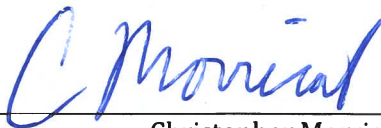


# City of Memphis

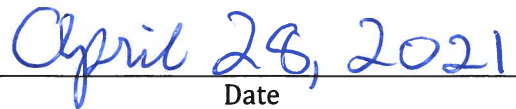
## Semi-Annual Report

October 1, 2020 through March 31, 2021

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.



Christopher Morrical, P.E.



Date

**COVID-19 Statement:** This report identifies in a number of places anticipated activities in the next reporting period or other future activities. Those discussions do not take into consideration the potential impact of the covid-19 pandemic on the City's activities. Instead of constantly repeating the potential impact of covid-19 in each of the sections, we are providing an upfront statement here that applies to all future activities discussed in this report. The ability of the City to undertake the identified implementation activities may be impacted by the covid-19 pandemic.

## 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.

The City’s subsequent review of the SORP resulted in one change to Section 7.1 of the SORP submitted in its March 6, 2019 letter. The City was notified by EPA by letter dated May 20, 2019 that the change submitted on March 6, 2019 was not approved. The City operated under the approved SORP as modified in 2016.

#### **Progress During This Reporting Period**

The City undertook a review of the SORP during this reporting period and submitted the modified SORP to EPA on March 5, 2021 as a change in “form” and not of “substance.” A copy of the document was submitted to the public document repository. The City began operating under the SORP as modified March 5, 2021.

#### **Anticipated Activities in The Next Reporting Period**

The City will continue to operate under the modified SORP.

### 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.

Based upon prior discussion with EPA, by letter dated March 6, 2019 the City updated Section 1.1 Purpose of the FOG Program. The City was notified by EPA by letter dated May 20, 2019 that the change submitted on March 6, 2019 was not approved.

The City submitted revisions to the FOG to the EPA dated May 30, 2019. The City subsequently submitted a letter dated July 22, 2019 where the City further provided minor changes to the FOG Program identifying these updates as “form” not of “substance.” A copy of the document was submitted to the public document repository on July 22, 2019. The City operated under the processes described in the FOG Program as updated.

### **Progress During This Reporting Period**

The City continued to operate under the FOG Program as modified on July 22, 2019. In addition to conducting inspection and reporting activities, the City has continued public outreach efforts, such as the use of vehicle wraps 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.

### **Anticipated Activities in The Next Reporting Period**

The City will continue to operate under the FOG Program as modified on July 22, 2019.

## **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 the approval letter from the EPA dated March 13, 2017 and began to implement the approved program. The City reviewed the LSFM O&M Program in February 2019 and determined that no changes were necessary other than the one change it submitted in March 2019. Based upon prior discussion with EPA, by letter dated March 6, 2019 the City updated Section 1, second paragraph of the LSFMOM Program. The City was notified by EPA on May 20, 2019 that the change submitted on March 6, 2019 was not approved. The City operated under the LSFM Program as approved on March 13, 2017.

### **Progress During This Reporting Period**

The City undertook a review of the LSFM O&M Program during this reporting period and submitted the modified SORP to EPA on March 5, 2021 as a change in “form” and not of “substance.” A copy of the document was submitted to the public document repository. The City began to operate under the LSFM O&M Program modified on March 5, 2021.

### **Anticipated Activities in the Next Reporting Period**

The City will continue to operate under the LSFM Program modified on March 5, 2021.

## **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 and EPA and TDEC, and the City submitted follow-up changes on August 21, 2017. The City received approval of the revised GS O&M Program on November 9, 2017. Based upon prior discussion with EPA, by letter dated March 6, 2019 the City updated Section 1, second paragraph of the GSSOM Program. The City was notified by EPA on May 20, 2019 that the changes submitted on March 6, 2019 were not approved. The City updated sections on November 14, 2019, identifying these updates as “form” not of “substance”. The City continued to operate and maintain the gravity sewer system in accordance with the approved GS O&M Program.

### **Progress During This Reporting Period**

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

### **Anticipated Activities in The Next Reporting Period**

The City will continue to operate and maintain the gravity sewer system in accordance with the GS O&M Program as modified on November 14, 2019.

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

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

The City executed the IJA with the Town of Collierville on May 21, 2020. The City continued negotiations with the City of Millington and City of Lakeland concerning the draft IJAs. Also, the City continued discussions with the Horn Lake Creek Basin Sewer District (“Sewer District”) and the Mississippi Department of Environmental Quality (“MDEQ”) regarding the draft IJA provided for the Sewer District and MDEQ’s review. The City participated in a conference call with TDEC, MDEQ, EPA, and the Sewer District on October 16, 2019 to discuss the draft IJA within the context of pretreatment issues. The City and MDEQ agreed to further analyze certain pretreatment matters raised during the call and to consider addressing pretreatment issues within a separate Memorandum of Agreement. The City of Memphis and Sewer District filed separate declaratory judgment actions against each other in federal court in Tennessee and Mississippi, respectively, with regard to the non-renewal of the existing sewer service agreements entered into between the

parties and set to naturally expire in 2023. The parties agreed to table discussions concerning the remaining issues addressed within the draft IJA pending conclusion of the existing litigation which has been restricted to Tennessee federal court based on dismissal of the action filed by the Sewer District in Mississippi federal court.

### **Progress During This Reporting Period**

The City remains in negotiations with the City of Millington and City of Lakeland.

The City remains in discussions with the City of Bartlett and City of Germantown concerning the draft IJA.

The City remains in active litigation with the Sewer District in Tennessee federal court and has continued to table discussions pertaining to the IJA outside the scope of such litigation.

### **Anticipated Activities In The Next Reporting Period**

The IJAs with the City of Millington and City of Lakeland are expected to be presented for approval by the respective municipalities in third quarter 2021 following execution by the City. The City intends to engage in more extensive negotiations with the City of Bartlett and City of Germantown concerning a draft IJA during the next reporting period. In light of pending litigation, we will continue to evaluate and monitor matters pertaining to the Sewer District and MDEQ.

## **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. The City submitted a revision to the CSAP on June 8, 2018. The City identified this an update of “form” and not of “substance”. The City received approval of the revised CSAP in a letter from the EPA dated November 5, 2018 and began to implement the approved program. The City reviewed the CSAP for potential changes and submitted revisions to the CSAP on June 8, 2020. The City identified this as an update of “form” and not of “substance”.

### **Progress During This Reporting Period**

The City continued implementation of the June 8, 2020 CSAP.

### **Anticipated Activities In The Next Reporting Period**

The City will continue implementation of the June 8, 2020 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.

The City has completed approximately 70,000 LF of rehabilitation in the North and South Priority Rehabilitation Areas. This rehabilitation was completed primarily through Group 1 Relay and Group 1 CIPP.

**Progress During This Reporting Period**

The City continued to prioritize rehabilitation in accordance with the IRP in the North and South Priority Rehabilitation Areas (as designated in Appendix G of the CD).

The City continued to reassess lines located within areas prioritized in the IRP. The contract includes reassessment of approximately 170,000 LF of small and large diameter pipe. Crews reassessed approximately 163,081 LF of small and large diameter pipe.

**Anticipated Activities in The Next Reporting Period**

The City will continue to prioritize rehabilitation in accordance with the IRP. Rehabilitation of prioritized assets designated in Appendix G is anticipated to continue.

**Figure 2-1  
MOM Programs Progress**

| Program                                   | CD Reference | CD Milestone | Progress During This Reporting Period                                   |     |     |     |     | Anticipated Activities in The Next Reporting Period |     |     |     |     |     |     |
|-------------------------------------------|--------------|--------------|-------------------------------------------------------------------------|-----|-----|-----|-----|-----------------------------------------------------|-----|-----|-----|-----|-----|-----|
|                                           |              |              | Oct                                                                     | Nov | Dec | Jan | Feb | Mar                                                 | Apr | May | Jun | Jul | Aug | Sep |
| Sewer Overflow Response Program           | V.10.a       | -            | The City revised program March 5, 2021 and operated per updated 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    | The City revised program March 5, 2021 and operated per updated 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 program.                                         |     |     |     |     | Continue to implement program.                      |     |     |     |     |     |     |
| Inter-Jurisdictional Agreement Program    | V.10.e       | 3/19/2018    | Continued to implement program.                                         |     |     |     |     | Continue to implement 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 to implement 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). The projects that were procured to comply with this section is a mainline relay project (Group 1 Relay) which consist of approximately 19,000 LF of 6" and 8" diameter gravity mains with new 8" diameter pipe and a trenchless rehabilitation (Group 1 CIPP) which consist of CIPP rehabilitation of approximately 54,000 LF of 8" to 36" diameter gravity mains. An Interim Priority Areas Project Report was submitted to USEPA and TDEC on October 11, 2018 and was approved by USEPA on November 5, 2018.

#### Activities Completed During Previous Reporting Periods

The Group 1 Relay and Group 1 CIPP projects continued in the North and South Priority Rehabilitation Areas. Approximately 20,830 LF of relay and associated point repairs were completed for Group 1 Relay, and 42,900 LF of lining and associated point repairs were completed for Group 1 CIPP. One force main, located in the North Priority Rehabilitation area, was reassessed and addition, there was reassessment of a number of gravity sewers

#### Progress During This Reporting Period

In this reporting period, no work was completed on either the Group 1 Relay or the Group 1 CIPP projects. Twelve-point repair was completed in Year 2 (Appendix F) area in preparation for annual City paving projects to minimize post-paving construction.

#### Anticipated Activities in The Next Reporting Period

Rehabilitation projects are anticipated to continue.

### 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. Rehabilitation of these areas was



completed during previous reporting periods and prior to the revised completion date of October 22, 2017. The Final Critical Areas Projects draft report was submitted to EPA and TDEC on April 23, 2018 and placed in the Public Document Repository. 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.

### 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 continue to be 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 During This Reporting Period         |     |     |                                                             |                         |     | Anticipated Activities in The Next Reporting Period |     |     |     |     |     |
|-----------------------------------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----|-----|-------------------------------------------------------------|-------------------------|-----|-----------------------------------------------------|-----|-----|-----|-----|-----|
|                                               |                                                          |                                                                                                                                                     | Oct                                           | Nov | Dec | Jan                                                         | Feb                     | Mar | Apr                                                 | May | Jun | Jul | Aug | Sep |
| <b>Priority Area Projects</b>                 | V.11.a                                                   | 9/9/2015<br>9/9/2016<br>Via implementation of IRP<br>2/13/2023<br>8/13/2018 - 10/13/2018<br>Within six months of rehabilitation projects completion | Previously completed.                         |     |     |                                                             |                         |     |                                                     |     |     |     |     |     |
| Assess areas identified in Appendix E         |                                                          |                                                                                                                                                     | Previously completed.                         |     |     |                                                             |                         |     |                                                     |     |     |     |     |     |
| Assess Year 2 areas (including Appendix F)    |                                                          |                                                                                                                                                     | Previously completed.                         |     |     |                                                             |                         |     |                                                     |     |     |     |     |     |
| Prioritize areas identified in Appendix G     |                                                          |                                                                                                                                                     | Previously completed.                         |     |     |                                                             |                         |     |                                                     |     |     |     |     |     |
| Complete Appendix G rehabilitation projects   |                                                          |                                                                                                                                                     | Rehabilitation of Appendix G areas continued. |     |     | Rehabilitation of Appendix G areas anticipated to continue. |                         |     |                                                     |     |     |     |     |     |
| Interim Priority Areas Project Report         |                                                          |                                                                                                                                                     | Previously completed.                         |     |     |                                                             |                         |     |                                                     |     |     |     |     |     |
| Final Priority Areas Project Report           | No work this period.                                     |                                                                                                                                                     |                                               |     |     |                                                             | No work is anticipated. |     |                                                     |     |     |     |     |     |
| <b>Critical Infrastructure Areas Projects</b> | V.11.b                                                   | 4/23/2018<br>4/23/2018                                                                                                                              | Previously completed.                         |     |     |                                                             |                         |     |                                                     |     |     |     |     |     |
| Complete Appendix H rehabilitation projects   |                                                          |                                                                                                                                                     | Previously completed.                         |     |     |                                                             |                         |     |                                                     |     |     |     |     |     |
| Final Critical Areas Project Report           | Previously completed.                                    |                                                                                                                                                     |                                               |     |     |                                                             |                         |     |                                                     |     |     |     |     |     |
| <b>Priority Assessment Area Projects</b>      | V.11.c.(i)<br>V.11.c.(ii)<br>V.11.c.(iii)<br>V.11.c.(iv) | 9/19/2016<br>9/19/2016<br>9/19/2016<br>9/19/2016                                                                                                    | Previously completed.                         |     |     |                                                             |                         |     |                                                     |     |     |     |     |     |
| Nonconah Interceptor                          |                                                          |                                                                                                                                                     | Previously completed.                         |     |     |                                                             |                         |     |                                                     |     |     |     |     |     |
| Mud Island Manholes                           |                                                          |                                                                                                                                                     | Previously completed.                         |     |     |                                                             |                         |     |                                                     |     |     |     |     |     |
| Burchart-Horn Manholes                        |                                                          |                                                                                                                                                     | Previously completed.                         |     |     |                                                             |                         |     |                                                     |     |     |     |     |     |
| Wolf River Interceptor                        | 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. The vortex structure was completed, and plant effluent flow was directed through the vortex on September 19, 2017. This project has been moved to Section 6.1 Projects Completed in Previous Reporting Periods.

#### 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 and rehabilitation work, the City and SARP10 staff coordinate 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 34-point repairs and 9 manhole adjustments were completed ahead of paving.

- **Workforce Development:** The City has implemented a 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.
- SARP10 implements community outreach through its “Green Team” which goes door-to-door to distribute information for upcoming condition assessment work. The Green Team has distributed roughly 100,000 informational bags since the implementation of them. The information distributed includes information about the FOG program along with grease caps to help educate the public. During the previous reporting periods, the Green Team distributed information for phase assessment work.

As a result of this program and other initiatives, approximately 175 or more 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 along with 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.

### **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 Ongoing CSAP Activities**

Due to the greater precision associated with the GIS information, the number of miles associated with the WCTS is subject to slight change. In its March 2, 2017, letter to EPA, the City stated the future reports and documents will continue to utilize the total mileage of approximately 2,808 recognizing that the exact number may vary slightly over time as additional new information is developed. Accordingly, this report continues to be based upon 2,808 miles.

As of March 31, 2021, the City has assessed approximately 2,302 of the estimated 2,808 miles of pipe contained within the WCTS. This equates to approximately 82% of the system being assessed and does not include the additional pipe assessed using the SL-RAT technology described in the CSAP. The City completed reassessment of lines located within areas prioritized in the IRP. Crews reassessed approximately 163,081 LF of small and large diameter pipe or 31 miles. Combining the reassessment with the current ongoing assessment, the City has assessed approximately 2,331 miles which results in an assessment rate of 83% of the required mileage. 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., 65% of the WCTS should be

assessed by March 2021). The current assessment rate of 83% places the City well ahead of the CD-required schedule.

Within the WCTS there are 102 lift stations all of which have been assessed. Additionally, seventy force mains have been assessed and one was reassessed utilizing CCTV. .

### **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 87 sub-basins in the pilot area and in Phase 1-5 areas. The assessment continued in Phase 6 and Fletcher Creek areas. 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 similar work outside the defined WCTS.

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

Condition assessment continued in the Phase 7 area which consists of approximately 860,000 LF of small diameter pipe and 14,000 LF of large-diameter pipe. During this reporting period, crews have assessed 625,951 LF of small-diameter pipe and 9,806 LF of large-diameter pipe.

No lift stations were assessed during this reporting period. All 102 lift stations have been assessed. There were 31 force mains assessed during the reporting period.

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

It is anticipated that Phase 7 SSES contract will be completed and Phase 8 SSES contract will commence. In addition, it is anticipated that force main assessment will continue.

## **4.5 City-Wide Master Plan**

The City has undertaken a wastewater master plan for the key sewer sheds within the WCTS.

### **Activities Completed During the Previous Reporting Period**

Work continued on the model and master plans.

### **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 Previous Reporting Period**

The Group 1 Relay work continued, and Group 1 CIPP contract commenced with work beginning (See Section 3.1 for details). Additionally, 2 manholes were adjusted to grade and 78 point repairs were completed.

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

The Group 1 Relay and Group 1 CIPP work continued and was completed in the North and South Priority Rehabilitation Areas in accordance with the IRP.

Additionally, 3 manholes were grade-adjusted (i.e., for accessibility) bringing the total to 189; and 2 point repairs were completed, bringing the total to 143 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 work on the prioritized projects in accordance with the IRP.

### 5.2 Other Rehabilitation Projects

While the CD delineates which areas of the WCTS should be addressed through the rehabilitation program, the City has continued to improve the collection system beyond the scope of the CD to include WCTS rehabilitation projects outside of the Priority Rehabilitation Areas.

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

Point repair and manhole adjustment contracts have been used to address issues found during cleaning and assessment of the WCTS. Repairs and adjustments were flagged as contractors cleaned and assessed sewers on an ongoing basis. As this was done, procurement of contracts for point repairs and manhole adjustment was undertaken. City of Memphis, SARP10 staff, and contractors prioritized high value sewer line defects and buried manholes.

#### **Activities Completed During Previous Reporting Period**

- Point Repair Contract: Approximately 154 point repairs were completed.
- Manhole Adjustment Contract: Approximately 174 manholes were adjusted.

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

- Point Repair Contract: Approximately 46 point repairs were completed.
- Manhole Adjustment Contract: Approximately 103 manholes were adjusted.

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

It is anticipated that both the point repair and manhole adjustment contracts will continue.

### **5.2.2 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. Construction of the temporary stabilization and reinforcement of the 42-inch sanitary sewer interceptor was completed. SARP10 continued to monitor the site until the crossing was determined to be in good condition. This project is now complete and will be moved to Section 6.1 in the following Semi-Annual Report.

### **5.2.3 Lift Station Rehab Design and Construction Group 1**

Lift Station Assessments were conducted, and summary reports were completed during previous reporting periods. Upon review of the assessment data, five lift stations were scheduled for rehabilitation. Three of the five lift station rehabilitation designs were completed, bid for construction, and a contractor was selected to complete the construction. The remaining two lift station rehabilitation designs are in progress.

The construction portion of the Lift Station Rehab Group 1 continued for three of the five lift stations.

### **5.2.4 Pilot Stream Crossing Evaluation**

Two basins were chosen for a pilot study to evaluate where sewer lines cross an open channel stormwater conveyance. The goal of the evaluation is to verify sewer line crossings and determine the conditions of the pipe and stream banks near the crossing. A consultant was hired to perform a desktop analysis and subsequent field evaluation of the crossings in a pilot area. Subsequently, the consultant performed desktop analysis and verification, and field evaluations on potential crossings in the Priority Rehabilitation areas.

The consultant continued verifying sewer line crossings in areas outside of the previously selected pilot area and Priority Rehabilitation area, and an expand project will be initiated for this work. Therefore, the Pilot Stream Crossing Evaluation project is now complete and will be moved to Section 6.1 in the following Semi-Annual Report.

### **5.2.5 Gayoso Force Main**

The City of Memphis is undergoing a new design of the Gayoso Force Main to reclaim the original design capacity. The force main has been sliplined in the past which reduced the original capacity of the force main. A design consultant was selected and began work on the design documents for replacement of the existing force main. The design consultant continued progress on the design.

### **5.2.6 Front Street Gate Barrier**

The Front Street Interceptor, that formerly flowed to the Mississippi River and now flows to the North Treatment Plant, was identified to be studied for alternatives to install a second barrier additional to the gate at the end of the outfall. The installation of a second barrier is to assure greater integrity and prevent a catastrophic event. When Mississippi River levels dropped over the summer, the City finalized the plans to pour a concrete bulkhead against the gate structure to create a second barrier at the end of the outfall. The contractor began and completed construction. This project is now complete and will be moved to Section 6.1 in the following Semi-Annual Report.

### **5.2.7 Stream Crossing Stabilization**

There are several locations in the WCTS where a gravity sewer line crosses an open channel stormwater conveyance. SAR10 completed field assessments and identified nine crossings to complete stabilization of the channels. The Notice to Proceed was issued in February 2019 and a professional services firm was contracted to complete the design for the stabilization at each crossing. The professional services firm completed the design. A bid opening was held for two of the nine locations, a contractor was selected, and construction began. Construction for one location was completed while construction started on the second location.

### **5.2.8 Group 4 CIPP**

By utilizing the prioritization methods outlined in the IRP, the City identified rehabilitation to be completed in the southern downtown portion of the City. The City procured and received bids for this work through Group 4 CIPP contract bid on January 31, 2019. This project consists of approximately 47,000 LF of CIPP with associated point repairs and rehabilitation of approximately 375 manholes. The NTP was issued on April 15, 2019 and the contractor began construction. This project was completed during this reporting period and will be moved Section 6.1 in the following Semi-Annual Report.

### **5.2.9 Gravity Sewer Improvements Design Package A**

Four sites within the WCTS and one outside of the WCTS were identified for rehabilitation. A contract was awarded, and design started on these projects. The notice to proceed was issued on February 25, 2019. An engineering firm completed three designs, bid openings were received, and a contract was awarded for two sites. Construction began in previous reporting periods. Construction was completed at two sites within the WCTS.

### **5.2.10 Wolf River 120 Sewer Interceptor Design**

The 96" diameter pipe of the Wolf River Interceptor, from M.C. Stiles Wastewater Treatment Plant to the joining at the Cypress Creek Interceptor, has been identified as in need of improvement. A new 120" diameter parallel pipe is being designed for replacement of approximately 14,000 LF of the most downgradient section. The design of this project is in progress.

### **5.2.11 Loosahatchie Diversion Construction**

The Construction portion of the Loosahatchie Diversion began once the design was developed, and procurement began. The project was bid and awarded as part of procurement, and the contractor mobilized the crews and equipment and set up at the project site. Access roads, well points, silt fencing, and site work were completed. Boring all three siphon barrels under the Loosahatchie River was completed, and construction on the siphon structures on the west side of the river was completed. Crews continued construction on the east side of the river, installing approximately 1,880 LF of pipe. High river water levels flooded the construction site which delayed progress of the project. For further understanding of this project, please see April 2020 Semi-Annual Report.

### **5.2.12 Lift Station Rehab Design Group 2**

Lift Station Assessments were conducted, and assessment reports were completed. The reports yielded an initial group of five lift stations called “Group 1” (See Section 5.2.3). Subsequently, an additional 12 lift stations were identified called “Group 2”. Two engineering firms were selected to complete designs for these 12 lift stations. The designs for the 12 lift stations are in progress.

### **5.2.13 Bazemore Stabilization Project**

It was discovered that a 10-inch sanitary sewer in an open channel tributary to the Wolf River was exposed. The City procured an engineering firm to complete the design of the new line and stabilization. The firm began work on the design.

### **5.2.14 Chelsea Siphon Project**

The City identified a siphon located at Chelsea Avenue for rehabilitation. Through procurement, an engineering firm was selected to design a relocation and replacement of the siphon and to reroute an upstream line.



## 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)
- Critical Infrastructure Areas Projects (last included in April 2018 – September 2018 Semi-Annual Report)
  - The first critical area completed rehabilitation of the 42-inch through 48-inch Wolf River Interceptor, in 2012.
  - The second critical area completed rehabilitation of a portion of the 96-inch interceptor at the entrance/exit ramp located at Mile 51 of Interstate 240, in 2017.
  - The third critical area completed rehabilitation on the 84-inch interceptor located where McLean Boulevard crosses the Wolf River and Interstate 40, in 2012.

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
- M.C. Stiles WWTP Foam Study and Outfall Improvements (last included in April 2018 – September 2018 Semi-Annual Report)
- Loosahatchie Interceptor Assessment (last included in April 2018 – September 2018 Semi-Annual Report).
- 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)
- Black Bayou Stream Crossing Rehabilitation Project (last included in April 2018 – September 2018 Semi-Annual Report)
- Barksdale Siphon Redesign and Construction Project (last included in September 2018 – April 2019 Semi-Annual Report)
- Rodney Baber Project (last included in April 2019 – September 2019)
- Loosahatchie Diversion Design (last included in April 2020 Semi-Annual Report)
- SL-RAT Acoustic Assessment (last included in April 2020 Semi-Annual Report)
- Shelby Oaks Main Re-Route (last included in April 2020 Semi-Annual Report)
- Mud Island Emergency CIPP (last included in April 2020 Semi-Annual Report)
- Front Street Cleaning (last included in September 2020 Semi-Annual Report)
- Cane Creek/Pine Hills (last included in September 2020 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 35,585 LF of pipe with CIPP. Since September 2012 (effective date of CD), the City has otherwise installed approximately 184,737 LF of CIPP and rehabilitated 12 lift stations (Gayoso, Big Orange, Genyth, N. Watkins, Jack Carley, Valero, Kimbrough, Wilson, Harbor, South Mendenhall, Woodland Run, and Illinois).