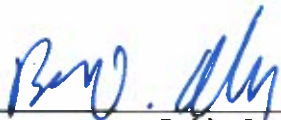


City of Memphis

Semi-Annual Report

April 1, 2018 through September 30, 2018

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 CD (CD) 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 CD, 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 CD.
- 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 CD.
- Additional information determined to be appropriate to demonstrate implementation of the remedial actions required under the CD.

This report is organized into six 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 CD.
- **Section 3** identifies recent progress and anticipated continuing activities related to the Priority Rehabilitation Projects noted in the CD.
- **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 CD projects and non-CD projects performed.

Section 2

Management, Operations, and Maintenance Programs

As defined in Paragraph V.10 of the CD, 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 CD was entered. A copy of the SORP is included in Appendix B of the CD. The City updated Section 3 of the document and submitted to EPA on March 30, 2016. The City identified 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 (FOG Program) to EPA and TDEC on March 11, 2011, before the CD was entered. A copy of the FOG Program is included in Appendix C of the CD. In 2013, the City made minor changes in form, not substance, to the FOG Program and submitted to EPA on October 30, 2013. Subsequently, on April 22, 2014 EPA approved the updated FOG Program submitted by the City.

The City reviewed the approved updated FOG 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

The City continued to operate under the processes described in the FOG 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 CD, 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 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 Program (LSFM O&M Program). The City revised the LSFM 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, LSFM 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 LSFM O&M Program.

Activities Anticipated to be Performed During the Next Reporting Period

The City will continue to operate under the approved LSFM O&M Program.

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 Program (GS O&M Program). The City revised the GS 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 and submitted responses on May 16, 2017. These responses were discussed during a July 19, 2017 meeting between the City, EPA and TDEC, and the City submitted follow-up comments on August 21, 2017. The City received approval of the revised GS O&M Program on November 9, 2017.

Activities Completed During This Reporting Period

The City continued to operate and maintain the gravity sewer system in accordance with the November 2017 approved GS O&M Program.

Activities Anticipated to be Performed During the Next Reporting Period

The City will continue to operate and maintain the gravity sewer system in accordance with the approved GS O&M Program .

2.5 Inter-Jurisdictional Agreement Program

Activities Completed During Previous Reporting Periods

On February 5, 2015, the City received comments from EPA on the Inter-Jurisdictional Agreement Program submitted on March 18, 2013. The City revised the Inter-Jurisdictional Agreement Program (IJAP) to address EPA’s comments and submitted the revised version to EPA and TDEC on April 8, 2015. During a July 19, 2017 meeting with EPA and TDEC, the City discussed the EPA’s concerns regarding the IJAP. By letter dated August 18, 2017, EPA commented on the April 8, 2015 revised IJAP. EPA and the City agreed on an extension of the date for responding to the EPA

comments. Based on discussions with EPA during the July 19 meeting, the City submitted a revised IJAP on October 20, 2017. The City received approval of this submittal from EPA on March 19, 2018.

Activities Completed During This Reporting Period

Although not required by the CD the City initiated negotiations with the Town of Collierville and issued a draft IJAP for their review.

Activities Anticipated to be Performed During the Next Reporting Period

The City will follow the March 19, 2018 approved 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.

It is also anticipated that the City will finalize the agreement with the Town of Collierville. In addition, the City is planning to open negotiations with the Cities of Bartlett, Germantown, Lakeland and Millington and expects to issue draft IJAPs to all of these municipalities. Also, although not required by the CD the City will seek to establish an agreement with the City of Horn Lake, Mississippi. It is anticipated that negotiations for this agreement will be started during the next reporting period.

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 CD 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 CD and reviewed it for potential changes. The City submitted a revision to the CSAP on June 8, 2018. The City identified this an update of “form” and not of “substance”.

Activities Anticipated to be Performed During the Next Reporting Period

The City will continue implementation of the CSAP.

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 CD, 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 and began rehabilitation in the North and South Priority Rehabilitation Areas (as designated in Appendix G of the CD) by procuring the Group 1 Relay construction contract. This project consists of approximately 19,000 linear feet (LF) of 6” and 8” pipe replacement. The Notice-to-Proceed for this project was issued to

the selected contractor on May 10, 2018. The project is anticipated to be completed in August 2019.

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 additional rehabilitation in the North and South Priority Rehabilitation Areas as designated in Appendix G of the CD within six years and seven months after IRP approval (February 13, 2023). Rehabilitation of prioritized assets designated in Appendix G is anticipated to continue.

**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 program.						Continue to implement 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	Continued to implement revised program						Continue to implement program.					
Inter-Jurisdictional Agreement Program	V.10.e	3/19/2018	Continued to implement IJAP program						Continue to implement program.					
Continuing Sewer Assessment Program	V.10.f	9/19/2013	The City submitted a revision to the CSAP on June 8th, 2018						Implement program.					
Infrastructure Rehabilitation Program	V.10.g	3/9/2015	Continued to implement approved program.						Continue to implement program.					

Section 3

Priority Rehabilitation Projects

As defined in Paragraph V.11 of the CD, 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 CD 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 CD, 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

Required condition assessment and rehabilitation prioritization was completed in accordance with the deadlines specified in the CD, and this progress was discussed in detail in previous Semi-Annual Reports.

Activities Completed During This Reporting Period

A mainline relay project (Group 1 Relay) was initiated in the North and South Priority Rehabilitation Areas (Appendix G). This project consists of the replacement of approximately 19,000 linear feet (LF) of 6" and 8" diameter gravity mains with new 8-inch diameter pipe. In addition, 19 point repairs were completed in the Year 1 and Year 2 (Appendix E and F, respectively) areas in preparation for annual city paving projects to minimize post-paving construction. The Interim Priority Areas Project Report was also drafted during this reporting period.

Activities Anticipated to be Performed During the Next Reporting Period

Construction of the Group 1 Relay project is anticipated to continue. The Interim Priority Areas Project Report is anticipated to be submitted during the next reporting period in accordance with the timeframe specified in the CD.

3.2 Critical Infrastructure Areas Projects

Activities Completed During Previous Reporting Periods

As discussed in Paragraph V.11.b of the CD, 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 CD.

As stated in previous Semi-Annual Reports, the first critical area (located on the 42-inch through 48-inch Wolf River Interceptor) and the third critical area (located on the 84-inch interceptor located where McLean Boulevard crosses the Wolf River and Interstate 40) were completed in 2012. 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 completed in October 2017. While the

project was on schedule to be completed by September 20, 2017 (in accordance with the CD), Memphis experienced a flash flood event from August 31 through September 1 (from the storms associated with Hurricane Harvey) which resulted in a work stoppage. The City sent a force majeure notification letter to the EPA and TDEC on September 1, 2017 informing them of the situation. As a result of the force majeure event, the project was extended by 33 days and was substantially completed within the revised completion date of October 22, 2017.

Activities Completed During This Reporting Period

Site restoration of the second critical area was completed. The Final Critical Areas Projects draft report was submitted to EPA and TDEC (in accordance with the CD requirements) on April 23, 2018. A copy was also placed in the Public Document Repository.

Activities Anticipated to be Performed During the Next Reporting Period

Site restoration work associated with the second Critical Infrastructure Areas project was completed during this reporting period and as such this section will be moved to Section 6.1 in future Semi-Annual Reports.

3.3 Prior Assessment Areas Projects

As discussed in Paragraph V.11.c of the CD, four additional rehabilitation projects were 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 CD. The four projects were completed during previous reporting periods and prior to the September 20, 2016 date established in the CD. As such, these projects are now included in Section 6.1 Projects Completed in Previous Reporting Periods. Table 3-1 displays the progress completed as of this reporting period and the anticipated progress of the next reporting period.

**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													
Assess areas identified in Appendix E		9/9/2015	Previously completed.											
Assess Year 2 areas (including Appendix F)		9/9/2016	Previously completed.											
Prioritize areas identified in Appendix G		Via implementation of IRP	Previously completed.											
Complete Appendix G rehabilitation projects		2/13/2023	Rehabilitation work of Appendix G began in accordance with IRP.						Continue rehabilitation work in accordance with approved IRP.					
Interim Priority Areas Project Report		8/13/2018-10/13/2018	A draft of the Interim Priority Areas Project Report was submitted for public comment.						Interim Priority Areas Project Report is anticipated to be submitted to EPA.					
Final Priority Areas Project Report	Within six months of rehabilitation projects	No work this period.						No work is anticipated.						
Critical Infrastructure Areas Projects	V.11.b													
Complete Appendix H rehabilitation projects		4/23/2018	Previously completed.											
Final Critical Areas Project Report	4/23/2018	Previously completed.												
Priority Assessment Area Projects														
Nonconnah Interceptor	V.11.c.(i)	9/19/2016	Previously completed.											
Mud Island Manholes	V.11.c.(ii)	9/19/2016	Previously completed.											
Burchart-Horn Manholes	V.11.c.(iii)	9/19/2016	Previously completed.											
Wolf River Interceptor	V.11.c.(iv)	9/19/2016	Previously completed.											

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 CD compliance.

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

As described in Paragraph V.12 of the CD, the City was 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 CD. On May 19, 2014, the first amendment of the CD, 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

The vortex structure was completed and plant effluent flow was directed through the vortex on September 19, 2017.

Activities Completed During This Reporting Period

The vent pipe cleanouts were modified to alleviate foaming and hand rails were installed around the perimeter of the vortex.

Activities Anticipated to be Performed During the Next Reporting Period

The vortex project was completed during this reporting period and as such this section will be moved to Section 6.1 in future Semi-Annual Reports.

4.2 State Projects

As stated in previous Semi-Annual Reports, 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 CD, the City has conducted several administrative activities for the implementation of the CD program, known as the Sewer Assessment and Rehabilitation Program (SARP10).

Activities Completed During Past and This Reporting Periods

- **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. During this reporting period a total of 122 point repairs were completed ahead of paving.
- **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 CD-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 CD-related projects. As candidates are placed, their progress is monitored.

During this reporting period, 12 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 28,092 homes during this reporting period, which brings the total homes visited to date to 158,592.

Also as a result of this program and other initiatives, a total of 172 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 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 included the assessment of 109,600 linear feet of interceptor and surveying manhole rim and pipe invert elevations. During previous reporting periods, assessment, cleaning, surveying and flow monitoring on the Old Loosahatchie interceptor were completed. The assessment and flow monitoring data was used to supplement the master plan effort further described in Section 4.6, and the Loosahatchie Diversion Design Project.

Activities Completed During This Reporting Period

The Loosahatchie Interceptor Assessment project was completed during a previous reporting period.

Activities Anticipated to be Performed During the Next Reporting Period

The Loosahatchie Interceptor Assessment project was completed during a previous reporting period and as such this section will be moved to Section 6.1 in future Semi-Annual Reports.

4.5 Ongoing CSAP Activities

As of September 2018, the City has assessed approximately 1,600 of the estimated 2,808 miles of pipe contained within the WCTS. This equates to approximately 56% of the system. In accordance with the CD, the City is required to assess approximately 10% of the WCTS per year following approval of the CSAP in September 2014 (i.e., 40% of the WCTS should be assessed by September 2018). The current assessment rate of 56% places the City well ahead of the CD-required schedule. Additionally, 34 lift stations have been assessed to date.

Activities Completed During Previous Reporting Periods

The City divided the WCTS into 13 watershed basins and subsequently divided these basins into 131 sub-basins and is assessing these areas in phases. To date, assessment has been completed in the pilot area and in Phase 1-5 areas. The phases were completed based on the historical sanitary sewer overflow (SSO) occurrences starting with the areas identified in Appendix E, then the area in Appendix F and proceeding from there in general to the next highest SSO area. In addition, the City is doing other work outside the WCTS.

Activities Completed During This Reporting Period

Approximately 1 million LF of gravity sewer was assessed. The previous semi-annual report stated that condition assessment had begun in the Phase 6 area. While contracts for the work were executed during that time frame actual field assessment work did not begin until this reporting period. Phase 6 consists of approximately 1.59 million LF of smaller-diameter assessment and 300,000 LF of large-diameter assessment. Condition assessment also began in the Fletcher Creek area, which includes a small section outside the WCTS, and consists of approximately 1.2 million LF of smaller-diameter assessment and 65 thousand LF of larger-diameter assessment. Nine lift stations were assessed during this reporting period. Additionally, a contract was issued to an engineering firm to assess ten of the City's force mains.

Activities Anticipated to be Performed During the Next Reporting Period

It is anticipated that assessment work will continue in Phase 6 and Fletcher Creek areas. In addition, it is anticipated that assessment of the force main and lift stations will continue.

4.6 City-Wide Master Plan

The City has undertaken a wastewater master plan for the key sewer sheds within the WCTS. This work, including associated metering and modeling, will enable the City to 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 plans.

Activities Anticipated to be Performed During the Next Reporting Period

Work will proceed during the next reporting period.

Section 5

Infrastructure Rehabilitation Projects

5.1 Priority Rehabilitation Areas

Pursuant to the CD and IRP requirements, the City shall complete the rehabilitation projects within the priority areas identified in Appendix G of the CD 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

A construction contract for the Group 1 Relay (i.e., mainline rehabilitation) was executed, and rehabilitation work was started in the North and South Priority Rehabilitation Areas in accordance with the IRP.

Additionally, one manhole was grade-adjusted (i.e., for accessibility) bringing the total to 175; and three point repairs were completed, bringing the total to 29 for the North and South Priority Rehabilitation Areas.

Activities Anticipated to be Performed During the Next Reporting Period

It is anticipated that the City will continue the main line rehabilitation work on the prioritized projects in accordance with the IRP. Additionally, it is anticipated that the procurement process for the Group 1 Cured-In-Place-Pipe (CIPP) construction contract (i.e. for liner insertion rehabilitation) will begin. The Group 1 contract is for rehabilitation in the North and South Priority Rehabilitation Areas.

5.2 Other Rehabilitation Projects

Although not required by the CD, 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: Approximately 148 point repairs were completed.
- Manhole Adjustment Contract: Approximately 341 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. Subsequently, large diameter sewer cleaning equipment was used to clean the line upstream of the collapse, and condition assessment was performed. 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 was completed as part of the project.

Activities Completed During This Reporting Period

A remaining dumpster was removed.

Activities Anticipated to be Performed During the Next Reporting Period

The John's Creek Interceptor project was completed during this reporting period and as such this section will be moved to Section 6.1 in future Semi-Annual Reports.

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 reinforced 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

Perennial vegetation was established and permits, including SWPPP and ARAP, were terminated.

Activities Anticipated to be Performed During the Next Reporting Period

The Black Bayou Stream Crossing Rehabilitation project was completed during this reporting period and as such this section will be moved to Section 6.1 in future Semi-Annual Reports.

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 and to relay associated gravity lines in the area. After alternative analysis, a final design was selected and a construction cost estimate and specification package were developed.

Activities Completed During This Reporting Period

During this reporting period, construction work associated with installing a new siphon and gravity lines commenced.

Activities Anticipated to be Performed During the Next Reporting Period

Construction work associated with installing a new siphon and gravity lines is anticipated to continue and be completed in December 2018.

5.2.5 Rodney Baber Project

After condition assessment discovered a sinkhole along the sewer alignment located at Rodney Baber Park, the City conducted further investigation upstream and downstream of the 36-inch

sewer that runs through the park. The 36-inch sewer was discovered to have low flow and servicing a minimal number of facilities. The City approved a relay design to bypass the upstream flow to the downstream side of the sinkhole with a 12-inch sewer and abandon the existing 36-inch sewer. Also, another part of the relay design included diverting flow in an existing 24-inch line on Hollywood Street from the 36-inch interceptor to an existing 84-inch interceptor (south of the 36-inch sewer). The construction contract was awarded and the 12-inch sewer mainline relay was constructed and the upstream flow was diverted into the new sewer.

Activities Completed During This Reporting Period

No work was completed on the construction to abandon the existing 36-inch sewer. There was an unanticipated delay in construction due to, among other things, negotiating through an easement issue with a property owner.

Activities Anticipated to be Performed During the Next Reporting Period

Construction to abandon the existing 36-inch sewer is anticipated to begin.

5.2.6 Fletcher Creek Stabilization

An exposed 42-inch sanitary sewer was discovered in an open channel tributary to Fletcher Creek. As a result, a contractor was mobilized to implement remedial measures to stabilize the sewer line. Subsequently, an engineering firm was engaged to design a more permanent solution.

Activities Completed During This Reporting Period

Construction of the temporary stabilization and reinforcement of the 42-inch sanitary sewer interceptor was completed. This temporary stabilization is being monitored pending construction of more permanent stabilization measures. A firm was selected for design of the permanent stabilization measures.

Activities Anticipated to be Performed During the Next Reporting Period

It is anticipated that design documents will be prepared for the permanent stabilization work.

5.2.7 Lift Station Rehab Design

Upon review of the assessment data, five lift stations were scheduled for rehabilitation.

Activities Completed During This Reporting Period

Procurement for the rehab design of five lift stations was completed. Two firms were selected for this work and the contracts were executed in September 2018.

Activities Anticipated to be Performed During the Next Reporting Period

During the next reporting period it is anticipated that the two design firms will complete the design documents.

5.2.8 Loosahatchie Diversion Design

Early in the SARP10 Program, the City identified the New and Old Loosahatchie Interceptors as a priority for condition assessment. These sewer lines were assessed utilizing CCTV and sonar equipment. Furthermore, a calibrated hydraulic model was built in an effort to understand why historic SSO's were occurring. As part of the model calibration, flow meters were installed to capture flows and depths in the sewer lines. The decision was made to divert flow from the Old Loosahatchie Interceptor to the New Loosahatchie Interceptor via 7,900 linear feet of 54-inch

gravity sewer. The diversion sends flow from downstream of N. Watkins St. on the Old Loosahatchie interceptor to the New Loosahatchie. A contract was issued for the interceptor design and easement documents necessary to construct the diversion sewer were developed.

Activities Completed During This Reporting Period

After bidding, an alternative approach was decided upon.

Activities Anticipated to be Performed During the Next Reporting Period

During the next reporting period, it is anticipated that the alternative alignment design documents will be completed and the project will be advertised for bids.

Section 6

Past Consent Decree Projects and Non-Consent Decree 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)
- John’s Creek Interceptor Repair and Evaluation (last included in October 2017 – March 2018 Semi-Annual Report)

6.2 Other Rehabilitation Projects Completed by City of Memphis

In addition to the assessment projects completed under the SARP10 program, the City routinely completes improvement projects of the WCTS. During this reporting period, the City estimates that in addition to the SARP10 program work, it has rehabbed 13,486 linear feet of pipe with CIPP. Since September 2012 (effective date of CD), the City has otherwise installed approximately 108,786 linear feet of CIPP and rehabilitated 9 lift stations (Gayoso, Big Orange, Genyth, N. Watkins, Jack Carley, Valero, Kimbrough, Wilson and Harbert).