

US EPA ARCHIVE DOCUMENT

**Municipal Separate Storm Sewer System (MS4) Audit  
Hampton, Virginia  
June 14 - 15, 2005**

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## EXECUTIVE SUMMARY

Detailed findings from the Municipal Separate Storm Sewer System (MS4) audit conducted at Hampton, Virginia on June 14 - 15, 2005 are presented in this report. The major general findings from the MS4 audit are as follows:

### **Consolidate documents into a single Storm Water Management Master Plan.**

The City has no single document or compilation of documents that describe the City's Storm Water Management Program. This makes it potentially difficult for the several departments and divisions that implement the Storm Water Management Program to understand and implement all of the permit requirements. The City's permit requires adherence to the Comprehensive Plan, Storm Water Management Master Plan, and all storm water-related ordinances.

*The City should list and consolidate all documents that address storm water management activities.*

### **Conduct field screening for illicit discharges.**

The City does not currently conduct field screening investigations of potential sources of unauthorized non-storm water discharges.

*The City's permit requires field screening procedures with priority for segments of the storm sewer system which receive discharge from industrial and commercial sources. Thus, the City must prioritize its screening at locations throughout the storm sewer system to focus on those locations that receive discharges from industrial and commercial sources.*

### **Develop a program for onsite investigation of potential sources of unauthorized non-storm water discharges.**

The City does not have a program to investigate potential sources of non-storm water discharges and does not have effective enforcement capabilities to cause such discharges to cease, unless the Fire Department is involved.

*The City should develop such a program. This could include periodic review of facilities with Virginia Pollutant Discharge Elimination System permits and comparison of these facilities against the City business license database to identify whether any facilities regulated under the storm water program may need to apply for a permit.*

### **Improve the amount and type of information in the Indicators section of the Annual Report.**

The storm water program effectiveness indicators included in the City's current permit may not be adequate to show actual water quality improvement.

*In its upcoming permit reissuance, the City must consider what indicators would be appropriate to show improved water quality based on the pounds of pollutants of concern reduced. Effectiveness of the structural and non-structural controls employed by Hampton should be more directly linked with water quality improvements.*



**Municipal Separate Storm Sewer System (MS4) Audit  
Hampton, Virginia  
June 14 - 15, 2005**

**1 INTRODUCTION**

At the request of the U.S. Environmental Protection Agency (EPA) Region 3, a Municipal Separate Storm Sewer System (MS4) Audit was conducted on June 14 - 15, 2005, at the City of Hampton, Virginia. The audit team included Jennifer Legge, Jesse Salter, and Dianne Stewart of Science Applications International Corporation; Paula Estornell of EPA Region 3; and Doug Fritz and Fran Geissler of the Virginia Department of Conservation and Recreation (VADCR).

The City of Hampton (City) was issued Permit No. VA0088633, effective from March 8, 2001 to March 8, 2006. The City is currently the single permittee holder for the MS4 permit (i.e., there are no co-permittees). Under the permit, the City is required to implement its Storm Water Management Master Plan (SWMMP). The City does not have a current single document which is its SWMP.

The remainder of this report summarizes the findings of the MS4 audit organized by the individual elements and sub-elements described in the City's Virginia Pollutant Discharge Elimination System (VPDES) permit. Each program component section contains a summary of the findings associated with each program component and required and recommended actions, where appropriate.

**2 FINDINGS**

**2.1 Runoff from Commercial and Residential Facilities (Permit Section I.A.1.a)**

**2.1.1 Maintenance Activities and Schedule for Structural Controls to Reduce Pollutants in Runoff (Permit Section I.A.1.a.1)**

*Storm Sewer Maintenance*

The City's Drainage Maintenance Division maintains the storm drain system. The system includes street inlets, yard inlets (inlets not located on streets), catch basins, ditches, and pipes.

The City's highest priority is maintenance of the street inlets, which are inspected at least annually and vacuumed when necessary with one of the City's two wash trucks (vactors). Yard inlets are maintained upon request because many are fenced in and not readily accessible. Catch basins are cleaned at least once per year using the vactors; some catch basins are cleaned more frequently because they are located in areas where they become clogged more often (e.g., areas where pine tree needles clog the catch basin). In the City's Annual Report Fiscal Year 2004 (FY04 Annual Report), the City estimates that it removed 800 tons of debris from catch basins and other drainage structures.

The City has three ditch cleaning crews, which try to walk through all street side ditches at least twice annually. Ditches in wooded areas may not be inspected annually. In the FY04 Annual Report, the City reported cleaning 52% of street side ditches and 92% of rear ditches. The FY04 Annual Report notes that 1,683 tons of debris from street side and rear ditch cleaning were disposed of during Fiscal Year 2004 (FY04). Intense maintenance is needed to keep the storm sewers flowing because of the very flat terrain. The City does not maintain subdivision ditches where it has easements, but does not own the property. In such situations, the homeowner is responsible, but the City is responsible for the pipes to which such facilities drain. There are known problem areas in the storm water system that receive more maintenance than average, but there is no list of such locations.

In the FY04 Annual Report, the City reported cleaning 11% of its storm sewer pipes. Storm sewer pipe maintenance is primarily complaint-driven, and there is no schedule for preventive maintenance or inspection.

Complaints are received via the City's 311 number telephone system. Responses to the 311 complaints are tracked, but the specific locations of maintenance may not be clear. The City is developing an asset management system that will allow better correlation between the response to the complaint and the location of the maintenance. In addition, City staff stated that they hope to eventually use the asset management system as a project management tool.

The Drainage Maintenance Division works with the Fire Department to address any item in a ditch that appears to be a hazard. For instance, a crew found a drum in a ditch a few weeks ago and called the Fire Department to determine the drum's contents. The Fire Department determined it was used oil, and the drum was appropriately disposed.

#### *Best Management Practices (BMPs) Inspection and Maintenance Program*

The City has approximately 120 BMPs. A few BMPs are mapped in the GIS asset management system. The City expects to have all BMPs mapped by the end of the next fiscal year. BMP inspections are done annually by the Entomology Section, which is part of the Drainage Maintenance Division, and are usually performed in January and February when the Entomology staff are not as busy with their pesticide and herbicide application duties. Inspectors use a BMP checklist to document the condition of the BMPs, and the inspection findings are documented in a spreadsheet database. In FY04, BMPs at 51 commercial sites and seven City-owned sites were inspected.

The Drainage Maintenance Division staff maintain the majority of City-owned BMPs. Maintenance activities include cutting grass in ditches, removing sediment and debris, and making repairs. The Parks and Recreation Department maintains the perimeter and aerator of one Regional BMP on Nickerson and Old Buck Road and is responsible for repair and cleanup. The BMP is inspected weekly and maintained once every two weeks. The Parks and Recreation Department also maintains the underwater aerators in the Billy Wood Canal System and cuts grass in right-of-ways.

The majority of private BMPs are under a Declaration of Covenant, which is signed by the property owner and recorded with the deed to require property owners to maintain their BMPs. While the site plan review process currently ensures that all new BMPs have a signed Declaration of Covenant, older BMPs may not be under a maintenance agreement. The City inspects private BMPs on the same schedule as the City BMPs. The inspector does not take photographs as part of these inspections. Inspection findings are given to Mr. Chuck Fleming of the Public Works Department, who sends letters to the owner/operator of the privately-owned BMP. If the problems are not addressed, the inspection reports would ultimately go to Codes Compliance for enforcement.

The MS4 audit team observed a City inspector conduct inspections of a BMP at a Walmart facility and a City-owned BMP. The MS4 audit team observed some areas at these BMPs that should have been but were not inspected. For example, the City did not observe or investigate outfalls from the BMPs, and did not know the BMP's discharge locations. In addition, trash compactor "squeezeings" were being discharged into the BMP. Detailed findings associated with these inspections are provided in Appendix A.

**Required actions:** *None.*

**Recommended actions:** *The City should:*

- (1) ensure that all BMPs are mapped and placed on a scheduled maintenance program as the asset management system is developed.*
- (2) ensure that adequate staff and resources are available to implement the maintenance program (i.e., scheduled structural controls inspection and maintenance activities).*
- (3) consider whether a BMP inspection program active only in January and February is adequate since BMP problems may arise at other times of year.*
- (4) document the location of historical problem areas for follow-up, and document storm drain structures that require more maintenance than usual in the asset management system.*
- (5) ensure that all areas of BMPs (e.g., outfalls) are inspected and that follow-up actions are taken to address any identified deficiencies or maintenance needs.*
- (6) ensure that City inspectors take photographs of any problem areas to aid in explaining what corrective actions need to be taken and as documentation should enforcement be necessary.*
- (7) provide to inspectors training to identify illicit discharges to BMPs (e.g., the Walmart trash compactor "squeezeings").*

## **2.1.2 Enforcement of the Comprehensive Plan, Master Plan, and Other Related Ordinances Pertaining to Development and Redevelopment (Permit Section I.A.1.a.2)**

The permit requires the City to adhere to and, where applicable, enforce all those components of the Comprehensive Plan, the SWMMP, and all storm water-related ordinances pertaining to development and redevelopment in the City.

The City does not have an updated SWMMP and is in the process of revising its Comprehensive Plan. The City primarily relies on enforcement of the ordinances pertaining to development and redevelopment described below.

*Chapter 9* contains building and development regulations. The ordinance details the requirements for the site plan, which is always required for commercial and multi-family construction. A site plan is not required for single-family homes or subdivisions of single-family homes.

*Chapter 13* contains the Erosion and Sediment Control regulations, which require any person proposing to undertake any land-disturbing activity for which a permit is required to submit an Erosion and Sediment Control Plan to the City's Department of Public Works. The ordinance also details the right of the City to inspect and the enforcement process.

*Chapter 30* contains the City's sewage ordinance, which is enforced by the City's Health Department.

*Chapter 33.1* contains regulations for storm water management. The ordinance requires a Storm Water Management Plan (SWMP) for land disturbances over 2,500 square feet. SWMPs are also required for the development of single-family or duplex dwellings and their accessory structures (including, but not limited to fences, storage sheds, etc.) on individual lots within the Resource Protection Area (RPA).

*Chapter 35* contains regulations for subdivision development. Subdivisions are required to submit a development plan rather than a site plan.

*Zoning Ordinance Chapter 17.3 Article 10* contains the provisions for the Chesapeake Bay Preservation District. This ordinance is primarily enforced by the Zoning Department with support from the Planning and Engineering Departments. Environmental protection can be gained in the rezoning process because of "proffers," which are provisions that the developer will agree to in order to rezone a piece of land. To convince the City to rezone, developers will proffer design reviews or design standards that are not required, promise to convey land to the City to conserve, or provide grant easements for public access. The Oxford Trail and the Greenway on New Market Creek were made possible because of rezoning proffers.

The City's site plan review is conducted by one central person, Ms. Gayle Hicks. Ms. Hicks distributes to developers a Site Plan Submittal Package, which covers the site plan review process. The Site Plan Submittal Package is a guide for procedures to be taken by the owner, developer, or authorized representative for projected new construction. It includes a checklist of site plan requirements, which include requirements for the grading/erosion and sediment control plan. It also includes site plan storm water design and plan information, the 19 minimum controls, general erosion and sediment control notes, a storm water management guidance calculation worksheet, an excerpt from a textbook regarding water quality calculation procedures, and a blank Declaration of Covenant. The Site Plan Submittal Package includes a note that a VPDES permit is required for sites greater than one acre.

Ms. Hicks uses a checklist of the 19 minimum standards to review the erosion and sediment control provisions in submitted plans. She completes and includes in the file the checklist as documentation of the review. Ms. Hicks also checks the calculations for BMP design and ensures that the plans account for the water table. Ms. Hicks is responsible for ensuring that facility owners, or the Homeowners Association in the case of subdivision BMPs, sign the Declaration of Covenant.

The City is proposing to change its RPA to Intensely Developed Area (IDA). These changes were approved by the Hampton City Council and will be submitted to the State for a consistency review. The City staff indicated that the reason for this change is to facilitate the process whereby homeowners can build secondary structures (e.g., garage, shed) on their lots, which are already located within the Chesapeake Bay Preservation Act (CBPA) RPA. The City believes that the change will improve water quality because the IDA regulations require that the redevelopment cause a 10% reduction of pre-redevelopment pollutant load.

BMPs must be designed in accordance with the Virginia Department of Transportation Drainage Manual. Water quality performance standards for BMPs are as follows:

- For new development, the post development nonpoint source pollution runoff load must not exceed the pre-development load.
- For redevelopment, the existing nonpoint source pollution load must be reduced by at least 10%.

City staff noted that these performance standards are applied throughout the whole City, both within and outside the CBPA overlay district. Ponds are designed to control the 2- and 10-year peak flows, and checked for overtopping for the 25-year design frequency, at a minimum.

A review of the plan review files showed these findings:

- The 200 Tower Place file contained a letter from Virginia that indicated that the site had been issued a VPDES permit. While the City notifies Virginia of its construction sites greater than one acre, the City does not routinely receive feedback regarding whether a VPDES permit had been issued.

- The completed 19 minimum control checklist was in the Mercury Run Development file, but was not located in the 200 Tower Place file, which was an older development that started the approval process in 1999.
- The 200 Tower Place Erosion and Sediment Control notes and details included all applicable 19 minimum standards.

**Required actions:** *In accordance with Section I.A.1.a.2 of Permit No. VA0088633, the City must adhere to and enforce components of the Comprehensive Plan, SWMMP, and all storm water-related ordinances pertaining to development and redevelopment. To fulfill this permit condition, the County should list, consolidate and update as necessary all documents that address storm water management activities so that a complete SWMMP document is available for use in implementing the storm water management program.*

**Recommended actions:** *The City should evaluate the proposed change of the City's RPAs to IDAs, which may impact the effectiveness of the City's storm water management program (e.g., amount of Greenlands).*

### **2.1.3 Programs to Reduce Impacts on Water from Street Maintenance (Permit Section I.A.1.a.3)**

#### *Street Sweeping*

The City reduces impacts on storm water primarily through its street sweeping program conducted by the Bridge Maintenance Division. One crew with seven sweeper trucks sweep every curbed street in the City once per month. Streets are swept four days per week based on a defined route. The fifth day of the week is reserved for maintenance of the sweeper trucks and completion of any unfinished routes for the week. Mr. Roy Chesterfield of the Bridge Maintenance Division keeps paper records of all street sweeping activities.

In the FY04 Annual Report, the City stated that an average of 715 miles of streets are swept each month. In the first year of its street sweeping program, the City weighed its trucks to determine the amount of waste collected. The estimated average of 294 tons per month reported in the FY04 Annual Report was based on the number of trucks of waste collected and the average truck weight that was calculated during the first year. Street sweeping waste is disposed of in the landfill as cover material in the summer and in the yard waste center in the fall, where the mostly leafy material is composted.

#### *De-icing*

The City has made efforts to reduce impacts from its deicing program by using salt only. The City uses the same amount of salt as in the past, but does not use sand, which can lead to sediment problems. The salt is stored at the public works yard in a 50-foot by 40-foot fully-enclosed hut with concrete walls. The hut can store 400 tons and is kept full throughout the year.

*Mowing and Litter Control*

The Parks and Recreation Department (Parks Department) cuts the grass approximately once per week. A street sweeper is used to clean up roadways after mowing. Grass clippings are mulched or bagged and disposed of at the yard waste site. Employees walk sites to collect trash prior to mowing. Assistants through the Sheriff’s Department and the volunteer group, Clean City Commission, also remove trash from the City property. The volume of trash reported in the Annual Report does not include these Parks activities.

**Required actions:** *None.*

**Recommended actions:** *The City should include the volume of trash removed by the Parks Department in the Annual Report.*

**2.1.4 Existing Flood Control and Proposed Flood Control Projects (Permit Section I.A.1.a.4)**

All newly proposed flood management projects are solely focused on water quantity rather than water quality. The City reviews proposed projects for ways to incorporate design elements that will improve water quality, but usually does not find solutions that are financially or technically feasible.

The City has not retrofitted any structural controls with water quality features since its submittal of the FY04 Annual Report. The current status of the capital projects listed as being under construction or under design in the FY04 Annual Report is presented in Table 1.

<b>Table 1. Status of Hampton’s Capital Projects</b>	
<b>Capital Project</b>	<b>Status</b>
Tyler/Seldendale Outfall Improvements	Complete
Wythe/I-664 Outfall Improvements	Complete
Pembroke/Queen Street Outfall Improvements	On hold
Salt Ponds Geo-tube Restoration	Complete
New Market Creek Drainage Improvements	Complete
Church Creek Outfall Improvements	Awaiting Permit

Oakville Road Drainage Improvements	Cancelled; Cost Prohibitive
Linden Avenue Drainage Improvements	Complete
Atlantic Avenue Outfall/Drainage Improvements	Under Design
Greenbriar Avenue Drainage Improvements	Awaiting Easements
Ridgeway Avenue Drainage Improvements	Awaiting Easements

**Required actions:** *In accordance with Section I.A.1.a.4, the City must maintain programs to ensure flood management projects assess the impacts on the water quality of the receiving stream.*

**Recommended actions:** *None.*

**2.1.5 Application of Pesticides and Fertilizers (Permit Section I.A.1.a.5)**

*Parks and Recreation Department (Parks Department)*

The Parks Department maintains the grounds for municipal buildings, park areas, private lots, two municipal golf courses, and the public schools. It also maintains vegetated roadsides and median islands. The Parks Department has eight certified applicators, two of which are employed at each golf course. The applicators are required to obtain and maintain State certification as a condition of their employment. The Parks Department representatives were uncertain whether they used any Restricted Use Pesticides (RUPs).

Yearly soil testing is conducted on athletic fields and public building sites to determine fertilizer needs. Managers or team leaders work with applicators to determine the amounts of pesticides or fertilizers to apply. The applicators use all of the pesticides obtained for each application. There are five material storage areas.

The Parks Department has agreements with two contractors to perform grounds maintenance, including pesticides application, on some school grounds and other lots. A different contractor applies algacide treatments to five lakes. The City recommends the product and quantity to use, but the contractors have the flexibility to use comparable products. The amounts used are itemized in the contractors’ invoices, but the Parks Department does not track this information. The contracts require the applicators to obtain licenses and follow applicable rules and regulations. A Parks Department supervisor also oversees the contractor’s operations.

Purchase of pesticides, herbicides, and fertilizers can be tracked using budget information. There is a budget line item for chemicals and another budget line item for seeds and fertilizers. The Parks Department also has records of the size of the maintained areas.

### *Entomology Section of the Drainage Maintenance Division*

The Entomology Section of the Drainage Maintenance Division has seven certified pest control applicators and one registered technician to run the mosquito control program. The Entomology Section staff provide rat control on City right-of-ways, provide mosquito control, and apply herbicides in ditches. They do not use any RUPs.

Mosquito control is applied based on complaints and insect surveys involving carbon dioxide traps, where insects are held, counted, and identified. Complaints come in via the 311 line, and the traps are always used at some locations. The City uses species-specific applications and relies more on larvaecides than adulticides. Before applying larvaecide, the applicator ensures that larvae are in the water body, which could range in size from a puddle to a pond.

The Entomology Section only treats the bottoms of ditches with Rodeo. The practice of not treating the slopes minimizes erosion and reduces overspray problems. The Entomology Section primarily treats outfall ditches and ditches that are mowed by hand. Herbicides are used to keep the water flowing and to minimize the need for digging.

The applicators in the Entomology Section place excess pellets and granules back into the original containers, but use all of the liquids that they take from storage for each application session.

The City has an agreement with Langley Air Force Base for aerial mosquito spraying. The Entomology Section furnishes the product to the Air Force and assists in the effort by distributing and collecting dye cards and conducting bioassays and wind monitoring.

The amount of product used by the Entomology Section staff is tracked on each person's daily time sheet. The Entomology Section has also recently hired a full-time biologist, who is studying the City's pesticide use to determine how it can be more effective and efficient. The City is just beginning a data collection program that will track the locations and amounts of pesticides used.

Pesticides, herbicides, and fertilizers are purchased based on use in previous years and immediate need. Suppliers are generally able to deliver products within one week, so stocking a large amount of pesticides is not necessary. In addition, the City has limited storage capacity.

### *Public Education*

The City has created and distributed pamphlets regarding the proper application of herbicides, pesticides, and fertilizers. While the materials are still available, distribution has decreased since the Public Education staff was reduced. HR Storm, the regional organization to which the City belongs, produced outreach materials encouraging the proper and limited use of herbicides and fertilizers in home landscaping. The Public Education staff also annually conduct outreach

activities for approximately 200 area lawn care providers regarding proper disposal of yard waste.

**Required actions:** *None.*

**Recommended actions:** *The City should:*

*(1) create and implement a Nutrient Management Plan (NMP) regarding the amount, placement, timing, and application of nutrient-containing materials such as fertilizers and teach employees to use the NMP to responsibly apply and handle lawn care products.*

*(2) create and implement a Standard Operating Procedure (SOP) for the application of pesticides using the data collected by the full-time biologist in the Entomology Section. This SOP should be applicable to the Parks Department as well as the Entomology Section.*

*(3) make public education materials regarding pesticides, herbicides, and fertilizers publicly available and consider adding information regarding use of pesticides, herbicides, and fertilizers to the annual outreach to lawn care providers.*

*(4) consider using available information, such as City and contractor material purchase data and the size of areas maintained by the City, to track trends in pesticide and fertilizer usage. Further, the City can use this information to identify anomalous increases in usage that may indicate overuse and to document declines in usage due to better planning and more careful use.*

## **2.2 Illicit Discharge Program**

Several City departments or divisions are potentially involved in implementing the City's Illicit Discharge program. The City staff include Mr. Chuck Fleming, Storm Water Engineer under the Director of the Public Works Department; Mr. Pat Ray, the Manager of the Drainage Maintenance Division; Mr. Rick Rickett, Fire Marshal; and Lt. Maurice W. Wilson, Deputy Fire Marshal of the Fire Department.

### **2.2.1 Prevention of Illicit Discharges to the Storm Sewer System (Permit Section I.A.1.b.1)**

The permit requires the City to implement and enforce all provisions of the City's Storm Sewer System Discharge Ordinance which prohibits unauthorized non-storm water discharges to the storm sewer system. Section 33.1-12.1 of the City's Storm Water Ordinance states that:

(a) It shall be unlawful for any person to put, or allow to be put, any sewage, industrial waste, animal or vegetable matter, or any other similar substance in the storm sewer system, or in any manner pollute the storm sewer system.

(b) It shall be unlawful for any person to pour or discharge, or to permit to be poured or discharged, or to deposit, so that the same may be discharged, any gasoline, oil waste, antifreeze, or other automotive, motor or equipment fluids into any storm sewer system.

(c) It shall be unlawful for any commercial, industrial, or manufacturing entity to discharge process water, wash water, or any other unpermitted discharge into any storm sewer system.

In addition, Section 33.1-12.2 of the City's Ordinance prohibits illicit discharges to the storm sewer system. Section 33.1-12.2(a) states that "No person shall connect, or cause or permit to be connected, any sanitary sewer to the storm sewer system." Section 33.1-12.2(b) states that "No person, either directly or indirectly, shall cause or permit any significant discharge to the city's storm sewer system that is not composed entirely of storm water."

**Required actions:** *The City must remove the word "significant" from Sec. 33.1-12.2(b), which currently states that "No person, either directly or indirectly, shall cause or permit any significant (emphasis added) discharge to the City's storm sewer system that is not composed entirely of storm water." This will ensure that any non-storm water discharges (i.e., significant or insignificant) are prohibited.*

**Recommended actions:** *The City should consider adding to its Storm Sewer System Discharge Ordinance the allowable non-storm water discharges (e.g., uncontaminated groundwater) as outlined in Section I.B.4.b of Permit No. VA0088633.*

## 2.2.2 Field Screening for Illicit Discharges (Permit Section I.A.1.b.2)

The permit requires the City to implement field screening procedures for identifying unauthorized non-storm water discharges and improper disposal into the storm sewer system. Priority shall be placed on segments of the storm sewer system which receive drainage from industrial and commercial sources.

The City included "procedures for Field Screening and On-Site Investigations for Illicit Discharges" as Appendix 4B in its Part II NPDES permit application. In general, the City's field screening consists of observations by the Drainage Maintenance crews as they go about their normal maintenance tasks. They smoke tested the storm sewer ten years ago as part of the City's first collection system consent order to find illegal connections, but now the City only conducts such screening if there is a problem. For instance, in Buckroe last year, high *Enterococcus* counts were investigated to determine if they might be due to discharges from the storm sewer. The investigation concluded that seagulls were the source. No cross connections with the sanitary sewer and no illicit discharges were involved.

**Required actions:** *Section I.A.1.b.2 of Permit No. VA0088633 requires the City to implement field screening procedures for identifying unauthorized non-storm water discharges and improper disposal into the storm sewer system, and that screening procedures place priority on segments of the storm sewer system which receive discharge from industrial and commercial sources. Thus, the City must:*

- (1) develop and implement field screening procedures of potential sources of unauthorized non-storm water discharges.*

(2) *prioritize its screening throughout the storm sewer system to focus on those locations that receive discharges from industrial and commercial sources.*

**Recommended actions:** *The City should:*

(1) *review and update its existing field screening procedures.*

(2) *ensure that all individuals performing these activities are adequately trained.*

### **2.2.3 On-Site Investigations for Illicit Discharges (Permit Section I.A.1.b.3)**

The City has does not have a program designed to identify and investigate potential sources of unauthorized non-storm water discharges. The Fire Department conducts some routine inspections that could aid in identifying some types of non-storm water discharges. The Fire Department has four inspectors and five investigators who perform primary code inspections (e.g., for underground storage tanks), and investigations of arson, bombs, and environmental crimes. There are about 4,300 inspectable properties in Hampton. The Fire Department has a goal of 1,200 inspections per year. Most facilities will require some re-inspection. Routine inspections are based on life, safety, and property conservation. Inspectable facilities are defined based on a priority system developed by the National Fire Protection Association: (1) places where people sleep; (2) places where people gather; and (3) facilities with specific potential problems (e.g., gas stations, photo processing facilities). However, the Fire Department does not have sufficient personnel to inspect the third priority facilities. There are ten fire stations, all of which do inspections in their own areas and complete a Pre-Incident Survey form. These preplanned inspections (surveys) are conducted by fire station personnel to familiarize themselves with the facility and its equipment and materials in case an emergency response is warranted. Fire staff have been asked by the Fire Chief to complete a risk assessment of high hazard areas, but have not done these assessments yet due to lack of resources.

The FY04 Annual Report notes that the City received approximately 50 complaints regarding improper disposal of yard debris into the storm drain system. Mr. Fleming investigates these complaints, but does not have the authority to issue citations to parties found to be responsible for illicit discharges to the storm sewer or for any other infractions of the City Code. This reduces the City's ability to quickly require a discharger to comply. Mr. Fleming can send a letter requesting that the situation be addressed. Fire Department staff have the ability to issue citations, but they do not have the staffing or the mandate to be involved in incidents, such as a wash water discharge, that do not involve hazardous materials or threats to life or property.

The City's documenting and tracking of illicit discharge investigations is not fully implemented. When the Fire Department responds to a complaint or is called out by the Drainage Maintenance Division, a response ticket is completed. However, if the Fire Department is not involved, there may be no documentation of the resolution of problems found during routine cleaning. The City does document its responses to requests for service (customer complaints). For instance, in

FY04 the City responded to 707 drainage stoppage issues and 236 drainage flooding events, in addition to other types of complaints.

**Required actions:** *Section I.A.1.b.3 of Permit No. VA0088633 requires the City to, where necessary, conduct on-site investigation of potential sources of unauthorized non-storm water discharges, and act as expeditiously as possible to require a discharger to eliminate unauthorized non-storm water discharges. Thus the City must:*

- (1) implement a program to conduct on-site investigation of potential sources of unauthorized non-storm water discharges.*
- (2) notify a discharger to apply for a Virginia Department of Environmental Quality (VADEQ) permit, if appropriate.*
- (3) evaluate and revise its legal authority as appropriate to ensure that the City can take enforcement action to require a responsible party to immediately cease improper disposal practices.*

**Recommended actions:** *The City should:*

- (1) pursue additional means of enforcement other than citation if necessary to achieve compliance. For example, the City should review Health Department ordinances to determine if they have any application for use in improving storm water quality.*
- (2) ensure that City staff responsible for enforcement of the storm water ordinance are trained as peace officers.*
- (3) train Fire Department staff in the requirements of the storm water ordinance, and consider adding a storm water component to the SOPs and checklists currently used for routine inspections.*
- (4) evaluate whether additional staff are needed to implement the City's on-site investigation programs.*
- (5) provide adequate resources to implement and enforce all provisions of the City's Storm Sewer System Discharge Ordinance.*

#### **2.2.4 Spill Prevention, Containment, and Response Program (Permit Section I.A.1.b.4)**

Spill response is performed primarily by the Fire Department. The City's HAZMAT Officer recently retired and has not yet been replaced. The City staff did not know when this position would be filled as it is not a high priority. The lack of a HAZMAT Officer and adequate numbers of qualified inspectors has reduced the City's ability to respond effectively to spills that may enter the storm drain system. Inspectors initially respond to complaints and refer the case to investigators as appropriate. Most releases are handled at the station level.

The Fire Department has 25 HAZMAT technicians with Operations Level HAZMAT training and is trying to establish a HAZMAT response team. The Department is also trying to get environmental crimes training for three people. The Fire Department is called out to any type of spill, release into waterway, or traffic accident. The DOT is the responsible party for these

events on interstates and will send a contractor to clean up spills on interstates. Fluid spills of up to 25 gallons originating from vehicles are taken to the incinerator at NASA.

The Fire Department has an SOP for HAZMAT response, which follows the environmental crimes format. Staff call whatever agency or department needs to be notified. Fire engines carry absorbent and other materials, and the Fire Department also has a HAZMAT truck. City fire engines do not carry maps of storm drains. Spills of more than 50 gallons trigger a notification to Virginia's Department of Emergency Management. The City would try to contain any such spills.

The Fire Department receives an average of about 20,000 calls per year, but most calls are for emergency medical services. There are about 10 - 20 calls per month regarding vehicle accidents or other situations that involve spills. The Fire Department completes a report for each spill, primarily for use in cost recovery. Copies of spill reports are kept as a record. These incidents are documented as complaints, which are summarized and sent to Mr. Fleming for inclusion in the City's Annual Report.

The City reported responding to 148 releases (other than sanitary sewage) in FY04.

**Required actions:** *None.*

**Recommended actions:** *The City should:*

- (1) move forward with hiring and training adequate staff.*
- (2) ensure that each fire engine is provided with City utility maps, either paper copies or on a computer with GIS mapping capability when the asset management system and GIS components are complete. This could save valuable time when responding to a spill, enhancing the City's ability to prevent the spill from entering the storm sewer system.*
- (3) develop a records system to ensure that problems discovered during routine maintenance of the storm sewer system are documented so that the City's Annual Report will accurately reflect their efforts.*

#### **2.2.5 Public Reporting of Illicit Discharges or Water Quality Impacts (Permit Sections I.A.1.b.5 and b.6)**

The City has a program that works with area businesses to develop environmental friendly work practices. They have also developed and annually distribute educational materials for businesses and residents. Information is also sent to new residents that are identified by the 311 operators.

The City's Memorandum of Agreement with Hampton Roads Planning District Commission (HRPDC) indicates that HRPDC will develop public service announcements and handout materials for public education on storm water issues, including pet waste and household chemical disposal, but not reporting of illicit discharges (see related discussion in the *Hampton Roads Planning District Commission Memorandum of Agreement and Storm Water Program*

*Effectiveness Indicators* section). HRPDC develops these materials through its HR Storm and HR Clean programs. The City provides funding from the storm water operations budget to HRPDC for these activities.

**Required actions:** *None.*

**Recommended actions:** *The City should:*

*(1) consider using City cable channels to broadcast storm water messages, perhaps developed by HR STORM, the regional public education committee.*

*(2) include a plan and schedule of activities in the storm water management program that describes public education and outreach efforts related to illicit discharge detection and elimination.*

#### **2.2.6 Controls to Limit Seepage from Sanitary Sewer to Storm Sewer (Permit Section I.A.1.b.7)**

Mr. Jason Mitchell, Wastewater Operations Manager, provided information on the City's sanitary sewer system. The City has about 40 - 50 sanitary sewer overflows (SSOs) annually, and more if rainfall is high. The City considers any release from the sanitary system to be an SSO, even from cleanouts. Tree roots and grease cause the majority of problems.

SSOs are reported into a regional database maintained by the VADEQ. The City also has an internal database to record these events, and a summary is provided to Mr. Fleming for inclusion in the City's Annual Report. The City also reports overflows from Hampton Roads Sanitation District (HRSD) facilities if they observe them.

The City is under a Consent Order with VADEQ that calls for air testing, smoke testing, and cleaning of sanitary sewers in the Wythe area. The City also does this type of work whenever there are problems. The City owns the sewer lines to 24 inches beyond the curb. As part of its inflow and infiltration (I/I) elimination program, the City will issue a letter to the homeowner when laterals need repair.

HRSD performs the pretreatment program for the City and is also developing a grease control program. City staff can talk with the business owner to deal with grease blockages or contact the County Health Department.

The Wastewater Operations staff consists of 63 employees, with 15 -16 employees dedicated to the I/I program. Over a ten-year period, the City inspected the entire sewer system and grouted much of the system. There are 350 miles of gravity mains and 26 miles of force mains.

**Required actions:** *None.*

*Recommended actions: The City should develop an improved storm sewer system maintenance program to detect seepages into the storm sewer system.*

## **2.3 Runoff from Industrial Facilities (Permit Sections I.A.1.c)**

### **2.3.1 Inspect and control any new or previously unidentified facilities and monitor industrial storm water discharges (Permit Sections I.A.1.c.1 and c.2)**

The City relies on the Fire Marshals office (i.e., HAZMAT staff) to conduct inspections of industrial and commercial facilities and review Storm Water Pollution Prevention Plans (SWPPPs). However, these staff do not review SWPPPs or specifically focus on storm water concerns during inspections. In addition, the HAZMAT staff are unable to provide adequate inspection coverage of all industrial and commercial facilities throughout Hampton.

The City believes that industrial or commercial facilities with State-issued storm water permits are inspected by the State and that facilities without State permits are the City's responsibility. However, the City has not conducted inspections of any commercial or industrial facilities except for BMPs. The City does receive a list of permitted facilities from the State.

The City conducts no monitoring or does not require any industrial facility to conduct monitoring.

*Required actions: In accordance with Section I.A.1.c of Permit No. VA0088633, the City must:*

- (1) develop a list of municipal landfills, hazardous waste treatment, storage and disposal facilities, industrial facilities subject to Section 313 of the Emergency Planning and Community Right to Know Act, and facilities determined by the City to be contributing substantial pollutant loadings.*
- (2) develop a list of high priority facilities not covered by VPDES permits.*
- (3) develop an inspection schedule that places priority on those facilities that pose potential threats to water quality.*
- (4) develop a monitoring program for industrial and commercial facilities.*
- (5) revise the industrial inspection procedures to ensure that the inspection focuses on discharges to storm water.*
- (6) ensure adequate staff and resources are available to implement the industrial inspection program.*

*Recommended actions: None.*

## **2.4 Runoff from Construction Sites (Permit Section I.A.1.d)**

### **2.4.1 Enforce the Requirements of the City Ordinances pertaining to Building and Development Regulations, Subdivisions, Erosion and Sediment Control and Storm Water Management (Permit Section I.A.1.d.1)**

The City requires that construction sites use structural and non-structural BMPs from the Virginia Sediment and Erosion Control Handbook.

The City has one full-time Erosion and Sediment Control inspector, Mr. Dan Wilkison, who has primary responsibility for inspections at commercial construction sites and is responsible for all sites with land-disturbing permits in the CBPA. Following site plan review, developers are told to contact Mr. Wilkison for a preconstruction meeting. Mr. Wilkison discusses the erosion and sediment control plan and details of specific requirements, such as trenching of silt fence. Mr. Wilkison gives permission for the City land disturbance permit following the preconstruction meeting (i.e., his approval is required). The commercial inspections are performed approximately every two weeks. Newer and more active sites may be inspected once per week, while dormant sites may be inspected less frequently. Mr. Wilkison also conducts a final approval inspection when the construction is complete to ensure that all areas are stabilized and silt fence is removed. Mr. Mike Portonova, a part-time residential inspector and part-time electrical inspector, inspects erosion and sediment control measures at subdivisions and homes. Mr. Portonova was not available for interview.

Mr. Wilkison's training for construction erosion and sediment control is through Virginia's certification program. He is a certified program administrator and inspector under this program. The program includes a continuing education component, and participants must recertify every three years.

Mr. Wilkison uses two forms to document his inspections: a checklist of the 19 minimum standards and an inspection form on which he documents the violations. During the inspection, Mr. Wilkison reviews the construction entrance, inlet and outlet protection, silt fence, sediment trap/basin, and diversion dikes/berms. He does not check the site's VPDES permit paperwork. A typical inspection takes less than 30 minutes. Specific deficiencies are documented, and a copy of the inspection report is provided to the land disturber or builder immediately for corrective action. The inspection report includes a required corrective action deadline date and a reinspection date, which are usually within 24 hours. Mr. Wilkison reinspects all sites with violations. If violations are found during the reinspection, Mr. Wilkison issues a Notice to Comply. The facility has seven days after the issuance of the Notice to Comply to return to compliance. Mr. Wilkison reinspects the facility on the eighth day and issues a summons if the violations are still occurring. The summons is for a Class I Misdemeanor, which can result in 30 days in jail and/or a \$1,000 per day fine if convicted. Mr. Wilkison could also issue a Stop Work Order, if he considers the violation egregious or harmful. None of Mr. Wilkison's summons has ever resulted in a conviction because defendants have taken corrective action.

A review of inspection files showed that Mr. Wilkison does not document each visit to a site. VADCR's recent review of the construction inspections prompted him to start a file containing one piece of paper for each site where he lists all inspections conducted, whether or not an inspection checklist has been completed.

The MS4 audit team observed the City inspector conduct inspections at 200 Tower Place and the Mercury Run Development, now known as 101-112 Market Place Dr. Reports on these inspection observations are presented in Appendix B. The following is a summary of findings from the inspection observations:

- Mr. Wilkison did not note BMP conditions likely to allow sediment to enter the storm sewer, such as unprotected portions of inlets and failure to temporarily seed inactive areas.
- If a newly constructed permanent structure, such as a curb inlet, has defects such that sediment can enter the storm sewer, this may not be noted in Mr. Wilkison’s inspections, since the inspection is focused on the temporary construction BMPs. Such a structure would not be inspected until a Drainage Maintenance Division inspector inspected it up to one year after construction.

**Required actions:** *In accordance with Section I.A.1.d.1 of Permit No. VA0088633, the City must notify VADCR of all land disturbing activity of one acre or greater within 30 days after approving the site plan.*

**Recommended actions:** *The City should:*

- (1) require all BMPs to be included in the erosion and sediment control plan, such as temporary seeding for inactive areas and require facilities to ensure that polluted storm water cannot circumvent existing controls.*
- (2) ensure that erosion and sediment control inspections include review of all aspects of a drainage point that may allow sediment to enter the storm sewer system, including damaged and defective structures. If the Erosion And Sediment Control inspector must call for assistance from a Drainage Maintenance Division inspector to resolve problems with newly-constructed storm sewer structures, ensure that procedures are in place to allow this cooperation during construction and in a timely manner in order to halt sediment flow to the system.*
- (3) consider expanding the scope of the erosion and sediment control inspection to incorporate review of petroleum product storage and mortar or concrete wastes and review paperwork to verify the existence of a VPDES storm water permit and a SWPPP on site.*
- (4) evaluate whether the current number of inspectors is adequate to properly inspect all applicable construction sites in the City.*

#### **2.4.2 Educate and Train Construction Site Operators (Permit Section I.A.1.d.2)**

The City does not conduct a formal training program for construction site operators. During the site plan review process, each site must identify a Responsible Land Disturber (RLD). RLDs must pass a Virginia test to be certified.

The City considers its required pre-construction meeting with Mr. Dan Wilkison as its education and training program for construction site operators. During this meeting, Mr. Wilkison reviews the details of the land-disturbing permit and the requirements for erosion and sediment controls with the construction superintendent or the RLD. The RLD may be a licensed professional engineer, architect, certified landscape architect, or land surveyor who is responsible for carrying out the land disturbance activities for the project including permit compliance.

**Required actions:** *None.*

**Recommended actions:** *The City should:*

- (1) conduct the pre-construction meeting with someone who is responsible for the day-to-day on-site implementation of the plan*
- (2) consider expanding the scope of the pre-construction meeting to discuss the requirements of the VPDES general storm water permit for construction activities.*

## **2.5 Annual Report (Permit Section I.A.3)**

Section I.A.3 of Permit No. VA0088633 requires the County to submit an Annual Report which includes all the information and data listed in this section of the permit. The MS4 audit team compared the data which are required to be included in the Annual Report with the FY04 Annual Report. The FY04 Annual Report did not include the following items:

- The progress on the City's participation in a local or Regional public information program to address any new education programs concerning the use and disposal of pesticides, herbicides, and fertilizers (specified in Section I.A.3.a.3.a).
- The number and nature of unauthorized non-storm water discharges or improper disposal practices eliminated under the program by conducting on-site investigations (specified in Section I.A.3.a.4)
- A listing of any facilities identified and inspected under Part I.A.1.c.(1), a summary of any controls established for these facilities, and the implementation schedule established (specified in Section I.A.3.a.5).
- Results of any monitoring performed in accordance with Part I.A.1.c.(2) of the permit (specified in Section I.A.3.a.6).
- Revisions to the assessment of controls and to the fiscal analysis reporting in the permit application, and an assessment of the effectiveness of new controls established by the Storm Water Management Program (specified in Section I.A.3.c).
- A summary of the progress toward achieving the goals of the Storm Water Management Program through the use of effectiveness indicators. The summary shall address each individual effectiveness indicator (specified in Section I.A.3.d).
- Annual nutrient loadings as indicated in Part I.C.2.j of this permit
- Information regarding enforcement actions or inspections for its industrial program (specified in Section I.A.3.f).

**Required actions:** In accordance with Section I.A.3 of Permit No. VA0088633, the City must include all of the items listed in the above paragraph in its Annual Report.

**Recommended actions:** None.

**2.6 Hampton Roads Planning District Commission (HRPDC) Memorandum of Agreement (MOA) and Storm Water Program Effectiveness Indicators (Permit Section I.C)**

Section I.C of Permit No. VA0088633 requires the City to collect various types of data for its storm water program effectiveness indicators. Some data were not reported as required in the FY04 Annual Report. The Annual Report only included the *Regional Cooperation in Storm Water Management Fiscal Year 2003 - 2004 Status Report*. The information regarding each effectiveness indicator presented in Table 2 was gathered during the MS4 audit opening conference and from the FY04 Annual Report.

<b>Indicator</b>	<b>Comments</b>
Greenlands (Permit Section I.C.2.a)	Greenlands data were not reported in the FY04 Annual Report. The 5,000 acres of Greenlands reported in the FY03 Annual Report has not changed significantly. The City staff indicated that the acreage of Greenlands is stable year-to-year.
BMP implementation (Permit Section I.C.2.b)	BMP implementation data were not reported in the FY04 Annual Report. The City is currently mapping its BMPs. When all BMPs have been mapped, the City will outline the area served by each BMP.
Flooding and drainage responses (Permit Section I.C.2.d)	Flooding and drainage response data were not reported in the FY04 Annual Report.
Permitting and compliance (Permit Section I.C.2.h)	The FY04 Annual Report did not include the developed or redeveloped acres associated with the land disturbing permits.
Water Quality Nutrient Loadings (Permit Section I.C.2.j)	The FY03 Annual Report states that due to minor land use changes, loading estimates calculated for the FY01 Annual Report are representative of the current year. No recalculations of water quality nutrient loadings have been done for several years and this information was not included in the FY04 Annual Report. Section I.C.2.j states that the Event Mean Concentrations (EMC) will be calculated in Permit Year 5. City staff indicated that they did not have plans to perform the 5 EMC calculations as the permit requires.

As presented in the *Enforcement of the Comprehensive Plan, Master Plan, and Other Related Ordinances Pertaining to Development and Redevelopment* section of this report, Hampton’s

City Council approved changing the City's RPAs to IDAs. These changes will be submitted to the State for a consistency review. It is unclear how the proposed changes will affect the effectiveness of the City's storm water management program and move toward the goal of improved water quality.

The City considers parks, wetlands, and Chesapeake Bay Areas as Greenlands. The 10% impervious area added as a provision of redevelopment is not included in the Greenlands acreage and would not significantly change the total number of acres reported. The City does not include undeveloped, but unprotected, land because the acreage of Greenlands would constantly decrease if they did include these areas.

**Required actions:** *Per Section I.C of Permit No. VA0088633, the City must:*

- (1) maintain and report on all data for its storm water program effectiveness indicators in its Annual Report (see Table 2 above).*
- (2) recalculate the Event Mean Concentrations in Year 5 of the permit term.*

**Recommended actions:** *The City should:*

- (1) evaluate options for how water quality nutrient loadings should be calculated and reported in its Annual Report. For example, the City should review the model used to calculate the loadings estimates in FY 2001 and determine whether the model and/or input parameters should be revised to actually reflect pollutants being removed through BMP implementation in the City such as street sweeping.*
- (2) report the status of the Storm Water Program Effectiveness Indicators in a consolidated section of the Annual Report similar to the report in Section 8 of the City's Annual Report Fiscal Year 2003.*
- (3) include undeveloped, but unprotected, lands as a part of the Greenlands data.*

*For its upcoming permit resissuance in 2006, the City should:*

- (1) evaluate what indicators would be appropriate to accurately reflect the City's storm water program effectiveness in removing pounds of pollutants of concern. The ultimate goal of the City's storm water program effectiveness is to show improvement in water quality. In the Chesapeake Bay watershed, this translates into the pounds of phosphorus, nitrogen, and sediment that were reduced or removal of specific stream/river segments from the 303(d) list because of the storm water program. For example, the City should consider the annual pounds of fertilizers applied and reduced.*
- (2) consider whether storm water monitoring may be appropriate to assess the storm water program effectiveness.*

## **2.7 City Resources/Budget**

Funding for the City's storm water program is provided through storm water fees. The approved operating budget for FY04 was approximately \$3.66 million with \$1.08 million designated for Capital Improvement Projects. The proposed FY05 budget is \$3.55 million, according to the FY04 Annual Report. The most significant differences between the FY04 and FY05 budgets is a

60% decrease in funding for “environmental relations,” a 10% increase in street sweeping, and a 15% increase for administration in FY05.

The operating budget for FY04 funds 40 positions as follows: 1 in administration; 3 in environmental relations; 18 in drainage maintenance; 4 in heavy equipment; 10 in street sweeping; and 4 in review, inspection, and monitoring. In FY05, an additional administrative position is funded.

Several elements of the City’s storm water management program may not have adequate resources and staff for implementation (e.g., maintenance activities, capital improvements, industrial facility inspections, construction site inspections).

**Required actions:** *None.*

**Recommended actions:** *The City should evaluate whether sufficient resources and staff have been allocated to implement the storm water program and consider evaluating additional funding mechanism sources (e.g., storm sewer inspection fees) to generate funds for the MS4 program. If additional revenue is unavailable, current spending priorities should be re-evaluated and revised to give priority to those program items necessary for permit compliance and environmental health and safety. For example, the City should evaluate whether it is more effective to spend more funds on street sweeping or reallocate some funds from street sweeping to hire an additional City Erosion and Sediment Control inspector.*