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FY 2010

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

October 29, 2010

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APPENDIX A. INTERIM SYSTEM IMPROVEMENTS ....A

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 for the purpose of fulfilling the objectives of the Clean Water Act and the Virginia State Water Control Law.

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 annual report is submitted pursuant to Section XVII of the Consent Decree and Item 7 of Appendix A to the SOC. HRSD has prepared this 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 and the SOC. Specifically, this annual report summarizes the work and activities undertaken by HRSD from July 1, 2009, through June 30, 2010, and the resulting benefits to the sanitary sewer system. While there are a few requirements unique to the Consent Decree and Special Order on Consent (e.g., a Short Term Wet Weather Operational Plan is required in the Consent Decree but not the SOC) that are not expressly mentioned in the other document, in the interest of efficiency, a single report has been prepared herein that satisfies the information called for in both documents.

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2. ACTIVITIES UNDERTAKEN PREVIOUS FISCAL YEAR

2.1 Flow, Pressure, and Rainfall Monitoring Program

2.1.1 FPR Monitoring Plan

In April 2009, a revised Flow, Pressure, and Rainfall (FPR) Monitoring Plan was submitted to the EPA and DEQ that was updated from the previous submittals, most recently in November 2008. With the date of entry of the Consent Decree on February 23, 2010, the FPR Monitoring Plan was deemed approved by the EPA and DEQ. No addendum or modified document has been submitted since that date. Some changes have occurred in the monitoring location, technology, and schedule, which are documented in the Interim Flow, Pressure, and Rainfall Monitoring Report submitted in FY2011 on September 13, 2010.

2.1.2 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 is due within 180 days of receipt of comments (December 25, 2010).

2.1.3 Implementation of the FPR Monitoring Plan

As described in the FPR Monitoring Plan, flow monitoring is required by the SOC and Consent Decree for a variety of purposes:

- SSES Basin identification
- Regional Hydraulic Model inflow hydrograph development
- Hydraulic model calibration and verification

HRSD's system of FPR sensors is extensive and complex due to the system configuration (i.e., mostly pressurized force main) and size of the facilities. Many sites required extensive design and construction work to install the sensors in an appropriate manner. In this fiscal year, HRSD successfully completed the installation of the program sensors with a notification to the EPA and DEQ on March 12, 2010, that the 12-month monitoring program had begun. The overall network is quite extensive and includes 112 pressure-side flow monitors, 20 gravity flow monitors, 117 pressure sensors, and 64 rain gauges.

Data collection has been ongoing through June 30, 2010, and will continue through March 12, 2011. The data is processed through the DQSAP as described in Section 2.1.2 to evaluate data validity. An Interim Flow, Pressure, and Rainfall Monitoring Report is required within 30 days of completing the first 5 months of monitoring and was submitted in September 2010.

As part of the SOC, a Flow Evaluation Report (FER) is required to document the work conducted as part of the flow monitoring program. The original FER from HRSD was submitted on May 26, 2009, as required by the SOC. A second submittal was made on July 24, 2009 to update and correct some of the data from the original report. Comments were received from the DEQ on January 12, 2010, for the FER submittal. Prior

to comments being received, the DEQ had requested additional information on data reliability and surcharge percentage from HRSD and all the Localities. This response was provided on January 8, 2010.

HRSD prepared a response to the January 12, 2010 comments on the FER in a letter dated March 15, 2010, and then submitted a revised FER document on April 15, 2010. Response from the DEQ is pending through the end of FY10.

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.

2.1.4 LOPs Not Included in HRSD Flow Monitoring

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 will coordinate any time an LOP activates to review the cause and circumstance of the SSO.

In FY2010, HRSD has coordinated with several Localities regarding the handful of activations from their LOPs, which are described in more detail below.

2.1.4.1 City of Suffolk: LOP Nos. 2 and 53

LOP 2 relates to City of Suffolk PS 63 and its service area. 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. In addition, HRSD and the City of Suffolk have worked together in a several month process to identify an interim solution to add pressure reducing facilities along the interceptor force main from the LOP to the downstream Pughsville PRS. The engineering work for this project was conducted in FY10 and installation is scheduled for FY11. This solution will significantly reduce the hydraulic grade line and reduce the potential for future SSOs at the LOP. A section of force main is also being replaced that will decrease the friction head loss in the pipeline and further assist the City's pumping facility.

LOP 53 relates to City of Suffolk PS 48 and its service area. During wet weather events, the flow rate from the system increases to an amount incapable of being pumped with the existing facility. The City is implementing a plan to install a bypass pump, replace failing sections of gravity sewer, and make improvements to the pumping facility at PS 48. Similar to LOP 2, the new pressure reducing facilities along the interceptor force main from the LOP to the downstream Pughsville PRS will significantly reduce the hydraulic grade line and reduce the potential for future SSOs at the LOP.

2.1.4.2 City of Portsmouth: LOP No. 35

LOP No. 35 is at Rose Avenue and South Street in Portsmouth. During the wet weather event of March 29, 2010, this LOP activated with SSOs reported to the DEQ. The cause description was given as "Capacity-Wet Weather" and no volume estimation was made due to the wet weather conditions. 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.

2.1.4.3 City of Williamsburg: LOP No. 70

LOP No. 70 is at Williamsburg Avenue and South England Street. Since development of the LOP list, a grease blockage was found and cleared between that manhole location and the HRSD Williamsburg PS. There was a capacity-related SSO at the HRSD Williamsburg PS on March 29, 2010 as a result of a wet

weather event; however, it was not from the LOP location. HRSD is evaluating all of its pumping facilities as part of the Regional Wet Weather Management Plan and will make any appropriate improvements.

2.1.4.4 City of Hampton: LOP No. 76

The City of Hampton reported SSOs at multiple locations as a result of the March 29, 2010 regionally heavy rainfall event, including the area of LOP No. 76 at N. King Street and Macalva Drive. HRSD has been working closely with the City of Hampton during FY10 to develop short term and long term solutions to minimize SSOs occurring within the City of Hampton. This has included SSES inspections, rehabilitation, temporary bypass pump installation at HRSD Langley Circle PS, and long term development of a pressure reducing station and wet weather storage facility to increase pumping capacity at Langley Circle PS and other City of Hampton pumping stations.

2.1.4.5 City of Chesapeake: LOP No. 22

The City of Chesapeake experienced two SSOs from their LOP No. 22 at City PS 107 during this reporting period. One occurred on March 29, 2010 as a result of the region-wide, heavy wet weather event, and the second occurred on June 16, 2010, as a result of temporary mechanical failure that was immediately corrected. The wet weather event of March 29, 2010 produced conditions that exceeded the capabilities of the City PS 107. This station is known to have a shut-off head of 77.5 feet TDH while the Pressure Policy at that location is a hydraulic grade line elevation of 90 feet. The City has been able to divert some flows away from the PS during wet weather and is in the process of evaluating the facility for an upgrade.

2.2 Regional Hydraulic Model and Hydraulic Assessment

2.2.1 Regional Hydraulic Model Plan

With the date of entry of the Consent Decree on February 23, 2010, the Regional Hydraulic Model Plan was deemed approved by the EPA and DEQ. No addendum or modified document has been submitted since that date.

2.2.2 Implementation of the Regional Hydraulic Model Plan

The Regional Hydraulic Model (RHM) required by the Consent Decree and SOC was under development and testing in FY 2010. 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 this meeting 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. By November 2009, the model structure had been developed and testing had begun. Wet weather and dry weather events from September 2009 were evaluated to begin improvement of the model. Meetings were held with Localities in December 2009 and January 2010 to review the results of the first test runs. Following a resubmission of data from the Localities on March 15, 2010, a new set of model runs were performed for another testing event in January 2010 and a potential model calibration event in March 2010. Another round of coordination meetings was held in May 2010 to review these results and identify action items to continue improvement of the RHM. A second potential model calibration event was identified from May 2010 and calibration is being performed.

2.2.2.1 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 2010. Training on the DHI MIKE URBAN modeling software platform was arranged by HRSD for the Localities and a Model User's Group has been organized by HRSD which has met monthly in FY2010.

HRSD has worked closely with the Localities to facilitate submittal of the Locality Geographic Information System (GIS) data for the Regional Hydraulic Model. This data has been reviewed and comments have been provided to the Localities. Tools have been developed to convert data from the GIS geodatabase to data that can be used in the Regional Hydraulic Model.

In addition to the GIS data, HRSD has facilitated the submission of 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.

2.2.3 Regional Hydraulic Model Report

The initial report to document the development, calibration, and verification of the RHM is due to the EPA and DEQ on November 30, 2010. Preparation of this document is underway.

2.3 Condition Assessment Plan

2.3.1 Condition Assessment Plan

With the date of entry of the Consent Decree on February 23, 2010, the Condition Assessment Plan was deemed approved by the EPA and DEQ. No addendum or modified document has been submitted since that date.

2.3.1.1 SSES Plan

The SSES Plan was submitted to the DEQ on December 23, 2008, ahead of the December 31, 2008 due date from the SOC. A revised SSES Plan was submitted to the DEQ on March 30, 2009. Comments were received from the DEQ on the revised SSES Plan on June 15 and a meeting was held on June 25 to review the comments with DEQ staff. These comments are incorporated in a revision which was submitted on September 23, 2009. A letter documenting the changes and providing a response to comments for the September 23, 2009 SSES Plan revision was submitted on October 19, 2009. Subsequent comments were received from the DEQ on December 16, 2009, with a response requested by February 1, 2010. HRSD prepared an addendum to the SSES Plan and submitted it to the DEQ on February 1, 2010.

2.3.2 Preliminary Condition Assessment Report

A Preliminary Condition Assessment Report (PCAR) was required by the Consent Decree to be submitted on or before September 23, 2009. This report describes the results of the screening and preliminary risk assessment for HRSD's Sanitary Sewer System and provides a schedule to complete the field inspections. HRSD completed this document and submitted it to the EPA and DEQ on September 23, 2009. Comments were received from the EPA on October 15, 2009, and a response was submitted on November 13, 2009. Additional comments were received on December 3, 2009, and HRSD provided a response with additional information on January 4, 2010. A letter was received from the EPA on March 4, 2010, that the PCAR was approved. A complete document that includes addenda was provided to the EPA and DEQ on June 2, 2010.

2.3.3 Implementation of the Condition Assessment Plan

2.3.3.1 Condition Assessment Field Activities

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

2.3.3.2 Prompt Repairs

2.3.3.2.1 Conveyance System

The following programs are in place to identify collection system infrastructure deficiencies found during the course of condition assessment field activities that require prompt attention (as defined under RTS Section 4.6 and the approved Condition Assessment Plan):

2.3.3.2.1.1 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 is being reviewed to make that assessment and the first set of data was reviewed for status determination on July 1, 2010.

2.3.3.2.1.2 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 any significant defects. A condition assessment evaluation will be completed by November 26, 2011, that 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.

2.3.3.3 Private Property I/I Abatement Program

A special committee composed of representatives from Localities, HRSD, consultants and HRPDC met in FY 2010 to develop a regional Private Property I/I Abatement Program per the requirements of the SOC. This Committee is exploring possible elements for such a program including such issues as inspection, enforcement, incentives, testing of new construction, financing, ordinance support and other pertinent issues. The Committee is developing draft model documents including an ordinance, enforcement response plan, inspection form and instructions for consideration by HRSD and Localities in early FY 2011. Actual implementation would follow thereafter.

2.3.4 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 10 in construction during this fiscal year and 4 completed. As required by Paragraph 32 of the Consent Decree, HRSD has prepared 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. Appendix A to this Annual Report includes the Verification of Completion forms for projects completed in FY2010.

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.

2.5.2 Implementation of MOM Program

HRSD continues to implement its MOM Program with updates per the May 20, 2010 submittal. It includes details pertaining to nearly all aspects of HRSD's system, including quantitative performance measures and special programs coordinated in the region such as the HR FOG.

2.5.2.1 HR FOG

HR FOG is a regional effort aimed at fats, oils, and grease (FOG) in the sewer system and is coordinated by the Hampton Roads Planning District Commission that includes participation from HRSD and the Localities. Between FY09 and FY10, a model sewer use ordinance, technical design standards, and a Memorandum of Agreement between HRSD and the Localities have been completed pertaining to mutual enforcement of FOG control. HRSD has participated in development of these documents and supports the Localities as they each update their individual Sewer Use Ordinance and get passage through their local governing bodies. HRSD has also supported the region through various training workshops and an education effort to make food service establishments (FSEs) aware of the new requirements.

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.

2.6 Regional Wet Weather Management Plan

Although there were no discussions or activities conducted in FY 2010 specifically about the Regional Wet Weather Management Plan (RWWMP) (because it is a later deliverable under the Consent Decree and SOC), there were numerous activities that occurred in FY 2010 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 Rehabilitation Plan/Final Condition Assessment Report and the associated peak flow commitment; and
- Discussion at the Capacity Team about the cost and effectiveness of rehabilitation on reducing peak wet weather flows.

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. 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 revised the document to meet the September 25, 2010 due date.

In the meantime, HRSD continues to actively coordinate with Localities and operate its system to maximize available capacity and minimize system SSOs and treatment plant discharges.

2.8 SSO Emergency Response Plan

A Collection System Release (CSR) Response Plan was submitted to the EPA and DEQ in August 2009. Comments were received on April 15, 2010 from the EPA, and the document was resubmitted to the EPA and DEQ with a new title, Sanitary Sewer Overflow Response Plan, on June 14, 2010. HRSD has received comments following the end of FY2010 and submitted a final version responsive to those comments in FY2011.

2.9 Coordination with Localities

There was a wide variety of coordination activities in FY 2010 amongst the regional parties to the SOC. These activities included:

- Numerous meetings of the Capacity Team to discuss SOC and Consent Decree issues, develop Regional Technical Standards (RTS) Interpretations, and provide 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; and
- A regional SharePoint website has been developed and continues to be updated to collaborate with and provide documents to the regional Locality Team and Capacity Team.

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 Summary of Submittals

Table 1 summarizes the status of the documentation that HRSD has submitted to the DEQ under the SOC in FY 2010.

Table 1. Summary of SOC Submittals	
SOC Submittal	Submittal Date
Annual Report	October 29, 2009
Flow Evaluation Report	Revision July 24, 2009 Response to Comments January 8, 2010 Response to Comments March 15, 2010 Revision April 15, 2010
SSES Plan	Revision September 23, 2009 Addendum October 19, 2009 Addendum February 1, 2010
CSR Response Plan SSO Response Plan	August 20, 2009 Revision June 14, 2010
MOM Program	Revision May 20, 2010

Table 2 summarizes the status of the documentation that HRSD has submitted to the EPA and DEQ under the Consent Decree in FY2010.

Table 2. Summary of Consent Decree Submittals	
Consent Decree Submittal	Submittal Date
QAPP/DQSAP	August 17, 2009 Revision March 9, 2010
Notification of Beginning of 12-month Monitoring Period	March 12, 2010
Preliminary Condition Assessment Report	September 23, 2009 Comment Response November 13, 2009 Comment Response January 4, 2010 Revision June 2, 2010
Notification of Completion of First Condition Assessment Milestones	June 29, 2010
CSR Response Plan SSO Response Plan	August 20, 2009 Revision June 14, 2010
MOM Program	Revision May 20, 2010

3. SUMMARY OF NON-COMPLIANCE

In FY2010, HRSD expended considerable resources in both time and money to achieve the compliance goals of the SOC and Consent Decree. All deliverables were submitted on or before their due dates, including those with short timeframes for response.

The Flow, Pressure, and Rainfall (FPR) Monitoring Plan submitted in April 2009 and approved at the Date of Entry of the Consent Decree (February 23, 2010) included a schedule for the FPR site installations to be complete in January 2010. Due to severe weather in the fall of 2009 and early winter 2010 hampering construction, the FPR Monitoring Program experienced some delays with the expected start date shown in the FPR Monitoring Plan. Despite these circumstances, the network was substantially complete on March 12, 2010, and HRSD will perform a full 12 months of monitoring. This completion date meets the deadline of March 15, 2010, listed in the Stipulated Penalties section of the Consent Decree.

The Consent Decree contains multiple provisions with respect to data reliability for the FPR Monitoring Program. HRSD is meeting the requirement for wet weather reliability. As more experience was gained with this extensive new network, it was discovered that meeting the secondary data reliability requirement of 75% reliability at every meter monthly is not feasible or, for that matter, necessary to achieve the objectives of the monitoring program. HRSD notified EPA and DEQ of this issue and presented an alternate proposal in early September 2010. HRSD will continue to work with EPA and DEQ in FY 2011 to satisfactorily resolve this issue, which does not compromise HRSD's achievement of the objectives of the program.

From the Date of Entry through June 30, 2010, HRSD's Sanitary Sewer System had 13 Sanitary Sewer Discharges (SSDs) and 8 treatment plant discharges that are detailed in Section 5 of this report. Many of these SSDs were caused by circumstances beyond HRSD's control. HRSD will be discussing these events with EPA in FY 2011.

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4. CONDITION ASSESSMENT ACTIVITIES DURING FY 2010

HRSD has continued with its Condition Assessment Program through FY2010 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 June 30, 2010, more than 90,500 linear feet of gravity sewer main has been inspected using PACP-compliant CCTV techniques. In addition, more than 480 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. This work is expected to be completed in FY2011 ahead of 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 June 30, 2010, the following assessments have been completed:

- Groups 1 and 2, Level 1 inspection – 25,322 linear feet
- Ferrous Segments, Level 2 inspection – 5,531 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, in FY2011.

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 pumping facility location. Each annual inspection includes a mechanical inspection, electrical/instrumentation inspection, and SCADA inspection.

HRSD will update the detailed inspections from 2008 in FY2011 by the November 26, 2011 completion deadline.

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5. SYSTEM PERFORMANCE DURING FY 2010

5.1 Modifications to HRSD Operating Pressures

HRSD has made no changes to its current Pressure Policy as detailed in the most recent version of "Development Plan 2000."

5.2 STP Performance

The HRSD system was influenced by several significant wet weather events in FY10 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 beginning on the following page provides details on these occurrences since the Consent Decree Date of Entry.

5.3 Conveyance System Performance

For the reporting period of July 1, 2009, through June 30, 2010, HRSD experienced 108 sanitary sewer overflows (SSOs) from its system. Of these, 87 were the result of elevated wet weather flows in HRSD's system. Several very significant wet weather events in excess of a 10-year recurrence interval occurred during this period. These wet weather events contributed directly, or indirectly (prolonged elevated groundwater table), to nearly all of these 87 SSOs. Significant storm events including the November Nor'easter and a very wet fall and winter resulted in high groundwater conditions and elevated system flows. The Nor'easter in November 2009 resulted in the second highest tide recorded at Sewell's Point since 1933, with a high tide peaking at 7.74 feet (only 2 inches less than the highest value which was recorded during Hurricane Isabel). All of these events are detailed in the Sanitary Sewer Overflow Reporting System (SSORS).

Of the 108 total events from July 1, 2009 to June 30, 2010, only 13 Sanitary Sewer Discharges (SSDs) occurred since the Consent Decree Date of Entry on February 23, 2010. Details on these 13 events are available in Table 4.

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Table 3. Detailed Listing of HRSD Treatment Plant Discharges (February 23, 2010 to June 30, 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
3/25/2010	York River STP	Contractor was installing manhole in the 12" centrate line. Plant had flushed line with NPW in preparation for work. A sump pump was installed in the excavation to remove any NPW which would be discharged when pipe was cut. The contractor placed the pump discharge hose in the incorrect manhole which allowed flow to escape to surrounding area.	30	Plant staff routed hose to deep manhole system and lowered the level set points for the shallow wet well pumps. Set up a second portable pump at the manhole to keep any backflow out of excavation. Majority of spill was contained and pumped back into plant system.	900	90	NPW*	ground	Reclaimed water spill
4/12/2010	Atlantic STP	Plant was placing new preliminary treatment facility into operation for plant start up. The wrong gate was opened because it was not locked and tagged out by contractor. The gate was to a 54-inch line that had not yet been connected. Influent flow went through the pipe and onto the ground next to a drain that drains back to the plant system.	10	Valve was closed immediately upon discovery of problem. Storm drains were blocked. Majority of spill either drained back into the plant drain system or was pumped back into system by plant staff.	1000	200	Raw Influent	ground	This was an operations problem that was corrected within 10 minutes
4/13/2010	Virginia Initiative STP	Grit dumpster room floor drain was plugged with grit. This allowed water entering the drain to back up into the room and eventually flow out the door.	45	Secured water entering the drain system and cleared the drain to allow it to drain again. Sandbagged area outside of building. Cleaned floor of room. Applied sand to standing water in the street and disposed in grit dumpster. Preventative maintenance schedule for the drain line was changed from quarterly to monthly.	500	100	NPW*/Grit	ditch and ground	This was an operations problem. A procedure change was implemented to prevent reoccurrence.
4/15/2010	Atlantic STP	NPW valve broken by traffic. Valve is about 4 feet high and was installed for use by construction crew. It is suspected that the valve was hit by piece of heavy equipment being transported.	20	Supply valve was closed to stop spill. Recovered small portion of spill.	1600	1400	NPW*	ground	Reclaimed water spill
5/21/2010	Atlantic STP	NPW was being pumped into aeration tank. The NPW overwhelmed the contractor's sump pump and overflowed the well.	10	Secured NPW to tank and opened aeration tank drain valves.	200	200	NPW*	ground	Reclaimed water spill
6/1/2010	York River STP	Contractor sheared off top of 2" air vent on a newly installed 12" NPW line while preparing the road for paving.	15	Closed valves to stop flow in pipe. Contractor repaired air vent. Spill soaked immediately in bed of rock in the roadway and could not be recovered.	300	300	NPW*	ground	Reclaimed water spill
6/17/2010	Atlantic STP	Air pocket occurred while bringing clarifier in service. RAS came up through grating. Most of spill returned to the distribution tank through the grating but small portion spilled over the side.	<1	No action was taken as incident was over in a matter of seconds. Dirt was placed on spill on the ground for absorption.	25	25	wastewater	ground	Installation operations problem with duration of less than 1 minute
6/25/2010	Nansemond STP	Operator opened the centrate holding tank drain valve and it backed up into the struvite recovery building. The drain overflowed out the door and soaked into the ground.	5	Closed the drain valve and cleaned up the floor of struvite building. Outside spill soaked into the ground and could not be recovered.	35	35	wastewater	ground	This was an operations problem that was corrected within 5 minutes

*NPW – Non-potable water (treated effluent)

Table 4. Detailed Listing of HRSD SSDs (February 23, 2010 to June 30, 2010)

Date and Time of Incident	Location	Sewer System Component	Potential Receiving Waters	Spilled In Jurisdiction	SSO/SSD Classification	Description of Incident from SSORS	SSD Duration	Explanation of SSD*	Discharge Quantity	Amount Reaching State Waters	DEQ IR
3/8/2010 21:44	4562 Southern Blvd	Independence Blvd Pump Station	Thalia Creek	Virginia Beach	Infrastructure	Pump inside of station tripped out due to electrical malfunction.	0 hour(s) 38 minute(s)	Due to an unforeseeable electrical malfunction, the pumps inside this station tripped out. HRSD staff responded within 38 minutes and were able to correct the electrical malfunction. The overflow was immediately stopped. Only 200 gallons were lost to the nearby Creek with no apparent adverse environmental impact. There were no visible solids, no discoloration of the stream, no odor, no fish kill, no indication of any adverse impact whatsoever. This pump station had never experienced such a malfunction and it has not recurred. This was an unforeseeable and unavoidable, isolated, event for which we do not think a fine is warranted.	200	200	SSORS#2010-T-102485
3/15/2010 9:30	217 Washington Street	Washington Street Pump Station	Hampton River	Hampton	Infrastructure	Force main failure resulting in leak of 5 gpm. The 14" cast iron force main is located under two 72" storm drain pipes which have settled onto the HRSD pipe.	0 hour(s) 30 minute(s)	We lost 150 gallons from a 14-inch force main to the Hampton River. In response, we discovered that two 72” storm drains had settled on our 14-inch sewer line putting it under significant stress and leading to the failure. There was no way we could have anticipated or discovered this short of randomly digging up the pipes. We established bypass pumping at the nearby pump station and this pipe will be replaced with a CIP project which should be bid in the next 2-3 weeks. Only 150 gallons were lost to the Hampton River with no apparent adverse environmental impact. There were no visible solids, no discoloration of the stream, no odor, no fish kill, no indication of any adverse impact whatsoever.	150	150	SSORS#2010-T-102496
3/25/2010 11:45	3284 Virginia Beach Blvd	Air Vent	eastern branch of Lynnhaven River	Virginia Beach	Infrastructure	Air vent riser pipe leaking due to deterioration.	0 hour(s) 35 minute(s)	Riser pipe deteriorated and was discovered during preventive maintenance – Maintenance Crews installed a temporary plug to stop leak and replaced the pipe on 3/26/10. Preventive maintenance had been performed on this air release vent in May 2009 and the valve operated properly with no indication of potential future failure. This was unavoidable as the ARV had been properly maintained and there was no way to predict this failure.	875	437	SSORS#2010-T-102511
3/26/2010 10:20	4562 Southern Blvd	Independence Blvd PS	Thalia Creek	Virginia Beach	Infrastructure	Electricians turned off pumps temporarily at the station to make adjustments to pump controls. Flow backed up and leaked from force main. City of Virginia Beach observed the leak coming up between gutter pan and road and notified HRSD. By the time HRSD arrived on site, the leak had stopped.	0 hour(s) 40 minute(s)	Leak had stopped by the time HRSD arrived – within 40 minutes - so no estimate could be done. HRSD observed sediment and debris in the gutter pan. Crew was brought in to clean area. This force main is scheduled to be replaced using a contractor who will conduct directional drilling. In the interim, a temporary pumping system has been installed to reduce pressure on the pipe.	-1	-1	SSORS#2010-T-102513

Table 4. Detailed Listing of HRSD SSDs (February 23, 2010 to June 30, 2010)

Date and Time of Incident	Location	Sewer System Component	Potential Receiving Waters	Spilled In Jurisdiction	SSO/SSD Classification	Description of Incident from SSORS	SSD Duration	Explanation of SSD*	Discharge Quantity	Amount Reaching State Waters	DEQ IR
3/29/2010 5:08	315 Center Avenue	Center Avenue Pump Station	James River	Newport News	Capacity-Weather Related	Pump station overflowing from high flow caused by rainstorms in the area. Initial flow rate estimated at 175 gpm. Increased to 200 gpm when station was checked again at 8:35 am. Rain gauge at Copeland Park Pump Station recorded 2.8" of rain within 9.5 hours.	11 hour(s) 3 minute(s)	Pump station overflowing from high flow caused by severe rainstorms in the area. We experienced approximately 3.7 inches of rain in a 24-hour period with over three inches in one six hour period within that duration. Thus, this was a very strong storm event both in terms of rainfall intensity and volume. Across our system, we identified just seven sewer system releases totaling approximately 145,000 gallons. This was a tiny amount of the flow which HRSD treated during the event and a completely insignificant volume instream during a storm event that dropped almost four inches of rain across our system. There was absolutely no environmental impact or impact on recreational uses given (1) the time of year and (2) such a large and sustained storm event. We believe this is an unavoidable overflow while the RWWMP is being developed and implemented.	106080	106080	SSORS#2010-T-102516
3/29/2010 8:10	4701 Victoria Blvd	Bridge Street Pump Station	Salters Creek	Hampton	Capacity-Weather Related	Pump station overflowing through tide gate due to high flows from rainstorms in the area. Rain gauge at Bayshore Pump Station recorded 2.5" of rain within seven hours.	5 hour(s) 47 minute(s)	Same explanation as above.	12145	12145	SSORS#2010-T-102517
3/29/2010 8:26	42 Franklin Avenue	manhole	James River	Newport News	Capacity-Weather Related	Manhole overflowing at estimated rate of 35 gpm due to high flow from rainstorms in the area. Rain gauge at Copeland Park Pump Station recorded 2.8" of rain within 9.5 hours.	6 hour(s) 2 minute(s)	Same explanation as above.	12670	12670	SSORS#2010-T-102518
3/29/2010 10:30	1136 Sanders Road	Suffolk Pump Station	Wilroy Creek	Suffolk	Infrastructure	Crew discovered a small hole in the discharge fitting on the 12-inch emergency pump at the station.	1 hour(s) 0 minute(s)	During the storm event of 3/29, HRSD operations crews were alerted that the standby pump was kicking in to augment the normal pumps. The Crews responded to the station and discovered a small hole in the discharge fitting on the 12-inch emergency pump at the station The hose was immediately replaced and the pump put back in service. An HRSD vactor truck responded immediately and recovered as much as possible. 200 gallons were recovered while approximately100 gallons were lost. This was an unforeseeable failure of the fitting. Same explanation as above – large intense storm system dropped almost four inches of rain across much of the area.	300	100	SSORS#2010-T-102519
3/29/2010 10:04	King Street & MacAlva Drive	Manhole	Back River	Hampton	Capacity-Weather Related	Manhole overflowing due to high flows from rainstorms in the area. Initial flow rate estimated at 5 gpm. Estimated flow rate of 10 gpm when manhole was re-visited at 1:00 pm. Rain gauge at Bayshore Pump Station recorded 2.5" of rain within seven hours.	10 hour(s) 56 minute(s)	Same explanation as above – large intense storm system dropped almost four inches of rain across much of the area.	3280	3280	SSORS#2010-T-102520

Table 4. Detailed Listing of HRSD SSDs (February 23, 2010 to June 30, 2010)

Date and Time of Incident	Location	Sewer System Component	Potential Receiving Waters	Spilled In Jurisdiction	SSO/SSD Classification	Description of Incident from SSORS	SSD Duration	Explanation of SSD*	Discharge Quantity	Amount Reaching State Waters	DEQ IR
3/29/2010 10:03	King Street and Donald Street	Manhole	Back River	Hampton	Capacity-Weather Related	Manhole overflowing due to high flows from rainstorms in the area. Initial flow rate estimated at 25 gpm. Estimated flow rate of 30 gpm when manhole was re-visited at 11:42 am. Rain gauge at Bayshore Pump Station recorded 2.5" of rain within seven hours.	12 hour(s) 57 minute(s)	Same explanation as above – large intense storm system dropped almost four inches of rain across much of the area.	11655	11655	SSORS#2010-T-102521
3/29/2010 10:33	Chesapeake Avenue & Clyde Street	Manhole	James River	Hampton	Capacity-Weather Related	Manhole overflowed at estimated rate of 2 gpm due to high flows from rainstorms in the area. Rain gauge at Bayshore Pump Station recorded 2.5" of rain within seven hours.	1 hour(s) 27 minute(s)	Same explanation as above – large intense storm system dropped almost four inches of rain across much of the area.	174	174	SSORS#2010-T-102522
4/1/2010 10:30	Little Neck Rd and Sea Horse Way, Valve Guide At3054G	Little Neck Interceptor FM	storm drain to Lynnhaven River	Virginia Beach	Infrastructure	Bonnet bolts on 10 inch valve failed	0 hour(s) 4 minute(s)	New bonnet bolts were installed. A vac-truck was on site to contain the spill during the repair. Pine Tree PRS also operated to reduce system pressure. 400 gallons were lost during a four minute period when the vac-truck was returning from off-site to be emptied.	400	400	SSORS#2010-T-102553
4/11/2010 12:18	3101 Shell Road	Force Main	Deep Creek	Chesapeake	Infrastructure	24-inch ductile iron force main failure. There was a 3 to 4-inch hole in the top of the pipe.	3 hour(s) 12 minute(s)	Valved system to stop leak temporarily. Pipe was excavated and full circle clamp was installed for repair. Vaccon recovered as much of the spill as possible. Area was cleaned and limed. Site was visited on 4/12 by HRSD and approximately 10 dead gizzard shad were discovered. The Dissolved Oxygen upstream of the spill was 8 mg/l and 7 mg/l downstream. Final report edited due to typographical error for amount of material reaching state waters. Crew repaired pipe failure from internal corrosion. Based on the condition of the pipe an emergency CIP project was initiated resulting in the replacement of approximately 800 lf of force main. This was completed by Labor Day 2010. A section of this line was replaced in the 2003 timeframe. At that time, the adjacent sections were inspected and found to be sound and in good condition. Based on this evaluation, there was no way to predict this section of pipe would deteriorate so rapidly and fail.	67200	54600	SSORS#2010-T-102561

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

6. PLANNED ACTIVITIES FOR FY2011

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

6.1 Flow, Pressure, and Rainfall Monitoring Program

6.1.1 QAPP

Comments for the DQSAP were received from the EPA and DEQ on June 28, 2010, and a revised document is due within 180 days of receipt of comments (December 25, 2010). HRSD will submit a revised document by this due date. In the meanwhile, HRSD is implementing the procedures during the data collection effort.

As stated previously, the data reliability requirements outlined in the RTS and Consent Decree to meet 75% reliable data at every meter every month are not achievable (or necessary). HRSD will be working with the DEQ and EPA in FY11 to develop a standard that can be achieved with the large number of sensors and rigorous data analysis performed by HRSD. A document was provided to the EPA and DEQ at the beginning of September 2010 that provided an alternative approach.

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 12, 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 FY11.

6.1.3 LOPs Not Included in HRSD Flow Monitoring

In FY11, HRSD will continue to coordinate with Localities following activation of an LOP in the Localities system. This will include meeting 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 reports.

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 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. Consensus between HRSD and the Localities on RHM model parameters and calibration is scheduled to occur by May 1, 2011. On or before November 30, 2010, a RHM Report will be submitted to the DEQ and EPA documenting the model development and calibration efforts. This will be an interim submittal with the Final RHM Report due to be submitted by July 31, 2011.

Monthly meetings of the Model Users Group, facilitated by HRSD and attended by the Localities will continue to be held as needed.

6.3 Condition Assessment Plan

6.3.1 SSES Plan

HRSD prepared an addendum to the SSES Plan and submitted it to the DEQ on February 1, 2010. It is anticipated that HRSD will finalize the SSES Plan with an approval from DEQ in FY11.

6.3.2 Implementation of the Condition Assessment Plan

6.3.2.1 Condition Assessment Field Activities

The planned Condition Assessment Field Activities will continue to be performed in FY11. This will include:

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

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

6.3.2.2 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 and SOC for Prompt Repair. Once a defect is identified as requiring Prompt Repair, HRSD will implement an action plan to make the improvements necessary.

6.3.2.3 Private Property I/I Abatement Program

In FY11, HRSD will continue to support the efforts of the Localities to implement a Private Property I/I Abatement Program within each jurisdiction. It is expected that during FY11, the model documents will be approved by the Directors' of Utilities for use by each Locality to develop their program.

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 for these projects 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 FY11, HRSD anticipates receiving comments from the EPA and DEQ on the MOM Plan and will make appropriate changes to develop a final document for approval.

6.5.2 Implementation of MOM Program

HRSD will continue to implement its MOM Program per the May 20, 2010 submittal, or subsequent submittals as they are made.

6.5.3 Quantitative Performance Measures

In FY11, HRSD will begin 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

At the end of FY11, 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 FY12-13 The complex evaluation of system improvements, including reaching regional consensus on a level of service, that will be conducted in FY 12-13 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 submitted the STWWOP by the September 2010 due date and anticipates having a final approved document in FY11.

6.8 SSO Emergency Response Plan

Similar to the STWWOP, HRSD submitted the final SSO Response Plan by the September 2010 due date and anticipates having a final approved document in FY11.

6.9 Coordination with Localities

HRSD will continue to actively participate and in some cases 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 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 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. SUMMARY OF SYSTEM BENEFITS FOR PREVIOUS FISCAL YEAR

As reported in the earlier sections of this report, HRSD continues to make important strides in the process of preparing a Regional Wet Weather Management Plan and overall system improvement. Some of the major milestones include:

- Implementation of a large Flow, Pressure, and Rainfall Monitoring Program, with the initiation of the 12-month monitoring period on March 12, 2010;
- Development and use of robust Data Quality Standards and Procedures;
- Submission of a revised Flow Evaluation Report based on the flow and rainfall data collected;
- Maintenance of a web portal to allow Localities access to HRSD flow, pressure, and rainfall data;
- Development and submission of documents related to the Condition Assessment Program (the Condition Assessment Plan, the SSES Plan, and the Preliminary Condition Assessment Report);
- Awarding multiple contracts for inspection of HRSD's gravity sewers and force mains;
- Completion of the first condition assessment milestone with 90,000 LF of gravity sewer, 450 manholes, and more than 30,000 LF of force main inspected;
- Development of a Regional Hydraulic Model suitable for testing and preliminary calibration;
- Coordination with Localities on submission of Sewer Facility and Flow Parameter data to construct the Regional Hydraulic Model;
- Completion of several Interim System Improvements as required by the Consent Decree;
- Submission of a revised MOM Program;
- Development of a revised SSO Response Plan;
- Ongoing use of a web portal to share information between HRSD and the Localities;
- Submission of an Annual Report;
- Bi-weekly Capacity Team and monthly Locality Team meetings to foster cooperation and coordination in the region; and
- Regular meetings of the Private Property I/I Abatement Committee to develop a regional program

HRSD will continue in FY 2011 with implementation of the Consent Decree and SOC Program to develop a Regional Wet Weather Management Plan in coordination with the Localities for overall system benefit.

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APPENDIX A. INTERIM SYSTEM IMPROVEMENTS

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Interim System Improvements
Verification of Completion

As required by Section IX of the Amended Consent Decree dated February 23, 2010, a set of Interim System Improvements have been identified that must be completed within 8 years of the Date of Entry. Paragraph 32 of that section requires a written certification of completion of each project or group of projects. For capital projects in excess of $1,000,000, Paragraph 87a of the Consent Decree requires that verification be made by a Professional Engineer that the project was completed satisfactorily.

Through June 30, 2010, the following projects have been completed satisfactorily and consistent with the scope provided to the EPA and DEQ in the Consent Decree:

Ref No.	CIP No.	Project Name	Project Cost	Completion Date
1	BH-111	Claremont Avenue Pump Station Rehabilitation	$2,177,129.06	12/31/09
4	YR-100	Big Bethel Road to J. Clyde Morris Boulevard Interceptor Force Main Replacement	$2,381,085.18	11/04/09

COMMONWEALTH OF VIRGINIA
DAVID W. COOLEY
Lic. No. 044550
10/20/10
PROFESSIONAL ENGINEER

Hereby verified by

David W. Cooley, PE (No. 044550)
Chief of Design and Construction, North Shore
Hampton Roads Sanitation District

Appendix 5
Interim System Improvements

Ref No.	CIP Proj. No.	Project Title	Estimate
1	BH-111	Claremont Avenue Pump Station Rehabilitation	$ 1,500,000
2	AT-100	Atlantic Pressure Reducing Station Emergency Generator Replacement	$ 1,000,000
3	AT-113-2	Lake Ridge Interceptor Force Main Section B - Contract 2 (Land)	$ 3,000,000
4	YR-100	Big Bethel Road to J Clyde Morris Boulevard Interceptor Force Main Replacement	$ 2,500,000
5	JR-109-1	Williamsburg-James River Connection Force Main Section II and Lucas Creek-Woodhaven Interceptor Force Main Replacements - Phase I	$ 4,000,000
6	YR-108	Route 171 Interceptor Force Main	$ 8,000,000
7	YR-104	Kiln Creek Interceptor Force Main	$ 7,000,000
8	VIP-120	H 12-Inch Interceptor Force Main Replacement and Gravity Sewer Chesterfield Blvd. Replacement	$ 11,000,000
9	AT-108	Eastern Branch Sections A & B, Green Run Section C, and 24-Inch Kempsville Road Force Main Replacements	$ 6,000,000
10	VIP-106	North Trunk Sewer Section W 8-Inch and 12-Inch Force Mains and Larchmont Force Mains (Formerly Siphon Lines) Replacements	$ 2,000,000
11	VIP-105	North Trunk Sewer Section R 6-Inch Interceptor Force Main and 10-Inch Gravity Replacement	$ 1,000,000
12	VIP-104	North Trunk Sewer Section D 24-Inch Interceptor Force Main Replacement	$ 6,000,000
13	AT-112-2	Hilltop/Point O'Woods Interceptor Force Main Replacements; Section B	$ 6,000,000
14	AT-112-1	Hilltop/Point O'Woods Interceptor Force Main Replacements; Section A	$ 5,000,000
15	WB-107	Williamsburg Interceptor Force Main Contract A Replacement	$ 6,000,000
16	BH-100	33rd Street Pump Station Replacement/Rehabilitation	$ 3,000,000
17	VIP-133	Sanitary Sewer System Portsmouth VA Contract A Clifford Street Force Main	$ 1,000,000
18	BH-114	James River Diversion 35th Street Phase III and Boat Harbor Outlet Sewer Relocation I-664 Rehabilitation	$ 2,000,000
19	BH-112	Hampton Trunk Sewer Division A Replacement	$ 1,000,000
20	JR-106	Lucas Creek Pump Station Upgrade	$ 2,000,000
21	VIP-131*	South Trunk Sewer Section C-42 inch Force Main Replacement	$ 4,000,000
22	AB-105	Section W Force Main Replacement	$ 1,000,000
23	YR-101	Coliseum Drive Pressure Reducing Station	$ 6,000,000
24	JR-100	Center Avenue Pump Station Replacement	$ 4,000,000
25	VIP-130*	Norchester St Pump Station Replacement/Rehabilitation	$ 2,000,000
26	AT-114*	Providence Road Pressure Reducing Station Modifications	$ 2,000,000
27	BH-101	58th Street Connecting Sewer Rehabilitation	$ 1,000,000
28	BH-116	Bridge St. Pump Station Replacement/Rehabilitation	$ 2,000,000
29	VIP-132*	South Trunk Sewer Section G-36 inch Force Main Replacement	$ 3,000,000
30	GN-128	Interceptor Systems Pump Station Control and SCADA Upgrades and Enhancements	$ 10,000,000
31	NP-106*	Wilroy Pressure Reducing Station, Pughsville PRS Upgrades, Suffolk PS Upgrades	$ 12,000,000
32	AB-100	Army Base 24-Inch and 20-Inch Transmission Main Replacements	$ 7,000,000
33	JR-108	Normandy Lane Interceptor Force Main Replacement	$ 7,000,000
			$ 140,000,000
	* As of date of lodging, preliminary engineering work indicates these projects		
	may require significant change in scope. HRSD will provide appropriate notice to plaintiffs		
	puruant to Paragraph 30.		

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Interim System Improvements
Verification of Completion

As required by Section IX of the Amended Consent Decree dated February 23, 2010, a set of Interim System Improvements have been identified that must be completed within 8 years of the Date of Entry. Paragraph 32 of that section requires a written certification of completion of each project or group of projects. For capital projects in excess of $1,000,000, Paragraph 87a of the Consent Decree requires that verification be made by a Professional Engineer that the project was completed satisfactorily.

Through June 30, 2010, the following projects have been completed satisfactorily and consistent with the scope provided to the EPA and DEQ in the Consent Decree:

Ref No.	CIP No.	Project Name	Project Cost	Completion Date
2	AT-100	Atlantic Pressure Reducing Station Emergency Generator Replacement	$ 1,218,225	June 22, 2010
3	AT-113-2	Lake Ridge Interceptor Force Main Section B - Contract 2 (Land)	$2,717,714	September 10, 2009

COMMONWEALTH OF VIRGINIA
GARY M. HART
No. 17583
PROFESSIONAL ENGINEER

Hereby verified by

Gary Hart, PE (No. 017583)
Chief of Design and Construction, South Shore
Hampton Roads Sanitation District

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9	AT-108	Eastern Branch Sections A & B, Green Run Section C, and 24-Inch Kempsville Road Force Main Replacements	$ 6,000,000
10	VIP-106	North Trunk Sewer Section W 8-Inch and 12-Inch Force Mains and Larchmont Force Mains (Formerly Siphon Lines) Replacements	$ 2,000,000
11	VIP-105	North Trunk Sewer Section R 6-Inch Interceptor Force Main and 10-Inch Gravity Replacement	$ 1,000,000
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18	BH-114	James River Diversion 35th Street Phase III and Boat Harbor Outlet Sewer Relocation I-664 Rehabilitation	$ 2,000,000
19	BH-112	Hampton Trunk Sewer Division A Replacement	$ 1,000,000
20	JR-106	Lucas Creek Pump Station Upgrade	$ 2,000,000
21	**VIP-131***	South Trunk Sewer Section C-42 inch Force Main Replacement	$ 4,000,000
22	AB-105	Section W Force Main Replacement	$ 1,000,000
23	YR-101	Coliseum Drive Pressure Reducing Station	$ 6,000,000
24	JR-100	Center Avenue Pump Station Replacement	$ 4,000,000
25	**VIP-130***	Norchester St Pump Station Replacement/Rehabilitation	$ 2,000,000
26	**AT-114***	Providence Road Pressure Reducing Station Modifications	$ 2,000,000
27	BH-101	58th Street Connecting Sewer Rehabilitation	$ 1,000,000
28	BH-116	Bridge St. Pump Station Replacement/Rehabilitation	$ 2,000,000
29	**VIP-132***	South Trunk Sewer Section G-36 inch Force Main Replacement	$ 3,000,000
30	GN-128	Interceptor Systems Pump Station Control and SCADA Upgrades and Enhancements	$ 10,000,000
31	**NP-106***	Wilroy Pressure Reducing Station, Pughsville PRS Upgrades, Suffolk PS Upgrades	$ 12,000,000
32	AB-100	Army Base 24-Inch and 20-Inch Transmission Main Replacements	$ 7,000,000
33	JR-108	Normandy Lane Interceptor Force Main Replacement	$ 7,000,000
			$ 140,000,000
	* As of date of lodging, preliminary engineering work indicates these projects		
	may require significant change in scope. HRSD will provide appropriate notice to plaintiffs		
	puruant to Paragraph 30.		