

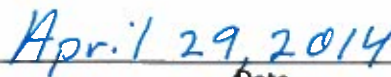
# City of Memphis

## Semi-Annual Report October 1, 2013 through March 31, 2014

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering such information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Bobby D. Allen, P.E.



Date

# Section 1

## Introduction

On September 20, 2012, the United States District Court for the Western District of Tennessee entered a Consent Decree between the City of Memphis (the City) and the United States, the State of Tennessee, and the Tennessee Clean Water Network.

To fulfill the reporting requirements defined in Paragraph VIII.25. of the Consent Decree, the City has prepared this Semi-Annual Report, which includes the following information:

- A description of projects and activities completed and milestones achieved during the previous six month period pursuant to the requirements of the Consent Decree.
- A summary of significant projects and activities anticipated to be performed, and milestones anticipated to be achieved, in the next six month period pursuant to the requirements of the Consent Decree.
- Any additional information determined to be appropriate to demonstrate implementation of the remedial actions required under the Consent Decree.

This report is organized into four sections:

- **Section 1** provides an introduction.
- **Section 2** documents recent progress and anticipated continuing activities related to development and implementation of the Management, Operations, and Maintenance (MOM) Programs noted in the Consent Decree.
- **Section 3** identifies recent progress and anticipated continuing activities related to the Priority Rehabilitation Projects noted in the Consent Decree.
- **Section 4** provides a summary of additional actions that the City has recently completed and anticipates completing over the next six months to maintain compliance with the Consent Decree.

## Section 2

# Management, Operations, and Maintenance Programs

As defined in Paragraph V.10 of the Consent Decree, the City shall develop and implement specific MOM Programs. These MOM Programs are listed below along with a summary of activities completed in the previous six months and activities anticipated to be performed during the upcoming six months. A chart showing the status of compliance is presented as **Figure 2-1**. All MOM Programs activities are currently in compliance.

### 2.1 Sewer Overflow Response Plan

#### **Activities Completed During This Reporting Period**

The City submitted a Sewer Overflow Response Plan (SORP) to the U.S. Environmental Protection Agency (EPA) and Tennessee Department of Environment and Conservation (TDEC) on March 11, 2011, before the Consent Decree was entered. A copy of the SORP is included in Appendix B of the Consent Decree. During this reporting period, the City conducted a review of the SORP with no changes recommended at this time. The City continued to operate under the processes described in the SORP.

#### **Activities Anticipated to be Performed During the Next Reporting Period**

The City will continue to operate under the approved SORP.

### 2.2 Fats, Oil, and Grease Management Program

#### **Activities Completed During This Reporting Period**

Due to the vagueness associated with the terms “form” and “substance” as set forth in paragraph 10 of the Consent Decree, the City submitted revisions to the Fats, Oil, and Grease (FOG) Management Program to EPA on October 30, 2013 for approval. In response to EPA’s request, a tracked changes version of the document was provided to EPA in April 2014. During this reporting period, the City continued to operate under the processes described in the FOG Management Program. In addition to conducting the required inspection and reporting activities, the City has continued public outreach efforts, such as the use of billboard and bus stop advertising and the distribution of “Can the Grease” door hangers and can lids to discourage residents from discarding cooking oils and other FOG in the sewer system.

The previous Semi-Annual Report noted that due to a shortage of operators at the treatment plant, a FOG inspector with a Tennessee Wastewater Operators License was temporarily assigned to plant operations to assure compliance with NPDES permit discharge requirements. During the reporting period, the FOG program returned to a full complement of personnel.

**Figure 2-1  
MOM Programs Progress**

Program	CD Reference	CD Milestone	Progress Last Six Months						Anticipated Activities Next Six Months					
			Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Sewer Overflow Response Program	V.10.a	-	Conducted review of existing program with no changes recommended. Continuing to implement program.						Continue to implement program.					
Fats, Oils, and Grease Management Program	V.10.b	-	Submitted program revisions to EPA and TDEC. Continued to implement approved program.						Implement approved program.					
Lift Station & Force Main O&M Program	V.10.c	9/19/2013	Awaiting comments from EPA and/or TDEC.						Respond to any comments received, revise program as appropriate, and implement approved program.					
SCADA installation at lift stations	V.10.c.iii	3/19/2013	Previously completed. SCADA is operational.											
Gravity Sewer System O&M Program	V.10.d	9/19/2013	Awaiting comments from EPA and/or TDEC.						Respond to any comments received, revise program as appropriate, and implement approved program.					
Inter-Jurisdictional Agreement Program	V.10.e	3/19/2013	Awaiting comments from EPA and/or TDEC.						Respond to any comments received, revise program as appropriate, and implement approved program.					
Continuing Sewer Assessment Program	V.10.f	9/19/2013	Discussing initial comments with EPA.						Respond to any comments received, revise program as appropriate, and implement approved program.					
Infrastructure Rehabilitation Program	V.10.g	Within 180 days of EPA approval of CSAP	Under development.						Development will continue.					

### **Activities Anticipated to be Performed During the Next Reporting Period**

The City received approval of the revised FOG program by letter dated April 22, 2014, and will begin operating under the revised FOG Management Program.

The Food Establishment Waste Discharge (FEWD) reissued permits have yet to include language requiring FEWDs to maintain documentation of training on site for review during routine FOG inspections. Revised, pre-printed permits including this language are on order from the City's print shop. Once obtained, these permits will be used for issuance and reissuance of FEWD permits.

## **2.3 Lift Station and Force Main O&M Program**

### **Activities Completed During This Reporting Period**

No additional activities regarding the Lift Station and Force Main Operations and Maintenance (O&M) Program were completed during the reporting period, as the City is awaiting EPA and TDEC comments.

### **Activities Anticipated to be Performed During the Next Reporting Period**

It is anticipated during the next reporting period that EPA, after consultation with TDEC, will provide the City comments on the Lift Station and Force Main O&M Program or approve the document as submitted. Section 14 of the Consent Decree generally envisions up to a 120-day period for EPA comments on deliverables. The City will respond to comments received from EPA, if any, and will revise the Lift Station and Force Main O&M Program, as appropriate. Once approved, the City will implement the Lift Station and Force Main O&M Program.

## **2.4 Gravity Sewer System O&M Program**

### **Activities Completed During This Reporting Period**

No additional activities regarding the Gravity Sewer System O&M Program were completed during the reporting period, as the City is awaiting EPA and TDEC comments.

### **Activities Anticipated to be Performed During the Next Reporting Period**

It is anticipated during the next reporting period that EPA, after consultation with TDEC, will provide the City comments on the Gravity Sewer System O&M Program or approve the document as submitted. Section 14 of the Consent Decree generally envisions up to a 120-day period for EPA comments on deliverables. The City will respond to comments received from EPA, if any, and will revise the Gravity Sewer System O&M Program, as appropriate. Once approved, the City will implement the Gravity Sewer System O&M Program.

## **2.5 Inter-Jurisdictional Agreement Program**

### **Activities Completed During This Reporting Period**

No additional activities regarding the Inter-Jurisdictional Agreement Program (IJAP) were completed during the reporting period, as the City is awaiting EPA and TDEC comments.

### **Activities Anticipated to be Performed During the Next Reporting Period**

It is anticipated during the next reporting period that EPA, after consultation with TDEC, will provide the City comments on the IJAP or approve the IJAP as submitted. Section 14 of the Consent Decree generally envisions up to a 120-day period for EPA comments on deliverables. The City will respond to comments received from EPA, if any, and will revise the IJAP, as appropriate. Once

approved, the City will follow the IJAP for new agreements and renewal of existing agreements related to the collection, conveyance, and treatment of sewage by the City from municipal satellite sewer systems.

## 2.6 Continuing Sewer Assessment Program

### **Activities Completed During This Reporting Period**

The City completed development of the Continuing Sewer Assessment Program (CSAP), as required in Paragraph V.10.f of the Consent Decree and submitted the document to EPA and TDEC for review on September 16, 2013. Following an initial review of the CSAP by EPA, a summary of preliminary comments from EPA was discussed with the City in March 2014. Conversations between the two parties regarding the comments are currently on-going.

### **Activities Anticipated to be Performed During the Next Reporting Period**

During the next reporting period, discussions with EPA are expected to continue. Initial comments will be incorporated in the CSAP, as appropriate, and the document will be resubmitted. It is anticipated that the CSAP will be approved during the next reporting period. Once approved, the City will implement the CSAP in accordance with the timeframes presented in the Consent Decree.

## 2.7 Infrastructure Rehabilitation Program

### **Activities Completed During This Reporting Period**

The City continued preliminary activities to support the development of the Infrastructure Rehabilitation Program (IRP), as required in Paragraph V.10.g of the Consent Decree.

### **Activities Anticipated to be Performed During the Next Reporting Period**

During the next reporting period, it is anticipated that preliminary work on the IRP will continue. Pursuant to the Consent Decree, this program will not be submitted to the PDR, EPA, or TDEC until after EPA approval of the CSAP.

## Section 3

# Priority Rehabilitation Projects

As defined in Paragraph V.11 of the Consent Decree, the City shall complete various Priority Rehabilitation Projects. These projects are listed below along with a summary of activities completed in the previous six months and activities anticipated to be performed during the upcoming six months. A chart showing the status of compliance is presented as **Figure 3-1**. All Priority Rehabilitation Project activities are currently in compliance.

### 3.1 Priority Areas Projects

#### **Activities Completed During This Reporting Period**

Paragraph V.11.a of the Consent Decree identifies several areas of the City's wastewater collection and transmission system (WCTS) that should be assessed during the first and second years following approval of the CSAP. These areas are shown in Appendix E and F of the Consent Decree, respectively. Additionally, a subset of the first year priority area (Appendix E), as shown in Appendix G of the Consent Decree, is identified as a priority during implementation of the IRP.

Because work in these priority areas is tied to approval of the CSAP and IRP, no activities have been completed, excluding work associated with pilot areas described in Section 4. It is anticipated that, consistent with the terms of the Consent Decree, assessment of the areas shown in Appendix E and F of the Consent Decree will be completed during the first and second years, respectively, following approval of the CSAP. It is further anticipated, consistent with the terms of the Consent Decree, that rehabilitation projects within the areas shown in Appendix G of the Consent Decree shall be completed within six years and seven months after EPA's approval of the IRP. Additional compliance dates are shown on Figure 3-1.

#### **Activities Anticipated to be Performed During the Next Reporting Period**

During the upcoming reporting period, it is anticipated that assessment work in Phase 1 of the Year 1 Priority Area (Appendix E of the Consent Decree) will begin; however, this work is contingent upon reaching consensus with EPA and TDEC on the approach described in the CSAP. Additionally, procurement of condition assessment contractors for Phase 2 may also be initiated. This is in addition to the work associated with the pilot areas discussed in Section 4.





## 3.2 Critical Infrastructure Areas Projects

### Activities Completed During This Reporting Period

As discussed in Paragraph V.11.b of the Consent Decree, three areas within the WCTS were identified to receive prioritized rehabilitation due to the critical nature of the infrastructure and the potential consequences of large SSO volumes in the event of a failure. A map showing the locations of these areas is included as Appendix H of the Consent Decree.

Preliminary work associated with the second critical area, which is a portion of the 96-inch interceptor at the entrance/exit ramp located at mile 51 of Interstate 240, continued through this reporting period. The City met with the Tennessee Department of Transportation to discuss options for installing a line beneath the interstate.

### Activities Anticipated to be Performed During the Next Reporting Period

It is anticipated that work associated with the second critical area will continue through the next reporting period and will be completed within the timeframe established in the Consent Decree. The Final Critical Areas Project Report is anticipated to be submitted within six months of completion of the second critical area, consistent with the terms of the Consent Decree.

## 3.3 Prior Assessment Areas Projects

### Activities Completed During This Reporting Period

As discussed in Paragraph V.11.c of the Consent Decree, four additional rehabilitation projects have been identified based on previous inspection and assessment activities. These projects are to be completed within four years from the effective date of the Consent Decree.

Paragraph V.11.c.(iii) of the Consent Decree requires the rehabilitation of 64 manholes identified in the June 6, 2006 Buchart-Horn study report. As discussed in the last Semi-Annual Report, 32 of these manholes have been rehabilitated. During this reporting period, plans and specifications were developed, and bids were solicited for 28 of the remaining manholes. The bids are currently being evaluated.

The work described in Paragraph V.11.c.(iv) includes cured-in-place pipe (CIPP) lining on segments of the Wolf River Interceptor between demarcation points W05-120 and W05-130. During this reporting period, a contractor for this project was selected, and a Notice to Proceed was issued. In addition, the contractor began clearing activities and initiated site access negotiations.

### Activities Anticipated to be Performed During the Next Reporting Period

During the upcoming reporting period, it is anticipated that a bidder will be selected, and 28 of the remaining manholes will be rehabilitated as discussed in Paragraph V.11.c.(iii).

It is also anticipated that installation of CIPP lining of the Wolf River Interceptor as described in Paragraph V.11.c.(iv.) will be completed during the upcoming reporting period.

Work associated with the remaining activities is anticipated to be completed within the timeframes established in the Consent Decree.

## Section 4

# Additional Measures to Maintain Compliance

In addition to the projects and activities described in the previous sections, the measures described below are related to the City's ongoing Consent Decree compliance.

### 4.1 M.C. Stiles WWTP Foam Study and Outfall Improvements

As described in Paragraph V.12 of the Consent Decree, the City is required to implement the M.C. Stiles Wastewater Treatment Plant (WWTP) Foam Study and Outfall Improvements Work Plan that was included as Appendix I of the Consent Decree. During preliminary design, CDM Smith determined that the recommended alternative in the Work Plan may not result in the desired reduction of foaming. As such, additional evaluation consisting of physical modeling and testing was performed to confirm a preferred alternative. As discussed with EPA, the additional evaluation activities extended the schedule that was originally presented in the Work Plan. A copy of the first amendment of the Consent Decree is being circulated for signatures by the parties.

#### **Activities Completed During This Reporting Period**

During the reporting period, physical modeling, testing, and additional alternative evaluation activities were completed. The results of this work indicated that a vortex drop structure, which transitions flow vertically down to the elevation of discharge into the Mississippi River with minimal air entrainment, will provide the greatest reduction in foaming of the alternatives evaluated.

Following completion of the physical modeling and testing, CDM Smith performed initial design activities for the vortex drop structure. Initial design is now complete, and the City plans to procure final design and construction to a single contractor.

#### **Activities Anticipated to be Performed During the Next Reporting Period**

After receipt of the signed First Amendment to the Consent Decree and during the upcoming reporting period, the City plans to advertise this project and receive bids from design-build contractors. Bid evaluation, contractor selection, and contract execution will follow.

### 4.2 State Projects

As described in Appendix J of the Consent Decree, the City is required to implement two state projects. Activities associated with these projects are described in the following subsections.

#### **4.2.1 State Project A – Color Study**

As described in Appendix J of the Consent Decree, the City is required to undertake a color study to assist TDEC in the development of a numerical color permit limit.

#### **Activities Completed During This Reporting Period**

The University of Memphis' Ground Water Institute, through their contract with the City, has continued implementing the TDEC-approved color study during this reporting period. Weekly sampling and analysis of true and apparent color, which was initiated in January 2013, was

completed in February 2014. Statistics are being used to determine relationships between true and apparent color, river elevation, and WWTP discharge. Since the last reporting period, five additional on-site participant surveys were conducted with a total of 36 people participating and a total of 88 participants over the 12-month survey duration (March 2013 – February 2014). The results from the on-site visual assessments are being compiled and will be analyzed upon completion. Wildlife camera photos were filtered to exclude poor quality photos and ‘random objects’ – barges/boats, flocks of birds, etc. From the remaining photos, stimuli for the second Mechanical Turk survey has been selected and uploaded to the Mechanical Turk website to assess the human perception of color change from the upstream and downstream wildlife photos. Wildlife photo property statistics will be run on the upstream and downstream photo pairs. The results will be used to determine if there is a correlation between participants’ perception of water color and the environmental variables. The study will continue to be implemented during the upcoming reporting period in compliance with the scope of work as approved by TDEC.

#### **Activities Anticipated to be Performed During the Next Reporting Period**

Data from on-site environmental assessments and online surveys, color analyses, and photo statistics will be analyzed. A final report will be written and submitted within the timeframes established in the Consent Decree.

#### **4.2.2 State Project B – Geographic Information System**

As described in Appendix J of the Consent Decree, the City began implementing the transition of its sanitary sewer record information, primarily on paper maps, into an electronic Geographic Information System (GIS). This work is being completed by the University of Memphis Center for Partnerships in Geographic Information Systems (CPGIS).

#### **Activities Completed During This Reporting Period**

CPGIS continued converting basic information for the Year 1 Priority Area from paper block maps into GIS. CPGIS developed maps showing the assets and associated asset number for the pilot areas and Phase 1 of the Year 1 Priority Area. Also, CPGIS began developing asset maps for Phase 2 of the Year 1 Priority Area and the Year 2 Priority Area. As digitization efforts are completed in the Priority Areas, work is being extended to other areas.

As condition assessment GPS data is collected in the field, this data subsequently replaces the digitized data being developed by the CPGIS. Until the condition assessment data is completed, however, digitized data forms the basis for prioritizing and procuring the condition assessment contracts.

#### **Activities Anticipated to be Performed During the Next Reporting Period**

During the next reporting period, it is anticipated that CPGIS will complete Phase 2 of the Year 1 Priority Area and the Year 2 Priority Area. Upon completion of these areas, CPGIS will proceed to the future assessment areas. In addition, the existing WCTS GIS data will be updated with information collected during field investigation activities.

### **4.3 Program Administration Activities**

Since entering into the Consent Decree, the City has conducted several administrative activities for the implementation of the Consent Decree program.

### Activities Completed During This Reporting Period

- **Program Information Number:** To facilitate communication with the public, a program informational phone number (901-452-2385) was established.
- **Coordination with Emergency Personnel:** Through the condition assessment pilot projects, the Program Team coordinated weekly with fire and police department leadership to keep them abreast of on-going activities and work locations. This is particularly important when smoke testing is being performed in a neighborhood.
- **Workforce Development:** As part of overall program efforts to be inclusive of the local community with respect to program implementation, training and education activities were conducted with the local Memphis Job Corps to develop opportunities for viable candidates to gain meaningful employment through various program functions. The initial program effort is focused primarily on the condition assessment portion of the program.
- **Public Relations:** Program Team members were interviewed by a local television station during smoke testing activities. The interview aired on the station's news program. In addition, Program Team members were interviewed on two local media programs (30 minutes each).
- **Phase 1 Condition Assessment Procurement:** Procurement efforts were completed on the next phase of condition assessment contracts. Three contracts were developed and were being prepared for execution at the close of this reporting period. These contracts will complete approximately 891,000 feet of condition assessment within the Year 1 Priority Area.

### Activities Anticipated to be Performed During the Next Reporting Period

- **Manhole Adjustment Contract:** It is anticipated that the Program Team will procure a contract for a firm to raise buried manholes to grade so that they can be accessed and assessed.
- **Point Repair Contract:** It is anticipated that the Program Team will procure a contract for a firm to complete high priority point repairs identified as part of the condition assessment program.

## 4.4 Snowden Assessment and Rehabilitation

Although not required at this time by the Consent Decree (except to the extent that there is some minor overlap with the Appendix E and Appendix F areas), the City is already undertaking assessment and rehabilitation work in the Snowden area. The assessment area included approximately 87,400 linear feet of pipe and 251 manholes.

### Activities Completed During This Reporting Period

Repair and rehabilitation work in the Snowden area has continued throughout the reporting period. To date, approximately 70 percent of the work has been completed, including approximately 41,343 linear feet of CIPP lining, 5,295 linear feet of pipe bursting, and 63 point repairs. Due to conditions encountered in the field, revisions to the original rehabilitation scope of work were required. As such the quantities of the various repair items changed, and the schedule was extended into the current reporting period.

### **Activities Anticipated to be Performed During the Next Reporting Period**

The rehabilitation work in the Snowden area is anticipated to be completed during the upcoming reporting period.

## **4.5 Cane Creek and Hickory Hill Pilot Assessment Areas**

Although not required at this time by the Consent Decree, the City identified two areas to serve as pilot areas to test the procedures being established through the CSAP and help the City in the development of the IRP. The first area, Cane Creek, includes a portion of the Year 1 Priority Area and encompasses approximately 283,000 linear feet of sewer. The second area, Hickory Hill, is located in the southeast portion of the City and includes approximately 40,900 linear feet of sewer. The Hickory Hill area, which was constructed much more recently than the Cane Creek area, was included as part of the pilot to provide assessment data that is more representative of the range of conditions found within the WCTS.

### **Activities Completed During This Reporting Period**

Contractors were secured to conduct the condition assessment work in the Cane Creek and Hickory Hill areas, which primarily included smoke testing, manhole inspection, and CCTV inspection of the gravity sewer system. This assessment work has been completed, and the data is currently being reviewed. If structural defects requiring immediate attention were identified through the assessment activities, these were addressed as point repairs by the City's Operations and Maintenance crews.

As part of the public education plan for the pilot, neighborhood meetings were conducted in both the Cane Creek and Hickory Hill areas to advise residents of upcoming activities associated with the program and to solicit their input and perspectives. The meetings were well-attended with overall positive feedback from residents regarding the program's goals and objectives.

### **Activities Anticipated to be Performed During the Next Reporting Period**

It is anticipated that the data review process will be completed during the next reporting period.

## **4.6 Loosahatchie Interceptor Assessment**

Although not required at this time by the Consent Decree, the City is undertaking condition assessment of approximately 22,000 linear feet of the Loosahatchie Interceptor.

### **Activities Completed During This Reporting Period**

The City has identified 22,000 linear feet of the Loosahatchie Interceptor for laser and/or sonar inspections to assess the condition of this interceptor. The specifications for condition assessment activities for this project were finalized during the reporting period.

### **Activities Anticipated to be Performed During the Next Reporting Period**

A contract for these services is expected to be advertised for bids during the next reporting period.

## **4.7 Big Orange Lift Station Rehabilitation**

The Grey's Creek Big Orange Lift Station is one of the City's largest stations with a capacity of approximately 3,500 gallons per minute.

**Activities Completed During This Reporting Period**

The City initiated procurement of construction services for the rehabilitation of the Big Orange Lift Station. Bids were received in January 2014, the contract awarded, and a Notice to Proceed was issued on March 14, 2014.

**Activities Anticipated to be Performed During the Next Reporting Period**

Construction activities are anticipated to continue through the next reporting period.