City of Richmond Hill, Georgia

Stormwater Management Plan (SWMP)

National Pollutant Discharge & Elimination System (NPDES)
Phase II Municipal Separate Storm Sewer System (MS4) Permit 2012

Submitted to:
Environmental Protection Division
Georgia Department of Natural Resources

January 2015

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ACRONYMS/DEFINITIONS

BMPs	Best Management Practices
CIP	Capital Improvement Project
CORH	City of Richmond Hill
E&S	Erosion & Sedimentation
EOC	Emergency Operations Center
EPD	Georgia Environmental Protection Division
ERP	Enforcement Response Plan
ESPC	Erosion, Sedimentation & Pollution Control
GESA	Georgia Erosion & Sedimentation Act
GIS	Geographic Information System
GSMM	Georgia Stormwater Management Manual
GSWCC	Georgia Soil & Water Conservation Commission
IDDE	Illicit Discharge Detection & Elimination
LDP	Land Disturbance Permit
LIA	Local Issuing Authority
MNGWPD	Metropolitan North Georgia Water Planning District
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MS4	Municipal Separate Storm Sewer System
NOI	Notice of Intent
NPDES	National Pollutant Discharge & Elimination System
POC	Pollution of Concern
QA/QC	Quality Assurance/Quality Control
ROW	Right of Way
SOP	Standard Operating Procedure
SWCD	Soil and Water Conservation District
SWMP	Stormwater Management Plan
TSS	Total Suspended Solids

EXECUTIVE SUMMARY

The City of Richmond Hill (CORH) was designated by the EPD as a City that must seek coverage under the National Pollutant Discharge and Elimination System (NPDES) Phase II Municipal Separate Storm Sewer System (MS4) Permit, issued December 6, 2012, as required by provisions of the Georgia Water Quality Control Act and the Federal Clean Water Act. This permit requires the development of a Stormwater Management Plan (SWMP), to address the following provisions of Section 4.2 Minimum Measures:

- Public Education
- Public Involvement
- Illicit Discharge Detection and Elimination
- Erosion & Sedimentation (E&S) Control
- Post Construction Stormwater Management Control
- Good Housekeeping

The NPDES Phase II MS4 Permit also requires that the SWMP address additional future requirements, as follows:

- Development of an Enforcement Response Plan (ERP) by 2014
- Impaired Waterway Monitoring and Implementation Plan by 2015
- Green Infrastructure Ordinance review by 2015; update by 2016, if needed

LOCAL WATERWAYS TO WHICH THE MS4 DISCHARGES

The CORH's MS4 discharges to the Lower Ogeechee River Watershed. All streams within the City are within this basin and ultimately discharge into the Ogeechee River.

Table 1 summarizes the 303(d) listed streams and the pollutant within the CORH limits.

Table 1: Streams within the CORH listed on the Georgia 2012 303(d) List

Reach	County	Location	Extent (miles)	Pollutant of Concern	TMDL Approved	Source
Sterling Creek	Bryan	Headwaters to the Ogeechee River	8.6	FC	No	Urban runoff
Ogeechee River	Bryan Chatham Effingham	Black Creek to Richmond Hill	23.3	TWR	Yes	NP
FC = Fecal Coliform; Bio F = Biota Impacted (Fish Community); FCG= Fish Consumption Guidance						

Reach	County	Location	Extent (miles)	Pollutant of Concern	TMDL Approved	Source
This document is intended for reference use only and does not replace Georgia's official 2012 303(d) list. Any discrepancy or inconsistency between this document and the official 303(d) list should be resolved by referring to the official 2012 305(b)/303(d) list.						

A. PUBLIC EDUCATION AND OUTREACH ON STORMWATER IMPACTS

40 CFR Part 122.34(b)(1) Requirement: You must implement a public education program to distribute educational materials to the community or conduct equivalent outreach activities about the impacts of stormwater discharges on water bodies and the steps that the public can take to reduce pollutants in stormwater runoff.

The BMPs listed below address the requirements above in accordance with the guidelines included in Table 4.2.1(a) of the NPDES Phase II MS4 permit.

A.1. BMP: STORMWATER EDUCATION – INSERTS IN LOCAL NEWSPAPER

Permit Section: 4.2.1(a)1

A.1.1. Target Audience

Residents of Richmond Hill

A.1.2. Description of BMP

The CORH will publish one article/story in the local newspaper ("Bryan County News") to inform the public of stormwater management topics and other local stormwater related issues. Topics will include, but are not limited to:

- Preventing Stormwater Pollution
- Reporting Illicit Discharges
- Proper Disposal of Hazardous Materials
- Good Housekeeping Measures for residential and commercial properties

This article will also be published on the CORH Stormwater Management Webpage (A.2).

A.1.3. Measurable Goal(s):

a. The CORH will publish one (1) article/story per year

A.1.4. Documentation to be submitted with each annual report:

Each article published within the reporting year will be submitted with that year's annual report.

A.1.5. Schedule:

a. *Interim Milestone Dates:* Articles
b. *Implementation Date:* 2015
c. *Frequency of Actions:* Articles/stories will be published once per year
d. *Month/Year of Each Action:* 2015 - 2018

A.1.6. Person (position) responsible for overall management and implementation of the BMP: Planning and Zoning Director

A.1.7. Rationale for choosing BMP and setting measurable goal(s):

The BMP provides information to the public on stormwater management related issues in a format that they are more likely to view, i.e. website and newspapers. Furthermore, because this information is generated every year, the CORH can keep the public up-to-date on new and developing issues related to stormwater. By utilizing two methods for delivery of the message, i.e. newspapers and website, the City will be sure to reach residents of all ages and technological abilities.

A.1.8. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

The Bryan County News has records of its distribution, so the City can find out how many residents had the opportunity to read the articles.

A.2. BMP: STORMWATER WEBPAGE

Permit Section: 4.2.1(a)1

A.2.1. Target Audience

General public, businesses and industries

A.2.2. Description of BMP

The City will establish a Stormwater Webpage. This webpage will include general information on stormwater pollution prevention, as well as more specific information such as:

- Reporting of illicit discharges
- NPDES Phase II MS4 Permit
- Stormwater Brochures
- Flood Management Program
- Community Involvement Opportunities

The CORH will monitor and update the information on this website on an annual basis. The CORH will encourage the public to visit this site by including the web address in outreach materials, such as: press releases, utility bills, e-newsletters, Facebook page, etc. The CORH will establish an internal tracking mechanism to count the number of visitors that view and click on the Stormwater Webpage by March 2015.

A.2.3. Measurable Goal(s):

a. The CORH will review and update the information on the website at least once per year
b. The CORH will encourage the public to visit the website once per year through local media

A.2.4. Documentation to be submitted with each annual report

Copies of information posted to the website during the reporting period and promotional material where the website was mentioned.

A.2.5. Schedule:

a. *Interim Milestone Dates:* Establish webpage by March 2015
b. *Implementation Date:* 2015
c. *Frequency of Actions:* Update website once per year
Advertise website once per year
d. *Month/Year of Each Action:* 2015 – 2018

A.2.6. Person (position) responsible for overall management and implementation of the BMP:

Executive Assistant to the City Manager

A.2.7. Rationale for choosing BMP and setting measurable goal(s):

The BMP provides information to the public on stormwater management related issues in a

format that they are more likely to view, i.e. website. Furthermore, because this information is updated once per year, the CORH can keep the public up-to-date on new and developing issues related to stormwater.

A.2.8. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

As this educational material is continuously distributed within the community, the general public will become better educated on stormwater management issues and reduce their impacts on local waterways.

B. PUBLIC INVOLVEMENT / PARTICIPATION

<u>40 CFR Part 122.34(b)(2) Requirement:</u> You must, at a minimum, comply with State, Tribal, and local public notice requirements when implementing a public involvement/ participation program.

The BMPs listed below address the requirements above in accordance with the guidelines included in Table 4.2.2(a) of the NPDES Phase II MS4 permit.

B.1. BMP: STORM DRAIN MARKING

Permit Section: 4.2.2(a)1

B.1.1. Target Audience

Community groups such as Boy Scouts, schools, local volunteer organization and the general public

B.1.2. Description of BMP

The City staff will identify a local civic organization and coordinate their efforts to mark storm drains within the City. The storm drain markers will be specially designed to alert people that water and other materials that are introduced into the system will eventually discharge into local streams and creeks. This BMP both involves and educates the general public on how their personal behavior (i.e. **not** dumping non-stormwater materials in storm drains) can help reduce stormwater pollution within the community. The proposed storm drain markers will be the standard "No Dumping, Drains to Waterways" decal that affixes to the drainage structure.

B.1.3. Measurable Goal(s):

a. The City staff will work with a designated group from within the City that will mark up to **twenty (20)** storm drains per year.

B.1.4. Documentation to be submitted with each annual report:

The City will include the number of storm drain markers installed in the Annual Report each year.

B.1.5. Schedule:

a. *Interim Milestone Dates:* n/a
b. *Implementation Date:* 2015
c. *Frequency of Actions:* Annual
d. *Month/Year of Each Action:* 2015 - 2017

B.1.6. Person (position) responsible for overall management and implementation of the BMP:

Planning and Zoning Director

B.1.7. Rationale for choosing BMP and setting measurable goal(s):

The City has adopted this BMP to facilitate public participation in the education of residents within the community about ways they can have a positive impact of stormwater pollution.

B.1.8. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

It is a common misunderstanding that storm drains are connected to the sanitary sewer, as opposed to the storm sewer system. By applying these storm drain markers, the volunteers, and the general public, will learn that pollutants placed in a storm drain will eventually be discharged to a local waterway. This will reduce the amount of non-point source pollution by addressing the source of that pollution.

B.2. BMP: BRING ONE FOR THE CHIPPER

Permit Section: 4.2.2(a)1

B.2.1. Target Audience

The general public

B.2.2. Description of BMP

The CORH will continue to implement the "Bring One for the Chipper" program to encourage people to properly dispose of their Christmas trees. The City's Parks and Trees Department will host the annual event where residents can bring in old Christmas trees to be chipped and recycled into mulch. The mulch is then used on City property and provided to residents at no charge. This event is advertised on the City's webpage and local media. The City will maintain records of the number of trees recycled.

B.2.3. Measurable Goal(s):

a. Hold the Bring One for the Chipper event once per year.
b. Advertise the event on the City's website and local media.

B.2.4. Documentation to be submitted with each annual report

Number of trees recycled will be included in that year's annual report. A copy of any outreach material advertising the event will also be included.

B.2.5. Schedule:

a. *Interim Milestone Dates:* n/a
b. *Implementation Date:* 2014
c. *Frequency of Actions:* One event per year
d. *Month/Year of Each Action:* 2014 - 2018

B.2.6. Person (position) responsible for overall management and implementation of the BMP:

Parks and Tree Director

B.2.7. Rationale for choosing BMP and setting measurable goal(s):

The object of having this event is to facilitate public participation in stormwater program implementation while making the public aware of issues related to dumping of organic materials in the drainage system. Debris, such as discarded trees, can block streams causing flooding and also cause water quality impairments as they decay.

B.2.8. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

The CORH will be able to keep records of the amount of trees collected and therefore prevented from entering the drainage system. This is a direct measurement of the effectiveness of this BMP in removing pollution.

C. ILLICIT DISCHARGE DETECTION AND ELIMINATION

40 CFR Part 122.34(b)(3) Requirement: You must develop, implement and enforce a program to detect and eliminate illicit discharges into your small MS4. You must:

A) Develop, if not already completed, a storm sewer system map, showing the location of all outfalls and the names and location of all waters of the State that receive discharges from those outfalls;

B) Effectively prohibit, through ordinance, or other regulatory mechanism, non-stormwater discharges into your storm sewer system and implement appropriate enforcement procedures and actions;

C) Develop and implement a plan to detect and address non-stormwater discharges, including illegal dumping, to your system; and

D) Inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste.

The BMPs listed below address the requirements above in accordance with the guidelines included in Table 4.2.3(a) of the NPDES Phase II MS4 permit.

C.1. BMP: LEGAL AUTHORITY

Permit Section: 4.2.3(a)1

C.1.1. Description of BMP

The CORH will adopt an ordinance that addresses illicit discharges. The purpose of this ordinance will be to prohibit non-stormwater discharges into the storm sewer system and to establish appropriate enforcement procedures.

C.1.2. Measurable Goal(s):

a. Adopt Illicit Discharge Ordinance
b. Enforce 100% of violations of the ordinance

C.1.3. Documentation to be submitted with each annual report

Once adopted, the ordinance will be submitted to EPD. In the future, the City will evaluate the ordinance periodically to determine if charges are needed that will allow the City to better manage illicit discharges. If the ordinance is revised during the reporting period, a copy of the revised ordinance will be submitted to the Georgia EPD.

C.1.4. Schedule:

a. *Interim Milestone Dates:* Adoption of Illicit Discharge Ordinance in March 2015
b. *Implementation Date:* 2015
c. *Frequency of Actions:* Annual evaluation of ordinance.
d. *Month/Year of Each Action:* 2015 - 2018

C.1.5. Person (position) responsible for overall management and implementation of the BMP: Planning and Zoning Director

C.1.6. Rationale for choosing BMP and setting measurable goal(s):
An Illicit Discharge Ordinance is necessary to provide the City with the authority to implement an Illicit Discharge Detection and Elimination program.

C.1.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit
The CORH will maintain the records of the number and types of illicit discharges eliminated through enforcement of this ordinance.

C.2. BMP: MS4 OUTFALL INVENTORY

Permit Section: 4.2.3(a)2

C.2.1. Description of BMP

The NPDES Phase II MS4 permit defines an "MS4 Outfall" to be "the most downstream point (i.e. final discharge point) on an MS4 where it discharges to waters of the State." The City will complete a GIS inventory of MS4 outfalls by December 2017. A map and inventory of MS4 outfalls identified during each reporting period will be included in each annual report as the City completes this inventory. The City intends to engage a consultant to perform the GIS inventory of MS4 outfalls beginning in 2015. The inventory work will continue until complete.

C.2.2. Measurable Goal(s):

a. Complete the inventory of MS4 Outfalls.
b. Provide an update to EPD annually of any MS4 outfalls added to the inventory during the reporting period.

C.2.3. Documentation to be submitted with each annual report:

The City will provide an updated inventory and map of all MS4 outfalls in each Annual Report.

C.2.4. Schedule:

a. *Interim Milestone Dates:* Provide update to EPD on progress of inventory in the Annual Reports due February 15, 2016 and February 15, 2017.
b. *Implementation Date:* 2017
c. *Frequency of Actions:* Update inventory and map each year as new outfalls are added and deleted
d. *Month/Year of Each Action:* 2014 – 2017

C.2.5. Person (position) responsible for overall management and implementation of the BMP:

Planning and Zoning Director.

C.2.6. Rationale for choosing BMP and setting measurable goal(s):

The CORH needs an accurate inventory of its MS4 outfalls to implement an effective dry weather screening program. Ensuring that outfalls screened are actual MS4 outfalls will make the most efficient use of City resources.

C.2.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

The CORH will maintain the records of the number and types of illicit discharges eliminated through implementation of the dry weather screening program.

C.3. BMP: ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE) PLAN

Permit Section: 4.2.3(a)3

C.3.1. Description of BMP

The CORH has prepared an IDDE Plan, included in Appendix C, and will perform dry weather screening of the MS4 outfalls within its current inventory. The CORH will investigate any potential illicit discharges in accordance with the procedures outlines in the IDDE Plan. Suspect or obvious illicit discharges require follow-up actions and activities to determine the specific source(s) of contamination. There are a variety of methods for illicit discharge source identification/tracing, including: mapping analysis, drainage area investigation, piping schematic review, smoke testing, dye testing and septic system investigation. Should the CORH positively identify any illicit discharges, the CORH will implement the Illicit Discharge Ordinance to remove positively identified illicit discharges.

The CORH will establish 5 screening districts that make up roughly 20% of the land area of the City. The City will complete the screening of outfalls in one district per year so that 100% of the inventory of MS4 outfalls is screened over a five-year period.

C.3.2. Measurable Goal(s):

a. Dry weather screen 100% of all MS4 outfalls over a five-year period.
b. Investigate and perform source tracing for 100% of all suspected illicit discharges
c. Enforce the Illicit Discharge Ordinance and ERP for 100% of positively identified illicit discharges

C.3.3. Documentation to be submitted with each annual report

The checklists for the MS4 outfalls screened will be included in the Annual Report. Records of any source tracing or enforcement activities conducted as a result of the dry weather screening activities will also be included in the Annual Report.

C.3.4. Schedule:

a. *Interim Milestone Dates:* n/a
b. *Implementation Date:* 2015
c. *Frequency of Actions:* Annual
d. *Month/Year of Each Action:* 2015 - 2018

C.3.5. Person (position) responsible for overall management and implementation of the BMP: Public Works Director

C.3.6. Rationale for choosing BMP and setting measurable goal(s):

Dry weather screenings are useful in identifying illicit discharges and sources. Appropriate corrective and enforcement actions will be taken if an illicit discharge is detected.

C.3.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

The CORH will maintain the records of the number and types of illicit discharges investigated and eliminated through implementation of this BMP.

C.4. BMP: ILLICIT DISCHARGE EDUCATION

Permit Section: 4.2.3(a)4

C.4.1. Description of BMP

The CORH will make publicly available information on identification of illicit discharges and illicit discharge prevention. The purpose of this BMP is to inform the public, employees, and businesses of the hazards associated with illegal discharges and how to prevent them in the household and/or workplace. The CORH will include education information on illicit discharges on the stormwater webpage and will address illicit discharges in its stormwater articles at least once per year. Educational materials will encourage residents to report illicit discharges and illicit dumping, and will include the City Hall Citizen Complaint number 912-756-3345. In addition, the CORH stormwater webpage will include a link to allow residents to report illicit discharges/dumping through the website. This BMP is closely related to the Public Education BMPs A.1 and A.2 and IDDE BMP C.5.

C.4.2. Measurable Goal(s):

a. Update the CORH Stormwater webpage on an annual basis with illicit discharge educational information
b. Draft one article per year that addresses illicit discharge prevention

C.4.3. Documentation to be submitted with each annual report

Articles made publicly available on the CORH website as well as any other illicit discharge related educational materials will be submitted with each annual report.

C.4.4. Schedule:

a. *Interim Milestone Dates:* Establish webpage by December 2014
b. *Implementation Date:* 2014
c. *Frequency of Actions:* Annually
d. *Month/Year of Each Action:* 2014 - 2017

C.4.5. Person (position) responsible for overall management and implementation of the BMP:

Public Works / Planning and Zoning Department/Executive Assistant to the City Manger

C.4.6. Rationale for choosing BMP and setting measurable goal(s):

This BMP will increase public awareness on the negative effects of illicit discharges into streams and how to prevent these occurrences.

C.4.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

The CORH will establish an internal tracking mechanism to count the number of visitors that view and click on the Stormwater Webpage. This data will allow the CORH to track the number of visitors who view educational materials.

C.5. BMP: CITIZEN COMPLAINT RESPONSE

Permit Section: 4.2.3(a)5

C.5.1. Description of BMP

The CORH will implement a program for receiving, investigating, and tracking the status of illicit discharge complaints. Procedures for the Citizen Complaint Response program are included in Appendix C. Complaints can be made by calling the City Hall Complaint Hotline at 912-756-3345. The City website will also allow for electronic submittal of stormwater complaints by providing a link on the stormwater webpage at www.richmondhill-ga.gov/requesttracker.aspx. All citizen complaints will be documented by City staff and then directed to the appropriate department for follow up within three (3) business days. All complaints received, the City's response, records of any investigation activities performed, and enforcement actions undertaken will be recorded in the City's Stormwater Complaint Database.

C.5.2. Measurable Goal(s):

a. Investigate illicit discharge complaints within three (3) business days
b. Record illicit discharge complaints in the electronic database

C.5.3. Documentation to be submitted with each annual report

Illicit discharge complaints as well as any action taken by the City to address the complaints will be compiled in an electronic database and reported annually

C.5.4. Schedule:

a. *Interim Milestone Dates:* n/a
b. *Implementation Date:* 2014
c. *Frequency of Actions:* As complaints are received
d. *Month/Year of Each Action:* 2014 - 2017

C.5.5. Person (position) responsible for overall management and implementation of the BMP: Public Works / Planning and Zoning

C.5.6. Rationale for choosing BMP and setting measurable goal(s):

Illicit discharges may be more easily identified and corrected by providing the public a way to report complaints.

C.5.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

The CORH will maintain the records of the number and types of illicit discharge complaints investigated and the number of illicit discharges eliminated through this BMP.

D. CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

<u>40 CFR Part 122.34(b)(4) Requirement</u>: You must develop, implement, and enforce a program to reduce pollutants in any stormwater runoff to your small MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. Reduction of stormwater discharges from construction activity disturbing less than one acre must be included in your program if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more. Your program must include:

A) An ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions to ensure compliance;

B) Requirements for construction site operators to implement appropriate erosion and sediment control best management practices;

C) Requirements for construction site operators to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality;

D) Procedures for site plan review which incorporate consideration of potential water quality impacts;

E) Procedures for receipt and consideration of information submitted by the public; and

F) Procedures for site inspection and enforcement of control measures.

The BMPs listed below address the requirements above in accordance with the guidelines included in Table 4.2.4(a) of the NPDES Phase II MS4 permit.

D.1. BMP: LEGAL AUTHORITY

Permit Section: 4.2.4(a)1

D.1.1. Description of BMP

The CORH adopted the State model Erosion, Sedimentation and Pollution Control Ordinance (E&S Ordinance) to reflect most recent amendments to the Georgia Erosion and Sedimentation Act (GESA). The CORH is a Local Issuing Authority (LIA) and inspects active constructions sites for violations of this ordinance. The Natural Resources Conservation Service (NRCS) conducts the reviews of Erosion, Sedimentation, and Pollution Control Plans on behalf of the Soil and water Conservation Commission. The CORH will continue to enforce this ordinance and update it as mandated by the State to maintain its LIA status.

The City will also review its current E&S Ordinance and Litter Control Ordinance and amend these policies to require construction site operators to control waste as stipulated in the NPDES Phase II MS4 permit.

D.1.2. Documentation to be submitted with each annual report

Modification of an ordinance to include language in D.1.3.(b) will be completed and included with the annual report submittal in 2015. Any other changes made to the ordinance during the term of the permit will be included in each year's annual report.

D.1.3. Measurable Goal(s):

a. Enforce ordinance
b. Update an appropriate ordinance, as required by the State, to include the language: "*…construction site operators to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site…*"

D.1.4. Schedule:

a. *Interim Milestone Dates:* Ordinance modification by February 2015
b. *Implementation Date:* 2014
c. *Frequency of Actions:* As needed
d. *Month/Year of Each Action:* 2014 - 2017

D.1.5. Person (position) responsible for overall management and implementation of the BMP: Planning and Zoning Director

D.1.6. Rationale for choosing BMP and setting measurable goal(s):

This ordinance is needed to allow the CORH to implement an Erosion and Sedimentation Control Program. It is also required by the State that all LIAs adopt the model ordinance.

D.1.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

The CORH will maintain the records of the number and types of E&S violations investigated and the number of sediment discharges eliminated through implementation of the ordinance.

D.2. BMP: SITE PLAN REVIEW

Permit Section: 4.2.4(a)2

D.2.1. Description of BMP

The CORH will conduct ESPC plan reviews for all development projects requiring an LDP and disturbing more than one (1) acre of land or are part of a larger common development that disturbs more than one (1) acre of land. The ESPC plans are reviewed for compliance with the City's E&S Ordinances by certified City staff to ensure effective control of potential polluted stormwater runoff during construction. The number of plans reviewed and plans approved will be reported on an annual basis. ESPC plans are reviewed for compliance with the Manual for Erosion and Sedimentation Control in Georgia "Green Book" and the E&S Ordinance.

D.2.2. Measurable Goal(s):

a. 100% of site plans for projects disturbing over one (1) acre of land will be reviewed by the CORH certified personnel

D.2.3. Documentation to be submitted with each annual report

A list of the site plans received and the number of site plans reviewed, approved or denied will be included in each year's annual report.

D.2.4. Schedule:

a. *Interim Milestone Dates:* n/a
b. *Implementation Date:* 2014
c. *Frequency of Actions:* As ESPC plans are submitted
d. *Month/Year of Each Action:* 2014 - 2017

D.2.5. Person (position) responsible for overall management and implementation of the BMP: Planning and Zoning Director

D.2.6. Rationale for choosing BMP and setting measurable goal(s):

Utilizing the Georgia Soil and Water Conservation Commission (GSWCC) standardized checklist to perform the plan review will ensure a consistent and comprehensive review process.

D.2.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

This BMP ensures that the developer implements an approved E&S plan to prevent sediment from leaving the construction site. State law mandates that discharges from developing sites cannot increase the Total Suspended Solids (TSS) in the receiving stream by more than 25 Nephelometric Turbidity Units (NTUs) so implementation of the approved ESPC plan should achieve that water quality goal.

D.3. BMP: EROSION & SEDIMENTATION (E&S) INSPECTIONS

Permit Section: 4.2.4(a)3

D.3.1. Description of BMP

The CORH certified personnel will conduct inspections of construction sites and enforce the requirements of the E&S Ordinance. All projects with an active LDP are to be inspected to ensure that proper E&S measures have been installed and maintained according to the approved ESPC plan. Inspectors will inspect sites after the installation of initial BMPs, during active construction, and after final site stabilization. Inspections will be conducted by city staff certified in the fundamentals of E&S control. Inspections are conducted following the *Field Manual for Erosion and Sediment Control in Georgia* ("Green Book"). If violations are discovered during an inspection, enforcement actions are taken in accordance with the E&S Ordinance included in Appendix A.

D.3.2. Measurable Goal(s):

a. Active development sites with an LDP are inspected after installation of initial BMPs, during active construction, and after final site stabilization.

D.3.3. Documentation to be submitted in each annual report:

A list of active construction sites and any inspections conducted will be included in the annual report for that reporting year.

D.3.4. Schedule:

a. *Interim Milestone Dates:* n/a
b. *Implementation Date:* 2014
c. *Frequency of Actions:* As LDP projects are constructed
d. *Month/Year of Each Action:* 2014 - 2017

D.3.5. Person (position) responsible for overall management and implementation of the BMP: Planning and Zoning Director

D.3.6. Rationale for choosing BMP and setting measurable goal(s):

E&S inspections and enforcement of the ordinance will prevent excessive erosion and sedimentation from construction activities.

D.3.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

This BMP ensures that developers implement approved ESPC plans to prevent sediment from leaving construction sites in the CORH. State law mandates that discharges from developing sites cannot increase the TSS in the receiving stream by more than 25 NTUs so implementation of the approved ESPC plan should achieve that water quality goal. The CORH will keep records of the number and nature of E&S violations that were discovered and addressed through implementation of this BMP.

D.4. BMP: ENFORCEMENT PROCEDURES FOR EROSION & SEDIMENTATION VIOLATIONS

Permit Section: 4.2.4(a)4

D.4.1. Description of BMP

The CORH will implement enforcement procedures for E&S violations documented at construction sites in accordance with the E&S Ordinance, included in Appendix A. The E&S Ordinance specifically includes an escalating series of enforcement mechanisms available including:

- For the first and second violations of the E&S ordinance, the City shall issue a written warning to the violator. The violator shall have five (5) days to correct the violation. If the violation is not corrected within five (5) days, the director or the local issuing authority shall issue a stop-work order requiring that land-disturbing activities be stopped until necessary corrective action or mitigation has occurred.
- If the violation presents an imminent threat to public health or waters of the state or if the land-disturbing activities are conducted without obtaining the necessary permit, the director or the local issuing authority shall issue an immediate stop-work order.
- For a third and each subsequent violation, the director or the local issuing authority shall issue an immediate stop-work order.

If the violator fails to take action within the prescribed time period, the City shall take enforcement actions, including: stop work orders, bond forfeiture, and monetary penalties of up to $1,000 per violation per day.

D.4.2. Measurable Goal(s):

a. Implement enforcement actions for 100% of identified violations in accordance with E&S ordinance.

D.4.3. Documentation to be submitted with each annual report

Documentation of any enforcement actions taken during the reporting period will be included in each annual report.

D.4.4. Schedule:

a. *Interim Milestone Dates:* n/a
b. *Implementation Date:* 2014
c. *Frequency of Actions:* Ongoing
d. *Month/Year of Each Action:* 2015 – 2018

D.4.5. Person (position) responsible for overall management and implementation of the BMP: Planning and Zoning Director

D.4.6. Rationale for choosing BMP and setting measurable goal(s):

Effective enforcement of the CORH ordinances is necessary to ensure that they appropriately regulate various aspects of the SWMP to protect water quality.

D.4.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

The CORH will maintain records of the number and nature of enforcement actions taken to enforce the ERP. These will be submitted to EPD in the Annual Report, beginning with the 2014 Annual Report.

D.5. BMP: CITIZEN COMPLAINT RESPONSE

Permit Section: 4.2.4(a)5

D.5.1. Description of BMP

The CORH will implement a program for receiving, investigating, and tracking the status of E&S complaints. The CORH will implement a program for receiving, investigating, and tracking the status of illicit discharge complaints. Procedures for the Citizen Complaint Response program are included in Appendix C. Complaints can be made by calling the City Hall Complaint Hotline at 912-756-3345. The City website will also allow for electronic submittal of stormwater complaints by providing a link on the stormwater webpage at www.richmondhill-ga.gov/requesttracker.aspx. All citizen complaints will be documented by City staff and then directed to the appropriate department for follow up within three (3) business days. All complaints received, the City's response, records of any investigation activities performed, and enforcement actions undertaken will be recorded in the City's Stormwater Complaint Database.

D.5.2. Measurable Goal(s):

c. Investigate E&S complaints within three (3) business days
d. Record complaints in the electronic database

D.5.3. Documentation to be submitted with each annual report:

A copy of the complaint response database with all complaints and actions taken will be included in the annual report.

D.5.4. Schedule:

e. *Interim Milestone Dates:* n/a
f. *Implementation Date:* 2014
g. *Frequency of Actions:* As complaints are received
h. *Month/Year of Each Action:* 2014 - 2017

D.5.5. Person (position) responsible for overall management and implementation of the BMP:

Planning and Zoning Director/Executive Assistant to the City Manager

D.5.6. Rationale for choosing BMP and setting measurable goal(s):

E&S problems may be more easily identified and corrected by providing the public a way to report complaints.

D.5.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

The City will maintain the records of the number and types of E&S complaints investigated through implementation of this BMP.

D.6. BMP: EMPLOYEE E&S CERTIFICATION

Permit Section: 4.2.4(a)6

D.6.1. Description of BMP

GESA now requires all local government employees involved with plan review, site inspections, or E&S Ordinance enforcement, as well as construction site operators to undergo the applicable training seminars developed by the GSWCC. The CORH requires all construction site operators to maintain documentation on-site that they have received the appropriate certification. Evidence of site personnel certification must also be produced if requested by CORH inspectors during an E&S inspection. The CORH also requires all applicable staff to receive this training as soon as possible after the start of their employment.

D.6.2. Measurable Goal(s):

a. 100% of CORH employees involved in the E&S Program will receive applicable E&S certification
b. 100% of construction site operators with LDA permits will have applicable E&S certification

D.6.3. Documentation to be submitted with each annual report

Proof of certification for applicable employees will be submitted with each annual report.

D.6.4. Schedule:

a. *Interim Milestone Dates:* n/a
b. *Implementation Date:* 2014
c. *Frequency of Actions:* Ongoing
d. *Month/Year of Each Action:* 2014 - 2017

D.6.5. Person (position) responsible for overall management and implementation of the BMP:

Planning and Zoning Director

D.6.6. Rationale for choosing BMP and setting measurable goal(s):

By requiring certification for CORH employees (inspectors and plan reviewers) and for construction site operators, the CORH will ensure that ESPC plan is correctly designed and implemented on site.

D.6.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

This BMP ensures that E&S BMPs are installed correctly to prevent sediment from leaving the construction site. State law mandates that discharges from developing sites cannot increase the TSS in the receiving stream by more than 25 NTUs so implementation of the approved ESPC plan should achieve that water quality goal. The City will require that all personnel involved in E&S activities are maintain their certification and seek re-certification in accordance with the requirements of the GSWCC.

E. POST-CONSTRUCTION STORMWATER MANAGEMENT IN NEW DEVELOPMENT & REDEVELOPMENT

<u>40 CFR Part 122.34(b)(5) Requirement</u>: You must develop, implement, and enforce a program to address stormwater runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into your small MS4. You must:

A) Develop and implement strategies which include a combination of structural and/or non-structural BMPs appropriate for your community;

B) Use an ordinance or other regulatory mechanism to address post-construction runoff from new development or redevelopment projects; and

C) Ensure adequate long-term operation and maintenance of BMPs.

The BMPs listed below address the requirements above in accordance with the guidelines included in Table 4.2.5(a) of the NPDES Phase II MS4 permit.

E.1. BMP: LEGAL AUTHORITY

Permit Section: 4.2.5(a)1

E.1.1. Description of BMP

The CORH will adopt and enforce a Post Construction Stormwater Management Ordinance that includes the stormwater design criteria established in the Coastal Stormwater Supplement (CSS) to the Georgia Stormwater Management Manual. The ordinance and design manual will apply to new development and redevelopment that creates or adds more than 5,000 sqft of impervious surface or that involves land disturbing activities of 1 acre or more. The design criteria within the ordinance will be consistent with those listed in Section 4.2.5.1 of the NDPES Phase II MS4 permit.

E.1.2. Measurable Goal(s):

a. Adopt Post Construction Stormwater Management Ordinance
b. Review the ordinance annually to ensure that legal authority is available to address post construction runoff from new and redevelopment projects.

E.1.3. Documentation to be submitted with each annual report

If the ordinance is adopted or revised during the reporting period, a copy of the newly adopted ordinance will be submitted with the annual report.

E.1.4. Schedule:

a. *Interim Milestone Dates:* Ordinance to be adopted by March 7, 2015

b. *Implementation Date:* 2015
c. *Frequency of Actions:* As site plans are submitted
d. *Month/Year of Each Action:* 2015 - 2017

E.1.5. Person (position) responsible for overall management and implementation of the BMP: Planning and Zoning Director.

E.1.6. Rationale for choosing BMP and setting measurable goal(s):

Ordinances are an effective way to establish performance standards for runoff controls. In order to protect the environment from stormwater runoff impacts all new developments and redevelopment site plans have to address stormwater runoff quality and quantity impacts resulting from alteration of the landscape. The City's future ordinance will promote the design and construction of structural and non-structural BMPs that will control and reduce the impacts of stormwater runoff from newly constructed and redeveloped sites

E.1.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

The CORH will maintain the records of the number of stormwater management plans reviewed and approved in accordance with this ordinance and the GSMM. By taking a better site design approach to stormwater management plan design, the CORH will ensure that new and re-development projects comply with applicable post construction stormwater management requirements related to water quality. Furthermore, the ordinance and CSS require that all stormwater management site plans be designed to reduce TSS by 80% and to reduce the volume of stormwater runoff associated with the first 1.2" of rain.

E.2. BMP: DETENTION POND/STORMWATER CONTROL INVENTORY

Permit Section: 4.2.5(a)2

E.2.1. Description of BMP

The CORH will complete an inventory of stormwater controls/BMPs, including detention ponds in a GIS format. This inventory will include both publically-owned and/or operated stormwater controls as well as those privately-owned stormwater controls constructed after the date of adoption for the Post Construction Control Ordinance. Those privately-owned structures, designed and constructed prior the adoption the Post Construction Runoff Control Ordinance will not be included in the inventory. All structures owned and/or maintained by the CORH, regardless of construction date, will be included the inventory. The initial inventory will be completed by December 2016 and submitted to EPD in the 2016 Annual Report, due February 15, 2017. The CORH will then update this database annually as new development and redevelopment occur.

E.2.2. Measurable Goal(s):

a. Complete inventory of detention ponds/stormwater controls by December 2016.
b. Update inventory as new development and redevelopment occur.

E.2.3. Documentation to be submitted in each annual report

As new structures are constructed or existing structures are identified during the reporting period, an updated inventory and map will be included on that year's annual report.

E.2.4. Schedule:

a. *Interim Milestone Dates:* Complete initial inventory by December 2016.
b. *Implementation Date:* 2015
c. *Frequency of Actions:* Ongoing, annual updates
d. *Month/Year of Each Action:* 2015 - 2017

E.2.5. Person (position) responsible for overall management and implementation of the BMP: Planning and Zoning Director

E.2.6. Rationale for choosing BMP and setting measurable goal(s):

This BMP provides the information necessary for the CORH to implement the maintenance provisions of its Post Construction Stormwater Management Ordinance and to implement the Private Detention Pond/Stormwater Control Inspection BMP E.3.

E.2.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

Detention ponds are supposed to be designed to remove 80% of TSS. Routine inspection and required maintenance ensure that ponds continue to function to meet this water quality goal.

E.3. BMP: STORMWATER FACILITY INSPECTION

Permit Section: 4.2.5(a)3

E.3.1. Description of BMP

The CORH will develop procedures for inspection of detention ponds and other stormwater management facilities by February 15, 2017. The approved procedures will outline a process to inspect approximately 20% of inventoried ponds per year such that 100% of the inventoried ponds will be inspected over a five-year period. As the inventory is updated, the number of inspections will be modified to reflect the current number of facilities.

E.3.2. Measurable Goal(s):

a. Develop
b. Inspect 100% of public stormwater facilities (i.e. detention ponds) every five years.
c. Inspect 100% of the private stormwater facilities (i.e. detention ponds) that are constructed after March 7, 2014 every five years.

E.3.3. Documentation to be submitted with each annual report:

Inspection reports will be included with each year's annual report.

E.3.4. Schedule:

a. *Interim Milestone Dates:* Develop Inspection Procedures by February 15, 2017.
b. *Implementation Date:* 2017
c. *Frequency of Actions:* Annual, upon approval
d. *Month/Year of Each Action:* 2017

E.3.5. Person (position) responsible for overall management and implementation of the BMP: Public Works Director

E.3.6. Rationale for choosing BMP and setting measurable goal(s):

This BMP allows the CORH to ensure that detention ponds/stormwater controls are operating effectively to remove pollutants.

E.3.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

Detention ponds are supposed to be designed to remove 80% of TSS. Routine inspection and appropriate maintenance ensure that ponds continue to function to meet this water quality goal.

E.4. BMP: STORMWATER FACILITY MAINTENANCE

Permit Section: 4.2.5(a)4

E.4.1. Description of BMP

In order to compel the maintenance of privately-owned detention ponds or other stormwater facilities, the CORH will adopt a Post-Construction Stormwater Management Control ordinance that requires private owners to maintain their structural controls. The ordinance will require development projects that include a stormwater facility/detention pond to develop an "Inspection and Maintenance Agreement" that must be approved with the Stormwater Management Site Plan. The future Post Construction Stormwater Management Control Ordinance and the Inspection and Maintenance Agreement will provide the CORH with the authority to inspect private stormwater facilities to ensure that they are being maintained in accordance with the Inspection and Maintenance Agreement.

The CORH also has the responsibility to inspect and maintain stormwater facilities/ponds that are either on CORH property or have been accepted by the CORH for maintenance. The CORH will perform maintenance activities based on the results of the inspection and in accordance with the Procedures for Detention Pond Inspection & Maintenance to be developed by February 15, 2017. Maintenance of publicly owned and maintained structures will be completed at the rate of 100% of such structures over a five-year period.

E.4.2. Measurable Goal(s):

a. Develop Detention Pond Inspection & Maintenance Procedures by February 15, 2017.
b. Maintain 100% of publicly-owned or maintained stormwater facilities as needed and identified through inspections over a five-year period.
c. Ensure that 100% of stormwater facilities, designed in accordance with the Post Construction Stormwater Management Ordinance, have a Maintenance and Inspection Agreement.
d. Notify private owners with Inspection and Maintenance Agreements of detention pond maintenance needs identified through inspection.

E.4.3. Documentation to be submitted with each annual report:

a. For publicly-owned structures and/or maintained structures, documentation of maintenance activities will be included with each year's annual report.
b. For privately-owned and maintained structures, maintenance agreements executed during a reporting year will be submitted with that year's annual report.

E.4.4. Schedule:

a. *Interim Milestone Dates:* Adopt Ordinance with Inspection and Maintenance Agreement by March 7, 2015
Develop Detention Pond Inspection & Maintenance Procedures by February 15, 2017.
b. *Implementation Date:* 2015

c. *Frequency of Actions:* Annually, in accordance with inspection results
d. *Month/Year of Each Action:* 2015 - 2017

E.4.5. Person (position) responsible for overall management and implementation of the BMP: Public Works Director

E.4.6. Rationale for choosing BMP and setting measurable goal(s):
By requiring developers/property owners to develop plans for inspecting and maintaining their detention ponds or other stormwater facilities through an Inspection and Maintenance Agreement, the CORH has the legal means to ensure that these facilities will be maintained and function properly after construction is complete.

E.4.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit
Detention ponds are supposed to be designed to remove 80% of TSS. Routine inspection and appropriate maintenance ensure that ponds continue to function to meet this water quality goal.

E.5 BMP: GREEN INFRASTRUCTURE (GI) LOW IMPACT DEVELOPMENT (LID) STRUCTURE INVENTORY

Permit Section: 4.2.5(a)5

E.5.1. Description of BMP

The City shall develop an inventory of all GI/LID structures within the City. At a minimum, this inventory will include those structures constructed after the effective date of NPDES Phase II MS4 Permittee designation (i.e. March 7, 2014). This inventory will contain information on the type, location, and number of GI/LD structures such as bio-retention, bio-swales, pervious pavement, green roofs, etc. The City will complete the initial inventory and submit it to EPD with the Annual Report that is to be submitted in February 15, 2015. The City will continue to update this inventory as new GI/LID structures are constructed.

The City's population is less than 10,000 so the "GI/LID Ordinance Review" activity is not applicable.

E.5.2. Measurable Goal(s):

a. Complete GI/LID structure inventory and submit to EPD in the annual report on February 15, 2015
b. Update inventory as new GI/LID structures are constructed

E.5.3 Documentation to be included with each annual report:

The updated inventory, including those structures added during that year's reporting year, will be included in that year's annual report**.**

E.5.4. Schedule:

a. *Interim Milestone Dates:* Submit inventory to EPD by February 15, 2015
b. *Implementation Date:* 2015
c. *Frequency of Actions:* As new GI/LID structures are constructed
d. *Month/Year of Each Action:* 2015 - 2017

E.5.5. Person (position) responsible for overall management and implementation of the BMP: Planning and Zoning Director

E.5.6. Rationale for choosing BMP and setting measurable goal(s):

This BMP allows the CORH to identify the location of GI/LID structures.

E.5.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

Each type of GI/LID practice has an estimated pollutant removal efficiency. By encouraging the incorporation of these types of practices in new and redevelopment, the CORH can estimate the amount of pollutants being removed through these practices. Furthermore, an inventory is necessary for inspection and maintenance purposes.

F. POLLUTION PREVENTION/ GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS

40 CFR Part 122.34(b)(6) Requirement: You must develop and implement an operation and maintenance program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations.

The BMPs listed below address the requirements above in accordance with the guidelines included in Table 4.2.6(a) of the NPDES Phase II MS4 permit.

F.1. BMP: MS4 INVENTORY

Permit Section: 4.2.6(a)1

F.1.1. Description of BMP

The CORH will develop an a GIS inventory and map of MS4 control structures including, but not limited to catch basins, inlets, pipes, ditches, and junctions. This inventory will be in a GIS format. The City will complete this inventory by February 15, 2018. After the initial inventory is complete, the CORH will continue to update this data as development and redevelopment occur.

F.1.2. Measurable Goal(s):

a. The City will complete an inventory and map of MS4 control structures by February 15, 2018 and include it in the Annual Report.
b. The City will update the status of the inventory work as well as the number of structures added during each reporting period in the Annual Reports.

F.1.3. Documentation to be submitted with each annual report:

a. The City will provide a completed inventory and map of all MS4 structural controls along with MS4 outfalls by February 15, 2018.
b. The City will provide annual updates of the MS4 structural control mapping inventory for each reporting period in the Annual Reports.

F.1.4. Schedule:

a. *Interim Milestone Dates:* Provide update to EPD on progress of inventory in the Annual Reports due February 15, 2016 and February 15, 2017.
b. *Implementation Date:* 2018
c. *Frequency of Actions:* Ongoing
d. *Month/Year of Each Action:* 2015 - 2018

F.1.5. Person (position) responsible for overall management and implementation of the BMP: Planning and Zoning Director

F.1.6. Rationale for choosing BMP and setting measurable goal(s):
This BMP provides the information necessary for the CORH to implement the MS4 Inspection and Maintenance Program.

F.1.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit
The MS4 must function as designed in order to reduce pollutants discharged from the system. Routine inspection and appropriate maintenance ensure that the MS4 continues to function to meet this water quality goal.

F.2. BMP: MS4 CONTROL STRUCTURE INSPECTIONS

Permit Section: 4.2.6(a)2

F.2.1. Description of BMP

The publicly-owned MS4 control structures will be inspected by the City as the initial GIS inventory is collected. Inspections of the MS4 structures will be conducted in accordance with the MS4 Inspection, Operation & Maintenance Procedures attached in Appendix E. The City maintains the stormwater drainage systems within the right-of-way (ROW) as well as stormwater controls on property owned by the City or within an easement with an express acceptance by the City. It is the City's intent to initially inspect these structures as the inventory is gathered and then to inspect these system components each year thereafter in accordance with a five (5) maintenance zone approach. The City has broken down the MS4 area into 5 maintenance zones. The City will inspect the MS4 within one zone per year, such that over a five-year period, the entire system is inspected.

F.2.2. Measurable Goal(s):

a. Inspect MS4 structures as the initial GIS inventory is collected.
b. Inspect the MS4 structures in one maintenance zone per year after completion of the initial inventory.

F.2.3. Schedule:

a. *Interim Milestone Dates:* n/a
b. *Implementation Date:* 2015
c. *Frequency of Actions:* Annual
d. *Month/Year of Each Action:* 2015 - 2017

F.2.4. Documentation to be submitted with each annual report:

The number and percentage of structures inspected during the reporting period will be included in each annual report.

F.2.5. Person (position) responsible for overall management and implementation of the BMP: Public Works Director

F.2.6. Rationale for choosing BMP and setting measurable goal(s):

This BMP allows the CORH to ensure that the MS4 is functioning properly and to reduce the pollutants discharged from the system.

F.2.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

The MS4 must function as designed in order to reduce pollutants discharged from the system. Routine inspection and appropriate maintenance ensure that the MS4 continues to function to meet this water quality goal.

F.3. BMP: MS4 MAINTENANCE

Permit Section: 4.2.6(a)3

F.3.1. Description of BMP

The CORH will perform maintenance activities based on the results of the inspection, in accordance with the MS4 Inspection and Maintenance procedures in Appendix E. Maintenance may include debris removal, cleaning of inlet and outlet structures, sediment and vegetation removal, and earthwork activities. Maintenance activities will be recorded in the City's work order database, and a summary of that database will be provided in the Annual Report.

F.3.2. Measurable Goal(s):

a. Maintain MS4 structures as needed, and as funding is available

F.3.3. Schedule:

a. *Interim Milestone Dates:* n/a
b. *Implementation Date:* 2015
c. *Frequency of Actions:* Ongoing
d. *Month/Year of Each Action:* 2015 - 2018

F.3.4. Documentation to be reported in each annual report:

A summary of the work order database will be included in the annual report.

F.3.5. Person (position) responsible for overall management and implementation of the BMP: Public Works Director

F.3.6. Rationale for choosing BMP and setting measurable goal(s):

This BMP allows the CORH to ensure that the MS4 is functioning properly and to reduce the pollutants discharged from the system.

F.3.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

The MS4 must function as designed in order to reduce pollutants discharged from the system. Routine inspections and appropriate maintenance ensure that the MS4 continues to function to meet this water quality goal.

F.4. BMP: STREET, PARKING LOT AND RIGHT-OF-WAY (ROW) CLEANING

Permit Section: 4.2.6(a)4

F.4.1. Description of BMP

The City implements a program to keep leaves and debris from being washed from the City's MS4 structures from the City streets and/or public parking lots. This program consists of performing street sweeping on all curb and gutter streets in residential neighborhoods, where most street trees are located. The City completes its street sweeping route approximately once per month.

The City public works crews will also pick up litter in City-owned parking lots and along City street ROW at least four times per year. This program is described further in the Street, Parking Lot & ROW Cleaning Procedures in Appendix F.

F.4.2. Measurable Goal(s):

a. Sweep curb and gutter residential City streets once per month
b. Pick-up of debris and litter from City Parking Lots and ROW areas four times per year.

F.4.3. Schedule:

a. *Interim Milestone Dates:* n/a
b. *Implementation Date:* 2014
c. *Frequency of Actions:* Daily
d. *Month/Year of Each Action:* 2014 - 2018

F.4.4. Documentation to be submitted with each annual report:

Detailed information on street sweeping and litter pickup activities completed the reporting period will be included in the annual report.

F.4.5. Person (position) responsible for overall management and implementation of the BMP: Public Works Director

F.4.6. Rationale for choosing BMP and setting measurable goal(s):

This BMP will reduce the amount of litter and other pollutants being discharged from City streets into the MS4.

F.4.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

The CORH will keep records or make estimates, based on accepted estimation techniques, of the amount of debris removed through each of these activities.

F.5. BMP: EMPLOYEE TRAINING

Permit Section: 4.2.6(a)5

F.5.1. Description of BMP

The CORH will facilitate one (1) training session per year for CORH employees who are involved in implementation of the SWMP. The employee training will address pollution prevention by recognizing illegal connections, illegal dumping, spill prevention, and containment practices to avoid hazardous chemicals in the storm drain system. A description of each training program and number of employees in attendance will be reported on an annual basis. Alternatively, the City may send City staff to an established off-site training program that address stormwater issues.

F.5.2. Measurable Goal(s):

a. Applicable employees attend one training session per year

F.5.3. Schedule:

a. *Interim Milestone Dates:* n/a
b. *Implementation Date:* 2015
c. *Frequency of Actions:* Annual
d. *Month/Year of Each Action:* 2015 - 2017

F.5.4. Documentation to be submitted with each annual report:

The date of any training conducted, training materials/agenda, and the number of attendees will be included in that year's annual report.

F.5.5. Person (position) responsible for overall management and implementation of the BMP: Planning and Zoning Director

F.5.6. Rationale for choosing BMP and setting measurable goal(s):

This BMP will help prevent water quality impacts due to activities undertaken by employees during municipal operations.

F.5.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

The CORH will keep records of any spills or discharges related to municipal operations. If training is successful, there should be minimal municipal operation spills.

F.6. BMP: DEBRIS DISPOSAL

Permit Section: 4.2.6(a)6

F.6.1. Description of BMP

The CORH will properly dispose of wastes including litter, debris, sediment, and other pollutants, removed from the drainage system during maintenance, street sweeping, litter pickup, or any other municipal activity. Waste will be disposed of in accordance with the MS4 Inspection, Operation, & Maintenance Procedures attached in Appendix E.

F.6.2. Measurable Goal(s):

a. Properly dispose of 100% of wastes removed from the MS4 in accordance with the MS4 Inspection, Operation, & Maintenance Procedures.

F.6.3. Schedule:

a. *Interim Milestone Dates:* 2014
b. *Implementation Date:* n/a
c. *Frequency of Actions:* Daily
d. *Month/Year of Each Action:* 2014 - 2018

F.6.4. Documentation to be submitted in each annual report:

Records of the amount of waste disposed of at the landfill will be included in the annual report.

F.6.5. Person (position) responsible for overall management and implementation of the BMP: Public Works Director

F.6.6. Rationale for choosing BMP and setting measurable goal(s):

This BMP ensures wastes resulting from stormwater management activities are disposed of appropriately and prevented from re-entering MS4.

F.6.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

The CORH will keep records or make estimates, based on accepted estimation techniques, of the amount of debris disposed of at the landfill.

F.7. BMP: NEW FLOOD CONTROL PROJECT ANALYSIS

Permit Section: 4.2.6(a)7

F.7.1. Description of BMP

The CORH will ensure that all new flood control projects are assessed for water quality impacts. For the purposes of this BMP, the CORH interprets "Flood Control Projects" to refer to detention, retention ponds/basins, and other stormwater management structures. After adoption of the Post Construction Stormwater Management Ordinance in February 2015, all new developments will be required to comply with the CORH Post-Construction Stormwater Management Ordinance and CSS, which require that stormwater management controls address water quality as well as water quantity protection.

F.7.2. Measurable Goal(s):

a. Ensure 100% of new flood control projects comply with the CORH ordinance and CSS

F.7.3. Schedule:

a. *Interim Milestone Dates:* Adopt Post Construction Stormwater Management Ordinance by March 7, 2015
b. *Implementation Date:* 2015
c. *Frequency of Actions:* When new flood control structures are built
d. *Month/Year of Each Action:* 2015 - 2017

F.7.4. Documentation to be submitted in each annual report:

The number of plans reviewed where flood management projects were assessed for water quality impacts during the reporting period will be submitted annually.

F.7.5. Person (position) responsible for overall management and implementation of the BMP: Planning and Zoning Director

F.7.6. Rationale for choosing BMP and setting measurable goal(s):

This BMP will improve the water quality treatment potential of flood control projects throughout the CORH.

F.7.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

The CSS provides pollutant removal efficiencies for all types of detention/retention facilities constructed or retrofitted in accordance with the CSS standards. The CORH will provide information in the annual report on the number of new ponds constructed in accordance with CSS standards.

F.8. BMP: EXISTING FLOOD CONTROL PROJECT ANALYSIS

Permit Section: 4.2.6(a)8

F.8.1. Description of BMP

The CORH has developed Water Quality Assessment Procedures, included in Appendix G, to ensure that existing City flood control projects are assessed for the potential to retrofit for additional water quality protection. The City periodically funds drainage Capital Improvement Projects (CIP) to maintain and/or upgrade flood control structures within, or connected to, the City's MS4. When CIPs are funded and enter the design phase, the City will review the proposed CIP and assess the potential to retrofit these publicly-owned structures to potentially incorporate additional control measures to improve water quality treatment. The assessment will also analyze the facility's compliance with the City's Post-Construction Stormwater Management Ordinance and CSS, which requires that stormwater management controls to address specified water quality as well as water quantity criteria.

F.8.2. Measurable Goal(s):

a. Perform Water Quality Assessment for all City drainage CIP as they are funded for implementation.

F.8.3. Schedule:

a. *Interim Milestone Dates:* N/A
b. *Implementation Date*: 2015
c. *Frequency of Actions:* Annually
d. *Month/Year of Each Action:* 2015 - 2018

F.8.4. Documentation to be submitted with each annual report:

A summary of the water quality assessment for the existing flood control project will be included in the annual report.

F.8.5. Person (position) responsible for overall management and implementation of the BMP: Planning and Zoning Director

F.8.6. Rationale for choosing BMP and setting measurable goal(s):

This BMP will improve the water quality treatment potential of existing flood control projects throughout the CORH.

F.8.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

The GSMM provides pollutant removal efficiencies for all types of flood control projects constructed or retrofitted in accordance with the GSMM standards. The CORH will provide information in the annual report on the number of existing ponds assessed and the number of ponds retrofitted to meet GSMM standards.

F.9. BMP: MUNICIPAL FACILITY INSPECTIONS

Permit Section: 4.2.6(a)9

F.9.1. Description of BMP

The City will inspect all municipal facilities with the potential to contribute pollutants to the MS4 on an annual basis. The inventory of municipal facilities that will likely require ongoing inspection includes the Public Works facilities at the Water Tower and Sommers Blvd and the Wastewater Treatment Plant. The City will also review all other City facilities and determine if there are any activities occurring on other sites that have the potential to contribute pollutants to the MS4. Inspections will be completed using the Municipal Facility Inspection Form included in Appendix E.

F.9.2. Measurable Goal(s):

a. The City will inspect 100% of identified municipal facilities each year.
b. The City will update the list of municipal facilities if necessary.

F.9.3. Documentation to be submitted with each annual report:

a. A copy of the Municipal Facility Inspection form for each site will be included in the annual report.
b. An updated list of municipal sites (if any) will be included in the Annual Reports.

F.9.4. Schedule:

a. *Interim Milestone Dates:* Finalize inventory of municipal facilities by February 2015
b. *Implementation Date:* 2015
c. *Frequency of Actions:* Annually
d. *Month/Year of Each Action:* 2015 - 2017

F.9.5. Person (position) responsible for overall management and implementation of the BMP:

Public Works Director

F.9.6. Rationale for choosing BMP and setting measurable goal(s):

This BMP will prevent, or identify and remove illicit discharges from municipal facilities.

F.9.7. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

The CORH will maintain records of municipal facility inspections and any illicit discharges removed.

G. ENFORCEMENT RESPONSE PLAN

G.1. ENFORCEMENT RESPONSE PLAN (ERP)

Permit Section: 4.3

G.1.1. Description of BMP

Permittee designated after the issuance date of the permit are required to complete and ERP within one year of designation and to submit that ERP to EPD for approval with that year's annual report. The CORH will develop an ERP, which includes references to the applicable ordinances that provide legal authority to implement the SWMP, the types of enforcement mechanisms available, escalation of enforcement, time frames for investigation, and the method to be used to track instances of non-compliance. Upon approval, the ERP will be included in Appendix H of this SWMP and will become part of the City SWMP. The City will implement the ERP within six (6) months after receiving EPD approval.

G.1.2. Measurable Goal(s):

a. Develop ERP by February 15, 2016.
b. Implement ERP to address ordinance violations.

G.1.3. Schedule:

a. *Interim Milestone Dates:* Submit ERP to EPD for review by February 15, 2016.
b. *Implementation Date:* Six (6) months after receiving EPD approval
c. *Frequency of Actions:* Ongoing
d. *Month/Year of Each Action:* 2016 - 2017

G.1.4. Person (position) responsible for overall management and implementation of the BMP: Planning and Zoning Director

G.1.5. Rationale for choosing BMP and setting measurable goal(s):

Effective enforcement of the City ordinances is necessary to ensure that they appropriately regulate various aspects of the SWMP to protect water quality.

G.1.6. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

The City will maintain records of the number and nature of enforcement actions undertaken through the ERP. These will be submitted to EPD in the Annual Report, beginning with the 2016 Annual Report.

H. IMPAIRED WATERS IMPLEMENTATION PLAN

H.1. IMPAIRED WATERS PLAN

Permit Section: 4.4.1

H.1.1. Description of BMP

The CORH will develop and implement an Impaired Waters Plan (the Plan) for all 303(d) listed waters to reduce the pollutant of concern (POC) on each impaired segment. The Plan will generally include the following:

- A list of the impaired waters on the current 303(d) listed and the associated POC;
- A map showing the location of impaired waters and all identified MS4 outfalls; located on the impaired waters or within one linear mile upstream of the impaired waters;
- BMPs that will be implemented to address the POCs;
- A schedule for implementing the BMPs.

The Plan will be developed and submitted to EPD by February 15, 2018 (or within four years of Phase II designation which occurred in March 2014). Upon approval by EPD, the Impaired Waters Plan will be included in Appendix I of this document and become part of the City SWMP. Each year, after approval, the City will review the 303(d) list and add any new impaired waters to the Plan.

H.1.2. Measurable Goal(s):

a. Develop Impaired Waters Plan by February 15, 2018

H.1.3. Schedule:

a. *Interim Milestone Dates:* n/a
b. *Implementation Date:* n/a
c. *Frequency of Actions:* n/a
d. *Month/Year of Each Action:* 2018

H.1.4. Person (position) responsible for overall management and implementation of the BMP: Planning and Zoning Director

H.1.5. Rationale for choosing BMP and setting measurable goal(s):

Identifying and implementing BMPs targeted at the POC(s) will help to address known water quality impairments within local streams.

H.1.6. How will the City determine whether this BMP is effective in reducing pollution to stormwater in accordance with Part 5.1.4 of the Permit

Prioritized implementation of BMPs targeted at the POC of listed waterways should improve water quality conditions within these waterways.

City of Richmond Hill, Georgia

Illicit Discharge Detection and Elimination (IDDE) Plan

1.0 Introduction

Illicit discharges are unpermitted non-stormwater flows to the stormwater drainage system that contain pollutants or pathogens. Illicit discharges can be direct discharges, dumping in or near the stormwater system, or can occur through upstream activities that eventually flow to storm drains or drainage channels. Illegal connections are physical connections such as pipes that allow illicit discharges to the stormwater system on an ongoing basis. Identification and elimination of illicit discharges and illegal connections can result in substantial improvements to local water quality.

The City's drainage system is unique to the coastal Georgia region in that a great majority of the system is open conveyance, i.e. canals and ditches. The City's drainage system is designed to discharge to large drainage canals that in turn discharge to local streams and rivers. This makes the actual point where the MS4 discharges to "Waters of the State" somewhat difficult to identify with any certainty. There are maintained portions of the drainage system that may also be classified as "Waters of the State" by certain programs/agencies. Furthermore, because the City's system is at or below groundwater and tidal elevations in many areas, it is often partially submerged and has flowing water even in dry weather. These coastal conditions can make a traditional dry weather screening program difficult to implement.

The EPA Guide to MS4 Permits acknowledges that there are these types of unique situations and permits an acceptable modification as follows:

> *"For those areas that have ponding or flow during dry weather, permit writers may consider allowing permittees the flexibility to look for indicators of an illicit discharge before conducting water quality tests due to baseline flow (e.g. baseflow, groundwater flow, irrigation return flows) in certain areas. In these cases, permit writers could require that sensory indicators (i.e. odor, color, turbidity, and floatables) be evaluated."*

Based on this recommendation, the City has developed the following procedures to allow for dry weather screening of outfalls within the MS4.

2.0 MS4 Outfall Location

An outfall is the point where a municipal separate storm sewer system discharges to waters of the State. The City will identify the outfall that is the lowest downstream point in a storm sewer system to monitor (i.e. the final outfall). The City may not maintain the storm sewer system continuously upstream from the point that is monitored, but the lowest point in the system is the designated location to screen for illicit connections and illegal discharges which is the objective of this procedure.

The City has developed MS4 inspection zones and will complete DWS at outfalls within the selected zone during each reporting period. There are five (5) MS4 inspection zones, with each zone containing approximately 20% of the City's MS4. The City will dry weather screen MS4 outfalls in one zone per year ensuring that 100% of the MS4 outfalls are screened over a five-year period.

The City of Richmond Hill does not have an existing inventory of outfalls. However, the City will be completing a city-wide inventory of the conveyance system, which will include the identification of MS4 outfalls within each of the maintenance zones.

The City of Richmond Hill is located in a coastal area, and as such MS4 outfalls are often submerged by tidal action, located in a continuously wet area, or surcharged by the design of the drainage system. When Richmond Hill encounters such an outfall, the City will identify an upstream location in the MS4 to screen. If the entire system is submerged to its most upstream point, then the City will document this condition as such in the annual report and will identify alternative methods for illicit discharge detection.

3.0 DWS Screening Procedures

Dry weather screening procedures described in the following subsections have been developed using the Atlanta Regional Commission's Stormwater Monitoring Program Handbook, the New England Interstate Water Pollution Control Commission's Illicit Discharge Detection and Elimination Manual, the Galveston County Health District, Pollution Control Division's A Guidance Manual for Identifying and Eliminating Illicit Connections to Municipal Separate Storm Sewer Systems, and the EPA's Guide for MS4 Permits. Procedures included below are deemed to be the most appropriate for coastal waters as well as most likely to identify an illicit connection.

When a dry weather flow is observed at an outfall, the following activities will be performed on the flow:

- **Field observations and measurements** – Site descriptions and qualitative observations of physical conditions of the outfall and flow, as well as measurement of several in-situ water quality parameters.
- **Field Water Quality Sampling -** Collection of water samples for field assessment when the field assessment activities dictate.
- **Laboratory Water Quality Sampling** – Collection of water samples for laboratory analysis when the field water quality sampling results dictate.

In dry weather outfall screening, the field team is looking for indicators that point to, or confirm an illicit discharge or illegal connection. Section 3.5 and 3.6 provide guidance on potential sources of pollution based upon the findings of the field screening/assessment. The discovery of an illicit discharge will warrant a more detailed pollutant source tracing and identification investigation.

3.1 Field Screening

Field screening will be conducted at MS4 outfalls within one (1) maintenance zone per year. Outfalls may be closed, i.e. piped outfalls, or open, i.e. ditch outfalls. Screening of stormwater outfalls for illicit discharges will be performed during periods of dry weather, which is defined as rainfall of less than **0.1 inch per day for at least 72 hours**. This criterion avoids the screening of flows that may have resulted from wet weather/rainfall events.

Outfall screening is initiated by driving or walking to the outfall location. When an outfall is reached, the coordinates should be logged or confirmed using the GPS receiver (if applicable).

Basic descriptive information is recorded at the top part of the Dry Weather Outfall Screening Form:

- Outfall location
- Outfall ID number
- Outfall type, material and size
- Receiving stream and/or watershed name
- Date and time of screening
- Weather observations
- Staff person(s) undertaking the screening

Digital photographs should be taken of the outfall and photo numbers recorded on the screening form.

City staff will then determine if there is flowing water leaving the outfall and entering the canal. Flowing water will not include tidal ebb flows in coastal, partially submerged systems. If there is no flowing water at the time of field screening, the staff will record "no flow observed." If flow is observed, the sample team will perform the following procedures to identify a suspected illicit discharge:

- Visually inspect the discharge for rate of flow, color, oil sheen, floatables, stains from illicit dumping, and odor.
- Visually inspect discharge for biological indicators including: emergent vegetation, algae blooms, and fish kills.

Each of these observations associated with flowing outfalls may predict the presence of an illicit discharge or illegal connection as described below and illustrated in Table 1:

- **Odor:** Description of any odors that emanate from the outfall and an associated severity score. Since noses have different sensitivities, the entire field team should reach consensus about whether an odor is present and how severe it is. A severity score of one means that it is faint or the team cannot agree on its presence or origin. A score of two indicates a moderate odor within the pipe. A score of three is assigned if the odor is so strong that the field team smells it a considerable distance away from the outfall.

- **Color:** The visual assessment of the discharge color. The intensity of color is ranked from one (slightly tinted) to three (clearly visible in the flow). The best way to measure color is to collect the discharge in a clear sample bottle and hold it up to the light. Field teams should also look for downstream plumes of color that appear to be associated with the outfall.

- **Turbidity:** The visual estimate of the turbidity of the discharge, which is a measure of the cloudiness or opaqueness of the water. Turbidity is ranked from one (slight cloudiness) to three (opaque). Like the color observation, turbidity is best observed using a clear sample bottle. The field team should also look for turbidity in the plunge pool below the outfall, and note any downstream turbidity plumes that appear to be associated with the outfall.

- **Floatables:** The presence of any floatable materials in the discharge or the plunge pool below. Sewage, oil sheen or film, and suds are all examples of floatable indicators. [Note that for dry weather screening, trash and debris are not considered indicators of an illicit discharge or illegal connection.]

The results of the observations will be recorded on the field screening form by City staff. City staff will also map the location of the outfalls screened, systematically updating the City's inventory of outfalls through the screening effort.

Table 1: Field Observations and Potential Sources

Physical Observations and Potential Sources

Parameter	Observations	Potential Source(s)
Odor	Sewage	Sanitary sewer; septic tank discharges
	Sulfur (rotten eggs)	Industrial discharge (sulfides and/or organics); sanitary sewer; septic tank discharges
	Oil / gasoline	Facilities associated with vehicle maintenance and operation; petroleum product manufacturing or storage; industrial discharge
	Rancid / sour	Food preparation facilities (restaurants, hotels, etc.)
Color	Orange / rust	Construction site or unstabilized soil (eroded soil and clay)
	White / milky	Sanitary sewer; septic tank discharges; residential or commercial washwater; concrete or stone operations; fertilizer
	Grey	Residential or commercial washwater; dairies
	Red	Meat packers
	Yellow	Industrial discharge
	Green	Industrial discharge; Facilities associated with vehicle maintenance and operation (antifreeze)
	Brown / black	Industrial discharge
Turbidity	Cloudy	Sanitary sewer; septic tank discharges; residential or commercial washwater; concrete or stone operations; fertilizer; industrial discharge
	Opaque	Food preparation facilities (restaurants, hotels, etc.); industrial discharge
	Silty / Muddy	Construction site or unstabilized soil (eroded soil and clay)
Floatables	Sewage	Sanitary sewer; septic tank discharges
	Petroleum (oil sheen)	Facilities associated with vehicle maintenance and operation; petroleum product manufacturing or storage; industrial discharge
	Suds	Sanitary sewer; septic tank discharges; residential or commercial washwater

3.2 Field Sampling

If flowing water is present, City staff will perform field sampling of the discharge to the canal as noted below.

- Measure the discharge in-stream using field probe, for the following parameters: pH, temperature, salinity, and conductivity.
- Collect a grab sample and perform analysis on the discharge using field equipment for total chlorine, ammonia, and surfactants.
- Laboratory analysis may be performed in-lieu of field sampling for one or more of the water quality parameters. Grab samples should be collected and analyzed using EPA-approved field collection methods and laboratory analysis protocols.
- Collect grab samples for fecal coliform, if conductivity is measured above 300 μmho/cm **and** ammonia levels are higher than 1.0 ppm. Samples should be taken when there is visual evidence including milky white or gray color and floatables, a sewage odor, or other applicable evidence of potential sanitary sewer discharge. Fecal grab samples will be cooled with ice and taken to an accredited laboratory for fecal coliform analysis within six hours of sample event. Fecal samples will be dechlorinated with sodium thiosulfate. Fecal samples will only be performed once at applicable outfalls during sampling event due to cost considerations.
- Please note, if the discharge is below the water level in the canal, i.e. partially submerged, City staff may elect to choose one of the other source tracing procedures listed in Section 3.

3.2.1 Grab Sample Collection

A manual grab sample for a dry weather flow is accomplished by inserting the sample container (either plastic or glass depending on the parameter) under or down current of a discharge with the container opening facing upstream. In many cases, the sample container itself can be used to collect the sample. Less accessible outfalls will require the use of poles and buckets to collect the grab sample. A pre-measured, cut-off and properly cleaned milk jug can be used to capture shallow flows from the outfall. To ensure that the manual grab samples are representative, the following procedures should be followed:

- Do not open sample bottle until sample is to be actually collected.
- Use gloves at all times when handling sampling bottles.
- Take the grab from the horizontal and vertical center of the outfall.
- Make sure not to disturb any sediments or benthic growth in the outfall.
- Transfer samples into proper container (e.g., from bucket to sample container).
    - Fecal coliform grab samples should be collected directly into the sterile sample container, where possible.

All of the equipment and containers that come into contact with the sample should be pre-cleaned and then routinely cleaned in order to avoid contamination, and be non-reactive to prevent leaching of pollutants.

3.2.2 Grab Sample Identification and Labeling

A sample numbering system should be used to ensure that each sample is uniquely identified in the field and tracked on field data collection forms. The sample numbering should be as follows: ###-MMDDYY-HH:MM

- ### = A unique number for each sample location
- MMDDYY = Month, day, year
- HH:MM = Time in military units

All of the samples collected at the site should be placed in the appropriate sample containers for preservation and shipment to the designated laboratory. Each sample should be identified with a separate identification label. A waterproof, sticky label should be attached to each sampling container. Information to be recorded on the label should include:

- Site name;
- Sample number;
- Analysis to be performed;
- Date and time of collection;
- Preservation used and any other field preparation of the sample; and
- Initials of field crew collecting the sample.

3.2.3 Grab Sample Documentation

A chain-of-custody (COC) form from the laboratory should accompany all samples. The COC form shall include all of the information provided on the sample label discussed in the preceding section.

The purpose of the COC form is to provide a mechanism for tracking each sample submitted for laboratory analysis. The information on the COC form must be identical to the information of the sample label. A COC form should be prepared by the sample collector for each set of samples submitted for laboratory analysis. The form should be placed in a re-sealable plastic bag (to keep the form dry) and sealed inside each sample cooler. When transferring possession of the samples, the individual relinquishing and receiving samples should sign, date, and note the time on the COC form. This record documents the transfer of custody from the sampler to another person, to/from a secure storage area, and to the laboratory. Copies of the COC forms should be kept for future reference.

3.2.4 Analytical Laboratory Coordination and Sample Delivery

The samples should be packed in coolers with ice (or ice packs) to ensure they maintain the required temperature of less than or equal to 4°C during transport to the designated laboratory.

Contact the laboratory prior to sampling to assure that the samples will be analyzed within their holding time**. Note that fecal coliform samples have a short holding time of six hours and must be returned to the lab for analysis within this time or the results may be unrepresentative of the flow.** Samples may be placed in individual one-gallon resealable bags as a precaution to avoid spilling the sample. All glass bottles should be individually bagged and bubble-wrapped to prevent breakage on the way to the lab. Samples may be placed in a large trash bag inside a cooler (to ensure against the sample leaking) with ice completely covering the samples.

3.2.5 Baseline Limits for Field Sampling Parameters

If field sampling detects limits of the above mentioned parameters that exceed the baseline limits described below, an illicit discharge is possible, and an attempt to trace the source using the procedures outlined in Section 4 will be performed. The following parameters were chosen to address the potential contaminates most likely to be found in the area, including wastewater, wash water, construction site runoff, and industrial contaminants.

Table 2: Field Sampling Baseline Limits

Parameter	Baseline Limit	Considerations	Potential Source Of Contamination
pH	< 5.0 or > 9.0		Low pH – Industries including textile mills, pharmaceuticals, metal finishers/fabricators, companies dealing in resins, fertilizers, or pesticides.
			High pH – Industries including soap manufacturers, metal plating, concrete, lime, and rubber or plastic producers.
Turbidity	> 100 NTU	Waters in coastal Georgia are generally slow moving and have a lot of naturally occurring suspended sediment.	Construction site runoff.
Conductivity	300* µmho/cm	Saline waters will have high conductivity associated with salt content.	Presence of contaminating ions from wastewater (sanitary or industrial).
Ammonia	> 1.0 PPM	These baselines are for water temp of approx 15^0C and a pH of 7.0. At temperatures higher than this, ammonia is potentially toxic to aquatic life at lower levels. Ammonia should only be considered an	Fertilizer, or sanitary wastewater.

Parameter	Baseline Limit	Considerations	Potential Source Of Contamination
		indicator of illicit discharge in conjunction with other parameters.	
Detergents/ Surfactants	> 1.0 PPM		Industrial and household wash water, wastewater, laundromats.
Total Chlorine	> 1 PPM	EPA requires water suppliers to maintain a level of chlorine at 4 PPM. Once treated water enters a waterway, chlorine levels will be diluted, hence the lower baseline limit.	Cross connections with water supply or sanitary wastewater lines.
Fecal Coliform	Apr – Oct: 200 col/100ml Nov – Mar: 1000 col/100ml	Fecal coliform in excess of standards does not necessarily indicate high levels of sanitary sewage.	Animal waste, or sanitary sewage.

3.3 Quality Assurance/Quality Control (QA/QC) Procedures

The following procedures should be followed to assure that the results of the field sampling are accurate:

- Field tests must be performed twice during each sampling event to confirm results.
- Horiba and any other probes used to measure temperature, turbidity, conductivity, salinity, and pH must be calibrated at the start of each day when sampling will take place.
- Readings should be taken directly in outfall flow, if possible. If in-flow sampling is not possible, then a container or bucket should be used to collect a sample to take readings. The bucket should be rinsed twice with flow from outfall and readings taken on the third fill.
- Containers used to test samples in the colorimeter must be rinsed twice with sample water before a sample is analyzed. Manufacturer's directions should be followed for all reagents used in the measurement of ammonia, phosphate, and total chlorine. After a sample has been analyzed, the container should be rinsed with distilled water. All reagent waste must be disposed of properly. Reagents will be checked and replaced annually.
- Fecal coliform samples must be taken directly in the outfall flow in a sterilized container to avoid contamination. Samples will be dechlorinated with Sodium Thiosulfate, and stored in a cooler with ice. Samples will be processed within six hours of the event.

- Any laboratory used for sample analysis should follow Georgia EPD- approved methods and routinely perform quality control checks during laboratory analysis, including calibration standards, blanks, laboratory control samples, laboratory control duplicate samples, matrix spikes, and matrix spike duplicates. Spikes and duplicates should be performed on a minimum of 10 percent of the samples and should meet data quality objectives established by the client.

3.4 Data Collection and Reporting

The City will maintain records of dry weather screening results, and include a copy in the Annual Report to EPD.

3.5 Field Screening Preparation & Analysis Equipment

Table 2 below lists the recommended equipment list and supplies for DWS of MS4 outfalls. Before undertaking field work, the field team should ensure that all of the necessary equipment is present and in order. Any meters/probes should be calibrated. In addition, field test kits should be inspected to ensure that they have sufficient reagents and test strips/discs.

Table 3: List of Equipment & Supplies for Outfall DWS

Field Equipment /Supplies	Function/Use
Field maps (with outfall locations, drainage areas, and street information)	Locating outfalls for DWS
Field DWS Procedures	For reference during the field activities
Field screening equipment	Measuring field temperature, pH and specific conductivity of dry weather flows
Field test kits	Measuring chlorine, ammonia, surfactants and fecal coliform
Sample bottles with labels	For collection of grab samples
Sealed, sterile sample bottles with labels	For collection of bacteria grab samples
Grab water sampler (dipper on long pole)	For outfalls/flows that are difficult to reach
Clear tape and applicator	To apply over label
Coolers with ice packs	For transport of grab samples and to keep samples preserved after collection and during transport to lab
Clipboard or notebook with data collection forms and COC forms	To document field data and activities
Cell phone with camera	Field communication and photo documentation
Handheld GPS receiver (if applicable)	Determining outfall locations
Field sampling gear (disposable gloves, etc)	To ensure proper sample collection protocols are followed

3.5.1 Weather Considerations

Prior to any screening field work, check local rain gages to ensure that the conditions are appropriate for dry weather outfall screening. **Dry weather conditions are defined as rainfall of less than 0.1 inch per day for at least 72 hours.**

3.6 Evaluating DWS Results

Effectively evaluating and interpreting dry weather screening results and data is the first step in identifying and tracing a potential illicit discharge or illegal connection.

3.6.1 Field Observations

Field observations of dry weather flow include odor, color, turbidity and floatables. These parameters are qualitative indicators detected by visual inspection and smell, and require no measurement equipment. They are important in evaluating a dry weather flow for a potential illicit discharge, and may confirm the most severe or obvious discharges. Table 1 lists the field observation parameters, along with potential sources for a number of observed conditions that the sampling team could encounter in the field.

3.5.3 Field Measurements and Water Quality Sampling Results

Field measurements and water quality sampling provide additional information which may detect, characterize or confirm an illicit discharge or illegal connection. Temperature, pH and conductivity measurements are completed in-situ using probes or other equipment that is calibrated prior to field work. Water quality sampling for the presence of chlorine, surfactants, amonia and fecal coliform is performed either in-field using test kit equipment or by collecting grab samples for laboratory analysis.

Table 2 lists the various parameters included in the dry weather screening protocol along with benchmarks and guidance on evaluating results. It also provides potential sources for each pollutant that can be used to identify potential illicit discharges based upon findings.

4.0 Source Tracing

All outfalls ranked as possible, suspect or obvious illicit discharges require follow-up actions and activities to determine the specific source(s) of contamination. There are a variety of methods for illicit discharge source identification, including:

- **Mapping Analysis** – Evaluation of the drainage area, land uses and properties above the outfall including the route of the storm drainage system and locations of storm drains. This enables local staff to predict the likely locations of illicit discharges and illegal connections. Geographic Information Systems (GIS) are a useful tool for identifying illicit discharges through mapping analysis.

- **Drainage Area Investigation –** A windshield survey or more detailed property inspections in the drainage area that has the illicit discharge. These inspections are often performed following a mapping analysis.
- **Upstream Sampling -** The City of Richmond Hill may sample upstream from the field-sampling site for the parameter that was above baseline limits. A sample will be taken above each pipe/connection to the system. When a sample is taken, and the parameter is no longer detectable, the pipe/connection to the system above which the sample is taken is likely to be the illicit discharge.
- **Piping Schematic Review** – Examination of building plans and plumbing details for potential sites where improper connections to the storm drainage system may have occurred.
- **Dye Testing** – If dry weather screening results indicate a possible illicit discharge of sewage, City staff may conduct dye testing at residences and facilities near the outfall. Dye testing uses a brightly colored fluorescent substance to detect illicit connections to the MS4, trace cross connections, or to determine the functionality of septic systems. During an on-site inspection of a residence or facility, dye is flushed down a toilet or poured down a sink. If there is an illicit connection between the sanitary sewer and the storm sewer, the dye will appear in the MS4 downstream of this connection. This method is relatively inexpensive and only requires the ability to get on-site to put the dye in the sanitary system.
- **Septic System Investigation –** Low density residential watersheds may require special investigation methods when failing septic systems are suspected. Homeowner surveys, surface investigations and infrared photography have all been used successfully to identify problem septic system facilities.

The appropriate method for any given outfall or area will be heavily dependent on the watershed and land use conditions, drainage system characteristics, available resources and the nature of the discharge and screening results.

3.6.2 Enforcement

If an illicit discharge is positively identified, the City must initiate enforcement actions to ensure that the illicit discharge is removed from the MS4. These enforcement procedures are outlined within the City's Illicit Discharge Ordinance, and include:

- Verbal Warning
- Written Notice of Violation
- Civil Penalties

The City specific enforcement procedures will be detailed within the future Enforcement Response Plan, to be completed by March 15, 2015 and included within this SWMP.

4.0 References

"Illicit Discharge Detection and Elimination – A Guidance Manual for Program Development and Technical Assessments." Center for Watershed Protection. 2004.

"District-Wide Watershed Management Plan Standards and Methodologies for Surface Water Quality Monitoring." Metropolitan North Georgia Water Planning District, March 2007.

"Investigation of Inappropriate Pollutant Entries into Storm Drainage Systems – A User's Guide. EPA/600/R-92/238," U.S. Environmental Protection Agency, January 1993.

"NPDES Stormwater Sampling Guidance Document. EPA-833-92-001,"
U.S. Environmental Protection Agency, July 1992.

Figure 1: Dry Weather Outfall Screening Form

City of Richmond Hill, GA

Dry Weather Outfall Screening Form	
Name of City or County:	**Data Sheet Number:**
Date of screening (MM/DD/YY):	Time of screening:
Weather conditions:	
Sampling performed by:	

Outfall Description	
Outfall Location:	Outfall I.D. Number:
Outfall Type/Material: ❒ Closed Pipe (circle): RCP CMP PVC HDPE Other: _____ ❒ Open Channel (circle): Concrete Earthen Grassy Other: _____	Outfall Diameter/Dimensions:
Receiving stream and watershed name:	
Land use/industries in drainage area:	
GPS Coordinates:	Photo numbers:

Field Observations and Measurements	
Flow from outfall? ❒ Yes ❒ No Flow Description: ❒ Trickle ❒ Moderate ❒ Substantial	
Odor: ❒ None ❒ Sewage ❒ Sulfide (rotten eggs) ❒ Petroleum/gas ❒ Rancid/sour ❒ Other _____ Relative severity: ❒ 0-None ❒ 1-Faint ❒ 2-Easily Detected ❒ 3-Noticable from a distance	
Color: ❒ Clear ❒ White ❒ Gray ❒ Orange/Rust ❒ Red ❒ Yellow ❒ Green ❒ Brown/Black ❒ Other Relative severity: ❒ 0-None ❒ 1-Faint ❒ 2-Clearly visible in bottle ❒ 3-Clearly visible in flow _____	
Turbidity: ❒ None ❒ Cloudy ❒ Opaque ❒ Silty ❒ Muddy ❒ Other _____ Relative severity: ❒ 0-None ❒ 1-Slight cloudiness ❒ 2-Cloudy ❒ 3-Opaque	
Floatables: ❒ None ❒ Sewage ❒ Petroleum (oil sheen) ❒ Suds ❒ Other _____ Relative severity: ❒ 0-None ❒ 1-Few/slight ❒ 2-Some ❒ 3-Heavy	
Flow Temperature (°C):	
Flow pH:	pH meter calibrated? ❒ Yes ❒ No
Flow Conductivity (µmho/cm):	Conductivity meter calibrated? ❒ Yes ❒ No

Water Quality Sampling			
Field Test Kit Manufacturer:		Model:	
Chlorine (mg/L)		**Fecal Coliform (MPN/100ml):**	
Surfactants (mg/L):		**Analysis Comments:**	
Grab sample for lab? (fluoride/surfactants) ❒ Yes ❒ No		Bacteria Grab sample for lab? (fecal coliform) ❒ Yes ❒ No	
Grab Sample ID:		Bacteria Grab Sample ID:	

Outfall Potential for Illicit Discharge:

❒ Unlikely - or- No Flow **❒ Possible (presence of two or more indicators)**

❒ Suspect (one or more indicators with severity of 2 or 3) **❒ Obvious - or- Confirmed**

Field Personnel Signature_____

Figure 2: Dry Weather Outfall Screening – Data Tracking Form

Date	Outfall I.D. Number	Flow? (Y/N)	Odor (describe)	Color (describe)	Turbidity (describe)	Floatables (describe)	Temp (°C)	pH	Conductivity (µmho/cm)	Fluoride (mg/L)	Surfactants (mg/L)	Fecal Coliform (MPN/100ml)	Follow-up Actions

Figure 3: Sample Chain of Custody (COC) Form

REPORT TO:
CONTACT
PHONE NO.
SALESMAN
PROJECT NAME
PROJECT NO.
P.O. NO.
DATE SAMPLED
SAMPLER(S)
BILL TO:
ANALYSES TO BE PERFORMED
TIME OF SAMPLING
TOTAL NO. OF CONTAINERS
SAMPLE DESCRIPTION/LOCATION
REMARKS
1
2
3
4
5
6
7
8
9
10
REMARKS:
SHIPPING CARRIER:
SHIPPING TICKET NUMBER:
CHAIN-OF-CUSTODY SEAL: INTACT BROKEN ABSENT

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
RECEIVED BY:	DATE	TIME	RELINQUISHED BY:	DATE	TIME
RELINQUISHED BY:	DATE	TIME	RELINQUISHED BY:	DATE	TIME
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
RECEIVED BY:	DATE	TIME	RELINQUISHED BY:	DATE	TIME
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME

©

City of Richmond Hill, Georgia

MS4 Inspection, Operation & Maintenance Procedures

1.0 Introduction

The City's Municipal Separate Storm Sewer System (MS4) is made up of structures, facilities and natural drainage-ways used for collecting, conveying, storing and/or treating stormwater. In order to ensure that the stormwater system continues to operate as designed to safely convey stormwater volume, velocity, and quality, it is the City's responsibility to maintain the MS4. An adequate Operations and Maintenance (O&M) program is essential to maintain the functionality of the system. In addition, it is a requirement of the City's Phase II NPDES Stormwater Permit that the City proactively maintain the MS4 in accordance with the procedures set forth herein. This document outlines the City's procedures for system inspection, maintenance and operation as well as program documentation.

The City must develop and implement a drainage system O&M program that meets the minimum requirements of the NPDES Phase II MS4 Permit. Failure to perform effective O&M activities can potentially reduce both the conveyance capacity and pollutant removal efficiency of the City's stormwater drainage system infrastructure. Ideally, the O&M program should address maintenance issues proactively instead of addressing issues (i.e. flooding, infrastructure failure, etc.) on a reactive basis. One of the purposes of formalizing the City's O&M plan is to outline how City staff will transition from a reactive O&M program to a proactive O&M program which incorporates schedules/planned activities and tasks into its day to day efforts.

The purpose of the O&M program is to provide regular inspections of the City's stormwater systems and then to undertake routine, proactive maintenance of those systems. This program is being developed to ensure that these systems function as they were designed, to prevent flooding and the degradation of existing water resources. This program was created to outline the inspection process, organize the administrative workload, and develop a systematic method to perform system maintenance and repair functions.

2.0 Program Description

The existing MS4 components will be inspected by the City of Richmond Hill staff or their designee on a periodic basis in accordance with the procedures outlined in the SWMP using the "MS4 Inspection Checklist Form" that is included herein. The City maintains the stormwater system within the right-of-way and stormwater components and controls on property owned by the City, or within an easement with an express acceptance by the City. It is unknown at this time as to the total number of structures that are present within the existing MS4. It is the City's intention to inventory and inspect its MS4 components in accordance with the NPDES Phase II MS4 Permit and this SWMP.

Within the right-of-way and for publicly-owned MS4 stormwater system components, the City will inspect and provide periodic, remedial and condition driven inspections and maintenance. However, for privately-owned stormwater system components (other than detention pond facilities), the City will only inspect the condition and provide information/recommendations on proper maintenance and corrective action to the private property owners.

3.0 Procedures

It is essential that the City establish a basic Extent of Service (EOS) Policy and Level of Service (LOS) Policy for the various components of the MS4 that the City staff can use as guidance in performing their work

tasks. The EOS policy spells out the "responsibility status" of the various drainage infrastructure system components based upon their location and ownership factors. In general, the City maintains the stormwater system components within the right-of-way as well as the stormwater system components and controls on property owned by the City, or within an easement with an express acceptance by the City.

The LOS for each major component of the system should also be defined. The LOS is generally defined as the types and frequencies of O&M activities that a local government will undertake to address O&M needs associated with different MS4 components. Within the right-of-way and for publicly owned stormwater components, the City will inspect and provide periodic, remedial and condition driven inspections and maintenance, unless service is provided by a private third party. However, for privately-owned stormwater components (other than detention pond facilities), the City will only inspect their condition and provide information/recommendations on proper maintenance and corrective actions to the private property owners.

The proposed O&M program will incorporate three types of inspection and maintenance activities:

- Remedial Inspections and Maintenance: Remedial inspection and maintenance is performed on an "as-needed basis" established on evidence of system failure during regular inspections or citizen complaints.
- Periodic Inspections: Periodic inspection involves performing inspection on a routine or set schedule.
- Condition Driven Maintenance: Condition driven maintenance involves performing maintenance activities when certain criteria are met. These criteria have been developed by the MNGWPD and should be referenced by the City when undertaking this element.

In order for the City to implement a proactive O&M program with its limited resources, it is recommended that the City prioritize areas and drainage system components within the MS4. By identifying and prioritizing inspections based on a history of flooding, the City's EOS policy, the system component's condition, or other community-specific factors, the City can cost effectively focus its O&M resources on those systems with priority needs.

Priority or primary drainage systems can be identified as those structures where significant harm or damage could occur if the system were to not function properly or if it were to fail. The highest priority would be assigned to those systems that cannot be allowed to fail due to the potential for serious threat to citizen safety, significant damage to habitable structures, or damage to public infrastructure. This priority could also be assigned to systems where the loss of other public infrastructure (i.e. roads, culverts, etc.) would result in a public safety issue or major inconvenience to citizens and/or business owners. Loss of access to a residential structure or business can severely limit access of emergency services such as fire and medical vehicles in these cases. Other high priority drainage systems would include systems that cause flooding of livable structures but do not cause damage to the livable spaces. For example, this type flooding would include unfinished basements, crawl spaces, debris against the structure and damage to mechanical systems (air conditioning units, furnaces, etc.).

Secondary drainage systems could include all other drainage systems not classified as a primary system within the City's EOS. A higher priority secondary system would include systems that could cause road closures but not necessarily result in loss of access to an area. Other secondary systems should include those that result in flooding of non-livable structures (i.e. sheds, storage buildings, etc.) and those that cause nuisance flooding. These criteria could be tied into the City's performance LOS criteria as it relates to flooding. After the initial inspections begin, the City will have a better understanding and definition of where the priority areas exist within the City.

For private systems, an inspection will be conducted and kept on file along with documentation of the recommended corrective actions for any problems or deficiencies noted during the inspection. After inspection, the project documentation will be placed into a folder so that records of the program activity can be maintained. Once the inspection of a private system is complete and a report has been finalized, a letter will be sent to the affected private property owner notifying them of the City's findings with a time frame to complete the recommended corrective measures noted (if any). If repairs are not properly completed within the specified time frame, the City may make the necessary repairs at the owner's expense.

3.1 MS4 Inventory

The inventory of MS4 components will be compiled into an inventory/database in accordance with the approved schedule in the SWMP. The inventory and database will be periodically updated as new information is collected. The MS4 components include such features as inlets, catch basins, curb and gutter systems, storm sewers, culverts, swales, ditches, and structural stormwater control facilities (i.e. detention ponds). The components may be located on publicly-owned property or on privately-owned property within an easement expressly accepted by the City for maintenance.

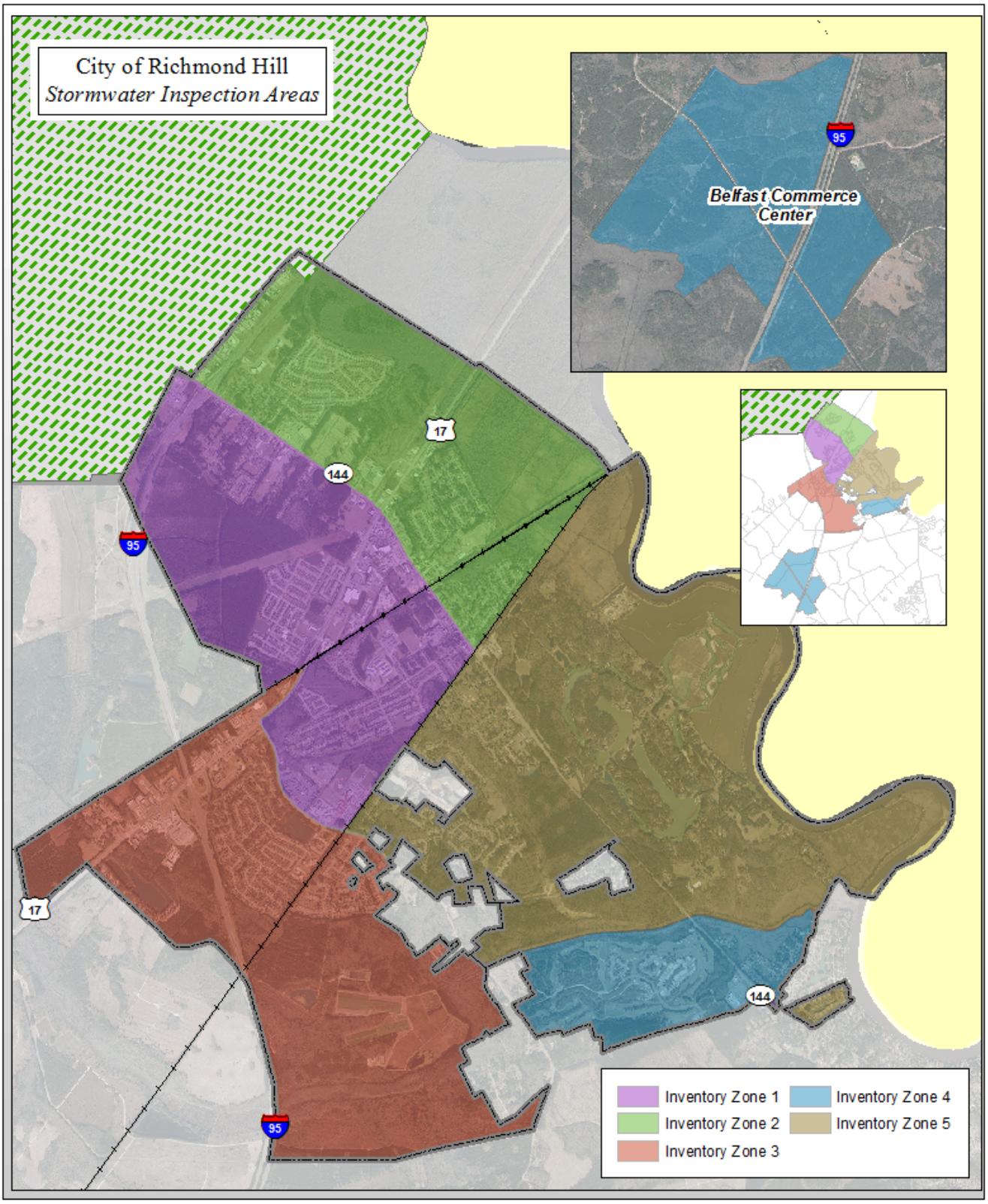
3.2 Remedial Inspection & Maintenance Procedures

Remedial maintenance is performed based on evidence of system impairment or malfunction identified through citizen complaints or City staff inspection. Inspection and maintenance is performed on an as needed basis and is logged in as an activity performed through a "Work Order" type system. This type of maintenance can include sediment/litter removal, vegetation clearing, channel stabilization, and outlet structure repairs.

Upon receipt of a complaint, the City staff will record the complaint per the procedure included herein and then generate a work order for the individual project task. A City staff member or designee will respond to that complaint within three (3) business days to conduct an inspection. The City staff person will assess the issue as to its condition, material present, water quality issues, structural considerations, etc. The appropriate maintenance activity will be recommended for performance based on the condition driven maintenance standards established below. If the recommended remedial maintenance calls for more specialized expertise and equipment, then the work order may be transferred to an entity outside of the City that specializes in that activity.

3.3 Periodic Inspections

Periodic inspections will be performed on a scheduled basis (i.e. a work order is not necessary). The City will perform periodic inspections on its MS4 system at a rate that ensures all MS4 components will be inspected once every five years. The City will accomplish this by implementing a zoned approach for inspections. The City has been broken down into five geographic zones, and City crews will inspect all MS4 components in one zone per year, rotating each year so that all zones are inspected over a five year period. The inspection zones are shown in the map on the following page.


City of Richmond Hill
Stormwater Inspection Areas
Belfast Commerce Center
95
17
144
Inventory Zone 1
Inventory Zone 2
Inventory Zone 3
Inventory Zone 4
Inventory Zone 5

3.4 Condition Driven Maintenance

Condition driven maintenance is performed based on the results of City staff inspections conducted as part of the periodic MS4 inspection program. If certain standards are not met during inspection, City staff will perform applicable maintenance procedures including removal of litter, debris, or sediment; re-grading; minor repair; replacement; etc.

The "Condition Driven Maintenance Standards" for system components are as follows:

- Catch Basins: Catch basins with should be cleaned if accumulated sediment, debris or other deposits are equal to (or greater than) approximately one-third of the depth of the subsurface structure or if the accumulated materials are impeding the function of the catch basin to an unacceptable degree. If catch basins are found to regularly exceed this standard, they should be inspected and cleaned more often. If deposits of concern are rarely found during regular inspections, the frequency of inspection may be adjusted to a less frequent schedule.
- Storm Drain Lines and Culverts: Storm sewers should be inspected as the catch basins are inspected. Storm pipes shall be cleaned if accumulated sediment, debris or other deposits are blocking more than approximately one-third of the pipe diameter. Woody debris and other conveyance blockages should be immediately removed from culverts and other critical conveyance components.
- Open Drainage Systems: Open drainage refers to ditches, swales, etc. Drainage ditches should be inspected and cleaned if accumulated sediment, debris or other deposits exceed approximately one-third of the functional depth. Excess vegetation shall be removed manually on a periodic basis to ensure that no unacceptable restriction in conveyance and flow occurs.
- Municipally-Owned Detention Ponds and other Stormwater Controls: Inspections of inflow and outflow structures are required. Sediment should be removed before 50% of the capacity has been lost (typically every 10 years). Stormwater structural control facilities shall be maintained according to criteria or procedures present in Volume 2 of the *Georgia Stormwater Management Manual (GSMM)*. Maintenance requirements are detailed at the end of each structural control design criteria section within the GSMM.
- Outfalls: Dry weather flows from the stormwater system that are observed during routine inspections may indicate a potential illicit discharge. As such, the City will document this type condition and investigate it for potential illegal dumping and /or illicit connections. If flow of water from outfall is causing erosion or a similar condition, the City will assess the condition noted for a possible retrofit or modification to address the issue observed.

3.5 Emergency Maintenance

The City will undertake emergency maintenance of its MS4 components or other drainage system components for which it has primary responsibility to maintain. In addition, the City may conduct emergency maintenance operations on private stormwater systems in order to protect the public health, safety and welfare of the community. Emergency maintenance on private systems includes those activities necessary to remedy a condition which is potentially damaging to life, property, or public infrastructure. Such emergency maintenance, shall not constitute acceptance of a perpetual maintenance obligation by the City for those systems, nor prevent the City from seeking reimbursement for expenses from the property owner(s) of the land that generated the condition. The City staff will consult with Mayor and City

Council as well as the City Attorney before undertaking emergency maintenance on private drainage systems.

3.6 Prioritizing Maintenance Projects and Activities

The City has developed prioritization criteria and guidance to assist the City staff in addressing drainage system maintenance requests and projects. The prioritization of the City's response to these projects will be determined by the category of the request. Requests for projects will be generally categorized as:

Category I: Poses an immediate threat to public health, safety and welfare of the community.

Category II: Rapidly degrading situation that could become a dangerous condition.

Category III: Routine maintenance or repair.

City Public Works staff will periodically review project work order requests and perform the initial project categorization. City staff will update the condition assessment information periodically and modify the categorization as necessary.

3.7 Stormwater Program Funding Issues

The Mayor and City Council develop an annual budget each year which includes funding for Public Works and Stormwater Management. As part of this annual budgeting process, the City staff will identify the projects and stormwater program needs that should be considered for funding and the recommended level of funding for specific stormwater program elements. The City's fiscal year begins in January each year, and the process to establish the budget for the following fiscal year begins in July.

3.8 Proper Disposal of Waste Materials

The City crews or its contractors will properly dispose of the materials that are collected from the various maintenance activities that are undertaken in accordance with this procedure as well as the other procedures dealing with maintenance. The materials collected should be segregated for disposal such that the City can properly dispose of the materials at a MSW Landfill, Inert Landfill, composting, etc. It will be incumbent on the City staff to segregate, properly dispose and then accurately document the actions taken by the City related to this activity.

3.9 Record Keeping

The City staff will keep records of all inspection and maintenance related activities performed in compliance with the MS4 Permit requirements and the City's various programs. Service requests or "Work Orders" will be generated based on system inspections, citizen complaints or other unforeseen maintenance activities not usually performed as part of scheduled maintenance. Service requests will also detail the source of the complaint, nature of the maintenance issue, inspection results, and the pertinent maintenance and/or enforcement activities. The service request records will include details of the project activity including dates, activities, resources and staff. City staff will also keep activity logs detailing their ongoing inspection and maintenance activities as they relate to drainage system inspection and maintenance. These logs will include structures inspected, activities performed, dates, etc. The "MS4 Inspection Checklist Form" is attached and should be used to document the activities performed.

MS4 Inspection Checklist								
STRUCTURE ID	STRUCTURE TYPE	STRUCTURE MATERIAL	STRUCTURAL DAMAGE	SEDIMENT	DEBRIS	FLOWING WATER	WATER QUALITY	MAINTENANCE NEEDED
	Outfall Headwall Inlet Catch Basin Junction Box Other:_____	Metal	None Minor Major	0-25% 25-50% 50-75% 75%-100%	Yes No	Yes No	Odor Stain Sheen Emergent Veg.	Yes No
	Outfall Headwall Inlet Catch Basin Junction Box Other:_____	Metal	None Minor Major	0-25% 25-50% 50-75% 75%-100%	Yes No	Yes No	Odor Stain Sheen Emergent Veg.	Yes No
	Outfall Headwall Inlet Catch Basin Junction Box Other:_____	Metal	None Minor Major	0-25% 25-50% 50-75% 75%-100%	Yes No	Yes No	Odor Stain Sheen Emergent Veg.	Yes No
	Outfall Headwall Inlet Catch Basin Junction Box Other:_____	Metal	None Minor Major	0-25% 25-50% 50-75% 75%-100%	Yes No	Yes No	Odor Stain Sheen Emergent Veg.	Yes No
	Outfall Headwall Inlet Catch Basin Junction Box Other:_____	Metal	None Minor Major	0-25% 25-50% 50-75% 75%-100%	Yes No	Yes No	Odor Stain Sheen Emergent Veg.	Yes No

Municipal Facility Stormwater Inspection Checklist

Facility:	
Facility Location:	
Date of Inspection:	
Reason for Inspection:	
Weather:	

Is there evidence of stormwater pollutants leaving site? (If YES, explain below) Describe pollutants:

Were stormwater issues discussed with on-site representative?	**YES**	**NO**
If YES, what is name and position of representative?	Name:	
	Position:	
Other comments/summary:		

Inspector Name:	
Company:	
Signature:	

Inspection Results:

Inspection Completed For:	YES/ NO/NA	PASS/ FAIL	Deficiencies Found	PHOTO #
Current Industrial NOI				
Stormwater Pollution Prevention Plan				
Areas around machinery and/or equipment				
Areas prone to leaks and spills				
Outdoor storage and handling areas				
Waste generation, storage, treatment and disposal areas				
Vehicle wash-down areas				
Fueling areas				
Loading and unloading areas				
Other:				

Inspect for the following:	
Stains, spots or puddles of oils, grease, or chemicals on concrete or around drains.	Torn bags of dry chemicals or bags exposed to rain
Leaking or corroded equipment, pipes, containers, or lines.	Broken or cracked dikes, walls, or other physical barriers
Improperly labeled or leaking drums	Improper outdoor storage of potential stormwater pollutants
Inadequate or inaccessible spill response equipment	Oily rags improperly discarded

City of Richmond Hill, Georgia

Water Quality Assessment Procedure Existing Flood Control Project Analysis

1.0 Introduction

The City of Richmond Hill periodically performs Capital Improvement Projects (CIP) related to retrofitting existing flood control structures to address drainage problems within the City. These drainage CIPs present a potential opportunity to also incorporate a water quality component to the project. This procedure puts in place a process to assess these drainage CIP projects for the opportunity to improve water quality as a part of the project. This procedure can be implemented to assess potential water quality benefits at the design stage for a drainage CIP project.

2.0 Procedures

City staff will completed the CIP Water Quality Analysis checklist for every drainage CIP at the time that that project is selected for design. This analysis will be completed prior to completion of the project design such that recommendations for water quality improvements can be included in the design, if feasible. The checklist is included on the following page.

Capital Improvement Project (CIP) Stormwater Impact Assessment

Project Name/ID Number: _____

Project Type: _____

Proposed Dates of Construction (start - finish): _____

Water Quality Impact

	Yes	No
The project will improve water quality by reducing velocity downstream associated with erosion.		
The project will replace a poorly functioning system that allows for the removal of pollutants currently entering the MS4 system.		
Other:		

Water Quality Enhancement Feasibility (Cost Estimations)

Enhancement Type*	Estimated Cost Increase	Feasible Yes/No
1.		
2.		
3.		

Regulatory Permits

	Yes	No
NPDES Construction Permit		
Section 404 Permit		
Other:		

Describe how this project adheres to the City Post Construction Stormwater Ordinance and GSMM:

_____

_____

_____