South Carolina NPDES Permit # SCR030000
Small Municipal Separate Storm Sewer System (SMS4)
Annual Report Template

Permit Coverage #SCR 030304 **Reporting Period:** 2016 - 2017

Permittee: City of North Augusta

Program Name: City of North Augusta Stormwater Management

Reporting for more than one Program: ☐
(Prepare copies of this page for each Program and attach to this report.)

Responsible Official Information
(Enter the information of the principal executive officer, mayor, or other duly authorized employee/elected official.)

Name: Tom Zeaser, P. E. **Title:** Director of Public Works

Telephone Number: 803 441-4220 **E-mail Address:** tzeaser@northaugusta.net

Mailing Address: P. O. Box 6400, North Augusta SC 29861-6400

Program Manager Information
(Enter the information of the person who is responsible for daily implementation of the program.)

Name: Tanya Strickland **Title:** Stormwater Manager

Telephone Number: 803 441-4246 **E-mail Address:** tstrickland@northaugusta.net

Mailing Address: P. O. Box 6400, North Augusta SC 29861-6400

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

Responsible Official Signature: Thomas C Zeaser **Date:** 6/25/18
(The responsible official may authorize another person or person occupying a specific position to certify this report if this authorization is made in writing and submitted to the Department. Please attach a copy of the authorization with this report, if applicable)

Submit the annual report to:
South Carolina Department of Health and Environmental Control
Bureau of Water, Water Pollution Compliance Section
2600 Bull Street
Columbia, SC 29201-1708

Questions? Contact (803) 898-4300

I. Special Conditions Applicable to Stormwater Discharges to Sensitive Waters

A. General (3.1)

1. Has an assessment been conducted to determine if the MS4 discharges to sensitive waters as described in the Permit Part 3? ■ Yes ☐ No *(what is the target date of completion of the assessment?)* completed

2. Does the SWMP specifically address these sensitive waters through BMP, system design, etc.? ■ Yes ☐ No

3. Does the MS4 discharge to waters classified as Outstanding Resource, Trout, or Shellfish Harvesting? If so, list the waters (3.5): ■ No ☐ Yes

B. TMDL Monitoring and Assessment Plan (3.2)

1. Does the MS4 discharge to receiving waters within a TMDL watershed? If yes, list the water body and the pollutant(s) of concern. ☐ No ■ Yes Pretty Run Creek (aka Unnamed Tributary to Savannah River); Fecal coliform E. coli, TSS

2. Which of the TMDL pollutant(s) of concern listed above have the potential to occur within the MS4? Fecal coliform, E. coli, TSS

3. Report the current stage of development of a monitoring and assessment plan. Mark one or more that most accurately reflects the current status of the program as a whole:
☐ Not started ☐ Research/Development ■ Implementation

4. Has the plan been submitted to the Department?
■ Yes ☐ No, target date for submission:

5. Has monitoring been conducted for the pollutant(s) of concern in the past reporting year?
■ Yes (summary of data attached) ☐ No, target date to begin monitoring: (see attached summary)

6. Are there any updates to the plan for this reporting year?
☐ No ■ Yes (updates attached)

7. Provide a brief description of the progress made on the plan in this reporting year and evaluate its effectiveness.
The plan was completed and submitted to SCDHEC on January 5, 2015. The plan was implemented in July 2015 and all preliminary sampling has been completed. Data is presented in the attached TMDL BMP Assessment & Implement. Plan

C. Discharges to Impaired Water Bodies (3.4)

1. Does the MS4 discharge to receiving waters on the 303(d) list of impaired waters? If yes, list the water body and the pollutant(s) of concern. ☐ No ■ Yes Pretty Run Creek (aka unnamed tributary to Savannah River), BIO

2. Which of the 303(d) pollutant(s) of concern listed above have the potential to occur within the MS4? TSS

II. Storm Water Management Program

A. Ordinance Information (4.1)

(Insert your website address if the ordinance is posted online. If your ordinance is not posted online, please submit a hard copy with this report.)

Website: www.northaugusta.net (click "About Us" and "Municipal Code") **Hard copy attached:** ☐

B. Storm Water Management Plan (SWMP) (4.1, 4.5)

(Answer the questions below about the SWMP for the current reporting year.)

1. Have there been any changes to the area covered by the MS4? If yes, is this reflected by updates to the SWMP?

☐ No ■ Yes *(explain)*: The city has annexed certain areas that will now be covered under the SWMP. All areas within the city limits are included in the SWPPP for the city.

2. Are there any proposed changes to the goals or BMP (best management practices) in the SWMP?

☐ No ■ Yes *(explain)*: The plan is updated with the results of the TMDL Sampling Plan and BMP Implementation Plan, the Municipal Facility Inventory & Maintenance Plan, and Municipal Inspection Results

3. Do you have adequate resources to implement your SWMP?

■ Yes ☐ No *(explain)*: we have adequate funding, we need to increase staffing, restore Env. Coord FTE. In lieu of that, a part-time position was created for 2 days per week to assist with education/public participation, sampling.

4. Provide information below about staffing levels for each Minimum Control Measure (MCM). This information should be presented as the amount of individuals performing duties directly related to each MCM and the estimated percentage of their time spent doing so. If you share responsibility for the MCM with another entity, indicate that in the corresponding spaces.

- MCM 1: 1.5 (1-25%, 0.5 - 75%)
- MCM 2: 1.5 (1-25%, 0.5 - 75%)
- MCM 3: 4.5 (1-25%, 1-25%, 2-85%, 0.5 -25%)
- MCM 4: 3.5 (1-25%, 1-20%, 1-5%, 0.5 - 1%)
- MCM 5: 4.5 (1-25%, 1-20%, 2-10%,0.5 - 1%)
- MCM 6: 2.5 (1-25%, 1.5-15%) SW Only

5. Has training been provided to staff as required by the permit in the last reporting year?

■ Yes *(fill in the table below)* ☐ No *(explain, and provide implementation dates)*: CEPSCI and CSWPR and SC Assoc. of SW Managers meetings, annual training (of departmental employees Illicit discharge, housekeeping, etc.)

Date	Topics Covered
04/25/16	CEPSCI - Taylor Ferguson - construction site inspection certification
6/1/16	Stormwater Plan Reviewer Re-certificaiton - Tanya Strickland
2/7/17	Stormwater Plan Reviewer Course - Brian Maleck, Engineer
06/7/17	CEPSCI - Re-cert - Tanya Strickland, construction site inspection certification

III. Minimum Control Measures (MCM)

A. Sharing Responsibility (4.4)

1. Is responsibility shared for any minimum measures through an agreement with another entity?
■ No ☐ Yes (*name the entity in the chart below)*

MCM 1	
MCM 2	
MCM 3	
MCM 4	
MCM 5	
MCM 6	

If you have indicated that you are sharing responsibility above in any MCM, answer the questions below:

2. Have you submitted notice to the Department that you are relying on another entity?
☐ Yes ☐No *(submit a copy of any agreements that have not previously been sent to the Department)*

3. If applicable, provide the date of submission of the agreement(s) to the Department:_____

4. Are all control measures as stringent as the permit requires?
☐ Yes ☐No *(if no, provide an explanation)*_____

5. Did the other entity agree in writing to implement the measure on your behalf?
☐ Yes ☐No *(if no, provide an explanation)*_____

6. Did the other entity implement the measure and agree to report on your behalf?
☐ Yes ☐No *(if no, provide an explanation)*_____

7. Is the agreement maintained as part of the SWMP?
☐ Yes ☐No *(if no, provide an explanation)*_____

8. Have you dissolved any agreements with entities this reporting year?
☐ No ☐Yes *(if yes, who?)* _____

III. Minimum Control Measures (MCM)

B. Minimum Control Measure 1: Public Education and Outreach on Storm Water Impacts (4.2.1, 5.3)

1. Use the table below to summarize outreach strategies, goals, and progress for the current reporting year. In the "activities conducted and planned" section, focus on activities that were conducted in the last reporting year and those that are planned for the upcoming reporting year, providing implementation dates. Add rows where needed and attach additional sheets if necessary.

Pollutant of Concern	**Outreach Strategy** *(include target audiences)*	**Measurable Goal(s)**	**Progress on Goal(s)**	**Activities Conducted and Planned** *(specific implementation dates)*	**Number of People Reached**
Bacteria, Oil & Grease, Fertilizers, TSS	Annual Resource Newsletter Residents, Commercial,	Newsletters Produced and Delivered	☐ In Planning ■ Ongoing ■ Completed ☐ Evaluation	(SEE APPENDIX A) 11/25/16 & 11/10/17 Resource 30K printed delivered to each utility customer via bill, done.	15,000/year (x 2 years)
Bacteria, Oil & Grease, Fertilizers, TSS	Business Permit Dept. Brochures Commercial	Outreach Materials Produced, Outreach materials delivered.	☐ In Planning ■ Ongoing ■ Completed ☐ Evaluation	06/21/17 BMP Brochure upd 08/11/16 Silt fence specs upd 11/11/16 Bus.Owner Fl upd, 1/13/17 Food Bus flyer upd 12/27/17 SW Flyer (815 sent)	50 indiv lot 815 bus 20 food
Bacteria, Oil & Grease, Fertilizers, TSS	Workshops, Engineers, Developers Contractors	Outreach Materials, Attendence	☐ In Planning ■ Ongoing ■ Completed ☐ Evaluation	11/11/16 Contractors Workshop held 12/27/16 HOA Workshop Planned - one signed up so they were met individually	47 attended 1 person
Bacteria, Oil & Grease, Fertilizers, TSS	Employee Refresher Training, City Employees	Outreach Materials provided, Attendence	☐ In Planning ■ Ongoing ■ Completed ☐ Evaluation	01/14/16 54 employees 10/25/16 4 swmd employ 12/14/17 11 employees 12/15/17 14 employees 12/20/17 19 employees	54 4 11 14
Bacteria, Oil & Grease, Fertilizers, TSS	Stormwater Education Program - Students, Residents, BPP &	Outreach activity/information provided, Attendence, Number of events	☐ In Planning ■ Ongoing ■ Completed ☐ Evaluation	See attachment A for a complete list of activites for this reporting period	2016 =1567 2017 =1557

C. Control Measure Evaluation (5.3)

1. Evaluate the success of this MCM. Refer to goals implemented and achieved, and adherence to the implementation schedule: This MCM is very successful and the program goals have been and continue to be achieved. The program elements are planned and adhered to. Through continued coordination with other entities, the program has become one of the most successful in the area. Schools, local clubs, and professional organizations routinely request or attend our stormwater training events or education programs. Local newspapers reports provide another mass number of customers reached. Excluding media reports, for 2016, our program reached 17,401 individuals, 2017=17,732.

2. Provide an evaluation of where the program needs improvement and explain any actions that will be taken to achieve objectives: This program continues to meets its goals. At this time, one additional staff dedicated to the program would reduce the time constraints this program causes to the overal program. Program goals continue to be achieved annually.

III. Minimum Control Measures (MCM)

D. Minimum Control Measure 2: Public Involvement/Participation (4.2.2, 5.3)

1. How can the public find information about the SWMP? The SWMP is available on the city website. Additionally, development within the city requires planning commission approval and these meetings are publicized and well attended.

2. Use the table below to summarize public involvement opportunities, goals, and progress for the current reporting year. In the "activities conducted and planned" section, focus on activities that were conducted in the last reporting year and those that are planned for the upcoming reporting year, providing implementation dates. Add rows where needed and attach additional sheets if necessary.

Public Involvement Opportunity	Measurable Goal(s)	Progress on Goal(s)	Activities Conducted and Planned *(specific implementation dates)*	Number of Participants
Review Evaluate Program Goals	Meeting Goals, Revised Goals Established	☐ In Planning ■ Ongoing ■ Completed ■ Evaluation	Program goals are being met. No revision required.	
Education Partnership	Brick Pond Park Program, Education Team & Events	☐ In Planning ■ Ongoing ■ Completed ☐ Evaluation	Paul Knox G&T Project Mtgs/outings 04/20/2017 Education Partners Meeting	5 14
Annual Household Haz Waste Collection Annual Earth Day Event	Participants at Waste Collected, Survey, Earth Day Participants, Marketing Handouts	☐ In Planning ■ Ongoing ■ Completed ☐ Evaluation	04/23/2016 Event Held Earth Day 05/21/2016 Event Held HHAZ 04/22/2017 Event Held Earth Day 05/20/2017 Event Held HHAZ	600 particip 260 particip 500 particip 248 particip
Storm Drain Marking	Drains marked	☐ In Planning ■ Ongoing ☐ Completed ■ Evaluation	2016 Staff installed 100 new markers 2017 Staff installed 50 new markers	2 2
City Website Public Meetings	Website use, stats SW pgs, Participants at Planning & City Council Mtgs. (developement)	☐ In Planning ■ Ongoing ■ Completed ■ Evaluation	Web page use Participants Planning Meetings City Council Meetings (undetermined) Special Projects	98 no sign-in

E. Control Measure Evaluation (5.3)

1. Evaluate the success of this MCM. Refer to goals implemented and achieved, and adherence to the implementation schedule: The participation with the stormwater program continues to be successful. During this reporting period we had three large projects undertaken by silver award girl scouts, one eagle scout and his team, and a girl scout and her team to accomplish the gold award. We also had many particpants at our Earth Day and Household Hazardous Waste Events. Our development Planning Meetings have been well attended and buffers and their protection have been a key focus of our citizens. This MCM is successful and being implemented as scheduled.

2. Provide an evaluation of where the program needs improvement and explain any actions that will be taken to achieve objectives: This program could use a full time staff member to focus on it along with other MCMs. At the present time we are meeting our goals and objectives. As development continues to increase in our town, these program areas will be the ones that suffer without a full time FTE. Currently we are funded for a part time staff member to maintain these programs.

III. Minimum Control Measures (MCM)

F. Minimum Control Measure 3: Illicit Discharge Detection and Elimination (IDDE) (4.2.3, 5.3)

1. How can the public notify the MS4 of suspected illicit discharges? The city website has a interactive feature for reporting problems including illicit discharge. Citizens can also contact the city 24 hours a day to report problems.

2. Complete the list below for the last reporting year:

- Total number of suspected illicit discharges: 5
- Total number of illicit discharges found: 3
- Number of illicit discharges with enforcement escalation (action taken beyond written warning): 2
- Total number of illicit discharges eliminated: 3

3. Use the table below to summarize priority areas (and associated rationale for selection) for screening. If these areas have changed since the last reporting year, provide a brief explanation. Add rows where needed and attach additional sheets if necessary.

Priority Areas	Rationale for Selection	Changed within last reporting year? *(If so, provide an explanation.)*
Pretty Run Creek	TMDL	No
Waterworks Subbasin	density of residential and commercial activies	No
Hammond Hills Subbasin	density of residential and commercial activities	No

4. Use the table below to summarize IDDE action items, goals, and progress for the current reporting year. In the "activities conducted and planned" section, focus on activities that were conducted in the last reporting year and those that are planned for the upcoming reporting year, providing implementation dates. Add rows where needed and attach additional sheets if necessary.

IDDE Action Item	Measurable Goal(s)	Progress on Goal(s)	Activities Conducted and Planned *(specific implementation dates)*
Field Screening Assessments, Report	Outcome of Assessment Number of Samples Report generated	☐ In Planning ■ Ongoing ■ Completed ■ Evaluation	TMDL Monitoring Plan - Completed 71 samples were collected and analyzed A report of the findings of the project are attached.
Mapping sw infrastructure, and revising/updating map	Mapping and revising Updating map Revised Map Produced	☐ In Planning ■ Ongoing ■ Completed ☐ Evaluation	The city has continued to map and revisit mapped drains to verify accuracy. A revised map is attached. Improved GIS capability will be implemented soon.
Develop/Implement BMP pilot project Monitor Outcomes	Pilot Project Completion Pilot Project Result - Carter Orthodontics Pond	☐ In Planning ☐ Ongoing ■ Completed ■ Evaluation	Retrofit: BMP pilot project retrofitting small stormwater pond with forebays and filter rings. Samples were conducted prior to the retrofit. Follow-up throughout 2018.
Maintenance SW Infras. Website Reporting Mech. Enforcement Program	Number of drains cleaned Priority Basins Cleaned Number of Drains Repaired	☐ In Planning ■ Ongoing ■ Completed ☐ Evaluation	619 storm drains were cleaned in 2016 645 linear feet of storm pipe was replaced 2016 56 Storm ponds were cleaned 2016
Facility inspections/Enf Municipal Industrial Webpage updates	Municipal Inspections Industrial Inspections Enforcement Activities Education/Outreach	☐ In Planning ■ Ongoing ■ Completed ☐ Evaluation	TMDL Monitoring Plan - Completed 71 samples were collected and analyzed A report of the findings of the project are attached. All facility owned by the city were inspected in 2016 & 2017. All industrial facilities owned by the city are +

G. Control Measure Evaluation (5.3)

1. Evaluate the success of this MCM. Refer to goals implemented and achieved, and adherence to the implementation schedule: The IDDE MCM is successful. We are able to locate, identify and eliminate discharges. The goals of the program were met within the time-frame set. We continue to maintain a storm drain inspection and cleaning schedule that allows us on site inspections of storm drains and outfalls to identify problems or illicit discharges. Our TMDL monitoring plan was successfully implemented and completed. Information from the monitoring allowed us to identify trouble areas within the community to investigate if problems arise. Residents are aware of the efforts and assist by reporting illicit discharges that they encounter for investigation.

2. Provide an evaluation of where the program needs improvement and explain any actions that will be taken to achieve objectives: The program could be improved by having the system of evaluation fully integrated with the GIS system. GIS and SW staff have met and are assessing the needs and data requirements to accomplish this within the next 24 months. The goal is to have all post construction facilities integrated into the database with access capabilities for field staff via I-pad or other device during inspection.

III. Minimum Control Measures (MCM)

H. Minimum Control Measure 4: Construction Site Storm Water Runoff Control (4.2.4, 5.3)

1. How can the public notify the MS4 of possible noncompliance at construction sites? The city has a website for reporting all issues the public is concerned about. Additionally, phone callers are directed 24 hours a day how to report

2. How does the MS4 communicate with construction operators to ensure understanding of requirements and improvements that may be needed? Preconstruction meetings allow exchange of phone and email information of all key project staff so that we can stay in contact. Construction inspection reports are exchanged with owners and contractor

3. Has an enforcement response plan (ERP) been developed and utilized?
■ Yes ☐ No (*explain):*

4. Complete the list below for the last reporting year:
- Number of new construction sites: 2016 = 18 2017=21
- Total number of active construction sites: 2016=34 2017=35
- Total number of inspections performed: 2016 = 432, 2017 = 451
- Number of sites with unsatisfactory/noncompliant inspection results: 2016 = 152, 2017= 94
- Number of sites with enforcement escalation (action taken beyond written warning): 2016=4 2017=4
- Number of sites inspected past the deadline specified in the permit: none

5. Use the table below to summarize construction site action items, goals, and progress for the current reporting year. In the "activities conducted and planned" section, focus on activities that were conducted in the last reporting year and those that are planned for the upcoming reporting year, providing implementation dates. Add rows where needed and attach additional sheets if necessary.

Construction Site Action Item	Measurable Goal(s)	Progress on Goal(s)	Activities Conducted and Planned *(specific implementation dates)*
Construction Permit Review Construction Site Inspections	Permits Reviewed/Issued Inspections Conducted (2 per mo)	☐ In Planning ■ Ongoing ■ Completed ☐ Evaluation	In 2016 17 permits were issued and all that were started have been inspected at least 2 times per month. In 2017, 21 new permits were issued, and all that have started are being inspected at least 2 times per month.
Establish / Maintain Stds	Construction Stds Post Construction Stds	☐ In Planning ■ Ongoing ■ Completed ☐ Evaluation	Standards for construction sites and post construction have been established in the Sediment & Erosion Control Manual and in the Water Quality Manual. These two documents are updated to reflect changes, new standards routinely.
Enforcement/Compliance	Enforcement Activities Initiated Enforcement Activities Completed	☐ In Planning ■ Ongoing ■ Completed ☐ Evaluation	There have been a few clients that have repeat violations requiring enforcement activity escalation. Targeted enforcement activities are initiated once a sites "unsatisfactory" inspection rate is greater than 25% of inspections conducted, it appears sufficient.
Construction Education Public Involvement Handouts/Brochures	Education completed Number Attendees/Particip Brochures/handouts created	☐ In Planning ■ Ongoing ■ Completed ☐ Evaluation	A contractors education seminar was held in November 2016 with 47 contractors present. Other handouts and brochures are provided during the year for contractors to learn and understand requirements/guidelines necessary by the city Stormwater Management
Post Construction Insp Post Construction Compliance	Post construction inspections Post construction compliance activities	☐ In Planning ■ Ongoing ■ Completed ☐ Evaluation	The city conducts post construction site inspections at stormwater facilities. Facilities must be brought into compliance by the owner if found to be unsatisfactory.

I. Control Measure Evaluation (5.3)

1. Evaluate the success of this MCM. Refer to goals implemented and achieved, and adherence to the implementation schedule: All goals that were set for the construction MCM have been met during this reporting period. All permits were issued & inspections conducted. Compliance ratings of 66% in 2016 and 80% in 2017 are due to a new inspector in 2016, he increased the number of inspections per site. Construction projects are holding steady at avg. 35 active sites, but the sites are larger or are in compacted areas. Ratings have been affected by increased & prolonged rain There are certain contractors that fail inspections more than others and in this reporting period, in 2016 we increased our efforts by targeting them with more enforcement actions and education activities, compliance was higher in 2017.

2. Provide an evaluation of where the program needs improvement and explain any actions that will be taken to achieve objectives: This MCM is working well. Increasing targeted education and enforcement activities on known violators has been working. We will increase this pressure to achieve better compliance. Impacts to our system are not increased, due to our stop work orders if impacts are immanent. Our goal will be to get at least 10% higher overall compliance ratings in 2018 & 2019. Our manuals have been updated but continue to need review and updating due to regulatory or observed issues with certain BMPs or practices. We will continue to monitor progress and develop training materials to combat recurring failed inspections. Increased development in the state has put pressure on contractors.

III. Minimum Control Measures (MCM)

J. Minimum Control Measure 5: Post-Construction Storm Water Management (4.2.5, 5.3)

1. Complete the list below for the last reporting year:

- Number of newly completed construction sites: 2016 = 12 2017 = 13
- Number of inspections performed within 30 days of construction completion: 25 (finals)
- Total number of inspections performed: 81
- Number of sites with unsatisfactory/noncompliant inspection results: 56
- Number of sites with enforcement escalation (action taken beyond written warning): 1

2. Use the table below to summarize post-construction action items, goals, and progress for the current reporting year. In the "activities conducted and planned" section, focus on activities that were conducted in the last reporting year and those that are planned for the upcoming reporting year, providing implementation dates. Add rows where needed and attach additional sheets if necessary.

Post-Construction Action Item	Measurable Goal(s)	Progress on Goal(s)	Activities Conducted and Planned *(specific implementation dates)*
Create & Maintain Inventory Post Const Post Constr Inspections	Updated inventory Inspections conducted	☐ In Planning ■ Ongoing ■ Completed ■ Evaluation	The inventory has been updated and city crews inspection records are maintained. We will continue doing this BMP. We are working to GIS based inspections.
Post construction compliance/enforcement activities	Enforcement activity Compliance Achieved	☐ In Planning ■ Ongoing ■ Completed ☐ Evaluation	Activities to bring sites into compliance are sufficient. The new GIS based post inspection program will create faster follow-up times. We will continue this BMP.
Identify Discharges to TMDL streams/ensure compliance	List of discharges to TMDL Compliance goal met	☐ In Planning ■ Ongoing ■ Completed ☐ Evaluation	Several activities have helped to identify discharges, we have coordinated with the city public works GIS tracking of leaks. We will continue this BMP.
New & Redev Sites meet stds	Review new and redev site plans to verify they meet stds set for program	☐ In Planning ■ Ongoing ■ Completed ☐ Evaluation	The project review process allowed us to identify problem areas and set stronger protections for the TMDL watershed. Mcdonalds, Bojangles added WQ bmps. We
Education and outreach	Education activities Customers reached with brochures education brochures (commercial)	☐ In Planning ■ Ongoing ■ Completed ■ Evaluation	We are constantly revamping materials and to reach our target audience. We conduct on site training, workshops, and provide information from several depts. We will

K. Control Measure Evaluation (5.3)

1. Evaluate the success of this MCM. Refer to goals implemented and achieved, and adherence to the implementation schedule: An inventory of all post construction devices was created, maps, site details, and agreements are all being incorporated into the GIS in the upcoming year. The inventory is being updated and maintained. Inspections and contacts with owners have been ongoing and follow-ups are conducted. Education materials and outreach is done.

2. Provide an evaluation of where the program needs improvement and explain any actions that will be taken to achieve objectives: There are certain areas where ownership is challenging. We are working with our attorneys to clear these issues up. The inventory process alerted us to previously unknown devices. Our goal is to have all of them incorporated into our GIS based tracking and maintenance system by 2019. We will continue to promote & train LID prac.

III. Minimum Control Measures (MCM)

L. Minimum Control Measure 6: Pollution Prevention/Good Housekeeping for Municipal Operations (4.2.6, 5.3)

1. Has a comprehensive assessment of the pollutant discharge potential for all municipally owned facilities been conducted? If not, indicate a status and planned completion date in the chart below.
■ Yes ☐ No ☐ In Progress *(explain):*_____

2. Have yearly comprehensive inspections been conducted at high priority facilities? If not, indicate a status and planned completion date in the chart below.
■ Yes ☐ No ☐ In Progress *(explain):* _____

3. Has training been conducted for employees? If not, indicate a status and planned completion date in the chart below.
■ Yes ☐ No ☐ In Progress *(explain):* _____

4. Use the table below to summarize municipal facility pollution prevention action items, goals, and progress for the current reporting year. In the "activities conducted and planned" section, focus on activities that were conducted in the last reporting year and those that are planned for the upcoming reporting year, providing implementation dates. Ensure that the maintenance and inspection of MS4 catch basins and structural storm water controls are addressed in the chart. Add rows where needed and attach additional sheets if necessary.

Pollution Prevention Action Item	Measurable Goal(s)	Progress on Goal(s)	Activities Conducted and Planned *(specific implementation dates)*
Municipal Employee Education	Annual training completed Compliance	☐ In Planning ■ Ongoing ■ Completed ☐ Evaluation	Each department conducts annual refresher training for stormwater management. A sign-in sheet is submitted. We will continue this BMP.
Municipal Facility Inspections Municipal SW Control Inventory/Ranking	Inspect all facilities Create inventory Rank by pollutant potential	☐ In Planning ■ Ongoing ■ Completed ☐ Evaluation	All sites were inspected with staff in 2015. An inventory was created and ranked. High priority facilities are inspected annually by the SWMD and Qtrly by staff. We will
High Priority Facility Inspection Program Conduct inspections and maintain high ranking sw	HP Facility prepare SWPPP Annual Inspections Repair/maintain sw controls Compliance	☐ In Planning ■ Ongoing ■ Completed ☐ Evaluation	A SWPPP was prepared for Operations Facility. Annual inspections are conducted, and qtrly. by PU dept. This will continue.
Education Program City employees Contractors to city	Meet with each facility mngr City Employees trained Contracts include requirement	☐ In Planning ■ Ongoing ■ Completed ☐ Evaluation	Meetings conducted with all depts., facility assessments/process to achieve compliance is established. The staff are trained via refresher training annually. We
Develop & implement pollution reduction strategies/plan for activities	Municipal Inventory and Inspection Program Results Evaluated	☐ In Planning ■ Ongoing ■ Completed ■ Evaluation	The pollution reduction strategies were implemented for two High Priority facilities. 1) Operations & 2) Park & Rec. Staff are following through on their training. We will

M. Control Measure Evaluation (5.3)

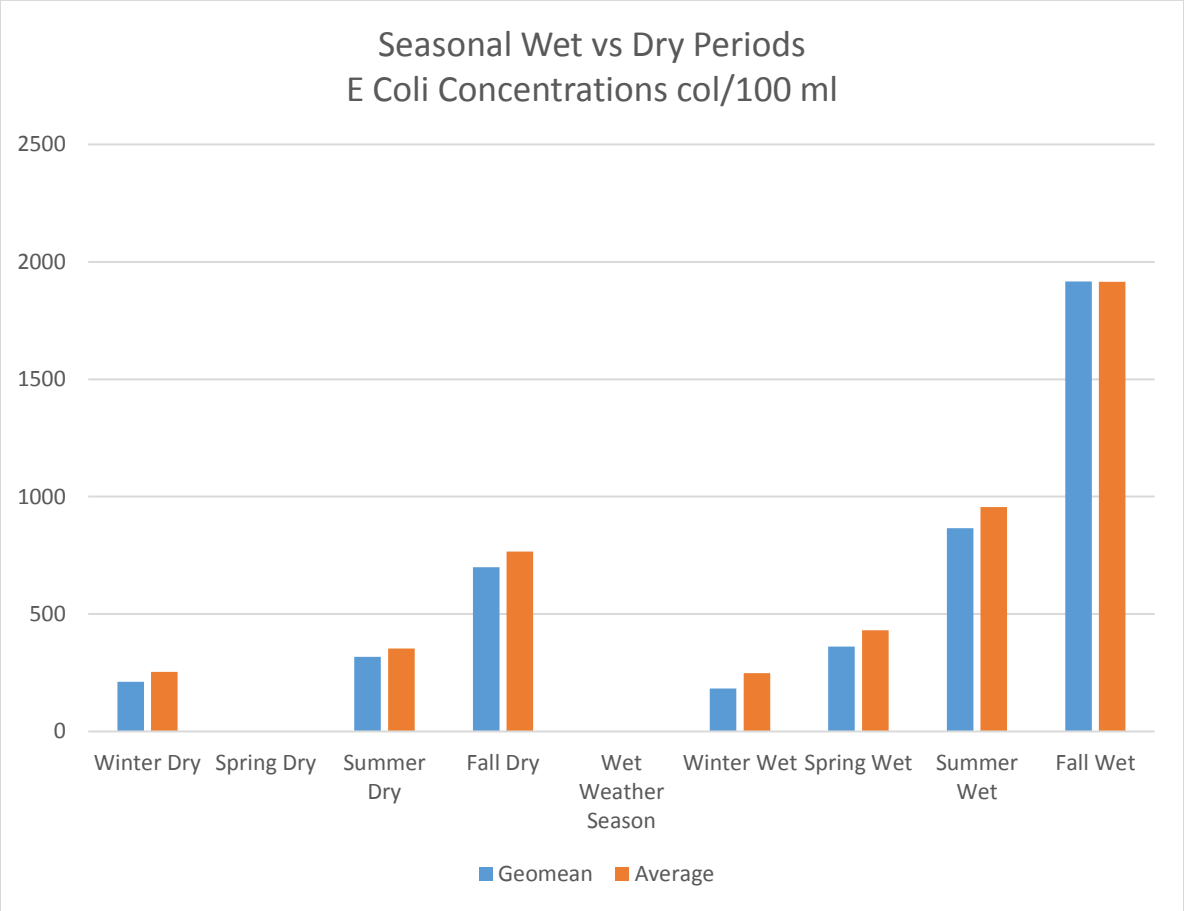
1. Evaluate the success of this MCM. Refer to goals implemented and achieved, and adherence to the implementation schedule: The goal to inspect 40% of installed structural stormwater control devices was met this reporting period. The unsatisfactory devices were brought into compliance and if not, increased enforcement worked to gain compliance. We identified all devices and areas where stormwater infrastructure discharges to our TMDL stream & conducted extensive dry weather & wet weather testing to determine impacts. All identified impacts are eliminated with on-going surveillance of the systems.GIS based location, inspection & maintenance is near completion and to go live in 2018.

2. Provide an evaluation of where the program needs improvement and explain any actions that will be taken to achieve objectives: The program milestones and goals are being met. Education & outreach materials have been developed and provided to business owners and residential HOAs. A HOA workshop was cancelled due to lack of parti-. cipation. We will work in the next few years to reach out to HOAs at their meetings. We are working to get our GIS based tracking system live. Information gathering is 98% complete. GIS completed a massive project with our public services providing live desktop of staff in the field that provides maps of all homeowner or city sewer leaks. SWMD information on ponds & infrastructure is to be part of the same system by the end of 2019. High priority pollution reduction plans are done

City of North Augusta TMDL Monitoring and Assessment Plan Implementation Summary

The data collected and presented as follows are the summary information gathered through sampling events prescribed in the City of North Augusta TMDL Monitoring and Assessment Plan from July 2015 to May 2017.

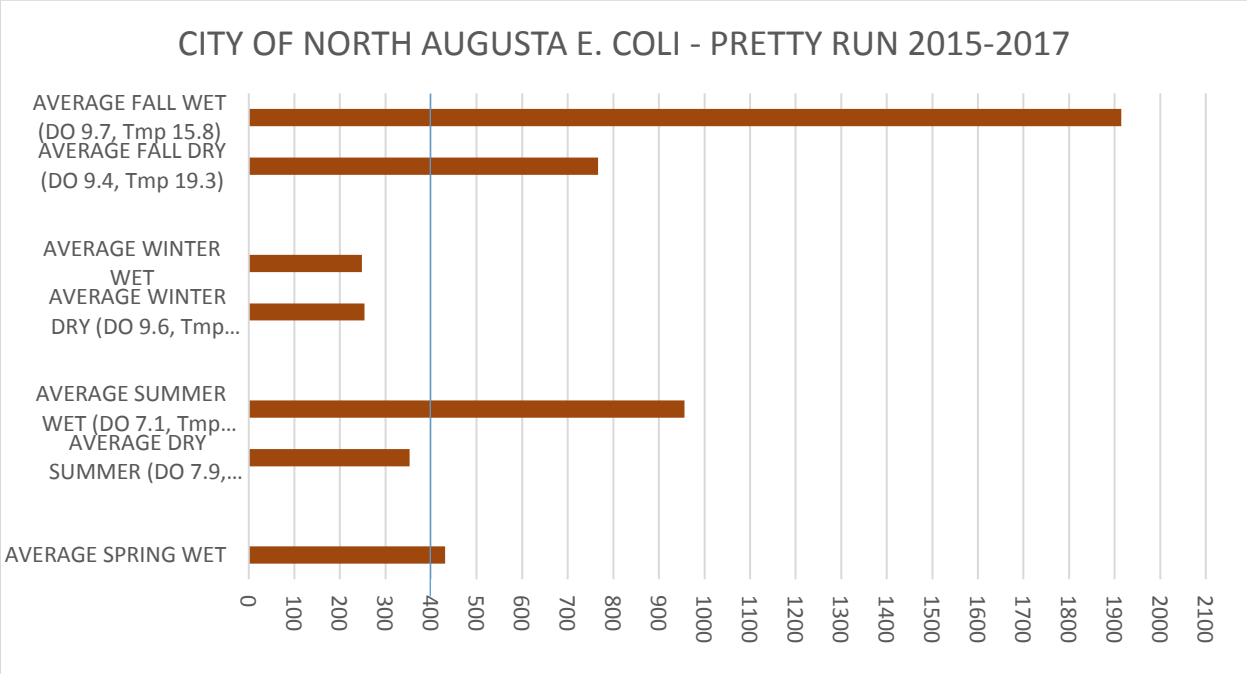
Results of the sampling are as follows:



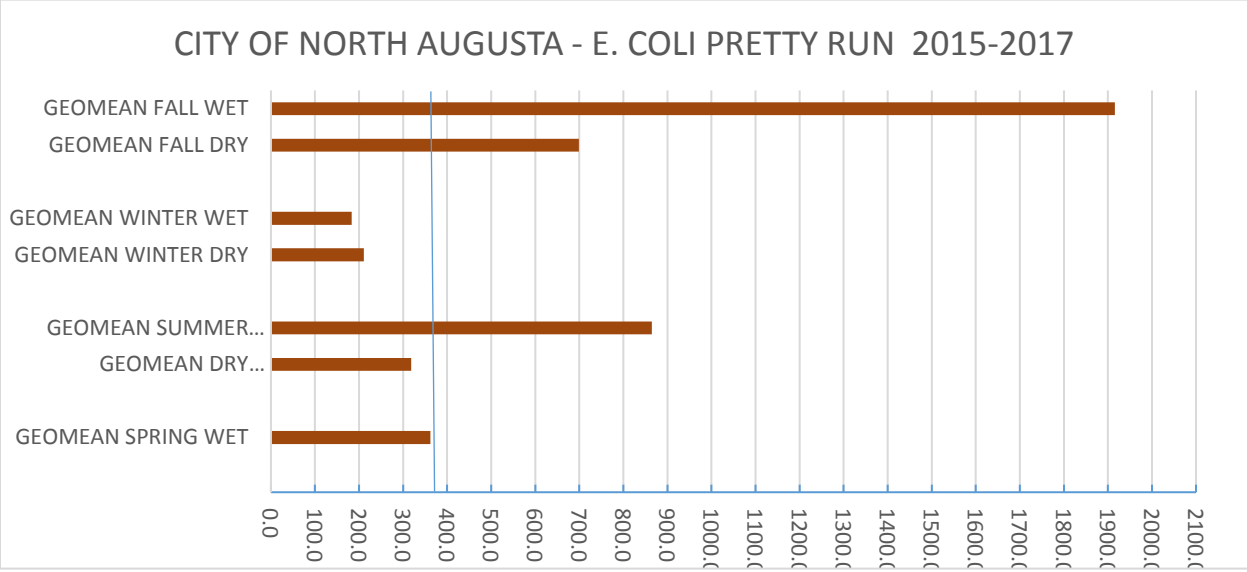
All samples analyzed for *E. coli* were processed via IDEXX Quantitray enumeration procedures.

Based on the results of the sampling the average concentrations of *E. coli* appear to be low except during Summer and Fall wet weather sample events. For *E. coli* sampling to be indicative of a true sources such as a leaking sewer line or overflowing septic system, the numbers would be in the 12,000 col/100 ml range according to data retrieved in *Quantification of E. coli & Enterococi Levels in Wet Weather and*

Dry Weather Flows, (Shergill & Pitt, 1989). Our testing methods was limited to an unknown number >2419 col/100 ml. much like theirs. Therefore, dilution was required to get a true number. Several samples toward the end of the sampling period were dilution samples. A true number was reached with that method. Further sampling within the Pretty Run watershed will use the dilution method.



City of North Augusta Average Concentrations of E. Coli by Season	
AVERAGE SPRING WET	**430.7**
AVERAGE DRY SUMMER (DO 7.9, Tmp 24.7)	**352.6**
AVERAGE SUMMER WET (DO 7.1, Tmp 26.0)	**956.3**
AVERAGE WINTER DRY (DO 9.6, Tmp 12.6)	**253.9**
AVERAGE WINTER WET	**248.2**
AVERAGE FALL DRY (DO 9.4, Tmp 19.3)	**766.3**
AVERAGE FALL WET (DO 9.7, Tmp 15.8)	**1914.9**

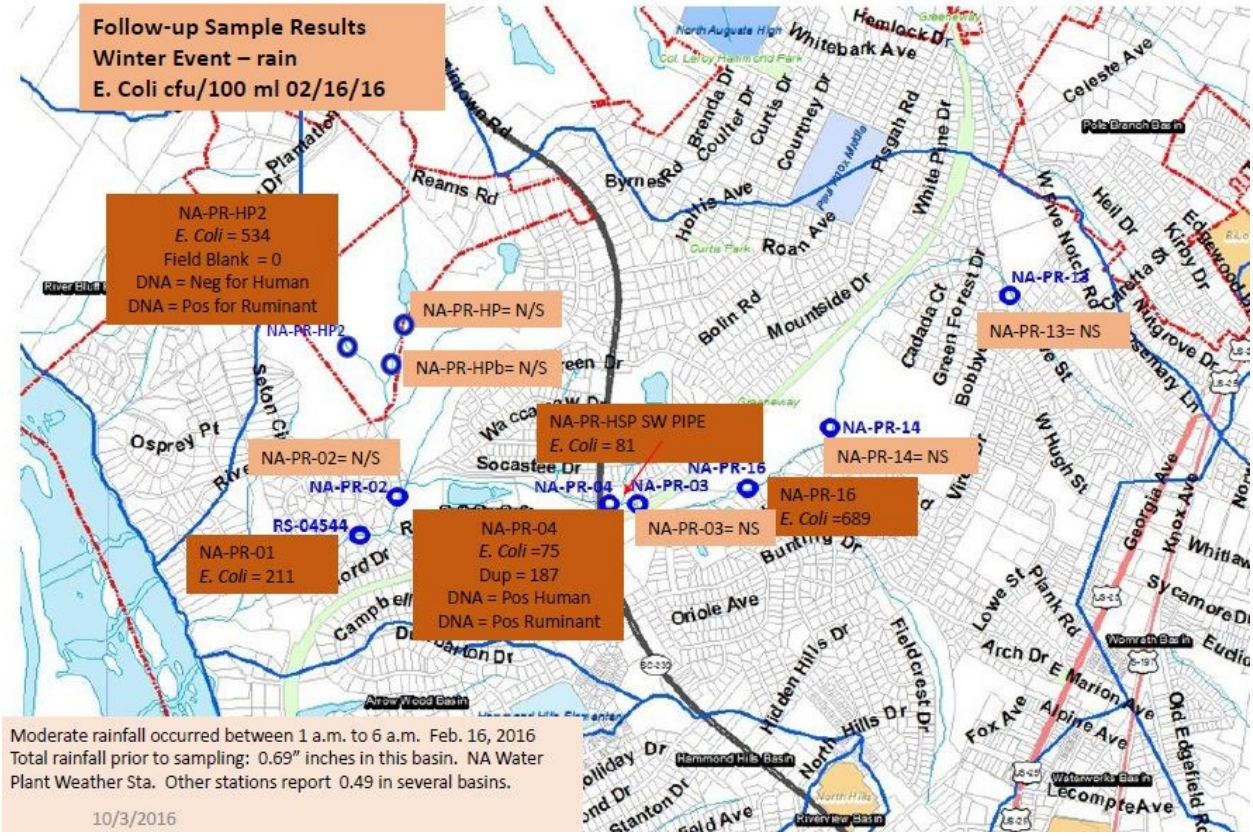


City of North Augusta Average Concentrations of E. Coli by Season						
GEOMEAN SPRING WET						**362.0**
GEOMEAN DRY SUMMER						**318.0**
GEOMEAN SUMMER WET						**865.0**
GEOMEAN WINTER DRY						**211.0**
GEOMEAN WINTER WET						**183.0**
GEOMEAN FALL DRY						**699.0**
GEOMEAN FALL WET						**1916.0**

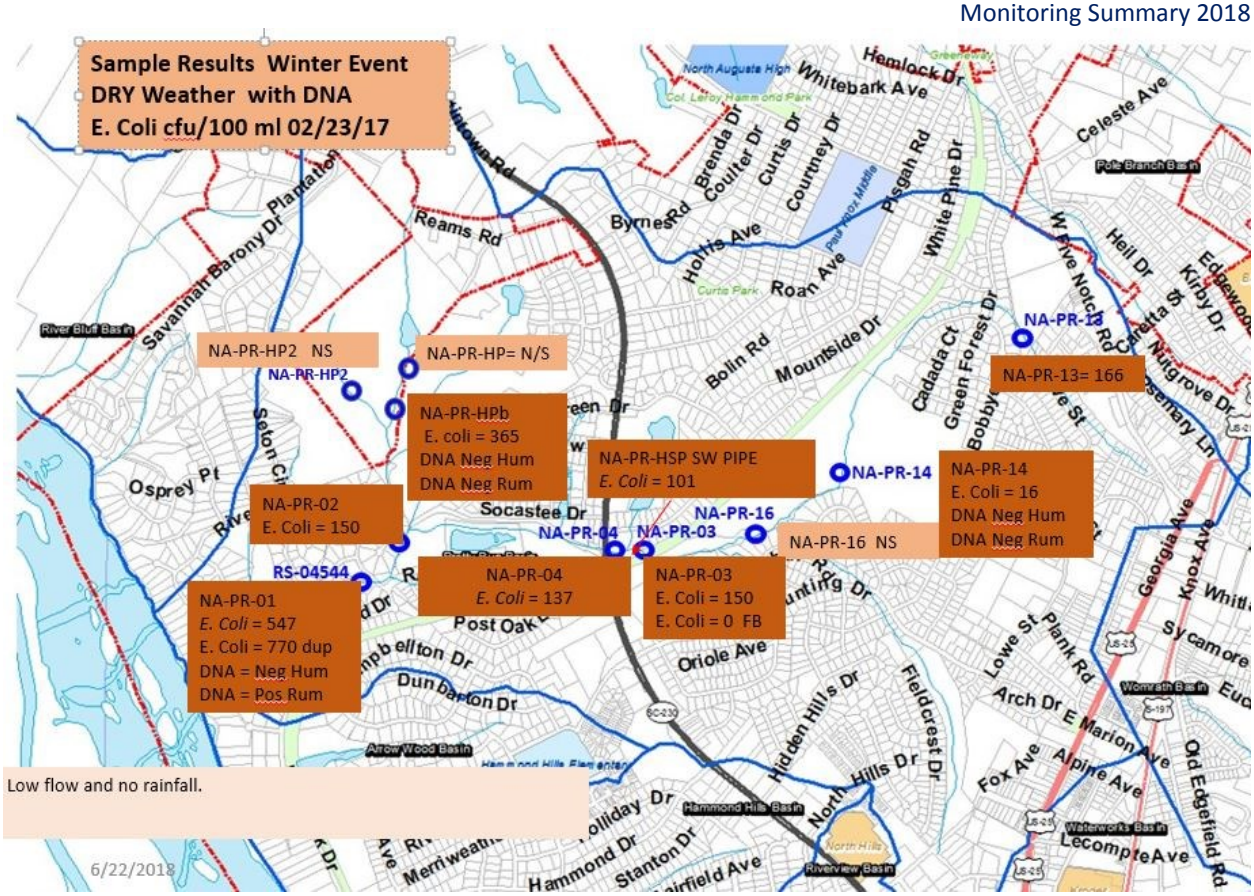
To further identify the source of the *E. coli* in our sampling, DNA analysis was undertaken of samples within the sub-watershed. DNA source tracking test were performed by SourceMolecular Laboratories to determine if (1) human or (2) ruminant sources could be identified. DNA results are shown below, NS = not sampled.

During the Febrauary 16, 2016 wet weather sample we ran DNA. Note that high concentration of *E. coli* appears in NA-PR-HP2 location 534 col/100 ml., as you can see from the map, there are no homes, no stormwater or sanitary sewer infrastructure in that area. The DNA sample in that location was positive

for ruminant, but not human sources. Interestingly, we did have a positive human source indicated at NA-PR-04 where the *E. coli* level was 75 col/100 ml.



Another sample event in February 2017 we looked at DNA in our samples. This was a dry weather event. The results are below. During this sample event we looked at a location below the unpopulated sample location NA-PR-HP2. We sampled just at the convergence of the stream. Our DNA results were negative for both human and ruminant sources. We also sampled RS-04544 (NA-PR-01 City ID). There we had *E. coli* indicated at 547 col/100 ml. That sample was negative for human, but positive for ruminant. Another sample in the upper reaches of the sub-watershed indicated low *E. coli*, with both DNA samples being negative.



Research found involving similar situations with elevated *E. coli* levels suggested that elevated levels such as these during rain events can arise from urban animal sources alone. To further elucidate potential wastewater sources we also conducted nutrient testing (Phosphorus, TKN, Ammonia, and Nitrite/Nitrate) concurrently with the *E. coli* samples during several sampling events. All of the data generated from nutrient samplings were within the average to low range for the constituents sampled based on SCDHEC Standard, Robert Pitt Stormwater Water Quality Database for residential stormwater sampling. The results imply that sanitary sewer leakages are unlikely to be the cause of the elevated *E. coli* levels. We have also conducted low-level detergent sampling and optical brightener sampling with all negative results from storm drains within the watershed. Based on this information, it is our belief that these results show no cause for concern of illicit discharge impact upon the Pretty Run Basin from sanitary wastewater lines or illicit discharges of wastewater to them.

Despite our reported *E. coli* levels exceeding the standard 349 mpn/100ml in the Pretty Run Basin we believe we have provided ample evidence that these levels potentially arise from natural sources, not from city wastewater infrastructure or illicit discharges to stormwater systems. This elevation in *E. coli* levels are most likely the result of large amounts of animal activity and not deficiencies in local infrastructure. This is concurrent with the current TMDL for Pretty Run Creek in the City of North Augusta.

Questions from our sampling plan:

1) What are the *Fecal coliform* or *E. coli* bacteria levels in the Pretty Run Creek Sub-basin receiving waters during dry or wet weather?

E. coli Results Wet vs Dry						
	N	Range		Median	Geomean	Avg
Wet	45	0-1120		816	464	1592
Dry	23	0-2419	Unsensored	261	174	375

2) What are the characteristics of the average storm event concentrations at monitoring sites?

Wet Weather Season				**Geomean**	**Average**
Winter Wet				183	248
Spring Wet				362	**431**
Summer Wet				**865**	**956**
Fall Wet				**1916**	**1915**

3) Are TMDL WLAs being met? And if not, assess, develop and implement a plan to control stormwater source discharges to the MEP.

TMDL WLAs are being met during winter and summer dry weather conditions. During summer and fall wet or dry weather conditions, evidenced based investigations (including sampling in stream and from storm drains throughout the watershed for *E. coli*, nutrients, optical brighteners, detergents, conducting

DNA testing for human or animal markers, conducting field investigations including land use; the resulting data indicate strongly that human impacts are not the cause of the wet weather concentrations of *E. coli* in the watershed. Only one DNA sample taken along with a duplicate for quality assurance during winter wet weather sample event indicated human DNA marker, and in that sample the *E. coli* concentration was 75 col/100 ml and a duplicate for quality assurance indicated 187 col/100 ml. The concentration of *E. coli* was well below the TMDL for the stream and does not indicate a bigger problem such as a sewer overflow or system malfunction. Stormwater sources are impacting the stream but those sources, in all likelihood, are animal sources such as deer, raccoon and birds (birds sources were not tested since it is a known source). Animals that live in the surrounding area frequently seek refuge in this location. While conducting sampling, visible evidence of ruminant in habitation was seen throughout the area. This included deer scat and tracks. Therefore, it is reasonable to assume that this increased animal activity has led to the elevated levels of *E. coli* observed in the unnamed tributary affecting the downstream locations including RS-04544 (aka NA-PR-01).

We will continue to target these neighborhoods with outreach and education to limit pet impacts to the watershed. It is also our intention to apply for funding through various grant programs to acquire additional information about the watershed, to find unique ways to address contributions of bacteria within the watershed and hopefully to implement techniques to limit the impacts. There are stormwater devices such as concrete ditches and other conveyances within these old neighborhoods that offer opportunities for improvement and we want to pursue implementing water quality treatment techniques where possible to improve water quality.

4) Are the sMS4's stormwater discharges impacting the stream with the POCs?

Based on sampling of storm drains for *E. coli*, Optical Brighteners, detergent sampling, nutrient sampling and field surveys of the watershed stream water quality, the evidence suggests that stormwater discharges

are not impacting the stream with the POC, *E. coli*., that the overland flow of water is bringing bacteria across the landscape from animal activity that is occurring in smaller and more compact areas of our city.

The development of our community has concentrated animals along our stream corridors where we provide buffers and development is less likely.

5) How do the POC concentrations from storm events in North Augusta compare regionally to storms of similar land use and precipitation?

Through a comparison of regional stormwater data and other evidenced based studies of stormwater concentrations of *E. coli*, the Pretty Run sub watershed is within the average range or less of *E. coli* concentrations during certain seasons and weather conditions. Data suggest that the cause of the elevated *E. coli* within the sub watershed are more than likely concentrated areas of animal populations along the stream reaches due to increased development pressure on habitat that within the open space that all development in North Augusta must provide as part of the city development code.

We see through the research of Robert Pitt and others that North Augusta's data mirrors many other communities that are similar in size and rainfall patterns. Previous research conducted by Pitt and Shergill of the University of Alabama have shown similar levels of *E. coli* in a study conducted on a section of Cribbs Mill Creek in Tuscaloosa, Alabama. These levels were observed in wet weather samples collected from areas where sanitary sewage contamination was not possible. In their samples taken during a wet weather event on 2002, areas that were both prone and not prone to use by urban animal life and where contamination from sanitary sewage was not a possibility, levels of *E. coli* regularly exceeded 2419.2 mpn/100 ml. In areas prone to urban animal use alone, all but one of Pitt and Shergill's samples exceeded 2419.2 mpn/100 ml. The one sample that was lowest was measured at 344.8 mpn/100 ml, only 4.2 mpn/100 ml below the SCDHEC TMDL standard of 349.