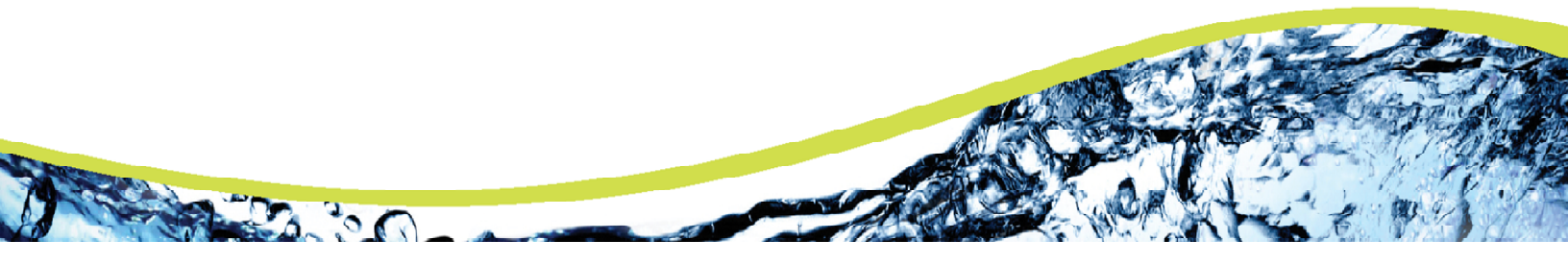


# Clean Water 2020 Program

## CONSENT DECREE QUARTERLY REPORT

January 1, 2017 – March 31, 2017

Corrected February 2018



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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.

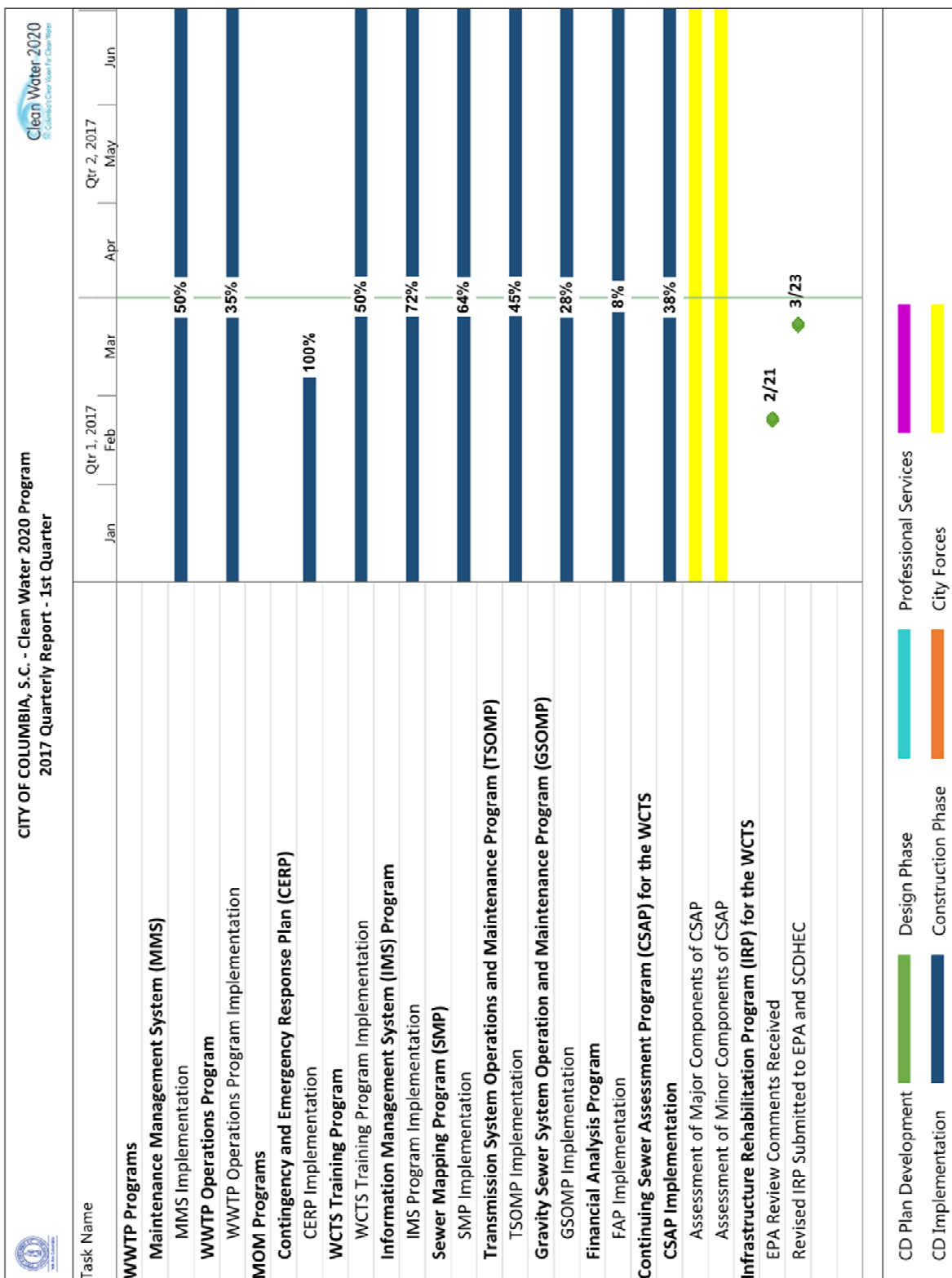
**Section 4 – Quarterly SSO Report**

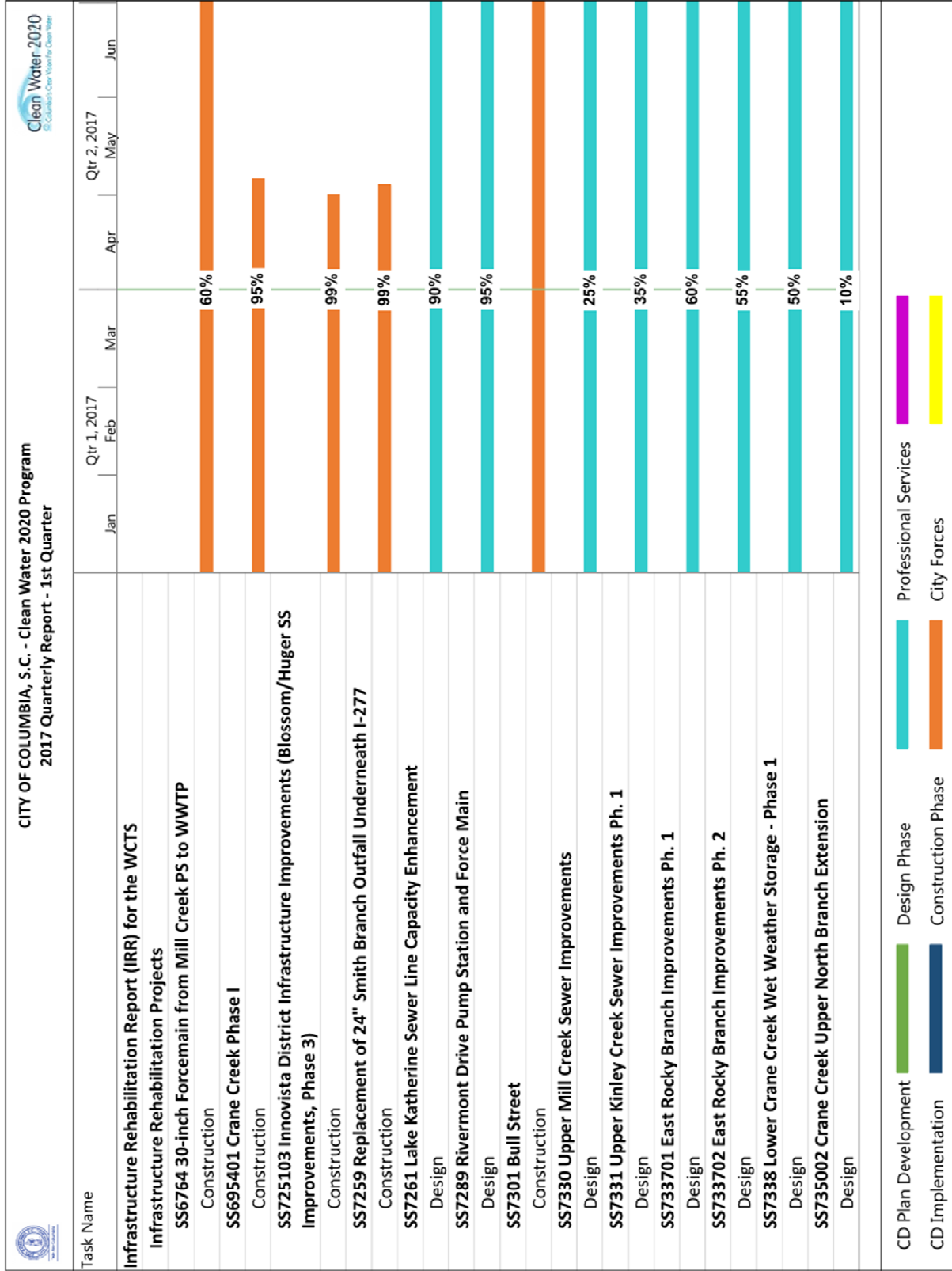
This section addresses the requirements of Section IX.39.a.(ii) of the Consent Decree and provides a tabular listing of sanitary sewer overflows (SSOs). The table includes the date, time, location, source, duration, estimated volume, receiving water (if any), cause, and actions taken to repair or otherwise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

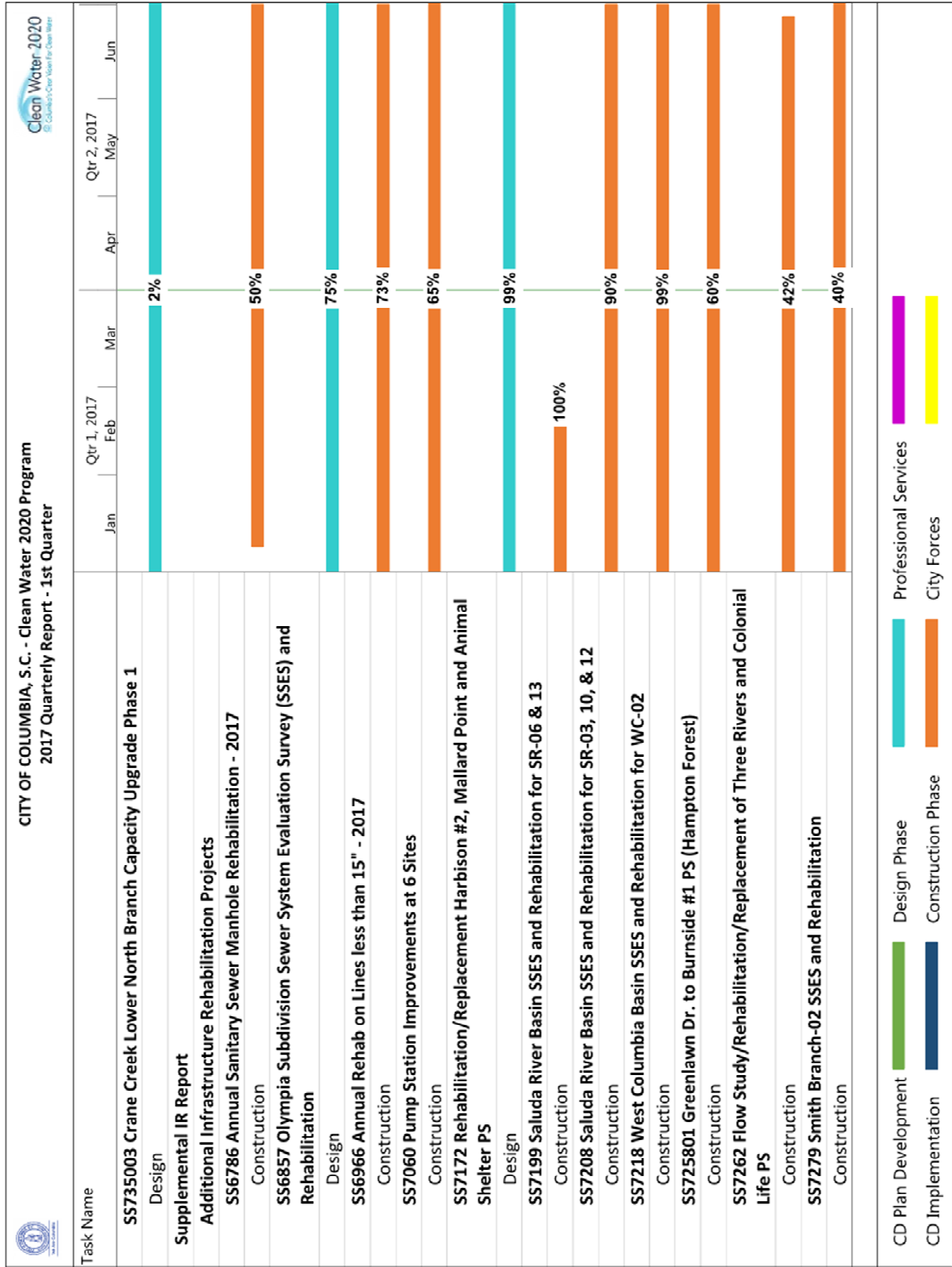
**Section 5 – SEP Water Quality Monitoring Results**

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.

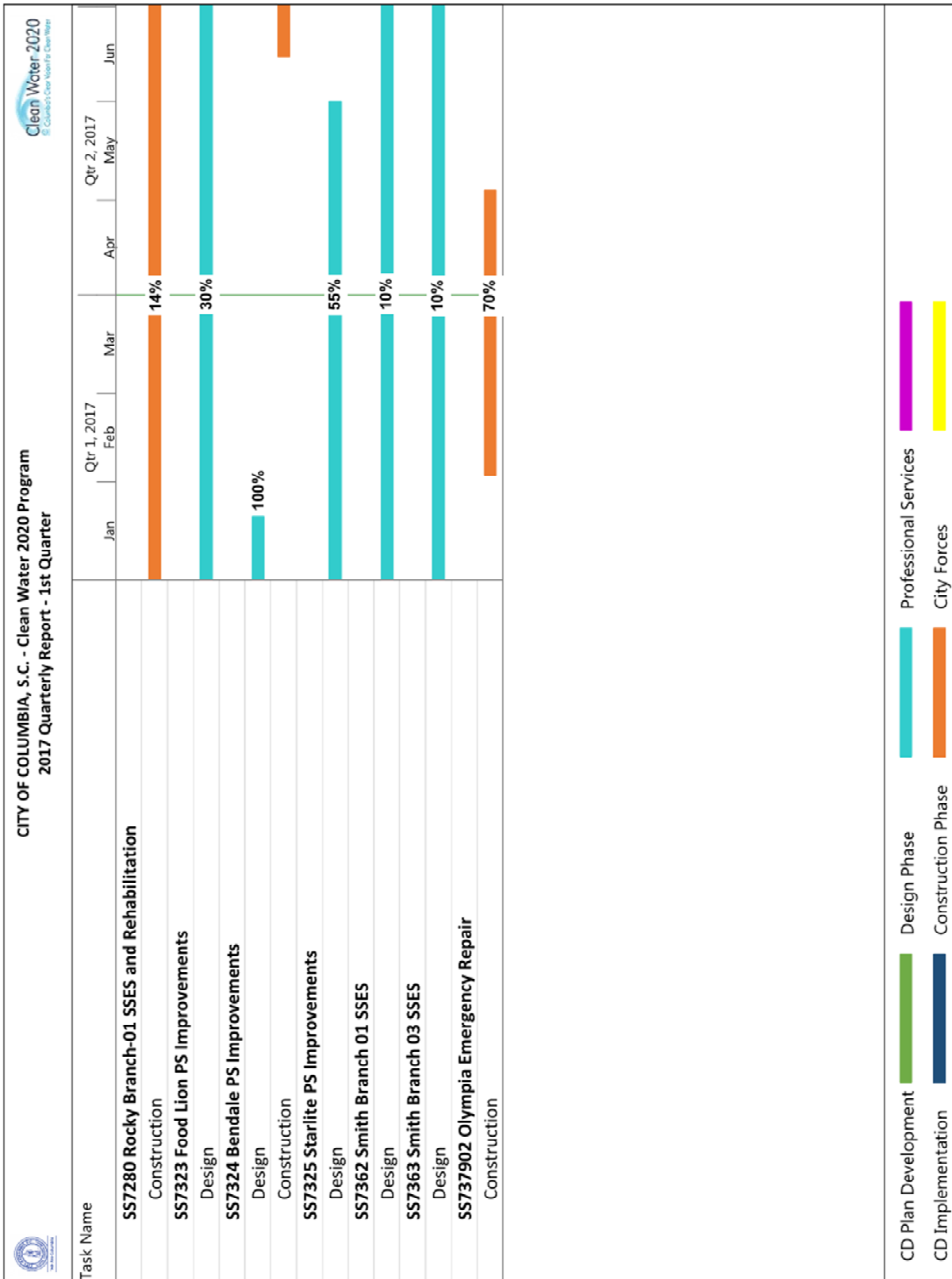
## Section 2 Schedule of Projects and Activities











## 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 WWTP Programs

In accordance with Section V.11 of the CD, the City is developing and implementing specific Wastewater Treatment Plant (WWTP) programs. The Program elements addressed in this section provide information regarding activities involving the Metro WWTP.

#### 3.1.1 Maintenance Management System (MMS)

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

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

- Migration of Data and Maintenance Schedules into Cityworks – 80% Complete
- Cityworks Testing & Implementation – 60% Complete
- Inventory Management within Cityworks Storeroom – 60% Complete

#### 3.1.2 WWTP Operations Program

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

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

- Written procedures describing the various operational controls at the WWTP – 35% Complete

#### 3.1.3 WWTP Training Program

The WWTP Training Program was submitted to EPA and SCDHEC on May 20, 2016. The City is awaiting EPA and SCDHEC review and approval of the WWTP Training Program.

### 3.2 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).

### 3.2.1 Contingency and Emergency Response Plan (CERP)

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

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

- Training Staff on the Activation of the CERP – 100% Complete
- Emergency Operation Training and Activation Procedures – 100% Complete
- Develop and Train Staff to Scenarios – 100% Complete

As of March 6, 2017, all implementation items associated with the CERP have been completed.

### 3.2.2 WCTS Training Program

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

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

- Plant Maintenance Technologist Apprentice Program (PMTAP) – 50% Complete

### 3.2.3 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:

- Storeroom Component of Cityworks – 80% Complete
- Sewer Mapping Program – 64% Complete

### 3.2.4 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 – 90% complete
  - Smith Branch Basin – 67% complete
  - Saluda River Basin – 87% complete
  - Rocky Branch Basin – 43% complete

- Mill Creek Basin – 26% complete
  - Gills Creek Basin – 29% complete
  - Crane Creek Basin – 65% complete
  - Broad River Basin – 27% complete
- Progress for each WCTS Major Gravity Mapping basin is as follows:
    - West Columbia Basin – 80% complete
    - Smith Branch Basin – 75% complete
    - Saluda River Basin – 77% complete
    - Rocky Branch Basin – 61% complete
    - Mill Creek Basin – 75% complete
    - Gills Creek Basin – 75% complete
    - Crane Creek Basin – 85% complete
    - Broad River Basin – 85% complete

### 3.2.5 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 – 45% Complete
- Force Main and Easement Maintenance (Easement survey and marking and initial clearing to the surveyed limits, where practical) – 20% Complete
- Corrosion Control – 5% Complete

### 3.2.6 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 Line Preventive Maintenance Plan (GLPMP) – 15% Complete
- Evaluation of potential sulfide and corrosion control of the WCTS – 5% Complete
- Inspection and evaluation of crossings and stream bank encroachment areas with a higher likelihood of SSOs – 5% Complete
- Gravity Sewer Easement survey and marking and initial clearing to survey the limits, where practical – 20% Complete
- Evaluation of resource commitment as part of the implementation of the GSOMP – 75% Complete

### 3.2.7 Financial Analysis Program

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

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

- Capital Improvement Financing Program – 50% Complete
- Budget and Customer Rate Setting Analysis – the second rate study update is in progress and is approximately 85% complete.

## 3.3 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 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 – 38% Complete
- Major Manhole Inspection – 70% Complete
- Major Pump Stations Condition Assessment – 25% Complete
- Major Force Mains Field Assessment – 10% Complete

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

- Initial Minor Gravity Sewer and Manholes Desktop Condition Assessment/Prioritization – 60% Complete
- Minor Gravity Sewer and Manholes Condition Assessment – 14% Complete
- Minor Pump Stations Condition Assessment – 14% Complete

## 3.4 Infrastructure Rehabilitation Program (IRP) for the WCTS

In accordance with Section V.15 of the CD, the City shall submit an Infrastructure Rehabilitation Program (IRP) to EPA and SCDHEC for review, comment, and approval. The IRP is to be submitted within six months after the date of EPA and SCDHEC approval of the CSAP. The IRP was submitted to EPA and SCDHEC on November 22, 2016.

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

- Comments on the IRP were received from EPA on February 21, 2017.
- The IRP was resubmitted to EPA and SCDHEC with responses to EPA comments on March 23, 2017.

### 3.5 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 3.4 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:

- SS6764 30" Forcemain from Mill Creek PS to WWTP – Construction 60% Complete
- SS695401 Crane Creek Phase I – Construction 95% Complete
- SS725103 Innovista District Infrastructure Improvements – Construction 99% Complete
- SS7259 Replacement of 24" Smith Branch Outfall Underneath I-277 – Construction 99% Complete
- SS7261 Lake Katherine Sewer Line Capacity Enhancement – Design 90% Complete
- SS7289 Rivermont Drive Pump Station and Force Main – Design 95% 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 25% Complete
- SS7331 Upper Kinley Creek Sewer Improvements Ph. 1 – Design 35% Complete
- SS733701 East Rocky Branch Improvements Ph. 1 – Design 60% Complete
- SS733702 East Rocky Branch Improvements Ph. 2 – Design 55% Complete
- SS7338 Lower Crane Creek Wet Weather Storage - Phase 1 – Design 50% Complete (decrease in completion % from previous report due to contract amendment)
- SS735002 Crane Creek Upper North Branch Extension – Design 10% Complete
- SS735003 Crane Creek Lower North Branch Capacity Upgrade Phase 1 – Design 2% 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 3.4 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 – 2017 Construction 50% Complete
- SS6857 Olympia Subdivision Sewer System Evaluation Survey (SSES) and Rehabilitation Design – Design 75% Complete
- SS6966 Annual Rehab on Manholes and Lines less than 15" – 2017 Construction 73% Complete
- SS7060 Pump Station Improvements at 6 Sites – Construction 65% Complete

- SS7172 Rehabilitation/Replacement Harbison #2, Mallard Point and Animal Shelter PS – Design 99% Complete
- SS7199 Saluda River Basin SSES and Rehabilitation for SR-06 & 13 – Construction 100% Complete
- SS7208 Saluda River Basin SSES and Rehabilitation for SR-03, 10, & 12 – Construction 90% Complete
- SS7218 West Columbia Basin SSES and Rehabilitation for WC-02 – Construction 99% Complete
- SS725801 Greenlawn Dr. to Burnside #1 PS (Hampton Forest) – Construction 60% Complete
- SS7262 Flow Study/Rehabilitation/Replacement of Three Rivers and Colonial Life PS – Construction 42% Complete
- SS7279 Smith Branch-02 SSES and Rehabilitation – Construction 40% Complete
- SS7280 Rocky Branch-01 SSES and Rehabilitation – Construction 14% Complete
- SS7323 Food Lion PS Improvements – Design 30% Complete
- SS7324 Bendale PS Improvements – Design 100% Complete, Construction 0% Complete
- SS7325 Starlite PS Improvements – Design 55% Complete
- SS7362 Smith Branch 01 SSES – Design 10% Complete
- SS7363 Smith Branch 03 SSES – Design 10% Complete
- SS737902 Olympia Emergency Repair – Construction 70% Complete

## 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 2017

City of Columbia, SC Quarterly SSO Listing 1st Quarter 2017									
SSO Date	SSO Time	Location	Source	Date of Corrective Action	Time of Corrective Action	Estimated Volume (gallons)	Receiving Water (if any)	Cause	Actions Taken
1/2/2017	12:30	2200 Sapling Dr, Columbia, SC 29210	Manhole	TBD		179		Roots	De-Greased Mainline And Washed Mainline 150 Feet. Unable To Resume Normal Flow Due To Blockage. Emergency Mainline Repair To Remove Blockage.
1/3/2017	07:56	5081 Brickyard Rd, Columbia, SC 29203	Manhole	TBD		66,450	Crane Creek	Wet Weather	Observation Only, Due To Wet Weather. Line Replacement Under Construction.
1/3/2017	09:01	1400 Peebles St, Columbia, SC 29203	Manhole	TBD		49,100	Crane Creek	Wet Weather	Observation Only, Due To Wet Weather. Line Replacement Under Construction.
1/3/2017	09:13	5081 Brickyard Rd, Columbia, SC 29203	Manhole	1/3/2017	10:13	7,500	Crane Creek	Roots	Removed Stoppage To Resume Normal Flow. Washed Mainline 125 Feet To Clear Any Potential Future Blockage.
1/3/2017	12:30	4806 Ridgewood Ave, Columbia, SC 29203	Cleanout	1/4/2017	08:00	1	Unnamed Creek	Collapsed Line	Washed Service Line 45 Feet And Washed Mainline 300 Feet. Broken Pickup Line Found. Emergency Service Line Repair.
1/3/2017	15:00	824 and 828 Blue Ridge Terrace, Columbia, SC 29203	Cleanout	1/3/2017	17:55	5,250	Crane Creek	Grease	Removed Stoppage To Resume Normal Flow. Mainline Washed 330 Feet.
1/5/2017	20:00	801 Seton Rd, Columbia, SC 29212	Manhole	1/6/2017	11:11	760	Storm Drain	Grease	Washed Mainline 150 Ft To Resume Normal Flow. Washed And Degreased Mainline 524 Ft.
1/6/2017	23:15	1001 W Confederate Ave, Columbia, SC 29201	Manhole	TBD		2,700	Unnamed Creek	Collapsed Line	Set Up Bypass Pump. Mainline Repair To Be Scheduled.
1/10/2017	10:15	118 Holborn Ct, Columbia, SC 29210	Manhole	TBD		25	Kinley Creek	Debris	Washed Mainline 100 Ft To Resume Normal Flow. Mainline Repair To Be Scheduled, Due To Offset Joint.
1/12/2017	07:40	1000 W Confederate Ave, Columbia, SC 29201	Other	1/12/2017	07:55	1,500	Storm Drain	3rd Party Responsibility	Fixed Bypass Connection (Bypass Removed, Mainline Repaired).
1/12/2017	14:29	1212 Whaley St, Columbia, SC 29201	Cleanout	TBD		4		Roots	Washed Service Line 25 Ft To Resume To Normal Flow. Service Line Repair To Be Scheduled.
1/13/2017	11:18	4400 Broad River Rd, Columbia, SC 29210	Manhole	TBD		600		Roots	Washed Mainline 400 Ft To Resume Normal Flow. Mainline Repair To Be Scheduled.
1/19/2017	15:34	1730 Busby St, Columbia, SC 29203	Cleanout	1/20/2017	10:24	1		Roots	Washed Mainline 400 Ft To Resume Normal Flow. Washed And Cut Roots In Mainline 452 Ft.
1/23/2017	10:00	4938 Brickyard Rd, Columbia, SC 29203	Manhole	TBD		1,650	Crane Creek	Collapsed Line	Washed Mainline 219 Feet, Removed Stoppage To Resume Normal Flow. Mainline Repair For Offset Pipe Repair.
1/24/2017	08:30	370 Harbison Blvd, Columbia, SC 29212	Cleanout	1/26/2017	12:00	150		Debris	Washed Service Line 20 Ft To Remove Stoppage. Repaired Service Line.
1/24/2017	10:36	1867 Cunningham Rd, Columbia, SC 29210	Manhole	1/27/2017	10:30	420	Unnamed Creek Trib To Broad River	Roots	Washed Mainline 150 Ft To Resume Normal Flow. Washed & Degreased Mainline 400 Ft X 3.
1/30/2017	09:07	934 W Confederate Ave, Columbia, SC 29201	Manhole	1/30/2017	09:20	90		Debris	Removed Stoppage To Resume Normal Flow. Washed Mainline 200 Feet To Remove Stoppage.
2/1/2017	10:40	1504 Murraywood Ct, Columbia, SC 29212	Manhole	2/3/2017	08:00	1	Koon Branch Creek	Debris	Washed Mainline 150 Ft To Resume Normal Flow. Rust And Calcification, Cleaned And Restored Flow.
1/31/2017	11:55	341 Powell Rd, Columbia, SC 29203	Manhole	2/2/2017	08:00	200		Roots	Washed Mainline 150 Feet, Removed Stoppage To Resume Normal Flow. Cleanout Manhole, Due To Huge Root Ball.
2/7/2017	10:58	5 Barnsbury Rd, Columbia, SC 29203	Manhole	2/7/2017	14:22	200		Grease	Washed Mainline 45 Ft To Resume Normal Flow. Televised Mainline 258 Ft, Grease Build Up.



City of Columbia, SC Quarterly SSO Listing 1st Quarter 2017									
SSO Date	SSO Time	Location	Source	Date of Corrective Action	Time of Corrective Action	Estimated Volume (gallons)	Receiving Water (if any)	Cause	Actions Taken
2/9/2017	17:35	4400 Broad River Rd, Columbia, SC 29212	Manhole	TBD		30		Roots	Washed Mainline To Remove Stoppage, Roots Cut Out As Much As Possible, Flowing, Giving To Contractor For Root Control.
2/11/2017	15:30	5031 Courtney Rd, Columbia, SC 29206	Manhole	N/A	N/A	900		Collapsed Line	Washed Mainline 35 Ft To Resume Normal Flow. Mainline Repair To Be Scheduled.
2/14/2017	12:50	370 Harbison Blvd, Columbia, SC 29212	Cleanout	2/14/2017	16:51	35		Debris	Washed Service Line 20 Feet And Washed Mainline 45 Feet To Resume Normal Flow. Emergency Service Line Tap Renewal.
2/15/2017	13:30	3524 Cairnbrook Dr, Columbia, SC 29210	Manhole	2/15/2017	Unknown	300		Debris	Removed Stoppage. Washed Mainline To Resume Normal Flow.
2/17/2017	11:28	6925 N Main St, Columbia, SC 29203	Manhole	2/17/2017	12:14	14,960	Unnamed Trib To Crane Creek	Debris	Washed Mainline To Remove Stoppage And Resume Normal Flow. Washed Mainline 290 Feet, CCTV Line.
2/17/2017	12:20	417 Bedford Dr, Columbia, SC 29203	Manhole	2/17/2017	16:39	750	Unnamed Trib To Crane Creek	Collapsed Line	Washed Mainline On N. Main Which Led To Removing Blockage In This Section To Resume Normal Flow. Emergency Temporary Repair Related To Oct. 2015 Flood Damage.
2/21/2017	14:06	1900 Shealy St, Columbia, SC 29203	Manhole	2/21/2017	15:45	50		3rd Party Responsibility	Remove Stoppage (Sand Bags And Debris) To Resume Normal Flow. Removed Sand Bags From Manhole, Washed Mainline 250 Feet.
2/24/2017	12:15	113 Old Arms Ct, Columbia, SC 29212	Manhole	2/24/2017	13:00	245		Roots	Removed Stoppage To Resume Normal Flow, Washed Mainline 250 Feet To Remove Stoppage. Rewashed Mainline 220 Feet To Remove Roots.
2/26/2017	15:20	2609 Devine St, Columbia, SC 29205	Other	2/27/2017	12:09	2,120	Storm Drain	Collapsed Line	Washed Mainline 175 Feet To Remove Stoppage And Resume Normal Flow. Emergency Service Line Repair, 6" Pick Up Line Broken.
2/27/2017	09:56	955 Park St, Columbia, SC 29201	Manhole	3/2/2017	10:40	196		Collapsed Line	Washed Mainline 175 Feet, Removed Stoppage To Resume Normal Flow. Emergency Mainline Repair.
2/28/2017	11:52	216 Briercliff Dr, Columbia, SC 29203	Cleanout	3/2/2017	07:23	34		Collapsed Line	Washed Service Line 55 Feet, Stoppage Removed To Resume Normal Flow. Emergency Service Line Repair.
3/7/2017	10:03	2971 The Blvd, Columbia, SC 29203	Manhole	3/7/2017	10:30	180	Storm Water Ditch	Collapsed Line	Removed Stoppage To Resume Normal Flow, Washed Mainline 175 Feet To Remove Stoppage. Mainline Has A Sag Which Is Holding Water, Repair TBD.
3/8/2017	13:44	801 Gervais St, Columbia, SC 29201	Other	3/8/2017	20:00	720	Storm Drain	3rd Party Responsibility	Vac Trucks Were Set Up To Extract The Effluent. Trucks Onsite Until Repair Was Made, Ceasing Overflow. Emergency Mainline Repair To Restore Flow.
3/10/2017	12:55	15 Woodpond Ct, Columbia, SC 29212	Cleanout	3/14/2017	09:00	20		Roots	Washed Service Line 30 Feet, Removed Stoppage To Resume Normal Flow. Roots Cut Out Of Line With Root Cutter On Harben Unit.
3/14/2017	09:30	15 Woodpond Ct, Columbia, SC 29212	Cleanout	3/14/2017	09:45	60		Roots	Washed The Clean Out 50 Feet, Removed Stoppage To Resume Normal Flow. Removed All Roots With Root Cutter.
3/14/2017	13:20	4017 Claremont Dr, Columbia, SC 29205	Manhole	3/14/2017	15:00	1,000	Storm Drain	Collapsed Line	Washed Mainline 83 Feet, Set-Up Bypass Pump And Vacuumed Out Manhole To Resume Normal Flow. Mainline Repair.
3/17/2017	14:45	108 Pointer Dr, Hopkins, SC 29061	Cleanout	TBD		135		Collapsed Line	Washed Mainline 400 Feet, Removed Stoppage To Resume Normal Flow. Mainline Repair Due To Broken Line, Hole In Pipe.
3/23/2017	14:22	1200 Simmon Tree Ln, Columbia, SC 29201	WWTP	3/23/2017	14:48	3,400	Storm Drain To Congaree River	Treatment Plant	Increased T1 DAFT MS Pumps To MAX Flow, Picked Up The Skimming Pipe Out Of The Water. Created A Dirt Dike To Keep As Much Water As Possible From Entering Storm Drain. Vacuumed Up As Much As Possible, Spread Lime Over Affected Area, Flushing Storm Drains With Potable Water From Fire Hydrant.

City of Columbia, SC Quarterly SSO Listing 1st Quarter 2017									
SSO Date	SSO Time	Location	Source	Date of Corrective Action	Time of Corrective Action	Estimated Volume (gallons)	Receiving Water (if any)	Cause	Actions Taken
3/23/2017	18:00	206 Stamford Bridge Rd, Columbia, SC 29212	Cleanout	TBD		4		Roots	Washed Mainline 130 Feet And Service Line 80 Feet, Removed Stoppage To Resume Normal Flow. Full Service Line Repair.
3/27/2017	10:45	1504 Crestwood Dr, Columbia, SC 29205	Cleanout	3/27/2017	10:50	10	Storm Drain	Debris	Removed Stoppage To Resume Normal Flow. Washed Mainline 100 Feet To Remove Stoppage.
3/28/2017	15:06	5311 Bush River Rd, Columbia, SC 29212	Other	3/30/2017	08:00	50		Collapsed Line	Pit Was Dug Out To Collect The Sewer, Also To Prevent The Sewer Going Into The Creek. Emergency Service Line Repair.
3/30/2017	16:51	4645 Pine Grove Ct, Columbia, SC 29206	Manhole	TBD		9,000	Lake Katherine	Wet Weather	Wet Weather, Observation Only. Engineering In Design Phase Of Line Replacement.
3/30/2017	16:45	1548 Kathwood Dr, Columbia, SC 29206	Manhole	TBD		15,000	Lake Katherine	Wet Weather	Wet Weather, Observation Only. Engineering In Design Phase Of Line Replacement.
3/30/2017	17:25	1806 Blossom St, Columbia, SC 29201	Manhole	TBD		Unknown	Rocky Branch	Wet Weather	Wet Weather / Not Observed Active. CIP Engineering Project In Design Phase.
3/30/2017	16:40	1721 W Buchanan Dr, Columbia, SC 29206	Manhole	TBD		Unknown	Tributary To Penn Branch	Wet Weather	Wet Weather, Not Observed Active. Engineering In Design Phase Of Line Replacement.
3/31/2017	11:36	1321 Hard Scrabble Rd, Columbia, SC 29203	Manhole	TBD		90	Crane Creek	Collapsed Line	Manhole Plugged And Effluent Will Be Discharged From Manhole Via Pump. Temp Emergency Erosion Repair.

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.

Separate from the SSO listing provided in Table 1 above, the following table identifies building backups within the City’s system for the current reporting period. Building backup claims are investigated by the City in order to determine whether the cause of the building backup is a condition within the City’s system. If so, the City corrects the problem in the City’s WCTS. Issues on private property are documented for the City by a third-party administrator. At this time, neither the City nor the third-party administrator have maintained records on volume, duration, or specific root causes of building backups.

**Table 2 - Building Backup Report, 1st Quarter 2017**

City of Columbia, SC Quarterly Building Backup Listing 1st Quarter 2017		
Date	Location	Claim Description
1/2/2017	919 Tara Trail	Sewage Back Up In Basement.
1/3/2017	828 Blue Ridge Terrace	Sewer Line And Pipes Busted Causing Damages To The Claimant Yard And House. Claimant Cannot Use The Bathroom.
1/22/2017	10 Cavalier Court	Sewer Back Up In Both Bathrooms & Laundry Room.
1/23/2017	58 Heritage Village Lane	Claimant Had Sewage Back Up That Was On The Insured's Side That Caused Damage To The Bathroom Floor And The Carpet In The Bedroom Behind The Bathroom.
2/2/2017	1502 Wyndham Road	Sewage In Crawlspace, Crew Solved Issue.
3/13/2017	2501 Heyward Street	Sewer Line Blockage, Back Up At Church. Claimant Called Third Party For Cleanup.

## 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 City will monitor quarterly for the first three years under the CD and 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 2017 Q1 was completed on February 1, 2017. 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



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## ANALYTICAL REPORT

**CLIENT:**

City of Columbia  
1136 Washington Street  
Columbia, SC 29201

**PROJECT:**

WATER QUALITY PARAMETERS

**REPORT DATE:**

02.01.17

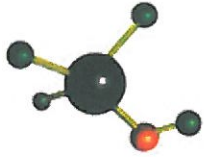
**REPORT APPROVED BY:**

Bryant W. Boyd  
Laboratory Manager  
[bryant@axs-inc.com](mailto:bryant@axs-inc.com)

Any questions related to this report should be directed to Access Analytical, Inc. via phone at 803.939.4983 or via email at the address listed above.

Access Analytical, Inc. SCDHEC certification #'s: 32571001 (Lexington Lab)  
25003001 (Hampton Lab)

Access Analytical, Inc.  
200-B Rich-Lex Dr. ~ Lexington, SC 29072  
PHONE: 803.939.4983 ~ FAX: 803.939.4984 ~ WEB: [www.axs-inc.com](http://www.axs-inc.com)



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## Report of Analysis

Lab ID #: 01275-001

Matrix: Waste Water

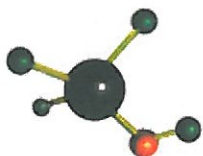
Project: WATER QUALITY PARAMETERS

Collected: 1/23/2017 @ 12:25

Sample Name: C-017

Date Received: 1/23/2017 @ 13:55

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	7.4	None	mg/L	SM 4500-O G-2011		1/23/2017 12:25	JRS
E. Coli (MPN)	980.4	1	MPN	SM 9223 B-2004		1/23/2017 16:00	RDA
Temperature	15	None	oC	SM 2550B-2010		1/23/2017 12:25	JRS
TSS	14.1	1	mg/L	SM 2540 D-2011		1/26/2017 13:45	RDA



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## Report of Analysis

**Lab ID #:** 01275-002

**Matrix:** Waste Water

**Project:** WATER QUALITY PARAMETERS

**Collected:** 1/23/2017 @ 12:55

**Sample Name:** C-001

**Date Received:** 1/23/2017 @ 13:55

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	9.0	None	mg/L	SM 4500-O G-2011		1/23/2017 12:55	JRS
E. Coli (MPN)	686.7	1	MPN	SM 9223 B-2004		1/23/2017 16:00	RDA
Temperature	15	None	oC	SM 2550B-2010		1/23/2017 12:55	JRS
TSS	99.7	1	mg/L	SM 2540 D-2011		1/26/2017 13:45	RDA



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## Report of Analysis

Lab ID #: 01275-003

Matrix: Waste Water

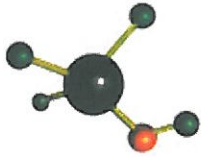
Project: WATER QUALITY PARAMETERS

Collected: 1/23/2017 @ 13:20

Sample Name: B-280

Date Received: 1/23/2017 @ 13:55

Parameter	Result	Reporting Limit	Units	Method Reference	Data Flag	Date/Time of Analysis	Analyst
DO	9.7	None	mg/L	SM 4500-O G-2011		1/23/2017 13:20	JRS
E. Coli (MPN)	1413.6	1	MPN	SM 9223 B-2004		1/23/2017 16:00	RDA
Temperature	15	None	oC	SM 2550B-2010		1/23/2017 13:20	JRS
TSS	14.6	1	mg/L	SM 2540 D-2011		1/26/2017 13:45	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:

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

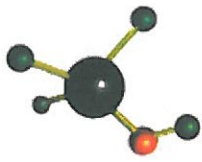
### Reporting flags that may be utilized in this report:

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

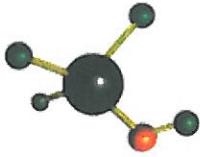




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## Sample Receipt

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



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# Chain of Custody

Phone: 803-939-4983  
Fax: 803-939-4984  
oleinc.com

Page 1 of 1

200 Rich Lex Drive  
Lexington, SC 29072

**ON LINE ENVIRONMENTAL, INC** Chain of Custody Record SCDHEC LAB ID# 32571/25003

Client: City of Columbia Attn: Andrew Stroud  
Address: 1136 Washington Street Phone: 803-545-4001  
City, State, Zip: Columbia, SC 29201 Email: astroud@columbiasc.net

Prog. Area	Sample ID# (FOR LAB USE ONLY)	Sample Name	Date/Time of Sample	Sample Type (G or C)	Preservation/ Bottle Type	# of bottles	Parameter(s)
WW	01275-061	C-017	1-23-17 12:25	G	A/P	1	TSS
WW		C-017		G	GF/P	1	E. Coli MPN
WW		C-017		G	Field An.	NA	D.O. (mg/L) = 7.4 Temp. (°C) = 15
WW	01275-062	C-001	1-23-17 12:55	G	A/P	1	TSS
WW		C-001		G	GF/P	1	E. Coli MPN
WW		C-001		G	Field An.	NA	D.O. (mg/L) = 1.0 Temp. (°C) = 15
WW	01275-063	B-280	1-23-17 13:20	G	A/P	1	TSS
WW		B-280		G	GF/P	1	E. Coli MPN
WW		B-280		G	Field An.	NA	D.O. (mg/L) = 9.1 Temp. (°C) = 15

G=grab C=composite Prog. Area: WW=wastewater DW=drinking water MW=monitoring well SS=semi solid SL=soil SD=solid

**Samplers signature:** *[Signature]*

**Auto Sampler Data**  
Date/Time Set On: \_\_\_\_\_ Meter Reading After: \_\_\_\_\_  
by whom: \_\_\_\_\_ Meter Reading Before: \_\_\_\_\_  
Date/Time Off: \_\_\_\_\_ Difference: \_\_\_\_\_ (factor): \_\_\_\_\_  
by whom: \_\_\_\_\_

**Special Instructions:**  
Received in lab @ 4 °C  
Project: Water Quality Monitoring  
(Sample Jan, April, July, Oct)

Relinquished by	Date	Time	Received by	Date	Time

Preservation Codes: A=s6°C, B=H<sub>2</sub>SO<sub>4</sub>, C=HNO<sub>3</sub>, D=HCl, E=NaOH, F=Na<sub>2</sub>S<sub>2</sub>O<sub>5</sub>, G= ±10°C, O=Other (describe) Bottle Type: Glass = G, Plastic = P

Received in lab by: *[Signature]* Date: 1-23-17 Time: 1355  
Sample Rcd. On Ice:  Yes No

City Of Columbia Quality Assurance Project Plan (QAPP) Data  
Verification and Validation Form

City of Columbia Supplemental Environmental Projects QAPP November 2015

Laboratory Report Date: 2/1/17

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



Andrew T. Stroud/QA Manager

2/2/17

Date

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



Michael Jaspers/Project Validator

2/2/17

Date