# Clean Water 2020 Program

# CONSENT DECREE QUARTERLY REPORT

July 1, 2019 – September 30, 2019



3.00-

## Table of Contents

Section 1	Introduction	3
1.1	Summary of Reporting Requirements	3
1.2	Report Organization	3
Section 2	Schedule of Projects and Activities	5
Section 3	Additional Information Demonstrating Implementation of Consent Decree Requirements.	9
3.1	MOM Programs	9
3.1.2	1 Information Management System (IMS) Program	9
3.1.2	2 Sewer Mapping Program	9
3.1.3	3 Transmission System Operations and Maintenance Program (TSOMP)	10
3.1.4	Gravity Sewer System Operation and Maintenance Program (GSOMP)	10
3.2	Continuing Sewer Assessment Program (CSAP) for the WCTS	10
3.3	Infrastructure Rehabilitation Report (IRR) for the WCTS	10
3.4	Supplemental Environmental Project	12
Section 4	Quarterly SSO Report	13
Section 5	SEP Water Quality Monitoring Results	15
5.1	Sampling Conducted and Results	15

## List of Tables

Table 1 - SSO Report, 3rd Quarter 2019	13
Table 2 - Building Backup Report, 3rd Quarter 2019	14

## 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):

- 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.

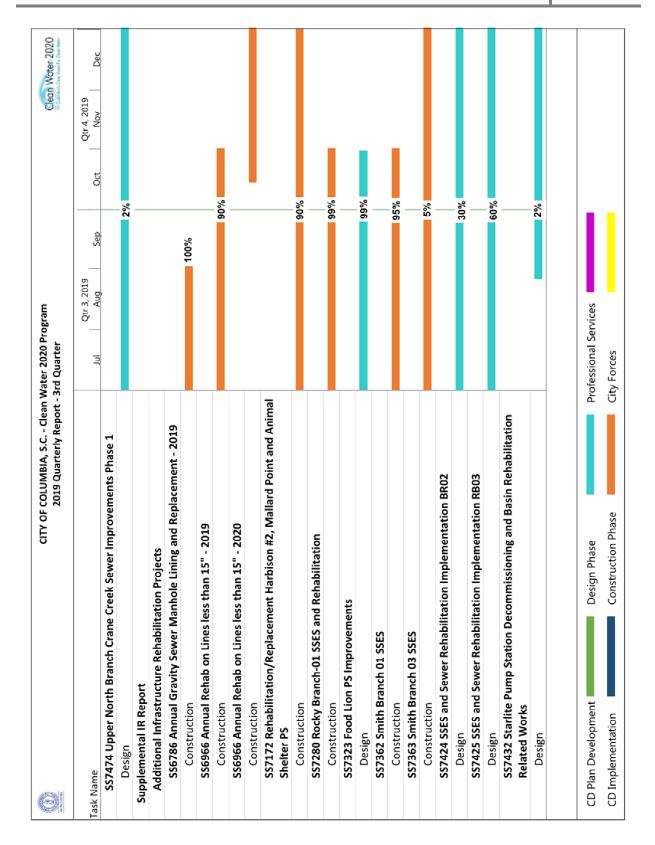
#### Section 5 – SEP Water Quality Monitoring Results

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.

Secti	on		2			50	ch	e	d	u	le	Ģ	<b>0</b> <sup>.</sup>	f	PI	rc	)j	e	ct	S	а	n	d	A	40	t	iv	it	ie	es		
Clean Water 2020	Qtr 4, 2019 Oct Nov Dec			%				%		%		%		%						<b>%</b>		%		%				%		%		
Water 2020 Program 3rd Quarter	Qtr 3, 2019 Jul Aun Sen	-		89%				79%		91%		78%		85%						%66		20%		98%				55%		%06	Professional Services	City Forces
CITY OF COLUMBIA, S.C Clean Water 2020 Program 2019 Quarterly Report - 3rd Quarter			Information Management System (IMS) Program	IMS Program Implementation	Capacity Assurance Program (CAP)	evelopment	Program (SMP)	ntation	Transmission System Operations and Maintenance Program (TSOMP)	mentation	Gravity Sewer System Operation and Maintenance Program (GSOMP)	mentation	Continuing Sewer Assessment Program (CSAP) for the WCTS	tation	Assessment of Minor Components of CSAP	Infrastructure Rehabilitation Report (IRR) for the WCTS	elopment	Infrastructure Rehabilitation Projects	SS725802 Greenlawn Dr. to Burnside #1 PS (Hampton Forest) Phase 2		SS7261 Lake Katherine Sewer Capacity Enhancement	E	SS7289 Rivermont Drive Pump Station and Force Main		rreet		SS7330 Upper Mill Creek Sewer Improvements		SS7331 Upper Kinley Creek Sewer Improvements Phase 1		Design Phase	Construction Phase
	Task Name	MOM Programs	Information Mar	IMS Program I	Capacity Assurar	CAP CD Plan Development	Sewer Mapping Program (SMP)	SMP Implementation	Transmission Sys	TSOMP Implementation	Gravity Sewer Sy	GSOMP Implementation	Continuing Sewer #	CSAP Implementation	Assessment of	Infrastructure Reha	IRR CD Plan Development	Infrastructure Re	SS725802 Gree	Design	SS7261 Lake K	Construction	SS7289 Rivern	Design	SS7301 Bull Street	Construction	SS7330 Upper	Design	SS7331 Upper	Design	CD Plan Development	CD Implementation

Task Name SS733701 East Rocky Branch Improvements Phase 1 Design	
SS733701 East Rocky Branch Improvements Phase 1 Design	Jul Qtr 3, 2019 Qtr 4, 2019 Jul Aug Sep Oct Nov Dec
Design	
	95%
Design	95%
SS735002 Crane Creek Upper North Branch Extension	
Design	98%
SS735003 Crane Creek Lower North Branch Capacity Upgrade Phase 1	
Design	95%
SS7389 Crane Creek and Smith Branch Manhole Repair and Mitigation	
Construction	100%
SS7428 Lower Saluda River Relief Sewer and Major Pipe Rehabilitation	
Design	90%
SS7433 Cunningham Rd/Johnson Ave/Cramer Dr/Summerlea Dr Sewer	
Relocation	
Design	95%
SS7450 Crane Creek Lower North Branch Capacity Upgrade Phase 2	
Design	35%
SS7454 Broad River Force Main Replacement and Gravity Sewer Capacity	
Improvements	
Design	27%
SS7465 Lower Crane Creek Relief Sewer Phase 2	
Design	30%
SS7466 Lower Rocky Branch Relief Sewer Phase 1	
Design	55%
SS7467 North Columbia Pump Station Upgrade	
Design	30%
SS7470 Lower Crane Creek Relief Sewer Phase 1	
Design	10%
CD Plan Development Design Phase Profe	Professional Services
CD Implementation Construction Phase	City Forces

## Consent Decree Quarterly Report 2019 Q3



## Consent Decree Quarterly Report 2019 Q3

	CITY OF COLUMBIA, S.C Clean Water 2020 Program 2019 Quarterly Report - 3rd Quarter	ın Water 2020 Program t - 3rd Quarter	Clean Water 2020
Task Name		Jul Aug Sep	Oct Nov Dec
7435 Wexford and Windsong L olect	ift Stations Evaluation and Rehabilitation	5	-
Design			60%
SS7437 Miscellaneous Lift Station Improvements and Backup Power Addition Project	provements and Backup Power		
Design			50%
vestigation of Crockett	Road, Atlas Road and Versch Lock Lift		
Design			15%
SS7463 SSES and Sewer Rehabilitation Implementation CC01	n Implementation CC01		
Design			20%
SS7464 SSES and Sewer Rehabilitation Implementation CC02 and CC04	n Implementation CC02 and CC04		
Design			25%
SS7468 Three Rivers Force Main Repla	Replacement		
Design			2%
SS7478 RB01 SSES - Phase 2			
Design			25%
SS7479 SB02 SSES - Phase 2			
Design			20%
Sewer System Hydraulic Model			
Model Report Development			

## Consent Decree Quarterly Report 2019 Q3

## 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
  - o Mill Creek Basin 28% complete
  - Gills Creek Basin 37% complete
  - Crane Creek Basin 67% complete
  - o 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.

	City of Columbia, SC											
						y SSO Listin arter 2019	g					
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	TBI	TBD			Collapsed Line	Removed Stoppage To Resume Normal Flow. Main Line Repair.			
7/3/2019	11:44	9539 Farrow Rd, Columbia, SC 29203	Line Segment	TB	TBD		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/-	N/A		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	тв	D	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 Lorick 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	TB	D	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	TB	D	280	Storm Drain	Collapsed Line	Removed Stoppage To Resume Normal Flow. Main Line Repair.			

#### 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			
9/6/2019	16:45	4038 Yale Ave, Columbia, SC 29205	Manhole	TBI	D	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	TB	D	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	TBI	D	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.

	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			Homeowner Ceased Water Usage / No Access To Service Line. Main Line Repair / Clean Out Install.			

#### Table 2 - Building Backup Report, 3rd Quarter 2019

## 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.

Project Verifier/QA Manager

Date

Andrea Bolling

Printed Name

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

2le

Project Manager/Project Validator

123/2019

Date

AJ Jesser

**Printed Name** 





Laboratory Services

## Laboratory Report

Client

Woolpert Inc. - City of Columbia Michael Long 2000 Center Point Road Ste 2200 Columbia, SC 29210 Project: Work Order: Received: Water Quality Testing 9071206 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:

wan ENas

Lauren Woodrum Project Manager

PO Box 5655 | Greenville, SC 29606 | 426 Fairforest Way | Greenville, SC 29607 | main 864.232.1556 | fax 864.232.6140 rogersandcallcott.com

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# SUPP ACCREDIES

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

Con united to 1 milling 515	Certificate	of Analysis	5
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Client	Woolpert Inc City of Columbia	Project:	Water Quality Testing
	Michael Long	Work Order:	9071206
	2000 Center Point Road Ste 2200	Received:	07/22/2019 12:45
	Columbia, SC 29210		

Sample Number	Sample Description	Matrix	Sampled	Туре
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

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Woolpert Inc City of Columbia	Project:	Water Quality Testing
2000 Center Point Road Ste 2200	Work Order:	9071206
Columbia, SC 29210	Reported:	07/29/19 11:23

#### Sample Data

Sample Number Sample Description	9071206-01 DHEC B-280 Smith Brancl	n @ N. Main	St collecte	d on 07/2	2/19 09:36				
Parameter	Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch
Field Parameters									
Dissolved Oxygen	9.3	0.1	mg/L	1.00	07/22/19 09:36	SM 4500 OG-2011		MBW	B9G1112
Grab	Complete				07/22/19 09:36	Grab		MBW	B9G1112
Temperature	25.4	0.0	°C	1.00	07/22/19 09:36	SM 2550B-2010		MBW	B9G1112
Sample Number Sample Description	9071206-02 DHEC B-280 Smith Branc	n @ N. Main	St collecte	d on 07/2	2/19 09:35				

Parameter	Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
<b>Microbiological Parameters</b> 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 Sample Description

ption 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

9071206-03

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
<b>Microbiological Parameters</b> 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

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Lab

RC-C RC-C RC-C



Woolpert Inc City of						Project:	Water Qual	ity Testing			
2000 Center Point Roa	ad Ste 2200					Work Order:	9071206				
Columbia, SC 29210						Reported:	07/29/19 1	1:23			
Sample Number	9071206-05										
Sample Description	DHEC C-017 C	Gills Creek	@ Bluff Roa	d collected o	n 07/22/2	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 Sample Description	9071206-06 DHEC C-017 C	Gills Creek	@ Bluff Roa	d collected o	n 07/22/2	19 10:45					
Parameter		Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
Microbiological Param	ieters										
E. Coli		104	20	MPN/100 mL	20.0	07/22/19 15:15	SM 9223B-2004		MBW	B9G1187	RC-C
General Chemistry Pa	rameters										
outrai ontinistry ra											

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Woolpert Inc City of Columbia	Project:	Water Quality Testing
2000 Center Point Road Ste 2200	Work Order:	9071206
Columbia, SC 29210	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

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So Rogers & Callcott	Ð	NIN OF CU	STOD	AIN OF CUSTODY RECORD	WORK ORDER 9071 200
Half a century of commitment and auglity	ENVIRONMENTAL ment and auality		N N		Filtered (Yes/No)
			۲		Cooled (Yes/No)
Address: Greenville, SC 29606 Address: Greenville, SC 29606 Address: Greenville, SC 29606 Address: Gree	420 Fairiorest way 213D stoneringe Drive Greenville, SC 29607 Columbia, SC 29210 Four José 201302 - 2140 Dhana (2003) Fon Sono		РР		Container Type (Plastic/Glass)
	140		0.56 120		Container Volume (mL)
ame	olumbia		פ פ		Sample Type (Grab/Composite)
Address <u>2000 Center Point Koad Suite 2200</u>	d Sulte 2200		ww ww		Sample Source (WW, GW, DW, SW, S, Other)
		 nistn 	A		Presentation Code(c)
Email Address <u>Michael.long@woolpert.com</u> Telephone # 803-214-5936	:rt.com	er(s) .			B - HNO <sub>3</sub> F - Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> J - H <sub>3</sub> PO <sub>4</sub> C - H <sub>2</sub> SO <sub>4</sub> G - Boric Acid K - NaH <sub>2</sub> PO <sub>4</sub>
	Project # Water Quality Testin				D - NaOH H - Ascorbic Acid L - NH <sub>4</sub> CI
R & C YR C WORK ORDER DATE TIME	SAMPLE DESCRIPTION		E. C		COMMENTS
HI 200 27.7 20-	DHEC B-280 (Smith Branch @ N. Main !	st) 1	-		D.0 9.34 mg/L
-02 7.22 2935 DHE	DHEC B-280 (Smith Branch @ N. Main !	st) 1	-		Temp- 25.4 °C
					Collected @ 0436
					Analyzed @ @ @ @ @
				· · · · · · · · · · · · · · · · · · ·	
					Weather-Nostly, Sunnd
					60.000
SAMPLER - RELINQUISHED BY:	DATE/TIME: RECEIVED BY			DATE/TIME:	Composite Start Date/Time:
RELINQUISHED BY:	ME: RECEIVED E	34:		DATE/TIME:	e End Date/Time:
RELINQUISHED BY:	DATE/TIME: RECEIVED BY:			DATE/TIME:	lime or Flow (Lircle one) Initials:
9 5. 9 RELINDUISHED BY:	DATE/TIME: RECEIVED BY:		-	DATE/TIMF:	Temperature of blank or representative sample At time of collection
					t 0.2
ossible Hazards associated with samples:	O Non-Hazard O Flammable O Skin Irritant	O Poison O Unknown		O other	Form Revised March, 2019 Page of

So Rogers & Callcott	Callcott	CHAIN OF	CUS	TOD	AIN OF CUSTODY RECORD	WORK	WORK ORDER ADV1200	
Half a century of commitment and availity	ENVIRONMENTAL ment and auality		Z	Z			Filtered ( <u>Y</u> es/ <u>N</u> o)	
Molling DO Boy ECEE Shinning		2158 Gtonaridae Drive	<i>≻</i>	γ			Cooled (Yes/No)	r
Address: Greenville, SC 29606 Address: Phone (Address: Greenville, SC 29606 Address:	Greenville, SC 29607	Columbia, SC 29210	<u>م</u>	٩			Container Type ( <u>P</u> lastic/ <u>G</u> lass)	r
(804	140	0116 (QU2) 202-202 (QU2)	0.5G	G 120			Container Volume (mt)	
ame	or columbia		0	U U			Sample Type ( <u>G</u> rab/ <u>C</u> omposite)	-
Address <u>2000 Center Point Koad Suite 2200</u>	: Koad Suite 2200	ers	MM	ww v			Sample Source (WW, GW, DW, SW, S, Other)	
	10	nietn	A	ш			Presenvation (ode(s)	
			1					
s	olpert.com	pet o	. (s) :				F - Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> G - Boric Acid	
1 EIE/11011E # 003-774-3330	Droioct # Woto	5	ətən	!			D - NaOH H - Ascorbic Acid L - $NH_4CI$	
		20		٥ <u>ر</u> ه				
R & C YR 11 WORK ORDER DATE TIME	SAMPLE DESCRIPTION		<b>e</b> ¶ ≳T				COMMENTS	
-04 7.22 1015	DHEC C-001 (Gills Creek @ Garners Ferry Rd)	@ Garners Ferry Rd) 1				6	D.O 8.34 mg/L	
-04 7.5 MOL	DHEC C-001 (Gills Creek @ Garners Ferr	@ Garners Ferry Rd) 1					Temp- 30.7 °C	
N							Collected @ cor7-	F
							Analyzed @ 1018	<b>I</b>
								1
			<u> </u>					1
							Weather- & *	
			and a company				Mostly Swany	
							1	
1. D MOL D. C. C.	+ DATE/TIME:	IS 2. DOP			PZZ-19 BU	Eqmposite St	Admposite Start Date/Time:	1
INDU	DATE/TIME:	RECEIVED BY: 4.			DATE/TIME:	(L)		
PA RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:			DATE/TIME:			
2 5. 2 RELINCTICHED BV:	DATE/TIMAE.	b. RECEIVED RV.			DATE/TIMAE.	Temperat At time	Temperature of blank or representative sample At time of collection	
	11/1	8.			77 I.C	At time	t <u>0.2</u>	
bssible Hazards associated with samples: (	O Non-Hazard O Flammable	e 🔵 Skin irritant 🔵 Poison		wn Oother		Form Revised March, 2019	ch, 2019 Page of	

Solution Rogers & Callcott	allcott	CHAIN OF	: CUS	TODY	AIN OF CUSTODY RECORD		JON 1206
Half a century of commitment and auglity	ENVIRONMENTAL ment and auality	-	Z	z		Filtered (Yes/No)	es/ <u>N</u> o)
			\ 	≻		Cooled (Yes/No)	(o <u>N</u> /si
anipping Address:	G C C C C C C C C C C C C C C C C C C C	ZIJB SLONEI IUGE Drive Columbia, SC 29210 Dhana (903) EAN 9000	<u>م</u>	Р		Container	Container Type (Plastic/Glass)
	140		0.5G	3 120		Container /	Container Volume (mL)
ame	Columbia		U	IJ		Sample Typ	Sample Type (Grab/Composite)
Address <u>2000 Center Point Koad Suite 2200</u>	ad Suite 2200	GLS	MM	ww v		Sample Sou	Sample Source (WW, GW, DW, SW, S, Other)
			A	ш			
Report To: Michael Long		Cor				A - NONE	Preservation Code(s) F - HCl
Email Address <u>Michael.long@woolpert.com</u>	bert.com	אר ס <del>נ</del> : אר ס <del>נ</del>	<b>↑</b> (s)			B - HNO <sub>3</sub>	5 <sub>2</sub> O <sub>3</sub>
Telephone # <u>803-214-5936</u>		upe 	ter(			C - H <sub>2</sub> SO <sub>4</sub> D - NaOH	G - Boric Acid K - NaH <sub>2</sub> PO <sub>4</sub> H - Ascorhic Acid I - NH <sub>4</sub> Cl
PO#	Project # Water Quality Testing	ality Testing	ame				
R & C YR C TIME DATE TIME	SAMPLE DESCRIPTION		<b>rs9</b> TSS	E. C			COMIMENTS
Shoi	DHEC C-017 (Gills Creek @ Bluff R	< @ Bluff Road) 1				0.0 GO	B. WS mg/L
a shoi 22.t 90-	DHEC C-017 (Gills Creek @	< @ Bluff Road) 1				Temp-	28.4°C
						Collected @	ced @ 1050
						Analyzed @	ted @ 1051
						Weather-	er-88°F
							Sunnut
· · · ·		8					
SAMPYER - RELINACUSHER BY:	DATE/TIME:	RECEIVED BY:			DATE/TIME:	Composite Start Date/Time:	me:
		RECEIVED BY: 4.				e	
Bad Relinquished by:	DATE/TIME:	RECEIVED BY:			DATE/TIME:		
0 2. 8 Relinquished by:	DATE/TIME:	o. RECEIVED BY:			DATE/TIME:	Temperature of blank At time of collection	or representative sar
-2 of 9		°.				At time of lab receipt	tipt 0.2 °C
ossible Hazards associated with samples: O N	O Non-Hazard O Flammable (	O skin Irritant O Poison	O Unknown	wn 🔘 Other		Form Revised March, 2019 P	Pageof

and a second	Rogers & C	ONMENTAL	unla Dassin	<b>4 V</b> ar		4.0				
Client: M	colper	t- Columb.	nple Receip Date Received:		1 <u></u>	22	$\sum_{i}$	Work Order:	1071	26
Carrier Name:	Client	FedEx UI	PS US	Mail		Cou	rier Fié	Id Services	Other:	
(to Columbia)	Tracking	Number:								
Carrier Name:		FedEx UI	es us	Mail		Cou	rier Fie	ld Services	Other:	
(to Greenville)	Tracking	Number:		$\mathcal{N}$	H		_			
Receipt Crite	ria			Y e s	No	N A	Comment	S		
Shipping contain	ner / cooler intact?			Ň			Damaged	Leaking Ot	her:	
Custody seals in	itact?					X				
COC included w	vith samples?			X						
COC signed wh	en relinquished and re	ceived?		Ń						
Sample bottles i	ntact?			Ń			Damaged	Leaking Ot	her:	
Sample ID on C	OC agree with label o	n bottle(s)?		X						
Date / time on C	OC agree with label o	n bottle(s)?		X						
Number of bottl	es on COC agrees with	n number of bottles rece	eived?	Ń						
Samples receive	d within holding time	?		X	-					
Sample volume	sufficient for analysis	?		X						
VOA vials free	of headspace (<6mm b	ubble)?		1		X				
Note: Samples		at proper pH? be preserved upon receipt ysis – preservation checke				X				
of sample collec	tion?	requiring chlorine remo mples requiring Bacterial.		X						
Samples cooled Columbia ?	when received in	Temp at time of receipt Temp measured with IR SN	<u>02 °C</u> 1: 36301p69WS	$\times$			Ice	Cold Packs	Dry Ice	None
Samples cooled Greenville ?	when received in	Temp at time of receipt Temp measured with IR SN	<u>N</u> H°C J: 97050067	4			Ice	Cold Packs	Dry Ice	None
		If in-ho	use preservation		- rec	ord Lo	ot #			
HCL			H <sub>3</sub> I							
H <sub>2</sub> SO <sub>4</sub> HNO <sub>3</sub>				OH her						
Comments:					I					
					_/					
	formance issues not ance issue other than	ed at initial sample re noted above:	ceipt? Ye	s or						
Note: Samples rece Facility. Revised M		a Facility. Sample preser	rvation checks per	formed	at Col	umbia	Complete	d by:	BB	

#### 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: <u>9/3/19</u>

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

Project Verifier/QA Manager

Date

Andrea Bolling

Printed Name

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

2011

Project Manager/Project Validator

Date

Jessee

**Printed Name** 





Laboratory Services

## **Laboratory Report**

Client

Woolpert Inc. - City of Columbia Michael Long 2000 Center Point Road Ste 2200 Columbia, SC 29210 Project: Work Order: Received: Water Quality Testing 9081078 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:

wanth,

Lauren Woodrum Hollister Project Manager

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#### SUPPACCREONES In ACCREONES In ACCREONES

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

## **Certificate of Analysis**

Client	Woolpert Inc City of Columbia	Project:	Water Quality Testing
	Michael Long	Work Order:	9081078
	2000 Center Point Road Ste 2200	Received:	08/22/2019 11:20
	Columbia, SC 29210		

Sample Number	Sample Description	Matrix	Sampled	Туре
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

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Woolpert Inc City of Columbia	Project:	Water Quality Testing
2000 Center Point Road Ste 2200	Work Order:	9081078
Columbia, SC 29210	Reported:	09/03/19 15:02

#### **Sample Data**

				Sample	Data						
Sample Number Sample Description	9081078-01 DHEC B-280	Smith Brand	ch @ N. Main	n St collected	1 on 08/2	2/19 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 Sample Description	9081078-02 DHEC B-280	Smith Brand	ch @ N. Main	n St collected	1 on 08/2	2/19 09:27					
Parameter		Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
Microbiological Paran	neters										
E. Coli		452	20	MPN/100 mL	20.0	08/22/19 14:15	SM 9223B-2004		BNE	B9H1102	RC-C
General Chemistry Pa	rameters										
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 Sample Description	9081078-03 DHEC C-001	Gills Creek	@ Garners F	erry Rd colle	ected 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 Sample Description	9081078-04 DHEC C-001	Gills Creek	@ Garners F	erry Rd colle	ected on	08/22/19 10:10					
Parameter		Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
Microbiological Paran	neters										
E. Coli		462	20	MPN/100 mL	20.0	08/22/19 14:15	SM 9223B-2004		BNE	B9H1102	RC-C
General Chemistry Pa	rameters										

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3.34 08/27/19 08:38

SM 2540D-2011

mg/L

28.0

3.3

RAM B9H1151 RC-C

Total Suspended Solids



Woolpert Inc City o						Project:	Water Qual	ity Testing			
2000 Center Point Roa Columbia, SC 29210	ad Ste 2200					Work Order:	9081078	5.02			
Columbia, SC 29210						Reported:	09/03/19 1	5:02			
Sample Number	9081078-05										
Sample Description	DHEC C-017 C	ills Creek	@ Bluff Roa	d collected o	on 08/22/2	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 Sample Description	9081078-06 DHEC C-017 C	Gills Creek	@ Bluff Roa	d collected o	on 08/22/2	19 10:40					
Parameter		Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
Microbiological Paran	neters										
E. Coli		316	20	MPN/100 mL	20.0	08/22/19 14:15	SM 9223B-2004		BNE	B9H1102	RC-C
General Chemistry Pa	rameters										

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Woolpert Inc City of Columbia	Project:	Water Quality Testing
2000 Center Point Road Ste 2200	Work Order:	9081078
Columbia, SC 29210	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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		Roge	LS &	Rogers & Callcott	ott	CHAIN (	OF C	UST	YOC	<b>AIN OF CUSTODY RECORD</b>	WOR	WORK ORDER 9081078
	Half a centur	rv of com	ENV	a century of commitment and auality	NTAL alitv			z	z			Filtered ( <u>Y</u> es/ <u>N</u> o)
	Mailing BO Boy EEEE		Chinning	136 Eairforact Way		215B Stonaridae Drive		≻	٢			Cooled ( <u>Y</u> es/ <u>N</u> o)
		Greenville, SC 29606	Address:		2	Columbia, SC 29210		٩	ط			Container Type ( <u>P</u> lastic/ <u>G</u> lass)
	CI:	Phone (864) 232-2-2-		Fax (804) 23	140	Prione (sus) every		0.5G	120			Container Volume (mL)
	Client Name	woolpei		Woolpert - Lity of Lolumbia	01a			U	IJ			Sample Type ( <u>G</u> rab/ <u>C</u> omposite)
	Address	2000 Cer	nter Point	2000 Center Point Road Suite 2200	e 2200		SIS	MM	MM			Sample Source (WW, GW, DW, SW, S, Other)
		Columbia	Columbia, SC 29210	10			ənis	⊲	   LL			
	Report To:	Michael Long	ong						-			Preservation Code
	Email Address	Michael.	ong@wo	Michael.long@woolpert.com	_							
	Telephone #	803-214-5936	5936									id Acid
	PO #			Prc	Project # Water Quality Testing	Juality Testing	inN li		ilo			
Ż	R & C WORK ORDER	VR 14 DATE	TIME		SAMPLE DESCRIPTION	RIPTION		SST	E. C			O COMMENTS
Pris i	240-	22.8	0927		DHEC B-280 (Smith Branch @ N. Main	ch @ N. Main St)	-	$\leftarrow$		K-22-19	A BI	D.O 8.94 mg/L
	-05	8.72	F190		DHEC B-280 (Smith Branch @ N. Main	ch @ N. Main St)	-		-			Temp- 25. \ °C
												Collected @ ogr&
												Analyzed @ ogrg
												Weather- 82°F Sumu
	SAMPLER - RELINOUHSHED BY	TINDUHSHEI	DBY:	* *	BATE/TIME: 8-22-19 1120	RECEIVED BY:	1		<u></u>	DATE/TIME: 8-22-19 1120	Composite S	Composite Start Date/Time:
	RELINQUISHED BY:	) BY:			DATE/TIME:	RECEIVED BY: 4.				DATE/TIME:	Composite E Time or F	Composite End Date/Time:
9	RELINQUISHED BY:	) ВҮ:			DATE/TIME:	RECEIVED BY: 6.				DATE/TIME:	Temner	Lan
	6 of 7.	O BY:			DATE/TIME:	RECEIVED BY: 8.				DATE/TIME:	At time At time	At time of lab receipt $-4,7$ °C
	ossible Hazards associated with samples:	sociated with s		O Non-Hazard	O Flammable	O Skin Irritant O Poison	1	O Unknown	O other		Form Revised March, 2019	irch, 2019 Page of

N M M	oger	N, N,	Rogers & Callcott	λť	CHAIN	OF (	CUS <sup>-</sup>	lob	AIN OF CUSTODY RECORD	WOR	WORK ORDER 9081078
Half a century of commitment and auglity	of com	EN	ENVIRONMENTAL	ITAL	L		Z	z			Filtered (Yes/No)
		Chinaina	ADE Enterrort Mau		215B Stonaridra Driva		>	7			Cooled ( <u>Y</u> es/ <u>N</u> o)
Address: Greenville, SC 29606	C 29606	Address:		1	Columbia, SC 29210		٩	ط			Container Type (Plastic/Glass)
1804	4261-222	Ţ	rax (804) 232-014U	140			0.5G	120			Container Volume (mL)
ame	voolper		<u>woolpert – Lity of Lolumpia</u>				IJ	ŋ			Sample Type (Grab/Composite)
Address <u>2</u>	000 Ceni	ter Point	2000 Center Point Road Suite 2200	7700		ers	MM	MM			Sample Source (WW, GW, DW, SW, S, Other)
	COUMDIA, SC 29210	76776	DT			nietr	∢	ц.			
Report To: <u>N</u> Email Address N	<u>Michael Long</u> Michael.long(	ong mg@wc	Michael Long Michael.long@woolpert.com			of Cor	<u>ተ</u> (				A - None E - HCl I - Zn Acetate B - HNO <sub>3</sub> F - Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> J - H <sub>3</sub> PO <sub>4</sub>
	803-214-5936	3 <b>93</b> 6				-	ter(s				G - Boric Acid H - Ascorbic Acid
			Proje	sct # <u>Water C</u>	Project # Water Quality Testing		.əwe	ilo			
R & C WORK ORDER	YR 1	TIME	SA	SAMPLE DESCRIPTION	RIPTION		Par 227	E. C			COMMENTS
-0-		1010	DHEC C-001	DHEC C-001 (Gills Creek @ Garners Ferry	Garners Ferry Rd)	1				103	D.O 7.82 mg/L
- <u>1</u> 0 1		DIO	DHEC C-001	DHEC C-001 (Gills Creek @ Garners Ferry	Garners Ferry Rd)						Temp- 28. 7 °C
											Collected @ 1011
											Analyzed @ 1012
											Weather-Bur F / Sunny
	-						control of Control of				
SAMPLER - RELINOUISHED BY:	NOWISHEE	BY:	4 10 3 10 3	BATE/TIME:	RECEIVED BY:	R	1	_	DATE/TIME: X-22-19 1120	Composite S	Composite Start Date/Time:
RELINQUISHED BY:				DATE/TIME:	RECEIVED BY: 4.				DATE/TIME:	Composite E	Composite End Date/Time:
Bad RELINQUISHED BY:	ïY:		/D	DATE/TIME:	RECEIVED BY:				DATE/TIME:		
a 2. 2 RELINQUISHED BY:	:			DATE/TIME:	v. RECEIVED BY:				DATE/TIME:	At tim	r representative sar
G 7.	ctod with co		Non-Hazard	C Elammahla	Stin Irritant Opicon					At time of Iab I Form Revised March 2019	eceipt 41.
~~~~~ ~~ ~~ ~~ ~~ ~~ ~~ ~~ ~~ ~~ ~~ ~~	יםררת אוויוי										

Z C C	oger	S S	Rogers & Callcott	CHAIN	OF C	UST	γdC	CHAIN OF CUSTODY RECORD	WOR	WORK ORDER 9081078
Half a century	of com/	ENV	a century of commitment and auality			z	z			Filtered ( <u>Y</u> es/ <u>N</u> o)
Molling DO Bourefee		Chinoina	A36 Enirferent Way	315B Stonaridae Drive		≻,	7			Cooled (Yes/No)
	2 29606 222 155	Address:		Columbia, SC 29210		٩	٩			Container Type (Plastic/Glass)
190 <del>4</del>	232-1556	, , ,	Fax (804) 232-0140	Fridrie (803) 203-203-203		0.5G	120			Container Volume (mL)
ame	Voolper		Woolpert - Lity of Columpia			U	U			Sample Type (Grab/Composite)
Address <u>2</u>	000 Cent	er Point	2000 Center Point Road Suite 2200		ers	Ŵ	MM			Sample Source (WW, GW, DW, SW, S, Other)
	<u>Columbia, SC 29210</u>	SC 2921	0		niet	٩	<u>ц</u>			
Report To: N	Michael Long	Buc								Preservation Code(s)
Email Address	Aichael.lo	ng@wo	Michael.long@woolpert.com							E - NCI F - Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>
Telephone # 8	803-214-5936	936				<u> </u>				C - H <sub>2</sub> SO4 G - Boric Acid K - NaH <sub>2</sub> PO4 D - NaOH H - Ascorhic Acid I - NH <sub>2</sub> CI
			Project # <u>W</u>	Project # Water Quality Testing	inN li		ilo			
R & C WORK ORDER	YR 19 DATE	TIME	SAMPLE	SAMPLE DESCRIPTION		SST	E. C			COMMENTS
		040	DHEC C-017 (Gill	DHEC C-017 (Gills Creek @ Bluff Road)		$\leftarrow$			-05	D.O 8.24 mg/L
-06	8.22	ohoi	DHEC C-017 (Gills Creek @ Bluff R	s Creek @ Bluff Road)			-			Temp- 29.8 °C
										Collected @ 1041
										Analyzed @ 1042
										Weather-89°F Sunnu
								-		
SAMPLER - RELINZONSHED BY	NOTINE HEB	EX BX	A BATE/TIME:	E: RECEIVED BY:	R			DATE/TIME: 8-22-19 1120	Composite S	Composite Start Date/Time:
RELINQUISHED BY:		$\nabla$	DATE/TIME:	E: RECEIVED BY: 4.				DATE/TIME:	Composite E	Composite End Date/Time:
Bad RELINQUISHED BY:	Υ:		DATE/TIME:	E: RECEIVED BY:				DATE/TIME:		
8 <sup>3.</sup> 8 RELINOUISHED B			DATE/TIME:					DATE/TIME:	At time	lemperature of blank or representative sample At time of collection
									At tim	At time of lab receipt 4.7 °C
ossible Hazards associated with samples:	ated with sai		O Non-Hazard O Flammable	O Skin Irritant	O Poison	O Unknown	O other		Form Revised March, 2019	irch, 2019 Page of



Sample Receipt Verification

Client:	solpert.	columbia	Date Received:	4	3 -	22	-19 Work 9081078	
Carrier Name: (to Columbia)	Client Tracking	FedEx UPS Number:	US	Mail		Cou	urier Field Services) Other:	
Carrier Name: (to Greenville)	Client Tracking	FedEx UPS Number:	us NA	Mail		Cou	urier Field Services Other:	
Receipt Crite	ria			Y e s	No	N A	Comments	
Shipping contai	ner / cooler intact?			1			Damaged Leaking Other:	
Custody seals in	itact?					/		
COC included v	vith samples?			1				
COC signed wh	en relinquished and red	ceived?		1				
Sample bottles i	ntact?						Damaged Leaking Other:	
Sample ID on C	OC agree with label or	n bottle(s)?		1				
Date / time on C	OC agree with label o	n bottle(s)?		1				
Number of bottl	es on COC agrees with	number of bottles receive	ed?	1				
Samples receive	d within holding time?	)		/				
Sample volume	sufficient for analysis?	)	<u> </u>	1				
VOA vials free	of headspace (<6mm b	ubble)?				1		
Note: Samples Note: Samples	for O&G and VOA anal	be preserved upon receipt in t ysis – preservation checked at	t bench.			/		
of sample collec	tion?	requiring chlorine remova		/				
Samples cooled Columbia ?	when received in	Temp at time of receipt Temp measured with IR SN: 30	, 7 °C				Cold Packs Dry Ice None	
	when received in		NA °c				Ice Cold Packs Dry Ice None	
If in-house preservation used – record Lot #								
HCL			H <sub>3</sub> I					
H <sub>2</sub> SO <sub>4</sub>				OH her	_			
HNO <sub>3</sub>		······	01					
Comments:								
1		ed at initial sample rece	ipt? Ye	s or	(r	19		
Non-Conform	ance issue other thar	n noted above:						
Note: Samples rec Facility. Revised N		ia Facility. Sample preserva	tion checks per	formea	l at Co	lumbic	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: <u>9/30/20/9</u>

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

Project Verifier/QA Manager

10/16

Date

Andrea Bollins

**Printed Name** 

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

Project Manager/Project Validator

125500

**Printed Name** 

Date





Laboratory Services

## Laboratory Report

Client

Woolpert Inc. - City of Columbia Michael Long 2000 Center Point Road Ste 2200 Columbia, SC 29210 Project: Work Order: Received: Water Quality Testing 9091077 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:

Courent Hollister

Lauren Woodrum Hollister Project Manager

PO Box 5655 | Greenville, SC 29606 | 426 Fairforest Way | Greenville, SC 29607 | main 864.232.1556 | fax 864.232.6140 rogersandcallcott.com

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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	Project:	Water Quality Testing
	Michael Long	Work Order:	9091077
	2000 Center Point Road Ste 2200 Columbia, SC 29210	Received:	09/20/2019 12:53

Sample Number	Sample Description	Matrix	Sampled	Туре
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

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Woolpert Inc City of Columbia	Project:	Water Quality Testing
2000 Center Point Road Ste 2200	Work Order:	9091077
Columbia, SC 29210	Reported:	09/30/19 15:21

#### Sample Data

				Sample	Data						
Sample Number Sample Description	9091077-01 DHEC C-017 G	ills Creek	@ Bluff Roa	d collected o	n 09/20/2	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 Sample Description	9091077-02 DHEC C-017 G	ills Creek	@ Bluff Roa	d collected o	n 09/20/2	19 09:14					
Parameter		Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
Microbiological Param	ieters										
E. Coli		20	20	MPN/100 mL	20.0	09/20/19 14:22	SM 9223B-2004		RAM	B9I0976	RC-C
General Chemistry Pa	rameters										
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 Sample Description	9091077-03 DHEC C-001 G	ills Creek	@ Garners F	erry Rd colle	ected 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 Sample Description	9091077-04 DHEC C-001 G	ills Creek	@ Garners F	erry Rd colle	ected on (	09/20/19 09:44					
Parameter		Result	Reporting Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
Microbiological Param	neters										
E. Coli		196	20	MPN/100 mL	20.0	09/20/19 14:22	SM 9223B-2004		RAM	B9I0976	RC-C
General Chemistry Pa	rameters										
Total Suspended Solids		10.8	2.5	mg/L	2.50	09/24/19 08:23	SM 2540D-2011		RAM	B9I0997	RC-C

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Woolpert Inc City of Columbia	Project:	Water Quality Testing
2000 Center Point Road Ste 2200	Work Order:	9091077
Columbia, SC 29210	Reported:	09/30/19 15:21

Sample Number Sample Description

9091077-05

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

Parameter	Resul	Reporting t 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	Compl	ete			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 Sample Description	9091077-06 DHEC B-280 Smith Bra	Ŭ		ed on 09/20	0/19 10:24					
Parameter	Resul	Reporting t Limit	Units	DF	Analyzed	Method	Flag	Analyst	Batch	Lab
<b>Microbiological Parame</b> E. Coli	ters 978	20	MPN/100 mL	20.0	09/20/19 14:22	SM 9223B-2004		RAM	B9I0976	RC-C
General Chemistry Para	meters									
Total Suspended Solids	2.4	1.0	mg/L	1.00	09/24/19 08:23	SM 2540D-2011		RAM	B9I0997	RC-C

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Woolpert Inc City of Columbia	Project:	Water Quality Testing
2000 Center Point Road Ste 2200	Work Order:	9091077
Columbia, SC 29210	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

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Somers & Callcott	Callcott	CHAIN OF	CUS	TOD	AIN OF CUSTODY RECORD	WOR	WORK ORDER 7091077
Half a century of commitment and auglity	ENVIRONMENTAL		Z	z			Filtered (Yes/No)
4			<b> </b> ≻	>			Cooled (Yes/No)
Shipping Address:	7	Zib storieridge unve Columbia, SC 29210		٩			Container Type (Plastic/Glass)
: (864) 232-1556	140	Phone (SU3-SU2-SU2-SU2-	0.5G	G 120			Container Volume (mL)
ame	Columpia		U	ں ری			Sample Type (Grab/Composite)
Address 2000 Center Point Road Suite 2200	toad Suite 2200	6rs	~~~	ww w			Sample Source (WW, GW, DW, SW, S, Other)
-		nietr	A	ш			Bronce (c)
Report To: Michael Long			/				A - None E - HCl I - Zn Acetate
Email Address Michael.long@woolpert.com	pert.com	r of	<b>r</b> (s				F - Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>
Telephone # 803-214-5936		upe	ter(				C - H <sub>2</sub> SO <sub>4</sub> G - Boric Acid K - NaH <sub>2</sub> PO <sub>4</sub> D - NaOH H - Ascorbic Acid L - NH <sub>4</sub> Cl
# Od	Project # Water Quality Testing	uality Testing	əme.	iloC			
R & C YR I <sup>44</sup> WORK ORDER DATE TIME	SAMPLE DESCRIPTION		ieq SST		·		COMMENTS
4-20 0914	DHEC C-017 (Gills Creek @ Bluff R	k @ Bluff Road) 1	-1			6	D.O 6.3 mg/L
02 9-20 0914	DHEC C-017 (Gills Creek @	k @ Bluff Road) 1	<u> </u>				Temp- 21.5 °C
			<u> </u>				Collected @ 0918
							Analyzed @ 0919
			<u> </u>				
			<u> </u>				Weather-72 F, clear
			<u></u>				
SAMPLER – RELINQUISHED BY:	DATE/TIME:	RECEIVED BY			DATE/TIME:	Cemposite	Composite Start Date/Time:
NN	DATE/TIME:	RECEIVED BY:			DATE/TIME:	e	
3. A RELINOUISHED BY:	DATE/TIME:	4. RECEIVED BY:			DATE/TIME:	Time or I	Flow (Circle one) Initials:
age		6.				Temper	or representative sar
b g Relinquished by: 6 7.	DATE/TIME:	RECEIVED BY: 8.			DATE/TIME:	At tim At tim	At time of collection°C At time of lab receipt°C
ossible Hazards associated with samples:	O Non-Hazard O Flammable	O Skin Irritant O Poison			O other F	Form Revised March, 2019	arch, 2019 Page of

So Rogers & Callcott	Scallcott	CHAIN OF	<u>CUS</u>	TOD	AIN OF CUSTODY RECORD	WORK ORDER <u>ACAIO77</u>
Half a century of commitment and auglity	ENVIRONMENTAL		Z	Z		Filtered (Yes/No)
		dao Drive	~	~		Cooled (Yes/No)
	426 Fairforest way Greenville, SC 29607	29210	٩	۵.		Container Type (Plastic/Glass)
s (864	Fax (864) 232-6140 Phone (803) 509-8999	00-00-000	0.5G	120		Container Volume (mL)
ame	Woolpert – City of Columbia		U	IJ		Sample Type (Grab/Composite)
Address 2000 Center Pc	2000 Center Point Road Suite 2200	6L2	MM	/ ww		Sample Source (WW, GW, DW, SW, S, Other)
	9210	Itain	4	ш		
	-		 个			Freservation Code E - HCI
Email Address <u>Michael.long@woolpert.com</u> Telenhone # R03-214-5936	woolpert.com	iber o	er(s)			B - HNO <sub>3</sub> F - Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> J - H <sub>3</sub> PO <sub>4</sub> C - H <sub>2</sub> SO <sub>4</sub> G - Boric Acid K - NaH <sub>2</sub> PO <sub>4</sub>
	Project # Water Quality Testing	nuV li				U - NAUH H - ASCOFDIC ACIO L - NH4CI
R&C YR <u>I 7</u> WORK ORDER DATE TIME	E SAMPLE DESCRIPTION	Tota	ne9 TSST	E. C		COMMENTS
9-20	μ DHEC C-001 (Gills Creek @ Garners Ferry Rd)	irs Ferry Rd) 1				DDD.0 5-9 mg/L
1-1-10 03-1-1-1	در DHEC C-001 (Gills Creek @ Garners Ferry Rd)	srs Ferry Rd)				Temp- 23,0 °C
						Collected @ 0947
						Analyzed @ 094 8
						Weather- 72°F, clear
SAMPLER – RELINQUISHED BY:	9 - 20 - 12 53 2/	RECEIVED BY:		~	A. M. HOLIME:	Composite Start Date/Time:
RELINQUISHED BY:		RECEIVED BY:			DATE/TIME:	
3. Barringuished by:	DATE/TIME: RECE	ч. RECEIVED BY:			DATE/TIME:	Time or Flow (Circle one) Initials:
ge 7						or representative sar
o RELINQUISHED BY: 6 7.	DATE/TIME: RECE	RECEIVED BY: 8.			DATE/TIME:	At time of collectionC At time of lab receiptC
ossible Hazards associated with samples:	O Non-Hazard O Flammable	O Skin Irritant O Poison (		wn 🔿 Other		Form Revised March, 2019 Page of

<b>Son</b> Rogers & Callcott	S S O	allcott	CHAIN C	P CU	STOD	CHAIN OF CUSTODY RECORD	WORK ORDER	ORDER (1077)
Half a century of commitment and auglity	ENVIRC itment a	ENVIRONMENTAL			N			Filtered ( <u>Y</u> es/ <u>N</u> o)
	Chinning 476		215B Stonaridge Drive	L:	۲ ۲			Cooled (Yes/ <u>N</u> o)
Address: Greenville, SC 29606	Address: Gre	5	Columbia, SC 29210		Р		•	Container Type ( <u>P</u> lastic/ <u>G</u> lass)
804		140			0.5G 120			Container Volume (mL)
ame					G G			Sample Type ( <u>G</u> rab/ <u>C</u> omposite)
Address 2000 Cente	er Point Roa	2000 Center Point Road Suite 2200		512	ww ww			Sample Source (WW, GW, DW, SW, S, Other)
Columbia, SC 29210	SC 29210				ч Ч			
Report To: Michael Long	ng							Preservation Code(s)
Email Address Michael.long@woolpert.com	g@woolpe	irt.com						
Telephone # 803-214-5936	<b>336</b>							C - H <sub>2</sub> SO4 G - Boric Acid K - NaH <sub>2</sub> PO4 D - NaOH H - Ascorbic Acid L - NH <sub>4</sub> Cl
# Od		Project # Water Quality Testin	рд	eme	ilo			
R & C YR 12 WORK ORDER DATE	TIME	SAMPLE DESCRIPTION			E. C			COMMENTS
9-20		DHEC B-280 (Smith Branch @ N. Main	nch @ N. Main St)				Ł	D.O 8° -/ mg/L
1 02-6 00-	HQ 1-201	DHEC B-280 (Smith Branch @ N. Main	nch @ N. Main St) 1					Temp- / <sup>2</sup> , 7 °C
								Collected @ 1025
								Analyzed @ 1025
				<u> </u>				Weather- 72"F, Clear
				[				
SAMPLER – RELINQUISHED BY:	BY:	9-20-17 1253	RECEIVED BY:			DATE/TIME:	Composite Sta	Composite Start Date/Time:
RELINQUISHED BY:		DATE/TIME:				DATE/TIME:	d)	
A RELINQUISHED BY:		DATE/TIME:	RECEIVED BY:			DATE/TIME:	lime or Flo	Flow (Lircle one) Initials:
ige 5.			6.				Temperat	or representative sar
6 RELINQUISHED BY: 6 7.		DATE/TIME:	RECEIVED BY: 8.			DATE/TIME:	At time At time	At time of collection C.C.At time of lab receipt
pssible Hazards associated with samples:		O Non-Hazard O Flammable	O Skin Irritant			O other	Form Revised March, 2019	ch, 2019 Page of

main a  $\langle$ 000



Sample Receipt Verification

Client: M	colpert		Date ceived:	9	12	201	19 Work <u>909107</u>	Ζ
Carrier Name:	Client	FedEx UPS	US	Mail		Cou	urier Field Services Other:	
(to Columbia)	Tracking	Number:						
Carrier Name: (to Greenville)	Client Tracking	FedEx UPS Number:	US	Mail	'A	Cou	rrier Field Services Other:	
Receipt Crite	ria			Y e s	No	N A	Comments	
Shipping contain	ner / cooler intact?			$ \chi $			Damaged Leaking Other:	
Custody seals in	tact?					$\bigvee$		
COC included w	vith samples?			X				
COC signed who	en relinquished and red	ceived?		Ń				
Sample bottles i	ntact?			Ń			Damaged Leaking Other:	
Sample ID on C	OC agree with label or	1 bottle(s)?		$\bigtriangledown$				
Date / time on C	OC agree with label o	n bottle(s)?		Ń				
Number of bottl	es on COC agrees with	n number of bottles received?		X				
Samples receive	d within holding time?	)	,	X				
Sample volume sufficient for analysis?								
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.								
Samples cooled when received in Columbia ?     Temp at time of receipt     1     °C       Temp measured with IR SN: 36301069WS				X			Ice Cold Packs Dry Ice None	
Samples cooled when received in Greenville ?     Temp measured with IR SN: 3050109 w3							Ice Cold Packs Dry Ice None	
		If in-house pro	T		- rec	ord L	ot #	
HCL			H <sub>3</sub> I					
H <sub>2</sub> SO <sub>4</sub> HNO <sub>3</sub>				OH her				
L								
Comments:								
					-1			
	formance issues not ance issue other than	ed at initial sample receipt?	Ye Ye	s or	$-\left( \begin{array}{c} \Gamma \\ \Gamma \end{array} \right)$	10		
Non-Comorm		Thoted above.			C			
	- 1 <u></u> 1							
Note: Samples recu Facility. Revised N		ia Facility. Sample preservation	checks per	formed	at Co	olumbic	Completed by:	