JOHN COOPER
MAYOR

METROPOLITAN GOVERNMENT OF NASHVILLE AND DAVIDSON COUNTY

DEPARTMENT OF WATER AND SEWERAGE SERVICES
ENGINEERING DIVISION
1600 SECOND AVENUE NORTH
NASHVILLE, TENNESSEE 37208

October 24, 2019

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Re: DOJ Case No. 90-5-1-1-09000
Submittal of Quarterly Progress Report

Gentlemen and Madam:

In accordance with the provisions of the Consent Decree, Section XIX (Reporting Requirements), Subsection A, herewith we are transmitting the Quarterly Progress report for the third Quarter of 2019, which covers the time period from July 1, 2019 through September 30, 2019.

A copy of this report is concurrently being placed in the Public Document Repository (PDR).

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.

If you have any questions concerning this report please contact me.

Sincerely,

Scott A. Potter, P.E.
Director

Ron C. Taylor, P.E.
Overflow Abatement Program Director
Engineering Division

Cc: Mr. David Tucker, Assistant Director, Operations
Mr. Cyrus Q. Toosi, P.E., Assistant Director / Chief Engineer, Engineering
Mr. Gregory A. Ballard, P.E., Engineer 3
Mr. Thomas G. Cross, Associate Director, Metropolitan Department of Law

Clean Water Nashville Overflow Abatement Program

Metropolitan Government of Nashville and Davidson County
Department of Water and Sewerage Services

CONSENT DECREE
QUARTERLY PROGRESS REPORT

July 1 through September 30, 2019

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.

Ron C. Taylor, P.E., Program Director

10/29/19
Date

cleanwater NASHVILLE
OVERFLOW ABATEMENT PROGRAM

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Section 1
Introduction

On March 12, 2009, the Metropolitan Government of Nashville and Davidson County, Tennessee (Metro), entered into a Consent Decree with the United States and the State of Tennessee. To fulfill the reporting requirements defined in Section XIX.A. of the Consent Decree, Metro has prepared this *Quarterly Progress Report*, which includes the following information:

1. Information on sanitary sewer overflows (SSOs) and dry-weather combined sewer system overflows (CSOs) occurring during the reporting period
2. A description of the work conducted during the reporting period to comply with the requirements of the Consent Decree
3. The anticipated work for the upcoming quarter to comply with the requirements of the Consent Decree
4. Any additional information necessary to demonstrate that Metro is adequately implementing the work

Work, as defined in the Consent Decree, includes all activities that Metro is required to perform under the Consent Decree. For the purposes of this *Quarterly Progress Report*, however, the focus will remain on current and upcoming work related to the *Corrective Action Plan/Engineering Report* (CAP/ER), the *Long Term Control Plan* (LTCP), and additional activities to address SSOs and CSOs.

1.1 Additional Programs

Several additional programs, listed below, were also required to be developed or implemented as part of the Consent Decree. Any modifications or updates to these programs will be identified in **Section 4** of this report.

- *Spill and Overflow Response Plan* (Section VII.C.2) – Metro continues to operate under the current Spill and Overflow Response Plan (SORP). A review of the SORP will be conducted annually with any proposed changes submitted to the U.S. Environmental Protection Agency (EPA) for review and approval by June 1 each year.
- *Inter-jurisdictional Agreement Program* (Section VII.C.3) – All required inter-jurisdictional agreements are in place, and Metro will continue to operate under these agreements, including monitoring peak flows received.
- *Capacity Assurance Plan* (Section VII.C.4) – The Capacity Assurance Plan will continue to be applied as a tracking/approval tool for new development/flow in the sanitary sewer system (SSS).
- *Pump Station Operation Plan for Power Outages* (Section VII.C.5) – All projects identified in the Pump Station Operation Plan for Power Outages were completed prior to the start of the reporting period.

- *Nine Minimum Controls Compliance Plan* (Section VII.D.1) – All elements of the Nine Minimum Controls Compliance Plan (NMC) were completed in 2012.
- Supplemental Environmental Projects (Section VIII) – The Supplemental Environmental Projects (SEPs) required in the Consent Decree were completed in 2010.

1.2 Report Organization

This *Quarterly Progress Report* is organized as follows:

Section 1 – Introduction

Section 2 – *Corrective Action Plan/Engineering Report*

Section 3 – *Long Term Control Plan*

Section 4 – Additional Measures to Maintain Consent Decree Compliance

Section 5 – Quarterly SSO and Dry-Weather CSO Report

Section 2

Corrective Action Plan/Engineering Report

To address conditions causing overflows in their sanitary sewer system, Metro developed a CAP/ER that was submitted to EPA and the Tennessee Department of Environment and Conservation (TDEC) on September 11, 2011.

The CAP/ER development began with a characterization of Metro's sanitary sewer system through extensive monitoring and modeling to understand the existing system's limitations. The need for improvements to address both current and future sewer capacity needs was then assessed, and potential alternatives were evaluated to select efficient and cost effective solutions. These recommended projects, which include infrastructure rehabilitation, additional conveyance capacity, and storage of wet-weather flows, are presented in the CAP/ER.

Approval of the CAP/ER was granted by EPA on August 10, 2017, with TDEC copied on the approval. Since submittal of the CAP/ER in 2011, information from additional flow monitoring data collection, constructability reviews, and hydraulic analyses has resulted in adjustments to several CAP/ER projects, as well as the identification of additional projects to remediate SSOs. A summary of those changes was presented to EPA and TDEC in the *Addendum to the CAP/ER*, dated September 27, 2017.

Through ongoing efforts to maintain the system, Metro has identified several overflow locations, outside of those identified in the CAP/ER, that warrant additional field investigations and/or improvements. As requested by TDEC in a letter dated July 15, 2019, Metro prepared *Addendum #2 to the CAP/ER*, which was submitted on August 30, 2019. That Addendum describes those overflow locations, summarizes actions taken, and presents Metro's plan for identifying and addressing conditions causing those overflows.

On-going CAP/ER projects are described in the following subsections, and a schedule illustrating current and upcoming work on CAP/ER projects is presented as Appendix A.

2.1 Completed CAP/ER Projects

The following projects, discussed in the CAP/ER, achieved substantial completion prior to the start of the reporting period:

- 28th Avenue Rehabilitation – Area 1 – Clifton Avenue
- Barker Road / Omohundro Equalization Storage Phase I
- Brick Church Pike Pipe Improvements
- Cowan / Riverside Rehabilitation – Area 1 – Jones Avenue
- Cowan / Riverside Rehabilitation – Area 2 – Dickerson Pike
- Cowan / Riverside Rehabilitation – Area 3 – West Trinity Lane
- Cowan / Riverside Rehabilitation – Area 4 – Pages Branch

- Davidson and Brook Hollow Sewer Improvements
- Dodson Chapel Equalization Tank and Wastewater Pumping Station Expansion
- Dodson Chapel Pipe Improvements
- Dry Creek Wastewater Treatment Plant Optimization
- Ewing Creek / Brick Church Equalization Facility
- Gibson Creek Rehabilitation – Area 1 – Dupont Avenue
- Hidden Acres Rehabilitation
- Highway 100 / Tyne Boulevard – Trimble Rehabilitation
- Holiday Travel Park Gravity Conversion
- Joelton Rehabilitation
- Lakewood Water and Sewer Replacement
- Langford Farms – Madison Heights Rehabilitation
- Loves Branch Rehabilitation
- Mill Creek 36-inch Trunk Sewer System Rehabilitation
- Mill Creek / Opryland Equalization Facility – Phase II
- Neely's Bend Rehabilitation
- Rockwood Conveyance Improvements
- Shelby Park Rehabilitation – Area 1 – Virginia Avenue
- Shelby Park Rehabilitation – Area 2 – Norvel Avenue
- Shelby Park Rehabilitation – Area 3 – Greenland Avenue
- Shelby Park Rehabilitation – Area 4 – Brush Hill Road
- Shelby Park Rehabilitation – Area 5 – Cooper Lane
- Smith Springs Equalization Storage
- Smith Springs Rehabilitation – Area 1 – Priest Lake Meadows
- Smith Springs Rehabilitation – Area 2 – Castlegate
- West Park Equalization Storage Phase I
- West Park Equalization Facility Phase II
- Westchester Drive Rehabilitation

- Whites Creek Wastewater Pumping Station
- Whites Creek Wastewater Treatment Plant (WWTP) Optimization and Disinfection

2.2 CAP/ER Projects under Construction

The following projects, discussed in the CAP/ER, were under construction during the reporting period:

- Vandiver Rehabilitation

  The Vandiver Pump Station Upgrades project, as presented in the CAP/ER, consisted of expanding the pumping capacity of the Vandiver Pump Station to 11 million gallons per day to address overflows and surcharging in the existing system. Additional analysis of the flow monitoring and condition assessment data of the upstream gravity system indicated that rehabilitation to reduce wet-weather flows may provide a viable option to reduce the required increase in pumping capacity. Because of this, the Vandiver Pump Station Upgrades project has been delayed allowing for the completion of the Vandiver Rehabilitation project and evaluation of the project's impact.

  The project area evaluated for rehabilitation included more than 55,000 linear feet of gravity sewer. The resulting project, as advertised for construction, consists of the rehabilitation of approximately 30,650 linear feet of 6- to 21-inch diameter gravity sewer, the rehabilitation of associated manholes, and the renewal of approximately 570 services using cured-in-place pipe lining or open-cut techniques.

  Design began on December 14, 2016, and was completed in July 2017. This project was packaged with the Hidden Acres Rehabilitation project for bidding, although construction activities for the two projects follow different schedules. Advertisement for construction activities began on November 2, 2017, and bid proposals were received on November 29, 2017. Construction activities began on March 26, 2018, and are anticipated to be substantially complete during the upcoming quarter.

2.3 CAP/ER Projects under Design

The following projects, discussed in the CAP/ER, were under design or bidding during the reporting period:

- Davidson Branch Pump Station and Equalization Facility

  The Davidson Branch Pump Station and Equalization Facility project, referred to as the Davidson Branch Equalization Storage project in the CAP/ER, includes the relocation of an existing duty station and construction of a wastewater storage tank and wet-weather pumping station on a property adjacent to the existing Davidson Branch Pump Station. Design began on May 1, 2015, and is complete. Advertisement for construction is anticipated to occur in the second quarter of 2020.

- Hurricane Creek Pipe Improvements

  The Hurricane Creek Pipe Improvements project, as presented in the CAP/ER, consisted of increasing the conveyance capacity of approximately 7,800 linear feet of gravity sewer to meet

Metro's capacity assurance requirements. Following the analysis of additional flow monitoring conducted in the spring of 2015, the project's scope was revised to include the design of parallel and/or replacement gravity sewers for approximately 12,100 linear feet of existing trunk sewer. Design began on July 12, 2016, and is complete. Permit and easement acquisition activities are underway and are anticipated to continue through the upcoming quarter.

- Gibson Creek Equalization Facility

  The Gibson Creek Equalization Facility project, as presented in the CAP/ER, consists of the design and construction of a 10 million gallon wastewater storage tank and associated wet-weather pumping station. Land acquisition activities were completed during the reporting period. Design began on September 12, 2016, and is complete. Permitting activities are underway and are anticipated to continue through the upcoming quarter. Advertisement for construction is anticipated to occur in the third quarter of 2020.

- Sevenmile Creek Rehabilitation – Area 1

  The Sevenmile Creek Rehabilitation – Area 1 project is the first in a series of rehabilitation projects developed for the Mill Creek watershed and its tributaries. Although not originally included in the projects proposed in the CAP/ER, sewer rehabilitation in the Mill Creek watershed will be performed to reduce wet-weather flows, allowing for a reduced length of conveyance improvements for the Mill Creek Trunk Improvements and Equalization Facility project. The project area to be evaluated for rehabilitation includes approximately 41,200 linear feet of gravity sewer. Design began on July 31, 2018, and is complete. Advertisement for construction is anticipated to occur in the third quarter of 2020.

- Shelby Park Rehabilitation – Area 6 – Shelby Trunk

  This rehabilitation project is the sixth in a series of rehabilitation projects to be conducted upstream of the Shelby Park Pump Station. The area to be evaluated for rehabilitation includes approximately 36,200 linear feet of gravity trunk sewer and 130 manholes. Design began on February 6, 2017, and is complete, including coordination with Metro Parks. Permitting activities were completed in December 2017. Advertisement for construction is anticipated to occur in the second quarter of 2020.

- Smith Springs Rehabilitation – Area 3 – Harbour Town

  The Smith Springs Rehabilitation – Area 3 – Harbour Town project is the third of multiple rehabilitation projects that will be conducted upstream of the Smith Springs Pump Station. The project area to be evaluated for rehabilitation includes over 60,000 linear feet of gravity sewer. Design began on June 5, 2017, and is complete. Advertisement for construction is anticipated to occur in the second quarter of 2020.

2.4 Upcoming CAP/ER Projects

The following project, discussed in the CAP/ER, is anticipated to begin procurement for design services during the upcoming quarter:

- Mill Creek Trunk Improvements and Equalization Facility

  The Mill Creek Trunk Improvements and Equalization Facility project combines two projects presented in the CAP/ER, the Mill Creek Trunk Improvements project and the Mill Creek / Opryland Equalization Facility – Phase III project. Additional analysis of the flow monitoring and condition assessment data of the upstream gravity system indicated that rehabilitation to reduce wet-weather flows may provide a viable option to reduce the extents of the trunk sewer improvements. The resulting project consists of conveyance capacity upgrades of over 3 miles of large diameter sewer, 60 million gallons of additional storage, and a wet-weather pump station with a 100 million gallons per day pumping capacity. Procurement of design services is anticipated to begin late in the fourth quarter.

  Additionally, Metro intends to deliver via a Construction Manager at Risk, who will provide pre-construction services during the design phase and act as the general contractor during the construction phase of this project. Procurement of the Construction Manager at Risk is also anticipated to begin late in the fourth quarter.

In addition to the projects listed above, Metro continues to conduct planning activities for multiple Clean Water Nashville projects including collecting sewer condition assessment data.

2.5 CAP/ER Addendum #2 Projects

As discussed in the *Addendum #2 to the CAP/ER*, Metro recognizes the need to continuously review occurrences of overflows, identify their root causes, and address issues before they become chronic. Through that monitoring process, Metro identified several overflow locations, outside of those initially identified in the CAP/ER, that warrant additional field investigations and/or improvements. Activities associated with those locations, when not associated with a capital project, are described as follows:

- Bordeaux Hills Pump Station

  After experiencing an increased frequency of overflows in 2018, the operation of the Bordeaux Hills Pump Station was evaluated, and it was determined that the grinders at the station were potentially causing excessive surcharging during high flow storm events leading to an overflow at the relief pipe. In March 2019, the grinders were removed, and the station has not experienced an overflow since that time. Metro continues to monitor the station's performance without the grinders, while commencing evaluation of the upstream gravity sewer system for potential repairs to mitigate the overflow.

- Bordeaux Hospital Pump Station

  To address the wet-weather overflow occurring at the Bordeaux Hospital Pump Station, the pump impellers were replaced in June 2019, restoring the capacity of the pump station. Although it is believed that this has solved the issue, the station's performance will continue to be monitored. If overflows continue, additional investigations and remedial activities will be conducted.

- Fairway Center Pump Station

  Because of recent overflows at the Fairway Center Pump Station during wet-weather events, Metro identified the area for additional investigation. An evaluation of the pump station's

performance has been completed, and smoke testing of the gravity sewer is scheduled for Fall 2019. Additional investigations, such as closed-circuit television (CCTV) inspection of the gravity sewer, may be conducted if issues persist at the station.

- Farmingham Woods Pump Station

  The Farmingham Woods Pump Station was removed from service in July 2019, and the area previously served by the station is now conveyed via a new gravity sewer. This improvement will address the wet-weather overflows previously observed at the station.

- Hillview Pump Station

  Although not historically a location of overflows, numerous wet-weather overflows were observed at the Hillview Pump Station beginning in late 2017. In response to these overflows, smoke testing was conducted in the upstream gravity sewer in October 2018, and manhole inspections along with CCTV inspections of the gravity sewer were conducted in March 2019. Several repairs to address rainfall-derived infiltration and inflow (RDII) were identified, and these are scheduled for completion by the end of 2019. Concurrently with the investigations of the gravity sewer, the pump station was evaluated and determined to have a reduced pumping capacity. Work to restore the station's capacity has been completed, and the station will continue to be monitored for capacity issues.

- Hopedale Pump Station

  Although it experienced only one overflow in the decade prior to 2019, there have been three reported overflows at the Hopedale Pump Station through the first half of 2019. Because of the increased frequency of overflows, the station's performance was evaluated, and smoke testing of the gravity sewer upstream of the station is scheduled for this fall. Additional investigations to identify and address sources of RDII, such as CCTV inspection of the gravity sewer, may be conducted if issues persist at the station.

- Long Hunter Chase Pump Station

  Following an increase in the frequency of wet-weather overflows associated with the Long Hunter Chase Pump Station in 2018, smoke testing was conducted in the upstream gravity sewer in October 2018. Smoke testing revealed that many cleanouts in the area were broken, allowing inflow to enter the system during rainfall events. Those cleanouts are scheduled to be repaired in 2020.

- Mill Creek Pump Station

  Because of the increased frequency of overflows in 2018 at the Mill Creek Pump Station, smoke testing of the gravity sewer upstream of the station is scheduled for Fall 2019. This will include an area of the gravity sewer that has recently undergone redevelopment. Defects identified through smoke testing will be repaired, as needed. Additional investigations, such as CCTV inspection of the gravity sewer or further pump station evaluations, may be conducted if issues persist at the station.

- Rowan Drive/Cravath Drive

  The Rowan Drive / Cravath Drive area, located in the northern portion of the Whites Creek WWTP service area, has experienced numerous rainfall-related overflows. Flow monitoring conducted in 2018 indicated that surcharging in the Rowan / Cravath area is not caused by surcharging in the trunk sewer along Whites Creek. Instead the overflows appear to be caused by either a capacity issue within the local gravity sewer or an excessive amount of RDII entering the system. Metro has installed a level sensor in the area to assess the frequency and extent of surcharging. CCTV inspection of the 10-inch gravity sewer was completed in Summer 2019 and is being reviewed to confirm that the sewer is free of blockages, structural defects, and sources of infiltration. Following that effort, additional analyses utilizing the hydraulic model will be conducted to confirm that the available capacity is adequate to convey the predicted peak flows in this area and to assess whether the area should be targeted for rehabilitation.

- South Oak Hill Pump Station

  Because of the increased frequency of overflows at the South Oak Hill Pump Station during wet-weather events, Metro has identified the area for additional investigation. An evaluation of the pump station's performance has been completed, and smoke testing of the gravity sewer is scheduled for Fall 2019. Defects identified through those investigations will be repaired, as needed. Additional investigations to identify and address sources of RDII, such as CCTV inspection of the gravity sewer, may be conducted if issues persist at this location.

- Sunliner Drive Pump Station

  Because of the increased frequency of overflows at the Sunliner Pump Station during wet-weather events, Metro has identified the area for additional investigation. This includes an evaluation of the pump station's performance and smoke testing of the gravity sewer system in Fall 2019. Defects identified through those investigations will be repaired, as needed. Additional investigations, such as CCTV inspection of the gravity sewer, to identify and address sources of RDII may be conducted if issues persist at the station.

- Wallace Lane / Abbott Martin Road

  The Wallace Lane / Abbott Martin Road area is located in Green Hills and is part of the Whites Creek WWTP service area. In early 2019, a customer notified Metro of a potential issue in this area, and Metro has since confirmed that overflows occur at two manholes (116-12-076 and 116-16-040) during wet-weather events. Since notification of the issue, Metro has verified that the sewers in the immediate area are structurally sound and free of blockages that may reduce the sewer's capacity during high flow events. Metro currently has level sensors installed in the area to assess the frequency and extent of surcharging. This data will also confirm the feasibility of redirecting additional flow from the 8-inch diameter sewer (where the overflows occur) to the parallel 10-inch diameter sewer running along Wallace Lane. If that is not feasible, or does not fully address the overflow, additional field investigation and rehabilitation to address the sources of RDII in the area upstream of the overflows will be conducted.

Section 3

Long Term Control Plan

To reduce the occurrence and impact of combined sewer overflows into the Cumberland River, Metro developed an update to the *Long Term Control Plan* (LTCP), that was submitted to EPA and TDEC on September 11, 2011.

The LTCP followed EPA's *Combined Sewer Overflow Control Policy* in implementing a rigorous process for identifying and evaluating alternatives to reduce combined sewer overflows. Consideration included financial and engineering analyses to develop recommended improvements in conjunction with four key objectives that were established early in the planning process:

- Improve the water quality of the Cumberland River by reducing impacts from combined sewer overflows
- Provide a level of CSO control that results in improvements in water quality that are consistent with the community's use of the Cumberland River
- Align investment in CSO controls to be commensurate with the contribution of CSOs to water quality relative to other sources
- Consider the impact of the overall program cost on the ratepayers in the current economic climate

These goals and objectives were developed based on feedback provided by representatives from Metro, local government, and the community through a public engagement campaign developed to solicit input from affected stakeholders.

On June 18, 2018, Metro presented to EPA and TDEC an *Addendum to the LTCP* which summarizes the updates and modifications to projects described in the LTCP since its submittal in 2011.

In a February 11, 2019, letter, EPA provided review comments to Metro on the LTCP and *Addendum to the LTCP*. Metro's letter in response, dated March 6, 2019, proposes the following path forward:

- Implement the recommended improvements at the Central WWTP identified in the *Basis of Design Report*
- Implement the selected control measures at the Driftwood and Boscobel CSO outfalls
- Submit a revised LTCP within twelve months after TDEC finalizes their revised water quality standards
- Implement the remedial measures identified in the revised LTCP within five years after approval or modification of the revised LTCP, provided the remaining costs do not exceed $200 million

Discussions about the LTCP are expected to continue through the upcoming quarter.

As review of the LTCP continues, Metro continues to move forward with the implementation of portions of the LTCP. Active projects are described in the following subsections, and a schedule illustrating current and upcoming work on LTCP projects is presented as Appendix A.

3.1 Completed LTCP Projects

The following projects, discussed in the LTCP, were completed prior to the start of the reporting period:

- Apex Sewer Corrections
- Broadway Improvements
- Driftwood Equalization Basin Expansion
- Sludge Transfer Facility (as part of Central WWTP Capacity Improvements and CSO Reduction)
- Van Buren Improvements
- Washington CSO Facility Improvements

3.2 LTCP Projects under Construction

There are currently no LTCP projects under construction.

3.3 LTCP Projects under Design and Preconstruction

The following project, discussed in the LTCP, is anticipated to continue design services during the upcoming quarter:

- Central WWTP Capacity Improvements and CSO Reduction, A and B

  The Central WWTP Capacity Improvements and CSO Reduction project will reduce the overflow frequency and volume from the Kerrigan CSO by increasing both the wet-weather treatment capacity of the Central WWTP and the overall capacity of the Central Pumping Station. The project will also add on-site CSO storage and equalization to assist in managing the dramatic flow rate increases from the combined sewer system during intense rainfall events. This project is the result of the *Central Wastewater Treatment Plant Optimization Study* which was completed in 2014. The study identified limiting factors in each of the Central WWTP's unit processes and confirmed that peak wet-weather secondary treatment capacity could be significantly increased through upgrades to the existing headworks, secondary aeration, and final clarification systems without building new tankage. As such, this project replaces the following projects presented in the LTCP:

  - CWWTP Optimization and EQ Conversion
  - CWWTP EQ Addition Phase 1
  - CWWTP Pumps / EQ Grit Equipment
  - CWWTP EQ Addition Phase 2
  - CWWTP EQ Addition Phase 3

Advertisement for design services for the Central WWTP Capacity Improvements and CSO Reduction project began in January 2015, and two design contracts (A and B) were awarded in April 2015. Following contract negotiations and other designer procurement activities, design activities for both contracts began on September 21, 2015. The *Basis of Design Report* was finalized in December 2016.

In mid-2017, Metro officially decided to design and construct a single headworks facility that will serve both combined and sanitary influents. This design is to be completed by Hazen and Sawyer. All other work at the plant will be designed by Brown and Caldwell. Each firm's notice-to-proceed for detailed design was issued on June 23, 2017. Design for the headworks reached 100 percent in June. Design activities on the remainder of the plant are underway and are anticipated to be complete in the upcoming quarter.

On March 23, 2017, Metro completed the procurement and contracting of a Construction Manager at Risk to provide pre-construction services during the design phase and to act as the general contractor during the construction phase of this project. Brasfield & Gorrie was selected as the Construction Manager at Risk. Through the reporting period, the Construction Manager at Risk provided input on design efforts, continued to analyze the construction schedule to determine critical path items, and refined construction cost estimates. It is anticipated that Brasfield & Gorrie will begin prequalifying subcontractors for procurement in the upcoming quarter.

3.4 Upcoming LTCP Projects

There are currently no LTCP projects anticipated to begin design in the upcoming quarter.

Section 4

Additional Measures to Maintain Consent Decree Compliance

In addition to the CAP/ER and LTCP projects described in the previous sections, the measures described in the following subsections are related to Metro's on-going Consent Decree compliance.

4.1 2017 Annual Rehabilitation – Dry Creek

The 2017 Annual Rehabilitation – Dry Creek project, which is located in the Dry Creek WWTP's service area, consists of the evaluation and rehabilitation of approximately 57,900 linear feet of gravity sewer, ranging in diameter from 8 to 30 inches. These sewers are located outside of CAP/ER rehabilitation areas and include many sewers classified as high priority for evaluation due to observations of infiltration. Design began on March 27, 2017, and was completed in September 2017. Advertisement for construction is anticipated to occur in the fourth quarter of 2020.

4.2 2017 Annual Rehabilitation – Shepherd Hills

The 2017 Annual Rehabilitation – Shepherd Hills project, which is located in the Dry Creek WWTP's service area, consists of approximately 59,900 linear feet of gravity sewer, ranging in diameter from 8 to 30 inches. This project targets sewers located outside of CAP/ER rehabilitation areas and includes many sewers classified as high priority for evaluation due to observations of infiltration. Design began on May 30, 2017, and was completed in October 2017. Advertisement for construction is anticipated to occur in the third quarter of 2020.

Section 5

Quarterly SSO and Dry-Weather CSO Report

During the reporting period, Metro experienced 19 SSOs, as listed in **Table 5-1**.

Two dry-weather CSOs occurred during the reporting period, as listed in **Table 5-2**. Those overflows occurred during a partial shutdown at the Central WWTP to install a new stop log frame on the North secondary clarifiers. Operators manually adjusted influent pumping rates to maintain a hydraulic grade below the Kerrigan overflow during this time. On the afternoon of August 15 and during the early morning hours of August 16, the necessary pumping rate adjustments were not made by the plant operator.

The construction work at Central WWTP was operationally necessary, as it will enable continued plant operation during the Central WWTP Capacity Improvements and CSO Reduction, as discussed in **Section 3.3**. The shutdown was scheduled for a week with no forecasted rainfall because the plant would be operating below 50 percent of secondary capacity during the one-week shutdown (August 12 to 19, 2019). Unfortunately, an isolated thunderstorm (1.89 inches) late on August 13, 2019, increased influent flow rates to the plant. Offline tankage was used for equalization.

Table 5-1 Quarterly SSO Report

Quarterly SSO Report July 1 through September 30, 2019									
Event Start Date	Event End Date	Rainfall (inches)	Duration (hours)	Overflow Volume (MG)	Overflow Cause	Location Manhole ID	Location	Unpermitted Discharge	Building Backup
04-Jul-19	04-Jul-19	0.30	0.25	0.002	Controller	12201011	Woodland Point #1 SPS	Yes	No
19-Jul-19	19-Jul-19	0.00	3.00	0.001	Blockage	13413127	363 Harding Pl	No	No
21-Jul-19	21-Jul-19	1.04	3.00	0.217	Rainfall	10210012	Davidson Branch SPS	Yes	No
22-Jul-19	23-Jul-19	2.51	25.50	0.5	Rainfall	05315020	Lakewood SPS	Yes	No
22-Jul-19	23-Jul-19	1.42	6.00	0.388	Rainfall	10210012	Davidson Branch SPS	Yes	No
23-Jul-19	23-Jul-19	2.50	1.50	0.001	Rainfall	11616040	4010 Wallace Ln	No	No
23-Jul-19	23-Jul-19	2.40	1.25	0.003	Rainfall	08410007	149 Barker Rd	Yes	No
31-Jul-19	31-Jul-19	0.00	3.50	0.001	Blockage	10608014	347 Wilhagan Rd	Yes	No
04-Aug-19	04-Aug-19	0.51	5.25	0.366	Rainfall	10210012	Davidson Branch SPS	Yes	No
07-Aug-19	07-Aug-19	0.00	0.25	0.002	Electrical	09506004	Mill Creek SPS	Yes	No
13-Aug-19	13-Aug-19	1.63	1.92	0.026	Rainfall	10210012	Davidson Branch SPS	Yes	No
16-Aug-19	16-Aug-19	0.00	3.00	0.00001	Blockage	08004037	1515 County Hospital Rd	No	No
17-Aug-19	18-Aug-19	0.00	7.00	0.00001	Blockage	08102021	2299 25th Ave N	No	No
18-Aug-19	18-Aug-19	0.00	4.50	0.00001	Blockage	WLS052K059	213 Kenya Ct	No	No
25-Aug-19	25-Aug-19	2.36	2.30	0.01	Rainfall	01416001	Joelton SPS	Yes	No
03-Sep-19	04-Sep-19	0.00	22.50	0.00001	Blockage	09606019	2934 McCampbell Ave	No	No
08-Sep-19	08-Sep-19	0.00	4.50	0.0001	Blockage	14604009	4710 Richmar Ct	Yes	No
12-Sep-19	12-Sep-19	0.00	3.00	0.0001	Blockage	09611008	342 Hickory Pl	Yes	No
20-Sep-19	20-Sep-19	0.00	1.50	0.0001	Blockage	13405057	4105 Providence Park Ln	Yes	No

Table 5-2 Quarterly Dry-Weather CSO Report

Quarterly Dry-Weather CSO Report July 1 through September 30, 2019						
Event Start Date	**Event End Date**	**Rainfall (inches)**	**Duration (hours)**	**Overflow Volume (MG)**	**Location Manhole ID**	**Location**
15-Aug-19	15-Aug-19	0.00	10.68	3.28	08214052	Kerrigan CSO
16-Aug-19	16-Aug-19	0.00	0.93	2.19	08214052	Kerrigan CSO

Appendix A

Schedule for Current and Upcoming Projects

Note: The construction activity is through substantial completion.

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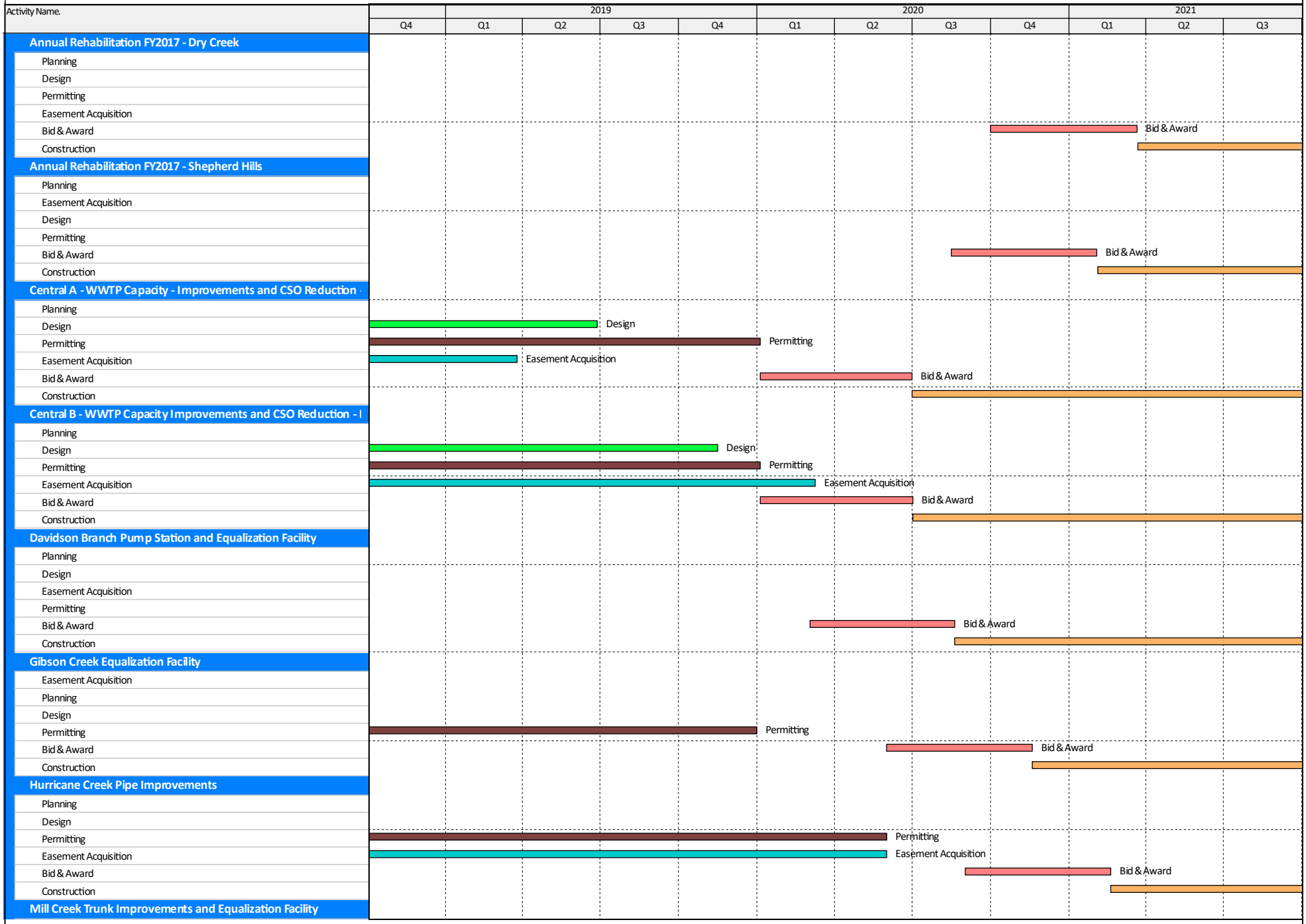

Note: The construction activity is through substantial completion.

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