

# SEMI-ANNUAL REPORT FY 2011

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Hampton Roads Sanitation District  
1436 Air Rail Avenue  
Virginia Beach, VA 23455

April 29, 2011

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## SEMI-ANNUAL REPORT FY 2011

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### 1. INTRODUCTION AND PURPOSE

On September 26, 2007, the Hampton Roads Sanitation District (HRSD) entered into a Special Order by Consent (SOC) with the Virginia Department of Environmental Quality (DEQ) and thirteen (13) area Localities for the purpose of resolving certain alleged violations of environmental laws and regulations related to Sanitary Sewer Overflows (SSOs). On February 23, 2010, HRSD entered into an Amended Consent Decree (“Consent Decree”) with the United States of America and the Commonwealth of Virginia to address sanitary sewer overflows throughout the Hampton Roads region.

As part of both agreements, HRSD is required to perform, among other things, the following tasks:

- Implement a flow, pressure, and rainfall monitoring program;
- Cooperate with the Localities to develop a Regional Hydraulic Model;
- Prepare a plan for and conduct a condition assessment program;
- Construct specified interim system improvements;
- Develop and implement an SSO Response Plan;
- Coordinate with the Localities to develop a Regional Wet Weather Management Plan;
- Update and implement a Management, Operations and Maintenance (MOM) Program; and
- Prepare and submit a variety of periodic and event-driven reports.

This semi-annual report is submitted pursuant to Section XVII of the Consent Decree. HRSD has prepared this semi-annual report in accordance with the above requirements to apprise the EPA (representing the United States of America) and the DEQ (representing the Commonwealth of Virginia) of steps taken toward meeting the obligations of the Consent Decree. Specifically, this semi-annual report summarizes the work and activities undertaken by HRSD from July 1, 2010, through December 31, 2010.

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## 2. MAJOR COMPLIANCE ACHIEVEMENTS

### 2.1 Flow, Pressure, and Rainfall Monitoring Program

#### 2.1.1 QAPP

As required by Paragraph 13 of the Consent Decree, HRSD developed and submitted a Quality Assurance Program Plan (QAPP) within 15 days of the decree date of entry. This document, entitled the Data Quality Standards and Procedures (DQSAP), was submitted to the EPA and DEQ on March 9, 2010. It includes details on how data quality reviews are performed, the data reliability calculations, and how data issues are resolved. Comments were received from the EPA and DEQ on June 28, 2010, and a revised document was submitted December 21, 2010. Final approval is pending from the EPA and DEQ. A Consent Decree modification related to the mechanics of data reliability calculations was signed by HRSD and returned to the EPA after this reporting period (in April 2011).

#### 2.1.2 Implementation of the FPR Monitoring Plan

In this reporting period, HRSD continued to operate an extensive and complex system of Flow, Pressure, and Rainfall (FPR) sensors after an official start date of March 12, 2010 to the one year monitoring period. The overall network includes approximately 360 flow, pressure, and rainfall gauges. Notifications of changes to the FPR Monitoring Program have been provided to the EPA and DEQ through the Interim Report, email, and telephone discussions. A complete listing of changes from the approved FPR Monitoring Plan will be provided in the Final FPR Monitoring Report in June 2011.

Data collection has been ongoing through December 31, 2010, and will continue through March 11, 2011. The data is processed through the DQSAP to evaluate data validity. An Interim Flow, Pressure, and Rainfall Monitoring Report was prepared as required by the Consent Decree within 30 days of completing the first 5 months of monitoring. This report was submitted to the EPA and DEQ on September 13, 2010, and included data summaries, tables, graphs, and maps documenting the collected information. Comments were received from the EPA and DEQ on November 29, 2010, and will be addressed in the Final Report.

A portal to allow access for the Localities to the HRSD flow, pressure, and rainfall data from the FPR sites (Telog server data) was developed and implemented in February 2009 and continues to be used and enhanced.

### 2.2 Regional Hydraulic Model and Hydraulic Assessment

#### 2.2.1 Implementation of the Regional Hydraulic Model Plan

The Regional Hydraulic Model (RHM) required by the Consent Decree was under development and testing during this reporting period. Localities collected and delivered data regarding their physical collection system and pumping network, analyzed flow data collected during the monitoring period, and delivered flow parameter databases.

Monthly meetings of the Model Users Group, facilitated by HRSD and attended by the Localities were conducted. Various modeling topics were discussed at these meetings including the process and content for

data submittals from Localities to HRSD for the RHM. In addition, individual meetings were held between HRSD and Localities to resolve any locality-specific issues.

HRSD has made significant progress in the development of a dynamic Regional Hydraulic Model. Three wet weather events (in March, May, and September 2010) have been identified as potential calibration and verification events during the FPR Monitoring period. A fourth event prior to the start of the monitoring period (occurring in January 2010) has also been evaluated as a potential RHM calibration or verification event for a limited portion of the system. HRSD has used these events, in conjunction with the facility data and flow parameters, to calibrate the RHM. Although much of the work was completed by December 31, 2010, the final calibration will be done in the second half of FY2011, culminating in an RHM Report in July 2011.

#### 2.2.1.1 Locality Hydraulic Modeling and Input Hydrographs

HRSD has collaborated with the Localities in the development of each Locality's Hydraulic Model in a number of ways in FY 2011. HRSD has worked closely with the Localities to facilitate submittal of updates to the Locality facility data for the Regional Hydraulic Model. This data has been reviewed and comments have been provided to the Localities. In addition to the facility data, HRSD has facilitated the submission of updated hydrologic flow parameters by each Locality to characterize the dry weather and wet weather flows from the sewer catchments discharging to HRSD. This data has been reviewed by HRSD and comments have been provided to the Localities.

#### 2.2.2 Regional Hydraulic Model Report

The report to document the initial development, calibration, and verification of the RHM was completed and submitted to the EPA and DEQ on November 30, 2010.

### 2.3 Condition Assessment Plan

#### 2.3.1 Implementation of the Condition Assessment Plan

##### 2.3.1.1 Condition Assessment Field Activities

See Section 4 of this report for details on the Condition Assessment Field Activities.

##### 2.3.1.2 Prompt Repairs

###### 2.3.1.2.1 Conveyance System

The following programs are in place to identify and address collection system infrastructure deficiencies found during the course of condition assessment field activities that require prompt attention (as defined in the approved Condition Assessment Plan):

###### 2.3.1.2.1.1 Gravity Sewer Internal Inspection

HRSD is assessing its gravity sewer system using CCTV as part of the Condition Assessment Program. Defects are evaluated to determine if they:

- Pose an immediate threat to the environment;
- Pose an imminent threat to the health and safety of the public;
- Create operational problems that may result in SSOs; or
- Contribute to substantial inflow to the system.

If such a defect is identified through the inspection process, it is assessed to determine the appropriate repair necessary. Data received from the condition assessment contractors continues to be reviewed to make that



assessment. See Section 4 of this report for details on the Condition Assessment Program Prompt Repair status.

#### 2.3.1.2.1.2 Pump Stations and Pressure Reducing Stations

HRSD routinely inspects its pump stations and pressure reducing stations (PRSs) as part of ongoing maintenance activities to identify and address any significant defects. A condition assessment evaluation will be completed by November 26, 2011, which focuses on the mechanical, electrical, instrumentation, and structural assets associated with each pump station. Any defect fitting the categories listed in the Conveyance System section above is similarly evaluated and listed for Prompt Repair as appropriate.

### 2.3.2 Final Condition Assessment Report

This report will be completed following Condition Assessment Field Activities as shown in the approved schedule from the PCAR.

## 2.4 Interim System Improvements

Appendix 5 to the Consent Decree lists thirty-three projects that are required to be completed within 8 years of the Date of Entry of the Consent Decree. HRSD has each of these projects scheduled as part of its Capital Improvement Program with completion prior to February 23, 2018. A number of these projects are underway with several in construction during this fiscal year. As required by Paragraph 32 of the Consent Decree, HRSD will provide a certification by a Professional Engineer that each of these projects was completed satisfactorily and in conformance with the scope as originally provided to the EPA and DEQ. HRSD is on schedule; however, consistent with the overall schedule, no projects were completed during the first half of FY2011. A complete update for the fiscal year will be provided in the Annual Report.

## 2.5 Management, Operations, and Maintenance Program

### 2.5.1 MOM Plan

As part of the SOC, a MOM Program document was submitted to the DEQ on December 23, 2008. Comments were received on August 20, 2009, and the Consent Decree required a revised submittal within 120 days of the Date of Entry (June 23, 2010). HRSD has revised the MOM Program and submitted an updated document to the EPA and DEQ ahead of schedule on May 20, 2010. Comments were received again from the EPA and DEQ on December 7, 2010, and HRSD revised the document for resubmittal in February 2011 (the status will be covered in HRSD's upcoming Annual Report).

### 2.5.2 Implementation of MOM Program

HRSD continues to implement its MOM Program. This includes details pertaining to management, operations, and maintenance of nearly all aspects of HRSD's system, including quantitative performance measures and special programs coordinated in the region such as the HR FOG.

### 2.5.3 Quantitative Performance Measures

The revised MOM Plan submitted on May 20, 2010 included many performance measures to determine how HRSD is implementing the program. Paragraph 34 of the Consent Decree established a list of six measures that are subject to stipulated penalties, including: gravity sewer main inspection, air release valve preventative maintenance, gravity sewer cleaning, pumping station annual preventative maintenance, back-up generator annual preventative maintenance, and non-invasive force main inspection near drinking water supply reservoirs. To coincide with HRSD's fiscal year, the tracking of these six measures commenced on July 1, 2010. Work has been underway to implement and track these performance measures and the results will be

presented in the FY2011 Annual Report. HRSD believes it is on track to meet all the performance measures identified in Paragraph 34 of the Consent Decree.

## 2.6 Regional Wet Weather Management Plan

Although there were no activities conducted in this reporting period specifically about the Regional Wet Weather Management Plan (RWWMP) (because it is a later deliverable under the Consent Decree), there were numerous activities that occurred in the first half of FY 2011 that contribute to the ultimate development of the RWWMP. The major activities include the following:

- Collection and analysis of flow, pressure, and rainfall monitoring data;
- Development of hydrologic models by Localities for wet weather system characterization;
- Development and submittal of collection system network data and the flow parameter database by Localities that will be used in the development of the RHM;
- Developing and testing of the RHM;
- Condition assessment field activities which will lead to the Final Condition Assessment Report and the associated peak flow commitment;
- Discussion at the Capacity Team about the cost and effectiveness of rehabilitation on reducing peak wet weather flows; and
- A Quarterly Briefing was held on July 28, 2010, with the EPA and DEQ to review progress of the program.

## 2.7 Short Term Wet Weather Operational Plan

Paragraph 60 of the Consent Decree requires HRSD to submit a revised Short Term Wet Weather Operational Plan within 180 days of receipt of comments from the EPA. The original plan was submitted as part of the Unilateral Administrative Order in October 2007. Comments were received from the EPA on March 29, 2010, and HRSD submitted a revised document on September 27, 2010. The EPA and DEQ provided comments on this revised plan on December 15, 2010, with a required revision date in June 2011. In the meantime, HRSD continues to actively coordinate with the Localities and operate its system to maximize available wet weather capacity.

## 2.8 SSO Emergency Response Plan

On July 26, 2010, HRSD received comments from the EPA and DEQ to the Sanitary Sewer Overflow (SSO) Response Plan. HRSD submitted a revised plan on September 17, 2010. This plan was approved by the EPA and DEQ on October 12, 2010, and has been implemented by HRSD. A copy of the approved plan was posted to the [www.HRSD.com](http://www.HRSD.com) website.

## 2.9 Coordination with Localities

There was a wide variety of coordination activities in the first half of FY 2011 amongst the regional parties to the SOC. These activities included:

- Numerous meetings of the Capacity Team to discuss SOC and Consent Decree issues, development of Regional Technical Standards (RTS) Interpretations, and providing guidance to the region on RTS issues;
- Monthly Locality coordination meetings were held to discuss issues of mutual concern regarding the SOC and Consent Decree;
- Meetings of the Model Users Group to discuss issues related to modeling;
- Briefings of the Directors' of Utilities Committee to share progress on compliance with the SOC and Consent Decree;

- A regional SharePoint website continues to be updated to collaborate with and provide documents to the regional Locality Team and Capacity Team; and
- Copies of the Interim FPR Monitoring Report, initial RHM Report, and Annual Report were provided from HRSD to the Localities.

## 2.10 Public Participation

HRSD will conduct an annual information meeting and publish a newsletter by February 23, 2011, the one year anniversary of the Date of Entry. Information and approved plans continue to be posted to HRSD's website, which is accessible to the public.

## 2.11 Post-RWWMP Implementation Monitoring and Performance Assessment

No action has been performed for this item as it is a later requirement of the Consent Decree.

## 2.12 Reporting

### 2.12.1 Annual Report

HRSD completed an FY2010 Annual Report as required by both the SOC and Consent Decree, and submitted it to the EPA and DEQ on November 1, 2010. This report covered SOC activities from July 1, 2009, through June 30, 2010, as well as Consent Decree activities from the Date of Entry (February 23, 2010) through June 30, 2010.

### 2.12.2 Quarterly Briefing

A quarterly briefing was held per Paragraph 90 of the Consent Decree, on July 28, 2010, with attendance by HRSD, the EPA, and the DEQ. A summary of the discussions was published by HRSD and submitted to the EPA and DEQ on August 17, 2010.

## 2.13 Summary of Submittals

Table 1 summarizes the status of the documentation that HRSD has submitted to the EPA and DEQ under the Consent Decree in the first half of FY2011.

Consent Decree Submittal	Submittal Date
QAPP/DQSAP	Revision December 21, 2010
Interim FPR Monitoring Report	September 13, 2010
Initial RHM Report	November 30, 2010
STWWOP	Revision September 27, 2010
SSO Response Plan	Revision September 17, 2010
Annual Report	November 1, 2010
Quarterly Briefing	July 28, 2010

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### 3. COMPLIANCE DEADLINES AND MILESTONES

In the first half of FY2011, HRSD expended considerable resources in both time and money to achieve the compliance goals of the Consent Decree. All deliverables were submitted on or before their due dates and all milestones were met, including those with short timeframes for response.

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### 4. CONDITION ASSESSMENT ACTIVITIES

HRSD has continued with its Condition Assessment Program in FY2011 with significant progress made in many aspects of the program. The following subsections describe the progress made in each aspect.

#### 4.1 Gravity Main

The inspection contract was awarded in December 2009 and began work in January 2010. Through December 31, 2010, more than 158,000 linear feet of gravity sewer main has been inspected using PACP-compliant CCTV techniques. In addition, more than 800 manholes have been inspected using MACP-compliant procedures.

A second contract was awarded in April 2010 for inspection of HRSD's large diameter gravity sewer interceptors and submerged portions of pipelines such as inverted siphons than cannot be inspected using standard CCTV methods. Through December 31, 2010, more than 34,000 linear feet of gravity sewer main has been inspected in this contract. Combined with the footage in the paragraph above, this inspection total accounts for more than 70% of the entire HRSD gravity pipe.

The remainder of the work is expected to be completed in FY2011 not later than the November 26, 2011 milestone.

#### 4.2 Force Main

HRSD's force main inspection program includes a number of activities that proceed through various steps in the assessment process. In FY2010, a contract was awarded to conduct Level 1 and Level 2 inspections as described in the Condition Assessment Program (September 2009). This contract will conduct assessments of the Group 1 and Group 2 segments, the ferrous force main segments within 3,000 feet downstream of an HRSD pumping station ("ferrous segments"), and the force main segments within 500 feet of a drinking water source ("reservoir segments"). Through December 31, 2010, the following assessments have been completed:

- Groups 1 and 2, Level 1 inspection – 75,000 linear feet
- Ferrous Segments, Level 2 inspection – 2,950 linear feet
- Reservoir Segments, Level 1 inspection - 650 linear feet

As described in the Condition Assessment Program, following each level of inspection, a determination is made as to additional inspection required, if any. The initial inspections performed to date are being evaluated for follow-up assessment, where needed.

#### 4.3 Pumping Facilities

HRSD completed an initial, detailed inspection of all of its pumping facilities in 2008 prior to the Date of Entry of the Consent Decree. These inspections were in addition to the routine annual inspections performed as part of the MOM Program at every HRSD pumping facility location by HRSD Operations and Maintenance staff. Each annual inspection includes a mechanical inspection, electrical/instrumentation inspection, and SCADA inspection.

HRSD will update the detailed inspections from 2008 by the November 26, 2011 completion deadline.

#### 4.4 Prompt Repairs

Through the Condition Assessment Program, HRSD has identified 23 defects in the HRSD sanitary sewer system (primarily gravity sewer pipe and manholes) which have been deemed to be Prompt Repairs between July 1 and December 31, 2010. These 23 defects have been grouped into 8 repair work orders and are currently in various stages of planning, design, or construction. The following Table 2 provides details on these Prompt Repairs.

Table 2. Summary of Prompt Repairs					
Name	Location	Jurisdiction	Line Number	Summary of defect	Status
41st Street	41st Street east of intersection with Jefferson Ave; between MHs NG-112-12175 and NG-112-11783	Hampton	NG-112	Pipe lining failure	In construction
Beach Road	West side of Beach Road opposite intersection with Wade Road between MH NG-088-0 and NG-088-155.	Hampton	NG-088	Pipe connection at manhole needs repair	Contractor mobilizing
	West side of Beach Rd. between intersection with Bonneville Dr. and Catalina Drive between MH NG-088-1654 and NG-088-1863	Hampton	NG-088	Lateral connection to mainline needs repair	
	Approximately in front of 112 Beach Rd between MH NG-088-0636 and NG-088-0970	Hampton	NG-088	Mainline pipe defects	
	Beach Rd. approximately 170 ft. south of Wade Rd. intersection	Hampton	NG-088	Manhole defects	
	West side of Beach Road opposite intersection with Hall Road. Between MHs NG-088-1260 and NG-088-1316	Hampton	NG-088	Mainline punctured by another utility directional drilling	
Various Manholes	North King St.	Hampton	NG-063	Manhole defects	Work order in development
	North King St.	Hampton	NG-078	Manhole defects	
	E. Pembroke Ave. at Washington St.	Hampton	NG-084	Manhole defects	
	Bainbridge Blvd. between Beech St. and Wilton St.	Norfolk	SG-153	Manhole defects	
Jefferson Ave	Jefferson Ave.	Newport News	NG-169	Mainline pipe defects	In design
	Jefferson Ave. between 40th Street and 41st Street	Newport News	NG-114	Mainline pipe defects	
	Jefferson Avenue between 39th and 40th Street	Newport News	NG-114	Mainline pipe defects	
Newtown Road	Newtown Rd. at Virginia Beach Blvd (ne corner of intersection)	Virginia Beach	SG-112	Manhole defects	In design
	Newtown Rd. approx. 415 ft. north of Princess Anne Rd.	Virginia Beach	SG-113	Manhole defects	



Table 2. Summary of Prompt Repairs

Name	Location	Jurisdiction	Line Number	Summary of defect	Status
	Newtown Rd. at Elam Ave.	Virginia Beach	SG-113	Manhole defects	
Mercury Blvd	West Mercury Blvd	Hampton	NG-099	Mainline pipe defects	Work order in development
	W. Mercury Blvd, Hampton VA	Hampton	NG-057	Mainline pipe defects	
	West Mercury Blvd, Hampton, VA; near Beechwood Rd.	Hampton	NG-057	Mainline pipe defects	
	West Mercury Blvd, Hampton VA	Hampton	NG-057	Mainline pipe defects	
	W. Mercury Blvd, Hampton, VA	Hampton	NG-057	Mainline pipe defects	
N. Hope Street	North Hope Street, Hampton, VA	Hampton	NG-160	Pipe lining failure	Work order in development
Old Atlantic Ave	Old Atlantic Avenue, Chesapeake, VA; near intersection with Liberty Street	Chesapeake	SG-148	Pipe lining failure	Work order in development

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## 5. SYSTEM PERFORMANCE

### 5.1 STP Performance

The HRSD system was influenced by several significant wet weather events in the first half of FY11 that led to flow increases at the treatment facilities. In addition, construction related to the nutrient control program was ongoing at several of the treatment plants with minor operational events that contributed to discharges from the facilities. Table 3 (below) provides details on the discharges from July 1 to December 31, 2010. The majority of these occurrences were fully treated effluent.

### 5.2 Conveyance System Performance

For the reporting period of July 1 through December 31, 2010, HRSD experienced 28 capacity-related sanitary sewer overflows (SSOs) from its system. Very significant wet weather events in excess of a 10-year recurrence interval occurred during this period, namely the July 29 event and September 29 to October 1 event. The latter storm was over a 100-year recurrence event throughout much of the system and resulted in high groundwater conditions and elevated system flows. All of these events are detailed in the Sanitary Sewer Overflow Reporting System (SSORS). Details on these 28 events are available in Table 4. All capacity-related SSOs during this reporting period were beyond the control of HRSD and were caused by rainfall amounts exceeding the available infrastructure systems as well as any reasonable level of service.

### 5.3 LOP Status

As listed in Appendix 1 of the Consent Decree, seventeen (17) Locality Overflow Points (LOPs) have been identified in the Regional Sanitary Sewer System. Prior to the Preliminary Capacity Assessment Report, HRSD and the specific Locality coordinate any time an LOP activates to review the cause and circumstance of the SSO.

In this reporting period, HRSD has coordinated with the applicable Localities regarding the handful of activations from their LOPs, which are described in more detail below. All of these activations occurred during the September 30 to October 1, 2010, wet weather event which was categorized as between a 25-year to more than 100-year rainfall event throughout the HRSD system.

#### 5.3.1 City of Suffolk: LOP No. 2

LOP 2 relates to City of Suffolk PS 63 and its service area. This LOP activated on September 30, 2010, with 10.37 inches of rain being recorded at a nearby HRSD rainfall gauge during a 72-hour period, translating into an event larger than a 50-year, 72-hour rainfall. During wet weather events, the pressure in the discharge force main at this pumping station increases to a level beyond the capabilities of the existing facility. The City has implemented a plan to install a bypass pump, conduct SSES and Find and Fix work to reduce I/I in the collection system, and make improvements to the pumping facility at PS 63. This rainfall event was above a level of service that is feasible to attain.

#### 5.3.2 City of Chesapeake: LOP No. 22

The City of Chesapeake experienced an SSO from their LOP No. 22 at City PS 107 during this reporting period on September 30, 2010. This LOP activated with 9.01 inches of rain being recorded at a nearby

HRSD rainfall gauge during a 72-hour period, translating into an event larger than a 25-year, 72-hour rainfall. The wet weather event produced conditions that exceeded the capabilities of the City PS 107. The City is implementing an SSES Program as well as a Find and Fix Program to reduce I/I in the collection system. This rainfall event was above a level of service that is feasible to attain.

### 5.3.3 City of Portsmouth: LOP No. 35

LOP No. 35 is at Rose Avenue and South Street in Portsmouth. During the wet weather event of September 30, 2010, this LOP activated with 9.54 inches of rain being recorded at a nearby HRSD rainfall gauge during a 72-hour period, translating into an event larger than a 50-year, 72-hour rainfall. The City is currently implementing several projects to address the LOP, including the South Street Project completed in July 2010, installing manhole inserts, performing SSES in the system, and rehabilitating downstream piping. This rainfall event was above a level of service that is feasible to attain.

### 5.3.4 James City Service Authority: LOP No. 49

JCSA experienced an SSO from their LOP No. 49 at LS3-3 during this reporting period on September 30, 2010. This LOP activated with 10.16 inches of rain being recorded at a nearby HRSD rainfall gauge during a 72-hour period, translating into an event larger than a 50-year, 72-hour rainfall. The wet weather event produced conditions that exceeded the capabilities of the LS3-3. JCSA is implementing an SSES Program as well as a Find and Fix Program to reduce I/I in the collection system. This rainfall event was above a level of service that is feasible to attain.

### 5.3.5 James City Service Authority: LOP No. 57

JCSA experienced an SSO from their LOP No. 57 at LS4-2 during this reporting period on September 30, 2010. This LOP activated with 11.36 inches of rain being recorded at a nearby HRSD rainfall gauge during a 72-hour period, translating into an event larger than a 50-year, 72-hour rainfall. The wet weather event produced conditions that exceeded the capabilities of the LS4-2. JCSA is implementing an SSES Program as well as a Find and Fix Program to reduce I/I in the collection system. This rainfall event was above a level of service that is feasible to attain.

### 5.3.6 James City Service Authority: LOP No. 58

JCSA experienced an SSO from their LOP No. 58 in the JCSA collection system upstream of HRSD's Greensprings Pumping Station during this reporting period on September 30, 2010. This LOP activated with 10.2 inches of rain being recorded at a nearby HRSD rainfall gauge during a 72-hour period, translating into an event larger than a 50-year, 72-hour rainfall. The wet weather event produced conditions that exceeded the capabilities of the system. JCSA has recently completed a pipelining project including 11,000 LF of 21" pipe and 38 manholes to reduce I/I in this collection system. This rainfall event was above a level of service that is feasible to attain.

### 5.3.7 City of Portsmouth: LOP No. 65

LOP No. 65 is at Pennock Street and Deep Creek Blvd in Portsmouth. During the wet weather event of September 30, 2010, this LOP activated from two manholes (separate SSORS reports 102728 and 102735) with 9.38 inches of rain being recorded at a nearby HRSD rainfall gauge during a 72-hour period, translating into an event larger than a 50-year, 72-hour rainfall. The City is currently implementing several projects to address the LOP, including the Prentice Park sewer rehabilitation project and performing SSES in the system. This rainfall event was above a level of service that is feasible to attain.

### 5.3.8 City of Portsmouth: LOP No. 72

LOP No. 72 is at Deep Creek Blvd and Fairview Circle in Portsmouth. During the wet weather event of September 30, 2010, this LOP activated from three manholes (separate SSORS reports 102721, 27238, and 102740) with 10.59 inches of rain being recorded at a nearby HRSD rainfall gauge during a 72-hour period, translating into an event larger than a 50-year, 72-hour rainfall. The City is currently implementing several projects to address the LOP, including the Prentice Park sewer rehabilitation project and performing SSES in the system. This rainfall event was above a level of service that is feasible to attain.

### 5.3.9 City of Hampton: LOP No. 76

The City of Hampton reported an SSO at LOP as a result of the September 30, 2010 regionally heavy rainfall event, at N. King Street and Macalva Drive. This LOP activated with 16.23 inches of rain being recorded at a nearby HRSD rainfall gauge during a 72-hour period, translating into an event larger than a 100-year, 72-hour rainfall. The wet weather event produced conditions that exceeded the capabilities of the sanitary sewer system. The City is implementing an SSES Program as well as a Find and Fix Program to reduce I/I in the collection system. This rainfall event was above a level of service that is feasible to attain.

### 5.3.10 City of Chesapeake: LOP No. 84

The City of Chesapeake experienced an SSO from their LOP No. 84 at City PS 227 during this reporting period on September 30, 2010. This LOP activated with 11.17 inches of rain being recorded at a nearby HRSD rainfall gauge during a 72-hour period, translating into an event larger than a 50-year, 72-hour rainfall. The wet weather event produced conditions that exceeded the capabilities of the City PS 227. The City is implementing an SSES Program as well as a Find and Fix Program to reduce I/I in the collection system. This rainfall event was above a level of service that is feasible to attain.

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Table 3. Detailed Listing of HRSD Treatment Plant Unusual Discharges (July 1 to December 31, 2010)

Date	Location	Description/Cause	Duration of Event (minutes)	Corrective Action	Estimated Quantity Discharged (gallons)	Estimated Quantity to State Waters (gallons)	Type of Overflow	Receiving Water	Comments
7/22/2010	VIP	Aeration effluent backed up and overflowed vault due to faulty check valve. Overflow went onto ground.	10	Operator started the offline pump and pumped down the vault. The majority of the mixed liquor solids was pumped back to the head of the plant. Sand was placed on top of the ground after most of the solids were removed.	800	0	aeration effluent	plant drain system	This was an operations problem that was corrected within 10 minutes
9/9/2010	York River	Spill occurred at the treatment system used to produce reuse water that is sent to Giant Industry. Primary effluent is pumped to the sequence batch reactors (SBR) for treatment. The treated effluent is then decanted into the post-equalization tank where it is then pumped to filtration and chlorination system. The discharge valve on the post-EQ tank failed to open when the level in the tank rose. The treated effluent exited the tank through the tank overflow line into the plant's manhole system. It subsequently overflowed the manhole system.	25	The operator opened the discharge valve manually. Once the valve was opened, the post- EQ tank pump began to operate and the level in the tank dropped. The plant staff checked the valve but could not re-create the problem. It is suspected that a power blip may have caused the problem.	2000	2000	Secondary Effluent	ground/Back Creek	Reclaimed water spill
9/10/2010	York River	Spill occurred at the treatment system used to produce reuse water that is sent to Giant Industry. Primary effluent is pumped to the sequence batch reactors (SBR) for treatment. The treated effluent is then decanted into the post-equalization tank where it is then pumped to filtration and chlorination system. The discharge valve on the post-EQ tank failed to open when the level in the tank rose. The treated effluent exited the tank through the tank overflow line into the plant's manhole system. It subsequently overflowed the manhole system. This is the second failure of the valve within 24 hours.	10	The operator opened the discharge valve manually. Once the valve was opened, the post- EQ tank pump began to operate and the level in the tank dropped. The plant staff left the valve in the open position while they continued their investigation of the problem. A float switch was installed temporarily to operate the post EQ-tank pumps. The problem was identified to be the actuator which controls the discharge valve. The actuator was dismantled and discovered to have water damage. The actuator was rebuilt and is now working properly.	2000	2000	Secondary Effluent	ground/Back Creek	Reclaimed water spill
9/21/2010	Boat Harbor	Broken fitting on 5-minute chlorine contact tank analyzer pump sprayed NPW onto ground and into storm drain. The metal fitting had corroded and cracked.	1	Operator shut down the pump and switched to another analyzer pump to maintain chlorination. The fitting was replaced. None of the spill was recovered because it either entered the storm drain or soaked into the ground.	200	200	NPW*	James River/ground	Reclaimed water spill
9/30/2010	James River	Pre-aeration tanks #2 and #3 and primary clarifiers #3 and #4 overflowed due to high flows from an extreme rain event. The Williamsburg-Newport News airport recorded 9.39" of rainfall for the day from the remnants of tropical storm Nicole interacting with a low pressure system. The plant is undergoing construction for nutrient removal upgrades and not all of the unit processes were available. Most of the overflows came from the pre-aeration tanks.	930	Plant used four pumps to divert some flow from the primary #3 and #4 trains of the plant to the primary #1 and #2 trains to equalize the flow through the plant. The majority of the tank overflows were contained on plant site and drained back into the plant drain system. A small portion of the overflow reached the storm drain. Plant staff placed bags in the roadway to divert flow back into the plant drain system and away from the storm drain.	625,000	1000	wastewater	Creek leading to Warwick River	Severe wet weather event greater than 50-year recurrence interval
9/30/2010	Ches-Eliz	Plant opened alternate outfall 002 to prevent process tank overflows due to high plant flows during heavy rain. The remnants of tropical storm Nicole interacted with a low pressure system to produce a record amount of rainfall for the day. Norfolk Inter Airport recorded 7.85" of rainfall for the day. Plant flow rate exceeded 60 MGD.	920	All discharge is fully treated, chlorinated and de-chlorinated final effluent. Plant closed short outfall valve when plant flow rate decreased to manageable rate.	10,000,000	10,000,000	Fully treated effluent	Little Creek Harbor	Documented use of a permitted alternate outfall

Table 3. Detailed Listing of HRSD Treatment Plant Unusual Discharges (July 1 to December 31, 2010)

Date	Location	Description/Cause	Duration of Event (minutes)	Corrective Action	Estimated Quantity Discharged (gallons)	Estimated Quantity to State Waters (gallons)	Type of Overflow	Receiving Water	Comments
10/13/2010	York River	A 6" PVC flange burst due to water hammer. The pipe carries NPW which is used to make up the sodium bi-sulfite solution for de-chlorination. The pipe flange is located inside the chemical feed building.	8	Operator closed valves in the line to isolate the pipe. The plant switched to potable water for the bi-sulfite solution makeup water. The piping was repaired and returned to service.	200	200	NPW*	Back Creek	Reclaimed water spill
11/2/2010	York River	Drain line to the final effluent sample sink became plugged and final effluent overflowed onto ground.	28	The final effluent sample pump was shut off and the drain was cleared. The NPW soaked into the ground and could not be recovered.	100	100	NPW*	ground	Reclaimed water spill
12/19/2010	Nansemond	The air compressor for the wet well bubbler level failed which caused the sanitary pumps to not operate. This caused the level in the wet well to rise and briefly overflow the well.	40	The sanitary pumps were placed in manual while the air compressor was replaced. Spill soaked into the ground and could not be recovered.	8	8	wastewater	ground	Small volume spill due to mechanical failure that was corrected
12/21/2010	Atlantic	Final effluent leaked at an estimated rate of 10 gph from the north side of the final effluent channel near the ground at the joint between the old channel and the new channel. Plant had recently undergone expansion construction project which includes building two new chlorine contact tanks. The tanks were built onto the old contact tanks and the effluent channel was extended to include all four of the tanks. It was the joint between the new and old effluent channel that was leaking.	1140	Plant staff established a sump to contain the leak and pump the effluent back into the effluent channel. The construction is still under warranty. Contractor pressure grouted the joint on 12/22/10 and no further leakage has been reported.	190	190	NPW*	ground	Reclaimed water spill
12/30/2010	Williamsburg	The 10-inch gravity thickener supernatant line broke underground. The top of the pipe was corroded by sulfides.	12	Plant stopped all flow to the gravity thickener and pumped the level of the tank down below the weirs of the thickener. Contained and recovered approximately one-half of the spill before it entered the storm drain. Pipe was replaced and the gravity thickener was placed back in service.	1000	500	wastewater	James River	

\*NPW – Non-potable water (treated effluent)



Table 4. Detailed Listing of HRSD Capacity Related SSOs (July 1 to December 31, 2010)

Date and Time of Incident	Location	Sewer System Component	Potential Receiving Waters	Spilled In Jurisdiction	SSO Classification	Description of Incident from SSORS	SSO Duration	Action Taken and Explanation of SSO*	Discharge Quantity**	Amount Reaching State Waters**	DEQ IR
7/29/2010 18:30	Bridge Street Pump Station	4701 Victoria Blvd	Salters Creek	Hampton	Capacity-Weather Related	Heavy rainfall from storms in area caused pump station to overflow. All three pumps failed due to high temperatures from the heat. Rain gauge at Bayshore Pump Station recorded 3.3" of rain in two hours. Estimated flow rate: 35 gal/min	6 hour(s) 0 minute(s)	Reset pumps. Station operated properly after pumps were reset. However, flow was too high due to storm and station overflowed via tidal gate until flows dropped.	12,600	12,600	SSORS#201 1-T-102642
7/29/2010 18:53	Center Avenue Pump Station	315 Center Avenue	James River	Newport News	Capacity-Weather Related	Heavy rains from storms in area caused pump station to overflow. Rain gauge at Copeland Park Pump Station recorded 5.83" of rain in two hours. Estimated overflow rate: 75 gal/min	3 hour(s) 42 minute(s)	Checked pump station to ensure pumps are operating properly. Start and stop times adjusted after review of records. Corrected location of station from Norfolk to Newport News.	16,650	16,650	SSORS#201 1-T-102643
7/29/2010 18:44	Manhole	King Street between Donald Street & MacAlva Drive	Back River	Hampton	Capacity-Weather Related	Heavy rains from storms in area caused manhole to overflow. Rain gauge at Bayshore PS recorded 3.3" of rain in two hours. Estimated overflow rate: 9 gal/min	4 hour(s) 42 minute(s)	Checked Langley Circle Pump Station to ensure pumps are operating properly. Started by-pass pump at station to facilitate pumping.	2,538	2,538	SSORS#201 1-T-102644
7/29/2010 18:44	Manhole	King Street at MacAlva	Back River	Hampton	Capacity-Weather Related	Heavy rains from storms in area caused manhole to overflow. Rain gauge at Bayshore PS recorded 3.3" of rain in two hours. Estimated overflow rate: 71 gal/min	4 hour(s) 42 minute(s)	Checked Langley Circle Pump Station to ensure pumps are operating properly. Started by-pass pump to facilitate pumping.	20,022	20,022	SSORS#201 1-T-102645
7/29/2010 20:30	Manhole	Sunset Road and Kecoughtan Road	Sunset Creek	Hampton	Capacity-Weather Related	Heavy rains from storms in area caused manhole to overflow. Rain gauge at Bayshore PS recorded 3.3" of rain in two hours. Estimated overflow rate: 5 gal/min	1 hour(s) 45 minute(s)	Checked Claremont Avenue Pump Station to ensure pumps are operating properly.	525	525	SSORS#201 1-T-102647
7/29/2010 20:35	Manhole	Chesapeake Avenue and Clyde Street	James River	Hampton	Capacity-Weather Related	Heavy rains from storms in area caused manhole to overflow. Rain gauge at Bayshore PS recorded 3.3" of rain in two hours. Estimated overflow rate: 10 gal/min	1 hour(s) 49 minute(s)	Checked Claremont Avenue Pump Station to ensure pumps are operating properly.	1,090	1,090	SSORS#201 1-T-102648
9/30/2010 8:49	Manhole	Donald and N. King Street	Back River	Hampton	Capacity-Weather Related	Manhole overflowing at initial estimated rate of 100 gpm due to high flows caused by rain from remnants of TS Nicole interacting with low pressure system. Rain gauge at Copeland Park PS recorded 10.75" of rainfall during 48-hour period with 8.7" of rain received on 9/30.	25 hour(s) 11 minute(s)	Checked Langley Circle Pump Station to ensure pumps were operating properly. Bypass pump set up at station to facilitate high flow conditions did not start automatically. Crew started pump manually upon arrival at site.	158,655	158,655	SSORS#201 1-T-102691
9/30/2010 8:47	Manhole	1275 North King Street	Back River	Hampton	Capacity-Weather Related	Manhole overflowing at initial estimated rate of 25 gpm due to high flows caused by rain from remnants of TS Nicole interacting with low pressure system. Rain gauge at Copeland Park PS recorded 10.75" of rainfall during 48-hour period with 8.7" of rain received on 9/30.	25 hour(s) 13 minute(s)	Checked Langley Circle Pump Station to ensure pumps were operating properly. The bypass pump set up at station to facilitate high flow conditions did not start automatically. Crew started pump manually upon arrival at site.	37,825	37,825	SSORS#201 1-T-102692
9/30/2010 8:45	Manhole	MacAlva and N. King Street	Back River	Hampton	Capacity-Weather Related	Manhole overflowing at initial estimated rate of 50 gpm due to high flows caused by rain from remnants of TS Nicole interacting with low pressure system. Rain gauge at Copeland Park PS recorded 10.75" of rainfall during 48-hour period with 8.7" of rain received on 9/30.	25 hour(s) 15 minute(s)	Checked Langley Circle Pump Station to ensure pumps were operating properly. The bypass pump set up at station to facilitate high flow conditions did not start automatically. Crew started pump manually upon arrival at site.	151,500	151,500	SSORS#201 1-T-102693
9/30/2010 7:27	Upstream of Bridge Street Pump Station	4701 Victoria Blvd	Salters Creek	Hampton	Capacity-Weather Related	PS overflowing at tide gate due to high flows caused by rain from remnants of TS Nicole interacting with low pressure system. Rain gauge at Freeman PS recorded 16.23" of rainfall during 48-hour period with 13.85" of rain received on 9/30.	36 hour(s) 57 minute(s)	Checked pump station to ensure pumps were operating properly. Start time is based on alarm.	665,400	665,400	SSORS#201 1-T-102694

Table 4. Detailed Listing of HRSD Capacity Related SSOs (July 1 to December 31, 2010)

Date and Time of Incident	Location	Sewer System Component	Potential Receiving Waters	Spilled In Jurisdiction	SSO Classification	Description of Incident from SSORS	SSO Duration	Action Taken and Explanation of SSO*	Discharge Quantity**	Amount Reaching State Waters**	DEQ IR
9/30/2010 9:59	Manhole	Sunset Road and Kecoughtan Road	Sunset Creek	Hampton	Capacity-Weather Related	Manhole overflowing at initial estimated rate of 10 gpm due to high flows caused by rain from remnants of TS Nicole interacting with low pressure system. Rain gauge at Freeman Pump Station recorded 16.23" of rainfall during 48-hour period with 13.85" of rain received on 9/30.	22 hour(s) 42 minute(s)	Checked pump station and downstream gravity system. Modified initial flow rate estimate to 5 gpm.	6,810	6,810	SSORS#201 1-T-102695
9/30/2010 11:09	Center Avenue Pump Station	315 Center Avenue	James River	Newport News	Capacity-Weather Related	Pump station overflowing at initial rate of 178 gpm due to high flows caused by rain from remnants of TS Nicole interacting with low pressure system. Rain gauge at Copeland Park PS recorded 10.75" of rainfall during 48-hour period with 8.7" of rain received on 9/30.	18 hour(s) 51 minute(s)	Checked pump station to ensure pumps were operating properly. Flow estimate is calculated using data from recently installed weir meter.	1,301,187	1,301,187	SSORS#201 1-T-102696
9/30/2010 10:30	Bayshore Pump Station	720 Bayshore Lane	Chesapeake Bay	Hampton	Capacity-Weather Related	Two manholes beside pump station are overflowing due to high flows caused by rain from remnants of TS Nicole interacting with low pressure system. Manhole beside station is overflowing at initial estimated rate of 20 gpm. Manhole across the street is overflowing at initial estimated rate of 15 gpm. Rain gauge at Bayshore PS recorded 12.42" of rainfall during 48-hour period with 10" of rain received on 9/30.	23 hour(s) 0 minute(s)	Checked pump station to ensure pumps were operating properly. Manhole across the street from station stopped overflowing at 11:00 pm on 9/30. Manhole beside station stopped overflowing at 9:30 am on 10/1.	48,900	48,900	SSORS#201 1-T-102697
9/30/2010 8:45	3 manholes	Ballentine and Virginia Beach Blvd	Elizabeth River	Norfolk	Capacity-Weather Related	Two MHs are overflowing due to high flows caused by rain. Each manhole flow rate is initially estimated at 25 gpm. A third MH began overflowing at an initial estimated rate of 15 gpm at 12:43 pm. Area received large amount of rain from remnants of TS Nicole interacting with low pressure system. Rain gauge at Virginia Beach Blvd PS recorded 12.12" of rainfall during 48-hour period with 10.51" of rain received on 9/30.	7 hour(s) 0 minute(s)	Checked Norchester pump station to ensure all pumps were operating, including Godwin pump installed for high flow conditions.	16,800	16,800	SSORS#201 1-T-102698
9/30/2010 10:00	Manhole	E. Chamberlain and N. Hope Street	Mill Creek	Hampton	Capacity-Weather Related	Manhole overflowing at initial estimated rate of 50 gpm due to high flows caused by rain from remnants of TS Nicole interacting with low pressure system. Rain gauge at Bayshore PS recorded 12.42" of rainfall during 48-hour period with 10" of rain received on 9/30.	31 hour(s) 0 minute(s)	Checked Willard Avenue pump station to ensure pumps were operating properly. Also checked gravity system downstream. Modified initial flow rate estimate to 100 gpm.	186,000	186,000	SSORS#201 1-T-102700
9/30/2010 10:00	Manhole	Yukon and N. Hope Street	Mill Creek	Hampton	Capacity-Weather Related	Manhole overflowing at initial estimated rate of 50 gpm due to high flows caused by rain from remnants of TS Nicole interacting with low pressure system. Rain gauge at Bayshore Pump Station recorded 12.42" of rainfall during 48-hour period with 10" of rain being received on 9/30.	31 hour(s) 0 minute(s)	Checked Willard Avenue pump station to ensure pumps were operating properly. Also checked gravity system downstream. Modified initial flow rate estimate to 100 gpm.	186,000	186,000	SSORS#201 1-T-102701
9/30/2010 13:55	Manhole	42 Franklin Road	James River	Newport News	Capacity-Weather Related	Manhole overflowing at initial estimated rate of 50 gpm due to high flows caused by rain from remnants of TS Nicole interacting with low pressure system. Flow rate dropped to estimated 10 gpm by 2:10 pm. Rain gauge at Copeland Park PS recorded 10.75" of rainfall during 48-hour period with 8.7" of rain received on 9/30.	18 hour(s) 15 minute(s)	Checked Center Avenue pump station to ensure pumps were operating properly.	54,750	54,750	SSORS#201 1-T-102705
9/30/2010 14:00	Manhole	3904 Chesapeake Avenue	James River	Hampton	Capacity-Weather Related	Manhole overflowing at initial estimated rate of 25 gpm due to high flows caused by rain from remnants of TS Nicole interacting with low pressure system. Rain gauge at Copeland Park pump station recorded 10.75" of rainfall during 48-hour period with 8.7" of rain received on 9/30.	18 hour(s) 45 minute(s)	Checked Claremont pump station to ensure pumps were operating properly. Also checked gravity system downstream.	22,500	22,500	SSORS#201 1-T-102706
9/30/2010 14:00	Manhole	3748 Chesapeake Avenue	James River	Hampton	Capacity-Weather Related	MH overflowing at initial estimated rate of 25 gpm due to high flows caused by rain from remnants of TS Nicole interacting with low pressure system.	18 hour(s) 45 minute(s)	Checked Claremont pump station to ensure pumps were operating properly. Also checked gravity system downstream.	22,500	22,500	SSORS#201 1-T-102707
9/30/2010 11:28	Manhole	Bainbridge Blvd and Park Avenue	Scuffletown Creek to Elizabeth River	Chesapeake	Capacity-Weather Related	Manhole overflowing at an initial estimated rate of 10 gpm due to high flows caused by rain from remnants of TS Nicole interacting with low pressure system. Rain gauge at Ferebee Pump Station recorded 12.5" of rainfall during 48-hour period with 10.59" of rain received on 9/30.	15 hour(s) 17 minute(s)	Checked Park Avenue pump station to ensure pumps were operating properly, including Godwin pump installed for high flow conditions. Manhole stopped overflowing at 11:32 am but started overflowing again at 12:14 am.	1,550	1,550	SSORS#201 1-T-102712

Table 4. Detailed Listing of HRSD Capacity Related SSOs (July 1 to December 31, 2010)

Date and Time of Incident	Location	Sewer System Component	Potential Receiving Waters	Spilled In Jurisdiction	SSO Classification	Description of Incident from SSORS	SSO Duration	Action Taken and Explanation of SSO*	Discharge Quantity**	Amount Reaching State Waters**	DEQ IR
9/30/2010 12:43	Monroe Place Pump Station	5808 Monroe Place	Lafayette River	Norfolk	Capacity-Weather Related	Station high water alarm due to high flow caused by rain from remnants of TS Nicole interacting with low pressure system. Manhole in front of station was overflowing and under water. Rain gauge at Luxembourg Pump Station recorded 11.95" of rainfall during a 48-hour period with 10" of rain received on 9/30.	24 hour(s) 28 minute(s)	Crew could not estimate flow rate due to flooding. All pumps at the station were operating properly, including Godwin pump installed for high flow conditions.	-1	-1	SSORS#201 1-T-102713
9/30/2010 10:51	Manhole	134 South 5th Street	Shingle Creek	Suffolk	Capacity-Weather Related	Manhole overflowing at initial estimated rate of 1 gpm due to high flows caused by rain from remnants of TS Nicole interacting with low pressure system. Rain gauge at Suffolk pump station recorded 9.75" of rainfall during 48-hour period with 7.2" of rain received during 9/30. Flow rate estimate modified to 5 gpm.	20 hour(s) 45 minute(s)	Checked Suffolk pump station to ensure all pumps were operating properly. An auxiliary Godwin pump is installed at station for high flow conditions.	6,255	6,255	SSORS#201 1-T-102714
9/30/2010 13:00	Manhole	Ivy Home Road and Victoria Blvd	Sunset Creek	Hampton	Capacity-Weather Related	Manhole overflowing at an initial estimated rate of 2 gpm due to high flows caused by rain from remnants of TS Nicole interacting with low pressure system. Rain gauge at Freeman Pump Station recorded 16.23" of rainfall during 48-hour period with 13.85" of rain received on 9/30.	14 hour(s) 24 minute(s)	Checked bypass pipe and bypass pump at Hampton pump station #1.	1,728	1,728	SSORS#201 1-T-102717
9/30/2010 12:15	Manhole	N. King Street at I-64	Brights Creek	Hampton	Capacity-Weather Related	Manhole overflowing at initial estimated rate of 50 gpm due to high flows caused by rain from remnants of TS Nicole interacting with low pressure system. Rain gauge at Copeland Park PS recorded 10.75" of rainfall during 48-hour period with 8.7" of rain received during 9/30.	23 hour(s) 45 minute(s)	Checked Washington Street pump station. All pumps were operating properly.	14,250	14,250	SSORS#201 1-T-102718
9/30/2010 7:43	Fords Colony Pump Station	430 Hempstead Road	Powhatan Creek	James City	Capacity-Weather Related	Manhole beside pump station overflowed due to high flows caused by rain from remnants of TS Nicole interacting with low pressure system. Rain gauge at station recorded 10.48" of rainfall during 48-hour period with 7.08" of rain received on 9/30.	19 hour(s) 50 minute(s)	Checked pump station and all pumps were operating properly. Report was delayed due to confusion of ownership of manhole. There are multiple manholes in swamp and most are owned by JCSA. It was originally thought that manhole belonged to JCSA and they were notified. Overflow stopped at 1:56 pm but restarted at 8:45 pm. Corrected location on update.	39,050	39,050	SSORS#201 1-T-102725
9/30/2010 21:41	Fort Eustis Pump Station	1619 Taylor Road	James River	Newport News	Capacity-Weather Related	Manhole at station overflowing at initial estimated rate of 150 gpm due to high flow caused by rain from remnants of TS Nicole interacting with low pressure system. Rain gauge at Fort Eustis pump station recorded 8.56" of rainfall during 48-hour period with 5.91" of rain received on 9/30.	2 hour(s) 33 minute(s)	Checked pump station to ensure pump were operating properly.	22,950	22,950	SSORS#201 1-T-102726
9/30/2010 16:11	Chesapeake Blvd Pump Station	5734 Chesapeake Blvd	Wayne Creek	Norfolk	Capacity-Weather Related	Station overflowing at initial estimated rate of 10 gpm due to high flows caused by rain from remnants of TS Nicole interacting with low pressure system. Rain gauge at Luxembourg Pump Station recorded 11.95" of rainfall during 48-hour period with 10" of rain received on 9/30.	22 hour(s) 28 minute(s)	Checked pump station to ensure all pumps were operating properly, including Godwin pump set up for high flow conditions. The fuel line on the Godwin pump ruptured at approximately 6:39 am on 10/1 which caused overflow rate to increase dramatically. The fuel line was repaired and the pump placed back in service by 10:05 am which slowed the overflow rate.	72,708	72,708	SSORS#201 1-T-102739
10/1/2010 3:00	Manhole	221 Locust Street	Shingle Creek	Suffolk	Capacity-Weather Related	Manhole overflowed at estimated rate of 1 gpm due to high flows from rain caused by remnants of TS Nicole interacting with low pressure system. Rain gauge at Suffolk Pump Station recorded 9.75" of rainfall during 48-hour period with 7.2" of rain received on 9/30.	3 hour(s) 30 minute(s)	Checked Suffolk pump station to ensure all pumps were operating. An auxiliary Godwin pump is installed at station for high flow conditions. Delay in reporting due to miscommunication within HRSD.	210	210	SSORS#201 1-T-102788

\*Comments have been added for the Semi-Annual Report that were not part of SSORS original report.

\*\*SSO volumes are calculated using a discharge rate that often fluctuates during the duration of the event.

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## SEMI-ANNUAL REPORT FY 2011

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### 6. PLANNED ACTIVITIES

HRSD will be continuing the overall program outlined in the Consent Decree in the remainder of FY11. The following sub-sections provide specifics on this work.

#### 6.1 Flow, Pressure, and Rainfall Monitoring Program

##### 6.1.1 QAPP

A revised Data Quality Standards and Procedures (DQSAP) document was submitted to the EPA and DEQ on December 21, 2010. Modified Consent Decree language to calculate data reliability has been agreed to by the EPA, DEQ, and HRSD. The DQSAP is being applied.

##### 6.1.2 Implementation of the FPR Monitoring Plan

HRSD will continue to collect data from its network of flow, pressure, and rainfall sensors through March 11, 2011. Within 90 days of the end of the monitoring period, HRSD will submit a Final Flow, Pressure, and Rainfall Monitoring Report.

HRSD will continue to operate a portal to allow access for the Localities to the HRSD flow, pressure, and rainfall data from the FPR sites (Telog server data) in the remainder of FY2011.

##### 6.1.3 LOP Status

In the remainder of FY2011, HRSD will continue to coordinate with Localities following activation of an LOP in the Localities system. This will include coordinating with the Locality to review the occurrence, assist with evaluation of the problem, and help the Locality with interim or final solutions to mitigate the LOP. This information will be documented in the upcoming Annual Report.

#### 6.2 Regional Hydraulic Model and Hydraulic Assessment

The Regional Hydraulic Model (RHM) required by the Consent Decree and SOC will continue to be developed and finalized in the second half of FY 2011. Numerous coordination sessions with the Localities are planned to review the Locality-delivered data regarding their physical collection system network and flow parameter databases. On or before July 31, 2011, a Final RHM Report will be submitted to the DEQ and EPA documenting the model development and calibration efforts.

Meetings of the Model Users Group, facilitated by HRSD and attended by the Localities will continue to be held as needed, following calibration of the RHM. HRSD also intends to hold a Modeling Workshop with the EPA and DEQ in the second half of FY2011.

## 6.3 Condition Assessment Plan

### 6.3.1 Implementation of the Condition Assessment Plan

#### 6.3.1.1 Condition Assessment Field Activities

The planned Condition Assessment Field Activities will continue to be performed in the second half of FY2011. This will include:

- Gravity Sewer Inspection
- Force Main Inspection
- Pumping Facility Inspection
- Other Condition Assessment Field Activities listed in the Condition Assessment Plan (CAP).

The targeted completion date for a portion of these activities is November 26, 2011.

#### 6.3.1.2 Prompt Repairs

As the Condition Assessment Field Activities are performed, HRSD will continue to review the data for issues that meet the criteria set forth in the CAP for Prompt Repair. Once a defect is identified as requiring Prompt Repair, HRSD will implement an action plan to make the improvements necessary.

## 6.4 Interim System Improvements

HRSD will continue to design and construct the projects listed in Appendix 5 of the Consent Decree that are required to be completed within 8 years of the Date of Entry. The Verification of Completion will be included in upcoming Annual Reports as the projects are completed.

## 6.5 Management, Operations, and Maintenance Program

### 6.5.1 MOM Plan

In the second half of FY2011, HRSD will submit a revised MOM Program document by the February 2011 deadline and await EPA and DEQ approval.

### 6.5.2 Implementation of MOM Program

HRSD will continue to implement its MOM Program.

### 6.5.3 Quantitative Performance Measures

In the second half of FY2011, HRSD will continue tracking the performance measures to determine how HRSD is implementing the program. This will include the list of six measures that are subject to stipulated penalties per Paragraph 34 of the Consent Decree.

## 6.6 Regional Wet Weather Management Plan

By July 31, 2011, HRSD will have completed a calibrated Regional Hydraulic Model and will begin the Preliminary Capacity Assessment that will be required to be completed in July 2012. The main efforts strictly related to the RWWMP are planned for FY2012-13. The complex evaluation of system improvements, including reaching regional consensus on a level of service, that will be conducted in FY2012-13 combined

with the need for 14 different governing bodies to approve portions of the plan, will make meeting this schedule very challenging.

## 6.7 Short Term Wet Weather Operational Plan

HRSD will revise the STWWOP based on EPA and DEQ comments and submit it by the June 2011 deadline.

## 6.8 SSO Emergency Response Plan

HRSD will continue to implement the approved SSO Response Plan.

## 6.9 Coordination with Localities

HRSD will continue to actively participate and facilitate a wide variety of coordination activities in FY 2011 amongst the regional parties to the SOC. These activities included:

- Meetings of the Capacity Team to discuss SOC issues, develop Regional Technical Standards Interpretations, and provide guidance to the region on RTS and Consent Decree issues;
- Monthly Locality coordination meetings will be held to discuss issues of mutual concern regarding the SOC and Consent Decree;
- Meetings of the Model Users Group to discuss issues related to modeling;
- Periodic briefings of the Directors' of Utilities Committee to share progress on compliance with the Consent Decree and SOC; and
- Maintain a regional SharePoint website to collaborate with and provide documents to the regional Locality Team and Capacity Team.

## 6.10 Public Participation

HRSD will have an annual information meeting and publish a newsletter by the one year anniversary of the Date of Entry, February 23, 2011. Information and approved plans continue to be posted to HRSD's website which is accessible to the public.

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## 7. FORESEEABLE ISSUES RELATED TO UPCOMING COMPLIANCE DEADLINES AND MILESTONES

### 7.1 Condition Assessment Program

Assessment of HRSD's interceptor force mains has proven to be very challenging. Significant issues related to adequate velocities, pipeline access, coordination with localities' operations, and technology limitations have been experienced. Level 1 inspections have been conducted and some Level 2 inspections are underway where Level 1 inspections identified potential issues. Based on our current assessment of progress, it is likely that HRSD will complete all the Level 1 and 2 inspections contained in the November 26, 2011 field work milestone in the Preliminary Condition Assessment Report. Through our regular monthly calls, we have informed EPA and DEQ that it is unlikely that any Level 3 inspections that arise from the Levels 1 and 2 inspection will be complete by November 26, 2011. Level 3 inspections are only required if the Level 2 results indicate a potential material risk of failure and the pipe segment is not scheduled for renewal. The results of the highly invasive Level 3 inspections are only needed to further define the scope of renewal. There is not sufficient time in the schedule to permit accomplishment of Level 3 inspections before the interim milestone of November 26, 2011. As such, we anticipate identifying all segments within the scope associated with the interim milestone as requiring a Level 3 inspection by November 26, 2011. HRSD may conduct some Level 3 inspections to further define the scope of these replacement/rehabilitation projects as additional data to be used in preparation of the final Condition Assessment Report, due February 12, 2013 and/or the Report Update due February 12, 2014. In some instances, the Level 3 work may be deferred until the design phase of the renewal project.

### 7.2 Regional Hydraulic Model

The calibration of the Regional Hydraulic Model is ongoing. Extensive coordination with all Localities has been ongoing and numerous adjustments have been made to the model inputs to achieve an adequate calibration. As expected, the calibration standards contained in the RHM Plan are not met at all calibration sites for all events. In addition, some calibration sites have been removed, replaced and/or relocated. The changes in the calibration network have been discussed with EPA and DEQ in numerous technical calls and will be documented in the Final FPR Monitoring Report per Paragraph 17.b. of the Consent Decree. The model calibration results will be discussed in the RHM Report.

### 7.3 Regional Wet Weather Management Plan

The extensive coordination with Localities and the resultant adjustments related to calibration of the RHM have reinforced the complex and highly interactive nature of assessing capacity and planning for capacity enhancements in this large and complex system. HRSD remains concerned about the schedule for delivering the Regional Wet Weather Management Plan by November 26, 2013. Localities have until November 26, 2012 to make their peak flow commitments which are key to conducting the level of service analysis. Gaining consensus on a mutually acceptable level of service during the RWWMP development will be very challenging and will involve extensive interaction with numerous stakeholders – especially the Localities. Even after the consensus on level of service is achieved, alternatives to achieve that level of service must be developed. The selected solution set must then be integrated with Locality capacity enhancements to achieve a schedule that makes sense. This interactive process, coordinated with 14 Localities with widely varying technical capabilities, will be difficult and time consuming. The process to achieve consensus on model calibration, a relatively simple intermediate step in comparison, has reinforced the challenging nature of this process.

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## 8. SIGNIFICANT ISSUES THAT REQUIRE A CHANGE IN THE CONSENT DECREE REQUIREMENTS

### 8.1 Data Quality Standards

There has been a lengthy discussion of the data quality standards related to the FPR Program. EPA, DEQ and HRSD have agreed to a revision in the way that the standards are applied. After the reporting period covered by this Semi Annual Report, HRSD signed and returned a Consent Decree modification to EPA and is awaiting a fully executed copy.

### 8.2 Stipulated Penalties

EPA has produced a demand for Stipulate Penalties related to SSOs for the period of the date of entry through June 30, 2010. HRSD has invoked the Dispute Resolution Process in this matter. HRSD's position is that these SSOs were beyond the control of HRSD. For the capacity related SSOs, HRSD's system has the hydraulic capacity that is inherent in the pumps and pipes that are installed. HRSD exercises a diligent standard of care to properly maintain and operate these facilities. Where feasible, these facilities have been supplemented by portable pumping equipment to enhance the capacity of the system. Until the enhancements developed in the approved RWWMP are implemented, there is nothing else that HRSD can do to ameliorate these SSOs.

Other SSOs have been caused by the unexpected failure of system components. HRSD's maintenance program diligently performs scheduled preventive maintenance activities that are designed to minimize unexpected failures with outstanding results. However, no amount of maintenance can eliminate failures in mechanical and electrical components. These failures are also beyond HRSD's ability to control.

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