
City of Opelika

204 South 7th Street
Opelika, Alabama 36801



Storm Water Management Program (SWMP) Plan

NPDES Permit No. ALR040018

July 2012

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 - Zoning Ordinance (Electronic Copy)
 - Subdivision Regulations (Electronic Copy)
 - Public Works Manual (Electronic Copy)
- Appendix B NPDES Permit Number ALR040018
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 - City of Opelika Recycle Service Guide
 - Illicit Discharge
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 - Alternative Storm Water Treatment Technologies
 - Erosion and Sediment Control Policy
 - Erosion and Sediment Control
 - Storm Water Related Websites
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SECTION 1

Program Administration



1. Program Administration

1.1. Signatory Requirements

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 gather and evaluate 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, the information 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.

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Title

Signature

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1.2. Introduction

In 1990, the U.S. Environmental Protection Agency (EPA) promulgated regulations establishing Phase I of the National Pollutant Discharge Elimination Systems (NPDES) storm water program. The Phase I program for municipal separate storm sewer systems (MS4s) requires operators of “medium” and “large” MS4s that generally serve populations of 100,000 or greater to implement a storm water management program as a means to control polluted discharges from certain municipal, industrial and construction activities into the MS4.

In 1999, EPA promulgated regulations establishing Phase II of the NPDES storm water program. The Phase II program extends coverage of the NPDES storm water program to regulated “small” MS4s. A regulated “small” MS4 is located within an “urbanized area” as defined by the Census Bureau or as designated by the NPDES permitting authority.

The Alabama Department of Environmental Management (ADEM) presently has primary jurisdiction over permitting and enforcement of the storm water program for Alabama. On 31 January 2011, ADEM issued MS4 Phase II General Permit (NPDES Permit Number ALR040018) for storm water discharges associated with the Opelika MS4.

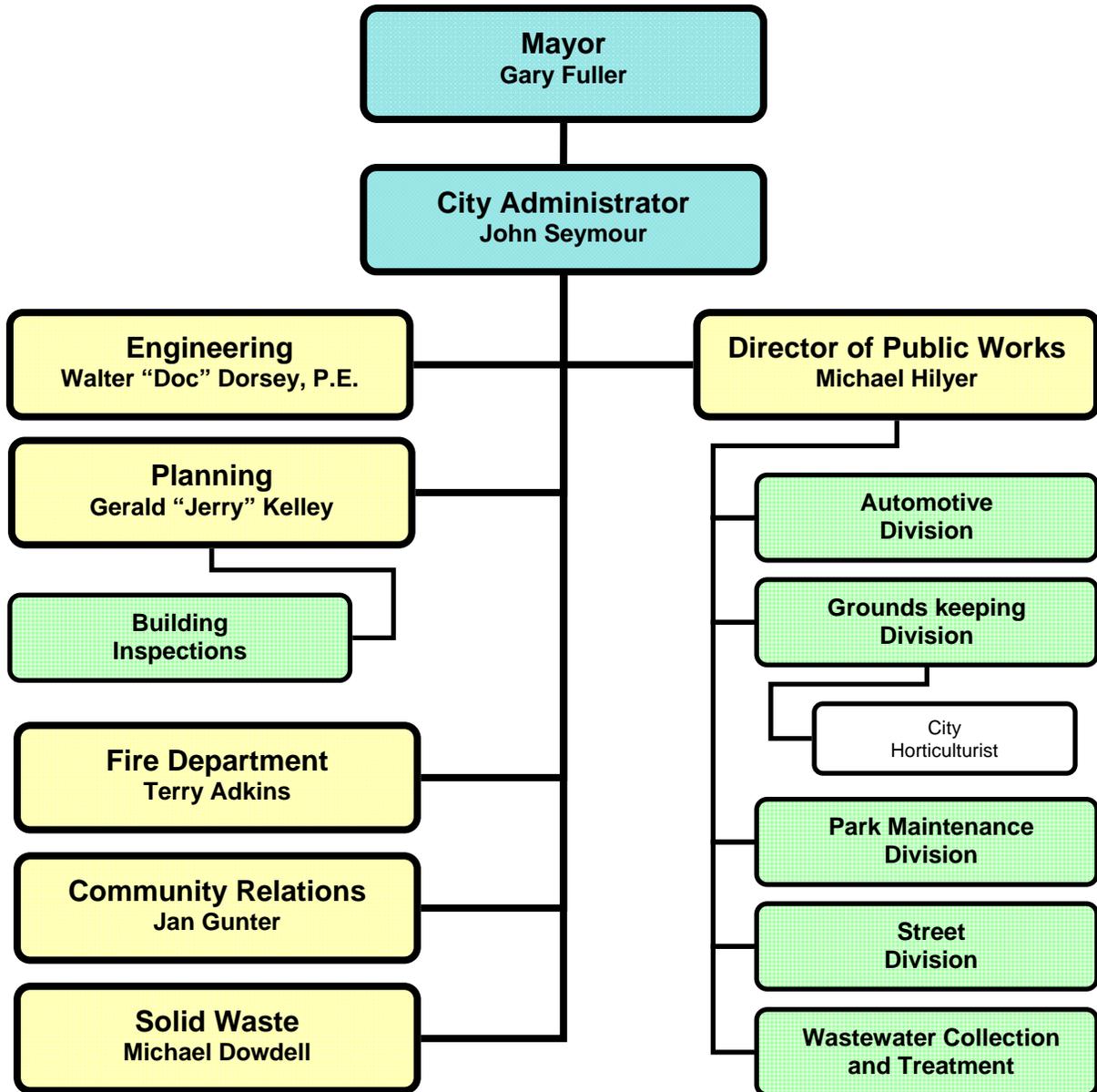
The Storm Water Management Program (SWMP) Plan has been developed to generally describe the City’s efforts to maintain compliance with the requirements of NPDES Permit ALR040018. This document is intended to be a dynamic document and shall be revised as needed to accurately reflect the City’s activities in implementing its SWMP.



1.4. Program Administration

The City’s organizational structure for administrating its SWMP Plan is provided in Figure 1-1.

**Figure 1-1
Program Organizational Chart**





1.5. Legal Authority

The City of Opelika was officially incorporated in 1854. As an incorporated city, Opelika has the legal authority to create land use and design regulations for developments within the City's corporate limits.

1.5.1. Comprehensive Plan 2020

The City of Opelika Comprehensive Plan 2020, was prepared to maintain and improve the overall quality of life for all citizens of Opelika by encouraging a stable and enduring economic base, and wise land use decisions that protect the natural, cultural, and historic resources of Opelika. The City utilized a planning process that actively incorporated input from city departments, Opelika Utilities, Opelika City Schools, Auburn/Opelika Airport Authority, and East Alabama Medical Center to develop a master plan that would define key issues of the City and would provide a guide for future growth of Opelika.

The Future Land Use Element examines the existing land uses to determine present and future land use needs for future growth in the City. This element is an important part of the Comprehensive Plan because it deals with factors influencing future growth and development. It provides a basic strategy and physical plan to guide the location, timing, density and intensity of land development to ensure compatibility with existing development, future population and economic development trends, community infrastructure, natural resources and cultural resources. The plan includes the following storm water related land use and planning initiatives.

- Update the future Land Use and Zoning maps for the City;
- Update and rewrite the Public Works Manual and Subdivision Regulations;
- Consider deleting all structural development within the updated Flood Insurance Rate Map (FIRM) flood plains;
- Adopt the Energy Star Conservation Program for residential development;
- Adopt the 2009 International Energy Conservation Code for residential and commercial development; and,

The Engineering Element also examines future needs from an infrastructure perspective, including sanitary sewer, storm sewer, and road and street network improvements. Future road and street objectives include promoting infill, clustering, and mixed-use developments in locations that will minimize trip



lengths and reduce the number of trips between residential and commercial areas.

The sanitary sewer system objectives include upgrading, improving, and maintaining operational sanitary sewers. Policies for the sanitary sewer system include developing detailed geographical information systems (GIS) maps for the system's infrastructure, redirecting wastewater flow from the Westside WWTP to the Eastside WWTP, and increasing capacity of selected pump stations. These policies will help decrease the occurrence of sanitary sewer overflows and redirect flow away from Pepperell Branch.

The plan also provides ten specific policies for maintaining an efficient and reliable storm drainage system. These policies are planned to be implemented into the revised Subdivision Regulations or the Public Works Manual.

- Promote and support a storm water drainage system extension that would encourage new development in areas appropriate for such activities by reason of City policy and the health, safety, and welfare of residents and employees;
- Allow no new development that would ignore the impacts of a 100-year storm event;
- Install all storm water drainage systems in such a manner that all water is led to and confined in natural drainage channels without causing erosion;
- Allow no storm water runoff to enter the City's sanitary sewer system;
- Connect all new developments to the existing storm water drainage system when they are within a reasonable distance of the system. When new developments are beyond a reasonable distance from the existing system, then they shall drain to locations acceptable to the City and constructed in a manner to properly carry the runoff water;
- Design and construct all storm water drainage systems in such a manner that natural drainage patterns are not significantly altered, erosion is not accelerated, the accumulation of eroded soil particles in the drainage system is avoided, and the appropriate design storm event is accommodated;
- Give special consideration to innovative storm water drainage designs that meet all City policy, yet do not adversely affect the quality of development of the area under consideration;



- Design and construct storm water drainage systems with detention or retention basins so the post-development runoff rate is no greater than the pre-development runoff rate;
- Develop an overall map of the City's storm water infrastructure for use in a geographical information system (GIS). This will allow for the City to better manage and maintain its system and to detect illicit discharges; and,
- Enforce regulations regarding development restrictions within the 100-year flood zone.

Since 2009, certain portions of the 2020 Comprehensive Plan have been implemented, including updating the Zoning Ordinance and GIS mapping of sanitary and storm sewers. The Plan is reviewed on a biannual basis beginning in the first quarter of 2011 and reported to the City Council for implementation of any recommendations. The 2020 Comprehensive Plan is available from the Storm Water Program Coordinator and included in electronic form in Appendix A.

1.5.2. Zoning Ordinance

In accordance with the authority granted by Title 11, Articles 1 through 4 of the Code of Alabama 1975, the City of Opelika developed and adopted a Zoning Ordinance on 11 September 1991 to regulate development within its corporate limits. The Zoning Ordinance has since been amended numerous times, the latest being on 25 March 2010.

The Zoning Ordinance establishes ten (10) zoning districts and six (6) "Special Districts" as described in Table 1-2 and Table 1-3. The boundaries of each zoning district are depicted on the "Zoning Map" provided in Appendix A.

Uses within each zoning district are further described in Sections VI and VII of the Zoning Ordinance. For each zoning district a particular use is either allowed, conditional or not allowed.



**Table 1-2
Zoning Districts**

Zoning District	Description
R-1	Rural District
R-1A	Residential Transition District
R-2, R-3	Low Density Residential
R-4, R-4M	Medium Density Residential
R-5, R-5M	High Density Residential
C-1	Downtown Commercial
C-2	Office/Retail
C-3	General Commercial
M-1, M-2	Industrial Districts
I-1	Institutional District

**Table 1-3
Special Districts**

Special District	Description
FP	Flood Plain Overlay
AP	Airport
GC-1, GC-2	Gateway Corridor Overlay
PRD	Planned Residential Development
PUD	Planned Unit Development
R/E	Retail / Entertainment

The Zoning Ordinance lists specific dimension requirements for each district, including the following.

- Minimum lot size;
- Minimum lot width;
- Front, rear, and side yard setbacks;
- Maximum building area; and,
- Maximum impervious surface area.

The Zoning Ordinance also has a Landscape Requirements section which details requirements for shade plantings. The system involves a number of points required based on square footage of the developed area and number of parking spaces. The latest revisions of the Zoning Ordinance are provided in electronic form in Appendix A.



1.5.3. Subdivision Regulations

In accordance with the authority granted by Title 11, Chapter 52, Article 1 of the Code of Alabama 1975, the City of Opelika has established procedures and standards for the design and development of proposed subdivisions or additions to existing subdivisions located within the jurisdiction of the City of Opelika.

Section 3.9 of the Subdivision Regulations describes specific requirements for the size, shape, and improvement of lots located within the Saugahatchee watershed. The stated purpose of these specific requirements is to:

“prevent water quality degradation of the Saugahatchee Watershed and to ensure the adequate protection of our present and future drinking water supply source by minimizing the amount of pollution, contaminates, and sedimentation discharged in the Watershed from agricultural, industrial, urban, or construction related surface water runoff, erosion, and sedimentation.”

Section 3.9 describes separate regulations for both Watershed Critical Areas (WCAs) and Watershed Protection Areas (WPAs) described as follows.

- A WCA describes an area within 2,500 feet from the full pool elevation and within 1,000 feet of the stream centerline of major tributaries within the Saugahatchee Watershed; and,
- A WPA refers to any other area within the watershed.

The regulations have specific requirements for WCAs and WPAs with and without public sanitary sewer for development density and maximum impervious surface area. Other regulations included in Section 3.9 are listed below.

- Impervious area criteria for existing development expansions;
- Cluster development conditions;
- Undisturbed vegetative buffer area requirements of 100 feet for slopes less than 10% steep and 200 feet for slopes greater than 10%; and,
- Building setbacks of 300 feet for slopes less than 10 % steep and 500 feet for slopes greater than 10%.

The latest version of the Subdivision Regulations is included electronically in Appendix A.



1.5.4. Public Works Manual

The City has developed a Public Works Manual which contains design standards for roadways, sanitary sewer, storm sewer, and general utilities. Section VI of the Public Works Manual details storm drainage system standards for construction. The design storm requirements based upon project area are summarized in Table 1-4 and listed in Section 6.1 of the manual.

Section 6.1 also states that developments will be designed so that the total discharge will not exceed the pre-development discharge. The manual requires the use of detention ponds, retention ponds, vegetation, or alternative suitable means to either permanently store and infiltrate or control and delay the release of water.

**Table 1-4
Drainage System Design Requirements**

Drainage Basin Size	Design Storm for Confined Conveyance Capacity	Design Storm for Routed Conveyance Capacity
<15,000 ft ²	10-year	25-year
15,000 ft ² to 25 acres	25-year	100-year
25 acres<	100-year	None

The manual also gives design requirements for open drainage swales in Section 6.5 and listed below.

- Minimum base width of 2 feet;
- Maximum side slope of 3H (horizontal) to 1V (vertical); and,
- Concrete or asphalt lined if storm water velocities exceed 3 feet per second.

The latest version of the Public Works Manual is provided electronically in Appendix A.

1.5.5. Erosion and Sediment Control Ordinance

In accordance with 40 CFR 122.26(d)(2)(i)(B) and (C), the City has updated its Erosion and Sedimentation Control Ordinance that establishes the legal authority for the City to implement its Construction Site Runoff Program. The updated Erosion and Sediment Control Ordinance (Ordinance No. 116-02) was adopted



on 18 June 2002 and has been added to the Municipal Code of the City of Opelika, Alabama as Chapter 7, Article III. A copy of the Erosion and Sediment Control Ordinance adopted by the City Council is provided in Appendix F.

1.5.6. Flood Damage Prevention Ordinance

On 5 April 2011, the City of Opelika adopted the latest revisions to the Flood Damage Prevention Ordinance. The purpose of this ordinance is to promote the public health, safety and general welfare and to minimize public and private losses due to flood conditions in specific areas of provisions designed to:

- Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;
- Restrict or prohibit uses which are dangerous to health, safety and property due to water or erosion hazards, or which increase flood heights, velocities, or erosion;
- Control filling, grading, dredging and other development which may increase flood damage or erosion;
- Prevent or regulate the construction of flood barriers which will unnaturally divert flood waters or which may increase flood hazards to other lands; and,
- Control the alteration of natural flood plains, stream channels, and natural protective barriers which are involved in the accommodation of flood waters.

The Flood Damage Prevention Ordinance (Ordinance No. 117-02) was originally adopted on 18 June 2002 and incorporated into the Municipal Code of the City of Opelika, Alabama as Chapter 7, Article II. A copy of the Flood Damage Prevention Ordinance adopted by the City Council is provided in Appendix H.

1.5.7. Illicit Discharge Detection and Elimination Ordinance

In accordance with 40 CFR 122.34(b)(3)(B), the City has developed and adopted an Illicit Discharge Detection and Elimination (IDDE) Ordinance that establishes the legal authority for the City to implement its illicit discharge program. The ordinance (Ordinance No. 117-11) was adopted on 21 September 2011 and has been added to the Municipal Code of the City of Opelika, Alabama as Chapter 7, Article I. A copy of the illicit discharge ordinance is provided in Appendix E.



1.5.8. Fats, Oils, and Grease (FOG) Ordinance

The City has been developing a Fats, Oil and Grease (FOG) ordinance which aids in the prevention of sanitary sewer blockages and obstructions from fats, oils, and greases. This ordinance (Ordinance No. 103-12) specifically applies to industrial and commercial facilities, particularly food service establishments. On 21 February 2012, the City adopted the FOG Ordinance. A copy of the ordinance is provided in Appendix E.

1.5.9. Inter Jurisdictional Agreements

ADEM has requested that inter-jurisdictional agreements between surrounding cities, counties and the State are a necessary component of this program. The City of Opelika will actively pursue the development of inter-jurisdictional agreements with neighboring cities, counties and State agencies. Entities of particular interest include but are not limited to the following:

- Lee County;
- City of Auburn; and,
- Alabama Department of Transportation.



SECTION 2

MS4 Area



2. MS4 Area

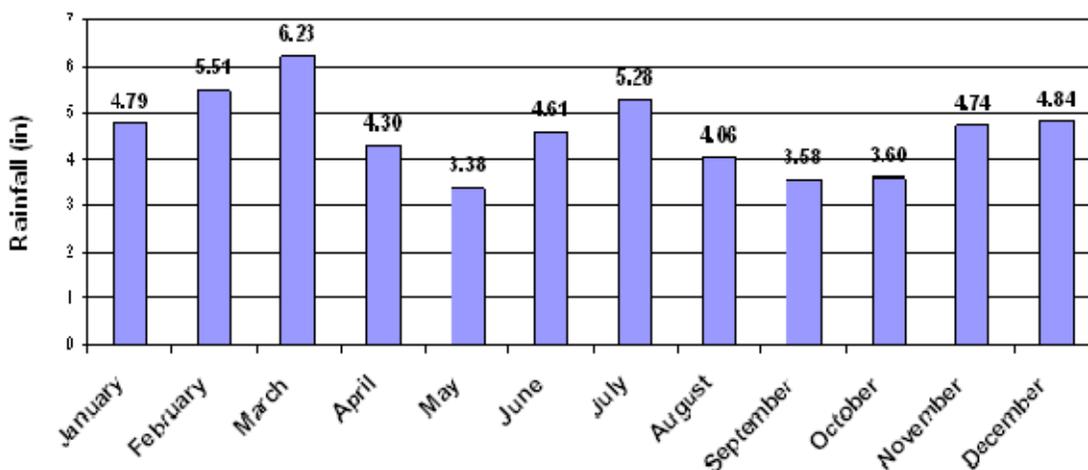
2.1. MS4 Characterization

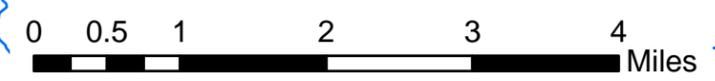
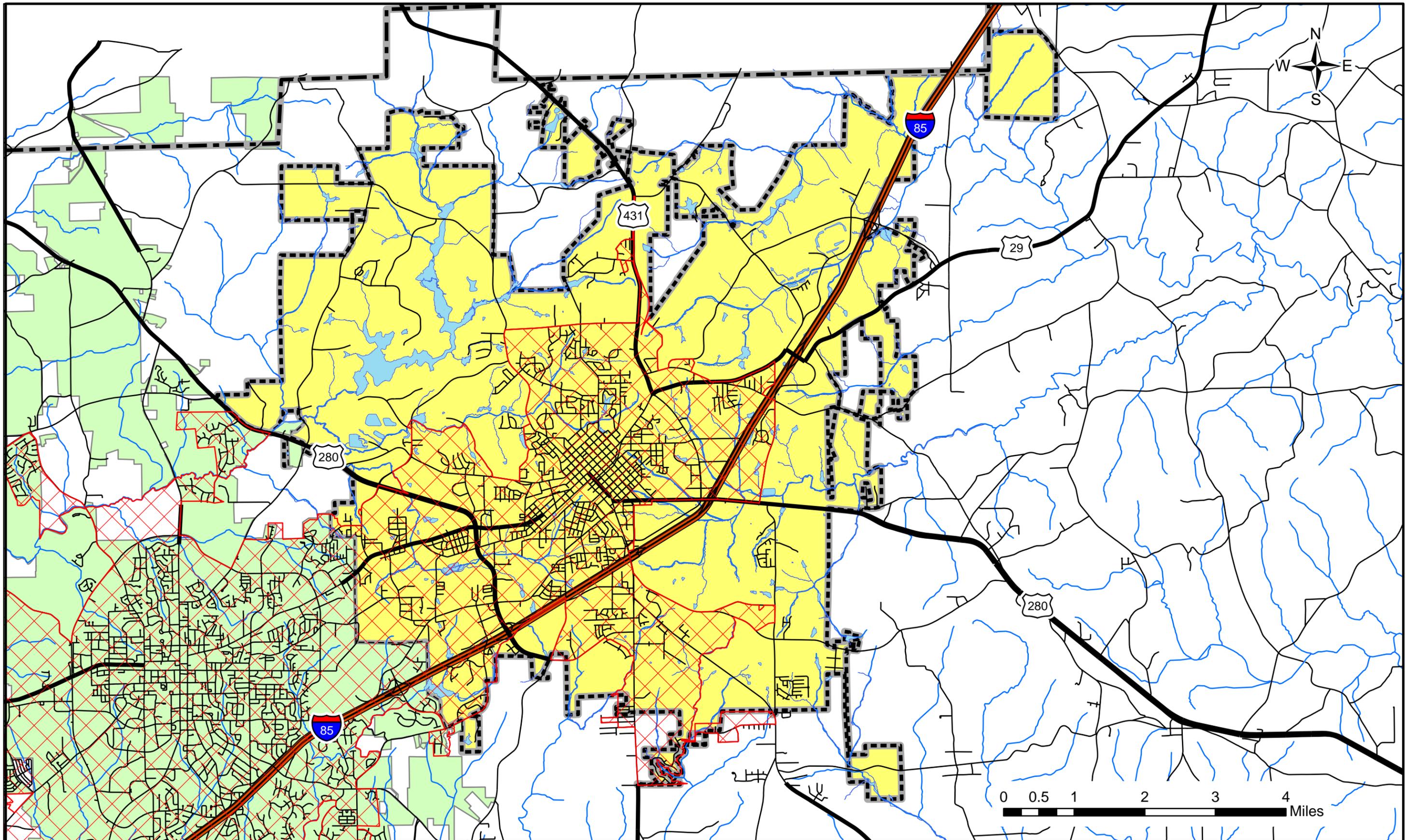
The City of Opelika is located in the central portion of Lee County and is part of the Auburn, Alabama Metropolitan Statistical Area. Opelika's incorporated area occupies approximately 54.9 square miles and is adjacent to the City of Auburn and unincorporated areas of Lee County. The City of Opelika's corporate limits, major roads, major streams, and surrounding communities are presented in Figure 2-2.

2.1.1. Climate

Opelika has a humid subtropical climate, with short mild winters, warm springs and autumns, and long hot humid summers. Average low temperatures in January are 32°F and average high temperatures in July are 90°F. The Opelika area receives approximately 55 inches of rainfall annually. Rainfall tends to be evenly distributed throughout the year with dryer periods occurring during late summer and early fall. Light snowfall occurs in some winters. Average monthly rainfall is summarized in Figure 2-1. Significant snow fall events are rare in Opelika.

Figure 2-1
Average Monthly Rainfall





HYDRO ENGINEERING SOLUTIONS, LLC

- 2010 Auburn Urbanized Area
- City of Auburn
- Lee County
- City of Opelika



OPELIKA, ALABAMA
City of Opelika

Figure 2-2
May 2012

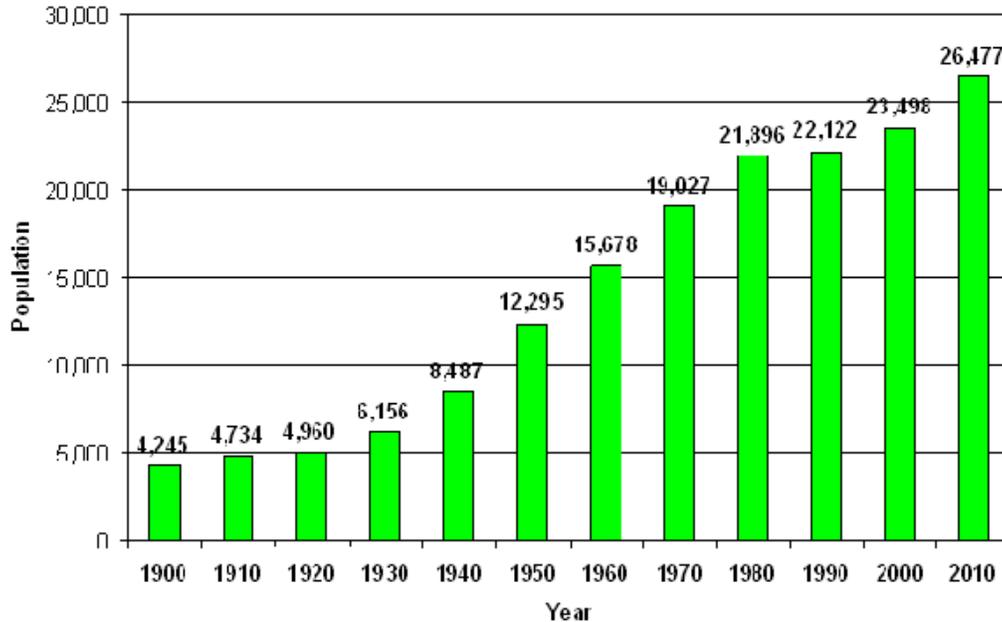


2.1.2. Population

Since the City of Opelika was incorporated in 1854, the City has experienced a steady growth. Figure 2-3 provides a graph showing the historical population of the City since 1900.

The 2010 Census estimated the total population of the City of Opelika to be 26,477. As compared to the population in 2000 of 23,498, the City has experienced a population increase of 2,979 (approximately 12.7%) over the past 10 years.

**Figure 2-3
Historical Population**



2.1.3. Watersheds

In order to develop, implement and maintain an effective storm water management program that minimizes pollutant discharges in storm water runoff, it is important for the City to be knowledgeable of the following:

- Major drainage basins within the City;
- Water quality concerns of each drainage basin; and,
- Potential sources of pollutants by land use.



The City of Opelika is located within six (6) drainage basins that have a 12 digit Hydraulic Unit Classification (HUC-12). The area of the City located within each HUC-12 drainage basin is summarized in Table 2-1 and shown in Figure 2-4.

**Table 2-1
HUC 12 Drainage Basins**

HUC 12 Basin	City of Opelika	
	Area (mi ²)	Area (% of City)
Tallapoosa River Basin	35.066	58.7
Upper Sougahatchee Creek	27.714	46.4
Loblockee Creek	0.062	0.1
Upper Chewacla Creek	7.290	12.2
Chattahoochee River Basin	24.615	41.3
Upper Halawakee Creek	13.242	22.2
Mountain Springs Church	10.085	16.9
Upper Little Uchee Creek	1.288	2.2

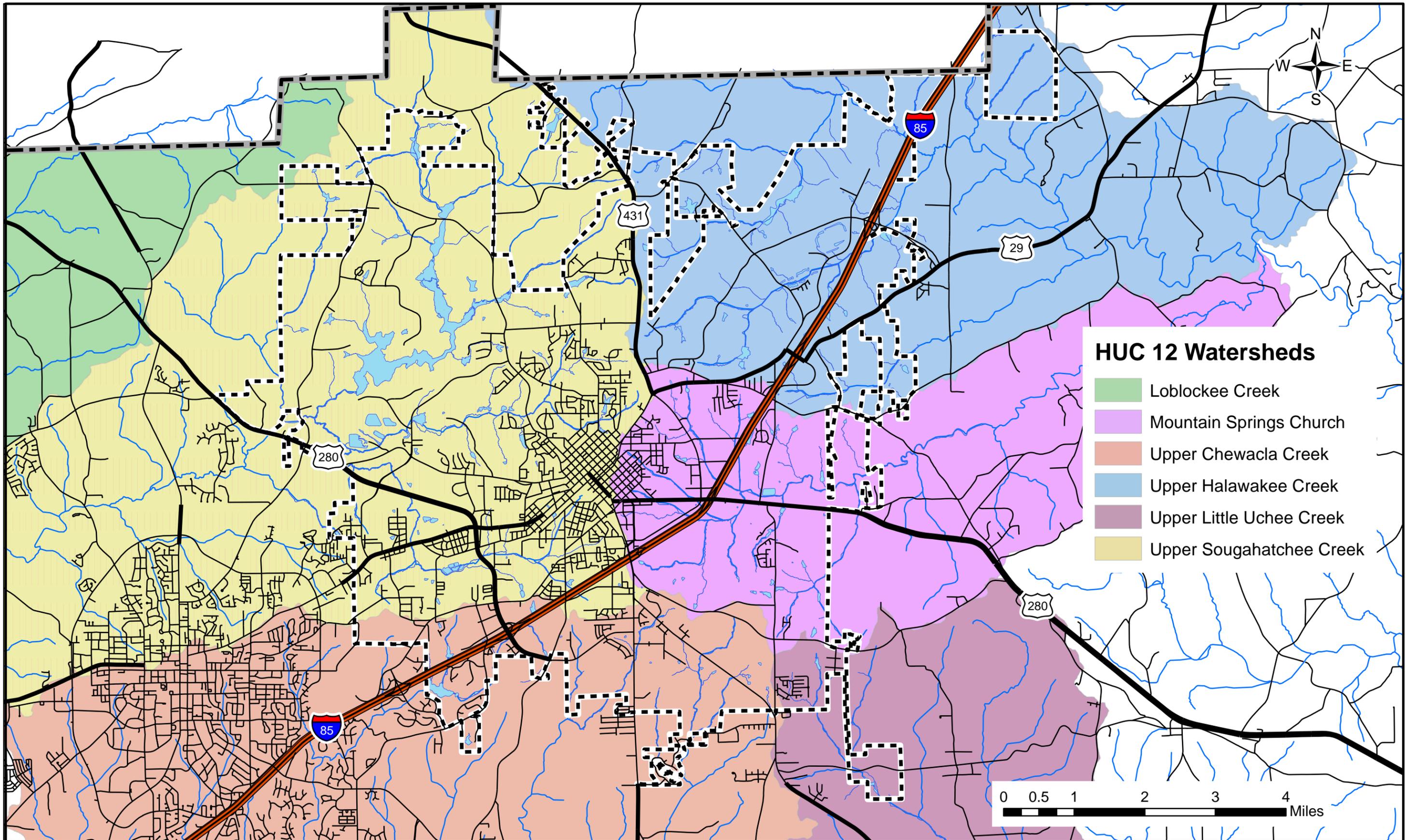
2.1.4. Land Use

The City maintains a GIS layer to track zoning and land use throughout the City. Major zoning districts are summarized in Table 2-2.

**Table 2-2
Major Land Use Districts**

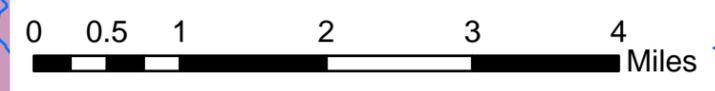
- Agricultural
- Commercial
- Village
- Industrial
- Institutional
- Hospital
- Residential
- Planned Unit Development (PUD)

Each major district is further subdivided into more detailed subcategories that characterize specific land use or land cover. Zoning districts for commercial, institutional, retail / entertainment, hospital, and Village commercial have been combined into commercial. Village residential has been added to residential. A summary of the approximate land use within the City is summarized in Table 2-3 and shown in Figure 2-5.



HUC 12 Watersheds

- Loblockee Creek
- Mountain Springs Church
- Upper Chewacla Creek
- Upper Halawakee Creek
- Upper Little Uchee Creek
- Upper Sougahatchee Creek





**Table 2-3
Land Use Summary**

Use	Area (mi ²)	Area (%)
Agricultural	17.84	29.9
Residential	16.5	27.1
Planned Unit Development	4.20	7.0
Commercial and Institutional	10.47	17.5
Industrial	6.24	10.5
Road and ROW	4.79	8.0
Total	59.70	100.0

Overlapping the land use with watershed boundaries will provide the City with the information needed to identify and implement Best Management Practices (BMPs) that are targeted to help improve water quality.

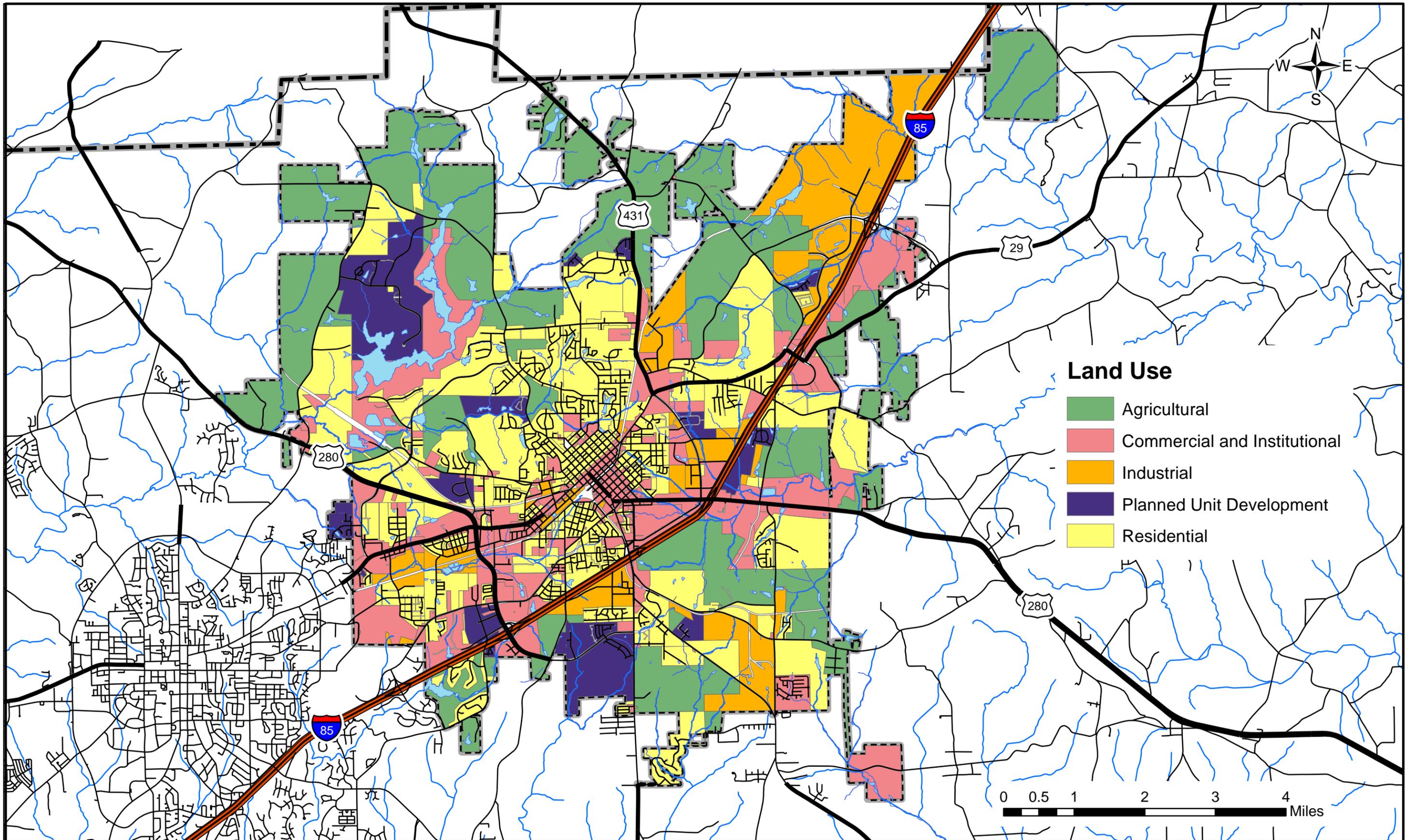
2.2. Known Problems

Section 303(d) of the Clean Water Act (CWA) establishes that states are to identify and list waters (rivers, streams, etc) for which technology based limits alone do not ensure attainment of applicable water quality standards. The 303(d) list of impaired waters will include a priority ranking for establishment of Total Maximum Daily Loads (TMDLs) for these waters. The state will establish a TMDL that will meet water quality standards for impaired streams, considering seasonal variations and a margin of safety that accounts for uncertainty. TMDLs establish the maximum amount of a pollutant that a water body can assimilate without exceeding water quality standards. Once a TMDL is developed for a water, that water will be removed from the 303(d) list.

2.2.1. 303(d) Listed Streams

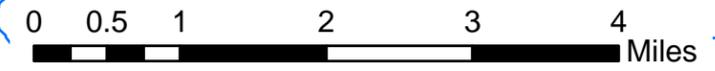
According to ADEM's 303(d) list dated April 2010, there is one stream within the City that has been designated as impaired. ADEM's 303(d) listed streams located within the City are summarized in Table 2-4 and shown in Figure 2-6.

Moore's Mill Creek is approximately 10.51 miles long and the impairment is listed for the entire length of the creek. The headwaters of Moore's Mill Creek originate in the City of Opelika.



Land Use

- Agricultural
- Commercial and Institutional
- Industrial
- Planned Unit Development
- Residential





**Table 2-4
2010 303(d) Listed Streams**

Waterbody		Designated Use	Pollutant of Concern	Sources
Name	ID			
Moores Mill Creek	AL03150110-0202-300	Swimming / Fish and Wildlife	Siltation (Habitat Alteration)	Land Development Urban Runoff / Storm Sewers

2.2.2. Approved TMDLs

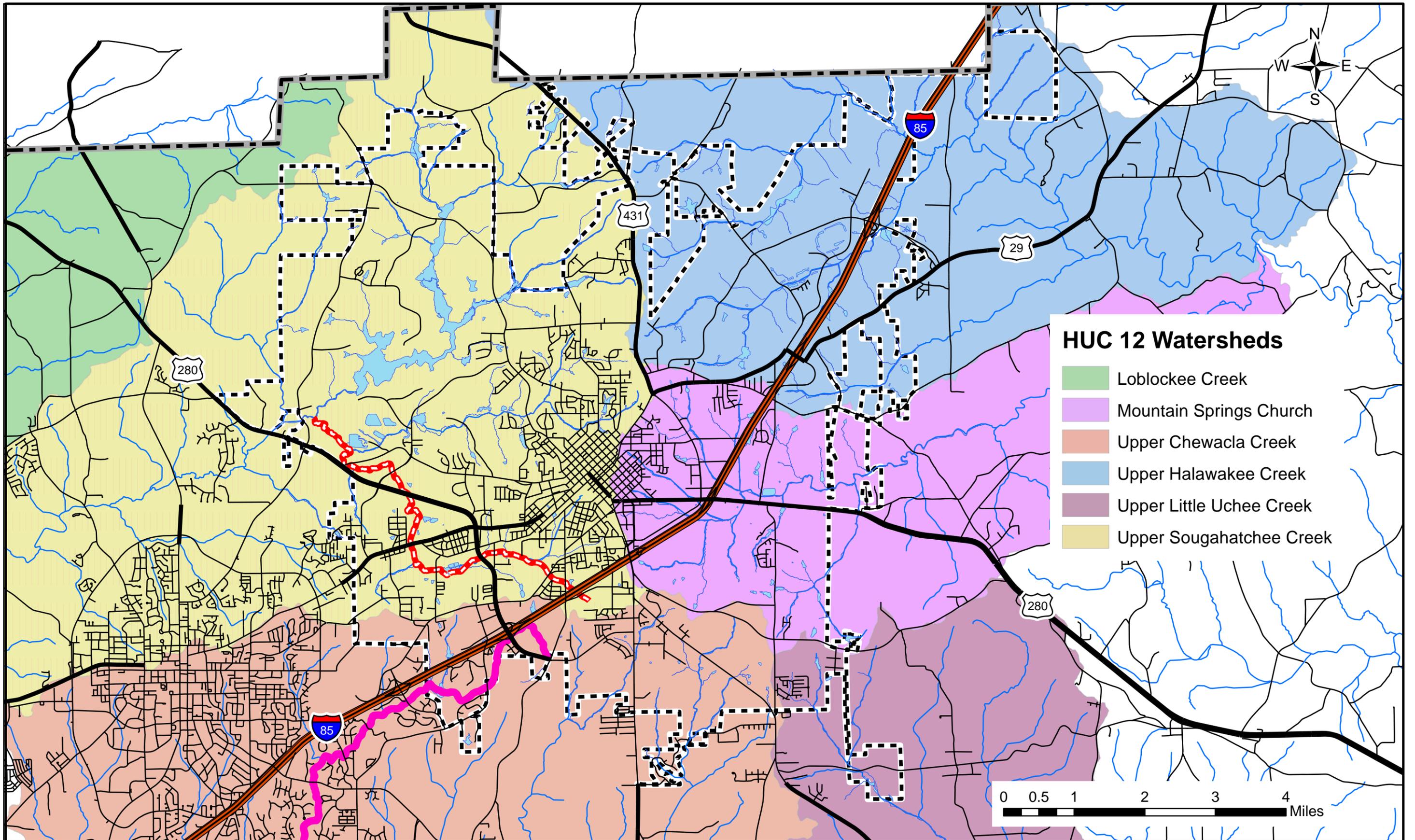
EPA has approved ADEM's Total Maximum Daily Loads (TMDLs) for the entire length of Pepperell Branch. The entire length of Pepperell Branch is located within the Opelika City limits. Pollutants of concern for Pepperell Branch are summarized in Table 2-5.

Pepperell Branch originates in southern Opelika and flows northwest through the City, discharging into Saugahatchee Creek. The impaired portion of Pepperell Branch extends from Saugahatchee Creek to its source. The drainage basin is approximately 14.58 square miles.

**Table 2-5
Approved TMDLs**

Waterbody		Pollutant of Concern	Date of Approval
Name	Assessment ID		
Pepperell Branch	AL03150110-0201-700	Organic Enrichment Low Dissolved Oxygen	1996
	AL03150110-0201-700	Nutrients	2008
	AL03150110-0201-700	Pathogens	2011

The location of Pepperell Branch and extents of the TMDL are shown in Figure 2-6.





SECTION 3

Regulatory Requirements



3. Regulatory Requirements

3.1. U.S. Environmental Protection Agency

3.1.1. Phase II MS4 Requirements

U.S. EPA defines the requirements for a SWMP Plan designed to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP), to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act in Title 40, Part 122, Sections 30 through 37 of the Code of Federal Regulations (40 CFR Parts 122.30 through 122.37). These regulations are incorporated into the SWMP Plan by reference.

3.1.2. Effluent Limitation Guidelines

40 CFR 450 Construction and Development Point Source Categories establishes effluent limitation requirements for construction sites and is incorporated into the SWMP Plan by reference. An outline of 40 CFR 450 is provided below.

Part 450 – Construction and Development Point Source Category

Subpart A – General Provisions

450.10 Applicability

450.11 General Definitions

Subpart B – Construction and Development Effluent Guidelines

450.21 Effluent limitations reflecting best practicable technology currently available (BPT).

450.22 Effluent limitations reflecting the best available technology economically achievable (BAT).

450.23 Effluent limitations reflecting the best conventional pollutant control technology (BCT).

450.24 New source performance standards reflecting the best available demonstrated control technology (NSPS).



3.2. Alabama Department of Environmental Management

The City's MS4 Program is currently operating under the requirements of the National Pollutant Discharge Elimination Systems (NPDES) Permit No. ALR040018 that became effective on 1 February 2011. Part III of the NPDES permit defines the requirements of the SWMP Plan and the requirements of the six (6) minimum control measures, listed below.

- Public Education and Outreach on Storm Water Impacts;
- Public Involvement / Participation;
- Illicit Discharge Detection and Elimination;
- Construction Site Storm Water Runoff Control;
- Post-Construction Storm Water Management in New Development and Redevelopment; and,
- Pollution Prevention / Good Housekeeping for Municipal Operations.

A copy of NPDES Permit ALR040018 is provided in Appendix B.



SECTION 4

Public Education



4. Public Education and Outreach

4.1. Introduction

The MS4 NPDES permit requires the City to develop, implement and evaluate a public education and outreach program. Goals of the program are to:

- Educate the community about the impacts of storm water discharges into streams, rivers, lakes and ponds; and,
- Identify steps that the community can take to help reduce pollutants in storm water runoff.

4.2. Target Audiences

Development within the City's MS4 areas primarily consists of residential, commercial and light industrial uses. Audiences typically associated with this type of development and land use include:

- Home owners;
- Renters;
- Schools;
- Business owners and employees;
- Professionals;
- Developers;
- Contractors; and,
- Elected officials.

Educational materials will be specifically tailored to communicate a specific topic to a targeted audience.

4.3. Target Pollutant Sources

Since TMDLs have been developed for Pepperell Branch for low dissolved oxygen/organic enrichment, nutrients and pathogens, and Moores Mill Creek is impaired for siltation and habitat alteration, there are several sources of pollution that need to be targeted in the public education program. Target non-point pollutant sources include:



- Sanitary sewer overflows (SSOs);
- Illegal dumping;
- Improper disposal;
- Failing septic systems;
- Impacts of development;
- Construction site erosion; and,
- Improper application of fertilizers, herbicides and pesticides;

Educational materials will also be developed to describe BMPs that are effective in reducing the impacts of development on storm water runoff. Topics may include but are not limited to the following:

- General impacts of storm water runoff;
- Rain water reuse;
- Low impact development practices; and,
- Impacts of development.

Educational materials will be specifically tailored for the targeted pollutant source of concern and/or pollution prevention practices.

4.4. Outreach Strategy

The City will utilize a variety of techniques to implement its public education and outreach program. Mechanisms and activities that have proven to be effective in educating the public include:

- Local Partnerships;
- Brochures;
- News Articles;
- Website;
- Workshops; and,
- Training.

A description of how the City is using these activities is described in more detail in the following sections.

4.4.1. Local Partnerships

Since the promulgation of the Phase II NPDES storm water regulations in 1999, the City of Opelika has been a partner in the formation of a citizen advisory committee known as “ALOA”. ALOA was created in 1999 and is comprised of



citizens and representatives from the City of Auburn, Lee County, City of Opelika and Auburn University. ALOA was created to provide a public forum for input on educational materials, storm water policies, and storm water regulations.

To capitalize on education materials and programs that have been developed, the City shall form partnerships with several state and local organizations including:

- Alabama Department of Environmental Management;
- Alabama Clean Water Partnership;
- Alabama Cooperative Extension System;
- Auburn University;
- Lee County;
- City of Auburn;
- Save our Saugahatchee;
- East Alabama Recycling Partnership; and,
- Keep Opelika Beautiful.

As the City's MS4 program continues to evolve, the City shall establish partnerships with the entities listed above as well as to seek partnerships with other agencies and organizations to facilitate the public education program.

4.4.2. Brochures

Through ALOA, several brochures have been developed for a variety of audiences and a variety of topics. Opelika has also obtained a variety of brochures from the Alabama Clean Water Partnership and has the ability to produce specific brochures through the City's Community Relations Department. Opelika shall obtain copies of the brochures and make them available at City Hall and the Public Works Facility. Lee County also maintains a brochure display at the Lee County Courthouse within the City's MS4 boundary.

Brochures that shall be made available through the City are summarized in Table 4-1 and provided in Appendix C.



**Table 4-1
Summary of Brochures**

Description	Target Pollution Source	Target Audience
Rain Gardens	Rain Water Reuse	Home Owners Renters Schools Business Owners Elected Officials
Rain Barrels		
Leaking Oil	Illegal Dumping Improper Disposal	
Pet Waste		
Lawn Fertilizing		
Car Washing		
Materials Management		
City of Opelika Recycle Service Guide		
Illicit Discharges	Septic Systems	
Low Impact Development	Development	Professionals Developers Contractors Elected Officials
Alternative Storm Water Treatment Technologies		
Erosion and Sediment Control Policy	Construction Site Erosion	
Erosion and Sediment Control		
Storm Water Related Websites	Informational	Home Owners Renters Schools Business Owners Professionals Developers Contractors Elected Officials
Local Water Resources		
Our Local Watersheds		
Saugahatchee Watershed		
Let's Look at Sediment!		
Stream Buffers		
Wetlands		



4.4.3. Web Site

The internet provides a very accessible mechanism for making information and data available to residents. The City's web site shall be expanded to incorporate storm water related topics as well as provide information regarding the City's storm water related activities.

4.4.4. Workshops

Workshops are useful in educating a specific target audience about a specific topic or issue. Capitalizing on existing training programs, the City will work with its partners to sponsor workshops in a variety of topics. Workshops that have been identified for this permit cycle may include the following:

- Nonpoint Education for Municipal Officials (NEMO) – The City will coordinate with ADEM to evaluate and identify workshops that will be beneficial to the City's leadership.
- Erosion and Sediment Control – The City will evaluate and identify workshops that will be beneficial to city staff, professionals and development community.
- Low Impact Development – The City will evaluate and identify workshops that will be beneficial to City staff, professionals and development community.

As the City's MS4 program continues to evolve, the types and frequency of workshops may be modified to address the changing needs of the City.

4.4.5. Training

The City shall evaluate potential training programs, activities and/or materials that can be used to educate the City's staff in storm water related issues.

4.5. Program Goals

The City has developed realistic, achievable and measurable goals and performance milestones to measure the progress in implementing a Public Education and Outreach Program. Program goals are summarized in Table 4-2.



4.6. Program Evaluation

The most basic measure to evaluate the program effectiveness is to evaluate whether the program goals are being met. At the end of the permit year, the City will evaluate the program goals and overall effectiveness in educating the public on storm water related issues. Results of the program evaluation will be summarized in the Annual Report.



**Table 4-2
Public Education and Outreach – Program Goals**

Program Component	BMP		Schedule	Responsible Department
	Description	Frequency		
Local Partnerships	Participation in ALOA	Quarterly Meetings	31 March 2013	Engineering
	Identify additional partnerships	Continuous	31 March 2013	
Brochures	Incorporate Display at City Hall	Initial	31 March 2013	Engineering Community Relations
	Incorporate Display at Public Works Building	Initial	31 March 2013	
	Identify Public Events for Distribution	Continuous	31 March 2013	
	Evaluate Target Audiences	Annually	31 March 2013	Engineering ALOA
	Evaluate Pollution Sources	Annually	31 March 2013	
	Develop New Brochures	2 per year	31 March 2013	
News Articles	Maintain Inventory of Articles	Continuous	31 March 2013	Engineering
Website	Incorporate Storm Water Page	Initial	31 March 2013	Community Relations
Workshops	Evaluate Workshop Topics	Annually	31 March 2013	Engineering
	Identify Partnerships	Continuous	31 March 2013	
	NEMO Workshop	Every 3 years	31 March 2015	
	Erosion Control Workshop	Annually	31 March 2013	
	LID Workshop	Every 3 years	31 March 2015	
Training	Evaluate Training Needs	Continuous	31 March 2013	Engineering
	Identify Training Programs / Materials	Annually	31 March 2013	
	Conduct Training	Continuous	31 March 2013	
Program Evaluation	Evaluate Program Effectiveness	Annually	31 March 2013	Engineering



SECTION 5

Public Involvement



5. Public Involvement / Participation

5.1. Introduction

The MS4 NPDES permit requires the City to develop, implement and evaluate a public involvement and participation program. Goals of the program are to:

- Provide opportunities for public input and feedback;
- Engage the public to actively participate; and,
- Facilitate opportunities to provide public education.

As the public gains a greater understanding of the benefits of a storm water program, the City is likely to gain more support for the SWMP and increased compliance with the NPDES permit requirements. Public education and involvement provides a mechanism to help the public understand how their actions can potentially impact storm water quality. Public participation can also help reduce the amount of pollution generated and identify potential pollution causing activities and/or sources.

5.2. Outreach Strategy

The City will utilize a variety of mechanisms to implement its public involvement program. Mechanisms and activities that have proven to be effective in engaging the public include:

- Citizens Advisory Committee;
- Complaint Reporting System;
- Lee County Water Festival; and,
- Public Involvement Opportunities.

A description of how the City is using these activities is described in more detail in the following sections.

5.2.1. Citizens Advisory Committee

Since the promulgation of the Phase II NPDES storm water regulations in 1999, Opelika has been a partner in formation of a citizen advisory committee known as "ALOA". ALOA was created in 1999 and is comprised of citizens and



representatives from City of Auburn, Lee County, City of Opelika and Auburn University. ALOA was created to provide a public forum for input on educational materials, storm water policies, and storm water regulations. ALOA meets on a quarterly basis. The City shall facilitate participation in this advisory committee.

5.2.2. Web-based Complaint Reporting System

The City is in the process of implementing a 311 web-based complaint reporting system. Currently, a link is provided on the City's website where citizens can report City-related issues such as clogged storm drains, litter, and illicit discharges. Citizens also have the option of reporting anonymously. The complaint or request is sent to the City's Community Relations Department and is then assigned to responsible department(s).

Applicable department(s) will respond to the request or complaint through Community Relations. Also, the City can inform citizens about status updates or job completions.

5.2.3. Lee County Water Festival

The mission of the Lee County Water Festival is to educate students about all aspects of surface water and groundwater and other related natural resources (such as wetlands, forestry, wildlife and much more) and to instill in them a general environmental awareness and stewardship ethic. Students and their teachers will go home with increased knowledge and awareness of the importance of our precious water resources and on becoming good environmental stewards of these resources. All 4th Grade students in Lee County including, public, private and home schooled students are invited to participate. Over recent years, the festival has had an annual participation level of over 2,000 participants.

The City has been a long term sponsor of this event. This is an excellent opportunity to help shape the environmental behaviors of 4th grade students. It is well documented that educating school age children help in improving the environmental behaviors of their parents.

5.2.4. Public Involvement Opportunities

There are a variety of BMPs available that actively incorporates public involvement into the City's MS4 Program. BMPs being considered by the City include but are not limited to the following:



- Clean Campus Program;
- Litter Abatement Programs;
- Stream Signage;
- Recycling;
- Adopt-a-stream;
- Stream clean-up events;
- Storm drain marking;
- Volunteer monitoring; and,
- Household hazardous waste day.

The City will evaluate and determine the most appropriate BMPs to implement within its MS4 boundary. The type and frequency of BMPs implemented will be dependent upon funding, public interest, volunteer availability, and effectiveness.

5.2.4.1. Clean Campus Program

Keep Opelika Beautiful (KOB) supports the Clean Campus Program, which utilizes liaison teachers at each City school to educate students from Kindergarten through the 12th grade. Teachers typically use lesson plans from Keep America Beautiful's Waste in Place workbook and also organize projects at specific schools, such as recycling at sporting events, nature guides, and collecting specific recyclables in schools.

Currently, the program has nine (9) liaison teachers who cover all Primary, Intermediate, Middle, and High schools. Each school is judged annually to determine if the school met all program requirements. If so, the school receives a \$100 donation to use for a Clean Campus project.

5.2.4.2. Litter Abatement Programs

The City promotes litter clean up through a variety of outlets. KOB and the City promote the Citywide Clean Up, held the first Saturday each March. Various civic groups participate in the event, averaging about 300 volunteers a year.

KOB also helps to sponsor Adopt-a-Mile, with nine (9) groups currently participating, listed below.

- Wal-Mart Distribution Center;
- Afni, Inc.;
- Opelika Lions Club;
- Opelika Rotary Club;



- Opelika Kiwanis Club;
- Opelika Exchange Club;
- Opelika Fire Fighters;
- Opelika High School FFA; and,
- Auburn / Opelika Elks Club.

The groups are required to clean their designated areas four times a year (one time can include the Citywide Clean Up). KOB provides signs for area designation. A picture of an Adopt-A-Mile sign is shown in Figure 5-1.

The City and KOB also perform an annual Litter Index for the City. A representative from each entity drive together to perform a “windshield” survey of the north, south, east, and west districts of the City. Each year, the representatives survey different areas within each district. A list and map of biannually inspected sites is provided in Appendix D.

**Figure 5-1
Adopt-A-Mile Sign**



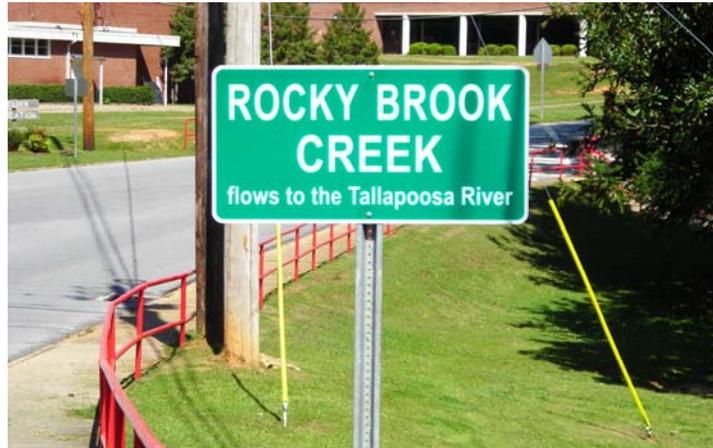
5.2.4.3. Stream Signage

The City’s Public Works Department, with cooperation from Saugahatchee Watershed Management Plan (SWaMP) and Opelika Middle School has posted stream signage at 30 stream crossings within the City limits. The signs display



the stream name and also the receiving water. A picture of a typical stream sign is shown in Figure 5-2.

Figure 5-2
Typical Stream Sign



5.2.4.4. Recycling

The City has been active in promoting recycling throughout the City in addition to the continuation of programs to promote a cleaner City. Recycling programs that the Solid Waste Department, KOB, and East Alabama Recycling Partnership (EARP) have implemented throughout the City include the following:

- General recycling centers and curbside collection;
- Electronics Recycling;
- Paper Shredding Recycling;
- Telephone Book Recycling; and,
- Christmas Tree Recycling.

A picture of a typical curbside recycling bins is shown in Figure 5-3. Figure 5-4 shows a picture of a typical recycling trailer placed at one of Opelika's five (5) recycling centers.

Solid Waste tracks the general recycling collected on a monthly basis. East Alabama Recycling Partnership (EARP) and/or KOB advertise for and track special event recycling.



**Figure 5-3
Typical Curbside Recycling Bins**



**Figure 5-4
Recycling Trailer**



5.3. Program Goals

The City has developed realistic, achievable and measurable goals and performance milestones to measure the progress in implementing a Public



Involvement / Participation Program. Program goals are summarized in Table 5-1.

5.4. Program Evaluation

The most basic measure to evaluate the program effectiveness is to evaluate whether the program goals are being met. At the end of the permit year, the City will evaluate the program goals and overall effectiveness of the Public Involvement / Participation Program on storm water related issues. Results of the program evaluation will be summarized in the Annual Report.



**Table 5-1
Public Involvement / Participation – Program Goals**

Program Component	BMP		Schedule	Responsible Department
	Description	Frequency		
Citizen Committees	Participation in ALOA	Quarterly Meetings	31 March 2013	Engineering
General Activities	Web-based Complaint Reporting System	Update as needed	31 March 2013	Community Relations
	Adopt-a-Mile Program	Track Annually	31 March 2013	Keep Opelika Beautiful
	Citywide Clean Up	Track Annually	31 March 2013	
	Recycling	Track Annually	31 March 2013	Solid Waste
	Public Events	Track Annually	31 March 2013	All Departments
	Stream Signage	Continuous	31 March 2013	Engineering
	Storm Drain Marking Program	Develop	31 March 2015	
Education Events	Clean Campus Program	Annually	31 March 2013	Keep Opelika Beautiful
	Lee County Water Festival	Annually	31 March 2013	Engineering Department
	Identify Annual Events	Continuous	31 March 2013	
Program Evaluation	Evaluate Program Effectiveness	Annually	31 March 2013	Engineering Department



SECTION 6

Illicit Discharge Detection and Elimination



6. Illicit Discharge Detection and Elimination

6.1. Introduction

The Illicit Discharge Detection and Elimination (IDDE) Program has been developed using the following guidance materials.

- NPDES Permit ALR040036;
- 40 CFR 122.26;
- 40 CFR 122.34(b)(3); and,
- Illicit Discharge Detection and Elimination, A Guidance Manual for Program Development and Technical Assessments, October 2004.

These documents are incorporated into the SWMP Plan by reference and are available in the office of the Storm Water Program Coordinator.

6.2. Legal Authority

In accordance with 40 CFR 122.34(b)(3)(ii)(B), the City has developed an Illicit Discharge Detection and Elimination Ordinance that establishes the legal authority for the City to prohibit illicit discharges into the MS4 and to implement appropriate enforcement procedures and actions. In 2012, the City also adopted a Fats, Oils, and Grease Ordinance, helping to prevent clogging of the sanitary sewer system and causing sanitary sewer overflows. Copies of the ordinances are provided in Appendix E.

6.3. Allowable and Occasional Incidental Discharges

In accordance with Part I, Section B2 of the NPDES permit and the City's Illicit Discharge and Connections to the Storm Drainage System Ordinance, the following non-storm water sources are allowed. The City has determined that these non-storm water discharges are not substantial contributors of pollutants to the MS4:

1. Water line flushing;
2. Landscape irrigation water;



3. Diverted stream flows;
4. Uncontaminated ground water infiltration to storm drains;
5. Uncontaminated pumped ground water;
6. Discharges from potable water sources;
7. Foundation drains;
8. Air conditioning condensation;
9. Irrigation water (not consisting of treated or untreated wastewater);
10. Rising ground waters;
11. Springs;
12. Water from crawl space pumps;
13. Footing drains;
14. Lawn watering runoff;
15. Individual residential car washing;
16. Discharge or flows from fire fighting activities (including fire hydrant flushing);
17. Flows from riparian habitats and wetlands;
18. Dechlorinated swimming pool discharges
19. Street wash water;
20. Discharges specified in writing by the City as being necessary to protect public health and safety;
21. Discharges associated with dye testing (with verbal notification to the City); and,
22. Discharges authorized by and in compliance with a separate NPDES permit.

6.4. Preventing Illicit Discharges

The Illicit Discharge Program identifies key behaviors of the public, facilities and municipal operations that produce intermittent and/or transitory discharges. These key behaviors are targeted to improve pollution prevention practices and prevent or reduce the risk of discharge. The City shall develop a wide variety of education and enforcement tools to promote pollution prevention practices.

6.5. Public Education

Public education activities associated with the illicit discharge detection and elimination are described in Section 4 of the SWMP Plan.



6.6. Data Management

The City has a dedicated IT Department responsible for obtaining, developing, and maintaining the City's GIS data and system. The City's IT Department coordinates with other local governments to acquire updated GIS information and data.

The City uses a state of the art GIS system to manage all types of information and data. Mapping layers available to support the City's Illicit Discharge Detection and Elimination Program may include but are not limited to the following.

- Storm sewer system;
- Sanitary sewer system;
- Aerial photography;
- City and County boundaries;
- Roads;
- Buildings;
- Parcels;
- Zoning;
- Hydrologic data (streams, wetlands, drainage basins, etc.); and,
- TMDL listed stream segments.

The City has an on-going effort to update and maintain the information and data contained in the GIS system. The City is currently in the process of mapping all storm sewers within the City limits. The City will update the GIS system with the information collected once field work is complete and data is finalized. Field work is scheduled to be completed summer of 2012.

6.7. Searching for Illicit Discharges

The City shall implement a comprehensive program to detect and eliminate illicit discharges. There are two categories of pollutants that will be addressed in different ways.

1. The first category is pollutants introduced into the MS4 from individuals in a one-time distinct episode at a discrete point of entry. Examples of these are dumping of yard waste, motor oil, antifreeze or trash into a creek or storm drain. These types of pollutants, when discovered in the MS4 or local streams, cannot be effectively investigated as to the source (i.e. the individual causing the pollution). Also they are not normally discovered



using a City-wide MS4 inspection program of monitoring fixed stations with scheduled work-day inspections. One of the best means of discovery will be through input from citizens, City crews, Police and Fire departments, businesses, and area agency field crews. Prevention of future isolated pollution episodes will rely upon implementation of the Public Education and Public Involvement programs.

2. The second category is pollutants from sources that have a chronic or frequently repeating discharge that can be traced through stream channels and the MS4 system using visual inspections and chemical field test kits, and laboratory monitoring. Pollutants from these sources will be dispersed downstream as a detectable odor, visual color, increased turbidity, excessive algae growth, or changes in water chemistry (e.g. pH or conductivity) when compared to uncontaminated water in the stream or MS4. These chronic pollutants are amenable to “source tracking” inspections, and the sources are more likely to be found and mitigated.

Searching for illicit discharge problems consists of detective work, and involves field screening of subwatersheds to locate outfalls and identify suspect illicit discharges. The primary field screening tool that will be used is the Outfall Reconnaissance Inventory (ORI). This recommended method is very effective for finding illicit discharge problems and developing an outfall inventory of the MS4. If suspect discharges are encountered during the field screening, the ORI will be supplemented with indicator monitoring methods to test suspect discharges.

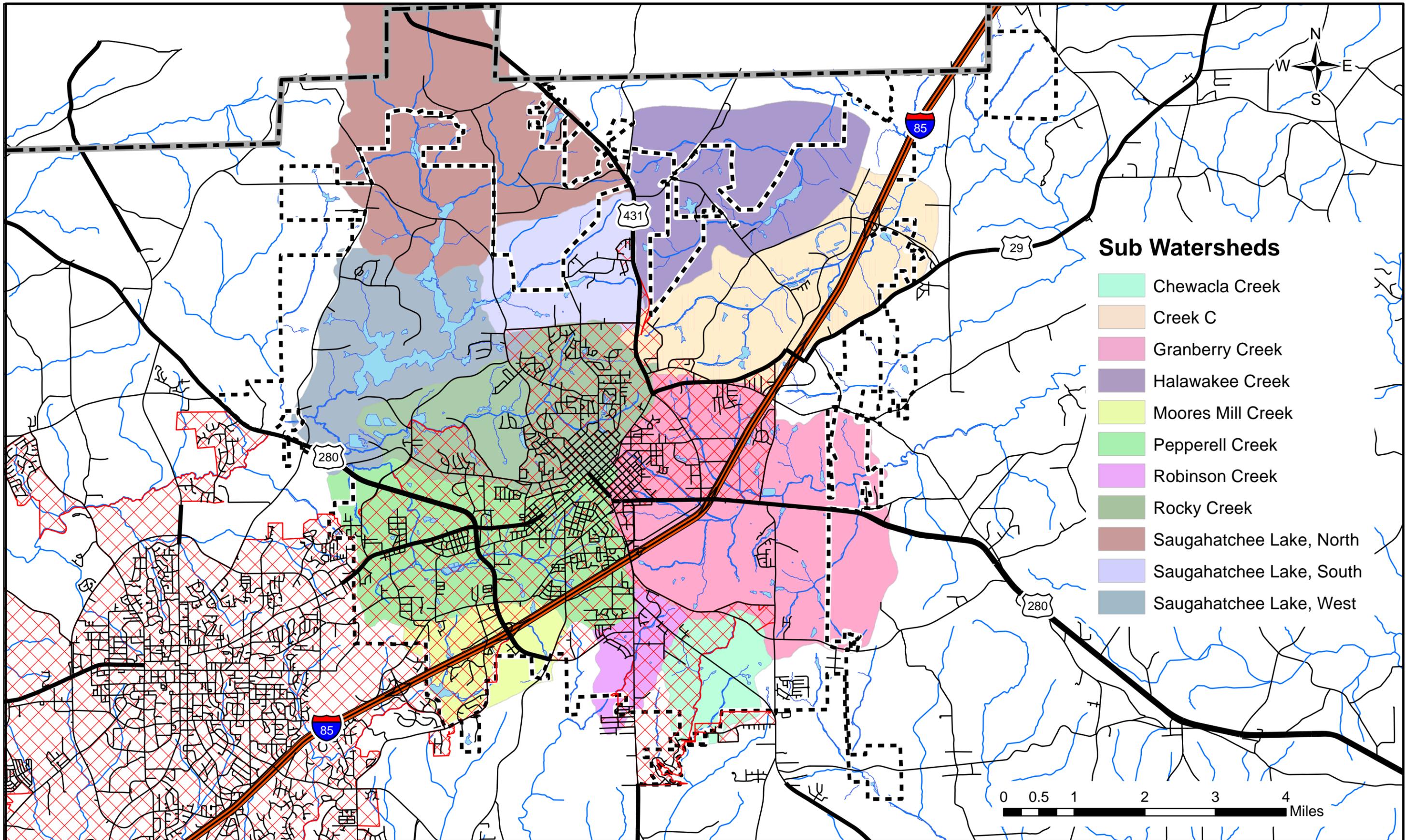
6.7.1. Field Activities

Field activities associated with the outfall reconnaissance inventory shall be performed when there has been a prolonged dry period with a minimum of 72 hours from the previous measurable (greater than 0.10 inch rainfall) storm event.

6.7.2. Outfall Inventory Schedule

The City will develop a schedule to identify and screen all major outfalls located within the City’s MS4 Area by March 2017. The areas of the City that will be evaluated each year shall be incorporated into Figure 6-1. After all major outfalls have been located and screened; the City will evaluate the screening data and identify priority areas for future evaluation.

Beginning March 2017, the City shall screen all major outfalls within a 5 year period.



- Sub Watersheds**
- Chewacla Creek
 - Creek C
 - Granberry Creek
 - Halawakee Creek
 - Moores Mill Creek
 - Pepperell Creek
 - Robinson Creek
 - Rocky Creek
 - Saughatchee Lake, North
 - Saughatchee Lake, South
 - Saughatchee Lake, West





6.8. Outfall Reconnaissance Inventory

The outfall reconnaissance inventory is designed to locate and record basic characteristics of each outfall. During the inventory process, each outfall shall be screened for the presence of illicit discharge(s). The City's outfall reconnaissance inventory methodology and procedures shall be developed in accordance with Chapter 11 of the Illicit Discharge Detection and Elimination guidance manual.

6.8.1. Field Sheets

The City shall utilize the Outfall Reconnaissance Inventory / Sample Collection Field Sheet provided with the Illicit Discharge Detection and Elimination guidance manual to collect and document each outfall located and screened. A copy of the Outfall Reconnaissance Inventory / Sample Collection Field Sheet shall be provided in Appendix E once it is completed.

6.8.2. Screening Data

Information and data that will be collected for each major outfall includes the following:

Section 1 – Background Data

- Coordinates
- Photograph

Section 2 – Outfall Description

- Location
- Material
- Shape
- Dimensions
- Submerged

Section 3 – Quantitative Characterization

- Parameter
- Result
- Unit
- Equipment

Section 4 – Physical Indicators for flowing outfalls only

- Indicator
- Description
- Relative Severity Index



Section 5 – Physical Indicators for both flow and non-flowing outfalls.

- Indicator
- Description

Chapter 11 of the Outfall Reconnaissance Inventory of the Illicit Discharge Detection and Elimination Guidance Manual provides direction in completing the Outfall Reconnaissance Inventory / Sample Collection Field Sheet information.

6.9. Outfalls Screened

As outfalls are screened within the City’s MS4 Area, they shall be summarized in Table 6-1. Outfalls shall be screened according to the City of Opelika’s previously defined watersheds, listed in the table.

**Table 6-1
Outfall Inventory by Watershed**

Watershed	Total Outfalls	Major Outfalls	Minor Outfalls
Saugahatchee Lake, North			
Saugahatchee Lake, South			
Saugahatchee Lake, West			
Rocky Creek			
Pepperell Branch			
Moore Mill Creek			
Robinson Creek			
Chewacla Creek			
Granberry Creek			
Creek C			
Halawakee Creek			
Totals			

6.10. Suspect Illicit Discharges

If a suspect illicit discharge is encountered during the outfall reconnaissance inventory at a major outfall, field personnel shall take the following steps to identify and locate a suspect illicit discharge.



- Conduct field screening of the suspect illicit discharge;
- Try to identify the source of the suspect illicit discharge; and/or,
- Collect a sample of the suspect illicit discharge.

6.10.1. Field Screening

Field personnel shall also estimate the flow and/or volume of the suspect illicit discharge. If the initial screening observations and/or data indicate a suspect illicit discharge, field personnel shall proceed in locating the source of the suspect illicit discharge.

6.10.2. Locating Illicit Discharges

If a suspect illicit discharge is identified during the outfall reconnaissance inventory, field personnel shall try to locate the source of the illicit discharge before proceeding to the next outfall. Field personnel shall attempt to follow the suspect illicit discharge up the storm sewer system to identify its source.

If the source of a suspect illicit discharge can not be easily located by field personnel, the location of the suspect illicit discharge shall be reported to the Storm Water Program Coordinator.

6.10.3. Sample Collection

If a discharge from a major outfall exhibits a physical characteristic of an illicit discharge and/or the source of the suspect illicit discharge cannot be easily identified, field personnel may collect a grab sample of the discharge. The sample shall be shipped to an independent laboratory and analyzed for the following parameters.

- Ammonia
- Chlorine
- Surfactants
- Turbidity
- Conductivity
- Detergents
- E. Coli
- Total Coliform
- Fluoride
- Hardness
- Potassium

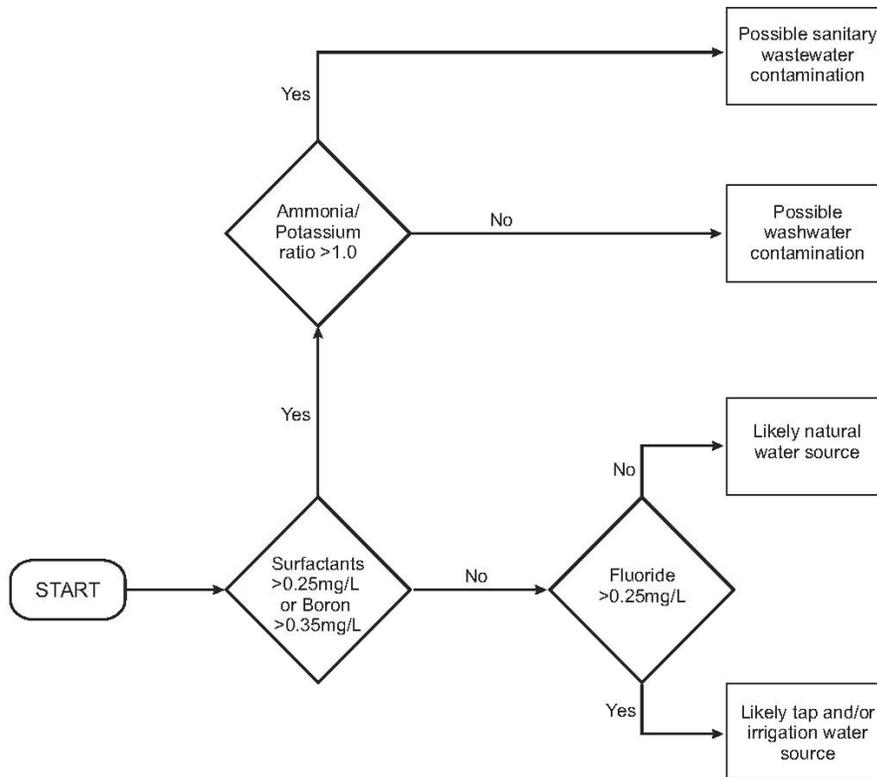
The City shall use the sample collection protocol provided in Appendix G of the Illicit Discharge Detection and Elimination Guidance Manual. Analytical methods for samples submitted to an independent laboratory shall be in accordance with 40 CFR 136.



6.10.4. Evaluation of Results

The Illicit Discharge Detection and Elimination Guidance Manual recommends the use of the Flow Chart Method for identifying the type of illicit discharge. The Flow Chart Method is recommended because it is a relatively simple technique that analyzes four or five indicator parameters that are safe, reliable and inexpensive to measure. The basic decision points involved in the Flow Chart Method for a residential area are shown in Figure 6-2.

Figure 6-2
Flow Chart to Identify Illicit Discharges in Residential Areas



6.11. Locating and Removing Illicit Discharges

When episodic incidental pollution is reported to the City (e.g. motor oil dumped into a storm drain), the City shall record the date, location, information source, and description of the event. If necessary, field personnel shall be sent to investigate and to determine if the site should be cleaned (e.g. removal of yard waste, containment of oil, etc.). After inspection and/or cleanup, the City shall keep a record of all actions taken regarding the incident.



6.11.1. Locating Illicit Discharges

If a suspect illicit discharge is identified during the outfall reconnaissance inventory, field personnel shall try to locate the source of the illicit discharge before proceeding to the next outfall. Field personnel shall employ the following techniques to locate the suspect illicit discharge.

- Storm Sewer System Evaluation – Field personnel shall attempt to follow the suspect illicit discharge up the storm sewer system to identify its source.
- Drainage Area Evaluation – Field personnel shall conduct a “windshield” survey of the drainage area to identify its source.
- If the source of an illicit discharge is located, field personnel shall report the location and source of the illicit discharge to the Storm Water Program Coordinator.

Upon receipt of the analytical results from samples collected of the suspect illicit discharge, the Storm Water Program Coordinator shall coordinate and/or perform a more detailed investigation to identify the source of a suspect illicit discharge.

- Analytical Results Evaluation – Evaluate the analytical results to characterize the type of illicit discharge.
- Detailed Storm Sewer System Evaluation – Using best available maps and data, attempt to follow the suspect illicit discharge up the storm sewer system to identify its source. Investigation methods may include dye tracing, video inspection of storm sewer system, specialized contractors and other methods as appropriate.
- Drainage Area Evaluation – Review the land used and types of facilities located within the drainage area. Conduct a survey of potential generating sites to identify the source of the illicit discharge.

6.11.2. Removing Illicit Discharges

After the source of an illicit discharge has been identified, the Storm Water Program Coordinator shall take appropriate actions to abate the illicit discharge.



6.12. Spill Response

The City's Fire Department is responsible for responding to any type of spill that may occur within the City's MS4. If a spill enters the MS4, the Fire Department shall notify the Storm Water Program Coordinator. The Storm Water Program Coordinator shall evaluate the impacts of the spill on the MS4 and ensure appropriate corrective measures are taken to abate the spill. Follow up inspections of the effected area shall be performed as needed.

6.13. Sanitary Sewer System

Residents of the City are provided sanitary sewer service by one of the following sources;

- 1) City of Opelika; or
- 2) On-Site Sewage Disposal.

6.13.1. City of Opelika

The City of Opelika provides sanitary sewer service through its Public Works Department to residents within the City's boundary. General information about the City's sanitary sewer system is summarized below.

- 5,928 sanitary sewer manholes;
- 256.95 miles of gravity sewer line;
- 39 pump stations;
- 18.75 miles of pressurized sewer line; and,
- 2 wastewater treatment plants with a total of 9 MGD capacity.

Problems with the sewer system are reported to the Public Works Department.

Recently, the City has completed a map of the sanitary sewer system and maintains GIS data showing the various components of the sanitary sewer system. As the sanitary sewer system expands and changes, the City shall update the sanitary sewer map.

Currently, the City inspects each pump station daily to ensure proper operation, prevent clogging, and perform any necessary pump maintenance. In the near future, the City will be able to detect pump station problems on a computer-based SCADA system. Regular monitoring of pump station operations helps prevent possible sanitary sewer overflows (SSOs).



6.13.2. Lee County Health Department

Some residents located within the City's MS4 area utilize on-site sewage disposal systems. The Alabama Department of Public Health has the regulatory authority for the design, permitting, construction and maintenance of individual on-site sewage disposal systems. The City shall contact the Alabama Department of Public Health to request a list of properties currently permitted for an on-site sewage disposal system.

If the City observes any problems with an on-site sewage disposal system, the City shall report the problem to:

**Lee County Health Department
(334) 745-5765**

As the City acquires data regarding the location of on-site sewage disposal systems, the City will update GIS data and maps to incorporate best available data.

6.14. Enforcement

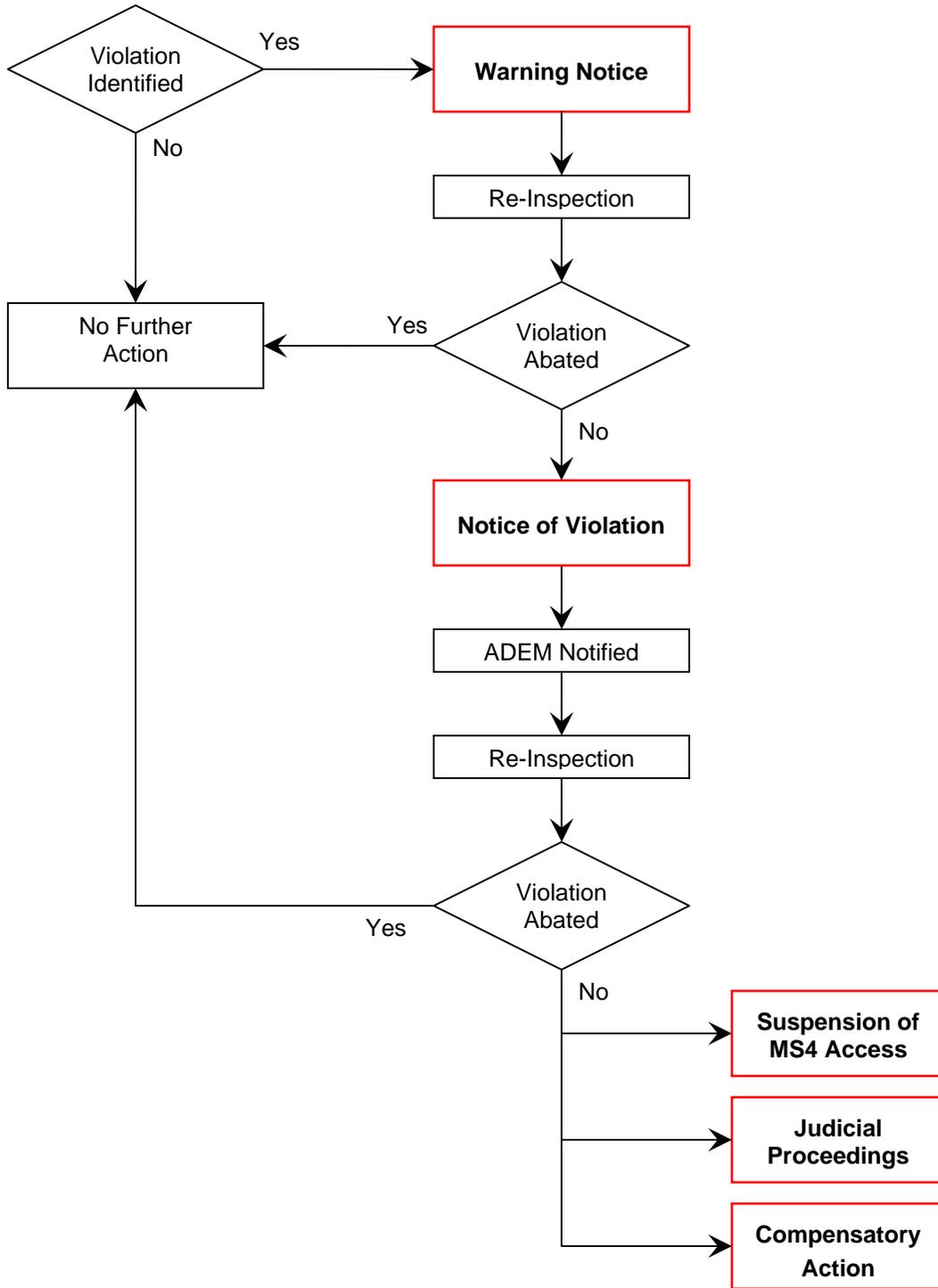
An effective Illicit Discharge Detection and Elimination Program uses an escalating scale of enforcement action to abate illicit discharges. A flow chart showing the escalating scale of enforcement action is provided in Figure 6-4 and further described in the sections below. The following sections describe the escalating levels of enforcement outlined in the adopted Illicit Discharge Detection and Elimination Ordinance.

6.14.1. Warning Notice

When it is determined that any person has violated or continues to violate any provision of the Illicit Discharge Detection and Elimination Ordinance, the Storm Water Program Coordinator may serve upon that person a written Warning Notice specifying the particular violation believed to have occurred and requesting that the discharger immediately investigate the matter and to seek a resolution whereby any offending discharge will cease. The investigation and/or resolution of the matter in no way relieves the alleged violator of liability for any violations before or after receipt of the warning notice.



Figure 6-3
Enforcement Action Flow Chart





6.14.2. Notice of Violation

If a person has been issued a Warning Notice and continues to violate any provision of the Illicit Discharge Detection and Elimination Ordinance, the Storm Water Program Coordinator may order compliance by issuing a written Notice of Violation. At a minimum, the Notice of Violation shall contain the following:

- Name and address of alleged violator;
- The address, when available, or a description of the building, structure or land upon which the violation is occurring, or has occurred;
- Nature of the violation;
- Description of the remedial actions required to abate the violation;
- Description of the penalties that may be assessed;
- Description of the appeal procedures;
- Time frame for abating the violation; and,
- If the violation is not abated within the specified time frame, the City may utilize its resources to abate the violation.

If a Notice of Violation is issued, the City may also require the following, without limitation:

- Performance of monitoring, analyses, and reporting;
- Elimination of illicit connections or discharges;
- Cease and desist of discharges, practices, or operations which are considered to be in violation;
- Abatement or remediation of storm water pollution or contamination hazards and the restoration of any affected property;
- Fines to cover administrative and/or remediation costs; and,
- Implementation of source controls or treatment BMPs.

Upon issuance of a written Notice of Violation, the Storm Water Program Coordinator shall notify ADEM regarding status of the illicit discharge.

If the violation is not corrected within the time frame specified in the Notice of Violation, the Storm Water Program Coordinator shall determine if the enforcement action should be escalated to Judicial Proceedings.



6.14.3. Compensatory Action

The ordinance has a provision to impose alternative compensatory actions upon the violator in lieu of enforcement proceedings, penalties, and remedies. Such compensatory actions may include storm drain marking, attendance at compliance workshops, creek clean ups, and/or other activities beneficial to the MS4 area.

6.14.4. Judicial Proceedings

If a person has been issued a written Notice of Violation and continues to violate any provision of the Illicit Discharge Detection and Elimination Ordinance, the Storm Water Program Coordinator may recommend to the City Council to initiate legal proceedings against the discharger.

The Storm Water Program Coordinator, with the consent of the City Council, may also initiate civil proceedings seeking monetary damages for any damages caused to public storm water facilities by the discharger, and may seek injunctive or other equitable relief to abate the illicit discharge.

6.14.5. Suspension of MS4 Access

If a person has been issued a warning notice and continues to violate any provision of the Illicit Discharge Detection and Elimination Ordinance, the Storm Water Program Coordinator may suspend access to discharging into the MS4. The City may decide to issue an emergency cease and desist order when illicit discharges are detected and/or causes imminent danger to the environment, health and welfare of persons, the MS4, or waters of the State.

6.14.6. Fines and Penalties

If the violator does not comply with the Notice of Violation within ten days, the City can impose a civil penalty not to exceed one hundred dollars (\$100) each day the violation remains noncompliant or not remedied.

Violators are also liable to criminal prosecution resulting in criminal penalties of one hundred dollars (\$100) per violation per day and/or imprisonment not to exceed 30 days. Each violation is considered a separate offense.

6.14.7. Public Nuisance

In addition to the enforcement processes and penalties described above, any condition caused or permitted to exist that is a threat to public health, safety and



welfare shall be declared and deemed a nuisance. The Storm Water Program Coordinator may take all appropriate measures to abate the nuisance.

6.15. Staff Training

Staff selected to perform the outfall reconnaissance inventory shall receive the following initial training.

Class Room Training

- Outfall reconnaissance inventory

Field Training

- Water quality monitoring procedures;
- Outfall reconnaissance inventory field procedures; and,
- Illicit discharge tracking procedures.

Staff shall receive annual refresher training. Any new staff incorporated into the outfall reconnaissance inventory shall receive the initial training described above and annual refresher training.

6.16. Standard Operating Procedures

The City shall develop Standard Operating Procedures (SOPs) for the various activities required for implementing the Illicit Discharge Detection and Elimination Program. SOPs shall include but are not limited to the following:

- Sampling equipment use, maintenance and storage;
- Outfall Reconnaissance Inventory;
 - Field procedures
 - Data collection
 - Data management
 - Sample Collection
- Illicit Discharge Evaluation;
- On-site sewage disposal system evaluation; and,
- Sanitary sewer overflow evaluation.

As SOPs are developed, they shall be included in Appendix E.



6.17. Program Goals

The City has developed realistic, achievable and measurable goals and performance milestones to measure the progress in implementing the Illicit Discharge Detection and Elimination Program. Program goals are summarized in Table 6-2.

6.18. Program Evaluation

The most basic measure to evaluate the program effectiveness is to evaluate whether the program goals are being met. At the end of the permit year, the City will evaluate the program goals and overall effectiveness of Illicit Discharge Detection and Elimination Program. Results of the program evaluation will be summarized in the Annual Report.



**Table 6-2
Illicit Discharge Detection and Elimination – Program Goals**

Program Component	BMP		Schedule	Responsible Department
	Description	Frequency		
Legal Authority	Illicit Discharge Ordinance	Update as Needed	31 March 2013	Engineering
Data Acquisition	City Sanitary Sewer Systems	Annually	31 March 2013	Public Works IT
	On-Site Sewage Disposal Systems	Annually	31 March 2013	
	City GIS Data	Annually	31 March 2013	
Outfall Inventory	Outfall Inventory Schedule	Initial	31 March 2013	Engineering
	Outfall Inventory Inspection Form	Initial	31 March 2013	
	Outfall Map	Update Annually	31 March 2013	
	Outfall Inventory	Continuous	31 March 2017	
Illicit Discharges	Complaint Tracking System	Develop and update as needed	31 March 2013	Engineering
	Illicit Discharge Inspection Form	Develop and update as needed	31 March 2013	
Standard Operating Procedures	Sample equipment use, maintenance	Develop and update as needed	31 March 2013	Engineering
	Outfall Reconnaissance Inventory	Develop and update as needed	31 March 2013	
	Illicit Discharge Evaluation	Develop and update as needed	31 March 2013	
	On-site sewer disposal system evaluation	Develop and update as needed	31 March 2013	
	Sanitary sewer overflow evaluation	Develop and update as needed	31 March 2013	Public Works
Program Evaluation	Evaluate Program Effectiveness	Annually	31 March 2013	Engineering



SECTION 7

Construction Site Runoff



7. Construction Site Runoff

7.1. Introduction

The City of Opelika has developed and continuously implemented a Construction Site Runoff Program to monitor and control pollutants in storm water discharges to the MS4 from the following land disturbing activities.

- Land disturbance equal to or greater than one (1) acre; and,
- Land disturbance involving less than one (1) acre that is part of a larger common plan of development.

This Construction Site Runoff Program has been developed using the following guidance materials.

- NPDES Permit No. ALR040018;
- Developing Your Storm Water Pollution Prevention Plan, A Guide for Construction Sites, Environmental Protection Agency, EPA 833-R-06-004, May 2007; and,
- Alabama Handbook for Erosion Control, Sediment Control, and Storm Water Management on Construction Sites and Urban Areas, Alabama Soil and Water Conservation Committee, March 2009.

These documents are incorporated into the Construction Site Runoff Program by reference and are available in the office of the Storm Water Program Coordinator.

7.2. Legal Authority

In accordance with 40 CFR 122.34(b)(4)(ii)(A), the City has developed an Erosion and Sediment Control Ordinance that establishes the legal authority for the City to implement its Construction Site Runoff Program. A copy of the Erosion and Sediment Control Ordinance is provided in Appendix F.



7.3. Requirements and Control Measures

The City's Construction Site Runoff Program requires owners and/or operators of construction sites to select, design, install, implement, inspect and maintain effective Best Management Practices (BMPs) to minimize the discharge of pollutants into the MS4 to the maximum extent practicable (MEP).

7.3.1. Erosion and Sediment Controls

The owner and/or operator shall select, design, install, implement, inspect and maintain BMPs appropriate to specific site conditions to, at a minimum;

1. Control storm water volume and velocity within the site to minimize soil erosion;
2. Control storm water discharges, including both peak flow rates and total storm water volume, to minimize erosion at outlets and to minimize downstream channel and stream bank erosion;
3. Minimize the disturbance of steep slopes;
4. Minimize sediment discharges from the site;
5. Minimize the generation of dust and off-site tracking of sediment from vehicles;
6. Stabilize all construction entrances and exits;
7. Provide and maintain natural buffers around surface waters, direct storm water to vegetated areas to increase sediment removal and maximize storm water infiltration, unless infeasible; and,
8. Implement measures or requirements to achieve the pollutant reductions consistent with a Total Maximum Daily Load (TMDL) finalized or approved by EPA.

7.3.2. Soil Stabilization

Stabilization of disturbed areas must, at a minimum, be initiated immediately whenever any clearing, grading, excavating or other earth disturbing activities have permanently ceased on any portion of the site, or temporarily ceased on any portion of the site and will not resume for a period exceeding 13 calendar



days. Per the City's ordinance, soil stabilization shall be completed within five (5) days of initial land disturbance.

7.3.3. Dewatering

Discharges from dewatering activities, including discharges from dewatering of trenches and excavations are prohibited unless managed by appropriate BMPs.

7.3.4. Pollution Prevention Measures

The owner and/or operator shall select, design, install, implement, and maintain effective pollution prevention measures to minimize the discharge of pollutants. At a minimum, such measures must be designed, installed, implemented and maintained to:

1. Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;
2. Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials present on the site to precipitation and to storm water; and,
3. Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures.

7.3.5. Prohibited Discharges

The following discharges are prohibited:

1. Wastewater from washout of concrete, unless managed by an appropriate BMP;
2. Wastewater from washout and cleanout of stucco, paint, from release oils, curing compounds and other construction materials;
3. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance; and,
4. Soaps or solvents used in vehicle and equipment washing.



7.3.6. Surface Outlets

When discharging from basins and impoundments the owner and/or operator shall utilize outlet structures that withdraw water from the surface, unless infeasible.

7.4. Permitting

The City issues separate permits for the construction of a subdivision and the construction of individual buildings. The permitting process for each type of construction is described in the following sections.

7.4.1. Subdivision Permit

Before the commencement of any land disturbing activity that is not exempted from obtaining a permit, the owner and/or operator of the construction site is required to submit an Application for Proposed Plat Review. The permit application requires the following information.

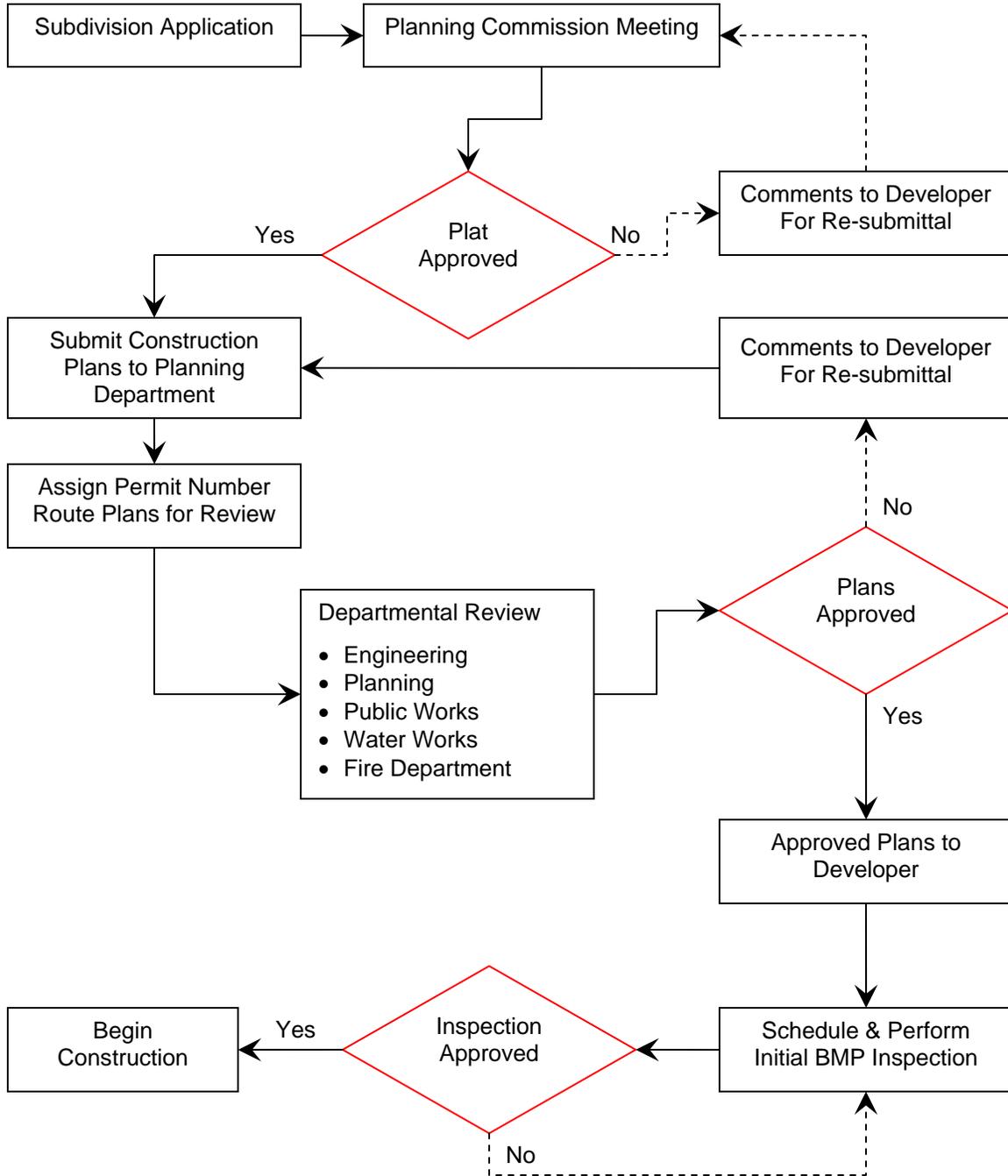
- Property Location;
- Applicant Information;
- Property Owner Information;
- Current Land Use;
- Current Zoning;
- Proposed Plat;
- Construction Plans; and,
- Application Fee.

Following approval of the Preliminary Plat by the Planning Commission, the Planning Department shall issue a Permit to Develop for the Proposed Plat. Copies of the Site Plan Review Form and Subdivision Application are provided in Appendix F.

The Site Plan Review is submitted to the Planning Department. The process for reviewing and approving the permit application is provided in Figure 7-1.



Figure 7-1
Permitting and Plan Review Flow Chart





7.4.2. Plan Review

BMPs selected for the site shall be designed, sized, and/or maintained in accordance with the following references.

- Alabama Handbook for Erosion Control, Sediment Control, and Storm Water Management on Construction Sites and Urban Areas, Alabama Soil and Water Conservation Committee, March 2009.
- Developing Your Storm Water Pollution Prevention Plan, A Guide for Construction Sites, Environmental Protection Agency, EPA 833-R-06-004, May 2007; and,

Review of the CBMP Plan is performed in the Engineering Department by personnel that are registered professional engineers knowledgeable in the many facets of design, storm water management, erosion and sediment control, and construction. The City shall develop a Standard Operating Procedure (SOP) and checklist for CBMP Plan review to ensure consistency with the Erosion and Sedimentation Control Policy. Once the SOP and CBMP Plan Review Checklist are developed, they shall be included in Appendix F.

7.4.3. Building Permit

A Building Permit is required for new construction, additions, renovations or repairs that exceed a construction value of \$1,000. Before the commencement of construction, the owner and/or operator is required to submit a Building Permit Application to the Planning Department. The permit application requires the following information.

- Property Location;
- Type of Improvement;
- Proposed Use;
- Source of Water Supply;
- Type of Sewage Disposal;
- Property Owner Information;
- Architect Information; and,
- Contractor Information.

A copy of the Building Permit Application form is provided in Appendix F.



7.5. Construction Site Inventory

The City shall continuously maintain an updated inventory of all active construction sites within the City's MS4 area. The City may develop a map of active construction sites as of the end of the previous permit year.

7.6. Inspections

After the CBMP Plan has been approved, a copy of the approved CBMP Plan shall be provided to the Developer and the project shall be assigned to the City's Engineering inspector. The inspector shall review the CBMP Plan, design plans and all applicable project documents. All inspections and activities associated with the project will be tracked by the permit number. The Engineering Department generally inspects the site for erosion and sediment control during mass grading and general infrastructure construction.

All City Engineering and Building inspectors shall maintain the Qualified Credentialed Inspector (QCI) certification.

7.6.1. Initial Inspection

After the Developer has installed the initial BMPs, the Developer shall contact the inspector to schedule an initial inspection. The Developer and/or their representatives shall accompany the inspector during the initial inspection. The initial inspection shall address the following:

- Inspect all discharge points from the site;
- Inspect perimeter controls; and,
- Compare installed BMPs with the CBMP Plan.

If all BMPs have been installed in accordance with the CBMP Plan and to the satisfaction of the inspector, the inspector shall approve the initial inspection and allow the Developer to proceed with construction of the project. The inspector shall document the results of the initial inspection.

If deficiencies are noted during the initial inspection, the inspector shall discuss the nature of the deficiencies with the Developer during the initial inspection. After all deficiencies have been corrected, the Developer shall contact the inspector to re-schedule the initial inspection. If all deficiencies have been corrected, the inspector shall approve the initial inspection and allow the Developer to proceed with construction of the project. The inspector shall document the results of the initial inspection.



7.6.2. Routine Inspection

The inspector performs routine inspections throughout the construction process. Routine inspections are typically performed for the following:

- Site Clearing
- Grading
- Foundations
- Framing
- Plumbing
- Electrical
- Mechanical
- Landscaping

Since all of the building inspectors will be QCI certified, the building inspector shall evaluate BMPs before inspecting any other activities at the site. The inspection shall address the following:

- Inspect all discharge points from the site;
- Inspect perimeter controls;
- Compare installed BMPs with the CBMP Plan;
- Inspect disturbed areas not currently being worked;
- Inspect areas with final stabilization;
- Inspect perimeter areas; and
- Request copies of the Developer's inspection reports.

If deficiencies are noted during the inspection, the building inspector shall discuss the nature of the deficiencies with the Developer. The Developer shall be given 48 hours to correct all deficiencies noted by the building inspector. Other inspections associated with foundations, framing, plumbing, electrical, and mechanical will not be performed until all BMP deficiencies have been corrected. The building inspector shall document the results of the inspection and schedule the site for re-inspection.

At a minimum, routine inspections shall occur on a monthly basis. The inspection frequency may be increased depending upon the following:

- Status of construction;
- Site conditions;
- Site size;
- Site location;
- Site proximity to sensitive waters and/or areas;



- Type of construction;
- Historical performance and/or issues with the Developer; and
- Significant storm events.

7.6.3. Re-Inspection

If a site fails the routine inspection, the site shall be scheduled for a re-inspection within 48 hours. The re-inspection shall focus on areas that were determined deficient during the routine inspection. If all deficiencies have been corrected to the satisfaction of the inspector, the inspector shall continue with routine inspections. The inspector shall document the results of the inspection.

7.6.4. Final Inspection

Upon completion of all construction activity, the Developer shall request a final inspection. The inspection shall address the following:

- Inspect all discharge points from the site;
- Inspect areas with final stabilization;
- Inspect perimeter areas;
- Request copies of the Developer's inspection reports; and
- Request copy of the Termination of Registration letter from ADEM.

If deficiencies are noted during the inspection, the inspector shall discuss the nature of the deficiencies with the Developer and the Developer shall be asked to reschedule the final inspection. The inspector shall document the results of the inspection and schedule the site for re-inspection.

If the site passes the final inspection, a certificate of occupancy shall be provided. The inspector shall document the results of the inspection.

7.7. Enforcement

The Erosion Control section of the Zoning Ordinance provides the building inspector with an escalating scale of enforcement action for violation of any provision in the ordinance. A flow chart showing the escalating scale of enforcement action is provided in Figure 7-2 and further described in the sections below.



7.7.1. Verbal Warning

If deficiencies are noted during an inspection, the building inspector shall discuss the nature of the deficiencies with the Developer. The following actions shall be taken to abate any violations.

- The Developer shall be given a verbal warning and 48 hours to correct all deficiencies noted by the building inspector.
- The building inspector shall perform a re-inspection within 48 hours.
- If the deficiencies are not corrected within 48 hours of the verbal warning, the building inspector shall determine if the enforcement action should be escalated to a Stop Work Notice.

7.7.2. Stop Work Notice

If a Developer has been issued a verbal warning and continues to violate any provision of the Erosion Control Ordinance, the building inspector may issue a Stop Work Notice to the Developer. The Stop Work Notice shall require the Developer to stop all work immediately and to take all appropriate remedial or preventive actions as may be required to abate all violations.

If the violation is not corrected immediately, the building inspector shall notify the Planning and Zoning Director to determine if the enforcement action should be escalated to a written notice of violation.

7.7.3. Notice of Violation

If the Planning and Zoning Director determines that a Developer has violated and/or continues to violate any provision of the Erosion Control Ordinance, the Planning and Zoning Director may issue the Developer a written Notice of Violation. At a minimum, the Notice of Violation shall contain the following:

- Name and address of alleged violator;
- Location or address of the site where the violation occurred;
- Nature of the violation;
- Description of the remedial actions required to abate the violation;
- Description of the penalties that may be assessed;



- Description of the appeal procedures;
- Time frame for abating the violation;
- If the violation is not abated within the specified time frame, the County may utilize its resources to abate the violation.

Upon issuance of a written Notice of Violation, the Planning and Zoning Director shall notify ADEM regarding status of the site.

If the violation is not corrected within the time frame specified in the Notice of Violation, the Planning and Zoning Director shall determine if the enforcement action should be escalated to a Judicial Proceedings.

7.7.4. Judicial Proceedings

If a Developer has been issued a written Notice of Violation and continues to violate any provision of the Erosion Control Ordinance, the Planning and Zoning Director may recommend to the County Commission to initiate legal proceedings against the Developer.

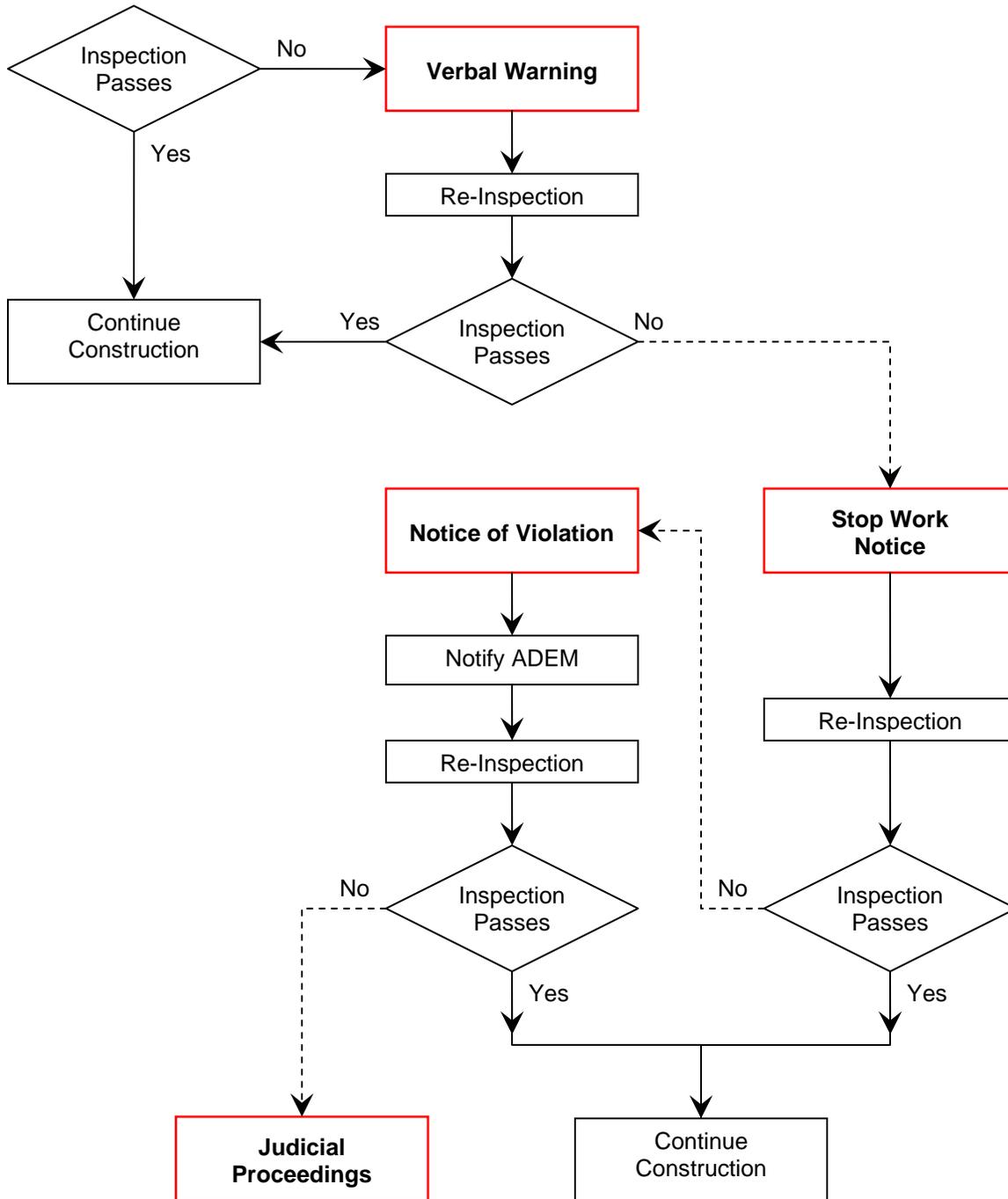
The Planning and Zoning Director, with the consent of the County Commission, may also initiate civil proceedings seeking monetary damages for any damages caused to public stormwater facilities by the Developer, and may seek injunctive or other equitable relief to enforce compliance with the Erosion Control Ordinance.

7.7.5. Fines and Penalties

Any person guilty of a violation; and each day of such violation, failure or refusal to comply with all provisions of the Erosion Control Ordinance shall be deemed a separate offense and punishable accordingly. Any person found to be in violation of any provision of the Erosion Control Ordinance shall be punished by a fine of not more than one hundred and fifty dollars (\$150) per day for each offense.



Figure 7-2
Enforcement Action Flow Chart





7.8. Staff Training

All engineering and building inspectors shall maintain current certification as a Qualified Credentialed Inspector (QCI). To further support this program element, the Storm Water Program Coordinator may select additional staff to obtain and maintain either a QCP or QCI certification.

Staff shall receive annual refresher training. Copies of the current QCI training certificates shall be maintained in Appendix F.

7.9. Program Goals

The City has developed realistic, achievable and measurable goals and performance milestones to measure the progress in implementing a Construction Site Storm Water Runoff Control Program. Program goals are summarized in Table 7-1.

7.10. Program Evaluation

The most basic measure to evaluate the program effectiveness is to evaluate whether the program goals are being met. At the end of the permit year, the City will evaluate the program goals and overall effectiveness of the Construction Site Storm Water Runoff Control Program. Results of the program evaluation will be summarized in the Annual Report.



**Table 7-1
Construction Site Runoff – Program Goals**

Program Component	BMP		Schedule	Responsible Department
	Description	Frequency		
Legal Authority	Erosion and Sediment Control Ordinance	Update as needed	31 March 2013	Engineering
	Subdivision Regulations	Review and update as needed	31 March 2013	
Permitting	Develop SOP	Develop and update as needed	31 March 2013	Building Inspections
	Track Number and Type of Permits	Annually	31 March 2013	
Plan Review	Develop SOP	Develop and update as needed	31 March 2013	Engineering
	Develop Review Checklist	Develop and update as needed	31 March 2013	
	Develop CBMP Plan Requirements	Develop and update as needed	31 March 2013	
	Track Number of Plans Reviewed	Annually	31 March 2013	
Inspections	Develop SOP	Develop and update as needed	31 March 2013	Engineering Building Inspections
	Develop Inspection Form	Develop and update as needed	31 March 2013	
	Track Number and Type of Inspections	Annually	31 March 2013	
Enforcement Actions	Track Number and Type	Annually	31 March 2013	Engineering Building Inspections
Training	QCI Training	Annually	31 March 2013	Engineering Building Inspections
Program Evaluation	Evaluate Program Effectiveness	Annually	31 March 2013	Engineering



SECTION 8

Post Construction Storm Water Management



8. Post Construction Storm Water Management

8.1. Introduction

The NPDES permit requires the City to develop, implement and enforce a program to address storm water discharges from new development and redevelopment projects that disturb greater than one acre, and projects less than one acre that are part of a larger common plan of development.

Post construction runoff generally has two types of impacts. First, developed areas will increase the type and quantity of pollutants in storm water runoff. When storm water flows over areas altered by development it has a potential to pick up a variety of pollutants including but not limited to trash, debris, sediment, oil, grease, pesticides, heavy metals and/or nutrients, and carry these pollutants to the streams and lakes. Second, development increases the impervious surfaces of an area resulting in a quantity increase of storm water runoff. Increased impervious surfaces like buildings and parking lots interrupt the natural cycle of gradual percolation of storm water through the vegetation and soil. Instead, storm water is collected on the impervious surface and conveyed to drainage systems where increase volumes of storm water runoff enter the stream quickly. As a result, stream banks are more susceptible to scouring and the down stream areas have a higher potential of flooding.

8.2. Legal Authority

In accordance with 40 CFR 122.34(b)(5)(ii)(B), the City shall develop a Post Construction Storm Water Management Ordinance that establishes the legal authority for the City to address post-construction storm water runoff from new development and redevelopment projects.

8.3. Program Components

Post construction storm water management involves the implementation of structural and/or non-structural BMPs to provide permanent storm water management over the life of a property's use. It is important to recognize that many BMPs are climate dependent and not all BMPs are suitable for every site. The City will evaluate and identify BMPs that are suitable for this area. The following sections will generally describe BMPs that will be considered.



8.3.1. Low Impact Development

Where feasible, the City will consider and encourage developers to utilize Low Impact Development (LID) and/or green infrastructure BMPs to minimize the post construction impacts of storm water runoff. The City will evaluate and identify the most appropriate LID BMPs.

8.3.2. Non-Structural BMPs

The City has developed zoning regulations, zoning maps and subdivision regulations to guide existing land uses and development patterns within the City. To complement the regulations, non-structural BMPs shall include but not limited to the following.

- Develop design standards;
- Develop plan review and approval procedures;
- Develop post construction BMP evaluation and inspection procedures; and,
- Develop BMP maintenance requirements.

The subdivision regulations already contain a general provision to address the quantity of post developed storm water runoff.

8.3.3. Structural BMPs

There are a variety of structural BMPs capable of not only managing the volume and velocity of storm water runoff, but also provides very effective treatment of storm water runoff. Structural BMPs may include the following.

- Storm water retention / detention basins;
- Infiltration basins / trenches;
- Pervious pavement;
- Grass swales;
- Filter strips;
- Constructed wetlands; and,
- Rain gardens.

As the City's post construction storm water management program develops, the City will evaluate and identify the most appropriate BMPs. A design rainfall event with an intensity up to a 2-year, 24-hour storm event shall be the basis for the design and implementation of post-construction water quality BMPs.



8.3.4. Operation and Maintenance

In order for post developed BMPs to be effective, routine maintenance of the BMP will be required. The City shall evaluate mechanisms that can be utilized to ensure proper maintenance of the BMPs.

8.3.5. Tracking System

As post development BMPs are implemented, the City shall develop a tracking and inspection system to ensure that BMPs continue to function properly.

8.4. Program Goals

The City has developed realistic, achievable and measurable goals and performance milestones to measure the progress in implementing a Post Construction Storm Water Management Program. Program goals are summarized in Table 8-1.

8.5. Program Evaluation

The most basic measure to evaluate the program effectiveness is to evaluate whether the program goals are being met. At the end of the permit year, the City will evaluate the program goals and overall effectiveness of the Post Construction Storm Water Management Program to improve storm water quality. Results of the program evaluation will be summarized in the Annual Report.



**Table 8-1
Post Construction Storm Water Management – Program Goals**

Program Component	BMP		Schedule	Responsible Department
	Description	Frequency		
Legal Authority	Develop Post Construction Storm Water Management Ordinance	Initial	31 March 2013	Engineering
	Adopt Post Construction Storm Water Management Ordinance	Initial	31 March 2014	
	Subdivision Regulations	Review and update as needed	31 March 2013	
Low Impact Development	Evaluate LID Best Management Practices (BMPs)	Annually	31 March 2013	Engineering
	LID Policy	Develop and update as needed	31 March 2013	
Non-Structural BMPs	Develop Plan Review Procedures	Develop and update as needed	31 March 2013	Engineering
	Develop Inspection Procedures	Develop and update as needed	31 March 2013	
	Develop Maintenance Requirements	Develop and update as needed	31 March 2013	
Structural BMPs	Evaluate and Identify BMPs	Develop and update as needed	31 March 2013	Engineering
	Develop Design Standards	Develop and update as needed	31 March 2013	
	Develop Review Checklist	Develop and update as needed	31 March 2013	
Inspections	Develop SOP	Develop and update as needed	31 March 2013	Engineering
	Develop Tracking System	Develop and update as needed	31 March 2013	
	Track Number and Type of Inspections	Annually	31 March 2013	
Training	Evaluate Training Needs	Annually	31 March 2013	Engineering
	Identify Training Sources	Annually	31 March 2013	
Program Evaluation	Evaluate Program Effectiveness	Annually	31 March 2013	Engineering



SECTION 9

Pollution Prevention Good Housekeeping



9. Pollution Prevention / Good Housekeeping

9.1. Introduction

Pollution prevention / good housekeeping for municipal operations is a control measure designed to emphasize the operation and maintenance of the MS4 and proper training of city employees. Performing municipal activities in a careful and proper manner prevents and/or reduces the potential of polluting storm water runoff. Operations specifically identified in the NPDES permit include the following:

- Park and open space;
- Fleet and building maintenance;
- New construction and land disturbances;
- Storm sewer system maintenance;
- Roads and highways;
- Municipal parking lots;
- Maintenance and storage yards;
- Waste transfer stations; and,
- Recycling centers.

9.2. Program Components

The Pollution Prevention / Good Housekeeping Program is a key element to help the MS4 to reduce potential pollutants from entering storm water runoff. This control measure requires the City to evaluate existing facilities and operations to identify areas of improvement that will help ensure a reduction in the amount and type of potential pollutants.

9.2.1. City Facilities

The first step is to evaluate and assess the areas and facilities to determine which activities may currently interact with storm water runoff and to identify appropriate BMPs for these activities. The simplest solution is to limit the number of activities that are performed outside and exposed to storm water.



9.2.2. Facility Inventory

The City shall complete an inventory of City facilities and areas that have a potential to interact with storm water runoff. Once the facility inventory is completed, the City shall develop a map identifying the facilities location with respect to water bodies. A comprehensive list and map of City facilities will help county employees build a better awareness of their locations within the MS4 and their potential to contribute pollutants in storm water runoff.

9.2.3. Facility Assessment

A comprehensive facility assessment is necessary to identify the facilities most likely to contribute storm water pollutants and the facilities in need of storm water controls. The facility assessments shall involve a detailed site inspection to identify improperly stored materials, activities that should not be performed outside, and poor housekeeping practices.

9.2.4. Standard Operating Procedures

Each City facility will require a different set of control measures depending on the nature and activities that occur at the facility and the types of materials that are stored and used. Developing and maintaining a site specific standard operating procedure (SOP) for each facility will help to ensure that employees responsible for the facility are aware of the storm water controls required for the facility. Using the information and data collected during the facility assessment, the City shall develop facility specific control measures and standard operating practices to minimize the potential of pollutants to interact with storm water.

Currently, the City has developed six (6) SOPs for specific tasks within the Public Works Department. These SOPs include the following:

- City Vehicle Usage;
- Trailers (Pull Behind);
- Mower (Walk Behind);
- Weedeater Operation;
- Tractor Operation; and,
- Herbicide Application.

Copies of the SOPs are provided in Appendix H. As the City develops additional SOPs, they will be included in Appendix H.



9.3. Structural Controls

The City generally exhibits sloping topography, with higher elevations near the center of the City and lower elevations at the City edges. Typically, storm water is collected through area, curb, and grate inlets and possibly open drainage swales. Storm water then flows through closed conduit pipe, junction boxes, and possibly open drainage swales prior to being discharged. Newer developments (within the last 20 years) usually discharge to a detention or retention pond meant to attenuate peak discharges during storm events.

The City maintains an inventory of storm sewer inlets and structures. This inventory is available through the City's Graphic Information Systems (GIS) Department. The City's storm sewer inventory is summarized in Table 9-1.

**Table 9-1
Storm Sewer Inventory**

Structure Type	Quantity	Units
Area Inlet	181	ea
Grate Inlet	496	ea
Curb Inlet	879	ea
Headwalls	769	
Junction Box	5,656	
Street Curb	102.1	miles

9.3.1. Maintenance and Repairs

Based on complaints or historical problem areas, required maintenance is performed in a timely manner by the Public Works Department. Maintenance can include:

- Structure clean out of leaves, sediment, floatables, and other debris;
- Mowing, clearing, or overhead limb removal in order to prevent drain blockage or reduced storm water flow;
- Regrading of swales and ditches to allow for proper storm water flow;
- Grass seeding/planting to prevent erosion; and,
- Replacing storm water structures.



The City currently assigns work order codes for various maintenance activities and tracks time and money required for each activity with a HTE system.

9.4. Roadways

Motor vehicles can generate runoff pollutants through emissions, deposition of exhaust, discharges of fluids and solid particles while traveling and breaking. Although the runoff constituents and concentration levels vary with road type and location, the sources of roadway runoff pollutants typically fall into one of three basic categories.

1. Vehicle traffic;
2. Deicing activities; and,
3. Vegetation management.

Potential pollutant sources from roadways that can affect water quality include.

- Solids generated from pavement wear, tire wear, engine and brake wear can increase turbidity and transport other pollutants that adhere to the particle surfaces.
- Heavy metals from lubricating oil and grease, bearing wear, tire wear, vehicle wear, break lining wear and moving engine parts.
- Nutrients from roadside fertilizer application can expedite algae growth and lower dissolved oxygen levels in streams, rivers and lakes.
- Polycyclic aromatic hydrocarbons (PAHs) such as petroleum and ethylene glycol, resulting from spills and leaks of oil, gas, antifreeze, and hydraulic fluids.
- Trash and floatables from litter and illegal dumping can transport pathogens, sediment, metals, nutrient, and other contaminants into waterways and also clog storm sewer systems.

The City has implemented and maintained BMPs to provide a means of mitigating the negative impacts of various pollutants that can be carried off by rainfall and receiving waters.

Interstates and State Roads are the responsibility of the Alabama Department of Transportation (ALDOT). The City is responsible for maintenance of arterial, collector and local roads. The City maintains an inventory of interstate, highway,



local, and private roads located within the City. An inventory of the roads by classification is summarized in Table 9-3.

**Table 9-2
Road Inventory**

Road Class	Length (miles)
Interstate	19.7
Highway	19.4
Local Road	243.6
Private Road	3.2

The City uses a variety of structural and nonstructural BMPs during the planning, design, operation and maintenance of its roadways and bridges. These BMPs help to mitigate the adverse effects to stormwater runoff by reducing the volume and concentration of pollutants generated by motor vehicle traffic.

9.4.1. Planning and Design

The City utilizes a variety of environmental planning and design management practices to reduce the environmental impacts of roadways and bridges. Section 3 of the City of Opelika Public Works Manual establishes planning and design requirements for roadways and bridges. Subsections 3.2 and 3.3 and Tables 3.1, 3.2, and 3.3 of this Section specifies the minimum roadway design standards that are based on roadway type (i.e. collector, residential, other) and minimum lot frontage width. A summary of the collector roadway design requirements is provided in Table 9-3 and residential street design requirements in Table 9-3.

**Table 9-3
Collector Roadway Design Requirements**

Roadway Type	Minimum Pavement Width (feet)	ROW Width	
		With Curb & Gutter	Without Curb & Gutter
Major Collector	48	80	100
Minor Collector	28	60	80



**Table 9-4
Residential Street Design Requirements**

Roadway Type	Minimum Pavement Width (feet)	Curb & Gutter Required?
Lane	22	Yes
Court	22-31	Yes
Way	22-32	Yes
Minor Street	22-34	Yes
Major Street	22-36	Yes

The City’s roadway design requirements minimize the pavement width based on roadway type and land use. For Major and Minor Collectors, curb and gutter is not required if the Right-of-Way (ROW) is wide enough to allow for open drainage swales. Curb and gutter are only required for Major and Minor Residential Streets. However, based on residential lot frontage, the City may require that curb and gutter be used.

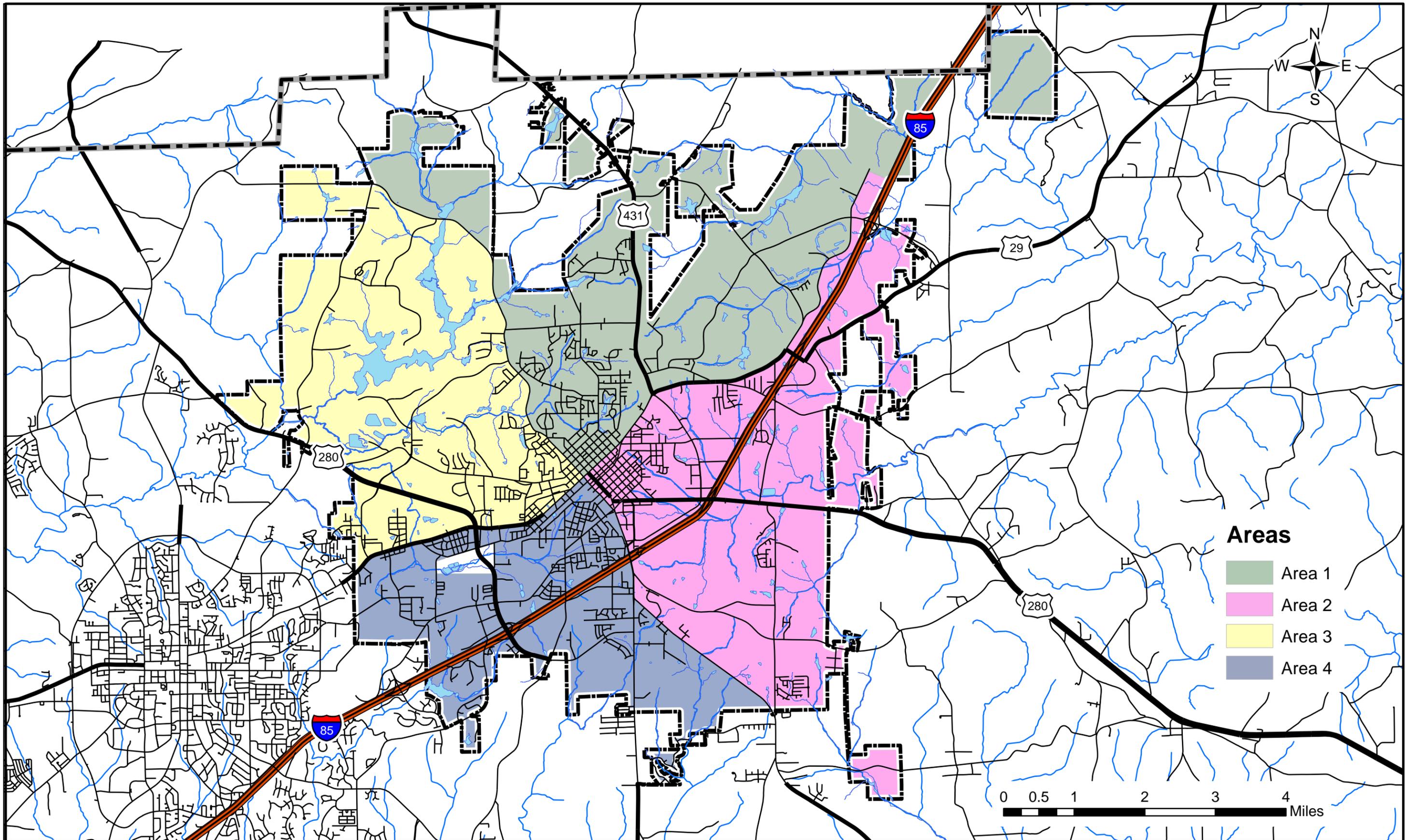
Typically, a 60-foot wide ROW is required for all local streets with pavement widths up to 28 feet.

9.4.2. Bridge Inspections

Bridge inspections are contracted through an outside inspector. The City maintains records of inspections and plans maintenance or minor repairs from those inspection reports.

9.4.3. Street Sweeping

The City has two (2) dedicated street sweeping crews which operate daily. The City is divided into four maintenance areas, with each area typically swept monthly. Figure 9-1 shows these maintenance areas within the City. These same maintenance areas are used for mowing and litter control operations. Any debris collected is disposed of at the Solid Waste Department’s handling facility.



- Areas**
- Area 1
 - Area 2
 - Area 3
 - Area 4

0 0.5 1 2 3 4 Miles



9.4.4. Litter Control

Roadside litter control BMPs implemented by the City to address health and aesthetic concerns also improve the quality of stormwater runoff by limiting trash in runoff conveyance systems. BMPs implemented by the City include:

- Regular litter, trash and debris removal and disposal;
- Sponsoring Adopt-a-Mile program;
- Having an annual Citywide Clean Up; and,
- Public education.

The City's Public Works Department has two (2) dedicated litter crews with one City employee serving as supervisor and two to four inmates serving as laborers. Lists of street ROWs in each section (maintenance area) cleaned by litter crews are provided in Appendix H. The crews determine location to clean by either complaint or scheduled cleaning in a maintenance area.

9.4.5. Mowing

The City has crews dedicated to roadway maintenance. Mowing crews follow the maintenance area and the litter control lists by section to determine street ROWs which require mowing. Routine mowing is also performed at City facilities, ROWs requiring landscape maintenance, and additional street ROWs not previously listed. Copies of these lists are provided in Appendix H.

9.4.6. Resurfacing

City roads with deteriorated paved surfaces are typically overlaid with new asphalt or milled, reclaimed, and replaced with new asphalt paving, depending on the deterioration cause. Resurfacing projects are contracted out and the contractor is required to implement any required erosion and sediment control measures. The Public Works Department does perform routine pothole repair and patching.

9.4.7. Deicing Activities

Based upon the City's location, winter weather is infrequent. The City spreads sand only on bridges with snow or ice cover. After winter weather has subsided, the City removes the sand using a small front end loader and a street sweeper.



9.5. Pesticides, Herbicides and Fertilizers

Pesticides, herbicides and fertilizers, when used properly, are helpful tools in maintaining grassed and landscaped areas. However, excess use can threaten natural ecosystems, particularly through runoff to streams and rivers or by infiltration to groundwater. Because of this concern for environmental health, the NPDES Permit requires the City to evaluate the use of pesticides, herbicides and fertilizers (PHF) to seek opportunities to reduce the use of these materials.

When all the land occupied by parks, right-of-ways, easements, open space and City facilities is added together, the City may own or control a significant portion of the land within a watershed. Maintenance of these areas frequently includes mowing, fertilization, pesticide application, herbicide application and supplemental irrigation. Effective management and landscaping practices can significantly reduce the pollutants discharged in stormwater runoff.

9.5.1. Facility Inventory

The City shall evaluate land under the control of the City to determine where pesticides, herbicides and/or fertilizers are being used. Areas of interest within the MS4 Area may include but are not limited the following.

- Public parks;
- Sports complexes;
- Green space around County facilities; and,
- County right-of-ways.

After City areas have been identified, develop a map showing the location of City Areas with respect to local rivers, streams and water bodies. A preliminary inventory is included in Appendix H.

9.5.2. Certification and Licensing

Commercial and non-commercial application of pesticides is regulated in the State of Alabama by the Department of Agriculture and Industries (DAI). In order to maintain a pest control license, applicators are required to obtain routine training that covers the following topics.

- Pests;
- Pests control and pesticides;
- Labels and labeling;
- The environment;



- Applicator safety;
- Laws and regulations;
- Pesticide storage and disposal;
- Record keeping;
- Application equipment and calibration; and,
- Weed control.

City staff and contractors involved with the application, storage and/or disposal of pesticides, herbicides, and fertilizers on City areas shall maintain current certification and training as required by DAI. The City currently has one staff member that maintains an applicators certification. Certification documentation is provided in Appendix H.

9.5.3. Chemical Inventory

The City may use a variety of pesticides, herbicide and fertilizer chemicals on road right-of-ways and City property. An inventory of pesticides, herbicides and fertilizers being stored at each City facility shall be maintained by Public Works.

Material Safety Data Sheets (MSDS) for pesticides, herbicides and fertilizers used by City staff shall be maintained at each individual storage location. The MSDS will provide information about the chemical to include but not limited to the following.

- Chemical constituents;
- Product use;
- Dilution requirements;
- Mixing requirements;
- Storage instructions; and,
- Health and safety precautions.

Chemicals typically used by the City are summarized in Table 9-5.

9.5.4. Application, Storage and Disposal

Application, storage and disposal of pesticides, herbicides and fertilizers shall be performed in accordance with Federal and State regulations and in accordance with the manufacturer's recommendations. A SOP for Herbicide Application and an application record is provided in Appendix H. As more SOPs are developed, they will be included in Appendix H.



**Table 9-5
PHF Chemicals**

Chemical Name	Type
25-4-8 Pea Fowl Turf Special	Fertilizer
Resolute 65WG	Herbicide
Alligare Glyphosate 4 Plus	Herbicide
2, 4-D Amine 4	Herbicide
Barricade 4L	Herbicide
Simazine 4L	Herbicide
Strike 3	Herbicide
Image Herbicide	Herbicide
Cleary's 3336F	Fungicide
Permanone RTU	Insecticide
Tengard SFR One Shot	Insecticide
Talstar PL	Insecticide

9.6. Data Management

The City has a dedicated Graphic Information System (GIS) manager responsible for obtaining, developing, and maintaining the City's GIS data and system. The City's GIS data includes relevant information for the City's Structural Controls, Roadways, and Pesticides, Herbicides, and Fertilizers programs.

The City has an on-going effort to update and maintain the information and data contained in the GIS system. Currently, the City is in the process of completing a mapping project of the entire storm sewer system. The final data will be incorporated into the City's GIS system.

9.7. Training

The City shall evaluate and develop a training program to educate city employees on how to incorporate pollution prevention / good housekeeping practices into City operations and facilities. Training topics may include the following.



- Federal and State storm water regulations;
- Storm water pollution prevention plan requirements;
- Significant materials and storage practices;
- Best Management Practices (BMPs);
- Non storm water discharges and evaluations;
- Site inspection and documentation protocols;
- Application of pesticides, herbicides and fertilizers;
- Road maintenance BMPs; and,
- Facility specific standard operating procedures.

To minimize the cost and resources associated with training, the City anticipates utilizing training programs and materials that have already been developed by EPA, ADEM and/or other readily available sources.

9.8. Flood Management

The NPDES permit requires the City to evaluate flood management projects for incorporation of additional water quality protection devices and practices to help improve water quality. If flood management projects are proposed within the City's MS4 area, the City will evaluate the projects for the potential incorporation of water quality features.

The City has also adopted a Flood Damage Prevention Ordinance. A detailed description of the ordinance is provided in the Program Administration Section. A copy of the ordinance is included in Appendix H.

9.9. Program Goals

The City has developed realistic, achievable and measurable goals and performance milestones to measure the progress in implementing a pollution prevention / good housekeeping program. Program goals are summarized in Table 9-6 through Table 9-9.

9.10. Program Evaluation

The most basic measure to evaluate the program effectiveness is to evaluate whether the program goals are being met. At the end of the permit year, the City will evaluate the pollution prevention / good housekeeping program goals and overall effectiveness of the program to help reduce pollutants in storm water



runoff. Results of the program evaluation will be summarized in the Annual Report.



**Table 9-6
Pollution Prevention / Good Housekeeping – Program Goals**

Program Component	BMP		Schedule	Responsible Department
	Description	Frequency		
Facility Inventory	Identify County Facilities and Operations	Annually	31 March 2013	Engineering
Facility Assessment	Develop Facility Evaluation Form	Develop and update as needed	31 March 2013	Engineering Public Works
	Conduct Facility Evaluation	Initial	31 March 2013	
	Prioritize Facilities	Initial	31 March 2013	
	Develop Facility Recommendations	Initial	31 March 2013	
	Develop Schedule for Implementation	Initial	31 March 2013	
Standard Operating Procedures	Paved Road Inspection / Maintenance	Develop and update as needed	31 March 2013	Engineering Public Works
	Dirt Road Inspection / Maintenance	Develop and update as needed	31 March 2013	
	Right-of-Way Maintenance	Develop and update as needed	31 March 2013	
Training	Evaluate Training Needs	Develop and update as needed	31 March 2013	Engineering Public Works
	Identify Training Resources	Develop and update as needed	31 March 2013	
	Implement Training	Annually	31 March 2013	
Flood Management	Review Flood Projects	As Needed	31 March 2013	Engineering Planning
Program Evaluation	Evaluate Program Effectiveness	Annually	31 March 2013	Engineering



**Table 9-7
Structural Controls – Program Goals**

Program Component	BMP		Schedule	Responsible Department
	Description	Frequency		
Data Management	Storm Sewer Inlet Inventory	Update As Needed	31 March 2013	Engineering IT
	Storm Sewer Structure Inventory	Update As Needed	31 March 2013	
Inspections	Drainage Swales	Track miles / year	31 March 2013	Engineering Public Works
	Storm Sewer Pipe	Track ft / year	31 March 2013	
	Storm Sewer Inlets	Track inlets / year	31 March 2013	
Cleaning	Drainage Swales	Track ft / year	31 March 2013	Public Works
	Storm Sewer Pipe	Track ft / year	31 March 2013	
	Storm Sewer Inlets	Track / year	31 March 2013	
Maintenance	Drainage Swales	Track ft / year	31 March 2013	Public Works
	Storm Sewer Pipe	Track ft / year	31 March 2013	
	Storm Sewer Inlets	Track / year	31 March 2013	
Repairs	Drainage Swales	Track ft / year	31 March 2013	Public Works
	Storm Sewer Pipe	Track ft / year	31 March 2013	
	Cross Drain Pipe	Track ft / year	31 March 2013	
Program Evaluation	Evaluate Program Effectiveness	Annually	31 March 2013	Engineering



**Table 9-8
Roadways – Program Goals**

Program Component	BMP		Schedule	Responsible Department
	Description	Frequency		
GIS Data	Road and Bridge Inventory Update	As needed	31 March 2013	IT
Roadway Design	Plan Reviews	Track reviews / Year	31 March 2013	Engineering
Inspections	Paved Roads	Track miles/year	31 March 2013	Engineering
	Dirt Roads	Track miles/year	31 March 2013	
	Bridges	Track bridges / year	31 March 2013	
Roadway Maintenance	Mowing ROW	Track miles / season	31 March 2013	Public Works
	Street Sweeping	Track miles / year	31 March 2013	
	Litter Control	Track miles / year	31 March 2013	
	Adopt-A-Mile	Track miles	31 March 2013	KOB
Roadway Repair	Resurfacing - Overlay	Track miles / year	31 March 2013	Engineering
	Resurfacing – Milled with new asphalt	Track miles / year	31 March 2013	
Deicing Activities	Deicing Events	Track Events / year	31 March 2013	Public Works
Program Evaluation	Evaluate Program Effectiveness	Annually	31 March 2013	Engineering



**Table 9-9
Pesticides, Herbicides and Fertilizers – Program Goals**

Program Component	BMP		Schedule	Responsible Department
	Description	Frequency		
Facility Inventory	Complete inventory of areas where PHF is applied	Annually	31 March 2013	Public Works
	Develop Map	Annually	31 March 2013	
Certification and Licensing	Employee Training	Annually	31 March 2013	Public Works
	Employee Certification	Annually	31 March 2013	
	Contractor Certification	Annually	31 March 2013	
Chemical Inventory	Update Inventory at each location	Annually	31 March 2013	Public Works
	Update MSDS at each location	Annually	31 March 2013	
SOPs	Application	Develop and update as needed	31 March 2013	Public Works
	Storage	Develop and update as needed	31 March 2013	
	Disposal	Develop and update as needed	31 March 2013	
	Equipment maintenance	Develop and update as needed	31 March 2013	
Chemical Use	Summary by Chemical	Annually	31 March 2013	Public Works



SECTION 10

Monitoring Plan



10. Monitoring Plan

10.1. Pepperell Branch

Pepperell Branch is classified as a Fish and Wildlife (F&W) stream. Since Pepperell Branch is not meeting designated uses under technology-based pollution controls, two (2) TMDLs have been developed for the following:

- Pathogens (E. coli); and,
- Nutrients and Organic Enrichments / Dissolved Oxygen (OE/DO).

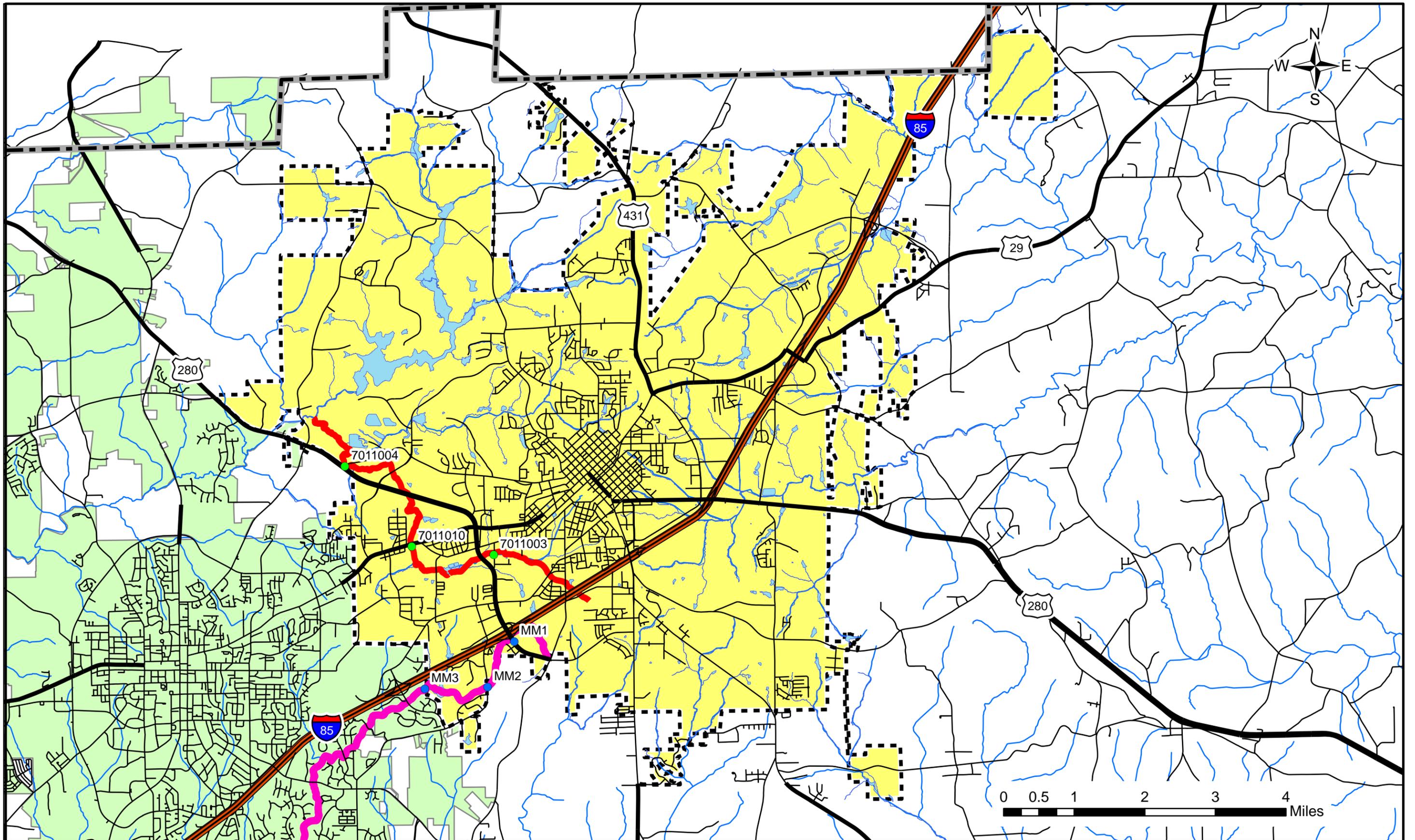
The Pathogens TMDL establishes criteria for acceptable bacteria levels (E. coli) for the F&W use classification for both a geometric mean and single sample criteria. Geometric mean criteria for F&W waterbodies is 126 cols/100 mL for summer and 548 cols/100 mL for winter. Single sample criteria for F&W waterbodies is 487 cols/100 mL for summer and 548 cols/100 mL for winter. Where summer is defined as the time frame from June through September and winter is defined from October through May.

The Nutrients and OE/DO TMDL establishes a phosphorus load allocation of 0.10 mg/L for stormwater sources during the growing season from April through October.

10.1.1. Monitoring Sites

Alabama Water Watch (AWW) is a statewide program dedicated to developing citizen volunteer monitoring of Alabama's lakes, streams and coasts. The City is developing a partnership with AWW and will coordinate with AWW to continue monitoring activities on Pepperell Branch.

AWW volunteers have been monitoring water quality at various locations along Pepperell Branch since 1997. Monitoring locations that will be evaluated for Pepperell Branch are shown in Figure 10-1 and summarized in Table 10-1. As the City's MS4 Program continues to evolve, the City may identify additional sites to conduct monitoring.





**Table 10-1
Pepperell Branch Monitoring Locations**

Site	Location	Latitude	Longitude	Monitoring
7011003	Thomason Drive	32.632	-85.405	Chemical Bacteria
7011004	Waverly Parkway	32.651	-85.441	Chemical Bacteria
7011010	Baseball field off US Hwy 29	32.634	-85.425	Chemical Bacteria

10.1.2. Monitoring Activities

AWW monitoring provides baseline water quality data to help evaluate surface waters. AWW is currently performing water chemistry monitoring at three (3) locations on Pepperell Branch for the following parameters.

- Temperature
- Dissolve Oxygen
- Alakalinity
- pH
- Turbidity
- Hardness

In 2007, AWW began adding bacteriological monitoring locations on Pepperell Branch to evaluate concentrations of E. coli and other coliform bacteria. The City shall integrate the analytical data collected by AWW into its SWMP and supplement additional sampling to evaluate the pollutants of concern.

The City shall collect grab samples during a storm event at each monitoring site at least twice during the growing season. Samples shall be analyzed for Total Phosphorus. Grab samples shall be collected in accordance with the following criteria:

- Storm event sampled shall produce a minimum rainfall 0.10 inches;
- Minimum antecedent dry period of 72 hours from the previous measurable storm event (0.10 inches of rainfall); and,
- Collect the grab sample within the first hour of the storm water runoff.



10.1.3. AWW Sample Collection and Analysis

AWW has developed and implemented a Quality Assurance Plan (QAP) that provides direction and guidance in sample collection and analysis. Information contained in the QAP includes the following.

- Data Quality Assurance Objectives;
- Sampling Procedures;
- Sample Custody Procedures;
- Calibration procedures and Frequency;
- Analytical Procedures;
- Data Reduction, Validation and Reporting;
- Internal Quality Control Checks;
- Performance and System Audits;
- Preventive Maintenance;
- Special Routine Procedures used to Assess Data Precision, Accuracy and Completeness;
- Corrective Action; and,
- Quality Assurance Reports.

Part 3 of the QAP provides specific instructions and test procedures for each parameter.

Samples are analyzed using a LaMotte Chemical Company water quality test kit that has been custom-made for the Alabama Water Watch Program. The water quality test kit contains all of the necessary reagents, solutions and equipment needed to analyze a water sample for the parameters listed above. A picture of the LaMotte Chemical Company water quality test kit is provided in Figure 10-2.

10.1.4. AWW Analytical Results

Water quality data collected by water quality monitors is available on AWW's website at <https://fp.auburn.edu/icaae/index.aspx>. Anyone can go to this web site and review all of the water quality data that has been collected to date.

10.1.5. AWW Training

AWW has established a certification program to train and educate citizen monitors on how to collect and analyze water quality samples. The training program provides assurance that water quality samples will be collected and



analyzed in the same way so that the results from each watershed in Alabama are standardized.

The City may identify staff to attend the training and become an AWW Certified Water Quality Monitor.

**Figure 10-2
Water Quality Test Kit**



10.2. Moores Mill Creek

Moores Mill Creek is classified as a Swimming / Fish and Wildlife (F&W) stream that has been placed on ADEM's 303(d) list as impaired for siltation. The source of the impairment is attributed to land development and urban runoff. Pollutants of concern to evaluate this type of impairment is primarily total suspended solids (TSS) and turbidity.

10.2.1. Monitoring Sites

The City has identified three (3) monitoring locations on Moores Mill Creek to evaluate the pollutants of concern. Monitoring locations are shown in Figure 10-1 and summarized in Table 10-2.



**Table 10-2
Moore's Mill Creek Monitoring Locations**

Site	Location	Latitude	Longitude
MM1	Gateway Drive	32.615	-85.400
MM2	Hamilton Road	32.605	-85.407
MM3	Hamilton Lake Dam	32.605	-85.422

10.2.2. Monitoring Activities

The City shall collect grab samples during a storm event at each monitoring site on a quarterly basis. Samples shall be analyzed for TSS and turbidity. Grab samples shall be collected in accordance with the following criteria:

- Storm event sampled shall produce a minimum rainfall 0.10 inches;
- Minimum antecedent dry period of 72 hours from the previous measurable storm event (0.10 inches of rainfall); and,
- Collect the grab sample within the first hour of the storm water runoff.

10.3. Sample Handling

To minimize the chance of sample contamination and unreliable analytical results, special measures must be taken during the collection, treatment, and handling of samples prior to analysis. For example, samples must be collected properly, stored in the appropriate containers, and preserved immediately. Samples must be analyzed within established holding times to ensure reliability of the results. Chain-of-custody procedures must be followed for sample handling and transportation to the laboratory. Each of these measures is discussed in more detail below.

10.3.1. Sample Collection Protocols

Water quality sampling shall employ "clean" sampling techniques to minimize potential sources of sample contamination – particularly from trace pollutants. Experience has shown that when clean sampling techniques are used, detected concentrations of constituents tend to be lower.

Clean sample collection techniques that should be followed during the collection of water samples are described below. Care must be taken during sampling to



minimize exposure of the samples to human, atmospheric, and other potential sources of contamination. Care must also be taken to avoid contamination whenever handling containers and lids. To reduce potential contamination, monitoring personnel must adhere to the following rules while collecting water samples:

- Do not eat, drink, or smoke during sample collection;
- Never sample near a running vehicle;
- Do not park vehicles in immediate sample collection area (even non-running vehicles);
- Always wear clean, powder-free nitrile gloves when handling sample containers and lids;
- Never touch the inside surface of a sample container or lid, even with gloved hands;
- Never allow the inner surface of a sample container or lid to be contacted by any material other than the sample water;
- Do not overfill sample containers (preservative may be lost);
- Never allow any object or material to fall into or contact the collected sample water;
- Avoid allowing rainwater to drip from rain gear or other surfaces into sample containers; and,
- Replace and tighten sample container lids immediately after sample collection.

Sampling sites should be approached from downstream whenever possible to minimize any streambed disturbance that could influence water quality. Be careful that the flow is not concentrated to the point the channel starts to erode and increases the amount of sediment in the water. Samples will be collected while facing upstream. When filling a sample bottle, lower the bottle slowly into the water to avoid hitting the streambed, disturbing the bottom, and stirring up sediment.



10.3.2. Manual Grab Sample Technique

A manual grab sample will define water quality at a distinct point in time. These samples are easily collected and are favored when the anticipated water quality of the discharge is homogeneous, or unchanging, in nature. A manual grab sample is an individual sample of at least 100 milliliters usually collected by direct submersion of each individual sample bottle into the water to be sampled. To collect samples, the water depth will need to be at least 0.5 inch. Filling a sample bottle is difficult when the water is shallow and the bottles cannot be completely submerged. Thus, an intermediate container should be used. For example, one clean, unpreserved sample bottle can be designated as the intermediate container and used to collect multiple grab samples to fill the remaining sample bottles. Fill the bottles as full as possible without overfilling.

10.3.3. Sample Preservation

Chemical preservatives are added to the samples for certain analyses to prolong the stability of the parameters during transport and storage. Table 10-3 lists the required sample preservatives for the analytical parameters. If manual grab sampling procedures are used (i.e., monitoring personnel directly fill the containers required for each analysis), the monitoring personnel should add the appropriate preservative to each sample container immediately. All samples will be iced immediately after collection.

Table 10-3
Sample Preservation and Holding Times

Parameter	Bottle Type	Preservative	Holding Time
E. Coli	200 mL Plastic	0.008% Na ₂ S ₂ O ₃ Cool to <10°C	6 hours
Phosphorus	500 mL Plastic	H ₂ SO ₄ to pH<2 Cool to <6°C	28 days
Total Suspended Solids (TSS)	200 mL Plastic	Cool to 4°C	7 days

10.3.4. Holding Times

The holding time starts when sample collection is complete and is counted until extraction/preparation or analysis of the sample at the laboratory. If a sample is not analyzed within the designated holding time, the analytical results may be



suspect. Thus, it is important that the monitoring personnel meet all specified holding times and the laboratory make every effort to prepare and analyze the samples as soon as possible after they are received. Prompt analysis also allows the laboratory time to review the data and, if analytical problems are found, re-analyze the affected samples.

Some holding times are short and will require the laboratory to analyze the sample promptly after receipt. For example, E. coli analyses must be performed within 6 hours after sample collection. Holding times may be a factor affecting allowable sampling times if the laboratory has not agreed to work evenings or weekends. To minimize the risk of exceeding the holding times, storm water samples must be transferred to the analytical laboratory as soon as possible after sampling is complete. Moreover, the laboratory should be notified before the sampling begins so that it can prepare to analyze the samples immediately upon receipt.

The shortest holding time for this monitoring program is 6 hours from sample collection for E. coli. All samples will have to be to the laboratory within 6 hours of collection.

10.3.5. Chain of Custody

Chain-of-custody (COC) forms are provided by the laboratory. They are to be filled out by monitoring personnel for all samples submitted to the analytical laboratory. The purpose of COC forms is to keep a record of the sample submittal information and to document the transfer of sample custody. Sample date, sample location, and analyses requested are noted on the COC form. Any special instructions for the laboratory should also be noted on the COC form such as specifications of quality control requirements (e.g., duplicate samples). The COC form must be signed by both the person relinquishing the samples and the person receiving the samples every time the samples change hands, thus documenting the chain of custody. No sample shall ever leave the possession of any City employee until it is relinquished to the laboratory. No third party will be used to collect, prepare, or deliver samples without the presence of a City employee.

Custody seals are used to detect unauthorized tampering with the samples. The seals are printed on strips of adhesive-backed paper. They are affixed over the lid of a filled sample bottle in such a way that the sample bottle cannot be opened without breaking the seal. Custody seals must be completed and affixed to all



sample bottles before the samples leave the custody of the monitoring personnel. Custody seals may also be used on each cooler.

10.3.6. Sample Analysis

Analysis of samples taken for the purpose of monitoring shall be conducted according to test procedures approved by EPA under 40 CFR Part 136.

10.4. Data Evaluation

The City shall review water quality data collected over the previous permit year and present a summary of the data in the annual report. Graphical representations of the data are available from AWW and shall be included in the annual report.



Appendix A

Program Administration



Appendix B

NPDES Permit Number ALR040018



Appendix C

Public Education and Outreach on Storm Water Impacts



Appendix D

Public Involvement / Participation



Appendix E

Illicit Discharge Detection and Elimination



Appendix F

Construction Site Storm Water Runoff Control



Appendix G

Post-Construction Storm Water Management in New Development and Redevelopment



Appendix H

Pollution Prevention / Good Housekeeping for Municipal Operations



Appendix I

Monitoring Activities