

Clean Water 2020 Program

CONSENT DECREE QUARTERLY REPORT

January 1, 2019 – March 31, 2019

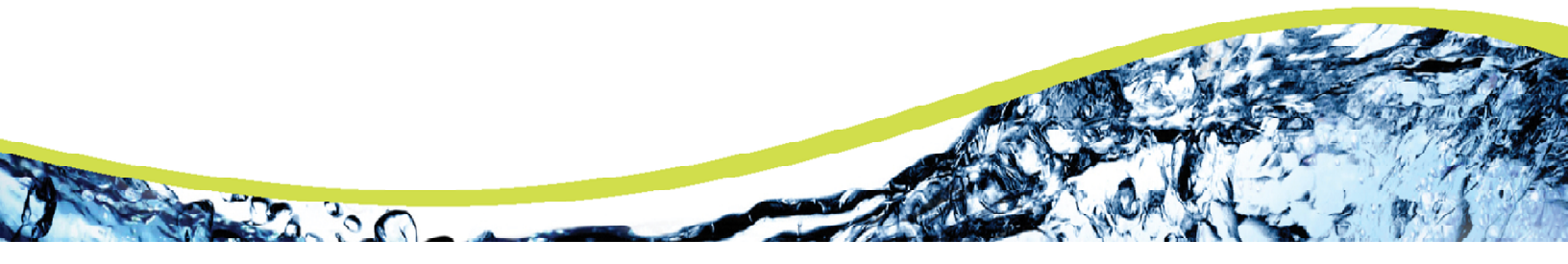


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Section 1 Introduction

1.1 Summary of Reporting Requirements

On May 21, 2014, the City of Columbia (City) entered into a Consent Decree (CD) with the United States Environmental Protection Agency (EPA), the United States Department of Justice (DOJ) and the South Carolina Department of Health and Environmental Control (SCDHEC). To fulfill the reporting requirements as defined in Section IX.39.a of the CD, the City has prepared this *Quarterly Report* that includes the following information (as excerpted from the CD):

1. A description of all projects and activities conducted during the most recently completed calendar quarter to comply with the requirements of this Consent Decree, in Gantt chart or similar format. This description shall include completion percentages of early action capital improvement projects under Paragraph 10, continuing sewer assessments under the CSAP, and the subsequent remedial actions under the IR Report;
2. The date, time, location, source, duration, estimated volume, receiving water (if any), cause, and actions taken to repair or otherwise resolve the cause of all SSOs for the most recently completed quarter in a tabulated electronic format;
3. The anticipated projects and activities that will be performed in the next quarter to comply with the requirements of this Consent Decree, in Gantt chart or similar format;
4. Any additional information that demonstrates that Columbia is implementing the remedial measures required in this Consent Decree; and
5. The results of water quality monitoring conducted during the previous Calendar Quarter as part of the SEP described in Appendix I of the Consent Decree.

1.2 Report Organization

This Quarterly Report is organized as follows:

Section 1 – Introduction

This section includes a summary of the reporting requirements and describes the report organization.

Section 2 – Schedule of Projects and Activities

This section addresses the requirements of Sections IX.39.a.(i) and IX.39.a.(iii) of the Consent Decree. The section includes the projects and activities conducted during the most recently completed calendar

quarter to comply with the requirements of the CD as well as the anticipated projects and activities that will be performed in the next quarter to comply with the requirements of the CD. A Gantt chart schedule of these activities is provided and includes completion percentages of continuing sewer assessments under the CSAP and the subsequent remedial actions under the IR Report, as applicable.

Section 3 – Additional Information Demonstrating Implementation of Consent Decree Requirements

This section addresses the requirements of Section IX.39.a.(iv) of the Consent Decree and includes additional information that demonstrates that Columbia is implementing the remedial measures required in the CD. Information supplemental to that which is provided in Section 2 is provided in this section.

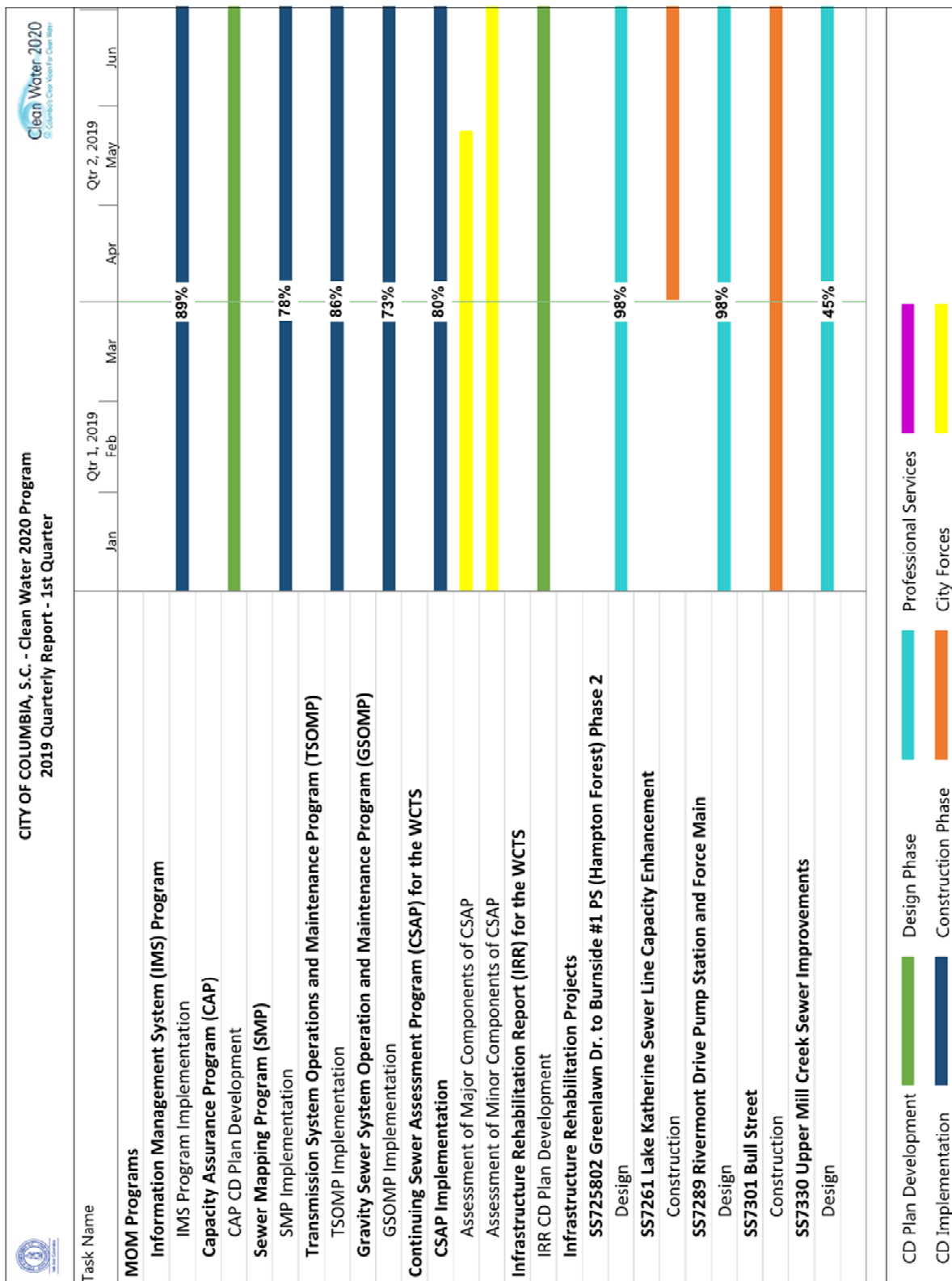
Section 4 – Quarterly SSO Report

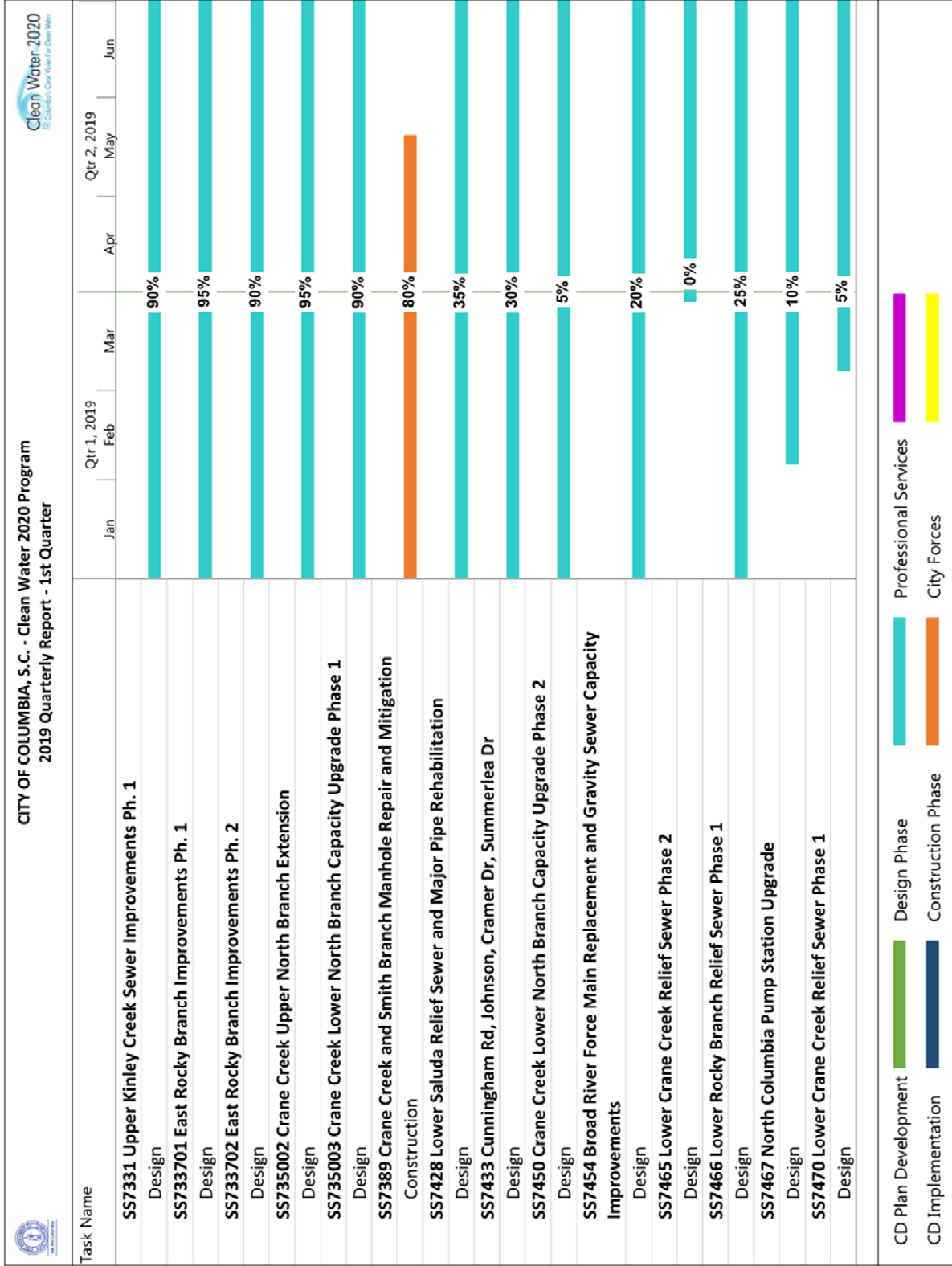
This section addresses the requirements of Section IX.39.a.(ii) of the Consent Decree and provides a tabular listing of sanitary sewer overflows (SSOs). The table includes the date, time, location, source, duration, estimated volume, receiving water (if any), cause, and actions taken to repair or otherwise resolve the cause of all SSOs that occurred during the most recently completed calendar quarter.

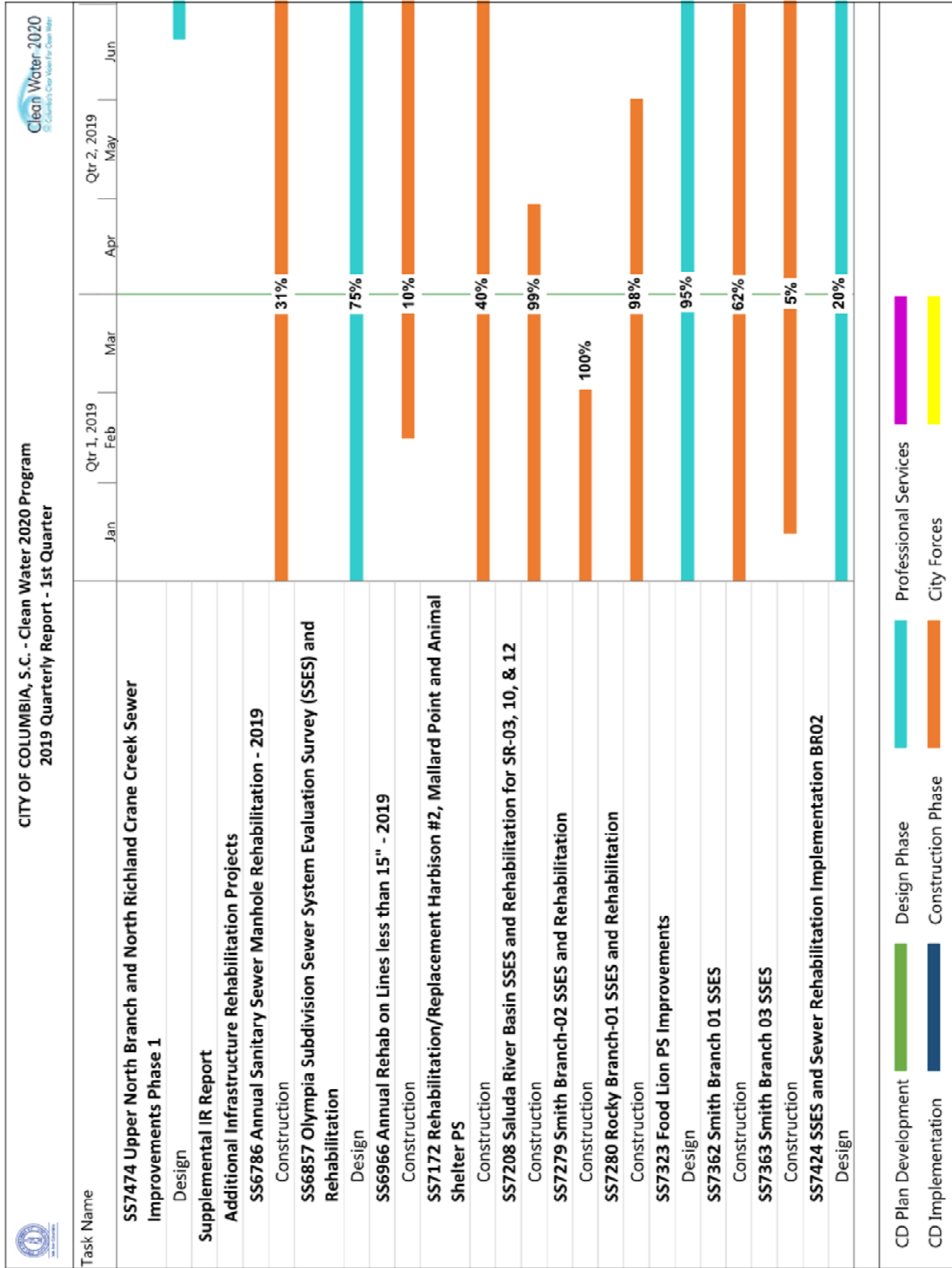
Section 5 – SEP Water Quality Monitoring Results

This section addresses the requirements of Section IX.39.a.(v) of the Consent Decree and provides the results of water quality monitoring conducted during the previous Calendar Quarter as part of the SEP described in Appendix I of the CD.






Section 2 Schedule of Projects and Activities







| Task Name | CITY OF COLUMBIA, S.C. - Clean Water 2020 Program 2019 Quarterly Report - 1st Quarter | | | | | |
|---|--|-----|-----|-----|-----|-----|
| | Jan | Feb | Mar | Apr | May | Jun |
| SS7425 SSES and Sewer Rehabilitation Implementation RB03 Design | | | 30% | | | |
| SS7435 Wexford and Windsong Lift Stations Evaluation and Rehabilitation Project | | | | | | |
| SS7437 Miscellaneous Lift Station Improvements and Backup Power Addition Project | | | 10% | | | |
| SS7462 Investigation of Crockett Road, Atlas Road and Versch Lock Lift Stations | | | 15% | | | |
| SS7463 SSES and Sewer Rehabilitation Implementation CC01 | | | 5% | | | |
| SS7464 SSES and Sewer Rehabilitation Implementation CC02 and CC04 | | | 15% | | | |
| SS7468 Three Rivers Force Main Replacement | | | 10% | | | |
| SS7478 RB01 SSES - Phase 2 | | | 1% | | | |
| SS7479 SB02 SSES - Phase 2 | | | 20% | | | |
| Sewer System Hydraulic Model Model Report Development | | | 18% | | | |

| | | | | | |
|---------------------|---|--------------------|---|-----------------------|---|
| CD Plan Development |  | Design Phase |  | Professional Services |  |
| CD Implementation |  | Construction Phase |  | City Forces |  |

Section 3 Additional Information Demonstrating Implementation of Consent Decree Requirements

In accordance with Section IX.39.a.(iv) of the CD, the following section provides additional information that demonstrates that the City is implementing the remedial measures required in the CD.

3.1 MOM Programs

In accordance with Section V.12 of the CD, the City is developing and implementing specific Management, Operations, and Maintenance (MOM) programs. The Program elements addressed in this section provide information regarding activities involving the Metro WWTP as well as the City's Wastewater Collection and Transmission System (WCTS).

3.1.1 Information Management System (IMS) Program

The IMS Program was submitted to EPA and SCDHEC on January 4, 2016. The City received final approval of the IMS Program from EPA and SCDHEC on May 23, 2016.

The activities completed or in progress during the current reporting period are as follows:

- Sewer Mapping Program – 78% Complete

3.1.2 Sewer Mapping Program

In accordance with the requirements of the CD, the City was to develop and submit a Sewer Mapping Program (SMP) to EPA and SCDHEC within 60 days of the date of entry of the CD. The City received final approval of the SMP from EPA and SCDHEC on December 9, 2014.

Projects and significant activities completed during the current reporting period:

- The City continues to complete the electronic mapping of each Sewer Basin in accordance with the approved SMP implementation plan. Progress for each WCTS Minor Gravity Mapping basin is as follows:
 - West Columbia Basin – 95% complete
 - Smith Branch Basin – 86% complete
 - Saluda River Basin – 88% complete
 - Rocky Branch Basin – 49% complete
 - Mill Creek Basin – 28% complete
 - Gills Creek Basin – 37% complete
 - Crane Creek Basin – 67% complete
 - Broad River Basin – 27% complete

3.1.3 Transmission System Operations and Maintenance Program (TSOMP)

The TSOMP was submitted to EPA and SCDHEC on May 18, 2015. The City received final approval of the TSOMP from EPA and SCDHEC on September 2, 2016.

The activities completed or in progress during the current reporting period are as follows:

- SCADA System Enhancements – 80% Complete
- Force Main and Easement Maintenance (Easement survey and marking and initial clearing to the surveyed limits, where practical) – 70% Complete

3.1.4 Gravity Sewer System Operation and Maintenance Program (GSOMP)

The GSOMP was submitted to EPA and SCDHEC on November 20, 2015. The City received final approval of the GSOMP from EPA and SCDHEC on May 23, 2016.

The activities completed or in progress during the current reporting period are as follows:

- Gravity Sewer Easement survey and marking and initial clearing to survey the limits, where practical – 20% Complete
- The GSOMP was revised in early 2019 to establish procedures related to inverted siphons and to update Key Performance Indicators tracked by the City.
- The 30 day EPA mandated public comment period for the revised GSOMP began on March 25, 2019.

3.2 Continuing Sewer Assessment Program (CSAP) for the WCTS

The CSAP was submitted to EPA and SCDHEC on June 9, 2015. The City received final approval of the CSAP from EPA and SCDHEC on May 23, 2016. The CSAP was revised and resubmitted to EPA and SCDHEC on October 3, 2018. The City received approval of the revised CSAP from EPA and SCDHEC on February 6, 2019.

The activities under the Major Components of the CSAP completed or in progress during the current reporting period are as follows:

- Major Gravity Sewer Video Inspection or Multi-Sensor Inspection – 95% Complete
- Major Pump Stations Condition Assessment – 95% Complete
- Major Force Mains Field Assessment – 95% Complete

The activities under the Minor Components of the CSAP completed or in progress during the current reporting period are as follows:

- Minor Gravity Sewer and Manholes Condition Assessment – 48% Complete
- Minor Pump Stations Condition Assessment – 48% Complete
- Minor Force Mains Field Assessment – 48% Complete

3.3 Infrastructure Rehabilitation Report (IRR) for the WCTS

In accordance with Section V.16 of the CD, the City shall submit an Infrastructure Rehabilitation Report (IRR) summarizing the results of the CSAP of the major components of the WCTS and a description of proposed rehabilitation projects. The IRR is to be submitted within six months after the City has assessed the major components of the WCTS once pursuant to the CSAP. As rehabilitation projects are identified through the assessments described in Section 3.2 and in the normal course of operations and maintenance, the City is proceeding with design and construction of those projects. Completion percentages of projects currently in progress are as follows:

- SS725802 Greenlawn Dr. to Burnside #1 PS (Hampton Forest) Phase 2 – Design 98% Complete
- SS7261 Lake Katherine Sewer Line Capacity Enhancement – Construction 0% Complete
- SS7289 Rivermont Drive Pump Station and Force Main – Design 98% Complete
- SS7301 Bull Street – Construction in Progress; a completion percentage cannot be provided due to a varying scope of work and timeline for this project.
- SS7330 Upper Mill Creek Sewer Improvements – Design 45% Complete
- SS7331 Upper Kinley Creek Sewer Improvements Ph. 1 – Design 90% Complete
- SS733701 East Rocky Branch Improvements Ph. 1 – Design 95% Complete
- SS733702 East Rocky Branch Improvements Ph. 2 – Design 90% Complete
- SS735002 Crane Creek Upper North Branch Extension – Design 95% Complete
- SS735003 Crane Creek Lower North Branch Capacity Upgrade Phase 1 – Design 90% Complete
- SS7389 Crane Creek and Smith Branch Manhole Repair and Mitigation – Construction 80% Complete
- SS7428 Lower Saluda Relief Sewer and Major Pipe Rehabilitation – Design 35% Complete
- SS7433 Cunningham Rd, Johnson, Cramer Dr, Summerlea Dr – Design 30% Complete
- SS7450 Crane Creek Lower North Branch Capacity Upgrade Phase 2 – Design 5% Complete
- SS7454 Broad River Force Main Replacement and Gravity Sewer Capacity Improvements – Design 20% Complete
- SS7465 Lower Crane Creek Relief Sewer Phase 2 – Design 0% Complete
- SS7466 Lower Rocky Branch Relief Sewer Phase 1 – Design 25% Complete
- SS7467 North Columbia Pump Station Upgrade – Design 10% Complete
- SS7470 Lower Crane Creek Relief Sewer Phase 1 – Design 5% Complete
- SS7474 Upper North Branch and North Richland Crane Creek Sewer Improvements Phase 1 – Design 0% Complete

In accordance with Section V.16.c of the CD, the City shall submit a Supplemental Infrastructure Rehabilitation Report (SIRR) which shall update all portions of the IRR to reflect additional information developed by the City through completion of the CSAP of the minor components of the WCTS. The SIRR is to be submitted within six months after the City has assessed the remainder of the entire WCTS pursuant to the CSAP. As rehabilitation projects are identified through the assessments described in Section 3.2 and in the normal course of operations and maintenance, the City is proceeding with design and construction of those projects. Completion percentages of projects currently in progress are as follows:

- SS6786 Annual Sanitary Sewer Manhole Rehabilitation – 2019 Construction 31% Complete
- SS6857 Olympia Subdivision Sewer System Evaluation Survey (SSES) and Rehabilitation – Design 75% Complete
- SS6966 Annual Rehab on Lines less than 15” – 2019 Construction 10% Complete
- SS7172 Rehabilitation/Replacement Harbison #2, Mallard Point and Animal Shelter PS – Construction 40% Complete
- SS7208 Saluda River Basin SSES and Rehabilitation for SR-03, 10, & 12 – Construction 99% Complete
- SS7279 Smith Branch-02 SSES and Rehabilitation – Construction 100% Complete
- SS7280 Rocky Branch-01 SSES and Rehabilitation – Construction 98% Complete
- SS7323 Food Lion PS Improvements – Design 95% Complete
- SS7362 Smith Branch 01 SSES – Construction 62% Complete
- SS7363 Smith Branch 03 SSES – Construction 5% Complete
- SS7424 SSES and Sewer Rehabilitation Implementation BR02 – Design 20% Complete
- SS7425 SSES and Sewer Rehabilitation Implementation RB03 – Design 30% Complete
- SS7435 Wexford and Windsong Lift Stations Evaluation and Rehabilitation Project – Design 10% Complete
- SS7437 Miscellaneous Lift Station Improvements and Backup Power Addition Project – Design 15% Complete
- SS7462 Investigation of Crockett Road, Atlas Road and Versch Lock Lift Stations – Design 5% Complete
- SS7463 SSES and Sewer Rehabilitation Implementation CC01 – Design 15% Complete
- SS7464 SSES and Sewer Rehabilitation Implementation CC02 and CC04 – Design 10% Complete
- SS7468 Three Rivers Force Main Replacement – Design 1% Complete
- SS7478 Rocky Branch 01 SSES Phase 2 – Design 20% Complete
- SS7479 Smith Branch 02 SSES Phase 2 – Design 18% Complete

3.4 Supplemental Environmental Project

In accordance with Section VIII and Appendix I of the CD, the City will perform a Supplemental Environmental Project (SEP). Within three years of the effective date of the CD, the City was to submit to EPA preliminary reports on the condition of Rocky Branch, Smith Branch, and Gills Creek and plans for Phase II for each of the SEP watersheds. On March 24, 2016, the City submitted a supplemental report related to the October 4, 2015 *force majeure* event and requested an additional six months to

November 21, 2017 to complete the submittal of the preliminary reports and plans for improving the SEP areas. This request was granted by EPA. The SEP Preliminary Report and Phase II plan for Rocky Branch, Smith Branch, and Gills Creek was submitted to EPA on June 14, 2017.

The activities completed or in progress during the current reporting period are as follows:

- As of January 24, 2019, construction is 100% complete for the MLK Detention Project, which will meet the SEP Phase II requirements for Rocky Branch.

Section 4 Quarterly SSO Report

In accordance with Section IX.39.a.(ii) of the CD, the City is to provide a list of all SSOs that occurred during the reporting period in a tabular format along with information on the date, time, location, source, duration, estimated volume, receiving water, cause, and actions taken to resolve the SSO.

Table 1 - SSO Report, 1st Quarter 2019

| City of Columbia, SC Quarterly SSO Listing 1st Quarter 2019 | | | | | | | | | |
|---|----------|---|----------|---------------------------|---------------------------|----------------------------|---------------------------|-----------------|---|
| SSO Date | SSO Time | Location | Source | Date of Corrective Action | Time of Corrective Action | Estimated Volume (gallons) | Receiving Water (if any) | Cause | Actions Taken |
| 1/5/2019 | 12:09 | 212 TS Martin Dr, Columbia, SC 29204 | Manhole | 1/5/2019 | 12:15 | 1,825 | | Grease | Washed Main Line 150 Feet To Remove Stoppage. Main Line Wash To Remove Grease. |
| 1/6/2019 | 17:38 | 1201 Bailey St, Columbia, SC 29203 | Manhole | 1/6/2019 | 18:00 | 3,993 | Smith Branch Tributary | Grease | Washed Main Line 300 Feet. Removed Stoppage. |
| 1/7/2019 | 14:20 | 7904 Trailwood Ln, Columbia, SC 29209 | Manhole | TBD | | 54 | | Collapsed Line | Washed Main Line 150 Feet, Removed Stoppage. CIPP Point Repair. |
| 1/7/2019 | 19:07 | 828 Laurel Hill Ln, Columbia, SC 29201 | Manhole | TBD | | 1,110 | Storm Drain | Collapsed Line | Jetted Main Line; Set Up Bypass Pump. Main Line Repairs. |
| 1/7/2019 | | 6509 Easter St, Columbia, SC 29203 | Cleanout | 1/7/2019 | 09:30 | 30 | | Debris | Removed Stoppage To Resume Normal Flow. Washed Service Line 45 Feet To Remove Stoppage. |
| 1/8/2019 | 18:13 | 915 Rolling View Ln, Columbia, SC 29210 | Cleanout | 1/8/2019 | 18:50 | 259 | Creek | Roots | Removed Stoppage To Resume Normal Flow. Tap Renewal/Root Removal. |
| 1/8/2019 | 14:25 | 314 Hilltop Pl, Columbia, SC 29203 | Other | 1/14/2019 | TBD | 4,568 | | Collapsed Line | Washed Main Line 275 Feet To Get Stoppage Down. Main Line Repair. |
| 1/9/2019 | 13:10 | 1241 Assembly St, Columbia, SC 29201 | Cleanout | 1/9/2019 | 13:30 | 10 | | Debris | Washed Service Line 20 Feet. Removed Stoppage. |
| 1/9/2019 | 20:10 | 2108 Georgia Elam Ln, Columbia, SC 29204 | Cleanout | 1/14/2019 | 09:45 | 15 | | Roots | Removed Stoppage To Resume Normal Flow. Service Line Repair. |
| 1/10/2019 | 12:00 | 1540 Frye Rd, Columbia, SC 29203 | Manhole | 1/15/2019 | 12:00 | 720 | | Roots | Washed Main Line 475 Feet. Heavy Main Line Washing To Remove Roots. |
| 1/11/2019 | 14:00 | 2221 Devine St, Columbia, SC 29205 | Manhole | TBD | | 600 | Storm Drain | Roots | Removed Stoppage To Resume Normal Flow. Run Root Cutter Through Lateral Line To Remove Roots. |
| 1/14/2019 | 10:00 | 401 Harbison Blvd, Columbia SC 29212 | Manhole | 1/14/2019 | 12:40 | 1,200 | Tributary To Kinley Creek | Roots | Washed Main Line 150 Feet To Remove Stoppage And Resume Normal Flow. Main Line Repair. |
| 1/16/2019 | 09:00 | 1540 Frye Rd, Columbia, SC 29203 | Manhole | TBD | | 2,876 | | Roots | Washed Main Line 1152 Feet; Removed Multiple Stoppages. Repair In Design Phase To Reroute The Line. |
| 1/16/2019 | 21:45 | 401 Bridle Trl, Columbia, SC 29203 | Cleanout | TBD | | 10 | | Roots | Washed Service Line 15 Feet And Removed Stoppage. Service Line Root Cut. |
| 1/17/2019 | 13:15 | 4805 Barrington Dr, Columbia, SC 29203 | Cleanout | 1/17/2019 | 15:00 | 15 | Drainage Ditch | Collapsed Line | Service Line Repair. |
| 1/21/2019 | 14:20 | 830 Gracern Rd, Columbia, SC 29210 | Manhole | 1/22/2019 | 12:00 | 4,487 | Storm Drain | Grease | Removed Stoppage To Resume Normal Flow. Main Line Wash To Remove Grease. |
| 1/23/2019 | 11:10 | 2204 N Lake Dr, Columbia, SC 29212 | Manhole | 1/23/2019 | 11:10 | 70,404 | | Debris | Removed Stoppage To Resume Normal Flow. Washed Main Line 500 Feet, Stoppage Removed. |
| 1/24/2019 | 14:04 | 3300 Park St, Columbia, SC 20201 | Manhole | 1/24/2019 | 14:15 | 650 | Storm Drain | Debris | Removed Debris Blocking Bypass Discharge Hose. |
| 1/25/2019 | 12:40 | 3000 Harden St, Columbia, SC 29203 | Cleanout | 1/25/2019 | 12:40 | 30 | | Debris | Washed Main Line To Remove Debris And Resume Normal Flow. |
| 1/25/2019 | 14:50 | 108 Crestmore Dr, Columbia, SC 29209 | Cleanout | TBD | | 100 | | Collapsed Line | Removed Stoppage To Resume Normal Flow. Service Line Repair. |
| 1/30/2019 | 11:45 | 3411 Deerfield Dr, Columbia, SC 29204 | Cleanout | 1/30/2019 | 12:00 | 40 | | Collapsed Line | Washed Service Line 40 Feet, Removed Stoppage. Service Line Repair. |
| 2/1/2019 | 08:40 | 1004 Craven St, Columbia, SC 29203 | Manhole | TBD | | 1,534 | Storm Drain | Roots | Removed Roots From Manhole To Resume Normal Flow. Manhole Clean To Remove Root Ball. |
| 2/1/2019 | 14:52 | 3638 Falling Springs Rd, Columbia, SC 29203 | Manhole | TBD | | 20 | Storm Drain | Roots | Jetted 300 Feet - Stoppage Removed. Main Line Repair. |
| 2/4/2019 | N/A | 1200 Simmon Tree Lane, Columbia, SC 29201 | Manhole | 2/4/2019 | 05:00 | 450 | Storm Drain | Treatment Plant | Raised Trough And Resecured It. |

| City of Columbia, SC Quarterly SSO Listing 1st Quarter 2019 | | | | | | | | | |
|---|----------|--|----------|---------------------------|---------------------------|----------------------------|----------------------------------|--------------------------|--|
| SSO Date | SSO Time | Location | Source | Date of Corrective Action | Time of Corrective Action | Estimated Volume (gallons) | Receiving Water (if any) | Cause | Actions Taken |
| 2/6/2019 | 19:17 | 3900 Bentley Dr, Columbia, SC 29210 | Manhole | TBD | | 582 | Tributary To Broad River | Collapsed Line | Jetted Main Line 165 Feet, Removed Stoppage To Resume Normal Flow. Main Line Repair. |
| 2/7/2019 | 15:00 | 9519 Farrow Rd, Columbia, SC 29203 | Cleanout | 2/7/2019 | 15:21 | 21 | | Debris | Removed Stoppage To Resume Normal Flow. Washed Service Line 20 Feet, Removed Stoppage. |
| 2/8/2019 | 19:30 | 2025 Harden St, Columbia, SC 29204 | Manhole | 2/11/2019 | 09:00 | 3 | | Grease | Washed Main Line 150 Feet To Remove Stoppage. Main Line Wash To Remove Grease. |
| 2/9/2019 | 11:15 | 109 Stephenson Ln, Columbia, SC 29212 | Cleanout | 2/9/2019 | 11:30 | 24 | Storm Drain | Debris | Washed Service Line 20 Feet To Remove Stoppage. |
| 2/9/2019 | 14:40 | 209 Palm Lake Dr, Columbia, SC 29212 | Manhole | TBD | | 70 | | Debris | Removed Stoppage To Resume Normal Flow. Clean Out Debris From Manhole And Around Casting/Lid. |
| 2/9/2019 | 20:00 | 7921 Teague Rd, Columbia, SC 29209 | Manhole | 2/9/2019 | 21:00 | 120 | | Roots | Removed Stoppage To Resume Normal Flow. Remove Roots From Manhole And Main Line. |
| 2/13/2019 | 18:27 | 5120 Brickyard Rd, Columbia, SC 29203 | Manhole | 2/14/2019 | 12:00 | 7,650 | Unnamed Creek | Debris | Removed Stoppage To Resume Normal Flow. Cleaned Debris Out Of Manhole. |
| 2/21/2019 | 11:00 | 230 Bush River Rd, Columbia, SC 29210 | Manhole | 2/21/2019 | 12:00 | 3,000 | Drainage Ditch | Debris | Washed Main Line 300 Feet To Resume Normal Flow. Removed Debris (Contractor Bag) From Manhole. |
| 3/3/2019 | 14:39 | 109 Stephenson Ln, Columbia, SC 29212 | Cleanout | TBD | | 375 | Unnamed Tributary To Koon Branch | Roots | Washed Main Line 250 Feet To Remove Stoppage. Main Line Repair. |
| 3/4/2019 | 15:00 | 1600 Garner Ln, Columbia, SC 29210 2119 Marley Dr, Columbia, SC 29210 | Manhole | TBD | | 122,833 | Broad River | 3rd Party Responsibility | Manually Opened The Discharge Valves And Restarted The Pumps. Requesting Utility Power Company To Monitor Incoming Power Supply Issues. |
| 3/6/2019 | 18:35 | 275 Hillsborough St, Columbia, SC 29212 | Manhole | 3/6/2019 | 18:49 | 262 | | Grease | Jetted Main Line 350 Feet To Remove Stoppage And Resume Normal Flow. |
| 3/6/2019 | 12:30 | 6530 Davidson St, Columbia, SC 29209 | Manhole | 3/8/2019 | 10:00 | 500 | | Roots | Washed Main Line To Remove Stoppage And Resume Normal Flow. Main Line Root Cut. |
| 3/7/2019 | 14:24 | 6530 Davidson St, Columbia, SC 29209 | Manhole | 3/8/2019 | TBD | 37 | | Roots | Washed Main Line To Resume Normal Flow. Main Line Root Cut. |
| 3/8/2019 | 11:25 | 1709 Lake Murray Blvd, Columbia, SC 29212 | Manhole | 3/8/2019 | 16:30 | 90 | | Debris | Washed Main Line To Resume Normal Flow. Main Line Washed 377 Feet, Stoppage Removed. |
| 3/8/2019 | 09:45 | 3247 Lucius Rd, Columbia, SC 20201 | Other | 3/8/2019 | 16:00 | 50 | | Equipment Failure | Turned Off Ball Valves Located On The ARVs To Stop The Leak. Installed Hoses To The ARVs To Direct The Leakage Back To The Wet Well At The Lift Station. |
| 3/10/2019 | 20:00 | 7921 Teague Rd, Columbia, SC 29209 | Cleanout | 3/12/2019 | TBD | 15 | | Roots | Service Line Wash From Tap In Manhole. Service Line Root Cut. |
| 3/11/2019 | 10:50 | 6530 Davidson St, Columbia, SC 29209 | Manhole | 3/11/2019 | 10:50 | 600 | | Collapsed Line | Washed Main Line 100 Feet To Remove Stoppage. |
| 3/11/2019 | 17:20 | 515 Richland St, Columbia, SC 29201 | Cleanout | 3/12/2019 | 11:00 | 9 | | Collapsed Line | Washed Service Line 35 Feet To Remove Stoppage. Service Line Repair. |
| 3/12/2019 | 18:00 | 1319 Hancock St, Columbia, SC 29205 | Manhole | TBD | | 24 | | Roots | Washed Main Line 200 Feet To Remove Stoppage And Resume Normal Flow. Main Line Repair And Tap Renewal. |
| 3/12/2019 | 21:50 | 112 Shetford Rd, Irmo, SC 29063 | Cleanout | 3/18/2019 | TBD | 6 | | Roots | Washed Service Line 15 Feet From City Cleanout. Service Line Repair. |
| 3/13/2019 | 13:50 | 120 Atlas Ct, Columbia, SC 29209 | Other | 3/14/2019 | 10:00 | 884 | Storm Drain | Collapsed Line | Washed Main Line 290 Feet And Removed Stoppage. Main Line Repair. |
| 3/13/2019 | 09:00 | 22 Thistle Ct, Irmo, SC 29063 | Cleanout | 3/13/2019 | 16:30 | 383 | Swygert Branch | Pump Station Failure | Bypassed Bad Phase Monitor At Pump Station #145 To Get Station Back On Line. Replaced Phase Monitor. |
| 3/14/2019 | 12:30 | 908 Woodland Dr, Columbia, SC 29205 | Cleanout | 3/14/2019 | 12:50 | 30 | | Debris | Washed City Service Line 40 Feet. Service Line Wash. |
| 3/15/2019 | 17:15 | 2346 Two Notch Rd, Columbia, SC 29204 | Manhole | 3/18/2019 | TBD | 9 | | Roots | Washed Main Line 250 Feet. Main Line Repair. |
| 3/26/2019 | 08:30 | 815 King St, Columbia, SC 29205 | Manhole | TBD | | 80 | | Debris | Removed Stoppage To Resume Normal Flow. Rerouting Service Lines For 815 And 819 King St To The Main Line On King St. |

As noted in Section IV.8.a of the CD, a Building Backup is defined as a release of wastewater into a building or onto private property that is caused by blockages, flow conditions, or other malfunctions in the WCTS.

No building backups were identified within the City's system for the current reporting period.

Section 5 SEP Water Quality Monitoring Results

In accordance with Section IX.39.a.(v) of the CD, the following section provides a summary of the results of water quality monitoring conducted during the previous calendar quarter as part of the Supplemental Environmental Project (SEP) described in Appendix I of the CD.

5.1 Sampling Conducted and Results

As a part of the SEP requirements established in Section VIII and Appendix I of the CD, the City is to conduct water quality monitoring at three locations to assist in evaluation of the environmental benefits of the SEP in improving water quality in Smith Branch and Gill's Creek. The City is to implement a program for ambient monitoring of dissolved oxygen (DO), total suspended solids (TSS), temperature, and E. coli at the following monitoring sites:

- Gill's Creek at Garner's Ferry Road
- Smith Branch at North Main Street
- Gill's Creek at Bluff Road

In accordance with the requirements of the CD, the City was to submit a Quality Assurance Project Plan (QAPP) to SCDHEC within 60 days of the date of entry of the CD. The City originally submitted the QAPP to SCDHEC on July 18, 2014 in advance of the deliverable deadline. The City subsequently received comments from SCDHEC and resubmitted the QAPP to SCDHEC on January 13, 2015. The City received final approval of the QAPP from EPA and SCDHEC on January 15, 2016. The QAPP was revised and resubmitted to SCDHEC on May 31, 2017 and on December 19, 2018 to reflect changes in City personnel. The revised QAPP was approved on January 9, 2019. The QAPP was subsequently revised and resubmitted to SCDHEC on January 22, 2019 to reflect a change in the testing laboratory. Following comments from SCDHEC and additional resubmittals, the City received approval of the revised QAPP from EPA and SCDHEC on April 2, 2019.

The City monitored quarterly for the first three years under the CD (through January 15, 2019) and will monitor monthly (or every other month at the Gills Creek at Bluff Road site) from years four through six under the CD.

Water quality monitoring for 2019 Q1 was completed on January 29, 2019, February 27, 2019, and April 1, 2019. Monitoring results are provided below for the following samples:

- C-001: Gill's Creek at Garner's Ferry Road
- B-280: Smith Branch at North Main Street
- C-017: Gill's Creek at Bluff Road

City of Columbia Quality Assurance Project Plan (QAPP) Data

Verification and Validation Form

City of Columbia Supplemental Environmental Projects QAPP

November 2015, Revised May 2017, Revised December 2018

Laboratory Report Date: 1/29/19

The undersigned verifies the data in the above referenced report, per the QAPP requirements.

Andrea Bolling
Project Verifier/QA Manager

3/8/19
Date

Andrea Bolling
Printed Name

The undersigned validates the data in the above referenced report, per the QAPP requirements.

AJ Jesse
Project Manager/Project Validator

2/22/19
Date

AJ Jesse
Printed Name



ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT:

City of Columbia
1136 Washington Street
Columbia, SC 29201

PROJECT:

WATER QUALITY MONITORING

REPORT DATE:

01.29.19

REPORT APPROVED BY:

Bryant W. Boyd
Laboratory Manager

bryant@axs-inc.com

Any questions related to this report should be directed to Access Analytical, Inc. via phone at 803.781.4243 or via email at the address listed above.

Access Analytical, Inc. SCDHEC certification #: 32571001 (Irmo Lab)

Access Analytical, Inc.
15 Thames Valley Rd. ~ Irmo, SC 29063
PHONE: 803.781.4243 ~ FAX: 803.781.4303 ~ WEB: www.axs-inc.com



Report of Analysis

Lab ID #: 17228-001

Matrix: Waste Water

Project: WATER QUALITY MONITORING

Collected: 1/24/2019 @ 13:30

Sample Name: C-017

Date Received: 1/24/2019 @ 15:08

Client ID #:

| Parameter | Result | Reporting Limit | Units | Method Reference | Data Flag | Date/Time of Analysis | Analyst |
|---------------|--------|-----------------|-------|------------------|-----------|-----------------------|---------|
| DO | 9.78 | None | mg/L | SM 4500-O G-2011 | | 1/24/2019 13:30 | JRS |
| E. Coli (MPN) | 791.5 | 1 | MPN | SM 9223 B-2004 | | 1/24/2019 15:52 | MML |
| Temperature | 13.3 | None | oC | SM 2550B-2010 | | 1/24/2019 13:30 | JRS |
| TSS | 21.7 | 1 | mg/L | SM 2540 D-2011 | | 1/24/2019 11:25 | RDA |



Report of Analysis

Lab ID #: 17228-002

Matrix: Waste Water

Project: WATER QUALITY MONITORING

Collected: 1/24/2019 @ 14:01

Sample Name: C-001

Date Received: 1/24/2019 @ 15:08

Client ID #:

| Parameter | Result | Reporting Limit | Units | Method Reference | Data Flag | Date/Time of Analysis | Analyst |
|---------------|--------|-----------------|-------|------------------|-----------|-----------------------|---------|
| DO | 11.42 | None | mg/L | SM 4500-O G-2011 | | 1/24/2019 14:01 | JRS |
| E. Coli (MPN) | 866.4 | 1 | MPN | SM 9223 B-2004 | | 1/24/2019 15:52 | MML |
| Temperature | 12.1 | None | oC | SM 2550B-2010 | | 1/24/2019 14:01 | JRS |
| TSS | 20.3 | 1 | mg/L | SM 2540 D-2011 | | 1/24/2019 11:25 | RDA |



Report of Analysis

Lab ID #: 17228-003

Project: WATER QUALITY MONITORING

Sample Name: B-280

Client ID #:

Matrix: Waste Water

Collected: 1/24/2019 @ 14:32

Date Received: 1/24/2019 @ 15:08

| Parameter | Result | Reporting Limit | Units | Method Reference | Data Flag | Date/Time of Analysis | Analyst |
|---------------|--------|-----------------|-------|------------------|-----------|-----------------------|---------|
| DO | 10.20 | None | mg/L | SM 4500-O G-2011 | | 1/24/2019 14:32 | JRS |
| E. Coli (MPN) | 1732.9 | 1 | MPN | SM 9223 B-2004 | | 1/24/2019 15:52 | MML |
| Temperature | 14.7 | None | oC | SM 2550B-2010 | | 1/24/2019 14:32 | JRS |
| TSS | 22.3 | 1 | mg/L | SM 2540 D-2011 | | 1/24/2019 11:25 | RDA |



Laboratory Endorsement / Definitions

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency, Standard Methods or other recognized agencies.

Common abbreviations that may be utilized in this report:

| | |
|---------------|--|
| ND | Indicates the result was Not Detected at the specified reporting limit |
| "<" | Indicated the result as less than the indicated amount |
| MI | Indicates the result was subject to Matrix Interference |
| TNTC | Indicates the result was Too Numerous to Count |
| SUB | Indicates the analysis was Sub-Contracted |
| FLD | Indicates the analysis was performed in the Field |
| DL | Detection Limit |
| DF | Dilution Factor |
| RL | Reporting Limit |
| MDL | Calculated minimum detection limit |
| PQL | Practical Quantitation Limit |
| RE | Re-analysis |

Reporting flags that may be utilized in this report:

| | |
|-----------|--|
| J | Indicates the result is between the MDL and PQL and considered to be an estimated result |
| MB | Indicates the analyte was detected in the associated Method Blank |
| H | Indicates the recommended holding time was exceeded |
| * | Indicates a non-compliant or not applicable QC recovery or RPD |
| A | BOD or CBOD GGA check value for this sample did not meet acceptance criteria. |
| B | BOD or CBOD blank depletion did not meet acceptance criteria. |
| C | Indicates the spike % recovery was not acceptable. |
| D | Indicates the duplicate % difference was not acceptable. |
| E | Toxicity is apparent in the sample. |

Sample receipt at Access Analytical is documented through the attached chain of custody. In accordance with laboratory protocol, this report shall be reproduced only in full and with the written permission of Access Analytical, Inc.. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the attached report and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.



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ANALYTICAL, INC.

Sample Receipt

| | |
|--|-----|
| Were samples received on ice? | YES |
| Were samples received within required temperature limits? | YES |
| Are the number of samples the same as stated on the chain of custody? | YES |
| Are samples submitted with a correct and complete chain of custody? | YES |
| Are bottle caps tight and securely in place, coolers and samples intact? | YES |
| Are the correct sample containers provided? | YES |
| Were samples within the holding time for requested test(s)? | YES |
| Is the volume of sample submitted sufficient for the requested test(s)? | YES |
| Is there sufficient air space in bottle for bacteriological analysis? | YES |
| Were samples received with applicable preservative? | YES |

City of Columbia Quality Assurance Project Plan (QAPP) Data

Verification and Validation Form

City of Columbia Supplemental Environmental Projects QAPP

November 2015, Revised May 2017, Revised December 2018

Laboratory Report Date: 2/27/19

The undersigned verifies the data in the above referenced report, per the QAPP requirements.

Andrea Bolling
Project Verifier/QA Manager

3/8/19
Date

Andrea Bolling
Printed Name

The undersigned validates the data in the above referenced report, per the QAPP requirements.

AJ Jesse
Project Manager/Project Validator

3/8/19
Date

AJ Jesse
Printed Name



ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT:

City of Columbia
1136 Washington Street
Columbia, SC 29201

PROJECT:

WATER QUALITY MONITORING

REPORT DATE:

02.27.19

REPORT APPROVED BY:

Bryant W. Boyd
Laboratory Manager

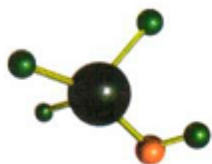
bryant@axs-inc.com

Any questions related to this report should be directed to Access Analytical, Inc. via phone at 803.781.4243 or via email at the address listed above.

- South Carolina DHEC state lab certification #: 32571001
- Florida – DOH national NELAP lab accreditation #: E871145



Access Analytical, Inc.
15 Thames Valley Rd. ~ Irmo, SC 29063
PHONE: 803.781.4243 ~ FAX: 803.781.4303 ~ WEB: www.axs-inc.com



Report of Analysis

Lab ID #: 17817-001

Matrix: Waste Water

Project: WATER QUALITY MONITORING

Collected: 2/21/2019 @ 10:06

Sample Name: C-017

Date Received: 2/21/2019 @ 14:52

Client ID #:

| Parameter | Result | Reporting Limit | Units | Method Reference | Data Flag | Date/Time of Analysis | Analyst |
|---------------|--------|-----------------|-------|------------------|-----------|-----------------------|---------|
| DO | 10.28 | None | mg/L | SM 4500-O G-2011 | | 2/21/2019 10:06 | JRS |
| E. Coli (MPN) | 91.0 | 1 | MPN | SM 9223 B-2004 | | 2/21/2019 15:20 | RDA |
| Temperature | 9.9 | None | oC | SM 2550B-2010 | | 2/21/2019 10:06 | JRS |
| TSS | 2.3 | 1 | mg/L | SM 2540 D-2011 | | 2/22/2019 13:40 | RDA |



Report of Analysis

Lab ID #: 17817-002

Matrix: Waste Water

Project: WATER QUALITY MONITORING

Collected: 2/21/2019 @ 10:36

Sample Name: C-001

Date Received: 2/21/2019 @ 14:52

Client ID #:

| Parameter | Result | Reporting Limit | Units | Method Reference | Data Flag | Date/Time of Analysis | Analyst |
|---------------|--------|-----------------|-------|------------------|-----------|-----------------------|---------|
| DO | 10.13 | None | mg/L | SM 4500-O G-2011 | | 2/21/2019 10:36 | JRS |
| E. Coli (MPN) | 115.3 | 1 | MPN | SM 9223 B-2004 | | 2/21/2019 15:20 | RDA |
| Temperature | 10.9 | None | oC | SM 2550B-2010 | | 2/21/2019 10:36 | JRS |
| TSS | 6.7 | 1 | mg/L | SM 2540 D-2011 | | 2/22/2019 13:40 | RDA |



Report of Analysis

Lab ID #: 17817-003

Matrix: Waste Water

Project: WATER QUALITY MONITORING

Collected: 2/21/2019 @ 11:09

Sample Name: B-280

Date Received: 2/21/2019 @ 14:52

Client ID #:

| Parameter | Result | Reporting Limit | Units | Method Reference | Data Flag | Date/Time of Analysis | Analyst |
|---------------|---------|-----------------|-------|------------------|-----------|-----------------------|---------|
| DO | 10.47 | None | mg/L | SM 4500-O G-2011 | | 2/21/2019 11:09 | JRS |
| E. Coli (MPN) | >2419.6 | 1 | MPN | SM 9223 B-2004 | | 2/21/2019 15:20 | RDA |
| Temperature | 11.8 | None | oC | SM 2550B-2010 | | 2/21/2019 11:09 | JRS |
| TSS | 15.3 | 1 | mg/L | SM 2540 D-2011 | | 2/21/2019 9:30 | RDA |



Laboratory Endorsement / Definitions

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Common abbreviations that may be utilized in this report:

| | |
|---------------|--|
| ND | Indicates the result was Not Detected at the specified reporting limit |
| "<" | Indicated the result as less than the indicated amount |
| MI | Indicates the result was subject to Matrix Interference |
| TNTC | Indicates the result was Too Numerous to Count |
| SUB | Indicates the analysis was Sub-Contracted |
| FLD | Indicates the analysis was performed in the Field |
| DL | Detection Limit |
| DF | Dilution Factor |
| RL | Reporting Limit |
| MDL | Calculated minimum detection limit |
| PQL | Practical Quantitation Limit |
| RE | Re-analysis |

Reporting flags that may be utilized in this report:

| | |
|-----------|--|
| J | Indicates the result is between the MDL and PQL and considered to be an estimated result |
| MB | Indicates the analyte was detected in the associated Method Blank |
| H | Indicates the recommended holding time was exceeded |
| * | Indicates a non-compliant or not applicable QC recovery or RPD |
| A | BOD or CBOD GGA check value for this sample did not meet acceptance criteria. |
| B | BOD or CBOD blank depletion did not meet acceptance criteria. |
| C | Indicates the spike % recovery was not acceptable. |
| D | Indicates the duplicate % difference was not acceptable. |
| E | Toxicity is apparent in the sample. |

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ACCESS
ANALYTICAL, INC.

Sample Receipt

| | |
|--|-----|
| Were samples received on ice? | YES |
| Were samples received within required temperature limits? | YES |
| Are the number of samples the same as stated on the chain of custody? | YES |
| Are samples submitted with a correct and complete chain of custody? | YES |
| Are bottle caps tight and securely in place, coolers and samples intact? | YES |
| Are the correct sample containers provided? | YES |
| Were samples within the holding time for requested test(s)? | YES |
| Is the volume of sample submitted sufficient for the requested test(s)? | YES |
| Is there sufficient air space in bottle for bacteriological analysis? | YES |
| Were samples received with applicable preservative? | YES |

City of Columbia Quality Assurance Project Plan (QAPP) Data

Verification and Validation Form

City of Columbia Supplemental Environmental Projects QAPP

November 2015, Revised May 2017, Revised December 2018

Laboratory Report Date: 4/1/19

The undersigned verifies the data in the above referenced report, per the QAPP requirements.

Andrea Bolling

Project Verifier/QA Manager

4/5/19

Date

Andrea Bolling

Printed Name

The undersigned validates the data in the above referenced report, per the QAPP requirements.

AJ Jesse

Project Manager/Project Validator

4/5/19

Date

AJ Jesse

Printed Name



ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT:

City of Columbia
1136 Washington Street
Columbia, SC 29201

PROJECT:

WATER QUALITY ANALYSIS

REPORT DATE:

04.01.19

REPORT APPROVED BY:

Bryant W. Boyd
Laboratory Manager

bryant@axs-inc.com

Any questions related to this report should be directed to Access Analytical, Inc. via phone at 803.781.4243 or via email at the address listed above.

- South Carolina DHEC state lab certification #: 32571001
- Florida – DOH national NELAP lab accreditation #: E871145



Access Analytical, Inc.
15 Thames Valley Rd. ~ Irmo, SC 29063
PHONE: 803.781.4243 ~ FAX: 803.781.4303 ~ WEB: www.axs-inc.com



Report of Analysis

Lab ID #: 18512-001

Project: WATER QUALITY ANALYSIS

Sample Name: C-017

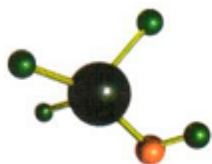
Client ID #:

Matrix: Waste Water

Collected: 3/25/2019 @ 13:46

Date Received: 3/25/2019 @ 15:20

| Parameter | Result | Reporting Limit | Units | Method Reference | Data Flag | Date/Time of Analysis | Analyst |
|---------------|--------|-----------------|-------|------------------|-----------|-----------------------|---------|
| DO | 7.81 | None | mg/L | SM 4500-O G-2011 | | 3/25/2019 13:46 | JRS |
| E. Coli (MPN) | 63.8 | 1 | MPN | SM 9223 B-2004 | | 3/25/2019 17:00 | MML |
| Temperature | 17.3 | None | oC | SM 2550B-2010 | | 3/25/2019 13:46 | JRS |
| TSS | 165 | 1 | mg/L | SM 2540 D-2011 | | 3/28/2019 11:20 | RDA |



Report of Analysis

Lab ID #: 18512-002

Project: WATER QUALITY ANALYSIS

Sample Name: C-001

Client ID #:

Matrix: Waste Water

Collected: 3/25/2019 @ 14:20

Date Received: 3/25/2019 @ 15:20

| Parameter | Result | Reporting Limit | Units | Method Reference | Data Flag | Date/Time of Analysis | Analyst |
|---------------|--------|-----------------|-------|------------------|-----------|-----------------------|---------|
| DO | 8.91 | None | mg/L | SM 4500-O G-2011 | | 3/25/2019 14:20 | JRS |
| E. Coli (MPN) | 146 | 1 | MPN | SM 9223 B-2004 | | 3/25/2019 17:00 | MML |
| Temperature | 17.0 | None | oC | SM 2550B-2010 | | 3/25/2019 14:20 | JRS |
| TSS | 12.0 | 1 | mg/L | SM 2540 D-2011 | | 3/28/2019 11:20 | RDA |



Report of Analysis

Lab ID #: 18512-003

Project: WATER QUALITY ANALYSIS

Sample Name: B-280

Client ID #:

Matrix: Waste Water

Collected: 3/25/2019 @ 14:48

Date Received: 3/25/2019 @ 15:20

| Parameter | Result | Reporting Limit | Units | Method Reference | Data Flag | Date/Time of Analysis | Analyst |
|---------------|--------|-----------------|-------|------------------|-----------|-----------------------|---------|
| DO | 9.78 | None | mg/L | SM 4500-O G-2011 | | 3/25/2019 14:48 | JRS |
| E. Coli (MPN) | 648.8 | 1 | MPN | SM 9223 B-2004 | | 3/25/2019 17:00 | MML |
| Temperature | 17.3 | None | oC | SM 2550B-2010 | | 3/25/2019 14:48 | JRS |
| TSS | 3.0 | 1 | mg/L | SM 2540 D-2011 | | 3/28/2019 11:20 | RDA |



Laboratory Endorsement / Definitions

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| DF | Dilution Factor |
| RL | Reporting Limit |
| MDL | Calculated minimum detection limit |
| PQL | Practical Quantitation Limit |
| RE | Re-analysis |

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|-----------|--|
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| * | Indicates a non-compliant or not applicable QC recovery or RPD |
| A | BOD or CBOD GGA check value for this sample did not meet acceptance criteria. |
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| C | Indicates the spike % recovery was not acceptable. |
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| E | Toxicity is apparent in the sample. |

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ACCESS
ANALYTICAL, INC.

Sample Receipt

| | |
|--|-----|
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| Were samples received within required temperature limits? | YES |
| Are the number of samples the same as stated on the chain of custody? | YES |
| Are samples submitted with a correct and complete chain of custody? | YES |
| Are bottle caps tight and securely in place, coolers and samples intact? | YES |
| Are the correct sample containers provided? | YES |
| Were samples within the holding time for requested test(s)? | YES |
| Is the volume of sample submitted sufficient for the requested test(s)? | YES |
| Is there sufficient air space in bottle for bacteriological analysis? | YES |
| Were samples received with applicable preservative? | YES |

