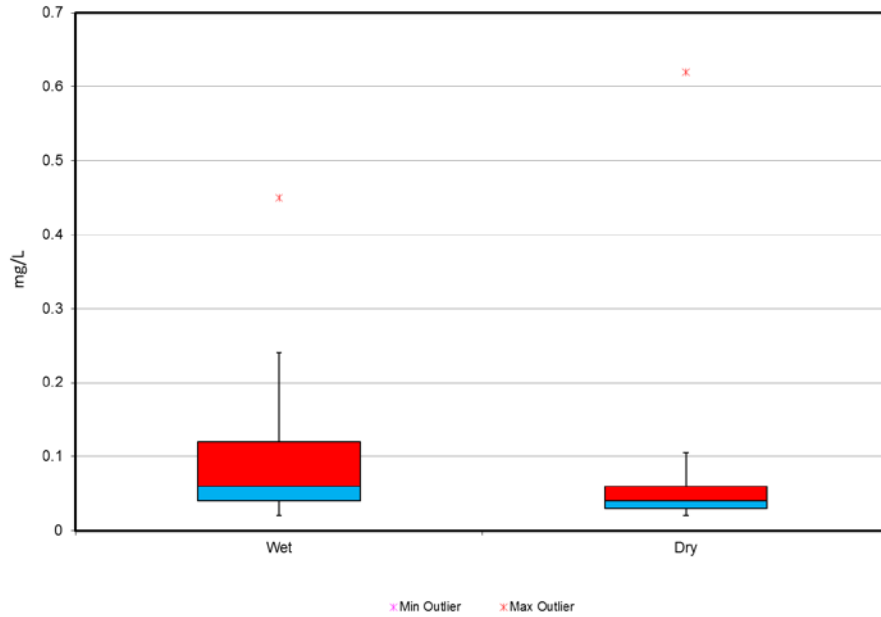
Total Nitrogen

The box plots in the figure below summarize the nitrate plus nitrite data for the wet and dry samples. There was no significant difference in the number of high vs. low nitrate plus nitrite values between the wet and dry samples at each site ($p = 0.152$, sign test).



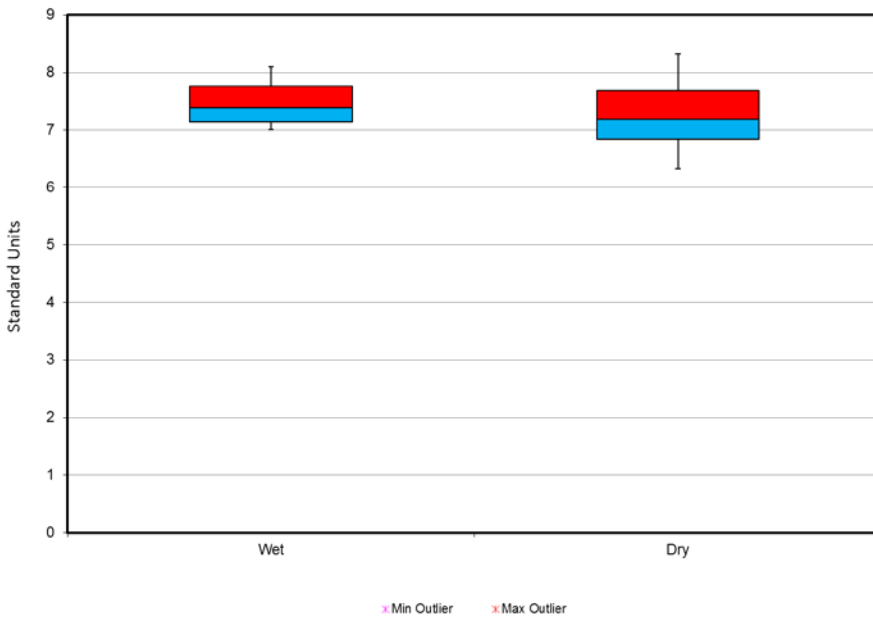
Total Phosphorus

The box plots in the figure below summarize the total phosphorus data for the wet and dry samples. There was a significant difference in the number of high vs. low total phosphorus values between the wet and dry samples at each site ($p < 0.035$, sign test).



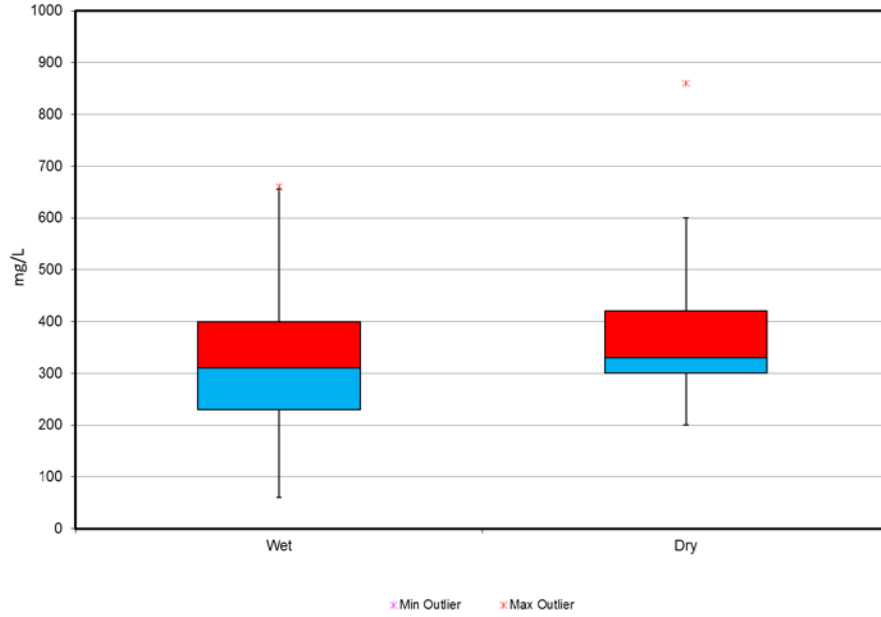
pH

The box plots in the figure below summarize the pH data for the wet and dry samples. There was no significant difference in the number of high vs. low pH values between the wet and dry samples at each site ($p = 0.152$, sign test).

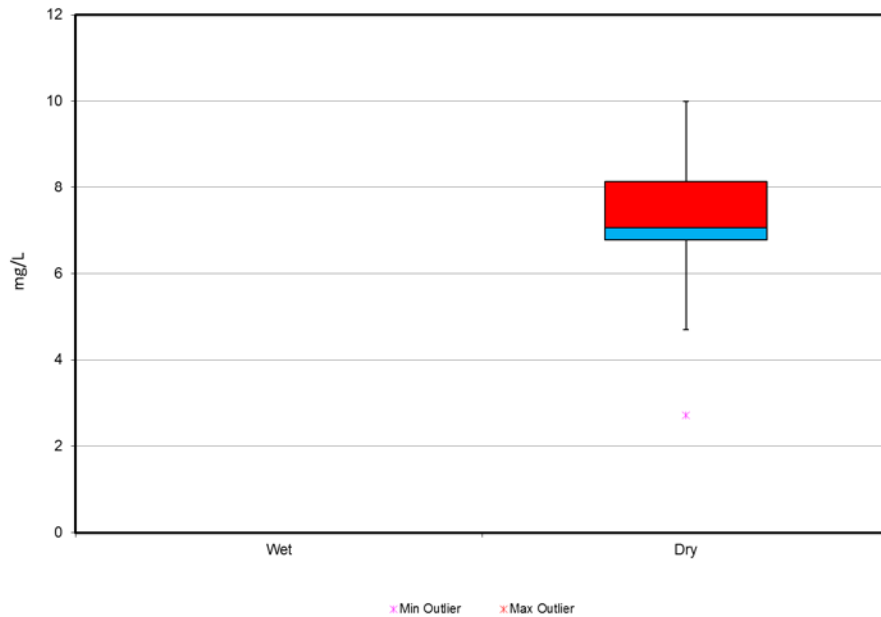


Specific Conductance

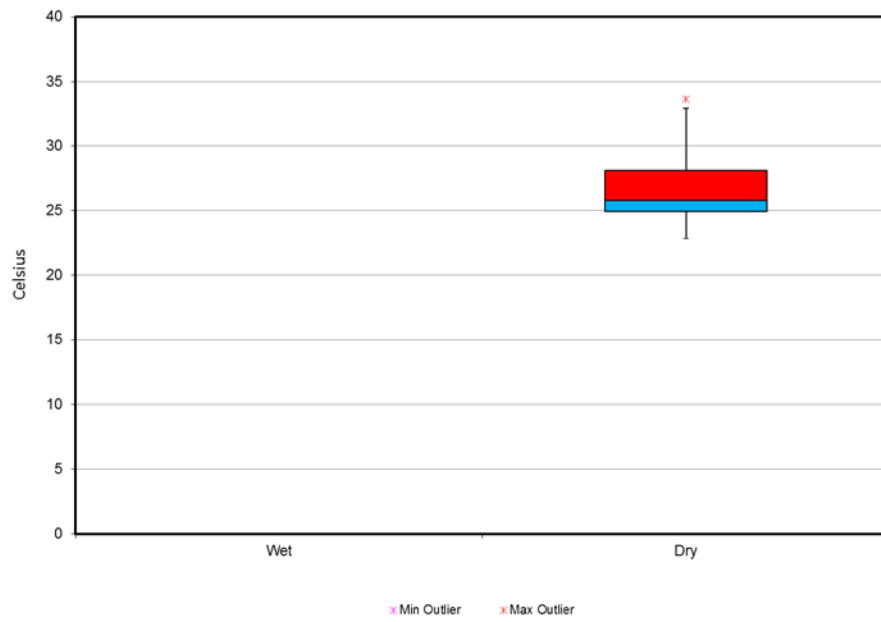
The box plots in the figure below summarize the specific conductance data for the wet and dry samples. There was no significant difference in the number of high vs. low specific conductance values between the wet and dry samples at each site ($p = 0.189$, sign test).



Dissolved Oxygen



Temperature



4.3 *General Discussion*

JCDH completed the wet samples and an additional round of dry samples. During the period of time that wet samples were collected, the equipment used to take the field measurements was found to be faulty therefore; temperature and dissolved oxygen data were not recorded.

Comparing the wet sample data to the dry sample data yielded some significant differences. E.coli, TSS, turbidity, and total phosphorus was significantly different ($p>0.05$) between the two conditions. While elevated total suspended solids and turbidity are expected during rain events, the increased E.coli and total phosphorus were not expected. According to EPA, sources of bacteria indicated by the presence of E.coli, include improperly functioning wastewater treatment plants, leaking septic systems, stormwater runoff, animal carcasses, and runoff from animal manure and manure storage areas. Per EPA, total phosphorus sources include oil and rocks, wastewater treatment plants, runoff from fertilized lawn and cropland, disturbed land areas, drained wetlands, water treatment, decomposition of organic matter and commercial cleaning preparations.

Statistical analysis of the wet and dry samples taken at each site was completed using the Friedman test. The Friedman test is a non-parametric statistical test that ranks the values of the parameters and then compares the rank sum for each site. The higher the sum rank the higher the number of elevated results a site had. The results for the sites and their ranking are shown in the following table.

Friedman Test Results

Wet Sampling		Dry Sampling	
Sites	Ranking	Sites	Ranking
VES-CAR-086T	174.5	HUE-VAC-014T	165.5
BRO-FMC-029M	163	ADA-VIC-023M	164
VES-CAR-074T	160	MOU-SHC-065M	164
HOM-SHC-072T	158.5	HOM-SHC-072T	161
FAI-VAC-010T	147.5	PLE-VAC-006T	161
ADA-VIC-023M	145.5	MOU-SHC-069M	159.5
MOU-SHC-068T	142.5	BRO-FMC-029M	158.5
MOU-SHC-065M	141	FAI-VAC-010T	158
IRO-CAR-057M	139	BRI-VAC-015M	147
TAR-FMC-036M	135.5	TAR-FMC-036M	135.5
HUE-VAC-014T	133	HUE-VAC-003M	134.5
PLE-VAC-006T	130.5	HOM-SHC-071T	130
HOM-SHC-071T	129.5	MOU-SHC-068T	125.5
HOM-SHC-087M	125.5	BRI-VAC-018T	120
MOU-SHC-069M	125	HOM-SHC-087M	113
VES-CAR-085M	121	BRO-FMC-030T	110.5
LIP-VAC-017T	119	LEE-CAR-053M	108.5
HUE-VAC-003M	117	IRO-CAR-057M	97
GAR-FMC-031T	116	TRU-CAR-051T	96
BRI-VAC-015M	111	GAR-FMC-031T	94
BRO-FMC-030T	106	VES-CAR-074T	88.5
TRU-CAR-051T	105.5	VES-CAR-086T	81.5
LEE-CAR-053M	105	TRU-CAR-048T	71
TRU-CAR-048T	105	VES-CAR-085M	56
BRI-VAC-018T	94		

4.4 *Status*

Wet samples were completed on all sites.

4.5 *Assessment*

Comparison of the continuous monitoring sites was not achieved during this reporting period. Analysis of the wet sample data indicates several sites need further investigation to determine causes of elevated parameters. Additional testing will be performed on these sites during the upcoming reporting period.

4.6 *Proposed Revisions*

There are no proposed revisions at this time.

4.7 *Annual Reporting*

The following information is a graphical summary of the data with an explanation of the data for each component of the monitoring program. Raw sampling data is found in **Appendix I**.

5 Fiscal Analysis

For the Permit year 2018-2019, SWMA was paid based on a \$5.00 per residence and \$15.00 per commercial rate by each member according to land usage. In accordance with Act 2014-439, Alabama Department of Revenue received 5% of the stormwater fee collected.

The money collected by SWMA was used to help members meet ADEM permit requirements. The most recent fiscal information available is included in **Appendix J**.