

Clean Water 2020 Program

CONSENT DECREE ANNUAL REPORT

January 1, 2015 – December 31, 2015

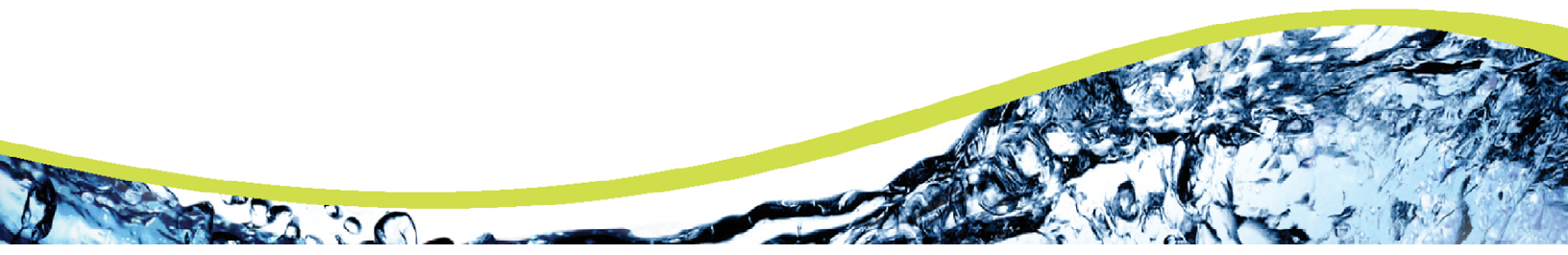


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Acronyms & Abbreviations

- CAP** – Capacity Assurance Program
- CCTV** – Closed Circuit Television
- CD** – Consent Decree
- CE** – City Engineer
- CERP** – Contingency Emergency Response Plan
- CFO** – Chief Financial Officer
- CIP** – Capital Improvements Program
- City** – City of Columbia
- CMOM** – Capacity, Management, Operations and Maintenance
- CSAP** – Continuing Sewer Assessment Program
- CW2020** – City’s Program to Manage the Consent Decree Compliance
- CY** – Calendar Year
- DOJ** – United States Department of Justice
- DUE** – Department of Utilities and Engineering
- EACIP** – Early Action Capital Improvement Projects
- EPA** – United States Environmental Protection Agency

FOG – Fats, Oils and Grease

FSE – Food Service Establishment

GIS – Geographic Information System

GSOMP – Gravity Sewer System Operation and Maintenance Program

IMS – Information Management System

IR – Infrastructure Rehabilitation [Program]

IRR – Infrastructure Rehabilitation Report

LGIM – Local Government Information Model

MAC – Maintenance and Compliance

NTP – Notice to Proceed

PTO – Permit to Operate

RFP – Request for Proposal

SCDHEC – South Carolina Department of Health and Environmental Control

SMP – Sewer Mapping Program

SOP – Standard Operating Procedure

SORP – Sewer Overflow Response Program

SSES – Sanitary Sewer Evaluation Survey

SSO – Sanitary Sewer Overflow

TSOMP – Transmission System Operations and Maintenance Program

WCTS – Wastewater Collection and Transmission System

WWTP – Wastewater Treatment Plant

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.c of the CD, the City has prepared this *Annual Report*, which includes the following information (as excerpted from the CD):

1. A summary of the CMOM Programs implemented pursuant to this Consent Decree, including a comparison of actual performance with any performance measures that have been established;
2. A summary of each remedial measure and capital project implemented pursuant to this Consent Decree;
3. A trends analysis of the number, volume, duration, and cause of Columbia's SSOs for the previous twenty-four (24) month period.

1.2 Report Organization

This Annual Report is organized as follows:

Section 1 – Introduction

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

Section 2 – CMOM Programs Update

This section addresses the requirements of Section IX.39.c.(i) of the CD. The section provides a summary and update on the implementation of the specific Management, Operations, and Maintenance (MOM) Programs included in Section V.12 of the CD.

Section 3 – Capital Projects Update

This section addresses the requirements of Section IX.39.c.(ii) of the CD. The section provides a summary and update on the remedial measures and capital projects implemented as a part of the CD. The remedial measures and capital projects noted in this report have been identified by the City in the course of the assessment of the Wastewater Collection and Transmission System (WCTS) and will be included in the IR Report required under Section V.16 of the CD.

Section 4 – Sanitary Sewer Overflow (SSO) Trends Analysis

This section addresses the requirements of Section IX.39.c.(iii) of the CD. The section provides information on the number, volume, duration, and cause of the City's SSOs for the previous twenty-four month period.

Section 2 CMOM Programs Update

In accordance with Section IX.39.c.(i) of the CD, this section provides a summary and update on the implementation of the specific CMOM Programs included in Section V.12 of the Consent Decree. The Program elements addressed in this section provide information regarding activities involving the Metro Wastewater Treatment Plant (WWTP) as well as the City's WCTS.

2.1 Sewer Overflow Response Program (SORP)

The City continues to implement the SORP as required under Section V.12.a of the CD.

Projects and significant activities completed during the current reporting period:

- Updated and redistributed the SORP to Department of Utilities and Engineering (DUE) personnel following December 2014 training.
- Trained new hires and existing personnel on the use of the SORP (completed December 2015).

2.2 Contingency and Emergency Response Plan (CERP)

In consultation with SCDHEC, the City was to develop and submit to EPA and SCDHEC a CERP within 18 months of the Date of Entry of the CD.

Projects and significant activities completed during the current reporting period:

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

2.3 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 was to be submitted within eighteen months of the date of entry of the CD.

Projects and significant activities completed during the current reporting period:

- 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.

2.4 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 was 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.

2.5 Capacity Assurance Program (CAP)

In accordance with the requirements of the CD, the City is to submit to EPA and SCDHEC a CAP within 180 days after approval of the Hydraulic Model Report. Additionally, within 90 days after the Date of Entry of the CD, Columbia was required to establish a list of all authorized new sewer service connections or increases in flow from existing service connections, which flows have not yet been introduced into the WCTS. Columbia is required to update and maintain this list as necessary until full implementation of the CAP, as approved by EPA. In addition, upon execution of the CD and until EPA approves the CAP as required by Section 12.e, Columbia agreed to continue to implement its current capacity program.

Projects and significant activities completed during the current reporting period:

- Updated the existing CAP SOP document to further define the CAP process.
- Created and distributed a CAP request form to satellite systems for their use.
- Continued to collect and process CAP requests received from satellite systems.
- Began a quarterly review of minor connections submitted to the City through the CAP process.

2.6 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 is continuing the electronic mapping of each Sewer Basin in accordance with the approved SMP implementation plan therein. 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

2.7 Fats, Oils, and Grease (FOG) Management Program

The City continues to implement its FOG Management Program. The FOG Management Program was submitted to the EPA on July 2, 2013 and incorporated into the CD as Appendix G.

Projects and significant activities completed during the current reporting period:

- Public education program and website information are available to the public to promote FOG awareness throughout the City of Columbia.
- New FOG software has been purchased and is in use by City staff.

2.8 Transmission System Operations and Maintenance Program

In accordance with the requirements of the CD, the City was to submit to EPA and SCDHEC a Transmission System Operations and Maintenance Program (TSOMP) within one year after the Date of Entry of the CD.

Projects and significant activities completed during the current reporting period:

- The TSOMP was submitted to EPA and SCDHEC on May 18, 2015.
- Pump Station O&M Procedures – Standard Operating Procedures completed and documented as required in the TSOMP Section 2.
- Critical Equipment and Spare Parts – Provision of on-site backup power or backup diesel pumps at Pump Station 080 (Quail Creek) and Pump Station 115 (Clearwater).

2.9 Gravity Sewer System Operation and Maintenance Program

In accordance with the requirements of the CD, the City is to submit to EPA and SCDHEC a Gravity Sewer System Operation and Maintenance Program (GSOMP) within 18 months of the Date of Entry of the CD.

Projects and significant activities completed during the current reporting period:

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

2.10 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 was 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.

Section 3 Capital Projects Update

In accordance with Section IX.39.c.(ii) of the CD, the following section provides a summary and update on the remedial measures and capital projects implemented as a part of the Consent Decree.

3.1 Infrastructure Rehabilitation Report (IRR) Projects

In accordance with Section V.16 of the CD, the City is to submit an IRR to EPA and SCDHEC summarizing the results of the Continuing Sewer Assessment Program (CSAP) of the major components of the WCTS and a description of proposed rehabilitation projects, including rehabilitation projects currently underway. The following projects have already been identified, are currently in progress, and will also be included as part of the IRR upon submission to EPA and SCDHEC.

Table 1: IRR Projects (V.16)

CIP #	Project Name	Project Status/Summary
SS676402	30-inch Force Main from Mill Creek PS to WWTP	Design 100% complete in September 2015. Construction anticipated to begin in 2016.
SS6833	Upgrade Piney Grove Lift Station	Construction NTP issued on June 8, 2015. Construction ongoing throughout remainder of 2015.
SS695401	Crane Creek Phase I	Construction NTP issued on March 31, 2015. Construction ongoing throughout remainder of 2015.
SS6966	Annual Rehab on Lines Less than 15"	Construction services included CCTV as well as pipe replacement/lining. Construction ongoing throughout 2015.
SS7199	Saluda River Basin SSES for SR-06 & 13	Construction NTP issued on July 31, 2014. Construction ongoing throughout 2015.
SS7207	Saluda River Basin SSES for SR-07 & 08	Construction NTP issued on August 15, 2014. Construction ongoing throughout 2015.
SS7208	Saluda River Basin SSES for SR-06 & 13	Construction NTP issued on August 19, 2014. Construction ongoing throughout 2015.
SS7218	West Columbia Basin SSES WC-02	Construction NTP issued on June 17, 2014. Construction ongoing throughout 2015.
SS7251	Blossom & Huger SS Improvements	Phases I and II construction began in July 2014. Construction was completed and a SS PTO was issued in May 2015.
SS725103	Innovista District Infrastructure Improvements	Construction NTP issued on July 28, 2015. Construction ongoing throughout remainder of 2015.
SS7259	Replacement of 24" Smith Branch Outfall Underneath I-277	Design 100% complete in December 2014. Construction anticipated to begin in 2016.
SS7262	Flow Study / Rehabilitation / Replacement of Three Rivers and Colonial Life PS	Design 100% complete in June 2015. Project bid in December 2015.
SS7301	Bull Street	City Council approved project on April 21, 2015. Construction ongoing throughout remainder of 2015.

Section 4 Sanitary Sewer Overflow (SSO) Trends Analysis

In accordance with Section IX.39.c.(iii) of the CD, the following section provides a trends analysis of the number, volume, duration, and cause of the City’s Sanitary Sewer Overflows (SSOs) for the previous twenty-four month period.

Items required include the detailed number (frequency) and volume, by cause, of reportable spills as well as a trend analysis of the number, volume, and cause of the City’s SSOs, by month, for the previous twenty-four month period.

4.1 SSO Frequency and Volume by Cause

The detailed number and volume, by cause, for reportable spills is presented for review. The following table represents the SSO volume spilled by cause, frequency and volume for calendar years 2014 and 2015. The increase in wet weather volume in CY 2015 is related to the significant amount of rainfall experienced by the City, including the unprecedented rainfall and catastrophic flooding that began on October 4, 2015.

Table 2: Total SSO Frequency and Volume by Cause, CY 2014 & 2015

SSO Cause	Frequency	Volume (gal)
Collapsed Line	31	69,837
Grease	66	73,759
3 rd Party	16	29,233
Pump Station Failure	4	358,340
Roots	63	81,461
Debris	28	53,202
Wet Weather	63	6,340,886
Force Main	6	32,065
Wastewater Treatment Plant	9	11,776

The following table shows the SSO category (cause), number of SSOs of that category by month, and the total for each month in CY 2014 and CY 2015. The total number of SSOs by category is then calculated as a percentage of all SSOs for the overall time period.

Table 3: Monthly SSO Frequency by Cause, CY 2014 & 2015

Month / Year	Collapsed Line	Grease	3rd Party	Pump Station Failure	Roots	Debris	Wet Weather	Force Main	Wastewater Treatment Plant	Total
Jan-14	0	2	1	0	1	6	6	0	2	18
Feb-14	1	3	2	0	5	2	0	0	0	13
Mar-14	0	5	2	0	4	0	4	0	0	15
Apr-14	0	7	0	0	5	2	0	0	1	15
May-14	0	2	3	1	3	0	0	1	0	10
Jun-14	2	4	1	0	1	0	0	0	2	10
Jul-14	1	2	1	0	1	0	0	0	1	6
Aug-14	1	4	0	0	2	0	1	0	0	8
Sep-14	2	3	0	0	1	2	1	0	1	10
Oct-14	0	2	0	1	0	0	0	1	1	5
Nov-14	1	4	0	0	0	1	0	0	0	6
Dec-14	1	3	1	0	3	3	5	0	0	16
CY 2014 Total	9	41	11	2	26	16	17	2	8	132
Jan-15	1	0	0	1	5	1	1	0	0	9
Feb-15	4	5	2	0	7	2	2	0	0	22
Mar-15	2	6	1	0	6	2	0	1	0	18
Apr-15	1	3	0	0	3	1	0	0	0	8
May-15	0	3	0	0	2	0	0	0	0	5
Jun-15	1	2	1	0	3	1	1	0	0	9
Jul-15	2	1	0	0	1	1	1	0	0	6
Aug-15	1	0	0	0	2	0	4	0	1	8
Sep-15	0	3	0	0	1	0	13	0	0	17
Oct-15	4	0	0	1	2	2	0	3	0	12
Nov-15	3	2	0	0	4	1	9	0	0	19
Dec-15	3	0	1	0	1	1	15	0	0	21
CY 2015 Total	22	25	5	2	37	12	46	4	1	154
Grand Total	31	66	16	4	63	28	63	6	9	286
% of Total	10.8%	23.1%	5.6%	1.4%	22.0%	9.8%	22.0%	2.1%	3.1%	

In CY 2014, the highest number (31%) of reportable spills was attributable to grease. The next highest area of reportable spills was attributable to roots (20%). Wet weather represented 13% and debris 12%. In CY 2015, the highest number (30%) of reportable spills were wet weather related. The next highest area of reportable spills was attributable to roots (24%). Grease represented 16% and collapsed lines

14%. Overall, grease, roots, and wet weather combined to represent a significant majority (67%) of the reportable spills for the period.

Figure 1: CY 2014 SSOs by Cause

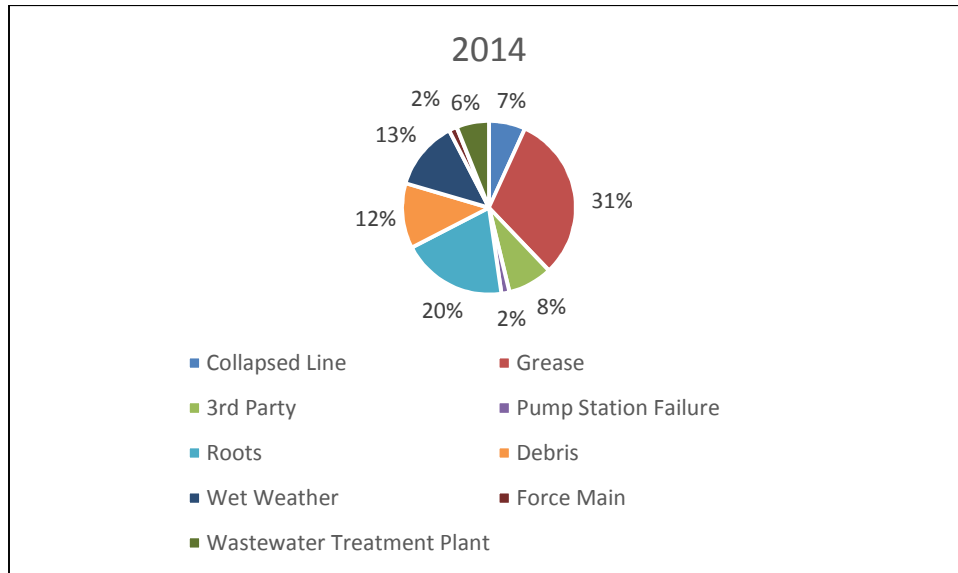
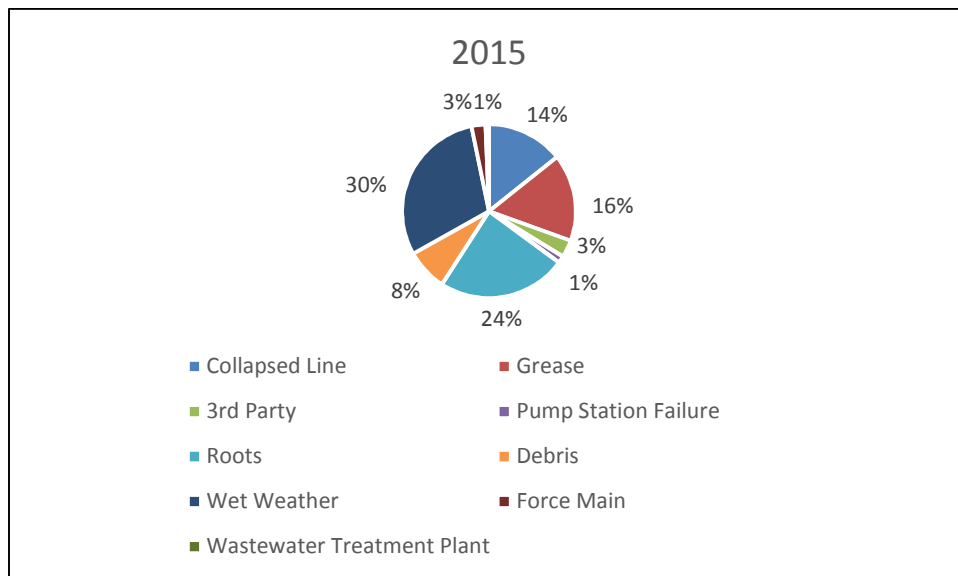


Figure 2: CY 2015 SSOs by Cause

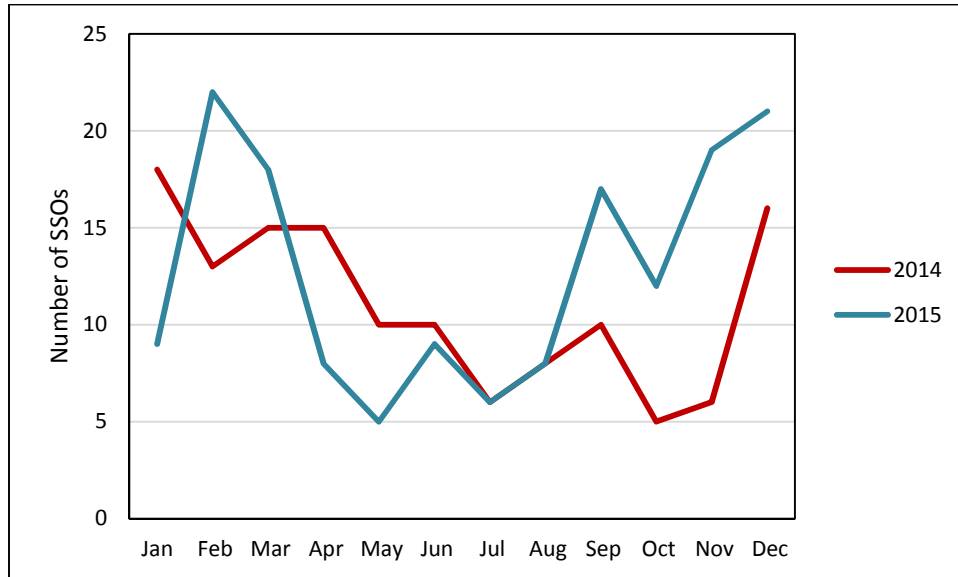


4.2 SSO Frequency and Volume by Month

As shown in the tables above, the City experienced a total of 132 SSOs in CY 2014. In CY 2015, the City experienced a total of 154 SSOs for a combined total of 286 SSOs. The average number of SSOs per month during CY 2014 was 11.0, and 12.8 in CY 2015. The fluctuation in SSOs on a monthly basis is caused by a combination of wet weather, roots and grease. During CY 2014, January, March, April and

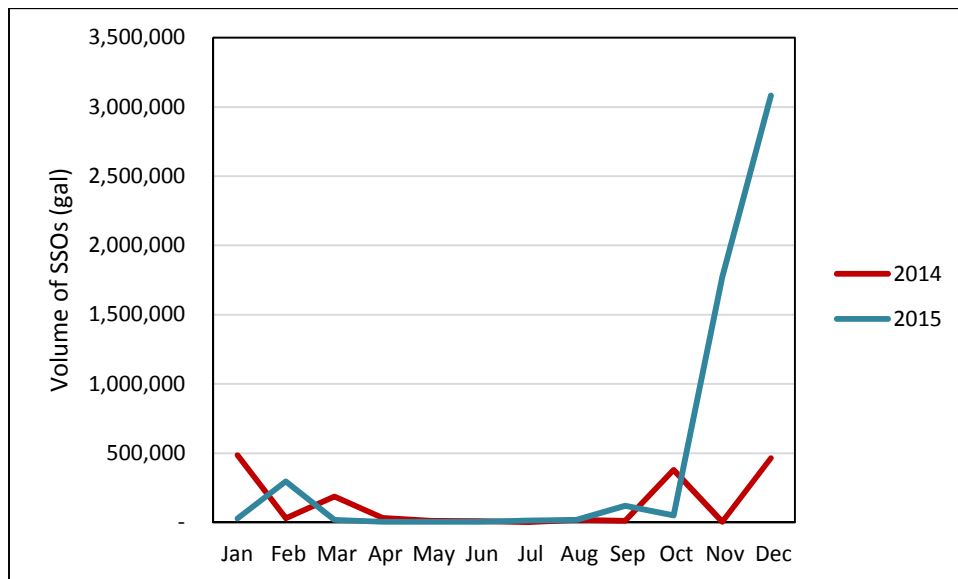
December averaged 16 SSOs per month, well above the annual average. In CY 2015, February, March, November and December averaged 20 SSOs per month, once again well above the annual average of 12.8.

Figure 3: SSO Frequency by Month



During CY 2014, total volume spilled represented approximately 1.64 million gallons; in CY 2015, total volume spilled represented approximately 5.41 million gallons, for an estimated combined total volume of 7.05 million gallons. Wet weather events accounted for 65.5% of the volume spilled in CY 2014 and 97.3% of the volume spilled in CY 2015.

Figure 4: SSO Volume by Month



Based on an analysis of the wet weather SSO events, there is an identifiable correlation between spill volume and rainfall. During major rainfall events, the City experienced significant volume of SSOs related to wet weather. The increase in wet weather volume in CY 2015 is related to the significant amount of rainfall experienced by the City, including the unprecedented rainfall and catastrophic flooding that began on October 4, 2015.

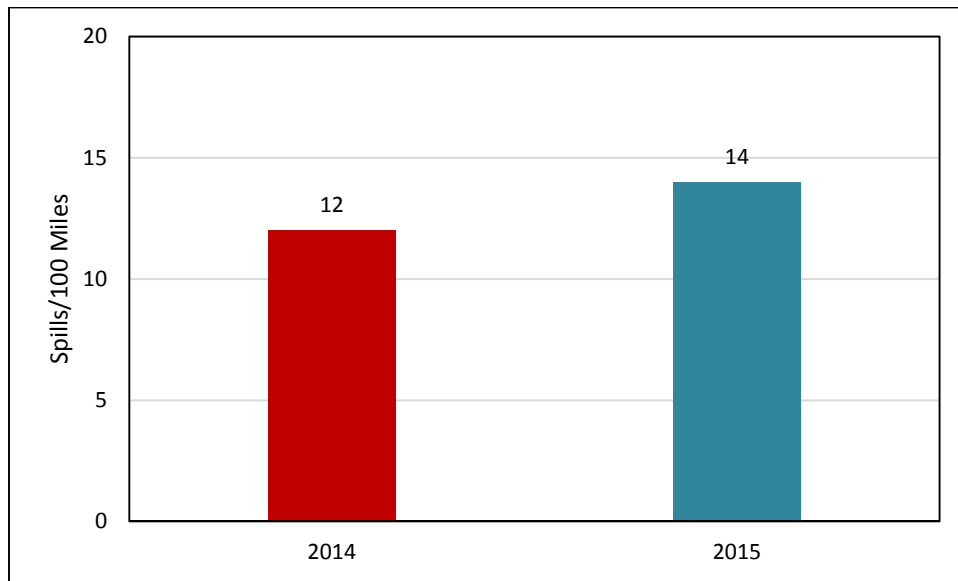
4.3 SSO Duration

Duration data for SSOs was captured beginning with CY 2015. The documented duration of an SSO is the amount of time between the estimated start time of the SSO event (observed) and the estimated end time of the SSO event (observed). In CY 2015, non-wet weather SSOs represented an average duration of 114 minutes per SSO. Wet weather SSOs represented an average duration of 655 minutes per SSO. A comparison of SSO duration over the two-calendar-year reporting period will occur in subsequent annual reports.

4.4 SSOs per 100 Miles of Pipe

The City currently operates and maintains 1,100 miles of pipe. In CY 2014 the number of SSOs per 100 miles equaled 12.0 and in CY 2015 14.0. This is an increase of 2.0 SSOs per 100 miles of pipe.

Figure 5: SSOs per 100 Miles of Pipe



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.

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

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Columbia, South Carolina

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