



TENNESSEE

JIM STRICKLAND  
MAYOR

DIVISION OF PUBLIC WORKS  
ENVIRONMENTAL ENGINEERING

October 27, 2017

Mr. Brad Ammons email: ammons.brad.epamail.epa.gov  
USEPA  
Chief, Clean Water Enforcement Branch  
Water Protection Division  
61 Forsyth Street, N.W.  
Atlanta, Georgia 30303

Ms. Tisha Calabrese-Benton email: Tisha.calabrese@tn.gov  
TDEC  
Director, Division of Water Resources  
Division of Water Resources  
William R. Snodgrass Tennessee Tower  
312 Rosa L. Parks Avenue, 11<sup>th</sup> Floor  
Nashville, Tennessee 37243

**RE: Consent Decree for City of Memphis WCTS  
Civil Action No. 2:10-cv-02083-SHM-dvk  
Revised Semi-Annual Report for April – September, 2017**

Mr. Ammons and Ms. Calabrese-Benton:

Enclosed please find a revised copy of the Semi-Annual Report for the time period of April 1 through September 30, 2017 for the referenced project. Please disregard the copy that was delivered to your office today. A disc copy and paper copy of the revised report will be forwarded to both of you via Federal Express. Also, a copy of the report will be submitted to the PDR. Two sections of the report have been revised as follows:

Section 2.4 2.4 Gravity Sewer System O&M Program  
Activities Completed During This Reporting Period

The City continued to operate and maintain the gravity sewer system. Additionally, the City submitted responses to the March 13, 2017, comments on May 16, 2017, and discussed these issues during a July 19, 2017, meeting. As a result of this discussion, the City submitted follow-up comments on August 21, 2017.  
Brad Ammons

Brad Ammons  
Tisha Calabrese-Benton  
October 27, 2013  
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Section 3.2 Critical Infrastructure Areas Projects  
Activities Completed During This Reporting Period

During this reporting period, work began on the second critical area. While the project was on schedule to be completed by September 20, 2017, in accordance with the Consent Decree, Memphis experienced a flash flood event from August 31 – September 1 caused by Hurricane Harvey. This event caused the bypass plugs and their steel bracing to fail which resulted in the pipe filling back up with water. The City sent a force majeure notification letter to EPA and TDEC on September 1, 2017 informing them of the situation. On September 13, 2017, the City sent a letter detailing the event and on October 3, 2017 sent a letter summarizing the status of the project. On October 10, 2017 the City sent a follow-up letter providing new information regarding the force majeure event. As a result of the force majeure event, the project was extended by 33 days and the revised completion date is October 22, 2017.

If you have any questions, please do not hesitate to contact me.

Sincerely,



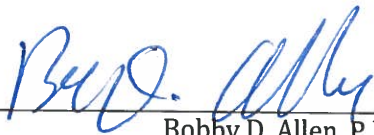
Bobby D. Allen, P.E.  
Administrator, Environmental Construction  
Public Works  
City of Memphis

cc: Paul Patterson  
Gary Cohen  
Scott McAmis

# City of Memphis

## Semi-Annual Report April 1, 2017 through September 30, 2017

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.
- 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.
- **Sections 4 and 5** provide a summary of additional actions that the City has recently completed and anticipates completing over the next six months.
- **Sections 6** identifies past Consent Decree projects and non-CD projects performed.

## Section 2

# Management, Operations, and Maintenance Programs

As defined in Paragraph V.10 of the Consent Decree, the City shall develop and implement specific Management, Operations, and Maintenance (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**.

### 2.1 Sewer Overflow Response Plan

#### **Activities Completed During Previous Reporting Periods**

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. The City updated Section 3 of the document and submitted to EPA on March 30, 2016. The City deemed these updates as “form” and not of “substance.” A copy of the document was submitted to the public document repository.

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

The City continued to operate under the processes described in the SORP as updated on March 30, 2016, during the reporting period.

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

The City will continue to operate under the approved SORP as modified on March 30, 2016.

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

#### **Activities Completed During Previous Reporting Periods**

The City submitted a Fats, Oils, and Grease (FOG) Management Program (Program) to EPA and TDEC on March 11, 2011, before the Consent Decree was entered. A copy of the FOG Management Program is included in Appendix C of the Consent Decree. In 2013, the City made minor changes in form, not substance, to the FOG and submitted to EPA on October 30, 2013. Subsequently, on April 22, 2014 EPA approved the updated FOG Management Program submitted by the City.

The City reviewed the approved updated FOG Management Program and made additional minor changes of form and not substance. These changes were submitted to EPA on January 18, 2017.

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

During the current reporting period, the City continued to operate under the processes described in the Program, updated January 18, 2017. In addition to conducting 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. As part of the workforce development aspect of the Consent Decree, the City has engaged the “Green Team” (Section 4.3) to distribute “Can the Grease” door hangers ahead of condition assessment work.

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

The City will continue to operate under the January 18, 2017, updated FOG Management Program.

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

#### **Activities Completed During Previous Reporting Periods**

On February 5, 2015, the City received comments from EPA on the Lift Station and Force Main Operations and Maintenance (O&M) Program. The City revised the Lift Station and Force Main O&M Program to address these comments and submitted the revised version to EPA and TDEC on April 8, 2015. The City received approval of the April 2015, Lift Station and Force Main O&M Program in a letter from the EPA dated March 13, 2017, and began to implement the approved program.

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

The City continued operating in accordance with the March 2017 approved Program.

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

The City will continue to operate under the approved plan.

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

#### **Activities Completed During Previous Reporting Periods**

On February 4, 2015, the City received comments from EPA on the Gravity Sewer Operations and Maintenance (O&M) Program. The City revised the Gravity Sewer O&M Program to address these comments and submitted the revised version to EPA and TDEC on April 8, 2015. The City received new comments from EPA on March 13, 2017.

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

The City continued to operate and maintain the gravity sewer system. Additionally, the City submitted responses to the March 13, 2017, comments on May 16, 2017, and discussed these issues during a July 19, 2017, meeting. As a result of this discussion, the City submitted follow-up comments on August 21, 2017.

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

The City will continue to operate and maintain the gravity sewer system. The City will respond to comments (if any) provided by the EPA in response to the City’s update to the document.

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

#### **Activities Completed During Previous Reporting Periods**

During a previous reporting period, on February 5, 2015, the City received comments from EPA on the Inter-Jurisdictional Agreement Program. The City revised the Inter-Jurisdictional Agreement Program to address these comments and submitted the revised version to EPA and TDEC on April 8, 2015.

**Activities Completed During This Reporting Period**

During a July 19, 2017, meeting with EPA, the City discussed the EPA's concerns regarding the IJAP. By letter dated August 18, 2017, EPA commented upon the revised Inter-Jurisdictional Agreement Program. EPA and the City agreed on an extension of the date for responding to the EPA comments.

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

A response to EPA's August 18, 2017, comment was sent to EPA along with an October 20, 2017, revised Inter-Jurisdictional Agreement Program. It is anticipated during the next reporting period that EPA, after consultation with TDEC, will approve the IJAP resubmitted on October 20, 2017 or provide additional comments. The City will respond to additional 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 Previous Reporting Periods**

The Continuing Sewer Assessment Program (CSAP) was approved on September 10, 2014. The Year 1 and Year 2 priority areas specifically outlined in the CSAP were completed during previous reporting periods in accordance with the CSAP Year 1 and Year 2 deadlines and the City is continuing to assess the Wastewater Collection and Transmission System (WCTS) outside of the specified areas.

**Activities Completed During This Reporting Period**

The City continued to implement the CSAP in accordance with the Consent Decree.

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

During the next reporting period, the City will continue implementation of the CSAP in accordance with the timeframes presented in the Consent Decree.

## 2.7 Infrastructure Rehabilitation Program

**Activities Completed During Previous Reporting Periods**

The City completed the development of the Infrastructure Rehabilitation Program (IRP), as required in Paragraph V.10.g of the Consent Decree, and submitted the document to EPA and TDEC for review on February 25, 2015. The EPA approved the IRP on July 13, 2016.

**Activities Completed During This Reporting Period**

The City continued to prioritize rehabilitation in accordance with the IRP.

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

The City will continue to prioritize rehabilitation in accordance with the IRP and will implement rehabilitation in the North and South Priority Rehabilitation Areas as designated in Appendix G of the Consent Decree within six years and seven months after IRP approval (February 13, 2023). The City will use the prioritization criteria set out in the IRP to determine which assets in appendix G will be rehabilitated.

**Figure 2-1  
MOM Programs Progress**

Program	CD Reference	CD Milestone	Progress Last Six Months						Anticipated Activities Next Six Months					
			Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Sewer Overflow Response Program	V.10.a	-	Continued to implement program.						Continue to implement program.					
Fats, Oils, and Grease Management Program	V.10.b	-	Continued to implement updated program.						Continue to implement updated program.					
Lift Station & Force Main O&M Program	V.10.c	9/19/2013	Continued to implement program.						Continue to implement 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	Submitted responses to March 13, 2017 comments on May 16, 2017.						Respond to any comments received and revise program as appropriate or implement program upon approval.					
Inter-Jurisdictional Agreement Program	V.10.e	3/19/2013	Received EPA August 18, 2017, new comments.						Submitted revised IJAP on 10/20/2017. Respond to any comments received, revise program as appropriate, or implement approved program.					
Continuing Sewer Assessment Program	V.10.f	9/19/2013	Continued to implement Program.						Continue to implement Program.					
Infrastructure Rehabilitation Program	V.10.g	3/9/2015	Continued prioritizing issues and rehabilitation.						Implement approved program, including rehabilitation on Priority Areas.					



## 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**.

#### 3.1 Priority Areas Projects

Paragraphs V.10.f and V.11.a of the Consent Decree identify areas of the WCTS that are to 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, Appendix G identifies North and South Priority Rehabilitation Areas that will be completed within six years and seven months of the IRP approval received on July 13, 2016 (i.e., completed by February 13, 2023).

##### **Activities Completed During Previous Reporting Periods**

During previous reporting periods, required condition assessment was completed in accordance with the deadlines specified in the CSAP and Consent Decree, and their progress was discussed in detail in previous Semi-Annual Reports.

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

During this period 3 point repairs were completed in the Year 1 and Year 2 areas to address high value sewer line defects (i.e. those determined to have high risk factors for contributing to or causing SSO events).

The rehabilitation schedule results were reviewed and modified.

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

The modified rehabilitation schedule for the North and South Rehabilitation Priority Areas is anticipated to be used to develop a scope of work consisting of various rehabilitation methods prioritized in accordance with the IRP.

#### 3.2 Critical Infrastructure Areas Projects

##### **Activities Completed During Previous Reporting Periods**

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 sanitary sewer overflow volumes in the event of a failure. A map showing the locations of these areas is included as Appendix H of the Consent Decree. These three projects are to be completed within five years after the September 20, 2012 Effective Date of the Consent Decree.

As stated in previous Semi-Annual Reports, the first critical area on the 42-inch through 48-inch Wolf River Interceptor and the third critical area on the 84-inch interceptor located where McLean

Boulevard crosses the Wolf River and Interstate 40 had already been completed. A contract for the second critical area, the rehabilitation of a portion of the 96-inch interceptor at the entrance/exit ramp located at Mile 51 of Interstate 240, was awarded on March 1, 2017.

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

During this reporting period, work began on the second critical area. While the project was on schedule to be completed by September 20, 2017, in accordance with the Consent Decree, Memphis experienced a flash flood event from August 31 – September 1 caused by Hurricane Harvey. This event caused the bypass plugs and their steel bracing to fail which resulted in the pipe filling back up with water. The City sent a force majeure notification letter to EPA and TDEC on September 1, 2017 informing them of the situation. On September 13, 2017, the City sent a letter detailing the event and on October 3, 2017 sent a letter summarizing the status of the project. On October 10, 2017 the City sent a follow-up letter providing new information regarding the force majeure event. As a result of the force majeure event, the project was extended by 33 days and the revised completion date is October 22, 2017.

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

It is anticipated that the second critical infrastructure area will be completed by October 22, 2017, as discussed in the October 10, 2017 Force Majeure letter. Following completion of the second critical infrastructure area project, the Final Critical Areas Project Report is anticipated to be submitted within six months in accordance with the terms of the Consent Decree.

### **3.3 Prior Assessment Areas Projects**

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 were to be completed by September 20, 2016, i.e., four years after the Effective Date of the Consent Decree. The four projects were completed in previous reporting periods and prior to the September 20, 2016 date established in the Consent Decree. As such, these projects are now included in Section 6.1 Projects Completed in Previous Reporting Periods.

**Figure 3-1  
Priority Rehabilitation Projects Progress**

Project	CD Reference	CD Milestone	Progress Last Six Months						Anticipated Activities Next Six Months								
			Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar			
Priority Area Projects	V.11.a	9/9/2015 9/9/2016 Via implementation of IRP 2/13/2023 8/13/2018 - 10/13/2018 Within six months of rehabilitation projects completion						Previously completed.									
Assess Year 1 areas identified in Appendix E																	
Assess Year 2 areas (including Appendix F)																	
Prioritize areas identified in Appendix G																	
Complete Appendix G rehabilitation projects																	
Interim Priority Areas Project Report																	
Final Priority Areas Project Report																	
Critical Infrastructure Areas Projects	V.11.b	10/22/2017 4/21/2018															
Complete Appendix H rehabilitation projects																	
Final Critical Areas Project Report																	
Priority Assessment Area Projects																	
Nonconnah Interceptor	V.11.c.(i)	9/19/2016															
Mud Island Manholes	V.11.c.(ii)	9/19/2016															
Burchart-Horn Manholes	V.11.c.(iii)	9/19/2016															
Wolf River Interceptor	V.11.c.(iv)	9/19/2016															

## Section 4

# Additional Measures

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. On May 19, 2014, the first amendment of the Consent Decree, which identified a preferred alternative design consisting of a vortex structure and which included a revised construction schedule, was approved and filed with the court.

#### **Activities Completed During Previous Reporting Periods**

During the previous reporting period, the contractor continued construction on the Stiles outfall improvements, including boring the outfall pipe from the vortex structure to the Mississippi River and installing the forms for the vortex structure.

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

During this reporting period, the vortex structure was completed and plant effluent flow was directed through the vortex on September 19, 2017. This satisfies the City's requirement regarding this project as stipulated per the Consent Decree. Minor ancillary items, such as final grading, re-vegetation, etc. and possible design modifications remain to be done.

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

It is anticipated that during the next reporting period that the ancillary work and possible design modifications will be completed.

### 4.2 State Projects

As stated in a previous Semi-Annual Report, the two State Projects: the Color Study and the Geographic Information System, have already been completed and therefore have been moved to Section 6.1 Projects Completed in Previous Reporting Periods.

### 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, known as the Sewer Assessment and Rehabilitation Program (SARP10).

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

- **Coordination with Emergency Personnel:** Through the condition assessment process, the City and SARP10 staff coordinated weekly with fire and police departments' leadership to keep them abreast of on-going activities and work locations.

- **Coordination with Special Projects:** The SARP10 Team has been working closely with City personnel to identify upcoming City special projects that may require coordination with future sewer improvements. The sewer lines associated with the projects are assessed in advance using CCTV inspection to identify areas in need of repair. The repairs are subsequently conducted to avoid disrupting future construction activities and to avoid patching associated paved areas.
- **Street Paving Projects:** The SARP10 Team has been working closely with City and State personnel to identify upcoming street paving projects. The sewer lines associated with these streets are assessed in advance using CCTV inspection to identify areas in need of repair, and required repairs are subsequently made to avoid patching newly paved areas.
- **Workforce Development:** The City continued to implement its workforce development program. The program is comprised of five-stages: assess, recruit, train, place, and retain. The assessment phase identifies the types of jobs that will be needed to complete the Consent Decree-related work and that could be filled by local personnel. Subsequently, potential candidates are identified and screened. These personnel are provided training as necessary to avail them for potential employment by contractors working on Consent Decree-related projects. As candidates are placed, their progress is monitored.

During this reporting period, 6 new candidates were provided public engagement training as part of the “Green Team,” previously mentioned in Section 2.2. As members of the Green Team, the individuals provided a key piece of the SARP10 public engagement project by going door-to-door in the neighborhoods scheduled for condition assessment work to be completed. The Green Team distributed door hangers providing information about smoke testing and proper grease disposal as well as interacted with homeowners whenever possible. The team provided information to over 21,500 homes during this reporting period, bringing the total homes to date to 130,500 that have been visited.

Also as a result of this program and other initiatives, a total of 161 local personnel have obtained full-time employment with SARP10 program companies or assessment and rehabilitation contractors working on the program for the City.

- **Public Relations:** After consulting with leaders of various neighborhood associations, the Program determined that distributing emails with relevant information instead of conducting public meetings to the affected neighborhoods was a more efficient use of resources while remaining effective at disseminating the information. SARP10 continues to utilize a website to provide current information, tentative schedules for work, and all assessment and rehabilitation contracts.
- **Point repair and manhole adjustment contracts** are ongoing and are detailed in Section 5: Infrastructure and Rehabilitation Projects.

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

Implementation of the activities described above are expected to continue through the upcoming reporting period.

## 4.4 Loosahatchie Interceptor Assessment

The City undertook condition assessment and survey of approximately 48,000 linear feet of the Old Loosahatchie Interceptor and 61,600 linear feet of the New Loosahatchie Interceptor to further understand its structural condition, causes and contributions to SSOs, and to evaluate the need for cleaning and rehabilitation.

### Activities Completed During Previous Reporting Periods

The City had previously identified 22,000 linear feet of the Old Loosahatchie Interceptor for CCTV and sonar inspections to assess the condition of this interceptor but expanded the project to include both the Old and New Loosahatchie Interceptors. The expanded project includes the assessment of 109,600 linear feet of interceptor and surveying manhole rim and pipe invert elevations. During the previous reporting period, all remaining assessment, cleaning, and surveying on the Old Loosahatchie interceptor was completed. On May 20, 2016, flow monitors were installed and flow measurements were completed on September 12, 2016.

### Activities Completed During This Reporting Period

During this reporting period, the assessment and flow monitoring data was used to supplement the Master Plan effort further described in Section 4.6. In order to convey the selected design storm assessed during the master plan's hydraulic modeling, the design and installation of 7,900 linear feet of 54-inch gravity sewer was recommended to divert flow from downstream of N. Watkins St. on the Old Loosahatchie interceptor to the New Loosahatchie. This diversion is expected to eliminate future potential SSOs along the Old Loosahatchie interceptor due to the selected rain event and allow this portion of the interceptor to be abandoned. The City accepted this recommendation and a contract was issued for the interceptor design and easement acquisition necessary to construct the diversion sewer.

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

During the next reporting period, the design progress and easement acquisition to enable future construction of the Loosahatchie diversion sewer is expected to continue.

## 4.5 Ongoing CSAP Activities

As per the Consent Decree, the CSAP schedule and priority provided for the assessment of approximately 10% of the WCTS on average per year following EPA approval of the CSAP.

### Activities Completed During This Reporting Period

Condition assessment work continued in the Phase 5 area which consists of approximately 1.15 million LF of smaller-diameter assessment and 110,000 LF of large diameter sewer assessment. During this reporting period, approximately 780,000 LF was assessed.

At the end of this reporting period, the Program has assessed approximately 1,290 miles (46% of the 2,808 mile system) of gravity mains and associated manholes. This exceeds the 10% assessment per year outlined in the CSAP. Additionally, 25 lift stations have been assessed to date. No lift stations were assessed during this reporting period.

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

During the next reporting period, Phase 5 assessment work will continue and Phase 6 is scheduled to be procured in early 2018.

**4.6 City-Wide Master Plan**

The City has undertaken a wastewater master plan for the key sewersheds within the WCTS. This work, including associated metering and modeling, will enable the City assess the capacity of the WCTS against the selected design storm and future population and development projections.

**Activities Completed During This Reporting Period**

Work continued on the model and master plan.

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

It is anticipated that work will proceed.

## Section 5

# Infrastructure Rehabilitation Projects

### 5.1 Priority Rehabilitation Areas

Pursuant to the Consent Decree and IRP requirements, the City shall complete the rehabilitation projects within the priority areas identified in Appendix G of the Consent Decree by February 13, 2023, i.e., within six years and seven months after EPA's approval of the IRP which occurred on July 13, 2016.

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

During this reporting period, no additional manholes were adjusted leaving the total at 174 and no point repairs were completed leaving the total at 20 for the North and South Priority Rehabilitation Areas.

During this reporting period, the City modified the prioritization of rehabilitation projects in accordance with the IRP.

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

It is anticipated that during the next reporting period the City will begin rehabilitation work on the prioritize projects in accordance with the IRP.

### 5.2 Other Rehabilitation Projects

Although not required by the Consent Decree, the City has started rehabilitation projects in areas of the WCTS outside of the Priority Rehabilitation Areas.

#### **5.2.1 Point Repairs and Manhole Adjustments**

Point repair and manhole adjustment contracts have been procured in order for the City to address high value sewer line defects and buried manholes in real-time so as to address defects that could be causing or that are likely to cause SSOs and to also facilitate access for condition assessment field testing activities.

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

- Point Repair Contract: During this reporting period, approximately 31 point repairs were completed.
- Manhole Adjustment Contract: During this reporting period, approximately 122 manholes were adjusted.

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

During the next reporting period, it is anticipated that both the point repair and manhole adjustment contracts will continue.

#### **5.2.2 John's Creek Interceptor Repair and Evaluation**



During condition assessment of the John's Creek Interceptor, a partial collapse was discovered on the 30" interceptor and an emergency point repair was completed. Since then, large diameter sewer cleaning equipment has been used to clean the line upstream of the collapse, and condition assessment was performed.

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

During this reporting period, the John's Creek Interceptor CIPP Project, which consists of approximately 3,000 LF of 30" CIPP rehabilitation and associated manhole coating, was procured. Additionally, a collapse at the upstream end of the lining scope was discovered and a sewer realignment will be completed as part of the project.

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

During the next reporting period, the realignment, CIPP, and manhole rehab are anticipated to be completed.

### **5.2.3 Black Bayou Stream Crossing Rehabilitation**

During the City's routine assessment of sewer lines adjacent to streams and stream crossings, crews discovered that sheet piles around the structure built to protect the 60" gravity sewer pipe from erosion where Black Bayou feeds into Nonconnah Creek were partially collapsing into the channel. The City determined that the pipe was structurally sound and not leaking into Black Bayou, and a local engineering firm was selected to redesign the structure. A contractor began reinforcing the concrete structure surrounding the 60" sewer line by grouting voids inside the structure and by replacing portions of the concrete slab. Work was also done to replace the sheet piling stabilizing the bank.

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

During this reporting period, the reinforcement around the structure, sheet piling to stabilize the bank, and site restoration were completed. A Notice of Termination (NOT) under the General NPDES Permit for Stormwater Discharges Associated with Construction Activity was submitted now that the job is complete.

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

The NOT submitted for this project was not accepted by TDEC. It is anticipated that the City will address TDEC's concerns at the site, finalize and re-submit the NOT.

### **5.2.4 Barksdale Siphon Redesign and Construction**

After condition assessment discovered a deteriorated siphon on S. Barksdale Street, the City selected an engineering firm to collect flow data and provide analysis of the condition of the sewer in the area. With this information, an engineering firm was selected to design a relocation and replacement of the siphon to alleviate the problem.

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

During this reporting period, the design was reviewed by the City and multiple alternatives were discussed with the design engineering firm. A final design was selected, and a construction cost estimate and specification package were developed.

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

During the next reporting period, the City anticipates advertising the construction to replace and relocate the siphon.

## Section 6

### Past CD Projects and Non-CD Projects

#### 6.1 Projects Completed in Previous Reporting Periods

The following projects have been completed during previous reporting periods and included in previous Semi-Annual Reports:

- Cane Creek and Hickory Hill Pilot Assessment Area (last included in April 2015 – Sept 2015 Semi-Annual Report)
- Prior Assessment Areas Projects (last included in April 2016 – September 2016 Semi-Annual Report):
  - Cured-in-Place Pipe (CIPP) lining of the Nonconnah Interceptor Between Manholes Numbered N06-119 and N06-127
  - Rehabilitation or replacement of manholes on Mud Island that include manhole number M10-005 plus the two (2) manholes immediately downstream and repair of the liner in the corresponding portion of the 60-inch interceptor near these manholes
  - Rehabilitation of approximately sixty-four (64) manholes identified as having heavy or medium corrosion in Appendix B of a June 6, 2006 study report prepared by Buchart-Horn on behalf of Memphis
  - CIPP lining on segments of the Wolf River Interceptor between demarcation points W05-120 and W05-130
- State Projects (last included in April 2016 – Sept 2016 Semi-Annual Report):
  - Color Study
  - Geographic Information System (GIS)
- Snowden Assessment and Rehabilitation (last included in April 2016 – Sept 2016 Semi-Annual Report)
- Woodview Subdivision Rehabilitation (last included in April 2016 – Sept 2016 Semi-Annual Report)
- Lick Creek Interceptor CIPP (last included in April 2016 – Sept 2016 Semi-Annual Report)
- Loosahatchie Interceptor Replacement (last included in April 2016 – Sept 2016 Semi-Annual Report)
- St. Elmo Pipe Bursting (last included in April 2016 – Sept 2016 Semi-Annual Report)

## 6.2 Other Rehabilitation Projects Completed by City of Memphis

In addition to projects completed under the CD program, the City routinely completes improvement projects to the WCTS. During this reporting period, the City estimates that it has rehabbed 8,600 linear feet of pipe with CIPP. Since September 2012 (effective date of CD), the City has installed approximately 80,600 linear feet of CIPP and rehabilitated 7 lift stations (Gayoso, Big Orange, Genyth, N. Watkins, Jack Carley, Valero, and Kimbrough).