

# SEMI-ANNUAL REPORT FY 2012

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

April 30, 2012

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## SEMI-ANNUAL REPORT FY 2012

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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, 2011, through December 31, 2011, and the planned work for the remainder of FY 2012.

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## 2. MAJOR COMPLIANCE ACHIEVEMENTS

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

#### 2.1.1 Implementation of the FPR Monitoring Plan

Following completion of the 12-month flow, pressure, and rainfall monitoring period on March 11, 2011, HRSD had submitted a Final Flow, Pressure, and Rainfall (FPR) Monitoring Report on June 11, 2011. HRSD received comments from the EPA and DEQ on September 6, 2011, and a comment response was submitted by HRSD to the EPA and DEQ on November 7, 2011. The Final FPR Monitoring Report was approved on January 25, 2012.

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

Calibration and verification of the Regional Hydraulic Model (RHM) required by the Consent Decree was completed during this reporting period. The Final RHM Report was submitted on July 29, 2011, ahead of the July 31 milestone date.

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 held a Modeling Workshop for the EPA and DEQ on November 16, 2011, where information was provided on the progress of the modeling and Capacity Assessment, along with other compliance program activities.

##### 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 2012. 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 development, calibration, and verification of the RHM was completed and submitted to the EPA and DEQ on July 29, 2011. Comments were received from the EPA and DEQ on the Final RHM Report on October 24, 2011. These comments were addressed in a comment response on February 22, 2012.

## 2.3 Condition Assessment Plan

### 2.3.1 Implementation of the Condition Assessment Plan

#### 2.3.1.1 Condition Assessment Field Activities

As required by the schedule contained within the Condition Assessment Plan and the Preliminary Condition Assessment Report (PCAR), HRSD has completed the Condition Assessment Field Activities milestones required by the November 26, 2011 due date. This was documented in a letter from HRSD to the EPA and DEQ on December 20, 2011. Some force main inspections required to be completed by October 2013 remain in progress. See Section 4 of this report for details on the Condition Assessment Field Activities.

#### 2.3.1.2 Prompt Repairs

HRSD continues to implement a program 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). 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.

### 2.3.2 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 FY 2012. A complete update for the fiscal year will be provided in the Annual Report.

## 2.5 Management, Operations, and Maintenance (MOM) Program

### 2.5.1 MOM Program

Comments were received on HRSD's MOM Program from the EPA and DEQ on December 7, 2010, and HRSD revised the document for submittal on February 7, 2011. Additional comments were received from the EPA and DEQ on May 3, 2011, and HRSD revised the document again for submittal on July 1, 2011. The MOM Program document was accepted to meet the requirements of Section X of the Consent Decree on September 27, 2011.

### 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, implementation of continuous improvement initiatives, and special programs coordinated in the region such as the HR FOG. HRSD performed an annual performance assessment of its MOM Plan in accordance with Section 5 of the MOM Program following completion of FY 2011. A small number of adjustments were made to performance measures and continuous improvement program based on the outcome of the assessment.

### 2.5.3 Quantitative Performance Measures

The revised MOM Program, approved on September 27, 2011, 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. The MOM Program's first year of performance was documented in HRSD's FY 2011 Annual Report. Work has continued to implement and track these performance measures and the results will be presented in the FY 2012 Annual Report. HRSD is on track to meet all the performance measures identified in Paragraph 34 of the Consent Decree.

## 2.6 Regional Wet Weather Management Plan

The RWWMP is due on November 26, 2013, with a Preliminary Capacity Assessment Report to be submitted by July 31, 2012. Following completion of the Final RHM Report in July 2011, HRSD began work on the Preliminary Capacity Assessment Report. This included coordination with Localities on population projections and determination of planned valving scenarios to accommodate HRSD's requirements for nutrient discharge limits. Numerous coordination meetings have been held with Localities to discuss loading the RHM for Capacity Assessment, and HRSD supplied an initial set of Capacity Assessment model results (Locality model boundary conditions) based on these assumptions on October 31, 2011. Since that time, HRSD and the Localities have continued discussions of the model loading for the Capacity Assessment and a revised set of model runs is to be conducted in the second half of FY 2012.

## 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 (STWWOP). This plan has been through several review cycles with the EPA and DEQ since 2007. A revised STWWOP was submitted on June 10, 2011, and comments were received from the

EPA and DEQ on December 5, 2011. HRSD has prepared another revision which was submitted on January 18, 2012. 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 October 12, 2011, HRSD submitted an annual update of the approved Sanitary Sewer Overflow (SSO) Response Plan to the EPA and DEQ. This updated plan was approved by the EPA and DEQ on November 14, 2011, 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 2012 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;
- 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 Final FPR Monitoring Report, Final RHM Report, and Annual Report were provided from HRSD to the Localities.

## 2.10 Public Participation

HRSD will conduct a second annual information meeting and publish a newsletter by February 23, 2012, the 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 FY 2011 Annual Report as required by both the SOC and Consent Decree, and submitted it to the EPA and DEQ on October 31, 2011.

## 2.12.2 Quarterly Briefing

A quarterly briefing was held per Paragraph 90 of the Consent Decree, on July 26, 2011, with attendance by HRSD, the EPA, and the DEQ. To supplement the Quarterly Briefings, HRSD has facilitated periodic Technical Calls with the EPA and DEQ during the first half of FY 2012 to provide additional technical details on the work being conducted as part of the Consent Decree program.

## 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 FY 2012.

Table 1. Summary of Consent Decree Submittals	
Consent Decree Submittal	Submittal Date
Final FPR Monitoring Report Comment Response	November 7, 2011
Final RHM Report	July 29, 2011
SSO Response Plan Annual Update	October 12, 2011
STWWOP Comment Response	October 18, 2011
MOM Program	Revision July 1, 2011
Annual Report	October 31, 2011
Quarterly Briefing	July 26, 2011

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### 3. COMPLIANCE DEADLINES AND MILESTONES

In the first half of FY 2012, 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 FY 2012 with significant progress made in many aspects of the program. The following subsections describe the progress made in each aspect.

#### 4.1 Gravity Main

An inspection contract for manholes and gravity pipelines 24 inches in diameter and smaller was awarded in December 2009. The inspection work began in January 2010 and continued throughout 2011. As of December 31, 2011, more than 192,000 linear feet of 24-inch diameter and smaller gravity sewer main had been inspected using PACP-compliant CCTV techniques. In addition, more than 1,270 manholes have been inspected using MACP-compliant procedures.

A second contract for inverted siphons and gravity pipelines larger than 24 inches in diameter was awarded in April 2010 and was ongoing throughout 2011 using PACP-compliant CCTV methods and sonar technology. As of December 31, 2011, more than 67,000 linear feet of gravity sewer main had been inspected in this contract.

Combined with the footage in the paragraph above, this inspection total accounts for the entire HRSD gravity pipe network.

#### 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 FY 2010, a contract was awarded to conduct Level 1 and Level 2 inspections as described in the Condition Assessment Program (September 2009), and the inspection work continued during FY 2012. This contract provides data to 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"). As of December 31, 2011, the following assessments have been completed:

- Groups 1 and 2, Level 1 inspection – approximately 135,000 linear feet
- Ferrous Segments, Level 2 inspection – approximately 23,000 linear feet
- Reservoir Segments, Level 1 inspection – approximately 3,900 linear feet

As described in the Condition Assessment Program, following each level of inspection, a determination is made as to the need for additional inspection, if necessary. The inspections performed to date are being evaluated for follow-up assessment, where needed. Through December 2011, eleven (11) segments have been elevated to Level 2 wall thickness inspection as a result of the Level 1 acoustic inspection.

#### 4.3 Pumping Facilities

HRSD completed an initial, detailed inspection of all of its pumping facilities in 2008. 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.

In 2011, HRSD has completed another detailed inspection of all of HRSD's pumping facilities with the results to be documented in the Final Condition Assessment Report and the Rehabilitation Action Plan. This work was completed by the November 26, 2011 schedule deadline.

#### 4.4 Prompt Repairs

Through the Condition Assessment Program, HRSD has identified 44 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, 2011. These defects have been grouped into larger 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	Complete
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	Complete
	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 Ave between 39th and 40th Street	Newport News	NG-114	Mainline pipe defects	

Table 2. Summary of Prompt Repairs					
Name	Location	Jurisdiction	Line Number	Summary of defect	Status
Newtown Road	Newtown Rd. at Virginia Beach Blvd (ne corner of intersection)	Virginia Beach	SG-112	Manhole defects and mainline pipe defects	Complete
	Newtown Rd. approx. 415 ft. north of Princess Anne Rd.	Virginia Beach	SG-113	Manhole defects	
	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
	West Mercury Blvd	Hampton	NG-057	Mainline pipe defects	
	West Mercury Blvd; near Beechwood Rd.	Hampton	NG-057	Mainline pipe defects	
	West Mercury Blvd	Hampton	NG-057	Mainline pipe defects	
	West Mercury Blvd	Hampton	NG-057	Mainline pipe defects	
Various Repairs	North Hope Street	Hampton	NG-160	Pipe lining failure	Work order in development
	Old Atlantic Avenue; near intersection with Liberty Street	Chesapeake	SG-148	Pipe lining failure	
	South of Steamboat Creek Pump Station	Norfolk	SG-102	Manhole defects	
Witchduck	South Witchduck Road	Virginia Beach	SF-141	Corroded FM bolts	Complete
Pin Oak Rd	Pin Oak Road; Residential neighborhood	Newport News	NG-175	Mainline Pipe Defects	Complete
Bainbridge Blvd	Bainbridge Blvd near I-464	Norfolk	SG-145	Mainline Pipe Defects	Complete
	Bainbridge Blvd near I-464 just upstream of PS	Norfolk	SG-145	Mainline Pipe Defects	
Shell Rd - Hampton	Shell Road	Hampton	NG-141	Mainline Pipe Defects	Work order in development
	Harris Creek Road	Hampton	NG-086	Mainline Pipe Defects	
	Boat Harbor Treatment Plant	Newport News	NG-129	Mainline Pipe Defects	
Pearl Street	Pearl Street near Ligon Street near I-464/I-262 Interchange	Norfolk	SG-202	Mainline Pipe Defects	Under construction
	Pearl Street near Ligon Street near I-464/I-262 Interchange	Norfolk	SG-202	Mainline Pipe Defects	
Deep Creek	Deep Creek force main on suction side of Deep Creek PRS	Chesapeake	SF-143	FM defects	Complete
Wythe Lagoon	Wythe Lagoon Siphon	Hampton	NG-151	Siphon defects	Work Order In Development
Camden Ave	Camden Ave Pump Station	Portsmouth	SPS-146	Defect in mainline at influent connection	Complete
Pump Station Hatches	Ingleside Road Pump Station	Norfolk	PS#148	Wet Well Hatch	Structural Evaluation Underway

Table 2. Summary of Prompt Repairs

Name	Location	Jurisdiction	Line Number	Summary of defect	Status
Pump Station Wet Wells	Ferebee Ave Pump Station Wet Well	Chesapeake	PS #110	Wet Well Defects	Structural Evaluation Underway
	Rodman Ave Pump Station Wet Well	Portsmouth	PS#145	Wet Well Defects	
	Virginia Beach Blvd Pump Station Wet Well	Norfolk	PS #130	Wet Well Defects	
	Ingleside Road Pump Station Wet Well	Norfolk	PS #148	Wet Well Defects	
Luxemburg Ave	Influent line to Luxemburg Avenue pump station.	Norfolk	SPS-113	Defect at manhole connection	Work order in development
Gowrie and Farragut	Manhole near creek at end of Gowrie Avenue	Norfolk	SG-068	Manhole defects	Work order in development
	Manhole near creek at end of Farragut Avenue	Norfolk	SG-068	Manhole defects	

## 5. SYSTEM PERFORMANCE

### 5.1 STP Performance

The HRSD system was influenced by several significant wet weather events in the first half of FY 2012 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 unusual discharges from the facilities. Table 3 provides details on the unusual discharges from July 1 to December 31, 2011. The majority of these occurrences were fully treated effluent.

### 5.2 Conveyance System Performance

For the reporting period of July 1 through December 31, 2011, HRSD experienced 20 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 6 to 9 event localized on the North Shore and Hurricane Irene on August 27 and 28. The July event included total rainfall of between 5.5 inches and 9.7 inches with rainfall recurrence intervals from 5-year to 50-year across the North Shore. Hurricane Irene produced rainfall with recurrence intervals between 10-year and 100-year across the entire system and accounted for 14 of the 20 SSOs. All of these events are detailed in the Sanitary Sewer Overflow Reporting System (SSORS). Details on these 20 events are available in Table 4. Four of the events are marked as “Infrastructure” rather than “Capacity Weather-Related,” however these occurred during the wet weather event. All capacity-related SSOs during this reporting period were beyond the control of HRSD and were caused by rainfall amounts exceeding 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 July 6 to 9 or the August 27 to 28, 2011, wet weather events. The July event included more than 9 inches of rain in back-to-back rainfall events from July 6 to 9 in the Williamsburg Treatment Plant service area which equates to a 50-year recurrence interval over the 72-hour period. The August event was Hurricane Irene which was categorized as between a 25-year to more than 100-year rainfall event throughout the HRSD system.

#### 5.3.1 City of Williamsburg: LOP No. 30

The City of Williamsburg experienced an SSO from their LOP No. 30 during this reporting period on July 8, 2011. This LOP activated with more than 9.7 inches of rain in back-to-back rainfall events from July 6 to 9 in the Williamsburg Treatment Plant service area which equates to a 50-year recurrence interval over the 72-hour period. The wet weather event produced conditions that exceeded the capabilities of the wastewater facilities. The City is implementing an SSES Program as well as a Find and Fix Program to reduce I/I in the collection system, and HRSD is addressing pumping capacity as part of the Regional Wet Weather

Management Plan. This rainfall event was above a level of service that is feasible to attain, and therefore, no additional steps are appropriate.

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

JCSA experienced an SSO from their LOP No. 49 at LS3-3 during this reporting period on July 9, 2011. This LOP activated with more than 9.7 inches of rain in back-to-back rainfall events from July 6 to 9 in the Williamsburg Treatment Plant service area which equates to a 50-year recurrence interval over the 72-hour period. 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, and therefore, no additional steps are appropriate.

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

JCSA experienced an SSO from their LOP No. 57 at LS4-2 during this reporting period on August 27, 2011. This LOP activated with 10.65 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 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, and therefore, no additional steps are appropriate.

### 5.3.4 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 August 28, 2011, this LOP activated with 8.67 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, and therefore, no additional steps are appropriate.

### 5.3.5 City of Chesapeake: LOP No. 85

The City of Chesapeake experienced an SSO from their LOP No. 85 at City PS 118 (2242 Dock Landing Road) during this reporting period during Hurricane Irene on August 28, 2011. This LOP activated with 9.72 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 City PS 118. 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, and therefore, no additional steps are appropriate.

Table 3. Detailed Listing of HRSD Treatment Plant Unusual Discharges (July 1 to December 31, 2011)

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
7/28/2011	Boat Harbor	Plant was using non-potable water (NPW) to wash out ferric chloride solution and rain water from chemical storage tank containment area. The liquid was being pumped into the split flow channel. The discharge hose slipped out of the channel and spilled contents onto the ground between the channel and the bulkhead.	1	Operator placed hose back in the channel. Recovered all standing liquid. The remainder soaked into the ground. Operators have been instructed to securely tie hose during cleaning operation to prevent a re-occurrence.	200	190	NPW*	ground	Reclaimed water spill
8/27/2011	VIP	High plant flow due to Hurricane Irene caused a portion of fully treated final effluent to go over the weir and discharge via alternate outfall 002.	328	The discharge stopped when the plant flow rate dropped below 80 MGD	2,286,000	2,286,000	fully treated final effluent	Elizabeth River	A permitted discharge of fully treated effluent occurring during Hurricane Irene (25-year + event)
8/28/2011	James River	Broken non-potable water (NPW) line.	90	Blocked off storm drain and pumped water into secondary clarifier. Pipe was repaired.	3,000	3,000	NPW*	James River	Reclaimed water spill
9/28/2011	VIP	Plant transferred power to emergency generators due to storm in area. Generators stopped after a few minutes and locked out. Main breaker safety device would not allow plant to return to Dominion Power. Water level in influent well rose and plant was forced to open bypass gate to avoid overflows in the residential area.	18	Generators were manually started at numerous attempts of resetting the generator panel alarms. Bypass gate was closed as soon as influent pumps started and dropped wet well to safe level. Bypass was chlorinated. Investigation into cause of failure is underway.	630,000	630,000	chlorinated wastewater	Elizabeth River	Generator issue has been addressed
10/19/2011	James River	Contractor was using jackhammer on gutter pan to remove curbing. The tip of the jackhammer hit the 8-inch chlorinated effluent line leading to the gravity thickener and created a small hole in the pipe.	30	Secured the NPW pump to stop flow. Pumped up part of spill and pumped into aeration tanks. Repaired pipe with clamp and returned to service.	1,000	500	NPW*	Warwick River	Reclaimed water spill
11/5/2011	York River	Final effluent sample sink drain was blocked and caused final effluent to overflow from the sink. A majority of the spill went back into the plant system through grating that the sink is adjacent to. The remainder of the spill soaked into the ground.	60	The sink drain was taken apart and the blockage was removed. The drain was reassembled and the sink drained properly. The sink was relocated so that any overflows will return to the plant system through the grating.	100	100	NPW*	ground	Reclaimed water spill
11/15/2011	Boat Harbor	The secondary clarifier drain system became clogged, causing the manhole to overflow intermittently into the storm drain leading to the ditch. Spill soaked into the ground in the bottom of the ditch.	60	Secured as much flow as possible to the drain system and set up a sump pump to pull down the manhole level. Vaccon was brought in to clear the pipe and system was placed back in service.	200	200	wastewater	ground	
11/20/2011	Nansemond	DCS indicated there was a fluctuation in the level readings of the centrate tanks. The operator went to verify the tank levels. The level indicator had malfunctioned due to a dirty probe. This caused the centrate valve to stay shut and not bypass to the head of the plant. Therefore, the centrate tanks overflowed.	10	The operator covered the storm drain with a mat. The centrifuge was placed in idle, and the centrate drain valve was manually opened to lower the level in the tanks. The probe was cleaned and placed back in service. The probe has been placed on a weekly cleaning schedule. The plant is planning to install an overflow pipe to divert overflow to the head of the plant.	250	250	wastewater	ground	Operational issue addressed within 10 minutes

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

Table 4. Detailed Listing of HRSD Capacity Related SSOs (July 1 to December 31, 2011)

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
7/6/2011 19:14	Center Avenue Pump Station	315 Center Avenue	James River	Newport News	Capacity-Weather Related	Heavy rain caused high flow at pump station. The rain gauge at Morrison Avenue PS recorded 1.49" of rainfall within 30 minutes. Temporary auxiliary pump at station failed at 7:09 pm and overflow alarm at station began at 7:14 pm. The temporary pump is used to assist the pump station pumps during wet weather high flows. Overflow entered Government Ditch.	1 hour(s) 2 minute(s)	Reset and restarted the temporary pump. Monitored station to ensure all pumps were working properly.	14,260	14,260	SSORS#2012-T-103096
7/8/2011 23:56	Williamsburg Pump Station	540 South England St, Williamsburg, VA	Soaked into ground. Spill site was located near Paper Mill Creek.	Williamsburg	Capacity-Weather Related	Heavy rain caused overflow at station wet well. HRSD personnel checked the site during the rain event and found evidence that the station had overflowed even though no alarm had been sent by the SCADA system. Start time and end time of the overflow can only be estimated by looking at the Telog data from the night of the event. HRSD electrical and instrumentation personnel are working to correct the problem with the overflow alarm.	2 hour(s) 16 minute(s)	Verified station was operating properly. Lime was spread in the area of the overflow.	-1	-1	SSORS#2012-T-103117
7/9/2011 1:35	Patrick Henry Pump Station, Influent flume	215 G. Ave, Newport News, VA	Lucas Creek	Newport News	Capacity-Weather Related	Heavy rains caused an overflow at the pump station influent flume.	2 hour(s) 15 minute(s)	Checked the pump station for proper operation and monitored the overflow. After the overflow stopped, lime was spread on the area of the overflow.	20,250	20,250	SSORS#2012-T-103115
7/9/2011 1:45	Center Avenue Pump Station	315 Center Ave, Newport News, VA	James River	Newport News	Capacity-Weather Related	Heavy rain caused an overflow at the pump station weir a structure. Used the flow meter data from the overflow weir to calculate the amount of sewage lost. Start and stop times are from the bypass alarm SCADA data. Time of discovery was when the alarm page was sent out by the HRSD SCADA system.	3 hour(s) 50 minute(s)	Checked pump station and temporary pump onsite to verify proper operation and monitored overflow. After overflow stopped, lime was spread on the area of the overflow.	216,660	216,660	SSORS#2012-T-103116
7/9/2011 3:33	Bridge Street Pump Station	4701 Victoria Blvd, Hampton, VA	Hampton Creek	Hampton	Capacity-Weather Related	Heavy rain caused pump station to overflow at tide gate into Hampton Creek. Overflow alarm had cleared by the time HRSD personnel were on site and they were unable to observe the tide gate as it was under water at the time.	0 hour(s) 20 minute(s)	Verified pump station was operating properly.	-1	-1	SSORS#2012-T-103114
7/25/2011 21:10	Bridge Street Pump Station	4701 Victoria Blvd	Salters Creek	Hampton	Capacity-Weather Related	Severe rainstorms caused high flow at pump station. Rain gauge at Copeland Park Pump Station recorded 4.86" of rainfall from 8:00 to 11:00 pm with 4.46" received during the first hour.	3 hour(s) 29 minute(s)	Checked pump station to ensure pumps were operating properly. Flow amount could not be estimated because overflow had stopped by the time staff arrived at station. Start and stop times are from alarm system.	-1	-1	SSORS#2012-T-103125
8/27/2011 11:43	3 manholes	1500 block of Bainbridge Blvd	Scuffletown Creek	Chesapeake	Capacity-Weather Related	Heavy rain from hurricane Irene caused three manholes located on same block to overflow. Rain gauge at Ferebee Pump Station recorded 9.15" of rain for 8/27. Two manholes overflowed at estimated rate of 5 gpm and one manhole overflowed at estimated rate of 10 gpm.	3 hour(s) 41 minute(s)	Checked Park Avenue Pump Station to ensure all pumps were operating properly.	4,420	4,420	SSORS#2012-T-103207
8/27/2011 11:56	Monroe Place Pump Station manholes	5808 Monroe Place	Lafayette River	Norfolk	Infrastructure	Equipment failure during hurricane Irene. The 6" emergency pump that was installed to assist station pumps during high flow failed to operate automatically. This caused the two manholes beside the station to overflow. Rain gauge at Bancker Road recorded 7.44" of rain for 8/27.	1 hour(s) 44 minute(s)	Crew responded to alarm and placed the controller for the emergency pump in manual to start the pump. Station was then able to keep up with flow.	10,400	10,400	SSORS#2012-T-103184

Table 4. Detailed Listing of HRSD Capacity Related SSOs (July 1 to December 31, 2011)

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
8/27/2011 12:20	Center Avenue Pump Station	315 Center Avenue	Government Ditch to James River	Newport News	Capacity-Weather Related	Heavy rain during hurricane Irene caused station to overflow weir. Rain gauge at Copeland Park Pump Station recorded 8.71" of rain for 8/27.	13 hour(s) 58 minute(s)	Checked pump station to ensure pumps were operating properly. Used data from the overflow weir to calculate the amount of overflow. Start and stop times are from alarm system. Crew was delayed reaching the station due to storm conditions.	1,153,806	1,153,806	SSORS#2012-T-103195
8/27/2011 12:32	Chesapeake Blvd PS	5734 Chesapeake Blvd	Wayne Creek	Norfolk	Infrastructure	Equipment failure during hurricane Irene. Emergency pump installed to assist station pumps during high flow failed to start automatically.	1 hour(s) 58 minute(s)	Controller for emergency pump was switched to manual and the pump started. Station was then able to keep up with flows. Amount could not be estimated because gate was below water.	-1	-1	SSORS#2012-T-103181
8/27/2011 12:51	Bridge Street Pump Station	4701 Victoria Blvd	Salters Creek	Hampton	Capacity-Weather Related	Heavy rain and high tides caused pump station to overflow through tidal gate. Rain gauge at Freeman Pump Station recorded 10.43" of rain for 8/27.	14 hour(s) 10 minute(s)	Checked pump station to ensure pumps were operating properly. Crew was delayed reaching site due to storm conditions. Flow estimate could not be made because station alarm had cleared by the time crew got to site. Start and stop times are from alarm system.	-1	-1	SSORS#2012-T-103196
8/27/2011 13:10	Seay Avenue Pump Station manhole	3541 Seay Avenue	Elizabeth River	Norfolk	Infrastructure	Equipment failure during hurricane Irene. The 6" emergency pump failed when the flywheel came apart. The pump was installed to pump flow during the storm. Manhole outside of station began to overflow. Rain gauge at Virginia Beach Blvd Pump Station recorded 8.29" of rain for 8/27.	1 hour(s) 10 minute(s)	Crew went to station when communications were lost. A generator was brought in to operate the pumps in the station which stopped the manhole overflow.	1,400	1,400	SSORS#2012-T-103182
8/27/2011 13:33	Williamsburg Pump Station	540 South England Street	Papermill Creek	Williamsburg	Capacity-Weather Related	Heavy rains from hurricane Irene and failure of pumps caused station to overflow. Rain gauge at station recorded 9.38" of rain for 8/27.	10 hour(s) 13 minute(s)	Checked pump station and reset pumps. Crew was delayed reaching site due to storm conditions. Flow estimate could not be made because area was flooded. Start and stop times are from alarm system.	-1	-1	SSORS#2012-T-103210
8/27/2011 14:28	Newmarket Pump Station	6000 Orcutt Avenue	Newmarket Creek	Newport News	Infrastructure	Heavy rain from hurricane Irene and emergency generator failure caused station to overflow. Staff responded to alarm and found power was off to station and emergency generator was not operating. Rain gauge at Copeland Park Pump Station recorded 8.71" of rain for 8/27.	2 hour(s) 31 minute(s)	Checked pump station and reset emergency generator which cleared the alarm. Area was flooded so overflow amount could not be estimated. Crew was delayed reaching station due to storm conditions.	-1	-1	SSORS#2012-T-103209
8/27/2011 14:40	manhole	E. Virginia Beach Blvd & Ballentine Blvd	Elizabeth River	Norfolk	Capacity-Weather Related	Manhole overflowed briefly during Hurricane Irene. Rain gauge at Virginia Beach Blvd Pump Station recorded 8.29" of rain for 8/27.	0 hour(s) 10 minute(s)	Checked Norchester Pump Station to ensure all pumps were operating properly.	50	50	SSORS#2012-T-103192
8/27/2011 14:40	manhole	E. Virginia Beach Blvd & Bellmore	Elizabeth River	Norfolk	Capacity-Weather Related	Manhole overflowed briefly during Hurricane Irene. Rain gauge at Virginia Beach Blvd Pump Station recorded 8.29" of rain for 8/27.	0 hour(s) 10 minute(s)	Checked Norchester Pump Station to ensure all pumps were operating properly.	300	300	SSORS#2012-T-103194

Table 4. Detailed Listing of HRSD Capacity Related SSOs (July 1 to December 31, 2011)

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
8/27/2011 14:40	manhole	E. Virginia Beach Blvd & Godfrey	Elizabeth River	Norfolk	Capacity-Weather Related	Manhole overflowed briefly during hurricane Irene. Rain gauge at Virginia Beach Blvd Pump Station recorded 8.29" of rain for 8/27.	0 hour(s) 10 minute(s)	Checked Norchester Pump Station to ensure all pumps were operating properly.	100	100	SSORS#2012-T-103206
8/27/2011 15:09	Ford's Colony Pump Station	430 Hempstead Road	Powhatan Creek	James City	Capacity-Weather Related	Heavy rains from hurricane Irene and emergency generator problems caused station to overflow twice. The first occurrence was from 8/27/11 at 3:09 pm to 8/28/11 at 2:59 am. The station overflowed again from 5:15 am to 8:49 am. Rain gauge at the station recorded 10.57" of rain for 8/27.	17 hour(s) 40 minute(s)	Checked pump station and reset emergency generator. The alarm system indicates that the emergency generator failed during the second overflow. Crew was delayed reaching site due to storm conditions. Flow estimate could not be made because of flooding in the area. Start and stop times are from alarm system. Total overflow time is 15 hours and 24 minutes.	-1	-1	SSORS#2012-T-103211
8/27/2011 15:19	Greensprings Pump Station	3900 John Tyler Highway	Powhatan Creek	James City	Capacity-Weather Related	Heavy rains from Irene and failure of one of the pumps caused station to overflow briefly. Rain gauge at Fords Colony pump station recorded 10.57" of rain for 8/27.	0 hour(s) 11 minute(s)	Checked station to ensure pumps were operating properly. Reset one pump. Crew was delayed reaching site due to storm conditions. Flow estimate could not be made because station alarm had cleared by the time crew got to site. Start and stop times are from alarm system.	-1	-1	SSORS#2012-T-103212
8/27/2011 20:23	Hampton University Pump Station	54 Shore Drive	Hampton River	Hampton	Capacity-Weather Related	Heavy rain and high tides from hurricane Irene caused pump station to overflow. Rain gauge at Freeman Pump Station recorded 10.43" of rain for 8/27.	2 hour(s) 46 minute(s)	Checked pump station to ensure pumps were operating. Crew was delayed reaching site due to storm conditions. Flow estimate could not be made because station alarm had cleared by the time crew got to site. Start and stop times are from alarm system.	-1	-1	SSORS#2012-T-103208

\*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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### 6. PLANNED ACTIVITIES

HRSD will be continuing the overall program outlined in the Consent Decree in the remainder of FY 2012. The following sub-sections provide specifics on this work.

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

##### 6.1.1 LOP Status

In the remainder of FY 2012, 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, if practicable, 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

A response to comments received on the July 2011 Final RHM Report will be submitted to the DEQ and EPA (submitted February 22, 2012).

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 FY 2012.

#### 6.3 Condition Assessment Plan

##### 6.3.1 Implementation of the Condition Assessment Plan

###### 6.3.1.1 Condition Assessment Field Activities

HRSD will continue the remaining force main Condition Assessment Field Activities in the second half of FY 2012. The targeted completion date for these field activities is October 2013.

###### 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 Implementation of MOM Program

HRSD will continue to implement its MOM Program.

### 6.5.2 Quantitative Performance Measures

In the second half of FY 2012, 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. Progress on these measures will be documented in the FY 2012 Annual Report.

## 6.6 Regional Wet Weather Management Plan

In the second half of FY 2012, HRSD will continue efforts to complete the Preliminary Capacity Assessment Report by the July 31, 2012, due date. Following completion of the Preliminary Capacity Assessment, HRSD will begin working on the Level of Service analysis and alternatives to meet the 2, 5, and 10-year Levels of Service in the system. The complex evaluation of system improvements, including reaching regional consensus on a level of service, 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 for EPA and DEQ review (submitted on January 19, 2012).

## 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 2012 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;
- Locality coordination meetings will be held periodically 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 second anniversary of the Date of Entry, February 23, 2012. Information and approved plans continue to be posted to HRSD's website which is accessible to the public.

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

### 7.1 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.

DEQ has initiated a change in the SOC schedule that will allow Localities to submit their Rehabilitation Plan at the same time that the RWWMP is due by the Consent Decree (November 26, 2013). In order to complete the RWWMP, the basin peak flow reduction information from the Localities is necessary. Although HRSD has proposed that these Preliminary Peak Flow Estimates (PPFEs) be submitted by November 2012, there will be issues in completing the RWWMP by November 26, 2013, if any changes occur between the PPFEs and the Peak Flow Commitments made in the Rehabilitation Plans.

In addition, gaining consensus from all Localities on an approach to loading the RHM for Capacity Assessment, Level of Service Analysis, and the RWWMP has been and will remain very challenging. Each Locality has its own drivers which often conflict amongst Localities. This issue was documented in correspondence from HRSD to the EPA and DEQ dated March 30, 2012.

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

No issues to document in this Semi Annual Report.

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