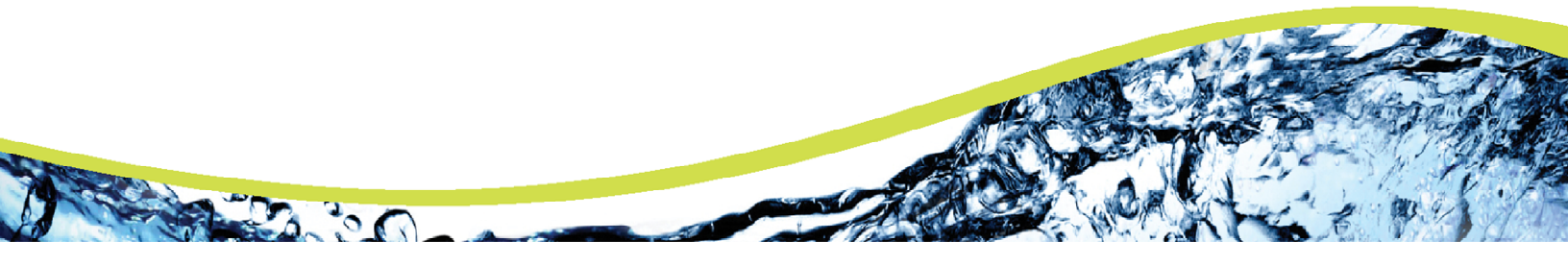


# Clean Water 2020 Program

## CONSENT DECREE QUARTERLY REPORT

October 1, 2015 – December 31, 2015



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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.

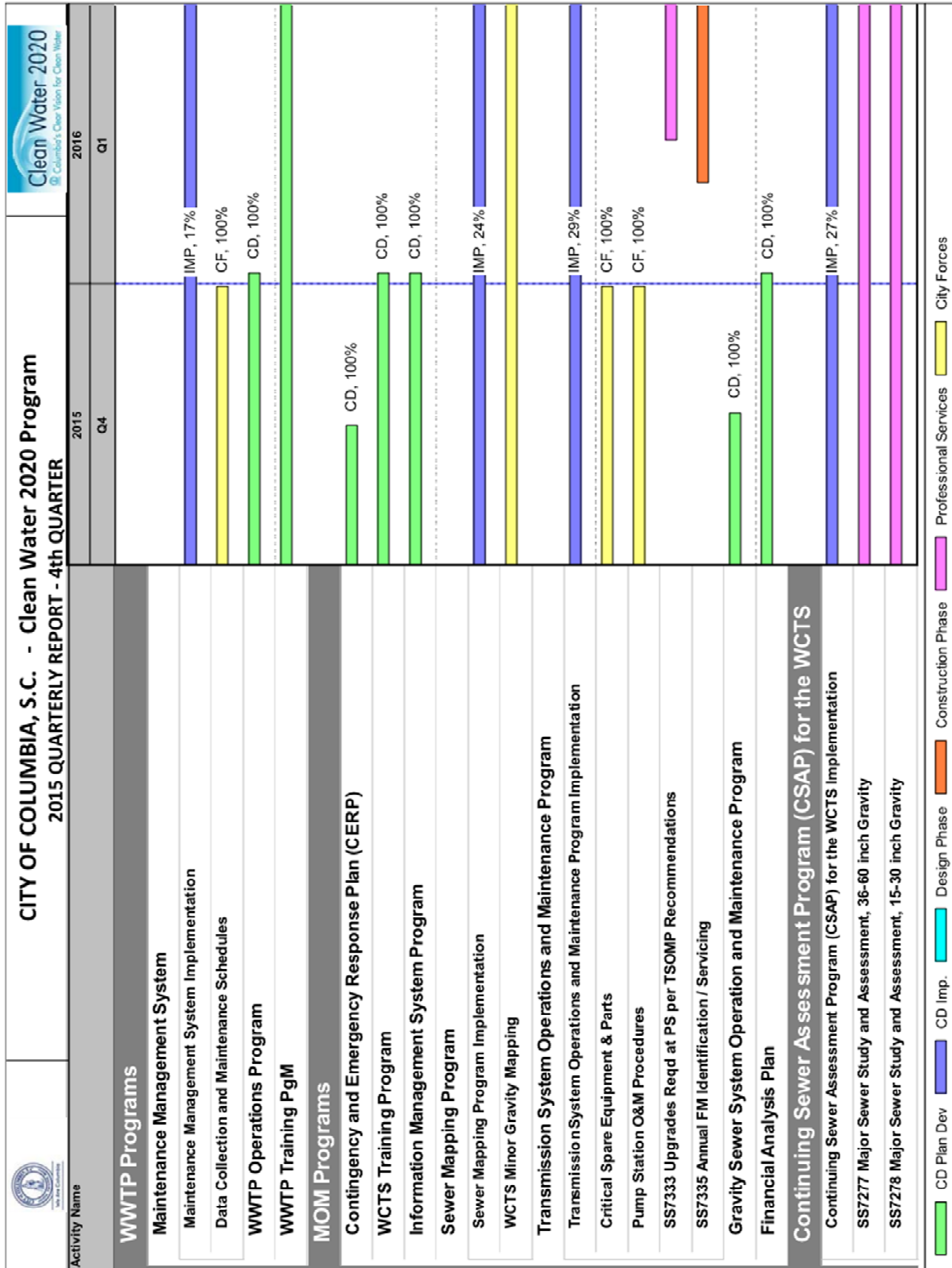
**Section 4 – Quarterly SSO Report**


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



 <b>CITY OF COLUMBIA, S.C. - Clean Water 2020 Program</b> 2015 QUARTERLY REPORT - 4th QUARTER		 2016 Q1	
Activity Name		2015	2016
Infrastructure Rehabilitation Program (IRP) for the WCTS IR Report for the WCTS		Q4	Q1
SS7350	Crane Creek Upper North Branch Extension and Lower North Branch Capacity Upgr		
SS7324	Bendale PS Improvements		
SS7323	Food Lion PS Improvements		
SS7280	Rocky Branch-01 SSES		
SS7279	Smith Branch 02 SSES		
SS7172	Rehabilitation/Replacement Harbison #2, Mallard Point and Animal Shelter PS		DES, 99%
SS7060	12 Pump Station Improvements at 6 Sites		DES, 90%
SS6966	Annual Rehab on Manholes and lines less than 15"		
SS6857	Olympia Subdivision (SSES Study) - Division I		
SS7330	Upper Mill Creek Sewer Improvements		
SS7337	02 East Rocky Branch Improvements Ph. 2		
SS7289	Rivermont Dr. Pump Station		
SS7261	Lake Katherine Sewer Line Capacity Enhancement		DES, 8%
SS7258	Greenlawn Dr to Burnside #1 PS (Hampton Forest)		
SS6954	01 Crane Creek Phase I		
SS7251	03 Innovista District Infrastructure Improvements		
SS6833	Upgrade Piney Grove Lift Station		CON, 50%
SS7207	Saluda River Basin SSES for SR 07 & 8		CON, 90%
SS7208	Saluda River Basin SSES for SR-03, 10, & 12		CON, 85%
SS7199	Saluda River Basin SSES for SR-06 & 13		CON, 99%
SS7218	West Columbia Basin SSES WC-02		CON, 99%



## 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.

As discussed below and in Section 4, the City notified the U.S. Department of Justice, the U.S. Environmental Protection Agency, and the South Carolina Department of Health and Environmental Control of a *force majeure* event on October 6, 2015. The City experienced unprecedented rainfall which resulted in catastrophic flooding beginning on October 4, 2015. On October 13, 2015, the City submitted an initial written report of the *force majeure* event and requested an additional 45 days for certain CD deliverables. The request for this extension was granted by EPA; the approval letter is provided in Appendix A. Additionally, the October 13, 2015 written report further advised that the report would be supplemented with additional information on other delays in performance under the CD following a full assessment of the damage to the City's wastewater system. The City is continuing that assessment and the effect on its performance of obligation under the CD. The City is currently preparing a supplemental report and will submit in the first quarter of 2016.

### 3.1 WWTP Programs

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

#### 3.1.1 Maintenance Management System (MMS)

The MMS was submitted to EPA and SCDHEC on May 18, 2015. The City is awaiting EPA and SCDHEC review and approval of the MMS.

Although the EPA has not yet approved the MMS, the City is proceeding with implementation activities under the MMS. The activities completed during the current reporting period are as follows:

- Data Collection and Maintenance Schedules – 100% Complete

#### 3.1.2 WWTP Operations Program

In accordance with the requirements of the CD, the City shall submit a WWTP Operations Program to EPA and SCDHEC for review, comment, and approval. The WWTP Operations Program is to be submitted within 18 months of the date of entry of the CD. The deadline for submittal of the WWTP Operations Program to EPA and SCDHEC was November 21, 2015. On October 6, 2015, the City notified the U.S. Department of Justice, the U.S. Environmental Protection Agency, and the South Carolina Department of Health and Environmental Control of a *force majeure* event. The City experienced unprecedented rainfall which resulted in catastrophic flooding beginning on October 4, 2015. On October 13, 2015, the City



submitted a written report of the *force majeure* event and requested an additional 45 days to January 5, 2016 to complete and obtain Council approval for this deliverable. This request was granted by EPA; the approval letter is provided in Appendix A.

## 3.2 MOM Programs

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

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

The CERP was submitted to EPA and SCDHEC on November 20, 2015.

### 3.2.2 WCTS Training Program

In accordance with the requirements of the CD, the City shall submit a WCTS Training Program to EPA and SCDHEC for review, comment, and approval. The WCTS Training Program is to be submitted within eighteen months of the date of entry of the CD. The deadline for submittal of the WCTS Training Program to EPA and SCDHEC was November 21, 2015. On October 6, 2015, the City notified the U.S. Department of Justice, the U.S. Environmental Protection Agency, and the South Carolina Department of Health and Environmental Control of a *force majeure* event. The City experienced unprecedented rainfall which resulted in catastrophic flooding beginning on October 4, 2015. On October 13, 2015, the City submitted a written report of the *force majeure* event and requested an additional 45 days to January 5, 2016 to complete and obtain Council approval for this deliverable. This request was granted by EPA; the approval letter is provided in Appendix A.

### 3.2.3 Information Management System (IMS) Program

In accordance with the requirements of the CD, the City shall submit an Information Management System (IMS) Program to EPA and SCDHEC for review, comment, and approval. The IMS Program is to be submitted within eighteen months of the date of entry of the CD. The deadline for submittal of the IMS Program to EPA and SCDHEC was November 21, 2015. On October 6, 2015, the City notified the U.S. Department of Justice, the U.S. Environmental Protection Agency, and the South Carolina Department of Health and Environmental Control of a *force majeure* event. The City experienced unprecedented rainfall which resulted in catastrophic flooding beginning on October 4, 2015. On October 13, 2015, the City submitted a written report of the *force majeure* event and requested an additional 45 days to January 5, 2016 to complete and obtain Council approval for this deliverable. This request was granted by EPA; the approval letter is provided in Appendix A.

### 3.2.4 Capacity Assurance Program (CAP)

In accordance with the requirements of the CD, the City shall submit a Capacity Assurance Program (CAP) to EPA and SCDHEC for review, comment, and approval. The CAP is to be submitted within 180 days after

EPA approval of the Hydraulic Model Report. The City agrees to continue to implement its current capacity program until EPA approves the CAP.

The City continues to implement, update, and maintain its CAP as necessary. The updated CAP, effective January 2016, is provided in Appendix C.

### 3.2.5 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 – 79% complete
  - Smith Branch Basin – 67% complete
  - Saluda River Basin – 78% complete
  - Rocky Branch Basin – 30% complete
  - Mill Creek Basin – 25% complete
  - Gills Creek Basin – 26% complete
  - Crane Creek Basin – 64% complete
  - Broad River Basin – 22% complete

### 3.2.6 Transmission System Operations and Maintenance Program (TSOMP)

The TSOMP was submitted to EPA and SCDHEC on May 18, 2015. The City is awaiting EPA and SCDHEC review and approval of the TSOMP.

Although the EPA has not yet approved the TSOMP, the City is proceeding with implementation activities under the TSOMP. The activities completed or in progress during the current reporting period are as follows:

- Critical Spare Equipment and Parts (Inventory Management Procedures) – 100% Complete
- Pump Station O&M Procedures – 100% Complete
- SS7333 Upgrades Required at PS per TSOMP Recommendations – 0% Complete
- SS7335 Annual FM Identification/Service – 0% Complete

### 3.2.7 Gravity Sewer System Operation and Maintenance Program (GSOMP)

The GSOMP was submitted to EPA and SCDHEC on November 20, 2015.

### 3.2.8 Financial Analysis Program

In accordance with the requirements of the CD, the City shall submit a Financial Analysis Program to EPA and SCDHEC for review, comment, and approval. The Financial Analysis Program is to be submitted within eighteen months of the date of entry of the CD. The deadline for submittal of the Financial Analysis Program to EPA and SCDHEC was November 21, 2015. On October 6, 2015, the City notified the U.S. Department of Justice, the U.S. Environmental Protection Agency, and the South Carolina Department of Health and Environmental Control of a *force majeure* event. The City experienced unprecedented rainfall which resulted in catastrophic flooding beginning on October 4, 2015. On October 13, 2015, the City submitted a written report of the *force majeure* event and requested an additional 45 days to January 5, 2016 to complete and obtain Council approval for this deliverable. This request was granted by EPA; the approval letter is provided in Appendix A.

## 3.3 Satellite Sewer System Agreements (SSSA)

The SSSA was submitted to EPA and SCDHEC on May 18, 2015. The City is awaiting EPA and SCDHEC review and approval of the SSSA.

## 3.4 Continuing Sewer Assessment Program (CSAP) for the WCTS

The CSAP was submitted to EPA and SCDHEC on June 9, 2015. The City is awaiting EPA and SCDHEC review and approval of the CSAP.

Although the EPA has not yet approved the CSAP, the City is proceeding with sewer assessments under the CSAP. The assessments on the major components of the WCTS currently in progress are as follows:

- SS7277 Major Sewer Study and Assessment, 36-60 inch Gravity – 85% Complete
- SS7278 Major Sewer Study and Assessment, 15-30 inch Gravity – 22% Complete

## 3.5 Infrastructure Rehabilitation Report (IRR) for the WCTS

In accordance with Section V.16 of the CD, the City shall submit an Infrastructure Rehabilitation Report (IRR) summarizing the results of the CSAP of the major components of the WCTS and a description of proposed rehabilitation projects. The IRR is to be submitted within six months after the City has assessed the major components of the WCTS once pursuant to the CSAP. As rehabilitation projects are identified through the assessments described in Section 3.4 and in the normal course of operations and maintenance, the City is proceeding with design and construction of those projects. Completion percentages of projects currently in progress are as follows:

- SS7350 Crane Creek Upper North Branch Extension and Lower North Branch Capacity Upgrade Phase 1 – Design 0% Complete
- SS7324 Bendale PS Improvements – Design 24% Complete
- SS7323 Food Lion PS Improvements – Design 6% Complete
- SS7280 Rocky Branch-01 SSES and Rehabilitation – Design 55% Complete
- SS7279 Smith Branch-02 SSES and Rehabilitation – Design 45% Complete
- SS7172 Rehabilitation/Replacement Harbison #2, Mallard Point and Animal Shelter PS – Design 99% Complete
- SS706012 Pump Station Improvements at 6 Sites – Design 90% Complete
- SS6966 Annual Rehab on Manholes and Lines less than 15” – 2015 Construction 95% Complete, 2016 Construction 0% Complete
- SS6857 Olympia Subdivision Sewer System Evaluation Survey (SSES) and Rehabilitation Design – Design 50% Complete
- SS7330 Upper Mill Creek Sewer Improvements – Design 0% Complete
- SS733702 East Rocky Branch Improvements Ph. 2 – Design 3% Complete
- SS7289 Rivermont Drive Pump Station – Design 82% Complete
- SS7261 Lake Katherine Sewer Line Capacity Enhancement – Design 80% Complete
- SS7258 Greenlawn Dr. to Burnside #1 PS (Hampton Forest) – Design 90% Complete
- SS695401 Crane Creek Phase I – Construction 50% Complete
- SS725103 Innovista District Infrastructure Improvements – Construction 50% Complete
- SS6833 Upgrade Piney Gove Lift Station – Construction 50% Complete
- SS7207 Saluda River Basin SSES and Rehabilitation for SR07 & 8 – Construction 90% Complete
- SS7208 Saluda River Basin SSES and Rehabilitation for SR-03, 10, & 12 – Construction 85% Complete
- SS7199 Saluda River Basin SSES and Rehabilitation for SR-06 & 13 – Construction 99% Complete
- SS7218 West Columbia Basin SSES and Rehabilitation for WC-02 – Construction 99% Complete

## Section 4 Quarterly SSO Report

In accordance with Section IX.39.a.(ii) of the CD, the City is required 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.

Beginning on October 3, 2015, the City experienced unprecedented rainfall which resulted in catastrophic flooding. SCDHEC instructed the City on October 4, 2015 to suspend verbal 24-hour notification of SSOs to SCDHEC. On October 8, 2015, the City requested guidance from SCDHEC regarding formal written reporting procedures for SSOs. SCDHEC responded on October 9, 2015 and instructed the City to suspend normal reporting until the flooding event concluded. On November 9, 2015, the City provided SCDHEC a summary of confirmed SSOs that occurred between October 3, 2015 and October 13, 2015. The summary submittal is provided in Appendix B. In addition to the SSO listing in Appendix B, the following table provides information on the other SSOs which occurred during the current reporting period.

Table 1 - SSO Report, 4th Quarter 2015

City of Columbia, SC Quarterly SSO Listing 4th Quarter 2015									
SSO Date	SSO Time	Location	Source	Date of Corrective Action	Time of Corrective Action	Estimated Volume (gallons)	Receiving Water (if any)	Cause	Actions Taken
10/14/2015	15:48	5000 Forest Dr, Columbia, SC 29206	Manhole	10/16/2015	08:00	28,946	Gills Creek	Collapsed Line	Set Up 4" Bypass Pump. Mainline Repair.
10/14/2015	09:00	348 Jadetree Dr, Hopkins, SC 29061	Forcemain	10/14/2015	11:00	2,000		Force Main	Turned Off Pump Station. Replaced ARV.
10/20/2015	18:30	348 Jadetree Dr, Hopkins, SC 29061	Forcemain	10/21/2015	10:45	3,000		Force Main	Shutdown Forcemain. Repaired ARV Due To Failure.
10/20/2015	20:37	320 Northwood St, Columbia, SC 29201	Other	TBD		1,060	Storm Drain To Broad	Collapsed Line	Set Up Bypass Pump On 10/20/15 At 9:30 PM. Contractor Will Repair Collapsed Line.
10/20/2015	15:09	150 Pelham Dr, Columbia, SC 29209	Manhole	TBD		Unknown	Gills Creek	Roots	Removed Blockage To Resume Normal Flow. Televised Mainline. Found Evidence Of Roots (Revised - Based On CCTV Review). Mainline Was Washed And Roots Will Be Removed. The Mainline Is Scheduled To Be Repaired At A Later Date.
10/20/2015	13:00	1162 Lake Murray Blvd, Irmo, SC 29063	Manhole	10/20/2015	13:45	1,125		Debris	Removed Stoppage To Resume Normal Flow. Televised Mainline 30 Ft. Debris, Rocks And Sand Were Found In The Mainline.
10/26/2015	12:11	4427 Blossom St F4, Columbia, SC 29205	Manhole	10/26/2015	14:00	6,565	Gills Creek	Debris	Removed Stoppage To Resume Normal Flow. Washed Mainline 150 Feet To Remove Stoppage.
10/27/2015	17:22	3125 Bluff Rd, Columbia, SC 29209	Forcemain	TBD		Unknown		Force Main	Contained By Relief Hole (Secured). Replace Forcemain Damaged Pipe. This Will Be Done By A Contractor.
10/26/2015	15:30	4300 Euclid Ave, Columbia, SC 29203	Other	TBD		Unknown	Tributary To Smith	Collapsed Line	Suspected Due To Hole In Pipe. Set Up Bypass Pumps 11/2/2015 At 2:54 PM. Contractual Repair For Creek Crossing.
10/29/2015	08:47	4800 Ft Jackson Blvd, Columbia, SC 29209	Manhole	10/29/2015	09:16	4,350	Gills Creek	Pump Station Failure	Replaced Hose Clamp On Primary Pump. Secured Hose Clamp So It Will Not Come Loose Again. Having Godwin Pump Tech To Come Repair Primary Pump 10/29/2015.
10/31/2015	03:30	2907 Two Notch Rd, Columbia, SC 29204	Cleanout	TBD		1,875		Collapsed Line	Washed Mainline And Put Bypass Pump. Contractual Repair.
10/31/2015	14:00	283 Woodwinds Dr, Columbia, SC 29212	Manhole	10/31/2015	15:45	1,600		Roots	Removed Stoppage To Resume Normal Flow. Washed Mainline 450 Feet.
11/2/2015	23:15	5081 Brickyard Rd, Columbia, SC 29203	Manhole	TBD		410,438	Crane Creek	Wet Weather	Wet Weather, Observation Only. Bid Opening For CIP Project 2/24/15, Oct 2015 Flood Has Delayed Project.
11/3/2015	15:15	1400 Peeples St, Columbia, SC 29203	Manhole	TBD		200,023	Crane Creek	Wet Weather	Wet Weather, Observation Only. Bid Opening For CIP Project, Oct 2015 Flood Has Delayed Project.
11/5/2015	11:50	2101 Laurel St, Columbia, SC 29204	Manhole	11/9/2015	10:50	300	Storm Drain	Debris	Removed Stoppage To Resume Normal Flow. Removed Traffic Cone From Mainline. Mainline CCTV To Find Cause Of Blockage.
11/5/2015	10:30	3900 Bentley Dr, Columbia, SC 29210	Other	TBD		7,400	Broad River	Collapsed Line	Set Up Bypass Pump At 5:10 PM. Contractor Will Repair Line.
11/8/2015	13:15	3200 N Beltline Blvd, Columbia, SC 29204	Manhole	TBD		600	Storm Drain	Collapsed Line	Washed Mainline 120 Feet To Resume Normal Flow And Vacuumed Out Manhole. Contractual Mainline Repair.
11/9/2015	17:10	1608 Nunamaker Dr, Columbia, SC 29210	Manhole	11/11/2015	14:17	1,000	Storm Drain	Grease	Washed Mainline 275 Ft To Resume To Normal Flow. Televised Mainline 2 Legs Downstream 271 And 275 Ft Manhole To Manhole.
11/10/2015	09:00	5006 Brickyard Rd, Columbia, SC 29203	Manhole	11/11/2015	10:30	3,650	Crane Creek	Roots	Washed Mainline 75 Feet To Resume Normal Flow. Mainline CCTV 80 Feet Found Roots In Line. Washing Line To Cut Roots Out.
11/10/2015	17:00	5081 Brickyard Rd, Columbia, SC 29203	Manhole	TBD		176,400	Crane Creek	Wet Weather	Wet Weather, Observation Only. Flood After October 2015.
11/17/2015	16:40	1100 Dorrah St, Columbia, SC 29203	Manhole	11/18/2015	08:30	400	Storm Drain	Roots	Removed Stoppage To Resume Normal Flow. Washed Mainline 616 Feet To Remove Stoppage.
11/17/2015	12:00	500 Lincolnshire Blvd, Columbia, SC 29203	Manhole	11/23/2015	09:16	2,000		Grease	Washed Mainline 200 Feet. Mainline CCTV 175 Feet. Grease Issue. Re-Washed Mainline And De-Greased.
11/19/2015	05:50	1400 Peeples St, Columbia, SC 29203	Manhole	TBD		Unknown	Crane Creek	Wet Weather	Wet Weather Observation, Checked Every Hour Until Flooded Access. Bid Opening For CIP Project, Oct 2015 Flood Has Delayed Project.
11/19/2015	05:55	5081 Brickyard Rd, Columbia, SC 29203	Manhole	TBD		390,700	Crane Creek	Wet Weather	Wet Weather, Observation Only. Checked Every Hour. CIP Project Line Replacement, Project On Hold Due To Flooding October 2015.
11/19/2015	06:25	4645 Pine Grove Ct, Columbia, SC 29206	Manhole	TBD		17,238	Lake Katherine (Gills)	Wet Weather	Wet Weather, Observation Only. Engineering In Design Phase Of Line Replacement.
11/19/2015	06:35	1548 Kathwood Dr, Columbia, SC 29206	Manhole	TBD		19,188	Lake Katherine (Gills)	Wet Weather	Wet Weather, Observation Only. Engineering In Design Phase Of Line Replacement.
11/19/2015	09:30	5006 Brickyard Rd, Columbia, SC 29203	Manhole	TBD		1,500		Collapsed Line	Removed Stoppage To Resume To Normal Flow. Mainline Repair.

City of Columbia, SC Quarterly SSO Listing 4th Quarter 2015									
SSO Date	SSO Time	Location	Source	Date of Corrective Action	Time of Corrective Action	Estimated Volume (gallons)	Receiving Water (if any)	Cause	Actions Taken
11/19/2015	09:30	3101 Bluff Rd, Columbia, SC 29209	Forcemain	TBD		537,720	Gills Creek	Wet Weather	Wet Weather, Observation Only. Contractual Repairs.
11/19/2015	11:15	34 Thistle Ct, Irmo, SC 29063	Cleanout	TBD		206	Swygert Creek	Wet Weather	Not Observed Active. Work Being Conducted To Evaluate Pump Station Drawdown.
11/20/2015	10:36	3001 Beechaven, Columbia, SC 29204	Manhole	TBD		3,020	Storm Drain	Roots	Washed Mainline 150 Ft To Remove Stoppage To Resume To Normal Flow. Point Repair.
11/28/2015	15:00	318 Quail Hills Dr, Hopkins, SC 29061	Cleanout	12/2/2015	10:18	6		Roots	Removed Stoppage To Resume Normal Flow. Washed, Vacuumed And Degreased Mainline. Televised Upstream 510 Ft.
12/7/2015	17:30	183 Waterford Dr, Columbia, SC 29203	Manhole	TBD		75	Dry Ditch	Collapsed Line	Washed Mainline 200 Feet To Remove Stoppage. Mainline Repair.
12/18/2015	12:00	1833 Belmont Dr, Columbia, SC 29206	Cleanout	12/20/2015	15:30	100		3Rd Party Responsibility	Advised Customer To Not Use Water. Digging Crew Was Dispatched On 12/20/15 To Repair The Bore Thru Caused By Phone Line.
12/22/2015	08:09	1721 W Buchanan Dr, Columbia, SC 29206	Manhole	12/22/2015	16:05	36,825	Gills Creek	Wet Weather	Wet Weather, Observation Only. None.
12/22/2015	08:16	1908 Belmont Dr, Columbia, SC 29206	Manhole	TBD		Undetermined	Pen Branch	Wet Weather	Wet Weather, Observation Only. Engineering CIP Project In Design.
12/22/2015	08:28	1548 Kathwood Dr, Columbia, SC 29206	Manhole	TBD		19,000	Lake Katherine (Gills)	Wet Weather	Wet Weather, Observation Only - Checked Every Hour. Engineering In Design Phase Of Line Replacement.
12/22/2015	08:41	4645 Pine Grove Ct, Columbia, SC 29209	Manhole	TBD		17,175	Lake Katherine (Gills)	Wet Weather	Wet Weather, Observation Only - Observed Every Hour. Engineering In Design Phase Of Line Replacement.
12/22/2015	08:57	5081 Brickyard Rd, Columbia, SC 29203	Manhole	TBD		327,450	Crane Creek	Wet Weather	Wet Weather, Observation Only. CIP Project Line Replacement, Project On Hold Due To Flooding October 2015.
12/22/2015	08:51	1400 Peeples St, Columbia, SC 29203	Manhole	12/22/2015	09:30	154,500	Crane Creek	Wet Weather	Wet Weather. Bid Opening For CIP Project, Oct 2015 Flood Has Delayed Project.
12/22/2015	09:25	3616 Edmond Dr, Columbia, SC 29205	Manhole	12/22/2015	09:25	Unknown	Storm Drain To Gills	Wet Weather	Wet Weather, Observation Only. None.
12/22/2015	11:00	1621 Stevenson Ave, Columbia, SC 29203	Manhole	12/22/2015	12:00	3,000	Storm Drain To Crane Creek	Wet Weather	Wet Weather. High Creek Level Entering System. Issue Is In Engineering.
12/23/2015	08:50	4800 Fort Jackson Blvd, Columbia, SC 29204	Manhole	TBD		300		Debris	Pump Suction Hose Was Removed And Screen Cleaned. On Going Project, Bypass Pump Is Setup Due To Sewer Line In Process Of Being Relocated.
12/23/2015	17:45	1621 Stevenson Ave, Columbia, SC 29203	Manhole	12/23/2015	20:20	3,100	Storm Drain To Crane Creek	Wet Weather	Wet Weather. High Creek Level Entering System. Issue Is In Engineering.
12/27/2015	16:00	6820 Becky Ct, Columbia, SC 29203	Cleanout	TBD		Unknown		Collapsed Line	Washed Service Line 80 Ft. Televised Service Line 150 Ft, Orangeburg Pipe Is Broken. Service Line Repair To Be Scheduled.
12/27/2015	18:30	3123 Harrison Rd, Columbia, SC 29204	Manhole	N/A		158		Wet Weather	Wet Weather, Observation Only. Evidence Of Spill Only.
12/28/2015	18:00	4400 Wildcat Rd, Columbia, SC 29209	Cleanout	12/29/2015	10:35	3,750	Gills Creek	Collapsed Line	Set Out Bypass Pump, Put Out 500 Feet Of Hose. Emergency Mainline Repair.
12/24/2015	08:25	5081 Brickyard Rd, Columbia, SC 29203	Manhole	TBD		303,188	Crane Creek	Wet Weather	Wet Weather. CIP Project Line Replacement, Project On Hold Due To Oct 2015 Flood.
12/24/2015	08:21	1400 Peeples St, Columbia, SC 29203	Manhole	TBD		290,250	Crane Creek	Wet Weather	Wet Weather. Bid Opening For CIP Project, Oct Flood Has Delayed Project.
12/29/2015	10:30	1340 Longcreek Dr, Columbia, SC 29210	Manhole	12/31/2015	08:00	1,500		Roots	Removed Stoppage To Resume Normal Flow. Roots In Mainline Being Cut Out 12-31-2015.
12/30/2015	20:23	22 Thistle Ct, Irmo, SC 29063	Cleanout	N/A		2,290	Swygert Creek	Wet Weather	Wet Weather, Monitored.
12/30/2015	21:38	5081 Brickyard Rd, Columbia, SC 29203	Manhole	TBD		1,195,888	Crane Creek	Wet Weather	Wet Weather - Monitor. CIP Project Line Replacement. Project On Hold Due To Oct 2015 Flood.
12/30/2015	21:32	1400 Peeples St, Columbia, SC 29203	Manhole	TBD		723,375	Crane Creek	Wet Weather	Monitored. CIP Project Underway. Oct Flood Has Delayed Project.

## 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 required to submit a Quality Assurance Project Plan (QAPP) to SCDHEC within 60 days of the date of entry of the CD. Upon approval of the QAPP by SCDHEC the City will begin monitoring within 30 days. The City will monitor quarterly for the first three years under the CD and monthly (or every other month at the Gills Creek at Bluff Road site) from years four through six under the CD.

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 is currently working with SCDHEC to finalize the QAPP. Upon approval of the QAPP by SCDHEC, the City will begin monitoring within 30 days in accordance with the requirements of the CD.



## Appendix A

# EPA Force Majeure Extension Approval Letter



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 4  
ATLANTA FEDERAL CENTER  
61 FORSYTH STREET  
ATLANTA, GEORGIA 30303-8960

CERTIFIED MAIL 7015 1730 0002 0524 5222  
RETURN RECEIPT REQUESTED

Ms. Teresa B. Wilson  
City Manager of Columbia  
P.O. Box 147  
Columbia, South Carolina 29217

Re: United States et al. v. The City of Columbia Consent Decree  
Civil Action No.: 3:13-2429-TLW (D. S.C.)

Dear Ms. Wilson:

This is in response to your letter of October 13, 2015, claiming that a force majeure event had occurred and would affect the ability of the City of Columbia to comply with its obligations under the above-referenced Consent Decree. The force majeure event in question is the unprecedented rainfall and catastrophic flooding that the City experienced beginning on October 4, 2015. The U.S. Environmental Protection Agency Region 4 has determined, after a reasonable opportunity for review and comment by the South Carolina Department of Health, that the anticipated delay described in your letter is attributable to a force majeure event and that the time for performance of certain obligations under the Consent Decree should be extended in accordance with your request. Specifically, pursuant to Paragraph 57 of the Consent Decree, the deadline for submission of four deliverables due on November 21, 2015 is extended to January 5, 2016. The four deliverables subject to this extension are:

1. Wastewater Collection and Transmission System Training Program (WCTS Training Program, required under Paragraph 12.c of Consent Decree)
2. Information Management System (IMS) Program (Paragraph 12.d of Consent Decree)
3. Wastewater Treatment Plant Operations Program (Paragraph 11.b of Consent Decree)
4. Financial Analysis Program (Paragraph 12.j of Consent Decree)

Your letter noted that the City would continue to assess the impacts of the force majeure event on the City's ability to meet deadlines in the Consent Decree, and that the City would supplement its October 13, 2015, letter with additional information regarding any further delays that may be caused by the force majeure event. We understand that the impacts to the City's operations and infrastructure have been substantial and, at the time of your October 13 letter, were still unfolding. Accordingly, we request that, as you complete your assessment, you provide notice of any additional delays that may be attributable to the force majeure event along with the information required under Paragraph 56 of the Consent Decree.

Should you have any questions regarding this matter, please contact Mr. Richard Elliott, of my staff, at (404) 562-8691 or via email at [elliott.richard@epa.gov](mailto:elliott.richard@epa.gov).

Sincerely,



Maurice L. Horsey, IV, Chief  
Municipal & Industrial Enforcement Section  
NPDES Permitting and Enforcement Branch

cc: City Attorney  
Columbia, South Carolina

Chief Financial Officer  
Columbia, South Carolina

Director – Utilities and Engineering  
Columbia, South Carolina

Paul Schwartz, Esq.  
Atlanta, Georgia

Mr. Glen Trofatter  
Columbia, South Carolina

Michael S. Traynham, Esq.  
Columbia, South Carolina

W. Thomas Lavender, Jr., Esq.  
Columbia, South Carolina

Joan Hartley, Esq.  
Columbia, South Carolina

Valerie Mann, Esq.  
Washington, DC

Elizabeth Drake, Esq  
Columbia, South Carolina

Carol King, Esq  
Washington, DC

Appendix B  
October 2015 Flood Event SSO Summary



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We Are Columbia

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PO Box 147, Columbia, SC 29217 • Phone: 803-733-8566 • Fax: 803-988-8057

November 9, 2015

Re: Sanitary Sewer Overflow Summary  
for the October 2015 Catastrophic  
Storm Event;  
City of Columbia SC0020940

SC Department of Health and Environmental Control  
Bureau of Water / Water Pollution Control Division  
Attn: Mr. Brian Wisnewski – Program Manager  
2600 Bull Street  
Columbia SC 29201

Dear Mr. Wisnewski:

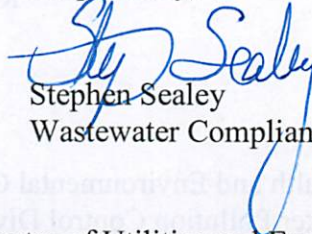
The flooding event that occurred from October 3 through October 6, 2015 resulted in multiple Sanitary Sewer Overflows (SSOs) within the City Wastewater Collection and Transmission System. The City of Columbia was instructed on October 4, 2015 to suspend verbal 24-hour notification by Mr. Paul Lee due to the magnitude of calls SCDHEC was receiving. The City also requested reporting guidance from SCDHEC on October 8, 2015 to ensure compliance was maintained during the emergency storm event and response. Specifically the City requested the direction of SCDHEC, regarding compliance with the written report requirement for SSOs under the City's NPDES permit. SCHDEC responded to that request on October 9, 2015 and instructed the City to suspend normal reporting until the event and response actions were concluded, but to maintain public notification practices when and where needed.

The City experienced multiple issues within the system as the result of the storm event and continues to perform assessments of the system. As of November 2, 2015, the attached summary of SSOs identifies the locations that were confirmed to have overflowed during the event and post event assessment time frames which dated from October 3, 2015 through October 13, 2015. The City WWTP was also inaccessible to

vehicular traffic from October 4 until October 14, 2015, thus preventing some staff from resuming normal operations.

If you have any questions regarding this summary submittal please feel free to give me a call.

Respectfully,



Stephen Sealey  
Wastewater Compliance Manager

- CC: Mr. Joseph Jaco, P.E. – Director of Utilities and Engineering  
Mr. David Wiman – Superintendent of the Metro WWTP  
Mr. Robert Judy – Superintendent of Wastewater Maintenance  
Mr. Harry Mathis – SCDHEC Regional Office

## City of Columbia SSO Summary for the October 2015 Storm Event

Location	Date	Confirmed time	Asset number	Cause
Date from 10/03/15 to 10/13/15				
1000 Garden Valley Lane (Saluda River PS - 195)	10/3/15	1:19 PM	PS-195	wet weather (broken flange)
5081 Brickyard Rd	10/4/15	1:01 AM	26258	Wet weather
1806 Blossom St	10/4/15	1:03 AM	07085	Wet weather
1806 Blossom St	10/4/15	2:00 AM	07087	Wet weather
1721 W Buchanan Dr	10/4/15	2:27 AM	06647	Wet weather
100 Wheat Street (West Cola PS - 110)	10/4/15	3:40 AM	PS-110	Wet weather
145 River Valley Dr	10/4/15	3:47 AM	23169	Wet weather
714 Santee Ave	10/4/15	4:20 AM	07077	Wet weather
2725 Harlem St	10/4/15	4:28 AM	01646	Wet weather
7313 Leitner Road (Galaxy PS-045)	10/4/15	4:36 AM	Ps-045	Wet weather
2000 Blossom	10/4/15	4:40 AM	26086	Wet weather
1806 Blossom St	10/4/15	5:00 AM	07086	Wet weather
1332 Shady Lane	10/4/15	5:00 AM	24267	Wet weather
4500 Bluff Road (Starlite PS - 090)	10/4/15	5:15 AM	PS-090	Wet weather
31 Bendale Ct (Bendale LS - 230)	10/4/15	6:00 AM	PS-230	Wet weather
2905 Two Notch Road (Food Lion at Two Notch PS - 250)	10/4/15	6:30 AM	PS-250	Wet weather
2901 Two Notch	10/4/15	6:30 AM	89752	Wet weather
5200 Bluff Road (Mill Creek PS - 065)	10/4/15	6:45 AM	PS-065	Wet weather
2100 Blossom St	10/4/15	6:50 AM	07252	Wet weather
189 Harbison	10/4/15	6:55 AM	19448	Wet weather
2101 Blossom St	10/4/15	7:00 AM	07253	Wet weather
3799 Beltline	10/4/15	7:00 AM	08502	Wet weather
1548 Kathwood	10/4/15	7:00 AM	06258	Wet weather
850 Gracern Road (3 River LS-200)	10/4/15	7:16 AM	PS-200	Wet weather
1142 Coatsdale	10/4/15	8:30 AM	27864	Wet weather
1154 Coatsdale	10/4/15	8:30 AM	27865	Wet weather
620 Harrden St	10/4/15	8:30 AM	07253	Wet weather
139 Emerald Lake Road (Emerald Lake PS-035)	10/4/15	5:20 PM	PS-035	Wet weather
3616 Edmond	10/4/15	8:00am	05315	Wet weather
4645 Pine Grove	10/4/15	unknown	07051	Wet weather
7745 Garners Ferry	10/4/15	unknown	30948	wet weather
100 Westwood Ave	10/4/15	unknown	15714	Wet weather
1908 Belmont Rd	10/4/15	unknown	06623	wet weather
1737 W Buchanan DR	10/4/15	unknown	06817	wet weather
900 Airport Blvd	10/7/15	12:20 PM	26166	Blockage
3123 Harrison Rd	10/7/15	4:30 PM	27484	debris
2200 Greene St	10/8/15	11:13 AM	31481	Blockage
4700 Ft Jackson Blvd	10/8/15	11:50 AM	04485	Equipment (By pass failure)
1035 Garden Valley Ln	10/8/15	12:00 PM	17944	Wet weather
1662 Kathwood Dr	10/10/15	9:00 PM	06170	ML Blockage
2150 South Beltline Blvd	10/11/15	5:57 AM	24341	Wet weather
2240 South Beltline Blvd	10/11/15	5:58 AM	24342	Wet weather
1721 W Buchanan Dr	10/11/15	10:15 AM	06647	Wet weather
1548 Kathwood	10/11/15	10:29 AM	06258	Wet weather

4645 Pine Grove	10/11/15	10:41 AM	31403	Wet weather
1350 White House Road	10/11/15	1:18 PM	24371	Wet weather
2770 The Blvd	10/11/15	2:18 PM	31249	Wet weather
2770 the Blvd	10/11/15	4:39 PM	31252	Wet weather
4316 Timberlane Drive	10/11/15	6:03 PM	24353	Wet weather
4225 Timberline	10/11/15	6:05 PM	no #	Wet weather
4316 Timberlane Drive	10/11/15	6:08 PM	24354	Wet weather
4314 Tinberlane Drive	10/11/15	6:10 PM	24529	Wet weather
320 Candi Ln	10/11/15	6:30 PM	27903	wet weather collapsed line (42")
320 Candi Ln	10/11/15	6:30 PM	28041	Wet weather
2102 South Beltline Blvd	10/11/15	7:29 PM	24336	Wet weather
2102 South Beltline Blvd	10/11/15	7:30 PM	24335	Wet weather
1003 Airport Blvd	10/11/15	12:00 AM	261452	Wet weather
1662 Kathwood Dr	10/11/15	10:35am	06170	Stoppage
320 Candi Ln	10/11/15	7:01 om	28795	Wet weather
1009 Airport Blvd	10/11/15	unknown	26153	Wet weather
1621 Steveson	10/11/15	unknown	10275	wet weather
212 Candi Lane	10/11/15	unknown	14873	wet weather collapsed line (42")
500 Wildlife Pwky	10/12/15	9:31 AM	28029	Wet weather
1050 Laural Crest	10/12/15	unknown	25206	Wet weather



# Appendix C

## Revised Wastewater System CAP SOP

City of Columbia, South Carolina  
Wastewater

Standard Operating Procedure

WASTEWATER SYSTEM CAPACITY ASSURANCE  
PROGRAM

May 2013  
Revised January 2016

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## **A. PURPOSE AND APPLICABILITY**

The purpose of this Standard Operating Procedure (SOP) is to establish a uniform practice for the City of Columbia (City) Capacity Assurance Program (CAP). The procedures outlined in this SOP are applicable to all personnel involved in the review of submittals requesting revisions to the permitted wastewater flows that are being discharged into and conveyed through the City's Wastewater Collection and Transmission Systems (WCTS), and ultimately being treated at the City's wastewater treatment plant (WWTP).

## **B. REQUESTS FOR CAP ANALYSIS**

This section outlines the request procedures for new connections and proposed increases in wastewater flows to the City's wastewater system.

### **1. Pre-CAP Analysis Request**

To assist developers at the earliest stages of planning for a proposed development, the Engineering Division will conduct a Pre-CAP Analysis upon request to determine whether the City's wastewater system has sufficient collection, transmission and treatment capacity to accept an increased wastewater flow. The Pre-CAP Analysis is optional, and the City's determination in response to a Pre-CAP Analysis Request is non-binding as system conditions may change prior to submittal of the CAP Analysis Request for a proposed project.

Developers or other entities requesting a Pre-CAP Analysis must submit a Capacity Assurance Program Analysis Request Form to the Engineering Department. Based on the information provided in the Capacity Assurance Program Analysis Request Form, the Engineering Department will conduct an analysis in accordance with the procedures in Section C below to determine whether the City's collection, transmission, and treatment system has sufficient capacity to accept the proposed increase in flow. The Pre-CAP Analysis is based on conditions existing at the time of the Pre-CAP determination. The City's Pre-CAP Analysis determination is offered as an optional planning tool to assist developers and does not guarantee that capacity will be available upon request for a CAP Analysis.

### **2. CAP Analysis Request**

For new wastewater connections or increases in wastewater flow, a Capacity Assurance Program Analysis Request Form and supporting documents and design plans must be submitted to Planning and Development along with any other required planning and development submittals for a proposed project. Planning and Development will forward the Capacity Assurance Program Analysis Request Form and supporting documents and wastewater design plans to the Engineering Division. The Engineering Division will

conduct a CAP Analysis in accordance with the procedures in Section C below to determine whether the City's collection, transmission, and treatment system has sufficient capacity to accept the proposed increase in flow. The Engineering Division may approve, approve with conditions, or deny a CAP Analysis Request.

If the City does not have capacity to accept the new connection or increase in wastewater flow for a proposed project, the City will notify the developer or entity that system upgrades would be required to serve the proposed project.

In response to a CAP Analysis Request in an area with an existing capacity limitation, the City may, in its sole discretion, authorize issuance of a construction permit for the proposed project by the South Carolina Department of Health and Environmental Control (SCDHEC) pursuant to S.C. Regulation 61-67.300.A. Under these circumstances, the City's authorization will be subject to a condition that SCDHEC's approval to place the proposed project into operation will not be issued until SCDHEC issues its approval to place the City's system upgrades into operation. In providing the authorization to proceed under S.C. Regulation 61-67.300.A, the City makes no representations or commitments regarding the date of completion or allocations of City funds necessary to complete the City's system upgrades on which SCDHEC's approval of the proposed project is conditioned.

An approval or approval with conditions of a CAP Analysis Request expires three years from the approval date or SCDHEC's issuance of the approval to place into operation, whichever is later.

### **C. CAP ANALYSIS PROCEDURE**

This section outlines the steps that are taken to review a Pre-CAP Analysis Request or a CAP Analysis Request for new connections or increases in wastewater flow to the City's wastewater system. In conducting the Pre-CAP Analysis or CAP Analysis, the Engineering Division will use the procedural steps below to determine whether the wastewater collection system, transmission system, applicable pump stations, and the WWTP have the capacity to serve the new sewer service connection or additional flow from an existing sewer service connection. Proposed wastewater flows of 4,000 gpd or less will be deemed to have minimal impacts to the system and may be approved without further analysis required at the discretion of the Engineering Division.

Columbia may authorize a new sewer service connection or additional flow from an existing sewer service connection in cases where there is not Adequate Collection Capacity, Adequate Transmission Capacity, and/or Adequate Treatment Capacity for health care facilities, public safety facilities and public schools and, subject to EPA review and approval, for government facilities; and in those cases where a pollution or sanitary nuisance condition exists, as determined by the Richland or Lexington County Health Department, as the result of a discharge of untreated wastewater from an on-site septic tank. All such new service connections or additions to flow from an existing connection will be tracked in the CAP Information Management System.

The Engineering Division will make a determination on Pre-CAP Analysis Requests and CAP Analysis Requests in accordance with the following criteria and procedures:

**1. CAP and Pre-CAP Evaluation Procedures**

- a. Evaluation of Proposed Sewer Connection - Determine whether the proposed pump station, force main, or gravity sewers meet the following requirements:

- Pertinent DHEC Standards
- City Standard Specifications

- b. Evaluation from Proposed Connection to Nearest 15 inch Sewer Line - Evaluate the wastewater collection system (for the purposes of this SOP, the wastewater collection system consists of all gravity sewer lines less than 15 inches in diameter) and existing minor pump stations and force mains from the proposed connection to the nearest 15 inch diameter gravity sewer to determine if the existing infrastructure has the capacity available to accept the additional flow. The existing infrastructure will be evaluated as defined in Section 2.

If the City determines that the capacity is sufficient, continue to Section 1c. If the capacity is not sufficient, the request will be denied but alternatives may be considered between the City and developer or other entity.

- c. Evaluation of Existing Wastewater System – Using the criteria set forth in Section 2, determine whether the City’s wastewater system has adequate collection, transmission, and treatment capacity for the increased wastewater flow.

If there is a capacity limiting condition downstream as determined using the criteria set forth in Section 2, evaluate the sub-basin, basin, pump station(s), and/or WWTP as required to identify any necessary system upgrades. If appropriate, notify the developer that necessary system upgrades will need to be undertaken. Restart at Section 1a when complete.

The City may, in its sole discretion, authorize issuance of a construction permit for the proposed project by the South Carolina Department of Health and Environmental Control (SCDHEC) pursuant to S.C. Regulation 61-67.300.A. Under these circumstances, the City’s authorization will be subject to a condition that SCDHEC’s approval to place the proposed project into operation will not be issued until SCDHEC issues its approval to place the City’s system upgrades into operation.

- d. Issue determination letter with approval, approval with conditions, or denial of CAP Analysis Request. Update wastewater capacity database as needed to reflect any new/increased flows and to subtract any flows if needed with change of use.

## 2. Evaluating Existing Wastewater System

The steps below describe the processes and methods used to determine whether the City's wastewater system has adequate collection, transmission, and treatment capacity for wastewater flows. Each of the three components of the wastewater system (collection, transmission/pumping, and treatment capacity) are evaluated separately.

### a. Collection Capacity

There are three main concepts related to wastewater collection system capacity analysis:

- Total pipe capacity based on diameter
- Existing Peak Flow
- Available pipe capacity

Peak flow is defined as the peak hourly wastewater flow using a 2.5 peaking factor.

Available pipe capacity is the capacity of the sewer remaining, after discounting the existing peak flow.

In the Capacity Assurance Program, capacity analysis for the wastewater collection system will be conducted using available data. Available data for the initial capacity analysis may include:

- Sanitary Sewer Overflow (SSO) Database
- Flow Monitoring Records
- Water consumption data based on city water billing records
- Desktop Hydraulic Analysis

The first step in assessing available capacity in the wastewater collection system is to review the SSO Database between the point of the proposed new connection, downstream to the wastewater treatment plant. Determine through the SSO Database if the wastewater system has experience either one of the following capacity limiting events:

1. A repeated dry-weather, capacity-related SSOs in the wastewater collection system in the past 12-months.
2. A repeated wet-weather, capacity-related SSO in the wastewater collection system in the previous 12 month period (excluding those SSOs caused by severe natural conditions such as hurricanes, tornados, widespread flooding

earthquakes, or rainfall events greater than a representative 2 year-24 hour storm event), unless Columbia can certify that the cause of the SSO has been corrected through improvements to the wastewater collection system.

If the wastewater system has not experienced either one of the events listed in 1 or 2 above, then a desktop hydraulic analysis is performed.

A desktop hydraulic analysis consists of determining the capacity of the wastewater collection system using pertinent system information, such as record drawings, in conjunction with hydraulic analysis equations, typically Manning's Equation. This methodology would be used in areas of the wastewater collection system where a more detailed evaluation is needed than is provided by the flow monitoring data analysis and may be manually for a specific segment of pipe or for numerous segments of pipe using a spreadsheet. If the Manning's equation determines that the contributing area exceeds full pipe capacity, further analysis will be required utilizing accepted methodologies to determine whether a surcharge condition exists which would preclude the introduction of additional flow. A capacity limiting surcharge condition exists when the contributing flow is greater than the capacity of the pipes and the surface of the wastewater in the manholes rises to an elevation greater than two (2) feet above the top of the pipe or within two (2) feet of the rim of the manhole, whichever is lower, and the gravity sewer pipe is under pressure or head rather than at atmospheric pressure.

#### b. Pumping Capacity

There are three main concepts related to pumping capacity analysis:

- Firm Pumping Capacity
- Peak Flow
- Available Pumping Capacity

Firm pumping capacity is defined as the maximum flow rate produced by a pumping station with the largest pump out of service. For the capacity analysis, the maximum capacity of the pumping station will be equal to the firm pumping capacity.

Peak flow is defined as the maximum wastewater flow rate entering the pumping station using a 2.5 peaking factor.

Available pumping capacity is the capacity of the pumping station remaining from the firm pumping capacity after discounting the existing peak flow.

The first step in determining available capacity at pumping stations is to review the SSO Database. If the pumping station has experienced repeated, capacity-related overflows, then the pumping station is deemed to have no available capacity.



Otherwise, a detailed capacity analysis will be conducted. The peak flow will be compared to the firm pumping capacity to determine the available capacity.

c. Treatment Capacity

The Capacity Assurance Program uses Metro wastewater treatment plant (WWTP) data to determine the available capacity at the WWTP versus the amount of flow from the new sewer service connection, or increase in flow to an existing connection. The available capacity at the WWTP is calculated by subtracting the average daily effluent flow from the wastewater treatment system's average design flow (currently 60 MGD) in million gallons per day (MGD) for the most recent twelve calendar months.

**3. Revisions Policy**

The City of Columbia may deem it necessary to revise or amend this document in the future. Such amendments will be developed by City staff and will be submitted to the EPA along with future quarterly reports.

**D. DATA AND RECORDS MANAGEMENT**

As mentioned in item C.1.d, the wastewater capacity database will be updated to reflect any changes in flow. The database will be kept in the following location: M:\Util&Eng\Wastewater\Projects\Wastewater Compliance\CAP and will be updated monthly by Subdivision Plan Review. The database will include the name and location of the project, including the sub-basin, date of approval, and the amount of flow added to the system.