

City of Fayetteville

NPDES Permit Program

2021 Annual Report



Permit Number NCS000246

October 31, 2021

Table of Contents

SECTION 1:	INTRODUCTION.....	1
SECTION 2:	BACKGROUND	1
SECTION 3:	PUBLIC EDUCATION AND OUTREACH.....	1
3.1	TARGET POLLUTANTS AND SOURCES	2
3.2	TARGET AUDIENCES.....	2
3.3	INFORMATIONAL WEBSITE	3
3.4	PUBLIC EDUCATION MATERIALS.....	3
3.5	HOTLINE / HELP LINE.....	4
3.6	PUBLIC EDUCATION AND OUTREACH PROGRAM	4
SECTION 4:	PUBLIC INVOLVEMENT AND PARTICIPATION	8
4.1	VOLUNTEER INVOLVEMENT PROGRAM	8
4.2	PUBLIC INVOLVEMENT MECHANISM	9
4.3	HOTLINE / HELP LINE.....	9
4.4	PUBLIC REVIEW AND COMMENT	9
4.5	PUBLIC NOTICE	9
SECTION 5:	ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE).....	9
5.1	ORDINANCE ADMINISTRATION AND ENFORCEMENT	9
5.2	STORMWATER SYSTEM INVENTORY	10
5.3	INSPECTION / DETECTION PROGRAM	10
5.4	EMPLOYEE TRAINING.....	13
5.5	PUBLIC EDUCATION AND OUTREACH.....	14
5.6	PUBLIC REPORTING MECHANISM	14
SECTION 6:	CONSTRUCTION SITE RUNOFF CONTROLS	14
6.1	LOCALLY DELEGATED PROGRAM	14
SECTION 7:	POST-CONSTRUCTION SITE RUNOFF CONTROLS	14
7.1	POST-CONSTRUCTION STORMWATER MANAGEMENT PROGRAM.....	14
7.2	POST-CONSTRUCTION SCM STRATEGIES	15
7.3	DEED RESTRICTIONS AND PROTECTIVE COVENANTS	15
7.4	OPERATION AND MAINTENANCE PLAN	16
7.5	SETBACKS FOR BUILT-UPON AREAS	16
7.6	EDUCATION AND TRAINING PROGRAM.....	17
SECTION 8:	POLLUTION PREVENTION AND GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS 17	
8.1	OPERATION AND MAINTENANCE PROGRAM	17
8.2	FACILITY STORMWATER POLLUTION PREVENTION PLANS	18
8.3	FACILITY INVENTORY AND SITE INSPECTIONS	18
8.4	MUNICIPAL SPILL RESPONSE PROCEDURES.....	20
8.5	VEHICLE AND EQUIPMENT CLEANING OPERATIONS.....	21
8.6	BMP EVALUATION FOR STREETS, ROADS, AND PUBLIC PARKING LOTS MAINTENANCE	21
8.7	BMP IMPLEMENTATION FOR STREETS, ROADS, AND PUBLIC PARKING LOTS MAINTENANCE.....	22
8.8	OPERATION AND MAINTENANCE FOR MUNICIPALLY OWNED OR MAINTAINED STRUCTURAL STORMWATER SCMS AND STORM SEWER SYSTEM	24
8.9	EMPLOYEE / STAFF TRAINING	28
SECTION 9:	INDUSTRIAL FACILITIES EVALUATION AND MONITORING.....	28
9.1	INDUSTRIAL FACILITY INVENTORY	28
9.2	INDUSTRIAL FACILITIES INSPECTION PROGRAM.....	28

9.3	EVALUATION MEASURES	30
SECTION 10:	WATER QUALITY ASSESSMENT AND MONITORING.....	30
10.1	WATER QUALITY ASSESSMENT AND MONITORING PLAN.....	30
10.2	WATER QUALITY MONITORING IMPLEMENTATION	34
SECTION 11:	TOTAL MAXIMUM DAILY LOADS (TMDLS).....	36
SECTION 12:	MISCELLANEOUS STORMWATER ACTIVITIES.....	36
SECTION 13:	PLANS FOR THE UPCOMING YEAR.....	36

Section 1: Introduction

The City of Fayetteville has prepared this report in accordance with the Environmental Protection Agency (EPA) and the Clean Water Act to meet program reporting and monitoring requirements of the National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater Discharge Permit (No. NCS000246) as issued by the State of North Carolina effective March 1, 2013. The permit provides authorization for the City of Fayetteville to discharge municipal stormwater to the Waters of the State. The City of Fayetteville received its renewed permit on October 10, 2018. The permit is effective for five (5) years and will expire at midnight on October 9, 2023.

Under its Public Services Department, the City of Fayetteville Stormwater Program is responsible for implementing and maintaining the City's NPDES Stormwater Discharge Permit. As prepared by the Stormwater Program, this annual report covers City NPDES Permit-related activities from approximately July 1, 2020, to June 30, 2021.

Several of our efforts were suspended or delayed during the reporting year due to mandated government shutdowns due to COVID-19. The City is working through the new government mandates to execute the permit safely.

Section 2: Background

Fayetteville is one of only six NC Phase I municipalities, defined as a population of 100,000 or more. Phase II permits cover all other NC municipalities and some designated counties and petitioned areas required to seek an NPDES stormwater permit. The Six Minimum Measures are the baseline for all Phase II NPDES stormwater permits. Because of their size and potential to pollute stormwater runoff, the Phase I municipalities are subject to the Six Minimum Measures and additional requirements.

Since the renewal of the permit on October 10, 2018, the City continues to implement the following measures:

- 1) Public Education and Outreach
- 2) Public Involvement and Participation
- 3) Illicit Discharge Detection and Elimination (IDDE)
- 4) Construction Site Runoff Controls
- 5) Post-Construction Site Runoff Controls
- 6) Pollution Prevention and Good Housekeeping for Municipal Operations
- 7) Monitor and Evaluate Pollutants in Stormwater Discharges to Municipal Systems
- 8) Water Quality Assessment and Monitoring

This report is formatted to coincide with the Permit structure and provide the permit requirement's progress, status, and results. The following major sections are the required program areas as outlined in the new Permit. The subsections under each major section are the required Best Management Practices (BMPs) for that Permit section.

Section 3: Public Education and Outreach

3.1 Target Pollutants and Sources

The Stormwater Program has determined that the following sources of pollution have significant impacts on water quality. Through proper education and public awareness, Stormwater's objective is to bring attention to these sources' impacts on water quality.

The specific pollution sources targeted for the public education and outreach program are as follows:

- 1) Lawn Care activities
- 2) Improper disposal
- 3) Poor housekeeping
- 4) Erosion

In addition to the above pollution sources, this Annual Report in Section 9 highlights the Stormwater Program's efforts as it addresses stormwater quality concerns associated with industrial activities and, in particular industrial "hot spots."

3.2 Target Audiences

The Stormwater Program has created a Public Education and Outreach campaign that targets several audiences throughout our community. The Stormwater Educator conducts several educational programs with the Fayetteville area schools inside the Cumberland County school system. The focus is to help children better understand what stormwater is, where it ends up, and the pollutants it picks up along the way. For some grade levels, this information is a part of their Essential Standards for Science. These standards outline what information a teacher will cover during the school year and on the End Of Grade (EOG) test. Several of the events that Stormwater is involved in also reach out to school-aged children. Through the education and engagement of children, the Stormwater Program can reach out to parents. During this reporting year, the Stormwater Educator conducted approximately five presentations/demonstrations geared towards school children.

The Stormwater Program offers several publications geared towards homeowners between the ages of 25-55 due to the significant positive and negative impacts on water quality. This age group represents a significant portion of the residents of the City. Also, citizens in this age group are more likely to contribute to pollution by dumping oil and other fluids into the storm drains, improperly disposing of yard wastes, and improperly applying pesticides and herbicides on lawns. Flyers, brochures, and other educational materials have been designed for this group. Stormwater attended or donated information for approximately one event specifically geared towards this age group during this reporting year. The number of events and presentations has been severely limited due to the COVID-19 pandemic and the ongoing cancellation of events.

The Stormwater Program also offers several free video training programs aimed at educating businesses about stormwater pollution prevention. The types of businesses that are targeted have been identified as those whose job duties pose a potential threat to stormwater runoff, such as:

- Concrete companies
- Construction companies
- Landscaping and lawn care professionals
- Painting contractors/home renovation companies

- Restaurants and foodservice establishments
- City Departments

The Stormwater Program acknowledges our growing diversity in our community, and we strive to provide information to our Hispanic community by offering several publications in Spanish.

3.3 Informational Website

The Stormwater Program maintains a comprehensive website (www.fayettevillenc.gov/stormwater) that details our program and permit components and offers citizens the opportunity to learn more about stormwater and water quality. A few of the topics addressed on the website include:

1. Stormwater Inspections
2. Stormwater Projects
3. Public Education and Involvement
4. Stormwater Management Ordinance and related documents
5. Frequently Asked Questions
6. Stormwater Related Downloadable Files

The website is updated regularly to keep information current and citizens aware of the Stormwater Program. The website is utilized to keep citizens informed of the status of various stormwater projects. Through this website, the City's Stormwater Program and Engineering Division can maintain public awareness about drainage issues within the City and inform citizens regarding traffic flow during emergencies and major maintenance of the drainage infrastructure.

During the reporting year, the COVID-19 pandemic continued to keep schools in the area closed for in-person instruction. Most events that Stormwater staff would participate in continued to be delayed as well. Therefore, the Stormwater program continued to offer and create online content that teachers and homeschoolers can use to enhance their lessons on water quality. The public can access these lessons at www.fayettevillenc.gov/stormwatereducation.

3.4 Public Education Materials

The City's Stormwater Program provides quality educational brochures and flyers to inform citizens about stormwater and pollution prevention through various sources. Details regarding these publications are described below:

1. Stormwater Inspectors continue to utilize various educational flyers to hand out to the public, including restaurant best management practices.
2. Stormwater distributes educational brochures at all of the events in which we participate. Stormwater also distributes materials to several events that Stormwater is not physically present. The Public Education and Outreach Program subsection of this report further describes these various activities.
3. Stormwater has brochures and flyers regarding the proper disposal of pet waste available to citizens at events and other activities.
4. Stormwater uses Spanish brochures during public awareness events to educate the growing local Hispanic population about stormwater pollution prevention. Examples include spring lawn maintenance, charity car washes, and pamphlets detailing the City's Stormwater program.

5. Stormwater continues to distribute a cigarette butt litter brochure during the various events Stormwater attends. The pamphlet explains the various water quality issues associated with cigarette butt litter.
6. During the reporting year, staff developed a brochure addressing household hazardous waste. This brochure will be distributed along with other educational material once events resume.
7. Due to a Citywide rebranding effort, all brochures had to be updated with a new City logo. While the logos were updated, brochures were reviewed to ensure information was up to date. These brochures are available online and will be available at events once we can start participating in events again:



Photograph 1: Restaurant Brochure with New Logo

3.5 Hotline / Help Line

The Stormwater Hotline (910-433-1613), initiated in 1995 as an integral part of the Stormwater program, is a source of information and direction and is the primary means for the public to communicate incidents, complaints, and suggestions on a 24/7 basis. The Hotline received approximately 429 documented calls during the past year, resulting in a Work Order for follow-up.

3.6 Public Education and Outreach Program

Stormwater has a documented Public Awareness Strategy, which outlines specific goals that Stormwater intends to meet each year through its efforts. This strategy is updated regularly and guides the Stormwater Program's public education and outreach efforts. This document is available to the public on the City of Fayetteville Stormwater website.

Throughout the past year, Stormwater contracted with several advertising agencies across several different media platforms to create awareness of the Stormwater Program. The following describes those efforts in detail:

1. Stormwater ran advertisements in three different issues of CityView. CityView is a popular local magazine published eight times a year with an estimated 78,000+ readers each issue. Readership adds up to approximately 243,000 annual potential contacts.
2. Stormwater ran several advertisements in the Sunday edition with the Fayetteville Observer. The ad promoted the importance of preventing stormwater pollution. The distribution of the ad is approximately 85,000. Along with this publication, the Observer gives us space on their website, which provides us with approximately 60,000 digital impressions.
3. The Stormwater Program runs four advertisements in Kidsville News that focused on advertising classroom presentations and pollution prevention. Kidsville News is a local publication that is distributed to local schools and focuses primarily on children.
4. The City of Fayetteville partnered with the Clean Water Education Partnership to promote stormwater pollution prevention through targeted TV, radio, and social media ads. The total estimated Spectrum and Capitol Broadcasting Company impressions for the City of Fayetteville are 1,072,143. This number includes tv ads, radio spots, web clicks, and TV pre-roll ads. The CWEP annual report can be accessed at <https://nc-cleanwater.com/annual-reports/>. Further details regarding various CWEP Campaigns can be found below.
5. The Stormwater Program works with Corporate Communications to advertise various commercials and bulletins on the City's government access channel, FayTV, and YouTube Channel. During the reporting year, Stormwater had several informational segments air on the channel. Our FayTV crew filmed these segments, , how to help keep storm drains clear,City Updates on various projects. These programs ran approximately 799 times before approximately 100,196 cable subscribers each time. Additionally, several "still" advertisements were viewed several times per day on FayTV before a potential viewership of 100,196 cable subscribers each time. See Photograph 2 on the following page for an example of one of the stills.
6. This year, Corporate Communications and Stormwater began development of a new social media video which highlights projects in the public services department on a monthly basis. Several Stormwater projects have been highlighted.
7. Stormwater utilized social media outlets such as the City of Fayetteville's Facebook, Twitter, and YouTube accounts to promote stormwater pollution prevention messages.
8. The Public Services Department continues to utilize its own Twitter account this past year, in which the Stormwater Program has promoted several pollution prevention messages. The COVID-19 pandemic kept schools closed to in-person instruction and canceled significant events and other face-to-face gatherings during the reporting year. The Stormwater Program continued to push messages out through the Public Services Twitter page to promote stormwater education.
9. Stormwater sent out four media releases and answered several media requests over the year involving stormwater-related information.



Photograph 2: Fayetteville TV Still Example



Photograph 3: Social Media Graphic

Due to the ongoing COVID-19 pandemic, the Stormwater Educator continued to advertise online lessons, reach out to teachers, and schedule virtual classroom visits. When giving school presentations, the Educator ensures that the information provided aligns with curriculum standards. Hence, the presentations relate to what the students are learning and reinforce what the teacher has taught. The Educator has created online content for teachers to use for online instruction and continues to look for ways to enhance virtual learning.

The Clean Water Education Partnership (CWEP) enhances the City of Fayetteville's Stormwater Educational program by offering multiple avenues of advertising through Spectrum, Capital

Broadcasting, La Noticia, and Radio One. The Stormwater Division also shares CWEP social media posts and the CWEP educator has assisted the Stormwater Educator in programming throughout the year. CWEP hosted a Virtual Regional Creek Week, in which the Stormwater Division took part by sharing social media posts, and Fayetteville was highlighted on CWEP's Creek Week webpage.

This reporting year, the Educator used online lesson plans using an online platform called Nearpod to create an interactive environment for students to learn about the water cycle, stormwater, and macroinvertebrates.

Many of the events that the Stormwater Program is usually involved in were canceled due to the COVID-19 pandemic. The City hopes that in the coming reporting year, these events will resume.

Since the Stormwater Program's inception, a focus has been made to coordinate public education efforts between various agencies and other City departments to provide information to the public regarding stormwater pollution prevention. These agencies/departments include, but are not limited to:

- Fayetteville PWC
- Fayetteville Police Department
- Cumberland County Soil and Water Conservation District
- Cumberland County Cooperative Extension
- Cumberland County Schools
- Fayetteville/Cumberland Parks and Recreation

The following paragraphs describe some of those efforts.

Through a partnership with Stormwater, the Clark Park Nature Center and Lake Rim Park incorporate stormwater pollution prevention elements in various programs, including the Environmental Mobile Unit (EMU). Due to the COVID-19 pandemic and the closure of Parks and Recreation Facilities, Clark Park and Lake Rim could not hold events. However, the Cape Fear River Trail, which runs through Clark Park, has seen record numbers as people get out and walk the trail. The Stormwater Program maintains educational signs along the trail that educate residents and users about stormwater, the importance of wetlands, and how habitats surrounding the river benefit the City.



Photographs 4 & 5: Educational Signs on Cape Fear River Trail

Stormwater continues to promote the use of pet waste stations in the local public parks through educational materials. There are seventeen pet waste stations spread throughout these parks. The division ran academic posts on social media and FayTV bulletins throughout the year to create awareness regarding picking up after pets.

The Stormwater Educator continues to sit on the Cumberland County Green Schools Advisory Team as an advisory member. The advisory team consists of several community agencies that meet quarterly to guide the Green Schools Program throughout the school year. This Green Schools program encourages schools to reduce their waste and increase conservation to be better stewards of the environment and lower school costs. Through this partnership, the staff helped to give advice where needed. It was able to strengthen relationships with Cumberland County school personnel and form relationships with other community partners. Throughout the COVID-19 pandemic, the Green Schools Advisory Team has continued to meet virtually via Google Meets.

Section 4: Public Involvement and Participation

4.1 Volunteer Involvement Program

The City of Fayetteville, through the Parks and Recreation Department, coordinates two programs, Adopt-A-Street and Adopt-A-Site, to provide trash and litter pickup along streets and sites that volunteer groups have adopted. The groups volunteer to clean these areas several times a year. The City provides trash bags along with a list of safety procedures to be followed during the cleanup. The groups report their activities back to the City, and the City picks up the full trash bags for proper disposal. A total of 115 Adopt-A-Street participants take on streets throughout the City and assume the responsibility to clean the streets several times a year. Additionally, 43 specific sites throughout the City of Fayetteville have been adopted and cleaned regularly. These groups provide a valuable service toward improving water quality by picking up and properly disposing of trash and litter that could otherwise discharge into the City's storm drainage system during the next rain event.

The Stormwater Program continues to partner with Fayetteville Beautiful, a local affiliation of Keep America Beautiful. Fayetteville Beautiful is responsible for a citywide cleanup each spring. Fayetteville Beautiful strives to keep the City clean and educate the public about the importance of putting litter in its proper place, thus keeping it out of local rivers and streams. This past year, the Annual Clean-up was held on April 17, 2021. Volunteers collected approximately 1.75 tons of litter during the event.

4.2 Public Involvement Mechanism

The City continues to have an active Stormwater Advisory Board (SWAB) that meets regularly. The City SWAB consists of Fayetteville citizens and provides guidance and advice to the City Council about the Stormwater Management Program. Additionally, the SWAB has the powers and duty in matters relating to the administrative review of any orders or decisions made by the Stormwater Manager. The SWAB discussed several items during the past year, including approval of Drainage Assistance Projects and reviewing the Stormwater Fee. The members are ready to continue their work on the board and look forward to the next year of service.

4.3 Hotline / Help Line

Information on the City's Stormwater Hotline can be found previously in this Annual Report in Section 3.5.

4.4 Public Review and Comment

The Stormwater Plan continues to be posted on the City's Stormwater webpage for information and to seek public input. Additionally, hard copies have been made available at City Hall for any interested citizens.

4.5 Public Notice

All regular meetings, special meetings, and hearings of the Stormwater Advisory Board are filed in accordance with the North Carolina Open Meetings Law. Notices of meetings are posted in a central location in City Hall and posted on the City's website. All records, files, and accounts are considered public records provided in the North Carolina General Statutes.

The Stormwater Program advertises in the Fayetteville Observer when necessary for Public Hearing Notices to notify residents about proposed changes to the Stormwater Management Ordinance.

Section 5: Illicit Discharge Detection and Elimination (IDDE)

5.1 Ordinance Administration and Enforcement

Article II. Illicit Connections and Improper Disposal of Chapter 23 Stormwater Management became effective in the City in July 2009. Prior to that, the City had been covered under Cumberland County's Ordinance as part of the previous joint Permit with the County. The City's Ordinance contains the same provisions as the previous County Ordinance. The Ordinance makes it illegal to place, deposit, or discharge anything except for stormwater runoff into the storm drainage system. There

are some "DEQ approved" exceptions, but overall the Ordinance is very inclusive. The Ordinance provides City staff with a right-of-entry to private property, including buildings, for enforcement actions when required. A Schedule of Civil Penalties, reviewed and approved annually by the City Council on the City's Fee Schedule, details the fines and penalties associated with ordinance violations. The Ordinance is available to the public online through the City's Stormwater website or www.online.encodeplus.com/regs/fayetteville-nc/. During the reporting year, the inspectors issued a total of 18 Notices of Violation (NOV).

5.2 Stormwater System Inventory

The City has previously inventoried the stormwater system that is considered part of the public system. The inventory contains all stormwater structures and conveyances within the public right-of-way. The system follows its outfalls into the Waters of the State. The parts of the stormwater system that originate on private property are not part of the inventory. The inventory is updated with new structures and conveyances constructed through as-builts submitted to the City at project completion.

Stormwater continues to utilize the stormwater inventory to detect and eliminate illicit connections and improper disposal and ensure that all structures and conveyances are functioning as intended. This information is also being used to schedule maintenance by the City of Fayetteville, along with NCDOT. The stormwater system inventory was instrumental in identifying outfalls to Waters of the State that need to be monitored as part of the field screening process. The stormwater system inventory was also proactively utilized to identify existing culverts under roadways that warranted inspection to detect possible defects or structural problems.

5.3 Inspection / Detection Program

The City investigates possible illicit connections or improper disposal activities to detect and eliminate them. The City acts as the enforcement agent and has the authority to issue fines. Additionally, during any enforcement action, the Inspector will educate the violator on stormwater quality and how similar situations can be avoided in the future. The City followed up on 28 documented work orders as a potential illicit connection or improper disposal. Many of these work orders involve improper disposal of yard waste, automotive fluids, sediment, and two that involved restaurants improperly disposing of waste, which are considered improper disposals according to the Ordinance. Suppose the potential violation is not obvious, or the need arises to identify a pollutant more accurately. In that case, the Stormwater Inspectors will collect samples and conduct water quality monitoring on an as-needed basis. As detailed later in this Annual Report, the City works closely with the NCDEQ Land Quality Section's regional office in Fayetteville to correct the sediment situations and issue possible fines where warranted.

During the stormwater system inventory, the City located and identified all known outfalls to Waters of the State regardless of their size. As the City has completed the stormwater inventory, data has been used to identify all major outfalls to Waters of the State 36 inches and greater. The City has identified 279 major outfalls to Waters of the State during this reporting period. The City completed an initial dry weather screening of all the major outfalls once their location was established to create a baseline. Each year, the City aims to screen 100% of the identified outfalls for dry weather flows and evidence to detect and eliminate illicit connections or improper disposal. However, if all major outfalls cannot be screened, those not screened in a given year are placed on the following year's list and are the first to be screened. Therefore, most major outfalls are screened

every year, but they are screened every two years at a minimum. The results of the screenings are recorded in an Excel spreadsheet and are considered permanent records. During this reporting year, 100% of the major outfalls were screened. During inspections of the outfalls, the Inspector noted several outfalls had heavy vegetation and iron bacteria present. Some outfalls also had issues present that were due to construction nearby.

All of the major outfalls were screened for dry weather flows during this reporting year. The table below reflects the number of outfalls in each of the respective drainage basins.

<u>BASIN NAME</u>	<u># OF OUTFALLS</u>	<u>BASIN NAME</u>	<u># OF OUTFALLS</u>
Beaver Creek 1	34	Carvers Creek	10
Beaver Creek 2	26	Cross Creek	41
Beaver Creek 3	10	Little Cross Creek	26
Blounts Creek	48	Little Rockfish 1	12
Bones Creek	18	Little Rockfish 2	2
Buckhead Creek	19	Rockfish	2
Cape Fear 1	16	Stewarts Creek	1
Cape Fear 2	14		

Culvert Inspection Program

In November 2013, Stormwater developed a comprehensive Culvert Inspection Program to monitor the culverts under existing roadways (both City and NCDOT) within the City limits. Culverts are essential to the City's infrastructure, as they help control and direct the flow of runoff away from City streets during rain events. The City has identified over 300 culverts that are inspected yearly. These culverts are not only inspected for functionality but water quality issues as well.

Inspections are conducted by walking mapped areas of culverts that have been identified. Several data types are collected during the inspection, such as the culvert's condition, debris/sediment found, percentage of culvert filled, a severity rating, flowing water, and any obvious water quality issues (i.e., color, sheen, turbidity). All analysis is done in the field and is addressed with appropriate staff. If water quality issues are present, samples are collected and tested as needed for various water quality issues to include: detergents, total chlorine, total copper, pH, turbidity, dissolved oxygen, and conductivity.

During the reporting year, 316 culverts were inspected. Most of the 316 culverts inspected are in good condition, with only a few having erosion issues and some heavy vegetation. If maintenance work is needed in any of the culverts, the appropriate agency responsible for the culvert is notified. The City Streets Superintendent is notified for City-maintained culverts, and for NCDOT-maintained culverts, the local NCDOT Maintenance Engineer is notified. The Stormwater Program aims to identify issues with the City's infrastructure and correct them before becoming a severe or dangerous problem through the Culvert Inspection Program.

Coordination with Fayetteville Public Works Commission (PWC)

Stormwater and PWC continue to work jointly on promoting water quality issues through their public relations programs. Additionally, Stormwater forwards potential sanitary sewer leaks to PWC upon discovery. Likewise, PWC alerts Stormwater anytime there is a sanitary sewer overflow that would potentially impact the water quality of the City's stormwater drainage system

and, more importantly, local streams. In cases of sanitary sewer overflows, Fayetteville PWC sends email messages to both the Stormwater Manager and the Stormwater Inspections Supervisor detailing the specifics of the occurrence. Responses by Stormwater may vary depending on the nature of the problem and the threat to water quality. Therefore, there is open communication and continuous dialogue between these two agencies.

During the reporting year, PWC notified Stormwater and NCDEQ of 19 sanitary sewer overflows. Information on the overflows is as follows:

Spill Volume in Gallons	Incident Date	Incident Location	Fayetteville City Limits
48,000	August 8, 2020	5400 Ramsey Street	yes
34,630	September 1, 2020	2541 Caledonia Circle	yes
19,200	September 30, 2020	313 Wareham Court	yes
495	October 19, 2020	6076 Lakeway Drive	yes
3,420	January 4, 2021	528 Randolph Avenue	yes
8	January 12, 2021	1206 Weeping Willow Way	yes
1,710	February 1, 2021	797 Conestoga Drive	yes
11	February 3, 2021	6105 Long Creek Court	yes
28	February 4, 2021	2131 Sapona Road	yes
5	February 16, 2021	4210 Cliffdale Road	yes
650	February 19, 2021	2310 Gunston Court	yes
130,500	March 2, 2021	5400 Ramsey Street	yes
15	March 10, 2021	308 Hinsdale Avenue	yes
100	April 9, 2021	437 Tradewinds Drive	yes
Spill not observed by FPWC staff; evidence observed in the yard around customer cleanout	April 12, 2021	825 Dwain Drive	yes
690	April 20, 2021	5595 Whithorn Court	yes
1625	May 8, 2021	3069 Boone Trail Extension	yes
415	May 16, 2021	2230 Waco Drive	yes
495	June 28, 2021	146 Lofton Drive	yes

Coordination with County Health Department

Stormwater continues to forward discoveries of failing and potentially failing septic tanks to the Cumberland County Health Department and works with their personnel as needed to resolve the matter. The number of septic tank failures within Fayetteville's city limits was not readily available because, at the time of this report, the County had not finished its Annual Report. When issues arise, they are addressed by repairing the system or connecting to a sanitary sewer. Additionally, Stormwater has coordinated with the County Health Department to resolve stagnant water and mosquito problems.

Sanitary Sewer Extension

In addition to the above coordination with the County Health Department, Cumberland County properties primarily on septic tanks continue to be annexed into Fayetteville. As a result, these properties will be converted over time to the sanitary sewer. Thus, the proliferation of septic tanks in the urbanized area continues to be reduced. Therefore, reducing the opportunity where septic tanks can fail can impact the local water quality.

5.4 Employee Training

Stormwater has documented "selected" training that each of the Stormwater staff has received over time. The Inspectors have attended a variety of internal and external classes, training seminars, and certification programs. Thus, each inspector has had adequate training to effectively inspect illicit connections, industrial facilities, stormwater SCMs, etc. Inspectors are also given opportunities for on-the-job training in each of these areas. Some of the major certifications that the Inspectors continue to receive training on are:

- Illicit Discharge Detection and Elimination Training
- Hazardous Materials Operations/OSHA Level II Chemical Spill Response
- Stormwater Permit and SWPPP Compliance Training
- Stormwater SCM Maintenance Training
- Erosion and Sediment Control Training I and II
- NPDES Certified Stormwater Inspector
- NC Notary Training
- Surface Water Identification Training and Certification
- OSHA 10 Hour Safety Course

Stormwater Inspection Staff attended the Citiworks Innovate conference. This interactive two-day event focused on user engagement with communities through asset management, technology, and collaboration with partners in GIS intelligence.

Engineering and Stormwater staff attended the virtual State Floodplain Managers Annual National Conference. The conference provided training and speakers on a wide variety of topics for flood plain managers, collaboration, and connecting with others in the profession.

Engineering Division staff received training on the Stormwater SCM Reviewer Certification through North Carolina State University. The team recertifies their certification as it expires. Staff also attended classes on Geographic Information Systems (GIS) and Low Impact Development (LID) to stay current with these programs.

Stormwater continues to utilize the online training program to provide annual stormwater pollution prevention training to City employees. FAST Bus Garage employees and Parks and Recreation Employees received their training via this online program during this reporting year.

Staff attended the virtual NCDEQ workshop entitled "WOW-How to Rock Your MS4 Audit". This workshop focused on what to expect during an MS4 audit. Other municipalities provided advice on how to prepare for an upcoming audit with NCDEQ.

5.5 Public Education and Outreach

Ongoing inspection visits of specific businesses such as commercial car washes, carpet cleaners, lawn care services, charitable car washes, etc. ensure continued education about proper material disposal. The City provides free educational videos to businesses and other entities who may pose a potentially high risk for pollution to educate them on stormwater pollution prevention. A description of these videos can be found in Section 8.9 (Employee / Staff Training) of this report. Follow-up investigations and monitoring occur on all potential illicit connections and improper disposal activities.

5.6 Public Reporting Mechanism

Information on the City's Stormwater Hotline can be found previously in this Annual Report in Section 3.5.

Section 6: Construction Site Runoff Controls

6.1 Locally Delegated Program

The City does not currently have a locally delegated erosion control program for administering a Construction Site Runoff Controls Program. This program has been and is now provided by the local office of the NCDEQ Land Quality Section. Even though the City's existing Construction Site Runoff program is handled by the local office of the NCDEQ Land Quality Section, the City continues to aggressively inspect construction sites brought to their attention through complaints or other sources. The City developed a standard operating procedure (SOP) that provides a step-by-step outline of how to perform the inspection and any needed follow-up. These activities are fully coordinated with NCDEQ Land Quality Section. There continues to be an excellent working relationship between the City and NCDEQ to address all problems associated with construction sites.

Additionally, the above-referenced program by NCDEQ's Land Quality Section regulates construction sites that are one (1) acre and larger. The City considers smaller sites as potentially discharging sediment and performs inspections, and pursues enforcement measures through our local Ordinance when needed.

Section 7: Post-Construction Site Runoff Controls

7.1 Post-Construction Stormwater Management Program

During the last year, the City continued to perform engineering reviews of new development plans, commercial and single-family, based on the City's Stormwater Management Ordinance, Chapter 23 of the City of Fayetteville's Code of Ordinances. Article III, Stormwater Control, requires stormwater SCMs to control peak discharge on new development and redevelopment so the post-development peak discharge rate will be no greater than the predevelopment peak discharge rate. This provision minimizes the downstream flooding impacts arising from new development. In February 2012, the City adopted proposed revisions to Article III to make the Ordinance compliant with Phase II post-construction requirements. The Division of Water Quality (DWQ) subsequently approved the Article. Based on the State's approval, the City of Fayetteville has delegated the authority to administer the

post-construction program on a local level. Therefore, the Ordinance contains both stormwater quantity and quality provisions. Last of all, and to address the concern regarding the ongoing maintenance of stormwater facilities in single-family subdivisions, the City decided to accept the functional maintenance responsibility for these facilities if the developer requests such.

During this reporting year, no changes were made to the Ordinance. Staff continues to review the Ordinance to ensure that it serves its purpose the way it is written. Additionally, City staff regularly meets with the Homebuilders Association of Fayetteville (HBAF) as the City's Post-Construction Stormwater Management Program continues to evolve. Thus, there is an ongoing dialogue with the development community on the Ordinance, its provisions, and its implementation.

The above-referenced Stormwater Management Ordinance is available on the City's website as well as through the Internet at <http://www.online.encodeplus.com/regs/fayetteville-nc/>.

7.2 Post-Construction SCM Strategies

The above referenced Article III utilizes the "Stormwater Design Manual" as developed by the North Carolina Division of Water Quality. Therefore, local engineers and developers can utilize any of the SCMs in the Manual to address their post-construction site runoff control requirements. Currently, the City of Fayetteville utilizes the State's Stormwater Design Manual in its locally delegated Water Supply Watershed and Phase II Stormwater Programs.

Article III requires the long-term operation and maintenance of structural SCMs by the property owner. This is accomplished by requiring that the structural SCM be inspected annually and the inspection report submitted to the City of Fayetteville. The inspection and report are designed to determine any maintenance needs and how they are to be repaired. Article III requires that the inspection be performed and the report signed by a qualified professional. The City's Stormwater Management Ordinance defines a qualified professional as "a qualified registered North Carolina professional engineer, surveyor, landscape architect, soil scientist, aquatic biologist, or a person certified by the North Carolina Cooperative Extension Service for stormwater treatment practice inspection and maintenance."

The exception to the above is in single-family subdivisions where the developer requests that the City provide the functional maintenance responsibility for the structural SCM. In these cases, the City performs the annual inspection and determines any functional maintenance needs. If necessary, City resources provide the needed repairs. The property owners in the subdivision are still responsible for routine maintenance such as grass cutting, trash removal, and landscaping.

The engineering staff reviewed 30 plans for initial compliance with the Stormwater Ordinance and Administrative Manual and other local requirements during the reporting year and had 27 plans resubmitted for review. Additionally, inspections were made at various stages of the SCM installation process to ensure that the SCM will be functional once the project is complete.

7.3 Deed Restrictions and Protective Covenants

Section 23-32 Minimum Stormwater Quality Control Requirements of Article III of the Ordinance contains the following provision:

The approval of the stormwater permit shall require an enforceable restriction on property usage that runs with the land, such as a recorded deed restriction or protective covenants, to ensure that future development and redevelopment maintains the site consistent with the approved project plans.

7.4 Operation and Maintenance Plan

Section 23-27 Plan Requirements of Article III of the Ordinance contains the following provision:

A plan for maintenance of privately-owned stormwater management facilities shall be included as part of the stormwater design plan, which as a minimum shall specify the following:

- a. Types of maintenance activities which should be anticipated so that the proposed drainage system and stormwater management facilities will operate as designed.*
- b. The frequency and amount of maintenance that should be anticipated.*
- c. The equipment that will be required to perform the needed maintenance.*
- d. Name, address, and telephone number of the party responsible for maintenance.*

Section 23-39 outlines the operation and maintenance agreement requirements, which must be executed on all privately-owned stormwater management facilities. The city shall provide a standard agreement for this purpose.

Please note that Article III of the Ordinance requires that the above Operation and Maintenance Plan be submitted to the City for review and approval prior to the issuance of a permit for the construction of the improvements.

7.5 Setbacks for Built-Upon Areas

Section 23-32 Minimum Stormwater Quality Control Requirements of Article III of the Ordinance contains the following provisions:

For low-density projects:

Built-upon area shall be at a minimum of 30 feet landward of all perennial and intermittent surface waters draining less than or equal to 640 acres. Built-upon area shall be at a minimum of 75 feet landward of all perennial and intermittent surface waters draining greater than 640 acres.

For high-density projects:

Built-upon area shall be at a minimum of 50 feet landward of all perennial and intermittent surface waters draining less than or equal to 640 acres. Built-upon area shall be at a minimum of 75 feet landward of all perennial and intermittent surface waters draining greater than 640 acres.

7.6 Education and Training Program

Stormwater maintains an Administrative Manual that details how stormwater plans are prepared, submitted, and reviewed by the City. The Manual outlines the entire process from approval of the construction plans to the stormwater control measures' inspection and approval (SCMs). The Manual was specifically prepared to educate and train engineers and developers on the new requirements for Post-Construction Site Runoff Controls. The City engaged a Stakeholder Committee consisting of local engineers and developers to assist in developing the Administrative Manual.

Since the Administrative Manual became effective in February 2012, local engineers and developers have used it to prepare and submittal plans to the City. In particular, the Appendices contain numerous forms required during the design, construction, and closeout phases of the stormwater SCMs. Additionally, City staff uses the Manual to review and approve all stormwater projects' design, construction, and closeout. In particular, the Appendices contain numerous form letters that the City utilizes to approve, disapprove or issue notices of violation for all phases of a stormwater project. Stormwater also plans to regularly review and update the Administrative Manual to reflect any updates to Article III of the Ordinance (Stormwater Control) or other procedural modifications. The Administrative Manual is available to the public on the City of Fayetteville Stormwater website (www.fayettevillenc.gov/stormwater).

Section 8: Pollution Prevention and Good Housekeeping for Municipal Operations

8.1 Operation and Maintenance Program

The City provides an extensive network of municipal operations designed to keep these operations and services functioning properly. These operations directly impact the storm sewer system, such as storm sewer system maintenance and street sweeping, and indirectly, landscape management and municipal building maintenance. The cumulative impact of all these operations on the storm sewer system can potentially be significant, so it is important to have operation and maintenance programs that consider impacts on the storm sewer system.

First of all, the City has developed a list of its facilities that have significant potential for generating polluted stormwater runoff. A list of these facilities is provided in Section 8.2. During this past year and many previous years, the Stormwater Inspectors have inspected each of these facilities for any situations that may generate polluted stormwater runoff. Any concerns that are found during the initial inspection are always verified and corrected during follow-up inspections.

Also, the Stormwater Program is in ongoing contact with those other City operations that have the potential for impacting stormwater runoff. In particular and as outlined in Section 5.4, Stormwater oversees and coordinates various training opportunities for City employees, the FAST Bus Garage. Additionally, City employees are reminded about how their actions can impact stormwater runoff quality through the Public Education and Outreach Program. This reporting year, FAST Bus Garage and Parks and Recreation were trained using the Online Training system. Due to mass gathering limits and the limitations of computers with Street maintenance staff, Streets maintenance staff were given training packets that were signed off once the employee had read through the packet.

Recycling

Regarding the recycling of household items, the City of Fayetteville's Solid Waste Division provides a curbside recycling program for its citizens where recyclables are picked up weekly. Citizens are given a choice whether to use the standard 36-gallon rollout container or purchase a 96-gallon rollout container. Items suitable for recycling are glass bottles and containers, plastic containers, aluminum cans, steel cans, newspapers, corrugated cardboard and food boxes, and mixed paper. The recycling program reduces the amount of waste going to the landfill and reduces the opportunity for these items to end up in the storm drainage system. The City of Fayetteville also has seven sites where recyclable items can be dropped off throughout the city, including recreational centers and fire stations.

Household Hazardous Waste

The Cumberland County Household Hazardous Waste (HHW) Facility continues to dispose of household hazardous waste materials properly. The HHW Facility reported that 11,876 pounds of household hazardous waste had been collected and processed during the past year.

Used Oil Collection

The used oil recycling program continued in the private commercial sector. Also, the County Solid Waste Department provides used oil recycling at its rural container sites and the Ann Street Landfill and Household Hazardous Waste (HHW) Facility. The HHW Facility reported that 2,143 pounds of motor oil were collected last year.

8.2 Facility Stormwater Pollution Prevention Plans

In previous years, Site Pollution Prevention Plans (SPPP) have been developed for all of the City of Fayetteville facilities listed in Section 8.3. The SPPPs are used as an implementation guide for maintaining good housekeeping and reducing stormwater pollution. Topics covered in the SPPP include best management practices, monitoring, training, inspections, spill prevention/response, vehicle/equipment cleaning, and preventative maintenance. Pertinent staff from each facility was trained on their respective Site Pollution Prevention Plan when the plan was developed and provided to the facility.

8.3 Facility Inventory and Site Inspections

Facility	Industrial Permit	Physical Address
PWC Wastewater Treatment Plant (Cross Creek)		601 North Eastern Boulevard
PWC Water Treatment Plant (P.O. Hoffer)		502 Hoffer Drive
PWC Water Treatment Plant (Glenville Lake)		628 Filter Plant Road
PWC Electrical Storage Yard		1035 Old Wilmington Road
PWC Fleet Maintenance Facility		1035 Old Wilmington Road
PWC Electric Generation Plant (Butler Warner)		2274 Custer Avenue
Fayetteville Regional Airport	Yes	400 Airport Road
Fayetteville Area System of Transit Bus Garage	Yes	455 Grove Street
Solid Waste Facility		455 Grove Street
Building Maintenance Facility & Fueling Station		325 Grove Street
Street Division Facility		335 Alexander Street

Milan Street Storage Yard		400 Milan Road
Marsh Street Storage Facility and Truck Wash		704 Marsh Street
Parks and Recreation Maintenance Facility		602 Ann Street
Parks and Recreation Maintenance / Storage Facility		214 Gray Street
Waste Industries Transfer Station		583 Winslow Street

Fayetteville Public Works Commission (PWC) Wastewater Treatment Plant (Cross Creek)

The PWC Wastewater Treatment Plant at Cross Creek currently operates under a State Non-Exposure Permit (NCGNE1080). The Cross Creek Wastewater Treatment Plant was inspected on May 25, 2021. No apparent issues with the facility were found. The Supervisor of the facility was emailed the inspection summary dated June 1, 2021.

Fayetteville Public Works Commission (PWC) Water Treatment Plant (P.O. Hoffer)

The Hoffer Treatment Plant was inspected on June 10, 2021. There were no apparent issues at the facility. The Supervisor of the Hoffer Water Treatment Plant was emailed the inspection summary dated June 14, 2021.

Fayetteville Public Works Commission (PWC) Electrical Storage Yard

The PWC Electrical Storage Yard was inspected on June 17, 2021, and noted one area of concern. PWC Environmental Compliance staff was informed of the inspection via a letter from Stormwater written on June 21, 2021.

Fayetteville Public Works Commission (PWC) Fleet Maintenance Facility

The PWC Fleet Maintenance Facility was inspected by Stormwater on June 17, 2021, and noted one area of concern. PWC Environmental Compliance staff was informed of the inspection via a letter from Stormwater written on June 21, 2021.

Fayetteville Public Works Commission (PWC) Electric Generation Plant (Butler Warner)

The PWC Butler Warner Electric Generation Plant currently operates under a State Industrial Permit (NCS000369). This facility was last inspected by Stormwater on May 19, 2021. There were no issues found at the inspection time, and the Supervisor was sent an inspection summary via email on May 24, 2021.

Fayetteville Regional Airport

The Fayetteville Regional Airport currently operates under Certificate of Coverage Number NCG150056, issued on June 4, 2010. The NC Division of Water Quality reissued the General Permit (NCG150000) for this Certificate of Coverage on September 1, 2014. This facility was last inspected by Stormwater on October 15, 2020. There were no discrepancies noted during the inspection, and the Supervisor was sent an inspection summary via email on October 19, 2020.

Fayetteville Area System of Transit (FAST) Bus Garage

The FAST Bus Garage was inspected on March 29, 2021. During the inspection, the inspector noted several items of concern. The Facility Supervisor was notified of the inspection summary via letter dated April 6, 2021.

Solid Waste Facility

The Solid Waste Facility is attached to the FAST Bus Garage and was inspected on March 29, 2021. During the inspection, the inspector noted several items of concern. The Facility Supervisor was notified of the inspection summary via letter dated April 6, 2021.

Building Maintenance Facility and Fueling Station

The Building Maintenance Facility and Fueling Station were inspected on June 28, 2021. During the inspection, the inspector noted several items of concern. The Facility Supervisor was notified of the inspection summary via letter dated July 6, 2021.

Street Division Facility

The Street Division Facility was inspected on June 22, 2021. During the inspection, the inspector noted one item of concern. The Streets Division Superintendent was notified of the inspection summary via a letter dated July 6, 2021.

Milan Road Storage Yard

The Milan Yard Facility was inspected on June 22, 2021, and one concern was noted during the inspection. The Superintendent of Street Maintenance notified the inspection summary via a letter dated July 6, 2021.

Marsh Street Storage Facility and Truck Wash

The Marsh Street Storage Facility was inspected on June 22, 2021, and one concern was noted during the inspection. The Superintendent of Street Maintenance was notified of the inspection summary via a letter dated July 6, 2021.

Parks and Recreation Maintenance Facility on Ann Street

The Ann Street Facility was inspected on June 28, 2021. During the inspection, the inspector noted several items of concern. The Facility Supervisor was notified of the inspection summary via letter dated July 6, 2021.

Parks and Recreation Maintenance / Storage Facility on Gray Street

The Gray Street Facility was inspected on June 28, 2021. During the inspection, the inspector noted several items of concern. The Facility Supervisor was notified of the inspection summary via letter dated July 6, 2021.

GFL Transfer Station

The GFL Transfer Station currently operates under a State Non-Exposure Permit (NCGNE0744). The GFL Transfer Station was inspected on May 11, 2021. During the inspection, the inspector noted several items of concern. The Facility Supervisor was notified of the inspection summary via letter dated May 17, 2021.

8.4 Municipal Spill Response Procedures

Spill Response Procedures have been developed and incorporated into the previously mentioned Site Pollution Prevention Plans the facilities listed below. Within the SPPPs, the municipal spill response procedures for each facility have been identified and outlined.

Spill response and prevention training for Street Maintenance and Parks and Recreation is generally conducted alongside good housekeeping training. Due to COVID-19, all training was conducted either online or through packets to satisfy mass gathering safety requirements.

Spill Prevention, Control, and Countermeasure (SPCC) Plans have been developed for the following:

- Milan Road Storage Yard located at 400 Milan Road
- Marsh Street Facility located at 704 Marsh Street
- Street Maintenance and Traffic Services Facility located at 335 Alexander St
- Building Maintenance, Parks and Recreation, and Fueling Station, located at 280 Lamon St
- Parks and Recreation Maintenance Facility located at 602 Ann Street
- Parks and Recreation Maintenance/Storage Facility located at 214 Gray Street
- PWC Wastewater Treatment Plant (Cross Creek) located at 601 North Eastern Boulevard
- PWC Water Treatment Plant (P.O. Hoffer) located at 502 Hoffer Drive
- PWC Water Treatment Plant (Glenville Lake) located at 628 Filter Plant Road
- PWC Electrical Storage Yard and Fleet Maintenance Facility located at 1035 Old Wilmington Road
- PWC Electric Generation Plant is located at 2274 Custer Avenue.

As part of these SPCC Plans, Facility Maps showing the onsite stormwater system and flow directions have been developed to control any spills that might occur.

8.5 Vehicle and Equipment Cleaning Operations

The Marsh Street Truck Wash is used to wash trucks, street sweepers, other heavy equipment, etc. The facility was constructed with sumps in the drain inlets where sediment will settle out and later be removed and disposed of properly by the City's Jet-Vac. The system also drains to an oil/water separator where the discharge is treated. Finally, the wash water is eventually discharged to the sanitary sewer, not the storm drainage system.

8.6 BMP Evaluation for Streets, Roads, and Public Parking Lots Maintenance

Based on the City's previous evaluation of BMPs in 2016 to reduce polluted stormwater runoff from municipally-owned streets, roads, and public parking lots within the corporate limits, the City continues to follow the select BMPs to implement fully:

- Street Sweeping
- Yard Waste Containerization
- Loose Leaf Collection
- Spill Response (HAZMAT)
- Person Street "Greenstreet" Streetscape
- Public Parking Lots
- Animal Control
- Dog Park
- Coordination with NCDOT

Each of the above BMPs is detailed in Section 8.7.

8.7 BMP Implementation for Streets, Roads, and Public Parking Lots Maintenance

Street Sweeping

Street Sweeping operations are an effective best management practice for water quality, in that it removes potential pollutants from entering the storm drainage system during rain events. The Stormwater Program now provides all funding for the City's street sweeping operations. The City Street Maintenance Division performs this service on City streets and some NCDOT roads, including selected thoroughfares, through a maintenance agreement. Regarding the street sweeping schedule, the thoroughfares are typically swept at night due to less traffic. Streets are swept ten (10) times during the year or about once per month except during the heart of winter. The sweeping process requires a water spray that does not work well in cold temperatures. The thoroughfare schedule includes NCDOT streets through the agreement previously referenced. Residential/subdivision streets are swept four (4) times per year plus shortly behind the leaf collection as close as possible. Thus, most residential / subdivision streets are swept five (5) or six (6) times per year. During the past reporting year, street sweepers removed 4,401 tons of debris from City's streets.

Yard Waste Containerization

The City's Solid Waste Division collects containerized yard waste once per week throughout the year. Citizens can purchase a brown yard waste container through Solid Waste or use clear plastic yard waste bags or other approved containers to containerize debris. Containerization of yard waste and debris helps the city look appealing and prevents this material from flowing into the storm drainage system. Details regarding yard waste pickup are outlined in Chapter 22, Article I of the City's Solid Waste Ordinance. Stormwater promotes yard waste containerization through its educational program to help prevent stormwater pollution.

Loose Leaf Collection

Stormwater promotes the City of Fayetteville's loose-leaf collection. City residents can place their loose leaves and pine straw at the curb for pickup during the fall leaf season during specific collection periods. This program provides the timely removal of the leaves before they are washed into the storm drainage system. Stormwater coordinates with Solid Waste to educate citizens on the proper placement of their loose yard waste to ensure it does not reach the drainage system. At other times throughout the year, Chapter 22, Article I of the City's Solid Waste Ordinance, requires containerization of all leaves for efficient and effective pickup. Again, the containerization requirement keeps the leaves from being washed down streets and other conveyances and into the storm drainage system.

Spill Response

The Hazardous Materials (HAZMAT) Team continues to provide regional emergency spill response. The HAZMAT unit members are skilled firemen and certified in hazardous materials by the State of North Carolina. Firefighters who are part of the HAZMAT team also receive a wide variety of training to handle different hazardous materials and situations once they are assigned. The State of North Carolina also contracts the HAZMAT team as one of seven Regional Response teams. The team is in charge of responding to incidents that cover a twelve-county area. Through these response teams, counties in the region receive the necessary help and materials to handle significant HAZMAT calls.

HAZMAT responds anytime there is an opportunity where hazardous materials or substances might be discharged to the environment. The Stormwater Program is concerned about those

incidents where hazardous materials or substances might be discharged into the storm drainage system and possibly into the Waters of the State. HAZMAT responded to 12 documented spills or releases within the City Limits that could impact the storm drainage system during the reporting year.

Stormwater takes an active role in any HAZMAT spill response where material could potentially enter the drainage system and, eventually, Waters of the State. Stormwater will plug any drainage lines in the vicinity of a spill where the spill might enter a portion of the drainage system. If necessary, Stormwater will contact an environmental firm qualified to clean materials out of the storm drainage system. Stormwater coordinates the efforts to ensure that hazardous materials do not reach the Waters of the State.

Person Street "Greenstreet" Streetscape

Previously, City Engineering completed the design on a "Greenstreet" project for two blocks of Person Street (a major corridor for Downtown Fayetteville). Person Street is located upstream and discharges its runoff to Blounts Creek. This project's design incorporates innovative Low Impact Development (LID) devices, which aids in runoff reduction and pollution reduction. Devices such as linear bio-filtration bump-outs, Silva Cells, and an experimental undersized permeable pavement design are used in this project. These devices meet LID volume reduction and quality improvement goals for this project. Blounts Creek is a biologically impaired stream upstream of the Greenstreet project and benefits from improved water quality from the devices.

NC State University's Biological and Agricultural Engineering Stormwater Engineering Group provided the final report for the Person Street research project. The results will be disseminated nationally and internationally through publication in scientific journals and technical papers. Through this dissemination of information, it is the objective that LID implementation in urban environments will be more widely used and accepted.

The City continues to maintain the educational signs that describe the stormwater control measures along the Greenstreet.



Photographs 6 & 7: Person Street Educational Signs

Animal Control

The City of Fayetteville follows Chapter 3, Article II of Cumberland County's Animal Control Ordinance within the City limits. This Ordinance requires owners of animals to immediately dispose of animal waste from any public or private property properly. Violators of this Ordinance can face violation notices and fines, leading to the loss of animals (until fees are paid) for habitual offenders. This ordinance helps our community to look better, and it has a positive impact on water quality.

Dog Park

A trend in many communities is to set aside a public place where owners can bring their dogs for recreation. Along those lines, Fayetteville operates the Riverside Dog Park near the Cape Fear Botanical Gardens. The park is a joint community involvement effort between the Bark for a Park committee and Fayetteville / Cumberland Parks and Recreation. There are two designated areas, one for dogs smaller than twenty-five pounds and one for larger dogs. All dogs in the park are on a leash and have licenses and tags on their collars.

Additionally, dog owners are educated and encouraged to dispose of their dog's waste properly. The park is supplied with dog waste bags to help promote this behavior. Proper dog waste disposal makes for a better park, but it also improves the stormwater runoff quality leaving the park.

Coordination with NCDOT

Stormwater continues to coordinate with the local NCDOT on various stormwater activities such as street sweeping and ditch maintenance programs and issues related to their NPDES permit implementation.

8.8 Operation and Maintenance for Municipally Owned or Maintained Structural Stormwater SCMs and Storm Sewer System

The City's operation and maintenance program for structural stormwater SCMs and the storm sewer system (including catch basins, the conveyance system, and structural stormwater controls) continue to highlight the following components and is detailed below:

- Structural Stormwater SCMs
- Maintenance Transfer Program
- Drainage Inspection
- Drainage System Maintenance
- Limited Creek Cleaning Program
- Beaver Management Program

During the reporting year, the Stormwater staff reviewed several Standard Operating Procedures (SOP) for various activities involving the inspection and maintenance of the stormwater drainage system. The SOPs are as follows:

- Storm Drainage System Maintenance and Inspection
- Catch Basin Maintenance and Inspection
- Drainage Ditch Maintenance and Inspection

Structural Stormwater SCMs

The City of Fayetteville owns or maintains several structural stormwater SCMs throughout the City. The following is a list of those structural stormwater SCMs, the type of SCM, and the entity responsible for maintenance:

Structural SCM Location	Type	Maintenance Responsibility
Airborne and Special Operations Museum	Rain Garden, Constructed Wetland, and Bioretention Areas	City of Fayetteville
Fayetteville Regional Airport	Dry Extended Detention Basin and Grassed Swale	Airport Grounds Maintenance
Swainey Avenue	Dry Extended Detention Basin	City of Fayetteville
Butler Warner Generation Plant	Wet Detention Basin	Fayetteville PWC Grounds Maintenance
Waddell Drive	Wet Detention Basin	Fayetteville PWC Maintenance
Thelbert Drive	Wet Detention Basin	Fayetteville PWC Maintenance
Fayetteville PWC Electrical Storage Yard	Sediment Basin	Fayetteville PWC Grounds Maintenance
Winslow Street Transfer Station	Wet Detention Basin, Forebay, and Sediment Baskets	Waste Management
Person Street "Greenstreet" Streetscape	Linear Bio-Filtration Swales, 13 Bio-Retention Bump-Outs, Silva Cells, Permeable Pavement, and Filterra Bioretention Systems	City of Fayetteville
James Creek North	Extended Dry Detention Basin	City of Fayetteville
Transit Multi-Model Facility	Rain Harvesting for Irrigation	Fayetteville Area Transit System (FAST)
Rosehill Road Aquatic Center	Extended Dry Detention Basin	City of Fayetteville
Fire Station #12 Hope Mills Road	Wet Detention Basin	City of Fayetteville
Westover Aquatic Center	Extended Dry Detention Basin	City of Fayetteville
College Lakes Aquatic Center	Extended Dry Detention Basin	City of Fayetteville
Lake Rim Aquatic Center	Extended Dry Detention Basin	City of Fayetteville
Fayetteville Skate Park	Extended Dry Detention Pond	City of Fayetteville
Legend Avenue Phase 1	Wet Detention Pond	City of Fayetteville

Legend Avenue Phase II	Extended Dry Detention Pond	City of Fayetteville
Rayconda Connector (Pinewood Terrace)	Wet Detention Pond	City of Fayetteville

The Stormwater Inspectors inspect each of the above SCMs on an annual basis. The Inspectors utilize the *BMP Maintenance and Inspection Checklist* as contained in Appendix 4-3 of the City of Fayetteville's "Administrative Manual for Implementation of the Stormwater Control Ordinance" for that specific structural stormwater SCM.

The annual maintenance on each SCMs is performed by personnel from the City Department or other responsible party as listed above. First of all, maintenance activities focus on issues as outlined in the above-referenced Inspection Report. Additionally, the maintenance personnel performs those maintenance tasks as outlined in the applicable *Maintenance Tasks and Schedule* contained in Appendix 4-2 (SCM Maintenance Plan) of the City of Fayetteville's "Administrative Manual for Implementation of the Stormwater Control Ordinance."

Regarding the innovative Low Impact Development (LID) devices anticipated as part of the Person Street "Greenstreet" Streetscape, Operation and Maintenance Manuals will be developed as part of the design and construction process. Once installed and properly functioning, these structural stormwater SCMs will be maintained by the Stormwater Program accordingly.

Maintenance Transfer Program

Chapter 23 (Stormwater Management), Article III (Stormwater Control) of the City of Fayetteville Code of Ordinances contains provisions that allow developers of single-family residential subdivisions to transfer functional maintenance responsibility of their SCMs to the City. This transfer takes place once the SCM has been constructed and fully functional for at least one year. The ground cover and required plant life must also be fully established before transferring functional maintenance responsibility. The homeowner association will own the property where the SCM is located. Therefore, the homeowner association will have responsibility for the routine maintenance of the facility. Routine maintenance includes the cutting of the grass, trash removal, and upkeep of the landscaping. The homeowner association is also required to remove any invasive plant life, such as cattails, hydrilla, etc.

The following is a list of those structural stormwater SCMs and the type of SCM that have been transferred to the City for functional maintenance:

Structural Stormwater SCM	Type
Lakedale Ph1	Wet Detention
Winberry Subdivision	Dry Extended Detention Basin
Stonegate Section 3 Basin A	Wet Detention
Stonegate Section 3 Basin B	Wet Detention
Tullamore Square	Dry Extended Detention Basin
Knolls on Cliffdale Basin 1	Wet Detention

The Stormwater Inspectors inspect the dry extended detention basins in the James Creek North and Winberry subdivisions annually. The Stormwater Inspectors use the *SCM Maintenance and Inspection Checklist, Dry Extended Detention Basin* as contained in Appendix 4-3 of the City of

Fayetteville's "Administrative Manual for Implementation of the Stormwater Control Ordinance" to perform these inspections.

Maintenance of these dry extended detention basins is conducted by Stormwater Program personnel based on issues highlighted in the above-referenced Inspection Report. In addition to addressing those maintenance issues observed during the annual inspection, Stormwater Program personnel perform the maintenance tasks as outlined in *Dry Extended Detention Basin, Maintenance Tasks and Schedule* contained in Appendix 4-2 (SCM Maintenance Plan) of the City of Fayetteville's "Administrative Manual for Implementation of the Stormwater Control Ordinance."

Drainage Inspection

Stormwater originally and continues to make routine inspections of the drainage system based on drainage complaints. Stormwater inspects the problem area, assesses the problem's source, then reports the issue to the appropriate agency (City Street Maintenance Division, City or County Engineering, NCDOT, etc.). Stormwater maintains a computerized database of open Work Orders until the problem is resolved. This complaint-driven process was greatly enhanced based on the results from the stormwater inventory. Therefore, based on the inventory data, the inspection and maintenance of the storm drainage system has become more efficient, effective, and systematic.

Additionally, all members of the City's Street Maintenance Crews, including the Leaf Cleaning Crews, have been instructed to observe the storm drainage system as they carry out their daily responsibilities in the field. Based on their field observations, they report any potential maintenance needs through the proper channels. The Inspectors in the Construction Management look for any drainage system maintenance needs as they inspect construction projects involving new and replacement/upgraded infrastructure throughout the City.

Drainage System Maintenance

During the last year, the City Street Maintenance Division reported that more than 101,890 linear feet of the drainage system were cleaned by the Jet-Vac process, as documented in the City's work order system. This maintenance practice provides benefits by removing sediments and other pollutants that might otherwise be washed downstream during heavy rain. During this reporting year, the Streets Division and Stormwater Program continued to use the RovverX Long-Range Pipe Inspection Crawler to assist in drainage pipe inspection. This camera system continues to aid staff in detecting issues (damaged pipes, problems with pipe joints, and potential illegal connections) within the City's piped drainage infrastructure. The camera has greatly enhanced system maintenance and upkeep while allowing for a more timely resolution to detected problems. Also, the Streets Division and Stormwater Program continue to use pole cameras to quickly and effectively address minor issues or concerns with the storm drainage system.

Limited Creek Cleaning Program

The Stormwater Division has a Limited Creek Cleaning Program, which essentially removes trash, debris, and undergrowth from the existing ditches, channels, and creek banks to proactively remove potential threats to the public right of way or city-owned infrastructure. Crews may perform limited vegetation maintenance to ensure that the character of the channel is maintained; however, the program is not intended to increase the capacity or improve any conveyance characteristics of the channel by excavation or filling; thus, the name Limited Creek Cleaning Program.

Beaver Management Assistance Program

The Beaver Management Assistance Program (BMAP) is designed to remove debris and obstructions in local waterways. Through a Cooperative Service Agreement, the City of Fayetteville partners with the US Department of Agriculture Wildlife Services (USDA APHIS WS) to provide City residents with these needed services to reduce or eliminate property damage and threats to human health and safety caused by beaver activities within the City limits. The Beaver Management Assistance Program effectively removed 62 beavers and 33 beaver dams during the reporting year.

8.9 Employee / Staff Training

During the reporting year, Stormwater staff continued to utilize the training packages "Storm Watch" and "Storm Warnings" that cover Stormwater Pollution Prevention to train City employees and make the packages available to local businesses. This past year employees from Street Maintenance, Parks and Recreation, and the FAST Bus Garage, participated in the Good Housekeeping training for City Employees. Stormwater's goal is that all departments that have the potential to pollute stormwater will receive training regularly. The materials cover the following:

- Good Housekeeping and Spill Prevention
- Vehicle and Equipment Washing, Fueling, and Repair
- Vehicle and Equipment Maintenance
- Spill Reporting and Response
- Street Maintenance
- Outdoor Storage and Management of Materials and Wastes
- Landscaping and Lawn Care
- Outdoor Manufacturing
- Dust Producing Processes

It should be noted that all current Stormwater Inspectors have a "Stormwater SCM Inspection and Maintenance Certification" as required by the North Carolina Department of Environment and Quality (NCDEQ) and the City of Fayetteville.

Section 9: Industrial Facilities Evaluation and Monitoring

9.1 Industrial Facility Inventory

The City receives a listing of all the facilities in the City of Fayetteville that have an Industrial NPDES Stormwater Discharge Permit from the local office of NCDEQ. This listing also includes those EPA Section 313 facilities located in the City of Fayetteville. The inventory comprises those facilities supplemented by field findings, Yellow Pages review, and other sources. The inventory of industries is updated annually based upon receipt of the latest listing of Industrial NPDES Stormwater Discharge Permits from the Fayetteville Regional Office of NCDEQ. Currently, the City has 25 permitted industries on the industrial list that are inspected annually.

9.2 Industrial Facilities Inspection Program

The City has developed a standard operating procedure (SOP) used by all its inspectors to inspect industrial facilities. The SOP provides a step-by-step outline of how the inspection and any needed follow-up actions are to occur. Additionally, the City has updated a previously developed standard

Inspection Form using the EPA Municipal Separate Storm Sewer System (MS4) Program Evaluation Guidance Manual. The new form is used and filled out by all of the Inspectors conducting inspections of industrial facilities. The Inspection Form contains an extensive checklist, including the following:

- Review of the Stormwater Pollution Prevention Plan (SWPPP)
- Review and inspection of all activities both inside and outside of the facility
- Observations at all stormwater outfalls
- SCMs are reviewed and their effectiveness assessed
- History of any spills or leaks are reviewed
- Photographs are taken of the facility and its activities

Industrial inspections are conducted on an annual basis. Industries have a higher potential to cause environmental harm and impact stormwater runoff; therefore, they are prioritized and inspected thoroughly. The Stormwater Inspector completes an industrial site inspection checklist report as described above for each site inspected. The inspection checklist information is transferred to an Excel spreadsheet as a permanent record. For the time period of July 1, 2020, to June 30, 2021, the City inspected all 25 of the above-referenced inventory facilities. If problems are noted during the inspection, the facility is notified of the deficiencies and instructed to make the necessary improvements to achieve compliance. Such facilities' compliance status is indicated as "pending" in the inventory to note that the facility will need to be re-inspected later to determine compliance.

During this reporting year, Stormwater inspected Valley Proteins, an EPA Section 313 facility within the City's permit jurisdiction. This facility is located on Martindale Drive. Valley Proteins was inspected on March 25, 2019, and was found to be in compliance with its Certificate of Coverage. Valley Proteins is also considered an EPA Section 313 facility due to its containment measures for the bulk storage of its chemicals. All chemical storage is properly stored and kept out of the way to prevent illegal discharge to the storm drainage system. This property will continue to be inspected by the City in the future to ensure continued compliance.

As a supplement to the industrial inspections and in a continuing effort to improve local water quality, the City has continued inspecting local area restaurants to ensure that they are practicing good housekeeping, particularly in the disposal of their cooking waste byproducts (grease). The Stormwater Inspector completes a site inspection checklist report for each restaurant inspected, similar to the industrial inspections. The inspection checklist information is transferred to an Excel spreadsheet as a permanent record. If the restaurant is in non-compliance, the inspector will issue a Notice of Violation and guide how to remedy the problem. For the time period July 1, 2020, to June 30, 2021, the City inspected 538 restaurants. There were a few restaurants that were found to be deficient in good housekeeping practices. The issues found were trash on the ground, leaking tallow bins, and grease on the ground. In each instance, the Stormwater Inspector worked with the restaurant to have the incident corrected. In 12 cases, a Notice of Violation was issued. Restaurants were given a period of time to clean up the issues, and all were brought into compliance.

When restaurant facilities are inspected, the Stormwater Inspectors provide them with educational materials and notify the owners of educational and training resources available to them through the City. Additionally, if any unresolved issues are found, a notice of violation (NOV) and possible fines can be issued.

9.3 Evaluation Measures

The Stormwater Inspector visually monitors the receiving waters at the industrial discharge point during an industrial inspection. The Inspector checks to see if the discharge has an abnormal color, odor, or sheen on the surface. The inspector also collects a sample of the discharge for visual observation and determines if any substances are suspended in the water column. If necessary, photographs are taken of the outfall. If evidence of polluted runoff is suspected, a sample of the discharge is collected and further analyzed by an approved independent local laboratory for several pollutant parameters. If pollutants are verified in the runoff, the City will immediately notify the facility and require actions to remedy the situation.

As a supplement to the major outfall inspections described earlier in Section 5.3 "Inspection/Detection Program" of this Annual Report, the City also monitors and inspects outfalls (12 inches and larger) associated with industrial activities. These inspections ensure industrial facilities are not discharging any potential pollutants to the City's storm drainage system or Waters of the State. Like the major outfall inspections, the Stormwater Inspector completes an outfall inspection checklist report for each industrial outfall inspected. The inspection checklist information is transferred to an Excel spreadsheet as a permanent record. For the time period July 1, 2020, to June 30, 2021, the City inspected 38 industrial outfalls. Some minor maintenance issues such as heavy sediment in catch basins, erosion, and ditch line maintenance were noted. No other significant water quality issues were observed.

Section 10: Water Quality Assessment and Monitoring

10.1 Water Quality Assessment and Monitoring Plan

The City's current Water Quality Assessment and Monitoring Plan was reviewed and approved by the NC Division of Water Quality via a June 12, 2013 email. The Plan details monitoring activities, parameters, and data assessment required by the Permit. The Plan specifies water quality monitoring activities to be performed quarterly at six (6) stream sites on major watersheds in the City. Monitoring is conducted for chemical and physical parameters on a fixed interval monitoring basis. Each calendar quarter (specifically, the 2nd Wednesday of the first month of each calendar quarter) is targeted for monitoring at each monitoring location. Additionally, the samples will be collected approximately 72 hours (48 to 96 hours) after rainfall has ceased. This will allow the streams to return to their normal dry weather flow depth following the rainfall.

Table 10-1 on the following page lists the water quality parameters sampled at the monitoring sites.

Stormwater staff maintains a Sample Collection Guidance Manual for the Water Quality Assessment and Monitoring Program. The document outlines detailed procedures and consistent methods for obtaining samples for the quarterly ambient in-stream monitoring program.

Table 10-1: Water Quality Monitoring Parameters

Parameter	Sample Type	Frequency
Temperature	In-situ	Quarterly
Turbidity	In-situ	Quarterly
Dissolved Oxygen	In-situ	Quarterly
pH	In-situ	Quarterly
Conductivity	In-situ	Quarterly
Total Suspended Solids	Grab	Quarterly
Total Nitrogen	Grab	Quarterly
Total Kjeldahl Nitrogen	Grab	Quarterly
Ammonia (NH ₃)	Grab	Quarterly
NO ₂ + NO ₃	Grab	Quarterly
Total Phosphorous	Grab	Quarterly
Chromium (Cr)	Grab	Quarterly
Copper (Cu)	Grab	Quarterly
Lead (Pb)	Grab	Quarterly
Zinc (Zn)	Grab	Quarterly
Fecal Coliform	Grab	Quarterly

Table 10-2 below contains a description and location of the six (6) monitoring sites in the Monitoring Plan.

Table 10-2: Description of City of Fayetteville Water Quality Monitoring Sites

Site	Stream	Location
BLT	Blounts Creek	Culvert at Campbell Avenue
XCK	Cross Creek	Culvert at Hillsboro Street
BVR	Beaver Creek	Bridge at Cumberland Road
BCK	Buckhead Creek	Culvert at Coventry Road
LRC	Little Rockfish Creek	Bridge at Lakewood Drive
CCK	Carvers Creek	Culvert at Ramsey Street and I-295

Figure 10-1 shows a map and location of the six (6) monitoring sites within the Monitoring Plan.

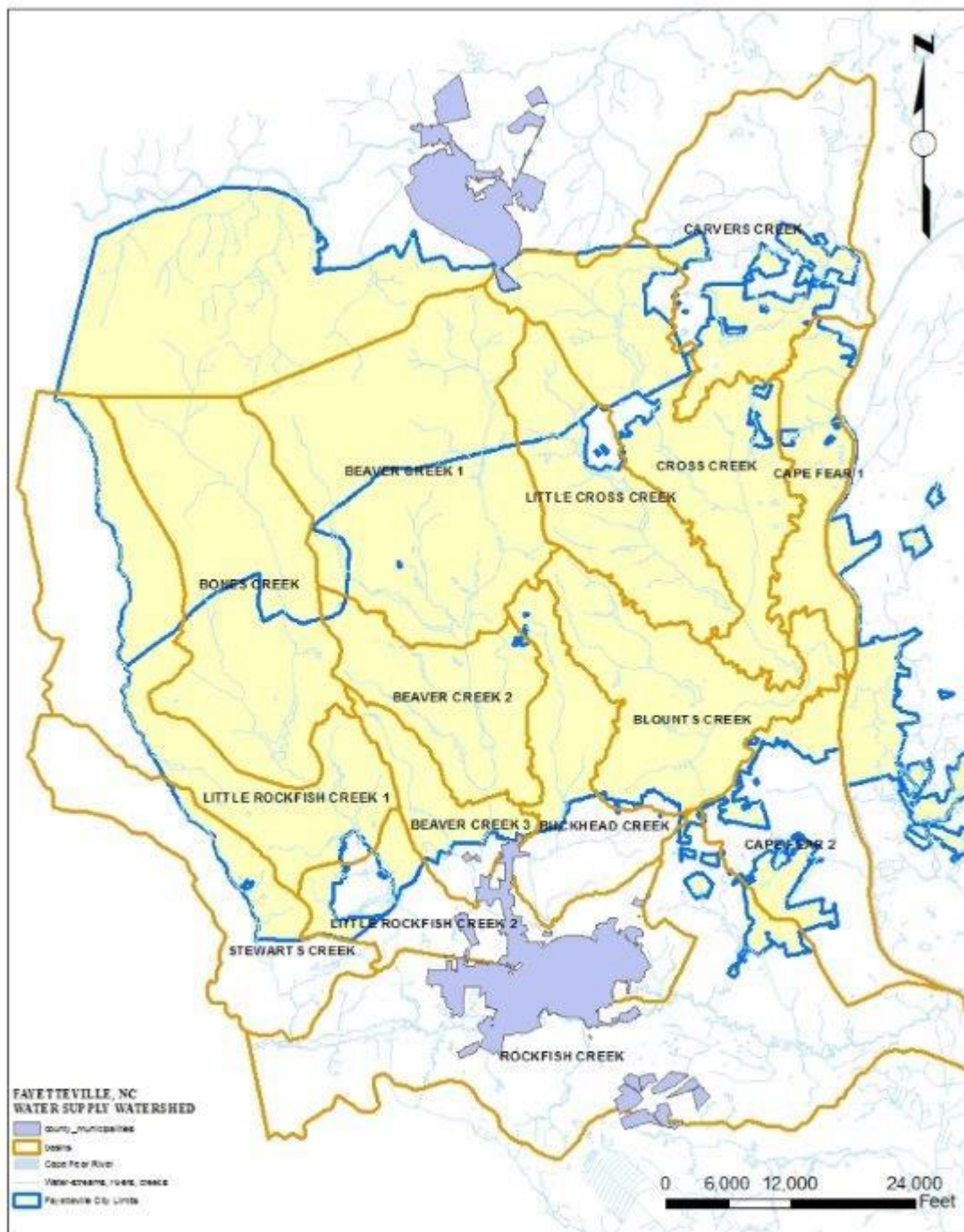


Figure 2-1: Fayetteville Jurisdiction and Drainage Basins

The City of Fayetteville
MPDES Permit No. NCS000246 - Stormwater Plan

page 4-
July 2017

Figure 10-1: Fayetteville Water Quality Monitoring Sites

10.2 Water Quality Monitoring Implementation

Stormwater has continued the in-stream ambient water quality monitoring program initiated in the fall of 2005 when four sites located along Blounts Creek, Cross Creek, Beaver Creek, and Buckhead Creek were chosen for in-stream ambient water quality monitoring. These sites were selected to avoid potential duplication of other monitoring activities by NCDEQ, Fayetteville Public Works Commission (PWC), the Middle Cape Fear River Basin Association, and the US Geological Survey (USGS).

In 2010, Stormwater evaluated the in-stream ambient water quality monitoring program and compared it to Charlotte, North Carolina. As a result of that evaluation and to get a better picture of the overall water quality throughout the City of Fayetteville, the City added two new sampling locations to the previous four locations. It started collecting samples in August of 2010. The two newer sites are located along Little Rockfish Creek and Carvers Creek. With the addition of the two locations, water quality samples are now collected and analyzed in each of the City's major watersheds. Figure 10-1 shows the location of the six monitoring sites. During this reporting year, Stormwater collected samples from each of the six sites quarterly. The in-stream ambient water quality monitoring program results are shown in Figure 10-2 for the fiscal year 2020-2021.

The parameters shown in the table's top portion are collected and reported in the field during the sample collection. The parameters shown in the middle of the table are reported from the laboratory following the sample's analysis. The parameters shown at the bottom of the table are observations made by the field personnel during sample collection.

In reviewing the results from last year (see Figure 10-2), we observe that some indication of pollution is present at each of the six in-stream monitoring stations. In an urban setting, this is to be expected. Pollutants of concern include Nutrients (as indicated by Nitrogen and $\text{NO}_2 + \text{NO}_3$) and Fecal Coliform. These parameters are detected in many of the samples. Also, elevated levels of Turbidity and Total Suspended Solids were observed in Beaver Creek during the January 2021 sampling event. This may be attributable to increased construction in the Fayetteville area due to an improving economy and large transportation projects. The Stormwater Program will pay close attention to this and coordinate with the NCDEQ Land Quality Section's local office, administering the City's Construction Site Runoff program. Since completion of the Coventry Road Storm Drainage Improvements, Fecal Coliform samples have spiked in Buckhead Creek. The inspections staff continue to monitor the area to determine the source.

CITY OF FAYETTEVILLE AMBIENT STREAM MONITORING RESULTS - 2020-2021 ANNUAL REPORT																											
SAMPLE DATE & TIME	BLOUNT'S CREEK				CROSS CREEK				BEAVER CREEK				BUCKHEAD CREEK				LITTLE ROCKFISH CREEK				CARVERS CREEK						
	BLT-001	BLT-002	BLT-003	BLT-004	XCK-001	XCK-002	XCK-003	XCK-004	BVR-001	BVR-002	BVR-003	BVR-004	BCK-001	BCK-002	BCK-003	BCK-004	LRC-001	LRC-002	LRC-003	LRC-004	CKK-001	CKK-002	CKK-003	CKK-004			
	7/15/21 @ 9:40	10-21-20 @ 9:50	1-22-2021 @ 8:45	4-7-21 @ 8:45	7/15/21 @ 9:25	10-21-20 @ 9:35	1-22-2021 @ 8:32	4-7-21 @ 8:32	7/15/21 @ 10:50	10-21-20 @ 11:15	1-22-2021 @ 10:20	4-7-21 @ 10:20	7-15-21 @ 10:10	10-21-20 @ 10:25	1-22-2021 @ 9:40	4-7-21 @ 10:20	7/15/21 @ 10:30	10-21-20 @ 10:50	1-22-2021 @ 10:00	4-7-21 @ 10:00	7/15/21 @ 8:55	10-21-20 @ 9:05	1-22-2021 @ 8:08	4-7-21 @ 8:08			
Analyst	NB/NB	NB/NCU	NB/NC	NB/NC	NB/NC	NB/NCU	NB/NC	NB/NC	NB/NC	NB/NCU	NB/NC	NB/NC	NB/NC	NB/NCU	NB/NC	NB/NC	NB/NC	NB/NC	NB/NCU	NB/NC	NB/NC	NB/NCU	NB/NC	NB/NC	NB/NC		
Hours since last rainfall	72+	72+	72+	72+	72+	72+	72+	72+	72+	72+	72+	72+	72+	72+	72+	72+	72+	72+	72+	72+	72+	72+	72+	72+			
Air Temp, F	77.4	70.7	51.9	64	74.6	75	54.6	65.3	78.8	73.4	51.5	65.3	78.4	70.2	52.7	65.5	77.3	74.1	54	66	75.5	83.3	53.9	67.2			
Water Temp, F	79.6	69.4	50.9	63.4	79.6	69.8	49.3	63.6	81.3	70.2	49.2	65.2	74.6	68.5	55.2	63.3	79.8	68.7	49	63.9	79.8	72.7	49.3	64.9			
Turbidity, NTU	0	13	32.6	4	0	14	21.1	3.5	0	17.1	39.1	9.2	2.1	11.4	29	0	0	11.4	17.7	5.8	4.4	8.8	32.4	4.7			
Dissolved Oxygen, %	6.18	9.03	7.84	5.88	6.51	11.17	7.22	5.13	5.03	7.35	6.44	6.01	6.32	7.3	6.41	6.31	5.4	8.05	8.1	5.43	5.34	8.9	9.54	6.2			
pH	6.82	6.35	5.75	6.9	6.89	6.48	6.49	6.84	6.28	6.24	6.82	6.72	5.59	5.32	4.7	6.05	6.06	5.47	6.12	6.07	6.2	5.98	6.25	6.81			
Conductivity, $\mu\text{mhos/cm}^2$	0.075	0.062	0.079	0.079	0.06	0.049	0.053	0.058	0.051	0.046	0.071	0.064	0.064	0.051	0.07	0.07	0.026	0.021	0.027	0.026	0.054	0.043	0.049	0.06			
GRAB SAMPLE	BLT-001	BLT-002	BLT-003	BLT-004	XCK-001	XCK-002	XCK-003	XCK-004	BVR-001	BVR-002	BVR-003	BVR-004	BCK-001	BCK-002	BCK-003	BCK-004	LRC-001	LRC-002	LRC-003	LRC-004	CKK-001	CKK-002	CKK-003	CKK-004			
Ammonia (NH ₃), mg/L	<0.100	0.107	0.182	0.134	<0.100	<0.100	0.147	<0.100	<0.100	0.111	0.216	<0.100	<0.100	0.157	0.127	<0.100	<0.100	<0.100	0.122	<0.100	<0.100	<0.100	0.137	0.118			
Fecal Coliform	430	140	250	460	220	130	52	120	74	72	55	63	250	160	78	300	220	80	40	18	260	130	15	72			
Total Nitrogen, mg/L	1.046	0.73936	8.9096	1.2448	0.972	0.50336	1.1326	0.9608	1.078	1.07736	1.5816	1.465	2.028	1.69036	2.0846	2.1088	0.94	0.47336	1.0756	0.9728	0.902	0.59436	1.1226	0.9498			
NO ₂ +NO ₃ , mg/L	0.346	0.37836	0.4976	0.4088	0.272	0.15036	0.3856	0.2608	0.378	0.37536	0.7656	0.588	1.328	1.39336	1.3576	1.4088	0.24	0.15436	0.3536	0.2728	0.202	0.13736	0.3856	0.1748			
Total Phosphorous, mg/L	<0.024	<0.0085	0.04	0.082	<0.024	<0.0085	0.034	0.079	<0.024	0.0092	0.052	0.1	<0.024	<0.0085	0.036	0.087	<0.024	<0.0085	0.036	0.082	<0.024	<0.0085	0.036	0.086			
TSS, mg/L	3.54	2.68	2.82	2.7	2.62	2.47	1.80	3.4	7.12	5.05	7.24	7.4	1.88	1.13	2.10	2.0	6.84	5.25	3.00	4.77	4.22	4.44	3.20	5.44			
TKN, mg/L	<0.600	0.254	8.23	0.702	<0.600	0.252	<0.600	<0.600	<0.600	0.591	<0.600	0.777	<0.600	0.14	<0.600	<0.600	<0.600	0.219	<0.600	<0.600	<0.600	0.357	<0.600	0.657			
Chromium (Cr), mg/L	<0.00350	<0.00350	<0.00350	<0.00350	<0.00350	<0.00350	<0.00350	<0.00350	<0.00350	<0.00350	<0.00350	<0.00350	<0.00350	<0.00350	<0.00350	<0.00350	<0.00350	<0.00350	<0.00350	<0.00350	<0.00350	<0.00350	<0.00350	<0.00350			
Copper (Cu), mg/L	0.00161	0.0011	<0.00100	0.00155	0.00183	<0.00100	<0.00100	0.00115	0.0011	0.00107	<0.00100	0.00155	<0.00100	<0.00100	<0.00100	0.00192	0.001	<0.00100	<0.00100	0.00106	0.00183	<0.00100	<0.00100	0.00108			
Lead (Pb), mg/L	0.00089	0.00058	0.00069	0.00079	0.00089	0.00057	<0.00050	0.0008	0.00079	0.00077	0.00087	0.00116	0.00064	0.00055	0.00061	0.00097	0.0008	<0.000500	0.00135	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500			
Zinc (Zn), mg/L	<0.0150	<0.0150	0.0189	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	0.048	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150			
OBSERVATIONS	BLT-001	BLT-002	BLT-003	BLT-004	XCK-001	XCK-002	XCK-003	XCK-004	BVR-001	BVR-002	BVR-003	BVR-004	BCK-001	BCK-002	BCK-003	BCK-004	LRC-001	LRC-002	LRC-003	LRC-004	CKK-001	CKK-002	CKK-003	CKK-004			
Oil Sheen	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No			
Foam	No	No	Yes	No	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	Yes	No	No	No	Yes	No			
Litter & Trash	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	No	No	Yes	No	No	Yes	No	No	No	Yes	No			
Dead Fish	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No			
Live Fish	No	No	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes	No	No	No	No	No	No	No	Yes	No	No			
Dead Amphibians	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No			
Live Amphibians	No	No	No	No	No	No	No	No	No	No	No	No	Yes	No	No	No	No	Yes	No	No	No	No	No	No			
Crayfish	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No			
Water bugs (insects)	No	Yes	No	No	No	No	No	No	No	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes	No	No	Yes	No	No	No			
Mussels	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No			
Algal growth	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No			
Color of Water	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Stained	Stained	Muddy	Murky	Clear	Clear	Clear	Clear	Stained	Stained	Clear/Dark	Clear/Dark	Stained	Clear	Clear	Clear			
Odor of Water	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No			
Illicit Discharge?	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No			

Figure 10-2: Ambient Instream Monitoring Results

Impaired Streams Program

Stormwater developed an Impaired Streams Program to monitor streams that have been classified as impaired within the City limits in 2014. In many cases, it is possible that an impaired stream could progress over time negatively and may have a Total Maximum Daily Load (TMDL) assigned to them to improve their water quality. To be proactive, Stormwater has developed this program voluntarily to monitor impaired streams and make necessary adjustments to improve their water quality before the potential issuance of a TMDL.

This program will allow Stormwater to assess the effect pollutants may have on streams and determine how their surrounding environments impact the streams. Stormwater uses several methods to analyze a stream's health, such as analytical laboratory sampling, field sampling, site inspections, and walking the stream. The Stormwater Program samples for 20 to 32 parameters at each sample site, depending on what related issues are found during the inspection. These methods allow staff to assess both the chemical and biological conditions of a stream. Information obtained through sampling and inspection is then recorded on an Excel Spreadsheet. Using the spreadsheet, staff will analyze the results over time to determine patterns and possible pollution issues within a stream.

The Stormwater Program identified the sample sites based on stream segments that the state has deemed as impaired, along with input from the PWC Watersheds Group, to ensure no duplication of sample sites. From these efforts, 20 sample sites were identified. This program allows Stormwater to understand the characteristics of our impaired streams.

Previously, Stormwater staff developed a Standard Operating Procedure (SOP) for inspecting and collecting sampling data from our designated impaired stream segments. The document outlines the City's efforts to monitor and reduce pollutants in local streams classified as impaired by NCDEQ. The written document also shows procedural consistency and the process when audited by DENR and EPA. While there are no TMDLs currently assigned to the City, the collected data

and a validated process will be great tools and provide historical information to hopefully avoid or delay future TMDLs in the local area.

Section 11: Total Maximum Daily Loads (TMDLs)

The Stormwater Program has determined that a Total Maximum Daily Load (TMDL) has not yet been developed, approved, or established by the EPA for the receiving waters of the City of Fayetteville's MS4 NPDES stormwater discharge. Therefore, this Permit section is currently not applicable to the City of Fayetteville.

Section 12: Miscellaneous Stormwater Activities

During the reporting year, Stormwater has participated in several activities to promote stormwater initiatives and support research for stormwater quality projects. These activities are listed below.

Urban Water Consortium

Stormwater is an active member of the Urban Water Consortium group of the Water Resources Research Institute. This group was established in 1985 to provide a program of research and development and technology transfer on water resource issues shared by urban areas across the state. Through this group, WRRI and the State of North Carolina help individual facilities and regions solve problems related to local environmental or regulatory circumstances. Stormwater actively participates due to the importance of sharing information with other municipalities that face the same challenges as Fayetteville and recognizing the importance of research and funding of stormwater quality-related projects. The group meets quarterly in different locations around the state.

Stormwater Association of North Carolina (SWANC)

Stormwater is an active member of SWANC, a statewide organization that advocates for stormwater programs at the NC General Assembly and the NC Department of Environmental Quality(DEQ).

Section 13: Plans for the Upcoming Year

The City continues through its Stormwater Program to implement the provisions of its 2018 issued permit. In moving forward, the City looks to accomplish the following in the coming year:

- Continue to implement the Water Quality Assessment and Monitoring Plan.
- Continue Stormwater Self-Audit in preparation for Audit in 2023
- Continue to update the Stormwater Inventory with stormwater structures and conveyances constructed during and after the field data collection.
- Complete recovery efforts from Hurricane Matthew to include repairing a creek bank failure next to a City facility, and repairing a City maintained dam.
- Continue to implement provisions from the renewed 2018 permit.
- Continue moving forward with a citywide Stormwater Watershed Master Plan.

This past year marked the tenth year that the City of Fayetteville has operated its independent stormwater program, permit, and utility that initially started with the previous joint City / County stormwater program, permit, and utility that ceased as of July 1, 2009. The upcoming year will

mark the twenty-fifth year that an NPDES Municipal Stormwater Discharge Permit has covered the City of Fayetteville.

To provide adequate funding to meet the requirements of the NPDES stormwater program, Stormwater Program the City collects a stormwater utility fee of \$72.00 per year per equivalent residential unit (ERU). There was no fee increase requested for the Fiscal Year 2021 year. The fee supports the NPDES permit compliance, capital infrastructure improvements, and the development of a citywide stormwater watershed masterplan.

Should any additional information be required, please contact:

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