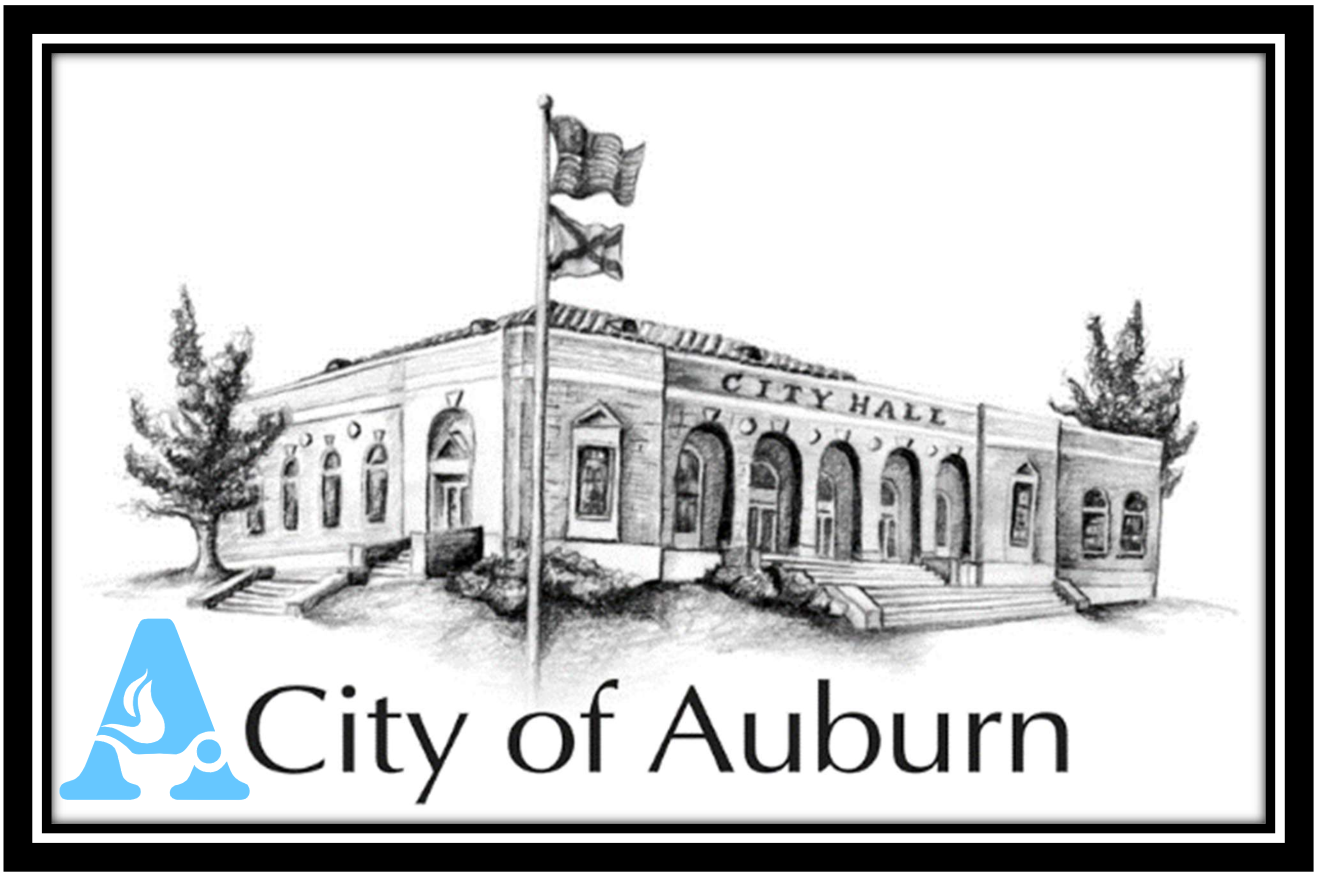
STORMWATER MANAGEMENT PROGRAM ANNUAL REPORT



"Protecting, preserving, and restoring our local water resources."

PERMIT YEAR

April 2018 – March 2019

SUBMITTED IN ACCORDANCE WITH THE REQUIREMENTS OF
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

PERMIT NUMBER ALR040003

CITY OF AUBURN

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEMS (NPDES)
PERMIT NUMBER ALR040003
MUNICIPAL STORMWATER PROGRAM ANNUAL REPORT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly fathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for fathering the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations.

Ron Anders, Jr.
Mayor, City of Auburn
144 Tichenor Avenue
Auburn, Alabama 36830
(334) 501-7260

James C. Buston, III
City Manager, City of Auburn
144 Tichenor Avenue
Auburn, Alabama 36830
(334) 501-7260

5-21-19
Date

TABLE OF CONTENTS

LIST OF APPENDICES

FOREWORD:

The mission of the Watershed Division of the Water Resource Management Department of the City of Auburn is, first and foremost, to *protect, preserve, and restore the chemical, biological, and physical integrity of our local water resources*. And, although the City's comprehensive Stormwater Management Program is managed by the Watershed Division, the long term success of the program will ultimately be determined by its ability to strengthen the resolve and desire of the entire community toward this same objective. This report is drafted with this understanding and therefore reflects the summary of the efforts of the community of Auburn as much as it does those of the staff of the City of Auburn. Although there are many success stories and much progress made in 2018, many challenges and concerns remain, not the least of which is the continued status of impairment of three of the City's principal water resources; Saugahatchee Creek (Nutrients and Pathogens), Parkerson Mill Creek (Pathogens), and Moore's Mill Creek (Siltation). We will continue to improve upon and develop our Stormwater Management Plan in the coming years, focusing on building and expanding upon the program's strengths and identifying and implementing strategies for addressing threats to our local water resources.

STORMWATER MANAGEMENT PROGRAM ANNUAL REPORT

City of Auburn

PERMIT YEAR
April 2018 - March 2019

PROGRAM EVALUATION & EXECUTIVE SUMMARY

The City of Auburn is now entering its sixteenth year as a regulated owner/operator of a small municipal separate storm sewer system, with the current reporting year representing the second under the current Statewide General Permit ALR040003. Over fourteen of these past sixteen years the City's Stormwater Management Program (SWMP) has generally been managed and operated with the same number of staff and with the same operational budget. Over this same time period the City's physical infrastructure and population has continued to experience rapid growth, with the population increasing by approximately 25% every ten years. This rapid urbanization, which began many years before the promulgation of Phase II of the NPDES program, has presented challenges to the City's SWMP, both in the form of legacy impacts to our water resources and in the form of the ever-evolving dynamics of the impacts of urban and suburban growth on local hydrologic conditions. The most outward physical evidence of these challenges is the continued status of impairment of three of the City's principal water resources; Saugahatchee Creek, Moore's Mill Creek, and Parkerson Mill Creek. Furthermore, the diversity of impairment (nutrients and pathogens, siltation, & pathogens respectively) between these waters highlights the complexity and uniqueness of the impacts of urbanization on our watersheds and underscores the need for prescriptive and strategic plans for protection, preservation, and restoration. The City's SWMP provides the framework for accomplishing this through both targeted regulations and policies (e.g. requirement of Water Quality Plans for developments discharging to impaired waters) and through the implementation of other targeted structural and non-structural control measures as required by the City's MS4 Permit and/or as outlined in the City's Stormwater Management Plan or any of the three approved Watershed Management Plans.

This report outlines, in detail, how the City is operating its SWMP and how it records and documents measurable success. Additionally, this report demonstrates how innovation, partnerships, collaboration, and dedication to a common mission have permitted the City to expand the capacity of its SWMP services to a growing population at little to no increased costs for over a decade. These partnerships, many of which started in the formative years of the program, are the foundation of the City's SWMP and have grown to include Auburn University, Save our Saugahatchee (SOS), Alabama Water Watch (AWW), the City of Opelika, the City of Smiths

Station, Lee County Highway Department, Auburn City Schools, and the Alabama Water Environment Association. Some of the successes and accomplishments of the program in 2018-2019, many of which would not be possible without these partners, include:

- The City of Auburn's Phase II MS4 program was the recipient of the Water Environment Federation (WEFTEC) National Award for Program Management Category—Phase II. The City's MS4 Phase II Program was also categorized as "Silver Level in Innovation" and "Gold Level in Project Management"
- Green Infrastructure Master Plan—In 2017, the City entered into an agreement with AMEC Foster Wheeler (now Wood Group), Volkert, and MacKnally Ross Land Design to develop the City's Green Infrastructure Master Plan (first of such plans in the State). A final draft of the Plan was submitted to the City staff by the consultant in early 2019 and the Plan is expected to be finalized in calendar year 2019.
- Entered into an agreement with the Green Infrastructure Center, Inc. to perform an assessment of the City's Urban Tree Canopy and to make recommendations for how to better manage and expand urban forest to minimize stormwater impacts.
- Integrated multiple Green Infrastructure practices into the design of the City's new Public Safety Building and began construction of those practices.
- Gave over 17 public presentations on stormwater and watershed management related topics to a variety of different groups and organizations.
- Visually screened 194 storm sewer outfalls within the City's MS4, above the mandated 15% identified in the City's MS4 Permit.
- Responded, investigated and resolved 24 water resource concerns received by citizens.
- Acquired an additional ~15 acres of land to be used for the Saugahatchee Greenway and Blueway Project, bringing the total land acquisition for this project to ~95 acres.
- Authored and distributed over 10 articles directly or indirectly related to stormwater and watershed management in the City's OpenLine Newsletter, which is distributed monthly to over 21,000 customers.
- Continued to meet with Auburn University's Comprehensive Stormwater Management Policy Initiative to discuss opportunities for developing programmatic and regulatory consistency between the two programs.

- Continued to make improvements to the Watershed Division webpage, including providing information about how citizens can get involved with various stormwater programs (ex. Water Festival, Storm Drain Marking, Stream Clean-ups, etc.).

- Purchased one (1) real-time stream gage with cellular telemetry and installed the gage on Parkerson Mill Creek (two gages already located on Chewacla Creek and one on Saugahatchee Creek). Staff also installed (2) additional real-time stream gages with cellular telemetry on Chewacla Creek associated with the Safe Harbor Agreement.

- Continued discussions with Alabama Water Watch to explore a partnership to sponsor the training of citizens interested in performing water quality monitoring in the City of Auburn.

- Continued regular meetings of the ALOAS organization. *Meetings were substituted with meetings of the broader Alabama Stormwater Association.

- Picked up 7,280 bags of litter off City streets and right of ways through the efforts of 2,130 hours of community service/inmates.

- Recycled over 27,558 pounds of household hazardous waste, over 1,229,782 pounds of newspaper, cardboard, glass and over 1,481 gallons of used cooking oil/grease.

- Performed ~1,140 Erosion and Sediment Control inspections on developments >1 acre, resulting in 570 inspection reports and fifty-four (54) 72-Hour Notices of Violation (NOV's).

- Maintained, implemented and enforced lot-level erosion and sediment control standards for single-family residential lots less <1 acre.

- Performed ~934 Initial Erosion and Sediment Control inspections on construction sites <1 acre. 275 of these inspections resulted in required corrective action prior to issuance of a building permit.

- Supported and participated in numerous community education and outreach opportunities, including Earth Day, the Lee County Water Festival, storm drain marking, clean-up events, etc.

- Performed Stream Cleanups that resulted in the removal of 55 garbage bags full of trash/debris from Parkerson Mill Creek and Town Creek.

- Performed Storm Drain Marking activities as a part of the Auburn University Big Event, providing services hours toward watershed/stormwater stewardship and installing 55 storm drain markers.

- Performed ~350 detention pond inspections.

- Developed an in-house program and performed approximately 128 stormwater inspections of City-owned facilities.
- Developed an illicit discharge detection and elimination training module for City staff during this reporting period.
- Continued to implement numerous recommendations outlined in the Natural Systems section of the City's Comp Plan 2030.
- Continued routine monitoring of 52 stations throughout the City for turbidity, dissolved oxygen, temperature, pH, and specific conductance.
- Implemented the fifth year of a five year in-sourcing Source Water Monitoring Plan.
- Continued to jointly fund and operate two USGS stream gaging operations on Saugahatchee and Chewacla Creeks.
- Completed the fifteenth year of conservation measures outlined in the Chewacla Creek Safe Harbor Agreement.
- Sustained a substantial reduction in sanitary sewer overflows since implementing a strategic maintenance and prevention program.

Progress Update of Specific Goals Established for 2018-2019 and New Goals for 2020

The Watershed Division regularly evaluates the effectiveness and efficiency of its operations, both from a permit compliance perspective as well as a mission/objectives and budgetary perspective. This allows staff to identify elements of the SWMP that are working, those that are not, and those that need or warrant modification. Staff work to continue those services that they determine effective, eliminate those that are not, and establish goals for improving those that could be. Below are an update of progress made toward goals established for 2018-2019 and a list of new goals established for 2019-2020.

<u>2018-2019 Goals - Progress Updates</u>

- Goal - Continue to increase public education and awareness through additional storm drain marking activities, involvement with our local schools and other education and outreach initiatives.
    - Staff completed storm drain marking, stream cleanup activities, Auburn City Schools Earth Day Activities and Lee County Water Festival in this reporting year of 2018-2019.

- Continue the City's new Stream Gaging Program through the installation of one (1) real-time stream gage per year until all major waterways are gaged.
    - Staff successfully installed an additional stream gage on Parkerson Mill Creek and two (2) additional gages on Chewacla Creek and are continually updating and maintaining these instruments and refining their measurements.
- Complete the revisions of the City's Illicit Discharge Ordinance, including the addition of specific escalating enforcement actions.
    - Staff finalized revisions to the City's Illicit Discharge Ordinance and City Council approved these changes in May 2018.
- Continue to improve and promote the City's Water Quality Monitoring Public Viewer Application.
    - Staff have made numerous presentations highlighting the City's Water Quality Public Viewer Application and made improvements to its website for ease of access.
- Complete the inventory and assessment of the City's properties and facilities and develop a program for annual inspection and improvements for stormwater management.
    - Staff successfully completed a full inventory of City owned properties and facilities and an initial site assessment of stormwater conditions, performed by the persons responsible for their maintenance and upkeep. In addition, the staff inspected all City owned properties and facilities during this reporting period.
- Continue the implementation and enhancement of the City's comprehensive water quality monitoring database that houses data from the City's various water quality monitoring programs.
    - Staff have made many improvements in its data collection, data management, and data integration, supporting data-driven decisions for activities ranging from illicit discharge investigations to water treatment processes.
- Complete the development, and begin implementation, of the City's Green Infrastructure Master Plan.
    - The City is in the process of reviewing the final draft of the Green Infrastructure Master Plan. The City anticipates Plan implementation to begin late FY19 to early FY20.

- Update the City's Site Development Review Tool, which is used for evaluating a proposed development's pollutant removal performance for compliance with applicable TMDL's.
    - Staff are intentionally awaiting the completion of the Green Infrastructure Master Plan prior to completing this task.
- Install at least one Green Infrastructure practice within the City.
    - The City is installing an outdoor classroom at the City of Auburn Public Library. Water Resource Management committed $30K toward the use of Green Infrastructure in this project. The 100% of the project design was completed during the 2018-2019 reporting period. The bid process was started in early 2019 and the City anticipates construction in late FY19 to early FY20. The City is also incorporating various green infrastructure practices into the City's new Public Safety Building that is currently being constructed.
- Complete the design and implementation of the H.C Morgan Stream Restoration Project.
    - Veolia, Inc. contracted with Normandeau and Associates to perform a biodiversity study within the H.C. Morgan Water Pollution Control Facility property. Due to the remodeling of the H.C. Morgan Wastewater treatment plant this past year, the staff have postponed the recommended improvements from the biodiversity study, along with continued exploration of alternatives for the restoration of two small tributaries located onsite until FY20-FY21.
- Complete Phase IA of the Saugahatchee Greenway + Blueway Project, which includes the first 1.5 miles of greenway trail, two kayak put-in/take-out facilities, a small pocket park, and associated parking facilities.
    - Staff have completed 90% of the construction documents associated with this project and anticipate accepting bids in late FY19 or early FY20.
- Plan and host a sediment basin design and construction workshop to educate local engineers and contractors on proper methods for design and construction of sediment basins using skimmer devices.
    - Staff postponed this event due to personnel changes, but plan to implement small workshops for specific groups and construction topics in FY19.

<u>New Goals for 2020</u>

- Begin implementation of the recommended policy and ordinance changes identified in the Green Infrastructure Master Plan and begin scheduling demonstration projects as strategic capital improvements.
- Install an additional stream gaging station on either Town Creek or Moore's Mill Creek.
- Complete the design and construction of various green infrastructure practices as opportunities arise.
- Implement a city-wide online education program for Illicit Discharge Detection and Elimination.
- Continue to investigate methods to improve communication with developers and improve response to erosion and sediment control enforcement issues.
- Evaluate options to improve tracking and reporting features of stormwater program components in CityWorks.
- Seek additional public education and outreach opportunities such as pet waste stations, CityFest, etc.

I. INTRODUCTION

In response to the National Pollutant Discharge Elimination System (NPDES) Phase II Stormwater Regulations, the City of Auburn (City) applied for and received an NPDES permit for stormwater discharges from the Alabama Department of Environmental Management (ADEM) on May 14, 2003. The current permit was issued September 6, 2016 and became effective October 1, 2016. A copy of this permit (ALR040003) is included in this report.

This report is being submitted to the ADEM pursuant to Part VI; paragraph 1 of NPDES Permit ALR040003.

This annual report is the City's fifteenth report, and third under the reissued permit, and covers the reporting period from April 2018 through March 2019. The stormwater program outlined in this report is patterned after the program submitted to and approved by ADEM in October 2015 in the City of Auburn's Notice of Intent (NOI) and in accordance with the City's Stormwater Management Plan.

II. Site Description

The City of Auburn is located in East Central Alabama. A map of the City is provided in Appendix B. The Auburn, Alabama land area encompasses 60.66 square miles per the 2015 U.S. Census. Approximately 26.80 square miles of the Auburn City Limits are located within this urbanized area. The current population of Auburn is approximately 65,738 per the 2018 U.S. Census estimate. There are approximately 286 miles of creeks and streams flowing through Auburn, approximately 667 lakes, ponds, and other open waters, and +/- 370 acres of wetland. From the most recent City storm drainage system inventory, the storm drainage system contains approximately 145 linear miles of storm pipe (130 miles of which are owned by the City). The City is updating its stormwater infrastructure inventory on a routine basis using the City's survey crew, as well as private surveyors.

Geographic Context

The City of Auburn is situated within a unique transitional zone between the Piedmont and Coastal Plain physiographic regions of the Southeastern United States (see link below). More specifically, the City is located within the Level IV sub-ecoregion known as the Southern Outer Piedmont. This ecoregion is generally characterized as having lower elevations, less relief, and less precipitation than that exhibited in other regions of the Piedmont. Overstory cover type within this region consists mostly of mixed deciduous (oak, gum, hickory) and mixed coniferous (pines, firs, spruces, etc.) with the presence of numerous monotypic pine plantations scattered throughout. Specific to these transitional areas in the southeast is the presence of the "fall line", the geographic divide between the Piedmont and Coastal Plain. More information can be found at the link provided below. The City's presence within this transitional area between the piedmont and coastal plain regions provides for a unique hydrogeomorphic diversity of water features within a relatively small geographic area. This diversity is exemplified in the abundance and variety of stream channel features, varying substrate composition, and variety of aquatic habitats. For example, streams in central Auburn generally exhibit piedmont characteristics, such as strong riffle/pool complex formation and cobble/gravel substrate composition, yet they cascade to a coastal plain dynamic of long runs and sandy substrates as they flow to the western and southern extents of the City. Similarly, the topography of each of the contributing watersheds follows the same pattern of increasing coastal plain-like features to the west and south of the City.

Link to a map of Alabama's physiographic regions:

http://alabamamaps.ua.edu/contemporarymaps/alabama/physical/al_physio.pdf

III. KNOWN OR SUSPECTED WATER QUALITY PROBLEMS

The City's municipal separate storm sewer system (MS4) discharges into streams located in three primary (10-digit HUC) watersheds; Saugahatchee Creek Watershed, Uphapee Creek Watershed, and Chewacla Creek Watershed. Smaller watersheds of the Saugahatchee Creek Watershed to which portions of the City's MS4 discharge include the Loblockee Creek Watershed and the Little Loblockee Creek Watershed. Smaller watersheds of the Chewacla Creek Watershed to which portions of the City's MS4 discharge include Parkerson Mill Creek, Moore's Mill Creek, and Town Creek. The only smaller watershed of the Uphapee Creek Watershed to which portions of the City's MS4 discharge is the Choctafaula Creek Watershed.

Moore's Mill Creek was placed on the draft 303(d) list in 1998 and has been listed on the final 303(d) lists from 2002 to present. Known water quality concerns within the jurisdictional area were identified as stream siltation resulting from sedimentation deriving from local development within the Moore's Mill Creek watershed and in-stream erosion. The ADEM final 2018 303(d) list identifies Moore's Mill Creek as a Low Priority for TMDL development. The Moore's Mill Creek Watershed Management Plan was drafted and finalized in May of 2008.

The Saugahatchee Embayment, where Saugahatchee Creek discharges into Yates Lake, was placed on the final 303(d) lists from 1996 to 2008. The Saugahatchee Watershed Management Plan was drafted and finalized in February of 2005. The Embayment was listed on the 303(d) list primarily for nutrient enrichment. ADEM and the USEPA issued the final Total Maximum Daily Load (TMDL) for nutrients and organic enrichment/dissolved oxygen for Pepperell Branch and the Saugahatchee Embayment in April 2008. Implementation of the stormwater TMDL is addressed in the City's Phase II Permit that was issued on September 6, 2016 (effective on October 1, 2016) and the City's updated Stormwater Management Plan that was submitted to ADEM in December 2016. Saugahatchee was again listed on the final 2018 303(d) list for pathogens (E. Coli). The City plans to perform pathogen monitoring beginning the summer of 2019.

Parkerson Mill Creek, from its source to Chewacla Creek, was placed on the final 303(d) list in 2008 and 2010. Known water quality concerns within the jurisdictional area were identified as pathogens resulting from urban runoff, storm sewers, and illicit discharges. A TMDL for Parkerson Mill Creek was issued by ADEM in September 2011. Implementation of this stormwater TMDL is addressed in the City's Phase II Permit issued on September 6, 2016 (effective on October 1, 2016) and the City's updated Stormwater Management Plan that was submitted to ADEM in December 2016. The Parkerson Mill Creek Watershed Management Plan was drafted and finalized in December of 2011.

IV. RESPONSIBLE PARTY

The City's Stormwater Management Program (SWMP) is implemented through a diversity of programs operating under various departments within the City's organization. The City, in 2018, experienced a re-organization. As a result, components of the SWMP and each department's respective responsibilities may have changed from previous years, but are currently as follows:

- Environmental Services Department – Operates the collection of garbage, bulky waste (trash) and recycling, along with animal control services and the maintenance of the City's vehicles and equipment fleet; Hosts the household hazardous waste event, shredding event, and the Amnesty Trash Month;

- Parks and Recreation Department – Hosts annual Earth Day activities along with several other community events; Manages the City's Greenway/Greenspace Program and the Pet Waste Stations;

- Planning Services Department – Assists with reviewing and approving low impact development projects; Manages CompPlan 2030 and future land use planning efforts;

- Inspection Services Department – Monitors residential and commercial construction, including construction stormwater inspection and enforcement for those entities;

- Public Works Department – Provides construction and maintenance services of the City's streets, sidewalks, storm drains, right-of-ways and public facilities. Within Public Works, several divisions play a role implementing the SWMP:

    - Landscape and Sustainability – Incorporates green infrastructure concepts and water quality management into the design and renovations of City facilities. The City's urban forestry program is managed through this division, thus supporting the Green Infrastructure Master Plan, Urban Forestry Master Plan, and Tree Giveaway Program (Arbor Day and Christmas Parade);

    - Maintenance – Maintains the street network and storm drainage system by repairing streets that have been damaged by construction and assessing existing streets, curb and gutter, drain inlets and stormwater conveyance systems to identify defects and develop maintenance recommendations for the renewal and replacement of assets;

    - Right of Way Maintenance – Provides maintenance of public right of way to include streets and sidewalks to keep grass mowed, weeds maintained, trees cut back and sidewalks and curbs edged. Also, provides litter control within the right of way and street sweeping.

- Engineering Services Department – provides engineering and project management services for construction and improvements to roads, sidewalks, drainage structures and bridges within the City and coordinates the plan review process for engineering and utility construction proposed by the local development community. Performs detention pond inspections;

- Water Resource Management Department – Monitors residential and commercial construction and conducts erosion and sediment control inspections; Manages water quality sampling program; Manages public education and outreach program; Assists Engineering Services with annual detention pond inspections; Manages the overall SWMP and compliance with the MS4 Phase II Stormwater Permit.

When the City began its Phase II program, coordination and implementation of the individual SWMP was the responsibility of the Public Works Department. In October 2005, management of the stormwater program was transferred from the Public Works Department to the Water Resource Management Department, under a newly created Watershed Division. The intent of the move was to manage water supply operations, wastewater operations, and stormwater operations from a watershed perspective for all components that impact water quality within the City.

The following group is responsible for the coordination and implementation of the individual SWMP:

Water Resource Management Department
City of Auburn
1501 West Samford Avenue
Auburn, AL 36832
(334) 501-3060

V. STORMWATER MANAGEMENT PROGRAM COMPONENTS

The Phase II stormwater regulations require operators of small Municipal Separate Storm Sewer Systems (MS4s) in urbanized areas to develop and implement stormwater management programs employing best management practices (BMPs) to adequately address five minimum control measures. The control measures include:

- Public Education and Public Involvement on Stormwater Impacts
- Illicit Discharge Detection and Elimination;
- Construction Site Stormwater Runoff Control;
- Post-Construction Stormwater Management; and
- Pollution Prevention/Good Housekeeping for Municipal Operations.

In March 2003, the City submitted to ADEM a Notice of Intent (NOI) to implement a SWMP under the Phase II stormwater regulations. The City's most recent update to its SWMP was in December 2016 to comply with the current Phase II Permit (submitted it to ADEM in December 2016). The goals and details of the City's program are outlined in the revised SWMP. At the end of permit year fifteen (third year under the reissued permit) all program components outlined in the SWMP have been implemented. The City is currently re-evaluating and proposing additional revisions to its SWMP Plan, which will be submitted to ADEM no later than end of the year 2019.

VI. PUBLIC EDUCATION AND PUBLIC INVOLVEMENT ON STORMWATER IMPACTS

A. Articles in the City Newsletter "Open Line"

Open Line is a monthly newsletter mailed to Auburn citizens through their utility bill. Articles and messages contained in the newsletter reach a large and diverse group of citizens. The goal for articles in Open Line is to produce five (5) articles per year. During the current reporting year, a total of ten (10) articles were published in which stormwater related issues were highlighted or affected:

- *TIPS: garbage, recycling and trash collection – April 2018*
- *Trash Amnesty Month – April 2018*
- *Results of the 2018 Citizen Survey – July 2018*
- *2017 Consumer Confidence Report Announced – July 2018*
- *Single Stream Recycling Announced – November 2018*
- *Bag Leaves/Yard Debris—November 2018*
- *Recycling Tips For the Holiday Season – December 2018*
- *Single Stream Recycling Carts on Their Way – January 2019*
- *Recycling in Auburn – February 2019*
- *2019 Trash Amnesty Month Announced – March 2019*

Copies of these articles can be downloaded from the City's website at:

http://www.auburnalabama.org/openline/.

B. Brochure Publications

Pamphlets and brochures can be an effective way to present and explain stormwater issues. Unlike other communication methods, pamphlets and brochures can be distributed in many locations without requiring staffing and the location of distribution can specifically target the audience you are trying to reach. The goal for brochure publications is to produce two (2) brochures per year. During the current reporting year, various brochures produced by Auburn University, the Clean Water Partnership, and other organizations were made available at several locations throughout the City. During this reporting period, the City created a new brochure to address "Stormwater Pollution Prevention for Restaurants." This brochure was sent to 159 restaurants within the City of Auburn. Brochures provided by the City over the past year include the following brochures published by the **A**uburn, **L**ee County, **O**pelika, **A**uburn University and **S**miths Station (ALOAS) Citizen Advisory Group:

Copies of these brochures can be downloaded from the City's website at:
https://www.auburnalabama.org/water-resource-management/watershed/aloas/
Additional Brochures Made Available:

- Washing Cars (Alabama Clean Water Partnership (ALCWP))
- Changing Oil (ALCWP)
- Pets (ALCWP)
- Fertilizing (ALCWP)
- Saugahatchee Creek Watershed: Past, Present and Future (Saugahatchee Watershed Management Plan Group (SWaMP))
- Fats, Oils and Grease Recycling Program (City of Auburn)
- ALOAS brochures from previous years
- Alabama Scenic River Trail maps and information
- Stormwater Pollution Prevention for Restaurants (City of Auburn)

C. Social Media

The City of Auburn takes advantage of social media as a communication tool with the citizens to let them know about upcoming stormwater events and festivals in the community, news articles involving stormwater issues, as well as updates to the City's MS4 stormwater program. The following networks are currently utilized by the City of Auburn:

- Facebook – The City currently has 13,059 followers and 12,228 likes. That is an increase of approximately 3,000 followers and 2,000 likes from last year. On average, there are 750 posts per year by the City.

- Twitter – The City currently has 7,106 followers which is an increase of approximately 800 followers from last year. Also, the City has 3,403 Tweets with an average of 370 Tweets per year.

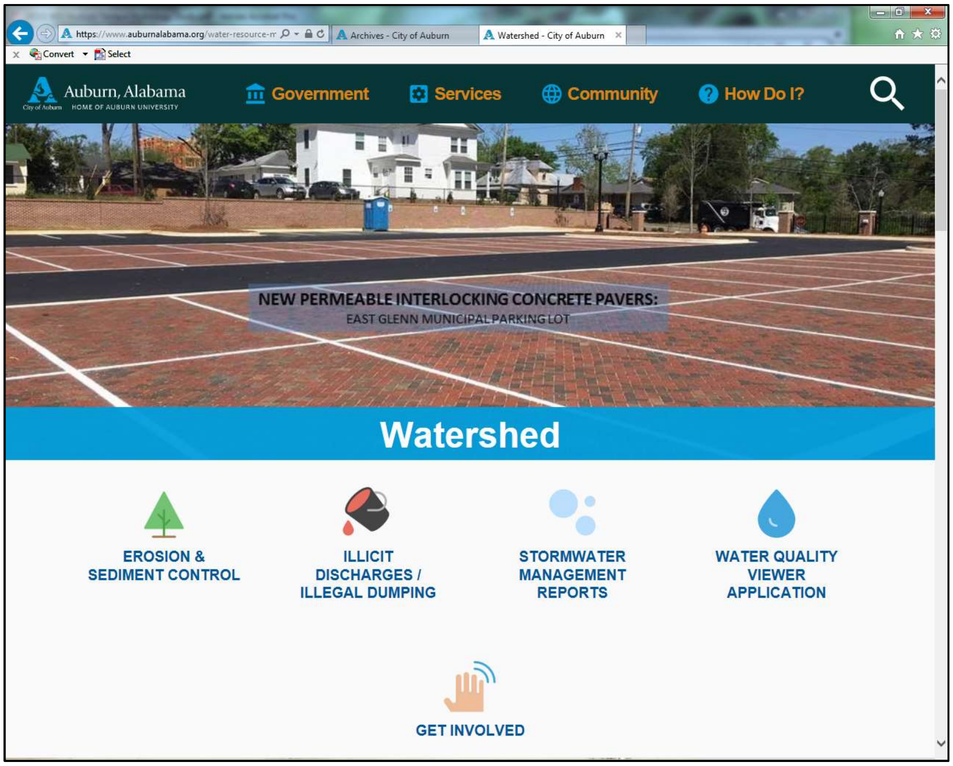
- Instagram – The City currently has 1,555 posts and averages approximately 550 posts per year. There are currently 2,847 followers which increased approximately 1,000 followers from the previous year.

- Youtube – Currently, the City has 4,429 subscribers which is an increase from last year of approximately 1,000 subscribers.

- Next Door Neighbor – The City is new to this network within the last month (March 2019). Currently, the City has reached 5,844 members.

D. Website

The City of Auburn launched a newly designed website during 2017, improving access and functionality for a more user-friendly experience. Citizens can go to the City's website to obtain information on items of local interests. The web page is accessible 24 hours per day and can serve citizens that do not have the time or the ability to physically meet with staff during normal working hours.



The City's Stormwater website was moved from the Public Works Department home page to the Water Resource Management Department home page in 2005. The Stormwater website received a major overhaul in 2017, including additional updates to the public water quality viewer application for the City's various Water Quality Monitoring programs and a new "Get Involved" site to inform citizens about various ways they can become involved in stormwater management activities. **In 2018, the Stormwater website was visited 4,635 times.**

For more information on the website please visit:

https://www.auburnalabama.org/water-resource-management/watershed/

E. Public Water Quality Viewer Application

This application, developed and launched in 2015 (updated in 2018), allows the public to view water quality data from forty (40) monitoring locations on streams throughout the City. These stations are monitored routinely by Watershed Division staff using modern water quality monitoring equipment, with the viewer application updated monthly to reflect current data. Water quality parameters analyzed and presented include Turbidity, Dissolved Oxygen, Temperature, Specific Conductance, and pH. More information about these parameters can be found through various webpage links provided in the application. This application helps to provide transparency in our monitoring operations, facilitate educational and research opportunities for students and teachers, and provide an additional tool for citizens to become aware and involved in helping to preserve and protect our local water resources. This application can be found at:

http://webgis.auburnalabama.org/waterqualitypublic/#openModal#openModal#openModal

F. Public Presentations

The City provides staff and/or resources to perform presentations for various groups and public meetings. Typically presentations are offered in PowerPoint format and the topics are chosen by the organization requesting the information.

Seventeen (17) public presentations were made during the current reporting year. Presentations were given to various groups, including Auburn University students from various departments, City officials, and public service organizations.

- Alabama Society of Agricultural and Biological Engineers – April 2018

  A. Topic – An Overview of Water Quality Monitoring in the Lake Ogletree Watershed and Recent Infrastructure Improvements

     1. Presenter – Dusty Kimbrow

- Fundamentals of Stream Morphology and Ecology Assessments Workshop – April 2018

  A. Topic – Watershed Assessment of Disturbed Streams

     1. Presenter – Dusty Kimbrow

- Auburn University Masters of Landscape Architecture Class – April 2018

  A. Topic – Wastewater Treatment: Yesterday, Today and Tomorrow

     1. Presenter – Matt Dunn

- City Academy – April 2018

    A. Topic – City of Auburn (to include Water Resource Management (WRM))

        1. Presenter – Dan Ballard

- Alabama Water Environment Association (AWEA) – April 2018

    A. Topic – Green Infrastructure: THING 1 and THING 2

        1. Presenter – Dan Ballard

- Auburn City Council – May 2018

    A. Topic – Water Resource Management CIP Update

        1. Presenter – Eric Carson

        2. Presenter – Matt Dunn

- Alabama Stormwater Forum – May 2018

    A. Topic – Retrofit Reality: Reality is a Funny Thing

        1. Presenter – Dan Ballard

- Hometown Heroes at the Auburn Public Library July 2018

    A. Topic – What is a Watershed? (Enviroscape Demonstration)

        1. Presenter – Dusty Kimbrow

- Clearwater Alabama – August 2018

    A. Topic – A New Day Dawning: GI as a SOP

        1. Presenter – Dan Ballard

- Save Our Saugahatchee (SOS) – August 2018

    A. Topic – City of Auburn Departments: WRM and Parks & Rec

        1. Presenter – Dan Ballard

- Auburn Citizen Stakeholder Meeting – August 2018

    A. Topic – City of Auburn GI Master Plan

1. Presenter – Dan Ballard

- Storm Drain Marker Design Meeting – October 2018

  A. Topic – Our Local Watersheds

  1. Presenter – Dusty Kimbrow

- Auburn City Council – November 2018

  A. Topic – Water Resource Management

  1. Presenter – Eric Carson

  2. Presenter – Matt Dunn

- Ward 2 Auburn City Council Meeting – January 2019

  A. Topic – City of Auburn Erosion and Sediment Control Program

  1. Presenter – Matt Dunn

- Alabama Stormwater Association – February 2019

  A. Topic – City of Auburn Post Construction

  1. Presenter – Dan Ballard

- Hydrology's Class Tour at Lake Ogletree (Landscape Architecture) – March 2019

  A. Topic – An Overview of Water Quality Monitoring in the Lake Ogletree Watershed and Recent Infrastructure Improvements

  1. Presenter – Dusty Kimbrow

- Natural Resource Engineering Class Tour at Lake Ogletree (Biosystems Engineering) – March 2019

  A. Topic – Stream Gaging and Rating Curve Development

  1. Presenter – Dusty Kimbrow

G. Workshops/Training Hosted

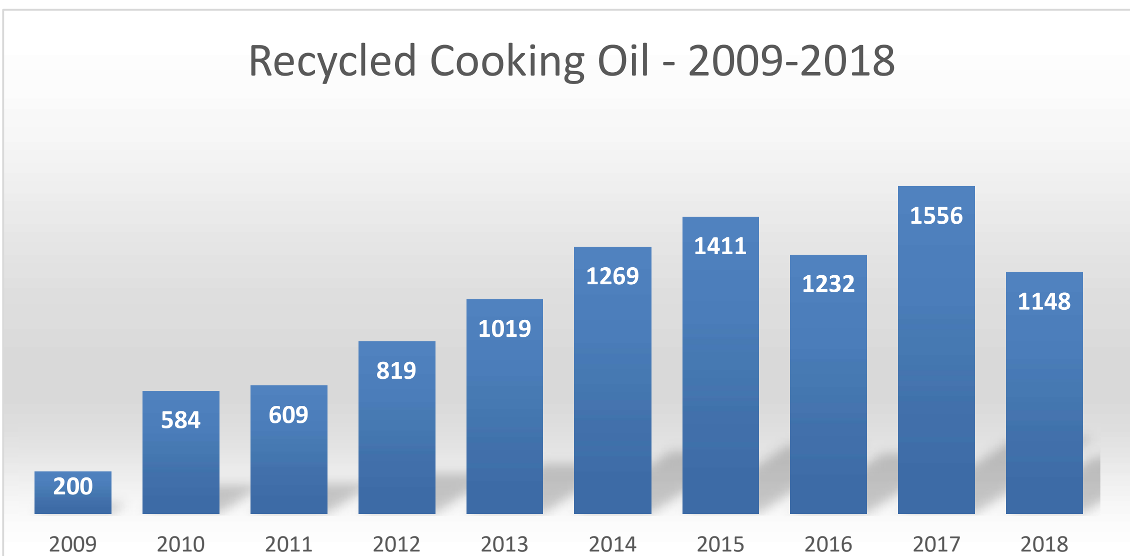
In an effort to educate contractors, developers, engineers, and staff, the City has initiated a series of workshops. The content of the workshops focuses on local stormwater issues of concern. Workshops/training hosted by the City over the past year include:

- **Erosion and Sediment Control Workshop (December 2018)** – The purpose of this Workshop is to educate and interact with local engineers, developers and contractors who are governed by the City's Erosion and Sediment Control Ordinance, the ADEM stormwater regulations, and the United States Environmental Protection Agency (EPA) regulations. Past speakers have included experts from various government organizations, academia, and the private sector.
    - The City did not host an erosion and sediment control workshop during the 2018-2019 reporting period; however, City personnel did attend Clearwater Alabama (August 2018), a workshop offered by the Alabama Erosion and Sediment Control to learn more about erosion and sediment control practices and products.
- **Materials Handling/Spill Prevention Training** – With the assistance of Mr. Tom McCauley, Auburn University's Environmental Risk Manager, the Water Resource Management Department conducted an informal review of its applicable facilities for proper Spill Prevention, Control and Countermeasures (SPCC) in October 2013. The City began addressing some of the recommendations that resulted from that review in 2014, including improving general housekeeping, storage, & labeling procedures at the Bailey-Alexander Water and Sewer Complex, repainting of the above-ground fuel storage tanks at the Public Works Construction Division Facility, and annual training of two Public Works staff in Spill Prevention Control & Countermeasures. The City continued these improvements in 2016 and 2017, including additional construction of vehicle and materials pole barns and improvements in the storage of fuels and other petroleum products. In March of 2018, the Sewer Division began construction of a wash station for the City's Fleet Services facility, removing all washing activity discharge from the City's storm sewer over to the sanitary sewer. **The wash station for the City's Fleet Services facility was completed in July of 2018.**
- **Webcasts & Webinars –** The Water Resource Management Department regularly schedules and participates in online webinars and webcasts training opportunities. During this reporting year, stormwater and watershed-related webinars/webcasts attended by City staff included topics such as stormwater utilities, monitoring instrumentation, and source water protection and are listed below:
    - EPA – Water Quality Monitoring for Source Waters (April 2018)
    - EPA – Water Quality Monitoring for Distribution Systems (June 2018)
    - OTT Hydromet – Urban Hydrology Protecting Lives and Property (June 2018)

H. Household Grease Recycling Program and Composting

The Water Resource Management Department initiated a Household Grease Recycling Program in 2009 with containers and bins located at the recycling center. This program provides citizens with a mechanism to properly dispose of household grease and is targeted at reducing potential sanitary sewer overflows. In 2011, the Water Resource Management Department launched a curbside household grease recycling program that provides residents with an opportunity to collect their household grease and have it picked up by City personnel at their residence. **Approximately 10,140 gallons of used cooking oil/grease have been collected since implementation of the program began in March 2009, with 1,148 of those gallons collected in 2018.** For more information on our household grease recycling program, please visit:

https://www.auburnalabama.org/water-resource-management/fog-recycling/.



I. Storm Drain Marking Project

In cooperation with the Auburn University Sustainability Initiative, the City initiated a storm drain marking program in 2007. School children within the City of Auburn were asked to submit designs for the original markers that were to be placed in the Saugahatchee Creek, Town Creek and Moore's Mill Creek watersheds. A number of the students' designs were selected for use. In 2010, the City of Auburn solicited new marker designs from children in the local school system. Winners were selected in April 2010 and had the opportunity to meet Mayor Ham to showcase their artwork. The local newspaper also ran an article on the project in April 2010. In 2009, the City developed a storm drain marking kit program that allows citizens to pick up a bag of materials containing all of the items needed to mark storm drains in their neighborhoods. Once the drains are marked, the citizen returns any unused materials to the Water Resource Management Department as well as a map showing the storm drains that were marked. During 2012 - 2013, the City hosted its third Storm Drain Marker Design Competition. This competition invites all 3rd – 5th grade elementary students to compete in designing the City's next storm drain markers. Winners were selected in March 2013 and each student received their award (a plaque with the storm drain marker they designed and a newspaper article published in the local paper) during a special presentation with the Mayor at City Hall. The City will continue to host these design competitions until all storm drains in the City have been marked. **During the 2018-2019 reporting year, approximately 55 markers were installed**.

J. Educational Field Activities

Earth Day Activities

On April 11th and 12th, 2018, 2nd graders had the opportunity to experience hands-on Earth Day activities such as working with a water Enviroscape. An Enviroscape is a molded plastic model of a watershed complete with various types of landuse including residential, transportation, agricultural, construction, recreation and forestry areas. The interaction with the Enviroscape allowed the children to visually see how soil erosion, pesticides, and storm water runoff impact a watershed and helped them learn ways to protect the

environment. **In 2018, four Water Resource Management (WRM) City personnel volunteered to help with the Earth Day activity and helped educate approximately 230 students from four Auburn City elementary schools.**

Lee County Water Festival

On May 2nd and 3rd, 2018 the fourteenth annual Lee County Water Festival was held at the Opelika SportsPlex. **Over 1,200 fourth graders from schools in the Lee County area attended the two-day event along with 50+ volunteers**. The primary purpose of the event is to educate young people on the importance of our water resources and the role each of us plays in conserving our water. During the event, students learned about water filtration, aquifers, and the water cycle through hands-on activities such as building an edible aquifer, making a water cycle bracelet, and building a mini-filtration unit. Volunteers from the City of Auburn, the Auburn Water Works Board, the City of Opelika, and other local groups helped make this past year's event a huge success. **The Auburn Water Works Board also helps to sponsor the annual Lee County Water Festival by providing a monetary donation in the amount of $3,000/year**.

Ogletree Elementary School Earth Day Field Activities

This event is an all-day natural resource education and outreach initiative organized by the teachers of Ogletree Elementary School for 3rd – 5th grade students. It is typically held at Chewacla State Park, and includes a variety of outdoor education and recreation activities. Water Resource Management staff have given presentations to the students and teachers about watershed and stormwater management, water quality and water quality monitoring, and aquatic biology. Students and their teachers are given a basic, hands-on introduction to water quality monitoring, along with information about non-point source and point source pollution prevention and reduction and tips on water conservation. **The City participated in this event on May 15th and May 16th of 2018 and had a total of 175 fifth graders.**

K. Green Infrastructure Master Plan

In 2016 the City began the process of planning for the future incorporation of Green Infrastructure as a "standard operating procedure". The first step in this process is to develop a strategic plan that identifies impediments to the use of Green Infrastructure and specific opportunities for the incorporation of Green Infrastructure. The City selected a team of consultants in 2017, led by the Wood Group, Inc., to develop this plan. The Green Infrastructure Master Plan that is currently under development includes these four pillars as the foundational framework:

1) Policy and Standards Review and Recommendations
2) Design Standards, Guidance, and Specifications
3) Pilot Project Planning and Concept Level Design
4) Education of and assistance to the Development Community

The City completed this plan during this reporting period and anticipates adoption in late 2019.

L. Comprehensive Stormwater Management Committee

In 2016 Auburn University formed an internal team to begin discussions about ways to modernize its stormwater management policy and programs and to identify areas for the development of consistency between its MS4 program and the City's. City staff have participated in these discussions since May of 2016, with meetings occurring quarterly to semi-annually. To date, this group has identified several ways in which each program can more effectively, and consistently, approach stormwater management within and between our respective jurisdictional areas. One such example includes joint annual review of our respective SWMP's, thus identifying opportunities for developing program consistency and collaboration. This group continued to meet through the current reporting year.

M. Citizens Advisory Committee

Both the EPA and ADEM recommend that the public be included in developing, implementing, and reviewing stormwater management programs through the establishment of a citizen's advisory committee. Communities that encourage citizens representing diverse backgrounds and interests to participate in the development of stormwater management programs are far more likely to gain community support during the implementation process.

ALOAS CITIZENS STORMWATER ADVISORY COMMITTEE (2001-present) **- ALOAS** is a Citizens' Advisory Committee that serves **A**uburn, **L**ee County, **O**pelika, **A**uburn University and **S**miths Station. It meets on a quarterly basis to review and provide public input on current policies, brochure content, educational material, and proposed ordinances. Prior to 2012, the Citizens Advisory Group was known as ALOA. In 2012, the City of Smiths Station joined the group and the group renamed itself ALOAS to include the addition of Smiths

Station. ALOAS meets quarterly throughout the year; however, during this reporting period, several of the meetings were substituted with the Alabama Stormwater Association meetings and/or public events (i.e. clean-ups, etc).

ALOAS members utilized educational materials that were either created by MS4 entities or obtained from other sources. These brochures and other materials are available to the citizens of Auburn and can be obtained at City Hall, the Bailey-Alexander Water and Sewer Complex or by contacting the Water Resource Management Department at (334) 501-3060. The brochures can also be downloaded from the City's website at https://www.auburnalabama.org/water-resource-management/watershed/aloas/.

N. Watershed Organizations

Regional watershed organizations bring together representatives from utilities, private industry, environmental awareness groups, farmers and branches of government to coordinate individual efforts, share information and plan for water resource and aquatic life protection. The regional approach allows participating entities to expand upon individual efforts in order to maximize limited resources. These organizations also allow for the sharing of ideas, lessons-learned, and development of professional networks.

Lower Tallapoosa River Basin/Clean Water Partnership (2001-2017) – While the City was an active participant in the Lower Tallapoosa River Basin/Clean Water Partnership, this Partnership was disbanded in 2017.

Save our Saugahatchee and Alabama Water Watch Citizen Water Quality Monitoring Program (2014 - Present) – Beginning in 2014, the City of Auburn, the City of Opelika, and the Lee County Highway Department have contributed $350 each to pay for material aid to the volunteer water quality monitoring programs operated by Save our Saugahatchee and the Alabama Water Watch organization. **In 2018, the City's contribution increased to $400.** These funds are used for both physical-chemical monitoring of local waters as well as bacteriological monitoring used to guide illicit discharge detection and elimination efforts. **In 2018 the City's contribution to these organizations financed routine monitoring of ~30 sites in the Saugahatchee Watershed, resulting in water chemistry and bacteriological monitoring.** All data collected is made available to the public via the Alabama Water Watch Data Portal at:

www.alabamawaterwatch.org/water-data

Parkerson Mill Creek (PMC) Watershed Management Plan Group (March 2010 – present) - Parkerson Mill Creek was placed on Alabama's 303(d) List of Impaired Waters for pathogens in 2007 and a pathogen TMDL for the Parkerson Mill Creek Watershed was subsequently approved by ADEM in July 2011. The PMC Group continues to assist by supporting the bacteriological monitoring in Parkerson Mill Creek by Auburn University undergraduates students (ex. Sydney Smith), which in turn supports investigative illicit discharge detection and elimination activities for the City of Auburn and Auburn University. For more information on the Parkerson Mill Creek Watershed Management Plan, please visit http://www.aces.edu/waterquality/pmc.htm.

O. Household Hazardous Waste Collection Day/Document Shredding Event

The City hosted the Household Hazardous Waste Collection Day twice during 2018. This event is a favorite among Auburn residents and was held one day during the months of April and October of 2018. The City allowed its customers to drop off hazardous household chemicals at a collection site free of charge. The items are then disposed of in a safe manner, eliminating the possibility of these items being improperly dumped in local creeks and streams. **The 2018 Household Hazardous Waste Collection Days yielded approximately 27,558 pounds (12.5 tons) of waste collected with a total of 457 participants!** In addition to the collection of household hazardous waste, the City also provided document shredding events during these two days. **The 2018 Document Shredding Event yielded twenty 95-gallon carts full of paper that was shredded!**

P. Website Hotline

In an effort to provide the general public with an additional means of reporting potential erosion control violations, the City launched the "On-Line Hotline" in March 2003. Citizens now have the ability to log on to the website 24 hours a day and provide information on suspected violations. The information is forwarded to the Water Resource Management Department and an investigation is initiated. The website hotline has proven to be a valuable tool over the course of the past fourteen years by assisting City personnel in responding to citizen concerns. For more information concerning the hotline, please visit:

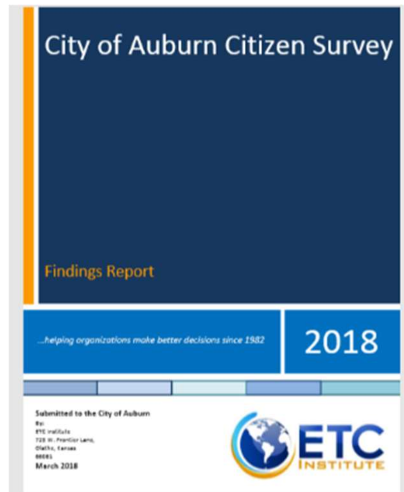
https://www.auburnalabama.org/water-resource-management/watershed/illicit-discharges/.

Q. Arbor Day Tree Give Away

The planting of trees improves water quality by reducing stormwater runoff and erosion while facilitating nutrient removal. In celebration of Alabama's Arbor Day and to encourage the reforestation of the City's urban landscape, the City's Tree Commission sponsors a tree giveaway. **The Commission gave away 1,000 Nuttall Oak Trees and 300 Pignut Hickory Trees at the annual 2018 Arbor Day Tree Giveaway. The City also gave away 1,000 Nuttall Oak Trees at the 2018 Christmas parade. Recently, the City added a fulltime Urban Forestry Specialist within the Urban Forestry Program.**

R. City of Auburn Citizen Survey

The citizen survey is an annual survey of a statistical cross section of randomly selected members of the community and is a way for the City to evaluate its MS4 program. The survey asks questions on issues of governmental performance and community priorities and is a means of encouraging citizens to participate in local government. In 2018, the survey contained several questions that were directly or indirectly related to stormwater issues. The questions covered issues such as infrastructure maintenance, trash collection, yard waste disposal, recycling, natural resource protection, greenspace initiatives and future growth planning. Once again in 2018, the City received very high satisfaction levels in most areas.



To view the Citizen survey, please visit: http://www.auburnalabama.org/survey.

S. Newspaper Articles

Newspaper articles covering local stormwater/environmental issues are a means for disseminating information to a large and diverse group of residents most directly impacted by these issues. Informative articles provide the reader with an independent point of view. The reader is not forced to rely on information generated by a single source (i.e. City through the newsletter Open Line or brochures).

The City is fortunate to have a local daily publication. The Opelika-Auburn News is a regional daily newspaper that covers local events and is widely read by residents of Lee County. A weekly newspaper publication, the Auburn Villager, began circulation in 2007. **A total of 27 stormwater related articles were published during the reporting year.** A listing of articles and publication dates is included in Appendix C of this report.

T. Greenspace Advisory Board/Greenspace Master Plan

The Auburn Greenspace Advisory Board (GAB) was created by a City Council resolution in 2002. Its objective was to identify potential areas for future property acquisitions for parks, recreation facility projects, and greenways. Once identified, these properties could be purchased and/or protected from development.

In 2003, the GAB recommended a Greenspace/Greenway Master Plan for the City. It was adopted in December 2003 by the City Council and has been utilized by the Planning

Commission in connection with approval of projects. The GAB revised the initial Plan to include a vast expansion of the proposed greenspace/greenway areas. This first amendment to the Greenspace/Greenway Master Plan was adopted by the City Council in October 2004.

This plan has resulted in the acquisition of several hundred acres of property located in environmentally sensitive areas. The greenspace/greenway areas include proposed bikeways and trails along existing and new roads and along waterways located within the City's growth boundary. Areas along waterways may be improved with natural trails and will be preserved by the dedication of conservation easements in developments or the acquisition of property by the City. **Additionally, the City continued its feasibility analysis, planning, and design work associated with a combined Blueway/Greenway along Saugahatchee Creek (general alignment as identified in Greenway Master Plan) during the 2018-2019 reporting period.**

U. Auburn Interactive Growth Model

In 2007 – 2008, the City, through its Planning Department, contracted with a firm to develop the Auburn Interactive Growth Model (AIGM), a tool the City utilizes annually to make informed planning decisions. Detailed inventories were conducted for current development such as housing unit by type, population by age groups and retail space by gross area. A demographic forecasting model was developed as well as models for other uses that will provide guidance for future land use allocations. The AIGM also forecasts the spatial distribution of the population over time and the apportionment of land uses necessary to meet the needs of the population. The Planning Department updates the AIGM annually. Since its initial completion, the AIGM's population projections have been used in projecting water and sewer demand, future traffic, regional growth, school growth and as the foundation of the Future Land Use Plan component of CompPlan 2030.

V. CompPlan 2030

In 2009, the City's Planning Department began development of CompPlan 2030, a comprehensive plan to guide future development in Auburn. CompPlan 2030 focuses on the following key areas: current and future land use, and how land use and the built environment affects our natural resources, schools, parks, utilities, civic facilities and transportation. The Plan provides guidance for future planning based on public input, analysis of current and future conditions, and best practices. A series of public meetings was held in 2009 and 2010 to allow citizens to share their ideas for Auburn's future, giving citizens a voice in the development of the plan. The Future Land Use Plan provides parcel-level recommendations for the type and scale of new development for the next twenty years, and is the product of a strategy to promote infill development and growth in downtown Auburn. The Future Land Use Plan element of

CompPlan 2030 replaces the 2004 Future Land Use Plan. The Natural Systems and Utility sections of CompPlan 2030 provide recommendations for water conservation and stormwater management. The plan was adopted by the Auburn City Council on October 4, 2011 and City Departments are now working to integrate components of the Plan into their operations. Revisions to the CompPlan 2030 were completed and adopted by the City in February of 2018. **For this reporting period, the Watershed Division is continuing to integrate components of the revised CompPlan into its operations.** For more information on CompPlan 2030, please visit:

https://www.auburnalabama.org/CompPlan2030/

W. Public Clean-Ups

Parkerson Mill Creek Clean Up (November 2018)

In a collaborative effort, the City of Auburn's Water Resource Management Department and Auburn University's Risk Management and Safety Department recruited community volunteers to clean up Parkerson Mill Creek. A total of 8 volunteers collected 20 bags of trash consisting of bottles, cans, and blue and orange streamers from football shakers.

Parkerson Mill Creek Clean Up (February 2019)

The City of Auburn's Water Resource Management Department, along with Auburn University's Risk Management and Safety Department partnered to recruit a total of 25 volunteers to clean up Parkerson Mill Creek. Volunteers were furnished maps, gloves, trash-tongs and plastic garbage bags. An estimated amount of 25 bags of trash was collected.

Auburn University Big Event Stream Clean Up (March 2019)

In conjunction with Auburn University's BIG Event, the City of Auburn sponsored a stream cleanup event in Town Creek at Graham McTeer Park on March 23, 2019. 7 students from Auburn University assisted Water Resources staff in collecting over 10 bags of litter and other debris from Town Creek.

X. Pet Waste Stations

Pet Waste Stations (10-12) have been installed within the City of Auburn, especially within the City Parks such as Town Creek Park and Kiesel Park that are frequented by residents and visitors with their furry companions. The pet waste stations are emptied and bags replenished twice a week except those stations placed at Town Creek Park and Kiesel Park which are maintained daily. If pet waste is not removed from the ground, there is the potential for the waste to be carried in stormwater runoff to nearby waterbodies causing possible pathogen impairments. The installation, maintenance and promoting the use of these stations, will help to reduce the potential presence of harmful bacteria due to pet waste from entering our waterbodies.

Y. Streambank Stabilization Projects

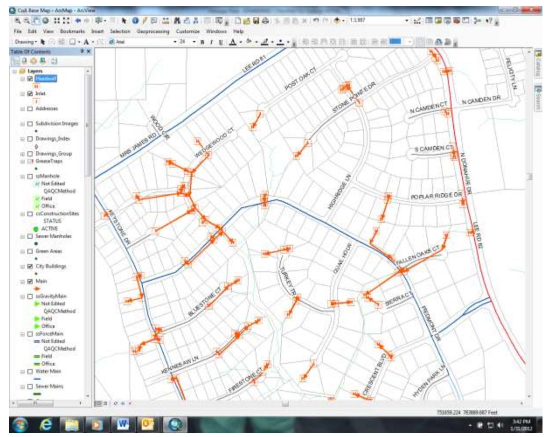
Town Creek Cemetery

In September 2018, the Watershed Division, in cooperation with the Collection System Division, restored approximately 150 ft. of streambank along an unnamed tributary to Town Creek in Town Creek Cemetery. The stream channel had migrated southwest and began to erode the dam of a nearby stormwater pond. In addition, Chinese privet, Eleagnus, and Kudzu had begun to grow on the floodplain. The right streambank was re-graded and a small rock vane was installed to reduce the stream velocity in that area. The dam of the stormwater pond was reinforced using large boulders. Coconut fiber matting was installed along the channel banks, and the invasive plant species were removed and mulched. The area was transformed into an amenity for the local citizens that will continue to improve water quality and wildlife habitat.

VII. <u>ILLICIT DISCHARGE DETECTION AND ELIMINATION</u>

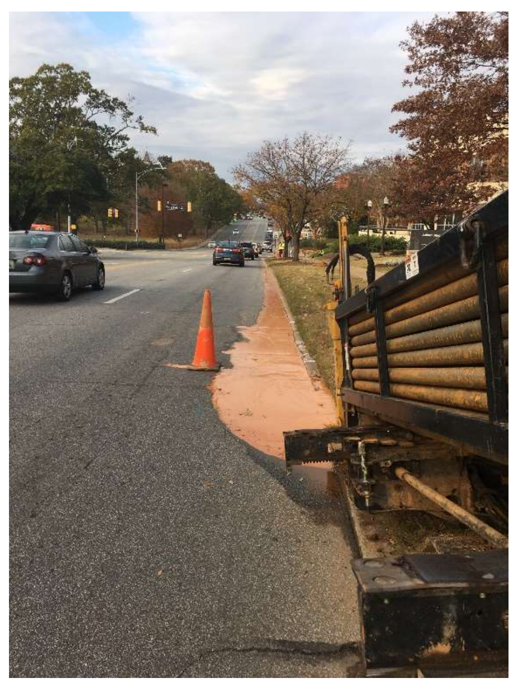
A. Storm Sewer Mapping

The City of Auburn completed the initial mapping of its storm sewer system in 2003. The mapping is maintained in a Geographical Information Systems Database (GIS). Detailed information on pipe size, pipe material, direction of flow, inlets, manholes, bridges, box culverts, detention ponds, and headwalls are maintained in the City's GIS database. The City is currently working to collect stormwater infrastructure data throughout the entire City Limits. In 2013, the City began a Utility Mapping Project utilizing City survey crews and several outside surveying firms. This project, the initial inventorying phase, was completed in 2017, which included the surveying of over 41,875 linear feet (7.93 Miles) of storm sewer main. **The GIS files are updated during the 2018-2019 reporting period as new work is added or as old work is modified to current standards.** The latest revisions of the maps can be obtained through the Engineering Services Department located at 171 North Ross Street.



B. Illicit Discharge Ordinance

The Environmental Protection Agency (EPA) recommends municipalities implement an ordinance that provides the means to identify and enforce correction of illicit discharges. In the City's NOI, submitted to ADEM in March 2003, the stated goal was to develop and implement an Illicit Discharge Ordinance by December 2005. This goal was met two years ahead of schedule.

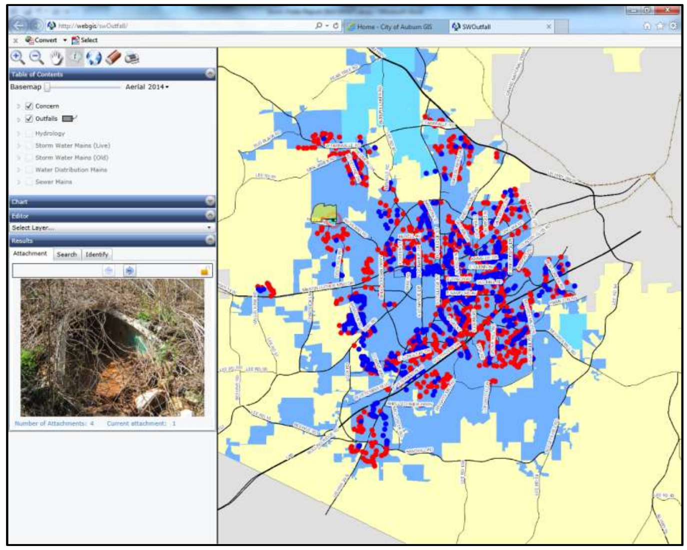


A draft copy of the Illicit Discharge Ordinance was reviewed by the **ALOA** (now ALOAS) Citizens Advisory Committee in November of 2003. A revised draft was forwarded to the City Attorney and Municipal Judge for review in December 2003. The Auburn City Council adopted the Illicit Discharge Ordinance on January 20, 2004. **Revisions were made in 2017 and City Council adopted these revisions in May of 2018.**

The City's IDDE Ordinance may be found at the following link:

https://library.municode.com/al/auburn/codes/code_of_ordinances?nodeId=CO_CH7DRFLCO

C. Stormwater Outfall Reconnaissance Inventory



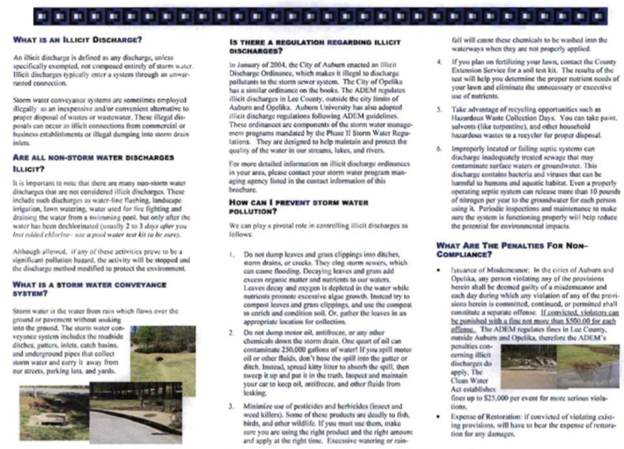
In 2009, the Water Resource Management Department began a stormwater outfall reconnaissance inventory (ORI) program. The purpose of this ORI program is to familiarize staff with all receiving waters within the City limits, conduct an inspection of each stormwater outfall and prepare detailed documentation of each stormwater outfall in that basin so that water quality concerns are documented and corrective actions planned. City staff are able to document any current illicit discharges and provide more detailed location information concerning existing outfalls. The City's ORI program is patterned on recommendations outlined in the *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments* (Center for Watershed Protection and Dr. Robert Pitt, October 2004). The City's goal is to inspect (or screen) all of its outfalls every five years (and/or 15% per year). In calendar year 2015 Watershed Division staff began planning for the second phase of its ORI Program. This included purchasing of a LaMotte Smart 3 Colorimeter for enhanced source identification and tracking, development of plans for a small laboratory at the WRM offices, and updates to the ORI tracking application. Upon the initial completion of its inventory, the WRM Department documented and inspected approximately two hundred forty (240) miles of stream and documented approximately one thousand two hundred twenty-eight (1,228) stormwater outfalls in the Saugahatchee, Parkerson Mill, Moore's Mill and Town Creek Watersheds. Staff also inspected approximately one hundred fifty (150) sanitary sewer aerial creek crossings and identified approximately eight hundred fifty eight (858) concerns or potential concerns during the ORI program. **During the current reporting year, staff re-screened and/or performed water quality analyses at 194 of the City's outfalls representing >16% of all outfalls in the City.** This list is included in Appendix G.

The Water Resource Management Department collaborated with the City's Information Technology (IT) Department GIS Division in 2010 to develop a stormwater outfall tracking tool that allows for easy management, access and viewing of data collected during the ORI program. Staff from multiple departments can view the data assimilated by this application and can utilize that information to monitor progress at addressing concerns identified by field survey. This tool/application was updated in 2015 to include attribute fields for water quality data. A screenshot of this tool can be seen above.

The ORI program is just one example of the measures the City has taken in creating and sustaining an efficient, effective and innovative stormwater management program, with the ultimate goal of protecting our local water resources. **Staff will continue both visual screening and water quality screening of select outfalls in 2019-2020.**

D. Public Education on Illicit Discharges and Improper Disposal

The City of Auburn created an illicit discharge brochure and has made it available to the public for review and/or download via the City's website (www.auburnalabama.org/water-resource-managment/watershed/aloas). In addition, the City routinely places articles in the City newsletter, Open Line and social media to educate citizens on illicit discharges. In 2018, the City also began working with its IT Department to develop an employee and citizen online training program for recognizing and responding to illicit discharges. **This online training program was made available to all City employees in March 2019. The City is continuing to develop and implement an online training program for citizens.**



What is an Illicit Discharge?

An illicit discharge is defined as any discharge, unless specifically exempted, not composed entirely of storm water. Illicit discharges typically enter a system through an unwarranted connection.

Storm water conveyance systems are sometimes employed illegally as an inexpensive and/or convenient alternative to proper disposal of wastes or wastewater. These illegal disposals can occur as illicit connections from commercial or business establishments or illegal dumping into storm drain inlets.

Are All Non-Storm Water Discharges Illicit?

It is important to note that there are many non-storm water discharges that are not considered illicit discharges. These include such discharges as water-line flushing, landscape irrigation, lawn watering, water used for fire fighting and draining the water from a swimming pool, but only after the water has been dechlorinated (usually 2 to 3 *days after you last added chlorine– use a pool water test kit to be sure).*

Although allowed, if any of these activities prove to be a significant pollution hazard, the activity will be stopped and the discharge method modified to protect the environment.

What is a Storm Water Conveyance System?

Storm water is the water from rain which flows over the ground or pavement without soaking into the ground. The storm water conveyance system includes the roadside ditches, gutters, inlets, catch basins, and underground pipes that collect storm water and carry it away from our streets, parking lots, and yards.

Is There a Regulation Regarding Illicit Discharges?

In January of 2004, the City of Auburn enacted an Illicit Discharge Ordinance, which makes it illegal to discharge pollutants to the storm sewer system. The City of Opelika has a similar ordinance on the books. The ADEM regulates illicit discharges in Lee County, outside the city limits of Auburn and Opelika. Auburn University has also adopted illicit discharge regulations following ADEM guidelines. These ordinances are components of the storm water management programs mandated by the Phase II Storm Water Regulations. They are designed to help maintain and protect the quality of the water in our streams, lakes, and rivers.

For more detailed information on illicit discharge ordinances in your area, please contact your storm water program managing agency listed in the contact information of this brochure.

How Can I Prevent Storm Water Pollution?

We can play a pivotal role in controlling illicit discharges as follows:

1. Do not dump leaves and grass clippings into ditches, storm drains, or creeks. They clog storm sewers, which can cause flooding. Decaying leaves and grass add excess organic matter and nutrients to our waters. Leaves decay and oxygen is depleted in the water while nutrients promote excessive algae growth. Instead try to compost leaves and grass clippings, and use the compost to enrich and condition soil. Or, gather the leaves in an appropriate location for collection.
2. Do not dump motor oil, antifreeze, or any other chemicals down the storm drain. One quart of oil can contaminate 250,000 gallons of water! If you spill motor oil or other fluids, don't hose the spill into the gutter or ditch. Instead, spread kitty litter to absorb the spill, then sweep it up and put it in the trash. Inspect and maintain your car to keep oil, antifreeze, and other fluids from leaking.
3. Minimize use of pesticides and herbicides (insect and weed killers). Some of these products are deadly to fish, birds, and other wildlife. If you must use them, make sure you are using the right product and the right amount and apply at the right time. Excessive watering or rainfall will cause these chemicals to be washed into the waterways when they are not properly applied.
4. If you plan on fertilizing your lawn, contact the County Extension Service for a soil test kit. The results of the test will help you determine the proper nutrient needs of your lawn and eliminate the unnecessary or excessive use of nutrients.
5. Take advantage of recycling opportunities such as Hazardous Waste Collection Days. You can take paint, solvents (like turpentine), and other household hazardous wastes to a recycler for proper disposal.
6. Improperly located or failing septic systems can discharge inadequately treated sewage that may contaminate surface waters or groundwater. This discharge contains bacteria and viruses that can be harmful to humans and aquatic habitat. Even a properly operating septic system can release more than 10 pounds of nitrogen per year to the groundwater for each person using it. Periodic inspections and maintenance to make sure the system is functioning properly will help reduce the potential for environmental impacts.

What Are The Penalties For Non-Compliance?

- Issuance of Misdemeanor: In the cities of Auburn and Opelika, any person violating any of the provisions herein shall be deemed guilty of a misdemeanor and each day during which any violation of any of the provisions herein is committed, continued, or permitted shall constitute a separate offense. If convicted, violators can be punished with a fine not more than $500.00 for each offense. The ADEM regulates fines in Lee County, outside Auburn and Opelika, therefore the ADEM's penalties concerning illicit discharges do apply. The Clean Water Act establishes fines up to $25,000 per event for more serious violations.
- Expense of Restoration: if convicted of violating existing provisions, will have to bear the expense of restoration for any damages.

E. Hazardous Waste Emergency Response Team

The City maintains a mutual aid agreement with the City of Opelika to share some of the cost of operating an emergency response vehicle equipped to handle hazardous waste spills. The agreement provides the City with the ability to properly identify and address hazardous or potentially hazardous spills. **This agreement was updated during the 2018-2019 reporting period and is still in effect.**

F. Illicit Discharge Hotline and Reporting Form


City of Auburn
Illicit Discharge Notification Form

First Name: ______ Last Name: ______
Address: ______
City: ______ State: ___ Zip Code: ______
Phone No.: ______ Email: ______

Incident/Discharge Information

Date Discharge Discovered: ______ Time Discharge Discovered: ______
Street Location: ______
Nearest Major Intersection: ______
Nearest Waterbody (if known): ______
Nature of Discharge: ___ Spill ___ Intermediate ___ Continuous ___ Pulsing

Description of Discharge

Odor:
Appearance:
Solids/Floatables:
Other Notes/Comments:

In 2008, the Water Resource Management Department developed an illicit discharge reporting form that residents can download, complete and e-mail back to the Department upon discovering a potential illicit discharge. This document is located on the Illicit Discharge Website, giving residents instant and 24-hour access to the form. This form assists the Department in tracking and responding to illicit discharges. This form can be downloaded from the City's website at https://www.auburnalabama.org/water-resource-management/watershed/illicit-discharges/.

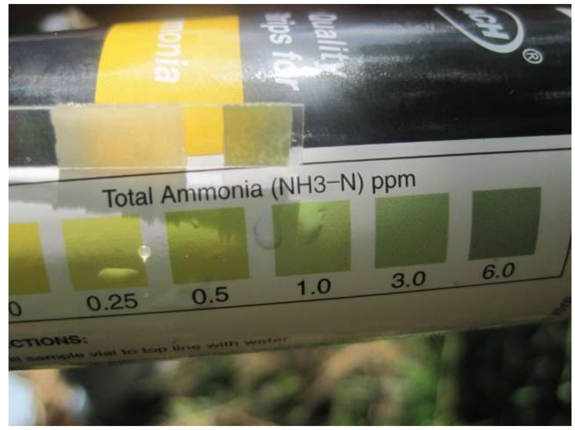
No forms were submitted in 2018.

The City of Auburn responded to several cases of reported illicit discharges during the current reporting year that were reported by phone. In each instance, the potential illicit discharge was investigated and if necessary, was traced back to its source and the violator was given a notice of violation and informed of the penalties for violating the City's Illicit Discharge Ordinance. In each incident, the City was able to ensure proper cleanup and corrective actions taken. **During this reporting period, the City received a total of 24 potential illicit discharge complaints.** Below is a summary table of the complaints received:

Type of Complaint	# of Complaints	Corrective Action	Resolved
Illicit Discharge	7	7 investigations resulting in 3 NOVs	Yes
Erosion and Sediment Control (Construction Site Runoff)	9	9 investigations with correction of deficiencies performed on site	Yes
Stream Erosion/Other Watershed Concern	8	8 investigations performed; 6 forwarded to different City Departments and 2 could not be located	Yes

G. Water Quality Monitoring Programs

In 2004, the City of Auburn began a water quality monitoring program in an effort to analyze the effectiveness of stormwater best management practices (BMPs) on active construction sites within the City. This program has been significantly expanded over the past 15 years to include a diverse range of monitoring programs and more in-depth water quality monitoring.



In 2018, the City of Auburn continued its water quality monitoring programs in accordance with its mission and Stormwater Quality Monitoring Plan. Altogether, thousands of data points are collected by City staff and are used to make data-driven decisions for the protection, preservation, and restoration of our local water resources. **For additional information concerning the City's Water Quality Monitoring Program, please see the 2018 Annual Water Quality Monitoring Report included in Appendix D. This Water Quality Monitoring Report is being submitted in accordance with Part V of NPDES General Permit ALR040003.**

VIII. CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

A. Erosion and Sediment Control Ordinance

The City, in conjunction with the City of Opelika and Auburn University, adopted the Erosion and Sediment Control Policy drafted by the ALOA (now ALOAS) Citizens Advisory Committee in 2003. The policy provides for a regional set of rules that can be applied to contractors, developers and engineers in the area.

The Auburn City Council approved additions to the City's Erosion and Sediment Control Ordinance in 2005 to establish protocol for enforcement of the Ordinance and to enable City personnel to issue citations to developers/contractors in violation of the Ordinance. The enforcement mechanisms have proven to be a valuable tool in ensuring compliance with the Ordinance.

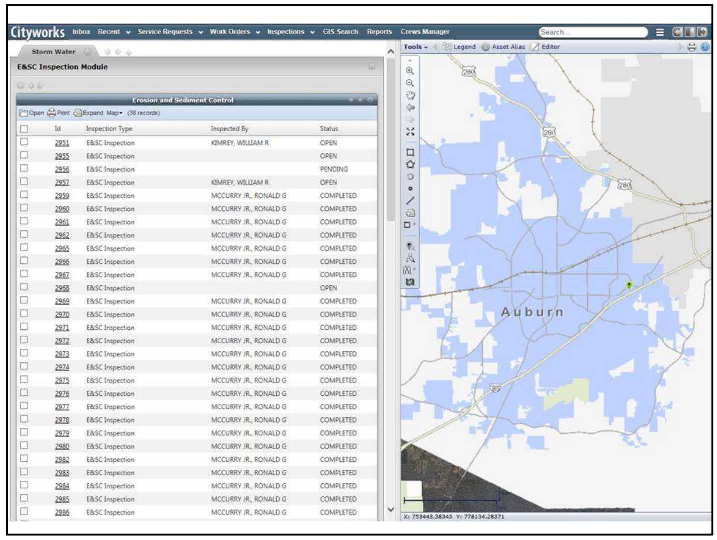
For more information on the City of Auburn's Erosion and Sediment Control Ordinance, please visit the following:

https://library.municode.com/al/auburn/codes/code_of_ordinances?nodeId=CO_CH7DRFLCO_ARTIIIERSECO

B. Erosion Control Inspections

The City, in an effort to patrol the management of erosion and sediment control measures on active construction sites, initiated a construction site inspection program in 2003. The inspection program is designed to identify deficiencies in erosion control and initiate corrective action. **Approximately 1,140 site erosion and sediment control inspections were performed during the current reporting year (includes follow-up inspections), resulting in 570 inspection reports and 54 72-Hour Notices of Violation**. The number of inspections performed is relative to development activity and annual rainfall intensity and accumulation patterns. The City's Water Resource Management Department maintains copies of the inspection reports in an electronic format and are available upon request.

C. Erosion Control Inspection Software



In 2011, staff from the City's Water Resource Management Department and Information Technology Department created an electronic erosion and sediment control inspection software program. This software gives staff the ability to fill out electronic copies of the erosion control inspection checklist using handheld units while in the field performing inspections. In 2015 Watershed Division staff began working with the City's IT staff to migrate the erosion and sediment control inspection and enforcement tracking into CityWorks, a GIS-centric asset management software. **Watershed Division staff began using this software exclusively in 2016 and continued to use this software during the 2018-2019 reporting year.**

D. Residential Erosion Control

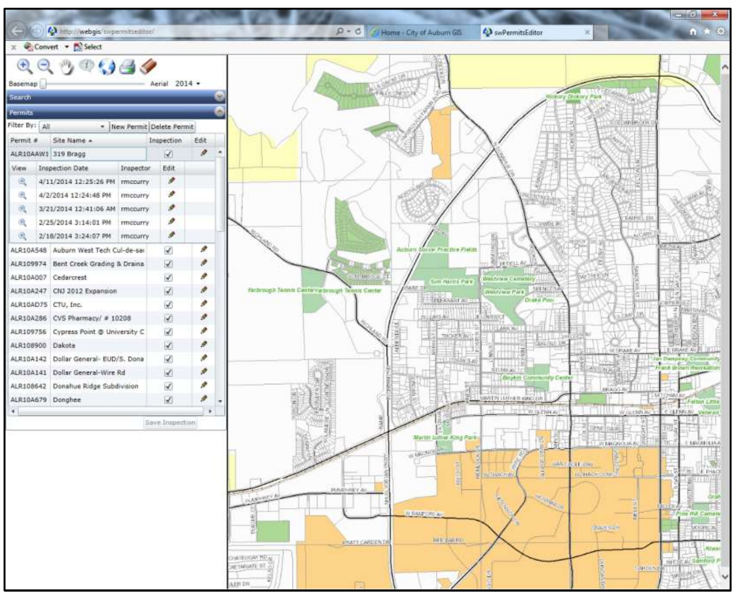
The City now issues an Erosion and Sediment Control Permit that allows for minimal clearing to install the approved BMPs onsite. This minimizes the clearing and grading work that sometimes occurred in the past prior to getting the site BMPs installed. The City's Inspection Services Department conducts an initial site inspection for all building construction in Auburn. Lots requesting the initial inspection must have a construction entrance and other necessary best management practices (BMPs) in place prior to authorizing foundation construction. Deficiencies noted during the initial inspection are relayed to the building permit applicant for correction. **During the current reporting year, 934 initial lot level inspections were performed and of those inspections, 275 failed the pre-permitting inspection which in turn held the permit issuance until the BMPs were properly implemented.**

The City's Inspection Services Department also inspects stormwater BMPs during the building phase inspections. If there is a minor deficiency with the stormwater BMPs, then the inspector will require the contractor to correct the issue prior to the next inspection. If the issue has not been corrected by the next inspection, the subsequent inspection will not be performed. If there is a major deficiency with the stormwater BMPs, then the inspector will not perform the requested inspection and have the contractor correct the deficiency immediately. **Also, there were 212 building phase inspections that recorded a major and/or minor deficiencies which required stormwater BMPs to be corrected during this reporting period.**

E. Rainfall Data Collection

In 2005, the City began maintaining historical rainfall data records. The data is obtained through a subscription to the Agricultural Weather Information System (AWIS) website. AWIS records daily weather data from the NOAA weather station at the Auburn University Regional Airport. The City collects the data on a routine basis and enters it into an Excel spreadsheet, enabling the City to analyze rainfall patterns and trends. The City has AWIS data dating back to 1976. The City records daily rainfall data at its two water pollution control facilities. In addition, the Auburn Water Works Board also has rain gauges located at Lake Ogletree and the James Estes Water Treatment Plant that provide daily rainfall records (intensity also available at Lake Ogletree as of 2016). Details regarding rainfall in 2018 can be found in the Water Quality Monitoring Report included in Appendix D of this report.

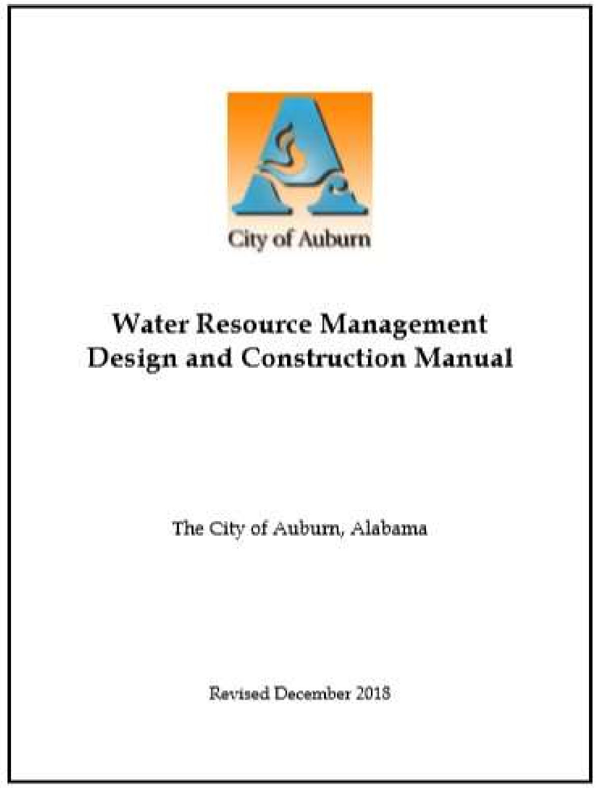
F. ADEM Construction Stormwater Permit Tracking Tool



In 2010, the Water Resource Management Department worked with assistance from the City's Information Technology Department to create a GIS-based tool that allows tracking of ADEM construction stormwater permits for developments within the City of Auburn. The tracking tool generates automatic emails that are sent to staff on a bi-weekly basis with notifications of expired permits, permits that are within thirty (30) days of expiration and permits that are within sixty (60) days of expiration. This allows staff to track permits in an efficient manner and to send notifications to permit holders who have expired permits or permits nearing expiration. In 2011, the permit tracking tool was incorporated into the Erosion and Sediment Control Software described earlier in this section. **In 2018, the City has phased out the use of this tool, as all inspections and permits are entirely housed and managed in CityWorks.**

IX. POST-CONSTRUCTION STORMWATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT

A. Engineering Design and Construction Manuals


City of Auburn

Water Resource Management Design and Construction Manual

The City of Auburn, Alabama

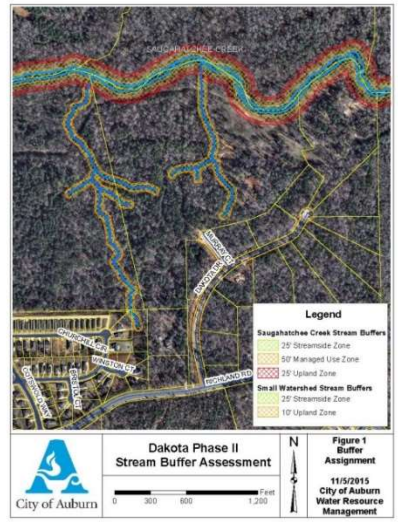
Revised December 2018

In April 2003, the City of Auburn published a Stormwater Design Manual that effectively addressed stormwater runoff controls required for sites greater than one acre. The manual identified project requirements and specifications for new infrastructure and also addressed the requirements for stormwater system sizing and stormwater runoff control/detention. During its implementation, the manual proved to be a very successful tool for the City and developers. The Water Resource Management Department contracted with CH2M Hill to develop an Engineering Design Manual in 2008 that includes engineering design criteria for sewer and water infrastructure, as well as stormwater BMPs for water quality protection such as rain gardens and stormwater wetlands. The Water Resource Management Design Manual also simplifies the City's regulations regarding restrictions on development in steep slope areas. The Public Works Department also developed a comprehensive Engineering Design Manual. The Stormwater Design Manual has been updated and included as an appendix in the Public Works Manual. Both the Public Works and Water Resource Management Design and Construction Manuals were adopted by the City Council in November 2010 and became effective on January 1, 2011. Revisions/amendments to the Manuals were adopted in 2011, 2013, 2014, 2015 and 2016. Reviews of these manuals are performed annually during the first fiscal quarter (October-December). **Revisions were made and were adopted by City Council in December of 2018**.

For more information on the City of Auburn's Water Resource Management Design and Construction Manual, please visit the following:

https://www.auburnalabama.org/water-resource-management/design-and-construction-manual/

B. Stream Buffer Regulations



As part of the Erosion and Sediment Control Ordinance adopted by the City Council in July 2002, a minimum 25-foot non-disturbed vegetative buffer zone was required for new developments on "blue line" streams and creeks identified on USGS 7.5 minute topographic maps. In May 2006, the City Council adopted new Stream Buffer regulations. The 2006 buffer regulations were based on a managed-use type buffer rather than a strict non-disturbed buffer approach. The 2006 regulations implement a 3-zoned buffer (streamside zone, managed use zone and upland zone) with the width of the buffer being based on the drainage area of the stream. A copy of the 2006 regulations can be found under Article IV in the City's Zoning Ordinance on the City's website. Greater than 656 acres of riparian corridors have been set aside since the adoption of the new regulations. **During this reporting period, the City reviewed 62 development plans for compliance with the stream buffer ordinance.** The table below provides the City's current stream buffer requirements.

Stream Buffer Requirements				
Drainage Area (Watershed) Designation	**Streamside Zone**	**Managed Use Zone**	**Upland Zone**	**Total Buffer Width on each side of Stream**
< 100 acres	25 feet	None	10 feet	35 feet
≥ 100 acres and ≤ 300 acres	25 feet	None	20 feet	45 feet
≥ 300 acres and ≤ 640 acres	25 feet	20 feet	10 feet	55 feet
≥ 640 acres	25 feet	50 feet	25 feet	100 feet

C. Post-Construction BMP Inspections

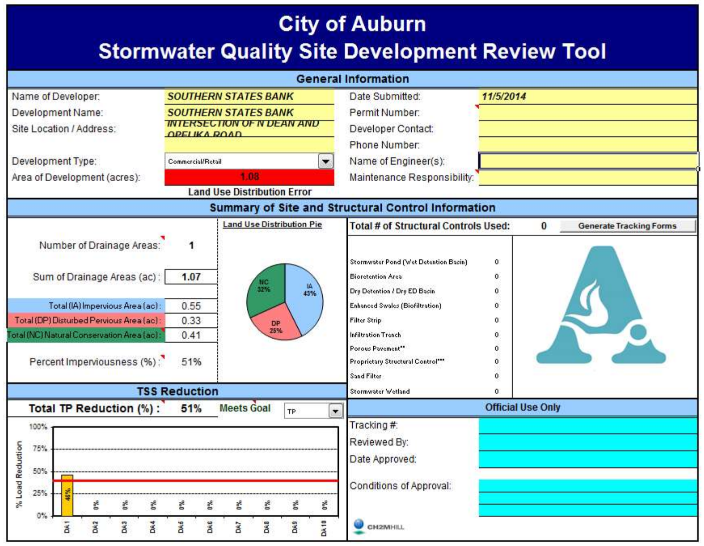
Existing post-construction BMPs need periodic inspections to evaluate the maintenance and operation of these vital components of the City's drainage system. Because vast quantities of stormwater are collected and passed through detention ponds every year, inspections of these facilities can identify potential problems and illicit discharges.

The Engineering Services Department and the Water Resource Management Department conduct annual inspections of all detention ponds (public and private) listed in the stormwater database. Upon inspection, the owner of the pond is notified of any corrective action needed. Enforcement measures are taken if the owner does not address the items listed in the report. **Approximately three hundred and fifty (350) detention ponds were inspected by the City within the 2018-2019 reporting period. There was an increase of approximately 50 post-construction BMPs since last year. A list of the detention ponds is available upon request.**

D. Conservation Subdivision Regulations

In 2006, staff members from the Planning Department, Water Resource Management Department, Public Works Department and Parks and Recreation Department began developing conservation subdivision regulations to aid in the protection of local water resources. These regulations were approved by the Auburn City Council in 2007. The regulations promote water resource protection through the setting aside of open space and concentrating development away from water resources. The ordinance and subdivision regulations promote the use of low impact design concepts to protect natural resources in the Auburn area. While developer interest for conservation subdivisions has not been strong to this point, the City continues to promote conservation subdivisions and low impact development principles for developments within the City of Auburn. These regulations can be downloaded from the City's website at https://www.auburnalabama.org/planning/development-services/subdivision-regulations/.

E. Site Development Review Tool



In 2006, the Water Resource Management Department contracted with CH2M Hill to develop a Site Development Review Tool (Tool) that could be utilized by local engineers when designing stormwater BMPs on developments within the City. This Tool was modeled on a similar tool created by CH2M Hill for Gwinnett County, Georgia.

The Tool was developed using a Microsoft Excel platform and can be used by engineers and developers to design and incorporate structural stormwater BMPs for developments within Auburn's planning jurisdiction boundaries and to maximize the efficiency of runoff pollutant management following construction of developments. This Tool can also be used to meet the target pollutant removal efficiencies outlined in the City's Conservation Subdivision Regulations.

The Tool provides pollutant removal estimates for site specific conditions based on removal efficiencies for a variety of stormwater BMPs including detention ponds, bioretention areas (i.e. rain gardens) and stormwater wetlands. This Tool analyzes a variety of stormwater pollutants including nutrients (phosphorus and nitrogen) and total suspended solids. City staff utilize the Tool during the plan review process to analyze development impacts on water quality within its water supply protection area (Lake Ogletree watershed). This Tool is also used by engineers when submitting water quality plans for developments located in the Saugahatchee Creek Watershed, the Parkerson Mill Creek Watershed, or the Lake Ogletree Watershed to assist them in determining if their post-development stormwater controls meet the City's applicable pollutant removal criteria. A copy of the Tool can be downloaded at https://www.auburnalabama.org/water-resource-management/standard-development-forms/. **During the 2018-2019 reporting year, the City reviewed nine (9) stormwater quality site development review tools.**

F. Student Chapter of American Society of Civil Engineers Constructed Wetland

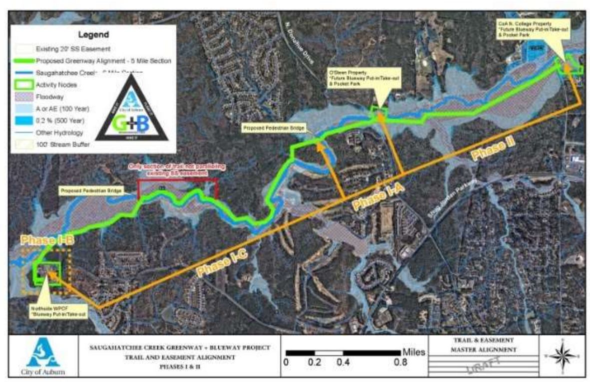
In 2015, the student chapter of the American Society of Civil Engineers (ASCE) of Auburn University worked to design and construct an Outdoor Civil Engineering Learning Lab (Auburn OutCELL) featuring educational displays and interactive exhibits meant to appeal to students of all ages. This project involved a collaborative effort with the City, which provided access to a city-owned site for developing the proposed learning center and design and construction feedback to the student-led team. The Auburn OutCELL will serve as a center where local K-12 students can come (free of charge) with family or school groups to interactively engage and learn about the various disciplines of civil engineering, specifically highlighting elements of environmental, geotechnical, hydraulics, hydrology, materials, structural, and transportation engineering.

The main feature of Auburn OutCELL is a constructed stormwater wetland, which includes an improved sediment basin and constructed treatment wetland system. Not only does this stormwater treatment system provide an ideal setup for lessons on erosion control, water quality, watershed hydrology and native Alabama vegetation, but it also serves to actively improve the quality of stormwater flowing into the Saugahatchee Creek. The site's location just off the unpaved Miracle Road leads to extremely turbid stormwater flowing through the site, which formerly deposited large amounts of sediment into the Saugahatchee Creek. **The City has begun design work associated with making improvements to this facility, including adding a parking lot and trails to access the OutCELL. Due to other developments in the area, construction is anticipated to begin in late 2019 or early 2020.**

G. Parkerson Mill Creek Sewer and Stream Stabilization Project

The WRM Department, in coordination with Auburn University and the Alabama Cooperative Extension Service, completed construction of the Parkerson Mill Creek Sewer and Stream Stabilization Project in December of 2015. This project is now in a maintenance phase and will be inspected annually for maintenance requirements. **During the 2018-2019 reporting period, maintenance was not required on this project.**

H. Saugahatchee Greenway + Blueway Project



Saugahatchee Creek is identified as a Primary Greenway Corridor in the City's Greenway and Greenspace Master Plan. In 2015 the City began performing the necessary feasibility assessments for the development of both a greenway and blueway component of this corridor. Staff have evaluated approximately six (6) miles of Saugahatchee for floatability and over six (6) miles of existing sanitary sewer easement for trail alignment. Between 2015 and 2018, the City has obtained more than 97 acres of land and/or public access easements thereto to convey +/-1.5 miles of Greenway and install two put-in/take-out locations. Additionally, in March of 2017 the City installed one realtime stream gage on Saugahatchee Creek, which will be used to develop a floatability index for kayaking. **During this reporting period, ninety (90) percent of Phase 1-A has been completed along with construction documents. The City anticipates to begin the bid requests in the summer of 2019.**

X. POLLUTION PREVENTION/GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS

A. Stormwater Management Training

The City of Auburn continues to develop a training program that provides the Water Resource Management Department and other City departments with information on the proper methods for implementing site control measures on all municipal projects. City personnel also attend a variety of stormwater/water quality related conferences, workshops and seminars annually.

Training opportunities during this reporting year included:

- **Alabama's Water Environment Association Annual Conference (April 2018)** – This 3-day conference sponsored by Alabama's Water Environment Association, state membership association of the Water Environment Federation (WEF), focuses on stormwater, water quality, and wastewater treatment issues. Five (5) City employees (Matt Dunn, Elisabeth Ingram, Mikel Thompson, Jimmy Segrest and Dan Ballard) attended the 2018 conference, attending technical sessions as well as vendor exhibits.

- **Certified Professional in Stormwater Quality Review Course** – In May 2018, one City staff (Dusty Kimbrow) attended this course in Toledo, Ohio.

- **American Water Works Association Annual Conference** – In June 2018, one City staff (Tim Johnson) attended this conference in Las Vegas, Nevada.

- **Alabama Rural Water Association Source Water Protection Workshop** – In July 2018, one City staff (Dusty Kimbrow) attended this workshop in Lineville, Alabama.

- **Alabama Rural Water Association Annual Conference** – In March 2018, two City staff (Mikel Thompson and Jimmy Segrest) attended this conference in Point Clear, Alabama.

- **Alabama Erosion and Sediment Control Partnership Clearwater Alabama** – In August 2018, one City staff (Dan Ballard) attended this workshop in Oxford, Alabama.

- **WEFTEC 2018 (September 2018)** – This 4-day conference, sponsored by the Water Environment Federation, is one of the premier water quality conferences in the world. WEFTEC 2018 was held in New Orleans, Louisiana. Four (4) City employees (Matt Dunn, Tim Johnson, Mikel Thompson and Jimmy Segrest) attended this conference and attended technical sessions related to watershed protection, water quality, stormwater BMPs and wastewater treatment.

- **Association of State Dam Safety Officials: Dam Safety 2018** – In September 2018, one City staff (Timothy Johnson) attended this 2-day workshop in Seattle, Washington.

- **Qualified Credentialed Inspector Training** – On average, 12 to 14 City employees maintain Qualified Credentialed Inspector (QCI) certification. This certification requires annual refresher training, for which all QCI certified personnel must perform in order to retain certification. In addition to QCI certified staff, the City has numerous professionals who qualify as Qualified Credentialed Professionals (QCP) through existing certifications. **In 2018, approximately twenty (20) City personnel have received QCI training.**

- **Alabama Department of Environmental Management Annual Surface Water Meeting** – In October 2018, one City staff (Timothy Johnson) attended this conference in Montgomery, Alabama.

- **ADEM Underground Storage Tank Educational Session**– Opelika, Alabama

- **ADEM/ARWA Understanding and Complying with Sanitary Sewer Overflow Permit Requirements (Multiple)** – Two City employees (Mikel Thompson and Jimmy Segrest) attended these sessions that were held statewide during various times of the reporting year (April 2018 – March 2019).

- **American Water Works Association and Alabama Water Environment Association Utility Management Workshop** – In January 2019, Five City staff (Eric Carson, Matt Dunn, Mikel Thompson, Jimmy Segrest and Tim Johnson) attended this workshop in Montgomery, AL.

- **Alabama Rural Water Association Lead and Copper Materials Inventory Training** – In January 2019, one City staff (Timothy Johnson) attended this training in Phenix City, Alabama.

- **Soil and Water Assessment Tool (SWAT) for Beginners Workshop** – In February 2019, one City staff (Dusty Kimbrow) attended this workshop in Auburn, Alabama.

B. Spill Response and Prevention Training

The City of Auburn has developed an in-house spill response training program. Staff from Water Resource Management and Public Works' Construction Management and Fleet Services Divisions routinely inspect their respective facilities for proper containment and signage associated with storage of petroleum products. Additionally, staff attend annual training on Spill Prevention, Control, and Countermeasure (SPCC) to ensure that they are prepared to respond to discharges in an appropriate manner. **In 2018, four (4) staff attended training directly related to SPCC.**

C. Risk Management Manual

The City's Human Resources Department has developed a manual outlining specific requirements/policies for dealing with hazardous chemicals. Topic 12 (titled Hazard Communication Program) of the City's Risk Management Manual specifically requires City personnel to receive training on hazardous chemicals used. Safety Data Sheets (SDS) identifying personal protective equipment, permissible exposure limits (PEL) and Threshold Limit Values (TLV) are required for all hazardous chemicals used. The Hazard Communication Program was adopted as part of the Risk Management Manual.

D. Municipal Operations Recycling

It has been standard policy to encourage individual Departments to participate in the City's recycling program. Recyclable waste generated through City activities is collected and processed through the City's recycling center located on Donahue Drive. This recycling center accepts the following recyclables 24 hours a day, 365 days a year: aluminum cans; flattened cardboard; paper (all types); steel/tin cans; batteries (transistor only up to size D); cellular phones; cooking grease/oil; green glass; magazines/telephone books; mixed office paper; and plastics #1-#7. Computer equipment and other electronics (not TVs) may also be recycled, but an appointment must be made as these items require special handling.

2018 Calendar Year RecycleAuburn Tonnage Report	
Item	**Total Tons**
Newspaper	66.44
Green Glass	57.60
Clear Glass	75.85
Brown Glass	57.49
Aluminum Cans	4.11
Cardboard	300.44
Steel	9.46
Magazines	64.40
Mixed Paper	61.31
Plastics	0.00
Computers/Electronics	1.60
Batteries	3.27
Scrap Metal	42.81
Downtown Grease	36.51
Single Stream	990.90
Total	**1772.19**
Monthly Average	**147.68**

In 2017, the City transitioned to single-stream recycling with 5,600 containers. Using 95-gallon containers/carts, citizens are able to place all recyclables into one container and place them at the curbside on their scheduled garbage collection day. Acceptable single-stream materials include: aluminum cans; flattened cardboard; paper (all types); plastic #1 through #7 and steel/tin cans. **During this reporting period, the City added another 5,600 customers to the single-stream curbside pickup and recycled approximately 990 tons of single-stream recyclables.**

E. Street Sweeping & Litter Control

Regular street sweeping has been proven as an effective means to reduce overall pollutant loading from roads and storm sewer systems. The Environmental Services Department of the City currently performs street sweeping measures on a monthly basis throughout numerous roadways within the City. One (1) mechanical and two (2) regenerative-air/vacuum sweepers are used to perform this service. Regular street sweeping measures such as these have been shown to reduce total phosphorus loading from roadways by 1.4 to 20 percent and total suspended solids by 4 to 45 percent, with variability seen in frequency of sweeping and machine type (Breault et. al., 2003). **During this reporting period, the City swept approximately 17,000 miles of streets and parking lots within the City, thereby removing approximately 900 tons of leaves and debris from the road. Additionally, the City removed 7,280 bags of litter from the right-of-way through 2,130 hours of community service/inmates.**

F. Alabama Certified Pesticides Applicator

The Parks and Recreation Department of the City maintains trained and certified personnel in the application of pesticides, including restricted-use pesticides. Although qualified to do so, the Parks and Recreation Department has not used any restricted-use pesticides in the previous decade. In order to maintain certification with the State of Alabama, the staff must document and complete 30 continuing education units (CEUs) over a three-year period. CEUs are earned at various conferences and workshops such as the Alabama Turfgrass Conference, Alabama Department of Transportation workshops, the Sports Turf Short Course and the Alabama Urban Forestry Association's Annual Conference. The CEUs cover the application of pesticides, information on the proper use of fertilizers and other chemicals typically used to maintain athletic fields, and best management practices for trees/shrubs/turf that are intended to reduce the need for pesticides, fertilizers and irrigation.

G. Municipal Facilities Inventory and Good Housekeeping Inspections

In 2017 the City completed an initial inventory and desktop assessment of all its properties and physical facilities, including an assessment of stormwater knowledge of the persons responsible for management and upkeep. The purpose of this inventory and assessment is to evaluate each property's respective potential to contribute to stormwater pollution, and to identify site-specific best management practices to improve maintenance and operation of these properties and facilities to reduce that potential. A total of 128 properties are currently owned and managed by the City. Of these 128 properties, 76 are developed (varying intensity) and 52 are in an undeveloped/natural condition. In 2018, the City re-evaluated the 128 properties, and determined that of the 128 properties, a total of 63 City properties have the potential to discharge pollutants via stormwater runoff. An updated table of City facilities and/or properties may be found in Appendix E. **During this reporting period, all 63 City properties were inspected with minimal deficiencies which have since been addressed.**

XII. STORMWATER INFRASTRUCTURE IMPROVEMENTS

In 2018-2019 report year, the Engineering Services Department continued to make considerable progress toward installing, rehabilitating and upgrading stormwater infrastructure within the City of Auburn. A listing of projects completed is included below, along with projects under construction, projects under design and/or consideration and a list of stormwater maintenance activities.

A. Stormwater Infrastructure Projects Completed

- Hwy 14 (Martin Luther King) and Richland Road Intersection Improvements – this project will involve the installation of 26 LF of 15-inch Pipe, 280 LF of 18-inch Pipe, 1 Area inlet, 1 Junction box, and 3 single wing inlets. The project also includes removal of 1 inlet.

- East Glenn Avenue and North Ross Street Intersection Improvements – This project will involve the installation of 45 LF of 15-inch Pipe, 8 LF of 42-inch Pipe, and 1 single wing inlet. The project also includes removal of 1 inlet.

- Moores Mill Road Bridge Replacement Project – This project will involve the installation of 80 LF of 12-inch Slotted Drain Pipe, 3500 LF of 18-inch Pipe, 192 LF of 24-inch pipe, 117 LF of 30-inch pipe, 304 LF of 60-inch pipe, 31 LF of 44” x 27”-inch pipe, 297 LF of 59” x 36”-inch pipe, 8 junction boxes, 32 single wing inlets, 5 double wing inlets, and 19 headwalls. The project also includes removal of 1001 LF of pipe, 7 inlets, and 19 headwalls.

- North Donahue Drive Widening Project – This project will involve the installation of 316 LF of 15-inch Pipe, 195 LF of 18-inch Pipe, 7 LF of 24-inch pipe, 1 junction boxes, 6 single wing inlets, and 2 double wing inlets. The project also includes removal of 4 inlets.

- Wire Road Widening Project – This project will involve the installation of 14 LF of 15-inch Pipe, 18 LF of 36-inch Pipe, 45 LF of 66-inch corrugated metal pipe, 3 single wing inlets, 1 double wing inlet, 1 36-incg headwall, and 1 66-inch headwall. The project also includes removal of 4 inlets.

- East University Drive & Samford Avenue Sidewalk and Culvert Replacement – This project will involve the installation of 24 LF of 15-inch Pipe, removal and replacement of double barrel 6’x8’ culvert, 2 double wing inlet, removal and replacement of existing headwalls.
- East Glenn Avenue Municipal Parking Lot – this project will involve the construction of a municipal surface parking lot including pervious pavers and a bioretention area.

- Richland Road Widening – This project will involve the installation of 37 LF of 15-inch Pipe, 13 LF of 18-inch pipe, 223 LF of 24-inch Pipe, 6 single wing inlets, 5 double wing inlet, and five 24-inch headwalls. The project also includes removal of 13 inlets.

B. Stormwater Infrastructure Projects Currently Under Construction

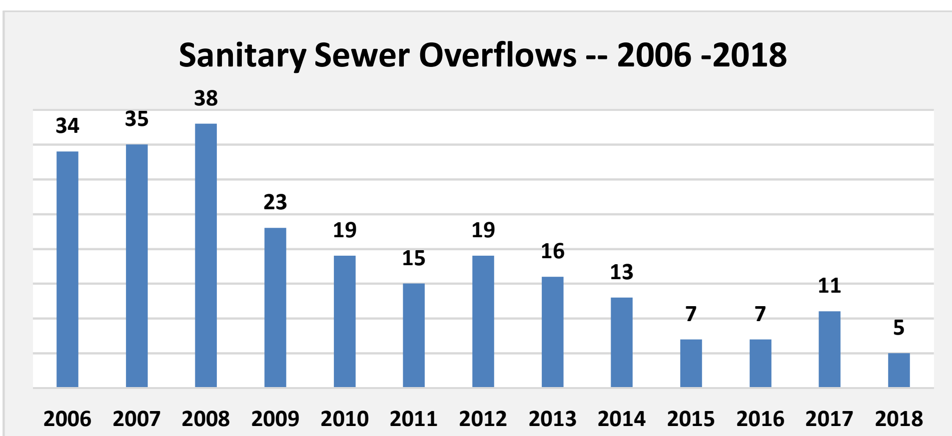
- New Public Safety Facility- This project will involve the installation of 132 LF of 12-inch Pipe, 91 LF of 15-inch Pipe, 1016 LF of 18-inch pipe, 18 LF of 24-inch Pipe, 681 LF of 48-inch Pipe, 188 LF of 6’x5’ box culvert, 6 single wing inlets, 9 wing inlets, 9 grate inlets, and one headwall.

C. Stormwater Infrastructure Projects Under Design and/or Consideration

- Moores Mill Road Sidewalk - This project will involve the installation of sidewalk along the south side of Moores Mill Road from East University Drive and Samford Avenue. As part of the project, curb and gutter will be added to portions of the roadway which will trigger the need for inlets and pipe. The project also include removal of any old-style inlets.

D. Sanitary Sewer Rehabilitation Projects

Several years ago, the City began implementation of a program to identify and rehabilitate aging sanitary sewer infrastructure in the City of Auburn. The primary purpose of this program is to rehabilitate aging infrastructure, prevent sanitary sewer overflows (SSOs) and reduce inflow and infiltration (I/I). The City actively addresses these issues through various sanitary sewer evaluation surveys and rehabilitation projects. **Efforts to rehabilitate gaining infrastructure have reduced SSOs substantially since 2006. In 2018, the City had a total of five (5) SSOs.**



APPENDIX A

2016 PHASE II STORMWATER PERMIT

Lance R. LeFleur
Director

ADEM

Robert J. Bentley
Governor

Alabama Department of Environmental Management
adem.alabama.gov
1400 Coliseum Blvd. 36110-2400 ■ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ■ FAX (334) 271-7950

September 12, 2016

Honorable Bill Ham, Jr.
Mayor, City of Auburn
144 Tichenor Ave., Suite 1
Auburn, Alabama 36830

Re: Municipal Separate Storm Sewer System (MS4) Phase II General Permit
NPDES Permit No. ALR040003
Lee County (081)

Dear Mayor Ham:

The Department has made a final determination to reissue General NPDES Permit No. ALR040000 for discharges from regulated small municipal separate storm sewer systems. The reissued permit will become effective on October 1, 2016 and will expire on September 30, 2021.

The Department notified the public of its tentative determination to reissue General NPDES Permit No. ALR040000 on November 18, 2015. Interested persons were provided the opportunity to submit comments on the Department's tentative decision through December 18, 2015. In accordance with ADEM Admin Code r. 335-6-6-.21(7), a response to all comments received during the public comment period will be available on the Department's efile system.

Based on your request, as evidenced by the submittal of a Notice of Intent, coverage under the General NPDES Permit No. ALR040003 is granted. The effective date of issuance coverage is October 1, 2016.

Coverage under this permit does not authorize the discharge of pollutant or non-stormwater that is not specifically identified in the permit and by the Notice of Intent which resulted in granting this coverage.

You are responsible for compliance with all provisions of the permit, including, but not limited to, the performance of any monitoring (if applicable), the submittal of any reports, and the preparation and implementation of any plans required by the permit. Part II.A.4. of the re-issued permit requires the submittal of an updated Stormwater Management Program Plan (SWMPP) within three months of the issuance date of this permit (January 1, 2017).

If you have any additional questions or concerns, please contact Marla Smith by email at mssmith@adem.state.al.us or by phone at 334-270-5616.

Sincerely,

Jeffery W. Kitchens, Chief
Stormwater Management Branch
Water Division

JWK/mss

File: FPER/1207

Enclosure: Final Permit ALR040003

Cc: Ms. Kacy Sable, EPA (via email)
Mr. Dan Ballard, City of Auburn (via email)

ADEM
Alabama Department of Environmental Management

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT

DISCHARGE AUTHORIZED:	STORMWATER DISCHARGES FROM REGULATED SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS
AREA OF COVERAGE:	THE STATE OF ALABAMA
PERMIT NUMBER:	ALR040003
RECEIVING WATERS:	ALL WATERS OF THE STATE OF ALABAMA

In accordance with and subject to the provisions of the Federal Water Pollution Control Act, as amended, 33 U.S.C.§§1251-1378 (the "FWPCA"), the Alabama Water Pollution Control Act, as amended, Code of Alabama 1975, §§ 22-22-1 to 22-22-14 (the "AWPCA"), the Alabama Environmental Management Act, as amended, Code of Alabama 1975, §§22-22A-1 to 22-22A-15, and rules and regulations adopted thereunder, and subject further to the terms and conditions set forth in this permit, the Permittee is hereby authorized to discharge into the above-named receiving waters.

ISSUANCE DATE:	SEPTEMBER 6, 2016
EFFECTIVE DATE:	OCTOBER 1, 2016
EXPIRATION DATE:	SEPTEMBER 30, 2021

GLENDA L. DEAN

Alabama Department of Environmental Management

Table of Contents

Table of Contents (continued)

PART I Coverage Under This General Permit

A. Permit Coverage

This permit covers the urbanized areas designated as a Phase II Municipal Separate Storm Sewer System (MS4) within the State of Alabama.

B. Authorized Discharges

1. This permit authorizes discharges of storm water from small MS4s, as defined in 40 CFR Part 122.26(b)(16). An entity may discharge under the terms and conditions of this general permit if the entity:
    a. Owns or operates a small MS4 within the permit area described in Section A;
    b. Is not a "large" or "medium" MS4 as described in 40 CFR Part 122.26(b)(4) or (7);
    c. Submits a Notice of Intent (NOI) in accordance with Part II of this general permit; and
    d. Either:
        i. Is located fully or partially within an urbanized area as determined by the latest Decennial Census by the Bureau of Census, or
        ii. Is designated for permit authorization by the Department pursuant to 40 CFR Part 122.32(a)(2).
2. This permit authorizes the following non-storm water discharges provided that they do not cause or contribute to a violation of water quality standards and that they have been determined not to be substantial contributors of pollutants to a particular small MS4 applying for coverage under this permit and that is implementing the storm water management program (SWMP) set forth in this permit:

    a. Water line flushing
    b. Landscape irrigation
    c. Diverted stream flows
    d. Uncontaminated ground water infiltration
    e. Uncontaminated pumped groundwater
    f. Discharges from potable water sources
    g. Foundation drains
    h. Air conditioning condensate
    i. Irrigation water (not consisting of treated, or untreated, wastewater)
    j. Rising ground water
    k. Springs
    l. Water from crawl space pumps
    m. Footing drains
    n. Lawn watering runoff
    o. Individual residential car washing, to include charitable carwashes

p. Residual street wash water
q. Discharge or flows from firefighting activities (including fire hydrant flushing)
r. Flows from riparian habitats and wetlands
s. Dechlorinated swimming pool discharges, and
t. Discharges authorized and in compliance with a separate NPDES permit.

C. Prohibited Discharges

The following discharges are not authorized by this permit:

1. Discharges that are mixed with sources of non-storm water unless such non-storm water discharges are:
    a. In compliance with a separate NPDES permit; or
    b. Determined by the Department not to be a significant contributor of pollutants to waters of the State;
2. Storm water discharges associated with industrial activity as defined in 40 CFR Part 122.26(b)(14)(i)-(ix) and (xi);
3. Storm water discharges associated with construction activity as defined in 40 CFR Part 122.26(b)(14)(x) or 40 CFR 122.26(b)(15) and subject to Alabama Department of Environmental Management (ADEM) Code r. 335-6-12;
4. Storm water discharges currently covered under another NPDES permit;
5. Discharges to territorial seas, contiguous zone, and the oceans unless such discharges are in compliance with the ocean discharge criteria of 40 CFR Part 125, Subpart M;
6. Discharges that would cause or contribute to instream exceedances of water quality standards; Your storm water management program plan (SWMPP) must include a description of the Best Management Practices (BMPs) that you will be using to ensure that this will not occur. The Department may require corrective action or an application for an individual permit if an MS4 is determined to cause an instream exceedance of water quality standards;
7. Discharges of any pollutant into any water for which a total maximum daily load (TMDL) has been approved or developed by EPA unless your discharge is consistent with the TMDL; This eligibility condition applies at the time you submit a NOI for coverage. If conditions change after you have permit coverage, you may remain covered by the permit provided you comply with the applicable requirements of Part V. You must incorporate any limitations, conditions and requirements applicable to your discharges, including monitoring frequency and reporting required, into your SWMPP in order to be eligible for permit coverage. For discharges not eligible for coverage under this permit, you must apply for and receive an individual or other applicable general NPDES permit prior to discharging;
8. This permit does not relieve entities that cause illicit discharges, including spills, of oils or hazardous substances, from responsibilities and liabilities under State and Federal law and regulations pertaining to those discharges.

D. Obtaining Authorization

1. To be authorized to discharge storm water from small MS4s, you must submit a Notice of Intent (NOI) and a description of your storm water management program (SWMP) in accordance with the deadlines presented in Part II of this permit.
2. You must submit the information required in Part II on the latest version of the NOI form (or photocopy thereof). Your NOI must be signed and dated in accordance with Part VII of this permit.
3. No discharge under the general permit may commence until the discharger receives the Department's acknowledgement of the NOI and approval of the coverage of the discharge by the general permit. The Department may deny coverage under this permit and require submittal of an application for an individual NPDES permit based on a review of the NOI.
4. Where the operator changes, or where a new operator is added after submittal of an NOI under Part II, a new NOI must be submitted in accordance with Part II within thirty (30) days of the change or addition.
5. For areas extended within your MS4 by the latest census or annexed into your MS4 area after you received coverage under this general permit, the first annual report submitted after the annexation must include the updates to your SWMP, as appropriate.

Note: If the Department notifies the dischargers (directly, by the public notice, or by making information available on the Internet) of other NOI form options that become available at a later date (e.g., electronic submission of forms), you may take advantage of those options to satisfy the NOI use and submittal requirements in Part II.

E. Implementation

1. This permit requires implementation of the MS4 Program under the State and Federal NPDES Regulations. MS4s shall modify their programs if and when water quality considerations warrant greater attention or prescriptiveness in specific components of the municipal program.
2. If a small MS4 operator implements the minimum control measures in 40 CFR 122.34(b) and the discharges are determined to cause or contribute to non-attainment of an applicable water quality standard as evidenced by the State of Alabama's 303(d) list or an EPA-approved or developed Total Maximum Daily Load (TMDL), the operator must tailor its BMPs within the scope of the six minimum control measures to address the pollutants of concern and implement permit requirements outlined in Part IV.D. and Part V of this permit.
3. Existing MS4s, unless otherwise stated within this permit, shall implement each of the minimum control measures outlined in Part III.B. of this permit immediately upon the effective date of coverage. Newly designated MS4s, unless otherwise stated in this permit, shall implement the minimum control measures outlined in Part III.B. of this permit within

365 days of the effective date of coverage. However, for newly designated MS4s, where new or revised ordinances are required to implement any of the minimum control measures, such ordinances shall be enacted within 730 days from the effective date of coverage.

PART II Notice of Intent (NOI) Requirements

A. Deadlines of Applications

1. If you are automatically designated under 40 CFR Part 122.32(a)(1) or designated by the Department, then to request recoverage, you are required to submit an NOI or an application for an individual permit and a description of your SWMP at least 90 days before the expiration of this permit.
2. If you are designated by the Department after the date of permit issuance, then you are required to submit an NOI or an application for an individual permit and a description of your SWMP within 180 days upon notification. Within six months of initial issuance, the operator of the regulated small MS4 shall submit a storm water management program plan (SWMPP) to the Department for review. A SWMPP can be submitted electronically in a .PDF format, or in another prescribed manner acceptable to the Department that contains all necessary components
3. You are not prohibited from submitting an NOI after the dates provided in Part II.A.1-2. If a NOI is submitted after the dates provided in Part II.A.1-2., your authorization is only for discharges that occur after permit coverage is granted. The Department reserves the right to take appropriate enforcement actions for any unpermitted discharges.
4. Within three months of the date of re-issuance of coverage under this permit, all operators of regulated small MS4s shall submit a revised storm water management program plan (SWMPP) to the Department for review.
5. **On or after December 21, 2020, all NOIs shall be made electronically in a prescribed manner acceptable to the Department.**

B. Continuation of the Expired General Permit

If this permit is not reissued or replaced prior to the expiration date, it will be administratively continued in accordance with the ADEM Code r. 335-6-6 and remain in force and effect if the Permittee re-applies for coverage as required under Part II of this Permit. Any Permittee who was granted permit coverage prior to the expiration date will automatically remain covered by the continued permit until the earlier of:

1. Reissuance or replacement of this permit, at which time you must comply with the Notice of Intent conditions of the new permit to maintain authorization to discharge; or
2. Issuance of an individual permit for your discharges; or
3. A formal permit decision by the Department not to reissue this general permit, at which time you must seek coverage under an alternative general permit or an individual permit.

C. Contents of the Notice of Intent (NOI)

The Notice of Intent must be signed in accordance with Part VII.G of this permit and must include the following information:

1. Information on the Permittee:
   a. The name of the regulated entity, specifying the contact person and responsible official, mailing address, telephone number and email address; and
   b. An indication of whether you are a Federal, State, County, Municipal or other public entity.

2. Information on the MS4:
   a. the name of your organization, county, city, or town and the latitude/longitude of the center or the MS4 location;
   b. The name of the major receiving water(s) and an indication of whether any of your receiving waters are included on the latest 303(d) list, included in an EPA-approved and/or EPA developed total maximum daily load (TMDL) or otherwise designated by the Department as being impaired. If you have discharges to 303(d) or TMDL waters, a certification that your SWMPP complies with the requirements of Part V;
   c. If you are relying on another governmental entity, regulated under the storm water regulations (40 CFR Part 122.26 & 122.32) to satisfy one or more of your permit obligations (see Part III), the identity of that entity(ies) and the elements(s) they will be implementing. The Permittee remains responsible for compliance if the other entity fails to fully perform the permit obligation, and may be subject to enforcement action if neither the Permittee nor the other entity fully performs the permit obligation; and
   d. Must include if you are relying on the Department for enforcement of erosion and sediment controls on qualifying construction sites in accordance with Part III.B.3.b.

3. Include a brief summary of the best management practices (BMPs) for the minimum control measures in Part III of this permit (i.e. a brief summary of the MS4's SWMPP), your timeframe for implementing each of the BMPs, and the person or persons responsible for implementing or coordinating your SWMPP.

D. Where to Submit MS4 Documents

You are to submit your NOI or individual application, and a description of your SWMP as allowed under Part II.A., signed in accordance with the signatory requirements of Section VII of this permit, to the Department at the following address:

Alabama Department of Environmental Management
Water Division
Storm Water Management Branch
Post Office Box 301463
Montgomery, Alabama 36130-1463

Certified and Registered Mail shall be addressed to:

Alabama Department of Environmental Management
Water Division
Storm Water Management Branch
1400 Coliseum Boulevard
Montgomery, Alabama 36110-2059

On or after December 21, 2020, all NOIs shall be made electronically in a prescribed manner acceptable to the Department.

PART III Storm Water Pollution Prevention and Management Program for Small MS4s

A. Storm Water Management Program (SWMP)

1. The Permittee is required to develop, revise, implement, maintain and enforce a storm water management program (SWMP) which shall include controls necessary to reduce the discharge of pollutants from its MS4 consistent with Section 402(p)(3)(B) of the Clean Water Act and 40 CFR Parts 122.30-122.37. These requirements shall be met by the development and implementation of a storm water management program plan (SWMPP) which addresses the best management practices (BMPs), control techniques and systems, design and engineering methods, public participation and education, monitoring, and other appropriate provisions designed to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP).
2. The Permittee shall provide and maintain adequate finance, staff, equipment, and support capabilities necessary to implement the SWMPP and comply with the requirements of this permit.
3. The SWMPP must address the minimum storm water control measures referenced in Part III.B. to include the following:
    a. A map of the Permittee's MS4 urbanized areas;
    b. The BMPs that will be implemented for each control measure. Low impact development/green infrastructure shall be considered where feasible. Information on LID/Green Infrastructure is available on the following websites: http://www.adem.alabama.gov/programs/water/waterforms/LIDHandbook.pdf and http://epa.gov/polwaste/green/index.cfm.
    c. The measureable goals for each of the minimum controls outlined in Part III.B.;
    d. The proposed schedule—including interim milestones, as appropriate, inspections, and the frequency of actions needed to fully implement each minimum control; and
    e. The person and/or persons responsible for implementing or coordination the BMPs for each separate minimum control measure.

4. Once the initial SWMPP is acknowledged by ADEM, activities and associated schedules outlined by the SWMPP or updates to the SWMPP are conditions of the permit.
5. Unless otherwise specified in this permit, the Permittee shall be in compliance with the conditions of this permit by the effective date of coverage.

B. Minimum Storm Water Control Measures

1. Public Education and Public Involvement on Storm Water Impacts

a. The Permittee must develop and implement a public education and outreach program to inform the community about the impacts of storm water discharges on water bodies and the steps that the public can take to reduce pollutants in storm water runoff to the MEP. The Permittee shall continuously implement this program in the areas served by the MS4. The Permittee shall also comply, at a minimum, with applicable State and local public notice requirements when implementing a public involvement/participation program.

b. The Permittee shall include within the SWMPP the methods for how it will:
   - i. Seek and consider public input in the development, revision, and implementation of the SWMPP;
   - ii. Identify targeted pollutant sources the Permittee's public education program is intended to address;
   - iii. Specifically address the reduction of litter, floatables and debris from entering the MS4, that may include, but is not limited to:
     1. Establishing a program to support volunteer groups for labeling storm drain inlets and catch basins with "no dumping" message; and
     2. Posting signs referencing local codes that prohibit littering and illegal dumping at selected designated public access points to open channels, creeks, and other relevant waterbodies;
   - iv. Inform and involve individuals and households about the steps they can take to reduce storm water pollution; and
   - v. Inform and involve individuals and groups on how to participate in the storm water program (with activities that may include, but not limited to, local stream and lake restoration activities, storm water stenciling, advisory councils, watershed associations, committees, participation on rate structures, stewardship programs and environmental related activities). The target audiences and subject areas for the education program that are likely to have significant storm water impacts should include, but is not limited to, the following:
     1. General Public
        - a. General impacts litter has on water bodies, how trash is delivered to streams via the MS4 and ways to reduce the litter;

b. General impacts of storm water flows into surface water from impervious surface; and
c. Source control BMPs in areas of pet waste, vehicle maintenance, landscaping and rain water reuse.

2. General Public, Businesses, Including Home-Based and Mobile Businesses
    a. BMPs for use and storage of automotive chemicals, hazardous cleaning supplies, carwash soaps and other hazardous materials; and
    b. Impacts of illicit discharges and how to report them.

3. Homeowners, Landscapers, and Property Managers
    a. Yard care techniques that protect water quality;
    b. BMPs for use and storage of pesticides and fertilizers;
    c. BMPs for carpet cleaning and auto repair and maintenance;
    d. Runoff reduction techniques, which may include but not limited to site design, pervious paving, retention of forests, and mature trees; and
    e. Storm water pond maintenance.
4. Engineers, Contractors, Developers, Review Staff and Land Use Planners
    a. Technical standards for construction site sediment and erosion control;
    b. Storm water treatment and flow control BMPs;
    c. Impacts of increased storm water flows into receiving water bodies; and
    d. Run-off reduction techniques and low impact development (LID)/green infrastructure (GI) practices that may include, but not limited to, site design, pervious pavement, alternative parking lot design, retention of forests and mature trees to assist in storm water treatment and flow control BMPS.

vi. Evaluation of the effectiveness of the public education and public involvement program.

c. The Permittee shall report each year in the annual report the following information:
    i. A description of the activities used to involve groups and/or individuals in the development and implementation of the SWMPP;
    ii. A description of the individuals and groups targeted and how many groups and/or individuals participated in the programs;
    iii. A description of the activities used to address the reduction of litter, floatables and debris from entering the MS4 as required in Part III.B.1.b.iii.;

iv. A description of the communication mechanisms or advertisements used to inform the public and the quantity that were distributed (i.e. number of printed brochures, copies of newspapers, workshops, public service announcements, etc); and

v. Results of the evaluation of the public education and public involvement program as required in Part III.B.1.b.vi.

d. The Permittee shall make their SWMPP and their annual reports required under this permit available to the public when requested. The current SWMPP and the latest annual report should be posted on the Permittee's website, if available.

2. Illicit Discharge Detection and Elimination (IDDE) Program

a. The Permittee shall implement an ongoing program to detect and eliminate illicit discharges into the MS4, to the maximum extent practicable. The program shall include, at a minimum, the following:

i. An initial map shall be provided in the SWMPP with updates, if any, provided each year in the annual report. The map shall include, at a minimum:

1. The latitude/longitude of all known outfalls;
2. The names of all waters of the State that receive discharges from these outfalls; and,
3. Structural BMPs owned, operated, or maintained by the Permittee.

ii. To the extent allowable under State law, an ordinance or other regulatory mechanism that effectively prohibits non-storm water discharges to the MS4. The ordinance or other regulatory mechanism shall be reviewed annually and updated as necessary and shall:

1. Include escalating enforcement procedures and actions; and
2. Require the removal of illicit discharges and the immediate cessation of improper disposal practices upon identification of responsible parties. Where the removal of illicit discharge within ten (10) working days is not possible, the ordinance shall require an expeditious schedule for removal of the discharge. In the interim, the ordinance shall require the operator of the illicit discharge to take all reasonable and prudent measures to minimize the discharge of pollutants to the MS4.

iii. A dry weather screening program designed to detect and address non-storm water discharges to the MS4. This program must address, at a minimum, dry weather screening of fifteen percent (15%) of the outfalls once per year with all (100 percent) screened at least once per five years. Priority areas, as described by the Permittee in the SWMPP, will be dry weather screened on a more frequent schedule as outlined in the SWMPP. If any indication of a suspected illicit discharge, from an unidentified source, is observed during the dry weather screening, then the Permittee shall follow the screening protocol as outlined in the SWMPP.

iv. Procedures for tracing the source of a suspect illicit discharge as outlined in the SWMPP. At a minimum, these procedures will be followed to investigate portions of the MS4 that, based on the results of the field screening or other appropriate information, indicate a reasonable potential of containing illicit discharges or other sources of non-storm water.

v. Procedures for eliminating an illicit discharge as outlined in the SWMPP;

vi. Procedures to notify ADEM of a suspect illicit discharge entering the Permittee's MS4 from an adjacent MS4 as outlined in the SWMPP;

vii. A mechanism for the public to report illicit discharges discovered within the Permittee's MS4 and procedures for appropriate investigation of such reports;

viii. A training program for appropriate personnel on identification, reporting, and corrective action of illicit discharges;

ix. Address the following categories of non-storm discharges or flows (i.e., illicit discharges) only if the Permittee or the Department identifies them as significant contributors of pollutants to your small MS4: water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration (infiltration is defined as water other than wastewater that enters a sewer system, including foundation drains, from the ground through such means as defective pipes, pipe joints, connections, or manholes. Infiltration does not include, and is distinguished from, inflow), uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering run-off, individual residential car washing, flows from riparian habitats and wetlands, discharge or flows from firefighting activities (to include fire hydrant flushing); dechlorinated swimming pool discharges, and residual street wash water, discharge authorized by and in compliance with a separate NPDES permit; and

x. The Permittee may also develop a list of other similar occasional incidental non- storm water discharges (e.g. non-commercial or charity car washes, etc.) that will not be addressed as illicit discharges. These non- storm water discharges must not be reasonably expected (based on information available to the Permittees) to be significant sources of pollutants to the municipal separate storm sewer system, because of either the nature of the discharges or conditions you have established for allowing these discharges to your MS4 (e.g., a charity car wash with appropriate controls on frequency, proximity to impaired waterbodies, BMPs on the wash water, etc.). You must document in your SWMPP any local controls or conditions placed on the discharges. The Permittee must include a provision prohibiting any individual non- storm water discharge that is determined to be contributing significant amounts of pollutants to your MS4.

b. The Permittee shall report each year in the annual report the following information:
    i. List of outfalls observed during the dry weather screening;
    ii. Updated MS4 map(s) unless there are no changes to the map that was previously submitted. When there are no changes to the map, the annual report must state this;
    iii. Copies of, or a link to, the IDDE ordinance or other regulatory mechanism; and
    iv. The number of illicit discharges investigated, the screening results, and the summary of corrective actions taken to include dates and timeframe of response.

3. Construction Site Storm Water Runoff Control

a. The Permittee must develop/revise, implement and enforce an ongoing program to reduce, to the maximum extent practicable, the pollutants in any storm water runoff to the MS4 from qualifying construction sites. The program shall include the following at a minimum:
    i. Specific procedures for construction site plan (including erosion prevention and sediment controls) review and approval: The MS4 procedures must include an evaluation of plan completeness and overall BMP effectiveness;
    ii. To the extent allowable under State law, an ordinance or other regulatory mechanism to require erosion and sediment controls, sanctions to ensure compliance, and to provide all other authorities needed to implement the requirements of Part III.B.3 of this permit;
    iii. A training program for MS4 site inspection staff in the identification of appropriate construction best management practices (example: QCI training in accordance with ADEM Admin Code. R. 335-6-12 or the Alabama Construction Site General Permit);
    iv. Procedures for the periodic inspection of qualifying construction sites to verify the use of appropriate erosion and sediment control practices that are consistent with the Alabama Handbook for Erosion Control, Sediment Control, And Stormwater Management on Construction Sites and Urban Areas published by the Alabama Soil and Water Conservation Committee (hereinafter the "Alabama Handbook"). The frequency and prioritization of inspection activities shall be documented in the SWMPP and must include a minimum inspection frequency of once each month for priority construction sites;
    v. Procedures, as outlined in the SWMPP, to notify ADEM of construction sites that do not have a NPDES permit or ineffective BMPs that are discovered during the periodic inspections. The notification must provide,

at a minimum, the specific location of the construction project, the name and contact information from the owner or operator, and a summary of the site deficiencies; and

vi. A mechanism for the public to report complaints regarding discharges from qualifying construction sites.

b. ADEM implements a State-wide NPDES construction storm water regulatory program. As provided by 40 CFR Part 122.35(b), the Permittee may rely on ADEM for the setting of standards for appropriate erosion controls and sediment controls for qualifying construction sites and for enforcement of such controls, and must document this in its SWMPP. If the Permittee elects not to rely on ADEM's program, then the Permittee must include the following, at a minimum, in its SWMPP:

   i. Requirements for construction site operators to implement appropriate erosion and sediment control BMPs consistent with the Alabama Handbook for Erosion Control, Sediment Control, And Stormwater Management on Construction Sites and Urban Areas published by the Alabama Soil and Water Conservation Committee (hereinafter the "Alabama Handbook");
   ii. Requirements for construction site operators to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality;
   iii. Development and implementation of an enforcement strategy that includes escalating enforcement remedies to respond to issues of non-compliance;
   iv. An enforcement tracking system designed to record instances of non-compliance and the MS4's responding actions. The enforcement case documentation should include:
      1. Name of owner/operator
      2. Location of construction project or industrial facility
      3. Description of violations
      4. Required schedule for returning to compliance
      5. Description of enforcement response used, including escalated responses if repeat violation occur or violations are not resolved in a timely manner;
      6. Accompanying documentation of enforcement response (e.g., notices of noncompliance, notices of violation, etc);
      7. Any referrals to different departments or agencies; and
      8. Date violation was resolved
   v. The Permittee must keep records of all inspections (i.e. inspection reports) and employee training required by Part III.3.a.

c. The Permittee shall include within the SWMPP the following information:
   i. Procedures for site plan reviews as required by Part III.B.3.a.i;
   ii. A copy or link of the ordinance or other regulatory mechanism required by Part III.B.3.a.ii.;

iii. Plans for the training of MS4 site inspection staff as required by Part III.B.3.a.iii; and

iv. A site inspection plan meeting the requirements of Part III.B.3.a.iv; and

d. The Permittee shall maintain the following information and make it available upon request:

i. Documentation of all inspections conducted of qualifying construction sites as required by Part III.B.3.a.iv. The inspection documentation shall include, at a minimum, the following:

1. Facility type;
2. Inspection date;
3. Name and signature of inspector;
4. Location of construction project;
5. Owner/operator information (name, address, phone number, email);
6. Description of the storm water BMP condition that may include, but not limited to, the quality of vegetation and soils, inlet and outlet channels and structures, embankments, slopes and safety benches, spillways, weirs, and other control structures; and sediment and debris accumulation in storage and forebay areas as well as in and around inlet and outlet structures; and
7. Photographic documentation of any issues and/or concerns.

ii. Documentation of referrals of noncompliant construction sites and/or enforcement actions taken at construction sites to include, at a minimum, the following:

1. Name of owner/operator
2. Location of construction project;
3. Description of violation;
4. Required schedule for returning to compliance;
5. Description of enforcement response used, including escalated responses if repeat violations occur; and
6. Accompanying documentation of enforcement responses (e.g. notices of non-compliance, notices of violations, etc).

iii. Records of public complaints including:

1. Date, time and description of the complaint;
2. Location of subject construction sites; and
3. Identification of any actions taken (e.g. inspections, enforcement, corrections). Identifying information must be sufficient to cross-reference inspection and enforcement records.

e. The Permittee shall report each year in the annual report the following information:

i. A description of any completed or planned revisions to the ordinance or regulatory mechanism required by Part III.B.3.a.i and the most recent copy, or a link to the ordinance; and

ii. List of all active construction sites within the MS4 to include the following summary:

1. Number of construction site inspections;
2. Number of non-compliant construction site referrals and/or enforcement actions and description of violations;
3. Number of construction site runoff complaints received; and
4. Number of MS4 staff/inspectors trained.

4. Post-Construction Storm Water Management in New Development and Redevelopment

a. Post-construction storm water management refers to the activities that take place after construction occurs, and includes structural and non-structural controls including low-impact development and green infrastructure practices to obtain permanent storm water management over the life of the property's use. These post construction controls should be considered during the initial site development planning phase.

i. The Permittee must develop/revise, implement, and enforce a program to address storm water runoff from qualifying new development and redevelopment projects, to the maximum extent practicable. This program shall ensure that controls are in place to prevent or minimize water quality impacts. Specifically, the Permittee shall:

1. Develop/revise and outline in the SWMPP procedures for the site-plan review and approval process and a required re-approval process when changes to post-construction controls are required; and
2. Develop/revise and outline in the SWMPP procedures for a post-construction process to demonstrate and document that post-construction storm water measures have been installed per design specifications, which includes enforceable procedures for bringing noncompliant projects into compliance.

ii. The Permittee must develop and implement strategies which may include a combination of structural and/or non-structural BMPs designed to ensure, to the maximum extent practicable, that the volume and velocity of pre-construction stormwater runoff is not significantly exceeded. A design rainfall event with an intensity up to that of a 2yr-24hr storm event shall be the basis for the design and implementation of post- construction BMPs.

iii. To the extent allowable under State law, the Permittee must develop and institute the use of an ordinance or other regulatory mechanism to address post-construction runoff from qualifying new development and redevelopment projects.

iv. The Permittee must require adequate long-term operation and maintenance of BMPs. One or more of the following as applicable:

1. The developer's signed statement accepting responsibility for maintenance until the maintenance responsibility is legally transferred to another party; and/or
2. Written conditions in the sales or lease agreement that require the recipient to assume responsibility for maintenance; and/or
3. Written conditions in project conditions, covenants and restrictions for residential properties assigning maintenance responsibilities to a home owner's association, or other appropriate group, for maintenance of structural and treatment control management practices; and/or
4. Any other legally enforceable agreement that assigns permanent responsibility for maintenance of structural or treatment control management practices.

v. The Permittee shall perform or require the performance of post-construction inspections, at a minimum of once per year, to confirm that post-construction BMP's are functioning as designed. The Permittee shall include an inspection schedule, to include inspection frequency, within the SWMPP.

vi. The Permittee shall maintain or require the developer/owner/operator to keep records of post-construction inspections, maintenance activities and make them available to the Department upon request and require corrective actions to poorly functioning or inadequately maintained post-construction BMP's.

vii. The Permittee shall review and evaluate policies and ordinances related to building codes, or other local regulations, with a goal of identifying regulatory and policy impediments to the installation of green infrastructure and low-impact development techniques.

b. The Permittee shall report each year in the annual report the following information:

i. Copies of, or link to, the ordinance or other regulatory mechanism required by Part III.B.4.a.iii;

ii. A list of the post-construction structural controls installed and inspected during the permit year;

iii. Updated inventory of post-construction structural controls including those owned by the Permittee;

iv. Number of inspections performed on post-construction structural controls; and,

v. Summary of enforcement actions.

5. Pollution Prevention/Good Housekeeping for Municipal Operations

a. The Permittee shall develop, implement, and maintain a program that will prevent or reduce the discharge of pollutants in storm water run-off from municipal operations to the maximum extent practicable. The program elements shall include, at a minimum, the following:

i. An inventory of all municipal facilities, including municipal facilities that have the potential to discharge pollutants via storm water runoff;
ii. Strategies for the implementation of BMPs to reduce litter, floatables and debris from entering the MS4 and evaluate those BMPs annually to determine their effectiveness. If a BMP is determined to be ineffective or infeasible, then the BMP must be modified. The Permittee shall also develop a plan to remove litter, floatable and debris material from the MS4, including proper disposal of waste removed from the system;
iii. A Standard Operating Procedures (SOP) detailing good housekeeping practices to be employed at appropriate municipal facilities and during municipal operations that may include, but not limited to, the following:
    1. Equipment washing;
    2. Street sweeping;
    3. Maintenance of municipal roads including public streets, roads, and highways, including but not limited to unpaved roads, owned, operated, or under the responsibility of the Permittee;
    4. Storage and disposal of chemicals, Pesticide, Herbicide and Fertilizers (PHFs) and waste materials;
    5. Vegetation control, cutting, removal, and disposal of the cuttings;
    6. Vehicle fleets/equipment maintenance and repair;
    7. External Building maintenance; and
    8. Materials storage facilities and storage yards.
iv. A program for inspecting municipal facilities for good housekeeping practices, including BMPs. The program shall include checklists and procedures for correcting noted deficiencies;
v. A training program for municipal facility staff in good housekeeping practices as outlined in the SOP developed pursuant to Part III.B.5.a.iii; and

b. The Permittee shall include within the SWMPP the following information:
    i. The inventory of municipal facilities required by Part III.B.5.a.i;
    ii. Schedule for developing the SOP of good housekeeping practices required by Part III.B.5.a.iii;
    iii. An inspection plan and schedule, including checklists and any other materials needed to comply with Part III.B.5.a.iv; and
    iv. A description of the training program and training schedule required by Part III.B.5.a.v.

c. The Permittee shall report each year in the annual report the following information:
    i. Any updates to the municipal facility inventory;
    ii. An estimated amount of floatable material collected from the MS4 as required by Part III.B.5.a.ii;
    iii. Any updates to the inspection plan
    iv. The number of inspections conducted; and
    v. Any updates to the SOP of good housekeeping practices.

d. The Permittee shall maintain the following information and make it available upon request:

   i. Records of inspections and corrective actions, if any; and
   ii. Training records including the dates of each training activities and names of personnel in attendance.

PART IV Special Conditions

A. Responsibilities of the Permittee

1. If the Permittee is relying on another entity to satisfy one or more requirements of this permit, then the Permittee must note that fact in the SWMPP. The Permittee remains responsible for compliance with all requirements of this permit, except as provided by Part III.B.3.b and reliance on another entity will not be a defense or justification for non-compliance if the entity fails to implement the permit requirements.
2. If the Permittee is relying on the Department for the enforcement of erosion and sediment controls on qualifying construction sites and has included that information in the SWMPP as required by Part III.A.3.e., the Permittee is not responsible for implementing the requirements of Part III.B.3.b of this permit as long as the Department receives notification of non-compliant qualifying constructions sites from the Permittee as required by Part III.B.3.a.v.

B. SWMPP Plan Review and Modification

1. The Permittee shall submit a SWMPP and/or revised SWMPP to the Department as required by Part II.A of the permit. The Permittee shall implement plans to seek and consider public input in the development, revision and implementation of this SWMPP, as required by Part III.B.1.b.i. Thereafter, the Permittee shall perform an annual review of the current SWMPP and must revise the SWMPP, as necessary, to maintain compliance with the permit. Any revisions to the SWMPP shall be submitted to the Department at the time a revision is made for the Department review. Revisions made to the SWMPP may include, but are not limited to, the replacement of ineffective or infeasible BMPs or the addition of components, controls and requirements; and
2. The Permittee shall implement the SWMPP on all new areas added to their municipal separate storm sewer system (or for which they become responsible for implementation of storm water quality controls) as soon as practicable, but not later than one (1) year from addition of the new areas. Implementation of the program in any new area shall consider the plans of the SWMPP of the previous MS4 ownership, if any.

C. Discharge Compliance with Water Quality Standards

This general permit requires, at a minimum, that the Permittee develop, implement and enforce a storm water management program designed to reduce the discharge of pollutants to the maximum extent practicable. Full implementation of BMPs, using all known, available, and reasonable methods of prevention, control and treatment to prevent and control storm water pollution from entering waters of the State of Alabama is considered an acceptable effort to reduce pollutants from the municipal storm drain system to be the maximum extent practicable.

D. Impaired Waters and Total Maximum Daily Loads (TMDLs)

1. The Permittee must determine whether the discharge from any part of the MS4 contributes directly or indirectly to a waterbody that is included on the latest §303(d) list or designated by the Department as impaired;

2. If the Permittee's MS4 discharges to a waterbody included on the latest §303(d) or designated by the Department as impaired, it must demonstrate the discharges, as controlled by the Permittee, do not cause or contribute to the impairment. The SWMPP must detail the BMPs that are being utilized to control discharges of pollutants associated with the impairment. If existing BMPs are not sufficient to achieve this demonstration, the Permittee must, within six (6) months following the publication of the latest final §303(d) list, Department designation, or the effective date of this permit, submit a revised SWMPP detailing new or modified BMPs. The SWMPP must be revised as directed by the Department and the new or modified BMPs must be implemented within one year from the publication of the latest final §303(d) list or Department designation.

3. Permittees discharging from MS4s into waters with EPA-Approved TMDLs and/or EPA-Established TMDLs

    a. The Permittee must determine whether its MS4 discharges to a waterbody for which a total maximum daily load (TMDL) has been established or approved by EPA. If an MS4 discharges into a water body with an EPA approved or established TMDL, then the SWMPP must include BMPs targeted to meet the assumptions and requirements of the TMDL. If additional BMPs will be necessary to meet the requirements of the TMDL, the SWMPP must include a schedule for installation and/or implementation of such BMPs. A monitoring component to assess the effectiveness of the BMPs in achieving the TMDL requirements must also be included in the SWMPP. Monitoring can entail a number of activities including, but not limited to: outfall monitoring, in-stream monitoring, and/or modeling. Monitoring data, along with an analysis of this data, shall be included in the Annual Report.

    b. If, during this permit cycle, a TMDL is approved by EPA or a TMDL is established by EPA for any waterbody into which an MS4 discharges, the Permittee must review the applicable TMDL to see if it includes requirements for control of storm water discharges from the MS4.

        1. If it is found that the Permittee must implement specific allocations of the TMDL, it must assess whether the assumptions and requirements of the TMDL are being met through implementation of existing BMPs or if additional BMPs are necessary. The SWMPP must include BMPs targeted to meet the assumptions and requirements of the TMDL. If existing BMPs are not sufficient, the Permittee must, within six (6)

months following the approval or establishment of the TMDL by EPA, submit a revised SWMPP detailing new or modified BMPs to be utilized along with a schedule of installation and/or implementation of such BMPs. Any new or modified BMPs must be implemented within one year, unless an alternate date is approved by the Department, from the establishment or approval of the TMDL by EPA. A monitoring component to assess the effectiveness of the BMPs in achieving the TMDL requirements must also be included in the SWMPP. Monitoring can entail a number of activities including, but not limited to: outfall monitoring, in-stream monitoring, and/or modeling. Monitoring data, along with an analysis of this data, shall be included in the Annual Report.

E. Requiring an Individual Permit

The Department may require any person authorized by this permit to apply for and/or obtain an individual NPDES permit. When the Department requires application for an individual NPDES permit, the Department will notify the Permittee in writing that a permit application is required. This notification shall include a brief statement of the reasons for this decision, an application from and a statement setting a deadline for the Permittee to file the application.

PART V Monitoring and Reporting

1. If there are no 303(d) listed or TMDL waters located within the Permittee's MS4 area, no monitoring shall be required. The SWMPP shall include a determination stating if monitoring is required.
2. If a waterbody within the MS4 jurisdiction is listed on the latest final §303(d) list, or otherwise designated impaired by the Department, or for which a TMDL is approved or established by EPA, during this permit cycle, then the Permittee must implement a monitoring program, within 6 months, to include monitoring that addresses the impairment or TMDL. A monitoring plan shall be included in the SWMPP and any revisions to the monitoring program shall be documented in the SWMPP and Annual Report.
3. Proposed monitoring locations, and monitoring frequency shall be described in the monitoring plan with actual locations described in the annual report;
4. The Permittee must include in the monitoring program any parameters attributed with the latest final §303(d) list or otherwise designated by the Department as impaired or are included in an EPA-approved or EPA-established TMDL;
5. Analysis and collection of samples shall be done in accordance with the methods specified at 40 CFR Part 136. Where an approved 40 CFR Part 136 does not exist, then a Department approved alternative method may be used;
6. If the Permittee is unable to collect samples due to adverse conditions, the Permittee must submit a description of why samples could not be collected, including available documentation of the event. An adverse climatic condition which may prohibit the collection of samples includes weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricane, tornadoes, electrical storms, etc.)

or otherwise make the collection of a sample impracticable (drought, extended frozen conditions, etc.);

7. Monitoring results must be reported with the subsequent Annual Report and shall include the following monitoring information:

   a. The date, latitude/longitude of location, and time of sampling;
   b. The name(s) of the individual(s) who performed the sampling;
   c. The date(s) analysis were performed;
   d. The name(s) of individuals who performed the analysis;
   e. The analytical techniques or methods used; and
   f. The results of such analysis.

PART VI Annual Reporting Requirements

1. The Permittee shall submit to the Department an annual report (1 hardcopy and 1 electronic copy) no later than May 31st of each year. The annual report shall cover the previous April 1 to March 31. If an entity comes under coverage for the first time after the issuance of this permit, then the first annual report should cover the time coverage begins until March 31st of subsequent year.
2. **On or after December 21, 2020, all annual reports shall be submitted to the Department electronically in a prescribed manner acceptable to the Department.**
3. The Permittee shall sign and certify the annual report in accordance with Part VII.G.
4. The annual report shall include the following information, at a minimum, and in addition to those requirements referenced in Part III-V:

   a. A list of contacts and responsible parties (e.g.: agency, name, phone number, address, & email address) who had input to and are responsible for the preparation of the annual report;
   b. Overall evaluation of the storm water management program developments and progress for the following:
      i. Major accomplishments;
      ii. Overall program strengths/weaknesses;
      iii. Future direction of the program;
      iv. Overall determination of the effectiveness of the SWMPP taking into account water quality/watershed improvements;
      v. Measureable goals that were not performed and reasons why the goals were not accomplished; and
      vi. If monitoring is required, evaluation of the monitoring data.
   c. Narrative report of all minimum storm water control measures referenced in Part III.B of this permit. The activities shall be discussed as follows:
      i. Minimum control measures completed and in progress;
      ii. Assessment of the controls; and
      iii. Discussion of proposed BMP revisions or any identified measureable goals that apply to the minimum storm water control measures.

d. Summary table of the storm water controls that are planned/scheduled for the next reporting cycle;
e. Results of information collected and analyzed, if any, during the reporting period, including any monitoring data used to assess the success of the program at reducing the discharge of pollutants to the MEP.
f. Notice of reliance on another entity to satisfy some of your permit obligations; and
g. If monitoring is required, all monitoring results collected during the previous year in accordance with Part V, if applicable. The monitoring results shall be submitted in a format acceptable to the Department.

PART VII Standard and General Permit Conditions

A. Duty to Comply

You must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of CWA and is ground for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

B. Continuation of the Expired General Permit

If this permit is not reissued or replaced prior to the expiration date, it will be administratively continued in accordance with the ADEM Code r. 335-6-6 and remain in force and effect if the Permittee re-applies for coverage as required under Part II of this Permit. Any Permittee who was granted permit coverage prior to the expiration date will automatically remain covered by the continued permit until the earlier of:

1. Reissuance or replacement of this permit, at which time you must comply with the Notice of Intent conditions of the new permit to maintain authorization to discharge; or
2. Issuance of an individual permit for your discharges; or
3. A formal permit decision by the Department not to reissue this general permit, at which time you must seek coverage under an alternative general permit or an individual permit.

C. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for you in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate

You must take all reasonable steps to minimize or prevent any discharge in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

E. Duty to Provide Information

The Permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, suspending, or terminating the permit or to determine compliance with the permit. The Permittee shall also furnish to the Director upon request, copies of records required to be kept by the permit.

F. Other Information

If you become aware that you have failed to submit any relevant facts in your Notice of Intent or submitted incorrect information in the Notice of Intent or in any other report to the Department, you must promptly submit such facts or information.

G. Signatory Requirements

All Notices of Intent, reports, certifications, or information submitted to the Department, or that this permit requires be maintained by you shall be signed and certified as follows:

1. Notice of Intent. All Notices of Intent shall be signed by a responsible official as set forth in ADEM Admin. Code r. 335-6-6-.09.
2. Reports and other information. All reports required by the permit and other information requested by the Department or authorized representative of the Department shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
    a. Signed authorization. The authorization is made in writing by a person described above and submitted to the Department.
    b. Authorization with specified responsibility. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility for environmental matters for the regulated entity.
3. Changes to authorization. If an authorization is no longer accurate because a different operator has the responsibility for the overall operation of the MS4, a new authorization satisfying the requirement of Part VII.G.2.b. above must be submitted to the Department prior to or together with any reports or information, and to be signed by an authorized representative.
4. Certification. Any person signing documents under Part VII.G.1-2. above shall make the following certification:

    "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

H. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privilege, nor it does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

I. Proper Operation and Maintenance

You must at all time properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by you to achieve compliance with the conditions of this permit and with the conditions of your SWMPP. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by you only when the operation is necessary to achieve compliance with the conditions of the permit.

J. Inspection and Entry

1. You must allow the Department or an authorized representative upon the presentation of credentials and other documents as may be required by law, to do any of the following:
    a. Enter your premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;
    b. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit;
    c. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment) practices, or operations regulated or required under this permit; and
    d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the CWA, any substances or parameters at any location.

K. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. Your filing of a request for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

L. Permit Transfers

This permit is not transferable to any person except after notice to the Department. The Department may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the Act.

M. Anticipated Noncompliance

You must give advance notice to the Department of any planned changes in the permitted small MS4 or activity which may result in noncompliance with this permit.

N. Compliance with Statutes and Rules

1. The permit is issued under ADEM Admin. Code r. 335-6-6. All provisions of this chapter that are applicable to this permit are hereby made a part of this permit.
2. This permit does not authorize the noncompliance with or violation of any laws of the State of Alabama or the United States of America or any regulations or rules implementing such laws.

O. Severability

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall be affected thereby.

P. Bypass Prohibition

Bypass (see 40 CFR 122.41(m)) is prohibited and enforcement action may be taken against a regulated entity for a bypass; unless:

1. The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

2. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during the normal periods of equipment downtime. This condition is not satisfied if the regulated entity should, in the exercise of reasonable engineering judgment, have installed adequate backup equipment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance.
3. The Permittee submits a written request for authorization to bypass to the Director at least ten (10) days prior to the anticipated bypass (if possible), the Permittee is granted such authorization, and the Permittee complies with any conditions imposed by the Director to minimize any adverse impact on human health or the environment resulting from the bypass.

The Permittee has the burden of establishing that each of the conditions of Part VII.P. have been met to qualify for an exception to the general prohibition against bypassing and an exemption, where applicable, from the discharge specified in this permit.

Q. Upset Conditions

An upset (see 40 CFR 122.41(n)) constitutes an affirmative defense to an action brought for noncompliance with technology-based permit limitations if a regulated entity shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence, that:

1. An upset occurred and the Permittee can identify the specific cause(s) of the upset;
2. The Permittee's facility was being properly operated at the time of the upset; and
3. The Permittee promptly took all reasonable steps to minimize any adverse impact on human health or the environment resulting from the upset.

The Permittee has the burden of establishing that each of the conditions of Part VII.Q. of this permit have been met to qualify for an exemption from the discharge specified in this permit.

R. Procedures for Modification or Revocation

Permit modification or revocation will be conducted according to ADEM Admin. Code r. 335-6-6-.17.

S. Re-opener Clause

If there is evidence indicating potential or realized impacts on water quality due to storm water discharge covered by this permit, the regulated entity may be required to obtain an individual permit or an alternative general permit or the permit may be modified to include different limitations and/or requirements.

T. Retention of Records

1. The Permittee shall retain the storm water quality management program developed in accordance with Part III-V of this permit until at least five years after coverage under this permit terminates.
2. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
3. The Permittee shall retain records of all monitoring information including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of reports required by this permit, and records of all data used to

complete the application of this permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended at the request of the Director at any time.

U. Monitoring Methods

Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

V. Additional Monitoring by the Permittee

If the Permittee monitors more frequently than required by this permit, using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the monitoring report. Such increased monitoring frequency shall also be indicated on the monitoring report.

W. Definitions

1. Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.
2. Control Measure as used in this permit, refers to any Best Management Practice or other method used to prevent or reduce the discharge of pollutants to waters of the State.
3. CWA or The Act means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub.L. 92-500, as amended Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483 and Pub. L. 97-117, 33 U.S.C. 1251 et.seq.
4. Department means the Alabama Department of Environmental Management or an authorized representative.
5. Discharge, when used without a qualifier, refers to "discharge of a pollutant" as defined as ADEM Admin. Code r. 335-6-6-.02(m).
6. Green Infrastructure refers to systems and practices that use or mimic natural processes to infiltrate, evapotranspirate (the return of water to the atmosphere either through evaporation or by plants), or reuse storm water or runoff on the site where it is generated.
7. Illicit Connection means any man-made conveyance connecting an illicit discharge directly to municipal separate storm sewer.
8. Illicit Discharge is defined at 40 CFR Part 122.26(b)(2) and refers to any discharge to a municipal separate storm sewer that is not entirely composed of storm water, except discharges authorized under an NPDES permit (other than the NPDES permit for discharges from the MS4) and discharges resulting from fire fighting activities.
9. Indian Country, as defined in 18 USC 1151, means (a) all land within the limits of any Indian reservation under the jurisdiction of the United States Government, notwithstanding the issuance of any patent, and including rights-of-way running through the reservation; (b) all dependent Indian communities within the borders of the United States whether within the original or subsequently acquired territory thereof, and whether within or without the limits of a State, and (c) all Indian allotments, the Indian titles to which have

not been extinguished, including rights-of-way running through the same. This definition includes all land held in trust for an Indian tribe.

10. Infiltration means water other than wastewater that enters a sewer system, including foundation drains, from the ground through such means as defective pipes, pipe joints, connections, or manholes. Infiltration does not include, and is distinguished from, inflow.
11. Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well, or waste pile.
12. Large municipal separate storm sewer system means all municipal separate storm sewers that are either: (i) located in an incorporated place (city) with a population of 250,000 or more as determined by the latest decennial census.
13. Low Impact Development (LID) is an approach to land development (or re-development) that works with nature to manage storm water as close to its source as possible. LID employs principles such as preserving and recreating natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treat storm water as a resource rather than a waste product.
14. Medium municipal separate storm sewer system means all municipal separate storm sewers that are either: (i) located in an incorporated place (city) with a population of 100,000 or more but less than 250,000 as determined by the latest decennial census.
15. MEP is an acronym for "Maximum Extent Practicable," the technology-based discharge standard for municipal separate storm sewer systems to reduce pollutants in storm water discharges that was established by CWA Section 402(p). A discussion of MEP as it applies to small MS4s is found at 40 CFR Part 122.34.
16. MS4 is an acronym for "Municipal Separate Storm Sewer System" and is used to refer to either a large, medium, or small municipal separate storm sewer system. The term is used to refer to either the system operated by a single entity or a group of systems within an area that are operated by multiple entities.
17. Municipal Separate Storm System is defined at 40 CFR Part 122.26(b)(8) and means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States; (ii) Designed or used for collecting or conveying storm water; (iii) Which is not a combined sewer; and (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined in ADEM Admin. Code r. 335-6-6-.02(nn).
18. NOI is an acronym for "Notice of Intent" to be covered by this permit and is the mechanism used to "register" for coverage under a general permit.
19. Permittee means each individual co-applicant for an NPDES permit who is only responsible for permit conditions relating to the discharge that they own or operate.
20. Point Source means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling

stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

21. Priority construction site means any qualifying construction site in an area where the MS4 discharges to a waterbody which is listed on the most recently approved 303(d) list of impaired waters for turbidity, siltation, or sedimentation, any waterbody for which a TMDL has been finalized or approved by EPA for turbidity, siltation, or sedimentation, and any waterbody assigned specific water quality criteria, such as Outstanding Alabama Water use classification, in accordance with ADEM Admin. Code r. 335-6-10-.09 and any waterbody assigned a special designation in accordance with ADEM Admin. Code r. 335-6-10-.10.
22. Qualifying Construction Site means any construction activity that results in a total land disturbance of one or more acres and activities that disturb less than one acre but are part of a larger common plan of development or sale that would disturb one or more acres. Qualifying construction sites do not include land disturbance conducted by entities under the jurisdiction and supervision of the Alabama Public Service Commission.
23. Qualifying New Development and Redevelopment means any site that results from the disturbance of one acre or more of land or the disturbance of less than one acre of land if part of a larger common plan of development or sale that is greater than one acre. Qualifying new development and redevelopment does not include land disturbances conducted by entities under the jurisdiction and supervision of the Alabama Public Service Commission.
24. Small municipal separate storm sewer system is defined at 40 CFR Part 122.26(b)(16) and refers to all separate storm sewers that are owned or operated by the United States, a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to water of the United States, but is not defined as "large" or "medium" municipal separate storm sewer system. This term includes systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewers in very discrete areas, such as individual buildings.
25. Storm water is defined at 40 CFR Part 122.26(b) (13) and means storm water runoff, snow melt runoff, and surface runoff and drainage.
26. Storm Water Management Program (SWMP) refers to a comprehensive program to manage the quality of storm water discharged from the municipal separate storm sewer system.
27. SWMP is an acronym for "Storm Water Management Program."
28. Total Maximum Daily Load (TMDL) means the calculated maximum permissible pollutant loading to a waterbody at which water quality standards can be maintained. The sum of wasteload allocations (WLAs) and load allocations (LAs) for any given pollutant.

29. You and Your as used in this permit is intended to refer to the Permittee, the operator, or the discharger as the context indicates and that party's responsibilities (e.g., the city, the country, the flood control district, the U.S. Air Force, etc.).

APPENDIX B

URBANIZED AREA MAP

Legend
Major Receiving Waters
Storm Sewer (Asset Inventory Ongoing)
Old Storm Sewer Survey
Hydrology in City Limits
Streets
Auburn, Alabama Urbanized Area - 2013 Census
Auburn University Property
Auburn City Limits
Opelika City Limits
Highway 280
Interstate 85
Saugahatchee Creek
Highway 14
Moore's Mill Creek
Parkerson Mill Creek
Town Creek
Choctafaula Creek
Chewacla Creek
N
W
E
S
0
0.75
1.5
3
Miles
City of Auburn Urban Area and Storm Sewer Stats
Auburn, Alabama Urbanized Area 59.30 Sq. Miles
Auburn City Limits within Urbanized Area 26.80 Sq. Miles
Estimated Storm Sewer Main *135 Linear Miles
Extent Storm Sewer Surveyed in 2017 7.93 Linear Miles
Hydrology
Stream in City Limits 286 Linear Miles
Ponds/Lakes in City Limits 667 Impoundments
Wetlands in City Limits 370+ Acres

APPENDIX C

NEWSPAPER PUBLICATIONS – 2018-2019

Opelika-Auburn Newspaper (OANOW)		
Title	**Publication Date**	**Hyperlink**
Auburn to learn soon about status of second grant for single-stream recycling	April 10, 2018	https://www.oanow.com/news/local/auburn-to-learn-soon-about-status-of-second-grant-for/article_62342af4-48fb-5c75-bf18-03e35bfffc6d.html
Auburn to accept household hazardous waste items Saturday	April 13, 2018	https://www.oanow.com/news/auburn/auburn-to-accept-household-hazardous-waste-items-saturday/article_6a134a1a-3f59-11e8-9df8-c70066440b04.html
From the Desk of Auburn Mayor Bill Ham	April 24, 2018	https://www.oanow.com/news/local/from-the-desk-of-auburn-mayor-bill-ham/article_0e297928-a48e-57de-baac-23768c810231.html
Lee County Water Festival provides hands-on learning experiences to fourth graders	May 4, 2018	https://www.oanow.com/news/lee_county/lee-county-water-festival-provides-hands-on-learning-experiences-to/article_e5d3203f-1083-504b-b2dc-431106f75ca4.html
Auburn Water Works Board Releases its 2017 Consumer Confidence Report	May 15, 2018	https://www.oanow.com/news/auburn/auburn-water-works-board-releases-its-consumer-confidence-report/article_1f8756de-5878-11e8-a67e-d7e042c57020.html
AWW: Volunteers collect water data in citizen science organization	June 25, 2018	https://www.oanow.com/news/alabama-water-watch-volunteers-collect-water-data-in-citizen-science/article_b9366906-781b-11e8-86d8-8f6947fbbc3a.html
Auburn to evaluate trees at community meeting	June 26, 2018	https://www.oanow.com/news/auburn-to-evaluate-trees-at-community-meeting/article_567425ea-78db-11e8-8bd7-a309e079da4b.html

Opelika-Auburn Newspaper (OANOW)		
Title	**Publication Date**	**Hyperlink**
Auburn Parks and Recreation applies for $300,000 grant	August 20, 2018	https://www.oanow.com/news/auburn-parks-and-recreation-applies-for-grant/article_30b00418-a3fc-11e8-9eea-b3b44414efb3.html
City, University unite to cleanup Parkerson Mill Creek	November 28, 2018	https://www.oanow.com/news/auburn/city-university-unite-to-clean-up-parkerson-mill-creek/article_09065048-f2a3-11e8-a423-03d778b22d51.html
Auburn to expand single-stream recycling	September 9, 2018	https://www.oanow.com/news/auburn/auburn-to-expand-single-stream-recycling/article_d067bca6-b3da-11e8-8280-0f6f25ff4ff2.html
Auburn City Council to consider contract to finish single-stream recycling	September 18, 2018	https://www.oanow.com/news/auburn-city-council-to-consider-contract-to-finish-single-stream/article_42a8482e-bacc-11e8-9b02-03bb0a788f56.html
City of Auburn takes additional step in single-stream recycling	September 19, 2018	https://www.oanow.com/news/auburn/city-of-auburn-takes-additional-step-in-single-stream-recycling/article_d26d4638-bbb9-11e8-97c3-7fae75b0fd36.html
Time to dispose or recycle Christmas trees, natural decorations	January 4, 2019	https://www.oanow.com/news/auburn/time-to-dispose-or-recycle-christmas-trees-natural-decorations/article_c8bbb288-0f9b-11e9-8c4d-5bf1e1e379c5.html
Busy agenda tonight includes update on performing arts center	February 19, 2019	https://www.oanow.com/news/auburn/busy-agenda-tonight-includes-update-on-performing-arts-center/article_f45869c6-3459-11e9-b7ef-bb43a9eaafa8.html

Opelika-Auburn Newspaper (OANOW)		
Title	**Publication Date**	**Hyperlink**
City Council approves recycling grants, receives construction update	February 20, 2019	https://www.oanow.com/news/auburn/city-council-approves-recycling-grant-receives-construction-update/article_7e9fbdc6-3524-11e9-b60f-eb1584f89052.html
Opelika and Auburn maintain Tree City USA status	February 20, 2019	https://www.oanow.com/news/auburn/opelika-and-auburn-maintain-tree-city-usa-status/article_d87943c8-3522-11e9-a0a5-a781bd7df57e.html
Auburn City Council discuss recycling purchases	March 19, 2019	https://www.oanow.com/news/auburn/auburn-city-council-discuss-recycling-purchases/article_ef2511d8-4a53-11e9-8494-c337999f2cbd.html
Recycling Partnership to reimburse the cost of 560 carts	March 20, 2019	https://www.oanow.com/news/auburn/recycling-partnership-to-reimburse-the-cost-of-carts/article_ccdff00e-4ab5-11e9-8eb0-e3c40ea3fcc5.html

The Auburn Villager		
Title	**Publication Date**	**Hyperlink**
$40M in projects proposed for first phase of Parks, Rec Master Plan	May 3, 2018	https://www.auburnvillager.com/news/m-in-projects-proposed-for-first-phase-of-parks-rec/article_fac6f87a-4ee7-11e8-bc2f-2790c6794292.html
Dedication held for spillway at Lake Ogletree	April 26, 2018	https://www.auburnvillager.com/news/dedication-held-for-spillway-at-lake-ogletree/article_102455d8-495b-11e8-bfe9-7f2c60ef0812.html
City Council to participate in work session on Parks, Recreation and Culture Master Plan	April 26, 2018	https://www.auburnvillager.com/news/city-council-to-participate-in-work-session-on-parks-recreation/article_e4e47bb8-4974-11e8-a310-874e27bca623.html
City budgeting $156 million for capital projects	July 12, 2018	https://www.auburnvillager.com/news/city-budgeting-million-for-capital-projects/article_c2e94bd8-85d8-11e8-8774-e31f14b9670a.html
Single-stream recycling program to expand citywide	September 12, 2018	https://www.auburnvillager.com/news/single-stream-recycling-program-to-expand-citywide/article_ca28d766-b6ba-11e8-bf88-a3b4660a2de7.html
City Council authorizes $15M for recreation projects	December 6, 2018	https://www.auburnvillager.com/news/city-council-authorizes-m-for-recreation-projects/article_137d4c64-f967-11e8-94cc-b7ccb191d146.html
Saugahatchee blueway project makes design progress	January 17, 2019	https://www.auburnvillager.com/news/saugahatchee-blueway-project-makes-design-progress/article_af128ab0-1a67-11e9-92a6-7f1c14ff29ec.html

The Auburn Villager		
Title	**Publication Date**	**Hyperlink**
City receives third grant for single-stream recycling program	February 21, 2019	https://www.auburnvillager.com/news/city-receives-third-grant-for-single-stream-recycling-program/article_9030c576-35e7-11e9-919f-33ba8ba37ec4.html
City Council Oks purchase of recycling carts	March 21, 2019	https://www.auburnvillager.com/news/city-council-oks-purchase-of-recycling-carts/article_012b4452-4be8-11e9-8b86-ff93fa466077.html

APPENDIX D

2018 STORMWATER QUALITY MONITORING REPORT

City of Auburn

City of Auburn, Alabama
Phase II MS4

Annual Surface Water Quality Monitoring Report
Monitoring Period: April 1, 2018 – March 31, 2019

Permit # ALR040003

Effective: October 1, 2016

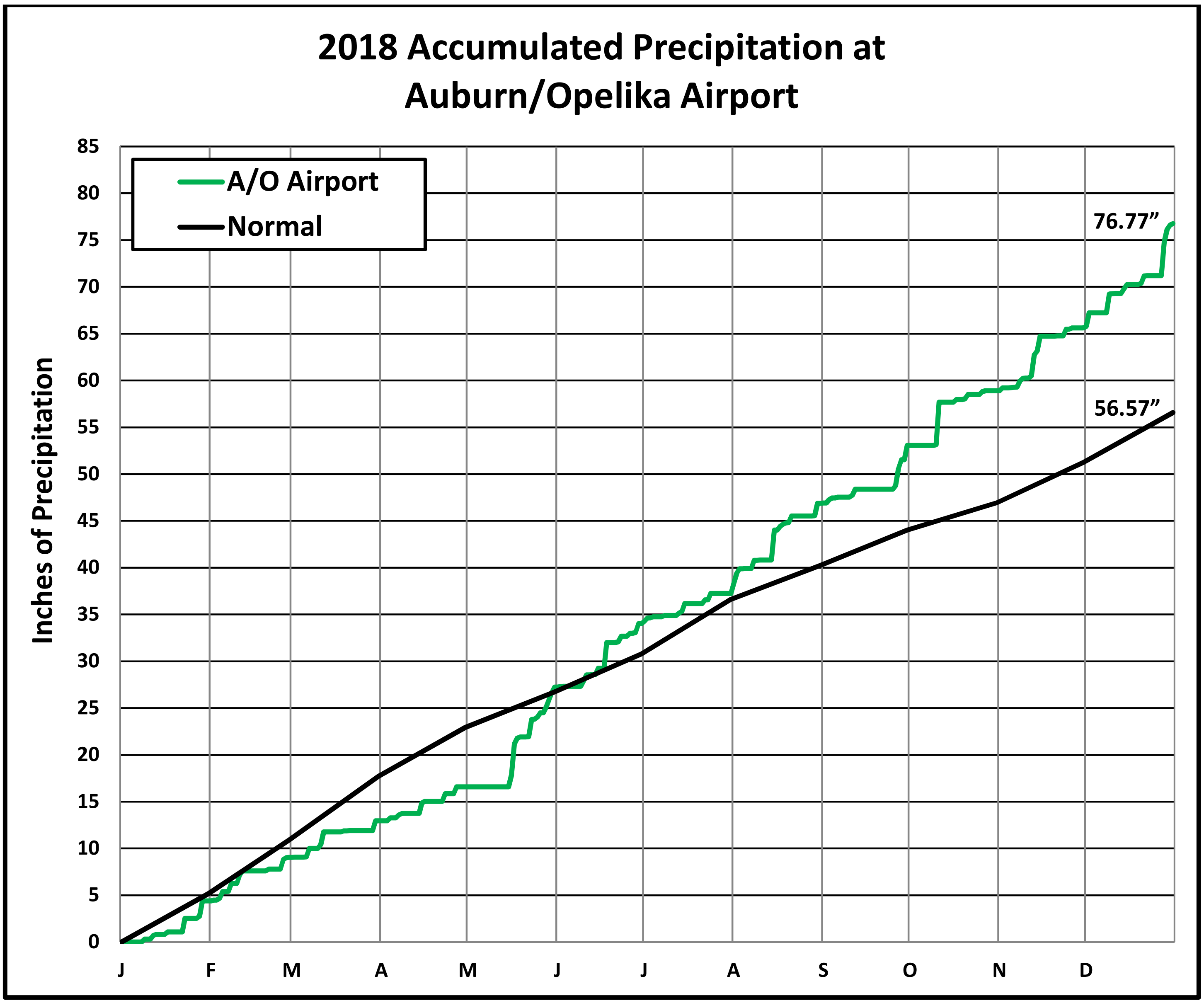
Expiration: September 30, 2021

Table of Contents

1.0 Introduction

The City of Auburn has been voluntarily collecting water quality data on its various surrounding water resources since the 1970's. Although initial efforts were primarily concentrated on source water quality monitoring in the Lake Ogletree reservoir watershed of Chewacla Creek, the City's water quality monitoring has expanded to include a wide variety of monitoring programs that are used to guide efforts of assessment, protection, and restoration of water quality. These programs include monitoring for physical, chemical, mineral, and biological indicators of water quality, with many monitoring efforts managed and operated in-house. This report presents the results of the water quality monitoring and analyses for the period of April 1, 2018 to March 31, 2019, and also includes notes and comments by Water Resource Management Staff.

1.1 Precipitation Data 2018



Monthly Accumulated Precipitation at Auburn/Opelika Airport

2.0 Monitoring Required Under ADEM Phase II NPDES General Permit ALR040003

2.1 Background

The City of Auburn has three (3) streams within its jurisdiction that fail to meet the state's minimum water quality standards for their designated uses. Two streams have a finalized Total Maximum Daily Load (TMDL), and two streams are included on the 2018 final 303(d) list. A TMDL was approved for the Saugahatchee Creek watershed in 2008, with the pollutants of concern being total phosphorus (TP) and organic enrichment/dissolved oxygen (OE/DO). Saugahatchee Creek was listed on the 2018 303(d) list for pathogens, and E. coli monitoring for this impairment will begin during the next reporting period (4/1/2019 – 3/31/2020). A TMDL was finalized for Parkerson's Mill Creek in 2011 for pathogens, with E. coli as the indicator bacteria. Moore's Mill Creek was included on the 303(d) list of impaired streams in 2000 for siltation, and there is currently no TMDL for Moore's Mill Creek. The following data were collected from April 1, 2018 to March 31, 2019 in compliance with the Phase II NPDES General Permit ALR040003 as outlined in the City of Auburn's Stormwater Quality Monitoring Plan.

2.2 Compliance Requirements

According to ADEM Phase II NPDES General Permit ALR040003, if a waterbody within the MS4 jurisdiction is listed on the latest final 303(d) list, or otherwise designated impaired by ADEM, or for which a TMDL is approved or established by EPA, the MS4 permittee shall comply with the following:

1. Include a statement in the SWMPP stating if monitoring is required.
2. Implement a monitoring program within 6 months of permit coverage that addresses the impairment or TMDL. Include the monitoring plan in the SWMPP, and document the revisions to the monitoring plan in the SWMPP and SWMPP Annual Report.
3. Describe proposed monitoring locations and proposed monitoring frequency in the monitoring plan, with actual locations described in the SWMPP Annual Report.
4. Include in the monitoring program any parameters attributed with the latest final 303(d) list, or otherwise designated by ADEM as impaired, or are included in an EPA-approved or EPA-established TMDL.
5. Perform analysis and collection of samples in accordance with the methods specified at 40 CFR Part 136. If an approved 40 CFR Part 136 method does not exist, then an ADEM approved method may be used.
6. If samples cannot be collected due to adverse conditions, permittee must submit a description of why samples could not be collected, including available documentation of the event (e.g. weather conditions that create dangerous conditions for personnel, or impracticable conditions such as drought or ice).
7. Monitoring results must be reported with the subsequent SWMPP Annual Report and shall include the following:
    a. The date, latitude/longitude of location, and time of sampling
    b. The name(s) of the individual(s) who performed the sampling
    c. The date(s) analysis were performed

d. The name(s) of the individual(s) who performed the analysis

e. The analytical techniques or methods used

f. The results of such analysis

The pages that follow include the sampling and reporting requirements outlined above for Saugahatchee Creek, Parkerson's Mill Creek, and Moore's Mill Creek (watersheds that fail to meet the state's minimum water quality standards for their designated uses).

2.3 Water Sampling Methods

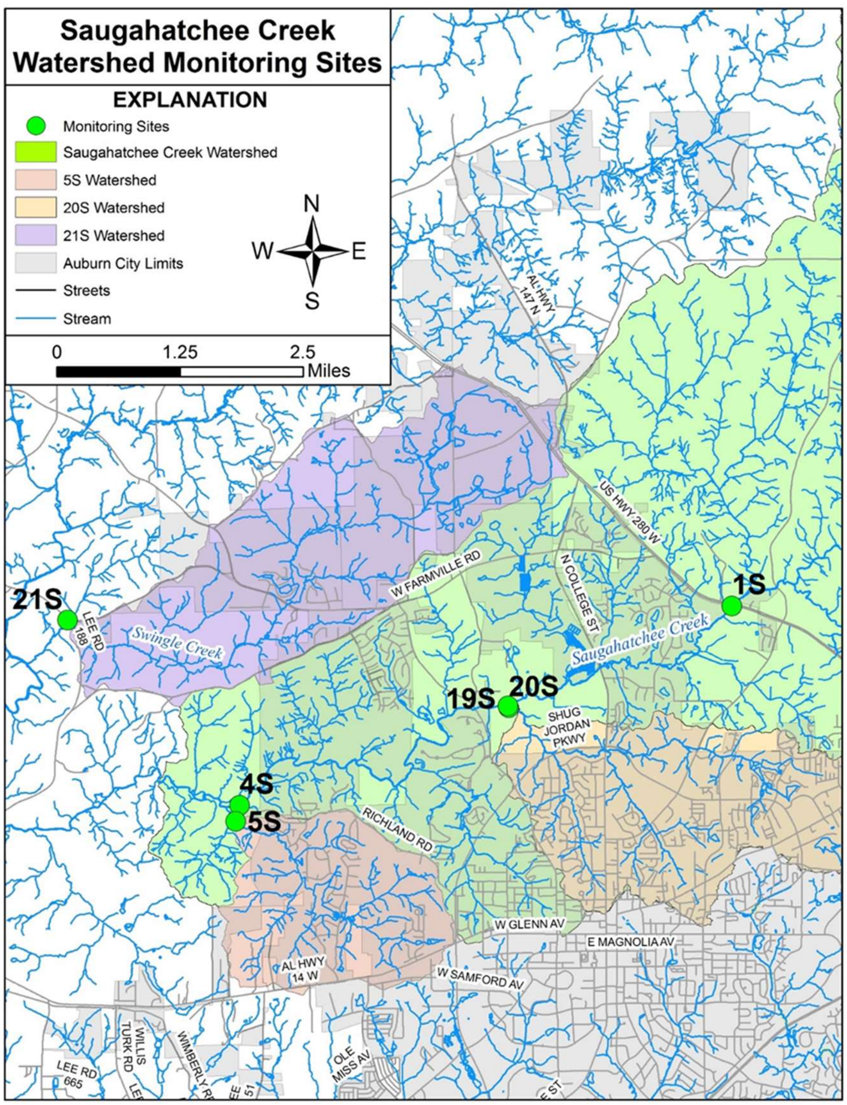
The City of Auburn understands that quality control and quality assurance are critical to a successful environmental monitoring program. In order to develop a dependable and credible database of water quality measurements for each sampling site in the City's MS4 area, the Water Resource Management (WRM) staff employ a stringent field and laboratory protocol. WRM staff are required to wear nitrile gloves when handling sample bottles, cleaning sample bottles, plating bacterial samples, handling bacterial plates and growth media, calibrating instruments, and collecting water samples. Before going to a sample site, water sample collection bottles are placed in clean, sealable plastic bags. They are carried to the sample site in a cooler, and the bottles are immediately placed back into the bag and into the cooler to be chilled at 4 degrees Celsius after the water samples are collected. WRM staff calibrate all water quality instruments prior to field use. Calibration standards are never used outside the expiration date. A detailed calibration log is filled out each time an instrument is calibrated. Sampling devices are cleaned using Liquinox™ phosphate-free detergent, followed by a tap water rinse, and then a final rinse with deionized water. At all sample sites, WRM staff utilize field sheets to document site characteristics and observations such as stream color, geomorphic setting (riffle, pool, etc.), and weather conditions. The field sheets are also used to document water quality data measured in-situ at each site. These in-situ data are collected using a YSI ProPlus instrument and include temperature (F), pH, specific conductance (µS/cm), and dissolved oxygen (mg/L). Water samples are analyzed for turbidity in the field using a LaMotte 2020we portable turbidimeter. Streamflow is determined using the mid-section method, where the channel is divided into segments along a cross-section and width, depth, and velocity are recorded at each segment. Velocity is measured at the center of each segment using either a Sontek Flowtracker 2 acoustic doppler velocimeter or a Price Pygmy Meter. The sum of flows of all the segments along a cross-section equals the total streamflow.

2.4 Saugahatchee Creek Compliance Monitoring Data

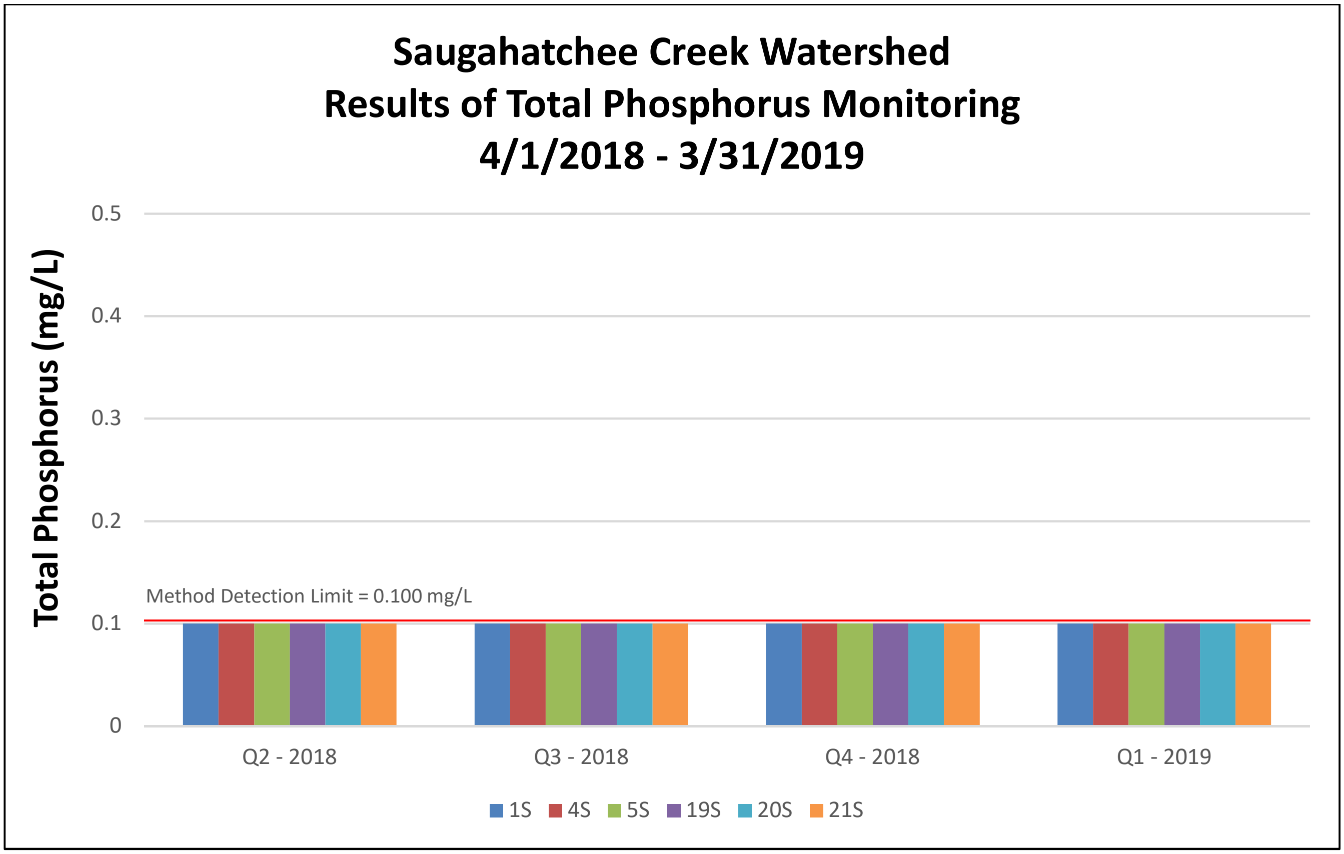
The Saugahatchee Creek Embayment on Yates Reservoir was originally placed on the ADEM 303(d) list of impaired waterbodies in 1996 for OE/DO and nutrients. It remained on the State's 303(d) list after each consecutive two-year water quality assessment until 2008, at which time the Saugahatchee Creek Embayment (Yates Reservoir) TMDL was finalized. Additionally, Pepperell Branch, a tributary of Saugahatchee Creek which originates in Opelika, also remained on the State's 303(d) list for nutrient impairment until 2008. The impairment of Pepperell Branch was also addressed in the Saugahatchee Creek Embayment TMDL. In order to address water quality concerns within the Saugahatchee Creek Embayment, ADEM and the EPA jointly developed a "watershed based" TMDL, which would in turn address nutrient loading from both the main stem of Saugahatchee Creek and Pepperell Branch. The final Saugahatchee Creek Watershed TMDL was issued in April of 2008, identifying TP as the primary pollutant of concern (expressed as chlorophyll-a to satisfy numeric target criteria for assessing eutrophication in lakes). The Saugahatchee Creek Embayment TMDL establishes the TP limits in stormwater runoff of equal to or less than 0.1 mg/L (see Table 5-2 of the Saugahatchee Creek Embayment TMDL).

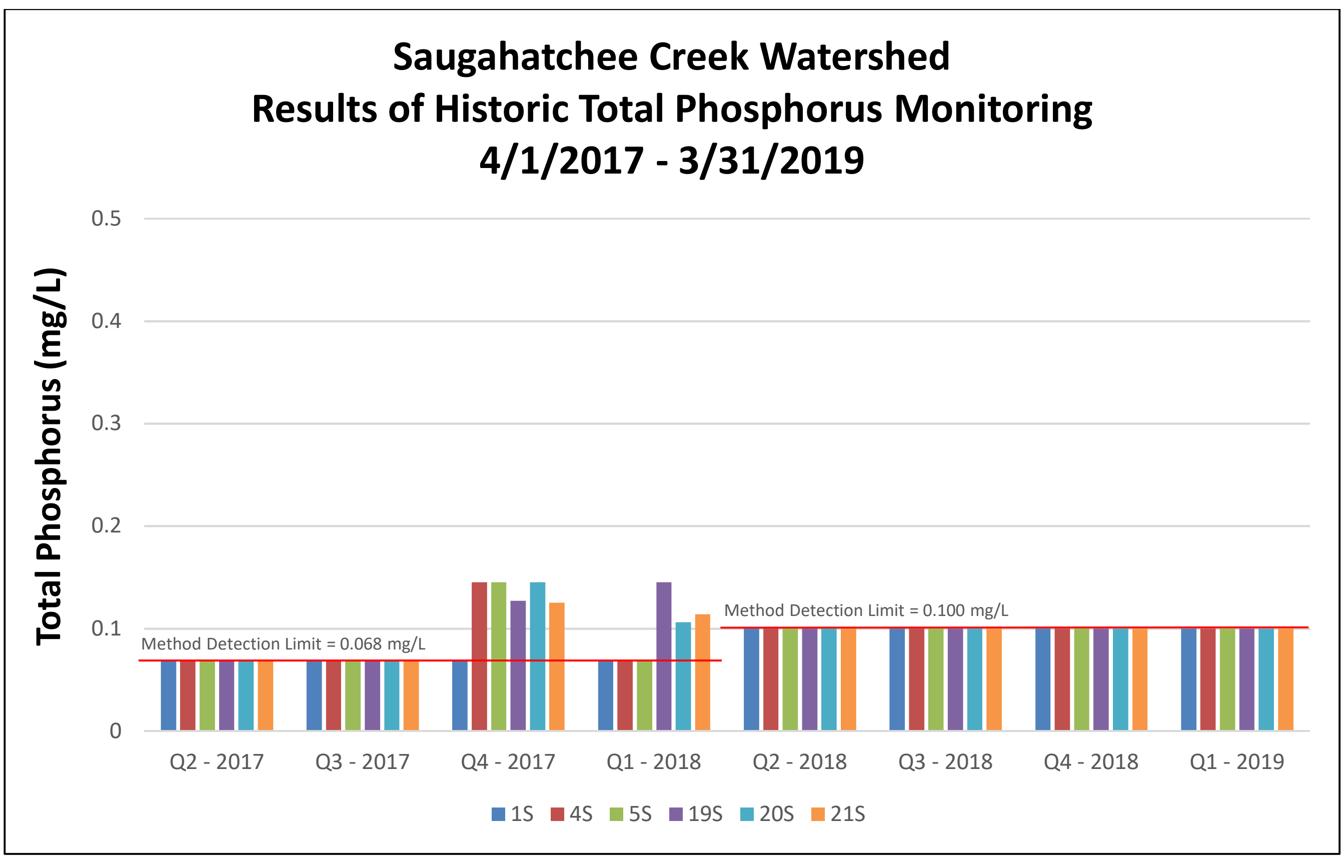
Monitoring TP at strategic locations along the main stem of Saugahatchee Creek and on tributaries within the Saugahatchee Creek watershed that drain portions of the City's MS4 provides sufficient data to evaluate the success of efforts to reduce TP in stormwater and meet TMDL concentrations. The City makes all reasonable efforts to conduct quarterly sampling for TP, water temperature, pH, dissolved oxygen, specific conductance, and turbidity at three locations along the main stem of Saugahatchee Creek, and also at three tributaries within the Saugahatchee Creek watershed. Streamflow in cubic feet per second (cfs) and million gallons per day (MGD) are recorded at each sample site when water samples are collected. Streamflow is determined from the USGS streamgage 02418230 for sites on the main stem of Saugahatchee Creek. The City makes a reasonable effort to measure streamflow in-situ at tributary sites when flow conditions permit. Additionally, the City continues to reasonably support and participate in studies of water quality in the embayment.

All monitoring results for TP during the reporting period 4/1/2018 to 3/31/2019 were below the method detection limit of 0.100 mg/L. Since the City began quarterly monitoring of TP in June 2017, 83% of all samples collected have been below the method detection limit. The tables below include results from monitoring conducted during the reporting period 4/1/2018 to 3/31/2019.



Saugahatchee Creek Watershed Monitoring Sites


Saugahatchee Creek Watershed
Results of Total Phosphorus Monitoring
4/1/2018 - 3/31/2019
Total Phosphorus (mg/L)
0.5
0.4
0.3
0.2
0.1
0
Method Detection Limit = 0.100 mg/L
Q2 - 2018
Q3 - 2018
Q4 - 2018
Q1 - 2019
1S
4S
5S
19S
20S
21S


Saugahatchee Creek Watershed
Results of Historic Total Phosphorus Monitoring
4/1/2017 - 3/31/2019
Total Phosphorus (mg/L)
0.5
0.4
0.3
0.2
0.1
0
Method Detection Limit = 0.068 mg/L
Method Detection Limit = 0.100 mg/L
Q2 - 2017
Q3 - 2017
Q4 - 2017
Q1 - 2018
Q2 - 2018
Q3 - 2018
Q4 - 2018
Q1 - 2019
1S
4S
5S
19S
20S
21S

Saugahatchee Creek Watershed Monitoring Data

Site Number	Site Location	Site Coordinates
1S	Saugahatchee Creek at US HWY 280	32.657413 N, 85.459656 W
4S	Saugahatchee Creek at Northside WWTP	32.642777 N, 85.498761 W
5S	Unnamed Tributary to Saugahatchee Creek	32.628185 N, 85.545705 W
19S	Saugahatchee Creek 0.35 mi upstream of N. Donahue Dr.	32.625847 N, 85.546404 W
20S	Unnamed Tributary to Saugahatchee Creek	32.642492 N, 85.498606 W
21S	Swingle Creek above Lee Rd. 188	32.655618 N, 85.575517 W

Site Number	Sample Date	Sample Time	Sample Collected By	Total Phosphorus (mg/L)	Analytical Method	Analysis Date	Analysis Performed By	Streamflow (cfs)	Stream-flow (MGD)
1S	6/7/2018	1605	D. Kimbrow	<0.100	EPA 365.4	6/21/2018	H. Knowles (ERA)	49.3	31.9
4S	6/7/2018	1145	D. Kimbrow	<0.100	EPA 365.4	6/21/2018	H. Knowles (ERA)	49.3	31.9
5S	6/7/2018	1200	D. Kimbrow	<0.100	EPA 365.4	6/21/2018	H. Knowles (ERA)	1.12	0.72
19S	6/7/2018	1455	D. Kimbrow	<0.100	EPA 365.4	6/21/2018	H. Knowles (ERA)	49.3	31.9
20S	6/7/2018	1450	D. Kimbrow	<0.100	EPA 365.4	6/21/2018	H. Knowles (ERA)	3.31	2.14
21S	6/7/2018	1045	D. Kimbrow	<0.100	EPA 365.4	6/21/2018	H. Knowles (ERA)	5.0	3.23
Site Number	Sample Date	Sample Time	Sample Collected By	Total Phosphorus (mg/L)	Analytical Method	Analysis Date	Analysis Performed By	Streamflow (cfs)	Stream-flow (MGD)
1S	9/20/2018	1425	D. Kimbrow	<0.100	EPA 365.4	10/1/2018	H. Knowles (ERA)	15.2	9.8
4S	9/20/2018	1015	D. Kimbrow	<0.100	EPA 365.4	10/1/2018	H. Knowles (ERA)	12.8	8.3
5S	9/20/2018	0940	D. Kimbrow	<0.100	EPA 365.4	10/1/2018	H. Knowles (ERA)	0.22	0.14
19S	9/20/2018	1310	D. Kimbrow	<0.100	EPA 365.4	10/1/2018	H. Knowles (ERA)	13.4	8.66
20S	9/20/2018	1305	D. Kimbrow	<0.100	EPA 365.4	10/1/2018	H. Knowles (ERA)	1.14	0.7
21S	9/20/2018	1050	D. Kimbrow	<0.100	EPA 365.4	10/1/2018	H. Knowles (ERA)	0.38	0.25
Site Number	Sample Date	Sample Time	Sample Collected By	Total Phosphorus (mg/L)	Analytical Method	Analysis Date	Analysis Performed By	Streamflow (cfs)	Stream-flow (MGD)
1S	12/13/2018	1355	D. Kimbrow	<0.100	EPA 365.4	12/28/2018	H. Knowles (ERA)	151	98
4S	12/13/2018	1505	D. Kimbrow	<0.100	EPA 365.4	12/28/2018	H. Knowles (ERA)	151	98
5S	12/13/2018	1430	D. Kimbrow	<0.100	EPA 365.4	12/28/2018	H. Knowles (ERA)	3.81	2.46
19S	12/13/2018	1140	D. Kimbrow	<0.100	EPA 365.4	12/28/2018	H. Knowles (ERA)	151	98
20S	12/13/2018	1110	D. Kimbrow	<0.100	EPA 365.4	12/28/2018	H. Knowles (ERA)	5.53	3.57
21S	12/13/2018	0950	D. Kimbrow	<0.100	EPA 365.4	12/28/2018	H. Knowles (ERA)	12.0	7.76

Site Number	Sample Date	Sample Time	Sample Collected By	Total Phosphorus (mg/L)	Analytical Method	Analysis Date	Analysis Performed By	Streamflow (cfs)	Stream-flow (MGD)
1S	3/14/2019	1400	D. Kimbrow	<0.100	EPA 365.4	3/24/2018	J. Andrews (ERA)	97.7	63.1
4S	3/14/2019	1025	D. Kimbrow	<0.100	EPA 365.4	3/24/2018	J. Andrews (ERA)	97.7	63.1
5S	3/14/2019	0950	D. Kimbrow	<0.100	EPA 365.4	3/24/2018	J. Andrews (ERA)	3.55	2.29
19S	3/14/2019	1135	D. Kimbrow	<0.100	EPA 365.4	3/24/2018	J. Andrews (ERA)	97.7	63.1
20S	3/14/2019	1105	D. Kimbrow	<0.100	EPA 365.4	3/24/2018	J. Andrews (ERA)	5.38	3.48
21S	3/14/2019	1300	D. Kimbrow	<0.100	EPA 365.4	3/24/2018	J. Andrews (ERA)	8.27	5.35
Site Number	Sample Date	Sample Time	Sample Collected By	Water Temperature (F)	Analytical Method	Analysis Date	Analysis Performed By	Streamflow (cfs)	Stream-flow (MGD)
1S	6/7/2018	1605	D. Kimbrow	77.1	YSI 5560	6/7/2018	D. Kimbrow	49.3	31.9
4S	6/7/2018	1145	D. Kimbrow	74.1	YSI 5560	6/7/2018	D. Kimbrow	49.3	31.9
5S	6/7/2018	1200	D. Kimbrow	72.3	YSI 5560	6/7/2018	D. Kimbrow	1.12	0.72
19S	6/7/2018	1455	D. Kimbrow	76.4	YSI 5560	6/7/2018	D. Kimbrow	49.3	31.9
20S	6/7/2018	1450	D. Kimbrow	75.8	YSI 5560	6/7/2018	D. Kimbrow	3.31	2.14
21S	6/7/2018	1045	D. Kimbrow	70.1	YSI 5560	6/7/2018	D. Kimbrow	5.0	3.23
Site Number	Sample Date	Sample Time	Sample Collected By	Water Temperature (F)	Analytical Method	Analysis Date	Analysis Performed By	Streamflow (cfs)	Stream-flow (MGD)
1S	9/20/2018	1425	D. Kimbrow	80.7	YSI 5560	9/20/2018	D. Kimbrow	15.2	9.8
4S	9/20/2018	1015	D. Kimbrow	75.3	YSI 5560	9/20/2018	D. Kimbrow	12.8	8.3
5S	9/20/2018	0940	D. Kimbrow	72.1	YSI 5560	9/20/2018	D. Kimbrow	0.22	0.14
19S	9/20/2018	1310	D. Kimbrow	78.8	YSI 5560	9/20/2018	D. Kimbrow	13.4	8.66
20S	9/20/2018	1305	D. Kimbrow	76.0	YSI 5560	9/20/2018	D. Kimbrow	1.14	0.7
21S	9/20/2018	1050	D. Kimbrow	71.9	YSI 5560	9/20/2018	D. Kimbrow	0.38	0.25
Site Number	Sample Date	Sample Time	Sample Collected By	Water Temperature (F)	Analytical Method	Analysis Date	Analysis Performed By	Streamflow (cfs)	Stream-flow (MGD)
1S	12/13/2018	1355	D. Kimbrow	51.2	YSI 5560	12/13/2018	D. Kimbrow	151	98
4S	12/13/2018	1505	D. Kimbrow	50.0	YSI 5560	12/13/2018	D. Kimbrow	151	98
5S	12/13/2018	1430	D. Kimbrow	50.9	YSI 5560	12/13/2018	D. Kimbrow	3.81	2.46
19S	12/13/2018	1140	D. Kimbrow	49.1	YSI 5560	12/13/2018	D. Kimbrow	151	98
20S	12/13/2018	1110	D. Kimbrow	49.1	YSI 5560	12/13/2018	D. Kimbrow	5.53	3.57
21S	12/13/2018	0950	D. Kimbrow	46.1	YSI 5560	12/13/2018	D. Kimbrow	12.0	7.76
Site Number	Sample Date	Sample Time	Sample Collected By	Water Temperature (F)	Analytical Method	Analysis Date	Analysis Performed By	Streamflow (cfs)	Stream-flow (MGD)
1S	3/14/2019	1400	D. Kimbrow	64.3	YSI 5560	3/14/2019	D. Kimbrow	97.7	63.1
4S	3/14/2019	1025	D. Kimbrow	61.3	YSI 5560	3/14/2019	D. Kimbrow	97.7	63.1
5S	3/14/2019	0950	D. Kimbrow	61.4	YSI 5560	3/14/2019	D. Kimbrow	3.55	2.29
19S	3/14/2019	1135	D. Kimbrow	61.7	YSI 5560	3/14/2019	D. Kimbrow	97.7	63.1
20S	3/14/2019	1105	D. Kimbrow	62.0	YSI 5560	3/14/2019	D. Kimbrow	5.38	3.48
21S	3/14/2019	1300	D. Kimbrow	64.0	YSI 5560	3/14/2019	D. Kimbrow	8.27	5.35

Site Number	Sample Date	Sample Time	Sample Collected By	pH	Analytical Method	Analysis Date	Analysis Performed By	Streamflow (cfs)	Stream-flow (MGD)
1S	6/7/2018	1605	D. Kimbrow	7.54	YSI 1001	6/7/2018	D. Kimbrow	49.3	31.9
4S	6/7/2018	1145	D. Kimbrow	7.22	YSI 1001	6/7/2018	D. Kimbrow	49.3	31.9
5S	6/7/2018	1200	D. Kimbrow	7.03	YSI 1001	6/7/2018	D. Kimbrow	1.12	0.72
19S	6/7/2018	1455	D. Kimbrow	7.14	YSI 1001	6/7/2018	D. Kimbrow	49.3	31.9
20S	6/7/2018	1450	D. Kimbrow	7.16	YSI 1001	6/7/2018	D. Kimbrow	3.31	2.14
21S	6/7/2018	1045	D. Kimbrow	7.10	YSI 1001	6/7/2018	D. Kimbrow	5.0	3.23
Site Number	Sample Date	Sample Time	Sample Collected By	pH	Analytical Method	Analysis Date	Analysis Performed By	Streamflow (cfs)	Stream-flow (MGD)
1S	9/20/2018	1425	D. Kimbrow	7.54	YSI 1001	9/20/2018	D. Kimbrow	15.2	9.8
4S	9/20/2018	1015	D. Kimbrow	7.28	YSI 1001	9/20/2018	D. Kimbrow	12.8	8.3
5S	9/20/2018	0940	D. Kimbrow	7.20	YSI 1001	9/20/2018	D. Kimbrow	0.22	0.14
19S	9/20/2018	1310	D. Kimbrow	7.26	YSI 1001	9/20/2018	D. Kimbrow	13.4	8.66
20S	9/20/2018	1305	D. Kimbrow	7.25	YSI 1001	9/20/2018	D. Kimbrow	1.14	0.7
21S	9/20/2018	1050	D. Kimbrow	7.06	YSI 1001	9/20/2018	D. Kimbrow	0.38	0.25
Site Number	Sample Date	Sample Time	Sample Collected By	pH	Analytical Method	Analysis Date	Analysis Performed By	Streamflow (cfs)	Stream-flow (MGD)
1S	12/13/2018	1355	D. Kimbrow	7.41	YSI 1001	12/13/2018	D. Kimbrow	151	98
4S	12/13/2018	1505	D. Kimbrow	7.18	YSI 1001	12/13/2018	D. Kimbrow	151	98
5S	12/13/2018	1430	D. Kimbrow	7.04	YSI 1001	12/13/2018	D. Kimbrow	3.81	2.46
19S	12/13/2018	1140	D. Kimbrow	7.16	YSI 1001	12/13/2018	D. Kimbrow	151	98
20S	12/13/2018	1110	D. Kimbrow	7.16	YSI 1001	12/13/2018	D. Kimbrow	5.53	3.57
21S	12/13/2018	0950	D. Kimbrow	6.98	YSI 1001	12/13/2018	D. Kimbrow	12.0	7.76
Site Number	Sample Date	Sample Time	Sample Collected By	pH	Analytical Method	Analysis Date	Analysis Performed By	Streamflow (cfs)	Stream-flow (MGD)
1S	3/14/2019	1400	D. Kimbrow	7.62	YSI 1001	3/14/2019	D. Kimbrow	97.7	63.1
4S	3/14/2019	1025	D. Kimbrow	7.30	YSI 1001	3/14/2019	D. Kimbrow	97.7	63.1
5S	3/14/2019	0950	D. Kimbrow	7.18	YSI 1001	3/14/2019	D. Kimbrow	3.55	2.29
19S	3/14/2019	1135	D. Kimbrow	7.32	YSI 1001	3/14/2019	D. Kimbrow	97.7	63.1
20S	3/14/2019	1105	D. Kimbrow	7.33	YSI 1001	3/14/2019	D. Kimbrow	5.38	3.48
21S	3/14/2019	1300	D. Kimbrow	7.24	YSI 1001	3/14/2019	D. Kimbrow	8.27	5.35
Site Number	Sample Date	Sample Time	Sample Collected By	Dissolved Oxygen (mg/L)	Analytical Method	Analysis Date	Analysis Performed By	Streamflow (cfs)	Stream-flow (MGD)
1S	6/7/2018	1605	D. Kimbrow	8.00	YSI 2003 polarographic	6/7/2018	D. Kimbrow	49.3	31.9
4S	6/7/2018	1145	D. Kimbrow	7.51	YSI 2003 polarographic	6/7/2018	D. Kimbrow	49.3	31.9
5S	6/7/2018	1200	D. Kimbrow	6.94	YSI 2003 polarographic	6/7/2018	D. Kimbrow	1.12	0.72
19S	6/7/2018	1455	D. Kimbrow	7.21	YSI 2003 polarographic	6/7/2018	D. Kimbrow	49.3	31.9
20S	6/7/2018	1450	D. Kimbrow	7.52	YSI 2003 polarographic	6/7/2018	D. Kimbrow	3.31	2.14
21S	6/7/2018	1045	D. Kimbrow	8.37	YSI 2003 polarographic	6/7/2018	D. Kimbrow	5.0	3.23

Site Number	Sample Date	Sample Time	Sample Collected By	Dissolved Oxygen (mg/L)	Analytical Method	Analysis Date	Analysis Performed By	Streamflow (cfs)	Stream-flow (MGD)
1S	9/20/2018	1425	D. Kimbrow	6.97	YSI 2003 polarographic	9/20/2018	D. Kimbrow	15.2	9.8
4S	9/20/2018	1015	D. Kimbrow	7.02	YSI 2003 polarographic	9/20/2018	D. Kimbrow	12.8	8.3
5S	9/20/2018	0940	D. Kimbrow	5.95	YSI 2003 polarographic	9/20/2018	D. Kimbrow	0.22	0.14
19S	9/20/2018	1310	D. Kimbrow	6.38	YSI 2003 polarographic	9/20/2018	D. Kimbrow	13.4	8.66
20S	9/20/2018	1305	D. Kimbrow	6.41	YSI 2003 polarographic	9/20/2018	D. Kimbrow	1.14	0.7
21S	9/20/2018	1050	D. Kimbrow	7.66	YSI 2003 polarographic	9/20/2018	D. Kimbrow	0.38	0.25
Site Number	Sample Date	Sample Time	Sample Collected By	Dissolved Oxygen (mg/L)	Analytical Method	Analysis Date	Analysis Performed By	Streamflow (cfs)	Stream-flow (MGD)
1S	12/13/2018	1355	D. Kimbrow	11.84	YSI 2003 polarographic	12/13/2018	D. Kimbrow	151	98
4S	12/13/2018	1505	D. Kimbrow	10.94	YSI 2003 polarographic	12/13/2018	D. Kimbrow	151	98
5S	12/13/2018	1430	D. Kimbrow	10.37	YSI 2003 polarographic	12/13/2018	D. Kimbrow	3.81	2.46
19S	12/13/2018	1140	D. Kimbrow	10.96	YSI 2003 polarographic	12/13/2018	D. Kimbrow	151	98
20S	12/13/2018	1110	D. Kimbrow	11.06	YSI 2003 polarographic	12/13/2018	D. Kimbrow	5.53	3.57
21S	12/13/2018	0950	D. Kimbrow	12.44	YSI 2003 polarographic	12/13/2018	D. Kimbrow	12.0	7.76
Site Number	Sample Date	Sample Time	Sample Collected By	Dissolved Oxygen (mg/L)	Analytical Method	Analysis Date	Analysis Performed By	Streamflow (cfs)	Stream-flow (MGD)
1S	3/14/2019	1400	D. Kimbrow	10.40	YSI 2003 polarographic	3/14/2019	D. Kimbrow	97.7	63.1
4S	3/14/2019	1025	D. Kimbrow	9.03	YSI 2003 polarographic	3/14/2019	D. Kimbrow	97.7	63.1
5S	3/14/2019	0950	D. Kimbrow	9.12	YSI 2003 polarographic	3/14/2019	D. Kimbrow	3.55	2.29
19S	3/14/2019	1135	D. Kimbrow	9.60	YSI 2003 polarographic	3/14/2019	D. Kimbrow	97.7	63.1
20S	3/14/2019	1105	D. Kimbrow	9.18	YSI 2003 polarographic	3/14/2019	D. Kimbrow	5.38	3.48
21S	3/14/2019	1300	D. Kimbrow	10.14	YSI 2003 polarographic	3/14/2019	D. Kimbrow	8.27	5.35
Site Number	Sample Date	Sample Time	Sample Collected By	Specific Conductance (uS/cm)	Analytical Method	Analysis Date	Analysis Performed By	Streamflow (cfs)	Stream-flow (MGD)
1S	6/7/2018	1605	D. Kimbrow	129	YSI 5560	6/7/2018	D. Kimbrow	49.3	31.9
4S	6/7/2018	1145	D. Kimbrow	124	YSI 5560	6/7/2018	D. Kimbrow	49.3	31.9
5S	6/7/2018	1200	D. Kimbrow	97	YSI 5560	6/7/2018	D. Kimbrow	1.12	0.72
19S	6/7/2018	1455	D. Kimbrow	124	YSI 5560	6/7/2018	D. Kimbrow	49.3	31.9
20S	6/7/2018	1450	D. Kimbrow	123	YSI 5560	6/7/2018	D. Kimbrow	3.31	2.14
21S	6/7/2018	1045	D. Kimbrow	66	YSI 5560	6/7/2018	D. Kimbrow	5.0	3.23

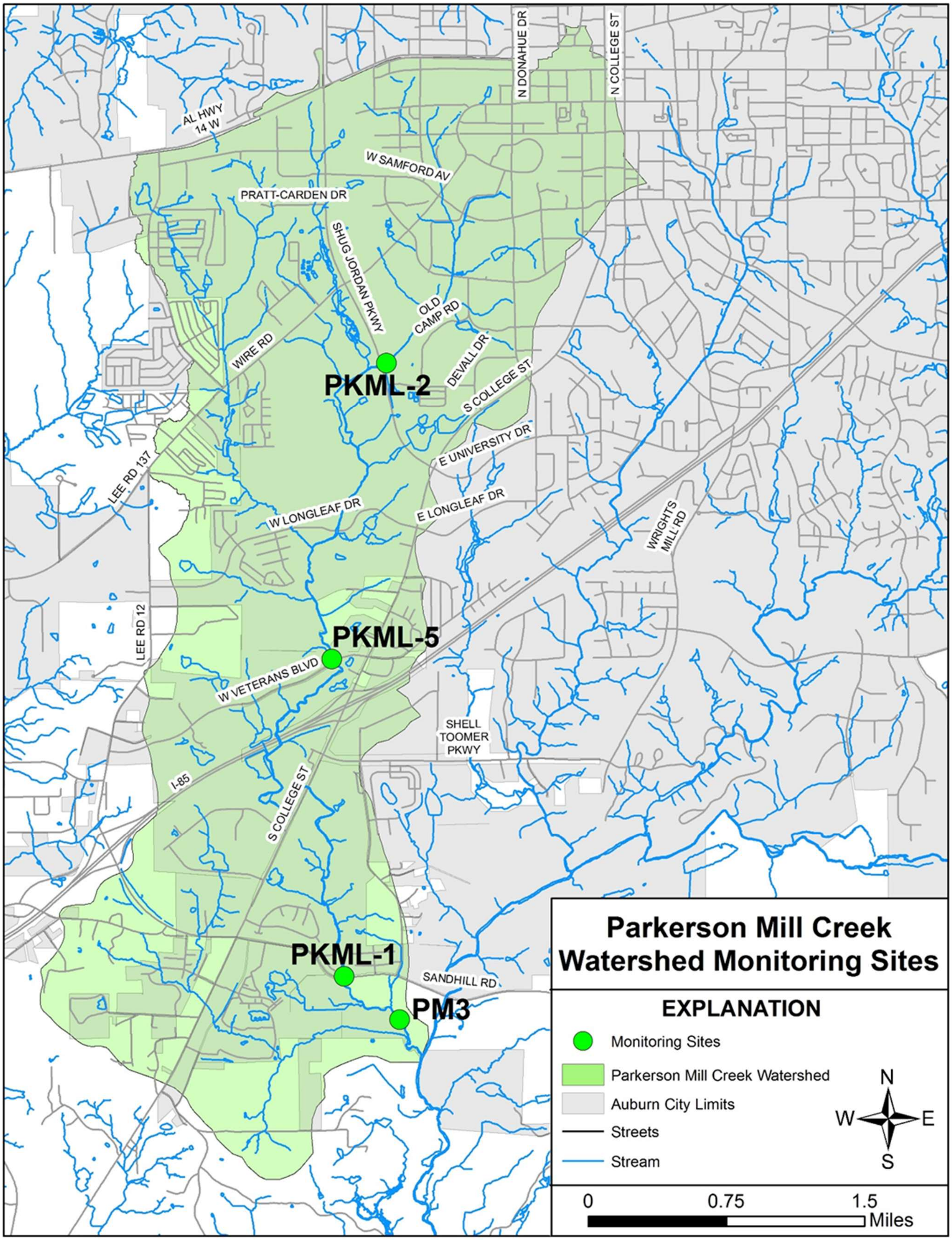
Site Number	Sample Date	Sample Time	Sample Collected By	Specific Conductance (uS/cm)	Analytical Method	Analysis Date	Analysis Performed By	Streamflow (cfs)	Stream-flow (MGD)
1S	9/20/2018	1425	D. Kimbrow	229	YSI 5560	9/20/2018	D. Kimbrow	15.2	9.8
4S	9/20/2018	1015	D. Kimbrow	157	YSI 5560	9/20/2018	D. Kimbrow	12.8	8.3
5S	9/20/2018	0940	D. Kimbrow	142	YSI 5560	9/20/2018	D. Kimbrow	0.22	0.14
19S	9/20/2018	1310	D. Kimbrow	153	YSI 5560	9/20/2018	D. Kimbrow	13.4	8.66
20S	9/20/2018	1305	D. Kimbrow	133	YSI 5560	9/20/2018	D. Kimbrow	1.14	0.7
21S	9/20/2018	1050	D. Kimbrow	61	YSI 5560	9/20/2018	D. Kimbrow	0.38	0.25
Site Number	Sample Date	Sample Time	Sample Collected By	Specific Conductance (uS/cm)	Analytical Method	Analysis Date	Analysis Performed By	Streamflow (cfs)	Stream-flow (MGD)
1S	12/13/2018	1355	D. Kimbrow	96	YSI 5560	12/13/2018	D. Kimbrow	151	98
4S	12/13/2018	1505	D. Kimbrow	98	YSI 5560	12/13/2018	D. Kimbrow	151	98
5S	12/13/2018	1430	D. Kimbrow	76	YSI 5560	12/13/2018	D. Kimbrow	3.81	2.46
19S	12/13/2018	1140	D. Kimbrow	97	YSI 5560	12/13/2018	D. Kimbrow	151	98
20S	12/13/2018	1110	D. Kimbrow	111	YSI 5560	12/13/2018	D. Kimbrow	5.53	3.57
21S	12/13/2018	0950	D. Kimbrow	59	YSI 5560	12/13/2018	D. Kimbrow	12.0	7.76
Site Number	Sample Date	Sample Time	Sample Collected By	Specific Conductance (uS/cm)	Analytical Method	Analysis Date	Analysis Performed By	Streamflow (cfs)	Stream-flow (MGD)
1S	3/14/2019	1400	D. Kimbrow	97.5	YSI 5560	3/14/2019	D. Kimbrow	97.7	63.1
4S	3/14/2019	1025	D. Kimbrow	99.5	YSI 5560	3/14/2019	D. Kimbrow	97.7	63.1
5S	3/14/2019	0950	D. Kimbrow	76.4	YSI 5560	3/14/2019	D. Kimbrow	3.55	2.29
19S	3/14/2019	1135	D. Kimbrow	94.1	YSI 5560	3/14/2019	D. Kimbrow	97.7	63.1
20S	3/14/2019	1105	D. Kimbrow	117.4	YSI 5560	3/14/2019	D. Kimbrow	5.38	3.48
21S	3/14/2019	1300	D. Kimbrow	58.1	YSI 5560	3/14/2019	D. Kimbrow	8.27	5.35
Site Number	Sample Date	Sample Time	Sample Collected By	Turbidity (NTU)	Analytical Method	Analysis Date	Analysis Performed By	Streamflow (cfs)	Stream-flow (MGD)
1S	6/7/2018	1605	D. Kimbrow	5.82	SM 2130 B	6/7/2018	D. Kimbrow	49.3	31.9
4S	6/7/2018	1145	D. Kimbrow	9.73	SM 2130 B	6/7/2018	D. Kimbrow	49.3	31.9
5S	6/7/2018	1200	D. Kimbrow	9.72	SM 2130 B	6/7/2018	D. Kimbrow	1.12	0.72
19S	6/7/2018	1455	D. Kimbrow	9.49	SM 2130 B	6/7/2018	D. Kimbrow	49.3	31.9
20S	6/7/2018	1450	D. Kimbrow	6.39	SM 2130 B	6/7/2018	D. Kimbrow	3.31	2.14
21S	6/7/2018	1045	D. Kimbrow	12.7	SM 2130 B	6/7/2018	D. Kimbrow	5.0	3.23
Site Number	Sample Date	Sample Time	Sample Collected By	Turbidity (NTU)	Analytical Method	Analysis Date	Analysis Performed By	Streamflow (cfs)	Stream-flow (MGD)
1S	9/20/2018	1425	D. Kimbrow	19.2	SM 2130 B	9/20/2018	D. Kimbrow	15.2	9.8
4S	9/20/2018	1015	D. Kimbrow	7.42	SM 2130 B	9/20/2018	D. Kimbrow	12.8	8.3
5S	9/20/2018	0940	D. Kimbrow	11.2	SM 2130 B	9/20/2018	D. Kimbrow	0.22	0.14
19S	9/20/2018	1310	D. Kimbrow	12.3	SM 2130 B	9/20/2018	D. Kimbrow	13.4	8.66
20S	9/20/2018	1305	D. Kimbrow	4.55	SM 2130 B	9/20/2018	D. Kimbrow	1.14	0.7
21S	9/20/2018	1050	D. Kimbrow	11.7	SM 2130 B	9/20/2018	D. Kimbrow	0.38	0.25
Site Number	Sample Date	Sample Time	Sample Collected By	Turbidity (NTU)	Analytical Method	Analysis Date	Analysis Performed By	Streamflow (cfs)	Stream-flow (MGD)
1S	12/13/2018	1355	D. Kimbrow	9.2	SM 2130 B	12/13/2018	D. Kimbrow	151	98
4S	12/13/2018	1505	D. Kimbrow	12.0	SM 2130 B	12/13/2018	D. Kimbrow	151	98
5S	12/13/2018	1430	D. Kimbrow	10.4	SM 2130 B	12/13/2018	D. Kimbrow	3.81	2.46
19S	12/13/2018	1140	D. Kimbrow	10.4	SM 2130 B	12/13/2018	D. Kimbrow	151	98
20S	12/13/2018	1110	D. Kimbrow	16.3	SM 2130 B	12/13/2018	D. Kimbrow	5.53	3.57
21S	12/13/2018	0950	D. Kimbrow	12.1	SM 2130 B	12/13/2018	D. Kimbrow	12.0	7.76

Site Number	Sample Date	Sample Time	Sample Collected By	Turbidity (NTU)	Analytical Method	Analysis Date	Analysis Performed By	Streamflow (cfs)	Stream-flow (MGD)
1S	3/14/2019	1400	D. Kimbrow	6.37	SM 2130 B	3/14/2019	D. Kimbrow	97.7	63.1
4S	3/14/2019	1025	D. Kimbrow	9.61	SM 2130 B	3/14/2019	D. Kimbrow	97.7	63.1
5S	3/14/2019	0950	D. Kimbrow	7.54	SM 2130 B	3/14/2019	D. Kimbrow	3.55	2.29
19S	3/14/2019	1135	D. Kimbrow	9.84	SM 2130 B	3/14/2019	D. Kimbrow	97.7	63.1
20S	3/14/2019	1105	D. Kimbrow	4.84	SM 2130 B	3/14/2019	D. Kimbrow	5.38	3.48
21S	3/14/2019	1300	D. Kimbrow	9.11	SM 2130 B	3/14/2019	D. Kimbrow	8.27	5.35

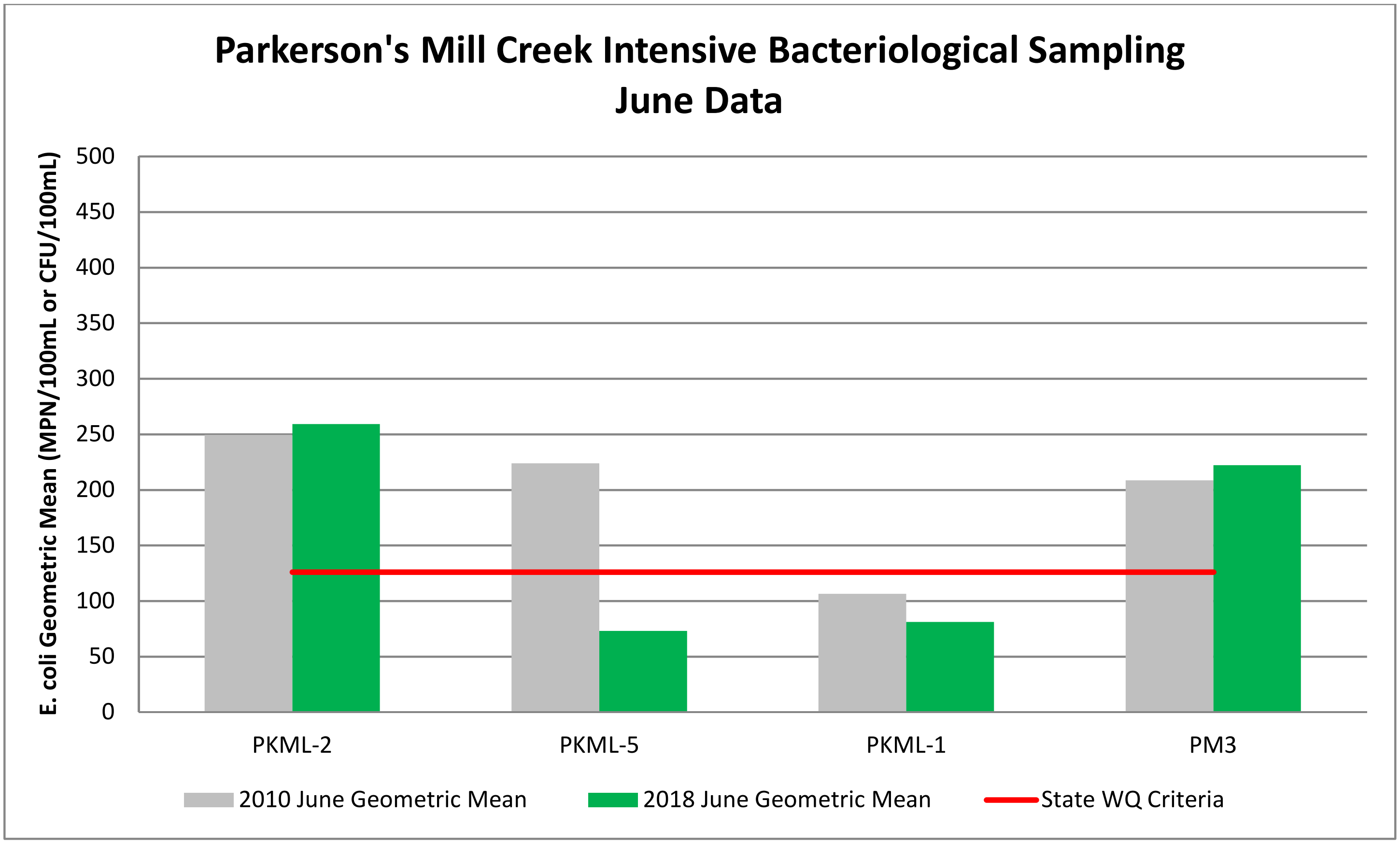
2.5 Parkerson's Mill Creek Compliance Monitoring Data

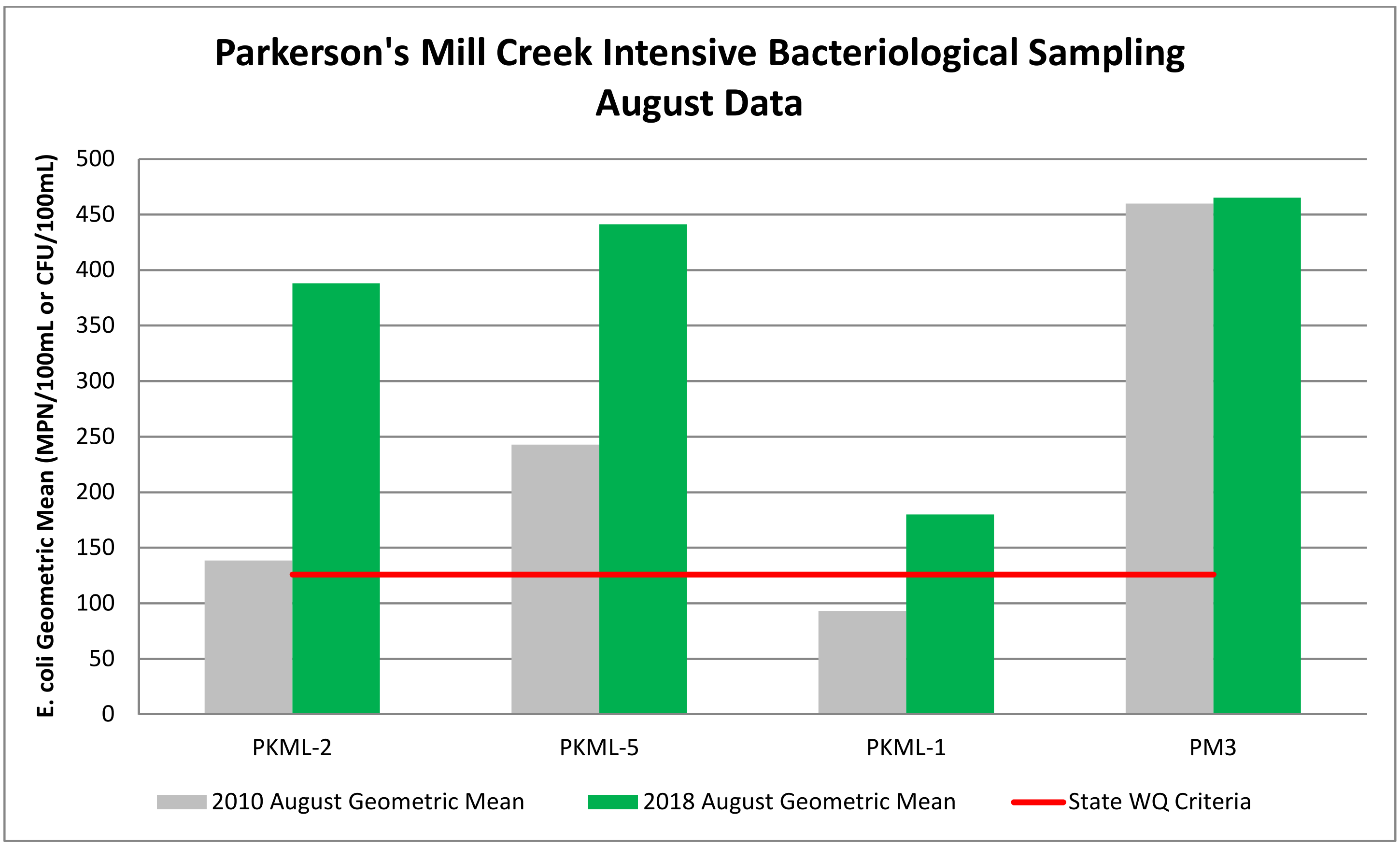
Parkerson's Mill Creek was placed on the ADEM 303(d) list of impaired waterbodies for pathogens in 2008. The impaired reach is 6.85 mi. long and includes all waters from its source (near the intersection of N. College St. and Glenn Ave. in downtown Auburn) to its confluence with Chewacla Creek. Potential sources of the impairment were listed as sanitary sewer overflows and urban runoff. The final Parkerson's Mill Creek TMDL was issued in September 2011, identifying E.coli as the pollutant of concern. The Parkerson's Mill Creek TMDL establishes the E. coli limits in stormwater at 3.42E+09 colonies/day, also expressed as a 61% reduction in non-point sources. This TMDL was established using the geometric mean criterion of 126 CFU/100mL.

The City makes all reasonable efforts to monitor E. coli concentrations in Parkerson's Mill Creek through annual intensive E. coli sampling. The intensive E. coli sampling provides sufficient data to evaluate the success of efforts to reduce pathogens in stormwater and meet TMDL concentrations. The intensive sampling is conducted in the same manner as the study performed by ADEM in 2010 at the same four (4) reference sites. Single samples are collected for E. coli once per month for April, May, July, September, October, and November. Weekly samples are collected at those sites during June and August. The 5-week geometric mean E. coli concentrations are calculated based on the results of the weekly sampling. The City makes a reasonable effort to measure streamflow in-situ (recorded in cfs and MGD) at each sample site after water samples are collected when flow conditions permit. Water temperature, pH, dissolved oxygen, specific conductance, and turbidity are also measured in-situ at each site. Additionally, the City continues to reasonably support and participate in studies of water quality in the Parkerson's Mill Creek watershed. Sample sites for monitoring in the Parkerson's Mill Creek watershed are shown in the map below. Monitoring results are shown in the following charts and tables.



Parkerson Mill Creek Watershed Monitoring Sites


Parkerson's Mill Creek Intensive Bacteriological Sampling
June Data
E. coli Geometric Mean (MPN/100mL or CFU/100mL)
500
450
400
350
300
250
200
150
100
50
0
PKML-2
PKML-5
PKML-1
PM3
2010 June Geometric Mean
2018 June Geometric Mean
State WQ Criteria


Parkerson's Mill Creek Intensive Bacteriological Sampling
August Data
E. coli Geometric Mean (MPN/100mL or CFU/100mL)
500
450
400
350
300
250
200
150
100
50
0
PKML-2
PKML-5
PKML-1
PM3
2010 August Geometric Mean
2018 August Geometric Mean
State WQ Criteria

Parkerson Mill Creek Watershed Monitoring Data

Site Number	Site Location	Site Coordinates
PKML-1	Parkerson's Mill Creek at Sand Hill Rd	32.53744 N, 85.50601 W
PKML-2	Parkerson's Mill Creek at Shug Jordan Pkwy	32.58551 N, 85.50249 W
PKML-5	Parkerson's Mill Creek at W. Veterans Blvd	32.56243 N, 85.50716 W
PM-3	Parkerson's Mill Creek below HC Morgan WPCF	32.53427 N, 85.50156 W

Site Number	Sample Date	Sample Time	Sample Collected By	E. coli (cfu/100mL)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	4/25/2018	1030	D. Ballard D. Kimbrow	0	Alabama Water Watch (Coliscan Easygel)	4/26/2018	D. Kimbrow	3.89	2.51
PKML-2	4/25/2018	1430	D. Ballard D. Kimbrow	50	Alabama Water Watch (Coliscan Easygel)	4/26/2018	D. Kimbrow	0.8	0.52
PKML-5	4/25/2018	1327	D. Ballard D. Kimbrow	0	Alabama Water Watch (Coliscan Easygel)	4/26/2018	D. Kimbrow	2.76	1.78
PM-3	4/25/2018	0930	D. Ballard D. Kimbrow	50	Alabama Water Watch (Coliscan Easygel)	4/26/2018	D. Kimbrow	15.2	9.82
Site Number	Sample Date	Sample Time	Sample Collected By	E. coli (cfu/100mL)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	5/31/2018	1025	D. Ballard D. Kimbrow	100	Alabama Water Watch (Coliscan Easygel)	6/1/2018	D. Kimbrow	12.1	7.8
PKML-2	5/31/2018	1348	D. Ballard D. Kimbrow	200	Alabama Water Watch (Coliscan Easygel)	6/1/2018	D. Kimbrow	2.93	1.89
PKML-5	5/31/2018	1122	D. Ballard D. Kimbrow	50	Alabama Water Watch (Coliscan Easygel)	6/1/2018	D. Kimbrow	8.94	5.78
PM-3	5/31/2018	0940	D. Ballard D. Kimbrow	0	Alabama Water Watch (Coliscan Easygel)	6/1/2018	D. Kimbrow	28.7	18.6
Site Number	Sample Date	Sample Time	Sample Collected By	E. coli (cfu/100mL)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	6/6/2018	1025	D. Kimbrow	0	Alabama Water Watch (Coliscan Easygel)	6/8/2018	D. Kimbrow	3.87	2.5
PKML-2	6/6/2018	1345	D. Kimbrow	300	Alabama Water Watch (Coliscan Easygel)	6/8/2018	D. Kimbrow	0.88	0.57
PKML-5	6/6/2018	1120	D. Kimbrow	0	Alabama Water Watch (Coliscan Easygel)	6/8/2018	D. Kimbrow	2.36	1.53
PM-3	6/6/2018	0930	D. Kimbrow	200	Alabama Water Watch (Coliscan Easygel)	6/8/2018	D. Kimbrow	11.94	7.72

Site Number	Sample Date	Sample Time	Sample Collected By	E. coli (cfu/100mL)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	6/12/2018	1003	D. Ballard D. Kimbrow	150	Alabama Water Watch (Coliscan Easygel)	6/14/2018	D. Kimbrow	4.22	2.73
PKML-2	6/12/2018	1115	D. Ballard D. Kimbrow	100	Alabama Water Watch (Coliscan Easygel)	6/14/2018	D. Kimbrow	0.75	0.48
PKML-5	6/12/2018	1045	D. Ballard D. Kimbrow	100	Alabama Water Watch (Coliscan Easygel)	6/14/2018	D. Kimbrow	2.71	1.75
PM-3	6/12/2018	0920	D. Ballard D. Kimbrow	150	Alabama Water Watch (Coliscan Easygel)	6/14/2018	D. Kimbrow	12.3	7.95
Site Number	Sample Date	Sample Time	Sample Collected By	E. coli (cfu/100mL)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	6/19/2018	1045	D. Kimbrow	450	Alabama Water Watch (Coliscan Easygel)	6/21/2018	D. Kimbrow	6.81	4.40
PKML-2	6/19/2018	1430	D. Kimbrow	300	Alabama Water Watch (Coliscan Easygel)	6/21/2018	D. Kimbrow	1.3	0.84
PKML-5	6/19/2018	1345	D. Kimbrow	400	Alabama Water Watch (Coliscan Easygel)	6/21/2018	D. Kimbrow	4.97	3.21
PM-3	6/19/2018	0950	D. Kimbrow	300	Alabama Water Watch (Coliscan Easygel)	6/21/2018	D. Kimbrow	21.3	13.8
Site Number	Sample Date	Sample Time	Sample Collected By	E. coli (cfu/100mL)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	6/27/2018	1615	D. Kimbrow	150	Alabama Water Watch (Coliscan Easygel)	6/29/2018	D. Kimbrow	4.86	3.14
PKML-2	6/27/2018	1420	D. Kimbrow	no sample	Alabama Water Watch (Coliscan Easygel)	6/29/2018	D. Kimbrow	0.94	0.61
PKML-5	6/27/2018	1335	D. Kimbrow	150	Alabama Water Watch (Coliscan Easygel)	6/29/2018	D. Kimbrow	3.31	2.14
PM-3	6/27/2018	1100	D. Kimbrow	200	Alabama Water Watch (Coliscan Easygel)	6/29/2018	D. Kimbrow	20.1	13.0
Site Number	Sample Date	Sample Time	Sample Collected By	E. coli (cfu/100mL)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	7/3/2018	1135	D. Kimbrow	350	Alabama Water Watch (Coliscan Easygel)	7/5/2018	D. Kimbrow	6.02	3.89
PKML-2	7/3/2018	1400	D. Kimbrow	500	Alabama Water Watch (Coliscan Easygel)	7/5/2018	D. Kimbrow	1.0	0.65
PKML-5	7/3/2018	1255	D. Kimbrow	350	Alabama Water Watch (Coliscan Easygel)	7/5/2018	D. Kimbrow	3.6	2.33
PM-3	7/3/2018	0925	D. Kimbrow	300	Alabama Water Watch (Coliscan Easygel)	7/5/2018	D. Kimbrow	15.3	9.89

Site Number	Sample Date	Sample Time	Sample Collected By	E. coli (cfu/100mL)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	7/24/2018	1000	D. Kimbrow	200	Alabama Water Watch (Coliscan Easygel)	7/26/2018	D. Kimbrow	meter error	meter error
PKML-2	7/24/2018	1125	D. Kimbrow	800	Alabama Water Watch (Coliscan Easygel)	7/26/2018	D. Kimbrow	meter error	meter error
PKML-5	7/24/2018	1020	D. Kimbrow	50	Alabama Water Watch (Coliscan Easygel)	7/26/2018	D. Kimbrow	meter error	meter error
PM-3	7/24/2018	0935	D. Kimbrow	300	Alabama Water Watch (Coliscan Easygel)	7/26/2018	D. Kimbrow	meter error	meter error
Site Number	Sample Date	Sample Time	Sample Collected By	E. coli (cfu/100mL)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/2/2018	1045	D. Kimbrow D. Ballard	2550	Alabama Water Watch (Coliscan Easygel)	8/3/2018	D. Kimbrow	meter error	meter error
PKML-2	8/2/2018	1135	D. Kimbrow D. Ballard	3150	Alabama Water Watch (Coliscan Easygel)	8/3/2018	D. Kimbrow	meter error	meter error
PKML-5	8/2/2018	1115	D. Kimbrow D. Ballard	3550	Alabama Water Watch (Coliscan Easygel)	8/3/2018	D. Kimbrow	meter error	meter error
PM-3	8/2/2018	1030	D. Kimbrow D. Ballard	1150	Alabama Water Watch (Coliscan Easygel)	8/3/2018	D. Kimbrow	meter error	meter error
Site Number	Sample Date	Sample Time	Sample Collected By	E. coli (cfu/100mL)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/8/2018	1140	D. Kimbrow	50	Alabama Water Watch (Coliscan Easygel)	8/10/2018	D. Kimbrow	2.37	1.53
PKML-2	8/8/2018	1415	D. Kimbrow	200	Alabama Water Watch (Coliscan Easygel)	8/10/2018	D. Kimbrow	0.61	0.39
PKML-5	8/8/2018	1320	D. Kimbrow	600	Alabama Water Watch (Coliscan Easygel)	8/10/2018	D. Kimbrow	1.54	1.00
PM-3	8/8/2018	0950	D. Kimbrow	200	Alabama Water Watch (Coliscan Easygel)	8/10/2018	D. Kimbrow	10.96	7.08
Site Number	Sample Date	Sample Time	Sample Collected By	E. coli (cfu/100mL)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/16/2018	1053	D. Ballard D. Kimbrow	200	Alabama Water Watch (Coliscan Easygel)	8/17/2018	D. Kimbrow	3.49	2.26
PKML-2	8/16/2018	1340	D. Kimbrow E. Bankston	350	Alabama Water Watch (Coliscan Easygel)	8/17/2018	D. Kimbrow	0.59	0.38
PKML-5	8/16/2018	1250	D. Ballard D. Kimbrow	350	Alabama Water Watch (Coliscan Easygel)	8/17/2018	D. Kimbrow	2.27	1.47
PM-3	8/16/2018	0940	D. Ballard D. Kimbrow	200	Alabama Water Watch (Coliscan Easygel)	8/17/2018	D. Kimbrow	13.33	8.62

Site Number	Sample Date	Sample Time	Sample Collected By	E. coli (cfu/100mL)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/23/2018	1155	D. Kimbrow	150	Alabama Water Watch (Coliscan Easygel)	8/24/2018	D. Ballard	2.58	1.67
PKML-2	8/23/2018	1420	D. Kimbrow	400	Alabama Water Watch (Coliscan Easygel)	8/24/2018	D. Ballard	0.66	0.43
PKML-5	8/23/2018	1325	D. Kimbrow	150	Alabama Water Watch (Coliscan Easygel)	8/24/2018	D. Ballard	1.78	1.15
PM-3	8/23/2018	1015	D. Kimbrow	250	Alabama Water Watch (Coliscan Easygel)	8/24/2018	D. Ballard	17.58	11.36
Site Number	Sample Date	Sample Time	Sample Collected By	E. coli (cfu/100mL)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/28/2018	0935	D. Ballard	50	Alabama Water Watch (Coliscan Easygel)	8/29/2018	D. Ballard	1.11	0.72
PKML-2	8/28/2018	1035	D. Ballard	100	Alabama Water Watch (Coliscan Easygel)	8/29/2018	D. Ballard	0.63	0.41
PKML-5	8/28/2018	1009	D. Ballard	150	Alabama Water Watch (Coliscan Easygel)	8/29/2018	D. Ballard	1.11	0.72
PM-3	8/28/2018	0858	D. Ballard	1900	Alabama Water Watch (Coliscan Easygel)	8/29/2018	D. Ballard	8.11	5.24
Site Number	Sample Date	Sample Time	Sample Collected By	E. coli (cfu/100mL)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	9/18/2018	1035	D. Kimbrow	0	Alabama Water Watch (Coliscan Easygel)	9/20/2018	D. Kimbrow	1.0	0.65
PKML-2	9/18/2018	1350	D. Kimbrow	150	Alabama Water Watch (Coliscan Easygel)	9/20/2018	D. Kimbrow	0.45	0.29
PKML-5	9/18/2018	1245	D. Kimbrow	150	Alabama Water Watch (Coliscan Easygel)	9/20/2018	D. Kimbrow	0.86	0.56
PM-3	9/18/2018	0945	D. Kimbrow	250	Alabama Water Watch (Coliscan Easygel)	9/20/2018	D. Kimbrow	n/a	n/a
Site Number	Sample Date	Sample Time	Sample Collected By	E. coli (cfu/100mL)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	10/17/2018	1145	D. Kimbrow	1150	Alabama Water Watch (Coliscan Easygel)	10/18/2018	D. Kimbrow	9.73	6.29
PKML-2	10/17/2018	1445	D. Kimbrow	1750	Alabama Water Watch (Coliscan Easygel)	10/18/2018	D. Kimbrow	1.15	0.74
PKML-5	10/17/2018	1340	D. Kimbrow	5850	Alabama Water Watch (Coliscan Easygel)	10/18/2018	D. Kimbrow	4.43	2.86
PM-3	10/17/2018	1025	D. Kimbrow	1000	Alabama Water Watch (Coliscan Easygel)	10/18/2018	D. Kimbrow	23.95	15.48

Site Number	Sample Date	Sample Time	Sample Collected By	E. coli (cfu/100mL)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	11/26/2018	1315	D. Kimbrow	0	Alabama Water Watch (Coliscan Easygel)	11/28/2018	D. Kimbrow	5.97	3.86
PKML-2	11/26/2018	1445	D. Kimbrow	200	Alabama Water Watch (Coliscan Easygel)	11/28/2018	D. Kimbrow	1.33	0.86
PKML-5	11/26/2018	1425	D. Kimbrow	200	Alabama Water Watch (Coliscan Easygel)	11/28/2018	D. Kimbrow	4.95	3.20
PM-3	11/26/2018	1040	D. Kimbrow	100	Alabama Water Watch (Coliscan Easygel)	11/28/2018	D. Kimbrow	22.39	14.47
Site Number	Sample Date	Sample Time	Sample Collected By	Water Temperature (F)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	4/25/2018	1030	D. Ballard D. Kimbrow	62.9	YSI 5560	4/25/2018	D. Ballard D. Kimbrow	3.89	2.51
PKML-2	4/25/2018	1430	D. Ballard D. Kimbrow	62.2	YSI 5560	4/25/2018	D. Ballard D. Kimbrow	0.8	0.52
PKML-5	4/25/2018	1327	D. Ballard D. Kimbrow	64.0	YSI 5560	4/25/2018	D. Ballard D. Kimbrow	2.76	1.78
PM-3	4/25/2018	0930	D. Ballard D. Kimbrow	67.0	YSI 5560	4/25/2018	D. Ballard D. Kimbrow	15.2	9.82
Site Number	Sample Date	Sample Time	Sample Collected By	Water Temperature (F)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	5/31/2018	1025	D. Ballard D. Kimbrow	74.6	YSI 5560	5/31/2018	D. Ballard D. Kimbrow	12.1	7.8
PKML-2	5/31/2018	1348	D. Ballard D. Kimbrow	74.2	YSI 5560	5/31/2018	D. Ballard D. Kimbrow	2.93	1.89
PKML-5	5/31/2018	1122	D. Ballard D. Kimbrow	74.4	YSI 5560	5/31/2018	D. Ballard D. Kimbrow	8.94	5.78
PM-3	5/31/2018	0940	D. Ballard D. Kimbrow	73.9	YSI 5560	5/31/2018	D. Ballard D. Kimbrow	28.7	18.6
Site Number	Sample Date	Sample Time	Sample Collected By	Water Temperature (F)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	6/6/2018	1025	D. Kimbrow	72.6	YSI 5560	6/8/2018	D. Kimbrow	3.87	2.5
PKML-2	6/6/2018	1345	D. Kimbrow	72.4	YSI 5560	6/8/2018	D. Kimbrow	0.88	0.57
PKML-5	6/6/2018	1120	D. Kimbrow	72.2	YSI 5560	6/8/2018	D. Kimbrow	2.36	1.53
PM-3	6/6/2018	0930	D. Kimbrow	73.7	YSI 5560	6/8/2018	D. Kimbrow	11.94	7.72
Site Number	Sample Date	Sample Time	Sample Collected By	Water Temperature (F)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	6/12/2018	1003	D. Ballard D. Kimbrow	75.4	YSI 5560	6/12/2018	D. Ballard D. Kimbrow	4.22	2.73
PKML-2	6/12/2018	1115	D. Ballard D. Kimbrow	74.0	YSI 5560	6/12/2018	D. Ballard D. Kimbrow	0.75	0.48
PKML-5	6/12/2018	1045	D. Ballard D. Kimbrow	74.6	YSI 5560	6/12/2018	D. Ballard D. Kimbrow	2.71	1.75
PM-3	6/12/2018	0920	D. Ballard D. Kimbrow	75.4	YSI 5560	6/12/2018	D. Ballard D. Kimbrow	12.3	7.95

Site Number	Sample Date	Sample Time	Sample Collected By	Water Temperature (F)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	6/19/2018	1045	D. Kimbrow	78.0	YSI 5560	6/19/2018	D. Kimbrow	6.81	4.40
PKML-2	6/19/2018	1430	D. Kimbrow	77.9	YSI 5560	6/19/2018	D. Kimbrow	1.3	0.84
PKML-5	6/19/2018	1345	D. Kimbrow	80.4	YSI 5560	6/19/2018	D. Kimbrow	4.97	3.21
PM-3	6/19/2018	0950	D. Kimbrow	76.9	YSI 5560	6/19/2018	D. Kimbrow	21.3	13.8
Site Number	Sample Date	Sample Time	Sample Collected By	Water Temperature (F)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	6/27/2018	1615	D. Kimbrow	84.1	YSI 5560	6/27/2018	D. Kimbrow	4.86	3.14
PKML-2	6/27/2018	1420	D. Kimbrow	77.7	YSI 5560	6/27/2018	D. Kimbrow	0.94	0.61
PKML-5	6/27/2018	1335	D. Kimbrow	80.4	YSI 5560	6/27/2018	D. Kimbrow	3.31	2.14
PM-3	6/27/2018	1100	D. Kimbrow	78.4	YSI 5560	6/27/2018	D. Kimbrow	20.1	13.0
Site Number	Sample Date	Sample Time	Sample Collected By	Water Temperature (F)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	7/3/2018	1135	D. Kimbrow	79.4	YSI 5560	7/3/2018	D. Kimbrow	6.02	3.89
PKML-2	7/3/2018	1400	D. Kimbrow	78.5	YSI 5560	7/3/2018	D. Kimbrow	1.0	0.65
PKML-5	7/3/2018	1255	D. Kimbrow	80.3	YSI 5560	7/3/2018	D. Kimbrow	3.6	2.33
PM-3	7/3/2018	0925	D. Kimbrow	77.8	YSI 5560	7/3/2018	D. Kimbrow	15.3	9.89
Site Number	Sample Date	Sample Time	Sample Collected By	Water Temperature (F)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	7/24/2018	1000	D. Kimbrow	75.8	YSI 5560	7/24/2018	D. Kimbrow	meter error	meter error
PKML-2	7/24/2018	1125	D. Kimbrow	74.6	YSI 5560	7/24/2018	D. Kimbrow	meter error	meter error
PKML-5	7/24/2018	1020	D. Kimbrow	74.8	YSI 5560	7/24/2018	D. Kimbrow	meter error	meter error
PM-3	7/24/2018	0935	D. Kimbrow	77.5	YSI 5560	7/24/2018	D. Kimbrow	meter error	meter error
Site Number	Sample Date	Sample Time	Sample Collected By	Water Temperature (F)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/2/2018	1045	D. Kimbrow D. Ballard	75.7	YSI 5560	8/2/2018	D. Kimbrow D. Ballard	meter error	meter error
PKML-2	8/2/2018	1135	D. Kimbrow D. Ballard	76.0	YSI 5560	8/2/2018	D. Kimbrow D. Ballard	meter error	meter error
PKML-5	8/2/2018	1115	D. Kimbrow D. Ballard	75.4	YSI 5560	8/2/2018	D. Kimbrow D. Ballard	meter error	meter error
PM-3	8/2/2018	1030	D. Kimbrow D. Ballard	76.7	YSI 5560	8/2/2018	D. Kimbrow D. Ballard	meter error	meter error
Site Number	Sample Date	Sample Time	Sample Collected By	Water Temperature (F)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/8/2018	1140	D. Kimbrow	80.5	YSI 5560	8/8/2018	D. Kimbrow	2.37	1.53
PKML-2	8/8/2018	1415	D. Kimbrow	78.9	YSI 5560	8/8/2018	D. Kimbrow	0.61	0.39
PKML-5	8/8/2018	1320	D. Kimbrow	80.2	YSI 5560	8/8/2018	D. Kimbrow	1.54	1.00
PM-3	8/8/2018	0950	D. Kimbrow	79.5	YSI 5560	8/8/2018	D. Kimbrow	10.96	7.08
Site Number	Sample Date	Sample Time	Sample Collected By	Water Temperature (F	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/16/2018	1053	D. Ballard D. Kimbrow	78.6	YSI 5560	8/16/2018	D. Kimbrow	3.49	2.26
PKML-2	8/16/2018	1340	D. Kimbrow E. Bankston	77.9	YSI 5560	8/16/2018	D. Kimbrow	0.59	0.38
PKML-5	8/16/2018	1250	D. Ballard D. Kimbrow	80.0	YSI 5560	8/16/2018	D. Kimbrow	2.27	1.47
PM-3	8/16/2018	0940	D. Ballard D. Kimbrow	79.2	YSI 5560	8/16/2018	D. Kimbrow	13.33	8.62

Site Number	Sample Date	Sample Time	Sample Collected By	Water Temperature (F)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/23/2018	1155	D. Kimbrow	77.7	YSI 5560	8/23/2018	D. Kimbrow	2.58	1.67
PKML-2	8/23/2018	1420	D. Kimbrow	75.4	YSI 5560	8/23/2018	D. Kimbrow	0.66	0.43
PKML-5	8/23/2018	1325	D. Kimbrow	77.0	YSI 5560	8/23/2018	D. Kimbrow	1.78	1.15
PM-3	8/23/2018	1015	D. Kimbrow	79.3	YSI 5560	8/23/2018	D. Kimbrow	17.58	11.36
Site Number	Sample Date	Sample Time	Sample Collected By	Water Temperature (F)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/28/2018	0935	D. Ballard	77.9	YSI 5560	8/28/2018	D. Ballard	1.11	0.72
PKML-2	8/28/2018	1035	D. Ballard	75.7	YSI 5560	8/28/2018	D. Ballard	0.63	0.41
PKML-5	8/28/2018	1009	D. Ballard	75.6	YSI 5560	8/28/2018	D. Ballard	1.11	0.72
PM-3	8/28/2018	0858	D. Ballard	79.2	YSI 5560	8/28/2018	D. Ballard	8.11	5.24
Site Number	Sample Date	Sample Time	Sample Collected By	Water Temperature (F)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	9/18/2018	1035	D. Kimbrow	78.7	YSI 5560	9/18/2018	D. Kimbrow	1.0	0.65
PKML-2	9/18/2018	1350	D. Kimbrow	77.9	YSI 5560	9/18/2018	D. Kimbrow	0.45	0.29
PKML-5	9/18/2018	1245	D. Kimbrow	79.1	YSI 5560	9/18/2018	D. Kimbrow	0.86	0.56
PM-3	9/18/2018	0945	D. Kimbrow	80.2	YSI 5560	9/18/2018	D. Kimbrow	n/a	n/a
Site Number	Sample Date	Sample Time	Sample Collected By	Water Temperature (F)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	10/17/2018	1145	D. Kimbrow	72.8	YSI 5560	10/17/2018	D. Kimbrow	9.73	6.29
PKML-2	10/17/2018	1445	D. Kimbrow	71.9	YSI 5560	10/17/2018	D. Kimbrow	1.15	0.74
PKML-5	10/17/2018	1340	D. Kimbrow	73.0	YSI 5560	10/17/2018	D. Kimbrow	4.43	2.86
PM-3	10/17/2018	1025	D. Kimbrow	74.7	YSI 5560	10/17/2018	D. Kimbrow	23.95	15.48
Site Number	Sample Date	Sample Time	Sample Collected By	Water Temperature (F)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	11/26/2018	1315	D. Kimbrow	54.9	YSI 5560	11/26/2018	D. Kimbrow	5.97	3.86
PKML-2	11/26/2018	1445	D. Kimbrow	53.9	YSI 5560	11/26/2018	D. Kimbrow	1.33	0.86
PKML-5	11/26/2018	1425	D. Kimbrow	54.4	YSI 5560	11/26/2018	D. Kimbrow	4.95	3.20
PM-3	11/26/2018	1040	D. Kimbrow	63.8	YSI 5560	11/26/2018	D. Kimbrow	22.39	14.47
Site Number	Sample Date	Sample Time	Sample Collected By	pH	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	4/25/2018	1030	D. Ballard D. Kimbrow	7.44	YSI 1001	4/25/2018	D. Ballard D. Kimbrow	3.89	2.51
PKML-2	4/25/2018	1430	D. Ballard D. Kimbrow	7.41	YSI 1001	4/25/2018	D. Ballard D. Kimbrow	0.8	0.52
PKML-5	4/25/2018	1327	D. Ballard D. Kimbrow	7.39	YSI 1001	4/25/2018	D. Ballard D. Kimbrow	2.76	1.78
PM-3	4/25/2018	0930	D. Ballard D. Kimbrow	7.10	YSI 1001	4/25/2018	D. Ballard D. Kimbrow	15.2	9.82
Site Number	Sample Date	Sample Time	Sample Collected By	pH	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	5/31/2018	1025	D. Ballard D. Kimbrow	6.94	YSI 1001	5/31/2018	D. Ballard D. Kimbrow	12.1	7.8
PKML-2	5/31/2018	1348	D. Ballard D. Kimbrow	7.08	YSI 1001	5/31/2018	D. Ballard D. Kimbrow	2.93	1.89
PKML-5	5/31/2018	1122	D. Ballard D. Kimbrow	6.93	YSI 1001	5/31/2018	D. Ballard D. Kimbrow	8.94	5.78
PM-3	5/31/2018	0940	D. Ballard D. Kimbrow	6.48	YSI 1001	5/31/2018	D. Ballard D. Kimbrow	28.7	18.6

Site Number	Sample Date	Sample Time	Sample Collected By	pH	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	6/6/2018	1025	D. Kimbrow	7.92	YSI 1001	6/8/2018	D. Kimbrow	3.87	2.5
PKML-2	6/6/2018	1345	D. Kimbrow	7.81	YSI 1001	6/8/2018	D. Kimbrow	0.88	0.57
PKML-5	6/6/2018	1120	D. Kimbrow	7.66	YSI 1001	6/8/2018	D. Kimbrow	2.36	1.53
PM-3	6/6/2018	0930	D. Kimbrow	7.51	YSI 1001	6/8/2018	D. Kimbrow	11.94	7.72
Site Number	Sample Date	Sample Time	Sample Collected By	pH	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	6/12/2018	1003	D. Ballard D. Kimbrow	7.77	YSI 1001	6/12/2018	D. Ballard D. Kimbrow	4.22	2.73
PKML-2	6/12/2018	1115	D. Ballard D. Kimbrow	7.63	YSI 1001	6/12/2018	D. Ballard D. Kimbrow	0.75	0.48
PKML-5	6/12/2018	1045	D. Ballard D. Kimbrow	7.46	YSI 1001	6/12/2018	D. Ballard D. Kimbrow	2.71	1.75
PM-3	6/12/2018	0920	D. Ballard D. Kimbrow	7.43	YSI 1001	6/12/2018	D. Ballard D. Kimbrow	12.3	7.95
Site Number	Sample Date	Sample Time	Sample Collected By	pH	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	6/19/2018	1045	D. Kimbrow	7.86	YSI 1001	6/19/2018	D. Kimbrow	6.81	4.40
PKML-2	6/19/2018	1430	D. Kimbrow	7.61	YSI 1001	6/19/2018	D. Kimbrow	1.3	0.84
PKML-5	6/19/2018	1345	D. Kimbrow	7.39	YSI 1001	6/19/2018	D. Kimbrow	4.97	3.21
PM-3	6/19/2018	0950	D. Kimbrow	7.52	YSI 1001	6/19/2018	D. Kimbrow	21.3	13.8
Site Number	Sample Date	Sample Time	Sample Collected By	pH	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	6/27/2018	1615	D. Kimbrow	7.84	YSI 1001	6/27/2018	D. Kimbrow	4.86	3.14
PKML-2	6/27/2018	1420	D. Kimbrow	7.71	YSI 1001	6/27/2018	D. Kimbrow	0.94	0.61
PKML-5	6/27/2018	1335	D. Kimbrow	7.51	YSI 1001	6/27/2018	D. Kimbrow	3.31	2.14
PM-3	6/27/2018	1100	D. Kimbrow	7.43	YSI 1001	6/27/2018	D. Kimbrow	20.1	13.0
Site Number	Sample Date	Sample Time	Sample Collected By	pH	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	7/3/2018	1135	D. Kimbrow	7.82	YSI 1001	7/3/2018	D. Kimbrow	6.02	3.89
PKML-2	7/3/2018	1400	D. Kimbrow	7.58	YSI 1001	7/3/2018	D. Kimbrow	1.0	0.65
PKML-5	7/3/2018	1255	D. Kimbrow	7.44	YSI 1001	7/3/2018	D. Kimbrow	3.6	2.33
PM-3	7/3/2018	0925	D. Kimbrow	7.43	YSI 1001	7/3/2018	D. Kimbrow	15.3	9.89
Site Number	Sample Date	Sample Time	Sample Collected By	pH	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	7/24/2018	1000	D. Kimbrow	7.92	YSI 1001	7/24/2018	D. Kimbrow	meter error	meter error
PKML-2	7/24/2018	1125	D. Kimbrow	7.81	YSI 1001	7/24/2018	D. Kimbrow	meter error	meter error
PKML-5	7/24/2018	1020	D. Kimbrow	7.61	YSI 1001	7/24/2018	D. Kimbrow	meter error	meter error
PM-3	7/24/2018	0935	D. Kimbrow	7.58	YSI 1001	7/24/2018	D. Kimbrow	meter error	meter error
Site Number	Sample Date	Sample Time	Sample Collected By	pH	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/2/2018	1045	D. Kimbrow D. Ballard	7.88	YSI 1001	8/2/2018	D. Kimbrow D. Ballard	meter error	meter error
PKML-2	8/2/2018	1135	D. Kimbrow D. Ballard	7.53	YSI 1001	8/2/2018	D. Kimbrow D. Ballard	meter error	meter error
PKML-5	8/2/2018	1115	D. Kimbrow D. Ballard	7.54	YSI 1001	8/2/2018	D. Kimbrow D. Ballard	meter error	meter error
PM-3	8/2/2018	1030	D. Kimbrow D. Ballard	7.55	YSI 1001	8/2/2018	D. Kimbrow D. Ballard	meter error	meter error

Site Number	Sample Date	Sample Time	Sample Collected By	pH	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/8/2018	1140	D. Kimbrow	8.21	YSI 1001	8/8/2018	D. Kimbrow	2.37	1.53
PKML-2	8/8/2018	1415	D. Kimbrow	7.75	YSI 1001	8/8/2018	D. Kimbrow	0.61	0.39
PKML-5	8/8/2018	1320	D. Kimbrow	7.59	YSI 1001	8/8/2018	D. Kimbrow	1.54	1.00
PM-3	8/8/2018	0950	D. Kimbrow	7.57	YSI 1001	8/8/2018	D. Kimbrow	10.96	7.08
Site Number	Sample Date	Sample Time	Sample Collected By	pH	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/16/2018	1053	D. Ballard D. Kimbrow	7.95	YSI 1001	8/16/2018	D. Kimbrow	3.49	2.26
PKML-2	8/16/2018	1340	D. Kimbrow E. Bankston	7.82	YSI 1001	8/16/2018	D. Kimbrow	0.59	0.38
PKML-5	8/16/2018	1250	D. Ballard D. Kimbrow	7.58	YSI 1001	8/16/2018	D. Kimbrow	2.27	1.47
PM-3	8/16/2018	0940	D. Ballard D. Kimbrow	7.55	YSI 1001	8/16/2018	D. Kimbrow	13.33	8.62
Site Number	Sample Date	Sample Time	Sample Collected By	pH	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/23/2018	1155	D. Kimbrow	8.09	YSI 1001	8/23/2018	D. Kimbrow	2.58	1.67
PKML-2	8/23/2018	1420	D. Kimbrow	7.91	YSI 1001	8/23/2018	D. Kimbrow	0.66	0.43
PKML-5	8/23/2018	1325	D. Kimbrow	7.66	YSI 1001	8/23/2018	D. Kimbrow	1.78	1.15
PM-3	8/23/2018	1015	D. Kimbrow	7.46	YSI 1001	8/23/2018	D. Kimbrow	17.58	11.36
Site Number	Sample Date	Sample Time	Sample Collected By	pH	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/28/2018	0935	D. Ballard	7.73	YSI 1001	8/28/2018	D. Ballard	1.11	0.72
PKML-2	8/28/2018	1035	D. Ballard	7.81	YSI 1001	8/28/2018	D. Ballard	0.63	0.41
PKML-5	8/28/2018	1009	D. Ballard	7.53	YSI 1001	8/28/2018	D. Ballard	1.11	0.72
PM-3	8/28/2018	0858	D. Ballard	7.36	YSI 1001	8/28/2018	D. Ballard	8.11	5.24
Site Number	Sample Date	Sample Time	Sample Collected By	pH	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	9/18/2018	1035	D. Kimbrow	7.83	YSI 1001	9/18/2018	D. Kimbrow	1.0	0.65
PKML-2	9/18/2018	1350	D. Kimbrow	7.69	YSI 1001	9/18/2018	D. Kimbrow	0.45	0.29
PKML-5	9/18/2018	1245	D. Kimbrow	7.58	YSI 1001	9/18/2018	D. Kimbrow	0.86	0.56
PM-3	9/18/2018	0945	D. Kimbrow	7.36	YSI 1001	9/18/2018	D. Kimbrow	n/a	n/a
Site Number	Sample Date	Sample Time	Sample Collected By	pH	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	10/17/2018	1145	D. Kimbrow	8.18	YSI 1001	10/17/2018	D. Kimbrow	9.73	6.29
PKML-2	10/17/2018	1445	D. Kimbrow	7.45	YSI 1001	10/17/2018	D. Kimbrow	1.15	0.74
PKML-5	10/17/2018	1340	D. Kimbrow	7.53	YSI 1001	10/17/2018	D. Kimbrow	4.43	2.86
PM-3	10/17/2018	1025	D. Kimbrow	7.65	YSI 1001	10/17/2018	D. Kimbrow	23.95	15.48
Site Number	Sample Date	Sample Time	Sample Collected By	pH	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	11/26/2018	1315	D. Kimbrow	7.82	YSI 1001	11/26/2018	D. Kimbrow	5.97	3.86
PKML-2	11/26/2018	1445	D. Kimbrow	7.50	YSI 1001	11/26/2018	D. Kimbrow	1.33	0.86
PKML-5	11/26/2018	1425	D. Kimbrow	7.49	YSI 1001	11/26/2018	D. Kimbrow	4.95	3.20
PM-3	11/26/2018	1040	D. Kimbrow	7.19	YSI 1001	11/26/2018	D. Kimbrow	22.39	14.47

Site Number	Sample Date	Sample Time	Sample Collected By	Dissolved Oxygen (mg/L)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	4/25/2018	1030	D. Ballard D. Kimbrow	9.70	YSI 2003 polarographic	4/25/2018	D. Ballard D. Kimbrow	3.89	2.51
PKML-2	4/25/2018	1430	D. Ballard D. Kimbrow	10.49	YSI 2003 polarographic	4/25/2018	D. Ballard D. Kimbrow	0.8	0.52
PKML-5	4/25/2018	1327	D. Ballard D. Kimbrow	10.58	YSI 2003 polarographic	4/25/2018	D. Ballard D. Kimbrow	2.76	1.78
PM-3	4/25/2018	0930	D. Ballard D. Kimbrow	8.64	YSI 2003 polarographic	4/25/2018	D. Ballard D. Kimbrow	15.2	9.82
Site Number	Sample Date	Sample Time	Sample Collected By	Dissolved Oxygen (mg/L)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	5/31/2018	1025	D. Ballard D. Kimbrow	8.88	YSI 2003 polarographic	5/31/2018	D. Ballard D. Kimbrow	12.1	7.8
PKML-2	5/31/2018	1348	D. Ballard D. Kimbrow	8.43	YSI 2003 polarographic	5/31/2018	D. Ballard D. Kimbrow	2.93	1.89
PKML-5	5/31/2018	1122	D. Ballard D. Kimbrow	8.34	YSI 2003 polarographic	5/31/2018	D. Ballard D. Kimbrow	8.94	5.78
PM-3	5/31/2018	0940	D. Ballard D. Kimbrow	8.16	YSI 2003 polarographic	5/31/2018	D. Ballard D. Kimbrow	28.7	18.6
Site Number	Sample Date	Sample Time	Sample Collected By	Dissolved Oxygen (mg/L)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	6/6/2018	1025	D. Kimbrow	8.40	YSI 2003 polarographic	6/8/2018	D. Kimbrow	3.87	2.5
PKML-2	6/6/2018	1345	D. Kimbrow	8.81	YSI 2003 polarographic	6/8/2018	D. Kimbrow	0.88	0.57
PKML-5	6/6/2018	1120	D. Kimbrow	8.48	YSI 2003 polarographic	6/8/2018	D. Kimbrow	2.36	1.53
PM-3	6/6/2018	0930	D. Kimbrow	8.01	YSI 2003 polarographic	6/8/2018	D. Kimbrow	11.94	7.72
Site Number	Sample Date	Sample Time	Sample Collected By	Dissolved Oxygen (mg/L)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	6/12/2018	1003	D. Ballard D. Kimbrow	8.25	YSI 2003 polarographic	6/12/2018	D. Ballard D. Kimbrow	4.22	2.73
PKML-2	6/12/2018	1115	D. Ballard D. Kimbrow	8.17	YSI 2003 polarographic	6/12/2018	D. Ballard D. Kimbrow	0.75	0.48
PKML-5	6/12/2018	1045	D. Ballard D. Kimbrow	8.04	YSI 2003 polarographic	6/12/2018	D. Ballard D. Kimbrow	2.71	1.75
PM-3	6/12/2018	0920	D. Ballard D. Kimbrow	7.61	YSI 2003 polarographic	6/12/2018	D. Ballard D. Kimbrow	12.3	7.95
Site Number	Sample Date	Sample Time	Sample Collected By	Dissolved Oxygen (mg/L)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	6/19/2018	1045	D. Kimbrow	8.07	YSI 2003 polarographic	6/19/2018	D. Kimbrow	6.81	4.40
PKML-2	6/19/2018	1430	D. Kimbrow	7.92	YSI 2003 polarographic	6/19/2018	D. Kimbrow	1.3	0.84
PKML-5	6/19/2018	1345	D. Kimbrow	7.58	YSI 2003 polarographic	6/19/2018	D. Kimbrow	4.97	3.21
PM-3	6/19/2018	0950	D. Kimbrow	7.93	YSI 2003 polarographic	6/19/2018	D. Kimbrow	21.3	13.8

Site Number	Sample Date	Sample Time	Sample Collected By	Dissolved Oxygen (mg/L)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	6/27/2018	1615	D. Kimbrow	6.96	YSI 2003 polarographic	6/27/2018	D. Kimbrow	4.86	3.14
PKML-2	6/27/2018	1420	D. Kimbrow	7.70	YSI 2003 polarographic	6/27/2018	D. Kimbrow	0.94	0.61
PKML-5	6/27/2018	1335	D. Kimbrow	7.82	YSI 2003 polarographic	6/27/2018	D. Kimbrow	3.31	2.14
PM-3	6/27/2018	1100	D. Kimbrow	7.57	YSI 2003 polarographic	6/27/2018	D. Kimbrow	20.1	13.0
Site Number	Sample Date	Sample Time	Sample Collected By	Dissolved Oxygen (mg/L)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	7/3/2018	1135	D. Kimbrow	7.93	YSI 2003 polarographic	7/3/2018	D. Kimbrow	6.02	3.89
PKML-2	7/3/2018	1400	D. Kimbrow	7.40	YSI 2003 polarographic	7/3/2018	D. Kimbrow	1.0	0.65
PKML-5	7/3/2018	1255	D. Kimbrow	7.57	YSI 2003 polarographic	7/3/2018	D. Kimbrow	3.6	2.33
PM-3	7/3/2018	0925	D. Kimbrow	7.75	YSI 2003 polarographic	7/3/2018	D. Kimbrow	15.3	9.89
Site Number	Sample Date	Sample Time	Sample Collected By	Dissolved Oxygen (mg/L)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	7/24/2018	1000	D. Kimbrow	7.37	YSI 2003 polarographic	7/24/2018	D. Kimbrow	meter error	meter error
PKML-2	7/24/2018	1125	D. Kimbrow	7.83	YSI 2003 polarographic	7/24/2018	D. Kimbrow	meter error	meter error
PKML-5	7/24/2018	1020	D. Kimbrow	7.29	YSI 2003 polarographic	7/24/2018	D. Kimbrow	meter error	meter error
PM-3	7/24/2018	0935	D. Kimbrow	7.41	YSI 2003 polarographic	7/24/2018	D. Kimbrow	meter error	meter error
Site Number	Sample Date	Sample Time	Sample Collected By	Dissolved Oxygen (mg/L)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/2/2018	1045	D. Kimbrow D. Ballard	8.19	YSI 2003 polarographic	8/2/2018	D. Kimbrow D. Ballard	meter error	meter error
PKML-2	8/2/2018	1135	D. Kimbrow D. Ballard	7.63	YSI 2003 polarographic	8/2/2018	D. Kimbrow D. Ballard	meter error	meter error
PKML-5	8/2/2018	1115	D. Kimbrow D. Ballard	8.58	YSI 2003 polarographic	8/2/2018	D. Kimbrow D. Ballard	meter error	meter error
PM-3	8/2/2018	1030	D. Kimbrow D. Ballard	7.73	YSI 2003 polarographic	8/2/2018	D. Kimbrow D. Ballard	meter error	meter error
Site Number	Sample Date	Sample Time	Sample Collected By	Dissolved Oxygen (mg/L)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/8/2018	1140	D. Kimbrow	8.90	YSI 2003 polarographic	8/8/2018	D. Kimbrow	2.37	1.53
PKML-2	8/8/2018	1415	D. Kimbrow	7.90	YSI 2003 polarographic	8/8/2018	D. Kimbrow	0.61	0.39
PKML-5	8/8/2018	1320	D. Kimbrow	7.88	YSI 2003 polarographic	8/8/2018	D. Kimbrow	1.54	1.00
PM-3	8/8/2018	0950	D. Kimbrow	7.84	YSI 2003 polarographic	8/8/2018	D. Kimbrow	10.96	7.08

Site Number	Sample Date	Sample Time	Sample Collected By	Dissolved Oxygen (mg/L)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/16/2018	1053	D. Ballard D. Kimbrow	7.64	YSI 2003 polarographic	8/16/2018	D. Kimbrow	3.49	2.26
PKML-2	8/16/2018	1340	D. Kimbrow E. Bankston	7.95	YSI 2003 polarographic	8/16/2018	D. Kimbrow	0.59	0.38
PKML-5	8/16/2018	1250	D. Ballard D. Kimbrow	7.91	YSI 2003 polarographic	8/16/2018	D. Kimbrow	2.27	1.47
PM-3	8/16/2018	0940	D. Ballard D. Kimbrow	7.40	YSI 2003 polarographic	8/16/2018	D. Kimbrow	13.33	8.62
Site Number	Sample Date	Sample Time	Sample Collected By	Dissolved Oxygen (mg/L)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/23/2018	1155	D. Kimbrow	8.02	YSI 2003 polarographic	8/23/2018	D. Kimbrow	2.58	1.67
PKML-2	8/23/2018	1420	D. Kimbrow	8.49	YSI 2003 polarographic	8/23/2018	D. Kimbrow	0.66	0.43
PKML-5	8/23/2018	1325	D. Kimbrow	8.16	YSI 2003 polarographic	8/23/2018	D. Kimbrow	1.78	1.15
PM-3	8/23/2018	1015	D. Kimbrow	7.52	YSI 2003 polarographic	8/23/2018	D. Kimbrow	17.58	11.36
Site Number	Sample Date	Sample Time	Sample Collected By	Dissolved Oxygen (mg/L)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/28/2018	0935	D. Ballard	7.90	YSI 2003 polarographic	8/28/2018	D. Ballard	1.11	0.72
PKML-2	8/28/2018	1035	D. Ballard	8.02	YSI 2003 polarographic	8/28/2018	D. Ballard	0.63	0.41
PKML-5	8/28/2018	1009	D. Ballard	6.91	YSI 2003 polarographic	8/28/2018	D. Ballard	1.11	0.72
PM-3	8/28/2018	0858	D. Ballard	5.73	YSI 2003 polarographic	8/28/2018	D. Ballard	8.11	5.24
Site Number	Sample Date	Sample Time	Sample Collected By	Dissolved Oxygen (mg/L)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	9/18/2018	1035	D. Kimbrow	8.08	YSI 2003 polarographic	9/18/2018	D. Kimbrow	1.0	0.65
PKML-2	9/18/2018	1350	D. Kimbrow	8.00	YSI 2003 polarographic	9/18/2018	D. Kimbrow	0.45	0.29
PKML-5	9/18/2018	1245	D. Kimbrow	7.32	YSI 2003 polarographic	9/18/2018	D. Kimbrow	0.86	0.56
PM-3	9/18/2018	0945	D. Kimbrow	6.02	YSI 2003 polarographic	9/18/2018	D. Kimbrow	n/a	n/a
Site Number	Sample Date	Sample Time	Sample Collected By	Dissolved Oxygen (mg/L)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	10/17/2018	1145	D. Kimbrow	8.83	YSI 2003 polarographic	10/17/2018	D. Kimbrow	9.73	6.29
PKML-2	10/17/2018	1445	D. Kimbrow	8.32	YSI 2003 polarographic	10/17/2018	D. Kimbrow	1.15	0.74
PKML-5	10/17/2018	1340	D. Kimbrow	8.04	YSI 2003 polarographic	10/17/2018	D. Kimbrow	4.43	2.86
PM-3	10/17/2018	1025	D. Kimbrow	8.09	YSI 2003 polarographic	10/17/2018	D. Kimbrow	23.95	15.48

Site Number	Sample Date	Sample Time	Sample Collected By	Dissolved Oxygen (mg/L)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	11/26/2018	1315	D. Kimbrow	10.75	YSI 2003 polarographic	11/26/2018	D. Kimbrow	5.97	3.86
PKML-2	11/26/2018	1445	D. Kimbrow	10.57	YSI 2003 polarographic	11/26/2018	D. Kimbrow	1.33	0.86
PKML-5	11/26/2018	1425	D. Kimbrow	10.75	YSI 2003 polarographic	11/26/2018	D. Kimbrow	4.95	3.20
PM-3	11/26/2018	1040	D. Kimbrow	9.23	YSI 2003 polarographic	11/26/2018	D. Kimbrow	22.39	14.47
Site Number	Sample Date	Sample Time	Sample Collected By	Specific Conductance (uS/cm)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	4/25/2018	1030	D. Ballard D. Kimbrow	153	YSI 5560	4/25/2018	D. Ballard D. Kimbrow	3.89	2.51
PKML-2	4/25/2018	1430	D. Ballard D. Kimbrow	287	YSI 5560	4/25/2018	D. Ballard D. Kimbrow	0.8	0.52
PKML-5	4/25/2018	1327	D. Ballard D. Kimbrow	167	YSI 5560	4/25/2018	D. Ballard D. Kimbrow	2.76	1.78
PM-3	4/25/2018	0930	D. Ballard D. Kimbrow	302	YSI 5560	4/25/2018	D. Ballard D. Kimbrow	15.2	9.82
Site Number	Sample Date	Sample Time	Sample Collected By	Specific Conductance (uS/cm)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	5/31/2018	1025	D. Ballard D. Kimbrow	135	YSI 5560	5/31/2018	D. Ballard D. Kimbrow	12.1	7.8
PKML-2	5/31/2018	1348	D. Ballard D. Kimbrow	247	YSI 5560	5/31/2018	D. Ballard D. Kimbrow	2.93	1.89
PKML-5	5/31/2018	1122	D. Ballard D. Kimbrow	142	YSI 5560	5/31/2018	D. Ballard D. Kimbrow	8.94	5.78
PM-3	5/31/2018	0940	D. Ballard D. Kimbrow	209	YSI 5560	5/31/2018	D. Ballard D. Kimbrow	28.7	18.6
Site Number	Sample Date	Sample Time	Sample Collected By	Specific Conductance (uS/cm)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	6/6/2018	1025	D. Kimbrow	187	YSI 5560	6/8/2018	D. Kimbrow	3.87	2.5
PKML-2	6/6/2018	1345	D. Kimbrow	321	YSI 5560	6/8/2018	D. Kimbrow	0.88	0.57
PKML-5	6/6/2018	1120	D. Kimbrow	195	YSI 5560	6/8/2018	D. Kimbrow	2.36	1.53
PM-3	6/6/2018	0930	D. Kimbrow	308	YSI 5560	6/8/2018	D. Kimbrow	11.94	7.72
Site Number	Sample Date	Sample Time	Sample Collected By	Specific Conductance (uS/cm)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	6/12/2018	1003	D. Ballard D. Kimbrow	145	YSI 5560	6/12/2018	D. Ballard D. Kimbrow	4.22	2.73
PKML-2	6/12/2018	1115	D. Ballard D. Kimbrow	292	YSI 5560	6/12/2018	D. Ballard D. Kimbrow	0.75	0.48
PKML-5	6/12/2018	1045	D. Ballard D. Kimbrow	140	YSI 5560	6/12/2018	D. Ballard D. Kimbrow	2.71	1.75
PM-3	6/12/2018	0920	D. Ballard D. Kimbrow	276	YSI 5560	6/12/2018	D. Ballard D. Kimbrow	12.3	7.95
Site Number	Sample Date	Sample Time	Sample Collected By	Specific Conductance (uS/cm)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	6/19/2018	1045	D. Kimbrow	178	YSI 5560	6/19/2018	D. Kimbrow	6.81	4.40
PKML-2	6/19/2018	1430	D. Kimbrow	255	YSI 5560	6/19/2018	D. Kimbrow	1.3	0.84
PKML-5	6/19/2018	1345	D. Kimbrow	121	YSI 5560	6/19/2018	D. Kimbrow	4.97	3.21
PM-3	6/19/2018	0950	D. Kimbrow	248	YSI 5560	6/19/2018	D. Kimbrow	21.3	13.8

Site Number	Sample Date	Sample Time	Sample Collected By	Specific Conductance (uS/cm)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	6/27/2018	1615	D. Kimbrow	139	YSI 5560	6/27/2018	D. Kimbrow	4.86	3.14
PKML-2	6/27/2018	1420	D. Kimbrow	307	YSI 5560	6/27/2018	D. Kimbrow	0.94	0.61
PKML-5	6/27/2018	1335	D. Kimbrow	145	YSI 5560	6/27/2018	D. Kimbrow	3.31	2.14
PM-3	6/27/2018	1100	D. Kimbrow	279	YSI 5560	6/27/2018	D. Kimbrow	20.1	13.0
Site Number	Sample Date	Sample Time	Sample Collected By	Specific Conductance (uS/cm)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	7/3/2018	1135	D. Kimbrow	127	YSI 5560	7/3/2018	D. Kimbrow	6.02	3.89
PKML-2	7/3/2018	1400	D. Kimbrow	229	YSI 5560	7/3/2018	D. Kimbrow	1.0	0.65
PKML-5	7/3/2018	1255	D. Kimbrow	121	YSI 5560	7/3/2018	D. Kimbrow	3.6	2.33
PM-3	7/3/2018	0925	D. Kimbrow	258	YSI 5560	7/3/2018	D. Kimbrow	15.3	9.89
Site Number	Sample Date	Sample Time	Sample Collected By	Specific Conductance (uS/cm)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	7/24/2018	1000	D. Kimbrow	154	YSI 5560	7/24/2018	D. Kimbrow	meter error	meter error
PKML-2	7/24/2018	1125	D. Kimbrow	307	YSI 5560	7/24/2018	D. Kimbrow	meter error	meter error
PKML-5	7/24/2018	1020	D. Kimbrow	170	YSI 5560	7/24/2018	D. Kimbrow	meter error	meter error
PM-3	7/24/2018	0935	D. Kimbrow	304	YSI 5560	7/24/2018	D. Kimbrow	meter error	meter error
Site Number	Sample Date	Sample Time	Sample Collected By	Specific Conductance (uS/cm)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/2/2018	1045	D. Kimbrow D. Ballard	109	YSI 5560	8/2/2018	D. Kimbrow D. Ballard	meter error	meter error
PKML-2	8/2/2018	1135	D. Kimbrow D. Ballard	113	YSI 5560	8/2/2018	D. Kimbrow D. Ballard	meter error	meter error
PKML-5	8/2/2018	1115	D. Kimbrow D. Ballard	93	YSI 5560	8/2/2018	D. Kimbrow D. Ballard	meter error	meter error
PM-3	8/2/2018	1030	D. Kimbrow D. Ballard	207	YSI 5560	8/2/2018	D. Kimbrow D. Ballard	meter error	meter error
Site Number	Sample Date	Sample Time	Sample Collected By	Specific Conductance (uS/cm)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/8/2018	1140	D. Kimbrow	198	YSI 5560	8/8/2018	D. Kimbrow	2.37	1.53
PKML-2	8/8/2018	1415	D. Kimbrow	286	YSI 5560	8/8/2018	D. Kimbrow	0.61	0.39
PKML-5	8/8/2018	1320	D. Kimbrow	194	YSI 5560	8/8/2018	D. Kimbrow	1.54	1.00
PM-3	8/8/2018	0950	D. Kimbrow	324	YSI 5560	8/8/2018	D. Kimbrow	10.96	7.08
Site Number	Sample Date	Sample Time	Sample Collected By	Specific Conductance (uS/cm)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/16/2018	1053	D. Ballard D. Kimbrow	144	YSI 5560	8/16/2018	D. Kimbrow	3.49	2.26
PKML-2	8/16/2018	1340	D. Kimbrow E. Bankston	341	YSI 5560	8/16/2018	D. Kimbrow	0.59	0.38
PKML-5	8/16/2018	1250	D. Ballard D. Kimbrow	147	YSI 5560	8/16/2018	D. Kimbrow	2.27	1.47
PM-3	8/16/2018	0940	D. Ballard D. Kimbrow	287	YSI 5560	8/16/2018	D. Kimbrow	13.33	8.62
Site Number	Sample Date	Sample Time	Sample Collected By	Specific Conductance (uS/cm)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/23/2018	1155	D. Kimbrow	160	YSI 5560	8/23/2018	D. Kimbrow	2.58	1.67
PKML-2	8/23/2018	1420	D. Kimbrow	354	YSI 5560	8/23/2018	D. Kimbrow	0.66	0.43
PKML-5	8/23/2018	1325	D. Kimbrow	183	YSI 5560	8/23/2018	D. Kimbrow	1.78	1.15
PM-3	8/23/2018	1015	D. Kimbrow	330	YSI 5560	8/23/2018	D. Kimbrow	17.58	11.36

Site Number	Sample Date	Sample Time	Sample Collected By	Specific Conductance (uS/cm)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/28/2018	0935	D. Ballard	204	YSI 5560	8/28/2018	D. Ballard	1.11	0.72
PKML-2	8/28/2018	1035	D. Ballard	352	YSI 5560	8/28/2018	D. Ballard	0.63	0.41
PKML-5	8/28/2018	1009	D. Ballard	232	YSI 5560	8/28/2018	D. Ballard	1.11	0.72
PM-3	8/28/2018	0858	D. Ballard	396	YSI 5560	8/28/2018	D. Ballard	8.11	5.24
Site Number	Sample Date	Sample Time	Sample Collected By	Specific Conductance (uS/cm)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	9/18/2018	1035	D. Kimbrow	189	YSI 5560	9/18/2018	D. Kimbrow	1.0	0.65
PKML-2	9/18/2018	1350	D. Kimbrow	362	YSI 5560	9/18/2018	D. Kimbrow	0.45	0.29
PKML-5	9/18/2018	1245	D. Kimbrow	220	YSI 5560	9/18/2018	D. Kimbrow	0.86	0.56
PM-3	9/18/2018	0945	D. Kimbrow	359	YSI 5560	9/18/2018	D. Kimbrow	n/a	n/a
Site Number	Sample Date	Sample Time	Sample Collected By	Specific Conductance (uS/cm)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	10/17/2018	1145	D. Kimbrow	189	YSI 5560	10/17/2018	D. Kimbrow	9.73	6.29
PKML-2	10/17/2018	1445	D. Kimbrow	132	YSI 5560	10/17/2018	D. Kimbrow	1.15	0.74
PKML-5	10/17/2018	1340	D. Kimbrow	150	YSI 5560	10/17/2018	D. Kimbrow	4.43	2.86
PM-3	10/17/2018	1025	D. Kimbrow	268	YSI 5560	10/17/2018	D. Kimbrow	23.95	15.48
Site Number	Sample Date	Sample Time	Sample Collected By	Specific Conductance (uS/cm)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	11/26/2018	1315	D. Kimbrow	160	YSI 5560	11/26/2018	D. Kimbrow	5.97	3.86
PKML-2	11/26/2018	1445	D. Kimbrow	225	YSI 5560	11/26/2018	D. Kimbrow	1.33	0.86
PKML-5	11/26/2018	1425	D. Kimbrow	161	YSI 5560	11/26/2018	D. Kimbrow	4.95	3.20
PM-3	11/26/2018	1040	D. Kimbrow	279	YSI 5560	11/26/2018	D. Kimbrow	22.39	14.47
Site Number	Sample Date	Sample Time	Sample Collected By	Turbidity (NTU)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	4/25/2018	1030	D. Ballard D. Kimbrow	6.92	SM 2130 B	4/25/2018	D. Ballard D. Kimbrow	3.89	2.51
PKML-2	4/25/2018	1430	D. Ballard D. Kimbrow	2.68	SM 2130 B	4/25/2018	D. Ballard D. Kimbrow	0.8	0.52
PKML-5	4/25/2018	1327	D. Ballard D. Kimbrow	3.08	SM 2130 B	4/25/2018	D. Ballard D. Kimbrow	2.76	1.78
PM-3	4/25/2018	0930	D. Ballard D. Kimbrow	3.80	SM 2130 B	4/25/2018	D. Ballard D. Kimbrow	15.2	9.82
Site Number	Sample Date	Sample Time	Sample Collected By	Turbidity (NTU)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	5/31/2018	1025	D. Ballard D. Kimbrow	12.4	SM 2130 B	5/31/2018	D. Ballard D. Kimbrow	12.1	7.8
PKML-2	5/31/2018	1348	D. Ballard D. Kimbrow	8.44	SM 2130 B	5/31/2018	D. Ballard D. Kimbrow	2.93	1.89
PKML-5	5/31/2018	1122	D. Ballard D. Kimbrow	11.3	SM 2130 B	5/31/2018	D. Ballard D. Kimbrow	8.94	5.78
PM-3	5/31/2018	0940	D. Ballard D. Kimbrow	9.45	SM 2130 B	5/31/2018	D. Ballard D. Kimbrow	28.7	18.6
Site Number	Sample Date	Sample Time	Sample Collected By	Turbidity (NTU)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	6/6/2018	1025	D. Kimbrow	7.96	SM 2130 B	6/8/2018	D. Kimbrow	3.87	2.5
PKML-2	6/6/2018	1345	D. Kimbrow	2.73	SM 2130 B	6/8/2018	D. Kimbrow	0.88	0.57
PKML-5	6/6/2018	1120	D. Kimbrow	2.45	SM 2130 B	6/8/2018	D. Kimbrow	2.36	1.53
PM-3	6/6/2018	0930	D. Kimbrow	2.14	SM 2130 B	6/8/2018	D. Kimbrow	11.94	7.72

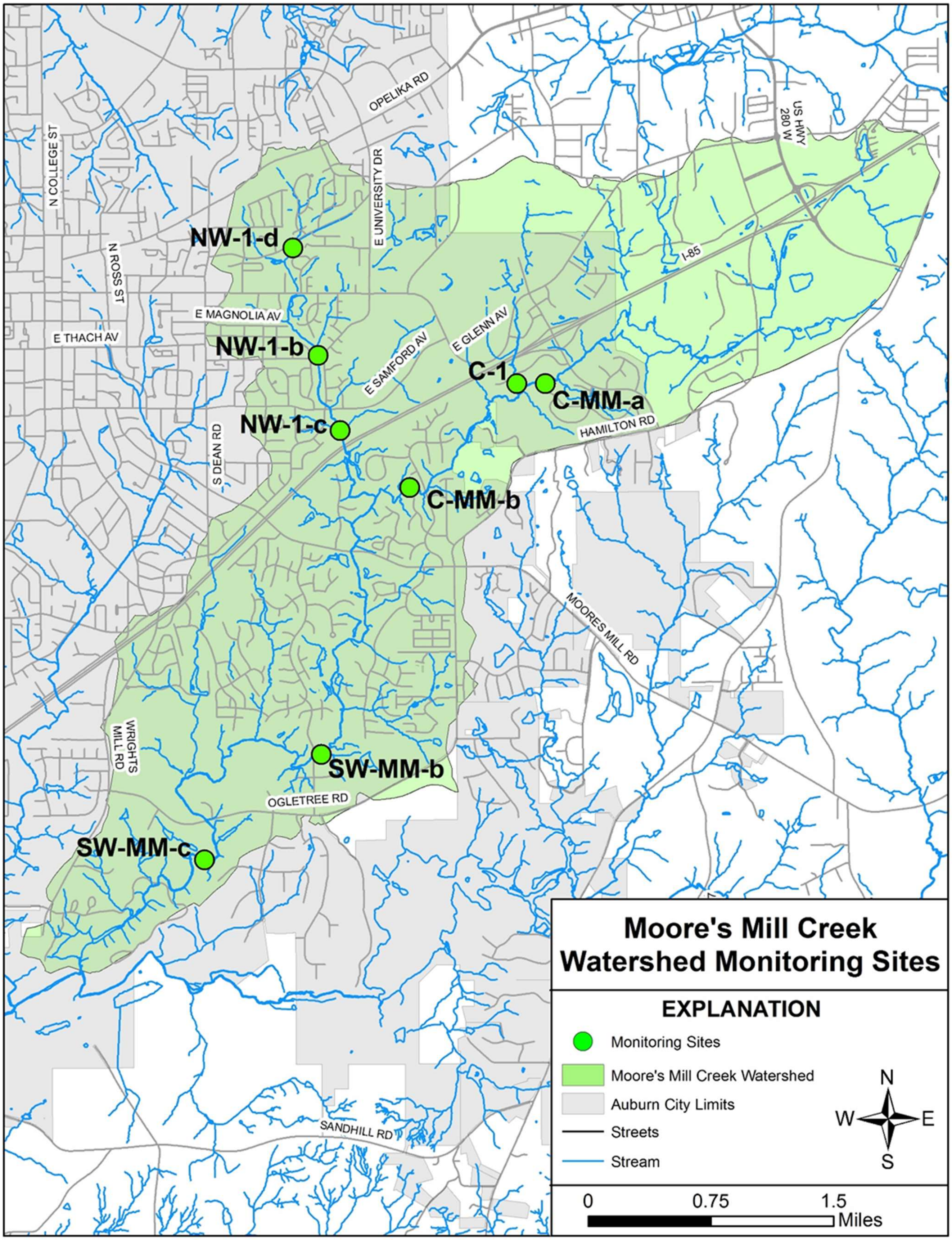
Site Number	Sample Date	Sample Time	Sample Collected By	Turbidity (NTU)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	6/12/2018	1003	D. Ballard D. Kimbrow	4.85	SM 2130 B	6/12/2018	D. Ballard D. Kimbrow	4.22	2.73
PKML-2	6/12/2018	1115	D. Ballard D. Kimbrow	2.83	SM 2130 B	6/12/2018	D. Ballard D. Kimbrow	0.75	0.48
PKML-5	6/12/2018	1045	D. Ballard D. Kimbrow	3.20	SM 2130 B	6/12/2018	D. Ballard D. Kimbrow	2.71	1.75
PM-3	6/12/2018	0920	D. Ballard D. Kimbrow	2.00	SM 2130 B	6/12/2018	D. Ballard D. Kimbrow	12.3	7.95
Site Number	Sample Date	Sample Time	Sample Collected By	Turbidity (NTU)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	6/19/2018	1045	D. Kimbrow	9.79	SM 2130 B	6/19/2018	D. Kimbrow	6.81	4.40
PKML-2	6/19/2018	1430	D. Kimbrow	7.21	SM 2130 B	6/19/2018	D. Kimbrow	1.3	0.84
PKML-5	6/19/2018	1345	D. Kimbrow	8.68	SM 2130 B	6/19/2018	D. Kimbrow	4.97	3.21
PM-3	6/19/2018	0950	D. Kimbrow	7.65	SM 2130 B	6/19/2018	D. Kimbrow	21.3	13.8
Site Number	Sample Date	Sample Time	Sample Collected By	Turbidity (NTU)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	6/27/2018	1615	D. Kimbrow	4.58	SM 2130 B	6/27/2018	D. Kimbrow	4.86	3.14
PKML-2	6/27/2018	1420	D. Kimbrow	3.84	SM 2130 B	6/27/2018	D. Kimbrow	0.94	0.61
PKML-5	6/27/2018	1335	D. Kimbrow	3.18	SM 2130 B	6/27/2018	D. Kimbrow	3.31	2.14
PM-3	6/27/2018	1100	D. Kimbrow	5.21	SM 2130 B	6/27/2018	D. Kimbrow	20.1	13.0
Site Number	Sample Date	Sample Time	Sample Collected By	Turbidity (NTU)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	7/3/2018	1135	D. Kimbrow	11.75	SM 2130 B	7/3/2018	D. Kimbrow	6.02	3.89
PKML-2	7/3/2018	1400	D. Kimbrow	9.08	SM 2130 B	7/3/2018	D. Kimbrow	1.0	0.65
PKML-5	7/3/2018	1255	D. Kimbrow	8.60	SM 2130 B	7/3/2018	D. Kimbrow	3.6	2.33
PM-3	7/3/2018	0925	D. Kimbrow	7.21	SM 2130 B	7/3/2018	D. Kimbrow	15.3	9.89
Site Number	Sample Date	Sample Time	Sample Collected By	Turbidity (NTU)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	7/24/2018	1000	D. Kimbrow	3.81	SM 2130 B	7/24/2018	D. Kimbrow	meter error	meter error
PKML-2	7/24/2018	1125	D. Kimbrow	1.62	SM 2130 B	7/24/2018	D. Kimbrow	meter error	meter error
PKML-5	7/24/2018	1020	D. Kimbrow	2.24	SM 2130 B	7/24/2018	D. Kimbrow	meter error	meter error
PM-3	7/24/2018	0935	D. Kimbrow	1.62	SM 2130 B	7/24/2018	D. Kimbrow	meter error	meter error
Site Number	Sample Date	Sample Time	Sample Collected By	Turbidity (NTU)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/2/2018	1045	D. Kimbrow D. Ballard	27.6	SM 2130 B	8/2/2018	D. Kimbrow D. Ballard	meter error	meter error
PKML-2	8/2/2018	1135	D. Kimbrow D. Ballard	17.0	SM 2130 B	8/2/2018	D. Kimbrow D. Ballard	meter error	meter error
PKML-5	8/2/2018	1115	D. Kimbrow D. Ballard	27.5	SM 2130 B	8/2/2018	D. Kimbrow D. Ballard	meter error	meter error
PM-3	8/2/2018	1030	D. Kimbrow D. Ballard	12.5	SM 2130 B	8/2/2018	D. Kimbrow D. Ballard	meter error	meter error
Site Number	Sample Date	Sample Time	Sample Collected By	Turbidity (NTU)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/8/2018	1140	D. Kimbrow	3.07	SM 2130 B	8/8/2018	D. Kimbrow	2.37	1.53
PKML-2	8/8/2018	1415	D. Kimbrow	7.43	SM 2130 B	8/8/2018	D. Kimbrow	0.61	0.39
PKML-5	8/8/2018	1320	D. Kimbrow	3.78	SM 2130 B	8/8/2018	D. Kimbrow	1.54	1.00
PM-3	8/8/2018	0950	D. Kimbrow	1.4	SM 2130 B	8/8/2018	D. Kimbrow	10.96	7.08

Site Number	Sample Date	Sample Time	Sample Collected By	Turbidity (NTU)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/16/2018	1053	D. Ballard D. Kimbrow	4.76	SM 2130 B	8/16/2018	D. Kimbrow	3.49	2.26
PKML-2	8/16/2018	1340	D. Kimbrow E. Bankston	4.31	SM 2130 B	8/16/2018	D. Kimbrow	0.59	0.38
PKML-5	8/16/2018	1250	D. Ballard D. Kimbrow	3.76	SM 2130 B	8/16/2018	D. Kimbrow	2.27	1.47
PM-3	8/16/2018	0940	D. Ballard D. Kimbrow	2.86	SM 2130 B	8/16/2018	D. Kimbrow	13.33	8.62
Site Number	Sample Date	Sample Time	Sample Collected By	Turbidity (NTU)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/23/2018	1155	D. Kimbrow	5.08	SM 2130 B	8/23/2018	D. Kimbrow	2.58	1.67
PKML-2	8/23/2018	1420	D. Kimbrow	1.81	SM 2130 B	8/23/2018	D. Kimbrow	0.66	0.43
PKML-5	8/23/2018	1325	D. Kimbrow	2.39	SM 2130 B	8/23/2018	D. Kimbrow	1.78	1.15
PM-3	8/23/2018	1015	D. Kimbrow	1.73	SM 2130 B	8/23/2018	D. Kimbrow	17.58	11.36
Site Number	Sample Date	Sample Time	Sample Collected By	Turbidity (NTU)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	8/28/2018	0935	D. Ballard	1.96	SM 2130 B	8/28/2018	D. Ballard	1.11	0.72
PKML-2	8/28/2018	1035	D. Ballard	1.03	SM 2130 B	8/28/2018	D. Ballard	0.63	0.41
PKML-5	8/28/2018	1009	D. Ballard	1.96	SM 2130 B	8/28/2018	D. Ballard	1.11	0.72
PM-3	8/28/2018	0858	D. Ballard	2.15	SM 2130 B	8/28/2018	D. Ballard	8.11	5.24
Site Number	Sample Date	Sample Time	Sample Collected By	Turbidity (NTU)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	9/18/2018	1035	D. Kimbrow	1.35	SM 2130 B	9/18/2018	D. Kimbrow	1.0	0.65
PKML-2	9/18/2018	1350	D. Kimbrow	2.78	SM 2130 B	9/18/2018	D. Kimbrow	0.45	0.29
PKML-5	9/18/2018	1245	D. Kimbrow	0.98	SM 2130 B	9/18/2018	D. Kimbrow	0.86	0.56
PM-3	9/18/2018	0945	D. Kimbrow	2.64	SM 2130 B	9/18/2018	D. Kimbrow	n/a	n/a
Site Number	Sample Date	Sample Time	Sample Collected By	Turbidity (NTU)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	10/17/2018	1145	D. Kimbrow	4.2	SM 2130 B	10/17/2018	D. Kimbrow	9.73	6.29
PKML-2	10/17/2018	1445	D. Kimbrow	8.96	SM 2130 B	10/17/2018	D. Kimbrow	1.15	0.74
PKML-5	10/17/2018	1340	D. Kimbrow	10.62	SM 2130 B	10/17/2018	D. Kimbrow	4.43	2.86
PM-3	10/17/2018	1025	D. Kimbrow	3.66	SM 2130 B	10/17/2018	D. Kimbrow	23.95	15.48
Site Number	Sample Date	Sample Time	Sample Collected By	Turbidity (NTU)	Analytical Method	Analysis Date	Analysis Performed By	Stream-flow (cfs)	Stream-flow (MGD)
PKML-1	11/26/2018	1315	D. Kimbrow	3.7	SM 2130 B	11/26/2018	D. Kimbrow	5.97	3.86
PKML-2	11/26/2018	1445	D. Kimbrow	4.74	SM 2130 B	11/26/2018	D. Kimbrow	1.33	0.86
PKML-5	11/26/2018	1425	D. Kimbrow	4.26	SM 2130 B	11/26/2018	D. Kimbrow	4.95	3.20
PM-3	11/26/2018	1040	D. Kimbrow	2.81	SM 2130 B	11/26/2018	D. Kimbrow	22.39	14.47

2.5 Moore’s Mill Creek Compliance Monitoring Data

Moore’s Mill Creek was placed on the draft 303(d) list for siltation in 1998, and has been on the final 303(d) list since 2000. The impaired reach is 10.51 mi. and includes all waters from its source to its confluence with Chewacla Creek. Habitat degradation due to sedimentation/siltation is the impairment in Moore’s Mill Creek. Potential sources of the impairment are listed as land development and urban runoff/storm sewers. The Moore’s Mill Creek Watershed Management Plan was completed in 2008. This plan outlined several objectives aimed to reduce sedimentation and mitigate habitat degradation. Included in the plan were geomorphic surveys and Bank Erosion Hazard Index (BEHI) assessments of stream reaches on both the main stem and tributaries throughout the watershed. Findings from these geomorphic surveys and BEHI assessments identified in-stream sediment loading from streambank erosion as a significant contributor to the impairment. The watershed management plan recommended continued monitoring of these sites to evaluate the success of future efforts aimed to reduce bank erosion.

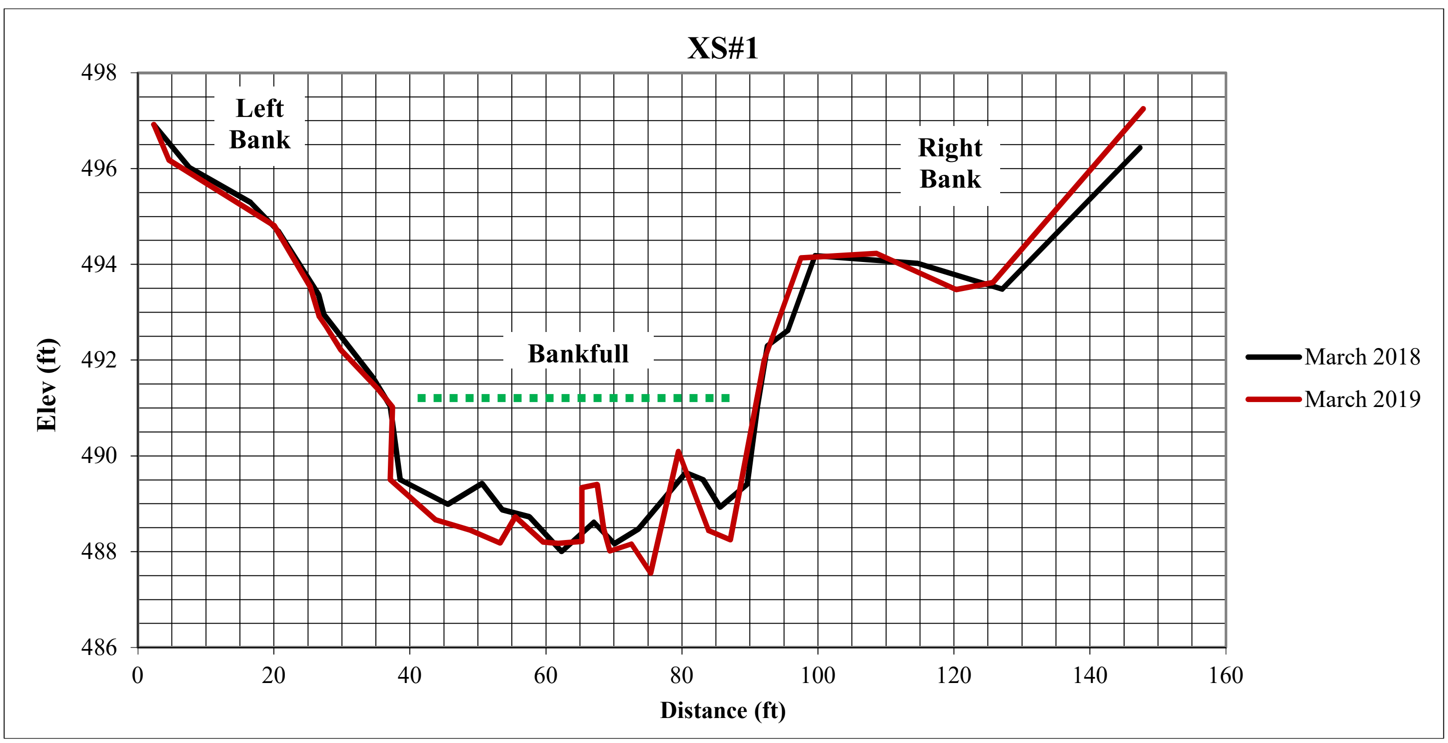
The City makes reasonable efforts to monitor streambank erosion at eight (8) reaches in the Moore’s Mill Creek watershed with annual stream geomorphic surveys. These annual surveys measure geomorphic parameters that are used as indicators of stability of a stream reach. A stream condition rapid assessment is performed annually at each of the 8 reaches. The stream condition rapid assessment was developed with a grant from EPA (EPA Region IV Wetlands Program Development Grant CD00D01412, "Eco-Morphological Mitigation Design and Assessment Tools for the Alabama and Tennessee Appalachian Plateau”), and rates stream condition and function based on eco-geomorphic indicators. Quarterly samples of total suspended solids (TSS), water temperature, pH, dissolved oxygen, specific conductance, and turbidity are measured in-situ at each site. Additionally, the City continues to reasonably support and participate in studies of water quality in the Moore’s Mill Creek watershed. Sample reaches for monitoring in the Moore’s Mill Creek watershed are shown below.



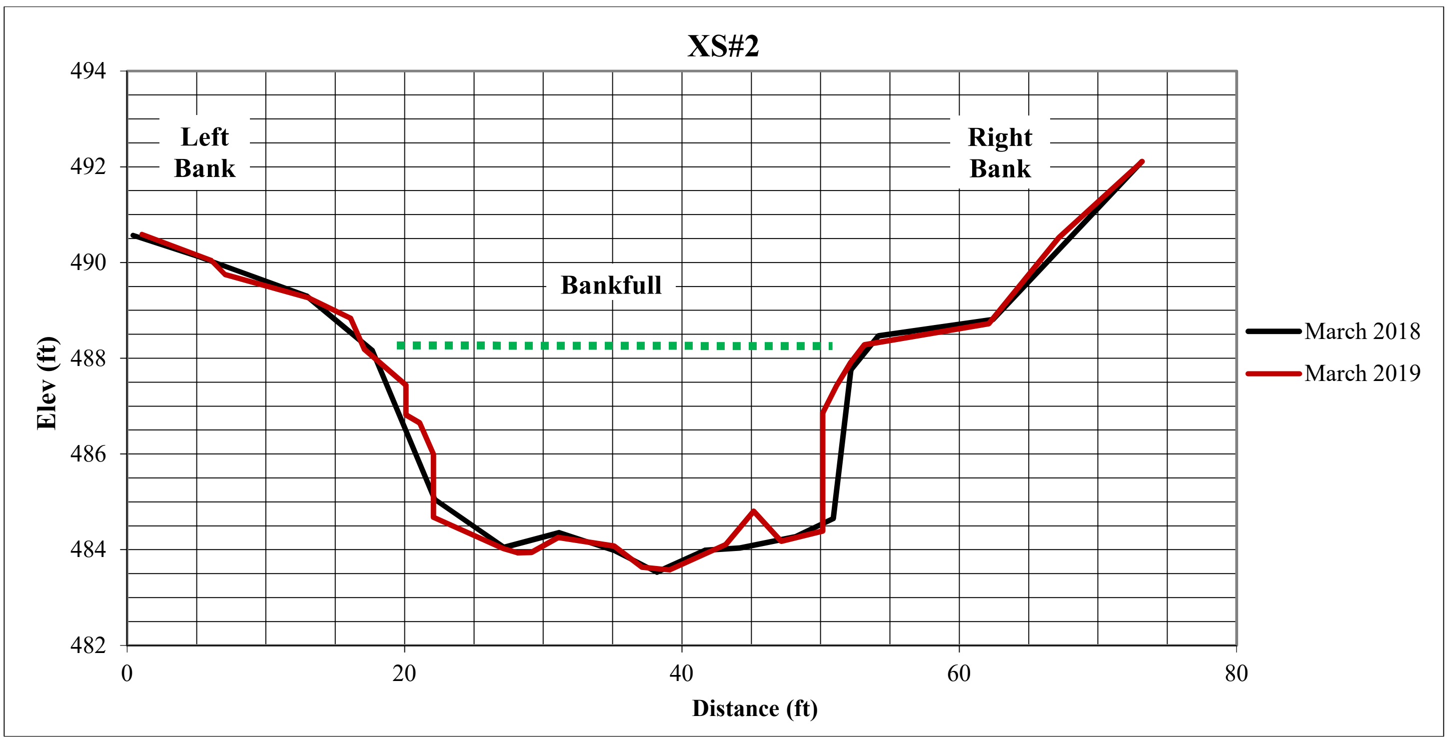
Moore’s Mill Creek Watershed Monitoring Sites

Site	Stream Condition and Function	Score (0 – 2)*
SW-MM-c	Upstream watershed impacts from stormwater, wastewater, or sediment	1
	Local stream reach impacts from ditches, pipes, livestock, utilities, or roads	2
	Channel dimension related to bankfull cross-section measurements	1
	Channel pattern related to planform measurements	2
	Channel bed profile related to longitudinal profile measurements	2
	Streambank stability and protection from erosion	1
	Floodplain connection for bankfull flood access	1
	Floodplain morphology to dissipate flood energy and minimize erosion	1
	Riparian vegetation to provide shade, nutrient uptake, and food sources	2
	Habitats including diverse bedform, large woody debris, leaf packs, root hairs	2
	Water quality and stream bed sediments	2
	Presence of desirable fish and macroinvertebrates expected for watershed	1
*Score indicates natural function and health: 2 = Good; 1 = Fair; 0 = Poor	TOTAL	18

Site	Cross-Section	Geomorphic Parameter	Value	Units
SW-MM-c	1	Bankfull Area	131	$ft.^2$
		Bankfull Width	55	ft.
		Bankfull Depth	2.4	ft.
		Maximum Bankfull Depth	3.5	ft.
		Low Bank Height	6.7	ft.
		Width of the Flood-prone Area	140	ft.
		Width to Depth Ratio	22.8	n/a
		Bank Height Ratio	1.9	n/a
		Entrenchment Ratio	2.6	n/a
		Right Bank BEHI	Very High	n/a
		Left Bank BEHI	Very High	n/a

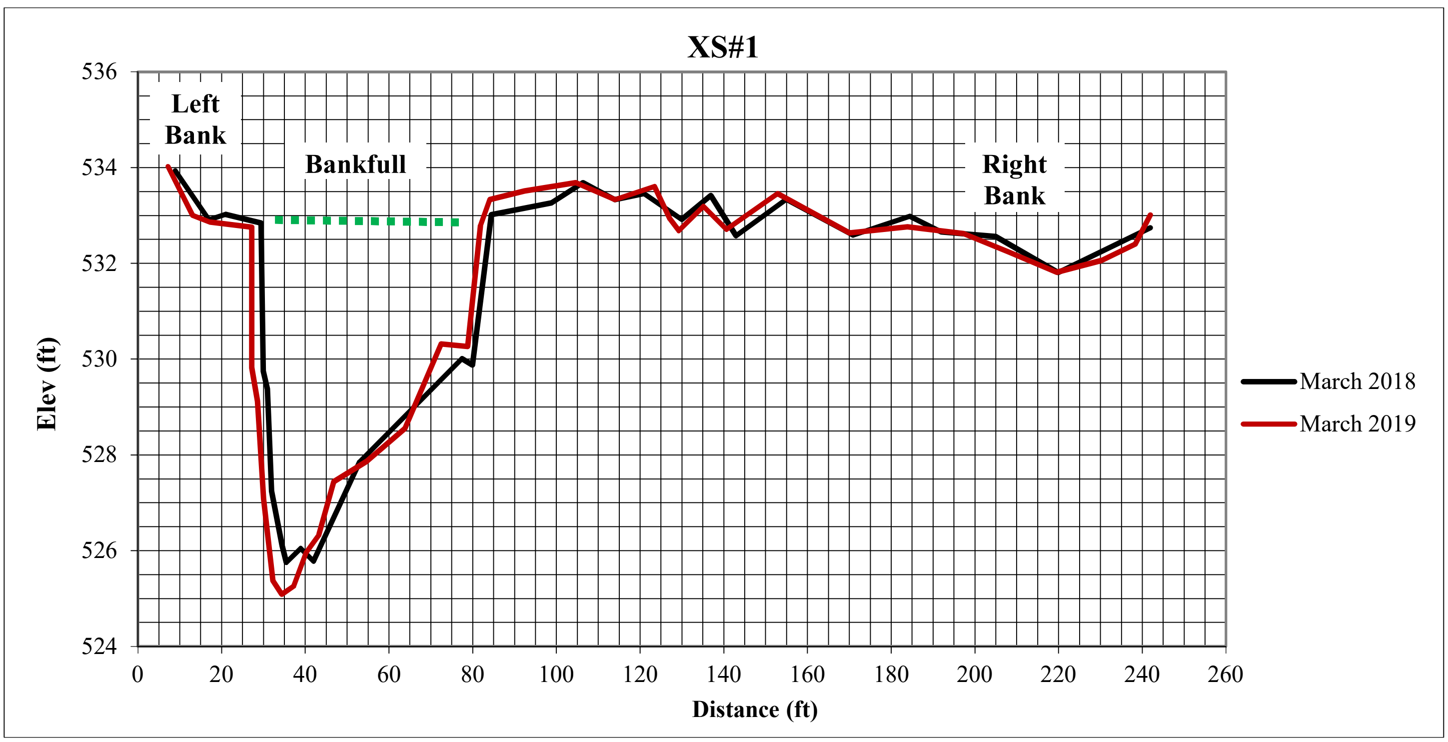


Site	Cross-Section	Geomorphic Parameter	Value	Units
SW-MM-c	2	Bankfull Area	125	$ft.^2$
		Bankfull Width	37	ft.
		Bankfull Depth	3.4	ft.
		Maximum Bankfull Depth	4.6	ft.
		Low Bank Height	7.0	ft.
		Width of the Flood-prone Area	220	ft.
		Width to Depth Ratio	11	n/a
		Bank Height Ratio	1.5	n/a
		Entrenchment Ratio	5.9	n/a
		Right Bank BEHI	Low	n/a
		Left Bank BEHI	Moderate	n/a

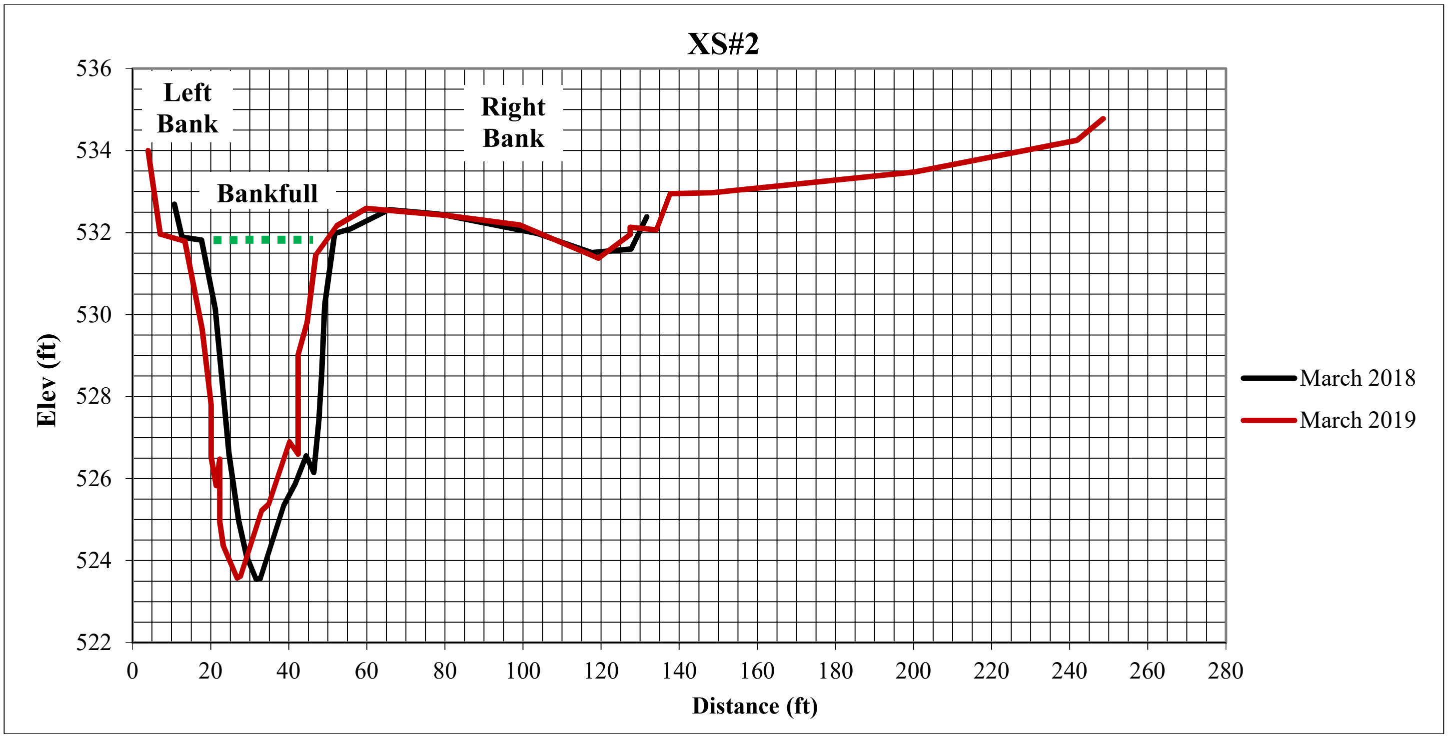


Site	Stream Condition and Function	Score (0 – 2)*
SW-MM-b	Upstream watershed impacts from stormwater, wastewater, or sediment	0
	Local stream reach impacts from ditches, pipes, livestock, utilities, or roads	1
	Channel dimension related to bankfull cross-section measurements	1
	Channel pattern related to planform measurements	1
	Channel bed profile related to longitudinal profile measurements	1
	Streambank stability and protection from erosion	1
	Floodplain connection for bankfull flood access	2
	Floodplain morphology to dissipate flood energy and minimize erosion	2
	Riparian vegetation to provide shade, nutrient uptake, and food sources	1
	Habitats including diverse bedform, large woody debris, leaf packs, root hairs	1
	Water quality and stream bed sediments	1
	Presence of desirable fish and macroinvertebrates expected for watershed	0
*Score indicates natural function and health: 2 = Good; 1 = Fair; 0 = Poor	TOTAL	12

Site	Cross-Section	Geomorphic Parameter	Value	Units
SW-MM-b	1	Bankfull Area	272	$ft.^2$
		Bankfull Width	55	ft.
		Bankfull Depth	5.0	ft.
		Maximum Bankfull Depth	7.7	ft.
		Low Bank Height	8.6	ft.
		Width of the Flood-prone Area	450	ft.
		Width to Depth Ratio	11	n/a
		Bank Height Ratio	1.1	n/a
		Entrenchment Ratio	8.2	n/a
		Right Bank BEHI	Low	n/a
		Left Bank BEHI	Moderate	n/a

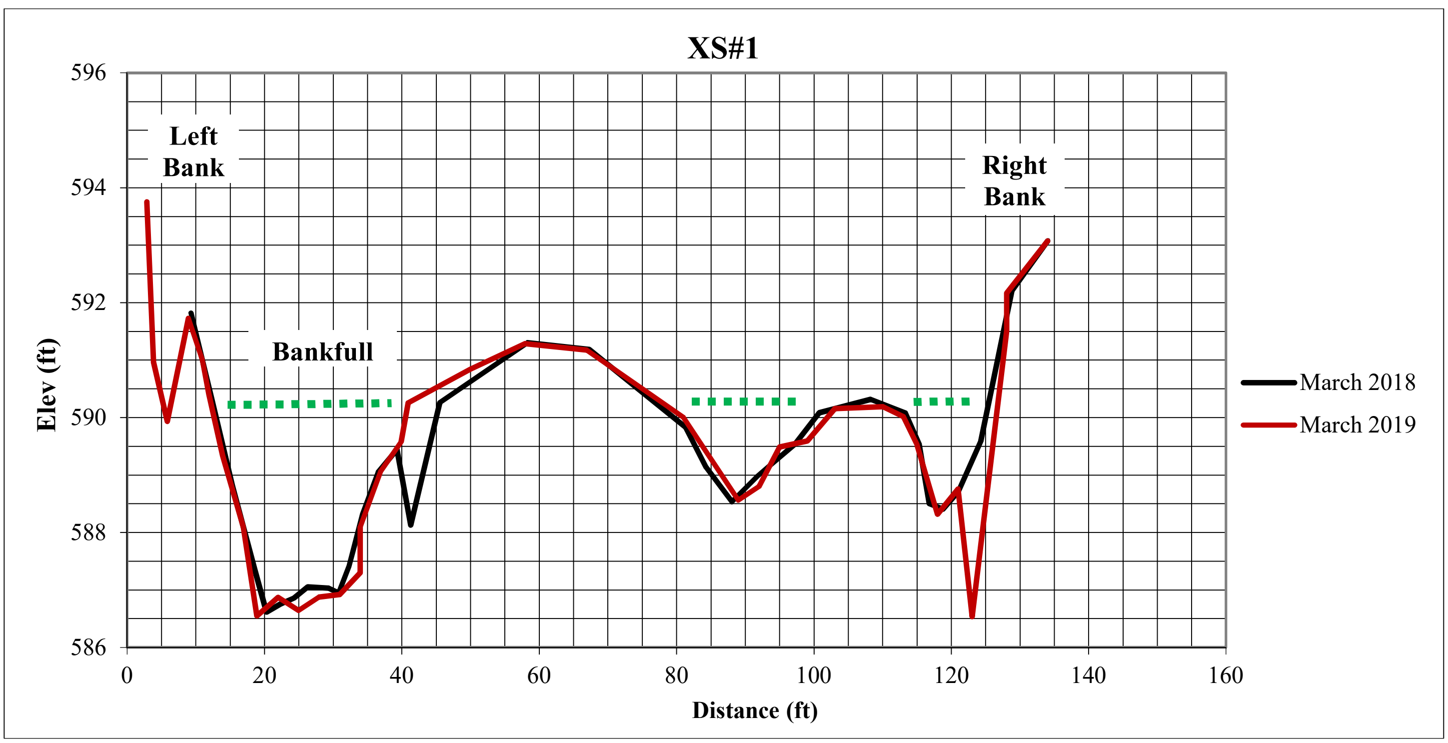


Site	Cross-Section	Geomorphic Parameter	Value	Units
SW-MM-b	2	Bankfull Area	164	$ft.^2$
		Bankfull Width	34	ft.
		Bankfull Depth	4.9	ft.
		Maximum Bankfull Depth	8.2	ft.
		Low Bank Height	9.0	ft.
		Width of the Flood-prone Area	425	ft.
		Width to Depth Ratio	6.8	n/a
		Bank Height Ratio	1.1	n/a
		Entrenchment Ratio	12.7	n/a
		Right Bank BEHI	Low	n/a
		Left Bank BEHI	Low	n/a

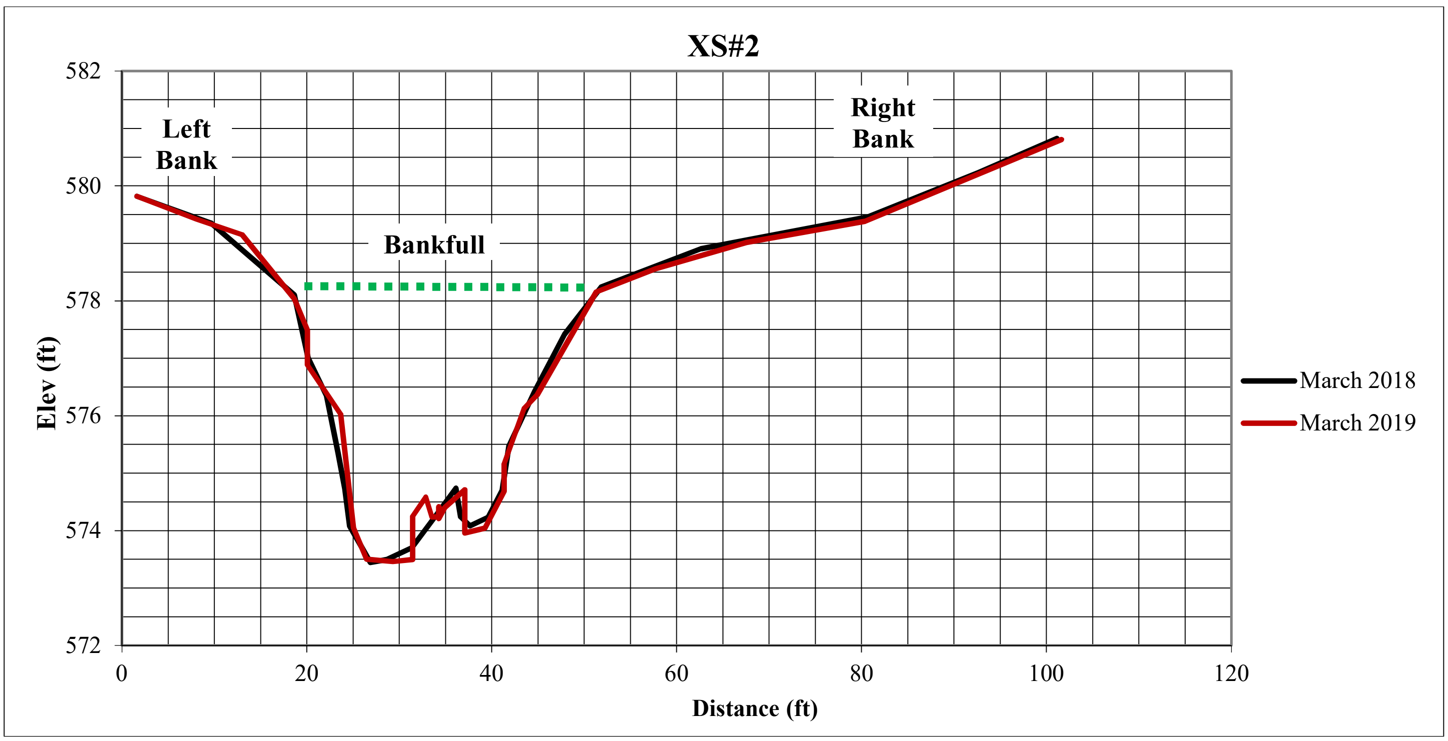


Site	Stream Condition and Function	Score (0 – 2)*
C-MM-b	Upstream watershed impacts from stormwater, wastewater, or sediment	1
	Local stream reach impacts from ditches, pipes, livestock, utilities, or roads	1
	Channel dimension related to bankfull cross-section measurements	1
	Channel pattern related to planform measurements	2
	Channel bed profile related to longitudinal profile measurements	2
	Streambank stability and protection from erosion	1
	Floodplain connection for bankfull flood access	1
	Floodplain morphology to dissipate flood energy and minimize erosion	2
	Riparian vegetation to provide shade, nutrient uptake, and food sources	1
	Habitats including diverse bedform, large woody debris, leaf packs, root hairs	2
	Water quality and stream bed sediments	2
	Presence of desirable fish and macroinvertebrates expected for watershed	0
*Score indicates natural function and health: 2 = Good; 1 = Fair; 0 = Poor	TOTAL	16

Site	Cross-Section	Geomorphic Parameter	Value	Units
C-MM-b	1	Bankfull Area	72	$ft.^2$
		Bankfull Width	30	ft.
		Bankfull Depth	2.4	ft.
		Maximum Bankfull Depth	3.7	ft.
		Low Bank Height	4.7	ft.
		Width of the Flood-prone Area	135	ft.
		Width to Depth Ratio	12.6	n/a
		Bank Height Ratio	1.3	n/a
		Entrenchment Ratio	4.5	n/a
		Right Bank BEHI	Low	n/a
		Left Bank BEHI	Moderate	n/a

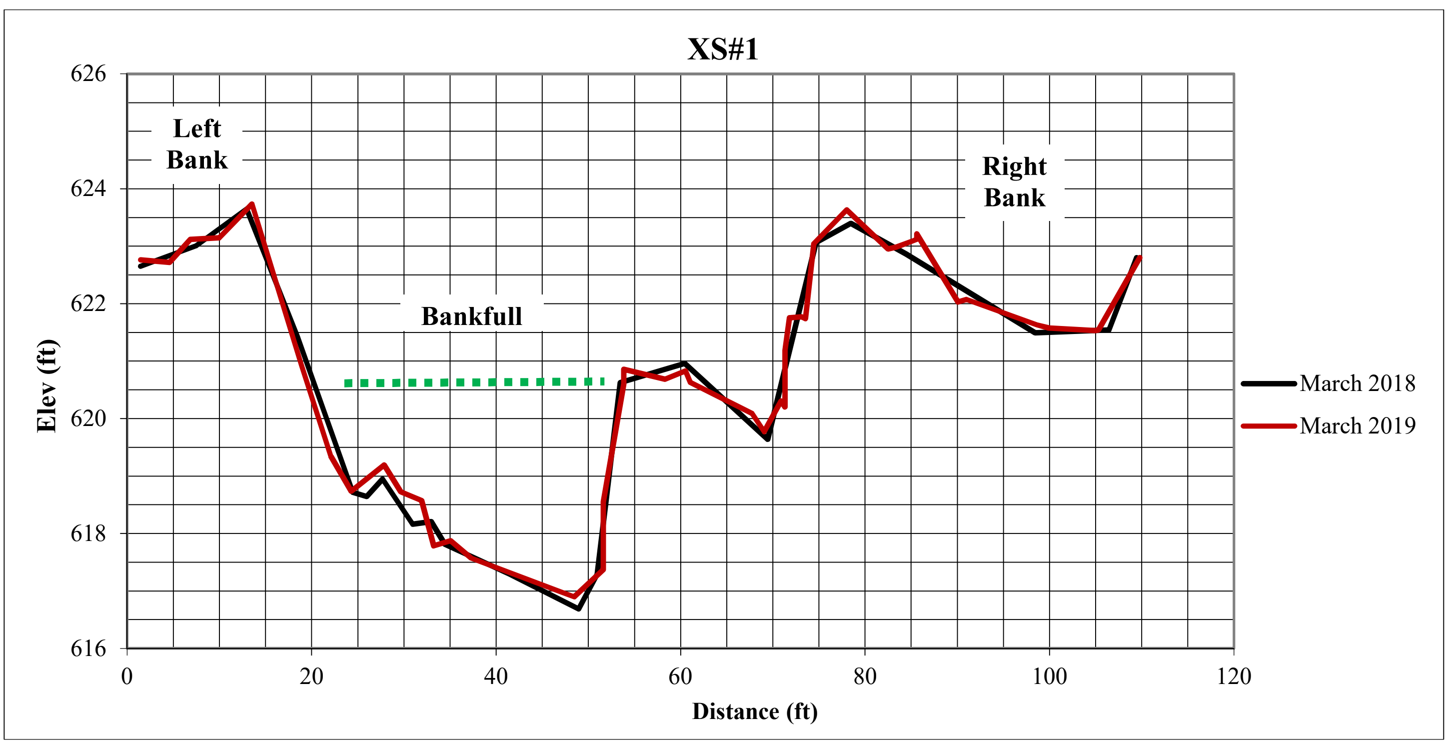


Site	Cross-Section	Geomorphic Parameter	Value	Units
C-MM-b	2	Bankfull Area	90	$ft.^2$
		Bankfull Width	33	ft.
		Bankfull Depth	2.7	ft.
		Maximum Bankfull Depth	4.7	ft.
		Low Bank Height	5.7	ft.
		Width of the Flood-prone Area	315	ft.
		Width to Depth Ratio	11.9	n/a
		Bank Height Ratio	1.2	n/a
		Entrenchment Ratio	9.6	n/a
		Right Bank BEHI	Low	n/a
		Left Bank BEHI	Moderate	n/a

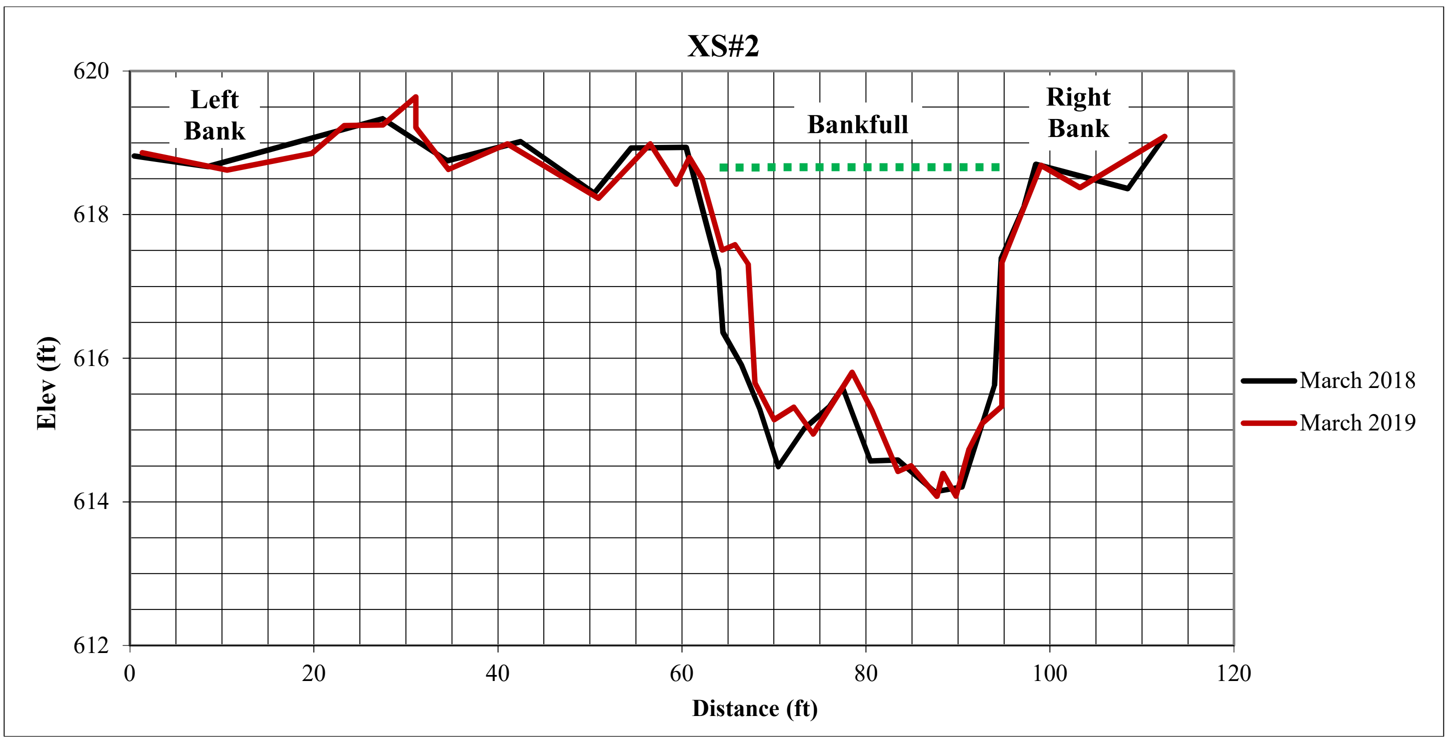


Site	Stream Condition and Function	Score (0 – 2)*
C-MM-a	Upstream watershed impacts from stormwater, wastewater, or sediment	1
	Local stream reach impacts from ditches, pipes, livestock, utilities, or roads	1
	Channel dimension related to bankfull cross-section measurements	1
	Channel pattern related to planform measurements	1
	Channel bed profile related to longitudinal profile measurements	1
	Streambank stability and protection from erosion	1
	Floodplain connection for bankfull flood access	1
	Floodplain morphology to dissipate flood energy and minimize erosion	2
	Riparian vegetation to provide shade, nutrient uptake, and food sources	2
	Habitats including diverse bedform, large woody debris, leaf packs, root hairs	1
	Water quality and stream bed sediments	1
	Presence of desirable fish and macroinvertebrates expected for watershed	1
*Score indicates natural function and health: 2 = Good; 1 = Fair; 0 = Poor	TOTAL	14

Site	Cross-Section	Geomorphic Parameter	Value	Units
C-MM-a	1	Bankfull Area	89	$ft.^2$
		Bankfull Width	36	ft.
		Bankfull Depth	2.5	ft.
		Maximum Bankfull Depth	4.0	ft.
		Low Bank Height	4.0	ft.
		Width of the Flood-prone Area	365	ft.
		Width to Depth Ratio	14.7	n/a
		Bank Height Ratio	1.0	n/a
		Entrenchment Ratio	10.1	n/a
		Right Bank BEHI	High	n/a
		Left Bank BEHI	High	n/a

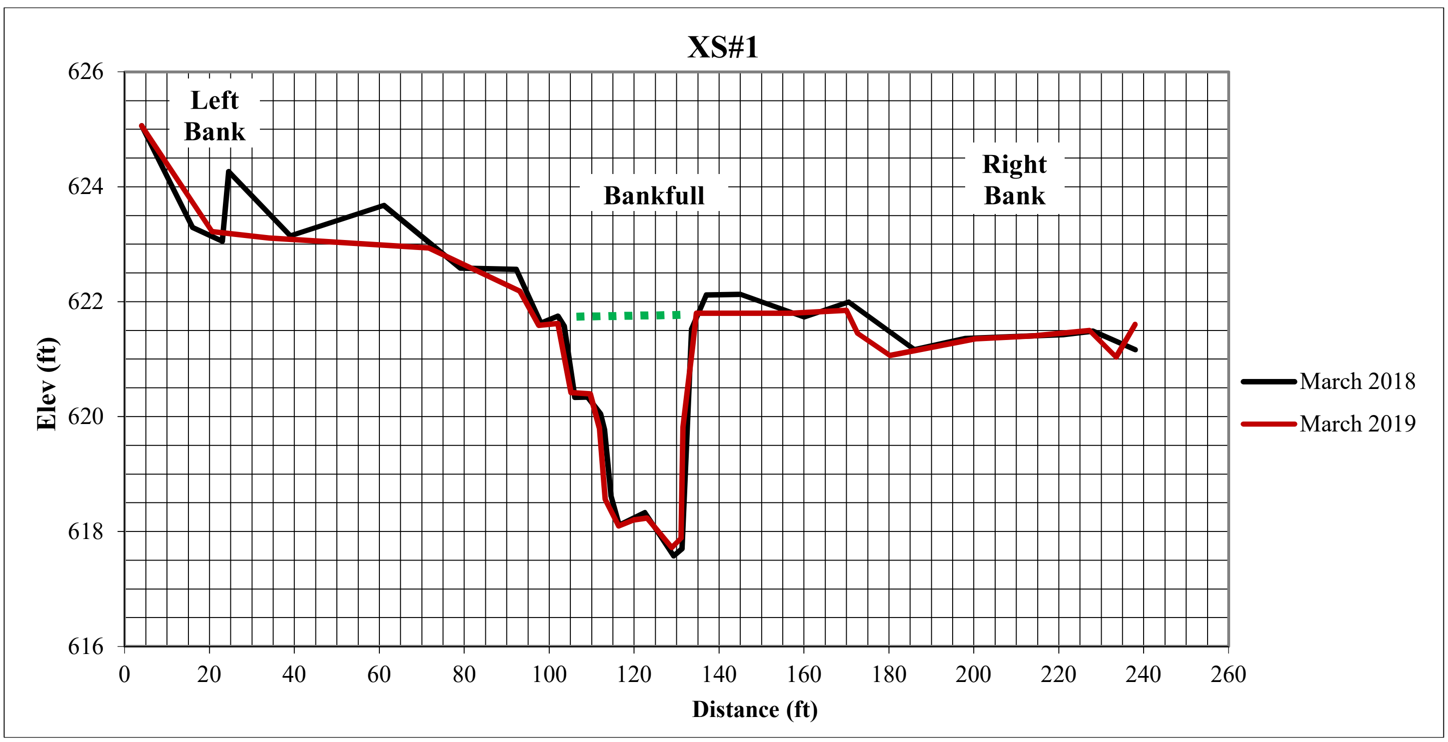


Site	Cross-Section	Geomorphic Parameter	Value	Units
C-MM-a	2	Bankfull Area	63	ft.^{2}
		Bankfull Width	28	ft.
		Bankfull Depth	2.3	ft.
		Maximum Bankfull Depth	3.2	ft.
		Low Bank Height	4.9	ft.
		Width of the Flood-prone Area	320	ft.
		Width to Depth Ratio	12.2	n/a
		Bank Height Ratio	1.5	n/a
		Entrenchment Ratio	11.6	n/a
		Right Bank BEHI	High	n/a
		Left Bank BEHI	High	n/a

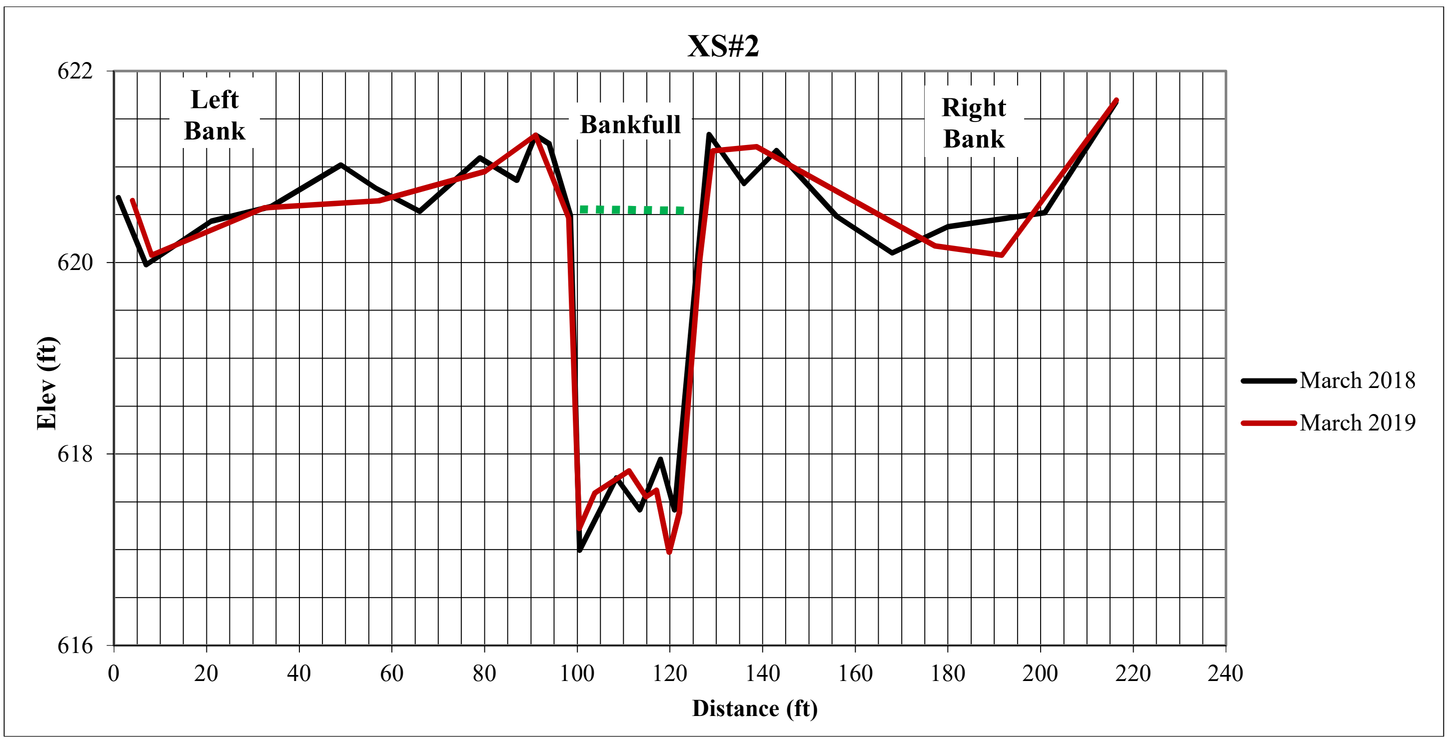


Site	Stream Condition and Function	Score (0 – 2)*
C-1	Upstream watershed impacts from stormwater, wastewater, or sediment	1
	Local stream reach impacts from ditches, pipes, livestock, utilities, or roads	2
	Channel dimension related to bankfull cross-section measurements	2
	Channel pattern related to planform measurements	2
	Channel bed profile related to longitudinal profile measurements	1
	Streambank stability and protection from erosion	1
	Floodplain connection for bankfull flood access	2
	Floodplain morphology to dissipate flood energy and minimize erosion	2
	Riparian vegetation to provide shade, nutrient uptake, and food sources	1
	Habitats including diverse bedform, large woody debris, leaf packs, root hairs	1
	Water quality and stream bed sediments	1
	Presence of desirable fish and macroinvertebrates expected for watershed	0
*Score indicates natural function and health: 2 = Good; 1 = Fair; 0 = Poor	TOTAL	16

Site	Cross-Section	Geomorphic Parameter	Value	Units
C-1	1	Bankfull Area	78	$ft.^2$
		Bankfull Width	33	ft.
		Bankfull Depth	2.4	ft.
		Maximum Bankfull Depth	3.9	ft.
		Low Bank Height	4.1	ft.
		Width of the Flood-prone Area	180	ft.
		Width to Depth Ratio	13.7	n/a
		Bank Height Ratio	1.0	n/a
		Entrenchment Ratio	5.5	n/a
		Right Bank BEHI	Moderate	n/a
		Left Bank BEHI	Low	n/a

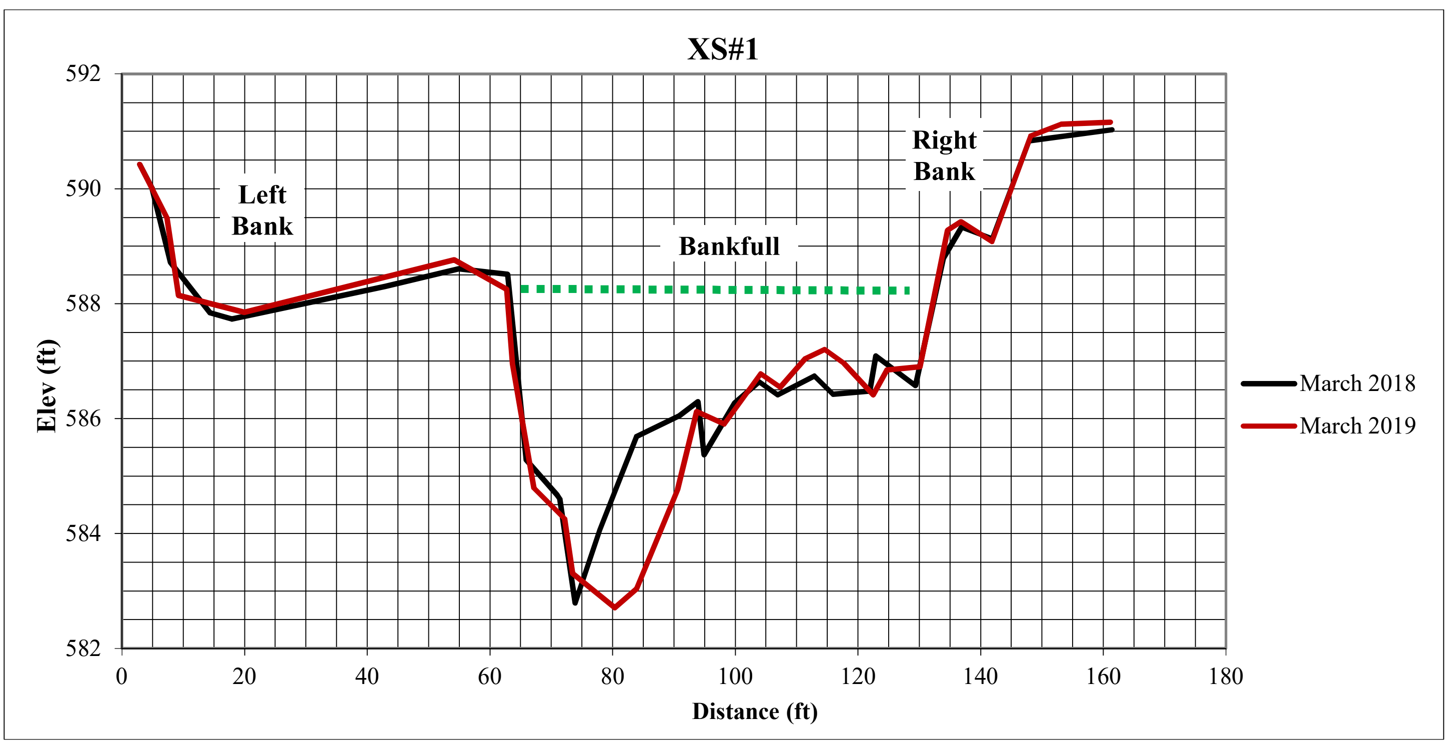


Site	Cross-Section	Geomorphic Parameter	Value	Units
C-1	2	Bankfull Area	79	$ft.^2$
		Bankfull Width	31	ft.
		Bankfull Depth	2.5	ft.
		Maximum Bankfull Depth	3.5	ft.
		Low Bank Height	4.2	ft.
		Width of the Flood-prone Area	232	ft.
		Width to Depth Ratio	12.3	n/a
		Bank Height Ratio	1.2	n/a
		Entrenchment Ratio	7.5	n/a
		Right Bank BEHI	High	n/a
		Left Bank BEHI	High	n/a

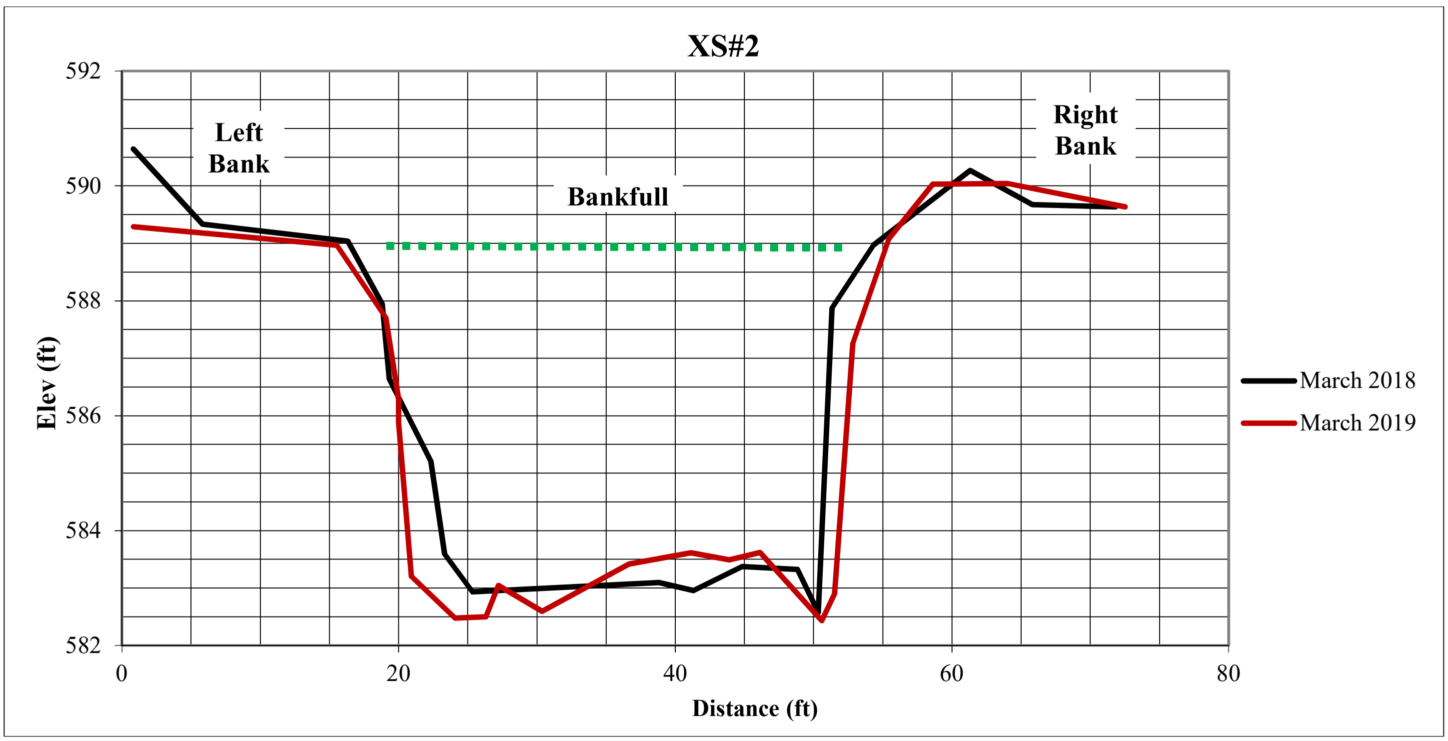


Site	Stream Condition and Function	Score (0 – 2)*
NW-1-c	Upstream watershed impacts from stormwater, wastewater, or sediment	0
	Local stream reach impacts from ditches, pipes, livestock, utilities, or roads	1
	Channel dimension related to bankfull cross-section measurements	1
	Channel pattern related to planform measurements	1
	Channel bed profile related to longitudinal profile measurements	1
	Streambank stability and protection from erosion	0
	Floodplain connection for bankfull flood access	2
	Floodplain morphology to dissipate flood energy and minimize erosion	2
	Riparian vegetation to provide shade, nutrient uptake, and food sources	1
	Habitats including diverse bedform, large woody debris, leaf packs, root hairs	1
	Water quality and stream bed sediments	1
	Presence of desirable fish and macroinvertebrates expected for watershed	0
*Score indicates natural function and health: 2 = Good; 1 = Fair; 0 = Poor	TOTAL	11

Site	Cross-Section	Geomorphic Parameter	Value	Units
NW-1-c	1	Bankfull Area	193	$ft.^2$
		Bankfull Width	72	ft.
		Bankfull Depth	2.7	ft.
		Maximum Bankfull Depth	5.5	ft.
		Low Bank Height	6.1	ft.
		Width of the Flood-prone Area	570	ft.
		Width to Depth Ratio	26.8	n/a
		Bank Height Ratio	1.1	n/a
		Entrenchment Ratio	7.9	n/a
		Right Bank BEHI	Moderate	n/a
		Left Bank BEHI	Low	n/a

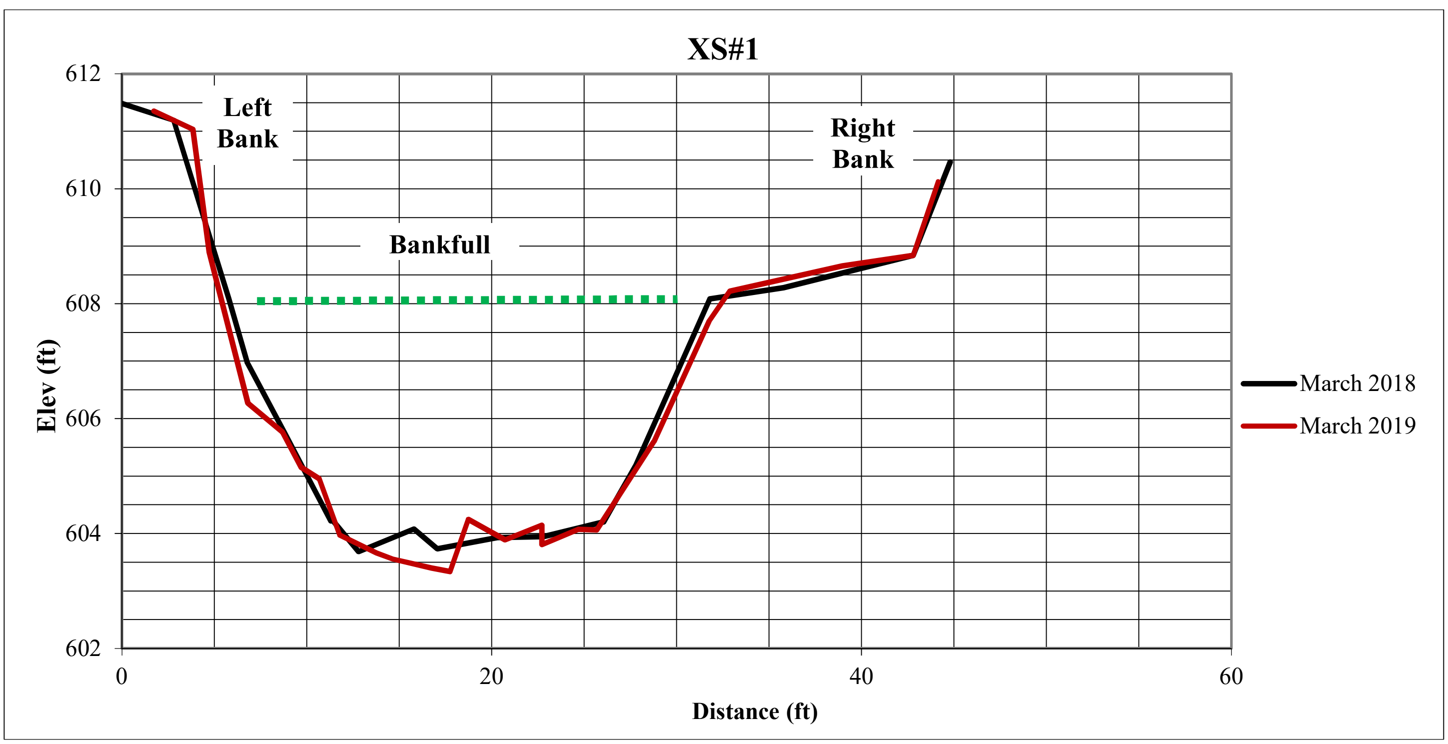


Site	Cross-Section	Geomorphic Parameter	Value	Units
NW-1-c	2	Bankfull Area	196	$ft.^2$
		Bankfull Width	40	ft.
		Bankfull Depth	4.9	ft.
		Maximum Bankfull Depth	6.5	ft.
		Low Bank Height	6.5	ft.
		Width of the Flood-prone Area	479	ft.
		Width to Depth Ratio	8.1	n/a
		Bank Height Ratio	1.0	n/a
		Entrenchment Ratio	12	n/a
		Right Bank BEHI	Moderate	n/a
		Left Bank BEHI	Low	n/a

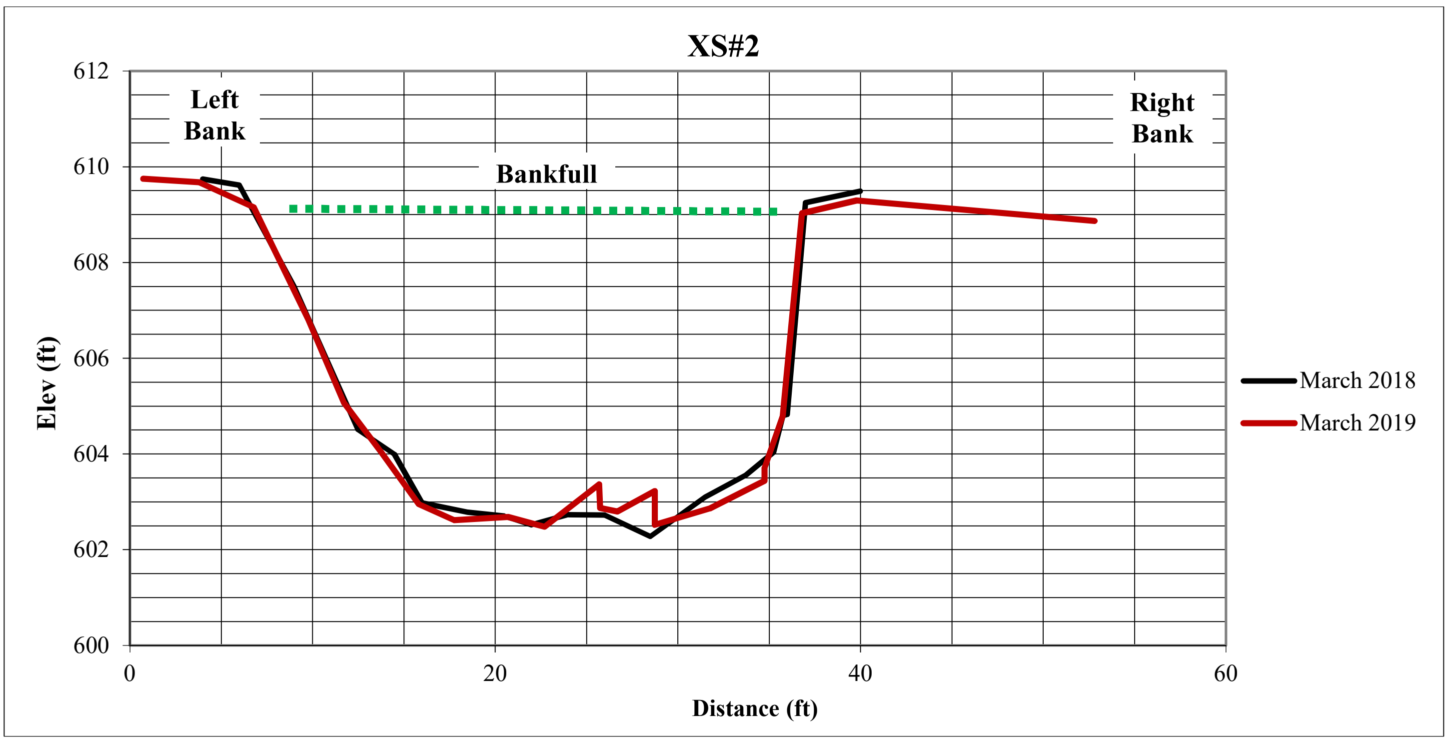


Site	Stream Condition and Function	Score (0 – 2)*
NW-1-b	Upstream watershed impacts from stormwater, wastewater, or sediment	0
	Local stream reach impacts from ditches, pipes, livestock, utilities, or roads	0
	Channel dimension related to bankfull cross-section measurements	1
	Channel pattern related to planform measurements	0
	Channel bed profile related to longitudinal profile measurements	1
	Streambank stability and protection from erosion	0
	Floodplain connection for bankfull flood access	1
	Floodplain morphology to dissipate flood energy and minimize erosion	2
	Riparian vegetation to provide shade, nutrient uptake, and food sources	0
	Habitats including diverse bedform, large woody debris, leaf packs, root hairs	1
	Water quality and stream bed sediments	1
	Presence of desirable fish and macroinvertebrates expected for watershed	0
*Score indicates natural function and health: 2 = Good; 1 = Fair; 0 = Poor	TOTAL	7

Site	Cross-Section	Geomorphic Parameter	Value	Units
NW-1-b	1	Bankfull Area	95	$ft.^2$
		Bankfull Width	26	ft.
		Bankfull Depth	3.7	ft.
		Maximum Bankfull Depth	4.9	ft.
		Low Bank Height	8	ft.
		Width of the Flood-prone Area	192	ft.
		Width to Depth Ratio	7.1	n/a
		Bank Height Ratio	1.6	n/a
		Entrenchment Ratio	7.4	n/a
		Right Bank BEHI	Low	n/a
		Left Bank BEHI	High	n/a

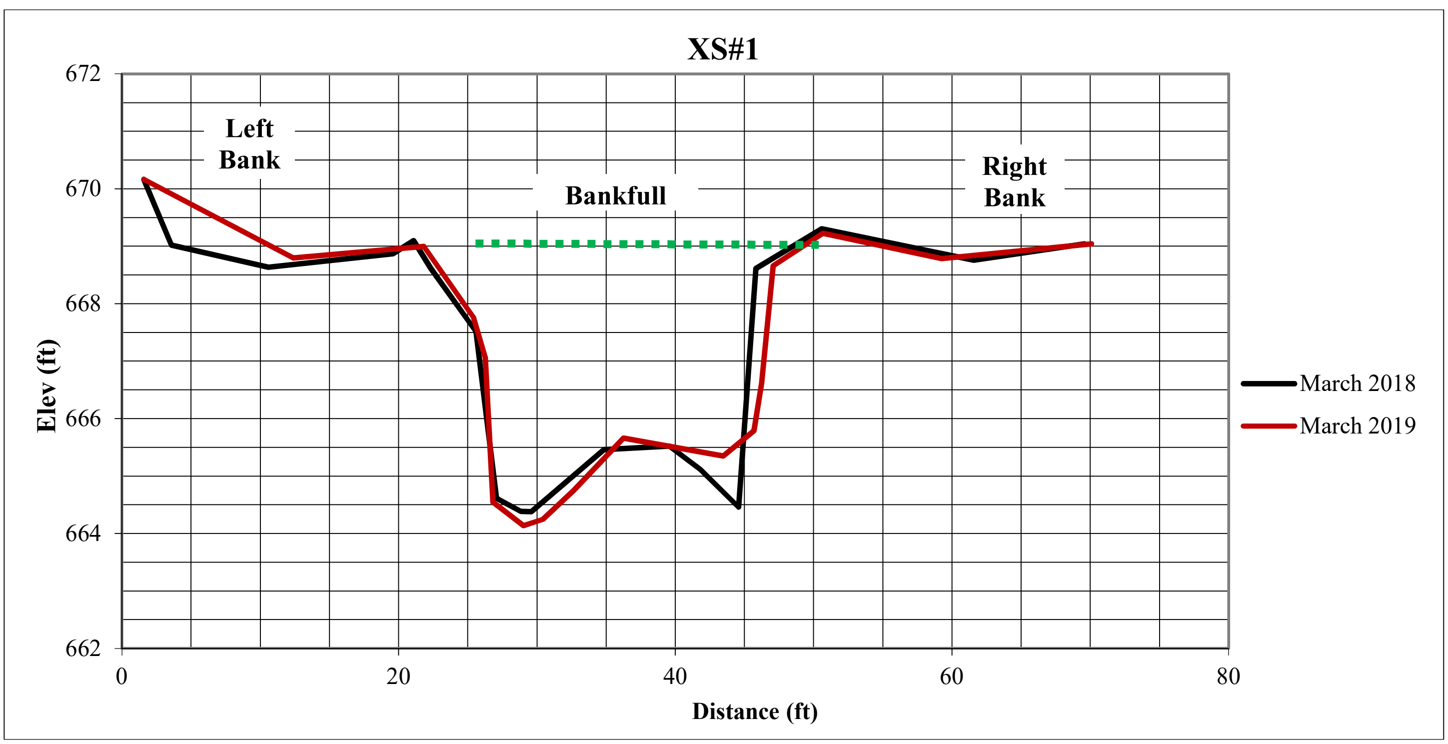


Site	Cross-Section	Geomorphic Parameter	Value	Units
NW-1-b	2	Bankfull Area	156	ft.^{2}
		Bankfull Width	29	ft.
		Bankfull Depth	5.4	ft.
		Maximum Bankfull Depth	6.5	ft.
		Low Bank Height	6.8	ft.
		Width of the Flood-prone Area	215	ft.
		Width to Depth Ratio	5.4	n/a
		Bank Height Ratio	1	n/a
		Entrenchment Ratio	7.4	n/a
		Right Bank BEHI	Low	n/a
		Left Bank BEHI	Low	n/a

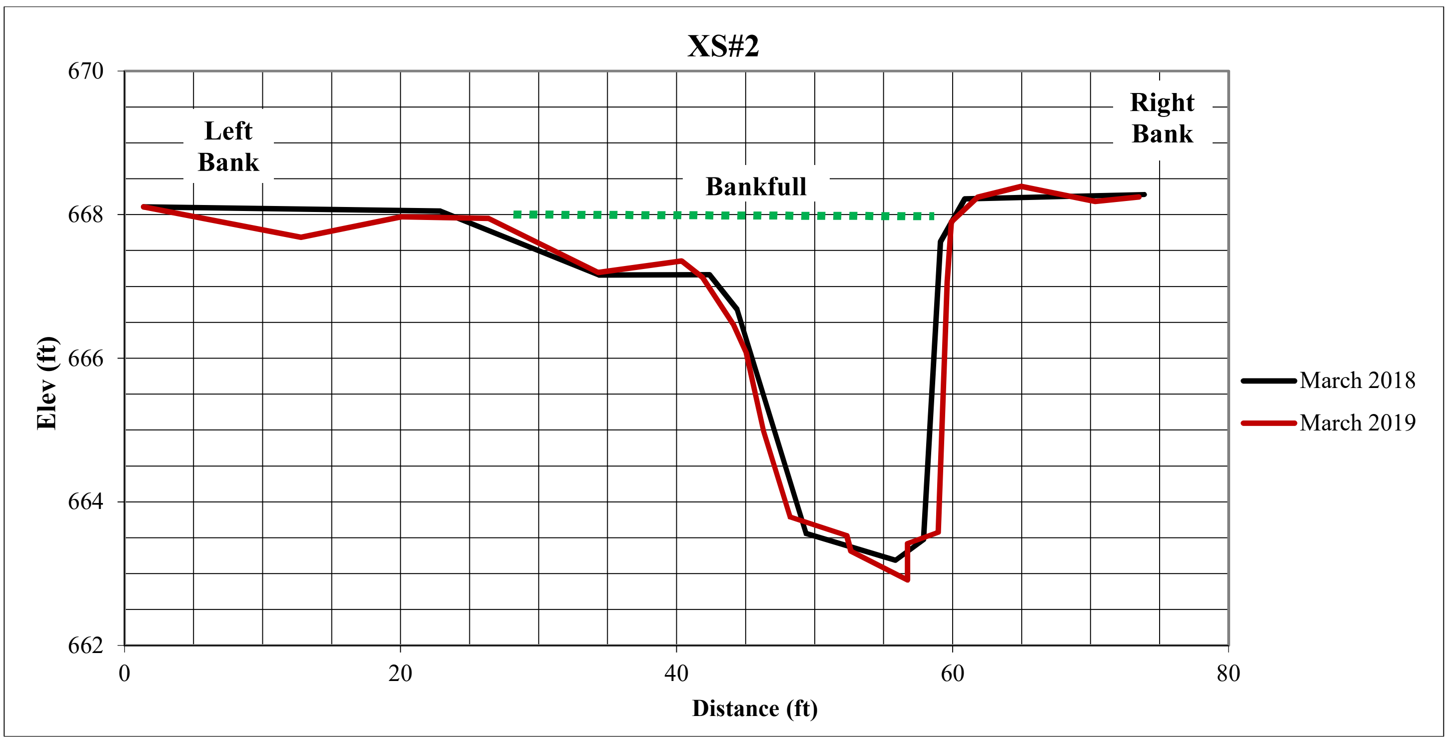


Site	Stream Condition and Function	Score (0 – 2)*
NW-1-d	Upstream watershed impacts from stormwater, wastewater, or sediment	0
	Local stream reach impacts from ditches, pipes, livestock, utilities, or roads	1
	Channel dimension related to bankfull cross-section measurements	2
	Channel pattern related to planform measurements	2
	Channel bed profile related to longitudinal profile measurements	2
	Streambank stability and protection from erosion	1
	Floodplain connection for bankfull flood access	2
	Floodplain morphology to dissipate flood energy and minimize erosion	1
	Riparian vegetation to provide shade, nutrient uptake, and food sources	1
	Habitats including diverse bedform, large woody debris, leaf packs, root hairs	2
	Water quality and stream bed sediments	1
	Presence of desirable fish and macroinvertebrates expected for watershed	0
*Score indicates natural function and health: 2 = Good; 1 = Fair; 0 = Poor	TOTAL	15

Site	Cross-Section	Geomorphic Parameter	Value	Units
NW-1-d	1	Bankfull Area	74	$ft.^2$
		Bankfull Width	25	ft.
		Bankfull Depth	2.9	ft.
		Maximum Bankfull Depth	4.5	ft.
		Low Bank Height	4.9	ft.
		Width of the Flood-prone Area	140	ft.
		Width to Depth Ratio	8.6	n/a
		Bank Height Ratio	1.1	n/a
		Entrenchment Ratio	5.5	n/a
		Right Bank BEHI	Moderate	n/a
		Left Bank BEHI	Moderate	n/a



Site	Cross-Section	Geomorphic Parameter	Value	Units
NW-1-d	2	Bankfull Area	76	ft.^{2}
		Bankfull Width	34	ft.
		Bankfull Depth	2.3	ft.
		Maximum Bankfull Depth	5.0	ft.
		Low Bank Height	5.0	ft.
		Width of the Flood-prone Area	100	ft.
		Width to Depth Ratio	14.7	n/a
		Bank Height Ratio	1.0	n/a
		Entrenchment Ratio	3.0	n/a
		Right Bank BEHI	Moderate	n/a
		Left Bank BEHI	Low	n/a



Moore’s Mill Creek Watershed Monitoring Data

Site Number	Reach Length	Upstream Coordinates	Downstream Coordinates
C-1	550 ft.	32.601404 N, 85.432698 W	32.600192 N, 85.432044 W
C-MM-a	950 ft.	32.600874 N, 85.428538 W	32.600530 N, 85.431463 W
C-MM-b	1100 ft.	32.591034 N, 85.442119 W	32.590912 N, 85.444596 W
NW-1-b	600 ft.	32.603946 N, 85.453310 W	32.602333 N, 85.453047 W
NW-1-c	850 ft.	32.597506 N, 85.451326 W	32.595712 N, 85.450483 W
NW-1-d	950 ft.	32.613527 N, 85.455178 W	32.611580 N, 85.456570 W
SW-MM-b	650 ft.	32.568631 N, 85.451830 W	32.567873 N, 85.453612 W
SW-MM-c	1350 ft.	32.559094 N, 85.463712 W	32.558760 N, 85.466685 W

Site Number	Sample Date	Sample Time	Sample Collected By	Total Suspended Solids (mg/L)	Analytical Method	Analysis Date	Analysis Performed By
C-1	6/25/2018	1440	D. Kimbrow	< 2.50	SM 2540D 1997	6/26/2018	T. Watson (ERA)
C-MM-a	6/25/2018	1450	D. Kimbrow	11.5	SM 2540D 1997	6/26/2018	T. Watson (ERA)
C-MM-b	6/25/2018	1510	D. Kimbrow	3.33	SM 2540D 1997	6/26/2018	T. Watson (ERA)
NW-1-b	6/25/2018	1410	D. Kimbrow	< 2.50	SM 2540D 1997	6/26/2018	T. Watson (ERA)
NW-1-c	6/25/2018	1420	D. Kimbrow	< 2.50	SM 2540D 1997	6/26/2018	T. Watson (ERA)
NW-1-d	6/25/2018	1355	D. Kimbrow	< 2.50	SM 2540D 1997	6/26/2018	T. Watson (ERA)
SW-MM-b	6/25/2018	1525	D. Kimbrow	3.25	SM 2540D 1997	6/26/2018	T. Watson (ERA)
SW-MM-c	6/25/2018	1545	D. Kimbrow	2.75	SM 2540D 1997	6/26/2018	T. Watson (ERA)
Site Number	Sample Date	Sample Time	Sample Collected By	Total Suspended Solids (mg/L)	Analytical Method	Analysis Date	Analysis Performed By
C-1	9/19/2018	1105	D. Kimbrow	< 2.50	SM 2540D 1997	9/20/2018	T. Watson (ERA)
C-MM-a	9/19/2018	1120	D. Kimbrow	2.80	SM 2540D 1997	9/20/2018	T. Watson (ERA)
C-MM-b	9/19/2018	1240	D. Kimbrow	< 2.50	SM 2540D 1997	9/20/2018	T. Watson (ERA)
NW-1-b	9/19/2018	1020	D. Kimbrow	< 2.50	SM 2540D 1997	9/20/2018	T. Watson (ERA)
NW-1-c	9/19/2018	1040	D. Kimbrow	< 2.50	SM 2540D 1997	9/20/2018	T. Watson (ERA)
NW-1-d	9/19/2018	1010	D. Kimbrow	< 2.50	SM 2540D 1997	9/20/2018	T. Watson (ERA)
SW-MM-b	9/19/2018	1255	D. Kimbrow	< 2.50	SM 2540D 1997	9/20/2018	T. Watson (ERA)
SW-MM-c	9/19/2018	1315	D. Kimbrow	< 2.50	SM 2540D 1997	9/20/2018	T. Watson (ERA)
Site Number	Sample Date	Sample Time	Sample Collected By	Total Suspended Solids (mg/L)	Analytical Method	Analysis Date	Analysis Performed By
C-1	12/10/2018	1310	D. Kimbrow	< 2.50	SM 2540D 1997	12/11/2018	C. Ott (ERA)
C-MM-a	12/10/2018	1320	D. Kimbrow	8.89	SM 2540D 1997	12/11/2018	C. Ott (ERA)
C-MM-b	12/10/2018	1345	D. Kimbrow	7.50	SM 2540D 1997	12/11/2018	C. Ott (ERA)
NW-1-b	12/10/2018	1230	D. Kimbrow	4.67	SM 2540D 1997	12/11/2018	C. Ott (ERA)
NW-1-c	12/10/2018	1250	D. Kimbrow	4.67	SM 2540D 1997	12/11/2018	C. Ott (ERA)
NW-1-d	12/10/2018	1125	D. Kimbrow	7.00	SM 2540D 1997	12/11/2018	C. Ott (ERA)
SW-MM-b	12/10/2018	1405	D. Kimbrow	6.33	SM 2540D 1997	12/11/2018	C. Ott (ERA)
SW-MM-c	12/10/2018	1435	D. Kimbrow	6.17	SM 2540D 1997	12/11/2018	C. Ott (ERA)
Site Number	Sample Date	Sample Time	Sample Collected By	Total Suspended Solids (mg/L)	Analytical Method	Analysis Date	Analysis Performed By
C-1	3/11/2019	1055	D. Kimbrow	< 2.50	SM 2540D 1997	3/12/2019	B. Green (ERA)
C-MM-a	3/11/2019	1105	D. Kimbrow	3.50	SM 2540D 1997	3/12/2019	B. Green (ERA)
C-MM-b	3/11/2019	1125	D. Kimbrow	2.88	SM 2540D 1997	3/12/2019	B. Green (ERA)
NW-1-b	3/11/2019	1025	D. Kimbrow	4.38	SM 2540D 1997	3/12/2019	B. Green (ERA)
NW-1-c	3/11/2019	1040	D. Kimbrow	4.00	SM 2540D 1997	3/12/2019	B. Green (ERA)
NW-1-d	3/11/2019	1010	D. Kimbrow	7.63	SM 2540D 1997	3/12/2019	B. Green (ERA)
SW-MM-b	3/11/2019	1140	D. Kimbrow	3.13	SM 2540D 1997	3/12/2019	B. Green (ERA)
SW-MM-c	3/11/2019	1200	D. Kimbrow	2.75	SM 2540D 1997	3/12/2019	B. Green (ERA)

Site Number	Sample Date	Sample Time	Sample Collected By	Water Temperature (F)	Analytical Method	Analysis Date	Analysis Performed By
C-1	6/25/2018	1440	D. Kimbrow	75.4	YSI 5560	6/25/2018	D. Kimbrow
C-MM-a	6/25/2018	1450	D. Kimbrow	83.4	YSI 5560	6/25/2018	D. Kimbrow
C-MM-b	6/25/2018	1510	D. Kimbrow	79.7	YSI 5560	6/25/2018	D. Kimbrow
NW-1-b	6/25/2018	1410	D. Kimbrow	81.9	YSI 5560	6/25/2018	D. Kimbrow
NW-1-c	6/25/2018	1420	D. Kimbrow	80.4	YSI 5560	6/25/2018	D. Kimbrow
NW-1-d	6/25/2018	1355	D. Kimbrow	74.6	YSI 5560	6/25/2018	D. Kimbrow
SW-MM-b	6/25/2018	1525	D. Kimbrow	85.2	YSI 5560	6/25/2018	D. Kimbrow
SW-MM-c	6/25/2018	1545	D. Kimbrow	82.6	YSI 5560	6/25/2018	D. Kimbrow
Site Number	Sample Date	Sample Time	Sample Collected By	Water Temperature (F)	Analytical Method	Analysis Date	Analysis Performed By
C-1	9/19/2018	1105	D. Kimbrow	73.2	YSI 5560	9/19/2018	D. Kimbrow
C-MM-a	9/19/2018	1120	D. Kimbrow	76.4	YSI 5560	9/19/2018	D. Kimbrow
C-MM-b	9/19/2018	1240	D. Kimbrow	76	YSI 5560	9/19/2018	D. Kimbrow
NW-1-b	9/19/2018	1020	D. Kimbrow	75.1	YSI 5560	9/19/2018	D. Kimbrow
NW-1-c	9/19/2018	1040	D. Kimbrow	74.7	YSI 5560	9/19/2018	D. Kimbrow
NW-1-d	9/19/2018	1010	D. Kimbrow	73.6	YSI 5560	9/19/2018	D. Kimbrow
SW-MM-b	9/19/2018	1255	D. Kimbrow	78.4	YSI 5560	9/19/2018	D. Kimbrow
SW-MM-c	9/19/2018	1315	D. Kimbrow	78.7	YSI 5560	9/19/2018	D. Kimbrow
Site Number	Sample Date	Sample Time	Sample Collected By	Water Temperature (F)	Analytical Method	Analysis Date	Analysis Performed By
C-1	12/10/2018	1310	D. Kimbrow	50.4	YSI 5560	12/10/2018	D. Kimbrow
C-MM-a	12/10/2018	1320	D. Kimbrow	47.7	YSI 5560	12/10/2018	D. Kimbrow
C-MM-b	12/10/2018	1345	D. Kimbrow	48.2	YSI 5560	12/10/2018	D. Kimbrow
NW-1-b	12/10/2018	1230	D. Kimbrow	50	YSI 5560	12/10/2018	D. Kimbrow
NW-1-c	12/10/2018	1250	D. Kimbrow	49.8	YSI 5560	12/10/2018	D. Kimbrow
NW-1-d	12/10/2018	1125	D. Kimbrow	53.5	YSI 5560	12/10/2018	D. Kimbrow
SW-MM-b	12/10/2018	1405	D. Kimbrow	49.1	YSI 5560	12/10/2018	D. Kimbrow
SW-MM-c	12/10/2018	1435	D. Kimbrow	48.7	YSI 5560	12/10/2018	D. Kimbrow
Site Number	Sample Date	Sample Time	Sample Collected By	Water Temperature (F)	Analytical Method	Analysis Date	Analysis Performed By
C-1	3/11/2019	1055	D. Kimbrow	60.2	YSI 5560	3/11/2019	D. Kimbrow
C-MM-a	3/11/2019	1105	D. Kimbrow	62.4	YSI 5560	3/11/2019	D. Kimbrow
C-MM-b	3/11/2019	1125	D. Kimbrow	61.9	YSI 5560	3/11/2019	D. Kimbrow
NW-1-b	3/11/2019	1025	D. Kimbrow	60.7	YSI 5560	3/11/2019	D. Kimbrow
NW-1-c	3/11/2019	1040	D. Kimbrow	60.5	YSI 5560	3/11/2019	D. Kimbrow
NW-1-d	3/11/2019	1010	D. Kimbrow	60.7	YSI 5560	3/11/2019	D. Kimbrow
SW-MM-b	3/11/2019	1140	D. Kimbrow	62.3	YSI 5560	3/11/2019	D. Kimbrow
SW-MM-c	3/11/2019	1200	D. Kimbrow	62.6	YSI 5560	3/11/2019	D. Kimbrow
Site Number	Sample Date	Sample Time	Sample Collected By	pH	Analytical Method	Analysis Date	Analysis Performed By
C-1	6/25/2018	1440	D. Kimbrow	7.42	YSI 1001	6/25/2018	D. Kimbrow
C-MM-a	6/25/2018	1450	D. Kimbrow	7.1	YSI 1001	6/25/2018	D. Kimbrow
C-MM-b	6/25/2018	1510	D. Kimbrow	7.33	YSI 1001	6/25/2018	D. Kimbrow
NW-1-b	6/25/2018	1410	D. Kimbrow	7.51	YSI 1001	6/25/2018	D. Kimbrow
NW-1-c	6/25/2018	1420	D. Kimbrow	7.33	YSI 1001	6/25/2018	D. Kimbrow
NW-1-d	6/25/2018	1355	D. Kimbrow	7.17	YSI 1001	6/25/2018	D. Kimbrow
SW-MM-b	6/25/2018	1525	D. Kimbrow	7.3	YSI 1001	6/25/2018	D. Kimbrow
SW-MM-c	6/25/2018	1545	D. Kimbrow	7.98	YSI 1001	6/25/2018	D. Kimbrow

Site Number	Sample Date	Sample Time	Sample Collected By	pH	Analytical Method	Analysis Date	Analysis Performed By
C-1	9/19/2018	1105	D. Kimbrow	7.38	YSI 1001	9/19/2018	D. Kimbrow
C-MM-a	9/19/2018	1120	D. Kimbrow	6.86	YSI 1001	9/19/2018	D. Kimbrow
C-MM-b	9/19/2018	1240	D. Kimbrow	7.34	YSI 1001	9/19/2018	D. Kimbrow
NW-1-b	9/19/2018	1020	D. Kimbrow	7.44	YSI 1001	9/19/2018	D. Kimbrow
NW-1-c	9/19/2018	1040	D. Kimbrow	7.25	YSI 1001	9/19/2018	D. Kimbrow
NW-1-d	9/19/2018	1010	D. Kimbrow	7.11	YSI 1001	9/19/2018	D. Kimbrow
SW-MM-b	9/19/2018	1255	D. Kimbrow	7.02	YSI 1001	9/19/2018	D. Kimbrow
SW-MM-c	9/19/2018	1315	D. Kimbrow	8	YSI 1001	9/19/2018	D. Kimbrow
Site Number	Sample Date	Sample Time	Sample Collected By	pH	Analytical Method	Analysis Date	Analysis Performed By
C-1	12/10/2018	1310	D. Kimbrow	7.31	YSI 1001	12/10/2018	D. Kimbrow
C-MM-a	12/10/2018	1320	D. Kimbrow	7.2	YSI 1001	12/10/2018	D. Kimbrow
C-MM-b	12/10/2018	1345	D. Kimbrow	7.27	YSI 1001	12/10/2018	D. Kimbrow
NW-1-b	12/10/2018	1230	D. Kimbrow	7.33	YSI 1001	12/10/2018	D. Kimbrow
NW-1-c	12/10/2018	1250	D. Kimbrow	7.33	YSI 1001	12/10/2018	D. Kimbrow
NW-1-d	12/10/2018	1125	D. Kimbrow	6.93	YSI 1001	12/10/2018	D. Kimbrow
SW-MM-b	12/10/2018	1405	D. Kimbrow	7.31	YSI 1001	12/10/2018	D. Kimbrow
SW-MM-c	12/10/2018	1435	D. Kimbrow	7.5	YSI 1001	12/10/2018	D. Kimbrow
Site Number	Sample Date	Sample Time	Sample Collected By	pH	Analytical Method	Analysis Date	Analysis Performed By
C-1	3/11/2019	1055	D. Kimbrow	7.28	YSI 1001	3/11/2019	D. Kimbrow
C-MM-a	3/11/2019	1105	D. Kimbrow	7.16	YSI 1001	3/11/2019	D. Kimbrow
C-MM-b	3/11/2019	1125	D. Kimbrow	7.43	YSI 1001	3/11/2019	D. Kimbrow
NW-1-b	3/11/2019	1025	D. Kimbrow	7.39	YSI 1001	3/11/2019	D. Kimbrow
NW-1-c	3/11/2019	1040	D. Kimbrow	7.37	YSI 1001	3/11/2019	D. Kimbrow
NW-1-d	3/11/2019	1010	D. Kimbrow	7.12	YSI 1001	3/11/2019	D. Kimbrow
SW-MM-b	3/11/2019	1140	D. Kimbrow	7.38	YSI 1001	3/11/2019	D. Kimbrow
SW-MM-c	3/11/2019	1200	D. Kimbrow	7.77	YSI 1001	3/11/2019	D. Kimbrow
Site Number	Sample Date	Sample Time	Sample Collected By	Dissolved Oxygen (mg/L)	Analytical Method	Analysis Date	Analysis Performed By
C-1	6/25/2018	1440	D. Kimbrow	7.96	YSI 2003 polarographic	6/25/2018	D. Kimbrow
C-MM-a	6/25/2018	1450	D. Kimbrow	6.42	YSI 2003 polarographic	6/25/2018	D. Kimbrow
C-MM-b	6/25/2018	1510	D. Kimbrow	8.06	YSI 2003 polarographic	6/25/2018	D. Kimbrow
NW-1-b	6/25/2018	1410	D. Kimbrow	8.16	YSI 2003 polarographic	6/25/2018	D. Kimbrow
NW-1-c	6/25/2018	1420	D. Kimbrow	7.35	YSI 2003 polarographic	6/25/2018	D. Kimbrow
NW-1-d	6/25/2018	1355	D. Kimbrow	7.91	YSI 2003 polarographic	6/25/2018	D. Kimbrow
SW-MM-b	6/25/2018	1525	D. Kimbrow	7.72	YSI 2003 polarographic	6/25/2018	D. Kimbrow
SW-MM-c	6/25/2018	1545	D. Kimbrow	8.29	YSI 2003 polarographic	6/25/2018	D. Kimbrow

Site Number	Sample Date	Sample Time	Sample Collected By	Dissolved Oxygen (mg/L)	Analytical Method	Analysis Date	Analysis Performed By
C-1	9/19/2018	1105	D. Kimbrow	7.46	YSI 2003 polarographic	9/19/2018	D. Kimbrow
C-MM-a	9/19/2018	1120	D. Kimbrow	2.14	YSI 2003 polarographic	9/19/2018	D. Kimbrow
C-MM-b	9/19/2018	1240	D. Kimbrow	7.88	YSI 2003 polarographic	9/19/2018	D. Kimbrow
NW-1-b	9/19/2018	1020	D. Kimbrow	7.51	YSI 2003 polarographic	9/19/2018	D. Kimbrow
NW-1-c	9/19/2018	1040	D. Kimbrow	6.25	YSI 2003 polarographic	9/19/2018	D. Kimbrow
NW-1-d	9/19/2018	1010	D. Kimbrow	7.85	YSI 2003 polarographic	9/19/2018	D. Kimbrow
SW-MM-b	9/19/2018	1255	D. Kimbrow	4.71	YSI 2003 polarographic	9/19/2018	D. Kimbrow
SW-MM-c	9/19/2018	1315	D. Kimbrow	8.47	YSI 2003 polarographic	9/19/2018	D. Kimbrow
Site Number	Sample Date	Sample Time	Sample Collected By	Dissolved Oxygen (mg/L)	Analytical Method	Analysis Date	Analysis Performed By
C-1	12/10/2018	1310	D. Kimbrow	10.76	YSI 2003 polarographic	12/10/2018	D. Kimbrow
C-MM-a	12/10/2018	1320	D. Kimbrow	10.7	YSI 2003 polarographic	12/10/2018	D. Kimbrow
C-MM-b	12/10/2018	1345	D. Kimbrow	11.05	YSI 2003 polarographic	12/10/2018	D. Kimbrow
NW-1-b	12/10/2018	1230	D. Kimbrow	11.65	YSI 2003 polarographic	12/10/2018	D. Kimbrow
NW-1-c	12/10/2018	1250	D. Kimbrow	10.81	YSI 2003 polarographic	12/10/2018	D. Kimbrow
NW-1-d	12/10/2018	1125	D. Kimbrow	9.17	YSI 2003 polarographic	12/10/2018	D. Kimbrow
SW-MM-b	12/10/2018	1405	D. Kimbrow	10.77	YSI 2003 polarographic	12/10/2018	D. Kimbrow
SW-MM-c	12/10/2018	1435	D. Kimbrow	11.4	YSI 2003 polarographic	12/10/2018	D. Kimbrow
Site Number	Sample Date	Sample Time	Sample Collected By	Dissolved Oxygen (mg/L)	Analytical Method	Analysis Date	Analysis Performed By
C-1	3/11/2019	1055	D. Kimbrow	9.83	YSI 2003 polarographic	3/11/2019	D. Kimbrow
C-MM-a	3/11/2019	1105	D. Kimbrow	8.66	YSI 2003 polarographic	3/11/2019	D. Kimbrow
C-MM-b	3/11/2019	1125	D. Kimbrow	9.83	YSI 2003 polarographic	3/11/2019	D. Kimbrow
NW-1-b	3/11/2019	1025	D. Kimbrow	10.29	YSI 2003 polarographic	3/11/2019	D. Kimbrow
NW-1-c	3/11/2019	1040	D. Kimbrow	9.84	YSI 2003 polarographic	3/11/2019	D. Kimbrow
NW-1-d	3/11/2019	1010	D. Kimbrow	9.29	YSI 2003 polarographic	3/11/2019	D. Kimbrow
SW-MM-b	3/11/2019	1140	D. Kimbrow	9.49	YSI 2003 polarographic	3/11/2019	D. Kimbrow
SW-MM-c	3/11/2019	1200	D. Kimbrow	10.37	YSI 2003 polarographic	3/11/2019	D. Kimbrow

Site Number	Sample Date	Sample Time	Sample Collected By	Specific Conductance (uS/cm)	Analytical Method	Analysis Date	Analysis Performed By
C-1	6/25/2018	1440	D. Kimbrow	124	YSI 5560	6/25/2018	D. Kimbrow
C-MM-a	6/25/2018	1450	D. Kimbrow	123	YSI 5560	6/25/2018	D. Kimbrow
C-MM-b	6/25/2018	1510	D. Kimbrow	130	YSI 5560	6/25/2018	D. Kimbrow
NW-1-b	6/25/2018	1410	D. Kimbrow	143	YSI 5560	6/25/2018	D. Kimbrow
NW-1-c	6/25/2018	1420	D. Kimbrow	187	YSI 5560	6/25/2018	D. Kimbrow
NW-1-d	6/25/2018	1355	D. Kimbrow	179	YSI 5560	6/25/2018	D. Kimbrow
SW-MM-b	6/25/2018	1525	D. Kimbrow	146	YSI 5560	6/25/2018	D. Kimbrow
SW-MM-c	6/25/2018	1545	D. Kimbrow	141	YSI 5560	6/25/2018	D. Kimbrow
Site Number	Sample Date	Sample Time	Sample Collected By	Specific Conductance (uS/cm)	Analytical Method	Analysis Date	Analysis Performed By
C-1	9/19/2018	1105	D. Kimbrow	157	YSI 5560	9/19/2018	D. Kimbrow
C-MM-a	9/19/2018	1120	D. Kimbrow	182	YSI 5560	9/19/2018	D. Kimbrow
C-MM-b	9/19/2018	1240	D. Kimbrow	146	YSI 5560	9/19/2018	D. Kimbrow
NW-1-b	9/19/2018	1020	D. Kimbrow	149	YSI 5560	9/19/2018	D. Kimbrow
NW-1-c	9/19/2018	1040	D. Kimbrow	159	YSI 5560	9/19/2018	D. Kimbrow
NW-1-d	9/19/2018	1010	D. Kimbrow	164	YSI 5560	9/19/2018	D. Kimbrow
SW-MM-b	9/19/2018	1255	D. Kimbrow	174	YSI 5560	9/19/2018	D. Kimbrow
SW-MM-c	9/19/2018	1315	D. Kimbrow	150	YSI 5560	9/19/2018	D. Kimbrow
Site Number	Sample Date	Sample Time	Sample Collected By	Specific Conductance (uS/cm)	Analytical Method	Analysis Date	Analysis Performed By
C-1	12/10/2018	1310	D. Kimbrow	139	YSI 5560	12/10/2018	D. Kimbrow
C-MM-a	12/10/2018	1320	D. Kimbrow	78	YSI 5560	12/10/2018	D. Kimbrow
C-MM-b	12/10/2018	1345	D. Kimbrow	87	YSI 5560	12/10/2018	D. Kimbrow
NW-1-b	12/10/2018	1230	D. Kimbrow	146	YSI 5560	12/10/2018	D. Kimbrow
NW-1-c	12/10/2018	1250	D. Kimbrow	138	YSI 5560	12/10/2018	D. Kimbrow
NW-1-d	12/10/2018	1125	D. Kimbrow	207	YSI 5560	12/10/2018	D. Kimbrow
SW-MM-b	12/10/2018	1405	D. Kimbrow	105	YSI 5560	12/10/2018	D. Kimbrow
SW-MM-c	12/10/2018	1435	D. Kimbrow	101	YSI 5560	12/10/2018	D. Kimbrow
Site Number	Sample Date	Sample Time	Sample Collected By	Specific Conductance (uS/cm)	Analytical Method	Analysis Date	Analysis Performed By
C-1	3/11/2019	1055	D. Kimbrow	131	YSI 5560	3/11/2019	D. Kimbrow
C-MM-a	3/11/2019	1105	D. Kimbrow	107	YSI 5560	3/11/2019	D. Kimbrow
C-MM-b	3/11/2019	1125	D. Kimbrow	105	YSI 5560	3/11/2019	D. Kimbrow
NW-1-b	3/11/2019	1025	D. Kimbrow	129	YSI 5560	3/11/2019	D. Kimbrow
NW-1-c	3/11/2019	1040	D. Kimbrow	139	YSI 5560	3/11/2019	D. Kimbrow
NW-1-d	3/11/2019	1010	D. Kimbrow	169	YSI 5560	3/11/2019	D. Kimbrow
SW-MM-b	3/11/2019	1140	D. Kimbrow	124	YSI 5560	3/11/2019	D. Kimbrow
SW-MM-c	3/11/2019	1200	D. Kimbrow	119	YSI 5560	3/11/2019	D. Kimbrow
Site Number	Sample Date	Sample Time	Sample Collected By	Turbidity (NTU)	Analytical Method	Analysis Date	Analysis Performed By
C-1	6/25/2018	1440	D. Kimbrow	3.98	SM 2130 B	6/25/2018	D. Kimbrow
C-MM-a	6/25/2018	1450	D. Kimbrow	5.22	SM 2130 B	6/25/2018	D. Kimbrow
C-MM-b	6/25/2018	1510	D. Kimbrow	5.83	SM 2130 B	6/25/2018	D. Kimbrow
NW-1-b	6/25/2018	1410	D. Kimbrow	3.77	SM 2130 B	6/25/2018	D. Kimbrow
NW-1-c	6/25/2018	1420	D. Kimbrow	3.59	SM 2130 B	6/25/2018	D. Kimbrow
NW-1-d	6/25/2018	1355	D. Kimbrow	3.28	SM 2130 B	6/25/2018	D. Kimbrow
SW-MM-b	6/25/2018	1525	D. Kimbrow	7.19	SM 2130 B	6/25/2018	D. Kimbrow
SW-MM-c	6/25/2018	1545	D. Kimbrow	5.54	SM 2130 B	6/25/2018	D. Kimbrow

Site Number	Sample Date	Sample Time	Sample Collected By	Turbidity (NTU)	Analytical Method	Analysis Date	Analysis Performed By
C-1	9/19/2018	1105	D. Kimbrow	3.42	SM 2130 B	9/19/2018	D. Kimbrow
C-MM-a	9/19/2018	1120	D. Kimbrow	8.22	SM 2130 B	9/19/2018	D. Kimbrow
C-MM-b	9/19/2018	1240	D. Kimbrow	4.0	SM 2130 B	9/19/2018	D. Kimbrow
NW-1-b	9/19/2018	1020	D. Kimbrow	2.66	SM 2130 B	9/19/2018	D. Kimbrow
NW-1-c	9/19/2018	1040	D. Kimbrow	2.97	SM 2130 B	9/19/2018	D. Kimbrow
NW-1-d	9/19/2018	1010	D. Kimbrow	2.22	SM 2130 B	9/19/2018	D. Kimbrow
SW-MM-b	9/19/2018	1255	D. Kimbrow	11.3	SM 2130 B	9/19/2018	D. Kimbrow
SW-MM-c	9/19/2018	1315	D. Kimbrow	4.92	SM 2130 B	9/19/2018	D. Kimbrow
Site Number	Sample Date	Sample Time	Sample Collected By	Turbidity (NTU)	Analytical Method	Analysis Date	Analysis Performed By
C-1	12/10/2018	1310	D. Kimbrow	5.53	SM 2130 B	12/10/2018	D. Kimbrow
C-MM-a	12/10/2018	1320	D. Kimbrow	12.52	SM 2130 B	12/10/2018	D. Kimbrow
C-MM-b	12/10/2018	1345	D. Kimbrow	11.58	SM 2130 B	12/10/2018	D. Kimbrow
NW-1-b	12/10/2018	1230	D. Kimbrow	15	SM 2130 B	12/10/2018	D. Kimbrow
NW-1-c	12/10/2018	1250	D. Kimbrow	13.5	SM 2130 B	12/10/2018	D. Kimbrow
NW-1-d	12/10/2018	1125	D. Kimbrow	13.9	SM 2130 B	12/10/2018	D. Kimbrow
SW-MM-b	12/10/2018	1405	D. Kimbrow	11.2	SM 2130 B	12/10/2018	D. Kimbrow
SW-MM-c	12/10/2018	1435	D. Kimbrow	12.1	SM 2130 B	12/10/2018	D. Kimbrow
Site Number	Sample Date	Sample Time	Sample Collected By	Turbidity (NTU)	Analytical Method	Analysis Date	Analysis Performed By
C-1	3/11/2019	1055	D. Kimbrow	5.75	SM 2130 B	3/11/2019	D. Kimbrow
C-MM-a	3/11/2019	1105	D. Kimbrow	5.42	SM 2130 B	3/11/2019	D. Kimbrow
C-MM-b	3/11/2019	1125	D. Kimbrow	4.87	SM 2130 B	3/11/2019	D. Kimbrow
NW-1-b	3/11/2019	1025	D. Kimbrow	11.37	SM 2130 B	3/11/2019	D. Kimbrow
NW-1-c	3/11/2019	1040	D. Kimbrow	9.2	SM 2130 B	3/11/2019	D. Kimbrow
NW-1-d	3/11/2019	1010	D. Kimbrow	13.27	SM 2130 B	3/11/2019	D. Kimbrow
SW-MM-b	3/11/2019	1140	D. Kimbrow	5.01	SM 2130 B	3/11/2019	D. Kimbrow
SW-MM-c	3/11/2019	1200	D. Kimbrow	5.25	SM 2130 B	3/11/2019	D. Kimbrow

3.0 Water Quality at Long-term Monitoring Sites

3.1 Purpose

The City of Auburn has conducted routine turbidity measurements at 40 stations within its MS4 jurisdiction since 2006. In 2016, the City updated the Stormwater Quality Monitoring Plan to reflect changes in the ADEM Phase II NPDES General Permit ALR040003. Because the updated Stormwater Quality Monitoring Plan required sampling for TP, E. coli, and TSS at several of the existing turbidity monitoring stations, the City reduced the number of turbidity monitoring stations from 40 to 20. Monitoring at these sites is not included in the City's Water Quality Monitoring Plan, and is not required under the Phase II NPDES General Permit ALR040003. This monitoring is conducted by the City on a strictly voluntary basis. As with previous years, data from each individual watershed is evaluated independently by monitoring station and collectively as a representative watershed group. Each station's data is also evaluated against any neighboring upstream station, thereby assisting in the identification of potential sources of sediment. Turbidity monitoring locations were strategically chosen to allow for both monitoring of the effectiveness of erosion and sediment control at construction sites and also to analyze potential trends within each watershed.

Sediment plays an important role in the biological, chemical, and physical health of streams, lakes, wetlands, and other waterbodies. However, excess siltation may cause an increase in stream water temperatures, decreases in the passage of light through the water column, decreased dissolved oxygen, issues with color, clogging of fish and aquatic invertebrate gills, destruction of habitat, increased nutrient loading, channel and pond aggradation, and decreased recreational use. Therefore it is important that we understand the various sources of sediment to these ecosystems, and we monitor and control any potential sources that would otherwise exceed the natural carrying capacity of the waterbody. In addition, this monitoring provides invaluable observations of other potential water quality concerns such as illegal dumping, illicit discharge violations, unauthorized construction activity, unauthorized stream buffer encroachment, etc. These data also support and enhance the effectiveness of the City's Construction Site Erosion and Sediment Control Inspection and Enforcement Program.

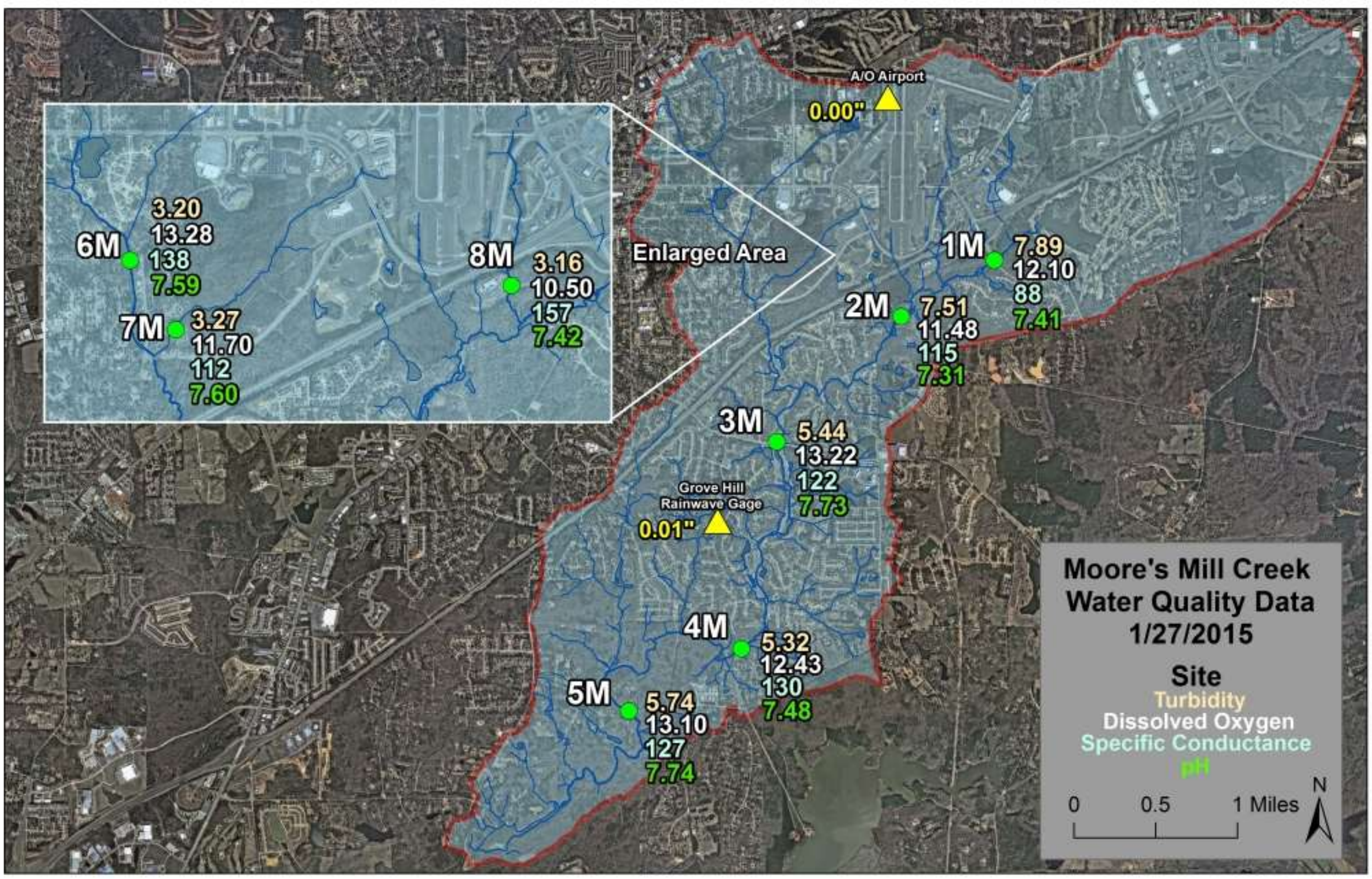
3.2 Definitions and Methods

Turbidity is the measure of the degree of transparency of a fluid as it affects the ability of light to pass through. Although it is not a direct measurement of sediment or TSS within the water column, it has been identified as a useful surrogate indicator for monitoring sediment pollution in stormwater runoff from active construction sites and is often the monitoring parameter of choice for regulatory agencies. Currently, ADEM water quality criteria states that "*There shall be no turbidity of other than natural origin that will cause substantial visible contrast with the natural appearance of waters or interfere with any beneficial uses which they serve. Furthermore, in no case shall turbidity exceed 50 Nephelometric units above background*". Turbidity levels are most commonly measured using a turbidity meter which measures the amount of scattered light as it is passed through a sample at a 90° angle. The resulting numerical value is called a nephelometric turbidity unit (NTU) of which increasing values represent a decrease in light penetration through the sample. The City uses a LaMotte 2020 WE turbidimeter to measure turbidity.

The City began measuring physical and chemical parameters at each station in September 2014 using a YSI Professional Plus water quality meter. WRM staff use these data to develop water quality "signatures" for each site, dependent upon both season and antecedent precipitation. In addition to turbidity, the following parameters are collected:

- Water Temperature – A measure of the heat contained in water. For most designated uses, State Water Quality Criteria requires that temperature not exceed 90° Fahrenheit.
- pH – A measure of how basic or how acidic a substance is. For most designated uses, State Water Quality Criteria requires pH to be between 6.0 and 8.5.
- Dissolved Oxygen – A measure of the concentration of oxygen in its dissolved form within a substance. For most designated uses, State Water Quality Criteria requires dissolved oxygen to be a minimum of 5 mg/L except under "extreme conditions".
- Specific Conductance – A measure of a substance's ability to pass an electrical current. There are currently no State Water Quality Criteria for conductivity. Conductivity is directly correlated to the amount of dissolved ions within a substance and is a useful indicator of potential illicit discharges.

Quality control/quality assurance is an integral part of a successful water quality monitoring program. In order to develop a dependable database of water quality measurements for each sample site, WRM Staff calibrate all water quality instruments prior to field use. A detailed calibration log is filled out each time an instrument is calibrated. WRM staff also utilize field sheets to document sample site characteristics and observations such as stream color, geomorphic setting (riffle, pool, etc.), channel substrate and grain size, sample site location relative to the road crossing, sample time, and weather conditions.



Example of a Water Quality Map for the Moore's Mill Creek Watershed

3.4 Water Quality Monitoring Sites

Chewacla Creek Watershed

Approximately 42 independent water quality measurements were collected in the Chewacla Creek watershed from April 1, 2018 to March 31, 2019. This number does not include data collected in the Chewacla Creek Watershed that is part of the Source Water Monitoring Program.

Monitoring Station Locations and Notes:

Station 1CW – Latitude *32, 35, 3.874 N*; Longitude *85, 25, 55.243 W*. Station 1CW is located along Moore's Mill Road, immediately east of the entrance to Bent Brooke Subdivision.

Station 2CW – Latitude *32, 34, 25.519 N*; Longitude *85, 25, 6.579 W*. Station 2CW is located along Moore's Mill Road, between CR 107/Estate Drive and Society Hill Road.

Station 4CW – Latitude *32, 33, 21.85 N*; Longitude *85, 24, 46.51 W*. Station 4CW is located at the crossing of CR 027 with Chewacla Creek. 4CW is a reference station used to evaluate turbidity as it enters Auburn's Phase II jurisdiction and discharges to Lake Ogletree.

Station 5CW – Latitude *32, 32, 52.236 N*; Longitude *85, 28, 1.713 W*. Station 5CW is located ½ mile downstream of the Lake Ogletree spillway and upstream of the Martin-Marietta Quarry discharge. 5CW is also a reference station monitored to evaluate turbidity within Chewacla Creek as it is discharged from Lake Ogletree, and before it leaves Auburn's Phase II jurisdiction. The relatively low values exhibited at this station can be attributed to the TSS removal provided by Lake Ogletree.

Water Quality Data for the Chewacla Creek Watershed

Site Number	Sample Date	Sample Time	Water Temperature (F)	pH	Dissolved Oxygen (mg/L)	Specific Conductance (uS/cm)	Turbidity (NTU)	Recent Precipitation (in)
2CW	4/5/2018	1425	57.7	7.19	9.82	52	7.14	0
2CW	7/26/2018	1130	73.1	6.85	6.40	64	23.3	0
2CW	10/30/2018	1120	57.6	7.09	8.33	61	6.69	0
2CW	11/14/2018	1550	55.4	6.97	9.90	54	15.63	2.48
5CW	4/5/2018	1515	67.7	7.31	8.73	87	2.41	0
5CW	7/26/2018	1450	81.9	7.42	6.04	99	1.92	0
5CW	11/16/2018	1005	54.8	7.31	10.57	84.6	8.29	2.0

Choctafaula Creek Watershed

Approximately 48 independent water quality measurements were collected in the Choctafaula Creek watershed from April 1, 2018 to March 31, 2019. Landcover within the Choctafaula Creek watershed consists of mostly forest and pasture, with relatively little urban/suburban development. This is generally reflected in the turbidity data, as the Choctafaula stations often exhibit lower turbidity than the other streams within the City's MS4 jurisdiction.

Monitoring Station Locations and Notes:

Station 1CH – Latitude *32, 34, 8.089 N*; Longitude *85, 32, 41.169 W.* Station 1CH is located on main stem Choctafaula Creek along Wire Road, immediately east of Talheim Street.

Station 2CH – Latitude *32, 34, 3.928 N*; Longitude *85, 33, 21.503 W.* Station 2CH is located on an unnamed tributary of Choctafaula Creek as it crosses under Wire Road, immediately east of CR 57. 2CH also receives flow from a mostly rural, forested basin and therefore generally exhibits low baseline and storm event turbidity values.

Station 4CH – Latitude *32, 32, 51.901 N*; Longitude *85, 33, 19.14 W.* Station 4CH is located on main stem Choctafaula Creek, as it crosses under Beehive Road, immediately west of the City of Auburn Tech Park West.

Water Quality Data for the Choctafaula Creek Watershed

Site Number	Sample Date	Sample Time	Water Temperature (F)	pH	Dissolved Oxygen (mg/L)	Specific Conductance (uS/cm)	Turbidity (NTU)	Recent Precipitation (in)
1CH	4/9/2018	1520	61.1	6.59	9.83	69	3.2	0.48
1CH	7/26/2018	1535	79.9	7.24	6.85	95	4.72	0
1CH	10/31/2018	1420	62.6	7.25	9.18	106	3.56	0
1CH	12/5/2018	0910	49.8	7.09	11.92	78.7	8.75	2.0
4CH	4/9/2018	1530	61.2	6.76	9.47	63	3.15	0.48
4CH	7/26/2018	1520	79.1	7.28	7.77	77	3.63	0
4CH	10/31/2018	1430	63.4	6.98	8.89	97	3.58	0
4CH	11/16/2018	0925	50.6	7.19	11.34	67.7	7.55	2.0

Moore's Mill Creek Watershed

Approximately 98 independent water quality measurements were collected in the Moore's Mill Creek watershed from April 1, 2018 to March 31, 2019.

Moore's Mill Creek remains on the ADEM list of impaired waters for siltation, therefore monitoring of turbidity within Moore's Mill Creek is of critical importance in determining the potential sources of excess sediment loading and in evaluating opportunities for protection, enhancement, and restoration.

Monitoring Station Locations and Notes:

1M – Latitude *32, 36, 8.253 N*; Longitude *85, 25, 35.563 W.* Station 1M is the farthest upstream monitoring location on Moore's Mill Creek, and is located at Bent Creek Road. This station is representative of water quality as it enters the City's Phase II jurisdiction. There are currently no active construction or development activities upstream of this site within the City's MS4 jurisdiction.

2M – Latitude *32, 35, 50.808 N*; Longitude *85, 26, 9.911 W*. Station 2M is located on Moore's Mill Creek off Bonny Glen Road. 2M is downstream of the unnamed tributary that drains the Auburn University Regional Airport (AUO).

3M – Latitude *32, 35, 10.371 N*; Longitude *85, 26, 58.62 W.* Station 3M is located on Moore's Mill Creek at Moore's Mill Road.

4M – Latitude *32, 34, 4.675 N*; Longitude *85, 27, 12.574 W.* Station 4M is located on Moore's Mill Creek at Windway Road.

5M – Latitude *32, 33, 44.879 N*; Longitude *85, 27, 54.706 W.* Station 5M is the final downstream station on Moore's Mill Creek at Ogletree Road.

6M – Latitude *32, 36, 11.560 N*; Longitude *85, 27, 11.520 W.* 6M is located on an unnamed tributary to Moore's Mill Creek as it crosses under Old Mill Rd. near East University Dr.

7M – Latitude *32, 36, 0.433 N*; Longitude *85, 27, 2.378 W.* 7M is also located on an unnamed tributary to Moore's Mill Creek as it crosses under Jockish Road.

8M – Latitude 32, 36*, 8.200 N*; Longitude *85, 25, 56.680 W.* 8M is located on an unnamed tributary to Moore's Mill Creek at Champions Blvd below AUO Airport.

Water Quality Data for the Moore's Mill Creek Watershed

Site Number	Sample Date	Sample Time	Water Temperature (F)	pH	Dissolved Oxygen (mg/L)	Specific Conductance (uS/cm)	Turbidity (NTU)	Recent Precipitation (in)
1M	4/5/2018	1410	66.9	7.17	8.80	91	2.87	0
1M	7/26/2018	1115	79.5	7.21	5.83	117	3.66	0
1M	10/30/2018	1105	60.5	7.34	8.23	98	3.82	0
1M	11/14/2018	1538	54.7	7.30	10.34	70	16.1	2.48
5M	4/5/2018	1440	61.4	7.03	10.6	114	4.38	0

Site Number	Sample Date	Sample Time	Water Temperature (F)	pH	Dissolved Oxygen (mg/L)	Specific Conductance (uS/cm)	Turbidity (NTU)	Recent Precipitation (in)
5M	7/26/2018	1305	80.5	7.64	7.78	134	6.17	0
5M	10/30/2018	1240	60.9	7.54	10.55	133	5.11	0
5M	11/14/2018	1000	53.0	7.37	11.74	84	32.9	2.65
6M	4/5/2018	1355	63.1	7.03	10.13	103	3.39	0
6M	7/26/2018	1100	76.8	7.60	7.85	144	4.47	0
6M	10/30/2018	1040	58.5	7.52	9.94	146	3.73	0
6M	11/14/2018	1517	55.6	7.32	10.34	99	17.16	2.48
7M	4/5/2018	1400	60.5	7.09	9.0	152	4.51	0
7M	7/26/2018	1105	74.1	7.42	7.87	158	3.1	0
7M	10/30/2018	1045	57.8	7.54	9.54	153	2.06	0
7M	11/14/2018	1528	-	-	-	-	34.83	2.48
8M	10/30/2018	1055	58.2	7.59	9.87	142	2.72	0

Parkerson's Mill Creek Watershed

Approximately 77 independent water quality measurements were collected in the Parkerson's Mill Creek watershed from April 1, 2018 to March 31, 2019.

Monitoring Station Locations and Notes:

1P – Latitude *32, 35, 33.627 N*; Longitude *85, 29, 45.826 W*. Station 1P is the furthest upstream monitoring location on Parkerson's Mill Creek (located at the Lem Morrison Road crossing).

2P – Latitude *32, 34, 21.948 N*; Longitude *85, 30, 24.979 W*. Station 2P is located on Parkerson's Mill Creek main stem at the eastern most W. Longleaf Drive crossing.

3P – Latitude *32, 33, 44.574 N*; Longitude *85, 30, 25.114 W*. Station 3P is located on Parkerson's Mill Creek main stem at the W. Veterans Boulevard crossing.

4P – Latitude *32, 32, 13.799 N*; Longitude *85, 30, 21.591 W*. Station 4P is the furthest downstream monitoring location on Parkerson's Mill Creek main stem and is located at the CR 10/Sandhill Road crossing.

5P – Latitude *32, 35, 8.48 N*; Longitude *85, 30, 10.446 W*. Station 5P is located on Parkerson's Mill Creek main stem just downstream of Station 1P, at the Shug Jordan Parkway Crossing.

6P – Latitude *32, 35, 3.567 N*; Longitude *85, 31, 0.914 W*. Station 6P is located on an unnamed tributary near the intersection of Wire and Webster Roads.

7P – Latitude *32, 34, 22.578 N*; Longitude *85, 30, 38.989 W*. Station 7P is located at the western most crossing on W. Longleaf Drive.

Water Quality Data for the Parkerson's Mill Creek Watershed

Site Number	Sample Date	Sample Time	Water Temperature (F)	pH	Dissolved Oxygen (mg/L)	Specific Conductance (uS/cm)	Turbidity (NTU)	Recent Precipitation (in)
1P	4/5/2018	1335	60.2	6.80	11.15	365	1.80	0
1P	7/26/2018	1035	76.0	7.68	7.97	372	1.37	0
1P	10/31/2018	1020	59.1	7.50	9.66	360	1.41	0
1P	11/14/2018	1450	57.5	7.45	10.17	108	30.1	2.48
3P	11/1/2018	0840	62.2	7.63	9.40	197	-	0
4P	11/15/2018	1030	51.7	7.69	11.77	96	25.06	2.65
4P	10/30/2018	1310	62.3	8.34	10.38	167	2.29	0
4P	7/26/2018	1405	83.8	8.49	8.18	179	3.53	0
4P	4/5/2018	1535	64.9	7.39	9.60	139	3.77	0
7P	4/9/2018	1545	60.3	6.72	9.56	143	3.11	0.48
7P	7/26/2018	1350	76.3	7.38	7.68	149	3.40	0
7P	10/31/2018	1405	62.2	7.30	9.16	153	2.66	0
7P	11/15/2018	1105	52.7	7.21	10.9	113	16.5	2.65

Saugahatchee Creek Watershed

Approximately 144 independent water quality measurements were collected in the Saugahatchee Creek watershed from April 1, 2018 to March 31, 2019.

Monitoring Station Locations and Notes:

1S – Latitude *32, 39, 28.708 N*; Longitude *85, 27, 33.229 W*. Station 1S is the furthest upstream monitoring location on Saugahatchee Creek main stem and is located at the US Highway 280 crossing. All construction activities contributing to this station are located outside of the City's MS4 jurisdiction.

2S – Latitude *32, 38, 54.075 N*; Longitude *85, 28, 56.552 W*. Station 2S is located on Saugahatchee Creek main stem at the N. College Street/AL 147 crossing.

3S – Latitude *32, 38, 32.179 N*; Longitude *85, 30, 14.658 W*. Station 3S is located on Saugahatchee Creek main stem at the N. Donahue Drive/CR 182 crossing.

4S - Latitude *32, 37, 40.252 N*; Longitude *85, 32, 51.6 W* Station 4S is the furthest downstream monitoring location on Saugahatchee Creek main stem and is located immediately upstream of the Northside Water Pollution Control Facility (WPCF).

5S – Latitude *32, 37, 30.273 N*; Longitude *85, 32, 45.009 W*. Station 5S is located on an unnamed tributary to Saugahatchee Creek immediately west of the Northside Water Pollution Control Facility.

6S – Latitude *32, 37, 48.368 N*; Longitude *85, 27, 7.52 W*. Station 6S is located on an unnamed tributary at the Gatewood Drive crossing near Uncle Bob's Storage.

7S – Latitude *32, 38, 10.933 N*; Longitude *85, 27, 56.368 W*. Station 7S is located downstream of 15S on an unnamed tributary to Saugahatchee Creek at the Shelton Mill Road crossing near The City Church (formerly Victory Prayer Center).

8S – Latitude *32, 37, 30.543 N*; Longitude *85, 28, 27.074 W*. Station 8S is located on an unnamed tributary to Saugahatchee Creek at the Shelton Mill Road crossing near the Covenant Presbyterian Church.

12S – Latitude *32, 38, 10.167 N*; Longitude *85, 28, 54.883 W*. Station 12S is located on an unnamed tributary to Saugahatchee Creek downstream of 8S near the intersection of N. College Street/AL 147 and Shug Jordan Parkway.

14S – Latitude *32, 39, 28.523 N*; Longitude *85, 32, 13.711 W*. Station 14S is located on W. Farmville Road on an unnamed tributary to Loblockee Creek at the discharge of the primary spillway of The Preserve pond.

15S – Latitude *32, 38, 6.51 N*; Longitude *85, 27, 34.675 W*. Station 15S is located on an unnamed tributary to Saugahatchee Creek at N. Dean Road, just downstream of 6S.

16S – Latitude *32, 38, 10.238 N*; Longitude *85, 29, 20.643 W*. Station 16S is located on the same unnamed tributary as 8S and 12S and is downstream of 12S along Shug Jordan Parkway.

17S – Latitude *32, 39, 15.106 N*; Longitude *85, 32, 1.977 W*. Station 17S is located on an unnamed tributary at the discharge of the primary spillway of the Shadow Woods pond (in Shadow Woods Subdivision off Mrs. James Road/CR 081).

18S – Latitude *32, 39, 53.844 N*; Longitude *85, 28, 51.164 W*. 18S is located on an unnamed tributary along Farmville Road, immediately downstream of Tuscany Hills.

Water Quality Data for the Saugahatchee Creek Watershed

Site Number	Sample Date	Sample Time	Water Temperature (F)	pH	Dissolved Oxygen (mg/L)	Specific Conductance (uS/cm)	Turbidity (NTU)	Recent Precipitation (in)
1S	4/10/2018	1420	65	7.12	9.80	109	4.8	0.18
1S	7/27/2018	0915	76.5	7.59	7.52	121	11.3	0
1S	10/31/2018	1115	61.4	7.63	9.60	155	3.94	0
2S	4/11/2018	1500	64.4	6.74	9.23	111	7.25	0
2S	7/27/2018	0930	75.2	7.27	6.99	128	12.9	0
2S	10/31/2018	1125	60.2	7.00	8.89	146	5.86	0
4S	4/10/2018	1340	63.6	6.97	9.49	109	5.93	0.18
4S	7/27/2018	0810	75.4	7.42	7.45	129	13.6	0
4S	10/31/2018	1240	61.1	7.35	9.26	140	6.51	0
5S	4/10/2018	1345	64.0	7.04	8.56	76	7.04	0.18
5S	7/27/2018	1005	73.8	7.25	6.47	93	6.25	0
5S	10/31/2018	1235	59.1	7.21	9.64	103	7.15	0
6S	4/10/2018	1410	67.9	6.85	8.13	118	4.60	0.18
6S	7/27/2018	0900	77.8	6.78	5.91	132	3.42	0
6S	10/31/2018	1045	64.5	6.89	9.35	122	2.44	0
6S	12/20/2018	1325	53.6	7.03	10.28	85	12.3	0.12

Site Number	Sample Date	Sample Time	Water Temperature (F)	pH	Dissolved Oxygen (mg/L)	Specific Conductance (uS/cm)	Turbidity (NTU)	Recent Precipitation (in)
8S	4/9/2018	1600	60.8	6.84	9.59	141	2.83	0.48
8S	7/27/2018	0845	73.6	7.17	7.23	164	1.82	0
8S	10/31/2018	1055	59.7	7.16	9.25	159	2.19	0
8S	11/15/2018	1335	52.3	7.06	10.84	115	1.33	2.65
8S	12/20/2018	1305	54.6	6.81	9.78	91	43.2	0.12
16S	4/11/2018	1510	63.8	6.82	9.85	123	5.96	0
16S	7/27/2018	0935	74.9	7.40	7.25	129	6.3	0
16S	10/31/2018	1135	59.1	7.40	9.38	126	6.91	0

Town Creek Watershed

Approximately 48 independent water quality measurements were collected in the Town Creek watershed from April 1, 2018 to March 31, 2019.

Monitoring Station Locations and Notes:

1T – Latitude *32, 35, 55.414 N*; Longitude *85, 28, 18.325 W*. Station 1T is located on Town Creek just upstream of the Samford Avenue crossing.
2T – Latitude *32, 35, 3.724 N*; Longitude *85, 28, 27.539 W*. Station 2T is located on Town Creek at the crossing of Gay Street.
3T – Latitude *32, 34, 46.858 N*; Longitude *85, 28, 42.094 W*. Station 3T is located on Town Creek at the crossing of East University Drive.
4T - Latitude *32, 39, 53.844 N*; Longitude *85, 28, 51.164 W*. Station 4T is located on Town Creek at the crossing of Shell-Toomer Parkway.

Water Quality Data for the Town Creek Watershed

Site Number	Sample Date	Sample Time	Water Temperature (F)	pH	Dissolved Oxygen (mg/L)	Specific Conductance (uS/cm)	Turbidity (NTU)	Recent Precipitation (in)
1T	4/5/2018	1350	61.1	6.96	9.16	171	1.66	0
1T	7/26/2018	1050	74.5	6.88	6.04	174	2.04	0
1T	10/30/2018	1030	60.7	7.13	8.16	185	1.81	0
1T	11/14/2018	1510	56.3	7.20	9.93	87	38.76	2.48
1T	4/5/2018	1450	62.8	7.19	10.09	117	2.69	0
1T	7/26/2018	1420	78.1	7.92	7.67	137	1.91	0
1T	10/30/2018	1255	59.3	7.89	10.31	135	1.54	0
1T	11/15/2018	1020	52.2	7.37	11.52	90	27.0	2.65

4.0 Lake Ogletree Source Water Monitoring Program

4.1 Purpose

Lake Ogletree, located southeast of Auburn, Alabama, is the City of Auburn's primary drinking water source. At full pool its surface area is approximately 300 acres with a capacity of approximately 1.6 billion gallons of water. Chewacla Creek is the primary stream that feeds Lake Ogletree, which has a 33 square mile watershed (as delineated from the Lake Ogletree dam and spillway). Although mostly forested and agricultural lands, the Lake Ogletree watershed includes industrial, commercial/retail, and residential land-uses, which is predicted to increase as the population of Lee County increases. Although a recently updated Source Water Assessment Program (SWAP) determined Lake Ogletree to be at low to moderate risk from stormwater-driven pollutants, it is imperative that water quality monitoring be performed to identify potential threats to water quality and to protect the health and vitality of Chewacla Creek and the encompassing watershed. Therefore, the Water Works Board of the City of Auburn (AWWB) is committed to performing monitoring and analysis of a wide range of physical, chemical, and mineral water quality parameters both in Lake Ogletree and its contributing watershed.

4.2 Methods

AWWB conducts water quality sampling and analysis at 14 locations throughout the Lake Ogletree Watershed. Water quality assessment includes sampling at locations along the main stem of Chewacla Creek ("C-Sites"), its smaller tributaries ("T-Sites"), and Lake Ogletree ("L-Sites"). Parameters monitored once every two months at these locations include E. coli, orthophosphate, total phosphorus, nitrate-nitrite, Kjeldahl-N, pH, temperature, turbidity, specific conductance, and dissolved oxygen. A QA/QC field blank for orthophosphate, total phosphorus, nitrate-nitrite, and kjeldahl-N is collected at a single randomly selected site during each sampling round. Bi-weekly monitoring is also conducted at select sites for temperature, pH, specific conductance, dissolved oxygen, and turbidity. The following are the parameters which are included in this program and the method of analysis.

- Temperature – YSI 5560
- Specific Conductance – YSI 5560
- Dissolved Oxygen – YSI 2003 polarographic
- pH – YSI 1001
- Turbidity – LaMotte 2020WE turbidimeter
- Nitrate + Nitrite – EPA 353.2
- Total Kjeldahl Nitrogen – EPA 351.2
- Orthophosphate – SM 4500 PE-1999
- Total Phosphorus – EPA 365.4
- E. coli - SM 9223B-2004

4.3 Monitoring Stations and Data

T11 – Station T11 is located on lower Robinson Creek at Moore's Mill Road (CR 146). Latitude *32, 33, 48.221 N*; Longitude *85, 23, 23.423 W*

T12N – Station T12N is located upper Robinson Creek, just upstream of Highway 51 and downstream from an Opelika sanitary sewer lift station. Latitude *32, 37, 1.72 N*; Longitude *85, 22, 9.316 W*

T19 – Station T19 is located on an unnamed tributary upstream of Emerald Lake. Latitude *32, 35, 36.364 N*; Longitude *85, 20, 37.00 W*

T22 – Station T22 is located on upper Robinson Creek, just downstream of Highway 51 and downstream from three Opelika sanitary sewer lift stations. Latitude *32, 36, 2.361 N*; Longitude *85, 22, 45.426 W*

T32 – Station T32 is located near the mouth of Nash Creek just before the confluence with Chewacla Creek. Latitude *32, 33, 18.484 N*; Longitude *85, 25, 30.655 W*

T34 – Station T34 is located on Chewacla Creek, upstream of Station C8. Latitude *32, 34, 32.672 N*; Longitude *85, 21, 49.692 W*

C1 – Station C1 is located at the forebay of Lake Ogletree, immediately downstream of the Society Hill Road bridge crossing. Latitude *32, 33, 20.161 N*; Longitude *85, 25, 36.026 W*

C2 – Station C2 is located at the bridge crossing of CR 027 with Chewacla Creek. Latitude *32, 33, 21.387 N*; Longitude *85, 24, 46.384 W*

C5 – Station C5 is located at the bridge crossing of Lee Road. 112 with Chewacla Creek. Latitude *32, 33, 6.291 N*; Longitude *85, 23, 41.151 W*

C7 – Station C7 is located at the bridge crossing of Highway 51 (Marvyn Parkway) with Chewacla Creek. Latitude *32, 33, 41.868 N*; Longitude *85, 22, 20.559 W*

C8 – Station C8 is located upstream of the bridge crossing of CR 146 (Moore's Mill Road) with Chewacla Creek. Latitude *32, 34, 5.715 N*; Longitude *85, 21, 42.033 W*

L1 – Station L1 is located in Lake Ogletree, immediately northeast of the Lake Ogletree spillway. Latitude *32, 32, 50.846 N*; Longitude *85, 26, 52.83 W*

L2 – Station L2 is located in Lake Ogletree near the water intake pump house. Latitude *32, 33, 5.626 N*; Longitude *85, 26, 45.038 W*

L5 – Station L5 is located along the northwest finger of Lake Ogletree, near the confluence with the East Lake/Green Chapel tributary. Latitude *32, 33, 37.961 N*; Longitude *85, 25, 38.369 W*

**See Insert for Maps of All Water Quality Monitoring Locations*

Site Number	Sample Date	Water Temp. (F)	pH	Dissolved Oxygen (mg/L)	Specific Conductance (uS/cm)	Turbidity (NTU)	Nitrate + Nitrite (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Orthophos-phate (mg/L)	Total Phosphorus (mg/L	E. coli (cfu/100 mL)
C1	2/21/2019	59.5	7.49	10.46	59	6.18	0.089	1.81	0	0	117.8
C1	12/19/2018	51.4	7.16	11.27	63	12.16	0.127	0	0	0	98.5
C1	10/18/2018	76	7.93	8.91	75	7.85	0.042	1.22	0	0	30.9
C1	8/20/2018	84.7	8.48	6.7	75	5.24	0.045	0.601	0.026	0	10.8
C1	6/21/2018	90.4	8.94	9.05	77	3.01	0	0	0	0	1
C1	4/27/2018	67.6	7.17	9.65	71	3.82	0	0	0	0	27
C2	2/21/2019	59.1	7.26	9.96	62	6.7	0.115	0	0	0	172.3
C2	12/19/2018	51.4	7.19	11.42	64	8.3	0.164	0	0	0	104.3
C2	8/20/2018	76.8	7.12	6.88	80	10.2	0.081	0.526	0.05	0	290.9
C2	6/21/2018	77.9	7.15	7.1	76	9.19	0.21	0	0	0	308
C2	4/27/2018	61.6	6.7	8.96	71	12.7	0.041	0	0	0	313
C5	2/21/2019	57.7	7.32	10.63	65	6.2	0.125	0	0	0	151.5
C5	12/19/2018	50.2	7.15	10.98	68	8.77	0.147	0	0	0	127.4
C5	10/18/2018	67	7.21	8.55	82	5.77	0.168	1.55	0.031	0	161.6

Site Number	Sample Date	Water Temp. (F)	pH	Dissolved Oxygen (mg/L)	Specific Conductance (uS/cm)	Turbidity (NTU)	Nitrate + Nitrite (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Orthophos-phate (mg/L)	Total Phosphorus (mg/L	E. coli (cfu/100 mL)
C5	8/20/2018	76.8	7.41	7.67	82	10.92	0.062	0	0	0	410.6
C5	6/21/2018	76.5	7.51	7.35	96	8.62	0.201	0	0	0	145
C5	4/27/2018	59.6	6.81	10.21	75	13.5	0.085	0	0	0	153
C7	2/21/2019	58.3	7.17	9.91	67	8.48	0.087	0.67	0	0	218.7
C7	12/19/2018	49.8	7.05	10.59	72	10.16	0.209	0	0	0	235.9
C7	10/18/2018	66.2	6.91	6.68	87	10.35	0.199	1.12	0	0	1553.1
C7	8/20/2018	78.7	7.14	6.73	78	11.71	0.078	0.662	0	0	435.2
C7	6/21/2018	77.1	7.1	6.5	83	11.2	0.2	0	0	0.1	365
C7	4/27/2018	60.4	6.64	8.6	78	13.9	0.074	0.527	0	0	156
C8	2/21/2019	58.9	7.24	10.7	69	6.91	0.13	0.596	0	0	770.1
C8	12/19/2018	51.3	7.06	10.9	75	10.25	0.214	0.477	0	0	83.9
C8	10/18/2018	66.3	6.98	7.7	90	8.31	0.228	0.93	0	0	461.1
C8	8/20/2018	80.3	7.19	6.61	83	9.95	0	0.772	0	0	235.9
C8	6/21/2018	79.6	7.15	6.8	84	6.78	0.171	0	0	0	238
C8	4/27/2018	63.6	6.89	8.8	80	11.5	0.066	0.488	0	0.101	219
L1	2/21/2019	56.4	7.4	10.52	55	7.72	0.117	0.525	0	0	160.7
L1	12/19/2018	51.3	7.34	10.88	66	10.79	0.083	0	0	0	25.6
L1	10/18/2018	75.6	7.78	8.3	68	22.1	0	0.775	0.028	0	6.3
L1	8/20/2018	84.3	8.13	7.42	75	3.79	0.074	0	0	0	5.2
L1	6/21/2018	87.6	9.04	9.09	77	3.24	0	0	0	0	20
L1	4/27/2018	67.1	6.93	9.4	72	4.54	0	0	0	0	2
L2	3/27/2019	61.6	7.83	10.92	57	4.28	-	-	-	-	-
L2	3/12/2019	61.2	7.57	10.44	56	8.32	-	-	-	-	-
L2	2/26/2019	61.1	7.65	11.23	56	9.56	-	-	-	-	-
L2	2/21/2019	56.2	7.38	10.86	55	8.41	0.127	0.671	0	0	6.3
L2	2/12/2019	54	7.19	10.73	53	11.3	-	-	-	-	-
L2	1/16/2019	55.4	7.46	10.15	52	16	-	-	-	-	-
L2	1/2/2019	60.2	6.92	9.14	-	-	-	-	-	-	-
L2	12/19/2018	51.2	7.32	10.45	65	10.38	0.091	0.539	0	0	31.5
L2	12/17/2018	51.8	7.26	10.74	66	7.43	-	-	-	-	-
L2	12/3/2018	57.5	7.52	11.69	65	11.98	-	-	-	-	-
L2	11/19/2018	57.4	7.96	11.07	68	6.44	-	-	-	-	-
L2	11/5/2018	66.5	8.52	10.69	70	5.53	-	-	-	-	-
L2	10/23/2018	71	7.53	10.17	68	4.79	-	-	-	-	-
L2	10/18/2018	75.3	7.22	7.5	69	6.87	0	0.859	0.031	0	4.1
L2	10/9/2018	81.9	7.46	7.32	74	4.86	-	-	-	-	-
L2	9/24/2018	87.8	8.8	8.47	78	5.23	-	-	-	-	-
L2	9/11/2018	87.9	8.77	8.56	76	3.31	-	-	-	-	-
L2	8/22/2018	86.2	8.58	8.84	76	3.41	-	-	-	-	-
L2	8/20/2018	84.3	8.14	7.46	75	5.86	0	0	0	0	18.9
L2	8/6/2018	91.1	8.91	8.95	78	2.75	-	-	-	-	-
L2	7/23/2018	88.3	8.59	8.16	76	2.39	-	-	-	-	-
L2	7/9/2018	88	8.9	7.97	76	2.63	-	-	-	-	-
L2	6/26/2018	89.5	8.96	8.07	77	2.48	-	-	-	-	-
L2	6/21/2018	88.1	8.93	8.78	77	2.4	0	0	0	0	4
L2	6/11/2018	87	9.13	9.92	77	2.28	-	-	-	-	-
L2	5/29/2018	80.4	8.81	9.1	73	4.8	-	-	-	-	-
L2	5/14/2018	84.5	8.25	9.18	77	2.75	-	-	-	-	-
L2	4/30/2018	69.5	7.72	9.87	72	2.03	-	-	-	-	-
L2	4/27/2018	66.8	6.88	9.39	72	2.39	0	0	0	0	3
L2	4/16/2018	66	7.74	10.02	72	3.31	-	-	-	-	-
L2	4/2/2018	67.9	7.21	10.19	70	-	-	-	-	-	-
L5	2/21/2019	60.1	7.91	12.46	68	3.8	0.081	0.532	0	0	90.4
L5	12/19/2018	52.8	7.11	11.33	74	11.89	0.151	0	0	0	31.5
L5	10/18/2018	69.3	7.21	8.14	76	3.93	0.163	0.579	0	0	93.3
L5	8/20/2018	80.5	7.27	6.62	84	10.1	0.145	0	0	0	57.1

Site Number	Sample Date	Water Temp. (F)	pH	Dissolved Oxygen (mg/L)	Specific Conductance (uS/cm)	Turbidity (NTU)	Nitrate + Nitrite (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Orthophos-phate (mg/L)	Total Phosphorus (mg/L	E. coli (cfu/100 mL)
L5	6/21/2018	89.7	8.93	9.15	null	3.29	0	0	0	0	3
L5	4/27/2018	68.1	7.08	9.65	81	4.16	0.046	0	0	0	56
T11	2/21/2019	60.6	7.25	10.25	64	4.77	0.52	0	0	0	344.8
T11	12/19/2018	51.1	7.26	11.1	69	8.01	0.074	0	0	0	45.7
T11	10/18/2018	66.3	7.17	8.51	91	6.85	0.223	0.828	0	0	101.5
T11	8/20/2018	74.5	7.34	7.79	108	8.37	0.125	0	0.145	0	770.1
T11	6/21/2018	75.1	7.28	7.84	106	7.77	0.191	0	0	0	162
T11	4/27/2018	59.5	6.78	9.47	78	11.2	0.12	0	0	0	361
T12N	2/21/2019	61	7.21	10.54	131	2.43	0	2.44	0	0	98.7
T12N	12/19/2018	54.4	7.16	10.24	142	2.91	0.253	0	0	0	104.6
T12N	10/18/2018	64.4	7.34	8.93	164	1.68	0.184	0.709	0	0	145.5
T12N	8/20/2018	78.1	7.41	7.29	191	0.96	0.221	0	0.189	0.165	0
T12N	6/21/2018	76.3	7.32	7.5	171	1.23	0.221	0	0.167	0.194	0
T12N	4/27/2018	62.4	6.85	9	153	1.92	0.209	0	0	0.165	0
T19	2/21/2019	58.1	7.31	10.12	109	11.8	0	0.679	0	0	133.4
T19	12/19/2018	51.1	7.27	10.88	103	11.61	0.147	0.519	0	0	123.6
T19	10/18/2018	67.1	6.99	7.48	129	9.36	0.117	0.89	0	0	95.9
T19	8/20/2018	77.9	7.14	6.79	110	10.9	0.0848	0	0.169	0	129.6
T19	6/21/2018	76.6	6.89	6.25	123	14.6	0.153	0	0	0	120
T19	4/27/2018	63	6.76	8.95	104	11.7	0	0	0	0	416
T22	2/21/2019	60.2	7.26	10.82	108	4.49	0.11	1.07	0	0	2419.6
T22	12/19/2018	51.8	7.17	10.63	109	6.45	0.193	0	0	0	65
T22	10/18/2018	64.7	7.11	8.81	123	4.07	0.093	0.939	0	0.103	410.6
T22	8/20/2018	75.4	7.3	7.21	169	4.1	0.181	0	0.043	0	95.9
T22	6/21/2018	74.8	7.25	6.96	131	5.05	0.167	0	0.06	0.14	387
T22	4/27/2018	60.2	6.74	8.66	136	6.73	0.133	0	0	0.121	870
T32	2/21/2019	61.5	7.39	10.05	56	5.74	0.038	0	0	0	116.9
T32	12/19/2018	52.8	7.18	10.98	59	10.03	0.116	0	0	0	238.2
T32	10/18/2018	66.7	7.62	8.84	75	8.84	0.123	0.797	0	0	387.3
T32	8/20/2018	76	7.39	7.66	80	12.4	0.161	0	0.037	0	307.6
T32	6/21/2018	90	8.91	8.61	77	2.77	0	0	0	0	31
T32	4/27/2018	67.2	7.18	9.28	73	3.78	0	0	0	0	26
T34	2/21/2019	58.3	7.15	10.53	67	7.13	0.086	0.494	0	0	110.6
T34	12/19/2018	51.2	7.04	10.77	73	10.64	0.143	0.559	0	0	22.8
T34	10/18/2018	66	6.74	7.27	84	13.6	0.117	0.568	0	0	461.1
T34	8/20/2018	81	7.27	7.25	77	9.91	0.054	0.621	0.041	0	116.2
T34	6/21/2018	79.4	7.02	6.5	81	11.22	0.135	0	0	0	517
T34	4/27/2018	63.5	6.72	8.42	79	10.3	0.057	1.28	0	0.118	125

5.0 WPCF Dissolved Oxygen Monitoring

5.1 Purpose

Staff have been collecting in-stream dissolved oxygen data upstream and downstream of both WPCF's effluent discharge points since August of 2006. This monitoring provides valuable data assuring that the effluent discharged from Auburn's WPCF is not causing decreases in the dissolved oxygen content of Parkerson's Mill Creek during the critical summer months. Monitoring at the Northside WPCF was discontinued in 2013 due to closure of the plant, however data collection resumed in 2015. Monitoring is performed on a frequent basis (almost daily) using a YSI (Clark Cell) and/or Hach (LDO) dissolved oxygen probe at points both upstream and downstream of each effluent discharge location.

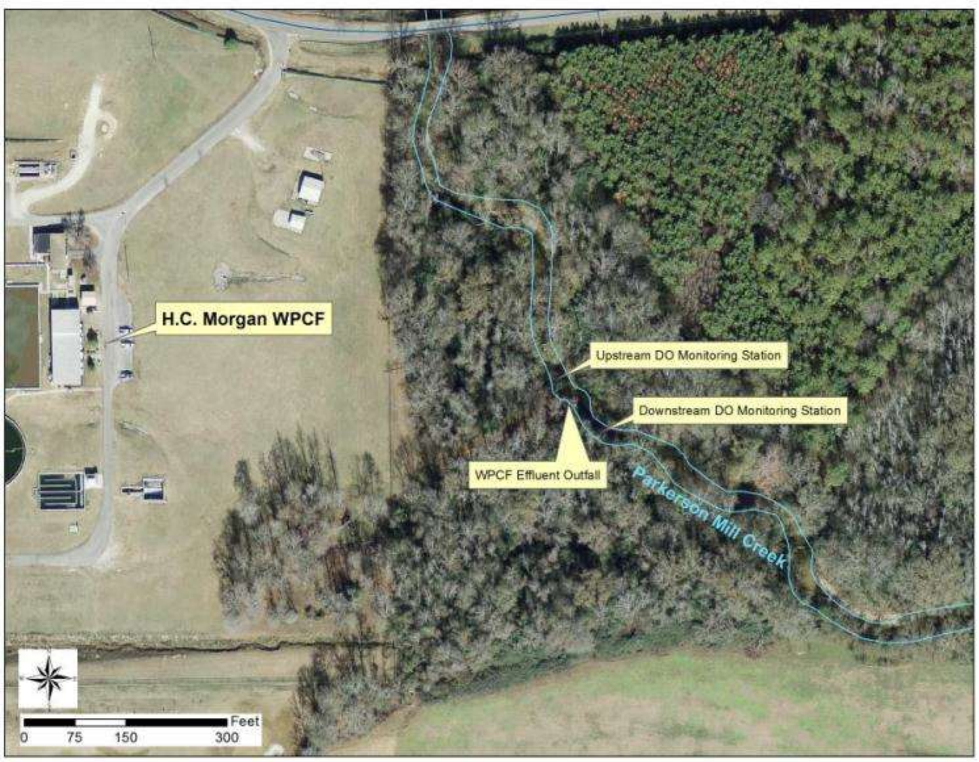
5.2 Definition and Methods

As noted above, dissolved oxygen measurements are taken with a YSI (Clark Cell) and/or HACH (Luminescent Dissolved Oxygen) probe.

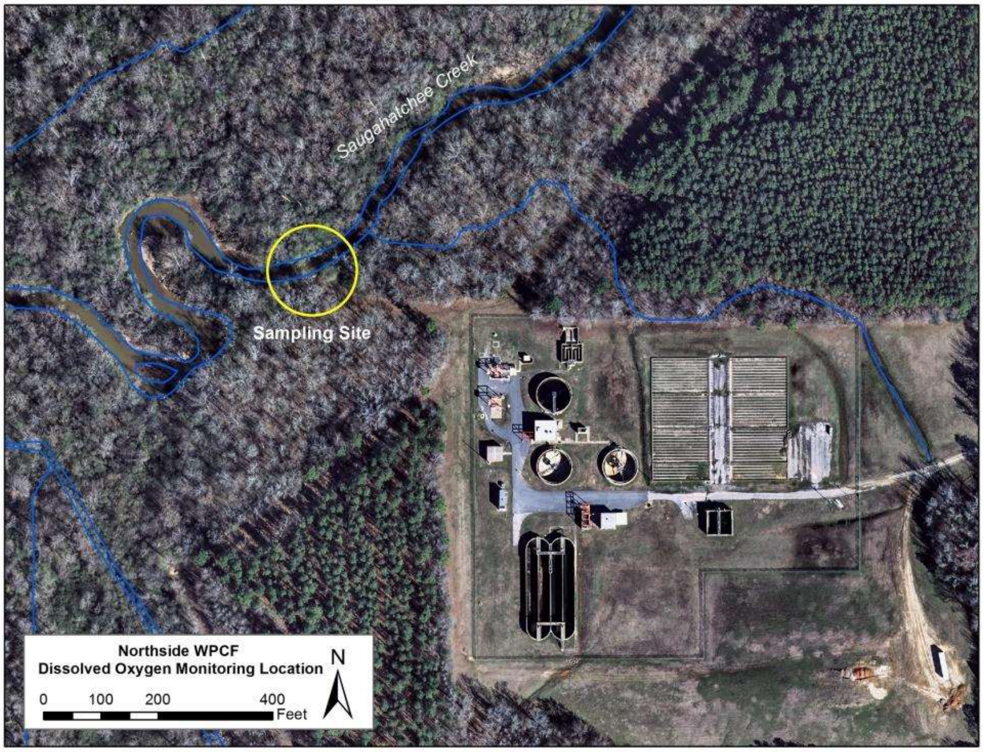
- Dissolved Oxygen – This is the amount of oxygen that has been dissolved in the water column, which comes from both the atmosphere and photosynthesis by aquatic plants.

5.3 Monitoring Stations

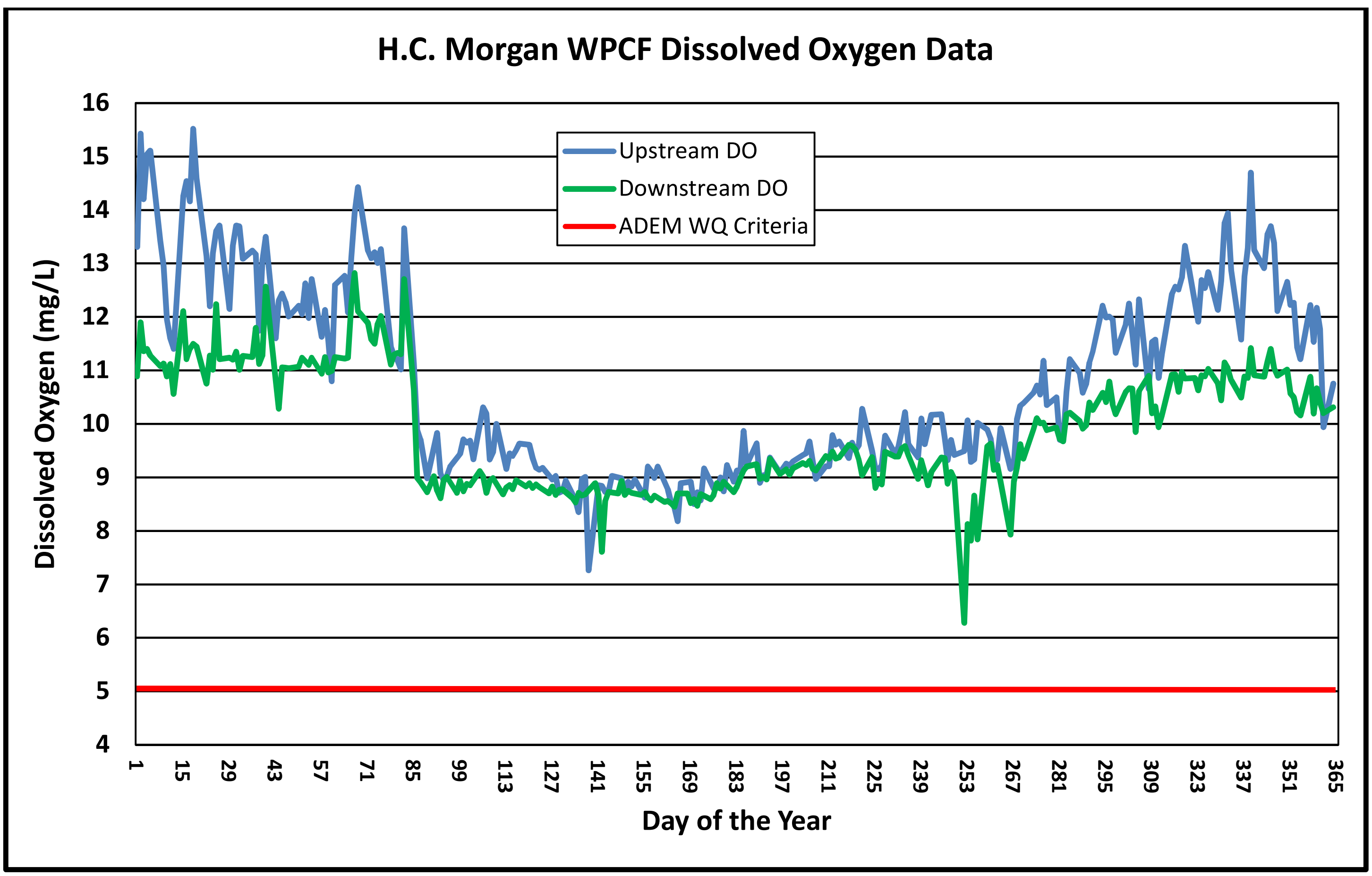
H.C. Morgan WPCF Upstream Latitude *32, 32, 9.890 N;* Longitude *85, 30, 20.443 W*
H.C. Morgan WPCF Downstream Latitude *32, 33, 9.077 N;* Longitude *85, 30, 19.699 W*

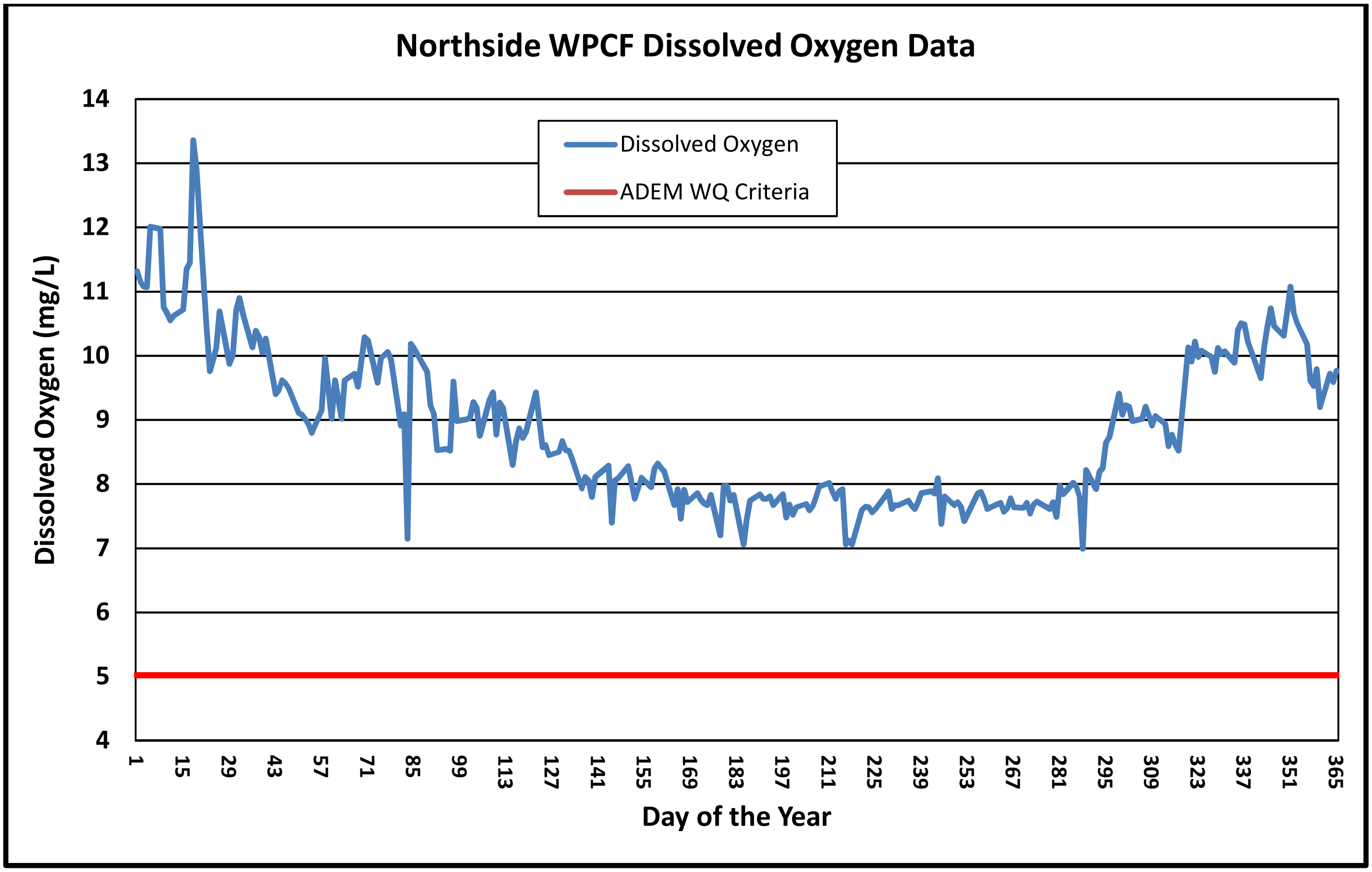


Northside WPCF Latitude *32, 37, 41.32 N;* Longitude *85, 32, 44.75 W*



5.4 Data





Northside WPCF Dissolved Oxygen Data
Dissolved Oxygen
ADEM WQ Criteria
Dissolved Oxygen (mg/L)
14
13
12
11
10
9
8
7
6
5
4
1
15
29
43
57
71
85
99
113
127
141
155
169
183
197
211
225
239
253
267
281
295
309
323
337
351
365
Day of the Year

6.0 Outfall Screening

6.1 Purpose

According to ADEM Phase II NPDES General Permit ALR040003, the permitee shall implement an ongoing program to detect and eliminate illicit discharges to the MS4 to the maximum extent practicable. The permit requires a dry weather screening program to detect and address non-stormwater discharges to the MS4. The table that follows includes the water quality monitoring data that were collected at stormwater outfalls from April 1, 2018 to March 31, 2019.

6.2 Monitoring Data

Site	Sample Date	Surfactants (mg/L)	Ammonia (mg/L)	Potassium (mg/L)	Ammonia & Potassium Ratio	Fluoride (mg/L)	E-Coli (CFU/100mL)
T90	8/27/2018	-	-	-	-	0.05	-
P66	8/14/2018	-	-	-	-	0.18	0
P15	8/14/2018	-	-	-	-	0.26	100
P40	8/7/2018	-	-	-	-	0	50
P32	8/7/2018	-	-	-	-	0	50
P152	8/7/2018	-	-	-	-	0.1	0
P143	8/7/2018	-	-	-	-	0.2	0
P142	8/7/2018	6.3	0.1	9.53	0.01	-	350
P107	7/26/2018	-	-	-	-	0	0
P108	7/26/2018	-	-	-	-	0.1	0
P94	7/26/2018	-	-	-	-	0.1	50
P91	7/26/2018	-	-	-	-	0	50
P8	7/25/2018	-	-	-	-	0.1	0

APPENDIX E

MUNICIPAL FACILITIES

City Properties/Facilities	
280 Rest Stop	Lake Wilmore
Ambulance Properties	Lee County Humane Society
Auburn Public Library	Lynn St. Property
Baptist Hill Cemetery	Lynn St. Property
Bowden Park	Mall Parkway Parking Lot
Boy Scout Hut Property	Martin Luther King Park
Boykin Community Center	Memorial Cemetery
Camellia Dr @ Wrights Mill Rd Property	Moores Mill @ Society Hill Property
Choctafaula Lift Station	Moores Mill Park
City Hall	N Gay St. Parking Lot
City Meeting Room	N Ross @ Opelika Rd Property
Dean Road Rec Center	Northside WPCF
Dekalb St. Regional DP	Parking Deck
Doug Watson Municipal Complex	Pine Hill Cemetery
Duck Samford Park	Public Safety Training Facility
Dumas Drive Property	Public Works
E Glenn Municipal Parking Lot	S Brookwood Dr Property
Environmental Services	S Donahue @ EUD Property
Felton Little Park	Sam Harris Park
Fire Station 2 & Fields	School Bus Depot
Fire Station 3	Soccer Complex
Fire Station 4	Softball Complex
Firing Range	Summertrees Properties
Fleet Services	Tacoma Dr Regional DP
Forestdale @ Moores Mill Property	Tennis Center
Frank Brown Rec Center	Town Creek Cemetery
Graham McTeer Park	Town Creek Drive Trailhead
HC Morgan WPCF	Town Creek Park and Greenway
Hickory Dickory Park	Veterans Memorial Property
Human Resources	Westview Properties
Indian Pines Golf Course	White St Regional DP
Keisel Park	

APPENDIX F

REVISED MONITORING PLAN

City of Auburn, Alabama
Phase II MS4
Stormwater Quality Monitoring Plan

Permit # ALR040003

Effective: October 1, 2016

Expiration: September 30, 2021

Updated: May 31, 2019

Table of Contents

1.0 Introduction

This document is the City of Auburn's Stormwater Monitoring Plan as required by the Alabama Department of Environmental Management (ADEM) Municipal Separate Storm Sewer System (MS4) Phase II NPDES General Permit No. ALR040003. The purpose of this monitoring plan is to provide environmental data that will be used to evaluate the conditions in each impaired stream within the City's MS4. These monitoring data will help determine the success of efforts to reduce pollutant loads within these waterbodies. This plan will be reviewed annually, and any revisions to the plan will be documented in the Stormwater Management Program Plan (SWMPP) Annual Report.

1.1 Watersheds and Impairments

The City of Auburn has three (3) streams within its jurisdiction that fail to meet the state's minimum water quality standards for their designated uses. Two streams have a finalized Total Maximum Daily Load (TMDL), and two streams are included on the 2018 final 303(d) list. A TMDL was approved for the Saugahatchee Creek watershed in 2008, with the pollutants of concern being total phosphorus (TP) and organic enrichment/dissolved oxygen (OE/DO). Saugahatchee Creek was listed on the 2018 303(d) list for pathogens, and E. coli monitoring for this impairment will begin during the next reporting period (4/1/2019 – 3/31/2020). A TMDL was finalized for Parkerson's Mill Creek in 2011 for pathogens, with E. coli as the indicator bacteria. Moore's Mill Creek was included on the 303(d) list of impaired streams in 2000 for siltation, and there is currently no TMDL for Moore's Mill Creek. This Stormwater Quality Monitoring Plan will address the TMDL pollutants of concern and 303(d) impairment for each of these streams.

1.2 Permit Requirements

According to Part V of the MS4 Phase II General Permit ALR040003 if there are no 303(d) listed or TMDL waters located in the permittee's MS4 area, no monitoring shall be required. However, if a waterbody within the MS4 jurisdiction is listed on the latest final 303(d) list, or otherwise designated impaired by ADEM, or for which a TMDL is approved or established by EPA, the MS4 permittee shall comply with the following:

1. Include a statement in the SWMPP stating if monitoring is required.
2. Implement a monitoring program within 6 months of permit coverage that addresses the impairment or TMDL. Include the monitoring plan in the SWMPP, and document the revisions to the monitoring plan in the SWMPP and SWMPP Annual Report.
3. Describe proposed monitoring locations and proposed monitoring frequency in the monitoring plan, with actual locations described in the SWMPP Annual Report.
4. Include in the monitoring program any parameters attributed with the latest final 303(d) list, or otherwise designated by ADEM as impaired, or are included in an EPA-approved or EPA-established TMDL.
5. Perform analysis and collection of samples in accordance with the methods specified at 40 CFR Part 136. If an approved 40 CFR Part 136 does not exist, then an ADEM approved method may be used.
6. If samples cannot be collected due to adverse conditions, permittee must submit a description of why samples could not be collected, including available documentation of the event (e.g. weather conditions that create dangerous conditions for personnel, or impracticable conditions such as drought or ice).
7. Monitoring results must be reported with the subsequent SWMPP Annual Report and shall include the following:
    a. The date, latitude/longitude of location, and time of sampling
    b. The name(s) of the individual(s) who performed the sampling
    c. The date(s) analysis were performed
    d. The name(s) of the individual(s) who performed the analysis
    e. The analytical techniques or methods used
    f. The results of such analysis

2.0 Monitoring

The City of Auburn understands that quality control and quality assurance are critical to a successful environmental monitoring program. In order to develop a dependable and credible database of water quality measurements for each sampling site in the City's MS4 area, the Water Resource Management (WRM) staff employ a stringent field and laboratory protocol. WRM staff are required to wear nitrile gloves when handling sample bottles, cleaning sample bottles, plating bacterial samples, handling bacterial plates and growth media, calibrating instruments, and collecting water samples. Before going to a sample site, water sample collection bottles are placed in clean, sealable plastic bags. They are carried to the sample site in a cooler, and after the samples are collected the bottles are immediately placed back into the bag and into the cooler to be chilled at 4 degrees Celsius. WRM staff calibrate all water quality instruments prior to field use. Calibration standards are never used outside the expiration date. A detailed calibration log is filled out each time an instrument is calibrated (Appendix A). Instruments, sampling devices, and sample vials are cleaned using Liquinox™ phosphate-free detergent, followed by a tap water rinse, and then a final rinse with deionized water. At all sample sites, WRM staff utilize field sheets to document site characteristics and observations such as stream color, geomorphic setting (riffle, pool, etc.), and weather conditions (Appendix B). The field sheets are also used to document water quality data measured in-situ at each site. These in-situ data include temperature, pH, specific conductance (µS/cm), dissolved oxygen (mg/L), and dissolved oxygen (% saturation), and are collected using a YSI ProPlus instrument. Water samples are analyzed for turbidity in the field using a LaMotte 2020we portable turbidimeter. Streamflow is determined using the mid-section method, where the channel is divided into segments along a cross-section, and width, depth, and velocity are recorded at each segment. Velocity is measured at the center of each segment using a Price Pygmy Meter. The sum of flows of all the segments along a cross-section equals the total streamflow.

2.1 Saugahatchee Creek

The Saugahatchee Creek Embayment on Yates Reservoir was originally placed on the ADEM 303(d) list of impaired waterbodies in 1996 for OE/DO and nutrients. It remained on the State's 303(d) list after each consecutive two-year water quality assessment until 2008, at which time the Saugahatchee Creek Embayment (Yates Reservoir) TMDL was finalized. Additionally, Pepperell Branch, an unnamed tributary of Saugahatchee Creek which originates in Opelika, also remained on the State's 303(d) list for nutrient impairment until 2008. The impairment of Pepperell Branch was also addressed in the Saugahatchee Creek Embayment TMDL. At no time has the main stem of Saugahatchee Creek been added to the State's 303(d) list. In order to address water quality concerns within the Saugahatchee Creek Embayment, ADEM and the EPA jointly developed a "watershed based" TMDL, which would in turn address nutrient loading from both the main stem of Saugahatchee Creek and Pepperell Branch. The final Saugahatchee Creek Watershed TMDL was issued in April of 2008, identifying TP as the primary pollutant of concern (expressed as chlorophyll-a to satisfy numeric target criteria for assessing eutrophication in lakes). The Saugahatchee Creek Embayment TMDL establishes the TP limits in stormwater runoff of equal to or less than 0.1 mg/L (see Table 5-2 of the Saugahatchee Creek Embayment TMDL).

Monitoring TP at strategic locations along the main stem of Saugahatchee Creek and on tributaries within the Saugahatchee Creek watershed that drain portions of the City's MS4 will provide sufficient data to evaluate the success of efforts to reduce TP in stormwater and meet TMDL concentrations. The City shall make all reasonable efforts to conduct quarterly sampling for TP, water temperature, pH, dissolved oxygen, specific conductance, and turbidity at three locations along the main stem of Saugahatchee Creek, and also at three tributaries within the Saugahatchee Creek watershed (Figure 1.). Streamflow in cubic feet per second (cfs) and million gallons per day (MGD) will also be recorded at each sample site when water samples are collected. Streamflow will be determined from the USGS streamgage 02418230 for sites on the main stem of Saugahatchee Creek. The City will make a reasonable effort to measure streamflow in-situ at tributary sites when flow conditions permit. Additionally, the City will continue to reasonably support and participate in studies of water quality in the embayment. Proposed sample sites for monitoring in the

Saugahatchee Creek watershed are shown in Table 1. The sample parameters and corresponding analytical techniques are shown in Table 2.

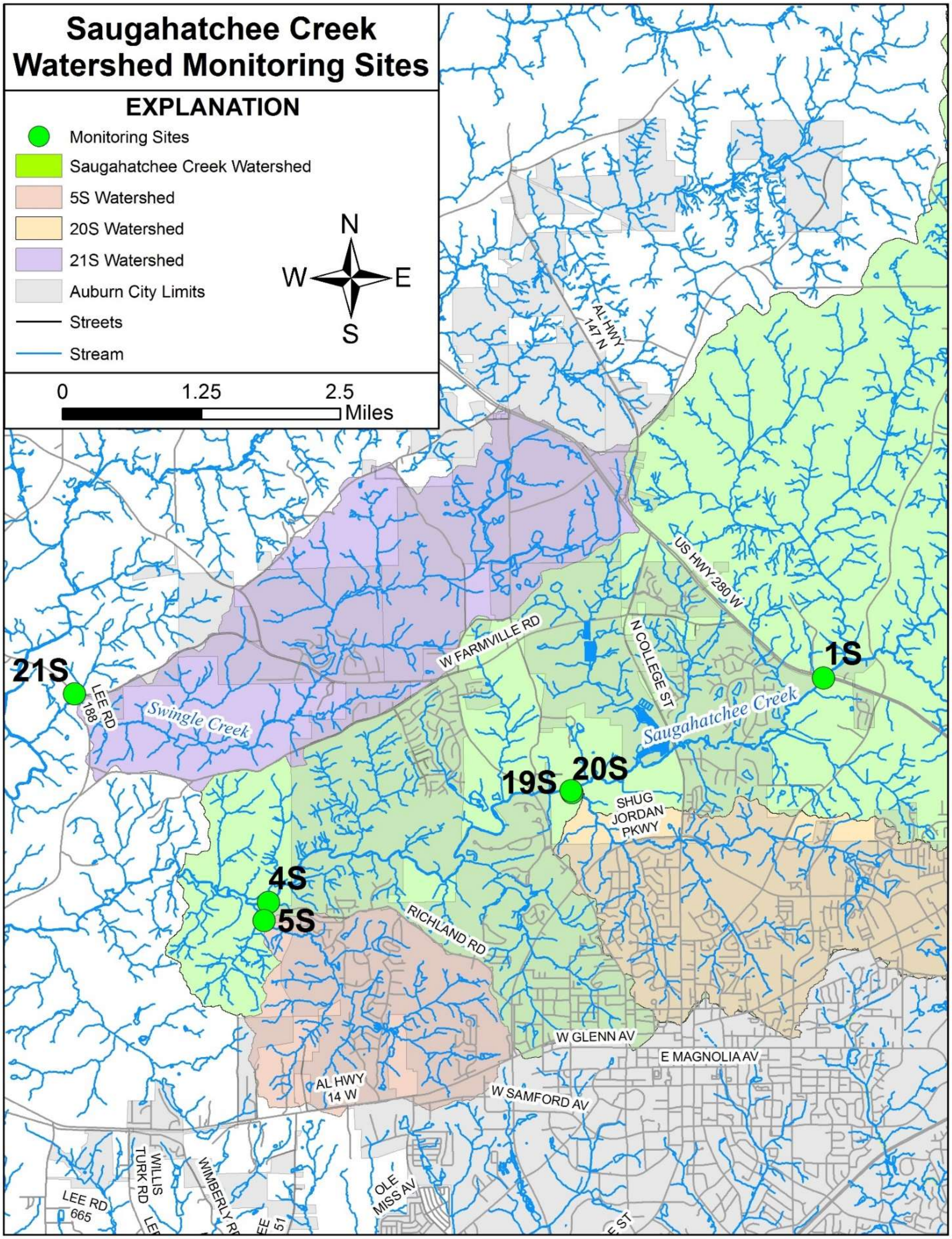


Figure 1. Saugahatchee Creek Watershed Monitoring Sites

Table 1. Saugahatchee Creek Monitoring Site Locations

Site Number	Site Location	Site Coordinates
1S	Saugahatchee Creek at US HWY 280	32.657413 N, 85.459656 W
19S	Saugahatchee Creek 0.35 mi upstream of N. Donahue Dr.	32.642777 N, 85.498761 W
4S	Saugahatchee Creek at Northside WWTP	32.628185 N, 85.545705 W
5S	Unnamed Tributary to Saugahatchee Creek	32.625847 N, 85.546404 W
20S	Unnamed Tributary to Saugahatchee Creek	32.642492 N, 85.498606 W
21S	Swingle Creek above Lee Rd. 188	32.655618 N, 85.575517 W

Table 2. Saugahatchee Creek Water Quality Parameters and Analytical Methods

Water Quality Parameter	Analytical Method
Total Phosphorus	EPA 365.4
Water Temperature	YSI model 5560
pH	YSI model 1001
Dissolved Oxygen	YSI model 2003 polarographic
Specific Conductance	YSI model 5560
Turbidity	Standard Methods 2130 B

2.2 Parkerson's Mill Creek

Parkerson's Mill Creek was placed on the ADEM 303(d) list of impaired waterbodies for pathogens in 2008. The impaired reach is 6.85 mi. and includes all waters from its source (near the intersection of N. College St. and Glenn Ave. in downtown Auburn) to its confluence with Chewacla Creek. Potential sources of the impairment were listed as sanitary sewer overflows and urban runoff. The final Parkerson's Mill Creek TMDL was issued in September 2011, identifying E.coli as the pollutant of concern. The Parkerson's Mill Creek TMDL establishes the E. coli limits in stormwater at 3.42E+09 colonies/day, also expressed as a 61% reduction in non-point sources. This TMDL was established using the geometric mean criterion of 126 CFU/100mL.

The City shall make all reasonable efforts to monitor E. coli concentrations in Parkerson's Mill Creek through annual intensive E. coli sampling. The intensive E. coli sampling will provide sufficient data to evaluate the success of efforts to reduce pathogens in stormwater and meet TMDL concentrations. The intensive sampling will be conducted in the same manner as the study performed by ADEM in 2010 at the same four (4) reference sites (Figure 2.). Single samples will be collected for E. coli once per month for April, May, July, September, October, and November. Weekly samples will be collected at those sites during June and August. The 5-week geometric mean concentrations will be calculated based on the results of the weekly sampling. The City will make a reasonable effort to measure streamflow (recorded in cfs and MGD) in-situ at each sample site after water samples are collected when flow conditions permit. Water temperature, pH, dissolved oxygen, specific conductance, and turbidity will be measured in-situ at each site. Additionally, the City will continue to reasonably support and participate in studies of water quality in the Parkerson's Mill Creek watershed. Proposed sample sites for monitoring in the Parkerson's Mill Creek watershed are shown in Table 3. The sample parameters and corresponding analytical techniques are shown in Table 4.

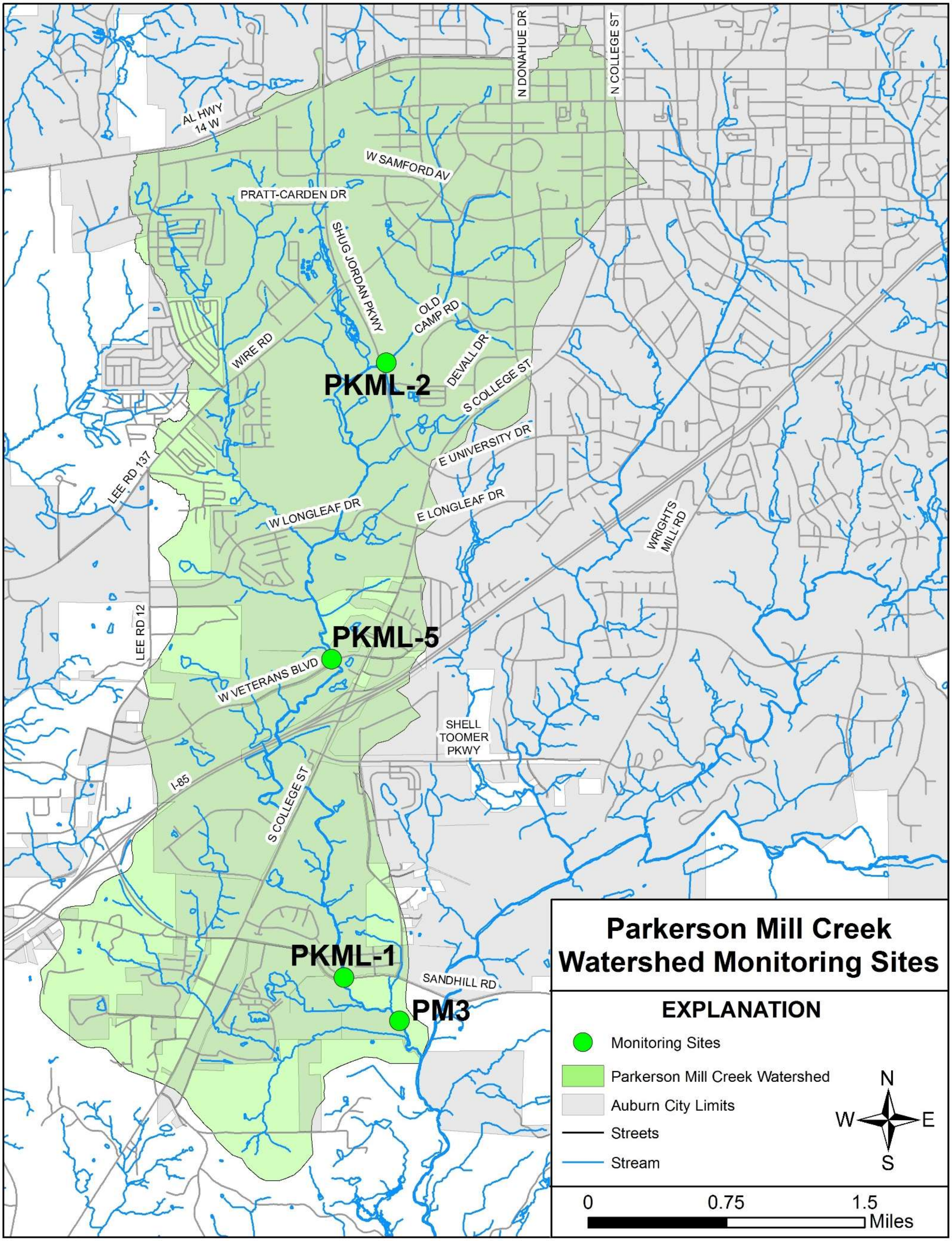


Figure 2. Parkerson's Mill Creek Watershed Monitoring Sites

Table 3. Parkerson's Mill Creek Monitoring Site Locations

Site Number	Site Location	Site Coordinates
PKML-1	Parkerson's Mill Creek at Sand Hill Rd	32.53744 N, 85.50601 W
PKML-2	Parkerson's Mill Creek at Shug Jordan Pkwy	32.58551 N, 85.50249 W
PKML-5	Parkerson's Mill Creek at W. Veterans Blvd	32.56243 N, 85.50716 W
PM-3	Parkerson's Mill Creek below HC Morgan WPCF	32.53427 N, 85.50156 W

Table 4. Parkerson's Mill Creek Water Quality Parameters and Analytical Methods

Water Quality Parameter	Analytical Method
E. coli	Alabama Water Watch (Coliscan Easygel Method)
Water Temperature	YSI model 5560
pH	YSI model 1001
Dissolved Oxygen	YSI model 2003 polarographic
Specific Conductance	YSI model 5560
Turbidity	Standard Methods 2130 B

2.3 Moore's Mill Creek

Moore's Mill Creek was placed on the draft 303(d) list for siltation in 1998, and has been on the final 303(d) list since 2000. The impaired reach is 10.51 mi. and includes all waters from its source to its confluence with Chewacla Creek. Habitat degradation due to sedimentation/siltation is the impairment in Moore's Mill Creek. Potential sources of the impairment are listed as land development and urban runoff/storm sewers. The Moore's Mill Creek Watershed Management Plan was completed in 2008. This plan outlined several objectives aimed to reduce sedimentation and mitigate habitat degradation. Included in the plan were geomorphic surveys and Bank Erosion Hazard Index (BEHI) assessments of stream reaches on both the main stem and tributaries throughout the watershed. Findings from these geomorphic surveys and BEHI assessments identified in-stream sediment loading from streambank erosion as a significant contributor to the impairment. The watershed management plan recommended continued monitoring of these sites to evaluate the success of future efforts aimed to reduce bank erosion.

The City shall make reasonable efforts to monitor streambank erosion at eight (8) reaches (Figure 3.) in the Moore's Mill Creek watershed with annual stream geomorphic surveys. These annual surveys will measure geomorphic parameters that are used as indicators of stability of a stream reach (Table 7.). A stream condition rapid assessment will also be performed annually at each of the 8 reaches. The stream condition rapid assessment (Appendix B) was developed with a grant from EPA (EPA Region IV Wetlands Program Development Grant CD00D01412, "Eco-Morphological Mitigation Design and Assessment Tools for the Alabama and Tennessee Appalachian Plateau"), and rates stream condition and function based on eco-geomorphic indicators. In addition, quarterly samples of turbidity, water temperature, pH, dissolved oxygen, specific conductance, and turbidity will be measured in-situ at each site. Additionally, the City will continue to reasonably support and participate in studies of water quality in the Moore's Mill Creek watershed. Proposed sample reaches for monitoring in the Moore's Mill Creek watershed are shown in Table 5. The water quality sampling parameters and corresponding analytical techniques are shown in Table 6, and geomorphic parameters are found in Table 7.

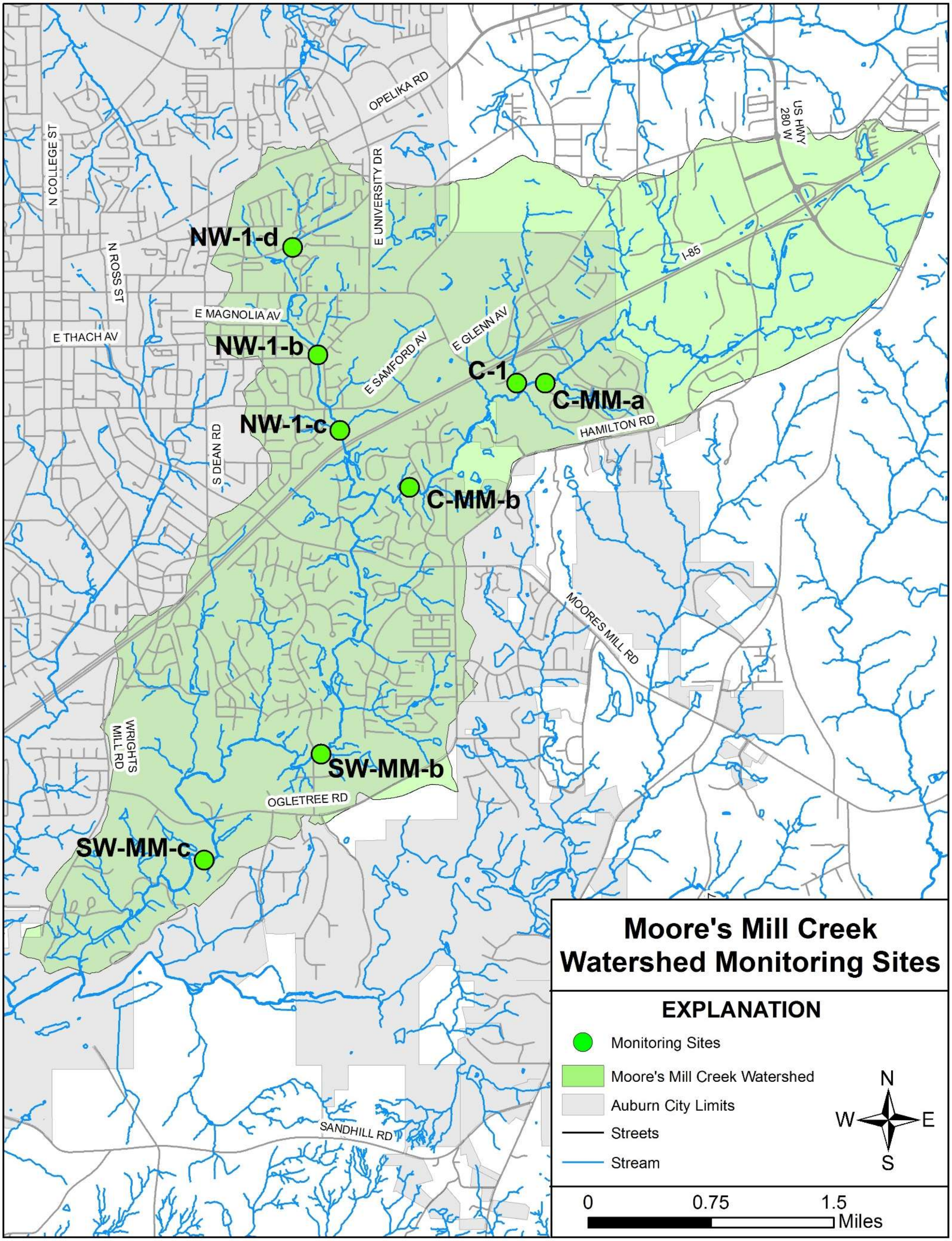


Figure 3. Moore's Mill Creek Watershed Monitoring Sites

Table 5. Moore's Mill Creek Monitoring Site Locations

Site Number	Reach Length	Upstream Coordinates	Downstream Coordinates
NW-1-b	600 ft.	32.603946 N, 85.453310 W	32.602333 N, 85.453047 W
NW-1-d	950 ft.	32.613527 N, 85.455178 W	32.611580 N, 85.456570 W
C-1	550 ft.	32.601404 N, 85.432698 W	32.600192 N, 85.432044 W
C-MM-a	950 ft.	32.600874 N, 85.428538 W	32.600530 N, 85.431463 W
NW-1-c	850 ft.	32.597506 N, 85.451326 W	32.595712 N, 85.450483 W
C-MM-b	1100 ft.	32.591034 N, 85.442119 W	32.590912 N, 85.444596 W
SW-MM-b	650 ft.	32.568631 N, 85.451830 W	32.567873 N, 85.453612 W
SW-MM-c	1350 ft.	32.559094 N, 85.463712 W	32.558760 N, 85.466685 W

Table 6. Moore's Mill Creek Water Quality Parameters and Analytical Methods

Water Quality Parameter	Analytical Method
Total Suspended Solids	Standard Methods 2540D Mod-1997
Water Temperature	YSI model 5560
pH	YSI model 1001
Dissolved Oxygen	YSI model 2003 polarographic
Specific Conductance	YSI model 5560
Turbidity	Standard Methods 2130 B

Table 7. Moore's Mill Creek Geomorphic Parameters

Geomorphic Parameter	Abbreviation
Bank Erosion Hazard Index	BEHI
Bankfull Area	A_{bkf}
Bankfull Width	W_{bkf}
Bankfull Depth	d_{bkf}
Maximum Bankfull Depth	d_{mbkf}
Low Bank Height	LBH
Width of the Flood-prone Area	W_{fpa}
Width to Depth Ratio	W/d
Bank Height Ratio	BHR
Entrenchment Ratio	ER

Appendix A. Water Quality Instrument Calibration Sheet

CITY OF AUBURN TURBIDITY METER CALIBRATION LOG

Turbidimeter Model____ Date___________________

Calibrated by__________________ Calibration Location______________ Time___________ CST CDT

STANDARD	READING

CITY OF AUBURN WQ METER CALIBRATION LOG

WQ Meter Model____ Date___________________

Calibrated by__________________ Calibration Location______________ Time___________ CST CDT

pH

pH Buffer	Buffer Temp (°C)	pH from table	pH before adj.	pH after adj.	mV
pH 7					
pH 4					

Specific Conductance

Std Value (µS/cm)	Std Temp	SC before adj.	SC after adj.

Dissolved Oxygen

Temp (°C)	Barometric Pressure (mm Hg)	Reading from DO table	DO after adjustment

Start Time	Calibration Time

Appendix B. Water Sample Collection Field Sheet

CITY OF AUBURN WATER SAMPLE COLLECTION FIELD NOTES

Site No.______________________ **Site Location**____ **Date**______________

Sampled by____ **Mean Sample Time**_____________ **CST** **CDT**

FIELD MEASUREMENTS

WQ Meter: **ProPlus A** **ProPlus B**

Temp. Air _____________ **°F C°**

Temp. Water __________ **°F C°**

pH _____________________ **Units**

Dissolved Oxygen_____________ **mg/L**

Dissolved Oxygen_____________ **% Sat.**

Sp. Conductance ________________ **µS/cm**

Turbidity #1 __________ **NTU**

Turbidity #2 __________ **NTU**

Turbidity #3 __________ **NTU**

Mean __________ **NTU**

SAMPLING DATA

Location: **Wading** _____ ft upstream downstream of bridge **Boat** **Bank** **Bridge**

Sampling site: pool riffle open channel pipe/culvert pour-over spillway lake spigot basin

Sampling method: **hand** **pump** **Kemmerer** grab composite

Stream bottom: bedrock boulder cobble gravel sand silt/mud concrete other_________________________

Stream/Lake color: clear brown green gray orange other____

Comments:

WEATHER CONDITIONS

Temp: cold cool warm hot **Wind:** calm light breeze windy **Sky:** clear partly cloudy cloudy

Precipitation: none light rain rain snow

48 hr Recent Precipitation: Yes No

SAMPLE CONSTITUENTS

Lab:_________________________

No. of Containers_________

Constituents:

Lab:_________________________

No. of Containers_________

Constituents:

Lab:_________________________

No. of Containers_________

Constituents:

Lab:_________________________

No. of Containers_________

Constituents:

Appendix C. Stream Condition Rapid Assessment Sheet from EPA Region IV Wetlands Program Development Grant CD00D01412, "Eco-Morphological Mitigation Design and Assessment Tools for the Alabama and Tennessee Appalachian Plateau"

Stream Condition Rapid Assessment

Stream name & location:	Assessed by:
Ecoregion:	Site visit date:
Watershed drainage area (sq mi):	Substrate (sand, gravel, cobble, bedrock):
Stream slope (ft/ft):	Stream reach length (ft):
Bankfull riffle area (sq ft):	Width/depth ratio (WDR):
Entrenchment ratio (ER):	Bank height ratio (BHR):
Sinuosity (K):	Streambank stability (BEHI):

Stream Condition and Function: Score from 0 to 2 indicating natural stream integrity and health:

2 = Good; 1 = Fair; 0 = Poor

1. **Upstream watershed impacts from stormwater, wastewater, or sediment** ______

Good: no impacts from upstream sources	Fair: some minor impacts from upstream sources	Poor: major impacts from upstream sources

2. **Local stream reach impacts from ditches, pipes, livestock, utilities, or roads** ______

Good: no impacts from local sources	Fair: some minor impacts from local sources	Poor: major impacts from local sources

3. **Channel dimension related to bankfull cross-section measurements** ______

Good: natural equilibrium width, depth, and area dimensions expected for the watershed	Fair: some disequilibrium indicated by unnatural dimensions	Poor: major disequilibrium indicated by incision, widening, high variability, or channelized system

4. **Channel pattern related to planform measurements** ______

Good: natural equilibrium meander pattern with sinuosity expected for the watershed	Fair: some disequilibrium indicated by unnatural pattern features	Poor: major disequilibrium indicated by tight bends, cutoffs, rapid down-valley meander migration, or straightening

5. **Channel bed profile related to longitudinal profile measurements** ______

Good: natural equilibrium riffles, pools, steps, glides, and runs with bedform expected for the watershed	Fair: some disequilibrium indicated by unnatural or missing bedform features	Poor: major disequilibrium indicated by head cutting, plane bed, aggradation, or riffle migration into pools

6. **Streambank stability and protection from erosion** ______

Good: low erodibility resulting from covered soil, low banks, deep roots, low stress	Fair: moderate erodibility resulting from some bare soil or erodible bank conditions	Poor: high erodibility resulting from bare soil, eroding bends, steep banks, high banks, lack of roots, high stress

7. **Floodplain connection for bankfull flood access** ______

Good: regular floodplain access with BHR < 1.2	Fair: some incision with BHR = 1.2–1.9	Poor: severely incised channel with BHR > 2

8. **Floodplain morphology to dissipate flood energy and minimize erosion** ______

Good: low entrenchment with ER > 5 and no contractions	Fair: moderate entrenchment with ER = 1.5–5 and/or minor contractions	Poor: severe entrenchment with ER < 1.5 and/or major contractions

9. **Riparian vegetation to provide shade, nutrient uptake, and food sources** ______

Good: healthy native plants growing in more than 90% of 50-ft buffer on both sides	Fair: healthy native plants growing in half to 90% of 50-ft buffer on both sides	Poor: healthy native plants growing in less than half of 50-ft buffer on both sides

10. **Habitats including diverse bedform, large woody debris, leaf packs, root hairs** ______

Good: healthy aquatic micro-and macro-habitat features expected for watershed	Fair: lacking up to half of expected aquatic habitat features	Poor: lacking more than half of expected aquatic habitat features

11. **Water quality and stream bed sediments** ______

Good: clear water with natural sediments expected for watershed	Fair: some turbidity and/or embeddedness affecting habitat conditions	Poor: excessive turbidity and/or embeddededness strongly affecting habitat conditions

12. **Presence of desirable fish and macroinvertebrates expected for watershed** ______

Good: healthy communities including intolerant taxa	Fair: missing some intolerant taxa	Poor: lacking expected communities and/or dominated by tolerant taxa

Notes: ____

____

____

____

Total Score: ___________

APPENDIX G

OUTFALL SCREENINGS 2018-2019

Id	Description	Inspection Date	Entity Uid	Entity Type	Location
17561	SW Outfall Inspection	04/12/2018 09:35	S438	OUTFALLS	S438
17562	SW Outfall Inspection	04/12/2018 09:50	S322	OUTFALLS	S322
17563	SW Outfall Inspection	04/12/2018 09:55	S325	OUTFALLS	S325
17564	SW Outfall Inspection	04/12/2018 10:00	S326	OUTFALLS	S326
17565	SW Outfall Inspection	04/12/2018 10:05	S327	OUTFALLS	S327
17566	SW Outfall Inspection	04/12/2018 10:05	S328	OUTFALLS	S328
17568	SW Outfall Inspection	04/12/2018 10:10	S329	OUTFALLS	S329
17570	SW Outfall Inspection	04/12/2018 10:20	S333	OUTFALLS	S333
17573	SW Outfall Inspection	04/12/2018 10:30	S332	OUTFALLS	S332
17574	SW Outfall Inspection	04/12/2018 10:30	S331	OUTFALLS	S331
17575	SW Outfall Inspection	04/12/2018 10:40	S334	OUTFALLS	S334
17576	SW Outfall Inspection	04/12/2018 10:45	S335	OUTFALLS	S335
17577	SW Outfall Inspection	04/12/2018 10:55	S336	OUTFALLS	S336
17644	SW Outfall Inspection	04/17/2018 10:05	S330	OUTFALLS	S330
17645	SW Outfall Inspection	04/17/2018 10:35	S343	OUTFALLS	S343
17646	SW Outfall Inspection	04/17/2018 10:50	S439	OUTFALLS	S439
17647	SW Outfall Inspection	04/17/2018 10:55	S440	OUTFALLS	S440
17648	SW Outfall Inspection	04/17/2018 11:00	S441	OUTFALLS	S441
17649	SW Outfall Inspection	04/17/2018 11:05	S442	OUTFALLS	S442
17650	SW Outfall Inspection	04/17/2018 11:05	S443	OUTFALLS	S443
17651	SW Outfall Inspection	04/17/2018 11:10	S444	OUTFALLS	S444
17652	SW Outfall Inspection	04/17/2018 11:15	S445	OUTFALLS	S445

17653	SW Outfall Inspection	04/17/2018 11:15	S446	OUTFALLS	S446
17654	SW Outfall Inspection	04/19/2018 09:15	S447	OUTFALLS	S447
17655	SW Outfall Inspection	04/19/2018 09:25	S448	OUTFALLS	S448
17656	SW Outfall Inspection	04/19/2018 09:35	S449	OUTFALLS	S449
17657	SW Outfall Inspection	04/19/2018 09:50	502	OUTFALLS	502
17658	SW Outfall Inspection	04/19/2018 09:50	501	OUTFALLS	501
17659	SW Outfall Inspection	04/19/2018 10:05	S356	OUTFALLS	S356
17673	SW Outfall Inspection	04/19/2018 10:10	S345	OUTFALLS	S345
17674	SW Outfall Inspection	04/19/2018 10:15	S344	OUTFALLS	S344
17675	SW Outfall Inspection	04/19/2018 10:30	S346	OUTFALLS	S346
17676	SW Outfall Inspection	04/19/2018 10:35	S347	OUTFALLS	S347
17677	SW Outfall Inspection	04/19/2018 10:40	S348	OUTFALLS	S348
17693	SW Outfall Inspection	04/24/2018 10:55	S243	OUTFALLS	S243
17694	SW Outfall Inspection	04/24/2018 10:10	S244	OUTFALLS	S244
17696	SW Outfall Inspection	04/24/2018 10:40	S241	OUTFALLS	S241
17697	SW Outfall Inspection	04/24/2018 10:40	S242	OUTFALLS	S242
17698	SW Outfall Inspection	04/24/2018 10:15	S240	OUTFALLS	S240
17699	SW Outfall Inspection	04/24/2018 09:25	S354	OUTFALLS	S354
17700	SW Outfall Inspection	04/24/2018 09:25	S355	OUTFALLS	S355
17701	SW Outfall Inspection	04/24/2018 09:30	S349	OUTFALLS	S349
17702	SW Outfall Inspection	04/24/2018 09:35	S350	OUTFALLS	S350
17703	SW Outfall Inspection	04/24/2018 09:40	S352	OUTFALLS	S352
17704	SW Outfall Inspection	04/24/2018 09:50	S351	OUTFALLS	S351

Id	Description	Inspection Date	Entity Uid	Entity Type	Location
17705	SW Outfall Inspection	04/24/2018 09:55	S353	OUTFALLS	S353
17752	SW Outfall Inspection	04/30/2018 11:55	S245	OUTFALLS	S245
17753	SW Outfall Inspection	04/30/2018 11:50	S246	OUTFALLS	S246
17754	SW Outfall Inspection	04/30/2018 11:50	S247	OUTFALLS	S247
17755	SW Outfall Inspection	04/26/2018 09:35	S252	OUTFALLS	S252
17756	SW Outfall Inspection	04/26/2018 09:55	S250	OUTFALLS	S250
17757	SW Outfall Inspection	04/26/2018 10:00	S251	OUTFALLS	S251
17758	SW Outfall Inspection	04/26/2018 10:05	S248	OUTFALLS	S248
17759	SW Outfall Inspection	04/30/2018 11:00	S249	OUTFALLS	S249
17760	SW Outfall Inspection	04/30/2018 11:40	S207	OUTFALLS	S207
17761	SW Outfall Inspection	04/30/2018 11:35	S208	OUTFALLS	S208
17762	SW Outfall Inspection	04/30/2018 11:25	S209	OUTFALLS	S209
17763	SW Outfall Inspection	04/30/2018 11:05	S211	OUTFALLS	S211
17764	SW Outfall Inspection	04/30/2018 11:15	S212	OUTFALLS	S212
17765	SW Outfall Inspection	04/30/2018 11:20	S213	OUTFALLS	S213
17766	SW Outfall Inspection	04/30/2018 11:20	S210	OUTFALLS	S210
17784	SW Outfall Inspection	04/30/2018 02:15	S214	OUTFALLS	S214
17785	SW Outfall Inspection	04/30/2018 02:40	S238	OUTFALLS	S238
17786	SW Outfall Inspection	04/30/2018 02:45	S239	OUTFALLS	S239
17787	SW Outfall Inspection	04/30/2018 02:30	S222	OUTFALLS	S222
17788	SW Outfall Inspection	04/30/2018 02:35	S221	OUTFALLS	S221
17789	SW Outfall Inspection	04/30/2018 02:05	S215	OUTFALLS	S215

17790	SW Outfall Inspection	04/30/2018 02:50	S237	OUTFALLS	S237
17791	SW Outfall Inspection	04/30/2018 02:55	S223	OUTFALLS	S223
17792	SW Outfall Inspection	04/30/2018 03:05	S218	OUTFALLS	S218
17793	SW Outfall Inspection	04/30/2018 03:10	S217	OUTFALLS	S217
17794	SW Outfall Inspection	04/30/2018 03:15	S232	OUTFALLS	S232
17795	SW Outfall Inspection	04/30/2018 03:15	S231	OUTFALLS	S231
17796	SW Outfall Inspection	04/30/2018 03:20	S185	OUTFALLS	S185
17797	SW Outfall Inspection	04/30/2018 03:25	S219	OUTFALLS	S219
17799	SW Outfall Inspection	04/30/2018 03:30	S220	OUTFALLS	S220
17800	SW Outfall Inspection	04/30/2018 03:35	S213b	OUTFALLS	S213b
17801	SW Outfall Inspection	05/7/2018 10:30	S230	OUTFALLS	S230
17802	SW Outfall Inspection	05/7/2018 10:40	S236	OUTFALLS	S236
17803	SW Outfall Inspection	05/7/2018 10:45	S235	OUTFALLS	S235
17804	SW Outfall Inspection	05/7/2018 10:50	S234	OUTFALLS	S234
17805	SW Outfall Inspection	05/7/2018 10:55	S233	OUTFALLS	S233
17806	SW Outfall Inspection	05/7/2018 11:10	S179	OUTFALLS	S179
17807	SW Outfall Inspection	05/7/2018 11:20	S164	OUTFALLS	S164
17808	SW Outfall Inspection	05/7/2018 11:20	S163	OUTFALLS	S163
17809	SW Outfall Inspection	05/7/2018 11:20	S165	OUTFALLS	S165
17810	SW Outfall Inspection	05/7/2018 11:30	S180	OUTFALLS	S180
17811	SW Outfall Inspection	05/7/2018 11:00	S175	OUTFALLS	S175
17812	SW Outfall Inspection	05/7/2018 11:10	S176	OUTFALLS	S176
17813	SW Outfall Inspection	05/7/2018 11:40	S177	OUTFALLS	S177

Id	Description	Inspection Date	Entity Uid	Entity Type	Location
17814	SW Outfall Inspection	05/7/2018 11:40	S178	OUTFALLS	S178
17815	SW Outfall Inspection	05/7/2018 01:45	P145	OUTFALLS	P145
17816	SW Outfall Inspection	05/7/2018 01:30	P124	OUTFALLS	P124
17817	SW Outfall Inspection	05/7/2018 01:45	P95	OUTFALLS	P95
17836	SW Outfall Inspection	05/10/2018 01:45	S162	OUTFALLS	S162
17837	SW Outfall Inspection	05/10/2018 01:35	S200	OUTFALLS	S200
17839	SW Outfall Inspection	05/10/2018 01:30	S205	OUTFALLS	S205
17840	SW Outfall Inspection	05/10/2018 11:15	S203	OUTFALLS	S203
17841	SW Outfall Inspection	05/10/2018 11:20	S201	OUTFALLS	S201
17842	SW Outfall Inspection	05/10/2018 11:25	S202	OUTFALLS	S202
17843	SW Outfall Inspection	05/10/2018 11:30	S204	OUTFALLS	S204
17844	SW Outfall Inspection	05/10/2018 10:55	S224	OUTFALLS	S224
17845	SW Outfall Inspection	05/10/2018 11:10	S206	OUTFALLS	S206
17846	SW Outfall Inspection	05/10/2018 10:10	S229	OUTFALLS	S229
17847	SW Outfall Inspection	05/10/2018 10:30	S228	OUTFALLS	S228
17848	SW Outfall Inspection	05/10/2018 10:40	S226	OUTFALLS	S226
17849	SW Outfall Inspection	05/10/2018 10:45	S227	OUTFALLS	S227
17850	SW Outfall Inspection	05/10/2018 10:55	S225	OUTFALLS	S225
17851	SW Outfall Inspection	05/10/2018 09:55	S216	OUTFALLS	S216
18107	SW Outfall Inspection	05/11/2018 11:00	S169	OUTFALLS	S169
18108	SW Outfall Inspection	05/11/2018 11:25	S170	OUTFALLS	S170
18109	SW Outfall Inspection	05/11/2018 11:10	S199	OUTFALLS	S199

18110	SW Outfall Inspection	05/11/2018 11:20	S197	OUTFALLS	S197
18111	SW Outfall Inspection	05/11/2018 11:20	S198	OUTFALLS	S198
18112	SW Outfall Inspection	05/11/2018 11:30	S173	OUTFALLS	S173
18113	SW Outfall Inspection	05/11/2018 11:35	S174	OUTFALLS	S174
18114	SW Outfall Inspection	05/11/2018 11:50	S171	OUTFALLS	S171
18115	SW Outfall Inspection	05/11/2018 12:20	S172	OUTFALLS	S172
18116	SW Outfall Inspection	05/11/2018 01:55	S150	OUTFALLS	S150
18117	SW Outfall Inspection	05/11/2018 02:00	S149	OUTFALLS	S149
18118	SW Outfall Inspection	05/11/2018 02:05	S148	OUTFALLS	S148
18119	SW Outfall Inspection	05/11/2018 02:15	S147	OUTFALLS	S147
18120	SW Outfall Inspection	05/11/2018 02:10	S146	OUTFALLS	S146
18121	SW Outfall Inspection	05/11/2018 02:20	S145	OUTFALLS	S145
18122	SW Outfall Inspection	05/11/2018 02:30	S54	OUTFALLS	S54
18123	SW Outfall Inspection	05/11/2018 02:40	S53	OUTFALLS	S53
19069	SW Outfall Inspection	06/4/2018 02:50	S81	OUTFALLS	S81
19070	SW Outfall Inspection	06/4/2018 02:20	S94	OUTFALLS	S94
19071	SW Outfall Inspection	06/4/2018 02:20	S93	OUTFALLS	S93
19072	SW Outfall Inspection	06/4/2018 02:25	S92	OUTFALLS	S92
19073	SW Outfall Inspection	06/4/2018 02:45	S138	OUTFALLS	S138
19074	SW Outfall Inspection	06/4/2018 02:30	S90	OUTFALLS	S90
19075	SW Outfall Inspection	06/4/2018 02:35	S89	OUTFALLS	S89
19076	SW Outfall Inspection	06/4/2018 11:25	S82	OUTFALLS	S82
19077	SW Outfall Inspection	06/4/2018 11:30	S86	OUTFALLS	S86

19078	SW Outfall Inspection	06/4/2018 11:40	S87	OUTFALLS	S87
19079	SW Outfall Inspection	06/4/2018 01:45	S84	OUTFALLS	S84
19080	SW Outfall Inspection	06/4/2018 01:50	S85	OUTFALLS	S85
19081	SW Outfall Inspection	06/4/2018 01:55	S88	OUTFALLS	S88
19082	SW Outfall Inspection	06/4/2018 11:00	S123	OUTFALLS	S123
19083	SW Outfall Inspection	06/4/2018 11:10	S121	OUTFALLS	S121
19084	SW Outfall Inspection	06/4/2018 11:15	S122	OUTFALLS	S122
19085	SW Outfall Inspection	06/4/2018 10:30	S48	OUTFALLS	S48
19086	SW Outfall Inspection	06/4/2018 10:45	S55	OUTFALLS	S55
19087	SW Outfall Inspection	06/4/2018 10:40	S56	OUTFALLS	S56
19091	SW Outfall Inspection	06/7/2018 10:20	S260	OUTFALLS	S260
19092	SW Outfall Inspection	06/7/2018 10:30	S261	OUTFALLS	S261
19100	SW Outfall Inspection	06/7/2018 10:00	S27	OUTFALLS	S27
19101	SW Outfall Inspection	06/7/2018 10:10	S28	OUTFALLS	S28
19102	SW Outfall Inspection	06/7/2018 09:55	S454	OUTFALLS	S454
19103	SW Outfall Inspection	06/7/2018 10:00	S455	OUTFALLS	S455
19104	SW Outfall Inspection	06/3/2018 01:55	S117	OUTFALLS	S117
19105	SW Outfall Inspection	06/6/2018 02:05	S116	OUTFALLS	S116
19106	SW Outfall Inspection	06/6/2018 02:15	S115	OUTFALLS	S115
19107	SW Outfall Inspection	06/6/2018 11:40	S119	OUTFALLS	S119
19108	SW Outfall Inspection	06/6/2018 11:45	S118	OUTFALLS	S118
19109	SW Outfall Inspection	06/6/2018 01:40	S114	OUTFALLS	S114
19111	SW Outfall Inspection	06/6/2018 01:45	S124	OUTFALLS	S124

19112	SW Outfall Inspection	06/6/2018 01:50	S120	OUTFALLS	S120
19113	SW Outfall Inspection	06/6/2018 11:35	S113	OUTFALLS	S113
19115	SW Outfall Inspection	06/6/2018 11:40	S125	OUTFALLS	S125
19116	SW Outfall Inspection	06/6/2018 11:30	S111	OUTFALLS	S111
19117	SW Outfall Inspection	06/6/2018 11:20	S91	OUTFALLS	S91
19118	SW Outfall Inspection	06/6/2018 11:05	S154	OUTFALLS	S154
19120	SW Outfall Inspection	06/6/2018 11:05	S153	OUTFALLS	S153
19121	SW Outfall Inspection	06/6/2018 10:55	S152	OUTFALLS	S152
19122	SW Outfall Inspection	06/6/2018 10:50	S151	OUTFALLS	S151
19147	SW Outfall Inspection	06/7/2018 10:50	P1	OUTFALLS	P1
19148	SW Outfall Inspection	06/7/2018 11:15	P2	OUTFALLS	P2
19149	SW Outfall Inspection	06/7/2018 11:10	P4	OUTFALLS	P4
19150	SW Outfall Inspection	06/7/2018 11:40	P151	OUTFALLS	P151
19152	SW Outfall Inspection	06/11/2018 01:50	S451	OUTFALLS	S451
19153	SW Outfall Inspection	06/11/2018 02:20	S100	OUTFALLS	S100
19158	SW Outfall Inspection	06/11/2018 02:15	S101	OUTFALLS	S101
19159	SW Outfall Inspection	06/11/2018 02:10	S103	OUTFALLS	S103
19160	SW Outfall Inspection	06/11/2018 02:10	S102	OUTFALLS	S102
19161	SW Outfall Inspection	06/11/2018 02:10	S104	OUTFALLS	S104
19162	SW Outfall Inspection	06/13/2018 11:00	S106	OUTFALLS	S106
19163	SW Outfall Inspection	06/13/2018 10:30	S453	OUTFALLS	S453
19164	SW Outfall Inspection	06/13/2018 10:45	S452	OUTFALLS	S452
19165	SW Outfall Inspection	06/13/2018 10:20	S105	OUTFALLS	S105

20174	SW Outfall Inspection	07/25/2018 01:45	P8	OUTFALLS	P8
20175	SW Outfall Inspection	07/25/2018 01:25	P72	OUTFALLS	P72
20176	SW Outfall Inspection	07/26/2018 11:55	P107	OUTFALLS	P107
Id	Description	Inspection Date	Entity Uid	Entity Type	Location
20177	SW Outfall Inspection	07/26/2018 11:45	P108	OUTFALLS	P108
20178	SW Outfall Inspection	07/26/2018 11:30	P94	OUTFALLS	P94
20179	SW Outfall Inspection	07/26/2018 11:25	P91	OUTFALLS	P91
20692	SW Outfall Inspection	08/7/2018 02:25	P32	OUTFALLS	P32
20693	SW Outfall Inspection	08/7/2018 11:30	P142	OUTFALLS	P142
20698	SW Outfall Inspection	08/7/2018 11:20	P143	OUTFALLS	P143
20699	SW Outfall Inspection	08/7/2018 01:40	P152	OUTFALLS	P152
20700	SW Outfall Inspection	08/7/2018 02:30	P40	OUTFALLS	P40
20780	SW Outfall Inspection	08/14/2018 11:30	P15	OUTFALLS	P15
20781	SW Outfall Inspection	08/14/2018 11:45	P66	OUTFALLS	P66
21048	SW Outfall Inspection	08/27/2018 10:30	T90	OUTFALLS	T90