

Clean Water 2020 Program

CONSENT DECREE QUARTERLY REPORT

July 1, 2019 – September 30, 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.

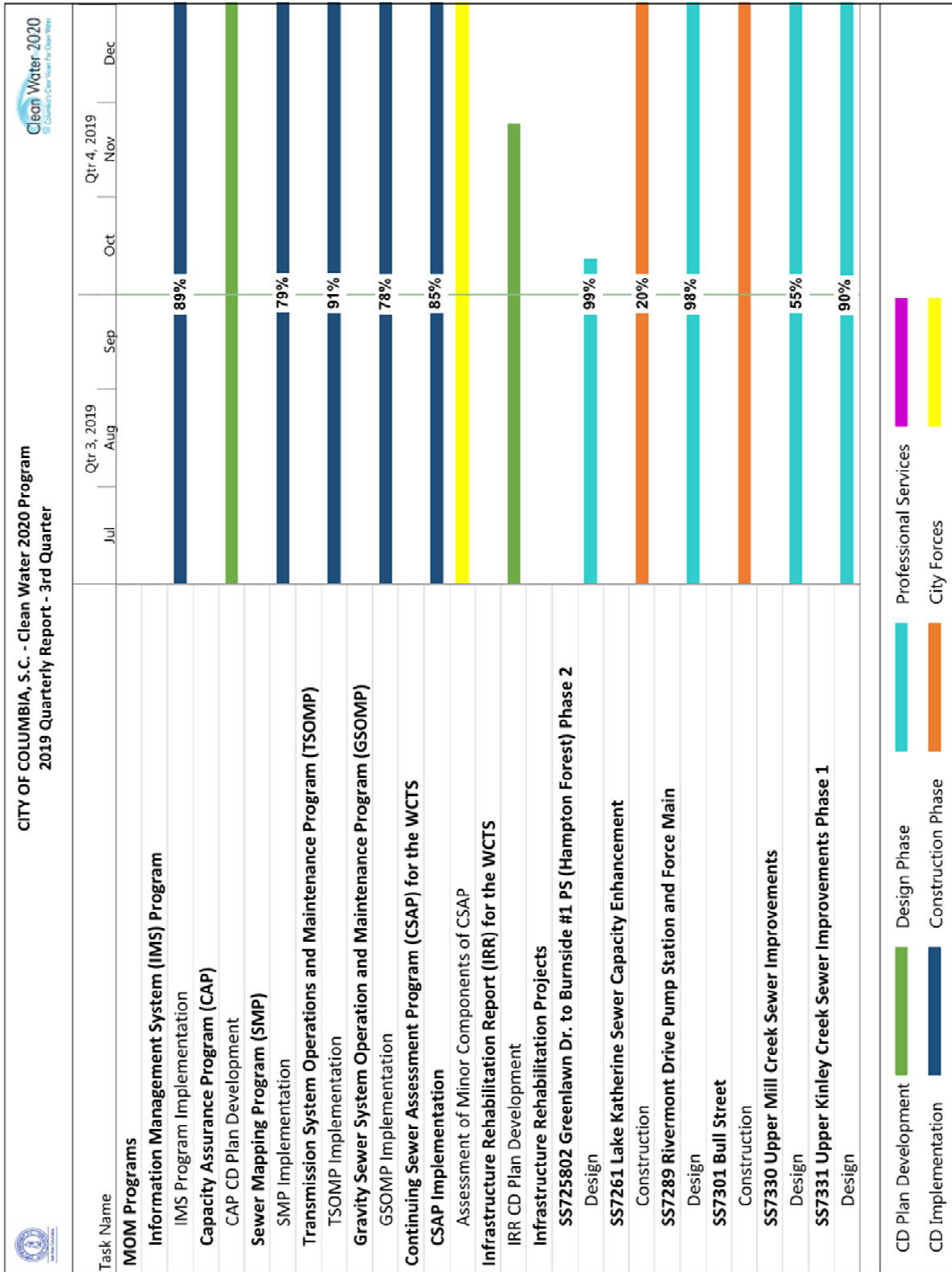
Section 4 – Quarterly SSO Report

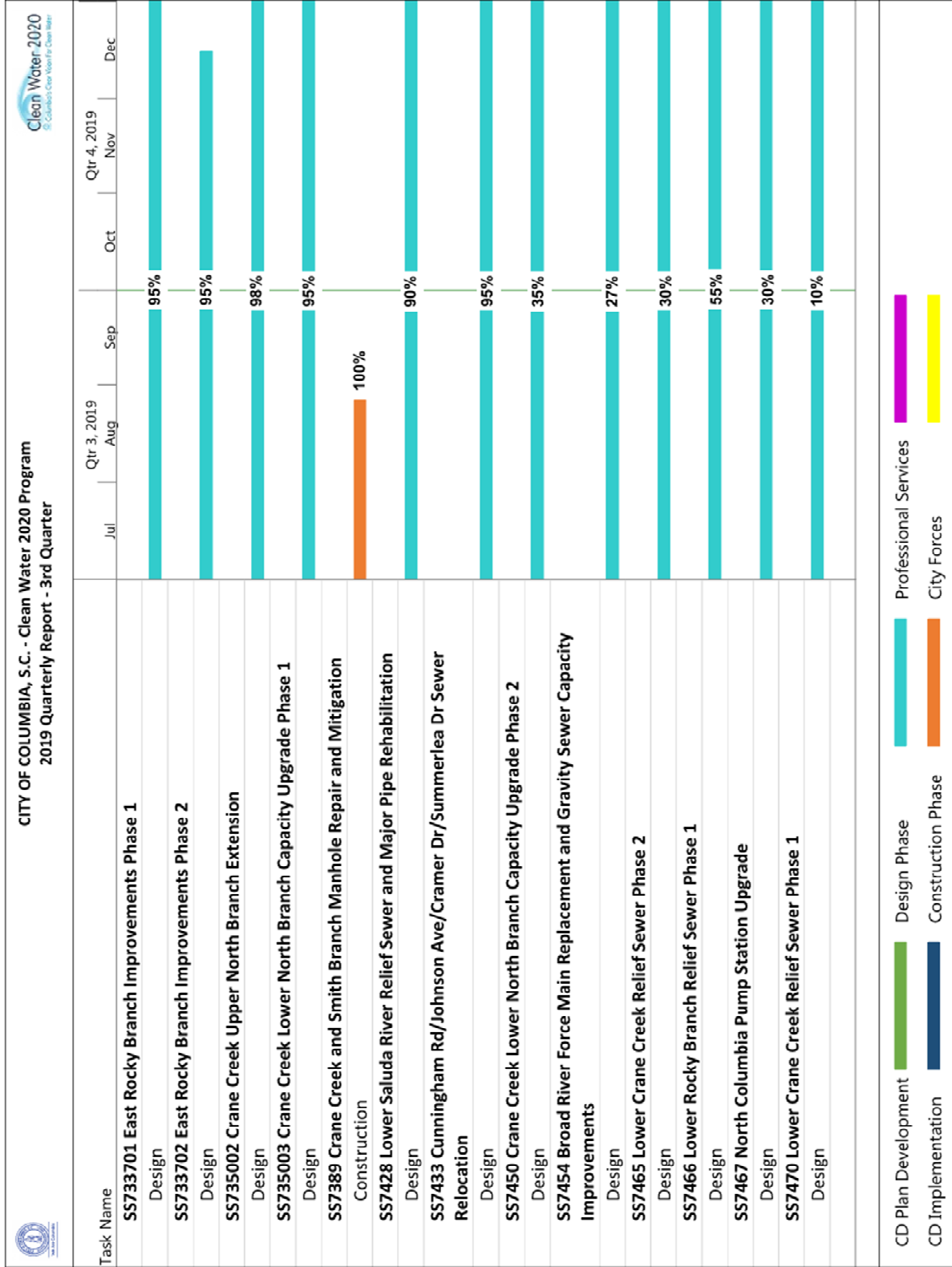
This section addresses the requirements of Section IX.39.a.(ii) of the Consent Decree and provides a tabular listing of sanitary sewer overflows (SSOs). The table includes the date, time, location, source, duration, estimated volume, receiving water (if any), cause, and actions taken to repair or otherwise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

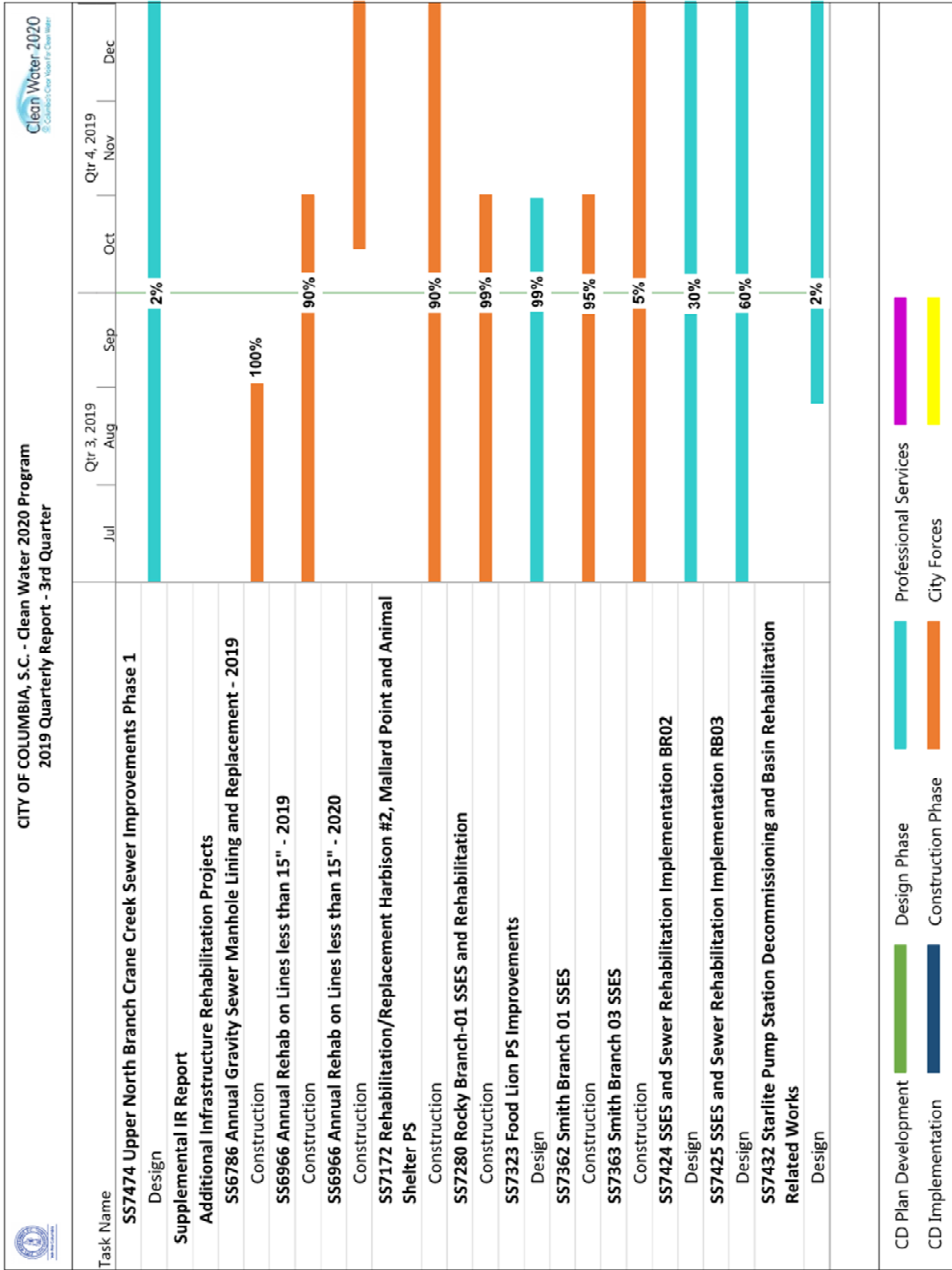
Section 5 – SEP Water Quality Monitoring Results

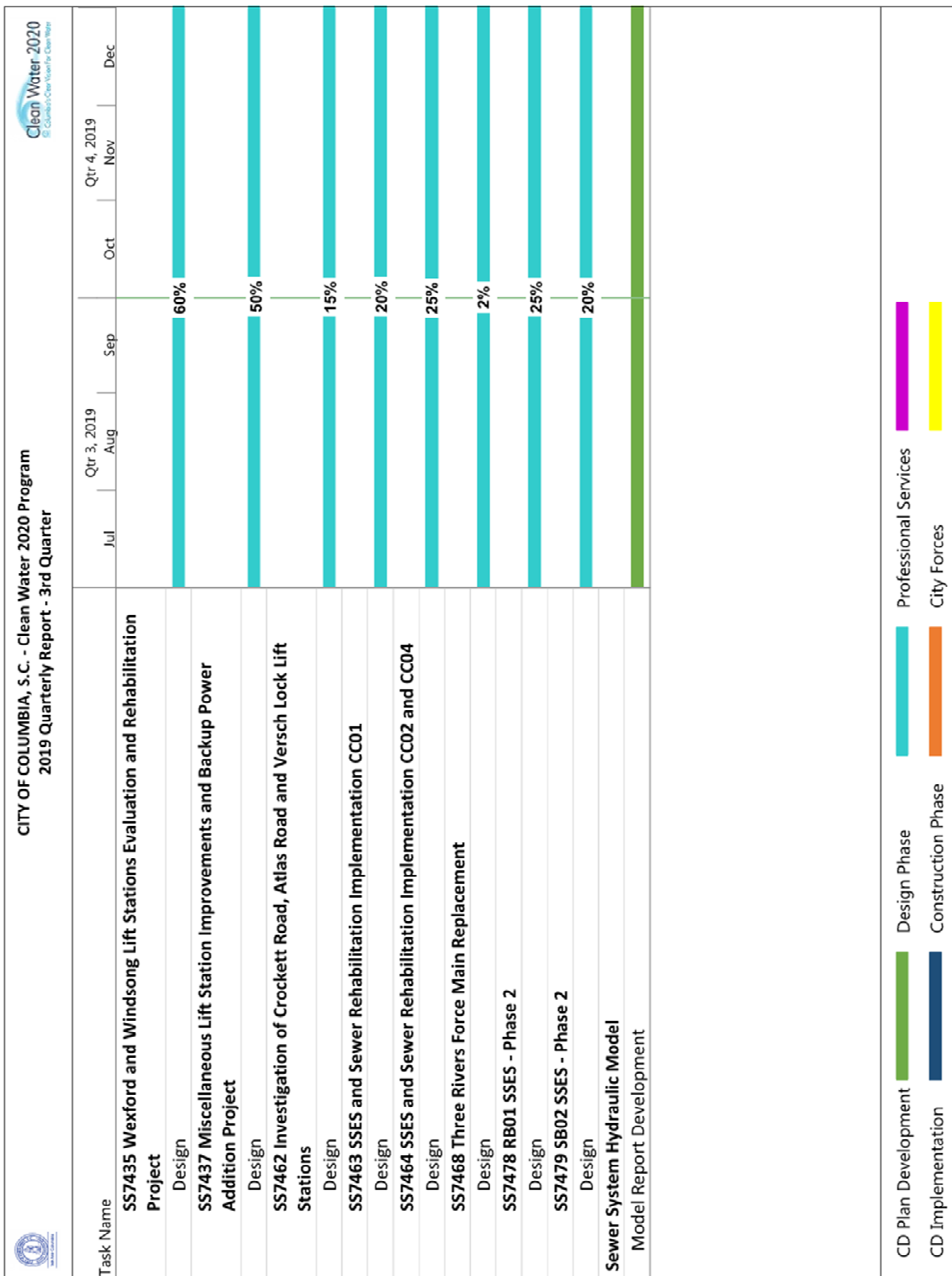
This section addresses the requirements of Section IX.39.a.(v) of the Consent Decree and provides the results of water quality monitoring conducted during the previous Calendar Quarter as part of the SEP described in Appendix I of the CD.

Section 2 Schedule of Projects and Activities









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 – 79% 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 – 88% complete
 - Saluda River Basin – 90% complete
 - Rocky Branch Basin – 53% 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 – 95% Complete
- Force Main and Easement Maintenance (Easement survey and marking and initial clearing to the surveyed limits, where practical) – 75% 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 GSOMP was revised and resubmitted to EPA and SCDHEC on May 8, 2019.

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 – 35% Complete

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

- Minor Gravity Sewer and Manholes Condition Assessment – 56% Complete
- Minor Pump Stations Condition Assessment – 56% Complete
- Minor Force Mains Field Assessment – 56% 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 99% Complete
- SS7261 Lake Katherine Sewer Capacity Enhancement – Construction 20% 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 55% Complete
- SS7331 Upper Kinley Creek Sewer Improvements Phase 1 – Design 90% Complete
- SS733701 East Rocky Branch Improvements Phase 1 – Design 95% Complete
- SS733702 East Rocky Branch Improvements Phase 2 – Design 95% Complete
- SS735002 Crane Creek Upper North Branch Extension – Design 98% Complete
- SS735003 Crane Creek Lower North Branch Capacity Upgrade Phase 1 – Design 95% Complete
- SS7389 Crane Creek and Smith Branch Manhole Repair and Mitigation – Construction 100% Complete
- SS7428 Lower Saluda River Relief Sewer and Major Pipe Rehabilitation – Design 90% Complete
- SS7433 Cunningham Rd/Johnson Ave/Cramer Dr/Summerlea Dr Sewer Relocation – Design 95% Complete
- SS7450 Crane Creek Lower North Branch Capacity Upgrade Phase 2 – Design 35% Complete
- SS7454 Broad River Force Main Replacement and Gravity Sewer Capacity Improvements – Design 27% Complete
- SS7465 Lower Crane Creek Relief Sewer Phase 2 – Design 30% Complete
- SS7466 Lower Rocky Branch Relief Sewer Phase 1 – Design 55% Complete
- SS7467 North Columbia Pump Station Upgrade – Design 30% Complete
- SS7470 Lower Crane Creek Relief Sewer Phase 1 – Design 10% Complete
- SS7472 Upper Crane Creek Relief Sewer Phase 1 – Project is currently on hold pending confirmation of capacity needs from the hydraulic model recalibration.
- SS7474 Upper North Branch Crane Creek Sewer Improvements 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 3.2 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 Gravity Sewer Manhole Lining and Replacement – 2019 Construction 100% Complete
- SS6966 Annual Rehab on Lines less than 15” – 2019 Construction 90% Complete, 2020 Construction 0% Complete
- SS7172 Rehabilitation/Replacement Harbison #2, Mallard Point and Animal Shelter PS – Construction 90% Complete
- SS7280 Rocky Branch-01 SSES and Rehabilitation – Construction 99% Complete
- SS7323 Food Lion PS Improvements – Design 99% Complete
- SS7362 Smith Branch 01 SSES – Construction 95% Complete
- SS7363 Smith Branch 03 SSES – Construction 5% Complete
- SS7424 SSES and Sewer Rehabilitation Implementation BR02 – Design 30% Complete
- SS7425 SSES and Sewer Rehabilitation Implementation RB03 – Design 60% Complete
- SS7432 Starlite PS Decommissioning and Basin Rehabilitation Related Works – Design 2% Complete
- SS7435 Wexford and Windsong Lift Stations Evaluation and Rehabilitation Project – Design 60% Complete
- SS7437 Miscellaneous Lift Station Improvements and Backup Power Addition Project – Design 50% Complete
- SS7462 Investigation of Crockett Road, Atlas Road and Versch Lock Lift Stations – Design 15% Complete
- SS7463 SSES and Sewer Rehabilitation Implementation CC01 – Design 20% Complete
- SS7464 SSES and Sewer Rehabilitation Implementation CC02 and CC04 – Design 25% Complete
- SS7468 Three Rivers Force Main Replacement – Design 2% Complete
- SS7478 Rocky Branch 01 SSES Phase 2 – Design 25% Complete
- SS7479 Smith Branch 02 SSES Phase 2 – Design 20% 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 SEP Completion Report was submitted to USDOJ and EPA on June 19, 2019.

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, 3rd Quarter 2019

City of Columbia, SC Quarterly SSO Listing 3rd 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
7/2/2019	21:44	9539 Farrow Rd, Columbia, SC 29203	Manhole	TBD		31		Collapsed Line	Removed Stoppage To Resume Normal Flow. Main Line Repair.
7/3/2019	11:44	9539 Farrow Rd, Columbia, SC 29203	Line Segment	TBD		267	Crane Creek	Collapsed Line	Washed Main Line Downstream 135 Feet To Remove Stoppage. Main Line Repair.
7/9/2019	14:50	2972 S Partridge Cir, Hopkins, SC 29061	Manhole	7/9/2019	15:34	352	Goose Branch	Debris	Washed Main Line 150 Feet To Remove Stoppage. Washed Main Line 150 Feet.
7/13/2019	20:32	1548 Kathwood Dr, Columbia, SC 29206	Manhole	N/A		210	Lake Katherine	Wet Weather	Wet Weather; Observation Only.
7/13/2019	21:07	4645 Pine Grove Ct, Columbia, SC 29206	Manhole	N/A		84	Lake Katherine	Wet Weather	Wet Weather; Observation Only.
7/18/2019	12:40	2700 Ansel St, Columbia, SC 29204	Manhole	7/18/2019	12:45	240	Storm Drain	Debris	Washed Main Line 120 Feet And Removed Stoppage.
7/19/2019	11:10	3301 Cannon St, Columbia, SC 29205	Cleanout	7/19/2019	11:20	10		Debris	Removed Stoppage To Resume Normal Flow. Washed Service Line 15 Feet.
7/23/2019	11:30	112 and 108 W Campanella Dr, Columbia, SC 29203	Cleanout	7/23/2019	11:40	30		Debris	Removed Stoppage To Resume Normal Flow. Washed Main Line 220 Feet.
7/23/2019	10:40	4100 Loquat Dr, Columbia, SC 29205	Other	7/23/2019	11:00	100		Equipment Failure	Shut Pump Off. Leaking Bypass Hose Replaced And Reconnected Hose.
7/24/2019	08:30	809 Sunset Dr, Columbia, SC 29203	Line Segment	TBD		600	Unnamed Trib To Smith Branch	Collapsed Line	Main Line Washed 130 Feet. Main Line Repair.
7/22/2019	15:00	127 Humane Ln, Columbia, SC 20209	Line Segment	7/22/2019	16:00	32		Pump Station Failure	Floats Fixed And Sewer Pumped Down. Floats Fixed And Submerged In Water.
7/29/2019	17:00	200 Sweetwater Dr, Columbia, SC 29061	Forcemain	7/31/2019	14:50	15,282		Force Main	Vacuumed Water From Manhole And Shut ARV Valve. Replaced ARV.
7/31/2019	10:30	1730 Gary St, Columbia, SC 29203	Other	8/1/2019	12:00	450		Debris	Removed Stoppage To Resume Normal Flow. Main Line Wash.
7/31/2019	19:20	5222 Mauldin Ave, Columbia, SC 29203	Cleanout	7/31/2019	19:44	288		Debris	Removed Stoppage To Resume Normal Flow. Removed Debris Out Of Manhole.
8/5/2019	08:45	1600 Loric Ave, Columbia, SC 29203	Manhole	8/5/2019	10:03	1,950	Trib To Smith Branch	Roots	Removed Stoppage To Resume Normal Flow. Main Line Root Cut.
8/6/2019	16:24	1228 Harden St, Columbia, SC 29204	Manhole	8/6/2019	16:30	60	Storm Drain	Collapsed Line	Washed Main Line To Resume Normal Flow. Washed Main Line 100 Feet, Removed Blockage.
8/16/2019	10:00	314 Lincolnshire Sq, Columbia, SC 29203	Manhole	TBD		540	Trib To Crane Creek	Roots	Removed Stoppage To Resume Normal Flow. Main Line Repair.
8/20/2019	12:30	107 Townes Rd, Columbia, SC 29210	Manhole	8/21/2019	12:00	200	Unnamed Creek	Roots	Removed Stoppage To Resume Normal Flow. Manhole Clean To Remove Roots.
8/19/2019	15:00	314 Heyward St, Columbia, SC 29201	Cleanout	8/19/2019	15:10	10		Grease	Removed Stoppage To Resume Normal Flow. Washed Service Line 20 Feet.
9/5/2019	11:20	1004 Craven St, Columbia, SC 29203	Manhole	TBD		280	Storm Drain	Collapsed Line	Removed Stoppage To Resume Normal Flow. Main Line Repair.

City of Columbia, SC Quarterly SSO Listing 3rd 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
9/6/2019	16:45	4038 Yale Ave, Columbia, SC 29205	Manhole	TBD		1,838	Storm Drain	Collapsed Line	Removed Stoppage To Resume Normal Flow/Set Up Bypass Pump. Main Line Repair To Be Done By Contractor.
9/9/2019	17:30	3408 Deerfield Dr, Columbia, SC 29204	Cleanout	9/9/2019	18:00	8		Debris	Removed Stoppage To Resume Normal Flow. Removed Clean Out Cap From Service Line.
9/23/2019	12:30	352 Shoreline Dr, Columbia, SC 29212	Cleanout	9/25/2019	16:51	16		Collapsed Line	Removed Blockage To Resume Normal Flow. Service Line Repair.
9/24/2019	18:30	2001 Bedford Way, Columbia, SC 29209	Cleanout	TBD		24		Collapsed Line	Removed Stoppage To Resume Normal Flow. Tap Renewal/Main Line Repair.
9/26/2019	13:45	48 Hillmark Dr, Columbia, SC 29210	Manhole	9/27/2019	10:00	13		Collapsed Line	Spill Stopped Before The Arrival Of City Staff. Sealed The Hole Between The Riser And The Pipe With Speedy Plug.
9/28/2019	09:40	121 Quail Creek Dr, Columbia, SC 29061	Manhole	9/28/2019	10:00	200		Roots	Main Line Wash To Remove Stoppage. Main Line Root Cut.
9/30/2019	13:15	5807 Ellisor St, Columbia, SC 29212	Cleanout	TBD		15	Storm Drain	Collapsed Line	Ceased Washing To Stop Overflow. Service Line 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.

Table 2 - Building Backup Report, 3rd Quarter 2019

City of Columbia, SC Quarterly Building Backup Listing 3rd Quarter 2019									
Date	Time	Location	Source	Date of Corrective Action	Time of Corrective Action	Estimated Volume (gallons)	Receiving Water (if any)	Cause	Actions Taken
8/30/2019	12:00	2630 Magnolia St, Columbia, SC 29204	Inside Property	8/30/2019	12:00	5		Roots	Homeowner Cleaned Up The Spill. Emergency Service Line Repair.
9/23/2019	16:47	2107 Sumter St, Columbia, SC 29201	City	9/25/2019	17:00	9		Collapsed Line	Homeowner Ceased Water Usage / No Access To Service Line. Main Line Repair / Clean Out Install.

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 Q3 was completed on July 29, 2019, September 3, 2019, and September 30, 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, Revised January 2019

Laboratory Report Date: 7/29/19

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

Andrea Bolling
Project Verifier/QA Manager

8/23/19
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

8/23/2019
Date

AJ Jesse
Printed Name



Laboratory Report

Client Woolpert Inc. - City of Columbia
Michael Long
2000 Center Point Road Ste 2200
Columbia, SC 29210

Project: Water Quality Testing
Work Order: 9071206
Received: 07/22/2019 12:45

Dear Client:

Rogers and Callcott appreciates the opportunity to be of service to you. The attached laboratory services report includes analytical results and chain of custody for samples that were received on July 22, 2019. Rogers and Callcott maintains a formal QA/QC program. Unless otherwise noted, all analyses performed under NELAP certification have complied with all the requirements for the TNI standard. The analyses met the QA/QC confidence interval for each test method unless otherwise qualified. Estimated uncertainty is available upon request.

Privileged / Confidential information may be contained in this report and is intended only for the use of the addressee. If you are not the addressee, or the person responsible for delivering to the person addressed, you may not copy or deliver this message to anyone else. If you receive this message by mistake, please notify Rogers and Callcott immediately.

We strive to provide excellent service to our clients. Please contact Lauren Woodrum, your Project Manager, at lauren.woodrum@rogersandcallcott.com or (864)-232-1556 if you have any questions about this report.

CC: Trevor Gauron

Report Approved By:

Lauren Woodrum
Project Manager



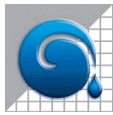
Certificate of Analysis

*South Carolina Greenville Laboratory Identification 23105
 South Carolina Columbia Laboratory Identification 40572
 North Carolina Laboratory Certification Number 27
 North Carolina Drinking Water Lab Number 45710
 NELAP Utah Certificate Number SC000042014-1
 Georgia Drinking Water Lab ID 880*

Client Woolpert Inc. - City of Columbia
 Michael Long
 2000 Center Point Road Ste 2200
 Columbia, SC 29210

Project: Water Quality Testing
Work Order: 9071206
Received: 07/22/2019 12:45

Sample Number	Sample Description	Matrix	Sampled	Type
9071206-01	DHEC B-280 Smith Branch @ N. Main St	Wastewater	07/22/19 09:36	Grab
9071206-02	DHEC B-280 Smith Branch @ N. Main St	Wastewater	07/22/19 09:35	Grab
9071206-03	DHEC C-001 Gills Creek @ Garners Ferry Rd	Wastewater	07/22/19 10:17	Grab
9071206-04	DHEC C-001 Gills Creek @ Garners Ferry Rd	Wastewater	07/22/19 10:15	Grab
9071206-05	DHEC C-017 Gills Creek @ Bluff Road	Wastewater	07/22/19 10:50	Grab
9071206-06	DHEC C-017 Gills Creek @ Bluff Road	Wastewater	07/22/19 10:45	Grab



Woolpert Inc. - City of Columbia
2000 Center Point Road Ste 2200
Columbia, SC 29210

Project: Water Quality Testing
Work Order: 9071206
Reported: 07/29/19 11:23

Sample Data

Sample Number 9071206-01
Sample Description DHEC B-280 Smith Branch @ N. Main St collected on 07/22/19 09:36

Parameter	Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
Field Parameters										
Dissolved Oxygen	9.3	0.1	mg/L	1.00	07/22/19 09:36	SM 4500 OG-2011		MBW	B9G1112	RC-C
Grab	Complete				07/22/19 09:36	Grab		MBW	B9G1112	RC-C
Temperature	25.4	0.0	°C	1.00	07/22/19 09:36	SM 2550B-2010		MBW	B9G1112	RC-C

Sample Number 9071206-02
Sample Description DHEC B-280 Smith Branch @ N. Main St collected on 07/22/19 09:35

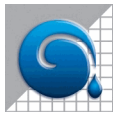
Parameter	Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
Microbiological Parameters										
E. Coli	378	20	MPN/100 mL	20.0	07/22/19 15:15	SM 9223B-2004		MBW	B9G1187	RC-C
General Chemistry Parameters										
Total Suspended Solids	ND	1.0	mg/L	1.00	07/23/19 08:20	SM 2540D-2011		RAM	B9G1138	RC-C

Sample Number 9071206-03
Sample Description DHEC C-001 Gills Creek @ Garners Ferry Rd collected on 07/22/19 10:17

Parameter	Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
Field Parameters										
Dissolved Oxygen	8.3	0.1	mg/L	1.00	07/22/19 10:18	SM 4500 OG-2011		MBW	B9G1112	RC-C
Temperature	30.7	0.0	°C	1.00	07/22/19 10:18	SM 2550B-2010		MBW	B9G1112	RC-C

Sample Number 9071206-04
Sample Description DHEC C-001 Gills Creek @ Garners Ferry Rd collected on 07/22/19 10:15

Parameter	Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
Microbiological Parameters										
E. Coli	576	20	MPN/100 mL	20.0	07/22/19 15:15	SM 9223B-2004		MBW	B9G1187	RC-C
General Chemistry Parameters										
Total Suspended Solids	8.2	2.0	mg/L	2.00	07/23/19 08:20	SM 2540D-2011		RAM	B9G1138	RC-C



Woolpert Inc. - City of Columbia
2000 Center Point Road Ste 2200
Columbia, SC 29210

Project: Water Quality Testing
Work Order: 9071206
Reported: 07/29/19 11:23

Sample Number 9071206-05
Sample Description DHEC C-017 Gills Creek @ Bluff Road collected on 07/22/19 10:50

Parameter	Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
Field Parameters										
Dissolved Oxygen	8.6	0.1	mg/L	1.00	07/22/19 10:51	SM 4500 OG-2011		MBW	B9G1112	RC-C
Temperature	28.6	0.0	°C	1.00	07/22/19 10:51	SM 2550B-2010		MBW	B9G1112	RC-C

Sample Number 9071206-06
Sample Description DHEC C-017 Gills Creek @ Bluff Road collected on 07/22/19 10:45

Parameter	Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
Microbiological Parameters										
E. Coli	104	20	MPN/100 mL	20.0	07/22/19 15:15	SM 9223B-2004		MBW	B9G1187	RC-C
General Chemistry Parameters										
Total Suspended Solids	6.6	1.0	mg/L	1.00	07/23/19 08:20	SM 2540D-2011		RAM	B9G1138	RC-C



Woolpert Inc. - City of Columbia
2000 Center Point Road Ste 2200
Columbia, SC 29210

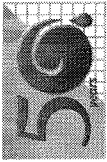
Project: Water Quality Testing
Work Order: 9071206
Reported: 07/29/19 11:23

Data Qualifiers and Definitions

ND Analyte NOT DETECTED at or above the reporting limit
NR Not reported

Laboratory Reference:

RC-G = Rogers and Callcott, 426 Fairforest Way, Greenville, SC 29607 / SC Lab ID 23105
RC-C = Rogers and Callcott, 215B Stoneridge Drive, Columbia, SC 29210 / SC Lab ID 40572



Rogers & Callcott
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Mailing PO Box 5655 Shipping 426 Fairforest Way 215B Stoneridge Drive
Address: Greenville, SC 29606 Address: Greenville, SC 29607 Columbia, SC 29210
Phone (864) 232-1556 Fax (864) 232-6140 Phone (803) 509-8999

Client Name Woolpert - City of Columbia
Address 2000 Center Point Road Suite 2200
Columbia, SC 29210
Report To: Michael Long
Email Address Michael.long@woolpert.com
Telephone # 803-214-5936
PO # _____ Project # Water Quality Testing

R & C WORK ORDER	YR DATE	TIME	SAMPLE DESCRIPTION
02	7-22-09	0935	DHEC B-280 (Smith Branch @ N. Main St)
02	7-22-09	0935	DHEC B-280 (Smith Branch @ N. Main St)

CHAIN OF CUSTODY RECORD

WORK ORDER 9071266

Parameter(s) ↑	Total Number of Containers	N	N	Filtered (Yes/No)	Cooled (Yes/No)	Container Type (Plastic/Glass)	Container Volume (mL)	Sample Type (Grab/Composite)	Sample Source (WW, GW, DW, SW, S, Other)	Preservation Code(s)	COMMENTS
TSS	1									A - None E - HCl I - Zn Acetate B - HNO ₃ F - Na ₂ S ₂ O ₃ J - H ₃ PO ₄ C - H ₂ SO ₄ G - Boric Acid K - NaH ₂ PO ₄ D - NaOH H - Ascorbic Acid L - NH ₄ Cl	D.O. - 9.34 mg/L Temp - 25.4 °C Collected @ 0936 Analyzed @ 0936
F. Coli	1										Weather - Mostly Sunny 84° F

SAMPLER - RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
1 <u>Nindi B. Wright</u>	7-22-09 1245	<u>[Signature]</u>	7-22-09 1245
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
3. _____	_____	4. _____	_____
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
5. _____	_____	6. _____	_____
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
7. _____	_____	8. _____	_____



Mailing Address: PO Box 5655 Greenville, SC 29606 Phone (864) 232-1556
Shipping Address: 426 Fairforest Way Greenville, SC 29607 Phone (803) 509-8999
215B Stoneridge Drive Columbia, SC 29210

Client Name: Woolpert - City of Columbia
Address: 2000 Center Point Road Suite 2200
Columbia, SC 29210

Report To: Michael Long
Email Address: Michael.long@woolpert.com
Telephone #: 803-214-5936

PO # _____ Project # Water Quality Testing

R & C WORK ORDER	YR 19 DATE	TIME	SAMPLE DESCRIPTION
-04	7-22	1015	DHEC C-001 (Gills Creek @ Garners Ferry Rd)
-04	7-22	1015	DHEC C-001 (Gills Creek @ Garners Ferry Rd)

WORK ORDER 9071206

CHAIN OF CUSTODY RECORD

Parameter(s) ↓	Total Number of Containers	N	N	Filtered (Yes/No)	Cooled (Yes/No)	Container Type (Plastic/Glass)	Container Volume (mL)	Sample Type (Grab/Composite)	Sample Source (WW, GW, DW, SW, S, Other)	Preservation Code(s)	COMMENTS
TSS	1									A - None E - HCl I - Zn Acetate B - HNO ₃ F - Na ₂ S ₂ O ₃ J - H ₃ PO ₄ C - H ₂ SO ₄ G - Boric Acid K - NaH ₂ PO ₄ D - NaOH H - Ascorbic Acid L - NH ₄ Cl	D.O. - 8.34 mg/L
											Temp - 30.7 °C
											Collected @ 1017
											Analyzed @ 1018
											Weather - 86 °F
											mostly Sunny

SAMPLER - RELINQUISHED BY: 1. Nandi B. Wright DATE/TIME: 7-22-19 1245 RECEIVED BY: [Signature]

RELINQUISHED BY: _____ DATE/TIME: _____ RECEIVED BY: _____

RELINQUISHED BY: _____ DATE/TIME: _____ RECEIVED BY: _____

RELINQUISHED BY: _____ DATE/TIME: _____ RECEIVED BY: _____

RELINQUISHED BY: _____ DATE/TIME: _____ RECEIVED BY: _____

RELINQUISHED BY: _____ DATE/TIME: _____ RECEIVED BY: _____

RELINQUISHED BY: _____ DATE/TIME: _____ RECEIVED BY: _____

RELINQUISHED BY: _____ DATE/TIME: _____ RECEIVED BY: _____

RELINQUISHED BY: _____ DATE/TIME: _____ RECEIVED BY: _____

RELINQUISHED BY: _____ DATE/TIME: _____ RECEIVED BY: _____

RELINQUISHED BY: _____ DATE/TIME: _____ RECEIVED BY: _____



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Address: Greenville, SC 29606 Address: Greenville, SC 29210 Columbia, SC 29210
Phone (864) 232-1556 Phone (864) 232-6140 Phone (803) 509-8999

Client Name Woolpert - City of Columbia
Address 2000 Center Point Road Suite 2200
Columbia, SC 29210
Report To: Michael Long
Email Address Michael.long@woolpert.com
Telephone # 803-214-5936
PO # _____ Project # Water Quality Testing

CHAIN OF CUSTODY RECORD

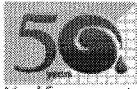
WORK ORDER

2071206

Parameter(s) ↓	Total Number of Containers	N	N	Filtered (Yes/No)
		Y		Cooled (Yes/No)
		P		Container Type (Plastic/Glass)
		0.5G	1.20	Container Volume (mL)
		G	G	Sample Type (Grab/Composite)
		ww	ww	Sample Source (WW, GW, DW, SW, S, Other)
		A	F	Preservation Code(s)
				A - None E - HCl I - Zn Acetate B - HNO ₃ F - Na ₂ S ₂ O ₃ J - H ₃ PO ₄ C - H ₂ SO ₄ G - Boric Acid K - NaH ₂ PO ₄ D - NaOH H - Ascorbic Acid L - NH ₄ Cl
		TSS	F. Coll	COMMENTS
	1	1		D.O. - 8.65 mg/L
	1	1		Temp - 28.6 °C
				Collected @ 1050
				Analyzed @ 1051
				Weather - 88° F
				Sunny

SAMPLER - RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
1. <u>Michael B. Wright</u>	<u>7-22-19 12:45</u>	2. <u>[Signature]</u>	<u>7-22-19 12:45</u>
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
3. _____	_____	4. _____	_____
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
5. _____	_____	6. _____	_____
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
7. _____	_____	8. _____	_____

Composite Start Date/Time: _____
Composite End Date/Time: _____
Time or Flow (Circle one) Initials: _____
Temperature of blank or representative sample _____ °C
At time of collection _____ °C
At time of lab receipt 0.2 °C



Sample Receipt Verification

Client: Woolpert - Columbia Date Received: 7-22-19 Work Order: 9071206

Carrier Name: Client FedEx UPS US Mail Courier Field Services Other: _____
Tracking Number: _____

Carrier Name: Client FedEx UPS US Mail Courier Field Services Other: _____
Tracking Number: NA

Receipt Criteria	Y e s	No	N A	Comments
Shipping container / cooler intact?	X			Damaged Leaking Other:
Custody seals intact?			X	
COC included with samples?	X			
COC signed when relinquished and received?	X			
Sample bottles intact?	X			Damaged Leaking Other:
Sample ID on COC agree with label on bottle(s)?	X			
Date / time on COC agree with label on bottle(s)?	X			
Number of bottles on COC agrees with number of bottles received?	X			
Samples received within holding time?	X			
Sample volume sufficient for analysis?	X			
VOA vials free of headspace (<6mm bubble)?			X	
Samples requiring pH preservation at proper pH? Note: Samples for metals analysis may be preserved upon receipt in the lab. Note: Samples for O&G and VOA analysis – preservation checked at bench.			X	
Samples dechlorinated for parameters requiring chlorine removal at the time of sample collection? Note: Chlorine checked at bench for samples requiring Bacterial, VOA, and HAA analysis.	X			
Samples cooled when received in Columbia ?	X			<u>Ice</u> Cold Packs Dry Ice None
Temp at time of receipt <u>0.2 °C</u> Temp measured with IR SN: 36301069WS				
Samples cooled when received in Greenville ?				Ice Cold Packs Dry Ice None
Temp at time of receipt <u>NA °C</u> Temp measured with IR SN: 97050067				

If in-house preservation used – record Lot #			
HCL		H ₃ PO ₄	
H ₂ SO ₄		NaOH	
HNO ₃		Other	

Comments:

Were non-conformance issues noted at initial sample receipt? Yes or No
Non-Conformance issue other than noted above:

Note: Samples received initially in Columbia Facility. Sample preservation checks performed at Columbia Facility. Revised March 2019

Completed by: ABS

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, Revised January 2019

Laboratory Report Date: 9/3/19

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

Andrea Bolling
Project Verifier/QA Manager

9/11/19
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

9/11/19
Date

AJ Jesse
Printed Name



Laboratory Report

Client Woolpert Inc. - City of Columbia
Michael Long
2000 Center Point Road Ste 2200
Columbia, SC 29210

Project: Water Quality Testing
Work Order: 9081078
Received: 08/22/2019 11:20

Dear Client:

Rogers and Callcott appreciates the opportunity to be of service to you. The attached laboratory services report includes analytical results and chain of custody for samples that were received on August 22, 2019. Rogers and Callcott maintains a formal QA/QC program. Unless otherwise noted, all analyses performed under NELAP certification have complied with all the requirements for the TNI standard. The analyses met the QA/QC confidence interval for each test method unless otherwise qualified. Estimated uncertainty is available upon request.

Privileged / Confidential information may be contained in this report and is intended only for the use of the addressee. If you are not the addressee, or the person responsible for delivering to the person addressed, you may not copy or deliver this message to anyone else. If you receive this message by mistake, please notify Rogers and Callcott immediately.

We strive to provide excellent service to our clients. Please contact Lauren Woodrum Hollister, your Project Manager, at lauren.woodrum.hollister@rogersandcallcott.com or (864)-232-1556 if you have any questions about this report.

CC: Trevor Gauron

Report Approved By:

Lauren Woodrum Hollister
Project Manager



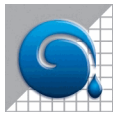
Certificate of Analysis

*South Carolina Greenville Laboratory Identification 23105
 South Carolina Columbia Laboratory Identification 40572
 North Carolina Laboratory Certification Number 27
 North Carolina Drinking Water Lab Number 45710
 NELAP Utah Certificate Number SC000042014-1
 Georgia Drinking Water Lab ID 880*

Client Woolpert Inc. - City of Columbia
 Michael Long
 2000 Center Point Road Ste 2200
 Columbia, SC 29210

Project: Water Quality Testing
Work Order: 9081078
Received: 08/22/2019 11:20

Sample Number	Sample Description	Matrix	Sampled	Type
9081078-01	DHEC B-280 Smith Branch @ N. Main St	Wastewater	08/22/19 09:28	Grab
9081078-02	DHEC B-280 Smith Branch @ N. Main St	Wastewater	08/22/19 09:27	Grab
9081078-03	DHEC C-001 Gills Creek @ Garners Ferry Rd	Wastewater	08/22/19 10:11	Grab
9081078-04	DHEC C-001 Gills Creek @ Garners Ferry Rd	Wastewater	08/22/19 10:10	Grab
9081078-05	DHEC C-017 Gills Creek @ Bluff Road	Wastewater	08/22/19 10:41	Grab
9081078-06	DHEC C-017 Gills Creek @ Bluff Road	Wastewater	08/22/19 10:40	Grab



Woolpert Inc. - City of Columbia
2000 Center Point Road Ste 2200
Columbia, SC 29210

Project: Water Quality Testing
Work Order: 9081078
Reported: 09/03/19 15:02

Sample Data

Sample Number 9081078-01
Sample Description DHEC B-280 Smith Branch @ N. Main St collected on 08/22/19 09:28

Parameter	Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
Field Parameters										
Dissolved Oxygen	8.9	0.1	mg/L	1.00	08/22/19 09:29	SM 4500 OG-2011		MBW	B9H1039	RC-C
Grab	Complete				08/22/19 09:28	Grab		MBW	B9H1039	RC-C
Temperature	25.1	0.0	°C	1.00	08/22/19 09:29	SM 2550B-2010		MBW	B9H1039	RC-C

Sample Number 9081078-02
Sample Description DHEC B-280 Smith Branch @ N. Main St collected on 08/22/19 09:27

Parameter	Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
Microbiological Parameters										
E. Coli	452	20	MPN/100 mL	20.0	08/22/19 14:15	SM 9223B-2004		BNE	B9H1102	RC-C
General Chemistry Parameters										
Total Suspended Solids	1.1	1.0	mg/L	1.00	08/27/19 08:38	SM 2540D-2011		RAM	B9H1151	RC-C

Sample Number 9081078-03
Sample Description DHEC C-001 Gills Creek @ Garners Ferry Rd collected on 08/22/19 10:11

Parameter	Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
Field Parameters										
Dissolved Oxygen	7.8	0.1	mg/L	1.00	08/22/19 10:12	SM 4500 OG-2011		MBW	B9H1039	RC-C
Temperature	28.7	0.0	°C	1.00	08/22/19 10:12	SM 2550B-2010		MBW	B9H1039	RC-C

Sample Number 9081078-04
Sample Description DHEC C-001 Gills Creek @ Garners Ferry Rd collected on 08/22/19 10:10

Parameter	Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
Microbiological Parameters										
E. Coli	462	20	MPN/100 mL	20.0	08/22/19 14:15	SM 9223B-2004		BNE	B9H1102	RC-C
General Chemistry Parameters										
Total Suspended Solids	28.0	3.3	mg/L	3.34	08/27/19 08:38	SM 2540D-2011		RAM	B9H1151	RC-C



Woolpert Inc. - City of Columbia
2000 Center Point Road Ste 2200
Columbia, SC 29210

Project: Water Quality Testing
Work Order: 9081078
Reported: 09/03/19 15:02

Sample Number 9081078-05
Sample Description DHEC C-017 Gills Creek @ Bluff Road collected on 08/22/19 10:41

Parameter	Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
Field Parameters										
Dissolved Oxygen	8.2	0.1	mg/L	1.00	08/22/19 10:42	SM 4500 OG-2011		MBW	B9H1039	RC-C
Temperature	29.8	0.0	°C	1.00	08/22/19 10:42	SM 2550B-2010		MBW	B9H1039	RC-C

Sample Number 9081078-06
Sample Description DHEC C-017 Gills Creek @ Bluff Road collected on 08/22/19 10:40

Parameter	Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
Microbiological Parameters										
E. Coli	316	20	MPN/100 mL	20.0	08/22/19 14:15	SM 9223B-2004		BNE	B9H1102	RC-C
General Chemistry Parameters										
Total Suspended Solids	3.7	1.0	mg/L	1.00	08/27/19 08:38	SM 2540D-2011		RAM	B9H1151	RC-C



Woolpert Inc. - City of Columbia
2000 Center Point Road Ste 2200
Columbia, SC 29210

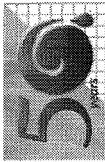
Project: Water Quality Testing
Work Order: 9081078
Reported: 09/03/19 15:02

Data Qualifiers and Definitions

ND Analyte NOT DETECTED at or above the reporting limit
NR Not reported

Laboratory Reference:

RC-G = Rogers and Callcott, 426 Fairforest Way, Greenville, SC 29607 / SC Lab ID 23105
RC-C = Rogers and Callcott, 215B Stoneridge Drive, Columbia, SC 29210 / SC Lab ID 40572



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Address: 215B Stoneridge Drive, Columbia, SC 29210, Phone (803) 509-8999

Client Name: Woolpert - City of Columbia
Address: 2000 Center Point Road Suite 2200
Columbia, SC 29210
Report To: Michael Long
Email Address: Michael.long@woolpert.com
Telephone #: 803-214-5936

PO # _____ Project # Water Quality Testing

CHAIN OF CUSTODY RECORD

WORK ORDER

9081078

R & C WORK ORDER		YR 19 DATE	TIME	SAMPLE DESCRIPTION	Total Number of Containers	Parameter(s) ↑	TSS	F. Coli	N	N	Filtered (Yes/No)	Cooled (Yes/No)	Container Type (Plastic/Glass)	Container Volume (mL)	Sample Type (Grab/Composite)	Sample Source (WW, GW, DW, SW, S, Other)	Preservation Code(s)	COMMENTS	
-012		8-22	0927	DHEC B-280 (Smith Branch @ N. Main St)	1		1		Y	N							A - None E - HCl B - HNO ₃ F - Na ₂ S ₂ O ₃ G - Boric Acid H - Ascorbic Acid I - Zn Acetate J - H ₃ PO ₄ K - NaH ₂ PO ₄ L - NH ₄ Cl	D.O. - 8.94 mg/L Temp - 25.1 °C	
-02		8-22	0927	DHEC B-280 (Smith Branch @ N. Main St)	1		1		P	N									Collected @ 0928 Analyzed @ 0929
																			Weather - 82°F Sunny

SAMPLER - RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
1. <u>Kindi B. Wright</u>	8-22-19 1120	2. <u>[Signature]</u>	8-22-19 1120
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
3.		4.	
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
5.		6.	
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
7.		8.	



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Greenville, SC 29606
Phone (864) 232-1556

Shipping Address: 426 Fairforest Way
Greenville, SC 29607
Phone (864) 232-6140

215B Stoneridge Drive
Columbia, SC 29210
Phone (803) 509-8999

Client Name: Woolpert - City of Columbia

Address: 2000 Center Point Road Suite 2200
Columbia, SC 29210

Report To: Michael Long

Email Address: Michael.long@woolpert.com

Telephone #: 803-214-5936

PO # _____ Project # Water Quality Testing

R & C WORK ORDER	YR 14 DATE	TIME	SAMPLE DESCRIPTION
-04	8-22	1010	DHEC C-001 (Gills Creek @ Garners Ferry Rd)
-04	8-22	1010	DHEC C-001 (Gills Creek @ Garners Ferry Rd)

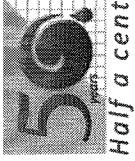
SAMPLER - RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:
1. <u>Madie B. Bright</u>	<u>8-22-19 1120</u>	2. <u>[Signature]</u>
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:
3.		4.
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:
5.		6.
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:
7.		8.

CHAIN OF CUSTODY RECORD

WORK ORDER 9081078

Parameter(s) ↑	Total Number of Containers	N	N	Filtered (Yes/No)	Cooled (Yes/No)	Container Type (Plastic/Glass)	Container Volume (mL)	Sample Type (Grab/Composite)	Sample Source (WW, GW, DW, SW, S, Other)	Preservation Code(s)	COMMENTS
TSS	1									A - None E - HCl I - Zn Acetate B - HNO ₃ F - Na ₂ S ₂ O ₃ J - H ₃ PO ₄ C - H ₂ SO ₄ G - Boric Acid K - NaH ₂ PO ₄ D - NaOH H - Ascorbic Acid L - NH ₄ Cl	D.O. - <u>7.82</u> mg/L
F. Coli	1										Temp - <u>28.7</u> °C
											Collected @ <u>1011</u>
											Analyzed @ <u>101Z</u>
											Weather - <u>86° F / Sunny</u>

Composite Start Date/Time:	DATE/TIME: <u>8-22-19 1120</u>
Composite End Date/Time:	DATE/TIME:
Time or Flow (Circle one) Initials:	DATE/TIME:
Temperature of blank or representative sample	DATE/TIME:
At time of collection _____ °C	
At time of lab receipt <u>47</u> °C	



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CHAIN OF CUSTODY RECORD

WORK ORDER

9081078

Mailing: PO Box 5655, Greenville, SC 29606, Phone (864) 232-1556
Shipping: 426 Fairforest Way, Greenville, SC 29607, Phone (864) 232-6140
Address: 215B Stoneridge Drive, Columbia, SC 29210, Phone (803) 509-8999

Client Name: Woolpert - City of Columbia
Address: 2000 Center Point Road Suite 2200
Columbia, SC 29210
Report To: Michael Long
Email Address: Michael.long@woolpert.com
Telephone # 803-214-5936

PO # _____ Project # Water Quality Testing

R & C WORK ORDER	YR 19 DATE	TIME	SAMPLE DESCRIPTION
-06	8-22	1040	DHEC C-017 (Gills Creek @ Bluff Road)
-06	8-22	1040	DHEC C-017 (Gills Creek @ Bluff Road)

Parameter(s) ↑	Total Number of Containers	N	Y	N	Y	Filtered (Yes/No)
TSS	1					
F. Coli	1					

Sample Source (WW, GW, DW, SW, S, Other)	Sample Type (Grab/Composite)	Container Type (Plastic/Glass)	Container Volume (mL)

Preservation Code(s)	COMMENTS
A - None E - HCl I - Zn Acetate B - HNO3 F - Na2S2O3 J - H3PO4 C - H2SO4 G - Boric Acid K - NaH2PO4 D - NaOH H - Ascorbic Acid L - NH4Cl	D.O.- 8.24 mg/L Temp- 29.8 °C Collected @ 1041 Analyzed @ 1042

Weather-89°F / Sunny

SAMPLER - RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
1. <i>Nandi B. Wright</i>	8-22-19 1120	2. <i>[Signature]</i>	8-22-19 1120

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
3. _____		4. _____	
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
5. _____		6. _____	
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
7. _____		8. _____	

Composite Start Date/Time: _____
Composite End Date/Time: _____
Time or Flow (Circle one) Initials: _____

Temperature of blank or representative sample
At time of collection _____ °C
At time of lab receipt <u>4.7</u> °C



Sample Receipt Verification

Client: Woolpert - Columbia Date Received: 8-22-19 Work Order: 9081078

Carrier Name: Client FedEx UPS US Mail Courier Field Services Other: _____
Tracking Number: _____

Carrier Name: Client FedEx UPS US Mail Courier Field Services Other: _____
Tracking Number: NA

Receipt Criteria	Y e s	No	N A	Comments
Shipping container / cooler intact?	<input checked="" type="checkbox"/>			Damaged Leaking Other:
Custody seals intact?			<input checked="" type="checkbox"/>	
COC included with samples?	<input checked="" type="checkbox"/>			
COC signed when relinquished and received?	<input checked="" type="checkbox"/>			
Sample bottles intact?	<input checked="" type="checkbox"/>			Damaged Leaking Other:
Sample ID on COC agree with label on bottle(s)?	<input checked="" type="checkbox"/>			
Date / time on COC agree with label on bottle(s)?	<input checked="" type="checkbox"/>			
Number of bottles on COC agrees with number of bottles received?	<input checked="" type="checkbox"/>			
Samples received within holding time?	<input checked="" type="checkbox"/>			
Sample volume sufficient for analysis?	<input checked="" type="checkbox"/>			
VOA vials free of headspace (<6mm bubble)?			<input checked="" type="checkbox"/>	
Samples requiring pH preservation at proper pH? Note: Samples for metals analysis may be preserved upon receipt in the lab. Note: Samples for O&G and VOA analysis – preservation checked at bench.			<input checked="" type="checkbox"/>	
Samples dechlorinated for parameters requiring chlorine removal at the time of sample collection? Note: Chlorine checked at bench for samples requiring Bacterial, VOA, and HAA analysis.	<input checked="" type="checkbox"/>			
Samples cooled when received in Columbia ?	Temp at time of receipt <u>4.7</u> °C Temp measured with IR SN: 36301069WS	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/> Ice Cold Packs Dry Ice None
Samples cooled when received in Greenville ?	Temp at time of receipt <u>NA</u> °C Temp measured with IR SN: 97050067			Ice Cold Packs Dry Ice None

If in-house preservation used – record Lot #			
HCL		H ₃ PO ₄	
H ₂ SO ₄		NaOH	
HNO ₃		Other	

Comments:

Were non-conformance issues noted at initial sample receipt? Yes or No
Non-Conformance issue other than noted above:

Note: Samples received initially in Columbia Facility. Sample preservation checks performed at Columbia Facility. Revised March 2019

Completed by: MJT

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, Revised January 2019

Laboratory Report Date: 9/30/2019

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

Andrea Bolling
Project Verifier/QA Manager

10/16/19
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

10/16/19
Date

AJ Jesse
Printed Name



Laboratory Report

Client	Woolpert Inc. - City of Columbia Michael Long 2000 Center Point Road Ste 2200 Columbia, SC 29210	Project:	Water Quality Testing
		Work Order:	9091077
		Received:	09/20/2019 12:53

Dear Client:

Rogers and Callcott appreciates the opportunity to be of service to you. The attached laboratory services report includes analytical results and chain of custody for samples that were received on September 20, 2019. Rogers and Callcott maintains a formal QA/QC program. Unless otherwise noted, all analyses performed under NELAP certification have complied with all the requirements for the TNi standard. The analyses met the QA/QC confidence interval for each test method unless otherwise qualified. Estimated uncertainty is available upon request.

Privileged / Confidential information may be contained in this report and is intended only for the use of the addressee. If you are not the addressee, or the person responsible for delivering to the person addressed, you may not copy or deliver this message to anyone else. If you receive this message by mistake, please notify Rogers and Callcott immediately.

We strive to provide excellent service to our clients. Please contact Lauren Woodrum Hollister, your Project Manager, at lauren.woodrum.hollister@rogersandcallcott.com or (864)-232-1556 if you have any questions about this report.

CC: Trevor Gauron

Report Approved By:

Lauren Woodrum Hollister
Project Manager



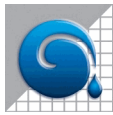
Certificate of Analysis

*South Carolina Greenville Laboratory Identification 23105
 South Carolina Columbia Laboratory Identification 40572
 North Carolina Laboratory Certification Number 27
 North Carolina Drinking Water Lab Number 45710
 NELAP Utah Certificate Number SC000042014-1
 Georgia Drinking Water Lab ID 880*

Client Woolpert Inc. - City of Columbia
 Michael Long
 2000 Center Point Road Ste 2200
 Columbia, SC 29210

Project: Water Quality Testing
Work Order: 9091077
Received: 09/20/2019 12:53

Sample Number	Sample Description	Matrix	Sampled	Type
9091077-01	DHEC C-017 Gills Creek @ Bluff Road	Wastewater	09/20/19 09:18	Grab
9091077-02	DHEC C-017 Gills Creek @ Bluff Road	Wastewater	09/20/19 09:14	Grab
9091077-03	DHEC C-001 Gills Creek @ Garners Ferry Rd	Wastewater	09/20/19 09:47	Grab
9091077-04	DHEC C-001 Gills Creek @ Garners Ferry Rd	Wastewater	09/20/19 09:44	Grab
9091077-05	DHEC B-280 Smith Branch @ N. Main St	Wastewater	09/20/19 10:25	Grab
9091077-06	DHEC B-280 Smith Branch @ N. Main St	Wastewater	09/20/19 10:24	Grab



Woolpert Inc. - City of Columbia
2000 Center Point Road Ste 2200
Columbia, SC 29210

Project: Water Quality Testing
Work Order: 9091077
Reported: 09/30/19 15:21

Sample Data

Sample Number 9091077-01
Sample Description DHEC C-017 Gills Creek @ Bluff Road collected on 09/20/19 09:18

Parameter	Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
Field Parameters										
Dissolved Oxygen	6.3	0.1	mg/L	1.00	09/20/19 09:19	SM 4500 OG-2011		MJT	B9I0914	RC-C
Temperature	21.5	0.0	°C	1.00	09/20/19 09:19	SM 2550B-2010		MJT	B9I0914	RC-C

Sample Number 9091077-02
Sample Description DHEC C-017 Gills Creek @ Bluff Road collected on 09/20/19 09:14

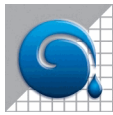
Parameter	Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
Microbiological Parameters										
E. Coli	20	20	MPN/100 mL	20.0	09/20/19 14:22	SM 9223B-2004		RAM	B9I0976	RC-C
General Chemistry Parameters										
Total Suspended Solids	3.6	1.0	mg/L	1.00	09/24/19 08:23	SM 2540D-2011		RAM	B9I0997	RC-C

Sample Number 9091077-03
Sample Description DHEC C-001 Gills Creek @ Garners Ferry Rd collected on 09/20/19 09:47

Parameter	Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
Field Parameters										
Dissolved Oxygen	5.9	0.1	mg/L	1.00	09/20/19 09:48	SM 4500 OG-2011		MJT	B9I0914	RC-C
Temperature	23.0	0.0	°C	1.00	09/20/19 09:48	SM 2550B-2010		MJT	B9I0914	RC-C

Sample Number 9091077-04
Sample Description DHEC C-001 Gills Creek @ Garners Ferry Rd collected on 09/20/19 09:44

Parameter	Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
Microbiological Parameters										
E. Coli	196	20	MPN/100 mL	20.0	09/20/19 14:22	SM 9223B-2004		RAM	B9I0976	RC-C
General Chemistry Parameters										
Total Suspended Solids	10.8	2.5	mg/L	2.50	09/24/19 08:23	SM 2540D-2011		RAM	B9I0997	RC-C



Woolpert Inc. - City of Columbia
2000 Center Point Road Ste 2200
Columbia, SC 29210

Project: Water Quality Testing
Work Order: 9091077
Reported: 09/30/19 15:21

Sample Number 9091077-05
Sample Description DHEC B-280 Smith Branch @ N. Main St collected on 09/20/19 10:25

Parameter	Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
Field Parameters										
Dissolved Oxygen	8.4	0.1	mg/L	1.00	09/20/19 10:25	SM 4500 OG-2011		MJT	B9I0914	RC-C
Grab	Complete				09/20/19 10:25	Grab		MJT	B9I0914	RC-C
Temperature	19.7	0.0	°C	1.00	09/20/19 10:25	SM 2550B-2010		MJT	B9I0914	RC-C

Sample Number 9091077-06
Sample Description DHEC B-280 Smith Branch @ N. Main St collected on 09/20/19 10:24

Parameter	Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
Microbiological Parameters										
E. Coli	978	20	MPN/100 mL	20.0	09/20/19 14:22	SM 9223B-2004		RAM	B9I0976	RC-C
General Chemistry Parameters										
Total Suspended Solids	2.4	1.0	mg/L	1.00	09/24/19 08:23	SM 2540D-2011		RAM	B9I0997	RC-C



Woolpert Inc. - City of Columbia
2000 Center Point Road Ste 2200
Columbia, SC 29210

Project: Water Quality Testing
Work Order: 9091077
Reported: 09/30/19 15:21

Data Qualifiers and Definitions

ND Analyte NOT DETECTED at or above the reporting limit
NR Not reported

Laboratory Reference:

RC-G = Rogers and Callcott, 426 Fairforest Way, Greenville, SC 29607 / SC Lab ID 23105
RC-C = Rogers and Callcott, 215B Stoneridge Drive, Columbia, SC 29210 / SC Lab ID 40572

Mailing Address: PO Box 5655
 Greenville, SC 29606
 Phone (864) 232-1556

Shipping Address: 426 Fairforest Way
 Greenville, SC 29607
 Phone (864) 232-6140

Client Name: Woolpert – City of Columbia

Address: 2000 Center Point Road Suite 2200
Columbia, SC 29210

Report To: Michael Long

Email Address: Michael.Long@woolpert.com

Telephone # 803-214-5936

PO # Project # Water Quality Testing

R & C WORK ORDER	YR / ^R DATE	TIME	SAMPLE DESCRIPTION
-02	9-20	0914	DHEC C-017 (Gills Creek @ Bluff Road)
-02	9-20	0914	DHEC C-017 (Gills Creek @ Bluff Road)

CHAIN OF CUSTODY RECORD

WORK ORDER

9091077

Total Number of Containers															
Parameter(s) ↑															
TSS	1														
F. Coli	1														

Filtered (Yes/No) _____

Cooled (Yes/No) _____

Container Type (Plastic/Glass) _____

Container Volume (mL) _____

Sample Type (Grab/Composite) _____

Sample Source (WW, GW, DW, SW, S, Other) _____

Preservation Code(s)

A - None E - HCl I - Zn Acetate
 B - HNO3 F - Na2S2O3 J - H3PO4
 C - H2SO4 G - Boric Acid K - NaH2PO4
 D - NaOH H - Ascorbic Acid L - NH4Cl

COMMENTS

D.O.- 6.3 mg/L

Temp- 21.5 °C

Collected @ 0918

Analyzed @ 0919

Weather- 72°F, clear

DATE/TIME: 9-20-19 12:53

RECEIVED BY: [Signature]

DATE/TIME: 9-20-19 12:53

RECEIVED BY: [Signature]

DATE/TIME: 9-20-19 12:53

RECEIVED BY: [Signature]

DATE/TIME: 9-20-19 12:53

RECEIVED BY: [Signature]

DATE/TIME: 9-20-19 12:53

RECEIVED BY: [Signature]

DATE/TIME: 9-20-19 12:53

RECEIVED BY: [Signature]

DATE/TIME: 9-20-19 12:53

RECEIVED BY: [Signature]

DATE/TIME: 9-20-19 12:53

RECEIVED BY: [Signature]

DATE/TIME: 9-20-19 12:53

RECEIVED BY: [Signature]

90911077

WORK ORDER

CHAIN OF CUSTODY RECORD

50 **Rogers & Callcott**
ENVIRONMENTAL
Half a century of commitment and quality

Mailing Address: PO Box 5655, Greenville, SC 29606, Phone (864) 232-1556
Shipping Address: 426 Fairforest Way, Greenville, SC 29607, Phone (864) 232-6140
215B Stoneridge Drive, Columbia, SC 29210, Phone (803) 509-8999

Client Name: Woolpert - City of Columbia
Address: 2000 Center Point Road Suite 2200 Columbia, SC 29210
Report To: Michael Long
Email Address: Michael.long@woolpert.com
Telephone # 803-214-5936
PO # Project # Water Quality Testing

Filtered (Yes/No)	
Cooled (Yes/No)	
Container Type (Plastic/Glass)	
Container Volume (mL)	
Sample Type (Grab/Composite)	
Sample Source (WW, GW, DW, SW, S, Other)	
Preservation Code(s) A - None B - HNO ₃ C - H ₂ SO ₄ D - NaOH E - HCl F - Na ₂ S ₂ O ₃ G - Boric Acid H - Ascorbic Acid I - Zn Acetate J - H ₃ PO ₄ K - NaH ₂ PO ₄ L - NH ₄ Cl	

Parameter(s) ↑	Total Number of Containers	N	Y	P	0.5G	G	WW	A	F	E. Coll	TSS	1	1	COMMENTS
	1													D.O.- 5.9 mg/L
	1													Temp- 23.0 °C
														Collected @ 0947
														Analyzed @ 0948
														Weather- 72°F, clear

R & C WORK ORDER	YR / DATE	TIME	SAMPLE DESCRIPTION
<u>-04</u>	<u>9-20</u>	<u>0944</u>	<u>DHEC C-001 (Gills Creek @ Garners Ferry Rd)</u>
<u>-04</u>	<u>9-20</u>	<u>0944</u>	<u>DHEC C-001 (Gills Creek @ Garners Ferry Rd)</u>

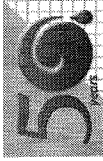
DATE/TIME: <u>9-20-19 12:53</u>	DATE/TIME: <u>9-20-19 12:53</u>
RECEIVED BY: <u>[Signature]</u>	RECEIVED BY: <u>[Signature]</u>
RECEIVED BY: <u>[Signature]</u>	RECEIVED BY: <u>[Signature]</u>
RECEIVED BY: <u>[Signature]</u>	RECEIVED BY: <u>[Signature]</u>
RECEIVED BY: <u>[Signature]</u>	RECEIVED BY: <u>[Signature]</u>
RECEIVED BY: <u>[Signature]</u>	RECEIVED BY: <u>[Signature]</u>
RECEIVED BY: <u>[Signature]</u>	RECEIVED BY: <u>[Signature]</u>

DATE/TIME: _____ Composite Start Date/Time: _____
 DATE/TIME: _____ Composite End Date/Time: _____
 Time or Flow (Circle one) Initials: _____
 Temperature of blank or representative sample _____ °C
 At time of collection _____ °C
 At time of lab receipt 1.3 °C

Form Revised March, 2019 Page _____ of _____

Possible Hazards associated with samples: Non-Hazard Flammable Skin Irritant Poison Unknown Other _____

Page 7 of 9



Rogers & Callcott
ENVIRONMENTAL
Half a century of commitment and quality

Mailing Address: PO Box 5655
Greenville, SC 29606
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Shipping Address: 426 Fairforest Way
Greenville, SC 29607
Phone (864) 232-6140

215B Stoneridge Drive
Columbia, SC 29210
Phone (803) 509-8999

Client Name Woolpert - City of Columbia
Address 2000 Center Point Road Suite 2200
Columbia, SC 29210
Report To: Michael Long
Email Address Michael.Long@woolpert.com
Telephone # 803-214-5936
PO # _____ **Project #** Water Quality Testing

CHAIN OF CUSTODY RECORD

WORK ORDER

9091077

Parameter(s) ↑	Total Number of Containers	N	Y	P	0.5G	G	WW	A	F	F. Coll.	TSS	COMMENTS
	1										1	D.O.- 8.7 mg/L
	1										1	Temp- 19.7 °C
												Collected @ 1025
												Analyzed @ 1025
												Weather- 72°F, clear

SAMPLER - RELINQUISHED BY: 1. [Signature] **DATE/TIME:** 9-20-17 12:53 **RECEIVED BY:** [Signature] **DATE/TIME:** 9-20-19 12:53

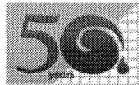
RELINQUISHED BY: 3. [Signature] **DATE/TIME:** _____ **RECEIVED BY:** _____ **DATE/TIME:** _____

RELINQUISHED BY: 5. [Signature] **DATE/TIME:** _____ **RECEIVED BY:** _____ **DATE/TIME:** _____

RELINQUISHED BY: 7. [Signature] **DATE/TIME:** _____ **RECEIVED BY:** _____ **DATE/TIME:** _____

COMPOSITE: Composite Start Date/Time: _____ Composite End Date/Time: _____
Time or Flow (Circle one) Initials: _____

Temperature of blank or representative sample
At time of collection _____ °C
At time of lab receipt 1.3 °C



Sample Receipt Verification

Client: Woolpert Date Received: 9/20/19 Work Order: 9091077

Carrier Name: Client FedEx UPS US Mail Courier Field Services Other: _____
Tracking Number: _____

Carrier Name: Client FedEx UPS US Mail Courier Field Services Other: _____
Tracking Number: NA

Receipt Criteria	Yes	No	NA	Comments
Shipping container / cooler intact?	X			Damaged Leaking Other:
Custody seals intact?			X	
COC included with samples?	X			
COC signed when relinquished and received?	X			
Sample bottles intact?	X			Damaged Leaking Other:
Sample ID on COC agree with label on bottle(s)?	X			
Date / time on COC agree with label on bottle(s)?	X			
Number of bottles on COC agrees with number of bottles received?	X			
Samples received within holding time?	X			
Sample volume sufficient for analysis?	X			
VOA vials free of headspace (<6mm bubble)?			X	
Samples requiring pH preservation at proper pH? <small>Note: Samples for metals analysis may be preserved upon receipt in the lab. Note: Samples for O&G and VOA analysis – preservation checked at bench.</small>			X	
Samples dechlorinated for parameters requiring chlorine removal at the time of sample collection? <small>Note: Chlorine checked at bench for samples requiring Bacterial, VOA, and HAA analysis.</small>	X			
Samples cooled when received in Columbia ?	Temp at time of receipt <u>1.3</u> °C Temp measured with IR SN: 36301069WS	X		<u>Ice</u> Cold Packs Dry Ice None
Samples cooled when received in Greenville ?	Temp at time of receipt <u>NA</u> °C Temp measured with IR SN: 97050067			Ice Cold Packs Dry Ice None

If in-house preservation used – record Lot #			
HCL		H ₃ PO ₄	
H ₂ SO ₄		NaOH	
HNO ₃		Other	

Comments:

Were non-conformance issues noted at initial sample receipt? Yes or No
Non-Conformance issue other than noted above:

Note: Samples received initially in Columbia Facility. Sample preservation checks performed at Columbia Facility. Revised March 2019

Completed by: ABB