
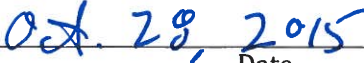


City of Memphis

Semi-Annual Report April 1, 2015 through September 30, 2015

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


Bobby D. Allen, P.E.


Date

Section 1

Introduction

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

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

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

This report is organized into four sections:

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

Section 2

Management, Operations, and Maintenance Programs

As defined in Paragraph V.10 of the Consent Decree, the City shall develop and implement specific 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**. All MOM Programs activities are currently in compliance.

2.1 Sewer Overflow Response Plan

Activities Completed During This Reporting Period

The City submitted a Sewer Overflow Response Plan (SORP) to the U.S. Environmental Protection Agency (EPA) and Tennessee Department of Environment and Conservation (TDEC) on March 11, 2011, before the Consent Decree was entered. A copy of the SORP is included in Appendix B of the Consent Decree. The City continued to operate under the processes described in the SORP during the reporting period.

Activities Anticipated to be Performed During the Next Reporting Period

The City will continue to operate under the approved SORP. The City anticipates that it will review the SORP during the next reporting period and will make revisions as deemed necessary.

2.2 Fats, Oil, and Grease Management Program

Activities Completed During This Reporting Period

The City submitted a Fats, Oils and Grease (FOG) Management Program to the U.S. Environmental Protection Agency (EPA) and Tennessee Department of Environment and Conservation (TDEC) on March 11, 2011, before the Consent Decree was entered. A copy of the FOG Management Program is included in Appendix C of the Consent Decree. On April 22, 2014, EPA approved an updated FOG Management Program (Program) submitted by the City in October of 2013. During the current reporting period, the City continued to operate under the processes described in the Program updated October 2013. In addition to conducting the required inspection and reporting activities, the City has continued public outreach efforts, such as the use of billboard and bus stop advertising and the distribution of "Can the Grease" door hangers and can lids to discourage residents from discarding cooking oils and other FOG in the sewer system. As part of the workforce development aspect of the Consent Decree, the City has engaged the "Green Team" (Section 4.3) to distribute "Can the Grease" door hangers ahead of condition assessment work.

Activities Anticipated to be Performed During the Next Reporting Period

The City will continue to operate under the approved updated FOG Management Program.

2.3 Lift Station and Force Main O&M Program

Activities Completed During This Reporting Period

On February 5, 2015, the City received comments from EPA on the Lift Station and Force Main Operations and Maintenance (O&M) Program. The City revised the Lift Station and Force Main O&M Program to address these comments and submitted the revised version to EPA and TDEC on April 8, 2015.

Activities Anticipated to be Performed During the Next Reporting Period

It is anticipated during the next reporting period that EPA, after consultation with TDEC, will review the revised submittal dated April 8, 2015, and provide the City comments or approve the document as submitted. The City will respond to any additional comments received from EPA and will revise the Lift Station and Force Main O&M Program, as appropriate. Once approved, the City will implement the Lift Station and Force Main O&M Program.

2.4 Gravity Sewer System O&M Program

Activities Completed During This Reporting Period

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

Activities Anticipated to be Performed During the Next Reporting Period

It is anticipated during the next reporting period that EPA, after consultation with TDEC, will approve the resubmitted Gravity Sewer System O&M Program dated April 8, 2015, or provide additional comments. The City will respond to additional comments received from EPA, if any, and will revise the Gravity Sewer System O&M Program, as appropriate. Once approved, the City will implement the Gravity Sewer System O&M Program.

2.5 Inter-Jurisdictional Agreement Program

Activities Completed During This Reporting Period

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

Activities Anticipated to be Performed During the Next Reporting Period

It is anticipated during the next reporting period that EPA, after consultation with TDEC, will approve the IJAP submitted on April 8, 2015, or provide additional comments. The City will respond to additional comments received from EPA, if any, and will revise the IJAP, as appropriate. Once approved, the City will follow the IJAP for new agreements and renewal of existing agreements related to the collection, conveyance, and treatment of sewage by the City from municipal satellite sewer systems.

2.6 Continuing Sewer Assessment Program

Activities Completed During This Reporting Period

The Continuing Sewer Assessment Program was approved on September 10, 2014, and outlined priority areas to receive condition assessment in Year 1 and Year 2 after CSAP approval. The Year 1

area received condition assessment beginning with the Cane Creek Pilot Assessment area (Section 4.5) before the CSAP approval. The Year 1 area was completed during this reporting period in compliance with the CSAP Year 1 deadline, and the Year 2 condition assessment began.

Activities Anticipated to be Performed During the Next Reporting Period

During the next reporting period, the City will continue implementation of the CSAP in accordance with the timeframes presented in the Consent Decree. This includes completing the Year 2 priority area condition assessment by September 9, 2016, which has already begun. This is further described in Section 3.1.

2.7 Infrastructure Rehabilitation Program

Activities Completed During This Reporting Period

During the previous reporting period, the City completed the development of the Infrastructure Rehabilitation Program (IRP), as required in Paragraph V.10.g of the Consent Decree, and submitted the document to EPA and TDEC for review on February 25, 2015. Based on a conversation with EPA, the City anticipates receiving comments by the end of October, 2015.

Activities Anticipated to be Performed During the Next Reporting Period

It is anticipated during the next reporting period that EPA, after consultation with TDEC, will provide the City comments on the IRP or approve the IRP as submitted. The City will respond to comments received from EPA, if any, and will revise the IRP, as appropriate. Once approved, the City will implement the IRP.

**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	-		Continuing to implement program.										Continue to implement program. SORP will be reviewed to determine if changes are necessary.			
Fats, Oils, and Grease Management Program	V.10.b	-		Continuing to implement program										Continue to implement program.			
Lift Station & Force Main O&M Program	V.10.c	9/19/2013		Received comments from EPA on Feb. 5, 2015, and submitted revised version to EPA and TDEC on April 8, 2015.										Respond to any further comments received, revise program as appropriate, and implement approved program.			
SCADA installation at lift stations	V.10.c.iii	3/19/2013		Previously completed.										SCADA is operational.			
Gravity Sewer System O&M Program	V.10.d	9/19/2013		Received comments from EPA on Feb. 4, 2015, and submitted revised version to EPA and TDEC on April 8, 2015.										Respond to any further comments received, revise program as appropriate, and implement approved program.			
Inter-Jurisdictional Agreement Program	V.10.e	3/19/2013		Received comments from EPA on Feb. 5, 2015, and submitted revised version to EPA and TDEC on April 8, 2015.										Respond to any further comments received, revise program as appropriate, and implement approved program.			
Continuing Sewer Assessment Program	V.10.f	9/19/2013		Completed Year 1 condition assessment compliance by Sep. 9, 2015, and began Year 2 compliance.										Complete Year 2 condition assessment compliance, in whole or in part, by Sep. 9, 2016.			
Infrastructure Rehabilitation Program	V.10.g	3/9/2015		Submitted to EPA and TDEC on February 25, 2015.										Respond to any comments received, revise program as appropriate, and implement approved program.			

Section 3

Priority Rehabilitation Projects

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

3.1 Priority Areas Projects

Paragraphs V.10.f and V.11.a of the Consent Decree identify several areas of the City's wastewater collection and transmission system (WCTS) that are to be assessed during the first and second years following approval of the CSAP. These areas are shown in Appendix E and F of the Consent Decree, respectively. Additionally, a subset of the first year priority area (Appendix E), as shown in Appendix G of the Consent Decree, is identified as a priority during implementation of the IRP. Rehabilitation projects within this area (Appendix G) are to be completed within six years and seven months after EPA's approval of the IRP.

Activities Completed During This Reporting Period

Condition assessment work in the Year 1 and Year 2 priority areas was tied to the approval of the CSAP, which occurred on September 10, 2014. Condition assessment on the Cane Creek and Hickory Hill Pilot Assessment Areas (Section 4.5) actually began before approval of the CSAP and included portions of the Year 1 and Year 2 priority areas. These areas were assessed using the methods identified in the CSAP which was subsequently approved by EPA. During this reporting period, four condition assessment contracts have been procured to perform field testing (i.e., manhole inspections, smoke testing, sewer cleaning, and CCTV inspections, etc.) in three separate watershed areas, reference as the Pilot, Phase 1, and Phase 2 Condition Assessment Areas. These areas encompass and actually extend beyond the entirety of the Consent Decree defined Year 1 and Year 2 areas to be assessed following EPA approval of the CSAP. In other words, some of the area assessed in Year 1 and Year 2 will include some additional areas that the City was not required to assess, as of yet, under the Consent Decree. However, it made sense for the City to include these additional areas.

Once the CSAP was approved, the Year 1 and Year 2 areas, along with the portions of the Year 1 and Year 2 area contiguous to the watershed being investigated, were divided by sewer subbasins into phases for work to be completed. Phase 1 was completed during the previous reporting period and the area of Phase 2 that falls inside of the Year 1 priority area was completed during this reporting period, in compliance with the CSAP deadline.

Year 1

Condition assessment for the Year 1 area was completed by September 9, 2015, in accordance with the CSAP. The CD and the CSAP required that the City assess the area in Appendix E in the first year after the CSAP was approved. The CSAP estimated the WCTS included in Appendix E at 1,214,400

LF of gravity mains and associated manholes and 6 lift stations and associated force mains. The Year 1 area actually comprised an estimated 1,414,000 LF of gravity mains and associated manholes digitized in GIS and assessed via the methods outlined in the CSAP. All identified siphons in the Year 1 area were cleaned and assessed except for those scheduled to be replaced or upgraded.

The Year 1 area contained 6 lift stations and associated force mains that were assessed using the methods described in the CSAP. They include the following:

- 1490 Bellevue Rd.
- 1513 Levee Rd.
- 1043 Wilson St.
- 2109 Howell Ave.
- 837 N. Claybrook St.
- 950 Early Maxwell Blvd.

As part of the condition assessment field testing efforts, critical sewer line defects (i.e., those determined to have high risk factors for contributing to or causing SSO events), as well as buried manholes (for accessibility to perform condition assessment work), were addressed on a real-time basis under four construction contracts.

Year 2

All Year 2 assets for condition assessment are to be completed by September 9, 2016. At the end of this reporting period, approximately 526,000 LF of gravity mains and associated manholes of Year 2 assets have been assessed. The Year 2 area consists of 633,000 LF of sewer gravity mains.

Seventeen of the 19 identified siphons within the Year 2 area were cleaned and assessed during this reporting period. As with the Year 1 assessed area; buried manholes and critical sewer line defects were addressed in real-time with on-going construction contracts.

Activities Anticipated to be Performed During the Next Reporting Period

Most if not all of the remaining Year 2 condition assessment work will be completed during the next reporting period. Additionally, the remaining two siphons in the Year 2 area will be cleaned and assessed and the Year 2 lift stations and force mains will be identified and assessed.

3.2 Critical Infrastructure Areas Projects

Activities Completed During This Reporting Period

As discussed in Paragraph V.11.b of the Consent Decree, three areas within the WCTS were identified to receive prioritized rehabilitation due to the critical nature of the infrastructure and the potential consequences of large sanitary sewer overflows volumes in the event of a failure. A map showing the locations of these areas is included as Appendix H of the Consent Decree. These three projects are to be completed within five years after the Effective Date of the Consent Decree (September 20, 2012). As stated in previous Semi-Annual Reports, the first critical area on the 42-inch through 48-inch Wolf River Interceptor and the third critical area on the 84-inch interceptor located where McLean Boulevard crosses the Wolf River and Interstate 40 have already been completed.

Preliminary work associated with the second critical area, which is a portion of the 96-inch interceptor at the entrance/exit ramp located at mile 51 of Interstate 240, continued through this reporting period.

Activities Anticipated to be Performed During the Next Reporting Period

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

3.3 Prior Assessment Areas Projects

As discussed in Paragraph V.11.c of the Consent Decree, four additional rehabilitation projects have been identified based on previous inspection and assessment activities. These projects are to all be completed four years after the Effective Date of the Consent Decree (September 20, 2012).

3.3.1 Cured-in-Place Pipe (CIPP) lining of the Nonconnah Interceptor Between Manholes Numbered N06-119 and N06-127

Activities Completed During This Reporting Period

As stated in previous Semi-Annual Reports, the CIPP lining of the Nonconnah Interceptor between manholes N06-119 and N06-127 has already been completed.

Activities Anticipated to be Performed During the Next Reporting Period

Not applicable.

3.3.2 Rehabilitation or Replacement of Manholes on Mud Island

Activities Completed During This Reporting Period

During this reporting period, the assessment for all but one of the Mud Island manholes and associated pipes as per Paragraph V.11.c.(ii) was completed. To date, the remaining manhole is unable to be located and is believed to be between Wolf River and the Stiles Treatment Plant.

Activities Anticipated to be Performed During the Next Reporting Period

It is anticipated that during the next reporting period, the remaining manhole will be located, assessed, and rehabilitation solutions will be considered based on the condition assessment results.

3.3.3 Rehabilitation of Approximately 64 Manholes Identified in Buchart-Horn Report

Activities Completed During This Reporting Period

Paragraph V.11.c.(iii) of the Consent Decree requires the rehabilitation of 64 manholes identified in the June 6, 2006 Buchart-Horn study report. Sixty-one of these manholes had previously been rehabilitated. Development of plans and specifications for rehabilitation of the remaining three manholes was initiated during this reporting period.

Activities Anticipated to be Performed During the Next Reporting Period

It is anticipated that plans and specifications will be completed and a contract issued for rehabilitation of the remaining three manholes from the Buchart-Horn report as discussed in Paragraph V.11.c.(iii).

3.1.4 Cured-in-Place Pipe (CIPP) Lining of the Wolf River Interceptor Between Demarcation Points W05-120 and W05-130

Activities Completed During This Reporting Period

As stated in previous Semi-Annual Reports, the CIPP lining of the Wolf River Interceptor between manholes WS05-120 and WS05-130 has already been completed.

Activities Anticipated to be Performed During the Next Reporting Period

Not applicable.

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

Project	CD Reference	CD Milestone	Progress Last Six Months						Anticipated Activities Next Six Months										
			Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar					
Priority Area Projects	V.11.a	9/9/2015	Completed all Year 1 (Appendix E) assessment by Sep. 9, 2015.																
Assess areas identified in Appendix E																			
Prioritize areas identified in Appendix G		Via implementation of IRP	No work this period																
Complete Appendix G rehabilitation projects		Six years and seven months after EPA approval of IRP	No work this period																
Interim Priority Areas Project Report		Within 27 months of EPA approval of IRP	No work this period																
Final Priority Areas Project Report		Within six months of rehabilitation projects completion	No work this period																
Critical Infrastructure Areas Projects	V.11.b	9/19/2017	Preliminary work associated with the second critical area continued. The first and third critical areas were previously completed.																
Complete Appendix H rehabilitation projects																			
Final Critical Areas Project Report		Within six months of rehabilitation projects completion	No work this period																
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	Condition assessment of all but one of the Mud Island manholes and associated gravity mains was completed.																
Burchart-Horn Manholes	V.11.c.(iii)	9/19/2016	Completed rehabilitation of 61 of 64 of the manholes. Developed plans and specifications for rehabilitation of the remaining 3 manholes.																
Wolf River Interceptor	V.11.c.(iv)	9/19/2016	Previously completed.																

Section 4

Additional Measures to Maintain Compliance

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

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

As described in Paragraph V.12 of the Consent Decree, the City is required to implement the M.C. Stiles Wastewater Treatment Plant (WWTP) Foam Study and Outfall Improvements Work Plan that was included as Appendix I of the Consent Decree. On May 19, 2014, the first amendment of the Consent Decree, which identified a preferred alternative design consisting of a vortex structure and which included a revised construction schedule, was approved and filed with the court.

Activities Completed During This Reporting Period

During this reporting period, as part of the design process, the contractor submitted an application to the United States Army Corps of Engineers (COE) for a 408 permit. The time required for the COE to review the application and issue the permit was 49 working days. Amended Appendix I to the CD, page 4, Amended Schedule, third paragraph of the CD states "In the event that TDEC and/or USACE take more than 21 days for permitting and plans approval, additional time is automatically provided commensurate with the number of additional days that TDEC and/or USACE take as the next step, i.e., construction, is not triggered until the permitting and plan approvals have occurred." In accordance with this section, the project will be extended an additional 28 working days. This moves the Project completion date from May 19 to June 29, 2016.

In addition to the permitting work, the contractor completed (and the engineer approved) the 100% design drawings and began construction. The contractor completed the preliminary site grading, installed silt fences, and prepared the site for jet grouting work.

Activities Anticipated to be Performed During the Next Reporting Period

It is anticipated that the contractor will continue construction including completing the jet grouting of the caisson, pouring and forming the cast-in-place concrete vortex shaft, and microtunneling for the 84" pipe between the vortex and the outfall.

4.2 State Projects

As outlined in Appendix J of the CD, the City agreed to spend \$645,000 to implement two state projects. The initial project is the color study which was implemented at a cost of \$290,900. The remaining funds, or \$354,100, were spent in accordance with Appendix J on converting the City's sanitary sewer drawings into a GIS format. Moreover, through the end of this reporting period, the City has expended funds significantly beyond the Appendix J \$645,000 requirement. Activities associated with the two state projects are described in the following subsections.

4.2.1 State Project A – Color Study

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

Activities Completed During This Reporting Period

In accordance with Appendix J of the Consent Decree, the City of Memphis submitted the finalized Color Study report entitled, *Perception studies to determine receiving-stream color objectionability due to effluent discharge*, to TDEC on October 29, 2014 following its review of the initial study results with TDEC personnel during a meeting held at TDEC's office in Nashville, Tennessee, on July 10, 2014. In light of TDEC's May 19, 2015 letter to the City regarding the Color Study, further discussion with TDEC is necessary regarding the finality of the study and the trigger for submission of the State Project Completion Report. Pending resolution, the City (who has already expended more than the \$645,000 required by the CD) intends to submit the State Project Completion Report.

Activities Anticipated to be Performed During the Next Reporting Period

It is anticipated that a state project completion report for the color study will be submitted during the next reporting period.

4.2.2 State Project B – Geographic Information System

As provided by Appendix J of the Consent Decree, the City continued the transition of its sanitary sewer record information, primarily on paper maps, into an electronic Geographic Information System (GIS). As the City undertook work beyond the State Project \$645,000 commitment, the City has already fulfilled its obligations under Appendix J. This work was undertaken by the University of Memphis Center for Partnerships in Geographic Information Systems (CPGIS) and the Sewer Assessment and Rehabilitation (SARP10) team, the City's consultant Consent Decree Program Management team. CPGIS begins by converting the paper maps into the electronic format which is then given to SARP10 for further refinement. CPGIS is also geo-locating plan and profile documents based on the area mapped. SARP10 performs a quality control (QC) check on the data received from CPGIS and assigns unique asset ID's to facilities based on sewershed boundaries. Sewersheds were grouped into phases for field condition assessment contracts issued by SARP10, and the results from the field were delivered to the SARP10 data team for final review and approval. These field inspections, which contain assessment and GPS locations of the assets, then replaced the original digitized facilities and assessment of the particular asset is considered complete.

Activities Completed During This Reporting Period

Through this reporting period, CPGIS continued digitizing the City's WCTS including the entirety of the Year 1 and Year 2 Priority areas. Digitized assets have been assigned a unique asset ID and uploaded into the master GIS database used by the SARP10 team.

As condition assessment and GPS data is collected in the field, SARP10 replaces the digitized data developed by CPGIS with the field verified data. Based on work completed to date, it is estimated that there are approximately 2,760 miles of gravity sewer located within the City limits.

Activities Anticipated to be Performed During the Next Reporting Period

While not required by the Consent Decree, at the City's sole discretion it is expending additional funds undertaking additional GIS work beyond the minimum required amount. During the next reporting period it is anticipated that CPGIS will complete the GIS conversion of the remaining portion of the WCTS. It is also anticipated that voluntary additional work will include SARP10

continuing to update the digitized assets with information collected during field investigation activities. It is anticipated that a State Project Completion Report will be submitted to TDEC upon further discussion with TDEC regarding the final color study report.

4.3 Program Administration Activities

Since entering into the Consent Decree, the City has conducted several administrative activities for the implementation of the Consent Decree program, known as SARP10.

Activities Completed During This Reporting Period

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

During this reporting period, 13 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 Phases 1 and 2 public engagement project by going door-to-door in the neighborhoods scheduled for condition assessment work to be completed. The Green Team distributed door hangers providing information about smoke testing and proper grease disposal as well as interacted with homeowners whenever possible. The team provided information to over 17,000 homes during this reporting period, bringing the total homes to date to 41,000 that have been visited.

Also as a result of this program and other initiatives, a total of 45 local personnel have obtained full-time employment with SARP10 program companies or assessment contractors working on the program for the City.

- **Public Relations:** The program continued to conduct public meetings in the assessment areas and will continue these efforts in the future. Also, a SARP10 website providing current

information and tentative schedules for work was developed and went live during this reporting period.

- Point repair and manhole raising 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 will continue through the upcoming reporting period.

4.4 Snowden Assessment and Rehabilitation

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

Activities Completed During This Reporting Period

Due to conditions encountered in the field, revisions to the original rehabilitation scope of work were required. During the previous reporting period, a revised scope of work was developed and negotiated with the contractor to address the remaining work which comprises approximately 25% of the Snowden project.

Activities Anticipated to be Performed During the Next Reporting Period

Rehabilitation work in the Snowden area is anticipated to be completed during the next reporting period.

4.5 Cane Creek and Hickory Hill Pilot Assessment Areas

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

Activities Completed During This Reporting Period

Areas in need of repair or accessibility such as point repairs and buried manholes were identified and addressed via SARP10 contracts. The areas of the Cane Creek area that fall in the Year 1 boundary were of particular focus when making repairs. These assets were made accessible by completing point repairs and raising manholes allowing assessment to be completed.

Activities Anticipated to be Performed During the Next Reporting Period

Since the assessment has been completed in the Pilot area and the applicable sections included in the Year 1 compliance count, this section will be removed from future Semi-Annual Reports since no more Consent Decree requirements are based on its completion.

4.6 Loosahatchie Interceptor Assessment

The City is undertaking 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. The total footage for assessment increased from the previous Semi-Annual Report to include upstream sections of the interceptor not originally in the scope.

Activities Completed During This Reporting Period

The City had previously identified 22,000 linear feet of the Loosahatchie Interceptor for CCTV and sonar inspections to assess the condition of this interceptor but has expanded the project to include both the Old and New Loosahatchie Interceptors. The expanded project includes the assessment of 109,600 linear feet of interceptor and surveying manhole rim and pipe invert elevations. Additional survey work was completed during this reporting period to confirm survey data obtained in the previous reporting period. In addition, a contract was issued for assessment for both the Old and New Loosahatchie. Approximately 67,000 LF has been assessed and the amount remaining is currently unable to be completed because of access and surcharge issues. As a result of the condition assessment work that has been completed to date, a decision was made to move forward with cleaning the section of the Old Loosahatchie upstream of Highway 51. This cleaning effort must be completed in order to facilitate the condition assessment work on the Old Loosahatchie. Condition assessment crews were able to acquire CCTV and sonar inspections for the upper two-thirds of the New Loosahatchie. The downstream portion could not be completed because of surcharged conditions. Additionally, flow monitoring data is being collected on the interceptors.

The SARP10 team was given an existing sewer interceptor model created by the City's Engineering Division that was created without the benefit of field survey information. The model was updated with the newly obtained survey data to better understand its performance.

Activities Anticipated to be Performed During the Next Reporting Period

It is anticipated that during the upcoming reporting period the assessment work of the remaining interceptor segments will be completed. The assessment data collected will be used to identify the amount of cleaning necessary on the areas that have been assessed, and to document the condition of both interceptors for further rehabilitation considerations, and explore any capacity alternatives that may be warranted.

4.7 Ongoing CSAP Activities

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

Activities Completed During This Reporting Period

Contracts were procured and work was initiated for Phase 3 area condition assessment work, consisting of approximately 1.2 million LF of gravity mains and associated manholes.

Activities Anticipated to be Performed During the Next Reporting Period

Phase 3 area condition assessment work will continue through the next reporting period.

Section 5

Infrastructure Rehabilitation Projects

5.1 Priority Rehabilitation Areas

Pursuant to the Consent Decree and IRP requirements, the City shall complete the rehabilitation projects within the priority areas identified in Appendix G of the Consent Decree within six years and seven months after EPA's approval of the IRP.

Activities Completed During This Reporting Period

The City has started rehabilitation projects in these areas by completing 165 manhole adjustments and 10 point repairs ahead of condition assessment.

Activities Anticipated to be Performed During the Next Reporting Period

Subject to EPA approval of the IRP, it is anticipated that the City will begin undertaking rehabilitation projects in the priority rehabilitation areas of those defects considered the highest priority for causing or that are likely to cause SSOs due to conveyance capacity concerns or structural failures.

5.2 Other Rehabilitation Projects

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

5.2.1 Point Repairs and Manhole Adjustments

Point repair and manhole adjustment contracts have been procured in order for the City to address critical 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 due to conveyance capacity concerns or structural failures, and to also facilitate access for condition assessment field testing activities.

Activities Completed During This Reporting Period

- **Point Repair Contract:** Two construction contracts have been procured to complete high priority point repairs identified as part of the condition assessment program. Both point repair contracts are currently ongoing. A third point repair contract has been bid and it is anticipated to be awarded during the next reporting period.
- **Manhole Adjustment Contract:** Two construction contracts have been procured to raise buried manholes to grade so that they can be accessed and assessed. Both manhole adjustment contracts are currently ongoing.

Activities Anticipated to be Performed During the Next Reporting Period

A third point repair contract has been bid and it is anticipated to be awarded during the next reporting period. The manhole adjustment contracts will also continue.

5.2.2 Woodview Subdivision

Although not required by the Consent Decree, SARP10 Program conducted an assessment of the sanitary sewer system in the Woodview subdivision area just northeast of the city's corporate limits. Although this area is outside of the Memphis city limits, its sewer system is connected to the City of Memphis system. This area has experienced sanitary sewer overflow issues in the past.

Activities Completed During This Reporting Period

As set forth in Section 4.7 of the City's prior Semi-Annual Report, sewer line condition assessment and cleaning efforts consisting of manhole inspections, smoke testing, jet nozzle high pressure cleaning, and CCTV inspections were conducted during the previous reporting period. Approximately 23,000 linear feet of pipe and associated manholes were assessed. Based on the results of the assessment, one sewer line was upgraded in size, a relief line was installed and a back-flow preventer valve was installed at one residence during this reporting period. The City also implemented a preventative maintenance program and installed a monitoring device in one of the manholes to detect surcharge conditions. On September 15, 2015, a public meeting was held at the Raleigh Community Center to present the completed work to the residents of the subdivision.

Activities Anticipated to be Performed During the Next Reporting Period

The City plans to increase the frequency of line cleaning in this area in the future. Since the assessment and rehabilitation work is completed in the Woodview Subdivision, this section will no longer be included in future Semi-Annual Reports.

5.2.3 Lick Creek Interceptor CIPP

After condition assessment of the area was completed, the City and the SARP10 team reviewed the findings and determined that the Lick Creek Interceptor from the Overton Square parking garage to Bellevue Blvd. was in need of cured-in-place pipe (CIPP) and manhole coating rehabilitation. While not required at this time by the Consent Decree, the Lick Creek Interceptor CIPP project aids in fulfilling the goals set forth in the document. The interceptor rehabilitation consists of approximately 10,000 LF of 18"-36" diameter sewer mains and 47 manholes. This project does not include the portion of the interceptor that runs through Overton Park and the Memphis Zoo which is being handled by a separate contract procured by the City. The SARP10 and City projects will coordinate their work since rehabilitation will most likely occur simultaneously.

Activities Completed During This Reporting Period

Plans and specifications for the Lick Creek Interceptor CIPP project were developed and solicited for bid on June 18, 2015. Bids were received on July 15, 2015, and a contract has been executed for the work.

Activities Anticipated to be Performed During the Next Reporting Period

SARP10 anticipates that the Notice to Proceed will be issued and rehabilitation will begin in the next reporting period.

5.2.4 Loosahatchie Interceptor Rehabilitation

Because of the structural issues and SSO's encountered along a portion of the Old Loosahatchie, the City and SARP10 opted to undertake a rehabilitation project on a 6,000 LF section of the interceptor near Highway 51 and Watkins Street.

Activities Completed During This Reporting Period

A construction contract was issued for the replacement of approximately 6,000 linear feet of pipe on the Old Loosahatchie Interceptor with glass reinforced fiberglass pipe. This project is currently under construction.

Activities Anticipated to be Performed During the Next Reporting Period

Rehabilitation on the Old Loosahatchie interceptor will continue during the next reporting period.