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**VIA ELECTRONIC CORRESPONDENCE**

March 1, 2018

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**RE: Consent Decree (Case: No. 1:12-cv-24400-FAM),  
Reference DOJ Case No. 90-5-1-1-4022/1,  
Section IX – Reporting Requirements, Paragraph 34 – Annual Reports –  
2017 Annual Report**

Dear Sir/Madam:

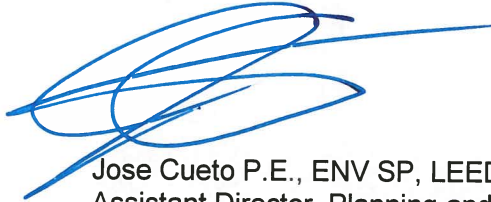
In accordance with the provisions of Paragraph 34 of the above referenced Consent Decree, on behalf of Miami-Dade County, the Water and Sewer Department (WASD) submits to both the United States Environmental Protection Agency (EPA) and the State of Florida Department of Environmental Protection (FDEP) the 2017 Annual Report. The 2017 Annual Report covers the period of time from January 1, 2017 through December 31, 2017.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering such information, the information submitted is, to the best of my knowledge

and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Should you have any questions regarding this matter, please call me at (786) 552-8884.

Sincerely,



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Attachment: 2017 Annual Report

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# 2017 Annual Report

(Fourth Annual Report)

January 1, 2017 through December 31, 2017

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Prepared for

United States Environmental Protection Agency and  
Florida Department of Environmental Protection

**Consent Decree**  
Case: No. 1:12-cv-24400-FAM

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Prepared by

Miami-Dade County, Miami-Dade Water and Sewer Department and  
the  
Consent Decree Program Management Construction Management  
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## Acronyms and Abbreviations

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AC	Asbestos Cement
BCC	Board of County Commissioners
BOD	Biological Oxygen Demand
BODR	Basis of Design Report
CMOM	Capacity, Management, Operations, and Maintenance
CD	Consent Decree
CDWWTP	Central District Waste Water Treatment Plant
CIP	Capital Improvement Project
CIPP	Cured in Place Pipe
CMOM	Capacity, Management, Operations and Maintenance
DIW	Deep Injection Well
EFT	Electronic Funds Transfer
EPA	United States Environmental Protection Agency
FOG	Fats, Oils, and Grease
FDEP	Florida Department of Environmental Protection
FSE	Food Service Establishment
GDO	Grease Discharge Operations
GPD	Gallons per Day
GPM	Gallons per Minute
GIS	Geographic Information Systems
GSSOMP	Gravity Sewer System Operations and maintenance System
I/I	Inflow/Infiltration
IMS	Information Management System



## Acronyms and Abbreviations (continued)

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LF	Linear Foot
MGD	Million Gallons per Day
MS	Metropolitan Services
NDWWTP	North District Waste Water Treatment Plant
NPDES	National Pollutant Discharge Elimination System
N/A	Not Applicable
OOL	Ocean Outfall Legislation
PCCP	Pre-stressed Concrete Cylinder Pipe
PDR	Public Document Repository
PS	Pump Station
PSOPMP	Pump Station Operations and Preventative Maintenance Program
RER-DERM	Department of Regulatory and Economic Resources-Division of Environmental Resources Management
RTC	Real Time Control
RTU	Remote Telemetry Unit
R & R	Repair and Replacement
SDWWTP	South District Waste Water Treatment Plant
SSO	Sanitary Sewer Overflow
SEP	Supplemental Environmental Project
SORP	Sewer Overflow Response Plan
SCADA	Supervisory Control and Data Acquisition
SSAMP	Sewer System Asset Management Program
TSS	Total Suspended Solids

## **Acronyms and Abbreviations (continued)**

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VFD	Variable Frequency Drive
VSCO	Volume Sewer Customer Ordinance
WASD	Water and Sewer Department
WCTL	Wastewater Collection and Transmission Line
WCTS	Wastewater Collection and Transmission System
WWTP	Wastewater Treatment Plant

## 1.0 Introduction

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Miami-Dade County ("County") submits this Annual Report ("Report") to the Environmental Protection Agency ("EPA") and the State of Florida Department of Environmental Protection ("FDEP") for review and comment in accordance with the requirements of Paragraph 34 of the Consent Decree ("CD"). This Report includes a narrative of progress made, including key accomplishments and significant activities, under the CMOM Programs implemented or modified pursuant to the CD for the most recent Calendar Year (January 1, 2017 through December 31, 2017), and provides a trends analysis of the number, volume, average duration, and cause of Miami-Dade's SSOs for the previous two (2) Calendar Years.

On May 21, 2013, the County approved a Consent Decree (CD) with the United States of America, the State of Florida Department of Environmental Protection, and the State of Florida, in the case styled *United States of America et. al. v. Miami-Dade County, Florida*, No. 1:12-cv-24400-FAM. On June 6, 2013, the CD was lodged with the United States District Court for the Southern District of Florida ("Court"). The Effective Date of the CD is December 6, 2013 (six months after the date of lodging). On April 9, 2014, the Court approved the CD with the United States of America, the State of Florida Department of Environmental Protection, and the State of Florida.

## 2.0 Requirements

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Beginning two (2) months after the first full Calendar Year following the Effective Date of the CD, and two (2) months after each subsequent Calendar Year until termination of the CD, Miami-Dade shall submit to EPA and FDEP for review and comment an Annual Report. Each Annual Report shall cover the most recent applicable Calendar Year and shall include, at a minimum:

1. "A narrative summary of progress made, including key accomplishments and significant activities, under the CMOM Programs implemented or modified pursuant to this Consent Decree for the most recent Calendar Year."
2. "A trends analysis of the number, volume, average duration, and cause of Miami-Dade's SSOs for the previous two (2) Calendar Years."

## **3.0 Implementation Progress (January 1, 2017 - December 31, 2017)**

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### **3.1 CD Reporting**

The County submitted four (4) quarterly reports covering the most recent Calendar Year (January 1, 2017 through December 31, 2017). Quarterly reports include the date, time, location, source, estimated duration, estimated volume, receiving water (if any) and cause of all SSOs occurring during the reporting period.

Two (2) semi-annual reports were submitted covering the most recent Calendar Year (January 1, 2017 through December 31, 2017). Semi-Annual reports contain a Gantt chart with description of projects and activities completed and milestones achieved during the reporting period, and those anticipated in the successive reporting period. The semi-annual reports include a description of the status of compliance or non-compliance with the requirements of this CD and, if applicable, the reasons for non-compliance. Also, the semi-annual reports contain the amount, recipient and the date of transfer or use during the reporting period of funds obtained by the County from the collection of sewer rates for any purpose not related to the management, operation or maintenance of the Sewer System or to any capital improvement needs of the Sewer System that is required to be tracked and reported pursuant to the Financial Analysis Program set forth in Subparagraph 19(j)(v) of the CD.

On March 18, 2014, the County approved a resolution of commitment not to transfer funds from the collection of sewer rates for purposes not related to the management, operation, or maintenance of the Sewer System or its capital improvement needs. During this reporting period, there were no transfers of funds from the Miami-Dade Water and Sewer Department ("WASD") that are required to be tracked and reported by Paragraph 19(j)(v) of the CD and the Policy Resolutions.

### **3.2 Continuation of CMOM Programs of the First Partial Consent Decree and Second and Final Consent Decree Paragraph 18**

Refer to Table A-1 (Appendix A) for significant activities and key accomplishments on the Continuing CMOM Programs during the most recent Calendar Year. Below are descriptions and background for each program.

#### [Adequate Pumping, Transmission and Treatment Capacity Program](#)

The Adequate Pumping, Transmission and Treatment Capacity Program ensures adequate transmission capacity for its pump stations and adequate treatment capacity for its Wastewater Treatment Plants. Pursuant to Paragraph 18(a) of the CD, the County has incorporated the criteria in Appendix A of the CD into Section 24-42.3 of the Code of Miami-Dade County. The amendment was submitted to EPA/FDEP on May 20, 2014 - ahead of the CD compliance date of June 4, 2014. This program remains in compliance with the requirements of the CD and Section 24-42.3 of the Code of Miami-Dade County.

Pursuant to Appendix A of the CD, certifications are performed by the Department of Regulatory and Economic Resources-Division of Environmental Resources Management ("RER-DERM") and kept on file by WASD. The EPA can have access to these reports upon request. Work on this Program is ongoing and details can be found in the work progress tables in Appendix A.

### Pump Station Remote Monitoring Program

The Pump Station Remote Monitoring Program involves the installation and operation of remote monitoring equipment in all Wastewater Collection and Transmission System (WCTS) pump stations within 6 months after the County becomes operationally responsible for a pump station. The pump station monitoring system shall continuously monitor, report, and transmit data.

Pump station remote monitoring equipment is installed during the pump station construction phase, prior to placing the pump station into operation. The pump station monitoring system provides the ability to continuously monitor, report, and transmit data. All the existing pump stations were upgraded with the latest technology, Supervisory Control and Data Acquisition (SCADA), Remote Terminal Units (RTUs), and operational software as part of CD Capital Improvement Project (CIP) 5.19 SCADA RTU Upgrades, which was completed in November 2015. Work on this Program is ongoing and details can be found in the work progress tables in Appendix A.

### WCTS Model

The WCTS Model was used in the development and implementation of CMOM Programs to optimize transmission capacity and to evaluate the impact of I/I rehabilitation projects; proposed modifications, upgrades and expansions to the WCTS; and performance of the WCTS. The WCTS Model was used to simulate the manifolded force mains and private pump stations that manifold into the County's force main system. Work on this Program is ongoing and details can be found in the work progress tables in Appendix A. The WCTS Model is on track for calibration deadline of December 2018.

### Spare Parts Program

This program involves a spare parts inventory management program for the WCTS and WWTPs. The existing Spare Parts Inventory Management Program will be enhanced as the following new CMOM Programs are implemented: Gravity Sewer System Operations and Maintenance Program; Pump Station Operations and Preventative Maintenance Program; Force Main Operations, Preventative Maintenance and Assessment/Rehabilitation Program; and the Wastewater Treatment Plants Operations and Maintenance Program. Work on this Program is ongoing and details can be found in the work progress tables in Appendix A.

### Volume Sewer Customer Ordinance (“VSCO”) Program

The purpose of the VSCO Program is to eliminate or otherwise control SSOs from the WCTS and the collection and transmission systems of present and future VSCs.

The amendment to the VSCO, pursuant to Paragraph 18(e)(ii), was submitted to the EPA/FDEP on March 14, 2014. Also, pursuant to Paragraph 18(e)(iii), a draft was written to include scheduling requirements and an approved VSC Plan of Compliance as defined in Appendix B of the CD. These proposed changes to amend the VSC Ordinance were submitted to the EPA/FDEP on April 4, 2014. RER-DERM revisions to the proposed amended VSC Ordinance were submitted to EPA/FDEP on February 23, 2015. On June 30, 2015, the proposed ordinance was read before the Board of County Commissioners (BCC). The proposed ordinance was adopted on first reading and scheduled for public hearing before the Metropolitan Services (MS) Committee on Wednesday, August 26, 2015. The MS Committee forwarded the VSCO to BCC with a favorable recommendation. The VSCO was presented before the BCC for the second reading and adopted on September 1, 2015. Work on this Program is ongoing and details can be found in the work

progress tables in Appendix A.

### **3.3 New CMOM Programs**

Refer to Table A-2 (Appendix A) for significant activities and key accomplishments on the New CMOM Programs during the most recent Calendar Year. Below are descriptions and background for each program.

#### Fats, Oils and Grease (“FOG”) Control Program

This program requires the County to regulate industrial and commercial sources of oil and grease. In addition, this program involves a review, evaluation and revision of the County's previous program. RER-DERM has organized the FOG Control Program into the following three projects: Project 1: FOG Characterization, Control Device Design, and Management, Operation and Maintenance Standards; Project 2: FOG Control Inspections, Enforcement, Compliance and Outreach; and Project 3: FOG Ordinance and Enforcement Management.

The deliverable was submitted to EPA/FDEP on the CD compliance date June 8, 2015. RER-DERM received comments on the Program from EPA/FDEP on December 28, 2016. Response to EPA and FDEP comments on the FOG Control Program was submitted on May 1, 2017. The FOG Control Program and FOG Ordinance were approved by the EPA/FDEP on September 7, 2017. Work on this Program is ongoing and details can be found in the work progress tables in Appendix A.

#### Sewer Overflow Response Plan (“SORP”)

The SORP is a program for identifying and reporting SSOs. The plan will establish timely and effective methods and means of responding to, cleaning up, and/or minimizing the impact of SSOs; timely reporting of the location, volume, cause, impact, and other pertinent SSO information to the appropriate regulatory agencies; and timely and effective notification of SSOs to potentially impacted public. In addition, the plan involves a re-evaluation of the County's previous program.

The SORP deliverable was submitted to EPA/FDEP on July 2, 2015, ahead of the CD compliance date of July 6, 2015. EPA/FDEP issued comments on the Program on January 24, 2017. Response to EPA/FDEP comments on the SORP was submitted on March 28, 2017. The SORP was approved by the EPA/FDEP on August 15, 2017. Work on this Program is ongoing and details can be found in the work progress tables in Appendix A.

#### Information Management System (“IMS”) Program

The IMS program will aid County managers and field supervisors to adequately track scheduled operational and maintenance activities; evaluate operations, maintenance, customer service, and sewer system rehabilitation activities; and improve overall sewer system performance.

The IMS program deliverable was submitted to EPA/FDEP on December 4, 2015, ahead of the CD compliance date of December 7, 2015. EPA/FDEP issued comments on the Program on February 28, 2017. Response to EPA/FDEP comments on the IMS was submitted on May 17, 2017. The IMS program was approved by the EPA/FDEP on October 17, 2017. Work on this Program is ongoing and details can be found in the work progress tables in Appendix A.

### Sewer System Asset Management Program (“SSAMP”)

The SSAMP is designed to maintain a desired level of service for the County's Sewer System and considers the life cycle cost to ensure compliance with regulatory requirements and the CD.

The Sewer SSAMP was submitted to EPA/FDEP on the CD compliance date of October 6, 2015. EPA/FDEP issued comments on the Program on January 24, 2017. Response to EPA/FDEP comments on the SSAMP was submitted on the CD compliance date of March 28, 2017. The SSAMP was approved by the EPA/FDEP on October 17, 2017. Work on this Program is ongoing and details can be found in the work progress tables in Appendix A.

### Gravity Sewer System Operations & Maintenance Program (“GSSOMP”)

The GSSOMP will address SSOs, particularly those caused by FOG, roots and/or debris obstructions. The program will facilitate proper operation and maintenance activities associated with gravity mains in the WCTS.

The GSSOMP was submitted to EPA/FDEP on the CD compliance date of February 6, 2015. WASD received comments on the Program from EPA/FDEP on July 1, 2016. WASD corrected all deficiencies in the Program identified by EPA/FDEP and submitted responses to the deficiencies on August 12, 2016. The GSSOMP was approved by the EPA/FDEP on October 17, 2017. Work on this Program is ongoing and details can be found in the work progress tables in Appendix A.

### Pump Station Operations & Preventative Maintenance Program (“PSOPMP”)

The PSOPMP will facilitate proper operation and maintenance activities associated with the pump stations within the WCTS.

The PSOPMP was submitted to EPA/FDEP on April 2, 2015, ahead of the CD compliance date of April 6, 2015. WASD received comments on the Program from EPA/FDEP on June 24, 2016. WASD addressed all comments and answered all questions provided by EPA/FDEP and submitted responses to the deficiencies on July 29, 2016. The PSOPMP was approved by the EPA/FDEP on October 17, 2017. Work on this Program is ongoing and details can be found in the work progress tables in Appendix A.

### Force Main Operations, Preventative Maintenance & Assessment/Rehab Program (“FMOPMARP”)

The FMOPMARP will facilitate proper operation and maintenance activities associated with force mains within the WCTS. A criticality assessment will also be performed of the structural integrity of the force mains and the risk of force main critical failure.

WASD has conducted condition assessments of pre-stressed concrete cylinder pipe force mains. The FMOPMARP was submitted to EPA/FDEP on the CD compliance date August 6, 2015. EPA/FDEP issued comments on the Program on February 23, 2017. Response to EPA/FDEP comments on the FMOPMARP was submitted on May 17, 2017. The FMOPMARP was approved by the EPA/FDEP on October 17, 2017. Work on this Program is ongoing and details can be found in the work progress tables in Appendix A.

### Force Main Rehabilitation/Replacement Program (“FMRRP”)

The FMRRP includes standard procedures for repairing, rehabilitating, and replacing force mains.



The FMRRP was submitted to EPA/FDEP on December 4, 2015, ahead of the CD compliance date of December 7, 2015. EPA/FDEP issued comments on the Program on February 23, 2017. Response to EPA/FDEP comments on the FMRRP was submitted on May 17, 2017. The FMRRP was approved by the EPA/FDEP on September 28, 2017. Work on this Program is ongoing and details can be found in the work progress tables in Appendix A.

#### WWTP Operations and Maintenance Program (“WWTP OMP”)

The WWTP OMP is being developed in accordance with Paragraph 19(h) in the CD. This program will facilitate proper operation, maintenance and equipment replacement activities associated with the WWTPs.

The WWTP OMP was submitted to EPA/FDEP on May 5, 2015, ahead of the CD compliance date of May 6, 2015. WASD received comments on the Program from EPA/FDEP on August 22, 2016. WASD corrected all deficiencies in the Program identified by EPA/FDEP and submitted responses to the deficiencies on November 21, 2016. On November 20, 2017, EPA/FDEP conditionally approved the WWTP OMP and requested additional information. Response to EPA/FDEP Request for Additional Information was submitted on January 29, 2018. On October 31, 2017, RER-DERM submitted the Hauled Waste Guidance Manual to EPA/FDEP. EPA/FDEP sent comments on the Manual on November 27, 2017. Response to EPA/FDEP comments on the Hauled Waste Guidance Manual was submitted on February 13, 2018. The program is pending EPA/FDEP approval. Work on this Program is ongoing and details can be found in the work progress tables in Appendix A.

#### Specific Capital Improvement Projects (“CIPs”)

Based on previous investigations, the County has identified certain rehabilitation projects that are intended to address conditions currently causing SSOs or contributing to NPDES permit violations. These specific capital improvement projects are identified and described in the Work Plan set forth in Appendix D of the CD. The County shall complete each of these capital improvement projects in accordance with the schedules set forth in Appendix D.

The following CIPs were completed during the most recent Calendar Year (January 1, 2017 through December 31, 2017):

##### Wastewater Treatment Plant (WWTP)

- Gas Monitoring and Alarms at Central District WWTP (CIP 2.24) was completed on September 29, 2017.
- Headworks and Sludge Degritting & Transfer at North District WWTP (CIP 3.1) achieved substantial completion on December 6, 2017.

##### Wastewater Collection and Transmission System (“WCTS”)

- Rehabilitation of 48 inch PCCP Force Main in the City of Miami (CIP 4.8) was completed on June 16, 2017. The EPA/FDEP approved three Force Majeure events, i.e. the bid protest, the non-functional isolation valve and the failed rehabilitation pipe, on September 14, 2017. The compliance date for this project was extended from April 9, 2017 to May



28, 2017.

The County failed to meet the CD compliance dates for: 1) CIP 4.8 CIP Rehabilitation of 48 inch PCCP Force Main in the City of Miami on May 28, 2017, 2) CIP 2.2 Repair to Various Buildings on September 6, 2017, 3) CIP 2.24 Gas Monitoring and Alarms on September 19, 2017, 4) CIP 2.17 Chlorination Facilities on September 29, 2017, 5) CIP 2.3 Central District WWTP Headworks/Grit Basin Plant 1 on October 22, 2017, 6) CIP 2.22 Pump Station No.2 on October 22, 2017, 7) CIP 4.5 South Dade 54-inch Pre-stressed Concrete Cylindrical Pipe (PCCP) FM Rehabilitation on November 27, 2017, 8) CIP 5.17 Upgrade of Pump Stations Nos. 0037, 0351, 0370, and 403 on December 31, 2017, and 9) CIP 5.16(1) Upgrade of PS No. 0198.

On January 27, 2017, the County notified EPA/FDEP of the potential Force Majeure event for CIP 5.16(1) due to the OSHA investigation. On September 14, 2017, EPA/FDEP approved request with the understanding that the work on the PS was to have been completed by August 31, 2017. However, this new deadline was missed due to additional problems experienced with the contractor and delays associated with Hurricane Irma. On September 22, 2017, the County informed EPA/FDEP that because of these issues, the PS would be completed by December 31, 2017. The EPA/FDEP determination is pending for this request. CIP 5.16(1) Upgrade of PS No. 0198 was completed on January 24, 2018.

The County continues to be fully engaged with the successful implementation and compliance of the CD. Specifically, with the execution of the eighty-one (81) capital improvement projects included in Appendix D which have an approximate total cost of \$1.55 billion, and the Supplemental Environmental Project (SEP) included in Appendix E. As of this reporting period, 19 projects with a total cost of \$259M have been completed and more than 40 projects with an approximate total cost of \$1.07 billion are currently in the procurement and construction phases. Despite the significant efforts and progress up to date, the County has encountered challenges that have delayed the completion of certain capital improvement projects. This is evident by the missed CD compliance dates of the CIPs listed above. On December 22, 2017, the County submitted a correspondence detailing the challenges being encountered and a request for non-material schedule modifications of 43 projects. The modifications of these project schedules are pending approval by EPA/FDEP.

Exclusive of the nine CD requirements described above, the County has complied with all other CD requirements during the most recent Calendar Year. Work on this Program is ongoing and details can be found in the work progress tables in Appendix A.

#### [Financial Analysis Program \("FAP"\)](#)

The purpose of the FAP is to effectively establish and track the sufficiency of funds for operations and maintenance, capital projects financing, and debt service coverage associated with the Sewer System, including, without limitation, the continued work pursuant to the CD.

The FAP was completed and submitted to EPA/FDEP on December 4, 2014, ahead of the CD compliance date December 8, 2014. WASD received comments on the Program from EPA/FDEP on November 25, 2015. WASD corrected all deficiencies in the Program identified by EPA/FDEP

and submitted responses to the deficiencies on January 29, 2016. The FAP was approved by the EPA/FDEP on October 17, 2017. Work on this Program is ongoing and details can be found in the work progress tables in Appendix A.

## 4.0 CMOM Programs Subject to Reporting Requirements

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### 4.1 Continuation of Capacity, Management, Operations and Maintenance ("CMOM") Programs of the First Partial Consent Decree and Second and Final Partial Consent Decree – Paragraph 18

A narrative summary of the continuing CMOM Programs and their significant activities for the previous calendar year can be found in Appendix A Table A-1.

### 4.2 New CMOM Programs – Paragraph 19(a) through (h) and (j)

During this reporting period, EPA/FDEP commented on five of the nine new CMOM Programs submitted in 2014 and 2015. Comments on the FMRRP and WWTP Hauled Waste Guidance Manual were also sent by EPA/FDEP. The County developed responses to EPA's/FDEP's comments and questions for those five CMOM Programs and submitted the respective response to EPA/FDEP within the permissible timeframe. The response to the comments on the Hauled Waste Program is anticipated to be submitted on the compliance date of February 13, 2018. Eight of the nine New CMOM Programs were approved by the EPA/FDEP. (Force Main Rehabilitation/Replacement Program is part of the Force Main Operations, Preventative Maintenance and Assessment/Rehabilitation Program.) The Wastewater Treatment Plant Operations and Maintenance Program is pending EPA/FDEP approval. The status of the CMOM Programs submitted to EPA/FDEP for review and comment are listed in Table 1-1.

Implementation schedules are required to be included in CMOM Program deliverables. However, these programs are interrelated and one program directly affects another. At the January 22, 2015 CD Program Monthly Progress Meeting with EPA/FDEP, WASD recommended that a consolidated implementation schedule be developed once all of the CMOM Program deliverables have been submitted.

On March 19, 2015, EPA/FDEP agreed to allow the County to submit a consolidated implementation schedule for all CMOM programs once all program documents have been submitted. At the September 17, 2015 CD Program Monthly Progress Meeting with EPA/FDEP, Miami-Dade requested a deadline of March 2016 for the submittal of the CMOM Programs Consolidated Schedule of Implementation Activities. EPA/FDEP agreed to the requested deadline. On March 31, 2016, the CMOM Programs Consolidated Implementation Schedule was submitted to EPA and FDEP for review and approval.

On March 28, 2017, WASD, EPA and United States Department of Justice ("DOJ") held a teleconference. At that teleconference, it was agreed that an updated CMOM consolidated schedule will be submitted 30 days after all CMOM Programs have been approved. This item is pending approval of the WWTP OMP.

Upon submittal of the CMOM Programs Consolidated Schedule of Implementation Activities, the County will comply with the schedule and report on the progress in future semi-annual and annual reports as required by the CD.

#### **4.2.1 Specific Capital Improvement Projects (“CIPs”) Program – Paragraph 19(i)**

The County has identified certain rehabilitation projects that are intended to address conditions currently causing SSOs or contributing to NPDES permit violations. In accordance with Paragraph 19(i), these specific capital improvements are identified and described in the Work Plan set forth in Appendix D of the CD. A narrative summary of these CIPs and their significant activities for the previous calendar year can be found in Tables A-3.1, A-3.2, and A-3.3 for the WWTPs; Tables A-4.1 and A-4.2 for the WCTLs; and Table A-5 for the Sewer Pump Station Systems included in Appendix A.

**Table 1-1 EPA/FDEP Submittals of CD CMOM Programs**

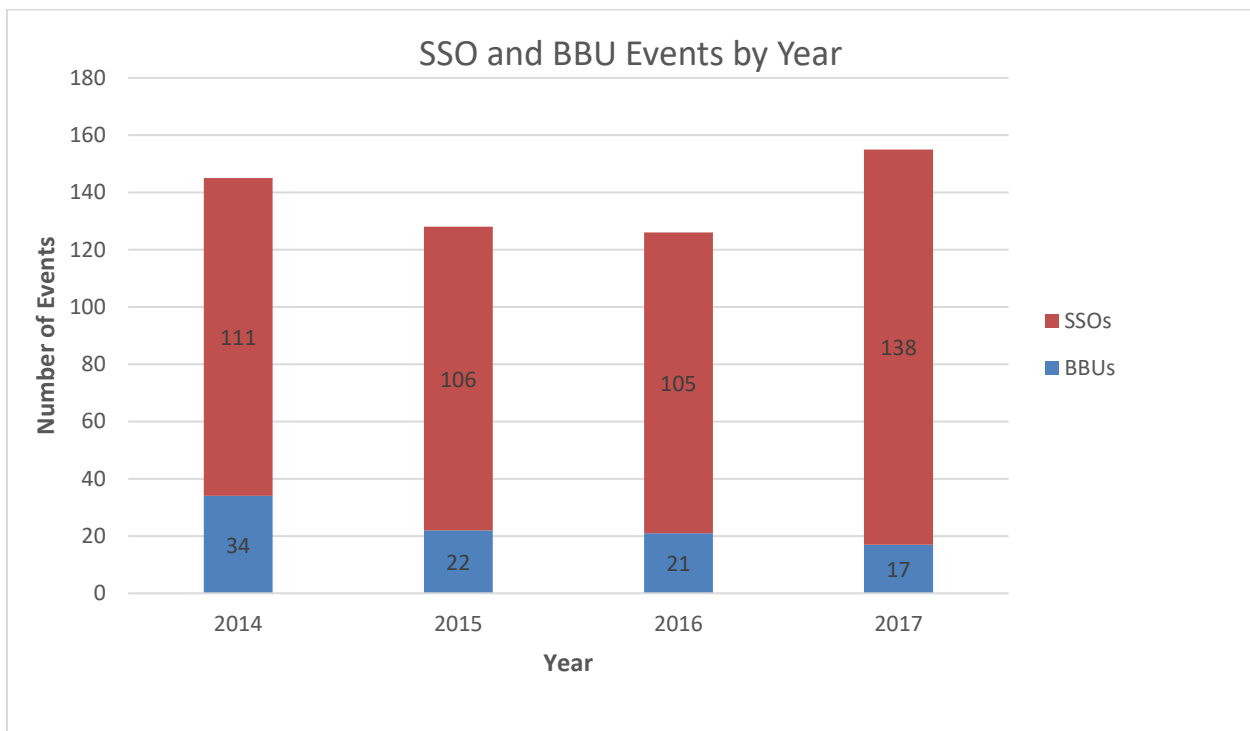
CD CMOM Programs	CD Reference	CD Deadline	Completion or Submittal Date	EPA/FDEP Comments	County Response Date	EPA/FDEP Approval
Financial Analysis Program	Section VI, para 19(j)	12/8/2014	12/4/2014	11/25/2015	1/29/2016	10/17/2017
Fats, Oils and Grease (FOG) Control Program	Section VI, para 19(a)	6/8/2015	6/8/2015	12/28/2016	5/1/2017	9/7/2017
Sewer Overflow Response Plan	Section VI, para 19(b)	7/6/2015	7/2/2015	1/24/2017	3/28/2017	8/15/2017
Information Management System	Section VI, para 19(c)	12/7/2015	12/4/2015	2/28/2017	5/17/2017	10/17/2017
Sewer System Asset Management	Section VI, para 19(d)	10/6/2015	10/6/2015	1/24/2017	3/28/2017	10/17/2017
Gravity Sewer System Operations and Maintenance Program	Section VI, para 19(e)	2/6/2015	2/6/2015	7/1/2016	8/12/2016	10/17/2017
Pump Station Operations and Preventative Maintenance Program	Section VI, para 19(f)	4/6/2015	4/2/2015	6/24/2016	7/29/2016	10/17/2017
Force Main Operations, Preventative Maintenance and Assessment/Rehabilitation Program	Section VI, para 19(g)	8/6/2015	8/6/2015	2/23/2017	5/17/2017	10/17/2017
Force Main Rehabilitation/Replacement Program	Section VI, para 19(g)(iv)	12/7/2015	12/4/2015	2/23/2017	5/17/2017	9/28/2017
WWTP Operations and Maintenance Program	Section VI, para 19(h)	5/6/2015	5/5/2015	8/22/2016 11/20/2017 (RAI) 11/27/2017 (Hauled Waste Manual)	11/21/2016 1/29/2018 (RAI) 2/13/2018 (Hauled Waste Manual)	Pending

## 5.0 Sanitary Sewer Overflow Analysis

A trends analysis of the number, volume, average duration, and cause of the County's Sanitary Sewer Overflow (SSO) and Building Backup (BBU) events was conducted for the previous three Calendar Years and the current reporting period (January 1, 2014 through December 31, 2017). The data gathered in accordance with the CD quarterly reporting requirements since the effective date of the CD are also depicted in the figures below.

### 5.1 Number of Sanitary Sewer Overflows

Figure 5.1 provides a summary of the number of SSO and BBU events by year.



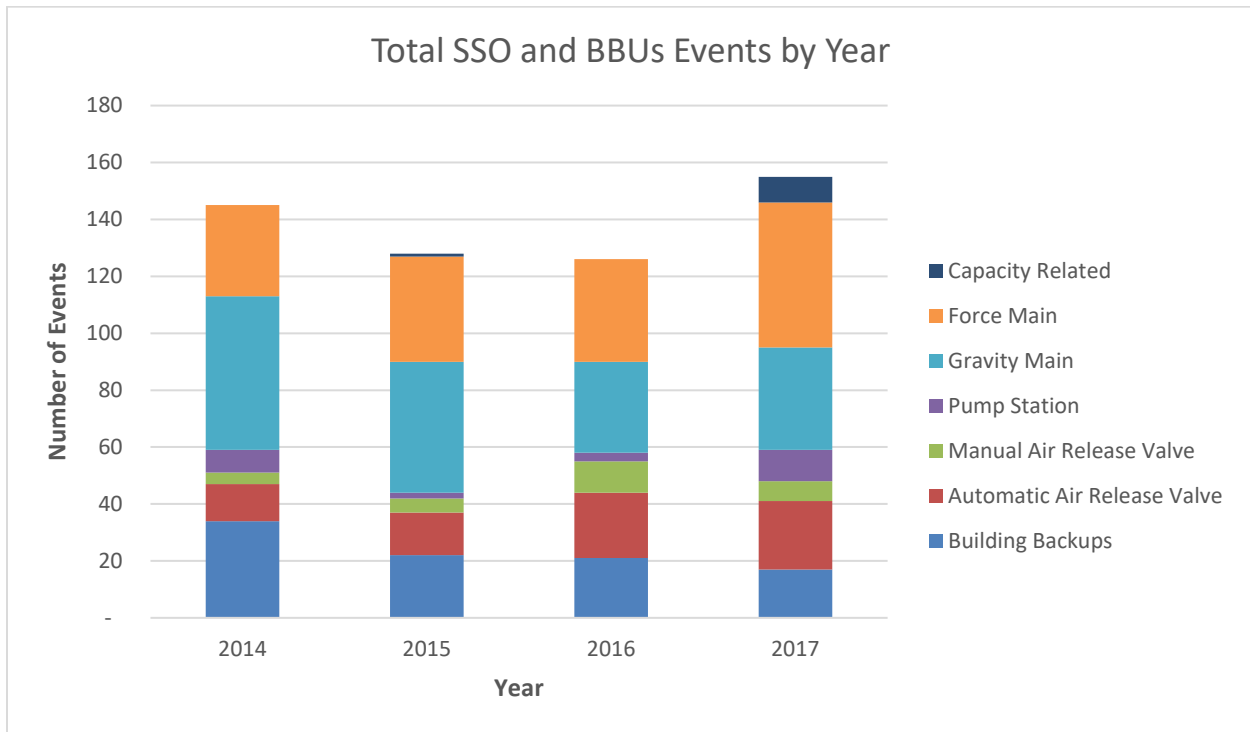
**Figure 5.1 – SSO Events by Year**

As shown in Figure 5.1, there was an increase in the number of SSOs during the reporting period. In 2017, the County experienced 138 SSOs, 33 more than in 2016, an increase of 31%. To date, this is the highest number of events during a reporting period since the inception of these annual reports.

It should be noted that 2017 brought unique challenges that impacted WASD's operations and corresponding number of SSO's during the calendar year. 2017 exhibited an unusually high amount of rainfall (>80 inches) over the course of the year, significantly higher than the historical average of approximately 60 inches. During the year, Miami-Dade County also experienced a major hurricane (Irma) which led to numerous SSO's. Based on these factors, WASD considers that if not for the unique climatic conditions of 2017, and numerous cases of third party contractor damage to WASD assets, declining SSO trends would have continued.

The number of BBUs in 2017 continued its trend downward with 17 events, four less events than in 2016, a reduction of 19%. When compared to 2014, the reduction amounts to 50% less BBUs in 2017. The following graphs are intended to provide the reasons this break occurred in the decreasing number of SSOs trend.

Figure 5.2 provides a summary of the number of SSO and BBU events by year and source.



**Figure 5.2 - SSO Events by Source**

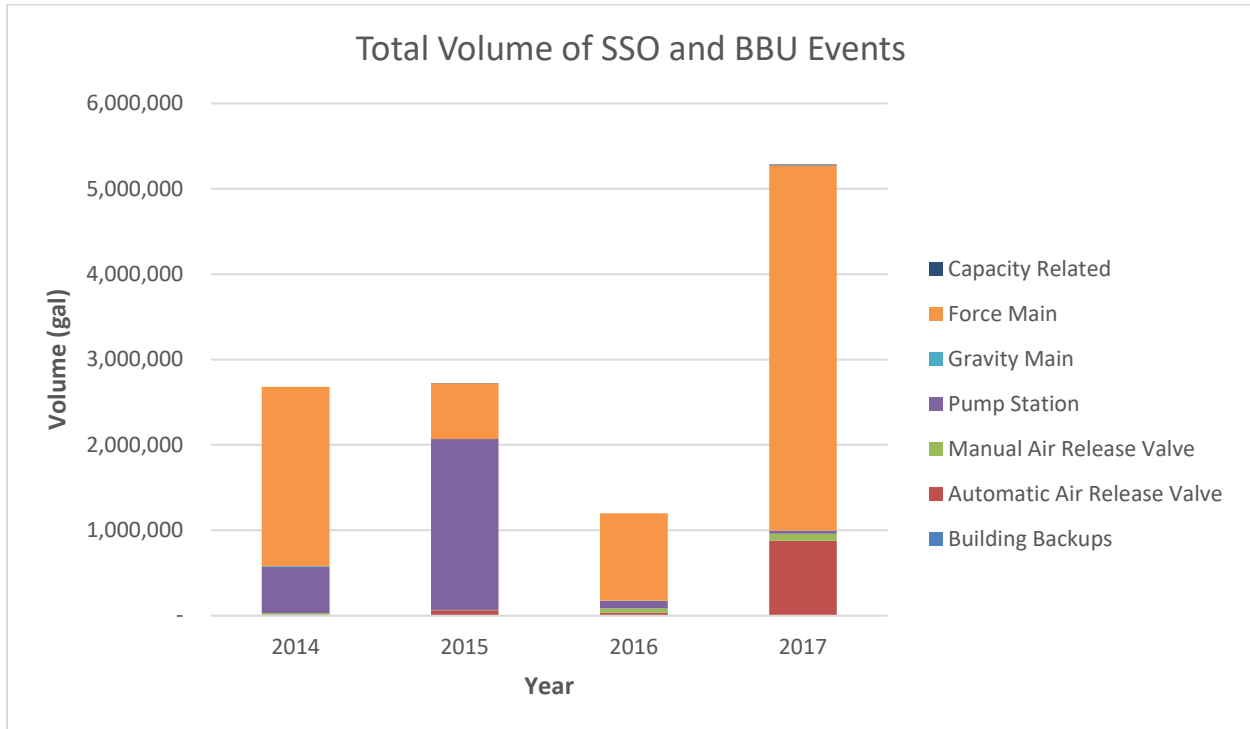
Figure 5.2 illustrates the distribution of SSOs by source and how each source contributed to the total number of SSOs for each year. As discussed above, BBUs decreased by 19% between 2016 and 2017. Automatic air release valve (AARV) related incidents increased by 4%, i.e. from 23 in 2016 to 24 in 2017. The Wastewater Collection and Transmission Line Division (WWCTLD) has identified this trend during their monthly spill evaluation meetings and is monitoring the data. It's been determined that the failures are attributable to a manufacturer design defect. These AARVs are being targeted and phased out of the Wastewater Collection and Transmission System (WCTS).

Manual air release valve (ARV) incidents decreased from 11 in 2016 to seven in 2017, a 36% reduction. Pump station (PS) related SSO incidents rose from three in 2016 to 11 in 2017, this is an increase of 267%. This increase can be partly attributed to power outages and physical damage to some PSs due to Hurricane Irma. In addition, nine capacity related incidents were reported in 2017, three of which were reported as due to Hurricane Irma overwhelming the WCTS and two due to unusual heavy rain falls in October 2017. Gravity main related SSOs events increased from 32 in 2016 to 36 in 2017, a 13% increase. Also, 27 out of the 36 gravity main related SSO events were due to grease blockages. As indicated in the New CMOM section of this report, The EPA/FDEP approved the FOG Control Program on September 7, 2017. The implementation of this program should cause this number to decrease in 2018. Force main SSOs

events increased by 42%, i.e. from 36 in 2016 to 51 in 2017. Of the 51 force main events 19 were contractor related. Due to the increase in the volume of work on the infrastructure and more CD CIPs entering the construction phase, more incidents of this nature occurred than previous years, i.e. 15 events in 2016, 11 in 2015, 10 in 2014 and 13 in 2013.

## 5.2 Volume of Sanitary Sewer Overflows

Figure 5.3 shows the total SSO volume within each categorized source. A full breakdown of all SSO volumes is available in Appendix B of this document.



**Figure 5.3 - Total Volume of SSOs**

Figure 5.3 illustrates the total SSO volume by source through the years and how much SSO volume was contributed by each source in the WCTS.

The volume released from all building back-ups in 2017 was 19% lower when compared to 2016. With regard to AARVs, the volume released in 2017 was 876,830 gallons, a spike of 2430% when compared to 2016, where only 34,657 gallons of sewage were discharged. Noteworthy is that one AARV incident alone contributed to 769,032 gallons discharged, 88% of the total of AARV related releases. The failure of an improperly fused AARV connection to a 63" HDEP lined force main was the cause of this incident. Manual air release valves volume discharge also increased from 2016 to 2017, i.e. 53,502 gallons and 81,361 gallons, respectively. This amounts to a 52% increase in volume. Pump stations recorded a decrease of 59% in volume released from SSOs from 86,065 gallons in 2016, to 35,027 gallons in 2017. In this case, despite the increase of SSO incidents at pump stations, the volume of sewage released by these sources decreased. Gravity main SSO volume discharged between 2016 and 2017 rose from 1,008 gallons to 5,763 gallons respectively, a 472% increase.

The majority amount of volume discharged in 2017 was contributed by force main related SSOs.



As will be described in Section 5.4, the majority of this large increase relative to prior years is related to a few inadvertent large force main breaks by Contractors. Although force mains always constitute a large portion of the total volume released each year, the volume released by force mains in 2017 is larger than the total annual SSO volume for each of the three previous years, and larger than all SSO volumes from 2015 and 2016 combined. Capacity related SSO volumes released in 2017 amounted to 9,815 gallons. As mentioned in the previous sections, most of these events were attributed to Hurricane Irma and unusual heavy rain falls.

### 5.3 Average Duration of Sanitary Sewer Overflows

The average duration of SSO events can be viewed in Table 5.1. For Building Backups, the “Time” and “Duration” parameters are seldom characteristically the same. As a result, Building Backups have not been included in the calculations of average duration.

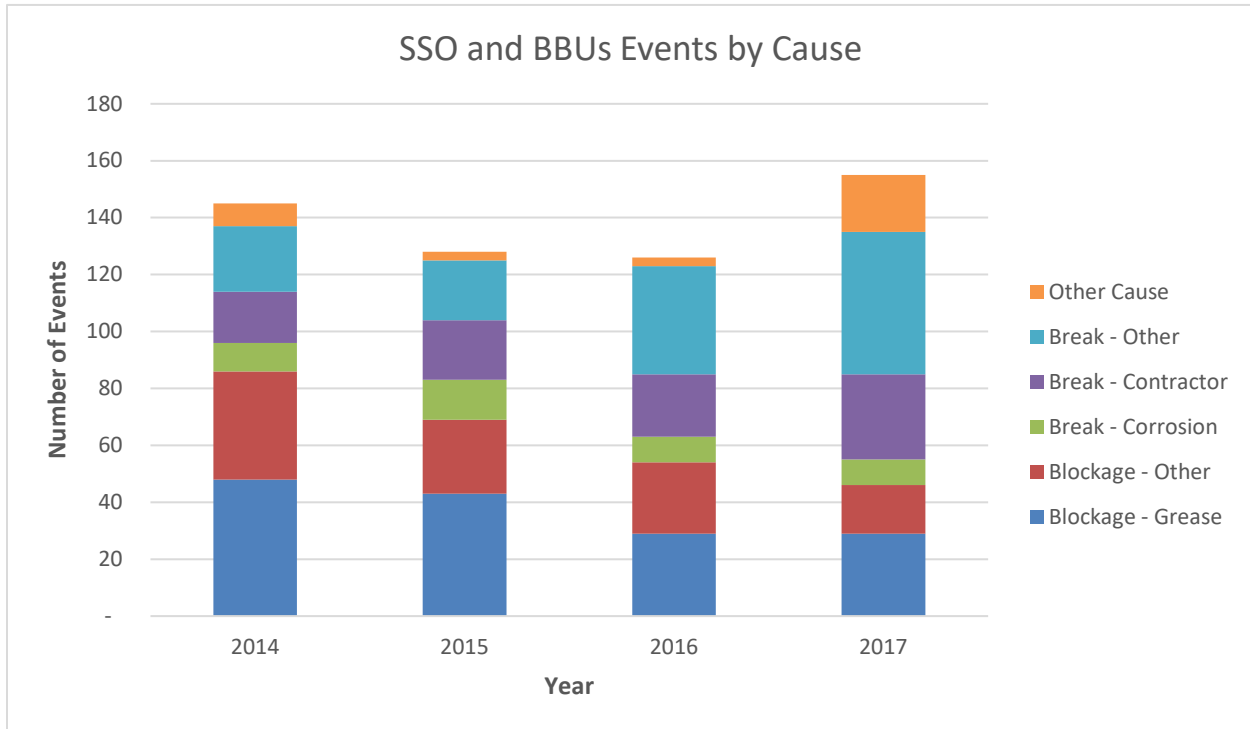
**Table 5.1 - Average Duration of SSO Events**

<b>Year</b>	<b>Average Duration (HH:MM)</b>	<b>Median Duration (HH:MM)</b>
2014	02:10	N/A
2015	04:36	01:41
2016	02:07	01:30
2017	02:18	01:45

Table 5.1 contains the average (arithmetic mean) and median (the number in the middle of the set of given numbers) for the duration of all SSOs in the reporting period. It is worth noting that despite the increase in the number of SSO incidents, and substantial increase in the volumes released, the average and median duration for all SSOs in the reporting period remained within the range of previous reporting periods.

## 5.4 Cause of Sanitary Sewer Overflows

A cause breakdown of SSOs is shown in Figure 5.4. A full breakdown of SSO causes is available in Appendix B of this document.

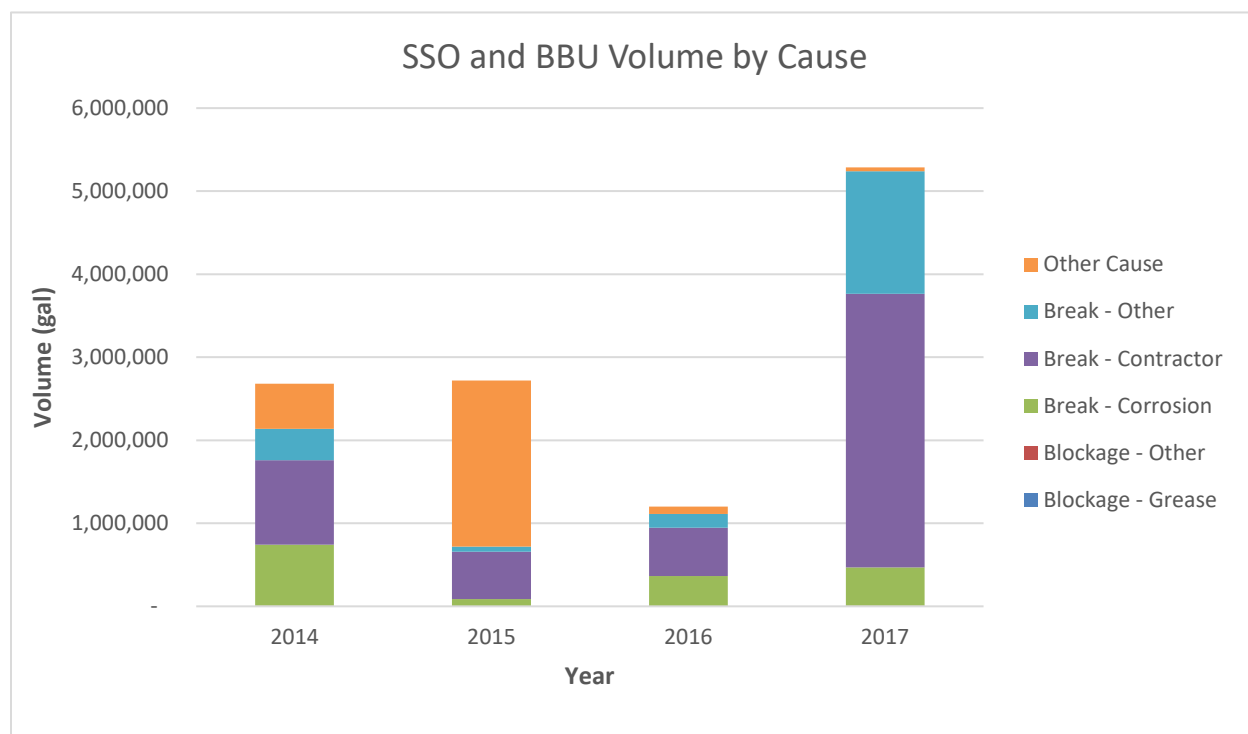


**Figure 5.4 - SSO Events by Cause**

The number of SSOs caused by grease blockages in the system remained constant between 2016 and 2017 at 29 incidents. Blockages in the system caused by other means were reduced by 32%, i.e. from 25 in 2016 to 17 in 2017. Broken equipment due to corrosion remained constant between 2016 and 2017 at nine incidents. Contractor related breakages increased from 22 in 2016 to 30 in 2017. As discussed above, the increase in this type of incident is attributed to the repair and replacement work on the WCTS. However, this increase in contractor related incidents is expected to decrease with the implementation of the SORP, specifically the annual Contractor Outreach Workshop. Breakages attributed to other causes include Building Back-Up (laterals); Malfunction, Riser/Nipple, Valve, and Vandalism related to AARV and ARVs; Force Mains broken due to vandalism and bedding settlement related causes; and Gravity and Force Mains broken by other than Contractor and/or Corrosion causes. This field grew from 38 incidents in 2016 to 50 in 2017, a 32% rise.

The amount of SSOs classified as “Other Cause” may include pump station related SSOs as FPL Service Outage, Pump, Pipe/Pump out, Electrical, Level/Bubbler, Bypass Operation, Contractor Involved, SCADA, and other issues; and Capacity Related SSOs as the ones caused by Rain, Surcharged Conditions, and Pressure. These types of incidents increased substantially between 2016 and 2017 from three to 20 respectively, a 567% spike. Many of the SSOs related to Hurricane Irma are included in this field.

Figure 5.5 shows the total volume of all SSOs broken down by the cause of the SSO. A full breakdown of all SSO volumes is available in Appendix B of this document.



**Figure 5.5 – SSO Volume by Cause**

As figure 5.5 shows, the volume discharged from SSOs in 2017 surpasses that of any of the three previous years. In 2017, 5,284,836 gallons of sewage were discharged from the system compared to 2016, when 1,200,206 gallons were released. The increase in volume is 340%.

Grease related blockages in 2017, caused spills that amounted to 1,851 gallons. In 2016, that volume was 1,128 gallons. This increase of 723 gallons between the reporting periods represents a 64% rise. Blockages caused by other means saw even larger volumes discharged for 2017. The 1030% increase stems from the fact that in 2016, 330 gallons of sewage were spilled due to SSOs, as opposed to 3,728 gallons in 2017. Corrosion breakages in 2017 exceeded those of 2016 by 99,362 gallons, representing a 27% increase.

Breakages attributed to contractors rose from 582,408 gallons spilled in 2016 to 3,295,319 gallons in 2017. A 466% augmentation of volume released or 2,712,911 more gallons. It should be noted that two Contractor incidents account for 2,298,483 gallons of the total volume discharged in 2017. The subtraction of these two outlier incidents brings the total 2017 volume discharged to 996,836 gallons which is more in line with previous years' total volumes. Total SSO volume from Contractor Related issues in 2017, alone, is greater than any of the Total Annual SSO volumes for each of the three previous years. These events are not related to aging or failing infrastructure and should be preventable. The Annual Contractor Outreach Workshops should result in a decrease of these types of SSOs.

Breakages attributed to other causes increased by 785% from 2016 to 2017, i.e. 1,309,459, more gallons were released in 2017 than 2016. Comparison between years 2014 and 2017 shows an

increase of 291% in volume released, equating to 1,098,213 more gallons spilled in 2017 than 2014.

SSOs that occurred due to causes other than blockages and breakages in 2017 released 41,223 less gallons than in 2016. This results in a 48% decrease in the volume spilled for this category. It may include pump station related SSOs as FPL Service Outage, Pump, Pipe/Pump out, Electrical, Level/Bubbler, Bypass Operation, Contractor Involved, SCADA, and other issues; and Capacity Related SSOs as the ones caused by Rain, Surcharged Conditions, and Pressure.

## 6.0 Amendment to Last Annual Report

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There are no amendments to the 2016 Annual Report

**Appendix A**

**CMOM Programs Significant Activities / Key Accomplishments**

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**Table A-1 Continuing CMOM Programs January 1, 2017 through December 31, 2017**

CMOM Program	CMOM Program Status	CD Reference	Significant Activities / Key Accomplishments
Adequate Pumping, Transmission and Treatment Capacity Program	Work on the program is ongoing.	Section VI, Paragraph 18(a)	<ol style="list-style-type: none"> <li>1. Monitored and tracking the monthly submittal of the Elapsed Time (ET) readings by each Volume Sewer Customer Utility.</li> <li>2. Placed under Moratorium pump stations that exceeded the maximum 10 hours pursuant to the Nominal Average Pump Operating Time (NAPOT).</li> <li>3. Removed from Moratorium status pump stations for which the utility completed and certified the Remedial Action Plans (RAP) to bring below the 10 hours pursuant to the Nominal Average Pump Operating Time (NAPOT).</li> <li>4. Completed monthly reports for the Certification of NAPOT for each Volume Sewer Customer Utility.</li> <li>5. Sent copies of the Certification of Nominal Average Pump Operating Time (NAPOT) to each Volume Sewer Customer Utility.</li> <li>6. Upgraded ET system/database to automatically place pump stations with missing ET or duplicate readings under Incomplete Moratorium (IN).</li> <li>7. Upgraded ET system/database to automatically place pump stations under Incomplete Moratorium (IN) for failure to submit ET readings by the 14th of the following month.</li> <li>8. Continued to use the ET system/database to automatically place pump stations under Incomplete Moratorium (IN) if a Triplicate Reading is detected.</li> <li>9. Provided the RER-DERM Web page link to all Volume Sewer Customer Utilities to have access to the Nominal Pump Operating Time (NAPOT) information.</li> <li>10. Completed quarterly Utility Round Table (URT) Meetings to discuss/review compliance issues within the County.</li> <li>11. Issued construction permits for the upgrade of multiple utility pump stations.</li> <li>12. Issued Certification of Completion for the upgrade of multiple utility pump stations.</li> <li>13. Completed reviews of the Sanitary Sewer Evaluation System, Phase 3, for all utilities.</li> <li>14. Completed the development plan to upgrade the system/database to capture ET readings for ALL-PUMPS ON and Midnight-5 am hours for all pump stations with 26 HP and larger pumps.</li> </ol>
Pump Station Remote Monitoring Program	Work on the program is ongoing.	Section VI, Paragraph 18(b)	Work on the program has been ongoing.

**Table A-1 Continuing CMOM Programs January 1, 2017 through December 31, 2017**

CMOM Program	CMOM Program Status	CD Reference	Significant Activities / Key Accomplishments
Wastewater Collection and Transmission Model	Work on the Model is ongoing.	Section VI, Paragraph 18(c)	<p>The County fully implemented the CD requirements listed in Section VI, paragraph 18(c)(i)-(iv) and continued calibration work. Completed evaluation of operating conditions for development of design consultant scope of work. Completed additional hydraulic modeling for design validation for the following CD Projects: 5.17(2), 5.17(3), 5.18(1), 5.18 (2), 5.18 (3), 5.18(4), 5.18(5) and 5.18 (6). Required documentation for DERM/RER Permitting Process was provided by CD PMCM Team. In addition, developed draft Point of Connection letters to be submitted to RER for permitting for the CD CIP 5.18: PS0441, PS0491, PS0710, PS0827 &amp; PS0852.</p> <p>Assisted CD PMCM Construction Managers in additional evaluations of alternate operation strategies for maintenance of service during construction activities for CD Projects 4.5, 4.8, 4.10 and 5.03. The evaluations were documented in technical memorandums that were submitted to DERM/RER as part of the permitting process.</p> <p>Continued update of WCTS Hydraulic Model network geometry in order to match the current conditions of the system, these updates include latest information. Updates included the following:</p> <ul style="list-style-type: none"> <li>• Addition of Private Pump Stations</li> <li>• Update Node and Flood Types</li> <li>• Update Ground Levels</li> <li>• Update Floodable Area</li> <li>• Update Solution Model Type</li> <li>• Update Pump Station Information .</li> </ul> <p>Continued efforts to update hydraulic model with information available for CD Projects, Ocean Outfall Legislation Projects, Master Plan Projects, Pump Station Improvement Projects as well as New Development Projects in an effort to maintain the most up to date projection scenarios for years 2020, 2025 and 2035 in the Pump Model.</p>



**Table A-1 Continuing CMOM Programs January 1, 2017 through December 31, 2017**

CMOM Program	CMOM Program Status	CD Reference	Significant Activities / Key Accomplishments
Wastewater Collection and Transmission Model <b>(continued)</b>	Work on the Model is ongoing.	Section VI, Paragraph 18(c)	<p>Completed first stage calibration of WASD WCTS Hydraulic Model which involves evaluation of flows received at Wastewater Treatment Plants.</p> <p>Completed development of WCTS model sub-networks for second stage of hydraulic model calibration. This entails the development smaller portions of the network for calibration of Lift Stations, Regional Stations and Booster Stations.</p> <p>The CD Hydraulic Modeling team in coordination with WASD and CMOM design consultant, completed the development of a GIS to Hydraulic Model Integration Procedure to automatically convert the GIS format WCTS Network to InfoWorks ICM (Modeling) software to meet the 90-day incorporation deadline.</p> <p>Completed pump station inflow calculation for all pump stations through implementation of flow calculation algorithm based on 3-min wet well level SCADA data. In addition, WCTS flow monitoring will be performed based on flow meter manual readings comparison with SCADA data.</p> <p>Initiated development of 12-Basin Pilot Study for implementation of Rainfall Derived Infiltration and Inflow (RDII) WCTs Hydraulic Model Module. This effort consists on the following activities:</p> <ul style="list-style-type: none"> <li>• Verification of invert data elevation for the gravity system</li> <li>• Development of hydraulic model networks</li> <li>• Calculation of population data for each manhole sub-catchment</li> <li>• Development and calibration of infiltration parameters</li> <li>• Validation of flow calculation at wet well for each basin</li> <li>• Calibrate sensitivity of infiltration parameters based on effect of repairs in network.</li> </ul>

**Table A-1 Continuing CMOM Programs January 1, 2017 through December 31, 2017**

CMOM Program	CMOM Program Status	CD Reference	Significant Activities / Key Accomplishments
Wastewater Collection and Transmission Model <b>(continued)</b>	Work on the Model is ongoing.	Section VI, Paragraph 18(c)	<p>Completed efforts associated with collection of required data for calibration of hydraulic model according to Paragraph 18(c)(iv). Some of tasks associated with this objective included:</p> <ul style="list-style-type: none"> <li>• Selection of Calibration Events</li> <li>• SCADA data compilation for comparison with model results.</li> <li>• Development of RTC for selected calibration events.</li> </ul> <p>This effort also includes the adjustment of model inflows for public pump stations to accommodate the additional flows associated with PPS. The update of PPS that manifold into the pressurized system includes the following breakdown:</p> <ul style="list-style-type: none"> <li>• Total of 476 PPS added systemwide</li> <li>• 179 PPS added with pump curve</li> <li>• 297 PPS added as direct inflow</li> </ul> <p>Continued inclusion of all gravity sewer network elements on Hydraulic Model. During this period, the CD PMCM team worked on the development of a tool that populates missing invert data and eliminates adverse slopes conditions. This tool processes the entire WASD gravity system before inclusion in the model software.</p> <p>The CD PMCM Team developed a calibration criteria document that outlines the standards that will be applied to for the calibration of the different networks elements and hydraulic variables of the WASD Sewer Hydraulic Model. The document was based on EPA WaPUG (Wastewater Planning Users Group) and previous experience by technical leads from the CD PMCM Team on hydraulic model calibration for wastewater collection systems.</p>

**Table A-1 Continuing CMOM Programs January 1, 2017 through December 31, 2017**

CMOM Program	CMOM Program Status	CD Reference	Significant Activities / Key Accomplishments
Wastewater Collection and Transmission Model <b>(continued)</b>	Work on the Model is ongoing.	Section VI, Paragraph 18(c)	<p>This document was submitted to WASD Planning Division for review.</p> <p>The CD Hydraulic Modeling team continued efforts associated with second stage (Hydraulic) calibration runs to evaluate accuracy of simulations of discharge pressure and flow at booster pump stations and regional wet well stations throughout the system. The hydraulic modeling team completed additional scenario runs based on modifications to all subnetworks for the hydraulic model, adjustments to the network were made based on evaluation of previous model simulations results comparison with SCADA data through the implementation of calibration spreadsheets.</p> <p>Through the first quarter of FY2018, the CD PMCM team achieved calibration results within calibration criteria standards at the regional level for wet weather flow simulations. The regional calibration networks were re-ensembled to continue calibration considering systemwide interconnectivity.</p> <p>The progress achieved on model calibration during FY2017 was documented in a report which included current calibration status for all system facilities, including Wastewater Treatment Plants (WWTP), regional wet well and booster stations as well as all terminal lift stations. The report also included the overall approach followed by the CD PMCM team in order to achieve calibration in a progression manner. All calibration results included in the report were associated with the calibration criteria document submitted previously to WASD Planning Division. The calibration status report for FY2017 was submitted to WASD Planning Division for review.</p>

**Table A-1 Continuing CMOM Programs January 1, 2017 through December 31, 2017**

CMOM Program	CMOM Program Status	CD Reference	Significant Activities / Key Accomplishments
Spare Parts Program	Work on the program is ongoing.	Section VI, Paragraph 18(d)	<p>This program is a continuing inventory management program for spare parts for the WCTS and WWTPs.</p> <p>The existing Spare Parts Inventory Management Program will be enhanced as the following new CMOM Programs are implemented: Gravity Sewer System Operations and Maintenance Program; Pump Station Operations and Preventative Maintenance Program; Force Main Operations, Preventative Maintenance and Assessment/Rehabilitation Program; and the Wastewater Treatment Plants Operations and Maintenance Program. The existing program will be enhanced as the new CMOM Programs are implemented. Work on the program is ongoing and will continue beyond 2018.</p>
Volume Sewer Customer ("VSC") Ordinance Program	Work on the program is ongoing.	Section VI, Paragraph 18(e)	<ol style="list-style-type: none"> <li>1. RER-DERM reviewed SSO reports from all VSCs.</li> <li>2. RER-DERM placed moratoriums within the PS basin when required by Chapter 24</li> <li>3. RER-DERM received 2017 Electronic GIS Sanitary Sewer Atlas with As-Built from all VSCs.</li> <li>4. RER-DERM received Sanitary Sewer Evaluation Surveys from All Utilities in March 2017.</li> <li>5. RER-DERM &amp; WASD reviewed/testing Electronic Sanitary Sewer GIS Atlas submitted by VSCs.</li> <li>6. RER-DERM reminded all VSC about the submittal of the 2017 Electronic GIS Sanitary Sewer Atlas As-Built UPDATE due by 1/06/2018.</li> <li>7. RER-DERM reviewed the Sanitary Sewer Evaluation Surveys from All Utilities. The outcome of the reviews were sent to all VSCs on August, 16,2017.</li> <li>8. Moratoriums were placed on VSCs that were reported exceeding the 5,000 GPDIM Code standard for the Infiltration/Inflow.</li> <li>9. Utilities responded to the RER-DERM Letter dated August, 16,2017.</li> <li>10. RER-DERM held two (2) Utility Round Table (URT) meetings with All VSCs.</li> <li>11. RER-DERM received the Illicit Stormwater Discharges report from all VSCs.</li> </ol>

**Table A-2 New CMOM Programs January 1, 2017 through December 31, 2017**

CMOM Program	CMOM Program Status	CD Reference	Significant Activities / Key Accomplishments
Fats, Oils and Grease (FOG) Control Program	Approved by EPA/FDEP on September 7, 2017	Section VI, Paragraph 19(a)	<p>Response to EPA and FDEP comments on the FOG Control Program was submitted on May 1, 2017. The FOG Control Program and FOG Ordinance were approved by the EPA and FDEP on September 7, 2017. Work on the program was ongoing.</p> <ol style="list-style-type: none"> <li>1. Completed in-house training of the FOG Control Technicians.</li> <li>2. Completed the "Did You Know" flyers. Flyers were distributed by DERM Plan Review, FOG Technicians/Inspectors, and Liquid Waste Transporters.</li> <li>3. Completed the FOG Outreach Program, including workshops (e.g., FOG Round Table and Utility Round Table meetings).</li> <li>4. Continued to receive monthly hauled waste disposal data from Pompano/Broward.</li> <li>5. Completed the update of the FSE FOG Operating Permit (GDO) permit conditions, including eManifest reporting as optional with reduced paperwork - but mandatory starting January 2018.</li> <li>6. Continued enforcement (and compliance assistance) with NGTs Food Service Establishments (FSE).</li> <li>7. Continued / implemented the new Liquid Waste Transporter (LWT) permits conditions which basically referred to the no commingling of the waste and to the electronic reporting.</li> <li>8. Continued / Implemented "NO COMMINGLING of FOG".</li> <li>9. Continued / Implemented eManifest for LWTs April 1, 2017.</li> <li>10. The FOG Control Program and FOG Ordinance were approved by EPA/FDEP on September 7, 2017.</li> <li>11. Final FOG Ordinance was sent to BCC in December 2017.</li> </ol>

**Table A-2 New CMOM Programs January 1, 2017 through December 31, 2017**

CMOM Program	CMOM Program Status	CD Reference	Significant Activities / Key Accomplishments
Sewer Overflow Response Plan (SORP)	Approved by EPA/FDEP on August 15, 2017	Section VI, Paragraph 19(b)	<p>EPA and FDEP sent out comments on the Program on January 24, 2017. Response to EPA and FDEP comments on the SORP was submitted on March 28, 2017. The SORP was approved by the EPA and FDEP on August 15, 2017. Work on the program was ongoing.</p> <p>On August 15, 2017, EPA/FDEP also sent comments on the Standard Operating Procedures for Calculating the Recovered SSO Volume. The letter was received by WASD on August 18, 2017. WASD submitted the Response to EPA/FDEP Comments on the Standard Operating Procedures for Calculating the Recovered SSO Volume on October 17, 2017. Work on the program was ongoing.</p> <ol style="list-style-type: none"> <li>1. Developed GIS viewer application to identify Repeat SSO.</li> <li>2. Continued the development of Consolidated SSO Database, and revised and completed SORP Appendix E list of lowest manhole elevation each pump station basin.</li> <li>3. Initiated the SSO Volume Estimation Training for SSO Response Personnel on August 28, 2017, before the compliance date of September 1, 2017.</li> </ol>
Information Management System (IMS) Program	Approved by EPA/FDEP on October 17, 2017.	Section VI, Paragraph 19(c)	<p>EPA and FDEP sent out comments on the Program on February 28, 2017. Response to EPA and FDEP comments on the IMS was submitted on May 17, 2017. The IMS program was approved by the EPA and FDEP on October 17, 2017. Work on the program was ongoing.</p> <p>To enhance Construction Contracts Management project close-out business practices, WASD has been working on the transition of their PCTS software from Proliance to e-Builder.</p>

**Table A-2 New CMOM Programs January 1, 2017 through December 31, 2017**

CMOM Program	CMOM Program Status	CD Reference	Significant Activities / Key Accomplishments
Geographic Information Systems (GIS) Program	Approved by EPA/FDEP on October 17, 2017.	Section VI, Paragraph 19(c)(x)	<ol style="list-style-type: none"> <li>1. GIS to Hydraulic Model Interface. - Completed.</li> <li>2. Manhole rim and pipe inverts and their inclusion into GIS - Completed - Remaining data not obtained in the field will be collected as an implementation activity to be added in the CMOM Consolidated Implementation Schedule.</li> <li>3. Streamlining the manual as-built to GIS process to satisfy 90 day requirement - Completed.</li> <li>4. GIS to Hydraulic Model Integration to satisfy 90 day requirement from GIS to Model - Completed.</li> <li>5. GIS Training Refresher Program - Completed - Training course, manual and online videos launched and continues to be offered by WASD HR several times a month.</li> <li>6. Electronic As-Built Submittal -Contract and Donation as-builts being received electronically. Approval/rejection process also being tracked electronically.</li> <li>7. Completion of GIS Backlog - Completed 193 Sewer projects: 25 miles of pipe modified or added; 1786 above ground assets modified or added. GIS backlog has been completed. Completion of 469 Water projects: 209 miles of pipe modified or added; 11656 above ground assets modified or added.</li> </ol> <p>As agreed on May 25, 2017, during the EPA/FDEP/WASD Monthly Teleconference Meeting, WASD has been tracking all as-builts and Active As-built Supplemental Information System (“AAS IS”) forms, including new and corrected asset attribute data to GIS since June 6, 2017. See the tracking metrics for these requirements below:</p>

**Table A-2 New CMOM Programs January 1, 2017 through December 31, 2017**

CMOM Program	CMOM Program Status	CD Reference	Significant Activities / Key Accomplishments															
Geographic Information Systems (GIS) Program <b>(continued)</b>	Approved by EPA/FDEP on October 17, 2017.	Section VI, Paragraph 19(c)(x)	<table border="1"> <caption>Approved Projects by Time Unit (Quarter vs. Percent)</caption> <thead> <tr> <th>Quarter / Year</th> <th>Under 90 Days (%)</th> <th>Over 90 Days (%)</th> </tr> </thead> <tbody> <tr> <td>Q2 2017</td> <td>35.53</td> <td>64.47</td> </tr> <tr> <td>Q3 2017</td> <td>80</td> <td>20</td> </tr> <tr> <td>Q4 2017</td> <td>53.7</td> <td>46.3</td> </tr> <tr> <td>Q1 2018</td> <td>73.33</td> <td>26.67</td> </tr> </tbody> </table>	Quarter / Year	Under 90 Days (%)	Over 90 Days (%)	Q2 2017	35.53	64.47	Q3 2017	80	20	Q4 2017	53.7	46.3	Q1 2018	73.33	26.67
Quarter / Year	Under 90 Days (%)	Over 90 Days (%)																
Q2 2017	35.53	64.47																
Q3 2017	80	20																
Q4 2017	53.7	46.3																
Q1 2018	73.33	26.67																
Sewer System Asset Management Program (SSAMP)	Approved by EPA/FDEP on October 17, 2017.	Section VI, Paragraph 19(d)	<p>EPA and FDEP sent out comments on the Program on January 24, 2017. Response to EPA and FDEP comments on the SSAMP was submitted on the CD compliance date of March 28, 2017. The SSAMP was approved by the EPA and FDEP on October 17, 2017. Work on the program was ongoing.</p> <p>WASD has brought on board a Consultant to assist them in developing a Department asset management framework.</p>															
Gravity Sewer System Operations and Maintenance Program (GSSOMP)	Approved by EPA/FDEP on October 17, 2017.	Section VI, Paragraph 19(e)	<p>The GSSOMP was approved by the EPA and FDEP on October 17, 2017. Work on the program was ongoing.</p> <ol style="list-style-type: none"> <li>Submitted Gravity Sewer System (GSS) Evaluation of Corrosion Control Options Report to EPA and FDEP on March 31, 2017.</li> <li>Conducted a pilot program to monitor pH of sewage flow from select WASD WCTS locations.</li> <li>WWCTLD has deployed approximately twenty more Smart Covers to "hot spots" to closely monitor and prevent SSOs.</li> </ol>															



**Table A-2 New CMOM Programs January 1, 2017 through December 31, 2017**

CMOM Program	CMOM Program Status	CD Reference	Significant Activities / Key Accomplishments
Pump Station Operations and Preventative Maintenance Program (PSOPMP)	Approved by EPA/FDEP on October 17, 2017.	Section VI, Paragraph 19(f)	The PSOPMP was approved by the EPA and FDEP on October 17, 2017. Work on the Program was ongoing.  WASD initiated Corrective Maintenance activities prioritized by schedulers and supervisors.
Force Main Operations, Preventative Maintenance and Assessment/Rehabilitation Program (FMOPMARP)	Approved by EPA/FDEP on October 17, 2017.	Section VI, Paragraph 19(g)	EPA and FDEP sent out comments on the Program on February 23, 2017. Response to EPA and FDEP comments on the FMOPMARP was submitted on May 17, 2017. The FMOPMARP was approved by the EPA and FDEP on October 17, 2017.
Force Main Rehabilitation/Replacement Program (FMRRP)	Approved by EPA/FDEP on September 28, 2017.	Section VI, Paragraph 19(g)(iv)	EPA and FDEP sent out comments on the Program on February 23, 2017. Response to EPA and FDEP comments on the FMRRP was submitted on May 17, 2017. The FMRRP was approved by the EPA and FDEP on September 28, 2017.
WWTP Operations and Maintenance Program (WWTP OMP)	Pending EPA/FDEP approval.	Section VI, Paragraph 19(h)	On November 20, 2017, EPA/FDEP conditionally approved the WWTP OMP. WASD received the letter on November 27, 2017. On December 15, 2017, WASD requested an extension for the deadline for the response to EPA/FDEP request for additional information on the WWTP Operations and Maintenance Program (OMP) and the submittal of the updated and approved WWTP OMP. Response to EPA and FDEP Request for Additional Information was submitted on January 29, 2018. On October 31, 2017, RER-DERM submitted the Hauled Waste Guidance Manual to EPA/FDEP. EPA and FDEP sent comments on the Manual on November 27, 2017. Compliance date for the response is February 13, 2018. Work on the program was ongoing.  1. The Hauled Waste Program Training held by RER-DERM was conducted on March 28 and May 8, 2017 at the Overtown Village Building. 2. Random Sampling and Analysis Program was initiated and is in progress at the SD WWTP as part of the implementation of the Hauled Waste Program. The first random collection of hauled waste occurred on May 10, 2017 and continues as a standard practice. The random sample collection practice and procedures used at the SDWWTP are in accordance with EPA's Handbook Guidance Manual for Control of Hauled Wastes EPA-833-B-98-003. 3. RER-DERM/WASD Coordination Meetings were held at SD WWTP to discuss Hauled Waste Program and any issues or concerns related to illicit hauled waste or discharges to the plant or collection system.

**Table A-2 New CMOM Programs January 1, 2017 through December 31, 2017**

CMOM Program	CMOM Program Status	CD Reference	Significant Activities / Key Accomplishments
Specific Capital Improvement Projects (CIP)	Ongoing	Section VI, Paragraph 19(i)	A summary of these CIPs and their significant activities for the previous calendar year can be found in Tables A-3.1, A-3.2, and A-3.3 for the WWTPs; Tables A-4.1 and A-4.2 for the WCTLs; and Table A-5 for the Sewer Pump Station Systems included in Appendix A.
Financial Analysis Program (FAP)	Approved by EPA/FDEP on October 17, 2017.	Section VI, Paragraph 19(j)	The FAP was approved by the EPA and FDEP on October 17, 2017. Work on the program was ongoing.

**Table A-3.1 South District WWTP Capital Improvement Projects January 1, 2017 through December 31, 2017**

Project Number	Project Name	Project Description	Significant Activities /Key Accomplishments
1.1	Headworks	The SDWWTP Headworks project will be performed pursuant to Paragraph 19(i) and Appendix D. This project involves routine repairs on existing bar screen mechanisms in headwork structure prior to aerated grit chambers. Failure of bar screen mechanism could result in the blinding of the bar screen and cause an overflow of raw sewage from the plant headworks structure towards nearby surface waters, especially during peak wet weather.	Procurement continued.
1.2	Oxygen Production	The SDWWTP Oxygen Production project will be performed pursuant to Paragraph 19(i) and Appendix D. The purpose of this project is to replace and retrofit existing air compression units.	Design continued. Permitting was completed. Procurement continued.
1.3	Oxygenation Trains	The SDWWTP Oxygen Trains project will be performed pursuant to Paragraph 19(i) and Appendix D. The purpose of this project is to retrofit aeration mixers and rehabilitate and apply surface coating to the structure. This project was split into three child projects: (1) the structural rehab of the trains, (2) the electrical building expansions and (3) the mixer upgrades. and the mixer upgrades, which includes electrical and building upgrades. The structural rehab will be performed by in-house forces, and the mixer/building work will be designed and constructed in the future.	1.3(1) Design was completed. Procurement and construction for Train 5 - SD Oxygenation Trains Struct. Rehab was completed. Procurement for Train 6 commenced. 1.3(2) Design continued. 1.3(3) Design commenced.
1.4	Chlorine Building	The SDWWTP Chlorine Building project will be performed pursuant to Paragraph 19(i) and Appendix D. This project involves replacement of motor control centers, relocation of electrical panels and roof repairs of the old chlorine building where flushing water pumps are to remain.	Design commenced.
1.5	Effluent Pump Station	The SDWWTP Effluent Pump Station project will be performed pursuant to Paragraph 19(i) and Appendix D. This project involves an upgrade of the existing obsolete pump control systems, upgrade of the pumps drives and motors, and structural rehabilitation of pump station wet well, i.e. chambers 2 through 4. This project has been split into three separate child projects: (1) structural rehabilitation of the effluent pump wet wells; (2) the building improvements and equipment for the remaining pumps respectively; (3) the electrical equipment associated with pumps 7,8 and 9.	Design, permitting, procurement and construction continued. 1.5(1) Wetwells #1-4 - Structural Rehab Wetwells design was completed. Procurement for Wetwells #1 and #2 commenced. 1.5(2) Design continued. 1.5(3) Construction - SD Effluent PS Electrical Equipment (Pumps 7-9) was completed on January 23, 2016.

**Table A-3.1 South District WWTP Capital Improvement Projects January 1, 2017 through December 31, 2017**

Project Number	Project Name	Project Description	Significant Activities /Key Accomplishments
1.6	Gravity Sludge Thickeners	The SDWWTP Gravity Sludge Thickeners project will be performed pursuant to Paragraph 19(i) and Appendix D. The objective of this project is to provide a combined Thickening and Dewatering facility under one common building. The existing sludge concentrators will be abandoned and a centrifuge thickening system will be utilized.	This project is being performed under design-build delivery method. Procurement continued.
1.7	Digesters and Control Buildings	The SDWWTP Digester and Control Buildings project will be performed pursuant to Paragraph 19(i) and Appendix D. The project involves the rehabilitation or replacement of digester roofs; digester tank cleaning, structural rehabilitation and coating, and sludge mixers improvement. This will prevent the loss of digestion capacity and the decline in biogas/methane production for power generation. In addition, it will decrease the amount of unstable sludge that will require landfill disposal.	Design and permitting were completed. Procurement commenced.
1.8	Dewatering Facility	The SDWWTP Dewatering Facility project is being performed pursuant to Paragraph 19(i) and Appendix A. The purpose of this project is to replace the existing interim dewatering building with a new permanent dewatering facility. This will improve sludge dewatering and decrease solids accumulation in the secondary treatment process and prevent effluent limit violations.	This project is being performed under design-build delivery method. Procurement continued.
1.9	FOG Removal Facility	The SDWWTP FOG Removal Facility project is being performed pursuant to Paragraph 19(i) and Appendix D. The current FOG separation tank is not capable of adequately handling solids load, resulting in excess odors and unanticipated manual labor to remove large amounts of grit, settled soils and hardened grease. The purpose of this project is to improve separation operations to the recently constructed FOG removal facility. This will result in the conveyance of oils and floating grease to a beneficial use option process and the removal of excess grit and settled solids.	Procurement was completed and construction commenced.
1.10	Odor Control	The SDWWTP Odor Control project is being performed pursuant to Paragraph 19(i) and Appendix D. The purpose of this project is to upgrade the odor control facilities.	In validation/planning stage.
1.11	General Electrical	The SDWWTP General Electrical project is being performed pursuant to Paragraph 19(i) and Appendix D. This project involves the rehabilitation and replacement of electrical controls and wiring as needed throughout the plant.  This project schedule has been broken down into multiple child/sub projects to better reflect the way the work is being executed: 1) SDWWTP General Electrical In-House Construction. 2) Expand Switchgear A & B. 3) Replace Primary Feeders from Elect. Bldg. 1 to Substation 8.	1.11(1) Design continued. 1.11(2) Design commenced. 1.11(3) Design and permitting were completed and procurement commenced.

**Table A-3.1 South District WWTP Capital Improvement Projects January 1, 2017 through December 31, 2017**

Project Number	Project Name	Project Description	Significant Activities /Key Accomplishments
1.12	Chlorine Contact Chamber Structural	The SDWWTP Chlorine Contact Chamber Structural project is being performed pursuant to Paragraph 19(i) and Appendix D. This project involves the structural rehabilitation and coating of chlorine contact chambers 1 through 4.	<p>1.12(1) Chlorine Contact Chamber Actuator Replacement construction continued.</p> <p>1.12(2) Chlorine Contact Chamber Structural Rehab &amp; Sluice Gates Replacement, design was completed, procurement and construction commenced.</p>

**Table A-3.2 Central District WWTP Capital Improvement Projects January 1, 2017 through December 31, 2017**

Project Number	Project Name	Project Description	Significant Activities / Key Accomplishments
2.1	Electrical Improvements	<p>The CDWWTP Electrical Improvements project is being performed pursuant to Paragraph 19(i) and Appendix D. This project involves the rehabilitation and replacement of electrical controls and wiring as needed throughout the plant. This project schedule has been broken down into multiple components more accurately reflect the way the work is being executed:</p> <ol style="list-style-type: none"> <li>1) CDWWTP General Electric In-house Construction - Substations 1, 2, 7A, 8A, 9A &amp; 10A</li> <li>2) Substations 3, 4A, 4B, 5 &amp; 6 – This work is part of Project 2.27.</li> <li>3) Substations 9 &amp; 10 - This work is part of Project 2.10.</li> <li>4) Substations 11 &amp; 12 – This work is part of project 2.11.</li> <li>5) Substations 15 &amp; 16 – This work is part of Project 2.15.</li> <li>6) Substations 17 &amp; 18 – This work is part of Project 2.19.</li> </ol>	<p>Note: The majority of this work will be done in conjunction with other CD projects.</p> <ol style="list-style-type: none"> <li>2.1(1) Construction Sub-Station 1 &amp; 2 Completed on May 5, 2016.</li> <li>2.1(2) Design was completed and procurement commenced.</li> <li>2.1(3) Design was completed, permitting continued and procurement commenced.</li> <li>2.1(4) Design was completed and permitting commenced.</li> <li>2.1(5) Construction continued.</li> <li>2.1(6) Permitting and procurement were completed, construction commenced.</li> <li>2.1(7) Design continued.</li> </ol>
2.2	Building Improvements	<p>The CDWWTP Building Improvements project is being performed pursuant to Paragraph 19(i) and Appendix D. The project involves the repair of maintenance, operations control and administration buildings at the plant. It includes the repair of the roofs and the staff facility. This project was split into two child projects; one for the building improvements to the Administrative Building and another for required repairs to other buildings, e.g. Maintenance, Operations, Storage, etc.</p>	<ol style="list-style-type: none"> <li>2.2(1a) Completed on June 1, 2015.</li> <li>2.2(1b) Construction continued.</li> <li>2.2(1c) Completed on October 19, 2016.</li> <li>2.2(2) Procurement was completed and construction commenced.</li> </ol>
2.3	Headworks Plant 1	<p>The CDWWTP Headworks/Grit Basin Plant 1 project is being performed pursuant to Paragraph 19(i) and Appendix D. The existing screening facilities at the CDWWTP influent pump station are inefficient. This results in the accumulation of rags and plastics in plant processes which sometimes leads to pump, mixer and clarifier collection mechanism failure. This project involves the addition of influent screens and an electrical room with upgraded electrical instrumentation.</p>	<p>Construction continued.</p>
2.4	Headworks Plant 2	<p>The CDWWTP Headworks/Grit Basin project is being performed pursuant to Paragraph 19(i) and Appendix D. The existing screening facilities at the CDWWTP influent pump station are inefficient. This results in the accumulation of rags and plastics in plant processes which sometimes leads to pump, mixer and clarifier collection mechanism failure. This project involves the addition of influent screens and an electrical room with upgraded electrical instrumentation.</p>	<p>Construction continued.</p>

**Table A-3.2 Central District WWTP Capital Improvement Projects January 1, 2017 through December 31, 2017**

Project Number	Project Name	Project Description	Significant Activities / Key Accomplishments
2.5	Oxygenation Trains Plant 1	The CDWWTP Oxygenation Trains Plant 1 project is being performed pursuant to Paragraph 19(i) and Appendix D. The project involves the retrofitting of the aeration mixers, structural rehabilitation and surface coating application.	Design was completed. Procurement and construction continued. Procurement and construction for (Structural Rehab Train #2) - CD Oxygenation Trains Plant 1, were completed. Procurement for (Structural Rehab Train #3) - CD Oxygenation Trains Plant 1 commenced.
2.6	Oxygenation Trains Plant 2	The CDWWTP Oxygenation Trains Plant 2 project is being performed pursuant to Paragraph 19(i) and Appendix D. The project involves the retrofitting of the aeration mixers, structural rehabilitation and surface coating application.	Design was completed, procurement and construction continued. Design for Structural Rehab Trains #2 & #4 Oxygenation Trains Plant 2 was completed. Procurement for Structural Rehab Train #2 Oxygenation Trains Plant 2 commenced. Construction for Electrical Equipment / Expand Structure continued.
2.7	Secondary Clarifiers Plant 1	The CDWWTP Secondary Clarifiers Plant 1 project is being performed pursuant to Paragraph 19(i) and Appendix D. The purpose of this project is to rehabilitate the structure and replace the sludge collection mechanisms in the plant.	Design, procurement and construction will continue. Design commenced for 2.7(1) Secondary Clarifiers Plant 1. Design commenced for 2.7(3) Trains 1-6 - CD Secondary Clarifiers Plant 1 Structural Rehab. Procurement for Trains 1 Secondary Clarifiers Structural Rehab

**Table A-3.2 Central District WWTP Capital Improvement Projects January 1, 2017 through December 31, 2017**

Project Number	Project Name	Project Description	Significant Activities / Key Accomplishments
2.8	Secondary Clarifiers Plant 2	The CDWWTP Secondary Clarifiers Plant 2 project is being performed pursuant to Paragraph 19(i) and Appendix D. The purpose of this project is to rehabilitate the structure and replace the sludge collection mechanisms in the plant.	Design and permitting continued. Procurement commenced. 2.8(1) Permitting continued and procurement commenced. Design for 2.8(3) Trains 1-10 CD Secondary Clarifiers commenced.
2.9	RS Pump Stations Plant 1	The CDWWTP RS Pump Stations Plant 1 project is being performed pursuant to Paragraph 19(i) and Appendix D. This project involves the replacement of return sludge pump, piping, motor control centers and structural repairs to the pump stations.	Design commenced.
2.10	RS Pump Stations Plant 2	The CDWWTP RS Pump Stations Plant 2 project is being performed pursuant to Paragraph 19(i) and Appendix D. This project involves the replacement of return sludge pump, piping, motor control centers and structural repairs to the pump stations.	2.10(1) Design was completed, permitting continued, and procurement commenced. 2.10(2) Construction of RAS Header Pipe was completed on July 7, 2017.
2.11	Effluent Pump Station	The CDWWTP Effluent Pump Station project is being performed pursuant to Paragraph 19(i) and Appendix D. The purpose of this project is to replace the pump in the effluent pump station.	Design was completed, permitting and procurement commenced.
2.12	Sludge Thickeners Plant 1	The CDWWTP Sludge Thickeners Plant 1 project is being performed pursuant to Paragraph 19(i) and Appendix D. This project involves the replacement of the thickened sludge pumps, sanitary sewer pumps, HVAC and electrical systems in the concentrator pump station. It also involves the rehabilitation of concentrator collector mechanisms and structural rehabilitation and coating of concentrators.	Procurement continued.
2.13	Sludge Thickeners Plant 2	The CDWWTP Sludge Thickeners Plant 2 project is being performed pursuant to Paragraph 19(i) and Appendix D. This project involves the replacement of the thickened sludge pumps, sanitary sewer pumps, HVAC and electrical systems in the concentrator pump station. It also involves the rehabilitation of concentrator collector mechanisms and structural rehabilitation and coating of concentrators.	Procurement continued.



**Table A-3.2 Central District WWTP Capital Improvement Projects January 1, 2017 through December 31, 2017**

Project Number	Project Name	Project Description	Significant Activities / Key Accomplishments
2.14	Digesters Plant 1	The CDWWTP Digesters Plant 1 project is being performed pursuant to Paragraph 19(i) and Appendix D. This project involves the complete rehabilitation of sludge digester clusters, i.e. roofs, concrete structures, recirculation and transfer pumps, mixers, and electrical pumps. This will prevent the loss of digestion capacity and the decline in biogas/methane production for power generation. In addition, it will decrease the amount of unstable sludge that will require landfill disposal.	Construction commenced for 2.14(2) Digesters Plant 1 cluster 2 covers demolition.
2.15	Digesters Plant 2	The CDWWTP Digesters Plant 2 project is being performed pursuant to Paragraph 19(i) and Appendix D. This project involves the complete rehabilitation of sludge digester clusters, i.e. roofs, concrete structures, recirculation and transfer pumps, mixers, and electrical pumps. This will prevent the loss of digestion capacity and the decline in biogas/methane production for power generation. In addition, it will decrease the amount of unstable sludge that will require landfill disposal. This project has ben split into 4 child projects, one for each digester cluster.	2.15(1) Cluster 1: Construction continued. 2.15(2) Cluster 2: Permitting was completed and procurement commenced. 2.15(3) Cluster 3: Design continued. 2.15(4) Cluster 4: Design continued.
2.16	Dewatering Building	The CDWWTP Dewatering Building project is being performed pursuant to Paragraph 19(i) and Appendix D. The purpose of this project is to construct a new dewatering facility and sludge cake conveyance system to the sludge storage buildings.	Procurement continued.
2.17	Chlorination Facilities	The CDWWTP Chlorination Facilities project is being performed pursuant to Paragraph 19(i) and Appendix D. This project involves the design and construction of a new bulk sodium hypochlorite storage and dosing system in separate outdoor structures to replace the existing chlorine gas system.	Construction continued.
2.18	Odor Control Systems	The CDWWTP Cogeneration Facility Improvements project is being performed pursuant to Paragraph 19(i) and Appendix D. This involves the replacement of the motor control center of the odor control buildings including air-conditioned electrical rooms. It also involves replacement of odor control chemical pumps, piping, valves and gas stripping tower media.	Procurement and construction continued. 2.18(1) Headworks Odor Controls System (Project 2.3/2.4) construction continued. 2.18(2) Dewatering Odor Control System (Project 2.16) procurement continued.

**Table A-3.2 Central District WWTP Capital Improvement Projects January 1, 2017 through December 31, 2017**

Project Number	Project Name	Project Description	Significant Activities / Key Accomplishments
2.19	Co-Gen Facility	The CDWWTP Cogeneration Facility Improvements project is being performed pursuant to Paragraph 19(i) and Appendix D. The project involves the installation of two new cogeneration engines, cogeneration building improvements, replacement of biogas pipeline and installation of biogas conditioning system. Thus, this project has been split into three separate child projects: the replacement of the generators, the biogas treatment facilities, and restrooms and building rehabilitation.	2.19(1) Co-Gen Generator Replacement completed on January 27, 2016. 2.19(2a) Permitting and procurement were completed, construction commenced. 2.19(2b) Permitting was completed and procurement commenced.
2.20	Septage Uploading	The CDWWTP Septage Unloading project is required under Paragraph 19(i) and Appendix D. The CD scope of this project included the construction of a new septage handling station to remove FOG from the main wastewater treatment stream and treat either through digestion or an off-site third party facility. However, the violation associated with this project was resolved by requiring all hauled waste to be sent to the South District WWTP as of January 2013.	Motion to delete Project 2.20 Septage Uploading at CD WWTP has been approved by the Court on December 28, 2016.
2.21	Pump Station 1	The CDWWTP Pump Station No. 1 project is being performed pursuant to Paragraph 19(i) and Appendix D. The purpose of this project is to rehabilitate the pump station for the odor control system and rehabilitate the bar screen mechanisms.	Design, procurement and construction continued. Permitting commenced. Construction of Screen Rehab - CD Pump Station No . 1 was completed
2.22	Pump Station 2	The CDWWTP Pump Station No. 2 project is being performed pursuant to Paragraph 19(i) and Appendix D. This project involves the rehabilitation of the pump station odor control system, rehabilitation of bar screen mechanism, and replacement pump stations flow metering to improve maintenance accessibility.	Construction commenced.
2.23	O <sub>2</sub> Plant Process Controls Phase 2	The CDWWTP O <sub>2</sub> Plant Process Controls project is being performed pursuant to Paragraph 19(i) and Appendix D. Existing oxygen production systems are either failing or obsolete. The purpose of this project is to replace existing oxygen production systems.	Construction was completed on April 25, 2016 ahead of the CD compliance date March 9, 2017.
2.24	Gas Monitoring	The CDWWTP Gas Monitoring project is being performed pursuant to Paragraph 19(i) and Appendix D. The purpose of this project is to monitor gas levels and place alarms in hazardous areas.	Construction was completed on September 29, 2017.

**Table A-3.2 Central District WWTP Capital Improvement Projects January 1, 2017 through December 31, 2017**

Project Number	Project Name	Project Description	Significant Activities / Key Accomplishments
2.25	Ventilation Improvements	The CDWWTP Ventilation Improvements project is being performed pursuant to Paragraph 19(i) and Appendix D. The purpose of this project is to improve ventilation in hazardous areas and is being executed in conjunction with other Capital Improvement projects.	2.25(1) In validation/planning stage 2.25(2) Construction continued. 2.25(3) Construction continued. 2.25(4) Design was completed, permitting and procurement commenced. 2.25(5) Procurement was completed and construction continued.
2.26	Rehabilitation of Walkways and Stairways	The CDWWTP Rehabilitation of Walkways and Stairways project is being performed pursuant to Paragraph 19(i) and Appendix D. This project involves the replacement of corroded walkways, stairways, railings, and grating throughout the plant.	Construction continued.
2.27	Oxygen Production	The CDWWTP Oxygen Production project is being performed pursuant to Paragraph 19(i) and Appendix D. The existing units are near the end of useful life and prone to failure. The purpose of this project is to construct a new 80 ton/day oxygen production cryogenic tower and air compression unit to provide full redundancy.	2.27(1) Oxygen Production Site Preparation was completed on June 29, 2017. 2.27(2) Design was completed and procurement continued.
2.28	SCADA RTU Upgrades	The CDWWTP Building Improvements project was performed pursuant to Paragraph 19(i) and Appendix D. The old radio communication system was obsolete and it was difficult to procure parts. The purpose of the project was to upgrade the SCADA remote telemetry units to maintain operational sustainability.	This project was completed as of February 10, 2014 ahead of the CD compliance date March 29, 2014.
2.29	High Strength Influent Impact Study	The CDWWTP High Strength Influent Impact Study was performed pursuant to Paragraph 19(i) and Appendix D. The CDWWTP was experiencing an increase in Total Suspended Solids (TSS) and Biochemical Oxygen Demand (BOD) loading. This study investigated the sources and conceptualized solutions to eliminate or mitigate the change in plant influent characteristics.	Completed. Work started February 2013 and was completed June 5, 2014 ahead of the CD compliance date June 24, 2014.

**Table A-3.3 North District WWTP Capital Improvement Projects January 1, 2017 through December 31, 2017**

Project Number	Project Name	Project Description	Significant Activities / Key Accomplishments
3.1	Headworks and Sludge Degritting Transfer	The NDWWTP Headworks and Sludge Degritting and Transfer project is being performed pursuant to Paragraph 19(i) and Appendix D. This project is a two-phase approach to improve the existing screening facilities at the NDWWTP. In Phase 1, bar screens are replaced with perforated plate screens, and Phase 2 involves the upgrade of the pretreatment buildings for fire code compliance and replacement of primary sludge grit separation equipment.	Construction was completed on December 6, 2017 ahead of the CD compliance date April 7, 2018.
3.2	Primary Clarifiers and Odor Control	The NDWWTP Primary Clarifiers and Odor Control project is being performed pursuant to Paragraph 19(i) and Appendix D. This project involves the rehabilitation of the structures of the primary clarifiers. It also involves the rehabilitation of the mechanical and odor control systems at the plant.	Procurement was completed for 3.2(1) and construction commenced. Design and permitting were completed for 3.2(2) and procurement commenced.
3.3	Oxygenation Trains	The NDWWTP Oxygenation Trains project is being performed pursuant to Paragraph 19(i) and Appendix D. The purpose of this project is to rehabilitate the structures of the aeration tanks and its mechanical and electrical systems.	Design and procurement commenced.
3.4	Oxygen Production	The NDWWTP Oxygen Production project is being performed pursuant to Paragraph 19(i) and Appendix D. This project involves the rehabilitation of the structure of the oxygen plant and its mechanical and electrical systems.	Design commenced.
3.5	Secondary Clarifiers	The NDWWTP Secondary Clarifiers project is being performed pursuant to Paragraph 19(i) and Appendix D. This project involves the rehabilitation of the structure of the secondary clarifiers and its mechanical and electrical systems.	3.5(1) Construction of Secondary Clarifiers Replace Mechanisms No.1 - 10 was completed on March 30, 2017. 3.5(2) Design and permitting were completed. Procurement commenced.
3.6	Disinfection	The NDWWTP Disinfection project is being performed pursuant to Paragraph 19(i) and Appendix D. This project involves the replacement of the chlorine gas storage, liquid chlorination and dosing system with bulk sodium hypochlorite storage and dosing system in the existing chlorine building.	Permitting continued and procurement commenced.
3.7	Effluent Disposal	The NDWWTP Effluent Disposal project is being performed pursuant to Paragraph 19(i) and Appendix D. This project involves the installation of standby pumps to ensure effluent disposal capacity and the structural rehabilitation of the ocean outfall pump station wet well. This project has been split into two separates child projects: the Deep Injection Well (DIW) Pump Station and the Ocean Outfall (OOF) Pump Station.	The OO Pump Station rehabilitation was completed in March 2015. Construction of DIW Pump Station Mechanical continued.

**Table A-3.3 North District WWTP Capital Improvement Projects January 1, 2017 through December 31, 2017**

Project Number	Project Name	Project Description	Significant Activities / Key Accomplishments
3.8	Plant Wide Electrical	<p>The NDWWTP Plant Wide Electrical project is being performed pursuant to Paragraph 19(i) and Appendix D. This project involves the rehabilitation and replacement of electrical controls and wiring as needed at the NDWWTP. This project schedule has been broken down into multiple child/sub projects to better reflect the way the work is being executed:</p> <ol style="list-style-type: none"> <li>1) NDWWTP General Electrical In House Construction Feeders 1 and 2 have been replaced.</li> <li>2) Electrical Feeders 3-6 Feeders 3-6 will be replaced in conjunction with Project 3.01.</li> <li>3) Electrical Feeders 7-8 Feeders 7 and 8 will be replaced along with Project 3.04.</li> <li>4) Electrical Feeders 9-14</li> </ol>	<p>Design, permitting, procurement, and construction continued.</p> <p>3.8(1) General Electrical In-house construction (Feeders 1-2) was completed on January 15, 2016.</p> <p>3.8(2) Electrical Feeders 3-6 (Project 3.1) was completed on December 6, 2017.</p> <p>3.8(3) Electrical Feeders 7-8 (Project 3.04) In validation/planning state.</p> <p>3.8(4) Electrical Feeders 9-14 in validation/planning state.</p>
3.9	Flood Mitigation	<p>The NDWWTP Flood Mitigation project is being performed pursuant to Paragraph 19(i) and Appendix D. The purpose of this project is to mitigate the flood potential in the Generator and Electrical Building at the NDWWTP.</p>	<p>Procurement and construction were completed. This project was completed on June 24, 2016 ahead of the CD compliance date of August 13, 2017.</p>
3.10	Yard Piping Replacement	<p>The NDWWTP Yard Piping Replacement project is being performed pursuant to Paragraph 19(i) and Appendix D. The purpose of this project is to replace the wastewater piping that interconnects unit processes throughout the plant.</p>	<p>Project was completed on May 24, 2016 ahead of the CD compliance date of December 4, 2021.</p>
3.11	SCADA RTU Upgrades	<p>The NDWWTP SCADA RTU Upgrades project is being performed pursuant to Paragraph 19(i) and Appendix D. The current radio communication system is obsolete, and it is difficult to procure parts. The purpose of the project is to upgrade the SCADA remote telemetry units to maintain operational sustainability.</p>	<p>Project was completed on November 26, 2014 ahead of the CD compliance date of March 24, 2015.</p>

**Table A-4.1 Wastewater Collection and Transmission Lines January 1, 2017 through December 31, 2017**

Project Number	Project Name	Project Description	Significant Activities / Key Accomplishments
4.1	Collection System I/I Repairs	The Collection System I/I Repairs project is being performed in accordance with Paragraph 19(i) and Appendix D of the CD. The project targets defective gravity sewers with excessive inflow/infiltration. It involves rehabilitation of the Collection System, (i.e. dig & replace mainlines and laterals, manhole replacement, cured-in-place liners and sectional liners) and will be performed concurrently with other work.	Work on this project is ongoing.
4.2	Government Cut FM Phase 1 & 2	The Government Cut FM Phases 1 & 2 project was performed in accordance with Paragraph 19(i) and Appendix D. The purpose of this two phase project is to replace critically damaged sections of the 54-inch force main to avert catastrophic failures in Government Cut. This project involved the replacement of the 54-inch FM with a 60-inch FM from the water shaft in Government Cut to mainland Miami Beach.	Project was completed on the CD compliance date of September 30, 2013.
4.3	Government Cut FM Phase 3	The Government Cut FM Phase 3 project is being performed in accordance with Paragraph 19(i) and Appendix D. Phase 3 of this project involves the replacement of the 54-inch FM from the land shaft at Fisher Island to CDWWTP at Virginia Key.	Project was completed on November 23, 2016 ahead of the CD compliance date of April 8, 2017.
4.4	North Dade 72 inch PCCP FM Rehabilitation	This North Dade Force Main Rehabilitation project is being performed in accordance with Paragraph 19(i) and Appendix D. The project replaces a damaged section of 72-inch force main that has experienced catastrophic failure. The rehabilitation involves 3.5 miles of 72-inch PCCP FM located between NW 17 Avenue and NE 10 Avenue in North Dade.	Project was completed on May 5, 2016 ahead of the CD compliance date of March 5, 2018.
4.5	South Dade 54 inch PCCP FM Rehabilitation	This South Dade Force Main Rehabilitation project is being performed in accordance with Paragraph 19(i) and Appendix D. The project involves the rehabilitation of 2.5 miles of 54-inch PCCP FM from SW 112 Avenue and SW 280 Street to SW 107 Avenue and SW 248 Street in South Dade. It replaces sections of the 54-inch force main that has critically damaged pipe segments. This project has been split into two (2) separate child projects: one which includes the 2.5 miles of 54-inch pipe rehabilitation and another for required bypasses.	4.5(1): Construction continued. 4.5(2): Design continued (Non-Consent Decree).

**Table A-4.1 Wastewater Collection and Transmission Lines January 1, 2017 through December 31, 2017**

Project Number	Project Name	Project Description	Significant Activities / Key Accomplishments
4.6	Replacement of Tamiami Canal Aerial Crossing FMs at NW 37th Avenue	This Tamiami Force Main Replacement project is being performed in accordance with Paragraph 19(i) and Appendix D. This project replaces corroded twin 24-inch FM crossing the Tamiami Canal at NW 37 Avenue, just south of NW 21 Street in the Tamiami area. The twin 24-inch force mains have experienced failures and are in need of replacement.	Construction was completed on May 27, 2014 - ahead of the CD compliance date of October 29, 2016.
4.7	Rehabilitation of 18 inch DIP FM in Miami Lakes	This Miami Lakes Force Main Replacement project is being replaced in accordance with Paragraph 19(i) and Appendix D. The purpose of this project is to replace severely corroded 18-inch pipe that has had multiple failures. It replaces one mile of 18-inch DIP FM located at NW 60 Avenue and NW 138 Street.	Construction was completed on December 7, 2015 ahead of the CD compliance date of April 9, 2017.
4.8	Rehabilitation of 54 inch PCCP FM in the City of Miami	This City of Miami Force Main Rehabilitation project is being performed pursuant to Paragraph 19(i) and Appendix D. A section of 54-inch force main in the City of Miami is deteriorated and has experienced failures. The project involves the rehabilitation of 2 miles of 54-inch PCCP FM by cured-in-place liner located on NW 2 Street between NW 67 Avenue and NW 37 Avenue in the City of Miami.	4.8(1): Construction was completed on June 16, 2017. 4.87(2): Construction continued (Non-Consent Decree).
4.9	Replace Approximately 30 miles of AC FM Transmission System	This Force Main Transmission System Replacement project is being performed pursuant to Paragraph 19(i) and Appendix D. The purpose of this project is to replace asbestos cement force mains that have experienced failures and are difficult to locate in the field. This includes approximately 30 miles of AC FM transmission system.	See Table A-4.2.
4.10	Opa-Locka Airport FM Replacement	The Opa-Locka Airport PCCP Force Main Replacement project is being performed pursuant to Paragraph 19(i) and Appendix D. This project involves the rehabilitation of 2.5 miles of 48-inch PCCP force main running along the Biscayne Canal between NW 57th Avenue & NW 32nd Avenue. The length has been determined to have approximately one quarter of its line segments distressed based on in-situ condition assessments.	4.10(1) Construction was completed on October 27, 2017 - ahead of the CD Compliance date of January 28, 2018 4.10(2) Construction continued. 4.10(3) Procurement was completed and construction continued. (Non-Consent Decree) 4.10(4) (Non-Consent Decree) Design continued.



**Table A-4.2 Project 4.9 Replacement of Approximately 26 Miles AC FM Transmission System January 1, 2017 through December 31, 2017**

Line Number	Diameter	From Location	To Location	Significant Activities / Key Accomplishments
1	12	SW 112 Ave. & SW 104 St.	SW 112 Ave. & SW 112 St.	Design commenced.
2	8	NE 14 Ave. & 191 St.	NE 14 Ave. & Miami Gardens Dr.	Procurement and construction were completed. This project was completed on October 25, 2016.
3	6	PS 356	NW 53 Ct. & NW 195 Dr.	This project was completed on August 11, 2014.
4	8	NW 53 Ct. & NW 195 Dr.	NW 52 Ct. & NW 191 Dr.	This project was completed on August 11, 2014.
5	10	NW 52 Ct. & NW 191 St.	NW 52 Ct. & NW 188 Dr.	This project was completed on August 11, 2014.
6	6	PS 362	NW 52 Ct. & NW 190 Dr.	This project was completed on August 18, 2017.
7	10	NW 52 Ct. & NW 190 St.	NW 52 Ave. & NW 189 Ter.	This project was completed on August 18, 2017.
8	10	NW 52 Ct. & NW 188 St.	NW 52 Ave. & NW 183 St.	This project was completed on August 11, 2014.
9	8	PS 385	NW 29 Ct. & NW 199 St.	This project was completed on August 7, 2015.
10	12	NW 29 Ct. & NW 199 St.	NW 30 Pl. & NW 199 St.	This project was completed on August 7, 2015.
11	8	NW 29 Ct. & NW 199 St.	NW 28 Ave. & NW 199 St.	This project was completed on August 7, 2015.
12	6	PS 374	NW 28 Ave. & NW 199 St.	This project was completed on August 7, 2015.
13	12	NW 30 Pl. & NW 199 St.	NW 37 Ave. & NW 199 St.	This project was completed on August 7, 2015.
14	8	PS 368	NW 37 Ave. & NW 194 Ter.	This project was completed on June 3, 2015.
15	4	PS 375	NW 29 Pl. and NW 191 St.	This project was completed on June 3, 2015.
16	10	PS 427	NW 29 Pl. and NW 191 St.	This project was completed on June 3, 2015.
17	10	NW 29 Pl. and NW 191 St.	NW 32 Ave. & NW 191 St.	This project was completed on June 3, 2015.
18	6	PS 376	NW 32 Ave. & NW 191 St.	This project was completed on June 3, 2015.
19	6	PS 377	NW 36 Ave. & NW 183 St.	This project was completed on June 3, 2015.
20	8	PS 366	NW 42 Pl. & NW 199 Ter.	This project was completed on March 6, 2017.
21	10	NW 42 Pl. & NW 199 Ter.	NW 39 Ct. & NW 199 St.	This project was completed on March 6, 2017.
22	6	PS 358	PS 352	This project was completed on March 1, 2017.
23	8	PS 1022	PS 1072	Procurement was completed.
24	8	PS 353	NW 48 Ct. & NW 178 Ter.	Design, permitting, procurement and construction were completed. This project was completed October 27, 2016.
25	10	NW 52 Ave. & NW 173 Dr.	NW 52 Ave. & NW 178 Ter.	This project was completed on April 3, 2017.
26	6	PS 354	NW 52 Ave. & NW 173 Dr.	This project was completed on April 3, 2017.
27	4	Pvt. PS @ SW 149 Ter.	MH 14 @ PS 719	Project was completed on November 20, 2015.
28	8	PS 786	MH 5 @ PS 785	Design commenced.
29	12	PS 811	SW 107 Ave. & SW 76 St.	Procurement was completed.
30	12	PS 811	SW 102 Ave. & SW 81 St.	Procurement was completed.
31	10	PS 812	SW 102 Ave. & SW 84 St.	Procurement was completed.



**Table A-4.2 Project 4.9 Replacement of Approximately 26 Miles AC FM Transmission System January 1, 2017 through December 31, 2017**

Line Number	Diameter	From Location	To Location	Significant Activities / Key Accomplishments
32	12	SW 107 Ave. & SW 104 St.	SW 107 Ave. & Kendale Blvd.	This project was completed on October 13, 2017.
33	4	Pvt. PS @ 114 Ave. & SW 169 St.	MH 59 @ SW 103 Ave.	Design, permitting, procurement and construction were completed. This project was completed on August 12, 2016.
34	10	PS 709	Homestead Ave. & Kumquat St.	Design continued and permitting commenced.
35	6	SW 110 Ave. & Banyan St.	SW 95 Ave. & SW Banyan St.	Design continued and permitting commenced.
36	4	PS 721	US1 & Banyan St.	Design continued and permitting commenced.
37	4	PS 749	PS 731	Design continued and permitting commenced.
38	4	PS 747	US1 & East Indigo St.	Design continued and permitting commenced.
39	10	SW 102 Ave. & SW 176 St.	Homestead Ave. & West Jessamine	Design continued and permitting commenced.
40	8	PS 745	SW 102 Ave. & SW 175 St.	Design continued and permitting commenced.
41	4	PS 731	SW Duval Ave. & West Indigo St.	Design continued and permitting commenced.
42	10	SW 102 Ave. & West Jessamine	US1 & SW 184 St.	Design continued and permitting commenced.
43	12	Homestead Ave. & 180 St.	Railroad St. & SW 184 St.	Design continued and permitting commenced.
44	8	PS 810	SW 118 Pl. & SW 72 St.	Design commenced.
45	12	PS 793	SW 118 Pl. & SW 72 St.	Design commenced.
46	6	PS 724	SW 106 Ave. & SW 155 St.	Design continued. Permitting and procurement commenced.
47	8	PS 869	SW 122 Ave. & SW 88 St.	This project was completed on February 1, 2017.
48	10	PS 1017	SW 123 Pl. & SW 268 St.	Design was completed. Permitting and procurement commenced.
49	10	PS 1029	SW 132 Ave. & 268 St.	Design was completed. Permitting and procurement commenced.
50	8	SW 137 Ave. & SW 268 St.	SW 128 Ave. & 268 St.	Design was completed. Permitting and procurement commenced.
51	10	PS 1028	SW 137 Ave. & 288 St.	Design was completed. Permitting and procurement commenced.
52	10	PS 1027	SW 132 Ave. & 280 St.	Design was completed. Permitting and procurement commenced.
53	8	PS 1018	MH 44A @ SW 132 Ave.	Design was completed. Permitting and procurement commenced.
54	12	SW 137 Ave. & SW 72 St.	SW 142 Ave. & SW 72 St.	Design commenced.

**Table A-4.2 Project 4.9 Replacement of Approximately 26 Miles AC FM Transmission System January 1, 2017 through December 31, 2017**

Line Number	Diameter	From Location	To Location	Significant Activities / Key Accomplishments
55	12	SW 142 Ave. & SW 72 St.	SW 147 Ave. & SW 72 St.	Design commenced.
56	8	PS 864	SW 147 Ave. & SW 72 St.	Design commenced.
57	8	SW 142 Ave. & Kendale Lakes Blvd.	SW 140 Ave. & Kendale Lakes Blvd.	Design commenced.
58	10	SW 140 Ave. & Kendale Lakes Blvd.	SW 137 Ave. & Kendale Lakes Blvd.	Design commenced.
59	12	SW 137 Ave. & Kendale Lakes Blvd.	SW 137 Ave. & SW 81 St.	Design commenced.
60	8	PS 1013	PS 1012	Design continued.
61	10	PS 1012	SW 144 Ave. & SW 280 St.	Design continued.
62	8	PS 1011	SW 144 Ct. & SW 280 St.	Design continued.
63	10	SW 147 Ave. & SW 288 St.	SW 134 Pl. & SW 288 St.	Design was completed. Permitting and procurement commenced.
64	6	PS 1009	SW 147 Ave. & SW 296 St.	Design commenced.
65	6	PS 1006	PS 1005	Design continued.
66	8	PS 1002	SW 152 & SW 304 St.	Design and permitting commenced.

**Table A-5 Sewer Pump Station Systems January 1, 2017 through December 31, 2017**

Project Number	Project Name	Project Description	Significant Activities / Key Accomplishments
5.1	Upgrade of PS No. 0418	The Upgrade of PS No. 0418 project is being performed pursuant to Paragraph 19(i) and Appendix D. The station has reached the end of its useful life, and a booster station is needed to relieve pressures in the Doral area. The purpose of this project is to convert PS No. 0418 into a booster type station.	Construction continued
5.2	Upgrade of PS No. 0691	The Upgrade of PS No. 0691 project is being performed pursuant to Paragraph 19(i) and Appendix D. The existing equipment of the PS is beyond its useful life and capacity increase is required to handle increased Homestead flows. This project involves the replacement of pumping and electrical equipment in PS No. 0691. On April 14, 2016, this scope was modified and approved by EPA/FDEP. Specifically, PS No. 0691 serves the City of Homestead and will be replaced by a new pump station currently being built by Homestead. As this new Homestead pump station will replace the current PS No. 0691, that pump station (PS No. 0691) will be decommissioned once the new Homestead pump station (PS No. 1) is online.	Construction commenced.
5.3	Upgrade of PS No. 0692	The Upgrade of PS No. 0692 project is being performed pursuant to Paragraph 19(i) and Appendix D. The existing equipment of the PS is beyond its useful life and capacity increase is required to handle increased Homestead flows. This project involves the replacement of pumping and electrical equipment in PS No. 0692.	Permitting was completed. Procurement commenced.
5.4	Replacement of Switchgear PS No. 0414	The Replacement of Switchgear PS No. 0414 project is being performed pursuant to Paragraph 19(i) and Appendix D. The existing equipment of the PS is beyond its useful life. This project involves the replacement of electrical switchgear in PS No. 0414.	Permitting and procurement were completed. Construction commenced.
5.5	Replacement of Switchgear and Rehabilitation of Wet Well PS No. 0415	The Replacement of Switchgear and Rehabilitation of Wet Well PS No. 0415 project is being performed pursuant to Paragraph 19(i) and Appendix D. The existing equipment of the PS is beyond its useful life, and the wet well structure is badly deteriorated due to H <sub>2</sub> S. This project involves the replacement of electrical switchgear and the rehabilitation of the wet well to include an odor control unit.	Permitting and procurement were completed. Construction commenced.
5.6	Replacement of Switchgear PS No. 0416	The Replacement of Switchgear PS No. 0416 project is being performed pursuant to Paragraph 19(i) and Appendix D. The existing equipment of the PS is beyond its useful life. This project involves the replacement of electrical switchgear in PS No. 0416.	Permitting and procurement were completed. Construction commenced.

**Table A-5 Sewer Pump Station Systems January 1, 2017 through December 31, 2017**

Project Number	Project Name	Project Description	Significant Activities / Key Accomplishments
5.7	Replacement of Switchgear and Rehabilitation of Wet Well PS No. 0417	The Replacement of Switchgear and Rehabilitation of Wet Well PS No. 0417 project is being performed pursuant to Paragraph 19(i) and Appendix D. The existing equipment of the PS is beyond its useful life, and the wet well structure is badly deteriorated due to H <sub>2</sub> S. This project involves the replacement of electrical switchgear and the rehabilitation of the wet well of PS No. 0417 to include an odor control unit.	Permitting was completed and procurement continued.
5.8	Replacement of Electrical and Mechanical Equipment PS No 0107	The Replacement of Electrical and Mechanical Equipment PS No. 0107 project is being performed pursuant to Paragraph 19(i) and Appendix D. The existing equipment of the PS is beyond its useful life, and parts are not readily available for the load cell type controllers. This project involves the replacement of pumping and electrical equipment of PS No. 0107.	Construction continued.
5.9	Replacement of Pumping and Electrical Equipment PS No. 0301	The Replacement of Pumping and Electrical Equipment PS No. 0301 project is being performed pursuant to Paragraph 19(i) and Appendix D. The existing equipment is beyond its useful life due to the saltwater environment. This project involves the replacement of pumping and electrical equipment of PS No. 0301 to include a generator.	Design, permitting, and procurement continued.
5.10	Upgrade of PS No. 0488	The Upgrade of PS No. 0488 project is being performed pursuant to Paragraph 19(i) and Appendix D. The existing equipment is beyond its useful life. This project involves the conversion of the PS to a submersible type station.	This project was completed on December 8, 2016 ahead of the CD compliance date May 9, 2018.
5.11	Installation of 60 inch FM from Kendall Dr. to PS No. 0536	On August 12, 2015 WASD submitted a Request for Non-Material Change for Appendix D CIP 5.11. WASD proposed the cost effective alternative of adding a 48-inch connection to the suction side of PS 0536 that will provide similar benefits to those of the 60-inch FM for CD Appendix D CIP 5.11. WASD received EPA and FDEP approval on October 28, 2015.	Permitting and procurement were completed. Construction commenced.
5.12	Replacement of Switchgear PS No. 0187	The Replacement of Switchgear PS No. 0187 project is being performed pursuant to Paragraph 19(i) and Appendix D. The existing equipment of the PS is beyond its useful life, and parts are not readily available. This project involves the replacement of the Anvic Drive with a VFD.	Procurement was completed. Construction commenced.

**Table A-5 Sewer Pump Station Systems January 1, 2017 through December 31, 2017**

Project Number	Project Name	Project Description	Significant Activities / Key Accomplishments
5.13	Refurbish Emergency Generators and Controls at Regional PSs	The Refurbish Emergency Generators and Controls at regional PSs project is being performed pursuant to Paragraph 19(i) and Appendix D. The emergency backup generators are unreliable due to the age of the controllers and the condition of the wiring on the engines. The purpose of this project is to refurbish emergency generators and controls at regional PSs.	This project was completed on February 4, 2016 ahead of the CD compliance date July 20, 2016.
5.14	Upgrade of PSs Nos. 0086 and 0492	The Upgrade of Pump Stations No. 0086 and 0492 project was performed and completed pursuant to Paragraph 19(i) and Appendix D. The project was designed to increase reliability and extend the service life of the pump station. The pump stations also exceeded the Adequate Transmission Capacity Criteria with a NAPOT of greater than 10 hours. For this project, Pump Station No. 0086 was converted to a submersible type pump station with an existing wet well and the electrical controls and instrumentation were upgraded. The electrical controls and instrumentation for Pump Station No. 0492 were upgraded. It was also rehabilitated to a new submersible type pump station.	PS No. 0086 was completed on July 15, 2013 and PS No. 0492 on April 25, 2013. Both were completed ahead of the CD compliance date of December 31, 2013.
5.15	Upgrade of PSs Nos. 0065, 0201, 0374, 0607	The Upgrade of PSs No. 0065, 0201, 0334, 0374, 0607 project is being performed pursuant to Paragraph 19(i) and Appendix D. The pump stations exceed the Adequate Transmission Capacity Criteria with a NAPOT of greater than 10 hours. The PS No. 0065 is being upgraded to include new submersible pumps in the existing dry well, installation of larger suction and discharge piping, and an electrical upgrade. The PS No. 0201 is being upgraded to include new submersible pumps, installation of a new valve box, an electrical upgrade and 48 I/I repairs for a flow of 176 gpm. The PS No. 0334 project involves the conversion to a new submersible type pump station, an electrical upgrade and the installation of 2,200 L.F. of new 8-inch FM. The PS No. 0374 is being upgraded to include new submersible pumps, installation of a new valve box, an electrical upgrade and the installation of 320 L.F. of new 8-inch FM. The PS No. 0607 project involves the conversion to a new submersible type pump station and an electrical upgrade.	This project was completed on December 30, 2015 - ahead of the CD compliance date of December 31, 2015.

**Table A-5 Sewer Pump Station Systems January 1, 2017 through December 31, 2017**

Project Number	Project Name	Project Description	Significant Activities / Key Accomplishments
5.16	Upgrade of PSs Nos.0198, 0437, 0466, 0680	The Upgrade of PSs No. 0198, 0437, 0466, 0680 project is being performed pursuant to Paragraph 19(i) and Appendix D. The pump stations exceed the Adequate Transmission Capacity Criteria with a NAPOT of greater than 10 hours. The PS No. 0198 is being upgraded to include new submersible pumps in the existing dry well, an electrical upgrade and flow isolation and I/I repairs, if necessary. The PSs No. 0437 and 0466 are being upgraded to include new submersible pumps, installation of a new valve box, and an electrical upgrade. The PS No. 0680 is being upgraded to include new submersible pumps, new valves above ground and an electrical upgrade.	PS No. 0198: Construction continued. PS No. 0437: Construction was completed on December 30, 2016 ahead of CD Compliance date of December 31, 2016. PS No. 0466: Construction was completed on October 21, 2016 ahead of CD Compliance date of December 31, 2016. PS No. 0680: Construction was completed on December 1, 2016 ahead of CD Compliance date of December 31, 2016.
5.17	Upgrade of PSs Nos. 0037, 0351, 0370, 0403	The Upgrade of PSs No. 0037, 0351, 0370, 0403 project is being performed pursuant to Paragraph 19(i) and Appendix D. The pump stations exceed the Adequate Transmission Capacity Criteria with a NAPOT of greater than 10 hours. The PS No. 0037 project involves the conversion to a new submersible type pump station and an electrical upgrade. The PS No. 0351 is being upgraded to include new submersible pumps, installation of a new valve box, an electrical upgrade and the replacement of 360 L.F. of 4-inch with 8-inch FM. The PS No. 0370 project involves the conversion to a new submersible type pump station, an electrical upgrade and the installation of 760 L.F. of new 8-inch FM. The PS No. 0403 project involves the conversion to a new submersible type pump station, an electrical upgrade and the installation of an on-site generator.	PS No. 0037: Construction was completed on November 14, 2017 ahead of CD Compliance date of December 31, 2017. PS No. 0351: Permitting and procurement were completed. Construction commenced. PS No. 0370: Permitting and procurement were completed. Construction commenced. PS No. 0403: Permitting and procurement were completed. Construction commenced.

**Table A-5 Sewer Pump Station Systems January 1, 2017 through December 31, 2017**

Project Number	Project Name	Project Description	Significant Activities / Key Accomplishments
5.18	Upgrade of PSs Nos. 0441, 0491, 0710, 0827, 0852, 1236	The Upgrade of PSs No. 0441, 0491, 0710, 0827, 0852, 1236 project is being performed pursuant to Paragraph 19(i) and Appendix D. The pump stations exceed the Adequate Transmission Capacity Criteria with a NAPOT of greater than 10 hours. The PS No. 0441 project involves the conversion to a new submersible type pump station and an electrical upgrade. PS No. 0491 is undergoing flow isolation and I/I repairs, if necessary. The PS No. 710 project involves the conversion to a new submersible type pump station, an electrical upgrade and the installation of 1,800 L.F. of new 8-inch FM. The PS No. 0827 is being upgraded to include larger submersible pumps, installation of a new valve vault, an electrical upgrade and the replacement of 1,600 L.F. of 4-inch FM with 8-inch FM. The PS No. 0852 project involves the conversion to a new submersible type pump station and an electrical upgrade. PS No. 1236 is undergoing 300 I/I repairs to achieve a flow of 130 gpm.	5.18(1) PS No. 0441: Design was completed. Permitting commenced. 5.18(2) PS No. 0491: In validation/planning stage. 5.18(3) PS No. 0710: Design was completed. Permitting commenced. 5.18(4) PS No.0827: Design was completed. Permitting commenced. 5.18(5) PS No.0852: Design was completed. Permitting commenced. 5.18(6) PS No.1236 Design commenced.
5.19	SCADA RTU Upgrades	The SCADA RTU Upgrades project is being performed pursuant to Paragraph 19(i) and Appendix D. The current radio communication system is obsolete, and it is difficult to procure parts. The purpose of the project is to upgrade the SCADA remote telemetry units for 635 pump stations to maintain operational sustainability.	Construction was completed on November 23, 2015 - ahead of the CD compliance date of March 18, 2016.

## Appendix B SSO Cause Analysis Tables

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**Table B-2: SSO Event Cause Analysis**

CAUSE		2014	2015	2016	2017
<b>1. Building Backups (Laterals)</b>		<b>34</b>	<b>22</b>	<b>21</b>	<b>17</b>
Blockage	(i) PM Activity*	20	11	17	8
	(ii) Roots	2	-	-	1
	(iii) Grease	3	6	-	2
	(iv) Debris	1	-	-	1
Break	(v) Contractor Involved	3	1	-	1
	(vi) Other	5	4	4	4
<b>2. Air Release Valves</b>		<b>17</b>	<b>20</b>	<b>34</b>	<b>31</b>
<b>(a) Automatic</b>		<b>13</b>	<b>15</b>	<b>23</b>	<b>24</b>
Break/Malfunctioning	(i) Malfunctioning/Other	1	3	7	13
	(ii) Riser/Nipple	1	-	5	3
	(iii) Valve	1	-	-	-
	(iv) Contractor Involved	1	3	2	5
	(v) Vandalism	-	-	3	3
Blockage	(iv) Grease Blockage	1	3	2	-
	(v) Debris Blockage	8	6	4	-
<b>(b) Manual</b>		<b>4</b>	<b>5</b>	<b>11</b>	<b>7</b>
Broken	(i) Riser/Nipple	1	1	7	3
	(ii) Valve	2	-	-	1
	(iii) Contractor Involved	1	3	3	3
	(iv) Vandalism	-	-	-	-
Blockage	(v) Grease Blockage	-	-	-	-
	(vi) Debris Blockage	-	1	1	-
<b>3. Pump Station</b>		<b>8</b>	<b>2</b>	<b>3</b>	<b>11</b>
Other/Broken	(i) FPL Service Outage	-	1	-	6
	(ii) Pump	1	-	-	1
	(iii) Pipe/Pump-out	1	1	3	1
	(iv) Electrical	2	-	-	-
	(v) Level/Bubbler	-	-	-	-
	(vi) Valve	3	-	-	1
	(vii) Bypass Operation	1	-	-	1
	(viii) Contractor Involved	-	-	-	-
	(ix) SCADA	-	-	-	-
	(x) Other	-	-	-	1
<b>4. Gravity Main</b>		<b>54</b>	<b>46</b>	<b>32</b>	<b>36</b>
Blockage	(i) Grease	44	34	27	27
	(ii) Debris	5	6	1	6
	(iii) Roots	1	-	-	-
	(iv) Other	1	2	2	1
Break	(iv) Contractor Involved	3	3	2	2
	(v) Other	-	1	-	-
<b>5. Force Main</b>		<b>32</b>	<b>37</b>	<b>36</b>	<b>51</b>
Break	(i) Contractor Involved	10	11	15	19
	(ii) Vandalism	-	1	3	-
	(iii) Corrosion	10	14	9	9
	(iv) Bedding/Settlement	6	10	2	5
	(v) Other	6	1	7	18
<b>6. Capacity Rel. - Rain/Sur/Press</b>		<b>-</b>	<b>1</b>	<b>-</b>	<b>9</b>
	(i) No Improvement Ness.	-	1	-	5
	(ii) Improvement Rec.	-	-	-	4
<b>SSOs (Excluding BBUs)</b>		<b>111</b>	<b>106</b>	<b>105</b>	<b>138</b>
<b>Total</b>		<b>145</b>	<b>128</b>	<b>126</b>	<b>155</b>

\* Prior to entry of the Consent Decree the County had not treated Building Backups as SSOs as it was not required to do so. Because the Consent decree was entered on December 6, 2013, the County only has one full year of Building Backup data.

**Table B-1: SSO Volume Analysis**

CAUSE		2014	2015	2016	2017
<b>1. Building Backups (Laterals)</b>		<b>612 gal.</b>	<b>58 gal.</b>	<b>101 gal.</b>	<b>82 gal.</b>
Blockage	(i) PM Activity*	76 gal.	43 gal.	88 gal.	10 gal.
	(ii) Roots	5 gal.	- gal.	- gal.	20 gal.
	(iii) Grease	455 gal.	9 gal.	- gal.	35 gal.
	(iv) Debris	2 gal.	- gal.	- gal.	1 gal.
Break	(v) Contractor Involved	56 gal.	1 gal.	- gal.	1 gal.
	(vi) Other	18 gal.	5 gal.	13 gal.	15 gal.
<b>2. Air Release Valves</b>		<b>31,685 gal.</b>	<b>66,977 gal.</b>	<b>88,159 gal.</b>	<b>958,191 gal.</b>
<b>(a) Automatic</b>		<b>12,485 gal.</b>	<b>63,507 gal.</b>	<b>34,657 gal.</b>	<b>876,830 gal.</b>
Break/Mal-functioning	(i) Malfunctioning/Other	2 gal.	3,055 gal.	3,220 gal.	779,477 gal.
	(ii) Riser/Nipple	2,232 gal.	- gal.	12,875 gal.	16,938 gal.
	(iii) Valve	90 gal.	- gal.	- gal.	- gal.
	(iv) Contractor Involved	9,930 gal.	60,140 gal.	6,015 gal.	27,485 gal.
	(v) Vandalism	- gal.	- gal.	12,200 gal.	52,930 gal.
Blockage	(iv) Grease Blockage	5 gal.	36 gal.	220 gal.	- gal.
	(v) Debris Blockage	226 gal.	276 gal.	127 gal.	- gal.
<b>(b) Manual</b>		<b>19,200 gal.</b>	<b>3,470 gal.</b>	<b>53,502 gal.</b>	<b>81,361 gal.</b>
Broken	(i) Riser/Nipple	5,800 gal.	2,710 gal.	33,982 gal.	53,677 gal.
	(ii) Valve	2,600 gal.	- gal.	- gal.	85 gal.
	(iii) Contractor Involved	10,800 gal.	750 gal.	19,470 gal.	27,599 gal.
	(iv) Vandalism	- gal.	- gal.	- gal.	- gal.
Blockage	(v) Grease Blockage	- gal.	- gal.	- gal.	- gal.
	(vi) Debris Blockage	- gal.	10 gal.	50 gal.	- gal.
<b>3. Pump Station</b>		<b>542,178 gal.</b>	<b>2,000,468 gal.</b>	<b>86,065 gal.</b>	<b>35,027 gal.</b>
Other/Broken	(i) FPL Service Outage	- gal.	2,000,000 gal.	- gal.	1,820 gal.
	(ii) Pump	100 gal.	- gal.	- gal.	50 gal.
	(iii) Pipe/Pump-out	200 gal.	468 gal.	86,065 gal.	30,107 gal.
	(iv) Electrical	540,500 gal.	- gal.	- gal.	- gal.
	(v) Level/Bubbler	- gal.	- gal.	- gal.	- gal.
	(vi) Valve	628 gal.	- gal.	- gal.	500 gal.
	(vii) Bypass Operation	750 gal.	- gal.	- gal.	50 gal.
	(viii) Contractor Involved	- gal.	- gal.	- gal.	- gal.
	(ix) SCADA	- gal.	- gal.	- gal.	- gal.
	(x) Other	- gal.	- gal.	- gal.	2,500 gal.
<b>4. Gravity Main</b>		<b>5,447 gal.</b>	<b>1,629 gal.</b>	<b>1,008 gal.</b>	<b>5,763 gal.</b>
Blockage	(i) Grease	1,682 gal.	1,075 gal.	908 gal.	1,816 gal.
	(ii) Debris	180 gal.	134 gal.	5 gal.	1,117 gal.
	(iii) Roots	2,400 gal.	- gal.	- gal.	- gal.
	(iv) Other	900 gal.	110 gal.	60 gal.	2,580 gal.
Break	(iv) Contractor Involved	285 gal.	260 gal.	35 gal.	250 gal.
	(v) Other	- gal.	50 gal.	- gal.	- gal.
<b>5. Force Main</b>		<b>2,101,605 gal.</b>	<b>651,001 gal.</b>	<b>1,024,873 gal.</b>	<b>4,275,958 gal.</b>
Break	(i) Contractor Involved	995,860 gal.	509,115 gal.	556,888 gal.	3,239,984 gal.
	(ii) Vandalism	- gal.	5,800 gal.	50 gal.	- gal.
	(iii) Corrosion	738,446 gal.	84,756 gal.	363,480 gal.	462,842 gal.
	(iv) Bedding/Settlement	39,139 gal.	51,130 gal.	21,350 gal.	120,299 gal.
	(v) Other	328,160 gal.	200 gal.	83,105 gal.	452,833 gal.
<b>6. Capacity Rel. - Rain/Sur/Press</b>		<b>- gal.</b>	<b>500 gal.</b>	<b>- gal.</b>	<b>9,815 gal.</b>
	(i) No Improvement Ness.	- gal.	500 gal.	- gal.	3,860 gal.
	(ii) Improvement Rec.	- gal.	- gal.	- gal.	5,955 gal.
<b>SSOs (Excluding BBUs)</b>		<b>2,680,915 gal.</b>	<b>2,720,575 gal.</b>	<b>1,200,105 gal.</b>	<b>5,284,754 gal.</b>
<b>Total</b>		<b>2,681,527 gal.</b>	<b>2,720,633 gal.</b>	<b>1,200,206 gal.</b>	<b>5,284,836 gal.</b>