msd
Safe, clean waterways

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December 30, 2018

Director, Division of Enforcement
Department for Environmental Protection
300 Sower Blvd.
Frankfort, KY 40601

Chief, NPDES Permitting & Enforcement Branch
Water Protection Division
U.S. EPA Region 4
Atlanta Federal Center
61 Forsyth Street SW
Atlanta, GA 30303

Chief, Environmental Enforcement Section
Environmental and Natural Resources Division
U.S. Department of Justice
Post Office Box 7611
Washington, DC 20044-7611

Subject: Annual Report
July 1, 2017 through June 30, 2018
Civil Action No. 3:08-cv-00608-CRS
DOJ Case No. 90-5-1-1-08254

Attention Director and Chiefs:

Please find attached our Annual Report, prepared in accordance with Paragraph 30 of our Amended Consent Decree. This report is for the period July 1, 2017, through June 30, 2018.

I certify under penalty of law that this document and all attachments were prepared under our 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.

If you have questions or need additional information, please contact me at (502) 540-6136.

Sincerely,

Angela Akridge, PE
MSD Chief Engineer

cc: James A. Parrott
Paula Purifoy
File

Louisville and Jefferson County Wet Weather Consent Decree Annual Report

Reporting Period:
July 1, 2017 through June 30, 2018

Submitted To:
Kentucky Department of Environmental Protection
United States Environmental Protection Agency
United States Department of Justice

Submitted By:
Louisville and Jefferson County Metropolitan Sewer District
700 W. Liberty Street
Louisville, Kentucky 40203-1911

Submittal Date:
December 30, 2018

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INTRODUCTION

The Louisville and Jefferson County Metropolitan Sewer District (MSD) has entered into an Amended Consent Decree with the Kentucky Department of Environmental Protection (KDEP) and the United States Environmental Protection Agency (EPA). The Amended Consent Decree was signed by United States District Judge Simpson on April 10, 2009, and filed in United States District Court, Western Division of Kentucky, Louisville Division, on April 15, 2009.

This is the thirteenth Annual Report submitted in accordance with Paragraph 30 of the Amended Consent Decree. This report covers the time period from July 1, 2017, through June 30, 2018, and references data presented in Quarterly Reports 48 through 51. The structure for this report is outlined as follows:

Section 1: Project WIN Performance Overview – This section provides an accounting of the number of overflow occurrences, including unauthorized discharges from the separate sanitary sewer and combined sewer system, and the estimated volumes of each. A discussion of the probable reductions that are expected as a result of MSD's projects and activities during the reporting period is also contained in this section. These include both unauthorized discharge points and the discharges from MSD's Combined Sewer Overflow (CSO) locations, as identified in the Morris Forman Water Quality Treatment Center (WQTC) Kentucky Pollutant Discharge Elimination System (KPDES) permit.

Section 2: Program Activities for Nine Minimum Controls – This section describes the scope, schedule and status for projects and other activities that were active during the reporting period, as well as the anticipated projects and activities scheduled to be performed during the next reporting period (July 1, 2018, through June 30, 2019) for continued compliance with the Amended Consent Decree.

Section 3: Program Activities for Sewer Overflow Response Protocol – This section describes the scope, schedule and status for activities that were active during the reporting period, and the anticipated activities that are scheduled to be performed during the next reporting period for continued compliance with the Amended Consent Decree.

Section 4: Program Activities for Discharge Abatement Plans – This section describes the scope, schedule and status for projects and other activities that were active during the reporting period, as well as the anticipated projects and activities that are scheduled to be performed during the next reporting period for continued compliance with the Amended Consent Decree.

Section 5: Public Outreach, Education, Notification and Participation – This section describes the activities related to public outreach, education, notification and participation that were active during the reporting period, and the anticipated activities that are scheduled to be performed during the next reporting period for continued compliance with the Amended Consent Decree.

Section 6: Capacity Management Operations and Maintenance Report – The program activities performed during the reporting period, and activities planned for the next reporting period are included in this section for continued compliance with the Amended Consent Decree.

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SECTION 1: PROJECT WIN PERFORMANCE OVERVIEW

This section presents an overview of IOAP progress during the reporting period as well as performance measures related to permit compliance, discharges, and other related data.

1.1. COMBINED SEWER OVERFLOW REDUCTION AND SANITARY SEWER OVERFLOW ABATEMENT ACTIVITIES

The following sections outline the activities performed during the reporting period to reduce or control Combined Sewer Overflow (CSOs) and eliminate Sanitary Sewer Overflows (SSOs).

1.1.1. COMBINED SEWER OVERFLOW REDUCTION AND CONTROL ACTIVITIES

MSD completed three IOAP projects during the reporting period that mitigated permitted CSOs, as detailed in Table 1.1.

Table 1.1. FY18 Combined Sewer Overflow Reduction and Control Activities

PROJECT	CERTIFIED COMPLETION DATE	LEVEL OF CONTROL (TYPICAL YEAR)
Bell's Lane Wet Weather Treatment Facility (fka Paddy's Run)	September 25, 2017	8
CSO190 Green Infrastructure	December 29, 2017	8
Logan Street & Breckinridge Street Storage Basin	December 20, 2017	8

The Annual Average Overflow Volume (AAOV), derived from the InfoWorks CSO hydraulic model, includes the modeled AAOV for the permitted CSOs and is included as Appendix B. The observed CSO data for the reporting period for each monitored overflow has been tabulated, along with rainfall information from the nearest rain gauge, to facilitate review of the overflows that occurred, and is included as Appendix C.

Refer to Section 4.3 for comprehensive project certification listing. Refer to Section 4.5 for information regarding system monitoring and performance.

1.1.2. SANITARY SEWER OVERFLOW ELIMINATION ACTIVITIES

MSD completed one IOAP project during the reporting period that eliminated SSOs, as detailed in Table 1.2.

Estimation of SSO volume is not available in the same manner as it is for the CSO locations. The SSO volume reductions are estimates based on actual observations or from flow monitoring and modeling information where available.

Refer to Section 4.2 for comprehensive project certification listing. Refer to Section 4.5 for information regarding system monitoring and performance. Refer to Appendix D for a listing of discharges.

Table 1.2. FY18 Sanitary Sewer Overflow Elimination Activities

PROJECT	CERTIFIED COMPLETION DATE	ASSOCIATED SSOS
Camp Taylor #3 – Replace Sewer & Rehabilitation	December 15, 2017	08717, 104223, 104224, 104231, 13931, 13943, 13946, 34093542, 36763, 44396, 44397, 51301, 66349, 99259, KK14815019, KK14855239

1.2. COMBINED AND SANITARY SEWER SYSTEM PERFORMANCE

MSD has developed performance measures to monitor the operation of the collections system and WQTCs, with the goal of reducing sewer overflows and improving surface water quality. The data reported in this document is the best, most up-to-date data available as of the document date. There may be changes to historic data as the data is reviewed for quality and accuracy and updated on a continuous basis by MSD administrative and field staff.

1.2.1. SYSTEMWIDE PERFORMANCE

1.2.1.1. RAINFALL

The number and the volume of wet weather overflows are directly related to the amount of rain that has fallen during the reporting period. Five new rain gauges have been installed by MSD during the reporting period, bringing the total network to 46 rain gauges, as shown in Figure 1.1. Nine gauges are located within Indiana, eight within adjacent Kentucky counties and the remaining 29 are within Jefferson County. MSD plans to continue to expand the rain gauge network as appropriate sites are identified.

Figure 1.2 shows the Jefferson County average daily rainfall amounts by month for the reporting period, based on the monthly average of all MSD rain gauges, compared with the average since FY08. Figure 1.3 presents the same data as an average monthly rainfall amount by month and fiscal year. These figures show that while the total rainfall for the year was just below the average annual rainfall since FY08, FY18 had significantly higher than average rainfall in February, and slightly higher than average rainfall in September, October, and June. The discharge data reflects this occurrence.

Figure 1.1. MSD Rain Gauge Network

Figure 1.2. Daily Average Rainfall by Month

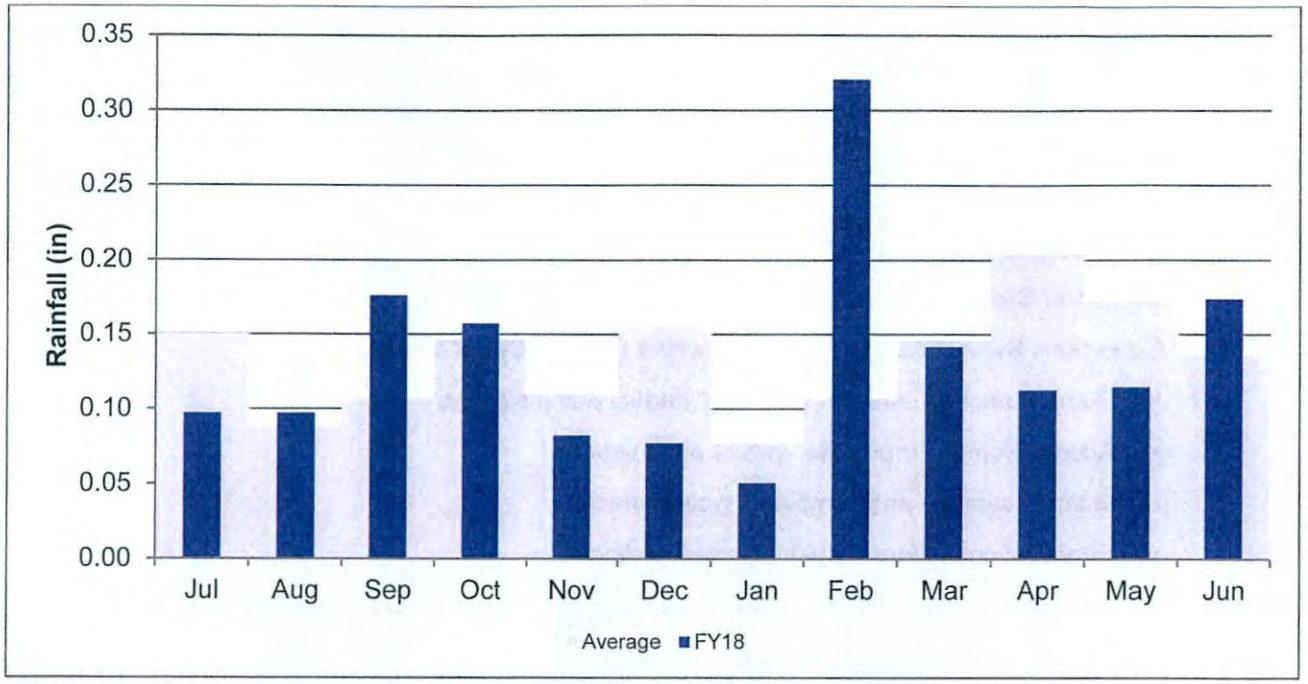
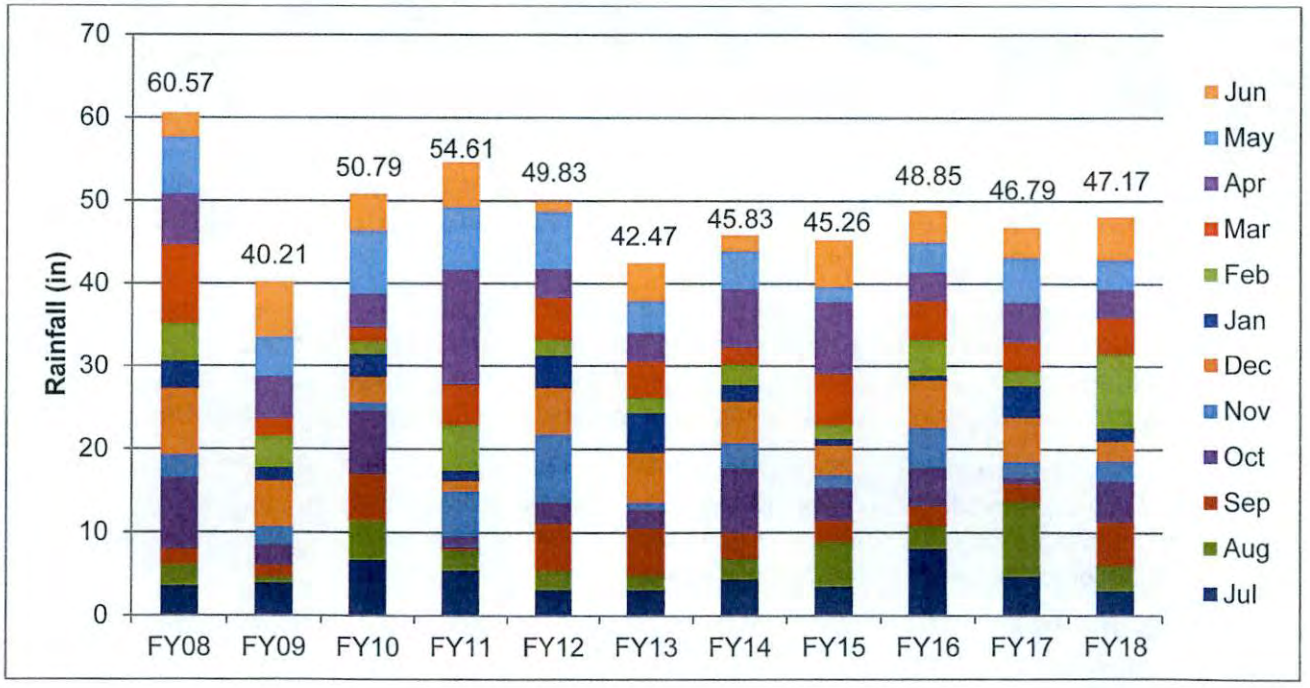


Figure 1.3. Monthly Average Rainfall by Fiscal Year



1.2.1.2. DISCHARGES

MSD enters and maintains information related to discharges and overflows that are observed by MSD staff in the Hansen Information Management System (Hansen) utilizing procedures reviewed and improved through efforts associated with components of the Sewer Overflow Response Protocol (SORP), as required under the Amended Consent Decree. These discharges are categorized using the following categories:

- Asset Type
  - Water Quality Treatment Center (WQTC)
  - Combined Sewer Overflow (CSO)
  - Collections System Assets associated with a Sanitary Sewer Overflow (SSO)
    - Pump Stations –sanitary, flood and viaduct pump stations
    - Access Points – manholes, valves and inlets
    - Mains – sanitary and combined system mains
    - Service Connections – customer service lines
- Weather – Dry or wet
- Result – Waters of the United States (WUS), Exterior (i.e., to the ground), or Interior (i.e., inside a building)
- Problem – The issue that caused the discharge, including the following groups:
  - Bypass / Upset at a WQTC (or Blending at Jeffersontown WQTC, for discharges that occurred prior to WQTC elimination) as defined by permit
  - Capacity – Lack of Capacity or Pumped Overflow during wet weather
  - Maintenance & Operations Issue – Electrical Problem at MSD, Grease Blockage, Mechanical Failure, Obstruction (Not Grease or Roots), Power Outage, Pumped due to USACE Manual Requirements, Roots, Structural Issue, or Utility Damage

Unauthorized discharges to the Waters of the United States (WUS) have been reported to the Kentucky Department of Environment Protection (KDEP) and the Environmental Protection Agency (EPA) per the approved SORP. Overflows to the ground and backups into buildings are reported in the Consent Decree Annual Report. All overflow reporting documentation is stored in MSD's asset management system, Hansen.

Table 1.3 details the observed discharges by weather and result since FY08. Appendix D includes information related to MSD's observed unauthorized discharges and overflows for the reporting period. During the upcoming reporting period, this data will be reviewed to determine if anomalies are present and if additional quality control or process improvements are warranted.

Discharges at permitted CSO locations that are observed by telemetry only are recorded with MSD's flow monitoring data and included in Appendix C.

Table 1.3. Observed Discharges by Weather and Result - All Assets

FY	UNAUTHORIZED DISCHARGE - WATERS OF US		OVERFLOW TO INTERIOR		OVERFLOW TO EXTERIOR (GROUND)	
	WET WEATHER	DRY WEATHER	WET WEATHER	DRY WEATHER	WET WEATHER	DRY WEATHER
FY08	552	42	692	122	21	42
FY09	129	64	147	154	9	61
FY10	394	47	706	151	21	48
FY11	789	44	609	171	28	62
FY12	494	43	106	141	20	48
FY13	296	27	38	127	5	37
FY14	416	38	130	127	7	26
FY15	422	38	305	763	24	82
FY16	335	32	83	86	17	39
FY17	76	29	8	271	6	69
FY18	205	23	32	54	14	49

1.2.2. WATER QUALITY TREATMENT CENTER PERFORMANCE

The following sections summarize performance compliance measures and trends at the water quality treatment centers (WQTCs) for the reporting period, including overflows attributed to the WQTC asset, bypasses, and effluent parameter exceedances.

1.2.2.1. OVERFLOWS TO THE EXTERIOR

Table 1.4 and Figure 1.4 detail the observed discharges by weather since FY08 at all WQTCs from manholes on WQTC property. The decreasing trend in number of discharges can in part be attributed to reduction in number of operational WQTCs, discussed further in Section 1.2.2.5.4. Table 1.5 and Figure 1.5 show discharges by problem.

1.2.2.2. BYPASSES

Project WIN Quarterly Report 18 included a memorandum, included as Appendix K in that report, which described the analysis of 44 bypass events that occurred between July 1, 2008, and December 31, 2009. This analysis delineated bypasses into the four categories, including Capacity, External Power Failures, Equipment Failure (Mechanical, Electrical, or Structural), and Human Error. An assessment of bypasses is performed in each subsequent quarterly report to determine the root cause of each bypass, the failure category, corrective actions to be taken, possible programmatic solutions, and a corrective action completion date. Refer to quarterly reports for the reporting period for detailed analysis of bypasses.

Table 1.6 and Figure 1.6 show the WQTC bypass events by weather since FY08. Table 1.7 and Figure 1.7 show the WQTC bypass events by cause since FY09.

Table 1.4. Observed Overflows to the Exterior by Weather – All WQTCs

FY	OVERFLOW TO EXTERIOR (GROUND)	
	WET WEATHER	DRY WEATHER
FY08	3	12
FY09	0	9
FY10	3	9
FY11	3	17
FY12	5	13
FY13	1	21
FY14	2	10
FY15	2	7
FY16	1	6
FY17	0	5
FY18	0	8

Figure 1.4. Trend of Observed Overflows to the Exterior by Weather – All WQTCs

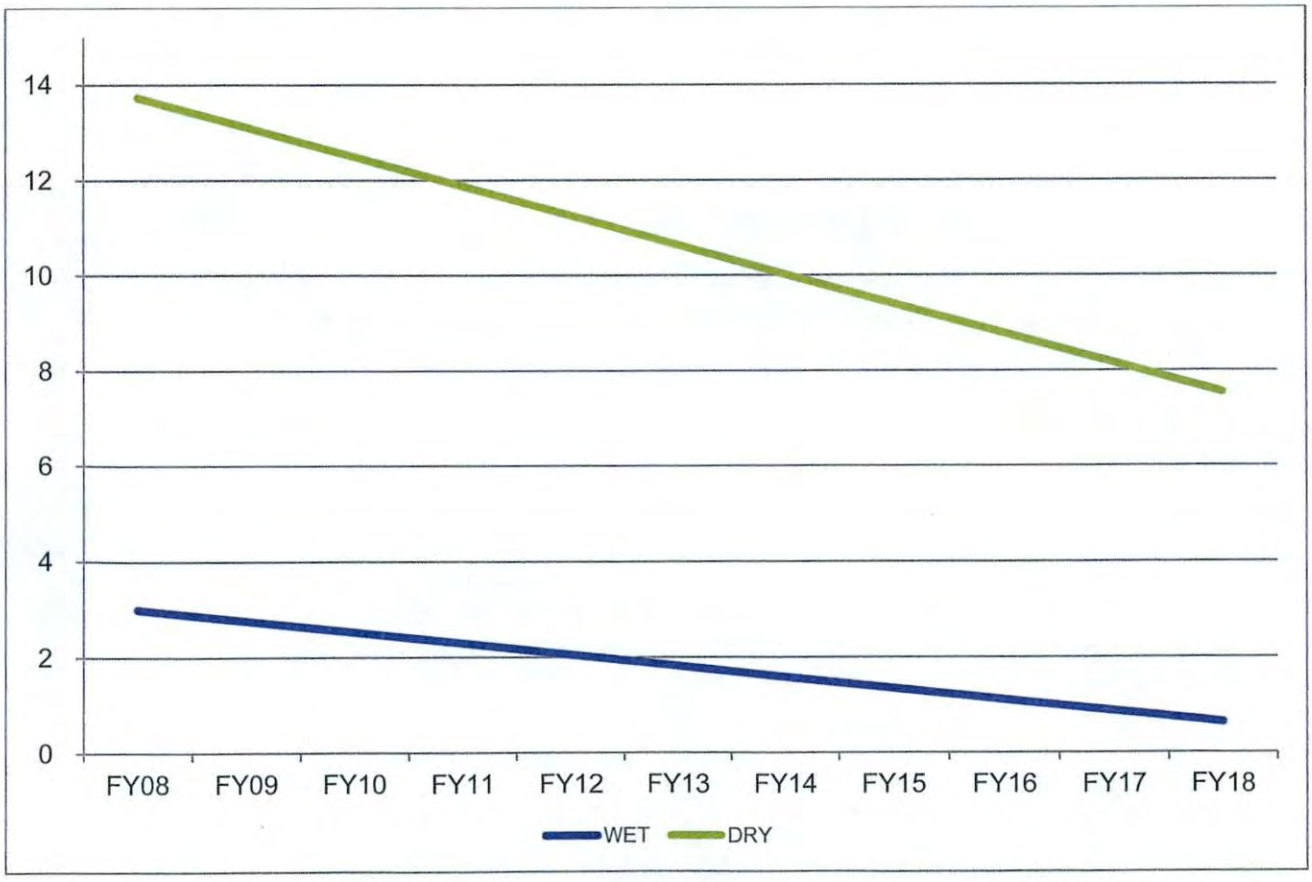


Table 1.5. Observed Overflows to the Exterior by Problem – All WQTCs

FY	ELECTRICAL PROBLEMS AT MSD	LACK OF SYSTEM CAPACITY	MECHANICAL FAILURE	OBSTRUCTION-NOT GREASE / ROOTS	POWER OUTAGE (LG&E)	STRUCTURAL FAILURE
FY08	0	2	11	0	0	2
FY09	0	0	9	0	0	0
FY10	0	1	8	0	1	2
FY11	0	1	11	1	0	7
FY12	2	2	9	1	0	4
FY13	3	1	6	1	0	11
FY14	1	1	5	2	0	3
FY15	1	0	3	0	0	5
FY16	0	0	6	0	0	1
FY17	0	0	2	0	0	3
FY18	0	0	5	0	0	3

Figure 1.5. Trend of Observed Overflows to the Exterior by Problem – All WQTCs

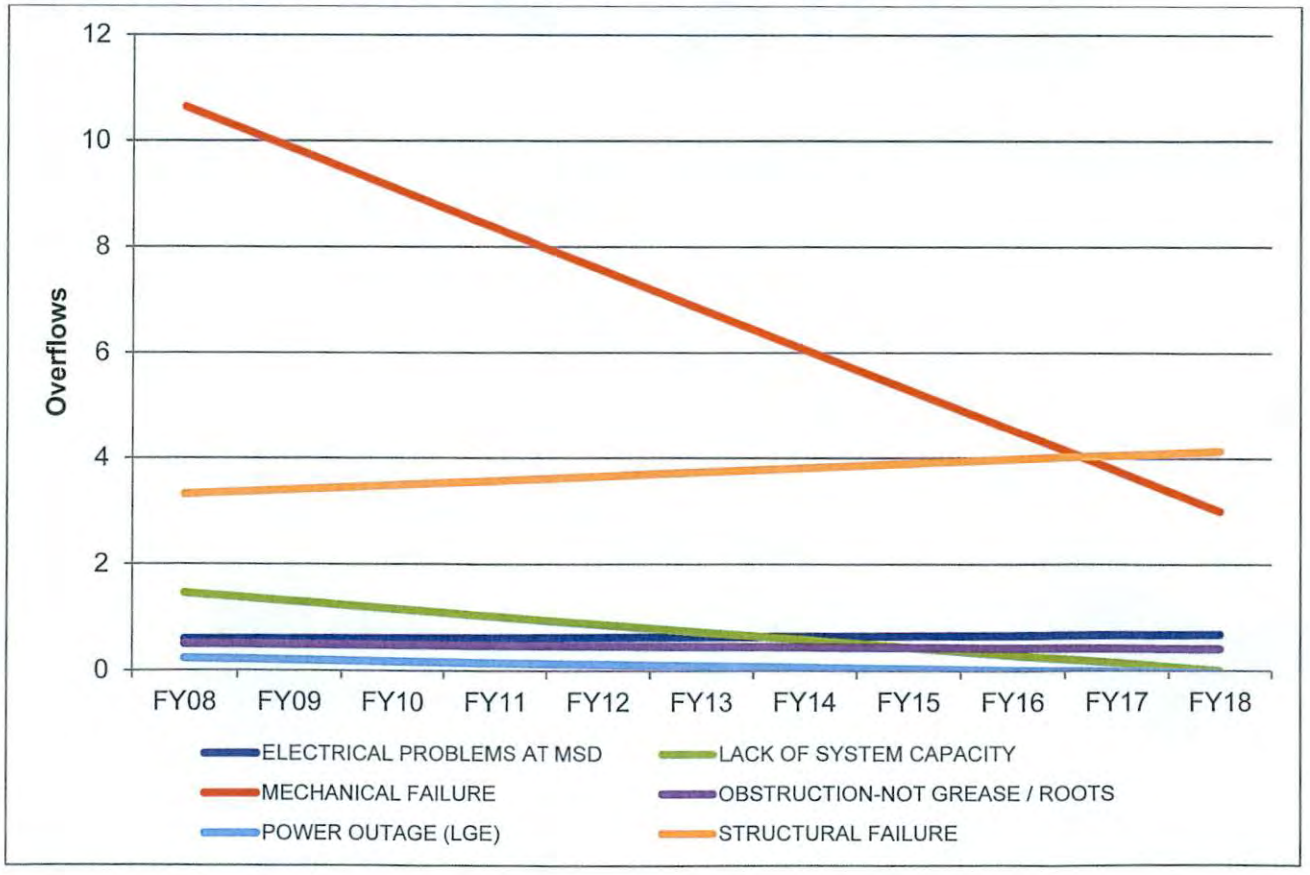


Table 1.6. Bypass Events by Weather – All WQTCs

FY	WET WEATHER	DRY WEATHER
FY08	21	10
FY09	11	21
FY10	20	13
FY11	29	3
FY12	12	8
FY13	17	8
FY14	19	8
FY15	10	0
FY16	8	4
FY17	4	1
FY18	1	1

Figure 1.6. Trend of Bypass Events by Weather – All WQTCs

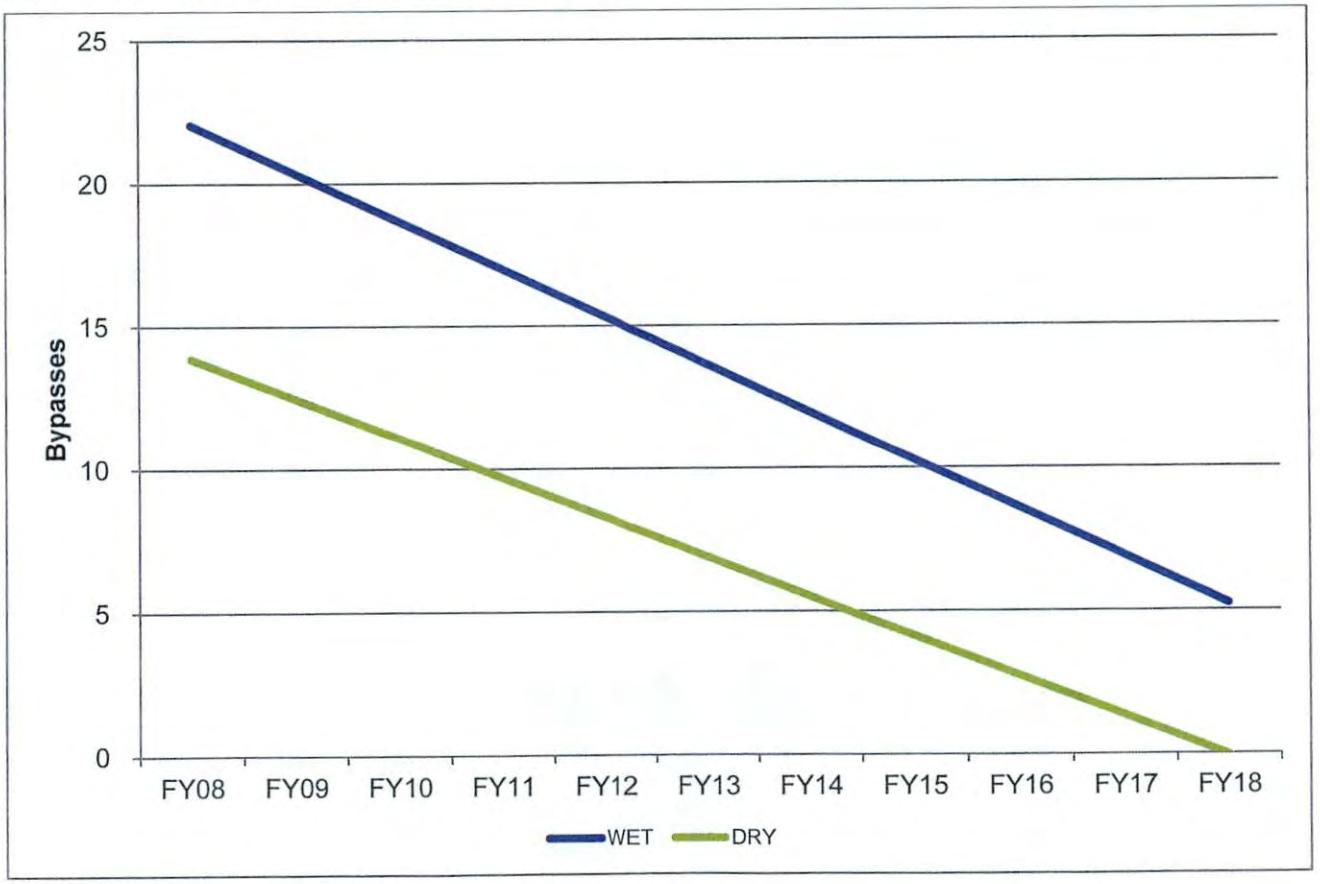
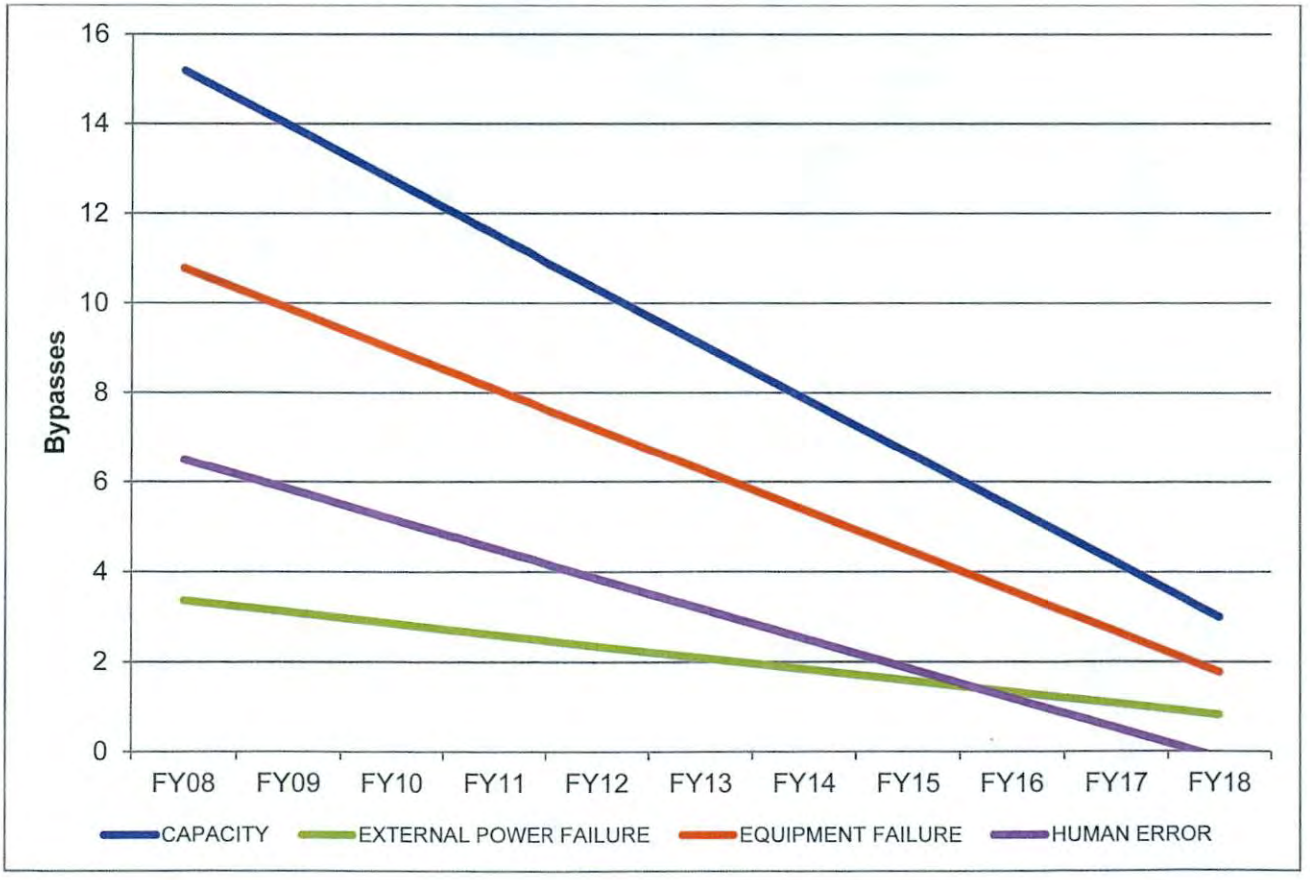


Table 1.7. Bypass Events by Cause – All WQTCs

FY	CAPACITY		EXTERNAL POWER FAILURE		EQUIPMENT FAILURE		HUMAN ERROR	
	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%
FY09	4	13%	6	19%	12	38%	10	31%
FY10	13	39%	2	6%	10	30%	8	24%
FY11	18	56%	5	16%	8	25%	1	3%
FY12	8	40%	5	25%	6	30%	1	5%
FY13	11	44%	0	0%	9	36%	5	20%
FY14	15	56%	0	0%	7	26%	5	19%
FY15	7	70%	1	10%	2	20%	0	0%
FY16	7	58%	1	8%	1	8%	3	25%
FY17	0	0%	3	50%	3	50%	0	0%
FY18	0	0%	0	0%	2	100%	0	0%

Figure 1.7. Trend of Bypass Events by Cause – All WQTCs



1.2.2.3. EXCEEDANCES

MSD's policy is to operate WQTCs in full compliance with the permitted effluent water quality standards. However, circumstances sometimes arise that may cause WQTCs to exceed the permitted effluent limits. This reality is recognized by the National Association of Clean Water Agencies (NACWA), which gives awards at different levels based on the number of effluent parameter exceedances during the calendar year:

- Silver – Five or fewer exceedances per year
- Gold – Zero exceedances per year
- Platinum – Zero exceedances per year for five years

Based on past operating history, MSD has established the target for all treatment centers of receiving at least the NACWA Silver Award. This goal is discussed in further detail under Sections 1.2.2.4.3 and 1.2.2.5.4 related to exceedances at Morris Forman WQTC and the regional WQTCs, respectively.

1.2.2.4. MORRIS FORMAN WATER QUALITY TREATMENT CENTER

Originally constructed in 1958, Morris Forman WQTC is MSD's largest, oldest WQTC. The following sections provide details related to this facility.

1.2.2.4.1. OVERFLOWS TO THE EXTERIOR

There were seven overflows from manholes "within the fence" at the WQTC during the reporting period, as shown in Table 1.8 and Table 1.9.

Table 1.8. Observed Overflows to the Exterior by Weather – Morris Forman WQTC

FY	OVERFLOW TO EXTERIOR (GROUND)	
	WET WEATHER	DRY WEATHER
FY08	0	0
FY09	0	0
FY10	0	2
FY11	0	0
FY12	1	1
FY13	0	0
FY14	0	0
FY15	0	0
FY16	0	0
FY17	0	0
FY18	0	7

Table 1.9. Observed Overflows to the Exterior by Problem – Morris Forman WQTC

FY	ELECTRICAL PROBLEMS AT MSD	LACK OF SYSTEM CAPACITY	MECHANICAL FAILURE	OBSTRUCTION-NOT GREASE / ROOTS	POWER OUTAGE (LG&E)	STRUCTURAL FAILURE
FY08	0	0	0	0	0	0
FY09	0	0	0	0	0	0
FY10	0	0	2	0	0	0
FY11	0	0	0	0	0	0
FY12	0	0	1	0	0	1
FY13	0	0	0	0	0	0
FY14	0	0	0	0	0	0
FY15	0	0	0	0	0	0
FY16	0	0	0	0	0	0
FY17	0	0	0	0	0	0
FY18	0	0	4	0	0	3

1.2.2.4.2. BYPASSES

One unauthorized wet weather bypass occurred during the reporting period, as shown in Table 1.10 and Table 1.11. The bypass was caused by equipment failure (estimated volume 1,210,000 gallons).

Table 1.10. Bypass Events by Weather – Morris Forman WQTC

FY	WET WEATHER	DRY WEATHER
FY08	0	0
FY09	0	0
FY10	0	0
FY11	1	0
FY12	1	2
FY13	0	2
FY14	0	0
FY15	1	0
FY16	0	1
FY17	4	0
FY18	1	0

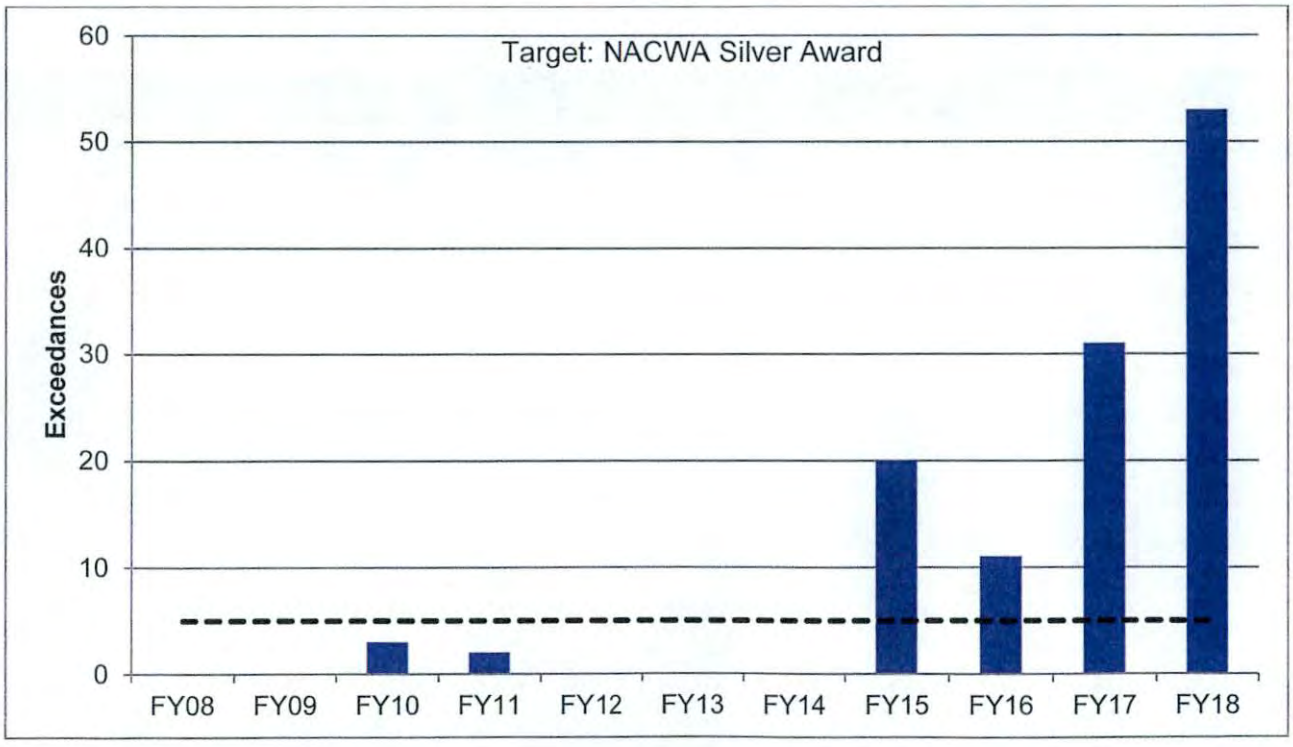
Table 1.11. Bypass Events by Cause – Morris Forman WQTC

FY	CAPACITY	EXTERNAL POWER FAILURE	EQUIPMENT FAILURE	HUMAN ERROR
FY09	0	0	0	0
FY10	0	0	0	0
FY11	0	0	1	0
FY12	2	0	1	0
FY13	0	0	2	0
FY14	0	0	0	0
FY15	0	0	1	0
FY16	0	0	0	1
FY17	0	1	3	0
FY18	0	0	1	0

1.2.2.4.3. EXCEEDANCES

As shown in Figure 1.8, a total of 53 exceedances occurred at Morris Forman WQTC in FY18. Compromised solids processing equipment contributed to the exceedances. MFWQTC continues to employ additional solids processing methods in an effort to meet permit requirements. These methods include dewatered cake, purchase of additional liquid oxygen, and externally contracted solids handling assistance.

Figure 1.8. Exceedances by Fiscal Year – Morris Forman WQTC



1.2.2.5. REGIONAL WATER QUALITY TREATMENT CENTERS

In December 2015, MSD successfully eliminated Jeffersontown WQTC, bringing the regional WQTC count to four. The following sections provide details related to the remaining regional WQTCs.

1.2.2.5.1. OVERFLOWS TO THE EXTERIOR

Observed overflows from manholes on WQTC property during the reporting period are shown in Table 1.12 and Table 1.13.

Table 1.12. Observed Overflows to the Exterior by Weather – Regional WQTCs

FY	OVERFLOW TO EXTERIOR (GROUND)	
	WET WEATHER	DRY WEATHER
FY08	2	7
FY09	0	7
FY10	2	4
FY11	1	8
FY12	4	9
FY13	1	14
FY14	2	6
FY15	1	3
FY16	1	6
FY17	0	5
FY18	0	1

Table 1.13. Observed Overflows to the Exterior by Problem – Regional WQTCs

FY	ELECTRICAL PROBLEMS AT MSD	LACK OF SYSTEM CAPACITY	MECHANICAL FAILURE	OBSTRUCTION-NOT GREASE / ROOTS	STRUCTURAL FAILURE
FY08	0	2	7	0	0
FY09	0	0	7	0	0
FY10	0	1	4	0	1
FY11	0	1	4	0	4
FY12	2	2	7	0	2
FY13	1	1	6	1	6
FY14	1	1	5	1	0
FY15	1	0	3	0	0
FY16	0	0	6	0	1
FY17	0	0	2	0	3
FY18	0	0	1	0	0

1.2.2.5.2. BYPASSES

Table 1.14 details the results of the current reporting period. Table 1.15 and Figure 1.9 summarize bypass events by weather since FY08, and Table 1.16 and Figure 1.10 summarize bypasses by cause since FY08. Refer to quarterly reports for the reporting period for details of the bypasses that occurred at regional WQTCs.

Table 1.14. FY18 Bypass Events by WQTC – Regional WQTCs

WQTC	KPDES PERMIT NUMBER	DRY WEATHER	WET WEATHER
Hite Creek	KY0022420	1	0

Table 1.15. Bypass Events by Weather – Regional WQTCs

FY	WET WEATHER	DRY WEATHER
FY08	4	6
FY09	10	5
FY10	6	8
FY11	2	7
FY12	4	3
FY13	1	7
FY14	0	2
FY15	0	1
FY16	1	3
FY17	0	1
FY18	0	1

Figure 1.9. Trend of Bypass Events by Weather – Regional WQTCs

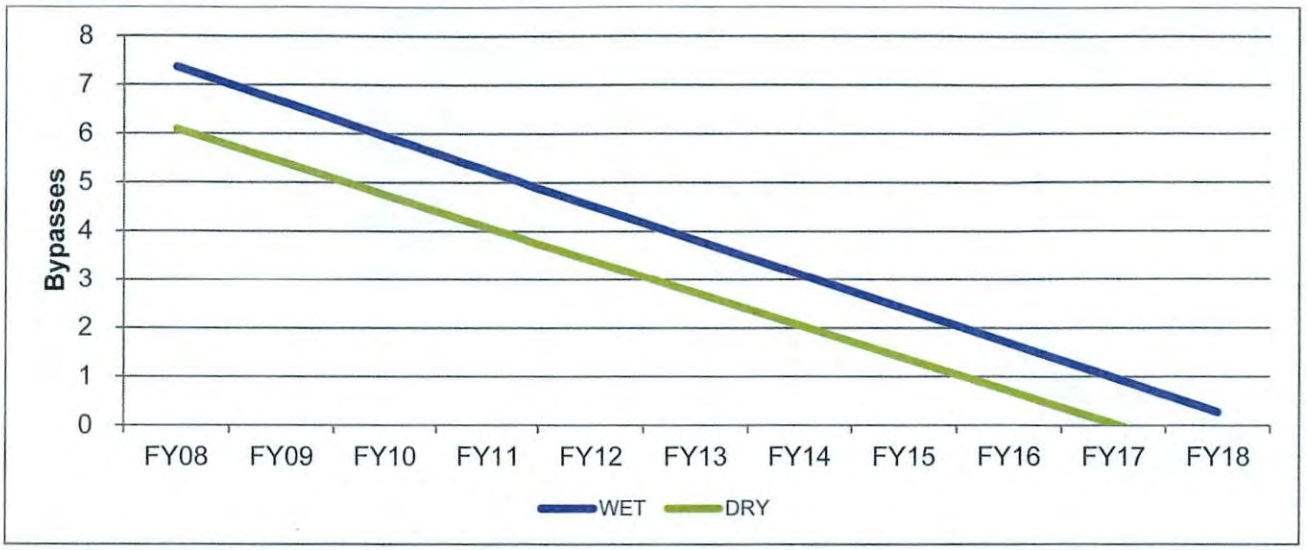
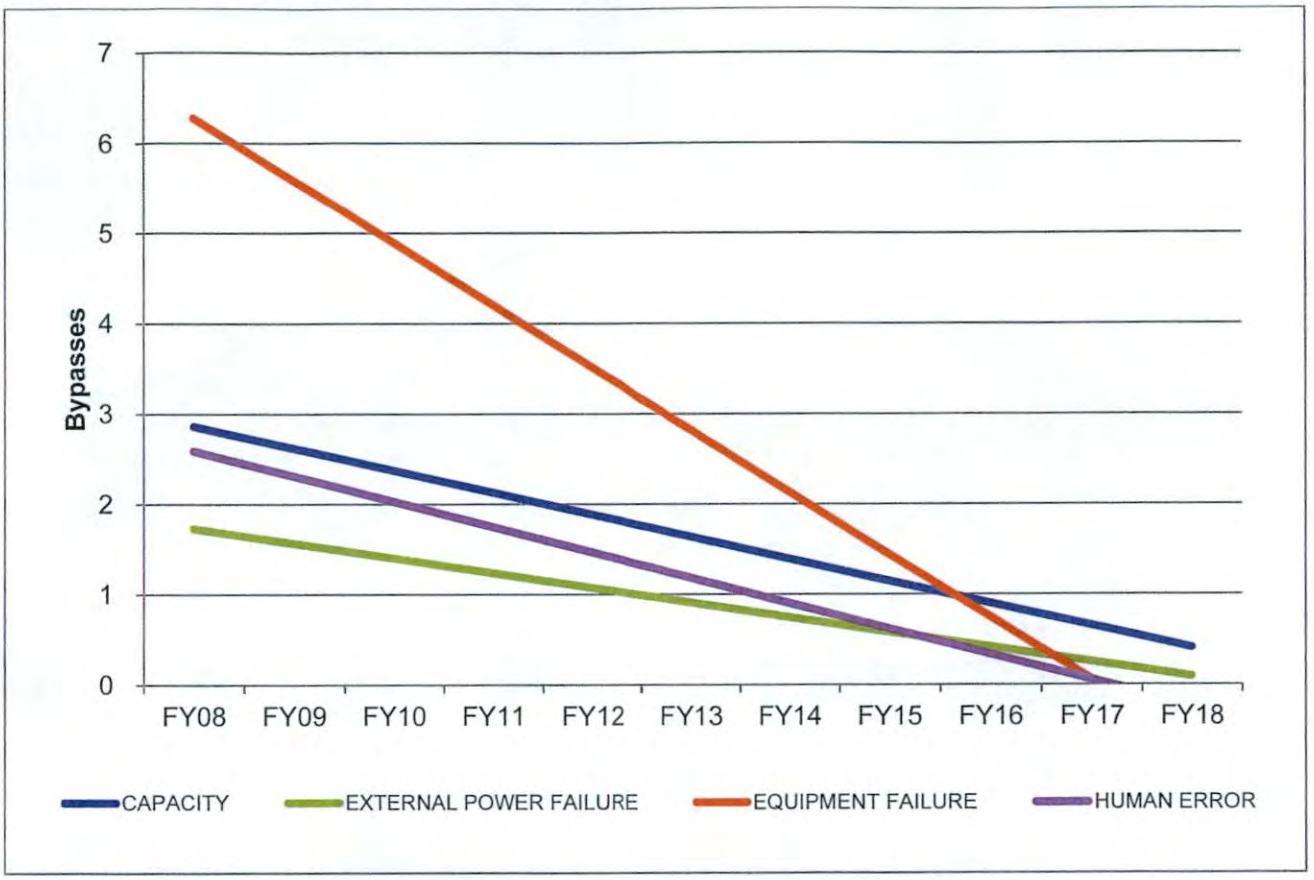


Table 1.16. Bypass Events by Cause – Regional WQTCs

FY	CAPACITY	EXTERNAL POWER FAILURE	EQUIPMENT FAILURE	HUMAN ERROR
FY08	4	0	4	2
FY09	1	2	8	4
FY10	3	2	5	4
FY11	1	3	5	0
FY12	1	2	4	0
FY13	4	0	4	0
FY14	1	0	0	1
FY15	1	0	0	0
FY16	2	0	0	2
FY17	0	1	0	0
FY18	0	0	1	0

Figure 1.10. Trend of Bypass Events by Cause – Regional WQTCs



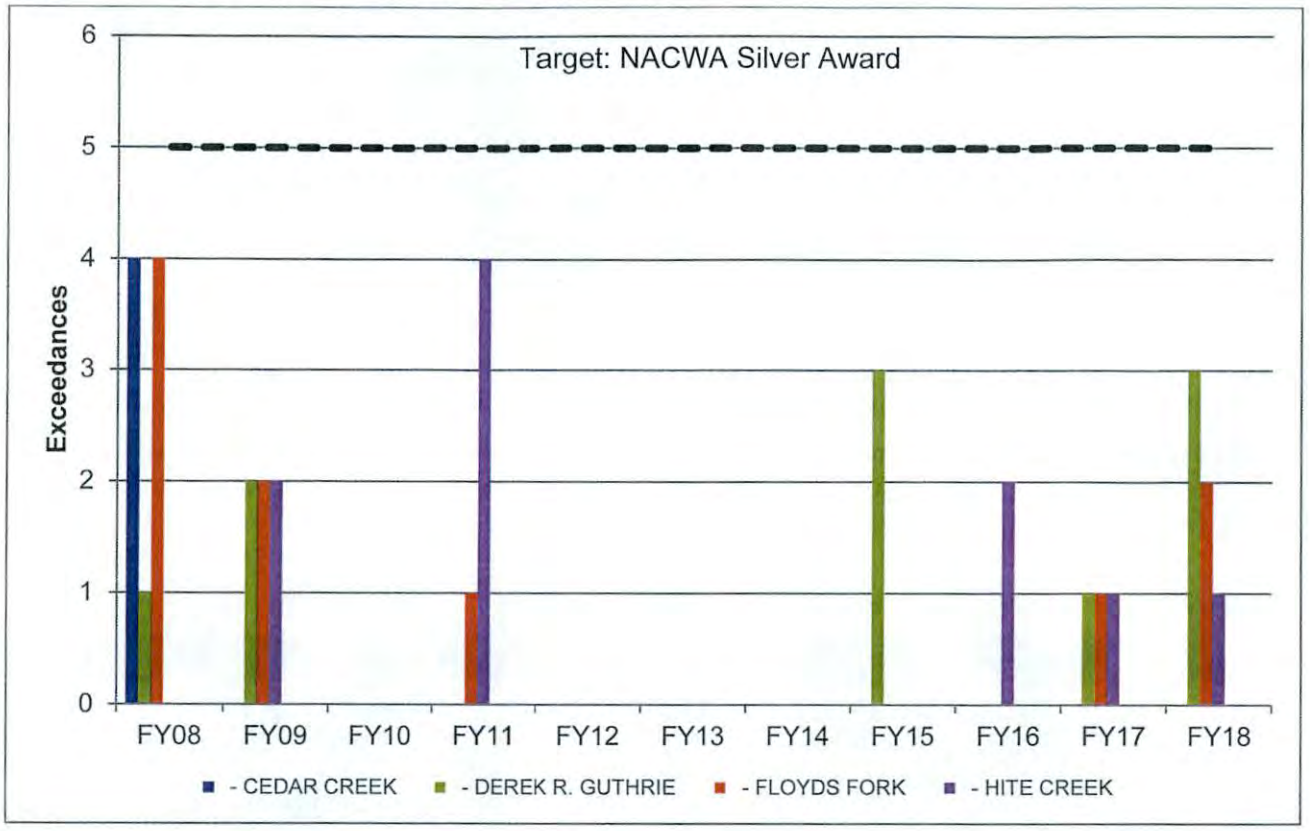
1.2.2.5.3. JEFFERSONTOWN WATER QUALITY TREATMENT CENTER

Jeffersontown WQTC is off-line as of December 2015, as detailed in Section 4.4.1.2. The FY16 Annual Report was the final annual report to include discussion of data at the siphon upstream of the headworks at Jeffersontown WQTC.

1.2.2.5.4. EXCEEDANCES

As shown in Figure 1.11, all four operational regional WQTCs have achieved the NACWA Silver Award goal since FY08. Cedar Creek WQTC has maintained NACWA Platinum Award status since FY09.

Figure 1.11. Exceedances by Fiscal Year – Regional WQTCs



1.2.2.6. NON-REGIONAL WQTCs

Since 1985, MSD has acquired and/or eliminated more than 300 privately owned non-regional WQTCs ("package plants"). The non-regional WQTCs typically had very limited operating flexibility, and were subject to high levels of variability in loads. Most of the non-regional WQTCs had been in operation over 35 years and typically had much poorer records of compliance compared to MSD's regional WQTCs. Therefore, MSD worked aggressively to eliminate the non-regional WQTCs. The last non-regional WQTC within the MSD service area was taken off-line on May 27, 2016. The FY16 Annual Report was the final annual report to include discussion of data associated with non-regional WQTCs. Should MSD acquire and/or eliminate any WQTCs in the future through service area expansion, their performance will be discussed here.

1.2.3. COMBINED SEWER OVERFLOW PERFORMANCE

1.2.3.1. AUTHORIZED DISCHARGES - WET WEATHER CSOs

At the end of the reporting period, MSD maintained 98 CSOs in operation. The modeled AAOV for the permitted CSOs is included as Appendix B. The observed CSO data for the reporting period for each monitored overflow has been tabulated, along with rainfall information from the nearest rain gauge, to facilitate review of the overflows that occurred, and is included as Appendix C. Refer to Section 4.5 for information regarding system monitoring and performance as CSO reduction projects are completed.

1.2.3.2. UNAUTHORIZED DISCHARGES - DRY WEATHER CSOs

MSD has implemented the Nine Minimum Controls (NMC) programs and provided resources to reduce dry weather CSOs as part of the CSO Long Term Control Plan (LTCP). During the reporting period, there were eleven observed dry weather overflows from a permitted CSO location as detailed in Table 1.17. The dry weather CSOs were analyzed by location and problem to identify issues that can be corrected.

CSO020 accounted for over 88% of the total overflow volume of FY18 due to structural failure of the Ohio River Interceptor. Emergency repairs caused CSO020 to discharge into the Ohio River between September 21 and October 6, 2017, when repairs on Main Street were completed.

On December 12, 2017, a sudden failure of a 48" diameter water main caused overflows at CSO117, CSO149, CSO180, CSO187, CSO188, and CSO183, accounting for six of the nine recorded overflows.

MSD removed obstructions and repaired components causing problems at CSO197, CSO120, and CSO015.

Table 1.18 and Figure 1.12 demonstrate that the number of dry weather overflows continues to decrease. The uptick in volume can be attributed to two high-volume events in FY18 along with improved flow monitoring. At this time, the 98 CSOs are functioning properly.

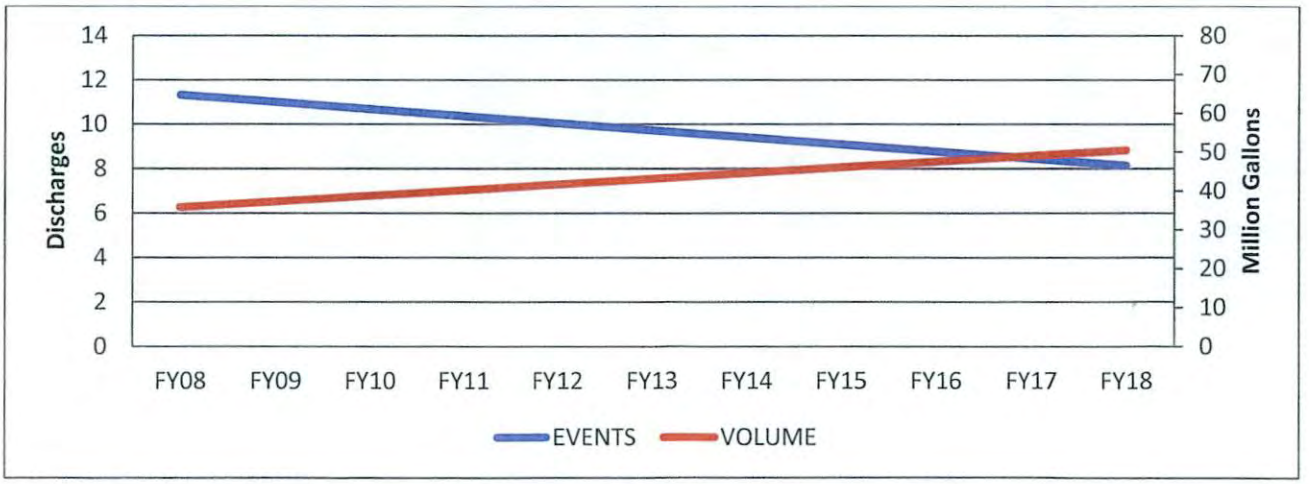
Table 1.17. FY18 Dry Weather CSOs

DATE	CSO	PROBLEM	DESCRIPTION	VOLUME (GAL)
July 5, 2017	CSO197	OBSTRUCTION-NOT GREASE / ROOTS	LINE OBSTRUCTED WITH DEBRIS & SEDIMENT	1,825
September 21, 2017	CSO020	STRUCTURAL FAILURE	OHIO RIVER INTERCEPTOR EMERGENCY REPAIRS	210,000,000
December 12, 2017	CSO117	UTILITY DAMAGED MSD ASSET	LOUISVILLE WATER CO. 48" MAIN BREAK	12,700,000
December 12, 2017	CSO149	UTILITY DAMAGED MSD ASSET	LOUISVILLE WATER 48" WATER MAIN BREAK	2,624,000
December 12, 2017	CSO180	UTILITY DAMAGED MSD ASSET	LOUISVILLE WATER CO. 48" MAIN BREAK.	9,189,000
December 12, 2017	CSO183	UTILITY DAMAGED MSD ASSET	LOUISVILLE WATER MAIN BREAK 48" LINE	1,000
December 12, 2017	CSO187	UTILITY DAMAGED MSD ASSET	LOUISVILLE WATER CO. 48" MAIN BREAK.	944,000
December 12, 2017	CSO188	UTILITY DAMAGED MSD ASSET	LOUISVILLE WATER CO. 48" MAIN BREAK.	1,430,000
December 21, 2017	CSO015	ELECTRICAL PROBLEMS AT MSD	PLC MALFUNCTION AT STRUCTURE	142,000
June 2, 2018	CSO120	OBSTRUCTION-NOT GREASE / ROOTS	OBSTRUCTION IN THE LOW FLOW LINE (BRICK AND OTHER DEBRIS).	28,929
June 7, 2018	CSO020	STRUCTURAL FAILURE	STARKEY PS WAS SHUT DOWN TO TAKE MEASUREMENTS FOR REHABILITATION OF THE OHIO RIVER INTERCEPTOR.	578,054

Table 1.18. Dry Weather CSOs by Fiscal Year

FY	EVENTS	VOLUME (GAL)
FY08	11	197,303,690
FY09	3	488,254
FY10	16	13,321,419
FY11	13	5,225,399
FY12	15	5,108,532
FY13	8	100,162
FY14	13	13,807,294
FY15	5	57,455
FY16	5	265,425
FY17	9	540,253
FY18	11	237,638,808

Figure 1.12. Trend of Dry Weather CSOs by Fiscal Year



1.2.3.3. CSO FLOW MONITORING QUALITY IMPROVEMENT

During the July 2016 – September 2016 reporting period, MSD identified a potential for inaccurate volume reporting at some CSOs. This was identified by comparing measured overflow volumes against modeled overflow volumes for similar storms. It was determined that several CSO flow monitors are affected by backwater levels from the receiving streams causing a discrepancy actual overflow volume, along with other potential variables at some locations. MSD notified EPA and KDEP of data discrepancies on September 29, 2016.

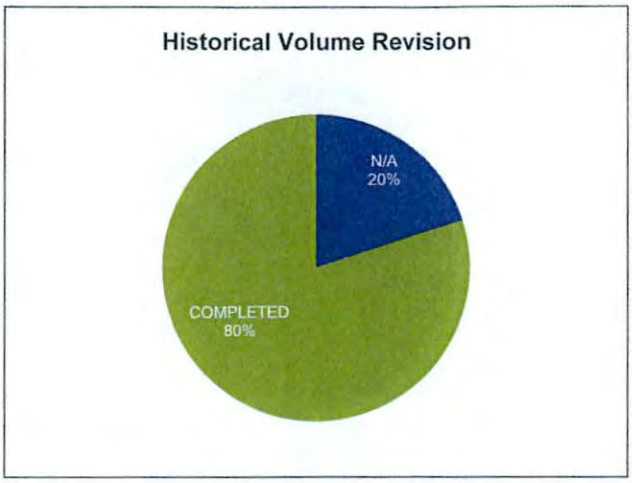
A workgroup was established to review CSO flow monitoring and resolve potential over/under reporting of overflow volumes. Initial findings indicated that potentially significant discrepancies between modeling and monitoring data existed at 33 of MSD's 98 CSO locations. This set of 33 CSOs was the highest priority to review, correct data, document SOPs, and implement changes. A summary for the initial 33 CSO locations was included in the FY17 ACD Annual Report. MSD will continue working to procure and replace equipment as required and update the programming at the PLC or with monitoring program logic, as summarized in Figure 1.13, to complete implementation of the SOPs.

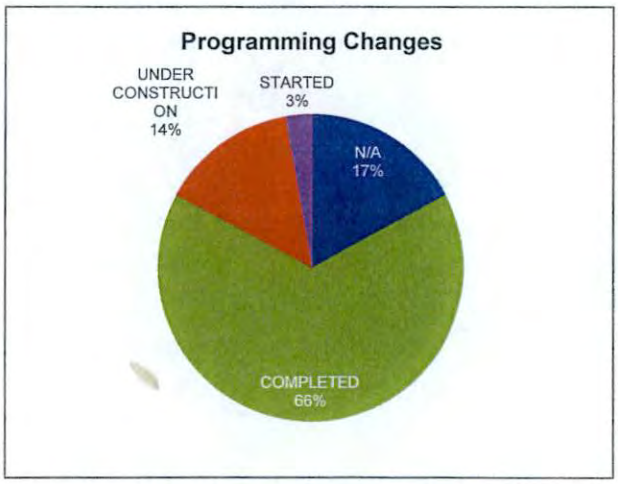
For the remaining 65 CSO locations, MSD performed site visits including elevation surveys, performed detailed analysis, investigated equipment configurations, and investigated PLC programming or monitoring program logic. MSD has also identified two inactive sites with historic data that were reviewed. MSD began calculation review, SOP development, and implementation of changes during this reporting period. This has led to the development of an SOP for each remaining CSO that describes the existing monitoring equipment, configuration, and flow calculation in use as of June 30, 2018, and evaluates the effectiveness of the existing setup. If a more effective arrangement was recommended, MSD added the proposed arrangement to the SOP for implementation and determined if historical data could be updated. In cases where the historical data could be updated, MSD has developed revised volumes for reporting. In some cases, historical volumes could not be recalculated based on the available data. For instance, CSOs influenced by river or creek elevation for which there was no available historic level data could not be recalculated for historical volumes but will be calculated or measured according to the revised SOPs as they are implemented.

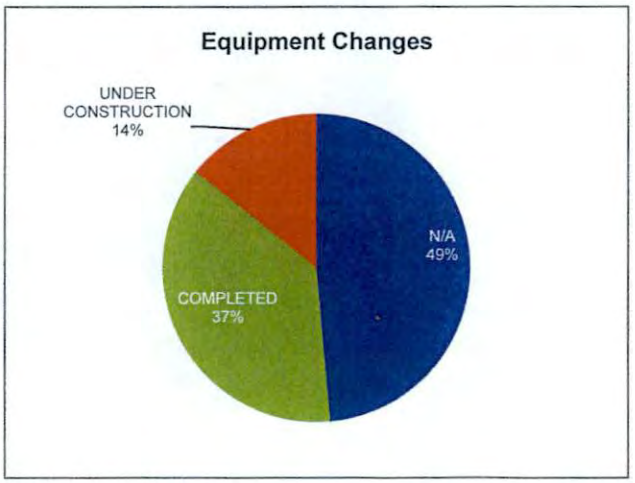
To date, SOPs have been drafted for all in service CSO locations and historical volume data corrections (where possible) have been made. Multiple SOPs require programming or equipment changes in order to implement the final SOPs. During the upcoming reporting period, MSD will continue working to procure and replace equipment as required and update the programming at the PLC or with monitoring program logic for the remaining 65 CSOs, as summarized in Figure 1.14 to complete implementation of the SOPs.

Until the review is complete, CSO flow monitoring data will continue to be included as an appendix to each quarterly report, will be listed as "Draft", and will include the statement "CSO data monitoring procedures are currently being revised". As changes are made to flow meter locations and or flow meter calculation algorithms, MSD will provide status updates in the quarterly reports on progress to evaluate data accuracy, revise monitoring data records, update monitoring procedures, and implement recommendations. CSO flow monitoring data reported quarterly will include updated volumes based on completion of the review and update of the reporting standards for each CSO. Any revised volumes for FY18 are included with FY18 CSO flow monitoring for all CSO locations in Appendix C. Any subsequently developed revised volumes for previous reporting periods up to and including FY19 will be included in the appendices to the FY19 Consent Decree Annual Report.

Figure 1.13. CSO Flow Monitoring Quality Improvement Status – Phase 1







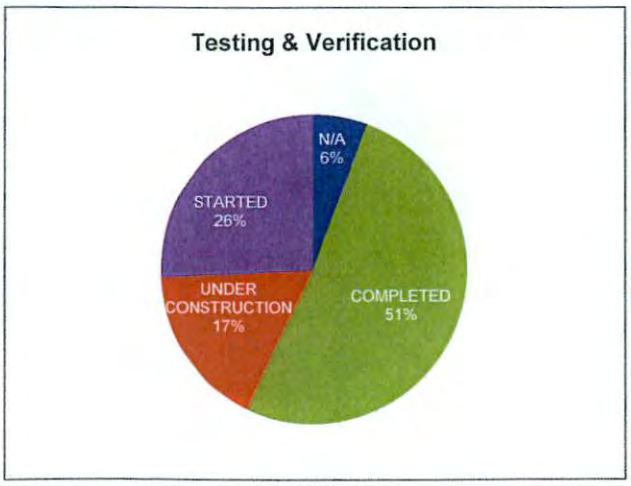
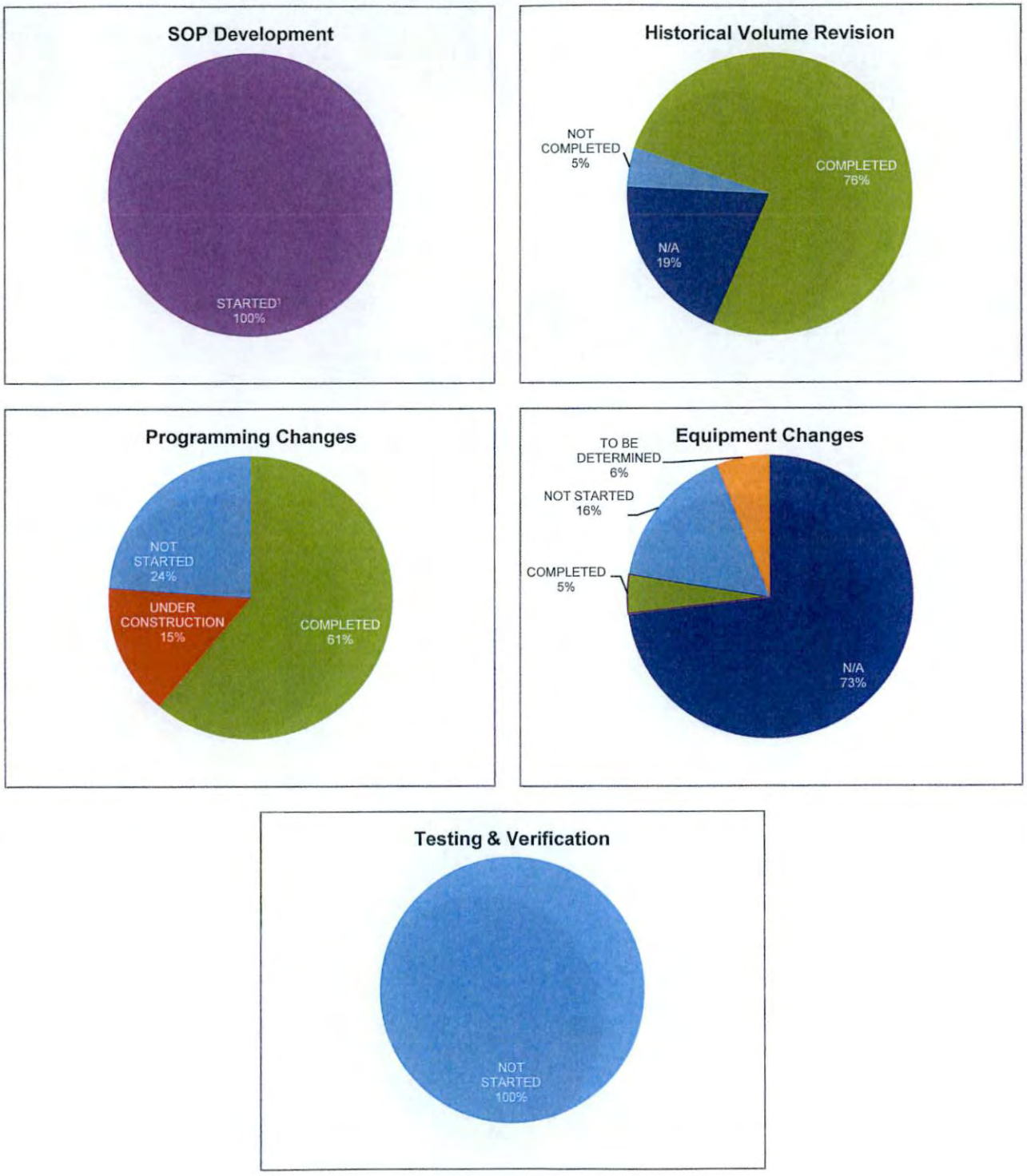


Figure 1.14. CSO Flow Monitoring Quality Improvement Status – Phase 2



[1]Draft SOPs are completed and under review.

1.2.4. COLLECTIONS SYSTEM OVERFLOW PERFORMANCE

At the end of the reporting period, MSD maintained 3,335 miles of sanitary and combined sewer mains in operation, including associated pump stations, manholes and other access points, and service lines.

1.2.4.1. UNAUTHORIZED DISCHARGES TO WATERS OF US - WET WEATHER SSOs

Table 1.19 and Figure 1.15 detail unauthorized discharges to WUS from the collections system by cause. Table 1.20 and Figure 1.16 detail unauthorized discharges to WUS from the collections system by asset.

Table 1.19. Wet Weather SSOs by Fiscal Year and Cause – Unauthorized Discharges to Waters of US

FY	ELECTRICAL PROBLEMS AT MSD	GREASE BLOCKAGE	MECHANICAL FAILURE	OBSTRUCTION -NOT GREASE / ROOTS	POWER OUTAGE (LG&E)	PUMPED DUE TO COE MANUAL	ROOTS	STRUCTURAL FAILURE	LACK OF SYSTEM CAPACITY	PUMPED OVERFLOW
FY08	2	2	3	0	3	0	3	1	369	136
FY09	4	1	1	0	20	0	1	0	53	26
FY10	4	0	0	0	8	0	0	0	289	55
FY11	3	0	1	2	5	5	2	2	623	99
FY12	2	1	5	0	1	0	0	1	425	30
FY13	1	0	2	0	1	0	3	1	250	5
FY14	0	0	3	5	2	0	1	2	359	10
FY15	3	1	2	1	1	0	3	2	374	7
FY16	1	0	0	0	0	0	0	5	309	3
FY17	2	0	3	0	1	0	0	1	63	0
FY18	2	0	2	1	2	0	2	2	191	1

Figure 1.15. Trend of Non-Capacity Related Wet Weather SSOs by Fiscal Year and Cause – Unauthorized Discharges to Waters of US

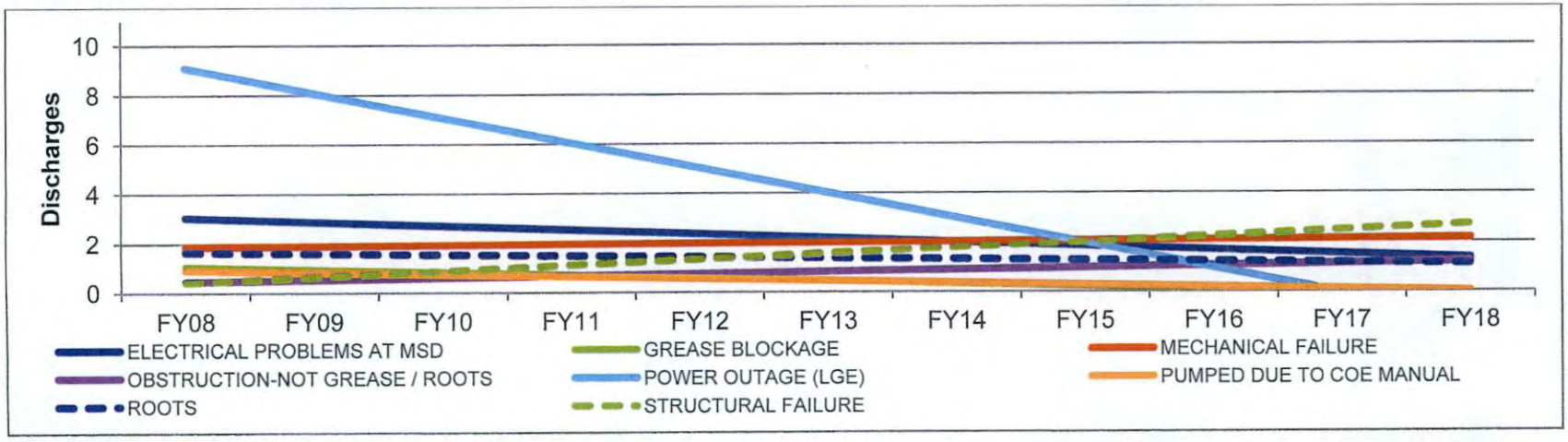
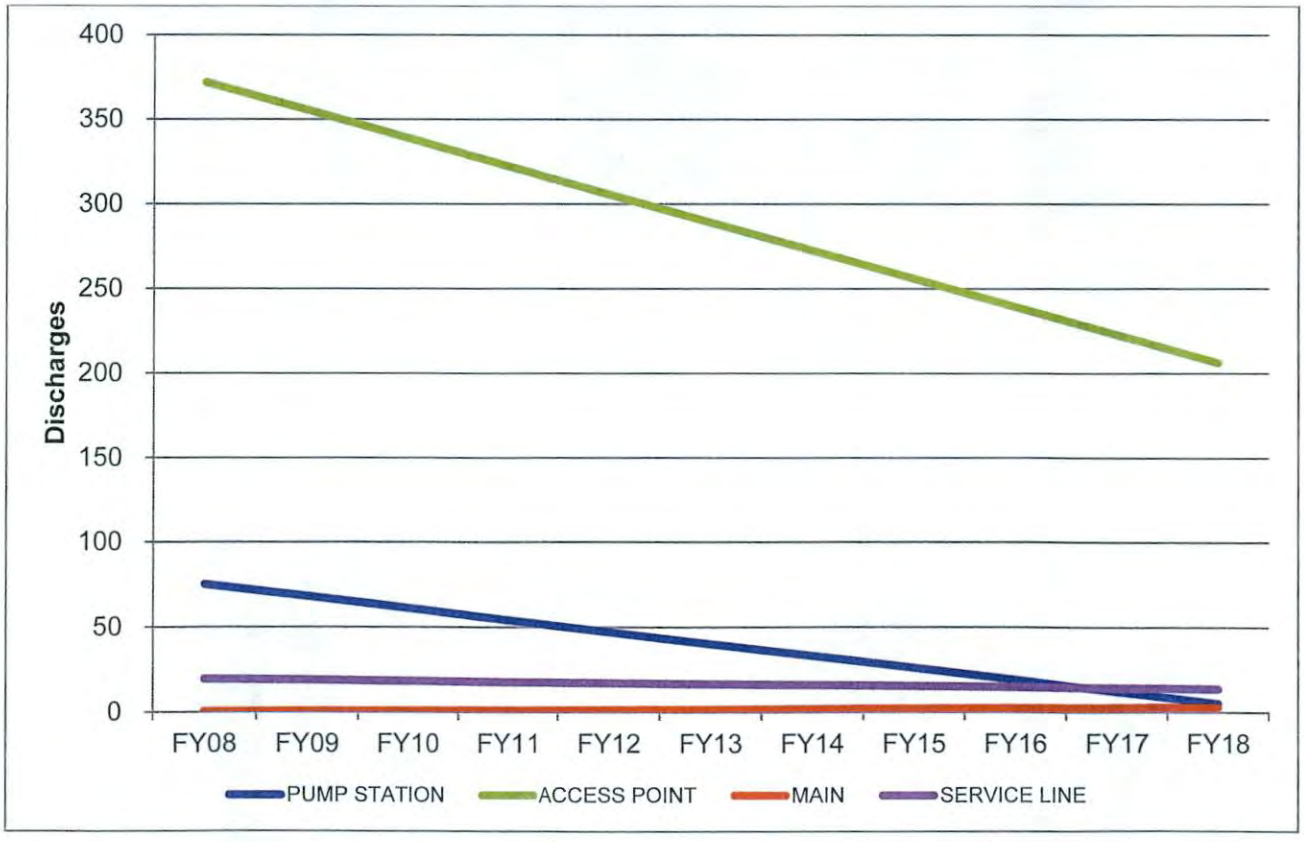


Table 1.20. Wet Weather SSOs by Fiscal Year and Asset – Unauthorized Discharges to Waters of US

FY	PUMP STATION	ACCESS POINT	MAIN	SERVICE CONNECTION
FY08	109	402	1	9
FY09	21	84	0	1
FY10	53	277	0	26
FY11	89	614	2	37
FY12	44	398	1	22
FY13	19	226	1	17
FY14	34	321	1	26
FY15	43	330	2	19
FY16	12	286	5	15
FY17	1	68	1	0
FY18	16	174	3	10

Figure 1.16. Trend of Wet Weather SSOs by Fiscal Year and Asset – Unauthorized Discharges to Waters of US



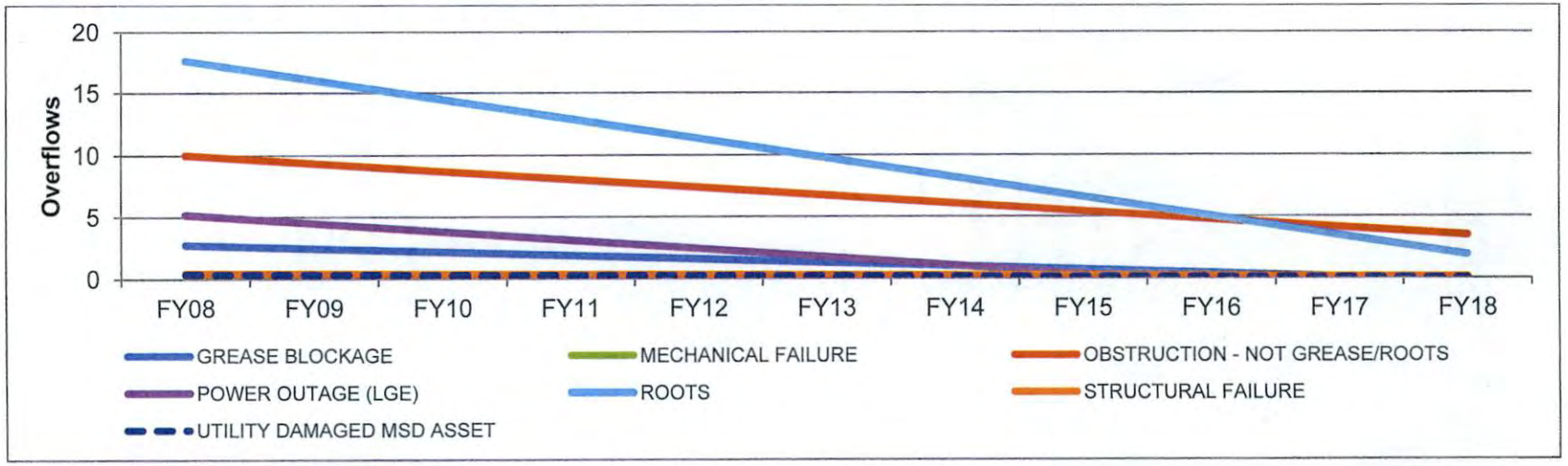
1.2.4.2. WET WEATHER OVERFLOWS TO THE INTERIOR

Table 1.21 and Figure 1.17 detail wet weather overflows to the interior from the collections system by cause.

Table 1.21. Wet Weather Overflows to the Interior by Fiscal Year and Cause

FY	GREASE BLOCKAGE	MECHANICAL FAILURE	OBSTRUCTION-NOT GREASE / ROOTS	POWER OUTAGE (LG&E)	ROOTS	STRUCTURAL FAILURE	UTILITY DAMAGED MSD ASSET	LACK OF SYSTEM CAPACITY
FY08	2	1	5	0	33	0	1	650
FY09	6	0	17	19	10	1	0	94
FY10	1	0	12	0	15	0	0	678
FY11	1	0	7	0	9	0	0	592
FY12	0	0	1	0	2	1	0	102
FY13	1	0	5	0	1	0	0	31
FY14	1	0	3	0	6	1	1	118
FY15	1	0	17	0	16	0	0	271
FY16	0	0	0	0	5	0	0	78
FY17	1	0	0	0	6	0	0	1
FY18	0	0	7	0	4	0	0	21

Figure 1.17. Trend of Non-Capacity Related Wet Weather Overflows to the Interior by Fiscal Year and Cause



1.2.4.3. WET WEATHER OVERFLOWS TO THE EXTERIOR

Table 1.22 and Figure 1.18 detail wet weather overflows to the exterior from the collections system by cause. Table 1.23 and Figure 1.19 detail wet weather overflows to the exterior from the collections system by asset.

1.2.4.4. WET WEATHER HAULING EVENTS

To reduce the number of overflows in wet weather, MSD hauls sewage from multiple locations. MSD proactively monitors known and suspected locations that have wet weather capacity issues which may cause sewer line surcharging, basement back-ups, and sanitary sewer overflows (SSOs). MSD staff only hauls from these locations as necessary and as resources allow. Hauling efforts are summarized in Table 1.24 and Figure 1.20 by month and in Table 1.25 and Figure 1.21 by asset.

Table 1.22. Wet Weather Overflows to the Exterior by Fiscal Year and Cause

FY	ELECTRICAL PROBLEMS AT MSD	GREASE BLOCKAGE	MECHANICAL FAILURE	OBSTRUCTION-NOT GREASE / ROOTS	POWER OUTAGE (LG&E)	PUMPED DUE TO COE MANUAL	ROOTS	STRUCTURAL FAILURE	UTILITY DAMAGED MSD ASSET	LACK OF SYSTEM CAPACITY	PUMPED OVERFLOW
FY08	0	0	1	0	0	0	4	0	1	12	0
FY09	0	0	0	3	3	0	1	2	0	0	0
FY10	0	0	0	2	0	0	2	0	0	13	1
FY11	0	0	0	1	0	0	0	0	0	24	0
FY12	0	0	1	2	3	0	0	1	0	8	0
FY13	0	0	0	1	0	0	0	0	0	3	0
FY14	0	0	0	0	0	1	1	1	0	2	0
FY15	0	0	1	1	0	1	0	0	0	17	0
FY16	0	0	0	0	0	0	2	0	0	13	0
FY17	1	0	0	0	0	0	0	1	0	3	0
FY18	0	1	2	1	0	0	3	1	0	6	0

Figure 1.18. Trend of Non-Capacity Related Wet Weather Overflows to the Exterior by Fiscal Year and Cause

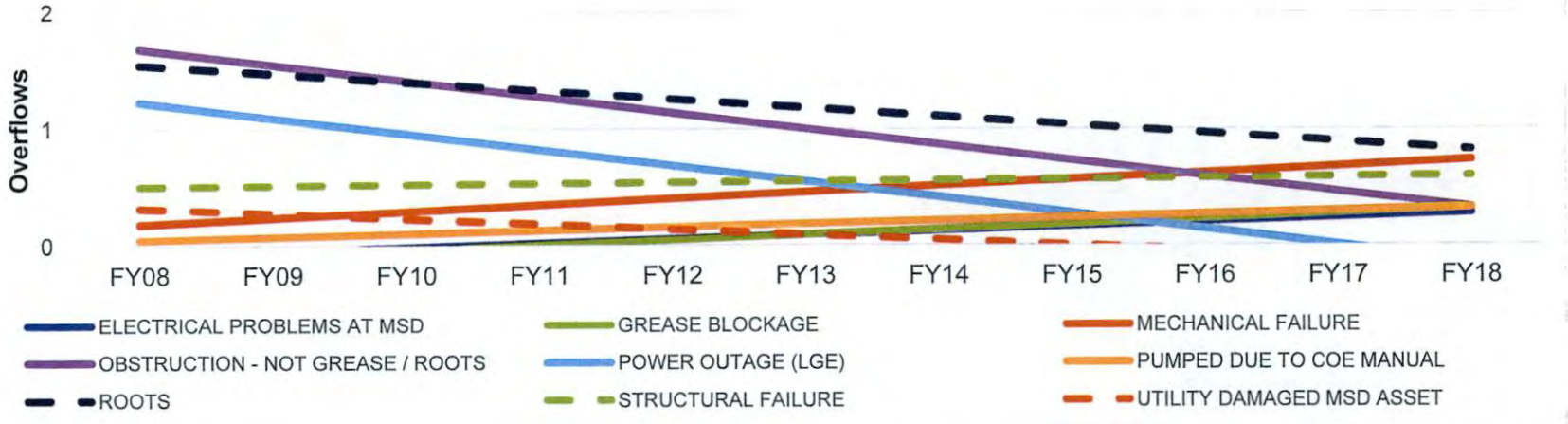


Table 1.23. Wet Weather Overflows to the Exterior by Fiscal Year and Asset

FY	PUMP STATION	ACCESS POINT	MAIN	SERVICE CONNECTION
FY08	2	14	1	1
FY09	3	2	1	3
FY10	1	12	1	4
FY11	0	22	0	2
FY12	1	9	2	3
FY13	0	3	1	0
FY14	0	3	0	2
FY15	1	9	3	9
FY16	1	5	2	7
FY17	3	1	1	0
FY18	4	2	4	4

Figure 1.19. Trend of Wet Weather Overflows to the Exterior by Fiscal Year and Asset

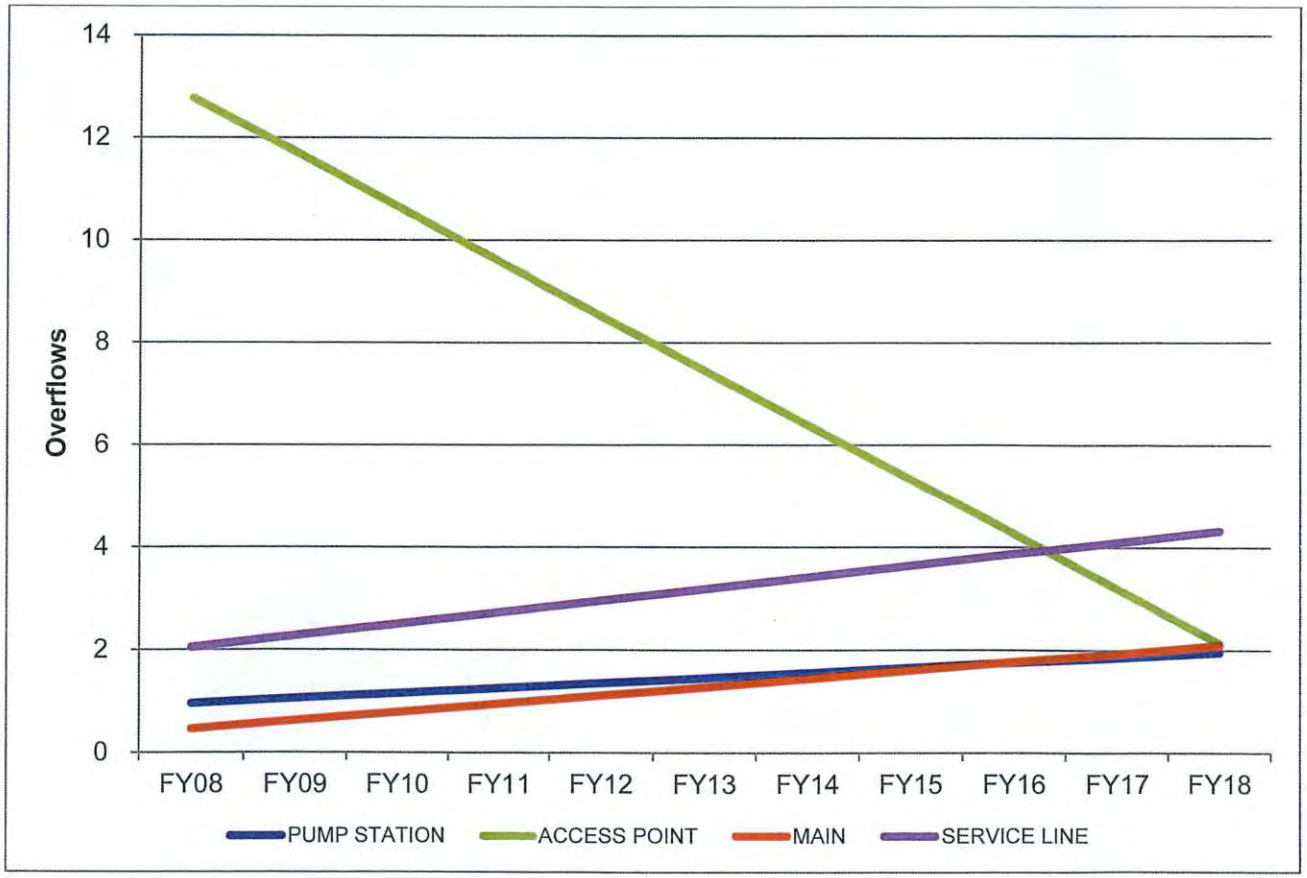


Table 1.24. Hauled Volumes in Gallons by Fiscal Year and Month

MONTH	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
FY08	22,200	0	13,900	1,168,150	41,500	1,470,550	164,300	857,950	4,016,003	1,752,920	1,049,000	19,000
FY09	62,000	24,500	1,834,650	10,000	13,600	550,800	1,330,700	785,280	34,300	634,500	572,400	337,400
FY10	1,367,135	1,794,300	426,300	1,581,950	13,900	452,850	897,800	451,400	100,050	178,650	2,245,750	162,900
FY11	199,500	112,500	571,750	63,622	944,900	76,400	111,500	1,034,200	868,650	2,541,850	1,524,000	660,400
FY12	72,600	146,500	261,800	3,500	938,050	738,700	196,700	12,500	267,100	162,800	604,400	62,700
FY13	33,000	0	77,500	39,300	0	568,700	444,500	0	753,600	58,400	235,500	178,100
FY14	287,600	15,500	320,500	366,100	165,300	167,600	90,400	125,000	22,600	556,710	167,300	0
FY15	41,000	66,500	133,200	58,500	5,000	194,000	0	9,500	509,400	250,300	3,000	58,100
FY16	130,900	3,650	76,000	42,500	95,000	176,100	3,500	115,500	24,700	4,001	0	0
FY17	34,000	0	0	11,500	3,000	123,000	9,200	18,000	10,000	8,000	12,800	6,000
FY18	300	50	15,660	3,000	34,200	0	0	360,700	29,000	3,000	216,500	0

Figure 1.20. Hauled Volumes by Fiscal Year and Month

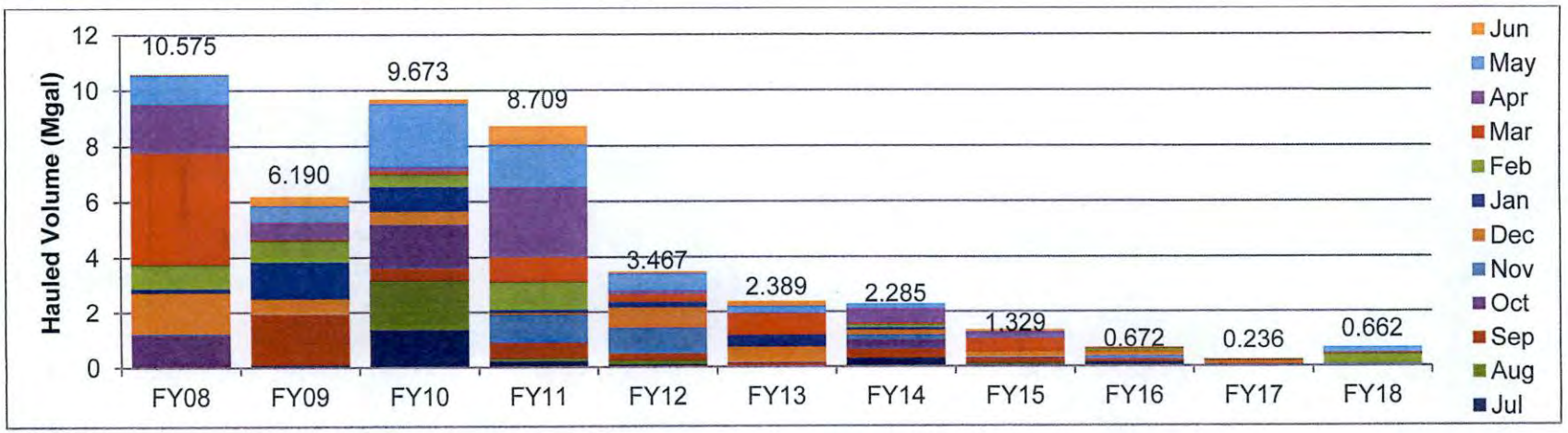
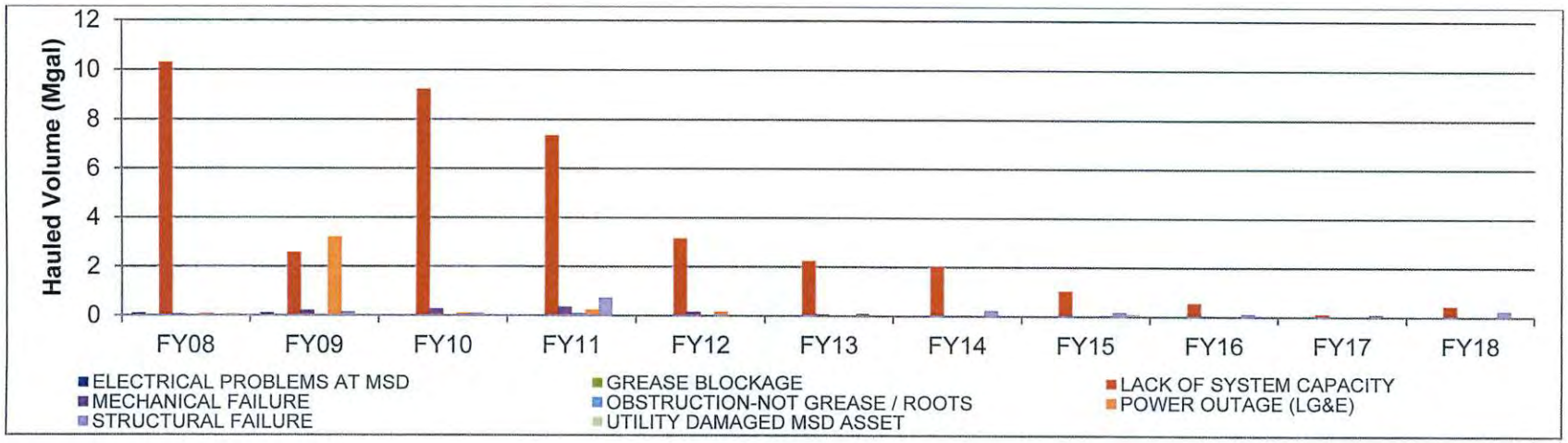


Table 1.25. Hauled Volumes in Gallons by Fiscal Year and Problem

FY	ELECTRICAL PROBLEMS AT MSD	GREASE BLOCKAGE	LACK OF SYSTEM CAPACITY	MECHANICAL FAILURE	OBSTRUCTION-NOT GREASE / ROOTS	POWER OUTAGE (LG&E)	STRUCTURAL FAILURE	UTILITY DAMAGED MSD ASSET
FY08	86,000	0	10,289,273	50,000	0	71,700	11,500	67,000
FY09	92,100	0	2,569,480	198,200	1,000	3,195,550	133,800	0
FY10	150	0	9,221,250	260,850	8,300	90,135	85,300	7,000
FY11	22,422	8,000	7,339,450	334,800	75,000	227,400	700,950	0
FY12	1,700	0	3,138,250	138,100	7,100	150,000	32,200	0
FY13	0	0	2,225,100	51,900	14,000	7,000	90,600	0
FY14	0	0	2,011,910	12,200	44,000	7,800	208,700	0
FY15	12,500	0	1,019,100	10,000	0	42,800	154,100	90,000
FY16	0	0	534,300	38,000	0	0	99,550	0
FY17	18,500	0	104,800	13,700	0	0	92,500	4,000
FY18	7,050	0	423,360	7,500	0	0	219,500	0

Figure 1.21. Hauled Volumes by Fiscal Year and Problem



1.2.4.5. UNAUTHORIZED DISCHARGES TO WATERS OF US - DRY WEATHER SSOs

Table 1.26 and Figure 1.22 detail unauthorized discharges to WUS from the collections system by cause. Table 1.27 and Figure 1.23 detail unauthorized discharges to WUS from the collections system by asset.

1.2.4.6. DRY WEATHER OVERFLOWS TO THE INTERIOR

Table 1.28 and Figure 1.24 detail dry weather overflows to the interior by cause.

1.2.4.7. DRY WEATHER OVERFLOWS TO THE EXTERIOR

Table 1.29 and Figure 1.25 detail dry weather overflows to the exterior by cause. Table 1.30 and Figure 1.26 detail dry weather overflows to the exterior by asset.

Table 1.26. Dry Weather SSOs by Fiscal Year and Cause – Unauthorized Discharges to Waters of US

FY	ELECTRICAL PROBLEMS AT MSD	GREASE BLOCKAGE	MECHANICAL FAILURE	OBSTRUCTION-NOT GREASE / ROOTS	POWER OUTAGE (LG&E)	PUMPED DUE TO COE MANUAL	ROOTS	STRUCTURAL FAILURE	UTILITY DAMAGED MSD ASSET
FY08	0	0	4	2	0	3	7	3	2
FY09	2	4	5	4	11	0	3	11	0
FY10	1	1	3	5	1	0	3	2	2
FY11	1	1	5	4	0	1	3	12	0
FY12	1	0	2	8	0	0	2	7	0
FY13	0	1	2	2	0	0	2	2	0
FY14	0	4	1	1	0	0	4	6	1
FY15	0	6	3	5	1	0	3	8	7
FY16	1	2	2	1	0	0	1	16	0
FY17	0	1	2	7	0	0	0	8	3
FY18	0	1	1	4	0	0	1	4	0

Figure 1.22. Trend of Dry Weather SSOs by Fiscal Year and Cause – Unauthorized Discharges to Waters of US

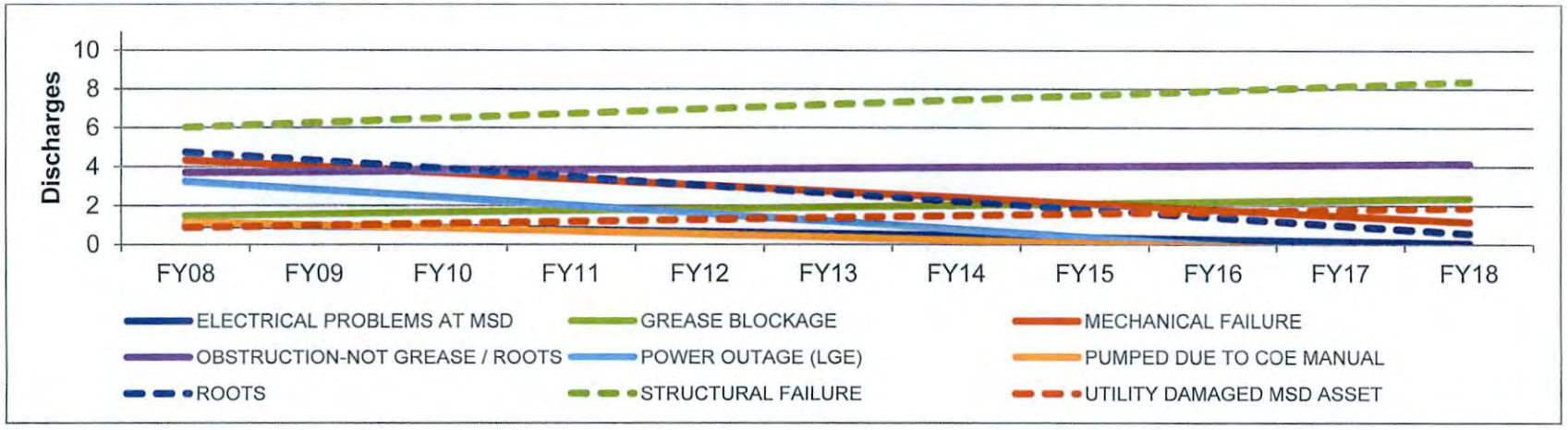


Table 1.27. Dry Weather SSOs by Fiscal Year and Asset – Unauthorized Discharges to Waters of US

FY	PUMP STATION	ACCESS POINT	MAIN	SERVICE CONNECTION
FY08	8	9	5	0
FY09	13	16	9	2
FY10	2	12	2	2
FY11	4	11	12	0
FY12	2	14	3	1
FY13	0	6	3	0
FY14	1	7	7	2
FY15	7	15	9	2
FY16	4	2	16	1
FY17	1	8	12	0
FY18	0	6	5	0

Figure 1.23. Trend of Dry Weather SSOs by Fiscal Year and Asset – Unauthorized Discharges to Waters of US

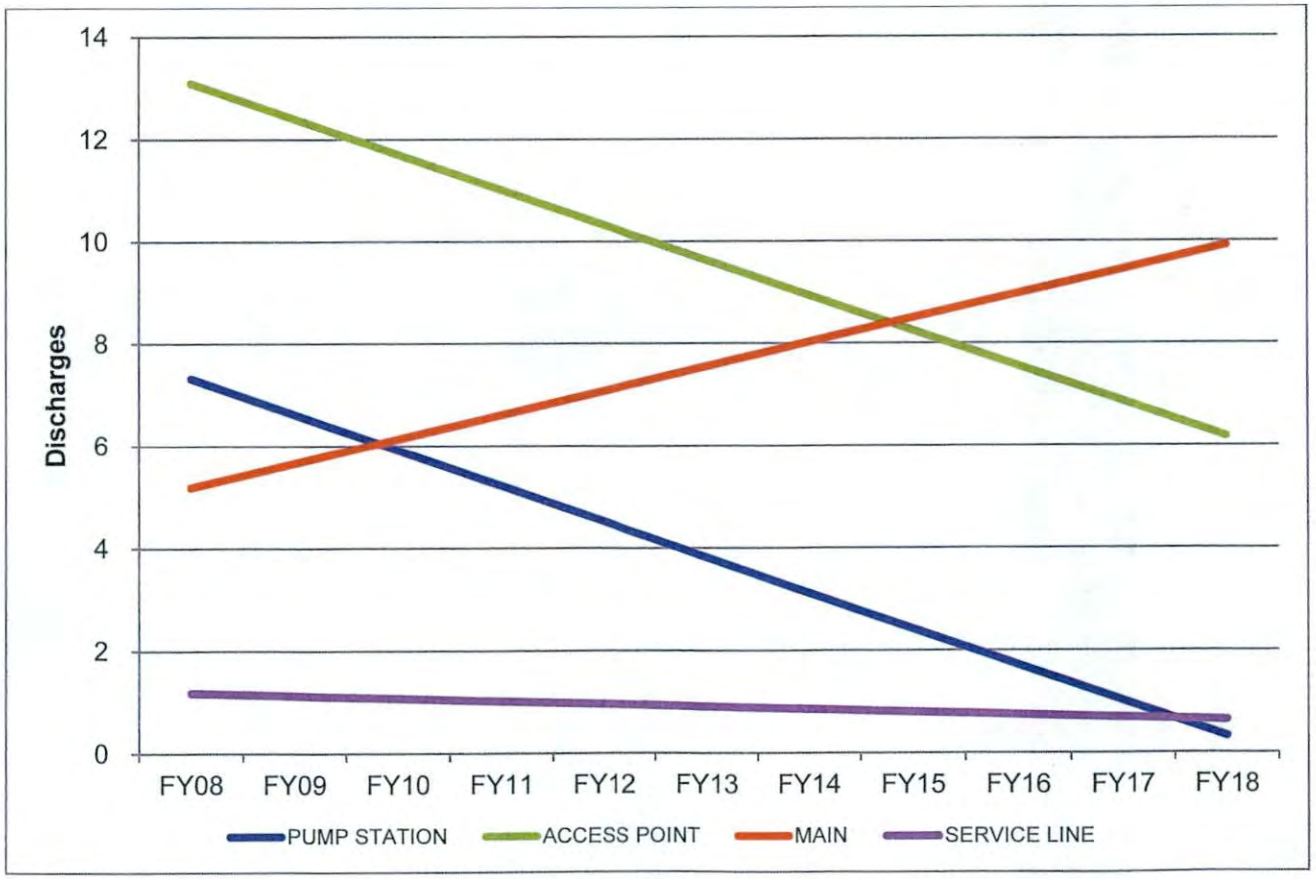


Table 1.28. Dry Weather Overflows to the Interior by Fiscal Year and Cause

FY	GREASE BLOCKAGE	MECHANICAL FAILURE	OBSTRUCTION-NOT GREASE / ROOTS	POWER OUTAGE (LG&E)	ROOTS	STRUCTURAL FAILURE	UTILITY DAMAGED MSD ASSET
FY08	7	1	38	0	71	3	2
FY09	8	0	74	14	55	1	2
FY10	9	1	72	0	61	1	7
FY11	16	0	80	0	70	3	2
FY12	19	0	66	0	48	8	0
FY13	21	0	46	0	55	1	4
FY14	18	0	46	0	49	5	9
FY15	36	1	359	0	361	5	1
FY16	22	1	20	0	43	0	0
FY17	18	0	96	0	153	3	1
FY18	7	0	29	0	16	2	0

Figure 1.24. Trend of Dry Weather Overflows to the Interior by Fiscal Year and Cause

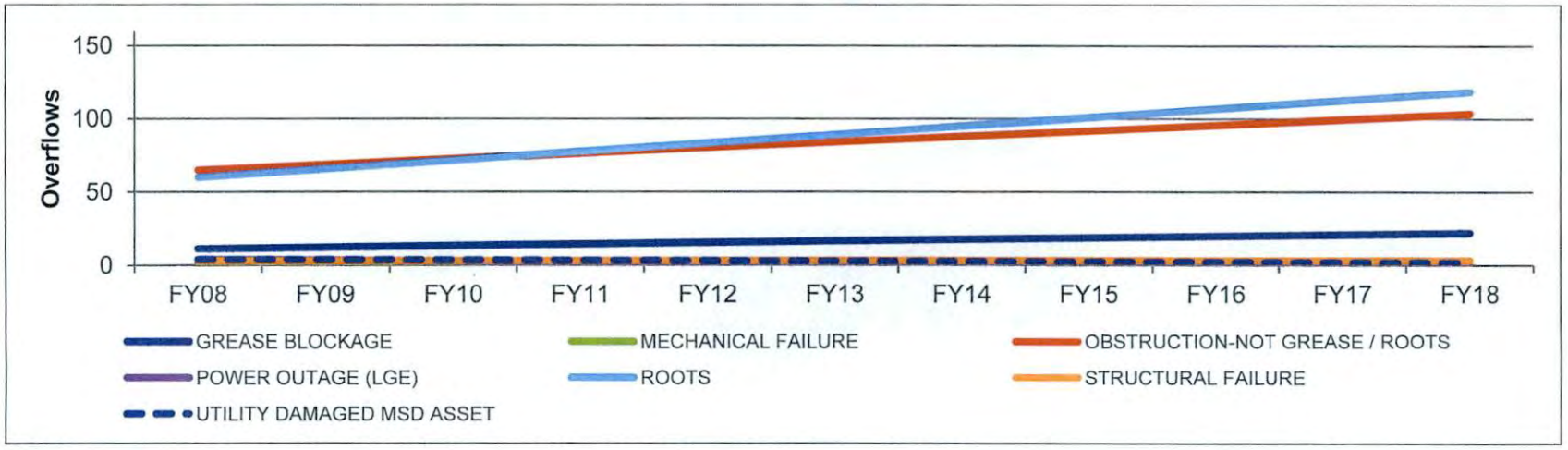


Table 1.29. Dry Weather Overflows to the Exterior by Fiscal Year and Cause

FY	ELECTRICAL PROBLEMS AT MSD	GREASE BLOCKAGE	MECHANICAL FAILURE	OBSTRUCTION-NOT GREASE / ROOTS	POWER OUTAGE (LG&E)	ROOTS	STRUCTURAL FAILURE	UTILITY DAMAGED MSD ASSET
FY08	0	4	8	8	0	6	4	0
FY09	4	4	10	9	16	2	7	0
FY10	2	0	11	14	1	4	4	3
FY11	2	4	8	11	1	9	10	0
FY12	1	7	2	10	0	8	5	2
FY13	0	0	2	5	0	1	8	0
FY14	0	5	1	5	0	0	4	1
FY15	1	4	2	35	0	22	7	3
FY16	0	5	4	11	0	7	4	2
FY17	0	10	3	23	0	22	6	0
FY18	0	5	8	15	0	6	6	1

Figure 1.25. Trend of Dry Weather Overflows to the Exterior by Fiscal Year and Cause

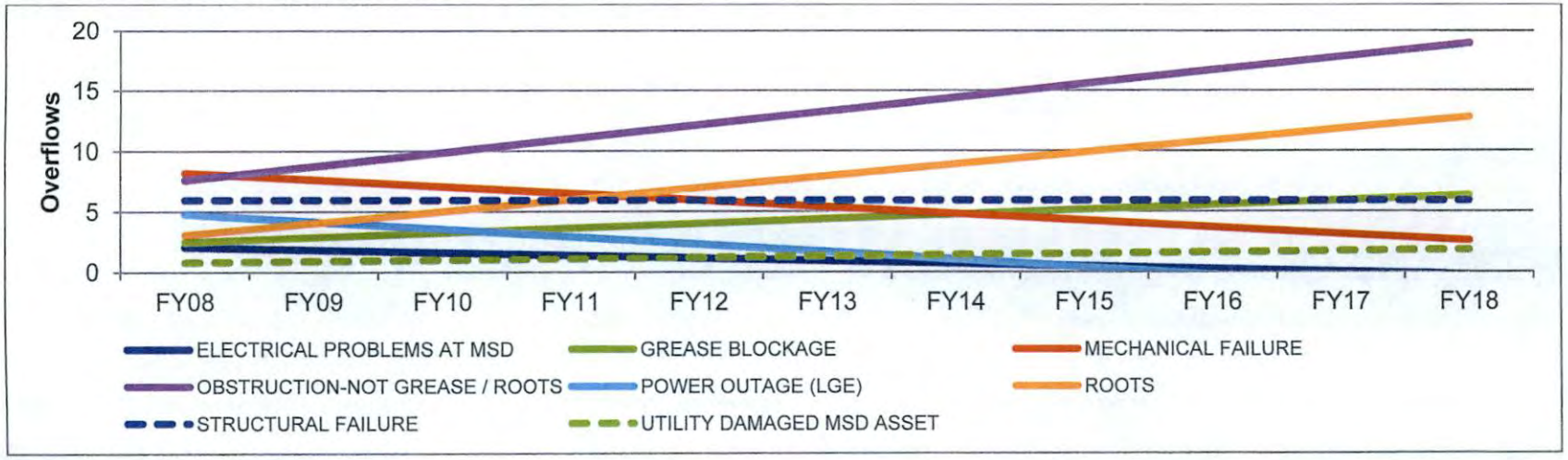
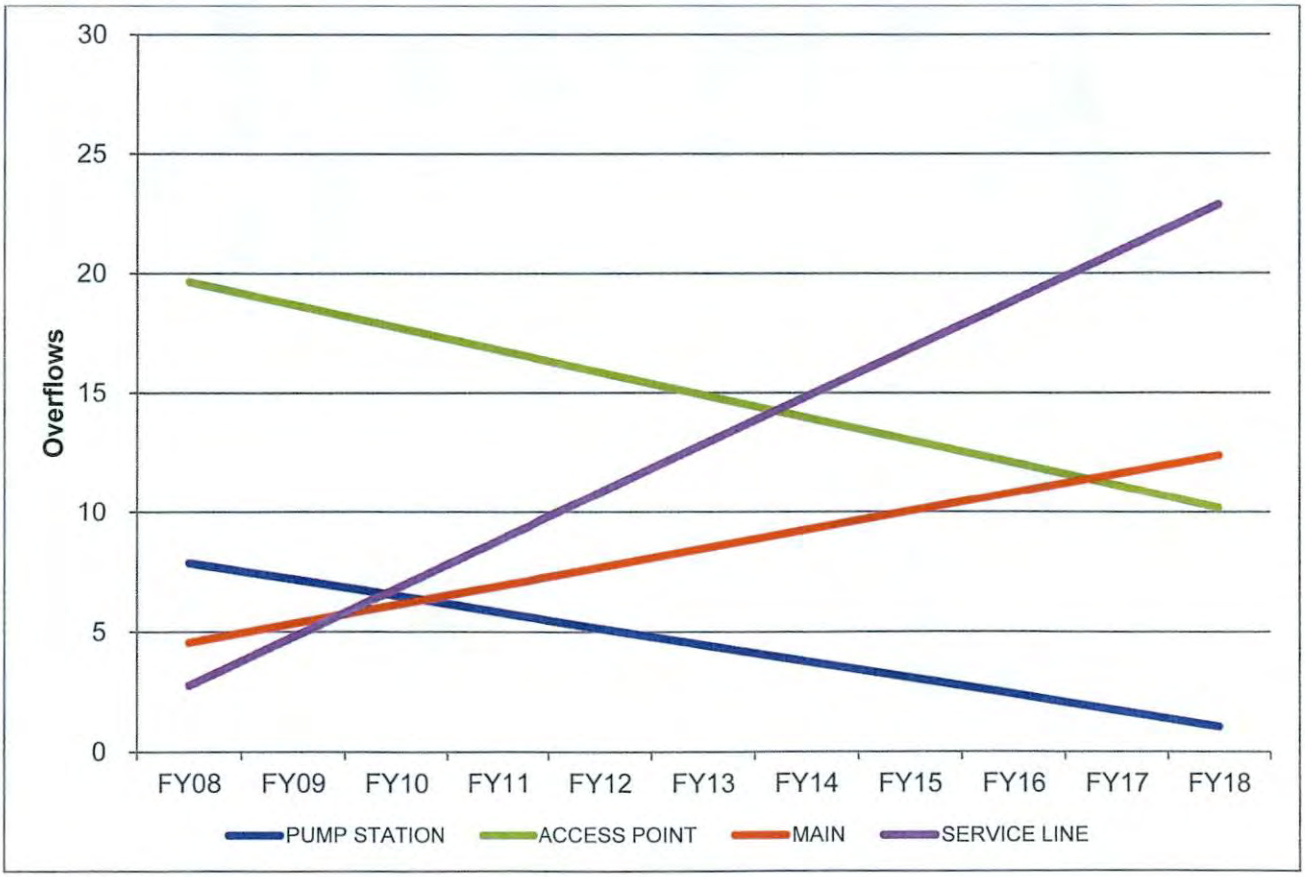


Table 1.30. Dry Weather Overflows to the Exterior by Fiscal Year and Asset

FY	PUMP STATION	ACCESS POINT	MAIN	SERVICE CONNECTION
FY08	3	16	3	8
FY09	18	18	10	6
FY10	5	25	6	3
FY11	8	25	7	5
FY12	2	19	6	8
FY13	0	6	7	3
FY14	0	7	4	5
FY15	5	7	12	50
FY16	1	11	8	13
FY17	3	12	17	32
FY18	4	18	11	8

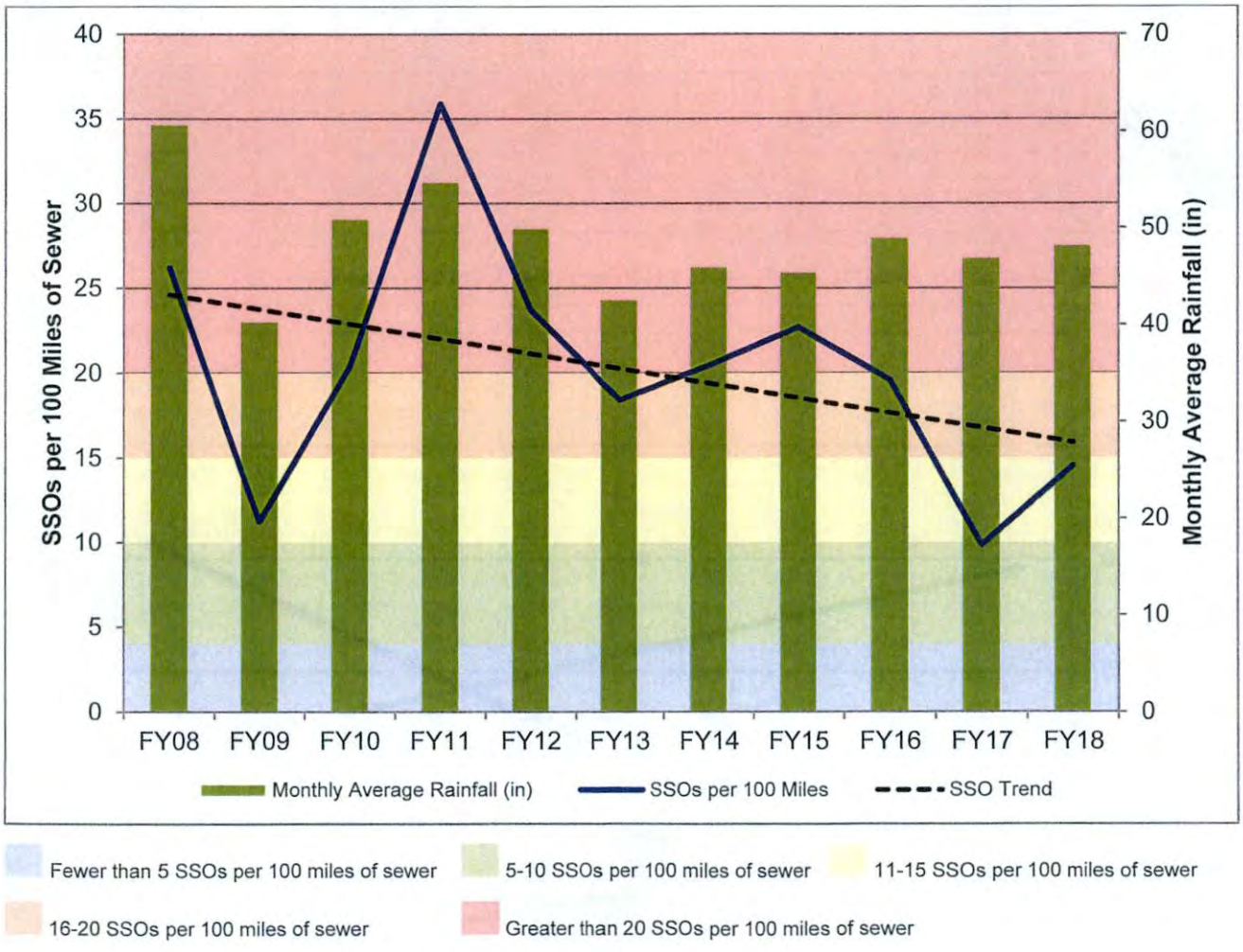
Figure 1.26. Trend of Dry Weather Overflows to the Exterior by Fiscal Year and Asset



1.2.4.8. SSOS PER 100 MILES OF SEWER

Per the request of EPA, and in keeping with benchmarks from other utilities, MSD has prepared the following analysis of SSOs per 100 Miles of sewer by cause for FY18, as well as by year and compared to national benchmarks. The background shading on the following chart represents benchmarking from other utilities and EPA studies of overflows per 100 miles of sewer. Although overflow occurrences are significantly influenced by rainfall, it is shown that MSD is trending favorably against benchmarks, and efforts documented in this Annual Report are proving effective at reducing overflows.

Figure 1.27. SSOs per 100 Miles of Sewer



SECTION 2: PROGRAM ACTIVITIES FOR NINE MINIMUM CONTROLS

2.1. NINE MINIMUM CONTROLS PROGRAM BACKGROUND

Per Paragraph 24.a. of the Amended Consent Decree, the Nine Minimum Controls (NMC) Compliance Report was initially submitted the Environmental Protection Agency (EPA) and to Kentucky Department of Environment Protection (KDEP) on February 10, 2006. MSD received an approval letter, dated February 22, 2007, for the NMC Compliance Report. The approved NMC Compliance document can be viewed on the MSD Project WIN website **www.msdlouky.org/projectwin**. Highlights of NMC program implementation are outlined below.

2.2. NMC 1: PROPER OPERATION AND MAINTENANCE PROGRAMS

FY18 Program

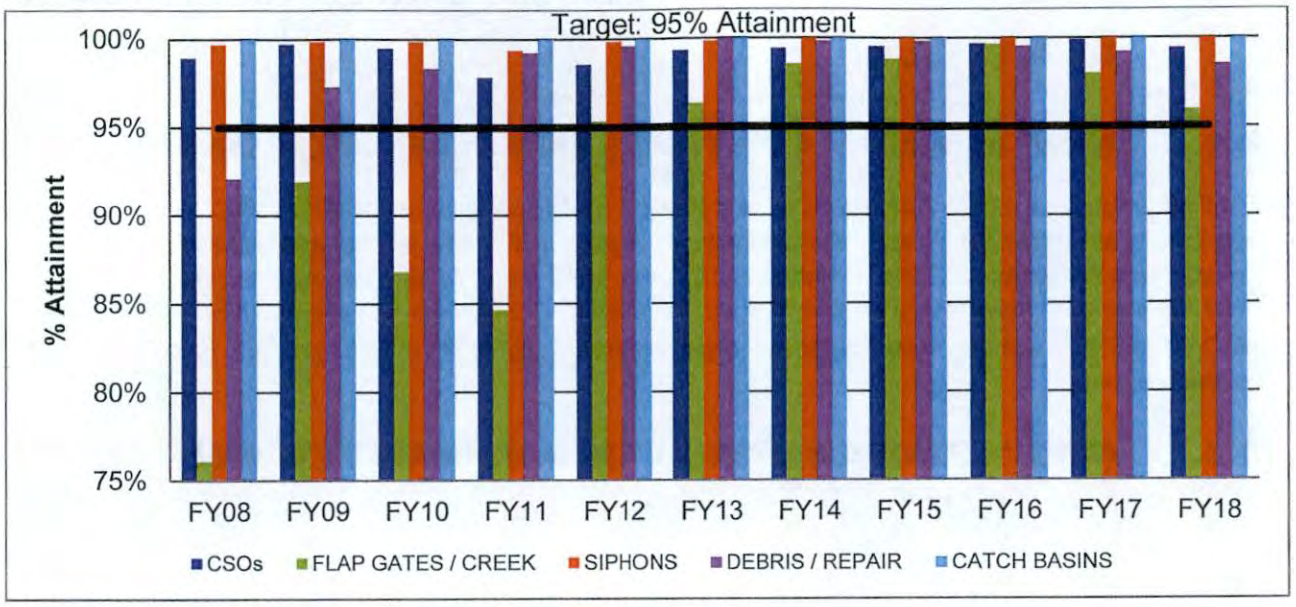
Program Implementation

- Inspected and cleaned 22,107 Catch Basins within the Combined Sewer System (CSS).
- Performed 5,180 weekly inspections on Combined Sewer Overflows (CSOs), 1,113 flap gate / creek inspections, 600 siphon inspections, and initiated 610 work orders for catch basin debris removal and/or repairs as determined to be necessary to allow proper system operation.
- Flushed 130 sewer line segments in the CSS, including 9,962 linear feet (1.9 miles) of sewer lines ranging in size from six to 54 inches. Performed formula-based PACP Television (TV) inspection on 135,496 feet (25.7 miles) of sewer lines.
- Continued to inspect, maintain and properly operate the CSS pump stations and the Morris Forman Water Quality Treatment Center (WQTC).
- Chemically treated 18,976 feet (3.6 miles) of combined sewer for roots.
- Achieved the 95% attainment program goals listed below, as shown in Figure 2.1.
    - 99% of CSOs inspected weekly.
    - 96% of flap gates inspected weekly.
    - 100% of siphons inspected monthly.
    - 99% of Debris or Repair Work Orders on CSO assets created the next workday after the inspection of the asset and open for no more than 5 days.
    - 100% catch basins within the CSS cleaned every 15 months.

Annual Training

- Conducted two sessions of CSO Field Training classes on September 3, 2017, and February 6, 2018.

Figure 2.1. NMC 1 Programmatic Implementation Attainment



Annual Asset Review and Documentation

- Continued projects to create improved access to selected CSO sites to facilitate cleaning activities.
- Continued to review catch basin areas against the CSS and explored re-alignment to confirm that the 15-month cleaning cycle is achieving regulatory commitments.

FY19 Program

Program Implementation

- Continue cleaning and inspection programs, and reporting on programmatic implementation goals.

Annual Training

- Incorporate the results of the annual field investigation to adjust and enhance the annual CSO Field Training modules.
- Schedule and conduct the annual CSO Field Training with the MSD Operations Division CSO/NMC staff and Morris Forman WQTC personnel.
- Develop online CSO & Siphon Training modules for MSD Operations Division CSO/NMC staff and Morris Forman WQTC personnel to supplement CSO Field Training.

Asset Review and Documentation

- Continue implementation of field verification efforts to determine operation and maintenance enhancements to be incorporated into annual training.
- Review the CSO inventory schematics and revise as necessary.
- Update the CSO characterization sheets to reflect the updated and calibrated hydraulic model.

2.3. NMC 2: MAXIMIZATION OF STORAGE IN THE COLLECTIONS SYSTEM

FY18 Program

Real Time Control (RTC) Optimization

- Continued operation of Phase 1 and 2 of the RTC system. During the reporting period, over 1,051 MG were stored in the system during rain events and routed to the Morris Forman WQTC once the system was able to handle the flow. See Figure 2.2 for a detailed report.
- Continued review of CSOs upstream of Morris Forman WQTC, and noted that flow through the plant is optimized prior to overflows occurring, as shown in quarterly reports for the reporting period.
- Continued utilization of "RTC active storage" to standardize the calculation of the volume of flow stored during wet weather events by RTC facilities.
- Continued Csoft maintenance and service agreement contract with RTC consultant.
- Completed integration of the InfoWorks Integrated Catchment Model (ICM) hydraulic model, ICM Exchange and Csoft. Evaluated multiple events to ensure Csoft 4 configurations were accurate and produced similar results as the Csoft 3. Deployed Csoft 4 and after a period of observation switched management of the system from Csoft 3 to Csoft 4 and the InfoWorks ICM hydraulic model.
- Completed the local site startup and integration of the RTC Phase 3 sites that include the Southeast Diversion Structure, Buechel Basin, Northern Ditch Diversion, and the Derek R Guthrie WQTC Wet Weather Treatment Facility.
- Worked with the RTC consultant under the RTC Phase 4 Integration to develop SOPs for the Southern Outfall Retention 1 (SOR1) facility, the Southwestern Parkway CSO Basin and the Clifton Heights CSO Basin. The SOPs for these sites will be implemented incrementally, starting with a period of manual operation to validate the control assumptions for each site, followed by increasing levels of system automation as the automated controls for individual components are implemented, validated, and then incorporated into the overall RTC system.
- Continued to implement recommendations for improvements designed to optimize the utilization and performance of the existing RTC system. Including the simplification of HMI programming and adjustments to position and flow deadband parameters to reduce the number of gate movements and improve operation of the Southwestern Outfall Retention 2 (SWOR2) facility.
- Completed installation of the SWOR2 Backup generator and automatic transfer switch.
- Completed survey and geotechnical investigation in support of the Sneads Branch preliminary design report to verify the constructability of the proposed Sneads Branch RTC Facility Upgrades planned to eliminate the Sneads Branch screening and pumping facility by directing flow and stored volumes of water to the Logan CSO basin for discharge to the Beargrass Interceptor. The design of the upgrade will be initiated during the upcoming period.

- Released the Ashland RTC Facility Upgrades project for bid, the project includes gate and check valve replacement and the installation of a backup generator to improve RTC operations and site reliability. Construction will occur during the upcoming reporting period.
- Integrated new rain gauges deployed by MSD into the RTC system to improve flow prediction and weather forecasting capabilities.
- Initiated the development of educational presentations for MSD operations and engineering staff focused on the fundamentals of the RTC system operations and the role of RTC in the MSD system and IOAP projects.

Storage Optimization

- Continued to monitor the performance of the CSO108 Dam Modification, a bending weir installed at CSO108. Flow monitoring improvements, hydraulic model calibration, and field investigations were completed in FY18 to evaluate performance and determine the need for additional mitigation in this CSO area. Updates provided to KDOW and EPA relayed that green infrastructure as a source mitigation option was not viable, and the approved IOAP benefit-cost methodology was applied to remaining potential solution alternatives. This assessment demonstrated that the most effective solution was inline storage via the existing bending weir, as implemented, at a Level of Control of eight overflows per Typical Year. A minor project modification was accepted on September 27, 2018, requesting a change in the level of control from four to eight overflows per year. While modeling data shows a nominal (0.2 MG) increase to the project's projected residual AAOV, this volume will be offset in other areas to maintain the expected system-wide capture when IOAP implementation is complete. CSO108 is one of several LTCP projects whose post-construction compliance results are dependent on the completion of upstream SSDP projects between 2020 and 2024. Flows will continue to be monitored as these projects are implemented.
- Continued to monitor and review the performance of the RTC sites and system under Csoft 4, developing recommendations for improvements, and implementing these recommendations as needed to optimize the utilization and performance of the RTC system.
- Completed the adjustment of gates at Brady Lake and Executive Inn storage facilities to eliminate leakage and improve facility operation.
- Placed the Logan CSO Basin into service and operated manually while local site and RTC programming is updated. The site will be integrated into RTC during the next reporting period.
- Attained substantially operational status at the SOR1 facility and initiated RTC programming of the facility.
- Completed SWOR1 / Southwest Sluice Gate (SWSG) repairs. The gates and actuators for the SWSG have been installed and the site is being operated manually while local site and RTC programming is updated. The site will be reintegrated into RTC during the next reporting period after which the set point will be gradually increased utilizing a step-wise approach.
- Advertised for bid dam raises and new solids & floatables (S&F) controls for the following CSOs: CSO029, CSO036, CSO178, CSO181, CSO193, CSO195, CSO196, CSO197. CSO198, CSO199, CSO201, and CSO202. Construction will be completed by December 31, 2018.

Table 2.1. Wet Weather Storage in the Morris Forman Sewer System via the RTC System

EVENT NUMBER	WET WEATHER EVENT			RAINFALL			CSO SAVED VOLUME (MG)								HIGH RIVER LEVELS	COMMENTS
	START DATE	END DATE	DURATION	AVERAGE*	MAX**		SWPS SG CHAMBER (14.5)+	SWOR2 (7.5)	BRADY LAKE AND EXECUTIVE INN STORAGE (13.4)	SOUTHERN OUTFALL (3.5)	ASHLAND (1.0)	OHIO RIVER INTERCEPTOR (4.1)	SNEADS BRANCH (2.5)	TOTAL (46.5)		
				TRFD (IN)	TRFD (IN)	RAIN GAUGE										
2017-046	6/30/17 21:30	7/2/17 15:50	42:20:00	0.46	0.74	TR04	5.80	3.30	1.70	3.50	0.55	4.15	1.17	20.17	No	Moderate storm cells homogeneously distributed over the service area. The SWSG site was controlled manually. The storage capacity at the SWSG site is restricted due to the damaged Gate 2.
2017-048	7/6/17 4:20	7/7/17 16:00	35:40:00	1.09	1.78	TR15	9.20	2.50	3.30	5.90	0.95	5.30	0.91	28.06	No	Large back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually. The storage capacity at the SWSG site is restricted due to the damaged Gate 2.
2017-049	7/7/17 20:55	7/9/17 5:00	32:05:00	0.34	0.57	TR11	5.65	1.85	1.60	3.30	0.75	4.45	0.60	18.20	No	Moderate storm cells homogeneously distributed over the service area. The SWSG site was controlled manually. The storage capacity at the SWSG site is restricted due to the damaged Gate 2.
2017-051	7/23/17 2:30	7/26/17 8:30	78:00:00	1.13	1.50	TR12	6.80	3.70	5.10	3.70	0.80	4.40	1.75	26.25	No	Large back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually. The storage capacity at the SWSG site is restricted due to the damaged Gate 2.
2017-052	7/28/17 6:00	7/28/17 19:25	13:25:00	0.31	0.78	TR12	0.35	0.30	0.05	2.90	0.00	4.30	0.25	8.15	No	Small storm cells heterogeneously distributed over the service area. The SWSG site was controlled manually. The storage capacity at the SWSG site is restricted due to the damaged Gate 2.
2017-053	8/1/17 21:55	8/2/17 22:05	24:10:00	0.39	0.88	TR14	1.35	0.50	0.10	3.35	0.10	3.70	0.20	9.30	Yes	Small storm cells heterogeneously distributed over the service area. The SWSG site was controlled manually. The storage capacity at the SWSG site is restricted due to the damaged Gate 2.
2017-054	8/6/17 14:55	8/7/17 16:50	25:55:00	0.64	0.72	TR12	5.80	2.95	1.80	3.50	0.55	4.70	0.55	19.85	No	Moderate storm cells homogeneously distributed over the service area. The SWSG site was controlled manually. The storage capacity at the SWSG site is restricted due to the damaged Gate 2.
2017-056	8/17/17 15:30	8/18/17 21:45	30:15:00	1.50	3.08	TR11	7.75	5.05	7.05	3.45	0.70	4.45	1.45	29.90	No	Large back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually. The storage capacity at the SWSG site is restricted due to the damaged Gate 2.
2017-058	8/22/17 13:15	8/24/17 17:50	52:35:00	0.52	0.93	TR04	5.35	2.35	1.45	3.65	0.55	4.50	0.90	18.75	No	Moderate storm cells homogeneously distributed over the service area. The SWSG site was controlled manually. The storage capacity at the SWSG site is restricted due to the damaged Gate 2.

Table 2.1. Wet Weather Storage in the Morris Forman Sewer System via the RTC System

EVENT NUMBER	WET WEATHER EVENT			RAINFALL			CSO SAVED VOLUME (MG)								HIGH RIVER LEVELS	COMMENTS
	START DATE	END DATE	DURATION	AVERAGE*	MAX**		SWPS SG CHAMBER (14.5)+	SWOR2 (7.5)	BRADY LAKE AND EXECUTIVE INN STORAGE (13.4)	SOUTHERN OUTFALL (3.5)	ASHLAND (1.0)	OHIO RIVER INTERCEPTOR (4.1)	SNEADS BRANCH (2.5)	TOTAL (46.5)		
				TRFD (IN)	TRFD (IN)	RAIN GAUGE										
2017-059	8/31/17 18:05	9/5/17 7:25	109:20:00	4.05	5.52	TR11	9.75	5.70	14.10	5.05	1.00	7.05	4.25	46.90	No	Very large storm cells homogeneously distributed over the service area . The SWSG site was controlled manually. The storage capacity at the SWSG site is restricted due to the damaged Gate 2.
2017-061	9/12/17 6:30	9/14/17 18:15	59:45:00	0.67	0.96	TR12	2.40	2.10	0.45	3.65	0.25	9.40	0.10	18.35	No	Moderate back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually. The storage capacity at the SWSG site is restricted due to the damaged Gate 2.
2017-062	9/19/17 8:20	9/19/17 19:00	10:40:00	0.55	0.68	TR15	6.30	1.60	1.95	3.50	0.45	4.40	0.50	18.70	No	Moderate back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually. The storage capacity at the SWSG site is restricted due to the damaged Gate 2.
2017-063	10/7/17 21:00	10/9/17 9:15	36:15:00	2.24	2.73	TR12	9.35	2.30	7.55	8.10	1.65	4.30	3.10	36.35	No	Very large back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually. The storage capacity at the SWSG site is restricted due to the damaged Gate 2.
2017-064	10/10/17 13:10	10/11/17 5:15	16:05:00	0.82	1.17	TR12	4.65	1.40	2.70	3.25	0.90	1.75	N.A.	14.65	No	Moderate storm cells heterogeneously distributed over the service area. The SWSG site was controlled manually. The storage capacity at the SWSG site is restricted due to the damaged Gate 2. Invalid level meter data at Sneads Branch.
2017-065	10/23/17 4:40	10/24/17 9:25	28:45:00	0.83	1.11	TR12	4.00	0.00	0.95	3.10	0.00	2.15	0.35	10.55	No	Small back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually. The storage capacity at the SWSG site is restricted due to the damaged Gate 2. Invalid level meter data at SWPS ; CSO saved volume estimated to the best of available data.
2017-066	10/27/17 16:40	10/28/17 17:35	24:55:00	1.10	1.46	TR12	7.00	0.00	3.45	3.20	0.65	2.05	0.50	16.85	No	Large storm cells homogeneously distributed over the service area. The SWSG site was controlled manually. The storage capacity at the SWSG site is restricted due to the damaged Gate 2.
2017-068	11/3/17 4:15	11/4/17 7:55	27:40:00	0.96	1.76	TR12	4.04	2.43	1.78	3.50	0.35	1.95	1.80	15.85	No	Large back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually. The storage capacity at the SWSG site is restricted due to the damaged Gate 2.

Table 2.1. Wet Weather Storage in the Morris Forman Sewer System via the RTC System

EVENT NUMBER	WET WEATHER EVENT			RAINFALL			CSO SAVED VOLUME (MG)								HIGH RIVER LEVELS	COMMENTS
	START DATE	END DATE	DURATION	AVERAGE*	MAX**		SWPS SG CHAMBER (14.5)+	SWOR2 (7.5)	BRADY LAKE AND EXECUTIVE INN STORAGE (13.4)	SOUTHERN OUTFALL (3.5)	ASHLAND (1.0)	OHIO RIVER INTERCEPTOR (4.1)	SNEADS BRANCH (2.5)	TOTAL (46.5)		
				TRFD (IN)	TRFD (IN)	RAIN GAUGE										
2017-069	11/6/17 0:25	11/6/17 17:20	16:55:00	0.36	0.71	TR05	1.05	0.00	1.10	3.20	0.05	1.30	0.65	7.35	No	Moderate back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually. The storage capacity at the SWSG site is restricted due to the damaged Gate 2.
2017-070	11/6/17 23:35	11/7/17 15:45	16:10:00	0.26	0.32	TR12	0.00	0.00	0.15	1.15	0.05	0.95	0.05	2.35	No	Small back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually. The storage capacity at the SWSG site is restricted due to the damaged Gate 2.
2017-072	11/15/17 10:55	11/15/17 21:50	10:55:00	0.29	0.36	TR04	1.40	0.00	0.60	2.50	0.10	1.60	0.20	6.40	No	Small storm cells homogeneously distributed over the service area. The SWSG site was controlled manually. The storage capacity at the SWSG site is restricted due to the damaged Gate 2.
2017-073	11/18/17 15:10	11/19/17 0:25	9:15:00	0.29	0.43	TR04	0.30	0.00	0.40	3.50	0.10	1.80	0.25	6.35	No	Moderate back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually. The storage capacity at the SWSG site is restricted due to the damaged Gate 2.
2017-074	12/4/17 20:00	12/5/17 17:50	21:50:00	0.89	1.15	TR14	4.05	1.80	3.30	3.20	0.75	2.75	1.30	17.15	No	Large back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually. The storage capacity at the SWSG site is restricted due to the damaged Gate 2.
2017-075	12/22/17 16:55	12/24/17 8:55	40:00:00	1.60	1.96	TR04	0.00	1.25	5.50	2.55	1.45	1.55	1.00	13.30	No	Large back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually. The storage capacity at the SWSG site is restricted due to the damaged Gate 2.
2018-002	1/11/18 7:20	1/13/18 7:25	48:05:00	0.55	0.69	TR14	3.70	3.60	1.30	6.70	1.00	7.85	0.05	24.20	No	Moderate back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-006	1/22/18 10:50	1/23/18 3:30	16:40:00	0.14	0.22	TR04	0.00	2.80	0.75	****	0.65	****	0.05	4.25	No	Small storm cells heterogeneously distributed over the service area. The SWSG site was controlled manually. **** MDS data unavailable from 01/21/2018 23:40 to 01/22/2018 15:55.
2018-007	1/27/18 13:20	1/28/18 3:05	13:45:00	0.42	0.53	TR12	1.25	1.80	0.85	2.10	0.40	4.00	0.05	10.45	No	Moderate back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.

Table 2.1. Wet Weather Storage in the Morris Forman Sewer System via the RTC System

EVENT NUMBER	WET WEATHER EVENT			RAINFALL			CSO SAVED VOLUME (MG)								HIGH RIVER LEVELS	COMMENTS
	START DATE	END DATE	DURATION	AVERAGE*	MAX**		SWPS SG CHAMBER (14.5)*	SWOR2 (7.5)	BRADY LAKE AND EXECUTIVE INN STORAGE (13.4)	SOUTHERN OUTFALL (3.5)	ASHLAND (1.0)	OHIO RIVER INTERCEPTOR (4.1)	SNEADS BRANCH (2.5)	TOTAL (46.5)		
				TRFD (IN)	TRFD (IN)	RAIN GAUGE										
2018-010	2/6/18 23:10	2/7/18 21:35	22:25:00	0.63	0.74	TR14	9.70	3.85	1.20	3.40	0.90	4.00	0.40	23.45	No	Moderate back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-011	2/10/18 5:40	2/12/18 2:45	45:05:00	0.60	0.73	TR14	9.65	4.80	2.50	3.70	1.15	4.35	0.45	26.60	No	Moderate back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-013	2/14/18 6:00	2/15/18 6:55	24:55:00	0.48	0.65	TR12	4.95	5.35	2.15	3.80	1.50	4.50	0.20	22.45	Yes	Moderate back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-014	2/16/18 2:15	2/19/18 8:55	78:40:00	0.94	1.18	TR12	10.95	3.45	3.50	3.60	0.75	4.20	0.20	26.65	Yes	Large back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-016	2/21/18 4:40	2/23/18 1:10	44:30:00	2.07	2.40	TR04	1.30	1.05	1.15	2.95	0.10	3.45	2.85	12.85	Yes	Large back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-017	2/23/18 1:10	2/27/18 8:00	102:50:00	4.08	4.70	TR14	7.45	6.95	6.90	6.95	0.50	8.15	5.00	41.90	Yes	Very large back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-021	3/9/18 23:30	3/10/18 16:05	16:35:00	0.54	0.60	TR05	6.65	3.60	1.20	2.55	0.75	3.00	0.30	18.05	No	Moderate back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-022	3/11/18 21:30	3/12/18 21:55	24:25:00	0.18	0.24	TR12	0.40	1.25	0.35	0.40	0.05	4.20	0.05	6.70	No	Small back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-024	3/19/18 12:55	3/21/18 3:00	38:05:00	0.39	0.51	TR13	1.20	0.10	0.05	2.45	0.00	3.60	0.05	7.45	No	Small storm cells heterogeneously distributed over the service area. The SWSG site was controlled manually.
2018-025	3/21/18 18:30	3/23/18 2:30	32:00:00	0.58	0.75	TR12	1.60	0.95	0.25	0.00	0.25	2.00	0.00	5.05	No	Moderate storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-026	3/24/18 4:05	3/26/18 7:35	51:30:00	1.13	1.27	TR11	12.20	4.20	1.80	2.85	0.85	3.35	0.95	26.20	No	Large back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-028	3/27/18 14:10	3/31/18 7:45	89:35:00	1.14	1.33	TR13	16.40	4.65	4.30	5.00	1.15	5.85	1.20	38.55	No	Large back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-029	3/31/18 22:20	4/3/18 9:50	59:30:00	0.94	1.06	TR12	17.70	5.00	2.90	3.30	1.20	3.85	0.95	34.90	Yes	Large back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.

Table 2.1. Wet Weather Storage in the Morris Forman Sewer System via the RTC System

EVENT NUMBER	WET WEATHER EVENT			RAINFALL			CSO SAVED VOLUME (MG)								HIGH RIVER LEVELS	COMMENTS
	START DATE	END DATE	DURATION	AVERAGE*	MAX**		SWPS SG CHAMBER (14.5)+	SWOR2 (7.5)	BRADY LAKE AND EXECUTIVE INN STORAGE (13.4)	SOUTHERN OUTFALL (3.5)	ASHLAND (1.0)	OHIO RIVER INTERCEPTOR (4.1)	SNEADS BRANCH (2.5)	TOTAL (46.5)		
				TRFD (IN)	TRFD (IN)	RAIN GAUGE										
2018-030	4/3/18 16:55	4/4/18 13:00	20:05:00	0.53	0.66	TR12	10.30	4.25	1.40	2.60	1.00	3.05	0.45	23.05	Yes	Moderate back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-033	4/14/18 9:15	4/16/18 8:40	47:25:00	1.33	1.94	TR12	18.65	5.45	2.65	5.70	1.35	6.65	0.75	41.20	No	Large back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-037	4/25/18 20:35	4/26/18 17:10	20:35:00	0.06	0.44	TR04	0.00	0.00	0.05	0.00	0.00	0.60	0.00	0.65	No	Small storm cells heterogeneously distributed over the service area. The SWSG site was controlled manually.
2018-039	5/4/18 21:55	5/7/18 0:45	50:50:00	2.02	4.16	TR12	13.78	3.90	12.54	2.39	0.78	2.81	2.40	38.60	No	Very large back-to-back storm cells heterogeneously distributed over the service area. The SWSG site was controlled manually.
2018-042	5/17/18 15:20	5/18/18 15:10	23:50:00	0.14	0.26	TR12	6.25	1.40	0.85	2.90	0.40	3.10	0.80	15.70	No	Small back-to-back storm cells heterogeneously distributed over the service area. The SWSG site was controlled manually.
2018-045	5/27/18 4:10	5/27/18 22:55	18:45:00	0.41	1.06	TR04	11.70	3.20	1.15	3.05	0.50	3.60	0.20	23.40	No	Moderate back-to-back storm cells heterogeneously distributed over the service area. The SWSG site was controlled manually.
2018-046	5/28/18 15:25	5/30/18 21:45	54:20:00	0.31	0.67	TR11	2.15	0.50	0.70	0.35	0.20	2.15	0.00	6.05	No	Small back-to-back storm cells heterogeneously distributed over the service area. The SWSG site was controlled manually.
2018-047	5/31/18 10:10	6/2/18 13:55	51:45:00	1.43	1.84	TR13	17.55	4.95	8.35	4.20	1.20	4.95	1.70	42.90	No	Large back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-049	6/10/18 15:25	6/13/18 6:20	62:55:00	1.08	1.20	TR05	15.70	5.65	4.45	6.55	1.65	7.65	0.80	42.45	No	Large back-to-back storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-050	6/20/18 13:30	6/23/18 4:05	62:35:00	0.91	1.40	TR04	5.70	1.45	1.65	2.35	0.20	6.15	0.25	17.75	No	Moderate back-to-back storm cells heterogeneously distributed over the service area. The SWSG site was controlled manually.
2018-052	6/25/18 1:15	6/26/18 13:10	35:55:00	0.82	0.97	TR11	9.65	2.70	2.00	3.10	0.65	3.65	0.55	22.30	No	Moderate storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
2018-053	6/26/18 13:10	6/28/18 5:30	40:20:00	1.12	1.84	TR13	12.67	3.58	7.88	5.45	0.87	6.39	1.40	38.24	No	Large storm cells homogeneously distributed over the service area. The SWSG site was controlled manually.
TOTAL				**18.23**	**5.52**		**331.54**	**131.51**	**140.95**	**171.09**	**32.70**	**200.05**	**43.88**	**1051.72**		

* Average total rainfall depth based on rain gauges TR04, TR05, TR11, TR12, TR13, TR14 and TR15.
** Maximum total rainfall depth measurement and where it was recorded during the wet weather event.
*** The MDS is always controlled manually by the operators.
+ The capacity has been restricted since April 1, 2016 due to the damaged Gate 2 at SWSG. Due to this restriction, capacity has been reduced from 14.5 MG to 7.7 MG until January 1st 2018. Prior to implementation of RTC, the site could store 5.5 MG.

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FY19 Program

RTC Optimization

- Continue to work with the RTC consultant to review RTC system performance and identify means to improve system operability in the automated mode under Csoft 4. The Operations Division will continue to implement operational set point control changes for individual components and then incorporate programming into the overall RTC system as deemed appropriate.
- Finalize SOPs for the NPS, SWOR1, SWPS, Bells Lane Wet Weather Treatment Facility, Logan CSO Basin and SOR1 sites to incorporate modifications to operations stemming from upgrades or the addition of new facilities. The revised SOPs for these sites will be implemented incrementally as related construction is completed and the facilities are placed in service, beginning with a period of manual operation to validate the control assumptions for each site, followed by increasing levels of system automation as the automated controls for individual components are implemented, validated, and then incorporated into the overall RTC system.
- Prepare the preliminary SOP for the Portland Wharf CSO Basin.
- Begin development of a RTC Programming and Modules guide to document existing and new site RTC programming and modules including local site variables and parameters utilized for site management.
- Continue the development of educational presentations for MSD operations and engineering staff focused on the fundamentals of the RTC system operations and the role of RTC in the MSD system and IOAP projects.

Storage Optimization

- Complete SOR1 in-line storage facility RTC programming and startup and begin operating the site under manual/local controls. Commissioning into the RTC system will occur after a period of manual and supervised operation during which operational assumptions will be validated and operational parameters will be tuned for the site. Once performance is deemed satisfactory, the site will be operated under increasing levels of system automation and be commissioned into the overall RTC system. Set points will be increased in a step wise approach to attain the optimal operating levels.
- Design the Sneads Branch RTC Facility Upgrades project which will eliminate the Sneads Branch screening and pumping facility by directing flow and stored volumes of water to the Logan CSO basin for discharge to the Beargrass Interceptor.

2.4. NMC 3: REVIEW AND MODIFICATION OF PRETREATMENT REQUIREMENTS

FY18 Program

- Completed FY18 NMC 3 Trunk Sewer Water Quality Data Collection in August 2017. Finalized pollutants of concern (POCs) and trunkline sewer data (contributory to CSOs) for FY18 Dry Weather Sampling Result Report. Reviewed and evaluated FY18 trunk sewer data against prior trunk sewer data to determine if changes in pollutants warrant review of contributory Non-Domestic Dischargers (NDDs). Determined POCs and trunkline sewer (contributory to CSOs) dry weather sampling strategy for FY19.

Prepared a report to document the findings and recommendations resulting from sampling efforts. Reviewed improvements made to the combined sewer system infrastructure and their potential impact on the NMC 3 program. Updated CSS flows from the most recent calibrated hydraulic model. A memo was written to document the changes and impacts.

- Continued to send wet weather alerts to NDDs of concern prior to rain events, reminding them of their commitment to implement voluntary controls during wet weather events. During this reporting period, the MSD service area experienced 69 measurable rain events and 41 events with only trace rainfall. MSD sent email notices to NDDs 68 times prior to precipitation events. The email notices contain information regarding expected precipitation expected for a one- to four-day period. There are currently nine NDDs that voluntarily implement controls during wet weather by alternating their cleaning schedule and/or by storing wastewater during a rain event.
- Continued to track performance measures to quantify the effectiveness of voluntary controls during wet weather events. The pollutant loading kept out of the CSS per typical rain event in previous fiscal years has been quantified with the data from the wet weather logs submitted by NDDs and is shown in Table 2.1. The typical results of pollutants kept out of the CSS when all NDDs participate are presented Table 2.2, quantified based on the actual rain events when NDDs detained their flow or otherwise reduced their discharge. Two new industries (Michter's Distillery and AAK) joined the program when they started production during the FY18 reporting period.
- Continued to include specific NMC 3 related language, as appropriate, in new and re-issued wastewater discharge permits to facilities located in the CSS, as well as in all Unusual Discharge Requests (UDRs) approved for discharge to the CSS. MSD re-issued 22 wastewater discharge permits to users discharging to or immediately upstream of the CSS. There were 27 UDRs processed for discharges to Morris Forman WQTC in FY18. The UDRs included nine locations in the CSS and 18 locations in the SSS which ultimately discharge to Morris Forman WQTC. To avoid the risk of an overflow occurring, UDR permits contain standard condition requirements which restrict discharges into the collection system when wet weather conditions are expected.
- Conducted three NMC 3 site inspections at NDD facilities as part of the permit renewal process.
- Conducted 12 NMC 3 site inspections at Industrial User facilities not currently in the formal NMC 3 program as part of the initial permitting or permit renewal process. These facilities were found to have little to no impact during rain events. MSD elected not to request implementation of voluntary controls by these facilities at this time because of the limited benefit to be gained. MSD heightened the understanding of the CSS operation during wet weather for these industries during the inspections.
- Continued to include hold and release requirements in permits for all new industrial users in the combined sewer system and for existing industrial customers that expand production in the combined sewer system. The volume and duration of each hold and release requirement were determined through use of MSD's hydraulic model. MSD applied this requirement to two permits during the reporting period. MSD also documented which permitted industries have 'hold and release' permit requirements.
- Continued to seek out green infrastructure opportunities at NDDs discharging to the CSS and documented the permitted industries that use green infrastructure to reduce flow contributions during wet weather.
- Documented which NDDs have ceased operation during the reporting period.

FY19 Program

- Complete FY19 NMC 3 Trunk Sewer Water Quality Data Collection effort. Compare FY19 trunk sewer data against prior trunk sewer data to determine if changes in pollutants warrant review of contributory NDDs. Determine POCs, NDDs (based on historical data), and trunkline sewers (contributory to CSOs) dry weather sampling strategy for FY20. Review NDDs (based on historical data) to identify those that may be removed from the program, as well as any that may need to be added. Prepare a file report to document the findings and recommendations resulting from FY19 NMC 3 trunk sewer collection data. Continue to review improvements made to the combined sewer system infrastructure and their potential impact on the NMC 3 program. Consider updated flows from the most recent calibrated hydraulic model. Some CSS improvements may result in changes to the ongoing NMC 3 program. Document the changes and impacts in a memo to the file.
- Continue to send wet weather alerts to NDDs of concern prior to rain events, reminding them of their commitment to implement voluntary controls during wet weather events.
- Continue to include specific NMC 3 related language, as appropriate, in new and re-issued wastewater discharge permits to facilities located in the CSS, as well as in all Unusual Discharge Requests approved for discharge to the CSS.
- Conduct NMC 3 site inspections at Industrial User permitted facilities not currently in the formal NMC 3 program as part of the permit renewal process.
- Discuss NMC 3 program participation at each annual site inspection for Industrial Users who are currently in the NMC 3 program.
- Track performance measures to monitor the effectiveness of the implementation of NMC 3 within the Pretreatment Program.
- Review new industrial users and existing industrial users with increased discharges in the combined sewer system to determine if hold and release requirements need to be added into their permits. Continue to document which permitted industries have hold and release permit requirements. Continue to document which permitted industries use green infrastructure to trade off for their 'hold and release' program.
- Document which NDDs have ceased operation and quantify the impact/reduction on CSS operation.
- Conduct staff training on implementation of the NMC 3 program.

Table 2.2 Typical Pollutants Kept Out of the CSS per Rain Event

FISCAL YEAR	NUMBER OF NDDS PARTICIPATING[2]	VOLUME[1] (GAL)	BOD[1] (LBS)	TSS[1] (LBS)
FY11	9	139,000	4,310	2,490
FY12	9	110,000	3,910	1,690
FY13	8	170,000	5,430	3,370
FY14	7	170,000	5,500	4,060
FY15	7	235,000	6,830	5,770
FY16	6	239,000	7,190	6,220

Table 2.2 Typical Pollutants Kept Out of the CSS per Rain Event

FISCAL YEAR	NUMBER OF NDDS PARTICIPATING[2]	VOLUME[1] (GAL)	BOD[1] (LBS)	TSS[1] (LBS)
FY17	7	255,000	7,950	6,850
FY18	9	313,000	4,900	2,020

[1] When all NDDs participate.
[2] Change due to NDD operational changes: Solae (FY13 - cessation); Kent Feed (FY14 - cessation); Canadian Harvest (FY16 - cessation); Diageo (FY17 - commencement).

Table 2.3 Total Quantity Pollutants Kept Out of the CSS

FISCAL YEAR	NUMBER OF WET WEATHER DAYS	VOLUME (GAL)	BOD (LBS)	TSS (LBS)
FY11	130	7,909,000	265,000	160,000
FY12	68	3,524,000	109,000	51,000
FY13	72	9,143,000	290,000	213,000
FY14	46	5,721,000	181,000	147,000
FY15	58	14,838,000	448,000	385,000
FY16	78	14,747,000	453,000	396,000
FY17	104	21,065,000	659,000	575,000
FY18	69	16,413,000	179,000	112,000

2.5. NMC 4: MAXIMIZATION OF FLOW AT THE MORRIS FORMAN WATER QUALITY TREATMENT CENTER

FY18 Program

- Morris Forman WQTC Headworks – The equipment has been in operation in the East and West Headworks during the reporting period.
- Electrical High-Yard Modification – This project achieved final completion during the reporting period.

FY19 Program

- Bells Lane Wet Weather Treatment Facility – The facility has been operational since fall 2017. Final construction is scheduled to be completed during this reporting period.
- Morris Forman WQTC Headworks – MSD is targeting this project for completion before the commissioning of the major off-line storage basins and the Ohio River Tunnel project, in anticipation of increased grit and screenings loading to the Morris Forman WQTC when the new storage basins are cleaned following wet weather events. The project is anticipated to be completed by December 31, 2018.
- MFWQTC Wet Cake Pump Phase II - This project is in the design phase and is expected to be bid during this reporting period.

- MFWQTC Primary Sludge Pipe Replacement – This project is in the design phase and is expected to be bid during this reporting period.
- MFWQTC East Cake Truck Bay Recovery – This project is in the design phase and is expected to be bid during this reporting period.
- SWPS Flood Repair - This project is in the design phase and is expected to be bid during this reporting period.
- Lock Out Tag Out – This project is expected to be completed during this reporting period.
- Truck Unloading Station – This project is expected to be bid during this reporting period.
- Bells Lane Disinfection Process Improvements – MSD is investigating the use of Peracetic Acid (PAA) in a pilot project to improve the disinfection system at Bells Lane facility. This pilot project testing will be started during this reporting period.

Figure 2.2. CSO Locations Relative to Morris Forman WQTC

2.5.1. MORRIS FORMAN WATER QUALITY TREATMENT CENTER

FY18 Program

Flows

Continued to maximize flow to the Morris Forman WQTC. Charts that compare plant flow at the Morris Forman WQTC during the reporting period with the occurrence of CSOs at the Main Diversion Structure and the Southwestern Pump Station have been previously included in Consent Decree quarterly reports. Refer to Figure 2.2 for location of the CSOs relative to the WQTC.

Outages

- To facilitate the completion of the High Yard Project, short term plant outages occurred at various times throughout the reporting period.
- The Morris Forman Headworks Replacement Project continued. The West Headworks Channels were in service without grit removal due to construction related issues.
- FEPS was in service 109 days during the reporting period.

Violations

Morris Forman WQTC experienced plant violations throughout the reporting period due to continuing failure of the solids handling equipment and the limited availability of alternate solids disposal. MSD contracted two companies to assist with biosolids removal at both Derek R Guthrie WQTC and Morris Forman WQTC.

FY19 Program

The FY19 program for the Morris Forman WQTC is as described in Section 2.5.

2.5.2. WET WEATHER CAPTURE

Over the past several years, the long term trend continues to show that MSD has increased the amount of wet weather flow treated at the Morris Forman WQTC. The wet weather capture is the difference between the annual average flow treated and the base wastewater flow (defined in state regulations as the lowest monthly average day flow during the calendar year). CY18 (through June 30) shows a significant increase in base flow compared to CY17, as seen in Figure 2.3. Overall, the long term base flow trend is dropping slightly, reflective of a trend toward lower per capita water use as identified by the Louisville Water Company records, and also some loss of customers in the industrial/commercial and residential customer base in the Morris Forman WQTC service area. The long-term trend shown in Figure 2.3 confirms that while individual year data is highly variable due to weather impacts, the long-term trend in wet weather capture continues to increase. The increasing trend in wet weather capture is largely attributed to a combination of capital improvements at the Morris Forman WQTC, development of wet weather operational procedures, and implementation of RTC facilities in the CSS.

The long term trend in the peak daily flow treated at the Morris Forman WQTC also shows improvement, as shown in Figure 2.4. Each data point represents the maximum daily flow treated during the year. Although the instantaneous peak hydraulic capacity of the Morris Forman WQTC is 350 MGD, the sustained flow that can be treated on a daily basis is governed by a number of other factors, including the performance of the biological treatment processes. While individual years are highly variable due to weather impacts, the long-term trend continues to be up. Factors contributing to this long-term positive trend are implementation of the new wet weather SOP and better wet weather process control at the Morris Forman WQTC. However, CY16 through CY18 show decreases in peak daily flow, as recent repair work has reduced the ability of the plant to operate at high flow for extended periods. MSD is currently evaluating whether additional work needs to be performed in order to treat elevated flows for a longer period of time without jeopardizing permit compliance.

Figure 2.3. Morris Forman WQTC Wet Weather Capture Trend

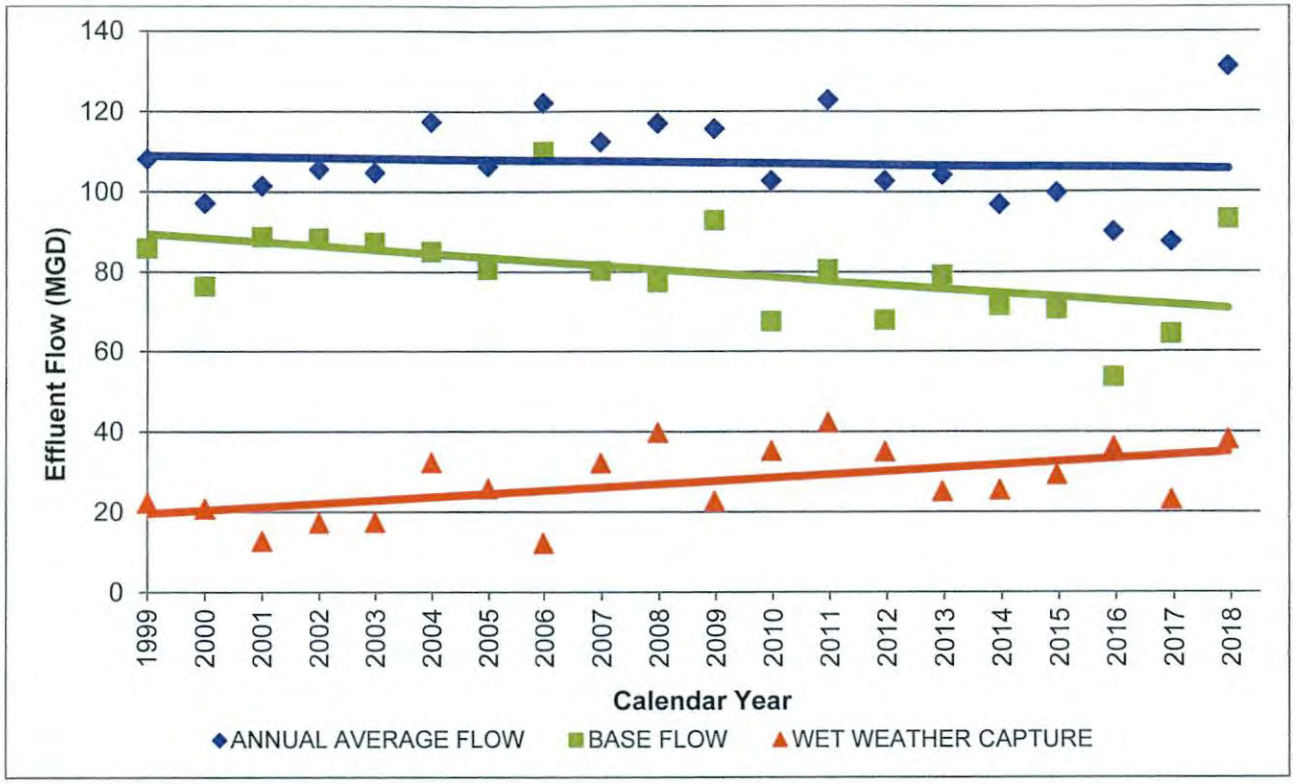
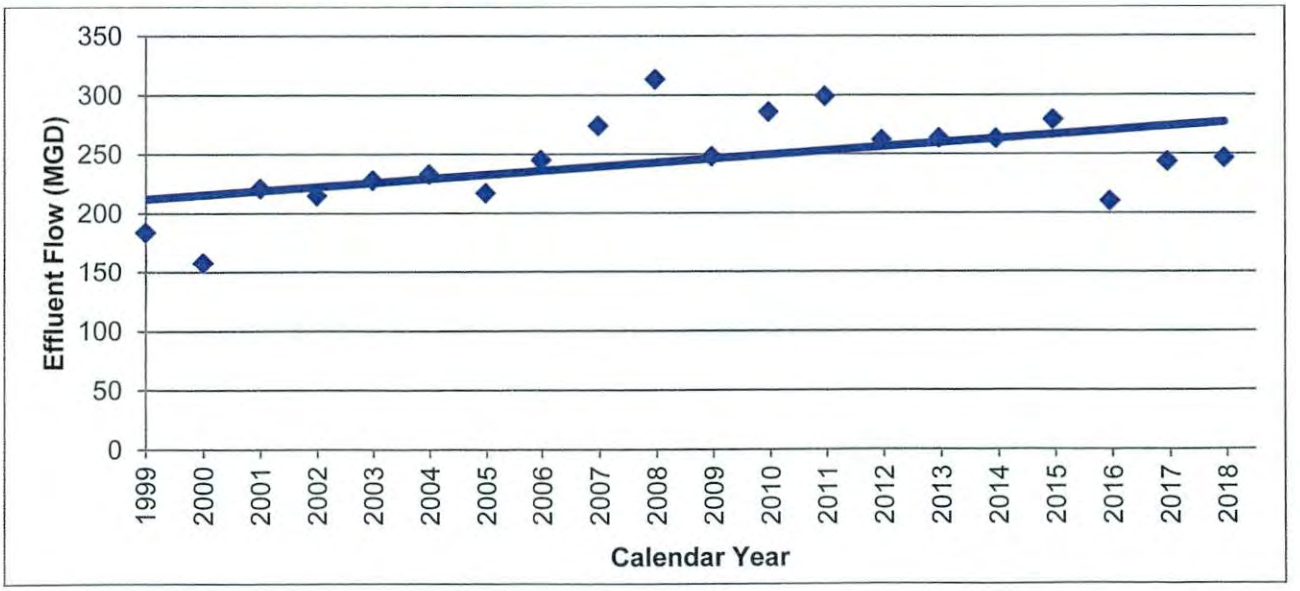


Figure 2.4. Morris Forman WQTC Peak Daily Flow



2.6. NMC 5: ELIMINATION OF COMBINED SEWER OVERFLOWS DURING DRY WEATHER

FY18 Program

Flood Pump Stations

- Continued updates of the U.S. Army Corps of Engineers (USACE) Flood Operations and Maintenance Manual to reflect changes in operations that have occurred with the IOAP projects and operational SOP improvements. This will be an ongoing task until all the projects in the IOAP are completed and an ongoing task as NMC programmatic activities are completed.
- Monitored flood pump stations (FPSs) for opportunities to pump trapped flow back into the combined sanitary sewer system to avoid dry weather overflows as a result of operation of the flood protection system from the 34th Street, Starkey and 4th Street FPSs.

Asset Analysis

- Performed the quarterly evaluation of dry weather unauthorized discharges to the WUS, with emphasis on the CSS, to determine causes and to determine if there is a need for corrective activities. The recommendation delivered from the inspection included continued interaction with the Louisville Water Company on response to water main breaks. Additionally, the number and volume of discharge events will be significantly decreased by the completion of Ohio River Interception and other rehab project improvements.
- Performed a source control analysis with recommendations for improvements for all upstream catch basins to address clogging of the siphon downstream of CSO153.
- Performed inspection and cleaning of fats, oils and grease (FOG) hotspots within the CSS, in accordance with Capacity Management, Operations and Maintenance (CMOM) commitments.

FY19 Program

Flood Pump Stations

- Continue to implement additional operational modifications at FPSs within the CSS to prevent dry weather overflows. Discussions with the USACE to continue regarding proposed modifications to these pumping stations that will minimize dry weather CSOs due to high river levels. This will be an ongoing activity until all the IOAP projects are completed and as staff implements programmatic NMC activities.
- Continue to review SOPs for the FPSs to reflect ongoing operational changes that occur as capital projects and NMC programmatic activities are completed.

Asset Analysis

- Perform a quarterly evaluation of dry weather overflows to the WUS, with emphasis on the CSS, to determine causes and to determine if there is a need for corrective activities.
- Perform inspection and cleaning of FOG hotspots within the CSS, in accordance with CMOM commitments.

- Implement source control at all upstream catch basins to address clogging of the siphon downstream of CSO153.

2.7. NMC 6: CONTROL OF SOLIDS AND FLOATABLE MATERIALS IN COMBINED SEWER OVERFLOWS

FY18 Program

- Continued to monitor and document performance of the CSO108 S&F Control Continuous Deflection Separator (CDS) operation in accordance with the Memorandum of Understanding (MOU) with the Kentucky Nature Preserve. Copies of the semi-annual CSO108 efficacy report are provided in quarterly reports for the reporting period (January and July).
- Continued to review new S&F technologies for potential incorporation into the program.
- Continued inspection and maintenance procedures for the S&F structures as part of the weekly CSO inspections and PM cleaning routines, outlined under NMC 1. During the reporting period, 601 work orders were issued for debris removal at the S&F structures.
- Raised the CSO dam at CSO190 and installed a new bar screen.
- Bid out dam raises and new S&F controls for the following CSOs: CSO029, CSO036, CSO178, CSO181, CSO193, CSO195, CSO196, CSO197. CSO198, CSO199, CSO201, and CSO202. Construction will be completed by December 31, 2018.
- Performed additional evaluation of upstream conditions on all dam raises to determine if any basements are at risk for flooding on all CSOs with dam raises. Continued working with staff to determine the quantity of debris and floatables captured by street sweeping, catch basin cleaning, at the Headworks of the Morris Forman WQTC, and at the end of line S&F controls. Reports have been developed to capture the amount of material removed through catch basin cleaning and at the end of the line S&F controls. Results for the reporting period are shown in Table 2.3 and Figure 2.6.

FY19 Program

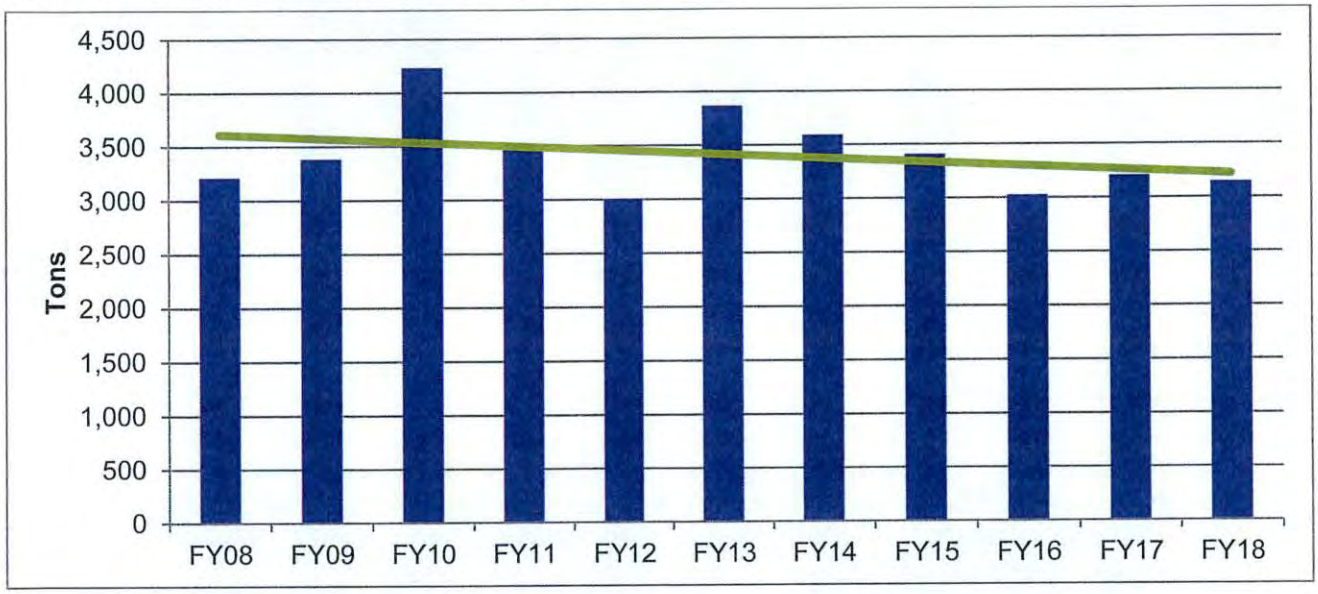
- Continue to monitor and document performance of the CSO108 S&F structure operation in accordance with the MOU with the Kentucky Nature Preserve by MSD Crews. Reports will be submitted on January 30, 2019, and July 30, 2019.
- Continue to review new S&F technologies for potential incorporation into the program.
- Continued inspection and maintenance procedures for the S&F structures as part of the weekly CSO inspections and PM cleaning routines, outlined under NMC 1.
- Track the volume of S&F materials removed from the CSS.
- Perform CSO S&F Efficacy assessments for approximately 20 CSOs including pre- and post-storm site visits to determine where S&F control devices could be improved or replaced.
- Complete construction of the dam raises and S&F controls bid in FY18 by December 31, 2018.
- Perform a dam raise and install new S&F control device at CSO126.

- Review and refine S&F control operations and maintenance training and administer to appropriate staff.

Table 2.4. Debris Removed from System

ACTIVITY / LOCATION	APPROXIMATE AMOUNT OF DEBRIS REMOVED
Catch Basin and Sewer Cleaning	2,201 CY
Street Sweeping	1,141.5 tons
Morris Forman WQTC Headworks	3,142 tons

Figure 2.5. Solids and Floatables Capture at Morris Forman WQTC



2.8. NMC 7: POLLUTION PREVENTION PROGRAMS TO REDUCE CONTAMINANTS IN COMBINED SEWER OVERFLOWS

FY18 Program

- Continued administration of the Erosion Prevention and Sediment Control (EPSC) Ordinance. Continued use of a tracking system for EPSC Notices of Violation (NOVs) and Field Correction Notices (FCNs) within the CSS.
- Continued administration of the Hazardous Materials Ordinance, which requires users with hazardous materials on site to submit a spill prevention and control plan. Continued response to spills of hazardous materials and incidents involving discharges to the sewer system and provided spill mitigation kits to the Louisville Metro Fire Department to use to absorb vehicle fluids rather than flushing to the sewer.
- Continued issuance of Wastewater Discharge Permits under the Industrial Pretreatment Program.

- Distributed literature to significant industrial users (SIUs) on best management practices for prevention of pollution.
- Continued coordination of activities performed by Louisville Metro, such as street sweeping, Operation Brightside (trash and litter clean-up), and other Metro pollution prevention programs.
- Participated in the Mayor's Give-A-Day week of service on April 18-20, 2018, to perform cleanup within the Beargrass Creek and Ohio River areas, in close proximity to several CSOs.
- Participated in the Annual Ohio River Sweep on June 16, 2018.
- Promoted Green Infrastructure initiatives within Jefferson County, such as guidance on downspout disconnection and rain garden installation.
- Led an informational session on rain garden design, construction, and maintenance at Male High School on February 1, 2018.
- Led a rain garden workshop at Male High School on May 16, 2018.
- Continued to prepare and distribute informational pieces, targeted to inform customers and residents on activities that can be practiced within their homes to assist in the reduction of overflows within the collections system.
- Continued to enhance and train on Stormwater Pollution Prevention Plans (SWPPPs) for the WQTCs, major pump stations, and the Central Maintenance Facility (CMF).
- Continued enhancement of the framework for the IOAP green infrastructure program tracking in Hansen.
- Utilized and distributed the rain garden handbook to Louisville Metro agencies and to the public in order to encourage green infrastructure.

FY19 Program

- Continue daily inspections and documentation for EPSC NOVs, FCNs, and all enforcement activities within the CSS with an inspection web application for FCN's.
- Continue inspection hazardous materials from facilities. Continue issuance of Wastewater Discharge Permits under the Industrial Pretreatment Program. Continue distribution of literature to SIUs on best management practices for prevention of pollution.
- Utilize and distribute the rain garden handbook to Louisville Metro agencies and to the public in order to encourage green infrastructure.
- Continue to track green infrastructure projects and initiatives in Hansen and SharePoint.
- Continue to prepare and distribute informational pieces, targeted to inform customers and residents on activities that can be practiced within their homes to assist in the reduction of overflows within the collection system.
- Continue planning for rain garden and stream health workshops.

2.9. NMC 8: PUBLIC NOTIFICATION

Refer to Section 5: Public Outreach, Education, Notification and Participation for information regarding public notification.

2.10. NMC 9: MONITORING TO CHARACTERIZE COMBINED SEWER OVERFLOW IMPACTS AND THE EFFICACY OF COMBINED SEWER OVERFLOW CONTROLS

Refer to Section 4.5 for information regarding system monitoring.

2.11. NMC ACTIVITY SCHEDULE

NMC capital project milestones for the current reporting period as well as a look-ahead for the upcoming reporting period are provided in Figure 2.6.

Figure 2.6. NMC Annual Commitments Schedule

Budget ID	Task Name	% Complete	Start	Finish
	MSD NMC Annual Commitments Schedule (FY2018-2019)	62%	Fri 8/15/14	Wed 6/9/21
H18207	**FY18 CSO IOAP and Priv Prop Initiatives**	100%	Sun 4/1/18	Sat 6/30/18
H18207	**INITIATION & PROCUREMENT**	100%	Sun 4/1/18	Wed 4/4/18
H18207	**CLOSEOUT**	100%	Sun 4/1/18	Sat 6/30/18
H19264	**FY19 CSO_IOAP Support**	37%	Sun 7/1/18	Sun 6/30/19
H19264	**INITIATION & PROCUREMENT**	100%	Sun 7/1/18	Wed 8/1/18
H19264	**CLOSEOUT**	37%	Wed 8/1/18	Sun 6/30/19
H19259	**FY19 NMC No 3 Local Limits for Regional WQTCs**	37%	Sun 7/1/18	Sun 6/30/19
H19259	**INITIATION & PROCUREMENT**	100%	Sun 7/1/18	Wed 8/1/18
H19259	**CLOSEOUT**	37%	Wed 8/1/18	Sun 6/30/19
D19044	**MFWQTC Primary Sludge Pump Compressor**	10%	Sun 7/1/18	Sun 6/30/19
D19044	**INITIATION & PROCUREMENT**	100%	Sun 7/1/18	Thu 7/19/18
D19044	**CONSTRUCTION**	8%	Fri 11/16/18	Sun 6/30/19
D19044	**CLOSEOUT**	0%	Mon 6/24/19	Sun 6/30/19
F16003	**Ashland RTC Facility Upgrades**	66%	Fri 4/1/16	Fri 4/3/20
F16003	**CONSTRUCTION**	50%	Mon 4/16/18	Mon 5/20/19
H18333	**Bells Lane WWTF EQ Basin Modifications**	99%	Wed 4/18/18	Wed 9/25/19
H18333	**INITIATION & PROCUREMENT**	100%	Wed 4/18/18	Tue 6/5/18
H18333	**DESIGN**	100%	Mon 5/7/18	Wed 6/27/18
H18333	**CONSTRUCTION**	100%	Fri 6/1/18	Wed 11/28/18
H18333	**CLOSEOUT**	0%	Tue 12/18/18	Wed 9/25/19
D18127	**DRGWQTC Hypo Containment**	0%	Sat 12/1/18	Tue 9/8/20
D18127	**INITIATION & PROCUREMENT**	100%	Sat 12/1/18	Thu 12/6/18
D18127	**DESIGN**	0%	Sat 12/15/18	Fri 5/17/19
D18127	**CONSTRUCTION**	0%	Sun 6/16/19	Wed 11/13/19
K17127	**Combination Vacuum Sewer Cleaner Single Axle Truck**	100%	Mon 7/3/17	Wed 8/22/18
K17127	**INITIATION & PROCUREMENT**	100%	Mon 7/3/17	Fri 7/7/17
K17127	**CLOSEOUT**	100%	Sat 7/8/17	Wed 8/22/18
D18118	**MFWQTC Truck Unloading Station Pavement Repair**	29%	Fri 4/27/18	Tue 2/11/20
D18118	**INITIATION & PROCUREMENT**	100%	Fri 4/27/18	Fri 5/25/18
D18118	**DESIGN**	100%	Mon 10/22/18	Wed 11/21/18
D18118	**CONSTRUCTION**	0%	Tue 12/18/18	Wed 4/17/19

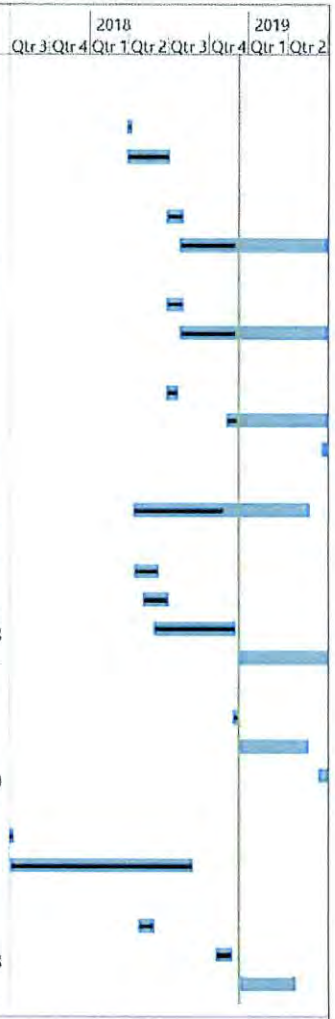


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Figure 2.6. NMC Annual Commitments Schedule

Budget ID	Task Name	% Complete	Start	Finish
D18118	CLOSEOUT	0%	Mon 6/17/19	Tue 2/11/20
D19049	MFWQTC West Freight Elevators	8%	Wed 5/9/18	Thu 10/22/20
D19049	INITIATION & PROCUREMENT	99%	Wed 5/9/18	Tue 1/1/19
D19049	CONSTRUCTION	0%	Thu 12/20/18	Fri 12/27/19
H19139	NMC CSO Inspection Cameras	1%	Sun 7/1/18	Sun 6/30/19
H19139	INITIATION & PROCUREMENT	99%	Sun 7/1/18	Tue 1/1/19
H19139	CLOSEOUT	0%	Tue 1/1/19	Sun 6/30/19
H14084	FY17 System Monitoring Sewer Flow and Rain	100%	Sat 7/1/17	Tue 12/26/17
H14084	INITIATION & PROCUREMENT	100%	Sat 7/1/17	Thu 7/6/17
H14084	CONSTRUCTION	100%	Fri 7/7/17	Fri 12/15/17
H14084	CLOSEOUT	100%	Thu 12/21/17	Tue 12/26/17
H16076	Sneads Branch Pump Replacement	15%	Thu 1/11/18	Tue 11/24/20
H16076	INITIATION & PROCUREMENT	100%	Thu 1/11/18	Mon 9/3/18
H16076	DESIGN	0%	Tue 1/1/19	Mon 6/3/19
F18322	Southwestern Gates Chamber Support Wall	51%	Thu 3/1/18	Fri 4/10/20
F18322	INITIATION & PROCUREMENT	100%	Thu 3/1/18	Wed 4/11/18
F18322	DESIGN	100%	Wed 4/11/18	Fri 10/5/18
F18322	CONSTRUCTION	0%	Sat 12/15/18	Sat 6/15/19
F17079	Southwestern Sluice Gate Replacement	99%	Mon 10/3/16	Mon 10/14/19
F17079	CONSTRUCTION	100%	Mon 11/28/16	Fri 8/31/18
F17079	CLOSEOUT	0%	Sat 12/15/18	Mon 10/14/19
D19242	FY19 Hazen DRGWQTC Engineering Support	1%	Sun 7/1/18	Sun 6/30/19
D19242	INITIATION & PROCUREMENT	100%	Sun 7/1/18	Sat 12/1/18
D19242	CLOSEOUT	0%	Sat 12/1/18	Sun 6/30/19
D19241	FY19 HDR MFWQTC Engineering Support	13%	Sun 7/1/18	Sun 6/30/19
D19241	INITIATION & PROCUREMENT	100%	Sun 7/1/18	Fri 11/2/18
D19241	CLOSEOUT	12%	Fri 11/2/18	Sun 6/30/19
D19243	FY19 Jacobs MFWQTC Engineering Support	34%	Sun 7/1/18	Sun 6/30/19
D19243	INITIATION & PROCUREMENT	100%	Sun 7/1/18	Fri 8/17/18
D19243	CLOSEOUT	34%	Fri 8/17/18	Sun 6/30/19

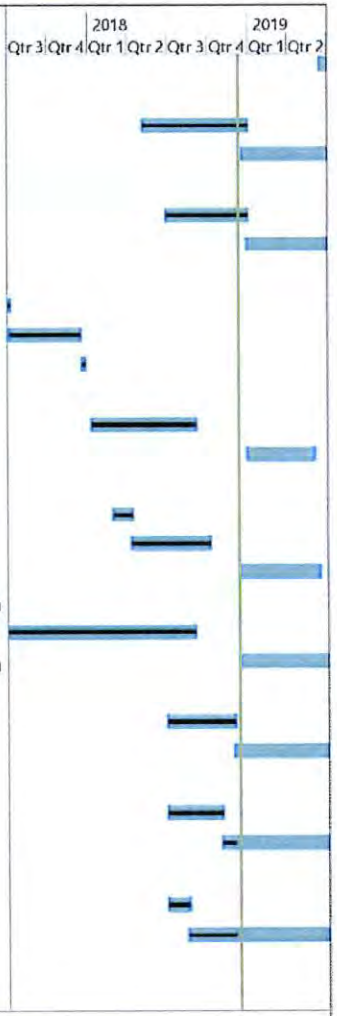

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Figure 2.6. NMC Annual Commitments Schedule

Budget ID	Task Name	% Complete	Start	Finish
D18122	FY19 MFWQTC Upgrade PLCs	25%	Wed 1/31/18	Mon 8/5/19
D18122	INITIATION & PROCUREMENT	100%	Wed 1/31/18	Tue 2/20/18
D18122	EQUIPMENT PROCUREMENT	23%	Mon 10/1/18	Sun 6/30/19
H19063	FY19 NMC No 3 Support	1%	Sun 7/1/18	Sun 6/30/19
H19063	INITIATION & PROCUREMENT	100%	Sun 7/1/18	Sat 12/1/18
H19063	CLOSEOUT	0%	Sat 12/1/18	Sun 6/30/19
H16039	FY19 NMC RTC	1%	Sun 7/1/18	Sun 6/30/19
H16039	INITIATION & PROCUREMENT	100%	Sun 7/1/18	Sat 12/1/18
H16039	CLOSEOUT	0%	Sat 12/1/18	Sun 6/30/19
D19228	FY19 Strand CCWQTC Engineering Support	42%	Sun 7/1/18	Sun 6/30/19
D19228	INITIATION & PROCUREMENT	100%	Sun 7/1/18	Fri 7/6/18
D19228	CLOSEOUT	41%	Fri 7/6/18	Sun 6/30/19
D15020	MFWQTC Cake Pump Phase II	23%	Mon 3/12/18	Wed 6/9/21
D15020	INITIATION & PROCUREMENT	100%	Mon 3/12/18	Mon 8/6/18
D15020	DESIGN	49%	Tue 8/7/18	Wed 4/3/19
D15020	CONSTRUCTION	0%	Fri 5/3/19	Thu 8/13/20
D18315	MFWQTC East Cake Truck Bay Recovery	52%	Wed 1/31/18	Mon 4/6/20
D18315	INITIATION & PROCUREMENT	100%	Wed 1/31/18	Tue 8/7/18
D18315	DESIGN	79%	Tue 8/7/18	Tue 1/1/19
D18315	CONSTRUCTION	0%	Thu 1/31/19	Sun 6/9/19
F14182	MFWQTC FEPS Pump Repair and Motor	50%	Wed 1/31/18	Wed 8/21/19
F14182	INITIATION & PROCUREMENT	100%	Wed 1/31/18	Tue 3/6/18
F14182	EQUIPMENT AND SERVICES PROCUREMENT	49%	Tue 3/6/18	Wed 8/21/19
D18085	MFWQTC LG Equipment	1%	Mon 7/2/18	Wed 4/21/21
D18085	INITIATION & PROCUREMENT	99%	Mon 7/2/18	Thu 12/13/18
D18085	DESIGN	0%	Fri 3/29/19	Sat 9/28/19
D19227	MFWQTC Primary Sludge Line Replacement	40%	Sun 7/1/18	Wed 6/10/20
D19227	INITIATION & PROCUREMENT	100%	Sun 7/1/18	Fri 7/6/18
D19227	DESIGN	77%	Sun 7/1/18	Tue 1/15/19
D19227	CONSTRUCTION	0%	Wed 1/16/19	Wed 8/14/19

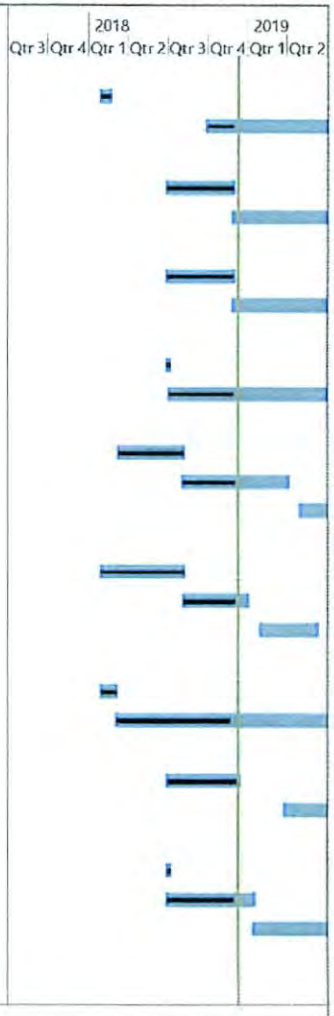

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Figure 2.6. NMC Annual Commitments Schedule

Budget ID	Task Name	% Complete	Start	Finish
D19048	MFWQTC Radio Repeater Project	10%	Sun 7/1/18	Tue 5/26/20
D19048	INITIATION & PROCUREMENT	100%	Sun 7/1/18	Thu 10/4/18
D19048	CONSTRUCTION	0%	Fri 2/15/19	Wed 7/31/19
D18129	MFWQTC Secondary Electrical MCC Upgrade	60%	Wed 1/31/18	Fri 3/29/19
D18129	INITIATION & PROCUREMENT	100%	Wed 1/31/18	Mon 10/22/18
D18129	DESIGN	33%	Mon 10/22/18	Wed 2/20/19
D18129	CLOSEOUT	0%	Mon 3/25/19	Fri 3/29/19
D18117	MFWQTC Solids Mixer Replacement	9%	Fri 8/3/18	Fri 9/25/20
D18117	INITIATION & PROCUREMENT	100%	Fri 8/3/18	Thu 8/9/18
D18117	DESIGN	20%	Thu 11/1/18	Wed 4/3/19
D18117	CONSTRUCTION	0%	Thu 4/4/19	Sat 11/30/19
D15017	MFWQTC Centrifuge Electrical Controls	99%	Wed 11/12/14	Tue 3/12/19
D15017	CONSTRUCTION	100%	Thu 10/1/15	Thu 3/15/18
D15017	CLOSEOUT	99%	Wed 12/6/17	Tue 3/12/19
F14183	MFWQTC FEPS Generator	99%	Fri 6/5/15	Thu 3/21/19
F14183	CONSTRUCTION	100%	Fri 6/5/15	Fri 5/25/18
F14183	CLOSEOUT	99%	Fri 5/25/18	Thu 3/21/19
F13016	MF High Yard Modification	99%	Thu 7/2/15	Thu 6/27/19
F13016	CONSTRUCTION	100%	Thu 7/2/15	Fri 8/31/18
F13016	CLOSEOUT	86%	Mon 9/17/18	Thu 6/27/19
F09510	MF OGA Plants 1 and 2 Replacement	99%	Mon 9/14/15	Mon 9/16/19
F09510	CONSTRUCTION	100%	Tue 12/1/15	Tue 12/12/17
F09510	CLOSEOUT	0%	Fri 2/15/19	Mon 9/16/19
F13041	Vactor Pit	99%	Sun 11/1/15	Fri 2/1/19
F13041	CONSTRUCTION	100%	Thu 9/29/16	Fri 3/2/18
F13041	CLOSEOUT	99%	Fri 11/10/17	Fri 2/1/19
H17005	RTC Support	100%	Fri 7/1/16	Fri 8/31/18
H17005	CLOSEOUT	100%	Fri 7/1/16	Fri 8/31/18
H18177	FY18 Controls Support	100%	Wed 11/1/17	Sat 6/30/18
H18177	INITIATION & PROCUREMENT	100%	Wed 11/1/17	Tue 11/7/17
H18177	CLOSEOUT	100%	Tue 11/7/17	Sat 6/30/18

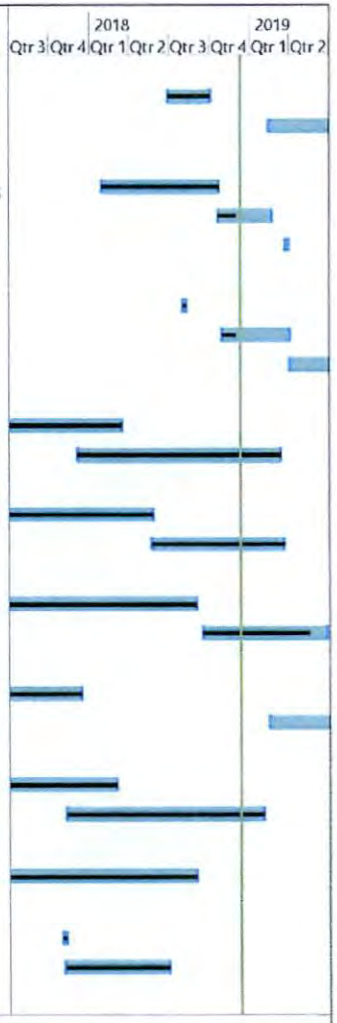

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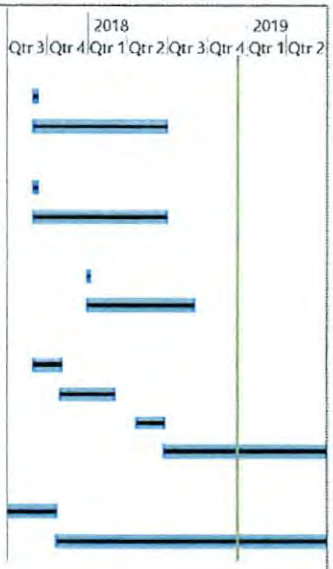
Figure 2.6. NMC Annual Commitments Schedule

Budget ID	Task Name	% Complete	Start	Finish
H18215	FY18 Local Limits for CCWQTC	100%	Fri 9/1/17	Sat 6/30/18
H18215	INITIATION & PROCUREMENT	100%	Fri 9/1/17	Thu 9/7/17
H18215	CLOSEOUT	100%	Fri 9/1/17	Sat 6/30/18
H14065	FY18 NMC	100%	Fri 9/1/17	Sat 6/30/18
H14065	INITIATION & PROCUREMENT	100%	Fri 9/1/17	Thu 9/7/17
H14065	CLOSEOUT	100%	Fri 9/1/17	Sat 6/30/18
H18214	FY18 NMC No 3 Support	100%	Mon 1/1/18	Fri 8/31/18
H18214	INITIATION & PROCUREMENT	100%	Mon 1/1/18	Fri 1/5/18
H18214	CLOSEOUT	100%	Mon 1/1/18	Fri 8/31/18
D17047	MF Brady Lake and Executive Inn Gate Study	99%	Fri 9/1/17	Mon 7/22/19
D17047	INITIATION & PROCUREMENT	100%	Fri 9/1/17	Wed 11/1/17
D17047	DESIGN	100%	Wed 11/1/17	Fri 3/2/18
D17047	PURCHASE OF EQUIPMENT	100%	Tue 4/24/18	Mon 6/25/18
D17047	CLOSEOUT	99%	Mon 6/25/18	Mon 7/22/19
H16357	SWOR2 Generator	99%	Fri 4/1/16	Wed 8/28/19
H16357	CONSTRUCTION	100%	Mon 10/3/16	Fri 10/20/17
H16357	CLOSEOUT	99%	Mon 10/23/17	Wed 8/28/19



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SECTION 3: PROGRAM ACTIVITIES FOR SEWER OVERFLOW RESPONSE PROTOCOL

3.1. SEWER OVERFLOW RESPONSE PROTOCOL PROGRAM BACKGROUND

Per Paragraph 24.d. of the Amended Consent Decree, MSD initially submitted the Sewer Overflow Response Protocol (SORP) to the Environmental Protection Agency (EPA) and Kentucky Department of Environmental Protection (KDEP) on February 10, 2006, and received comments on March 13, 2006. MSD resubmitted the revised SORP on May 12, 2006, and received an approval letter for the SORP on August 22, 2006. The most recent version is dated February 12, 2012. The approved SORP document can be viewed on the MSD Project WIN website, available at **www.msdlouky.org/projectwin**. The following activities were performed during the reporting period.

3.2. OVERFLOW MANAGEMENT AND FIELD DOCUMENTATION

FY18 Program

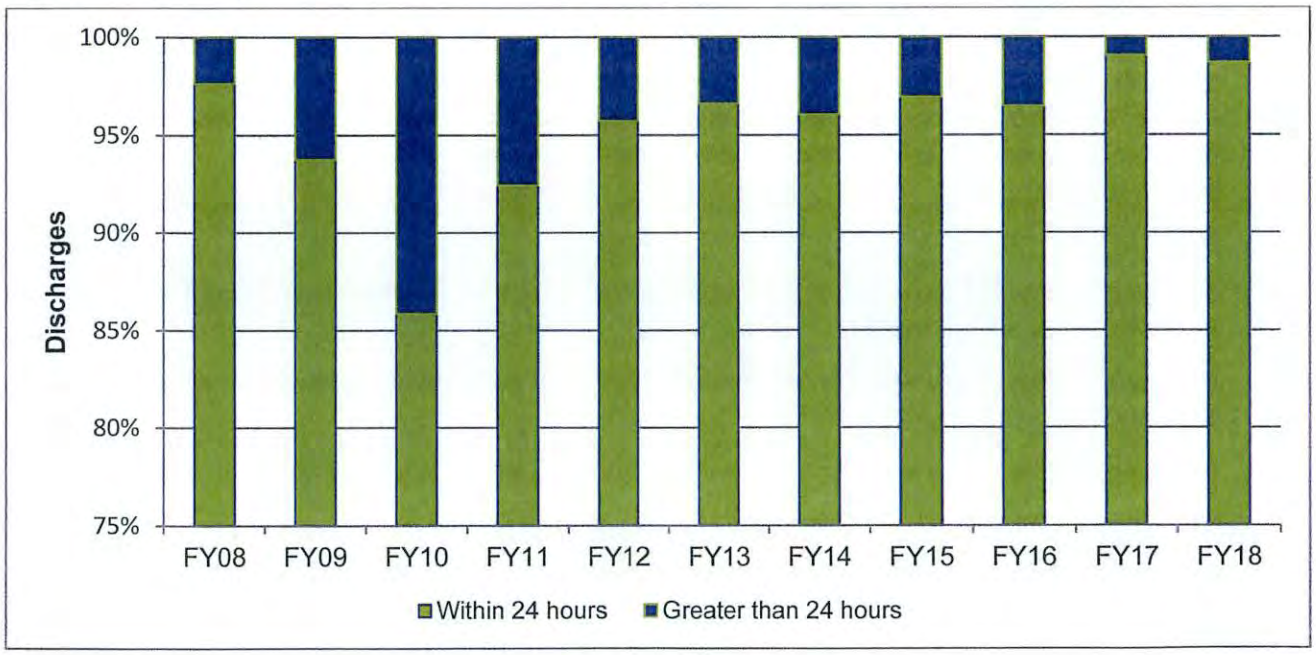
- Documented a total of 228 overflows and unauthorized discharges to waters of the US (WUS) during the reporting period. The charts pertaining to discharges in Section 1.1.2 show these overflows broken down by result, problem, and asset type. Interior overflows are from MSD main line issues only, and do not include those that are the result of a problem on MSD's portion of the lateral. In addition, any interior overflow that is caused by a private property matter is also excluded from reporting.
- Reported 225 of the 228 overflows that reached the WUS (98.6%) within 24 hours as shown in Figure 3.1.
- Reported 2 of the 228 overflows that reached the WUS (0.9%) as a Bypass event that included a required additional 5-day written report.
- Reported 5 of the 23 dry weather overflows (21.7%), each with a volume between 1,000 and 50,000 gallons.
- Reported 9 of the 23 dry weather overflows (39.1%), each with a volume greater than 50,000 gallons.
- Submitted revised SORP Implementation Manual August 9, 2017.
- Continued daily, monthly and quarterly reviews with staff from MSD Operations and MSD Engineering Divisions.
- Continued to monitor SSO sites, which have been grouped into routes based on the range of rainfall rates necessary to cause an SSO. These routes were monitored during rain events depending on the magnitude and location of the storm. If an overflow was observed, a discharge work order was created to document the event. MSD staff executed a total of 2,254 wet weather inspections on a total of 19 days, and documented 126 unauthorized discharges (5.6%) through route reconnaissance.
- Continued to monitor over 300 sites via telemetry. There were five sites where sewage was routinely (3 or more times per year) hauled from pump stations to prevent overflows during rain events depending on the

magnitude and location of the storm. Due to capacity issues, MSD staff hauled over 639,000 gallons of sewage. It should be noted that this value is greater than previously reported in the quarterly reports, due to late invoicing by the hauling contractor.

FY19 Program

- Continue to monitor data, train staff and update information as needed.
- Continue to monitor over 300 sites via telemetry.
- Continue to haul to prevent overflows and backups during rain events until system improvements are completed.
- Continue to monitor documented collections system SSO sites, which have been grouped into routes based on the range of rainfall rates necessary to cause a SSO.
- Continue the daily, monthly and quarterly data reviews with staff from Engineering and Operations Divisions to ensure accuracy and consistency in reporting.
- Schedule additional field reviews of SORP procedures after rain events to both ensure successful implementation and to assist with the annual SORP overall review.

Figure 3.1. Reporting Timeframe for Unauthorized Discharges to Waters of the US



3.3. REGULATORY REPORTING AND DATA MANAGEMENT

FY18 Program

- Conducted monthly meetings with staff to perform quality control on discharge work orders.
- Conducted a monthly review of the discharge work orders and updated the associated assets in Hansen as needed.
- Performed a detailed review and trend analysis on the discharge data, incorporated the findings into the quarterly SORP training and the quarterly reports.

FY19 Program

- Continue to perform quality control on discharge work orders with appropriate staff.
- Update assets in Hansen when new overflow locations are identified.
- Continue to review the overflow data for trends. These trends are discussed with staff in the Quarterly SORP training and documented in the Quarterly Reports.

3.4. STAFF TRAINING AND COMMUNICATION

FY18 Program

- Launched a new online training delivery system to allow more flexibility for employees to complete training at convenient times during the quarter and to integrate SORP training with new employee and contractor orientation. The existing training program was reviewed, updated, and repackaged into an enhanced online format, which allows training to be delivered on demand, improves accessibility for staff, and provides more accountability. Modules were also developed to provide continued updates related to progress under the IOAP and projects under the CMOM and NMC programs on a quarterly basis, as well as CSO and SSO abatement and annual trends on an annual basis.

Table 3.1. Completed SORP Training Schedule

KEY LEARNING OBJECTIVE	MONTHS	STAFF TRAINED
Public Notification & Overflow Cleanup	July - September	282
Reporting & Followup	October - December	290
Annual Overview	October - December	283
Annual Overview	January - March	296
Preparing for Overflows, Monitoring & Mobilization	January - March	296
Assessment, Mitigation, & Documentation	April - June	235

FY19 Program

- Integrate SORP training with new employee and contractor orientation.
- Schedule SORP Quarterly and Annual Training as described in Table 3.2.

- Continue to review and update the data associated with overflows.

Table 3.2. Projected SORP Training Schedule

KEY LEARNING OBJECTIVE	MONTHS
Public Notification & Overflow Cleanup	July - September
Reporting & Followup	October - December
Annual Overview	October - December
Annual Overview	January - March
Preparing for Overflows, Monitoring & Mobilization	January - March
Assessment, Mitigation, & Documentation	April - June

3.5. ANNUAL PROGRAM REVIEW

FY18 Program

- Completed the annual SORP document review in August 2017.
- Reviewed and updated routes to include any new SSO locations.

FY19 Program

- Perform the annual SORP document review prior to August 2018. There are no major program updates anticipated at this time. Routes will be reviewed and updated to include any new SSO locations or changes in responsible MSD reporting departments.
- Send new SSO routes to EPA/KDEP by August 22, 2018. New routes will be published once approved by EPA/KDEP.

3.6. PUBLIC NOTIFICATION AND COMMUNICATION

Refer to Section 5: Public Outreach, Education, Notification and Participation for information regarding public notification.

SECTION 4: PROGRAM ACTIVITIES FOR DISCHARGE ABATEMENT PLANS

4.1. INTEGRATED OVERFLOW ABATEMENT PLAN

As a requirement of the Amended Consent Decree, per Paragraph 25, MSD is to prepare and submit, for review and approval, discharge abatement plans. These discharge abatement plans identify the plan for the elimination of unauthorized discharges from the separate sanitary sewer system and the combined sewer system (CSS), the reduction and control of discharges from the Combined Sewer Overflow (CSO) locations identified in the Morris Forman Water Quality Treatment Center (WQTC) KPDES permit, and the improvement of water quality in the receiving waters.

The Final Sanitary Sewer Discharge Plan (SSDP) and the Final CSO Long Term Control Plan (LTCP) were submitted concurrently and certified on December 19, 2008, under the title of the Integrated Overflow Abatement Plan (IOAP). The IOAP was accepted by the Federal Court and incorporated by reference into the Amended Consent Decree by an Order signed February 12, 2010, that was entered into public record February 15, 2010.

MSD submitted an IOAP modification request to the Environmental Protection Agency (EPA) and Kentucky Department of Environmental Protection (KDEP) on September 20, 2012, with approval granted via certified letter on June 19, 2014. The modified project package, program descriptions and progress, and updated supporting text are included in the revised IOAP, submitted to EPA and KDEP on June 14, 2013.

Minor project modifications have been submitted and approved since the 2014 approval of the 2012 IOAP Modification. A summary of these modifications is included in Table 4.1.

4.2. SANITARY SEWER DISCHARGE PLAN

The Sanitary Sewer Discharge Plan (SSDP) addresses the overflows and unauthorized discharges from the separate sanitary sewer system. Three separate plans have been submitted under this program as described below and outlined in Paragraph 25.a. of the Amended Consent Decree.

4.2.1. UPDATED SANITARY SEWER OVERFLOW PLAN IMPLEMENTATION

MSD prepared and submitted the Updated Sanitary Sewer Overflow Plan (SSOP) on February 10, 2006. This plan included an overview of the MSD sanitary sewer overflow abatement program and specific actions taken to reduce/eliminate overflows from the sanitary sewer system. This document included a list of the proposed improvements to be accomplished by December 31, 2008. Activities required under the Updated SSOP have been completed.

4.2.2. INTERIM SANITARY SEWER DISCHARGE PLAN

MSD submitted for approval an Interim Sanitary Sewer Discharge Plan (ISSDP) on September 30, 2007. Comments were received on January 8, 2008. MSD resubmitted the revised ISSDP on March 7, 2008, and received an approval letter for the ISSDP on July 24, 2008. The approved ISSDP document can be viewed on the MSD Project WIN website, available at **www.msdlouky.org/projectwin.**

4.2.3. FINAL SANITARY SEWER DISCHARGE PLAN

MSD submitted for approval a Final Sanitary Sewer Discharge Plan (SSDP) on December 19, 2008, as Volume 3 of the IOAP. The IOAP was accepted by the Federal Court and incorporated by reference into the Amended Consent Decree by an Order signed February 12, 2010, and was entered into public record February 15, 2010. A revised SSDP was included in the IOAP revision submitted June 14, 2013. On June 19, 2014, MSD received approval of the 2012 IOAP Modification from EPA / KDEP. Per paragraph 25.a.(3)C., the SSDP shall not extend beyond December 31, 2024. A listing of SSDP projects completed and certified during the reporting period, along with the entire schedule of projects, can be found in Section 4.4.

4.3. COMBINED SEWER OVERFLOW LONG TERM CONTROL PLAN

The CSO Long Term Control Plan (LTCP) addresses the overflows and unauthorized discharges from the CSS. Two separate plans have been submitted under this program as described below and outlined in Paragraph 25.b. of the Amended Consent Decree.

4.3.1. INTERIM COMBINED SEWER OVERFLOW LONG TERM CONTROL PLAN

The Interim CSO LTCP was initially submitted to EPA and KDEP on February 10, 2006. MSD received an approval letter dated February 22, 2007, for the Interim LTCP. The approved Interim CSO LTCP can be viewed on the MSD Project WIN website, available at **www.msdlouky.org/projectwin**.

This plan includes an overview of the MSD program efforts taken to reduce/eliminate discharges from the CSS and the list of proposed improvements to be accomplished by December 31, 2008. All projects associated with this plan have been completed.

4.3.2. FINAL COMBINED SEWER OVERFLOW LONG TERM CONTROL PLAN

MSD submitted for approval the Final CSO LTCP on December 19, 2008, as Volume 2 of the Integrated Overflow Abatement Plan (IOAP). The IOAP was accepted by the Federal Court and incorporated by reference into the Amended Consent Decree by an Order signed February 12, 2010, that was entered into public record February 15, 2010. Per paragraph 25.b.(2), completion of the Final CSO LTCP shall not extend beyond December 31, 2020. A listing of Final CSO LTCP projects completed and certified during the reporting period, along with the entire schedule of projects, can be found in Section 4.4.

4.3.3. GREEN DEMONSTRATION PROJECT UPDATE

The Final CSO LTCP (Volume 2 of the IOAP) included 19 green demonstration projects with schedules for completion in 2010 and 2011. The 19 green demonstration projects have been certified as complete.

Table 4.1. IOAP Project Minor Modifications

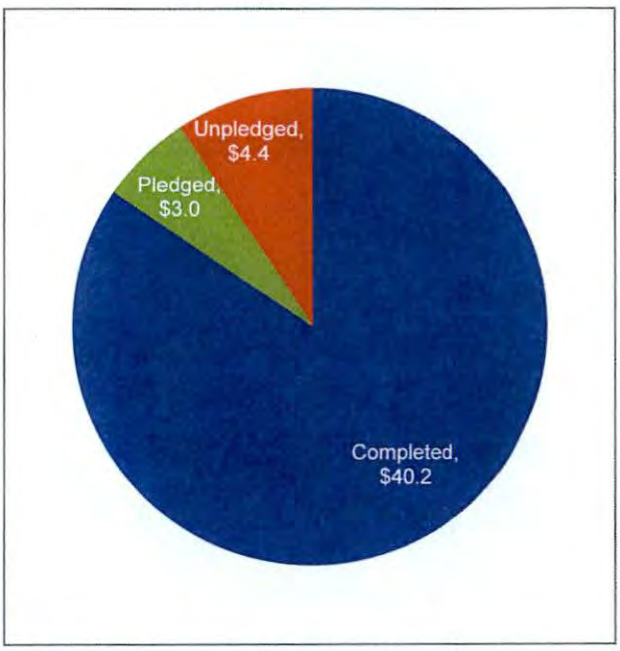
SUBMITTAL DATE	APPROVAL DATE	NEW PROJECT NAME	ORIGINAL PROJECT NAME	IOAP ID NUMBER	MODIFICATION DESCRIPTION
February 16, 2015	September 11, 2015	CSO190 Green Infrastructure Project	18th and Northwestern Parkway Storage Basin	L_SO_MF_190_S_09B_B_A_8	Green Infrastructure solutions for CSO190 replaced the storage basin at 18th and Northwestern Parkway.
February 16, 2015	September 11, 2015	Elimination of Chenoweth Hills WQTC, Chenoweth Run PS, and Chippewa PS	Chenoweth Hills WQTC Elimination and PS Improvements	S_JT_JT_NB01A_M_03_C	Project modification to construct new sewers and eliminate rather than upgrade Chenoweth Run and Chippewa Pump Stations
February 16, 2015	September 11, 2015	Goose Creek PS Phase 1 - Devondale Wet Weather Storage	Goose Creek PS Phase 1 - Devondale Wet Weather Storage	S_MI_MF_NB04_M_03_B	New sewer construction and a new Pump Station at Bancroft allowed for the elimination of both the Bancroft and Devondale WQTCs along with eliminating the need for wet weather storage.
February 16, 2015	September 11, 2015	St. Rene Road Pump Station Elimination	St. Rene Road PS Inline Storage	S_FF_CH_NB01_S_09A_C_A	Elimination of the St. Rene Road Pump Station and diverting flow to the Cedar Creek WQTC replaced the in-line storage solution.
February 16, 2015	September 11, 2015	Prospect #3 - ORFM System Improvements	Prospect #3 - ORFM System Improvements	S_OR_MF_NB04_M_03_B_B	Replaced in-line storage upstream of the Muddy Fork Pump Station with an offline covered storage basin.
August 7, 2015	September 11, 2015	Southwestern Parkway Storage Basin	Southwestern Parkway Storage Basin	L_OR_MF_105_M_13_B_A_0	Increased basin size from 11.07 MG to 20 MG, with a level of control of 8 overflows per Typical Year and no net increase in AAOV.
August 7, 2015	September 11, 2015	Portland Storage Basin	Portland Wharf Storage Basin	L_OR_MF_019_S_13_B_A_8	Increased basin size from 6.37 MG to 6.7 MG.
August 7, 2015	September 11, 2015	Lexington Road and Payne Street Storage Basin	Lexington Road and Payne Street Storage Basin	L_OR_MF_083_M_09B_B_A_8	Increased basin size from 8.18 MG to 13.7 MG.
August 7, 2015	September 11, 2015	Story Avenue and Main Street Storage Basin	Story Avenue and Main Street Storage Basin	L_OR_MF_020_S_09B_B_A_8	Increased basin size from 5.4 MG to 8.3 MG.
August 7, 2015	September 11, 2015	13th Street and Rowan Street Storage Basin	13th Street and Rowan Street Storage Basin	L_OR_MF_155_M_09B_B_B_4	Increased basin size from 4.36 MG to 9.8 MG.
December 21, 2015	January 11, 2016	Fairmount Road Pump Station Offline Storage Basin	Fairmount Road Pump Station Offline Storage Basin	S_FF_CC_81316_M_03_C_A	Change completion deadline from December 31, 2015 to March 31, 2016.
September 28, 2016	November 3, 2016	Logan Street and Breckenridge Street CSO Basin	Logan Street and Breckenridge Street CSO Basin	L_SO_MF_092_M_09B_B_D_8	Change design from an at-grade basin with a building above to open space above the basin structure.
September 28, 2016	November 3, 2016	Bells Lane Wet Weather Treatment Facility	Bells Lane Wet Weather Treatment Facility	L_OR_MF_015_M_13_B_B_8	Change completion deadline from December 31, 2016 to September 30, 2017.
September 28, 2016	November 3, 2016	Nightingale Pump Station Replacement and Storage	Nightingale Pump Station Replacement and Storage	L_SO_MF_018_S_03_A_A	Change completion deadline from December 31, 2016 to June 30, 2017.
September 28, 2016	November 3, 2016	Morris Forman WQTC Headworks	Southern Outfall Inline Storage (SOR2)	L_OR_MF_211_M_13_B_A_8	Elimination of SOR2 project and replace with flow control improvements at the Main Diversion Structure and rehabilitation of Morris Forman WQTC Headworks in order to increase maximum sustainable treatment capacity to 330 MGD.
September 27, 2016, with administrative correction submitted on October 17, 2016	November 3, 2016	Ohio River Tunnel	13th Street and Rowan Street Storage Basin	L_OR_MF_155_M_09B_B_B_4	Revise design to a 31.8 MG tunnel solution that consolidates CSO controls for 13th Street and Rowan Street, Story Avenue and Main Street, and Lexington and Payne Street Storage Basins. Tunnel capacity will allow a level of control of eight overflows per Typical Year for 9 CSOs previously associated with 13th and Rowan. Weir raises at 3 CSOs will remain unchanged.
September 27, 2016, with administrative correction submitted on October 17, 2016	November 3, 2016	Ohio River Tunnel	Story Avenue and Main Street Storage Basin	L_OR_MF_020_S_09B_B_A_8	Revise design to a 31.8 MG tunnel solution that consolidates CSO controls for 13th Street and Rowan Street, Story Avenue and Main Street, and Lexington Road and Payne Street Storage Basins. Tunnel capacity will allow a level of control of eight overflows per Typical Year for the one CSO previously associated with Story and Main.
September 27, 2016, with administrative correction submitted on October 17, 2016	November 3, 2016	Ohio River Tunnel	Lexington Road and Payne Street Storage Basin	L_OR_MF_083_M_09B_B_A_8	Revise design to a 31.8 MG tunnel solution that consolidates CSO controls for 13th Street and Rowan Street, Story Avenue and Main Street, and Lexington Road and Payne Street Storage Basins. Tunnel capacity will allow a level of control of zero overflows per Typical Year for the nine CSOs previously associated with Lexington and Payne.

Table 4.1. IOAP Project Minor Modifications

SUBMITTAL DATE	APPROVAL DATE	NEW PROJECT NAME	ORIGINAL PROJECT NAME	IOAP ID NUMBER	MODIFICATION DESCRIPTION
March 22, 2018	May 10, 2018	Middle Fork Relief Interceptor, Wet Weather Storage and UMFLS Diversion – PS Improvements and Diversion	Middle Fork Relief Interceptor, Wet Weather Storage and UMFPS Diversion 2 – PS Diversion and Storage	S_MISF_MF_NB01_M_01_C_A1	Revise design to replace existiong 9.0 MGD pump stationwith a 30.0 MGD pump station and convey wet weather flows in lieu of providing covered storage on site.
March 22, 2018	May 10, 2018	Southwestern Parkway Storage Basin	Southwestern Parkway Storage Basin	L_OR_MF_105_M_13_B_A_0	Revise project deadline to June 30, 2019 and correct inline storage volume submitted with 2015 minor modification fact sheet to 6.3 MG.
September 6, 2018	September 27, 2018	Waterway Protection Tunnel	Ohio River Tunnel	L_OR_MF_020_S_09B_B_A_8, L_OR_MF_155_M_09B_B_A_4, L_SO_MF_083_M_09B_B_A_8	Change project name and revise design to a 52.2 MG tunnel solution that consolidates CSO controls for Ohio River Tunnel and I-64 and Grinstead Drive Storage Basin.
September 6, 2018	September 27, 2018	Waterway Protection Tunnel	I-64 and Grinstead Drive Storage Basin	L_MI_MF_127_M_09B_B_A_8	Revise design to a 52.2 MG tunnel solution that consolidates CSO controls for Ohio River Tunnel and I-64 and Grinstead Drive Storage Basin.
September 6, 2018	September 27, 2018	CSO108 Dam Modification	CSO108 Dam Modification	L_SO_MF_108_S_09A_B_A_4	Revise LOC from four to eight overflows per Typical Year based on additional flow monitoring data and revised modeling. This change slightly increases the projected residual AAOV from 1.4 MG to 1.6 MG, but is easily offset with the significant increase in volume created by the extension of the Waterway Protection Tunnel.

4.3.4. GREEN INFRASTRUCTURE PROGRAMMATIC ACTIVITIES

Figure 4.1 Green Infrastructure Spending

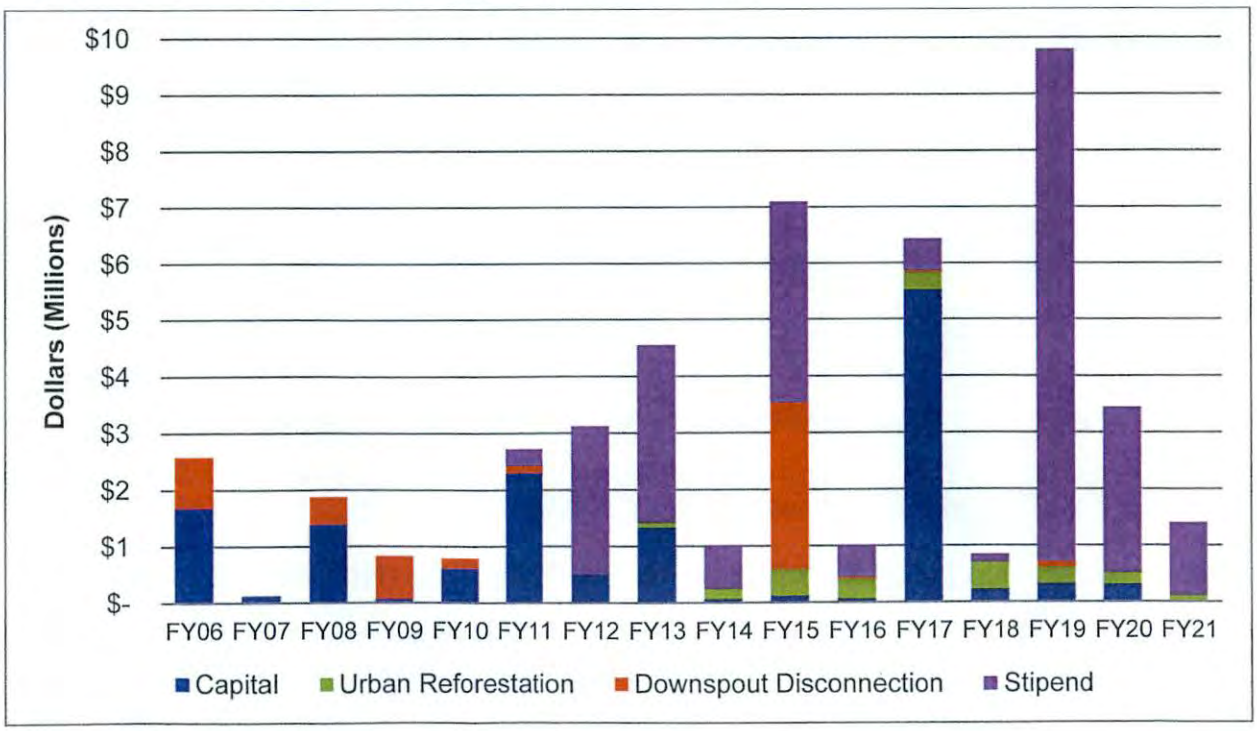


MSD committed to allocate $47 million for green infrastructure-related projects in the IOAP. As shown in Figure 4.1, MSD has fulfilled $40.2 million, or 84.5%, of this commitment. Additionally, $3.0 million has been pledged to approved incentive projects. The remaining $4.4 million, reported as unpledged, has been allocated for projects, but the final projects have not yet been approved. Figure 4.2 shows the types of projects where green infrastructure funding has been used or will be used prior to December 31, 2020.

FY18 Program

- Maintained www.msdgreen.org, an MSD Green Infrastructure website intended to offer general information on green infrastructure.
- Utilized a green tracking protocol for green infrastructure projects.

Figure 4.2. Green Infrastructure Expenditures and Commitments



- Participated in Urban Heat Island workgroups under the guidance of Louisville Metro.
- Tracked and calculated the impacts of green infrastructure projects on stormwater capture and estimated overflow reductions.
- Continued the arrangement with EPA Office of Research and Development (ORD) to determine the performance of green infrastructure practices to determine most effective applications, maintenance cycles and areas with high potential for reduction of overflows.
- Supported a joint funding partnership with the Louisville Metro Office of Sustainability to further incentivize the construction of green infrastructure on private property.

FY19 Program

- Continue to participate in the Louisville Metro Sustainability Plan.
- Continue to track green infrastructure projects in Hansen and MSD's Geographic Information System (GIS).

4.4. DISCHARGE ABATEMENT PLAN PROJECT STATUS

4.4.1. PROJECT CERTIFICATION PROGRESS

This section addresses project certification progress for the current reporting period and required activities for the upcoming reporting period.

4.4.1.1. SANITARY SEWER DISCHARGE PLAN

Table 4.2 details SSDP projects completed and certified during the current reporting period. No new SSDP projects are required to be completed and certified during the next reporting period.

Table 4.2. FY18 IOAP Project Completion Dates – SSDP

BUDGET ID	ACD PROJECT NUMBER	PROJECT NAME	ACD DATE	CERTIFIED COMPLETION DATE
H09218	S_SF_MF_30917_M_09_A	Camp Taylor #3 – Replace Sewer & Rehabilitation	December 31, 2017	December 15, 2017

4.4.1.2. JEFFERSONTOWN WATER QUALITY TREATMENT CENTER ELIMINATION

Jeffersontown WQTC elimination project was completed and certified December 23, 2015. Subsequent post-construction monitoring activities are reported in Section 4.5.2.

4.4.1.3. COMBINED SEWER OVERFLOW LONG TERM CONTROL PLAN

Table 4.3 details CSO LTCP projects completed and certified during the current reporting period, and Table 4.4 details CSO LTCP projects required to be completed and certified during the next reporting period.

Table 4.3. FY18 IOAP Project Completion Dates – CSO LTCP

BUDGET ID	ACD PROJECT NUMBER	PROJECT NAME	ACD DATE	CERTIFIED COMPLETION DATE
H09124	L_OR_MF_015_M_13_B_B_8	Bells Lane Wet Weather Treatment Facility	September 30, 2017	September 25, 2017
H09137	L_OR_MF_190_S_09B_B_A_8	CSO 190 Green Infrastructure Solution	December 31, 2017	December 20, 2017
H09142	L_SO_MF_092_M_09B_B_D_8	Logan Street and Breckenridge St Storage Basin	December 31, 2017	December 29, 2017

Table 4.4. FY19 IOAP Project Required Completion Dates – CSO LTCP

BUDGET ID	ACD PROJECT NUMBER	PROJECT NAME	ACD DATE	CERTIFIED COMPLETION DATE
H12155	L_OR_MF_155_M_09B_B_B_4	Central Relief Drain CSO In-Line Storage, Green Infrastructure, and Distributed Storage	December 31, 2018	Under Construction
H09123	L_MU_MF_154_M_09B_B_A_8	Clifton Heights Storage Basin	December 31, 2018	Under Construction
F13023	L_OR_MF_211_M_13_B_A_8	Morris Forman WQTC Headworks	December 31, 2018	Under Construction
H12158	L_OR_MF_211_M_13_B_A_8	Southern Outfall In-Line Storage at 43rd Street (SOR1)	December 31, 2018	Under Construction
H09132	L_OR_MF_105_M_13_B_A_0	Southwestern Parkway CSO Basin	June 30, 2019	Under Construction

4.4.2. DISCHARGE ABATEMENT ACTIVITY PROGRESS

A Gantt chart showing the 2012 IOAP Modification project schedules along with subsequently approved minor modifications is provided in Figure 4.3.

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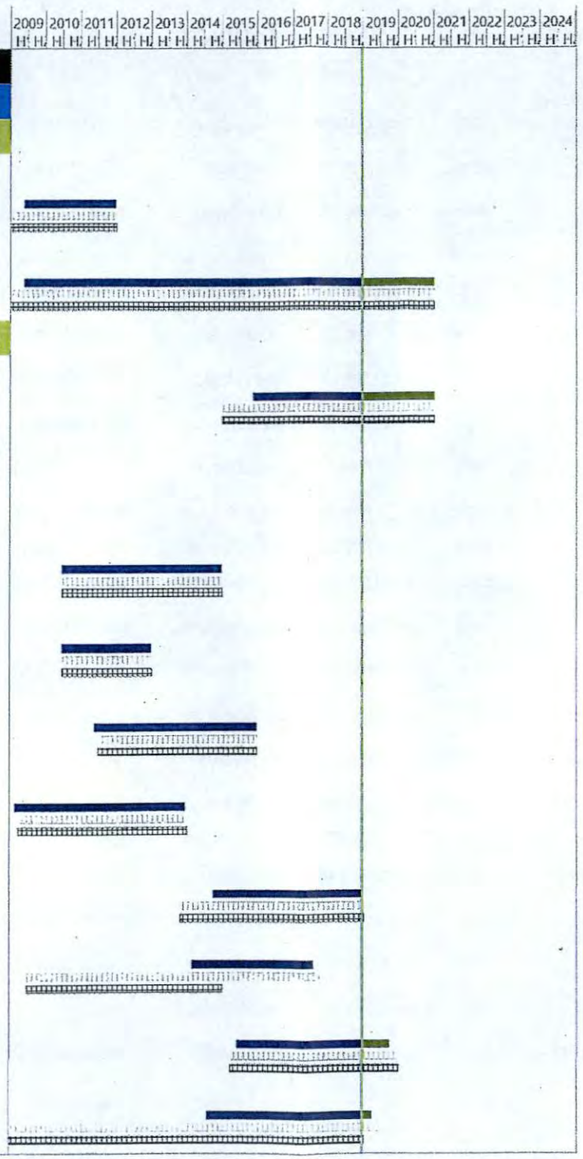
Figure 4.3. MSD Integrated Overflow Abatement Plan Implementation Schedule

MSD Integrated Overflow Abatement Plan Implementation Schedule (01 Jan 2009 - 31 Dec 2024)

Activity Name	% Complete	Anticipated Finish	Actual Finish	2009 IOAP Completion	IOAP Modifications*	IOAP Project ID	Original Project Name
MSD IOAP ANNUAL SCHEDULE							
LONG TERM CONTROL PLAN							
GREEN DEMONSTRATION PROJECTS	**85%**	**Thu 12/31/20**	**NA**	**Thu 12/31/20**	**Thu 12/31/20**		
Green Infrastructure Demonstration Projects	**100%**	**Mon 12/19/11**	**Mon 12/19/11**	**Sat 12/31/11**	**Sat 12/31/11**		
Green Infrastructure Demonstration Projects	100%	Mon 12/19/11	Mon 12/19/11	Sat 12/31/11	Sat 12/31/11		
Green Infrastructure Program	**82%**	**Thu 12/31/20**	**NA**	**Thu 12/31/20**	**Thu 12/31/20**		
Green Infrastructure Program	82%	Thu 12/31/20	NA	Thu 12/31/20	Thu 12/31/20		
GRAY INFRASTRUCTURE PROJECTS	**83%**	**Thu 12/31/20**	**NA**	**Thu 12/31/20**	**Thu 12/31/20**		
Waterway Protection Tunnel	**67%**	**Thu 12/31/20**	**NA**	**Thu 12/31/20**	**Thu 12/31/20**		
Waterway Protection Tunnel	67%	Thu 12/31/20	NA	Thu 12/31/20	Thu 12/31/20	L_OR_MF_155_M_09B_B_B_4 L_OR_MF_020_S_09B_B_A_8 L_OR_MF_083_M_09B_B_A_8 L_MI_MF_127_M_09B_B_A_8	13TH STREET AND ROWAN STREET STORAGE BASIN, STORY AVENUE AND MAIN STREET STORAGE BASIN, LEXINGTON ROAD AND PAYNE STREET STORAGE BASIN, I-64 AND GRINSTEAD CSO BASIN
CSO058 In-Line Storage and Green Infrastructure	**100%**	**Tue 12/23/14**	**Thu 12/18/14**	**Wed 12/31/14**	**Wed 12/31/14**		
CSO058 In-Line Storage and Green Infrastructure	100%	Tue 12/23/14	Thu 12/18/14	Wed 12/31/14	Wed 12/31/14	L_OR_MF_058_S_08_A_A_0	
CSO123 Downspout Disconnection	**100%**	**Sun 12/30/12**	**Sun 12/30/12**	**Mon 12/31/12**	**Mon 12/31/12**		
CSO123 Downspout Disconnection	100%	Sun 12/30/12	Sun 12/30/12	Mon 12/31/12	Mon 12/31/12	L_MI_MF_123_S_08_A_A_0	
CSO140 In-Line Storage & Green Infrastructure Controls	**100%**	**Wed 12/23/15**	**Wed 12/23/15**	**Thu 12/31/15**	**Thu 12/31/15**		
CSO140 In-Line Storage & Green Infrastructure Controls	100%	Wed 12/23/15	Wed 12/23/15	Thu 12/31/15	Thu 12/31/15	L_MI_MF_140_S_08_A_A_0	CSO140 SEWER SEPARATION
CSO206 Sewer Separation	**100%**	**Thu 12/12/13**	**Thu 12/12/13**	**Tue 12/31/13**	**Mon 12/30/13**		
CSO206 Sewer Separation	100%	Thu 12/12/13	Thu 12/12/13	Tue 12/31/13	Mon 12/30/13	L_MI_MF_206_S_08_A_A_0	
Clifton Heights Storage Basin	**100%**	**Sat 12/1/18**	**Sat 12/1/18**	**Mon 12/31/18**	**Mon 12/31/18**		
Clifton Heights Storage Basin	100%	Sat 12/1/18	Sat 12/1/18	Mon 12/31/18	Mon 12/31/18	L_MU_MF_154_M_09B_B_A_8	
Bells Lane Wet Weather Treatment Facility	**100%**	**Mon 7/24/17**	**Mon 7/24/17**	**Wed 12/31/14**	**Sat 9/30/17**		
Bells Lane Wet Weather Treatment Facility	100%	Mon 7/24/17	Mon 7/24/17	Wed 12/31/14	Sat 9/30/17	L_OR_MF_015_M_13_B_B_8	PADDY'S RUN WET WEATHER TREATMENT FACILITY
Portland CSO Basin	**87%**	**Wed 9/25/19**	**NA**	**Tue 12/31/19**	**Tue 12/31/19**		
Portland CSO Basin	87%	Wed 9/25/19	NA	Tue 12/31/19	Tue 12/31/19	L_OR_MF_019_S_13_B_A_8	PORTLAND WHARF STORAGE BASIN
Southwestern Parkway Storage Basin	**100%**	**Sun 3/31/19**	**Fri 11/30/18**	**Mon 12/31/18**	**Sun 6/30/19**		
Southwestern Parkway Storage Basin	100%	Sun 3/31/19	Fri 11/30/18	Mon 12/31/18	Sun 6/30/19	L_OR_MF_105_M_13_B_A_0	SOUTHWESTERN PARKWAY STORAGE BASIN



Approved 2009 IOAP | IOAP Modifications | Remaining Work | Completed Work

Includes 2014 approval of 2012 IOAP Modification as well as all minor mod letter approvals to date.

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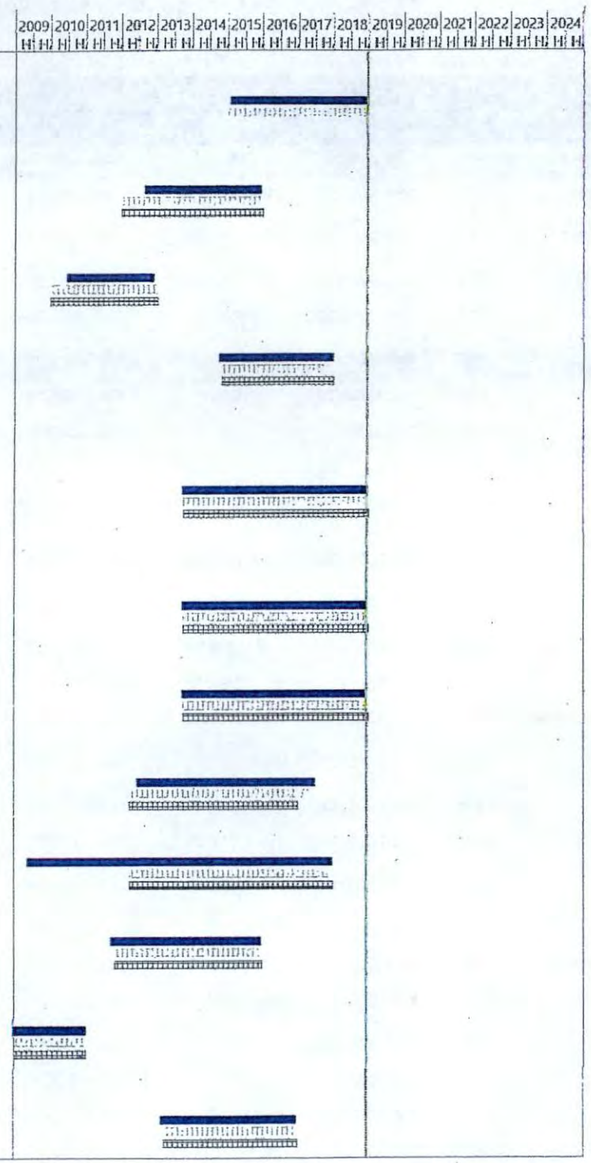
Date: 12/1/18

Figure 4.3. MSD Integrated Overflow Abatement Plan Implementation Schedule

MSD Integrated Overflow Abatement Plan Implementation Schedule (01 Jan 2009 - 31 Dec 2024)

Activity Name	% Complete	Anticipated Finish	Actual Finish	2009 IOAP Completion	IOAP Modifications*	IOAP Project ID	Original Project Name
Central Relief Drain CSO In-Line Storage, Green Infrastructure & Distributed Storage	**100%**	**Fri 11/30/18**	**Fri 11/30/18**	**NA**	**Mon 12/31/18**		
Central Relief Drain CSO In-Line Storage, Green Infrastructure & Distributed Storage	100%	Fri 11/30/18	Fri 11/30/18	NA	Mon 12/31/18	L_OR_MF_155_M_09B_B_B_4	
CSO160 In-Line Storage & Green Infrastructure Controls	**100%**	**Thu 12/10/15**	**Thu 12/10/15**	**Thu 12/31/15**	**Thu 12/31/15**		
CSO160 In-Line Storage & Green Infrastructure Controls	100%	Thu 12/10/15	Thu 12/10/15	Thu 12/31/15	Thu 12/31/15	L_OR_MF_160_S_08_A_A_0	CSO160 SEWER SEPARATION
Adams Street Sewer Separation	**100%**	**Wed 11/28/12**	**Wed 11/28/12**	**Mon 12/31/12**	**Mon 12/31/12**		
Adams Street Sewer Separation	100%	Wed 11/28/12	Wed 11/28/12	Mon 12/31/12	Mon 12/31/12	L_OR_MF_172_S_09B_B_A_0	ADAMS STREET STORAGE BASIN
CSO190 Green Infrastructure Solution	**100%**	**Sun 12/31/17**	**Fri 12/29/17**	**Sun 12/31/17**	**Sun 12/31/17**		
CSO190 Green Infrastructure Solution	100%	Sun 12/31/17	Fri 12/29/17	Sun 12/31/17	Sun 12/31/17	L_OR_MF_190_S_09B_B_A_8	18TH AND NORTHWESTERN PKY. STORAGE BASIN
Southern Outfall Inline Storage at 43rd St (SOR1) & Morris Forman WQTC Headworks	**100%**	**Fri 11/30/18**	**Fri 11/30/18**	**Mon 12/31/18**	**Mon 12/31/18**		
Southern Outfall In-Line Storage at 43rd St (SOR 1)	**100%**	**Fri 11/30/18**	**Fri 11/30/18**	**Mon 12/31/18**	**Mon 12/31/18**		
Southern Outfall In-Line Storage at 43rd St (SOR 1)	100%	Fri 11/30/18	Fri 11/30/18	Mon 12/31/18	Mon 12/31/18	L_OR_MF_211_M_13_B_A_8	
Morris Forman WQTC Headworks	**100%**	**Fri 11/30/18**	**Fri 11/30/18**	**Mon 12/31/18**	**Mon 12/31/18**		
Morris Forman WQTC Headworks	**100%**	**Fri 11/30/18**	**Fri 11/30/18**	**Mon 12/31/18**	**Mon 12/31/18**		
Morris Forman WQTC Headworks	100%	Fri 11/30/18	Fri 11/30/18	Mon 12/31/18	Mon 12/31/18		
MF Main Diversion Structure	**100%**	**Wed 11/28/18**	**Wed 11/28/18**	**Mon 12/31/18**	**Mon 12/31/18**		
MF Main Diversion Structure	100%	Wed 11/28/18	Wed 11/28/18	Mon 12/31/18	Mon 12/31/18		
Nightingale Pump Station Replacement & Storage	**100%**	**Thu 6/29/17**	**Thu 6/29/17**	**Sat 12/31/16**	**Fri 6/30/17**		
Nightingale Pump Station Replacement & Storage	100%	Thu 6/29/17	Thu 6/29/17	Sat 12/31/16	Fri 6/30/17	L_SO_MF_018_S_03_A_A	NIGHTINGALE PUMP STATION REPLACEMENT
Logan and Breckenridge Street Storage Basin	**100%**	**Wed 10/18/17**	**Wed 12/20/17**	**Sun 12/31/17**	**Sun 12/31/17**		
Logan and Breckenridge Street Storage Basin	100%	Wed 10/18/17	Wed 12/20/17	Sun 12/31/17	Sun 12/31/17	L_SO_MF_092_M_09B_B_D_8	CALVARY CREEKSIDE BASIN
CSO093 Structural Modifications & Green Infrastructure	**100%**	**Wed 12/23/15**	**Wed 12/23/15**	**Thu 12/31/15**	**Thu 12/31/15**		
CSO093 Structural Modifications & Green Infrastructure	100%	Wed 12/23/15	Wed 12/23/15	Thu 12/31/15	Thu 12/31/15	L_SO_MF_093_S_08_A_A_0	CSO093 SEWER SEPARATION
CSO108 Dam Modifications	**100%**	**Thu 12/30/10**	**Thu 12/30/10**	**Fri 12/31/10**	**Fri 12/31/10**		
CSO108 Dam Modifications	100%	Thu 12/30/10	Thu 12/30/10	Fri 12/31/10	Fri 12/31/10	L_SO_MF_108_S_09A_B_A_4	
Story Avenue and Spring Street Green Infrastructure	**100%**	**Tue 12/20/16**	**Tue 12/20/16**	**Sat 12/31/16**	**Sat 12/31/16**		
Story Avenue and Spring Street Green Infrastructure	100%	Tue 12/20/16	Tue 12/20/16	Sat 12/31/16	Sat 12/31/16	L_SO_MF_130_S_09B_B_A_8	STORY AVENUE AND SPRING STREET STORAGE BASIN



Approved 2009 IOAP IOAP Modifications Remaining Work Completed Work

Includes 2014 approval of 2012 IOAP Modification as well as all minor mod letter approvals to date.

Figure 4.3. MSD Integrated Overflow Abatement Plan Implementation Schedule

MSD Integrated Overflow Abatement Plan Implementation Schedule (01 Jan 2009 - 31 Dec 2024)

Activity Name	% Complete	Anticipated Finish	Actual Finish	2009 IOAP Completion	IOAP Modifications*	IOAP Project ID	Original Project Name
FLOOD PUMP STATION PROJECTS	**100%**	**Wed 12/31/14**	**Thu 12/18/14**	**Wed 12/31/14**	**Wed 12/31/14**		
27th Street Flood Pump Station DWO Elimination	**100%**	**Fri 6/28/13**	**Fri 6/28/13**	**Sun 6/30/13**	**Sun 6/30/13**		
27th Street Flood Pump Station DWO Elimination	100%	Fri 6/28/13	Fri 6/28/13	Sun 6/30/13	Sun 6/30/13	L_OR_MF_019_S_03_A_A	
34th Street Flood Pump Station DWO Elimination	**100%**	**Mon 6/11/12**	**Mon 6/11/12**	**Mon 12/31/12**	**Mon 12/31/12**		
34th Street Flood Pump Station DWO Elimination	100%	Mon 6/11/12	Mon 6/11/12	Mon 12/31/12	Mon 12/31/12	L_OR_MF_019_S_03_A_B	
4th Street Flood Pump Station DWO Elimination	**100%**	**Fri 6/15/12**	**Fri 6/15/12**	**Mon 12/31/12**	**Mon 12/31/12**		
4th Street Flood Pump Station DWO Elimination	100%	Fri 6/15/12	Fri 6/15/12	Mon 12/31/12	Mon 12/31/12	L_OR_MF_022_M_03_A_A	
Shawnee Flood Pump Station DWO Elimination	**100%**	**Tue 6/18/13**	**Tue 6/18/13**	**Sun 6/30/13**	**Sun 6/30/13**		
Shawnee Flood Pump Station DWO Elimination	100%	Tue 6/18/13	Tue 6/18/13	Sun 6/30/13	Sun 6/30/13	L_OR_MF_189_M_03_A_A	
17th Street Flood Pump Station DWO Elimination	**100%**	**Thu 12/18/14**	**Thu 12/18/14**	**Wed 12/31/14**	**Wed 12/31/14**		
17th Street Flood Pump Station DWO Elimination	100%	Thu 12/18/14	Thu 12/18/14	Wed 12/31/14	Wed 12/31/14	L_OR_MF_190_S_03_A_A	
SANITARY SEWER DISCHARGE PLAN							
BEARGRASS CREEK MIDDLE FORK AREA	**66%**	**Tue 12/31/24**	**NA**	**Tue 12/31/24**	**Tue 12/31/24**		
Goose Creek PS Improvements and Wet Weather Storage	**58%**	**Tue 12/31/24**	**NA**	**Tue 12/31/24**	**Tue 12/31/24**		
Goose Creek PS Improvements & Wet Weather Storage 1 - Devondale PS and Bancroft WQTC Elimination	**100%**	**Thu 6/29/17**	**Tue 7/25/17**	**Tue 12/31/24**	**Tue 12/31/24**		
Goose Creek PS Improvements & Wet Weather Storage 1 - Devondale PS and Bancroft WQTC Elimination	100%	Thu 6/29/17	Tue 7/25/17	Tue 12/31/24	Tue 12/31/24	S_MI_MF_NB04_M_03_B	
Goose Creek PS Improvements & Wet Weather Storage 2 - PS and FM Upgrades	**0%**	**Tue 12/31/24**	**NA**	**Tue 12/31/24**	**Tue 12/31/24**		
Goose Creek PS Improvements & Wet Weather Storage 2 - PS and FM	0%	Tue 12/31/24	NA	Tue 12/31/24	Tue 12/31/24	S_MI_MF_NB04_M_03_B	
Anchor Estates Pump Station Elimination	**100%**	**Fri 4/15/16**	**Fri 4/15/16**	**Sat 12/31/16**	**Sat 12/31/16**		
Anchor Estates PS Elimination 2 - Anchor Estates #1 and #2 PS Elimination	**100%**	**Fri 4/15/16**	**Fri 4/15/16**	**Sat 12/31/16**	**Sat 12/31/16**		
Anchor Estates PS Elimination 2 - Anchor Estates #1 and #2 PS Elimination	100%	Fri 4/15/16	Fri 4/15/16	Sat 12/31/16	Sat 12/31/16	S_MI_MF_NB06_M_01_A_A - 1	
Anchor Estates PS Elimination 1 - Vannah PS Elimination	**100%**	**Sat 10/15/11**	**Sat 10/15/11**	**Tue 12/31/13**	**Tue 12/31/13**		
Anchor Estates PS Elimination 1 - Vannah PS Elimination	100%	Sat 10/15/11	Sat 10/15/11	Tue 12/31/13	Tue 12/31/13	S_MI_MF_NB06_M_01_A_A - 2	

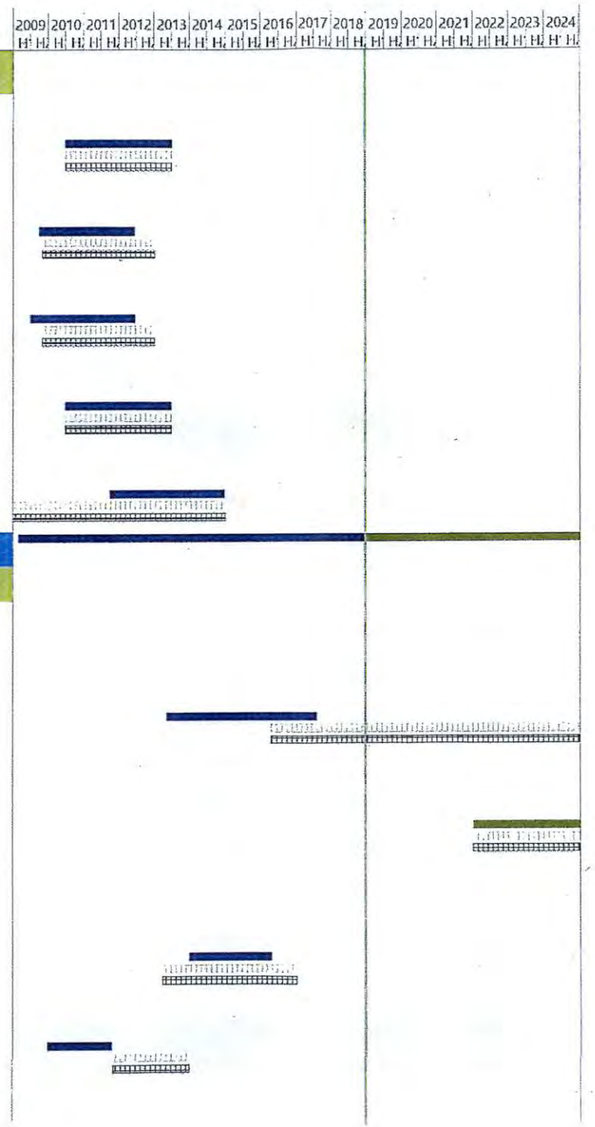


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Figure 4.3. MSD Integrated Overflow Abatement Plan Implementation Schedule

MSD Integrated Overflow Abatement Plan Implementation Schedule (01 Jan 2009 - 31 Dec 2024)

Activity Name	% Complete	Anticipated Finish	Actual Finish	2009 IOAP Completion	IOAP Modifications*	IOAP Project ID	Original Project Name
Sinking Fork Relief Sewer	**100%**	**Mon 11/30/09**	**Mon 11/30/09**	**Thu 12/30/10**	**Wed 12/23/09**		
Sinking Fork Relief Sewer	100%	Mon 11/30/09	Mon 11/30/09	Thu 12/30/10	Wed 12/23/09		
Derek R. Guthrie Water Quality Treatment Center	**100%**	**Tue 11/27/12**	**Tue 11/27/12**	**Tue 11/27/12**	**Tue 11/27/12**		
Derek R. Guthrie Water Quality Treatment Center	100%	Tue 11/27/12	Tue 11/27/12	Tue 11/27/12	Tue 11/27/12		
Hikes Lane Interceptor and Highgate Springs PS	**100%**	**Fri 11/2/12**	**Fri 11/2/12**	**Tue 11/27/12**	**Tue 11/27/12**		
Hikes Lane Interceptor and Highgate Springs PS	100%	Fri 11/2/12	Fri 11/2/12	Tue 11/27/12	Tue 11/27/12		
Northern Ditch Diversion Interceptor	**100%**	**Wed 2/16/11**	**Wed 2/16/11**	**Sun 7/31/11**	**Sun 7/31/11**		
Northern Ditch Diversion Interceptor	100%	Wed 2/16/11	Wed 2/16/11	Sun 7/31/11	Sun 7/31/11		
Southeastern Diversion Structure and Interceptor	**100%**	**Mon 12/19/11**	**Mon 12/19/11**	**Sat 5/12/12**	**Sat 5/12/12**		
Southeastern Diversion Structure and Interceptor	100%	Mon 12/19/11	Mon 12/19/11	Sat 5/12/12	Sat 5/12/12		
JEFFERSONTOWN AREA	**55%**	**Sat 12/31/22**	**NA**	**Sat 12/31/22**	**Sat 12/31/22**		
Jeffersontown WQTC Elimination	**100%**	**Wed 12/23/15**	**Wed 12/23/15**	**Thu 12/31/15**	**Thu 12/31/15**		
Jeffersontown WQTC Elimination	100%	Wed 12/23/15	Wed 12/23/15	Thu 12/31/15	Thu 12/31/15	S_JT_JT_NB01_M_01_C_A	
Elimination of Chenoweth Hills WQTC, Chenoweth Run PS, and Chippewa PS	**100%**	**Mon 9/22/14**	**Mon 9/22/14**	**Thu 12/31/15**	**Thu 12/31/15**		
Elimination of Chenoweth Hills WQTC, Chenoweth Run PS, and Chippewa PS	100%	Mon 9/22/14	Mon 9/22/14	Thu 12/31/15	Thu 12/31/15	S_JT_JT_NB01A_M_03_C	CHENOWETH HILLS WATER QUALITY TREATMENT CENTER ELIMINATION AND PS IMPROVEMENTS PROJECT
Dell Rd and Charlane Pkwy Interceptor Improvements	**0%**	**Wed 6/30/21**	**NA**	**Sat 12/31/22**	**Sat 12/31/22**		
Dell Rd and Charlane Pkwy Interceptor Improvements	0%	Wed 6/30/21	NA	Sat 12/31/22	Sat 12/31/22	S_JT_JT_NB02_M_01_C	
Raintree and Marian Ct 1	**5%**	**Wed 6/30/21**	**NA**	**Fri 12/31/21**	**Fri 12/31/21**		
Raintree and Marian Ct 1 - PS Elimination	**11%**	**Fri 8/30/19**	**NA**	**Fri 12/31/21**	**Fri 12/31/21**		
Raintree and Marian Ct 1 - PS Elimination	11%	Fri 8/30/19	NA	Fri 12/31/21	Fri 12/31/21	S_JT_JT_NB03_M_01_C	
Raintree and Marian Ct 2 - Pipe Upgrades	**0%**	**Wed 6/30/21**	**NA**	**Fri 12/31/21**	**Fri 12/31/21**		
Raintree and Marian Ct 2 - Pipe Upgrades	0%	Wed 6/30/21	NA	Fri 12/31/21	Fri 12/31/21	S_JT_JT_NB03_M_01_C	
Monticello PS Elimination	**0%**	**Sat 12/31/22**	**NA**	**Sat 12/31/22**	**Sat 12/31/22**		
Monticello PS Elimination	0%	Sat 12/31/22	NA	Sat 12/31/22	Sat 12/31/22	S_JT_JT_NB04_M_01_A	

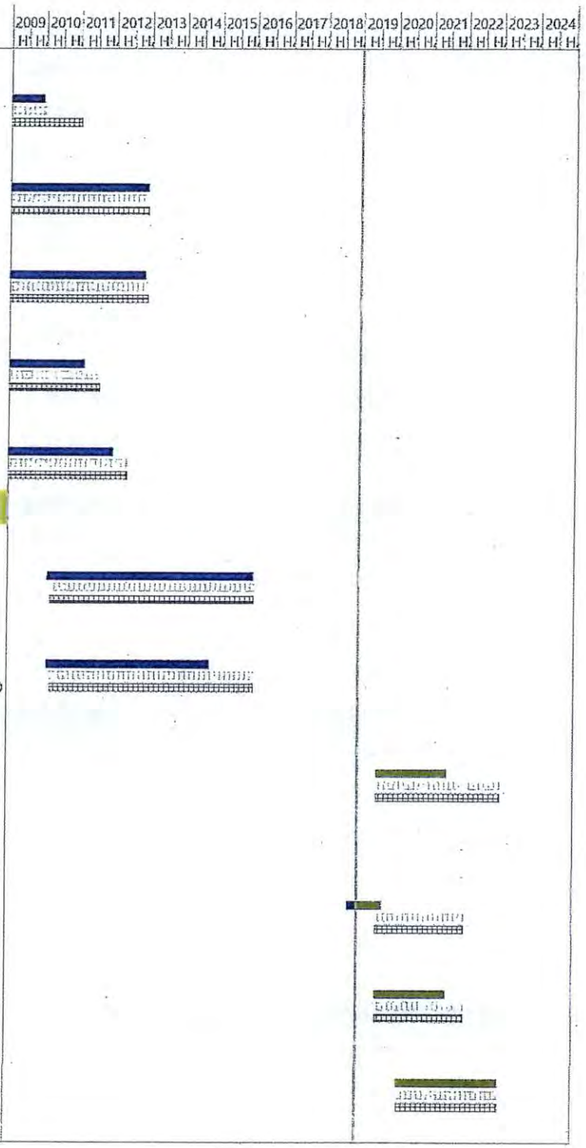

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Figure 4.3. MSD Integrated Overflow Abatement Plan Implementation Schedule

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Activity Name	% Complete	Anticipated Finish	Actual Finish	2009 IOAP Completion	IOAP Modifications*	IOAP Project ID	Original Project Name
MILL CREEK AREA	**100%**	**Fri 4/13/12**	**Fri 4/13/12**	**Fri 12/31/21**	**Fri 12/31/21**		
Shively Interceptor	**100%**	**Fri 4/13/12**	**Fri 4/13/12**	**Wed 12/31/14**	**Wed 12/31/14**		
Shively Interceptor	100%	Fri 4/13/12	Fri 4/13/12	Wed 12/31/14	Wed 12/31/14	S_MC_WC_NB01_M_01_A	
East Rockford PS Relocation	**100%**	**Fri 3/30/12**	**Fri 3/30/12**	**Fri 12/31/21**	**Fri 12/31/21**		
East Rockford PS Relocation	100%	Fri 3/30/12	Fri 3/30/12	Fri 12/31/21	Fri 12/31/21	S_MC_WC_NB02_S_03_C	
OHIO RIVER FORCE MAIN AREA	**84%**	**Thu 10/3/24**	**NA**	**Tue 12/31/24**	**Tue 12/31/24**		
Mellwood System Improvements & PS Elimination	**49%**	**Wed 12/19/12**	**NA**	**Tue 12/31/24**	**Tue 12/31/24**		
Mellwood System Improvements & PS Elimination - Mellwood PS and FM Improvements	**100%**	**Wed 12/19/12**	**Wed 12/19/12**	**Mon 12/31/12**	**Mon 12/31/12**		
Mellwood System Improvements & PS Elimination - Mellwood PS and FM Improvements	100%	Wed 12/19/12	Wed 12/19/12	Mon 12/31/12	Mon 12/31/12	S_OR_MF_NB01_M_01_B	
Mellwood System Improvements & PS Elimination - Winton and Mockingbird Valley Elimination	**0%**	**Thu 10/3/24**	**NA**	**Tue 12/31/24**	**Tue 12/31/24**		
Mellwood System Improvements & PS Elimination - Winton and Mockingbird Valley Elimination	0%	Thu 10/3/24	NA	Tue 12/31/24	Tue 12/31/24	S_OR_MF_NB01_M_01_B	
Derington Ct. PS I/I Investigation & Rehabilitation	**100%**	**Fri 3/30/12**	**Fri 3/30/12**	**Sat 3/31/12**	**Sat 3/31/12**		
Derington Ct. PS I/I Investigation & Rehabilitation	100%	Fri 3/30/12	Fri 3/30/12	Sat 3/31/12	Sat 3/31/12	S_OR_MF_NB03_S_07_C	
Prospect WQTC Eliminations, Harrods Creek PS and ORFM System Improvements	**100%**	**Mon 12/19/16**	**Mon 12/19/16**	**Sat 12/31/16**	**Sat 12/31/16**		
Prospect #1 - WQTC Eliminations	**100%**	**Tue 12/15/15**	**Tue 12/15/15**	**Thu 12/31/15**	**Thu 12/31/15**		
Prospect #1 - WQTC Eliminations	100%	Tue 12/15/15	Tue 12/15/15	Thu 12/31/15	Thu 12/31/15	S_OR_MF_NB04_M_03_B_B	
Prospect #2 - Harrods Creek PS and FM	**100%**	**Tue 12/15/15**	**Tue 12/15/15**	**Thu 12/31/15**	**Thu 12/31/15**		
Prospect #2 - Harrods Creek PS and FM	100%	Tue 12/15/15	Tue 12/15/15	Thu 12/31/15	Thu 12/31/15	S_OR_MF_NB04_M_03_B_B	
Prospect #3 - ORFM System Improvements	**100%**	**Mon 12/19/16**	**Mon 12/19/16**	**Sat 12/31/16**	**Sat 12/31/16**		
Prospect #3 - ORFM System Improvements	100%	Mon 12/19/16	Mon 12/19/16	Sat 12/31/16	Sat 12/31/16	S_OR_MF_NB04_M_03_B_B	
OTHER PROJECTS	**68%**	**Tue 12/31/24**	**NA**	**Tue 12/31/24**	**Mon 12/30/24**		
CPE_CCP Modifications To WQTC	**100%**	**Mon 12/19/11**	**Mon 12/19/11**	**Sat 12/31/11**	**Sat 12/31/11**		
CPE_CCP Modifications To WQTC	100%	Mon 12/19/11	Mon 12/19/11	Sat 12/31/11	Sat 12/31/11		
I/I Reduction Program	**62%**	**Tue 12/31/24**	**NA**	**Tue 12/31/24**	**Tue 12/31/24**		
I/I Reduction Program	62%	Tue 12/31/24	NA	Tue 12/31/24	Tue 12/31/24		

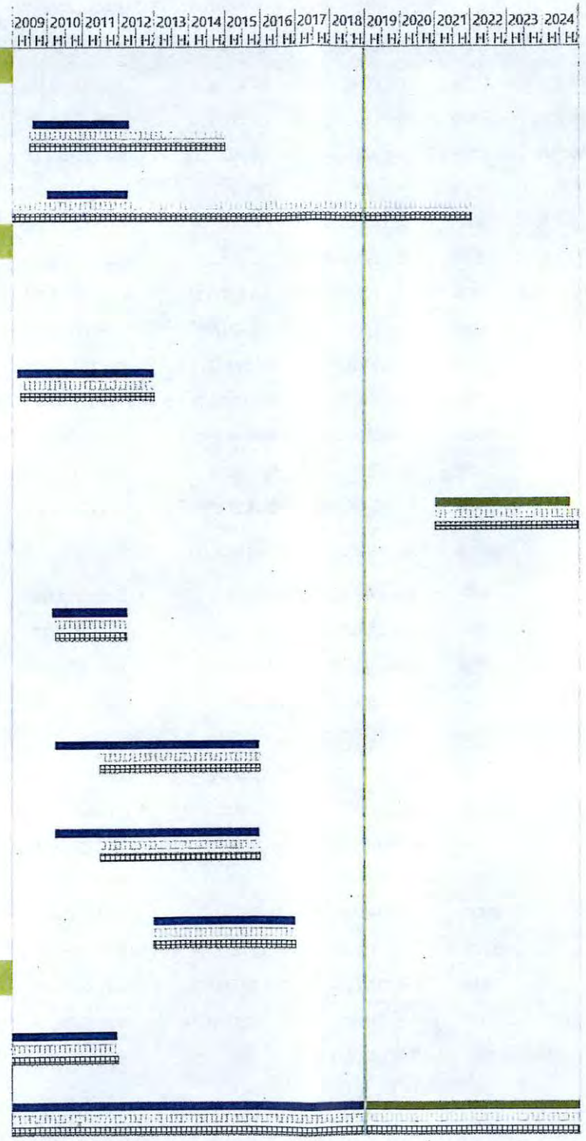

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Figure 4.3. MSD Integrated Overflow Abatement Plan Implementation Schedule

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Activity Name	% Complete	Anticipated Finish	Actual Finish	2009 IOAP Completion	IOAP Modifications*	IOAP Project ID	Original Project Name
POND CREEK AREA	**93%**	**Thu 6/30/22**	**NA**	**Tue 12/31/24**	**Tue 12/31/24**		
Lea Ann Way System Improvements	**100%**	**Fri 12/4/15**	**Fri 12/4/15**	**Thu 12/31/15**	**Thu 12/31/15**		
Lea Ann Way System Improvements	100%	Fri 12/4/15	Fri 12/4/15	Thu 12/31/15	Thu 12/31/15	S_PO_WC_PC08_M_01_C	
Edsel PS I/I Investigation & Rehabilitation	**100%**	**Tue 9/27/11**	**Tue 9/27/11**	**Sat 12/31/11**	**Fri 9/30/11**		
Edsel PS I/I Investigation & Rehabilitation	100%	Tue 9/27/11	Tue 9/27/11	Sat 12/31/11	Fri 9/30/11	S_PO_WC_PC11_M_07_C	
Cinderella PS Elimination	**0%**	**Thu 6/30/22**	**NA**	**Sun 12/31/23**	**Sun 12/31/23**		
Cinderella PS Elimination	0%	Thu 6/30/22	NA	Sun 12/31/23	Sun 12/31/23	S_PO_WC_PC04_M_01_C	
Government Center PS Elimination	**100%**	**Fri 4/1/11**	**Fri 4/1/11**	**Tue 12/31/24**	**Tue 12/31/24**		
Government Center PS Elimination	100%	Fri 4/1/11	Fri 4/1/11	Tue 12/31/24	Tue 12/31/24	S_PO_WC_PC06_M_01_C	
Avanti PS Elimination	**100%**	**Fri 7/10/09**	**Fri 7/10/09**	**Fri 12/31/10**	**Fri 12/31/10**		
Avanti PS Elimination	100%	Fri 7/10/09	Fri 7/10/09	Fri 12/31/10	Fri 12/31/10	S_PO_WC_PC07_M_01_A	
Charleswood Interceptor Extension	**100%**	**Wed 8/5/15**	**Wed 8/5/15**	**Sat 12/31/22**	**Sat 12/31/22**		
Charleswood Interceptor Extension	100%	Wed 8/5/15	Wed 8/5/15	Sat 12/31/22	Sat 12/31/22	S_PO_WC_PC03_M_01_C	
Lantana PS #1 I/I Investigation and Rehabilitation	**100%**	**Thu 12/29/11**	**Thu 12/29/11**	**Sat 12/31/11**	**Thu 12/29/11**		
Lantana PS #1 I/I Investigation and Rehabilitation	100%	Thu 12/29/11	Thu 12/29/11	Sat 12/31/11	Thu 12/29/11	S_PO_WC_PC05_M_07_C	
Leven PS Elimination	**0%**	**Thu 6/30/22**	**NA**	**Sat 12/31/22**	**Sat 12/31/22**		
Leven PS Elimination	0%	Thu 6/30/22	NA	Sat 12/31/22	Sat 12/31/22	S_PO_WC_PC10_M_01_C	
Caven Ave Pump Station Elimination	**100%**	**Mon 8/1/16**	**Mon 8/1/16**	**Tue 12/31/24**	**Sat 12/31/16**		
Caven Ave Pump Station Elimination	100%	Mon 8/1/16	Mon 8/1/16	Tue 12/31/24	Sat 12/31/16	S_PO_WC_PC09_M_09B_C	
SMALL WWTP AREA	**37%**	**Fri 12/31/21**	**NA**	**Fri 12/31/21**	**Fri 12/31/21**		
Riding Ridge PS Improvements	**100%**	**Sat 11/15/14**	**Sat 11/15/14**	**Wed 12/31/14**	**Wed 12/31/14**		
Riding Ridge PS Improvements	100%	Sat 11/15/14	Sat 11/15/14	Wed 12/31/14	Wed 12/31/14	S_HC_HN_NB01_S_03_C_A	
Lucas Lane PS Inline Storage	**0%**	**Wed 6/30/21**	**NA**	**Fri 12/31/21**	**Fri 12/31/21**		
Lucas Lane PS Inline Storage	0%	Wed 6/30/21	NA	Fri 12/31/21	Fri 12/31/21	S_FF_BT_NB01_S_09A_C_A	
St. Rene Rd. PS Elimination	**100%**	**Fri 9/19/14**	**Fri 9/19/14**	**Fri 12/31/21**	**Fri 12/31/21**		
St. Rene Rd. PS Elimination	100%	Fri 9/19/14	Fri 9/19/14	Fri 12/31/21	Fri 12/31/21	S_FF_CH_NB01_S_09A_C_A	ST. RENE RD PS INLINE STORAGE
Lake Forest PS SSO Investigation	**100%**	**Tue 12/18/12**	**Tue 12/18/12**	**Mon 12/31/12**	**Mon 12/31/12**		
Lake Forest PS SSO Investigation	100%	Tue 12/18/12	Tue 12/18/12	Mon 12/31/12	Mon 12/31/12	S_FF_LF_NB01_S_13_C_A	
Gunpowder PS Inline Storage	**0%**	**Wed 6/30/21**	**NA**	**Fri 12/31/21**	**Fri 12/31/21**		
Gunpowder PS Inline Storage	0%	Wed 6/30/21	NA	Fri 12/31/21	Fri 12/31/21	S_HC_HN_NB02_S_09A_C_B	

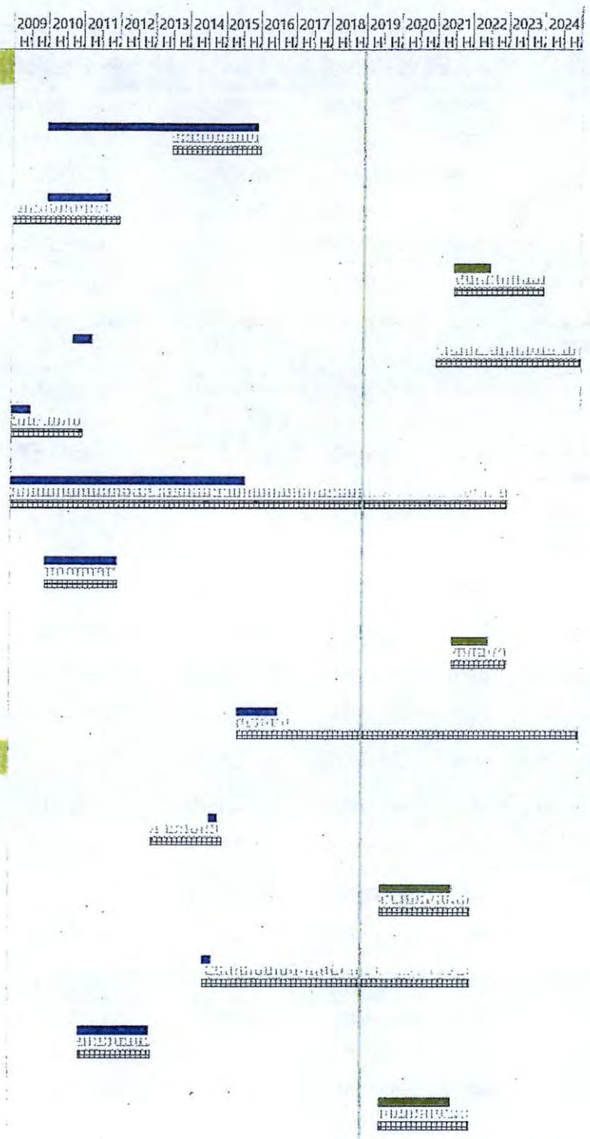

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Figure 4.3. MSD Integrated Overflow Abatement Plan Implementation Schedule

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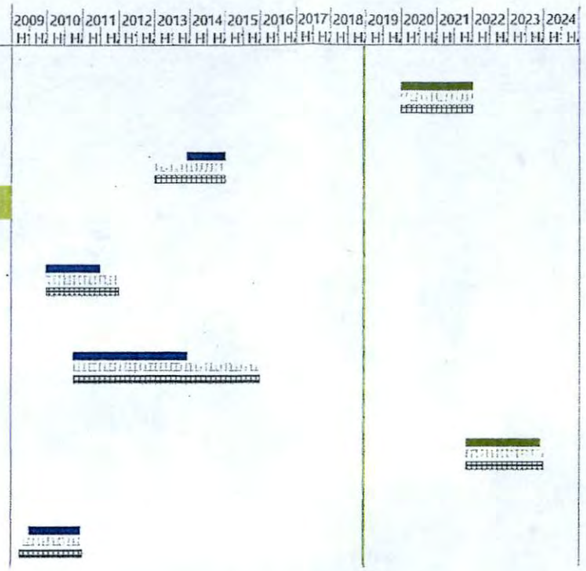
Activity Name	% Complete	Anticipated Finish	Actual Finish	2009 IOAP Completion	IOAP Modifications*	IOAP Project ID	Original Project Name
Fox Harbor Inline Storage	**0%**	**Fri 12/31/21**	**NA**	**Fri 12/31/21**	**Fri 12/31/21**		
Fox Harbor Inline Storage	0%	Fri 12/31/21	NA	Fri 12/31/21	Fri 12/31/21	S_HC_HN_NB03_S_09A_A_A	
Fairway View PS Improvements	**100%**	**Tue 12/30/14**	**Tue 12/30/14**	**Wed 12/31/14**	**Wed 12/31/14**		
Fairway View PS Improvements	100%	Tue 12/30/14	Tue 12/30/14	Wed 12/31/14	Wed 12/31/14	S_HC_HS_NB01_S_03_C_A	
SOUTHEASTERN DIVERSION AREA	**75%**	**Mon 11/27/23**	**NA**	**Sun 12/31/23**	**Sun 12/31/23**		
Parkview Estates I/I Investigation & Rehabilitation	**100%**	**Tue 6/28/11**	**Tue 6/28/11**	**Sat 12/31/11**	**Sat 12/31/11**		
Parkview Estates I/I Investigation & Rehabilitation	100%	Tue 6/28/11	Tue 6/28/11	Sat 12/31/11	Sat 12/31/11	S_SD_MF_NB03_S_07_C	
Klondike Interceptor	**100%**	**Thu 12/5/13**	**Thu 12/5/13**	**Thu 12/31/15**	**Thu 12/31/15**		
Klondike Interceptor	100%	Thu 12/5/13	Thu 12/5/13	Thu 12/31/15	Thu 12/31/15	S_SD_MF_NB04_S_01_B_A	
Sutherland Interceptor	**0%**	**Mon 11/27/23**	**NA**	**Sun 12/31/23**	**Sun 12/31/23**		
Sutherland Interceptor	0%	Mon 11/27/23	NA	Sun 12/31/23	Sun 12/31/23	S_SD_MF_NB05_M_01_A	
Beargrass Interceptor Rehab Ph. 2	**100%**	**Tue 12/14/10**	**Tue 12/14/10**	**Fri 12/31/10**	**Fri 12/31/10**		
Beargrass Interceptor Rehab Ph. 2	100%	Tue 12/14/10	Tue 12/14/10	Fri 12/31/10	Fri 12/31/10	S_SD_MF_NB06_S_13_C	



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4.5. POST CONSTRUCTION COMPLIANCE MONITORING PROGRAM

Within the IOAP, monitoring efforts that support the impact evaluation of both project and plan implementation are discussed in Volume 1, Section 6.5 - Post Construction Compliance Monitoring (PCCM). These efforts are incorporated into MSD's overall environmental data monitoring and management planning and activities, which support various MSD initiatives including operational support, the Municipal Separate Storm Sewer System (MS4) program, hydraulic and water quality modeling, and a range of regulatory reporting and trending requirements. Under the IOAP, the primary compliance assessment objectives will be to certify project completion to the selected overflow control level, both for CSOs and SSOs, as well as to confirm that the predicted levels of overflow control and anticipated water quality benefits have been realized. As such, post-construction compliance monitoring supports impact analysis and the validation of various objectives of IOAP project initiatives, and the overall abatement plan.

4.5.1. MODELING PROGRAM

As implementation of the IOAP continues, the sewer models increasingly support critical planning and design decisions on sizing, location and operation of new facilities (e.g., storage basins, pump stations, gates) as well as providing validation of predicted project level of control.

MSD has contracted with a hydraulic / hydrologic modeling (H/H) consultant to update and maintain a calibrated Infoworks ICM model of the combined and sanitary sewer collection systems. The model is used for the following activities:

- Planning and design of IOAP and other capital projects, including recommendations for changes to the operation of MSD's RTC system based on project impacts.
- Validation of performance of IOAP projects after construction.
- Evaluation of sewer capacity requests and proposed green infrastructure impacts on the combined and separate sanitary sewer systems.

The model is calibrated to both in-system flow monitors as well as flow monitors on CSO outfalls. MSD continues to look for ways to improve the accuracy and precision of the model by performing field surveys and reconnaissance where additional details or other critical details need clarification to refine calibration of the models.

FY18 Program

- Worked with H/H consultant to update ICM model to incorporate IOAP minor modifications.
- Worked with H/H consultant to review IOAP projects under design for validation of proposed performance.
- Worked with H/H consultant to validate performance of 30 IOAP projects under assessment, as discussed in Section 4.5.2.

FY19 Program

- Work with H/H consultant to review CSO flow monitoring data as discussed in Section 1.2.3.3.
- Work with H/H consultant to review IOAP projects under design for validation of proposed performance.
- Work with H/H consultant to validate performance of IOAP projects after construction is completed.

4.5.2. PROJECT PERFORMANCE REPORTING

As described in Volume 1, Section 6.5.2 of the 2012 IOAP Modification, dated May 2014, beginning with the FY14 Annual Report, MSD has agreed to provide annual reports on performance findings for completed projects and to self-identify cases where the performance falls below the committed level of control. In such cases, MSD will define the necessary remedial measures and schedule to improve performance to the appropriate level. It is the intent that performance analyses will be conducted for all constructed IOAP projects as monitoring data becomes available. To complete this effort and independently assess IOAP projects that have been certified to date, MSD has partnered with the University of Louisville Center for Infrastructure Research (UofL) for the majority of the IOAP projects.

Current performance reporting is updated to include 81 projects certified through June 30, 2017, with data through June 30, 2018.

MSD committed to an analysis of twelve months of final effluent sampling to determine performance of the Derek R. Guthrie WQTC Flow Equalization and Treatment Project, which was completed July 10, 2015. For all other LTCP and SSDP projects, the period for monitoring performance and compliance encompasses a three-year window following construction. Green demonstration projects were determined to meet performance commitments based on reported benefit and improvement to MSD's Green Infrastructure Program, as reported in Annual Report 7. Two supplemental environmental projects (SEPs) were assessed for successful restoration.

Detailed performance status of each project is included in Table 4.5. Of the 77 projects analyzed to date, 49 have met the criteria for final committed level of control and 29 remain under assessment. Projects detailed in Table 4.6 have been identified as phased projects that did not pass the current performance assessment but are linked to other projects that will address performance issues. Projects detailed in Table 4.7 need remediation to address performance issues. Projects that have been completed through the assessment date but have not been assessed as of the current reporting period are detailed in Table 4.8.

Table 4.5. IOAP Project Performance – Performance Status

PROJECT NAME	ACD PROJECT NUMBER	PROJECT CERTIFICATION DATE	PROJECT TYPE	ASSESSMENT RESULT	ASSESSMENT COMPLETION DATE
Avanti PS Elimination	S_PO_WC_PC07_M_01_A	July 28, 2009	SSDP	Pass	December 30, 2013
Sinking Fork Relief Sewer	SINKING FORK RELIEF SEWER	December 23, 2009	SSDP	Pass	December 30, 2014
Ashburton PS Improvements And Diversion	S_FF_FF_NB03_M_01_C_A	January 22, 2010	SSDP	Pass	December 30, 2013
Woodland Hills PS Diversion	S_FF_FF_NB03_M_01_C_A	April 1, 2010	SSDP	Pass	December 30, 2013
Running Fox PS Elimination	S_CC_CC_MSD1080_S_01_C	April 5, 2010	SSDP	Pass	December 30, 2013
Beechwood Village Sanitary Sewer Replacement	BEECHWOOD VILLAGE SANITARY SEWER REPLACEMENT	September 29, 2010	SSDP	Pass	December 30, 2014
Billy Goat Strut (Formerly Campbell and Main) Permeable Alley	L_SO_MF_121_S_12_A	October 8, 2010	Green	Pass	December 30, 2013
W. Gaulbert & W. Hill (Formerly Seventeenth and W. Hill) Permeable Alley	L_OR_MF_015_S_12_A	October 15, 2010	Green	Pass	December 30, 2013
2300 Block of Congress Street (Formerly Seventh and Market) Permeable Alley	L_OR_MF_053_S_12_A_C	November 11, 2010	Green	Pass	December 30, 2013
Clifton Triangle Area Rain Garden	ADDITIONAL RAIN GARDEN PROJECT	November 11, 2010	Green	Pass	December 30, 2013
Brandeis Apartments Rain Garden	ADDITIONAL RAIN GARDEN PROJECT	November 15, 2010	Green	Pass	December 30, 2013
Cherokee Park Stream Restoration1	SEP PROJECT	December 3, 2010	Other	Pass	May 7, 2014
MSD Main Office Parking Lot Bioswale	L_OR_MF_053_S_12_A_A	December 3, 2010	Green	Pass	December 30, 2013
3rd & Ormsby Biofiltration	L_OR_MF_198_S_12_A	December 12, 2010	Green	Pass	December 30, 2013
Beargrass Interceptor Rehabilitation Ph 2	S_SD_MF_NB06_S_13_C	December 14, 2010	SSDP	Phased Project	Ongoing
Floydsburg Rd I/I Investigation & Rehabilitation	S_HC_HC_MSD1086_M_07_C_A	December 17, 2010	SSDP	Remediation Required	Ongoing
6th & Martin Luther King (Formerly Sixth and Muhammad Ali) Green Parking Lot	L_OR_MF_022_S_12_A	December 28, 2010	Green	Pass	December 30, 2013

Table 4.5. IOAP Project Performance – Performance Status

PROJECT NAME	ACD PROJECT NUMBER	PROJECT CERTIFICATION DATE	PROJECT TYPE	ASSESSMENT RESULT	ASSESSMENT COMPLETION DATE
7th and Cedar Green Parking Lot	L_OR_MF_053_S_12_A_B	December 30, 2010	Green	Pass	December 30, 2013
CSO108 Dam Modifications	L_SO_MF_108_S_09A_B_A_4	December 30, 2010	LTCP	Not Yet Assessed	Ongoing
Housing Authority Green Roof (Formerly Sixth and Broadway Rain Garden)	L_OR_MF_028_S_12_A	December 30, 2010	Green	Pass	December 30, 2013
Scholar House Green Parking Lot (Formerly Twelfth and Jefferson)	L_OR_MF_208_S_12_A	December 30, 2010	Green	Pass	December 30, 2013
Swift Company Green Project (Formerly Second and Broadway Green Parking Lot)	L_OR_MF_181_S_12_A	December 30, 2010	Green	Pass	December 30, 2013
Northern Ditch Diversion Interceptor	NORTHERN DITCH DIVERSION INTERCEPTOR	February 16, 2011	SSDP	Pass	December 30, 2014
Pond Creek Trail SEP[3]	SEP PROJECT	February 19, 2011	Other	Pass	December 16, 2014
Government Center PS Elimination	S_PO_WC_PC06_M_01_C	April 1, 2011	SSDP	Pass	December 30, 2014
Parkview Estates I/I Investigation & Rehabilitation	S_SD_MF_NB03_S_07_C	June 28, 2011	SSDP	Pass	December 30, 2014
Hazelwood PS I&I Investigation & Rehabilitation	S_MC_MF_55665_S_07_C	June 30, 2011	SSDP	Pass	December 30, 2013
Sonne Pump Station I&I Investigation & Rehabilitation	S_OR_MF_42007_S_07_C	June 30, 2011	SSDP	Remediation Required	Ongoing
Camp Taylor #1- Replace Sewers	S_SF_MF_30917_M_09_A	July 8, 2011	SSDP	Phased Project	Ongoing
Edsel PS I/I Investigation & Rehabilitation	S_PO_WC_PC11_M_07_C	September 27, 2011	SSDP	Pass	December 30, 2014
Anchor Estates- Vannah PS Elimination	S_MI_MF_NB06_M_01_A_A - 2	October 15, 2011	SSDP	Pass	December 30, 2014
CPE/CCP Modifications to WQTC	CPE/CCP MODIFICATIONS TO WQTC	December 19, 2011	Other	Not Yet Assessed	Ongoing
East Washington @ Adams Street Green Demonstration Project (Formerly I-264 On-Ramp Dry Well)	L_OR_MF_019_S_12_A	December 19, 2011	Green	Pass	December 30, 2013

Table 4.5. IOAP Project Performance – Performance Status

PROJECT NAME	ACD PROJECT NUMBER	PROJECT CERTIFICATION DATE	PROJECT TYPE	ASSESSMENT RESULT	ASSESSMENT COMPLETION DATE
3rd Street and Campbell Ventures Green Project (Formerly JFK Montessori Area Dry Well)	L_OR_MF_191_S_12_A_B	December 20, 2011	Green	Pass	December 30, 2013
German/Paristown Green Street Rain Garden	ADDITIONAL RAIN GARDEN PROJECT	December 20, 2011	Green	Pass	December 30, 2013
Grawemeyer Hall Parking Lot (Formerly I-264 and Gibson Dry Well)	L_OR_MF_191_S_12_A_A	December 20, 2011	Green	Pass	December 30, 2013
Speed Art Museum Infiltration Trench (Formerly I-264 Off-Ramp Dry Well)	L_OR_MF_189_S_12_A	December 20, 2011	Green	Pass	December 30, 2013
Hurstbourne I&I Investigation & Rehabilitation	S_MI_MF_NB07_S_07_C	December 27, 2011	SSDP	Pass	December 30, 2014
Lantana PS I/I Investigation & Rehabilitation	S_PO_WC_PC05_M_07_C	December 29, 2011	SSDP	Remediation Required	Ongoing
Brown-Forman Green Roof Project (Formerly Bardstown Rd Presbyterian Church Green Parking Lot)	ADDITIONAL RAIN GARDEN PROJECT	December 30, 2011	Green	Pass	December 30, 2013
Wilson Crossings Green Parking Lot (Formerly Russell Lee Drive Dry Well)	L_OR_MF_191_S_12_A_C	December 30, 2011	Green	Pass	December 30, 2013
Derington Ct PS I/I Investigation & Rehabilitation	S_OR_MF_NB03_S_07_C	March 30, 2012	SSDP	Pass	June 30, 2016
East Rockford Lane PS Relocation	S_MC_WC_NB02_S_03_C	March 30, 2012	SSDP	Pass	June 30, 2016
Shively Interceptor	S_MC_WC_NB01_M_01_A	April 13, 2012	SSDP	Pass	June 30, 2016
Southeast Diversion Structure & Interceptor	SOUTHEASTERN DIVERSION STRUCTURE & INTERCEPTOR	April 19, 2012	SSDP	Additional Monitoring Required	Ongoing
Fairmount Rd PS Improvements	S_FF_CC_81316_M_03_C_A	April 24, 2012	SSDP	Pass	June 30, 2017
34th Street FPS DWO Elimination	L_OR_MF_019_S_03_A_B	June 11, 2012	LTCP	Pass	June 30, 2016
4th Street FPS DWO Elimination	L_OR_MF_022_M_03_A_A	June 15, 2012	LTCP	Pass	June 30, 2016
Hike Lane Interceptor & Highgate Springs PS	HIKES LANE INTERCEPTOR /HIGHGATE SPRINGS PS	November 2, 2012	SSDP	Pass	June 30, 2016

Table 4.5. IOAP Project Performance – Performance Status

PROJECT NAME	ACD PROJECT NUMBER	PROJECT CERTIFICATION DATE	PROJECT TYPE	ASSESSMENT RESULT	ASSESSMENT COMPLETION DATE
Derek R Guthrie WQTC[2]	DEREK R GUTHRIE WATER QUALITY TREATMENT CENTER	November 15, 2012	SSDP	Pass	July 10, 2015
Adams Street Sewer Separation	L_OR_MF_172_S_09B_B_A_0	November 28, 2012	LTCP	Pass	June 30, 2016
Lake Forest PS SSO Investigation	S_FF_LF_NB01_S_13_C_A	December 18, 2012	SSDP	Pass	June 30, 2016
Meadow Stream PS & FM Upgrade	S_HC_HC_MSD1082_S_09A_C	December 18, 2012	SSDP	Pass	June 30, 2016
Mellwood Sys 1 - Mellwood Ps & Force Main	S_OR_MF_NB01_M_01_B	December 27, 2012	SSDP	Phased Project	Ongoing
CSO123 Downspout Disconnection	L_MI_MF_123_S_08_A_A_0	December 30, 2012	LTCP	Pass	June 30, 2016
Shawnee FPS DWO Elimination	L_OR_MF_189_M_03_A_A	June 18, 2013	LTCP	Pass	June 30, 2016
27th Street FPS DWO Elimination	L_OR_MF_019_S_03_A_A	June 28, 2013	LTCP	Pass	June 30, 2016
CSO206 Sewer Separation	L_MI_MF_206_S_08_A_A_0	December 12, 2013	LTCP	Pass	June 30, 2017
Camp Taylor #2- Replace Sewers	S_SF_MF_30917_M_09_A	December 20, 2013	SSDP	Phased Project	Ongoing
UMF #1 - Buechel Basin	S_MISF_MF_NB01_M_01_C_A1	December 27, 2013	SSDP	Phased Project	Ongoing
Klondike Interceptor	S_SD_MF_NB04_S_01_B_A	July 17, 2014	SSDP	Pass	June 30, 2018
St. Rene Road Pump Station Elimination	S_FF_CH_NB01_S_09A_C_A	September 19, 2014	SSDP	Pass	June 30, 2018
Elimination of Chenoweth Hills WQTC, Chenoweth Run PS, and Chippewa PS	S_JT_JT_NB01A_M_03_C	September 22, 2014	SSDP	Pass	June 30, 2018
Riding Ridge PS Improvements	S_HC_HN_NB01_S_03_C_A	November 15, 2014	SSDP	Pass	June 30, 2018
17th FPS DWO Elimination	L_OR_MF_190_S_03_A_A	December 18, 2014	LTCP	Pass	June 30, 2018
Fairway View PS Improvements	S_HC_HS_NB01_S_03_C_A	December 30, 2014	SSDP	Pass	June 30, 2018
Charleswood Interceptor Extension	S_PO_WC_PC03_M_01_C	August 5, 2015	SSDP	Pass	Ongoing
Prospect #2 – Harrods Creek PS	S_OR_MF_NB04_M_03_B_B	November 13, 2015	SSDP	Phased Project	Ongoing
Lea Ann Way System Improvements	S_PO_WC_PC08_M_01_C	December 4, 2015	SSDP	Remediation Required	Ongoing
CSO160 In-Line Storage And Green Infrastructure	L_OR_MF_160_S_08_A_A_0	December 10, 2015	LTCP	Phased Project	Ongoing

Table 4.5. IOAP Project Performance – Performance Status

PROJECT NAME	ACD PROJECT NUMBER	PROJECT CERTIFICATION DATE	PROJECT TYPE	ASSESSMENT RESULT	ASSESSMENT COMPLETION DATE
Prospect #1 – WQTC Eliminations	S_OR_MF_NB04_M_03_B_B	December 15, 2015	SSDP	Phased Project	Ongoing
CSO093 Structural Modifications & Green Infrastructure	L_SO_MF_093_S_08_A_A_0	December 23, 2015	LTCP	Phased Project	Ongoing
CSO140 In-Line Storage And Green Infrastructure Controls	L_MI_MF_140_S_08_A_A_0	December 23, 2015	LTCP	Phased Project	Ongoing
Jeffersontown WQTC Elimination	S_JT_JT_NB01_M_01_C_A	December 23, 2015	SSDP	Remediation Required	Ongoing
Fairmount Road Pump Station Offline Storage Basin	S_FF_CC_81316_M_03_C_A	March 30, 2016	SSDP	Remediation Required	Ongoing
Goose Creek PS Phase 1 - Devondale Wet Weather Storage	S_MI_MF_NB04_M_03_B	April 15, 2016	SSDP	Phased Project	Ongoing
Caven Avenue PS Elimination	S_PO_WC_PC09_M_09B_C	September 26, 2016	SSDP	Pass	Ongoing
Anchor Estates PS Eliminations 2 – Ancor Estates #1 & #2 PS Eliminations	S_MI_MF_NB06_M_01_A_A - 1	September 30, 2016	SSDP	Pass	Ongoing
Prospect #3 – ORFM System Improvements	S_OR_MF_NB04_M_03_B_B	December 19, 2016	SSDP	Phased Project	Ongoing
Story Avenue and Spring Street Green Infrastructure	L_SO_MF_130_S_09B_B_A_8	December 20, 2016	LTCP	Not Yet Assessed	Ongoing
Nightingale Pump Station Replacement and Storage	L_SO_MF_018_S_03_A_A	June 30, 2017	LTCP	Not Yet Assessed	Ongoing

[1]Assessment performed by Stantec Consulting Services, Inc.
[2]Assessment performed by HDR Engineers, Inc.
[3]Assessment performed by Redwing Ecological Services, Inc

Table 4.6. IOAP Project Performance – Phased Project Performance Summary through June 30, 2018

PROJECT NAME	OVERFLOW EVENTS BELOW LEVEL OF CONTROL		PHASED PROJECT	PHASED PROJECT COMPLETION DATE
	COUNT	VOLUME (GALLONS)		
Beargrass Interceptor Rehabilitation Ph 2	55	496,100	Nightingale PS Replacement & Storage (S_SD_MF_NB06_S_13_C)	June 30, 2017[1]
Camp Taylor #1- SSES	86	773,250	Camp Taylor #4 (S_SF_MF_30917_M_09_A)	December 31, 2024[2]
Camp Taylor #2- Replace Sewers	86	773,250	Camp Taylor #4 (S_SF_MF_30917_M_09_A)	December 31, 2024[2]
CSO093 Structural Modifications & Green Infrastructure	6	57,656	Due to the interdependent nature of the CSS, the intended performance of any LTCP project is dependent on the full implementation of all LTCP projects as outlined in the IOAP.	December 31, 2020[2]
CSO140 In-Line Storage and Green Infrastructure Controls	42	15,982,844	Due to the interdependent nature of the CSS, the intended performance of any LTCP project is dependent on the full implementation of all LTCP projects as outlined in the IOAP.	December 31, 2020[2]
CSO160 In-Line Storage and Green Infrastructure	20	285,458	Due to the interdependent nature of the CSS, the intended performance of any LTCP project is dependent on the full implementation of all LTCP projects as outlined in the IOAP.	December 31, 2020[2]
Goose Creek PS Phase 1 - Devondale Wet Weather Storage	2	355,500	Goose Creek Pump Station Improvements and Wet Weather Storage 2 - Pump Station and Force Main Upgrades (S_MI_MF_NB04_M_03_B)	December 31, 2024[2]
Mellwood Sys 1 - Mellwood PS & Force Main	14	373,900	Winton & Mockingbird PS (S_OR_MF_NB01_M_01_B)	December 31, 2024[2]
Southeast Diversion Structure & Interceptor	1	1,000	Additional rehabilitation may be required dependent on monitoring outcomes after construction of Nightingale PS / Basin (S_SD_MF_NB06_S_13_C)	June 30, 2017[1]
UMF #1 - Buechel Basin	4	497,000	UMF #2 – PS Diversion & Storage (S_MISF_MF_NB01_M_01_C_A1)	December 31, 2024[2]

[1] Actual completion date.
[2] ACD date.

Table 4.7. IOAP Project Performance – Remediation Project Performance Summary through June 30, 2018 and Action Plan

PROJECT NAME	OVERFLOW EVENTS BELOW LEVEL OF CONTROL		REMEDIAL MEASURES	REMEDIATION COMPLETION DATE
	COUNT	VOLUME (GALLONS)		
Fairmount Road Pump Station Offline Storage Basin	1	1,078,500	Overflow occurred during February rainfall and river flooding event when system was not under normal operating conditions. Will be reevaluated FY19.	February 24, 2018
Floydsburg Rd I/I Investigation & Rehabilitation	5	1,760	Additional rehabilitation completed FY18. Will be reevaluated FY20.	August 9, 2018[2]
Jeffersontown WQTC Elimination	1	20,000	Overflow occurred during February rainfall and river flooding event when system was not under normal operating conditions. Will be reevaluated FY19.	February 24, 2018
Lantana PS I/I Investigation & Rehabilitation	14	152,865	Additional rehabilitation completed FY19. Will be reevaluated FY20.	August 10, 2018[2]
Lea Ann Way System Improvements	1	25,750	Overflow occurred during February rainfall and river flooding event when system was not under normal operating conditions. Will be reevaluated FY19.	February 24, 2018
Prospect #1 – WQTC Eliminations	3	34,000	Phased project with Prospect #3, completed December 31, 2016. Overflows occurred during February rainfall and river flooding event when system was not under normal operating conditions. Will be reevaluated FY19.	February 24, 2018
Prospect #2 – Harrods Creek PS	3	34,000	Phased project with Prospect #3, completed December 31, 2016. Overflows occurred during February rainfall and river flooding event when system was not under normal operating conditions. Will be reevaluated FY19.	February 24, 2018
Prospect #3 – ORFM System Improvements	7	1,448,200	Overflows occurred during February rainfall and river flooding event when system was not under normal operating conditions. Will be reevaluated FY19.	February 24, 2018
Sonne Pump Station I&I Investigation & Rehabilitation	1	8,055	Special permit conditions added to upstream wastewater discharger for 24-hour hold during rain events. Will be reevaluated FY19.	April 1, 2016

[1] Overflow events prior to remediation completion date and since phased project completion date, if appllicable.
[2] Actual completion date.
[3] ACD date.

Table 4.8. IOAP Project Performance – Projects Completed Prior to June 30, 2017 Requiring Assessment

PROJECT NAME	PROJECT TYPE	PERFORMANCE REPORTING DISCUSSION
CSO108 Dam Modifications	LTCP	Minor modification to change LOC from 4 to 8 approved September 27, 2018. Project will be assessed during the FY20 reporting period to align with LTCP assessment schedule.
CPE/CCP Modifications to WQTC	Other	ACD CPE/CCP activities were completed December 31, 2011. Ongoing review of treatment plant capacity and operation under the CMOM CPE/CCP, including operations and maintenance activities and activities under SORP and SCAP, are ongoing. Additional program information will be reported in Section 6.2 beginning FY19.
Story Avenue And Spring Street Green Infrastructure	LTCP	Project will be assessed during the FY19 reporting period to provide at least one full year of monitoring data and to align with LTCP assessment schedule.
Nightingale Pump Station Replacement And Storage	LTCP	Project will be assessed during the FY19 eporting period to provide at least one full year of monitoring data and to align with LTCP assessment schedule.

4.5.3. GREEN INFRASTRUCTURE MONITORING

MSD has partnered with the EPA ORD to continue long-term green infrastructure performance monitoring for two CSO areas (CSO130 and CSO190) where green infrastructure solution alternatives have demonstrated more favorable benefit/cost ratios than overflow storage basins. The CSO190 Green Infrastructure Project is completed. A significant amount of monitoring data has been compiled to document the green infrastructure infiltration rates, effectiveness of maintenance practices, and impact on overflow reduction. The monitoring data collected for CSO130 has proven to be valuable in developing an effective regular maintenance program. EPA ORD has continued to be involved in green infrastructure monitoring data in the CSO190 basin, beginning with the installations in November 2015. Both UofL and EPA ORD will be reviewing field monitoring data for these IOAP projects to ascertain overflow reduction performance. PCCM findings for these projects will be included in the annual report subsequent to project certification as updated flow monitoring data is available. Should their findings show that MSD has not achieved the proposed level of control, an action plan will be developed.

4.5.4. WATER QUALITY SYNTHESIS REPORT

MSD publishes a synthesis report, called "State of the Streams", that summarizes water quality trends based on data MSD collects through its Long-Term Monitoring Network. The latest report is available at **http://www.louisvillemsd.org/WaterQuality**. MSD continues to synthesize and trend water quality data in a report as required by the MS4 permit.

SECTION 5: PUBLIC OUTREACH, EDUCATION, NOTIFICATION AND PARTICIPATION

5.1. PUBLIC NOTIFICATION PROGRAM

MSD produced and distributed a number of products aimed at notifying the community on the objectives of Project WIN and how to lessen the risks associated with coming into contact with sewage overflows. The following activities occurred during the reporting period or are scheduled to occur in the next reporting period.

5.1.1. OVERFLOW ADVISORY SIGNS

FY18 Program

- Updated sign inventory to ensure all needed signs are in place.
- Performed the annual sign inspection process in the spring. There were 1,165 signs inspected, 736 signs cleaned, and 73 replaced.

FY19 Program

- Perform an evaluation comparing the documented overflows with existing sign locations to ensure all needed signs are in place.
- Schedule the Annual Sign Inspection process.

5.1.2. ELECTRONIC NOTIFICATIONS

FY18 Program

- Continued to utilize the Louisville Metro e-mail alert system to notify customers who voluntarily signed up to receive email alerts regarding sewer overflows and to broadcast messages to the public.
- Provided notification on the MSD webpage for wet weather overflows during rain events and unauthorized discharges of more than 1,000 gallons.

FY19 Program

- Continue email alerts to customers who signed up to receive the information.
- Continue to provide web notification for wet weather overflows and significant unauthorized discharges.

5.1.3. PRINT NOTIFICATIONS

FY18 Program

- Mailed 1,325 Project WIN information packets to customers who called with questions about the Amended Consent Decree – specifically regarding overflows, discharges, plumbing modification and the surcharge fee.

- In April 2018, distributed the annual mailing to over 20,000 residents within 500 feet of Beargrass Creek and the Ohio River, advising the use of caution around streams during and immediately following rain events as they may contain untreated sewage. A copy of the letter to residents is provided in Appendix F.
- Provided annual notification to community at large in the Courier Journal in a newspaper advertisement to use caution around streams during and immediately following rain events as they may contain untreated sewage. A copy of the notification is provided in Appendix F.
- Sent more than 300 public outreach letters to residents in areas that have FOG issues. The FOG message, included on the reverse of these letters, is provided in Appendix F.
- Included "Aging Infrastructure" print campaign with February / March 2018 billing, provided in Appendix F.

FY19 Program

- Continue to mail Project WIN information packets to customers who call with questions about the Amended Consent Decree – specifically regarding overflows, discharges, plumbing modification and the surcharge fee.
- Continue to send out FOG residential public outreach letters to areas that have FOG issues.
- Provide annual notification and informational material to the community, providing a general overview and awareness relating to public health impacts associated with sewer overflows and an update of Project WIN initiatives by May 1, 2019.
- Distribute, prior to May 1, 2019, the annual mailing to residents within 500 feet of Beargrass Creek and the Ohio River, advising the use of caution around streams during and immediately following rain events as they may contain untreated sewage.

5.2. PUBLIC EDUCATION PROGRAMS

MSD has developed a public education program aimed at expanding the public's knowledge on MSD's primary business functions of wastewater, stormwater and flood protection, with an emphasis on Project WIN Program elements. The following activities occurred during the reporting period or are scheduled to occur in the coming fiscal year.

FY18 Program

- Continued to identify areas of public knowledge requiring additional effort and attention and target public education efforts to fill the gaps.
- Continued to provide information on MSD's Green Infrastructure incentive programs, Louisville's tree canopy, sewer overflow prevention, pollution prevention and other topics, including the events listed in Table 5.1.
- Included Consent Decree compliance, wastewater facility upgrades, and aging infrastructure as key topics in the Critical Repair & Reinvestment Plan public meetings and posts on MSD's website and social media accounts.
- Released monthly social media ads containing messages related to upcoming IOAP project public meetings. Released posts on topics including environmental awareness, outreach programs, events,

health and safety, and public meetings. Public outreach campaigns supported included World Environment Day, World Oceans Day, Pollinator Week, Skills USA, and Ohio River Sweep. Weekly social media campaigns consisted of the following:

- Shared the benefits of green infrastructure and sewer overflow prevention.
- Encouraged activities and behaviors that have a positive impact on water quality; discouraged activities and behaviors that have a negative impact on local water quality. This campaign included tweets about the proper way to dispose of pharmaceutical products, pet waste, wipes, dental floss and other household products.
- Shared the benefits of fostering good water quality.

FY19 Program

- Continue to re-tool public education efforts to address areas of public knowledge requiring additional effort and attention.
- Continue to provide information through social media platforms.

Table 5.1. Public Education Workshops and Activities

DATE(S)	EVENT	BENEFIT / RELEVANCE / IMPACT
July 20, 2017	LFPL Summer Reading Program - "Understanding Our Watersheds"	Discussed how human actions can impact the quality of our local waterways as well as ways that students can take steps to reduce pollution loading to receiving water bodies.
August 24, 2017	Beargrass Exhibit/Screening	Local Photographer John Nations presented his Beargrass Creek photograph portfolio, local officials spoke about the importance of our waterways and water quality.
August 31, 2017	Earth & Spirit Center Event	Attended an environmental workshop open to the public that was hosted by the Earth & Spirit Center. MSD and the Earth & Spirit Center had recently partnered to construct a wetland adjacent to the Center's property. MSD was able to promote the value of GMPs such as constructed wetlands and to discuss the importance of non-point source control in ensuring quality waterways.
September 13, 2017	Kentucky Certified Hazardous Materials Managers Meeting MS4 Presentation	Presented an overview of MSD's MS4 regulations and role in stormwater quality in the community, including an overview of how GMPs help ensure quality runoff from developed land.
September 17, 2017	Waterfront Botanical Gardens ReGeneration Fair	Staffed a booth at Botanica's annual ReGeneration Fair, where stormwater topics were discussed with attendees from the general public.
October 6, 2017	Canoemobile at Riverview Park	Discussed water quality topics with students, what impacts the CSS can have on receiving waterways, and how they can improve water quality through behavior change.
October 11, 2017	SESWA Green Infrastructure Tour	Hosted a tour of various downtown Louisville green infrastructure projects for the Southeast Stormwater Association.
October 17, 2017 – October 19, 2017	Adventures in Water	Presented on the science of stormwater and sewage treatment.
October 28, 2017	Center For Neighborhoods - Neighborhood Summit	Attended the Center for Neighborhood's Neighborhood Summit to promote green infrastructure and to discuss strategies for sustainable residential water management with event attendees.

Table 5.1. Public Education Workshops and Activities

DATE(S)	EVENT	BENEFIT / RELEVANCE / IMPACT
November 28, 2017	YMCA and Passport Health Community Conversation	Presented on current issues facing MSD and the need to obtain new funding in order to maintain the public health and safety benefits provided by MSD's major systems, such as: the flood protection system, the water quality treatment centers, and the collection and stormwater systems.
March 3, 2018 – March 4, 2018	Home, Garden and Remodeling Show	MSD staffed a booth at the Home & Garden Show and communicated directly with the public on current issues facing MSD, discussed how the work MSD is doing impacts their lives, and how their dollars are being put to use to construct projects that improve the local environment.

5.2.1. RADIO AND TV ACTIVITIES

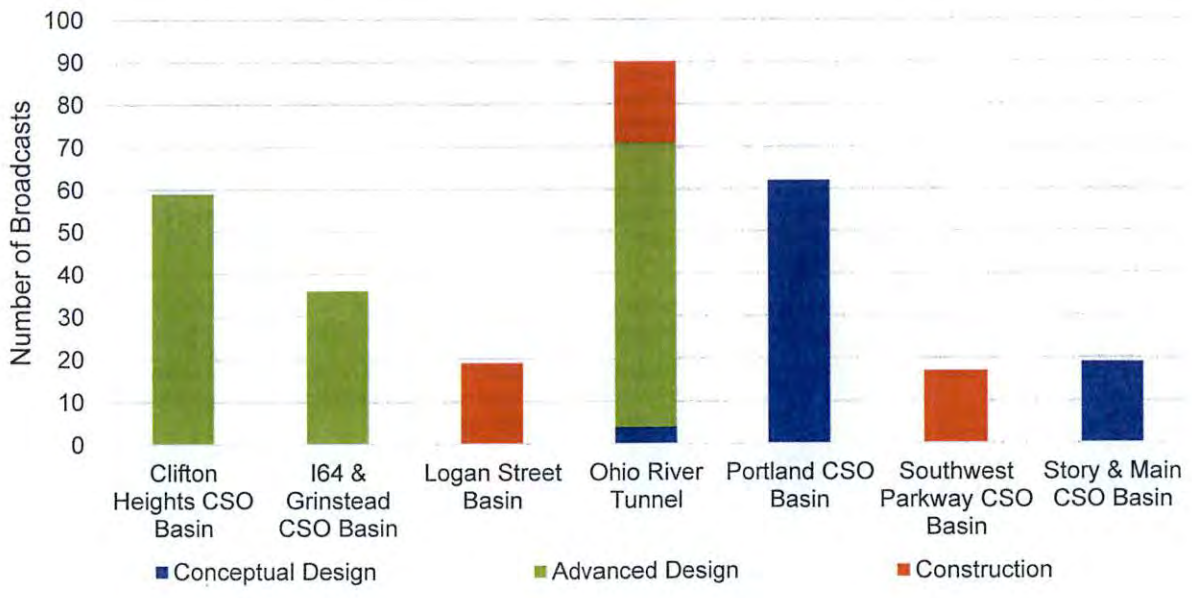
FY18 Program

- Coordinated with Metro TV (Channel 25) to air broadcasts of public input meetings as shown in Figure 5.1.

FY19 Program

- Continue to utilize various media outlets, including TV, radio and the newspaper, to serve as a conduit for disseminating information to the public.
- Continue coordination with Metro TV to show IOAP project public input meetings and special interest material.

Figure 5.1. Metro TV Broadcasts



5.2.2. PRINTED MEDIA ACTIVITIES

FY18 Program

- Purchased public service advertising messages in Business First and Louisville Magazine, provided in Appendix F.
- Provided printed copies of the StreamLine to 700 customers and staff each month. Posted the Streamline to Twitter and Facebook accounts. Project WIN related articles are contained in each issue of this newsletter. These publications are available on the MSD Website. Online versions of the StreamLine newsletter can be viewed at http://www.msdlouky.org/aboutmsd/updatenews.htm.

FY19 Program

- Continue to utilize various media outlets, including TV, radio and the newspaper, to serve as a conduit for disseminating information to the public.
- Continue to send the MSD Streamline to customers and staff each month.

5.2.3. PROJECT WIN AND GREEN WEBSITES

FY18 Program

- Continued to post Project WIN information on the website. On MSD's homepage, the Overflow Advisory Level indicator provides important information on the condition of area streams and shows a warning if overflows are likely to be happening or have happened in the past 48 hours. The Overflow Advisory Indicator includes a link to the Project WIN website, which includes a repository of public documents related to Project WIN, tips for customers to help control overflows through their personal actions, information about the history and background of Project WIN and a place to sign up for overflow advisory emails warning when significant precipitation has caused overflows in MSD's system. The Project WIN website can also be accessed by navigating through the Consent Decree link on MSD's homepage. This website can be found at **www.msdprojectwin.org**.
- Continued communication with customers via posts on MSD's social media platforms.

FY19 Program

- Continue to post Project WIN information on the website.
- Continue to post communication with customers via MSD's social media platforms.

5.3. PUBLIC OUTREACH PROGRAMS

MSD has developed a public outreach program aimed at involving the public on MSD's primary business functions with emphasis on wastewater, stormwater and flood protection. The following activities occurred within the current reporting period or are scheduled to occur in the coming fiscal year.

5.3.1. GREEN INFRASTRUCTURE WORKSHOPS AND ACTIVITIES

FY18 Program

Presented, attended, and/or facilitated meetings in Table 5.2 related to green infrastructure.

FY19 Program

- Schedule rain garden workshops at various times throughout the year.
- Continue planning for additional signage for green demonstration sites and green partnership locations.
- Continue planning of internal and external workshops explaining the Green Infrastructure Program, including the next Construction Field Day and classes on green infrastructure design, construction and inspection.

Table 5.2. Green Infrastructure Workshops and Activities

DATE(S)	EVENT	BENEFIT / RELEVANCE / IMPACT
August 31, 2017	Earth & Spirit Center Event	MSD attended an environmental workshop open to the public that was hosted by the Earth & Spirit Center. MSD and the Earth & Spirit Center had recently partnered to construct a wetland adjacent to the Center's property. MSD was able to promote the value of GMPs such as constructed wetlands and to discuss the importance of non-point source control in ensuring quality waterways.
September 13, 2017	Kentucky Certified Hazardous Materials Managers Meeting MS4 Presentation	MSD staff presented an overview of MSD's MS4 regulations and role in stormwater quality in the community, including an overview of how GMPs help ensure quality runoff from developed land.
September 17, 2017	Waterfront Botanical Gardens ReGeneration Fair	MSD staffed a booth at Botanica's annual ReGeneration Fair, where stormwater topics were discussed with attendees from the general public.
October 11, 2017	SESWA Green Infrastructure Tour	MSD hosted a tour of various downtown Louisville green infrastructure projects for the Southeast Stormwater Association.
November 8, 2017	Urban Design Studio Class	MSD staff presented on stormwater quality and green infrastructure.
March 3, 2018 – March 4, 2018	Home, Garden and Remodeling Show	MSD staffed a booth at the Home & Garden Show and communicated directly with the public on current issues facing MSD, discussed how the work MSD is doing impacts their lives, and how their dollars are being put to use to construct projects that improve the local environment.
March 29, 2018	Construction Field Day 2018	MSD planned and staffed the annual Field Day event where industry stakeholders are given an opportunity to interact directly with staff and ask questions about key projects and initiatives, such as major consent decree work and current MS4 issues.
April 29, 2018	Gardenganza Rain Garden Table	MSD staff discussed the benefits of rain gardens with attendees at Louisville Nature Center's Gardenganza event.

5.3.2. CLEAN STREAMS WORKSHOPS AND ACTIVITIES

FY18 Program

Activities related to the current reporting period are detailed in Table 5.3.

FY19 Program

- Continue to facilitate stream cleanup events and workshops.
- Continue work with Beargrass Creek Alliance to mark catch basins in critical areas.

Table 5.3. Clean Streams Workshops & Activities

DATE(S)	EVENT	BENEFIT / RELEVANCE / IMPACT
April 18, 2018	Mayor's Give A Day Week of Service	MSD staff participated in a Mayor's Give a Day event at the Louisville Nature Center in which rain garden maintenance and native planting was performed.
April 19, 2018	Mayor's Give A Day Week of Service	MSD staff and other volunteers performed trash removal along the bank of Beargrass Creek near the Beargrass FPS.
April 20, 2018	Mayor's Give A Day Week of Service	MSD staff performed trash pickup on city streets in downtown Louisville.
June 16, 2018	Ohio River Sweep 2018	MSD Staff and community volunteers removed trash and debris near the Ohio River in several waterfront parks throughout Louisville Metro.
Throughout the Year	Beargrass Creek (BGC) Alliance	Assisted in marking catch basins in critical areas.

5.3.3. OUTREACH ACTIVITIES FOR STUDENTS

FY18 Program

Attended or presented at the student-centered events detailed in Table 5.4.

FY19 Program

- Continue to coordinate with Parklands of Floyds Fork on educational partnerships at the Floyds Fork WQTC, including field trips with The Parklands and Louisville Water Company at Floyds Fork WQTC.
- Continue to work with UofL to identify educational opportunities for college students.

Table 5.4. Outreach Activities for Students

DATE(S)	EVENT	BENEFIT / RELEVANCE / IMPACT
September 11, 2017	Mercer County HS Floyds Fork WQTC Educational Tour	MSD staff provided a tour for the students. During the tour, the wastewater treatment process was explained. The importance of MSD's treatment systems to stream health was highlighted, and a stormwater message was delivered following the plant tour.
September 30, 2017	SRWW Grant Water Quality Workshop for UofL Students	An overview of stormwater topics such as stream monitoring, urban impacts to streams, water chemistry, and habitat/wildlife assessment was provided. Field testing was performed after the classroom overview.
October 6, 2017	Canoemobile	MSD staff discussed water quality topics with students, what impacts the CSS can have on receiving waterways, and how they can improve water quality through behavior change.
October 24, 2017	Male High School Environmental Science Class Rain Garden Design	MSD staff discussed rain garden design techniques with Male High School students in preparation for a rain garden workshop.
November 8, 2017	UofL Urban Design Studio Class	MSD staff presented on stormwater quality and green infrastructure.

Table 5.4. Outreach Activities for Students

DATE(S)	EVENT	BENEFIT / RELEVANCE / IMPACT
November 28, 2017	Holy Cross High School	MSD staff discussed the urban water cycle with students as part of the River to River curriculum.
February 20, 2018	Male High School AP Biology Class	MSD staff discussed stream health and water quality topics with a high school biology class.
March 13, 2018	St. Francis School	MSD staff discussed the urban water cycle with students as part of the River to River curriculum.
March 20, 2018	The Brown School	MSD staff discussed the urban water cycle with students as part of the River to River curriculum.
March 21, 2018	The Brown School	MSD staff discussed the urban water cycle with students as part of the River to River curriculum.
March 22, 2018	St. Margaret Mary School	MSD staff discussed the urban water cycle with students as part of the River to River curriculum.
March 23, 2018	North Oldham High School	MSD staff discussed the urban water cycle with students as part of the River to River curriculum.
April 1, 2018	Field Elementary School	MSD staff discussed the urban water cycle with students as part of the River to River curriculum.
April 4, 2018	UofL Sustainable Design Class Presentation	MSD staff discussed water quality topics and green infrastructure design with a graduate level class at UofL.
April 9, 2018	Indiana University Southeast Sustainability Fair	MSD staff discussed water quality and green infrastructure topics at the IUS Sustainability Fair.
April 12, 2018	Young Elementary School	MSD staff discussed the urban water cycle with students as part of the River to River curriculum.
April 17, 2018	Our Lady of Lourdes School	MSD staff discussed the urban water cycle with students as part of the River to River curriculum.
April 20, 2018	The Brown School Earth Day Event	MSD staff attended the Brown School's Earth Day event and discussed water quality topics using the Enviroscape watershed model.
April 21, 2018	Jefferson County Traditional Middle School	MSD staff discussed the urban water cycle with students as part of the River to River curriculum.
April 24, 2018	Semple Elementary School	MSD staff discussed the urban water cycle with students as part of the River to River curriculum.
May 10, 2018	St Albert the Great Catholic School	MSD staff discussed the urban water cycle with students as part of the River to River curriculum.
May 16, 2018	Male High School Rain Garden Workshop & Installation	MSD staff facilitated the installation of a rain garden at Male High School using students and staff as volunteers. During this event, the importance of rain gardens in preserving water quality was discussed, as well as MSD's role in protecting waterways.
May 21, 2018	Male High School Ecology Class Presentations	Male High School students involved with the installation of the rain garden presented on various ecological research topics, and then participated in a discussion about green infrastructure relative to their work.
June 7, 2018	Camp Taylor Elementary	MSD staff discussed the urban water cycle with students as part of the River to River curriculum.
June 18, 2018	Nativity School	MSD staff discussed the urban water cycle with students as part of the River to River curriculum.

Table 5.4. Outreach Activities for Students

DATE(S)	EVENT	BENEFIT / RELEVANCE / IMPACT
June 21, 2018	Jacob Elementary	MSD staff discussed the urban water cycle with students as part of the River to River curriculum.

5.3.4. IOAP PROJECT AND PROGRAM MEETINGS

MSD has developed a partnership with Louisville Metro for providing project information and soliciting feedback from stakeholders using a Structured Public Involvement approach. Structured Public Involvement is meant to facilitate relevant input on the design process as MSD prepares to design and construct CSO basins. Our current IOAP outreach activities and public meetings are using this process to elicit qualitative and quantitative information and enhance our engagement with customers. The Structured Public Involvement approach assures anonymity for each participant using transceivers to compile data which can then be correlated on a customer-specific basis. The plan for Structured Public Involvement includes implementing a four-meeting process that leads stakeholders through the project design stages as illustrated in Figure 5.2. Online surveys are also being made available to allow those not in attendance at public meetings to provide similar project-specific input. Creating this secondary online opportunity has been successful and generated responses that otherwise would not have been accounted for at the public meetings. Additional information regarding the Structured Public Involvement Process and meetings held during this reporting period may be found at the Project WIN Public Input Website (**www.msdprojectwin.org/Public-Input.aspx**).

FY18 Program

Facilitated the events detailed in Table 5.5.

FY19 Program

- Continue to facilitate and document IOAP Project Public Input Meetings.
- Continue to inform the Wet Weather Team on the progress of the IOAP implementation by hosting two Wet Weather Team meetings per year.
- Continue to provide information from the Wet Weather Team Stakeholders Group and IOAP Public Input meetings on the Project WIN website, at **www.msdlouky.org/projectwin**.

Figure 5.2. MSD's Structured Public involvement Meeting Process

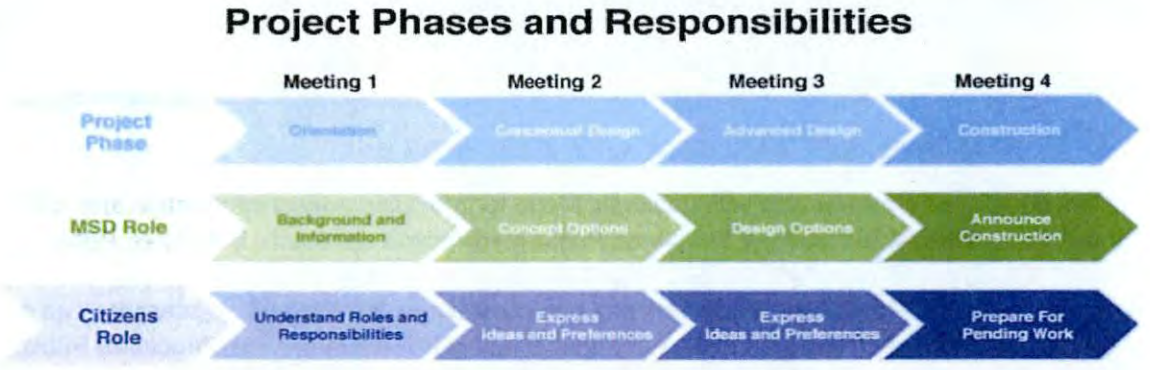


Table 5.5. IOAP Project & Program Meetings

DATE(S)	EVENT
July 11, 2017	Ohio River Tunnel: Advanced Design Meeting
July 19, 2017	Ohio River Tunnel: Advanced Design Meeting
July 25, 2017	I-64 & Grinstead CSO Basin: Construction Meeting
August 23, 2017	Wet Weather Team Meeting
October 17, 2017	Southwestern Parkway CSO Basin: Construction Meeting
November 7, 2017	Ohio River Tunnel: Construction Meeting
January 9, 2018	Southwestern Parkway CSO Basin: Construction Meeting
January 10, 2018	Ohio River Tunnel: Construction Meeting
February 13, 2018	Lexington & Payne CSO Interceptor: Construction Meeting
April 9, 2018	Ohio River Tunnel: Construction Meeting
April 10, 2018	Southwestern Parkway CSO Basin: Construction Meeting
April 17, 2018	Ohio River Tunnel: Construction Meeting
May 1, 2018	Ohio River Tunnel: Construction Meeting
May 8, 2018	Ohio River Tunnel: Construction Meeting
June 5, 2018	Ohio River Tunnel: Construction Meeting
June 28, 2018	Wet Weather Team Meeting

SECTION 6: CAPACITY MANAGEMENT OPERATIONS AND MAINTENANCE REPORT

6.1. CAPACITY MANAGEMENT OPERATIONS AND MAINTENANCE PROGRAM ACTIVITIES

Per Paragraph 24.c of the Amended Consent Decree, the CMOM Self-Assessment Report was submitted to the Environmental Protection Agency (EPA) and Kentucky Department of Environmental Protection (KDEP) on February 10, 2006. MSD received a letter of approval on August 22, 2006. The approved CMOM document can be viewed on the Project WIN website www.msdlouky.org/projectwin. Highlights of the CMOM program implementation during the reporting period are outlined below.

6.1.1. MANAGEMENT PROGRAMS

6.1.1.1. TABLE OF ORGANIZATION

This section describes MSD's Table of Organization. The goal of this section is to ensure each department works efficiently and cooperatively by clearly defining each department's role in the organization in terms of authority, function, position, duties, and relation to other departments. This section also identifies positions currently budgeted and filled.

M-A-1 Organizational Chart

The Louisville MSD Organizational Chart is updated every quarter. See Appendix G for the latest version.

M-A-2 Relationship to Other Departments

FY18 Program

- Carried 685.5 approved positions at the beginning of the reporting period and 696 approved positions at the end of the reporting period. This is an increase of 10.5 positions.
- Carried 56.5 vacant positions at the beginning of the reporting period and 64.5 vacant positions at the end of the reporting period.
- Utilized services of executive recruiter to find qualified candidates to fill specialty and senior/mid/upper management positions critical to the success of the ACD.

FY19 Program

- Continue to hire qualified staff to fill vacant positions, including specialty and senior/mid/upper management positions critical to the success of the ACD.

6.1.1.2. TRAINING PROGRAMS

This section describes MSD's Training Programs. The goal of this section is to ensure employee growth and workplace safety through mandatory training (both initial and ongoing), conference and seminar attendance,

certification, accurate record keeping of employee training, and incentives such as pay, promotions and ability to work. All training programs promote MSD's fundamental mission, goals, and policies.

M-B-1 Technical Training

M-B-2 Skills Training

M-B-3 Safety Training

FY18 Program

- Training for the reporting period is detailed in Figure 6.1 and Figure 6.2.
    - Conducted Administrative Training sessions including such topics as New Employee Orientation, Project Management, Leadership, Records Retention, Crew Management, Supplier Diversity Procurement Procedures, and Ethics.
    - Conducted Collections System training sessions including such topics as Sewer Overflow Response Protocol, Erosion Prevention & Sedimentation Control, Stormwater Pollution Prevention Plans (SWPPP) Training, Combined Sewer Overflow (CSO) & Siphon Preventative Maintenance, Sewer Cleaning, and Construction Blueprints.
    - Conducted Reporting training sessions including such topics as Crystal Reports, Telog, Budget Software and eB basics.
    - Conducted Equipment training primarily including heavy equipment that enables employees to maintain and operate the collections system, pump stations and treatment plants. Examples include training on mini-excavators, sewer cleaners, cranes, forklifts and backhoes.
    - Conducted Wastewater Operations training focusing on knowledge and skills related to wastewater treatment process and control, including sampling, Louisville Green Management System training, and Wastewater Lab Certification Preparation.
    - Conducted Safety training in such areas as Traffic Control, Hearing Protection, Confined Space Entry, Blood Borne Pathogens, Hazmat, Lock Out/Tag Out, and Competent Person training for trenching and excavation.

FY19 Program

- Increase access to digital training and resource materials for collection system and wastewater treatment employees.
- Continue development of enhanced Fleet mechanic training program.
- Continue to develop competent and capable employees through technical and skills training related to job duties.
- Continue to implement employee performance-based goals as part of annual appraisal process and utilize performance results to identify additional training needs.
- Develop processes to better link organizational goals to individual employee goals.
- Continue to train employees of MSD Standard Safety Procedures.

Figure 6.1. Training Programs - Sessions

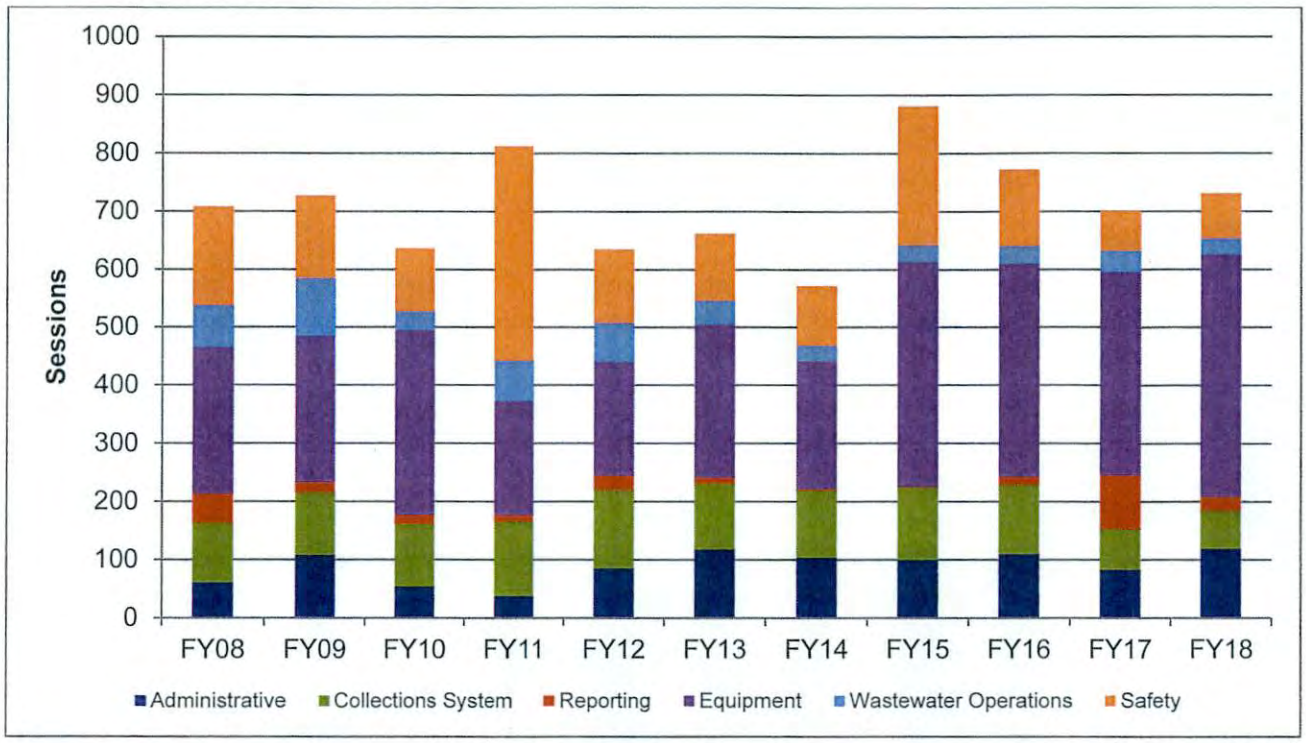
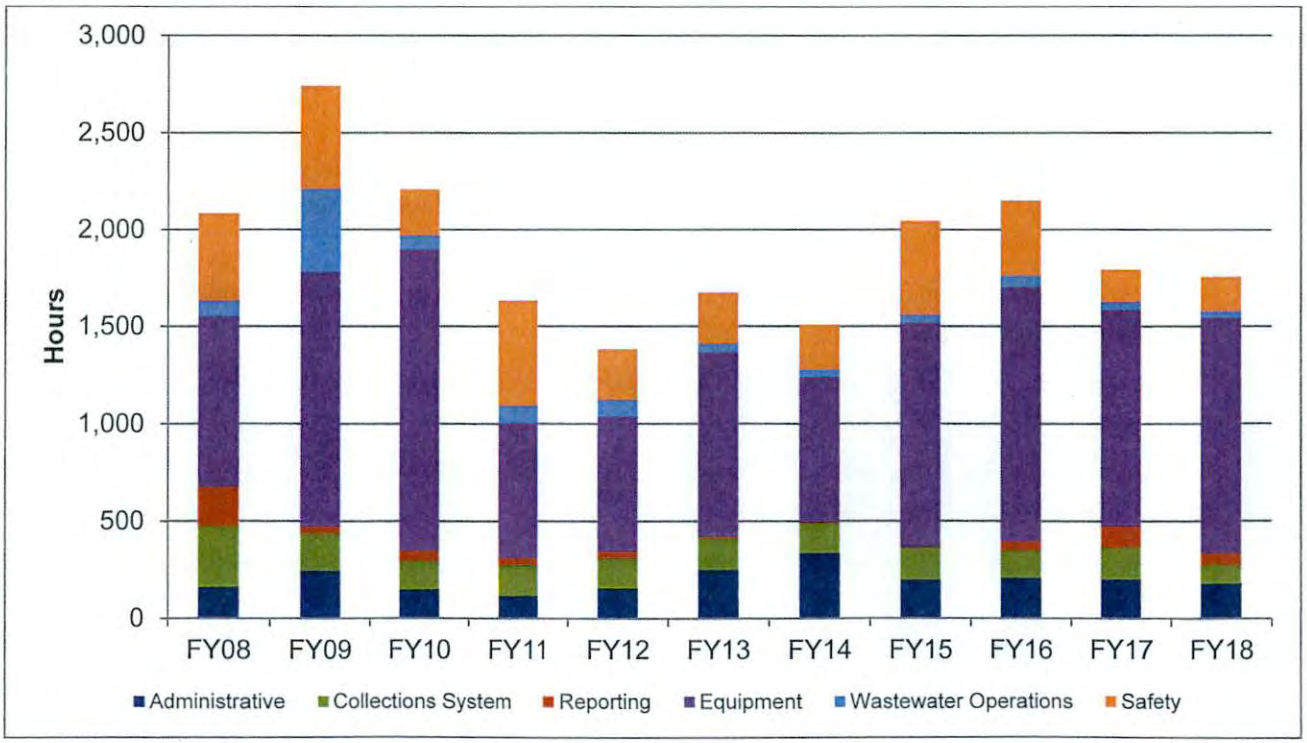


Figure 6.2. Training Programs - Hours



6.1.1.3. SAFETY PROGRAMS

This section describes MSD's Safety Programs. The goal of this section is to eliminate on-the-job injuries. MSD's Safety Programs include safety committees, confined space entry procedures, district wide safety policies, traffic management, lock out/tag out procedures, and proper use of safety equipment.

M-C-1 Safety Committee

FY18 Program

- Conducted quarterly meetings with the Safety Committee. This Committee includes representatives from across the Operations Division, including Treatment, Collections System, and Drainage and Flood Protection representatives.
- Performed random job site inspections on Drainage/Sanitary crews, inspections at Morris Forman WQTC, and quarterly inspections with Operations of WQTCs and flood & viaduct pump stations.

FY19 Program

- Continue Safety Committee meetings to perform inspections and review policy and incidents. Address safety concerns presented by safety committee members.
- Continue to improve safety culture with monthly meetings of the CMF Safety Committee, Treatment Safety Committee, and Collections Safety Committee. Adapt to changes presented during continued reorganization and maintain a focus on safety culture that includes all personnel.
- Continue to perform random job site inspections on Drainage/Sanitary crews, inspections at Morris Forman WQTC, and quarterly inspections with Operations of WQTCs and flood & viaduct pump stations.

M-C-2 Confined Space Entry

FY18 Program

- Conducted training and monitoring procedures on confined space entries in order to maintain compliance with 29 CFR 1910.146. Health and Safety personnel has spot-checked confined space entries to determine compliance with company procedure.
- Maintained entry equipment and personal protective equipment to provide for safe entry conditions and to maintain compliance with 29 CFR 1910.146.
- Contracted with vendor to conduct annual inspections on confined space entry equipment such as tripods, wenches, and harnesses.
- Continued to advise personnel on the purchase of multi-gas monitors to replace older models that will no longer be maintained or manufactured.
- Continued to assess confined space monitor calibration status and purchase calibration gas for the six calibration stations.
- Revised the calibration station software to remove chlorine and sulfur dioxide from the monthly calibration program, due to their removal from the operational processes at the treatment plants.

- Purchased new monitors and docking stations in Treatment and Collections to meet expected needs of future personnel and operational changes.

FY19 Program

- Continue to administer training and monitor procedures on confined space entry in order to maintain compliance with 29 CFR 1910.146. Health and Safety personnel will spot-check confined space entries to determine compliance with company procedure.
- Continue to ensure that all "Permit Required Confined Spaces" are properly labeled in Operations.
- Continue to advise personnel on the purchase of multi-gas monitors to replace older models that will no longer be maintained or manufactured.
- Continue to assess confined space monitor calibration status and purchase calibration gas for the six calibration stations.

M-C-3 General Safety Procedures

FY18 Program

- Established various general safety procedures based on both 1910 & 1926 OSHA regulations, input from internal personnel, and on the specific needs of the district in order to maintain regulatory compliance and provide safe working procedures for employees.
- Conducted Emergency Response Team (ERT) fire drills and tornado drills at the Main Office, CMF and Morris Forman WQTC.
- Conducted 8-hour refresher training on hazardous materials for the ERTs.
- Conducted fire extinguisher training district-wide.
- Conducted annual audiograms district-wide.
- Hired a senior electrical engineer to manage arc flash studies at facilities to enhance compliance objectives based on NFPA 70E (Arc Flash).

FY19 Program

- Continue to conduct training with employees on the new OSHA Hazardous Communications Standard to include Globally Harmonized Systems for material safety data sheets and container labeling.
- Continue to assess the need to update existing procedures and/or create new procedures as conditions and regulatory requirements dictate.
- Continue to conduct 8-hour refresher training on hazardous materials for the ERTs.
- Continue to conduct fire extinguisher training district-wide.
- Continue to conduct fire and tornado drills.
- Continue to conduct annual audiograms district-wide.
- Schedule 40-hour HAZ-MAT Technician Level training for newly hired employees as needed based on hiring demands.

- Enhance compliance objectives based on NFPA 70E by conducting an initial arc flash study at MFWQTC under the direction of the senior electrical engineer.
- Replace current Material Safety Data Sheets in the MSDS Pro database with updated safety data sheets compliant with the Globally Harmonized System (GHS) standard.
- Continue required safety orientations with contractors to ensure compliance with MSD & KYOSHA regulations and promote a strong safety culture.
- Review and update the MSD Confined Space Safety Program.
- Conducted Vehicle Accident and Equipment Damage awareness training for employees.

M-C-4 Traffic Management

FY18 Program

- Purchased and maintained traffic control equipment to reduce hazardous operational exposure.
- Provided training on traffic control during licensing and equipment operating training, conducted as employees are hired or as employee job duties require.

FY19 Program

- Continue traffic control training for employees to ensure continued compliance with MSD standards.
- Inspect and replace traffic control equipment regularly to ensure compliance with safety standards.

M-C-5 Lock Out/Tag Out

FY18 Program

- Enhanced lock out/tag out procedures as required by the OSHA Control of Hazardous Energy standard. Procedures are maintained and communicated to employees.
- Developed lock out/tag out procedures as equipment was added or replaced, or as processes were changed.

FY19 Program

- Implement lock out/tag out procedures as equipment is added or replaced, or as processes are changed.
- Work with staff at Morris Forman WQTC to enhance existing program by reviewing and documenting existing procedures. These SOPs will be available through eB for improved accessibility.

M-C-6 Safety Equipment

FY18 Program

- Continued to review and provide required personal protective equipment to employees.
- Conducted NFPA 1852 required annual testing and maintenance for self-contained breathing apparatus respirators.
- Purchased additional confined space escape bottles.

FY19 Program

- Maintain safety related equipment or replace the equipment per governing policies or as the need arises.
- Continue purchasing additional confined space escape bottles.
- Explore options for more comfortable safety equipment to maintain employee adherence to safety policies and procedures.

M-C-7 Performance Measures

FY18 Program

- Maintained compliance with OSHA standards.
- Ensured that appropriate staff attended mandatory training on trench excavation safety, confined space, first aid, hazmat response and fire extinguisher usage.
- Safety / worker compensation metrics for MSD employees are detailed in Figure 6.3 and Table 6.1.

FY19 Program

- Maintain field inspections as discussed under M-C-1 Safety Committee to reduce the number of incidents.
- Continue to improve compliance with NFPA 70E and the GHS standard as discussed under M-C-3 General Safety Procedures.
- Continue to foster a strong culture of workplace safety.

Figure 6.3. Safety Performance Rate Trends

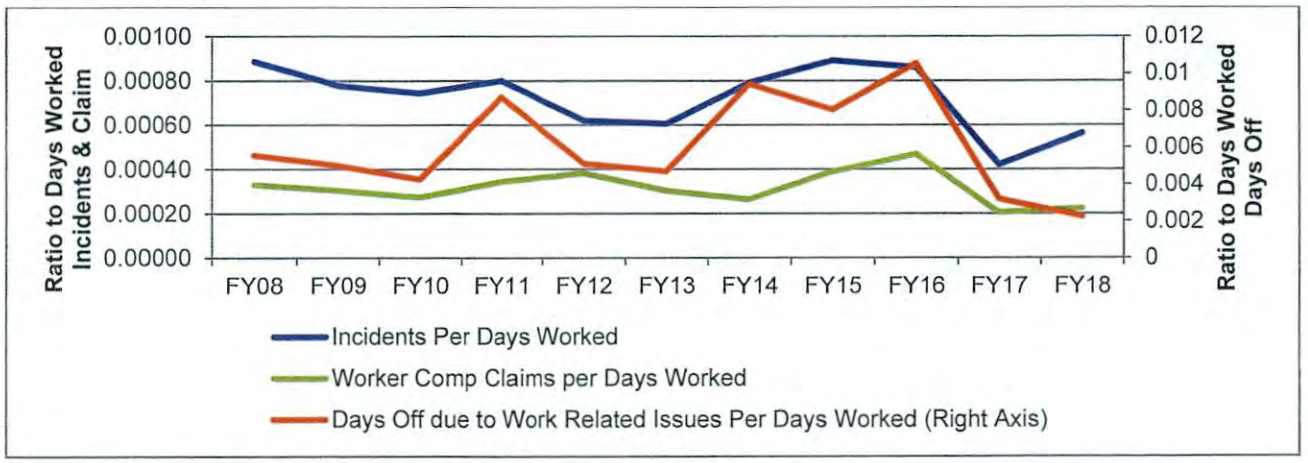


Table 6.1. Safety Incidents and Worker Compensation Claims

FY	DAYS WORKED (8 HOURS)	SAFETY INCIDENTS	WORKER COMP CLAIMS	DAYS OFF DUE TO WORK RELATED ISSUES
FY08	142,242	126	47	789

Table 6.1. Safety Incidents and Worker Compensation Claims

FY	DAYS WORKED (8 HOURS)	SAFETY INCIDENTS	WORKER COMP CLAIMS	DAYS OFF DUE TO WORK RELATED ISSUES
FY09	141,564	110	43	707
FY10	146,499	109	40	623
FY11	151,272	121	52	1317
FY12	151,605	94	58	773
FY13	145,302	88	44	681
FY14	144,178	114	38	1,357
FY15	141,353	126	55	1,134
FY16	143,113	123	67	1,507
FY17	152,175	64	31	482
FY18	152,,616	86	34	340

6.1.1.4. UTILITY INFORMATION MANAGEMENT SYSTEMS

This section describes MSD's Utility Information Management System. The goal of this section is to produce quality information regarding sewer system performance. MSD's Utility Information Management System supports the following programs: management, operations, maintenance, complaint management, and performance indicators.

M-D 1 Management Information Management Systems

M-D-2 Operations Information Management Systems

M-D-3 Maintenance Information Management Systems

M-D-4 Complaint Management and Tracking Information Management Systems

M-D-5 Performance Indicators

FY18 Program

- Utilized a wide variety of software to operate the day to day business activities associated with wastewater collections, conveyance and treatments. The major Utility Information Management (UIM) applications are shown in Table 6.2.
- Continued enhancement of the Project WIN website with updated information related to the ACD. General site statistics are included in Table 6.3.
- Completed SAP Hosting Project to move application to the cloud, providing improved stability and accessability.
- Continued migration of capital project performance measurement and project milestones to new platform.

- Revised and documented procedures for dry weather overflow notifications out of Telog monitoring system.
- Upgraded GIS databases, Upstream (formerly HARP), and other MSD web-based GIS applications to ArcGIS 10.6.1.
- Began LOJIC architecture redesign project. Initial design focused on server architecture, redundant Oracle infrastructure, and installation of ArcGIS Enterprise 10.6.1 framework on development tier. Migrated LOJIC Oracle databases from Solaris OS to Linux virtual server.
- Completed the migration of 20 MSD custom-written operations applications to a new Oracle version 11g Database.
- Upgraded the Hansen Oracle Database to Oracle version 11g.
- Completed Phase II of Cedar Creek Data Backup and Disaster Recovery Implementation.
- Completed Phase I of the Datacenter move to Peak 10 co-location site.
- Implemented redundant network feeds for Morris Forman WQTC and CMF.
- Began the migration of Oracle database systems to a Linux virtual server environment
- Implemented Identity Services Engine (ISE) framework to provide capability to deploy multiple network security enhancements
- Maintained a helpdesk system to track and respond to requests from users.

FY19 Program

- Investigate moving Hansen operations to Infor cloud.
- Rewrite Enterprise Crystal Reports with Microsoft SSRS.
- Implement SAP Employee Self-service functions and replace Workforce Time and Attendance and Asure Paystub view with SAP native functionality.
- Complete LOJIC deployment and testing of new ArcGIS Enterprise 10.6.1 architecture.
- Complete acquisition and publishing of Spring 2019 aerial imagery, elevation data and base map updates.
- Complete update and maintenance of countywide survey control network.
- Complete migration of all Oracle database systems to Linux virtual server environment.
- Complete Phase II of Datacenter move to P10 co-location site.
- Implement enhanced network security features leveraging ISE framework.
- Upgrade paging/safety communications systems at CMF and Morris Forman WQTC.

Table 6.2. Utility Information Management (UIM) Applications

UTILITY INFORMATION MANAGEMENT (UIM) APPLICATIONS						
eB	OneRain	GIS	EGIS	FASTER	Crystal Reports	LIMS
SAP	Hansen	Telog	SCADA	SharePoint	Performance Measures	GPS

Table 6.3. Project WIN Site Statistics

METRIC	NUMBER OF VISITS:	AVERAGE NUMBER OF VISITS PER DAY:	AVERAGE VISIT DURATION (MINUTES):	UNIQUE VISITORS:	ONE-TIME VISITORS:	REPEAT VISITORS:	AVERAGE VISITS PER VISITOR:
FY11	139,919	383	31	38,371	28,822	9,549	3.65
FY12	89,753	380	20	31,387	23,115	8,272	2.85
FY13	93,326	256	6	12,714	7,224	7,749	2.52
FY14	109,689	301	10	31,155	16,855	14,270	3.52
FY15	149,677	408	15	38,649	25,416	13,233	3.93
FY16	155,790	428	8	40,029	25,960	14,069	3.71
FY17	156,546	427	8	47,172	33,741	13,431	3.38
FY18	114,808	312	22	26,200	17,308	8,932	4.38

6.1.1.5. ENGINEERING PROGRAMS

This section describes MSD's Engineering CMOM activities. The goal of this section is to maintain accurate plans of current sewer system infrastructure, oversee construction quality of new infrastructure, and conduct assessments to maximize the efficiency of current WQTCs. MSD's engineering programs include the following: collections and transmission system plans, system inventory, mapping, sewer system design, sewer construction, construction inspection, acquisition considerations, continuing sewer system assessment (CSSA), infrastructure rehabilitation, and a system capacity assurance plan (SCAP).

M-E-1 Collection and Transmission System Plans

M-E-2 System Inventory

M-E-3 Mapping

MSD has an extensive collection of record drawings of the sewer facilities dating back to 1874. In addition to the original record drawing, a scanned image is stored in eB, MSD's records management system. Plans are scanned twice during a project life cycle – once when the project is approved for construction and a second time when the plans are made "as-built" after construction completion. After a set of plans has been constructed, the facilities are created in GIS and the attributes of the facilities are stored in a corresponding asset record in the Hansen database. Map corrections are also obtained during asset inspection activities described in Appendix E.

FY18 Program

- Captured assets in the GIS and asset management software. Added 1,108 property service connection records and 101,027 feet of sewer records.
- Corrected 144 sewer errata.
- Scanned 95 construction plan sets into the eB Imaging System.

FY19 Program

- Continue to scan plans and to add and update data in the GIS and asset management software based on new construction drawings and feedback from MSD field personnel.
- Update the GIS sewershed layer as projects are completed to support SCAP implementation.
- Continue routine audits and QA/QC methods to ensure data accuracy.

M-E-4 Sewer System Design

FY18 Program

- Conducted a thorough on-site review of 10 separate Green Management Practices (GMPs) to determine what specific types of GMPs could use additional design guidance. The results of the reviews and a recommendation summary for future design manual revisions were included in a technical memo to the Development & Stormwater Services Director.
- Continued to hold the Qualified Post-Construction Inspector (QPCI) training course, which includes a 4-hour training course and qualifying exam. MSD certified 17 participants as QPCIs during the reporting period. All green infrastructure projects are required to submit an annual inspection by a QPCI to verify continued on-site stormwater management.
- Continued use of new AutoCAD templates available on the MSD public webpage, including new AutoCAD 3D templates, for use by private firms as well as in-house design.

FY19 Program

- Continue to review and update the MSD Design Manual.
- Gather additional data on GMP implementation and update design manual as needed.
- Continue to administer training on the green infrastructure review and inspection process.

M-E-5 Sewer Construction

M-E-6 Construction Inspection

FY18 Program

- Maintained the practice on significant capital projects to utilize the design engineer as the engineer of record or resident project representative (RPR).
- Continued reviews and revisions of the Construction Inspector Field Handbook.

- Expanded the Construction Inspection division to include one manager, three supervisors, and 16 construction inspectors at the end of the reporting period.
- Increased utilization of contract inspectors due to increased workloads.

FY19 Program

- Continue construction inspection activities in-house and continue to supplement with contract inspection as needed.
- Continue acquisition of RPR services for significant capital projects.
- Continue review and updates of the Construction Inspector Field Handbook.

M-E-7 Acquisition Considerations

FY18 Program

- Financed capital expenditures of $190,475,225.
- Committed professional services funds of $14,516,922.
- Committed construction funds of $203,295,255.
- Awarded construction contracts valued at $201,056,600.

FY19 Program

- Budget for capital expenditures up to $202,000,000.
- Monitor expenditures related to professional services and construction.

M-E-8 Continuing Sewer System Assessment

Refer to Appendix E for details on the CSSA activities for the reporting period.

M-E-9 Infrastructure Rehabilitation

Refer to Section 4: Program Activities for Discharge Abatement Plans for more details on infrastructure rehabilitation projects identified in the IOAP. Refer to Appendix E for an update on all rehabilitation projects completed during the reporting period and planned for the next reporting period in accordance with CSSA.

M-E-10 System Capacity Assurance Program

FY18 Program

- Continued to collect formula-based defect inspection of significant footage of sewer lines in various sewer-sheds across the county. This information is being used to prioritize cleaning and rehabilitation efforts that will remove inflow and infiltration from the system and create capacity credits. Refer to Appendix E for a progress update.
- Tracked pump station capacities, reviewed drawdown testing results and identified action items pertaining to deficiencies. Critical results of this effort are being documented on each asset within the Hansen system.

- Reviewed wastewater capacity requests from private development as shown in Table 6.4.
- Continued to work on the procedures for documentation of rehabilitation and the calculation of SCAP results.
- Submitted credit catchment ledgers to the Kentucky Division of Water (KDOW) and EPA as part of quarterly reports.

FY19 Program

- Continue to perform formula-based inspection of sewer lines in various sewer-sheds across the county. Refer to Appendix E for an update on the areas selected for inspection.
- Continue tracking pump station capacities through testing, investigation and capacity evaluations.
- Update WQTC capacities and track new development flows.
- Generate inflow and infiltration reduction projects and calculate related capacity credits.
- Continue to enhance credit calculation protocols and tracking in Hansen.
- Continue to enhance the procedures for documentation of rehabilitation and the calculation of SCAP credits.
- Update SCAP areas based on pump station elimination projects that have been completed.

Table 6.4. SCAP Wastewater Capacity Request Review

FY	APPROVED		CONDITIONALLY APPROVED		DENIED	
	REVIEWS	FLOW	REVIEWS	FLOW	REVIEWS	FLOW
FY08	166	2,797,875	125	2,487,086	23	548,824
FY09	42	454,096	127	1,952,407	3	94,000
FY10	75	486,126	136	1,245,485	5	23,214
FY11	115	181,453	114	1,625,814	5	67,600
FY12	98	961,603	142	2,083,331	12	72,822
FY13	110	604,913	192	2,079,150	8	185,100
FY14	126	1,363,346	241	2,384,317	11	80,700
FY15	105	503,940	192	2,020,940	7	47,020
FY16	124	720,764	215	3,327,684	3	13,450
FY17	92	381,426	228	3,522,927	0	0
FY18	86	267,265	178	3,228,275	1	400

6.1.1.6. SANITARY SEWER OVERFLOW REPORTING AND NOTIFICATION PROGRAM

This section describes MSD's SSO Reporting and Notification Program. The goal of this section is to maintain accurate, up to date records of SSOs and to ensure proper, timely notification of the agencies and organizations through un-permitted discharge reporting, SSO notification and tracking.

M-F-1 Unauthorized Discharge Reporting

Refer to Section 1: Project WIN Performance Overview for detailed information.

M-F-2 Sanitary Sewer Overflow Notification

M-F-3 Tracking Sanitary Sewer Overflows

Refer to Section 3: Program Activities for Sewer Overflow Response Protocol for detailed information.

6.1.1.7. FINANCING AND COST ANALYSIS PROGRAM

This section describes MSD's Financing and Cost Analysis Program. The goal of this section is to provide a detailed cost analysis for both the capital and operational costs of MSD for use in future budgeting and decision making.

M-G-1 Operations Cost

M-G-2 Maintenance Cost

M-G-3 Capital Improvement Funding

M-G-4 Management Programs Cost

M-G-5 Life Cycle Cost

M-G-6 Budget and Customer Rate Setting

FY18 Program

Details of the previous reporting period's program are included in Table 6.5. Capitalized budget performance is shown in Figure 6.4. Reported amounts for the program are unaudited financial results.

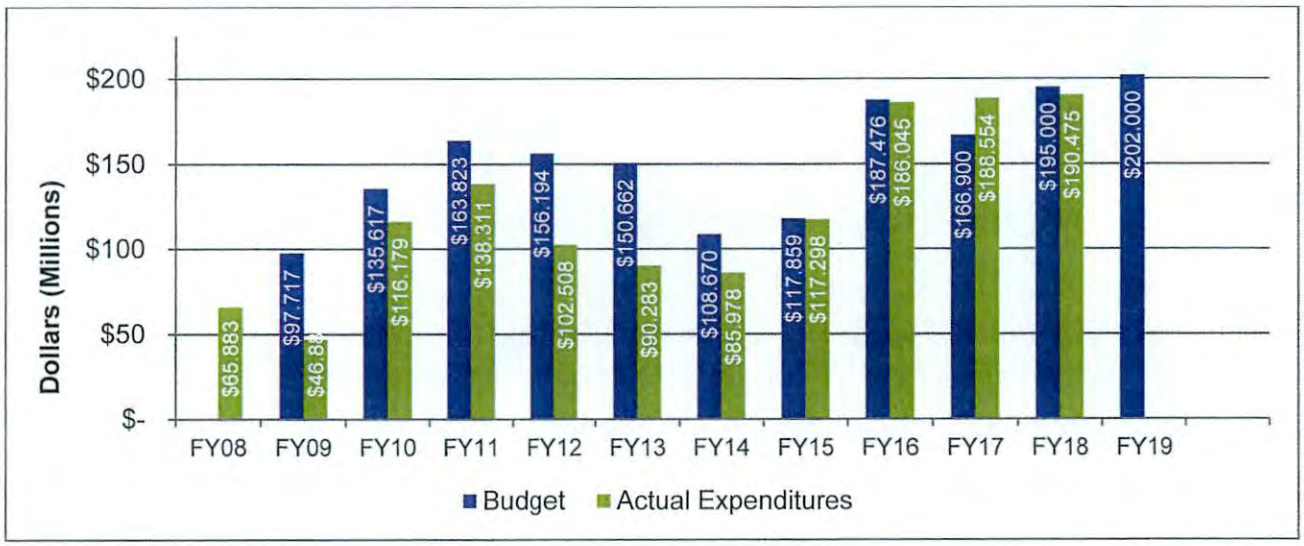
FY19 Program

- Set the operating budget at $178,842,410 and the capital budget at $202,000,000.
- Issue Commercial Paper to provide interim financing for the capital program.

Table 6.5. FY18 Financing and Cost Analysis Program Details

METRIC	BUDGET	ACTUAL
Operating Revenue Growth	-	7.5%
Operating Revenue	$275,667,000	$279,148,908
Wastewater / Stormwater Revenue	$271,667,000	$274,503,925
Investment Income	$18,390,000	$16,527,645
Debt Service Coverage Ratio	184.0%	190.0%
Total Operating Expenses	$170,229,049	$182,605,247
Total Capital Expenses	$195,000,000	$190,475,224

Figure 6.4. MSD Capitalized Budget Performance



6.1.1.8. EQUIPMENT AND TOOLS MANAGEMENT AND MAINTENANCE PROGRAM

This section describes MSD's Equipment and Tools Management Programs. The goal of this section is to facilitate efficient repair and support of MSD's sewer systems through an accurate spare parts inventory, a timely equipment maintenance schedule, vehicle repair, and needed tools and supplies.

M-H-1 Spare Parts Inventory Management

M-H-4 Supplies Management

FY18 Program

- Improved storeroom receiving process by recording tracking control numbers (TCNs) instead of PO numbers, and notifying receivers by email instead of phone. Improved documentation has streamlined the receiving, tracking, and delivery processes.

- Continued weekly meetings with departments for improved customer service, inventory management of critical spare parts, reorganization of new storeroom locations, and PPE/safety upgrades.
- Provided Excel refresher course training to storeroom team members for improvements with cycle counting and report design.
- Acquired spare parts for Morris Forman WQTC storeroom from ongoing equipment replacement projects.
- Continued asset management process to replace identified spare parts from Morris Forman WQTC flood event.
- Reviewed current SOPs to verify compatibility with current organizational direction. Updated SOPs for quality improvements and determined best practices to improve operations through continuous training of Storeroom applications.
- Continued improvements with recycling program.
- Improved cross training of all storeroom team and establish goals to learn new inventory management processes.
- Began process to revamp the Material Master Form to ensure customer comprehension and accuracy.
- Began to implement plan to reorganize CMF North Warehouse.
- Continued Bar-Code Scanning initiatives for inventory control.

FY19 Program

- Resubmit selected Material Master Forms for reprocessing to reconcile vendor's Unit of Measure with storeroom's Unit of Issue, in order to improve inventory and ordering processes.
- Upgrade security of Cedar Creek Storeroom with camera surveillance.
- Continue improvements to Material Master Form.
- Continue to implement plan to reorganize CMF North Warehouse.
- Continue to update SOPs for quality improvements and determine best practices to improve operations, utilizing "Back to Basics" guidelines.
- Complete Bar-Code Scanning initiatives for inventory control.
- Update inventory descriptions and relocate like parts.
- Continue cycle counts after each morning rush and before system processing.
- Implement storeroom follow-up program to ensure accountability of vendors and visibility of incoming assets.
- Continue "Back to Basics" training for goal setting and incorporate focus commodities for team members.

M-H-2 Equipment and Tools Repair Management

FY18 Program

- Improved CMF Tool Checkout Booklet by adding monthly tabs for monitoring length of time assets are checked out. This change allows greater visibility and accountability while minimizing theft or misappropriation.
- Attended regular safety inspections and meetings, and supported safety standards as part of participation in CMF and Morris Forman Safety Committees.
- Trained all employees in advanced safety of material handling and storeroom functionality.
- Continued annual audit of SOPs for tooling inspections and implement improved security measures for cost savings initiatives and asset management.
- Collaborated with Safety to review and update safety equipment and inspection controls (Arc Flash Personal Protective Equipment [PPE], safety harness inspections, eyewash stations, ladders, safety PPE, and fire extinguishers).
- Implemented cost savings initiatives of recycling out-of-service tools and utilizing in-house contracts for equipment and tool repair where applicable.

FY19 Program

- Continue participation on CMF and Morris Forman WQTC Safety Committees by attending regular safety inspections, safety meetings, and supporting safety standards.
- Continue training on safety related storeroom processes and inventory for all employees.
- Continue annual audit of SOP for tooling inspections and implement improved security measures for cost savings initiatives and asset management that aligned with departmental goals when necessary.
- Implement policies to include Safety/ Security in the reporting of lost/stolen tools, and in screening products prior to purchase (ladders, hoists).
- Implement improved documentation policies on replacement of lost/stolen or broken tools, or return of tools due to termination/transfers of personnel.

M-H-3 Vehicle Repair

MSD's vehicle repair maintenance program addresses over 600 pieces of rolling stock, including automobiles, trucks, trailers, construction equipment (backhoes, mobile cranes, etc.) and specialty sewer maintenance equipment. Quarterly and annual summary reports specifically address maintenance issues related to the grouping of Mission Critical Equipment (MCEs) that were identified as being essential to meeting Amended Consent Decree commitments related to NMC and CMOM activities. In prior fiscal years, MCE included 13 sound-attenuated 6-inch trash pumps. Effective FY18, these units will no longer be included as MCE due to the successful elimination of overflows in Beechwood Village and Highgate Springs.

In prior fiscal years, each equipment type included as MCE were assigned an average availability of 95% or higher, which would be appropriate for the entire MSD fleet per the American Public Works Association (APWA). A study performed by CH2M Hill dated Sptember 27, 2007 states "MSD should establish and track

vehicle availability. The availability goal for Vactors should be between 75 and 90 percent. Other equipment and vehicles should be between 80 and 90 percent." With this, the MCE availability goals have been adjusted to 80%. The four remaining equipment types of identified as MCEs in the MSD fleet are shown with availability for the current reporting period in Table 6.6, and shown with overall fleet availability in Figure 6.5.

The September 2007 CH2M Hill study also states "The second key measure of fleet availability is average repair turnaround time. It is typically expressed as the percentage of work orders (repairs) that are completed within a specified period, such as 24 or 48 hours. Industry standard benchmarks for these two measurements are 80 percent and 90 percent respectively." In addition, Section 8 of the EPA Region 4 Guide to Collection and Transmission System Management, Operation, and Maintenance program states that performance measures for the fleet maintenance program will consider turnaround time. Beginning in FY18, MCE metrics include measures for shop turnaround time to include the percentage of units returned to service within 24 hours (goal of 80%) and within 48 hours (goal of 90%). The four equipment types and respective turnaround times as related to goal are in Table 6.6, and shown with overall fleet turnaround in Figure 6.6 and Figure 6.7.

FY18 Program

- Continued monitoring and reporting availability of MCE targeting each equipment type's overall average availability goal.
- Monitored equipment and work order data using FASTER System reports to analyze and target areas where improvement is needed and to plan future replacements.
- Implemented revised preventive maintenance (PM) schedules to be class-specific and in line with industry standards, specifically addressing the operating environment of all MCE increasing the frequency of PM performed to improve availability to the operating division.
- Procurement
    - Analyzed FY18 capital purchasing needs, including the evaluation of MCE for replacement.
    - Prepared specifications for, bid and awarded contract to purchase one new Single Axle Combination Vacuum Sewer/Catch Basin Cleaner Truck. Unit was received and placed in service on December 21, 2017.
    - Prepared specifications for, bid and awarded contract to purchase one new Jetter/Flusher Truck. Unit is scheduled for delivery in March 2019. Prepared specifications for, bid and awarded contract to purchase one new Catch Basin Cleaner removed from service due to accident damage. Unit was received and placed in service on December 21, 2017. An additional unit scheduled for replacement has been ordered and is due for delivery in December 2018.
    - Prepared specifications for, bid and awarded contract to purchase two new Tele-Inspection Vehicles to replace aging equipment and improve availability. Units have been ordered and are due for delivery in October, 2018. An additional unit scheduled for replacement has been ordered and is due for delivery in February 2019.
- Continued efforts associated with One Water Initiative with LWC to capitalize on fleet services opportunities to realize cost savings while better serving our customers and increasing levels of service to the community.

- Initiated conversations with both MSD and LWC union leadership regarding opportunities to capitalize on shared resources.

FY19 Program

- Continue monitoring and reporting availability of MCE targeting each equipment type's availability and turnaround time.
- Continue monitoring equipment and work order data using FASTER System reports to analyze and target areas where improvement is needed and to plan future replacements.
- Continue to adjust PM schedules which are class-specific to address specific needs of MSD based upon the operating environment of equipment to improve overall preventive maintenance program effectiveness.
- Procurement
  - Prepare specifications for, bid, receive and place in service one new Combination Vacuum Sewer/Catch Basin Cleaner Truck to replace aging equipment and improve availability. Coordinate operator and fleet technician training on new units after receipt.
  - Using existing contract, procure two new Tele-Inspection Vehicles to replace aging equipment and improve availability. Coordinate operator and fleet technician training on new units after receipt.
- Continue to explore One Water Initiatives with LWC to capitalize on fleet services opportunities to realize cost savings while better serving our customers and increasing levels of service to the community.

Table 6.6. Mission Critical Equipment Availability and Turnaround Time

EQUIPMENT TYPE	QUANTITY	AVAILABILITY		24 HOUR TURNAROUND TIME		48 HOUR TURNAROUND TIME	
		GOAL	ATTAINMENT	GOAL	ATTAINMENT	GOAL	ATTAINMENT
Catch Basin Cleaners (mechanical clamshell type)	4	80%	91.3%	80%	84.5%	90%	91.1%
High-Pressure Sewer Flusher/Jetter Trucks	6	80%	86.5%	80%	88.3%	90%	90.0%
Tele-Inspection Vehicles	7	80%	95.3%	80%	93.7%	90%	99.2%
Vacuum Sewer / Catch Basin Cleaner Trucks	9	80%	82.5%	80%	93.4%	90%	94.6%

Figure 6.5. FY18 Availability for MCE and Fleet Equipment

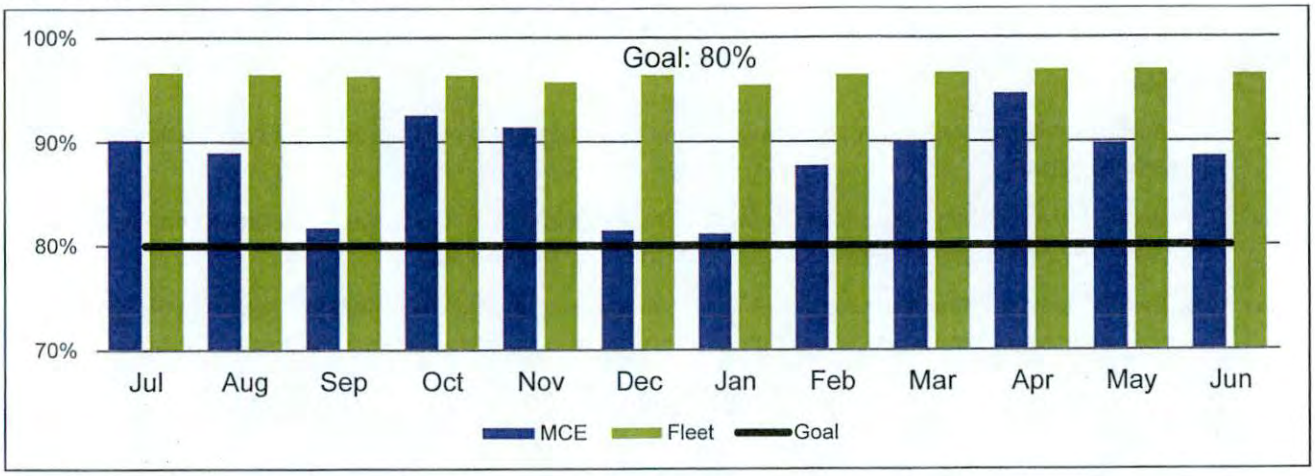


Figure 6.6. FY18 24-Hour Turnaround for MCE and Fleet Equipment

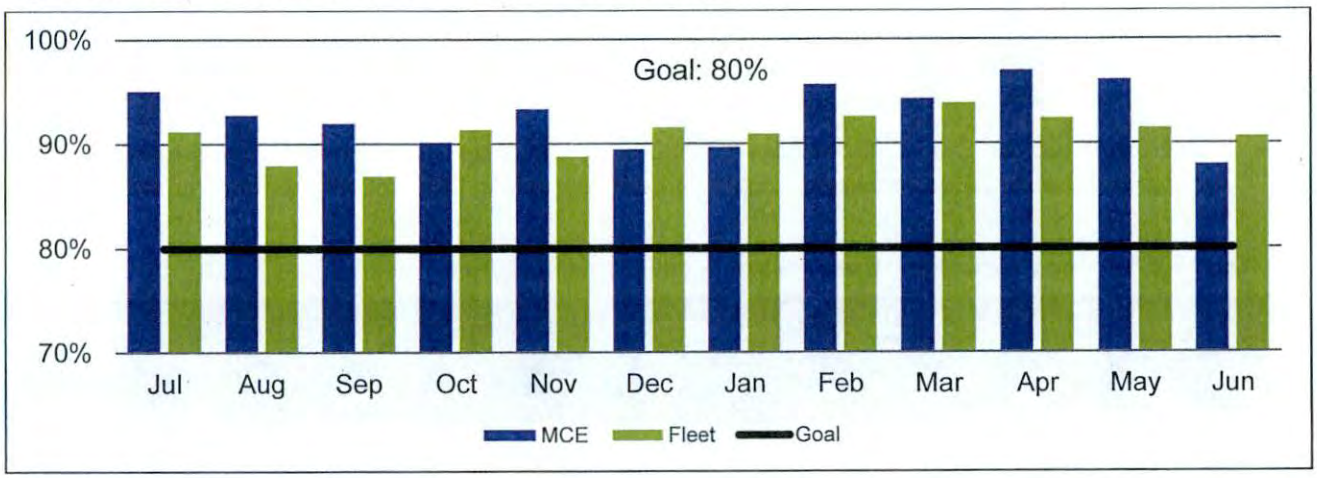
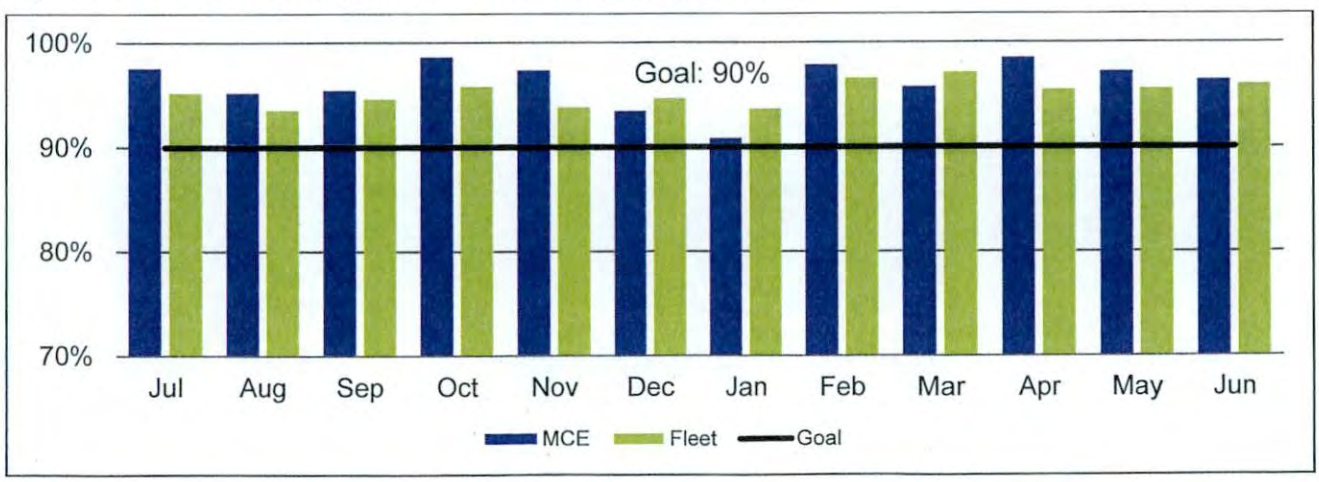


Figure 6.7. FY18 48-Hour Turnaround for MCE and Fleet Equipment



6.1.1.9. CUSTOMER SERVICE PROGRAMS

This section describes MSD's Customer Service Programs. The goal of this section is to strengthen and maintain a healthy relationship between MSD and the public through service programs which include complaint management, public information and public education.

M-I-1 Customer Service

M-I-2 Public Information

M-I-3 Public Education

FY18 Program

- Mailed out 1,320 Project WIN and Plumbing Modification Program packets of information or applications.
- Received 52,873 calls during FY18 as shown in Table 6.7. Figure 6.8 includes calls answered by MSD on behalf of Louisville Metro through FY14.
- Continued effort to reduce the percentage of abandoned calls below target level as shown in Figure 6.9. Annual rate dropped steeply from FY17 and was below target for FY18 despite challenges in staffing and programmatic changes.

FY19 Program

- Continue efforts to keep the number of abandoned calls below target level.
- Fill vacant Customer Relations positions and better serve customer needs.

Figure 6.8. Total Calls Received

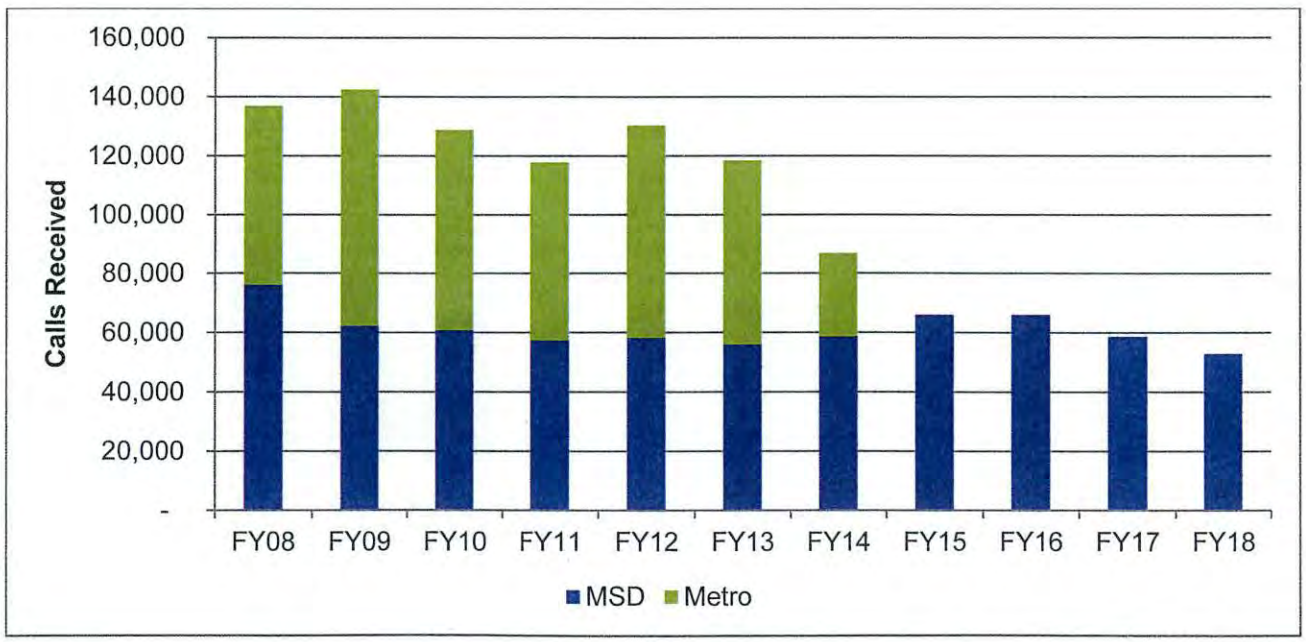
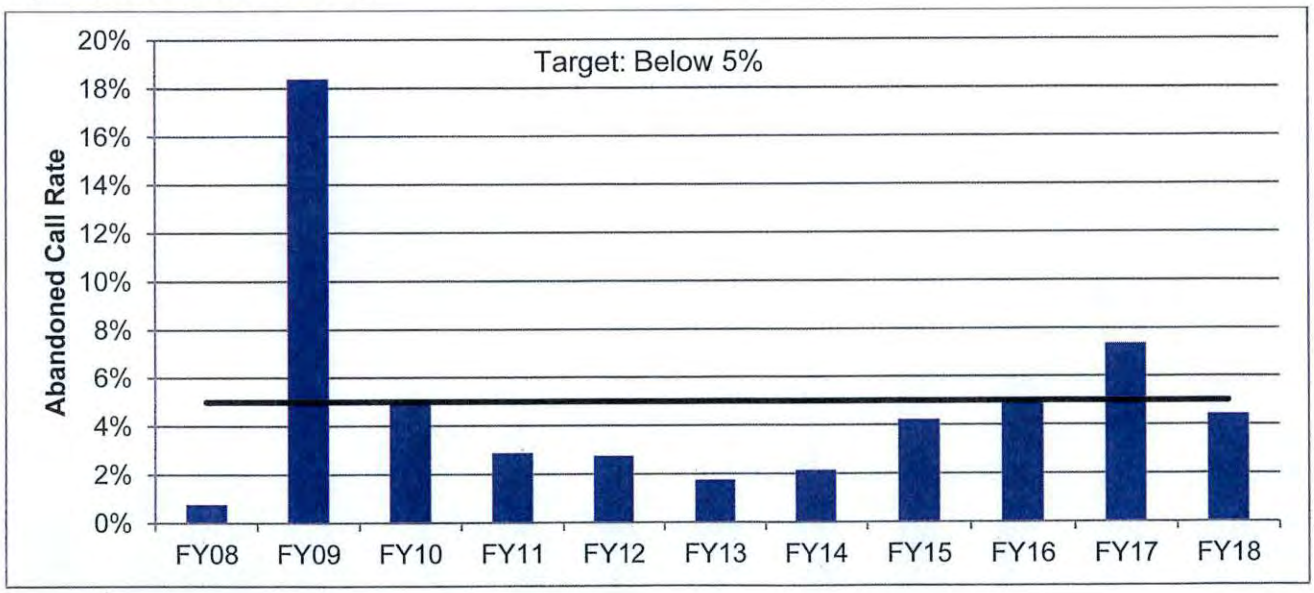


Table 6.7. FY18 Customer Service Call Data

MONTH	MSD CALLS RECEIVED	MSD CALLS ABANDONED	AVG. HOLD TIME (SEC)	CUSTOMER CARE CALLS RECEIVED
July	4,434	206	61	733
August	5,295	181	62	722
September	4,751	242	63	726
October	4,895	191	61	-
November	4,034	162	57	-
December	3,469	145	64	-
January	4,096	208	65	-
February	3,041	161	80	-
March	5,163	210	64	-
April	4,669	187	64	-
May	4,622	214	63	-
June	4,404	232	76	-
TOTAL	52,873	2,339	65	2,181

Figure 6.9. Abandoned Call Rate



6.1.1.10. LEGAL SUPPORT PROGRAMS

The following support programs are included in this section: inter-jurisdictional agreement, ordinances, pretreatment legal support, grease control legal support, service laterals legal support, septic tank haulers legal support, and "Call Before You Dig" legal support.

M-J-1 Inter-Jurisdictional Agreement

M-J-2 Ordinances

M-J-3 Pretreatment

M-J-4 Grease Control

M-J-5 Service Laterals

M-J-6 Septic Tank Haulers Legal Support

M-J-7 "Call Before You Dig"

FY18 Program

Over the past fiscal year, the MSD legal department has provided a variety of legal services designed to support MSD in its efforts to implement programs to abate sanitary sewer overflows as required by the Amended Consent Decree. The services most directly related to this effort include:

- Updated MSD's Facility Design and Construction Conformance Standards an Plan Approval Policy to expand Chief Engineer's authority to develop, inspect, and assure conformance with wastewater and stormwater facility standards for design and construction.
- Participated in and/or provided legal advice and other functions pertaining to the procurement of construction and professional service contractors to provide services and/or perform work in furtherance of IOAP related projects.
- Participated in the acquisition of properties and/or property interests (easements and/or fee simple ownership) critical to the completion of IOAP related sewer construction projects. The department's participation has included assisting in the negotiation and structuring of purchase and sale agreements, drafting acquisition related documents, drafting easements, title research, and performing or providing oversight of the closing of acquisition transactions, as well as initiating legal proceedings to acquire property through eminent domain.
- Provided support and assistance to the Development & Stormwater Services Administration department in the negotiation and preparation of green infrastructure and long term maintenance agreements.
- Provided support, assistance and counsel to regulatory programs and enforcement actions brought under the Wastewater Stormwater Discharge Regulations, Hazardous Materials Ordinance, and Erosion Prevention and Sediment Control Ordinance.
- Pursued cost recovery actions for regulatory violations of MSD's Wasterwater Stormwater Discharge regulations, MSD's pretreatement program, and FOG program which have contributed to blockages or back-ups and sewer overflows.

FY19 Program

Continue to provide legal services to support MSD.

6.1.1.11. WATER QUALITY MONITORING PROGRAMS

This section describes MSD's Water Quality Monitoring Program. The goal of this section is to maintain an accurate, consistent record of water quality in receiving bodies of water. Monitoring results are used to determine the effect of effluent discharge and/or spills through the following monitoring programs: routine water quality, investigative water quality, and water quality monitoring for spill impact. Water Quality monitoring data is also assessed and provided in the Water Quality Synthesis Report.

M-K-1 Routine Water Quality Monitoring Programs

M-K-2 Investigative Water Quality Monitoring

M-K-3 Water Quality Monitoring for Spill Impact

MSD has aggressively pursued a watershed management approach that relies heavily on an established water quality monitoring program. The program has an extensive in-stream monitoring effort for tributary streams and for emergency spill responses, including:

- Ambient monitoring at 28 Long Term Monitoring Network (LTMN) locations across Jefferson County to monitor multiple physical and biological indicator parameters in accordance with the MS4 permit.
    - Continuous monitoring for pH, conductivity, temperature, dissolved oxygen, and stream flow are currently collected at 25 of the 28 ambient locations.
    - Biological sampling and/or evaluation for algae, fish, and benthic macroinvertebrates are currently conducted every two years at 27 of the 28 ambient locations.
    - Quarterly sampling for Total Suspended Solids (TSS), E. coli, total nitrogen, oil and grease, copper, and pH is currently conducted on a quarterly basis at 27 of the 28 ambient locations.
    - Recreational contact monitoring is conducted seasonally from May through October is currently conducted at 27 of the 28 ambient monitoring sites for E. coli.
    - Wet weather monitoring is conducted over the course of the MS4 permit term for three storm events at 27 of the 28 ambient locations and an additional 15 locations.
- Combined Sewer Overflows (CSOs)/Significant Industrial Users (SIUs) point sampling monitors the risk of water quality impairment to discharges associated with SIUs and General Discharge Permits through the NMC No. 3 Pretreatment Program.
- CSO flow monitoring measures flow within the combined sewer system to provide improved data input into water quality models.

Additional information on these programs is provided in Section 4.5.

6.1.1.12. CONTINGENCY PLAN FOR SEWER AND TREATMENT PLANT

This section describes MSD's Contingency Plan for the wastewater collection and treatment system. The goal of this section is to provide a protocol for emergency response and notification. The following elements are included in this section: contingency planning process, response flow diagram, public notification plan, agency notification plan, emergency flow control plan, emergency operations and maintenance plan, preparedness

training program, water quality monitoring plan, and Sewer Overflow Response Protocol (SORP). The SORP requires training for all MSD employees.

M-L-1 Contingency Planning Process

M-L-2 Response Flow Diagram

FY18 Program

- Continued collaboration with the National Weather Service, USGS, and Louisville Metro Emergency Management Agency (EMA) to develop a pilot project to install flow and level monitors at a site for early warning of significant weather events. Significant changes in both meters would trigger a notification at MSD and EMA.
- Continued efforts to improve disaster response protocols. Improved draft matrix for internal training modules to be implemented, including training on first aid, CPR, bloodborne pathogens, and the National Incident Management System's Incident Management System and National Response Framework.
- Practiced annual Floodwall Closure Installations.
- Moved primary IT compute site to a Tier 3, co-location data center facility. Improved "Recovery Time Objective" (RTO) of several key applications by migrating Oracle databases to virtual platform.
- Revised the Comprehensive Nature Disaster and Business Continuity Plan, including development of several key documents and organizational structure of the comprehensive plan.

FY19 Program

- Continue work with the National Weather Service regarding monitors for early warning of significant weather events.
- Continue revision of Comprehensive Nature Disaster and Business Continuity Plan using the critical path. A disaster planning consultant will be utilized to aid in the completion of the plan, which is currently on schedule for June 2018. This revision will include training and emergency exercises.
- Continue to work with other agencies to develop Catastrophic Urban Flood Plan.
- Continue to practice annual Floodwall Closure Installations.
- Add redundant communication paths to provide improved network resiliency for key sites. Begin initiative to move disaster recovery capabilities into a Tier 3 data center.

M-L-3 Public Notification Plan

M-L-4 Agency Notification Plan

Refer to Section 3: Program Activities for Sewer Overflow Response Protocol.

M-L-5 Emergency Flow Control Plan

M-L-6 Emergency Operations and Maintenance Plan

Strategy 5 of MSD's Strategic Business Plan requires that MSD "develop a comprehensive disaster response and business continuity plan for disasters that impact our ability to serve our customers and the community". As part of this effort, a diverse team from across MSD has been working to complete the initiatives of this plan.

FY18 Program

- Finalized comprehensive risk and vulnerability assessment of MSD operations and infrastructure assets, using industry best practices.
- Finalized elements and metrics of EUM related to Operational Resiliency.

FY19 Program

- Continue development of catastrophic urban flood plan in conjunction with the Department of Homeland Security, US Army Corps of Engineers, Kentucky Emergency Management, Louisville Emergency Management Agency and other partners. MSD will transition from the data gathering stage of the Regional Resiliency Assessmet Program to the implementation phase.
- Develop operational emergency response SOPs from the comprehensive risk and vulnerability assessment of MSD operations and infrastructure assets, using industry best practices, and begin training.
- Continue to develop and expand each element of EUM related to Operational Resiliency.

M-L-7 Preparedness Training

Refer to Section 6.1.1.2 for details on training for emergency response procedures.

M-L-8 Water Quality Monitoring Plan

Refer to Sections 4.5 and 6.1.1.11 for more details on the MSD Water Quality Monitoring Plan.

M-L-9 Sewer Overflow Response Protocol

Refer to Section 3: Program Activities for Sewer Overflow Response Protocol for more details on the SORP.

6.1.2. OPERATIONS PROGRAMS

6.1.2.1. PUMP STATION OPERATIONS PROGRAMS

This section describes MSD's Pump Station Operation Programs. The goal of this section is to maintain pump stations for optimal use during routine and emergency operations through well documented operating procedures.

O-A-1 Routine Operating Programs

FY18 Program

- Continued review and updates, as needed, of the U.S. Army Corps of Engineers (USACE) Flood Operations and Maintenance Manual based on USACE and staff review comments. The manual is continuously under review as MSD completes both LTCP and NMC programmatic activities.
- Determined capital project priorities and the budgetary needs related to flood protection system pump stations during regular meetings with MSD Operations and Engineering staff.
- Completed Operations staff training for Southwestern Pump Station due to operational changes and new equipment related to Bells Lane Wet Weather Treatment Facility construction and planned operation. Completed Operations staff training for pump stations and diversion structures at newly-constructed CSO storage basins.
- Continued to develop operations and maintenance (O&M) manuals for existing sanitary pump stations that do not have formal O&M manuals. New O&M manuals were created for 26 sanitary pump stations as listed in Table 6.8.
- Continued to develop an application to automate the drawdown testing application at sanitary pump stations and to develop trending standards using Telog. Implemented 1-minute level data import in support of this effort. Installed level instrumentation at 21 sanitary pump stations in order to support automated drawdown efforts as listed in Table 6.8. Completed 125 manual drawdowns at sanitary pump stations.
- Provided permanent backup power at 94 critical pump stations and RTC facilities based upon the previously performed prioritization and ongoing review.

FY19 Program

- Continue regular meetings with MSD Operations and Engineering staff to determine capital project priorities and advise on the budgetary needs on a quarterly basis.
- Complete Operations staff training for pump stations and diversion structures at newly-constructed CSO storage basins.
- Continue the planning to enhance O&M manuals for existing sanitary pump stations that do not have formal O&M manuals. Staff will prioritize pump stations based on operational history. New O&M Manuals will be assigned for 12 sanitary pump stations as detailed in Table 6.9.
- Implement asset configuration data import to support automatic pump station draw down testing and performance trending. Install an additional 20 level transducers at sanitary pump stations as detailed in Table 6.9. Continue reviewing pump stations for the installation of level sensors in support of automated drawdown trending.
- Continue to provide backup power at critical pump stations.

Table 6.8. FY18 Completed Pump Station Updates

PUMP STATION ID	PUMP STATION NAME	O&M MANUAL UPDATE	LEVEL INSTRUMENT INSTALLATION
MSD0166-PS	ASHBURTON		X
MSD1155-PS	BIRCHAM ROAD	X	
MSD1171-PS	BECKLEY STATION ROAD	X	X
MSD1002-PS	BRITTANY WOODS CIRCLE		X
MSD1137-PS	CAMPBELL STREET	X	
MSD1091-PS	CARSLAW COURT		X
MSD1092-PS	CEDAR FOREST PLACE		X
MSD1087-PS	CHERRY LANE	X	
MSD1095-PS	CLORE LANE		X
MSD1067-PS	COVERED COVE WAY	X	
MSD1001-LS	CREEL LODGE DRIVE		X
MSD1027-PS	CROSSTIMBERS		X
MSD1049-PS	DOMINION WAY		X
MSD0191-PS	GLEN OAKS		X
MSD1125-PS	GLOBAL AMERICAN	X	
MSD1068-PS	HARRODS VIEW CIRCLE #1	X	
MSD1069-PS	HARRODS VIEW CIRCLE #2	X	
MSD0112-PS	HASBROOK	X	
MSD1088-LS	HENSLEY CT	X	X
MSD1106-P	KAVANAUGH CENTER	X	
MSD1019-PS	LEVEN		X
MSD1128-PS	LG&E	X	
MSD1101-PS	LOUISVILLE SLUGGER FIELD	X	
MSD1140-PS	MARCIETTA WAY		X
MSD1144-PS	MARINA VIEW	X	
MSD1134-PS	MARINE SALES	X	
MSD1040-PS	MIDDLETOWN CHRISTIAN VILLAGE		X
MSD1103-PS	MIMICH WAY		X
MSD1147-PS	MOUNT WASHINGTON ROAD		X
MSD1131-PS	NEW MORTON INTERNATIONAL	X	
MSD1098-PS	NUGENT SAND	X	
MSD1026-LS	OAK POINTE	X	
MSD0135-LS	PARK PLACE	X	
MSD1136-PS	PERIWINKLE WAY		X

Table 6.8. FY18 Completed Pump Station Updates

PUMP STATION ID	PUMP STATION NAME	O&M MANUAL UPDATE	LEVEL INSTRUMENT INSTALLATION
MSD1077-PS	PROVIDENCE COURT	X	X
MSD1194-PS	RIVER ROAD	X	
MSD1183-PS	RIVERSIDE GARDENS		X
MSD1190-PS	SARATOGA SPRINGS		X
MSD1129-PS	SPRING RIVER #1 WEST	X	
MSD1130-PS	SPRING RIVER #2 EAST	X	
MSD1149-PS	TERRA CROSSING		X
MSD0174-PS	TITLEIST		X
MSD1072-PS	WALNUT RIDGE	X	
MSD1182-PS	WOODLAND-BARBER	X	
MSD0134-PS	WOODS OF ST. THOMAS	X	

Table 6.9. FY19 Projected Pump Station Updates

PUMP STATION ID	PUMP STATION NAME	O&M MANUAL UPDATE	LEVEL INSTRUMENT INSTALLATION
MSD0029-PS	5TH & LEE		X
MSD1051-PS	ADMIRAL	X	
MSD1143-LS	BAY HARBOR COURT		X
MSD1137-PS	CAMPBELL STREET		X
MSD1207-PS	CENTRAL MAINTENANCE FACILITY (CMF)	X	
MSD1013-PS	CINDERELLA	X	
MSD1057-LS	CITY HALL		X
MSD0130-PS	COOPER CHAPEL		X
MSD1074-PS	GRAND ISLE WAY		X
MSD1179-PS	GRAND LAKES		X
MSD1214-PS	HANOVER TRACE	X	
MSD1110-PS	INNISBROOK		X
MSD1059-LS	JOHN HANCOCK		X
MSD1096-PS	KY22		X
MSD1197-PS	LAKE LOUISVILLA	X	
MSD0115-PS	LANFAIR		X
MSD1219-PS	MIDDLETOWN STATION		X
MSD0186-PS	MUDDY FORK	X	

Table 6.9. FY19 Projected Pump Station Updates

PUMP STATION ID	PUMP STATION NAME	O&M MANUAL UPDATE	LEVEL INSTRUMENT INSTALLATION
MSD1178-PS	NAPA RIDGE		X
	OLD BROWNSBORO CROSSING	X	
MSD1004-PS	OLD BROWNSBORO PLACE		X
MSD0165-PS	OLDE COPPER COURT		X
MSD0137-LS	PICCADILLY		X
MSD1112-PS	POPE LICK	X	
MSD1089-PS	REALITY TRAIL	X	
MSD1160-PS	RIDGELEIGH		X
MSD1183-PS	RIVERSIDE GARDENS		X
MSD1205-PS	SNEADS BRANCH S&F	X	
MSD0088-PS	STARKEY	X	
MSD1167-PS	WATERSTONE		X
MSD0123-PS	WEST GOOSE CREEK	X	
MSD1182-PS	WOODLAND-BARBER		X

O-A-2 Emergency Operating Programs

FY18 Program

- Green Line Analysis – Continued to evaluate pump stations for inclusion in the Green Line program. Green Line pump stations will be prioritized under the program to complete new draw down tests and pump station site assessments. The data from this effort will be collected and will be used to plan future rehabilitation projects. Future rehabilitation work will also correct any pump station operation level settings to prevent line surcharging.
- South Pope Lick Pump Station Project – Completed construction on December 5, 2017, to repair the South Pope Lick Pump Station after a surge event damaged both the east valve vault and the corresponding piping.
- Southwestern Gate Chamber Sluice Gate Replacement Project –This emergency project replaced all three gates and actuator on the Southwestern Outfall, downstream of the Southwestern Pump Station. These gates are responsible for holding back wet weather flow to maximize capacity in the collection system. The project was started in FY17 and construction was completed August 31, 2018.

FY19 Program

- Southwestern Gate Chamber Support Wall – Begin design of this project to reinforce the wall of the chamber to provide support in unseating head conditions.
- Green Line Analysis - Continue to evaluate pump stations for inclusion in the Green Line program.

6.1.2.2. PRETREATMENT PROGRAM

This section describes MSD's Pretreatment Programs. The goal of this section is to protect MSD's sewer system and treatment plants by requiring industrial users to pretreat their effluent to required levels through industrial user permitting, inspection, sampling and enforcement.

O-B-1 Industrial User Permit

O-B-2 Inspection

O-B-3 Sampling Enforcement

Administered pretreatment limitations at Hite Creek, Floyds Fork, Derek R. Guthrie and Morris Forman WQTCs. Additional information related to the MSD Pretreatment Program for the combined sewer system can be found in Section 2.4. Jeffersontown WQTC was eliminated and flow was redirected to the Morris Forman and Cedar Creek WQTCs in December 2015.

FY18 Program

- Continued communication with EPA to identify a clear methodology for assessing effluent limitations, guidelines, and standards for the dental category.
- Improved environmental compliance inspection documentation with photographs and detailed information regarding all sampling locations and flow meters. Further prodedural improvements are ongoing.
- Identified and confirmed specific sources of molybdenum in Morris Forman's influent. Brochures were been distributed to industries that discharge to the publicly owned treatment works (POTW), especially facilities providing service to cooling towers.
- Developed and implemented procedures for comprehensive data collection and reporting methods. Further improvements to semi-annual and annual pretreatment reports are ongoing.
- Submitted local limits for the Cedar Creek WQTC to KDOW for review.

FY19 Program

- Continue to establish communication with the dental offices, develop fee schedule, and online application processes that follow EPA requirements.
- Continue to identify and monitor sources of molybdenum in Morris Forman's influent and pursue opportunities to reduce molybdenum through product subsitituion or other controls.
- Continue to work with KDOW on review and approval of Cedar Creek WQTC local limits.
- Continue improving data collection to to reduce effort of semi-annual and annual reporting.
- Continue improvements on updating information and implementing procedures which enhance inspectors' documentation capabilities, specifically for sampling locations, flow meters and any other inspections relative to permits.

6.1.2.3. CORROSION CONTROLS PROGRAM

This section describes MSD's Corrosion Controls Program. The goal of this section is to extend the life of MSD's sewer system by controlling the corrosive effects of hydrogen sulfide (H_2S) and other corrosive chemicals in the system through inspection, control measures, monitoring, and performance measures.

O-C-1 Inspection

O-C-2 Control Measures

O-C-3 Monitoring

O-C-4 Performance Measures

Hydrogen sulfide is a serious problem for the structural integrity of the collection system, as well as a nuisance to the public due to odor. In some instances, it is possible to respond to odor complaints and treat H_2S without addressing corrosion concerns.

FY18 Program

- Continued to clean MSD facilities to minimize impact of corrosion and odors. Completed 219 cleaning work orders on collection system.
- Continued to enhance asset review and documentation by further defining service request responsibilities related to odor complaints.
- Continued contracts in order to provide professional engineering services to assist MSD with odor control for the collection system, regional WQTCs, and Ohio River Force Main (ORFM).
- Designed and began construction of a biofilter to treat H_2S at an air release valve (ARV) along the ORFM at the site of the proposed Waterfront Botanical Gardens. Construction will be completed in FY19.
- Began design of two pump station oxygen injection systems to treat H_2S on the ORFM. Construction is anticipated to begin in FY19.
- Continued to monitor and evaluate gravity lines within the collections system through the CSSA/Blockage Abatement Program using the corrosion indexes.

FY19 Program

- Continue to clean MSD facilities to minimize impact of odors and corrosion caused by H_2S on the collection system.
- Create further training and documentation on maintenance activities and work flow for better tracking of work performed and time and materials used.
- Monitor and evaluate gravity lines within the collections system through the CSSA/Blockage Abatement Program.
- Continue to contract professional engineering services to assist MSD with odor control for the collection system, regional WQTCs, and ORFM.
- Continue review of underground tank pump station sites, which may be susceptible to corrosion.

6.1.2.4. GREASE TRAP INSPECTION AND ENFORCEMENT PROGRAM

This section describes MSD's Grease Trap Inspection and Enforcement Programs. The goal of this section is to reduce the amount of fats, oils and grease (FOG) that enter MSD's sewer system and treatment plants through permitting, inspection, enforcement, performance measures, and the FOG program.

O-D-1 Permitting

O-D-2 Inspection

O-D-3 Enforcement

O-D-4 Performance Measures

O-D-5 Fats, Oils and Grease Program

FY18 Program

- Conducted 161 inspections at Food Service Establishments (FSEs) within Jefferson County. Inspections resulted in immediate issuance of appropriate enforcement actions to include FCNs. FCNs were issued for violation of MSDs Wastewater/Stormwater Discharge Regulations and FOG policies.
- Issued 54 enforcement actions to include FCNs, NOVs and NOVs with Fines to FSEs requiring action(s) to prevent and/or eliminate grease blockages in MSD's collections system. The enforcement actions required FSEs to install and/or modify grease control equipment, with additional requirements to submit documentation of installations and/or modifications.
- Conducted 362 plan review inspections to insure proper grease control equipment was installed at new and/or modified FSEs.
- Mailed 381 FOG residential public service notifications. The public service outreach informed residents of a recent sanitary sewer blockage occurrence near their home. Information sent to residents informs the customer of measures that could be taken within a residential dwelling to prevent any further occurrences.
- Conducted two Certified Grease Waste Hauler (CGWH) training classes for haulers servicing grease control equipment within Jefferson County. Class numbers 18 (held September 27, 2017) and 19 (held March 27, 2018) were provided to haulers during this period. CGWHs as well as master and journeyman plumbers that service or repair grease traps or grease interceptors within Jefferson County are required to participate and receive approval to service grease control equipment. FSEs in Jefferson County must only utilize MSD's CGWHs or plumbers that have obtained the appropriate certification.
- Performed 18 CGWH audits for haulers participating in the CGWH Program. Audits are conducted to assure Certified Grease Waste Haulers comply with hauler agreements between MSD and CGWH. MSD conducts audits with unspecified CGWHs randomly during the fiscal year.
- Continued to track FOG removal by CGWHs. Collectively, 4,045,452 gallons of FOG was removed from grease control equipment maintained by area FSEs during the reporting period. Collectively, CGWHs in Jefferson County serviced approximately 6,558 items of grease control equipment.

- Conducted one FOG reconnaissance tele-inspection project in conjunction with MSD's internal tele-inspection crews. The location inspected was an area where FSEs have not properly maintained grease control equipment or where multiple FOG related incidents had occurred.
- Continued to track FOG program performance measures.

FY19 Program

- Continue to conduct inspections at FESs and issue enforcement actions as appropriate for violations of the MSD Wastewater/Stormwater Discharge Regulations.
- Continue to send FOG residential public outreach letters to residents in neighborhoods in the MSD service area that had FOG issues.
- Participate in public education and outreach programs to inform the public regarding MSD's FOG program.
- Continue to host at least two CGWH training classes per year.
- Continue to conduct CGWH audits.
- Continue to track FOG program performance measures and develop reporting tools.

6.1.2.5. NEW CONNECTION TAP-IN PROGRAM

This section describes MSD's New Connection Tap-In Program. The goal of this section is to ensure that future connections do not compromise the capacity of the receiving treatment plant. The program is implemented using a new service tap approval process, inspection, enforcement, and performance measures for new connections to existing sewers and increased flow on existing service connection locations. All new service connections are installed by contractors that have a master plumber on staff. New connections made to public sanitary sewers are inspected by MSD personnel.

All new and changes to wastewater discharge volumes are reviewed through MSD's SCAP process. Developers are required to submit proposed flows to MSD's system and those flows are traced through MSD's infrastructure to identify lack of system capacity. Where capacity in the system exists, capacity requests are approved for 90 days. Where capacity does not exist, upgrades to infrastructure are undertaken or the capacity request is not approved.

O-E-1 Installation of New Service Taps

O-E-2 Inspection

O-E-3 Enforcement

O-E-4 Performance Measures

O-E-5 Other

FY18 Program

- Refer to Section 6.1.1.5, Table 6.4 for details regarding new connections approved through the SCAP process.

- Inspected installation of 112 new property service connections (PSCs) on existing MSD's sewers.

FY19 Program

- Continue to review projects for capacity available through SCAP program.
- Consolidate and improve internal tracker for new property services connections within the existing infrastructure.
- Work with Customer Relations, Development, and Engineering to develop SOP for new property service connections on existing infrastructure.

6.1.2.6. FLOW MONITORING FIELD OPERATION PROGRAMS

This section describes MSD's Flow Monitoring Field Operation Programs. The goal of this section is to provide accurate flow data for use in evaluating various aspects of MSD's sewer system. Flow is monitored at both permanent and temporary stations.

O-F-1 Permanent Stations

O-F-2 Temporary Stations

Refer to Section 4.5 for details on water quality monitoring efforts.

6.1.2.7. SEPTIC TANK HAULERS PROGRAM

MSD does not accept septic tank waste. This is handled through private contractors in Jefferson County.

6.1.2.8. "CALL BEFORE YOU DIG" PROGRAM

This section describes MSD's "Call Before You Dig" Program. The goal of this section is to prevent the damaging or cutting of sewer lines and other MSD assets and subsequent spills through permitting, inspection, enforcement, and performance measures.

O-H-1 Permitting

O-H-2 Inspection

O-H-4 Performance Measures

FY18 Program

- Contracted with locating company to locate all requests with the MSD service area. Contract is set up to handle Louisville Water Company (LWC) requests as well (invoiced separately). Invoices totaled $844,580.26 to process 111,860 locate requests to identify MSD facilities during the reporting period.
- Contracted with the KY 811 (BUD Center) for underground utility information call center services. Invoices totaled $186,732.80 to participate in this program for the reporting period.
- Requested 2,607 (1,901 via phone and 706 via web) to the BUD Center for the marking of other utilities during this time period.

FY19 Program

- Continue to contract for utility locating service.

O-H-3 Enforcement

Enforcement is handled by the Commonwealth of Kentucky.

6.1.3. MAINTENANCE PROGRAMS

6.1.3.1. PUMP STATION PREVENTIVE MAINTENANCE

This section describes MSD's Pump Station Preventive Maintenance program. The goal of this section is to prevent unanticipated repairs and subsequent down-time by providing scheduling, staff, and records to perform routine, preventive pump station maintenance. Electrical, mechanical, and physical maintenance are included in this section.

S-A-1 Electrical Maintenance

S-A-2 Mechanical Maintenance

S-A-3 Physical Maintenance

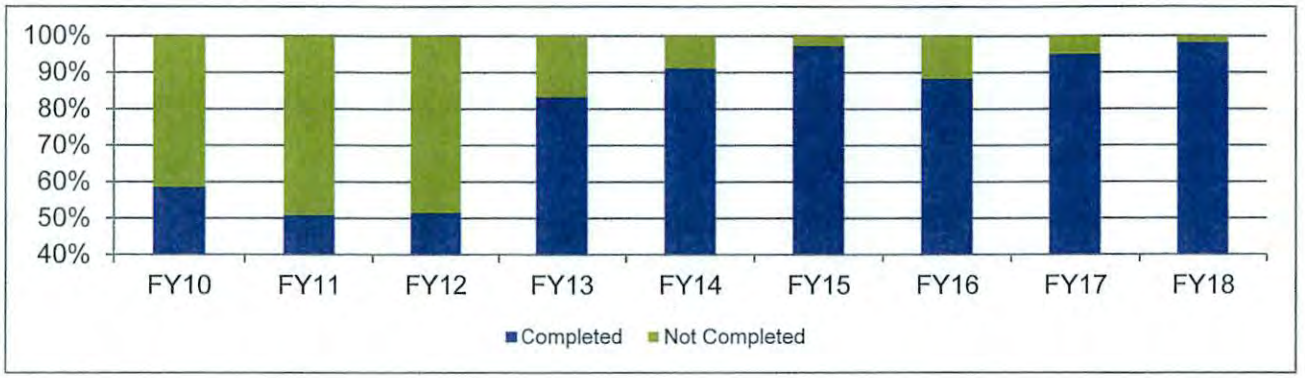
FY18 Program

- Continued preventive maintenance inspections for sanitary and flood pump stations as shown in Figure 6.10.
- Continued to annually train staff to use the Hansen asset management system to track pump station work orders as well as associated pump station assets.
- Ensured collaboration between Engineering and Operations on the design and construction of pump stations at CSO storage basins and diversion structures.

FY19 Program

- Continue preventive maintenance inspections for sanitary and flood pump stations. Continue to annually train staff to use the Hansen asset management system to track pump station work orders as well as associated pump station assets.
- Continue collaboration between Operations and Engineering staff, designers and contractors to incorporate changes to the system with the elimination of the non-regional WQTCs and the addition of storage basins and associated pump stations as required by the IOAP.
- Continue to develop and improve SOPs training, and reporting related to subsequent repairs.

Figure 6.10. Sanitary Pump Station Preventive Maintenance



6.1.3.2. FORCE MAIN PREVENTIVE MAINTENANCE

This section describes MSD's Force Main Preventive Maintenance program. The goal of this section is to prevent unanticipated repairs and subsequent down-time by providing scheduling, staff, and records to perform routine, preventive force main maintenance. The maintenance programs include walking the force main alignment to find cave-ins and air relief valve inspections.

S-B-1 Air Release Valves

S-B-2 Valve Exercise Program

FY18 Program

- Conducted the Annual Force Main Program evaluation and completed inspections on force mains listed in Table 6.10, covering 277,411 LF. Each inspection consisted of inspecting wet wells, valve vaults, air release valves, and discharge manholes; pumping out access vaults to lube, grease and exercise cross-connections; and observing the ground above the lines for evidence of pipe failure below ground.
- Determined that 2 air release valves required repairs or replacement as a result of inspections.
- Discovered that a section of the West County Sludge Main had been exposed by ATV riders along Black Pond Creek. An emergency bank repair was performed to prevent a potential break on the 20-inch line.
- Continued to initiate corrective work orders for defects found on other assets during inspections.

Table 6.10. FY18 Force Main Inspections

FORCE MAIN	FORCE MAIN	FORCE MAIN	FORCE MAIN
ADMIRAL – 2,348'	LAKELET WAY – 16,171'	PARKRIDGE WOODS – 382'	RUBBERTOWN – 9,609'
BECKLEY STATION – 7,268'	MUDDY FORK – 634'	POPE LICK – 7,748'	TRINITY HOMES – 584'
GRAND AVE. – 26,848'	NIGHTINGALE – 5,802'	RIVERSIDE GARDENS/LEES LN. – 1,137'	WEST COUNTY SLUDGE MAIN – 73,093'
HARRODS CREEK – 33,087'	OHIO RIVER – 90,385'	ROSA TERRACE – 1,498'	WHEELER BASIN – 817'

FY19 Program

- Complete the annual force main evaluation by June 30, 2019. Adjustments to the inspection schedule will be made based on conditions observed during the inspection cycle.
- Review 5-year trends in activities and performance metrics, comparing to targets established in 2006.
- Schedule FY20 force mains for inspection.

6.1.3.3. GRAVITY LINE PREVENTIVE MAINTENANCE

This section describes MSD's Gravity Line Preventive Maintenance program. The goal of this section is to reduce infiltration and increase efficiency of the gravity line system through routine cleaning, root control, and manhole preventive maintenance.

S-C-1 Routine Hydraulic Cleaning

S-C-2 Routine Mechanical Cleaning

S-C-3 Root Control Program

S-C-4 Manhole Preventive Maintenance

Refer to Appendix E for more details on the Gravity Line Preventative Maintenance Program.

6.1.3.4. EQUIPMENT AND COLLECTIONS SYSTEM MAINTENANCE

S-D-1 Equipment Maintenance

Equipment and vehicle maintenance is discussed in detail in Section 6.1.1.8.

6.2. COMPREHENSIVE PERFORMANCE EVALUATIONS AND COMPOSITE CORRECTION PLANS

Per requirements of MSD's 2009 Amended Consent Decree, MSD implemented a Comprehensive Performance Evaluation (CPE) and Composite Correction Plan (CCP) program for MSD's Water Quality Treatment Centers (WQTCs). This program defined specific WQTC improvements to be completed by December 31, 2011. These improvements under this program are discussed under Section 6.2.1. Although the IOAP CPE/CCP improvements were completed by December 31, 2011, MSD will continue to implement CPE/CCP activities as part of the MSD's CMOM Program. Section 6.2.2 will list such activities per WQTC as they occur each reporting period and a comprehensive project schedule for CPE/CCP related capital projects is provided in Section 6.3.

6.2.1. AMENDED CONSENT DECREE CPE/CCP PROGRAM

All activities under this program were completed by December 31, 2011, as required per the IOAP.

6.2.2. CMOM CPE/CCP PROGRAM

This section describes CMOM CPE/CCP activities active during the reporting period and being planned for the next fiscal year. Schedules for CPE/CCP related capital projects are provided in Section 6.3.

6.2.3. CEDAR CREEK WATER QUALITY TREATMENT CENTER

FY18 Program

- The Influent Pump Station Motor Controls Upgrade project was expanded to include further enhancement, including valve actuators.

FY19 Program

- Advertise, award contract, and complete construction of the Influent Pump Station Motor Controls Upgrade project in FY19.

6.2.4. HITE CREEK WATER QUALITY TREATMENT CENTER

FY18 Program

- Completed construction of the Preliminary Treatment Odor Control Improvements project.
- Continued design of the expansion project to increase the average daily treatment capacity from 6 MGD to 9 MGD.

FY19 Program

- Complete design of the expansion project to increase the average daily treatment capacity from 6 MGD to 9 MGD.

6.2.5. FLOYDS FORK WATER QUALITY TREATMENT CENTER

No major capital projects planned for the Floyds Fork WQTC in FY18 or FY19.

6.2.6. DEREK R. GUTHRIE WATER QUALITY TREATMENT CENTER

FY18 Program

- Completed construction for the Secondary Clarifiers 1, 2 and 3 collection mechanisms replacement project.
- Completed final review of the facility plan by the state multi-agency clearinghouse and KDOW.
- Completed additional I&C and Vibration testing of the Wet Weather Pumps.
- Continued construction of DRG Return Activated Sludge (RAS) 1 and 4 Pump Replacement project.

FY19 Program

- Complete construction of DRG Return Activated Sludge (RAS) 1 and 4 Pump Replacement project during the second quarter of FY19.

- Begin design of the Clarifier #7-12 Floor Repair and Gate Replacement project. New gates and automated actuators will be provided for the Influent and the Return Activated Sludge (RAS) lines for Clarifiers 1 - 6. Defective grout will be removed/replaced for Clarifiers 7 – 12. A new isolation gate will also be installed for the aeration basin.

6.2.7. JEFFERSONTOWN WATER QUALITY TREATMENT CENTER

MSD has completed the elimination Jeffersontown WQTC. Refer to Section 1.2.2.6 for details.

6.2.8. NON-REGIONAL WATER QUALITY TREATMENT CENTER UPDATES

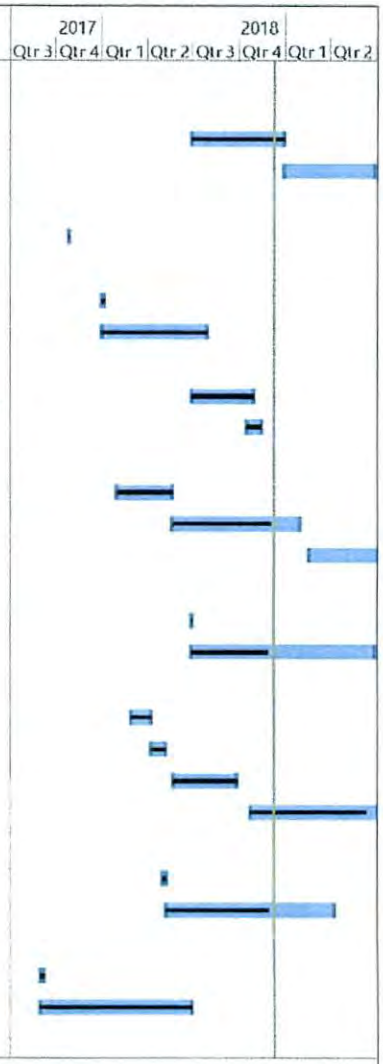
MSD has completed the elimination of all existing non-regional WQTCs at this time. Refer to Section 1.2.2.6 for details.

6.3. CMOM ACTIVITY SCHEDULE

CMOM capital project milestones for the current reporting period as well as a look-ahead for the upcoming reporting period are provided in Figure 6.11.

Figure 6.11. CMOM Annual Commitments Schedule

Budget ID	Task Name	% Complete	Start	Finish
	MSD CMOM Annual Commitments Schedule (FY2018-2019)	55%	Mon 3/16/15	Tue 3/1/22
E18475	MF Collection System Baffles	1%	Sun 7/1/18	Sun 6/30/19
E18475	INITIATION & PROCUREMENT	99%	Sun 7/1/18	Tue 1/1/19
E18475	CLOSEOUT	0%	Tue 1/1/19	Sun 6/30/19
H18206	DRGWQTC Wet Weather Flow Assessment	100%	Fri 1/1/16	Fri 10/27/17
H18206	CLOSEOUT	100%	Fri 10/27/17	Fri 10/27/17
H14124	FY18 SSES ICA	100%	Mon 1/1/18	Mon 7/30/18
H14124	INITIATION & PROCUREMENT	100%	Mon 1/1/18	Fri 1/5/18
H14124	CLOSEOUT	100%	Mon 1/1/18	Mon 7/30/18
K19246	FY19 Telog Recorder Repair	100%	Sun 7/1/18	Fri 11/16/18
K19246	INITIATION & PROCUREMENT	100%	Sun 7/1/18	Wed 10/31/18
K19246	CLOSEOUT	100%	Thu 10/18/18	Fri 11/16/18
D18292	DRGWQTC Clarifier Grout Repair and RAS Gate Replacement	34%	Wed 1/31/18	Mon 4/12/21
D18292	INITIATION & PROCUREMENT	100%	Wed 1/31/18	Wed 5/23/18
D18292	DESIGN	76%	Wed 5/23/18	Thu 1/31/19
D18292	CONSTRUCTION	0%	Wed 2/20/19	Sun 6/14/20
E18466	FY19 CMOM Collection System Pump Rehab and Replacement	42%	Sun 7/1/18	Sun 6/30/19
E18466	INITIATION & PROCUREMENT	100%	Sun 7/1/18	Sun 7/1/18
E18466	CLOSEOUT	42%	Sun 7/1/18	Sun 6/30/19
H18332	Botanical Garden Biofilter Upgrades	99%	Thu 3/1/18	Fri 7/26/19
H18332	INITIATION & PROCUREMENT	100%	Thu 3/1/18	Mon 4/9/18
H18332	DESIGN	100%	Mon 4/9/18	Wed 5/9/18
H18332	CONSTRUCTION	100%	Fri 5/25/18	Fri 9/28/18
H18332	CLOSEOUT	83%	Fri 10/26/18	Fri 7/26/19
G18326	Catalpa Farms PS Odor Control Evaluation	62%	Thu 5/3/18	Wed 4/10/19
G18326	INITIATION & PROCUREMENT	100%	Thu 5/3/18	Fri 5/11/18
G18326	CLOSEOUT	61%	Fri 5/11/18	Wed 4/10/19
G18001	FY18 Renewal and Replacement	100%	Fri 9/1/17	Sat 6/30/18
G18001	INITIATION & PROCUREMENT	100%	Fri 9/1/17	Thu 9/7/17
G18001	CLOSEOUT	100%	Fri 9/1/17	Sat 6/30/18



Date: 12/1/18 | CMOM Project | Project Progress

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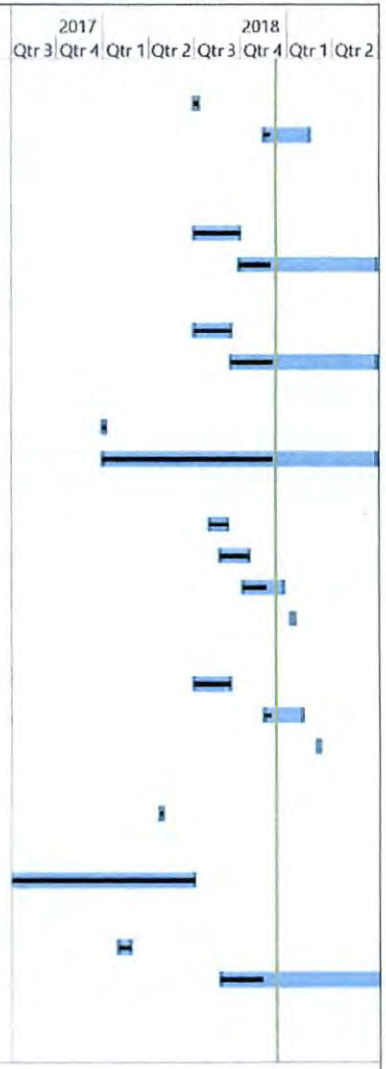
Figure 6.11. CMOM Annual Commitments Schedule

Budget ID	Task Name	% Complete	Start	Finish
D19248	CCWQTC Solids Study	15%	Sun 7/1/18	Tue 3/19/19
D19248	INITIATION & PROCUREMENT	100%	Sun 7/1/18	Mon 7/9/18
D19248	STUDY	14%	Mon 11/19/18	Sun 2/17/19
D19248	CLOSEOUT	0%	Tue 3/19/19	Tue 3/19/19
H19056	CMOM Telog 3G to 4G Conversion	23%	Sun 7/1/18	Sun 6/30/19
H19056	INITIATION & PROCUREMENT	100%	Sun 7/1/18	Sun 9/30/18
H19056	CLOSEOUT	23%	Sun 9/30/18	Sun 6/30/19
D19223	DRGWQTC WWPS Finite Element Analysis Phase 2	30%	Mon 7/2/18	Sun 6/30/19
D19223	INITIATION & PROCUREMENT	100%	Mon 7/2/18	Wed 9/12/18
D19223	CLOSEOUT	27%	Wed 9/12/18	Sun 6/30/19
F14005	FY18_19 Sewer Cleaning and TV Gline	62%	Mon 1/1/18	Sun 6/30/19
F14005	INITIATION & PROCUREMENT	100%	Mon 1/1/18	Fri 1/5/18
F14005	CLOSEOUT	62%	Mon 1/1/18	Sun 6/30/19
F19284	Breakwater PS Electrical Modifications	77%	Wed 8/1/18	Thu 1/17/19
F19284	INITIATION & PROCUREMENT	100%	Wed 8/1/18	Thu 9/6/18
F19284	DESIGN	100%	Wed 8/22/18	Fri 10/19/18
F19284	CONSTRUCTION	57%	Mon 10/8/18	Thu 12/27/18
F19284	CLOSEOUT	0%	Fri 1/11/19	Thu 1/17/19
D19038	CCWQTC Hydraulics Study	31%	Sun 7/1/18	Fri 3/8/19
D19038	INITIATION & PROCUREMENT	100%	Sun 7/1/18	Mon 9/10/18
D19038	CONSTRUCTION	17%	Mon 11/19/18	Sat 2/2/19
D19038	CLOSEOUT	0%	Mon 3/4/19	Fri 3/8/19
D16274	CCWQTC Oxidation Ditch Modifications	1%	Mon 4/23/18	Wed 6/23/21
D16274	INITIATION & PROCUREMENT	100%	Mon 4/23/18	Sat 4/28/18
E17010	Collection System Spare Pump Inventory	100%	Fri 7/1/16	Sat 6/30/18
E17010	CLOSEOUT	100%	Thu 7/7/16	Sat 6/30/18
D18290	DRGWQTC Carbon Odor Control	23%	Wed 1/31/18	Tue 10/20/20
D18290	INITIATION & PROCUREMENT	100%	Wed 1/31/18	Thu 2/22/18
D18290	CONSTRUCTION	17%	Wed 8/22/18	Tue 12/24/19



Date: 12/1/18 | CMOM Project | Project Progress

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Figure 6.11. CMOM Annual Commitments Schedule

Budget ID	Task Name	% Complete	Start	Finish
F14156	DRGWQTC RAS 1 and 4 Pump Replacement	96%	Fri 1/1/16	Sat 11/2/19
F14156	DESIGN	100%	Fri 1/1/16	Sun 8/13/17
F14156	CONSTRUCTION	94%	Sat 4/1/17	Sat 1/5/19
F14156	CLOSEOUT	0%	Wed 3/6/19	Sat 11/2/19
H14117	FY18 CMOM PS-Generator Upgrades	100%	Fri 9/1/17	Sat 6/30/18
H14117	INITIATION & PROCUREMENT	100%	Fri 9/1/17	Mon 11/6/17
H14117	CLOSEOUT	100%	Tue 11/7/17	Sat 6/30/18
H18217	FY18 Consent Decree Operating Program Support	100%	Wed 11/1/17	Fri 8/31/18
H18217	INITIATION & PROCUREMENT	100%	Wed 11/1/17	Tue 11/7/17
H18217	CLOSEOUT	100%	Wed 11/1/17	Fri 8/31/18
H19083	FY19 CMOM Grinder RR	1%	Sun 7/1/18	Sun 6/30/19
H19083	INITIATION & PROCUREMENT	99%	Sun 7/1/18	Fri 2/1/19
H19083	CLOSEOUT	0%	Fri 2/1/19	Sun 6/30/19
H19054	FY19 CMOM I and C Implementation	1%	Sun 7/1/18	Sun 6/30/19
H19054	INITIATION & PROCUREMENT	100%	Sun 7/1/18	Sat 12/1/18
H19054	CLOSEOUT	0%	Sat 12/1/18	Sun 6/30/19
H16008	FY19 CMOM PM Assist	1%	Sun 7/1/18	Sun 6/30/19
H16008	INITIATION & PROCUREMENT	99%	Sun 7/1/18	Tue 1/1/19
H16008	CLOSEOUT	0%	Tue 1/1/19	Sun 6/30/19
H16010	FY19 CMOM PS-Generator Upgrades	1%	Sun 7/1/18	Sun 6/30/19
H16010	INITIATION & PROCUREMENT	100%	Sun 7/1/18	Tue 1/1/19
H16010	CLOSEOUT	0%	Tue 1/1/19	Sun 6/30/19
H16012	FY19 CMOM SCAP, AAM and FOG	13%	Sun 7/1/18	Sun 6/30/19
H16012	INITIATION & PROCUREMENT	100%	Sun 7/1/18	Thu 11/1/18
H16012	CLOSEOUT	13%	Thu 11/1/18	Sun 6/30/19
H16041	FY19 CMOM SSES-ICA	1%	Sun 7/1/18	Sun 6/30/19
H16041	INITIATION & PROCUREMENT	99%	Sun 7/1/18	Tue 1/1/19
H16041	CLOSEOUT	0%	Tue 1/1/19	Sun 6/30/19
H16006	FY19 CMOM WQTC CCP Upgrades	1%	Sun 7/1/18	Sun 6/30/19
H16006	INITIATION & PROCUREMENT	99%	Sun 7/1/18	Tue 1/1/19
H16006	CLOSEOUT	0%	Tue 1/1/19	Sun 6/30/19

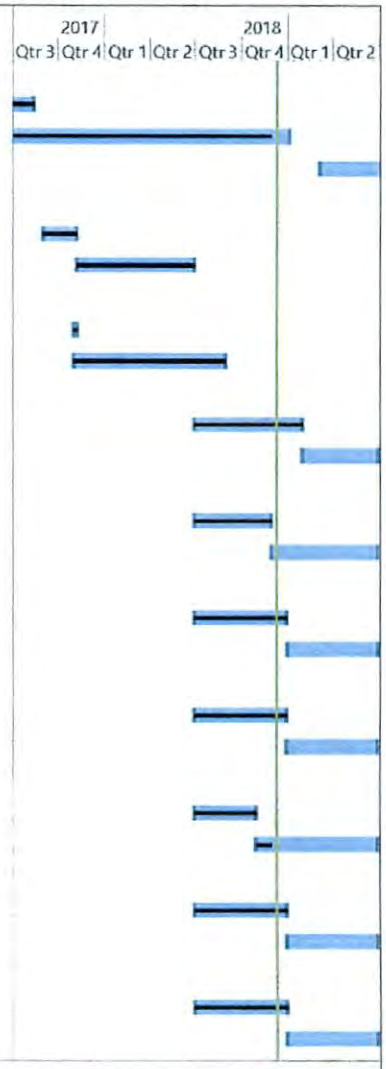

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Figure 6.11. CMOM Annual Commitments Schedule

Budget ID	Task Name	% Complete	Start	Finish
H19052	**FY19 CMOM WQTC Process Improvement**	1%	Sun 7/1/18	Sun 6/30/19
H19052	**INITIATION & PROCUREMENT**	99%	Sun 7/1/18	Tue 1/1/19
H19052	**CLOSEOUT**	0%	Tue 1/1/19	Sun 6/30/19
A19061	**FY19 Construction Inspection**	42%	Sun 7/1/18	Sun 6/30/19
A19061	**INITIATION & PROCUREMENT**	100%	Sun 7/1/18	Fri 7/6/18
A19061	**CLOSEOUT**	42%	Sun 7/1/18	Sun 6/30/19
H19053	**FY19 CRRP Implementation Assistance**	1%	Sun 7/1/18	Sun 6/30/19
H19053	**INITIATION & PROCUREMENT**	100%	Sun 7/1/18	Sat 12/1/18
H19053	**CLOSEOUT**	0%	Sat 12/1/18	Sun 6/30/19
G16032	**FY19 Development Team Support**	1%	Sun 7/1/18	Sun 6/30/19
G16032	**INITIATION & PROCUREMENT**	100%	Sun 7/1/18	Sat 12/1/18
G16032	**CLOSEOUT**	0%	Sat 12/1/18	Sun 6/30/19
H16036	**FY19 I and I Reduction Program**	0%	Sun 7/1/18	Sun 6/30/19
H16036	**INITIATION & PROCUREMENT**	100%	Sun 7/1/18	Tue 1/1/19
H16036	**CLOSEOUT**	0%	Tue 1/1/19	Sun 6/30/19
H18171	**FY19 Information Governance Architecture**	1%	Sun 7/1/18	Sun 6/30/19
H18171	**INITIATION & PROCUREMENT**	99%	Sun 7/1/18	Tue 1/1/19
H18171	**CLOSEOUT**	0%	Tue 1/1/19	Sun 6/30/19
D18451	**FY19 MFWQTC Equipment Renewal and Replacement**	1%	Sun 7/1/18	Sun 6/30/19
D18451	**INITIATION & PROCUREMENT**	100%	Sun 7/1/18	Sat 12/1/18
D18451	**CLOSEOUT**	0%	Sat 12/1/18	Sun 6/30/19
H16040	**FY19 PMP**	42%	Sun 7/1/18	Sun 6/30/19
H16040	**INITIATION & PROCUREMENT**	100%	Sun 7/1/18	Fri 7/6/18
H16040	**CLOSEOUT**	42%	Sun 7/1/18	Sun 6/30/19
H19087	**FY19 PS RR**	1%	Sun 7/1/18	Sun 6/30/19
H19087	**INITIATION & PROCUREMENT**	99%	Sun 7/1/18	Tue 1/1/19
H19087	**CLOSEOUT**	0%	Tue 1/1/19	Sun 6/30/19
G19001	**FY19 Renewal and Replacement**	43%	Sun 7/1/18	Sun 6/30/19
G19001	**INITIATION & PROCUREMENT**	100%	Sun 7/1/18	Fri 7/6/18
G19001	**CLOSEOUT**	42%	Sun 7/1/18	Sun 6/30/19

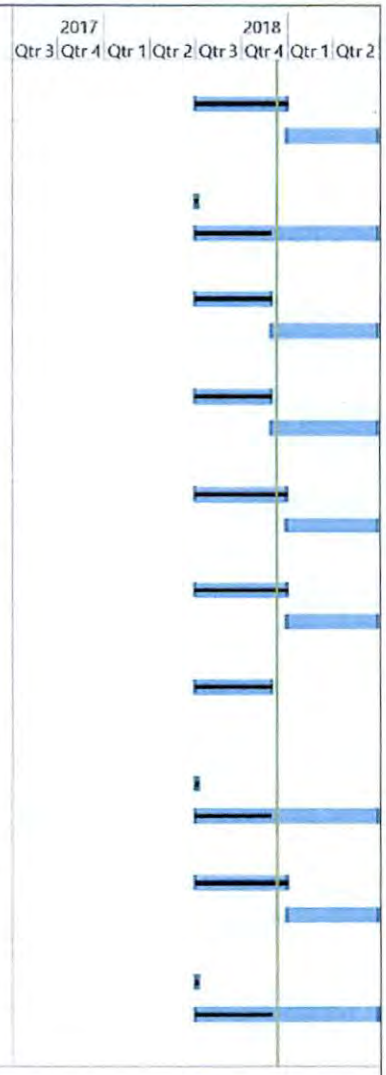

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Figure 6.11. CMOM Annual Commitments Schedule

Budget ID	Task Name	% Complete	Start	Finish
E18445	FY19 Systems Automation	0%	Sun 7/1/18	Sun 6/30/19
E18445	INITIATION & PROCUREMENT	99%	Sun 7/1/18	Tue 1/1/19
E18445	CLOSEOUT	0%	Tue 1/1/19	Sun 6/30/19
H19225	FY19 Telog Support	34%	Sun 7/1/18	Sun 6/30/19
H19225	INITIATION & PROCUREMENT	100%	Sun 7/1/18	Fri 8/17/18
H19225	CLOSEOUT	34%	Fri 8/17/18	Sun 6/30/19
D19042	FY19 WQTC Odor Improvements	10%	Sun 7/1/18	Sun 6/30/19
D19042	INITIATION & PROCUREMENT	100%	Sun 7/1/18	Sat 11/10/18
D19042	CLOSEOUT	9%	Sat 11/10/18	Sun 6/30/19
D17153	HCWQTC Bioscrubber Installation	99%	Fri 1/1/16	Mon 1/28/19
D17153	CONSTRUCTION	100%	Mon 5/15/17	Sat 3/31/18
D17153	CLOSEOUT	99%	Sat 3/31/18	Mon 1/28/19
H14126	HCWQTC Expansion	49%	Mon 11/2/15	Tue 3/1/22
H14126	DESIGN	100%	Mon 2/8/16	Fri 8/31/18
H14126	CONSTRUCTION	0%	Thu 1/31/19	Wed 5/5/21
D19237	MFWQTC Arc Flash Update	11%	Mon 7/2/18	Mon 5/6/19
D19237	INITIATION & PROCUREMENT	100%	Mon 7/2/18	Wed 9/26/18
D19237	STUDY UPDATE AND FIELD WORK	0%	Thu 2/14/19	Sun 3/31/19
D19237	CLOSEOUT	0%	Tue 4/30/19	Mon 5/6/19
A16073	Mud Lane Interceptor	57%	Mon 3/20/17	Mon 9/21/20
A16073	INITIATION & PROCUREMENT	100%	Mon 3/20/17	Fri 8/18/17
A16073	DESIGN	100%	Fri 8/4/17	Wed 8/22/18
A16073	EASEMENTS/LAND ACQUISITION	100%	Tue 5/29/18	Thu 8/23/18
A16073	CONSTRUCTION	5%	Thu 11/15/18	Tue 11/26/19
H16074	Nightingale Rehab	1%	Mon 7/2/18	Mon 9/20/21
H16074	INITIATION & PROCUREMENT	100%	Mon 7/2/18	Wed 7/18/18
H16074	CONSTRUCTION	0%	Fri 2/1/19	Fri 12/18/20
A18353	Ohio River Interceptor Structural Rehabilitation	89%	Tue 3/6/18	Mon 10/14/19
A18353	INITIATION & PROCUREMENT	100%	Tue 3/6/18	Tue 7/17/18
A18353	DESIGN	100%	Fri 5/4/18	Wed 8/29/18
A18353	CONSTRUCTION	83%	Fri 5/4/18	Sat 12/15/18

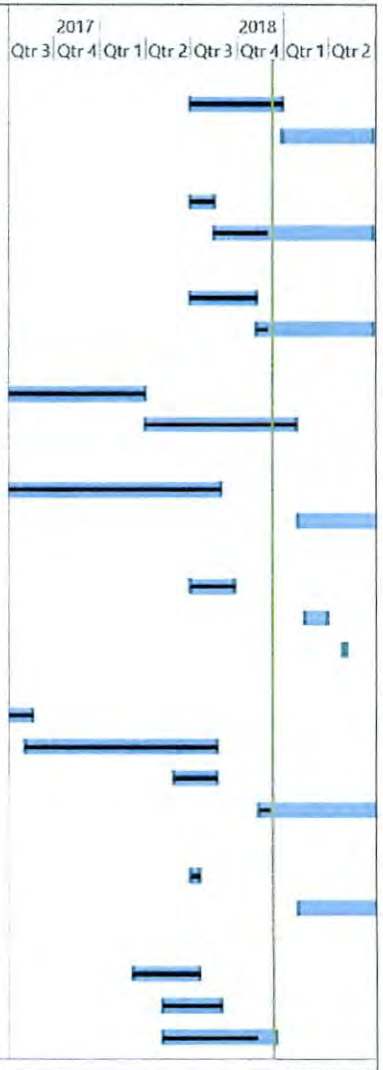

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Figure 6.11. CMOM Annual Commitments Schedule

Budget ID	Task Name	% Complete	Start	Finish
A18353	CLOSEOUT	0%	Thu 2/21/19	Mon 10/14/19
A18324	Oreland Mill Pump Station Elimination	40%	Fri 4/6/18	Wed 2/26/20
A18324	INITIATION & PROCUREMENT	100%	Fri 4/6/18	Thu 4/19/18
A18324	SCOPE FINALIZATION	100%	Fri 4/20/18	Fri 7/6/18
A18324	CONSTRUCTION	32%	Tue 7/17/18	Thu 5/2/19
D18285	ORFM Odor and Corrosion Control	31%	Mon 1/1/18	Thu 1/28/21
D18285	INITIATION & PROCUREMENT	100%	Mon 1/1/18	Mon 6/4/18
D18285	DESIGN	50%	Wed 1/10/18	Tue 10/29/19
D18285	CONSTRUCTION	0%	Fri 3/15/19	Thu 4/2/20
H19232	Parkwood PS Access Road	45%	Wed 8/1/18	Mon 3/9/20
H19232	INITIATION & PROCUREMENT	100%	Wed 8/1/18	Thu 9/6/18
H19232	DESIGN	70%	Tue 8/28/18	Fri 1/11/19
H19232	CONSTRUCTION	0%	Sat 1/26/19	Sat 5/11/19
H19232	CLOSEOUT	0%	Tue 6/11/19	Mon 3/9/20
E15033	Shively PS Generator Replacement	58%	Fri 4/1/16	Fri 5/1/20
E15033	DESIGN	100%	Tue 8/16/16	Wed 11/1/17
E15033	CONSTRUCTION	40%	Mon 11/27/17	Sat 7/6/19
H16356	South Pope Lick Pump Station Repair	99%	Mon 7/27/15	Fri 1/4/19
H16356	CONSTRUCTION	100%	Wed 8/12/15	Tue 12/5/17
H16356	CLOSEOUT	99%	Tue 12/5/17	Fri 1/4/19
H14125	HCWQTC Improvements	100%	Mon 3/16/15	Tue 4/24/18
H14125	CLOSEOUT	100%	Tue 2/28/17	Tue 4/24/18
F14167	District Wide Arc Flash Study	100%	Mon 5/25/15	Fri 11/16/18
F14167	CLOSEOUT	100%	Thu 11/1/18	Fri 11/16/18
D16272	CCWQTC Influent PS MCC Upgrades	30%	Thu 2/4/16	Fri 9/11/20
D16272	DESIGN	100%	Thu 2/4/16	Fri 5/18/18
D16272	CONSTRUCTION	8%	Mon 6/11/18	Thu 9/26/19
D17119	Ohio River FM Odor Study	100%	Mon 10/3/16	Tue 4/3/18
D17119	INITIATION & PROCUREMENT	100%	Mon 10/3/16	Wed 12/13/17
D17119	CLOSEOUT	100%	Mon 1/15/18	Tue 4/3/18

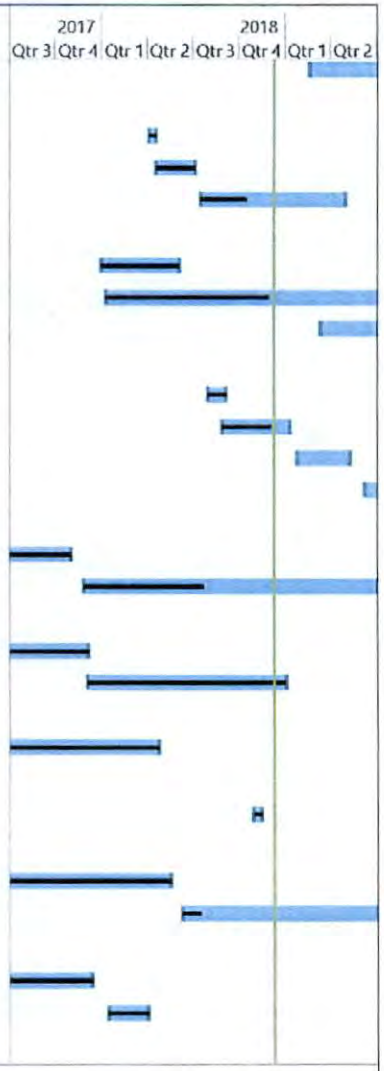

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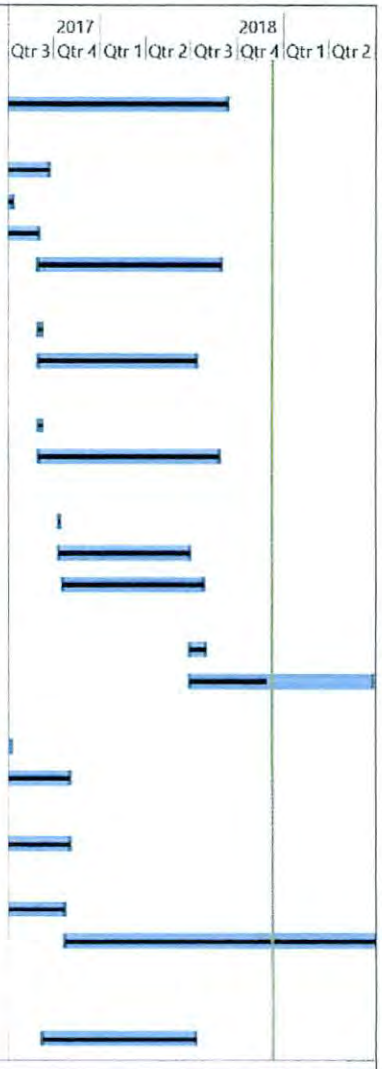
Figure 6.11. CMOM Annual Commitments Schedule

Budget ID	Task Name	% Complete	Start	Finish
F14004	FY17 Sewer Cleaning and TV Gline	100%	Sun 1/1/17	Wed 9/12/18
F14004	CLOSEOUT	100%	Sun 1/1/17	Wed 9/12/18
H17154	ORFM Biofilter for AVR67839	100%	Tue 3/28/17	Fri 8/31/18
H17154	INITIATION & PROCUREMENT	100%	Tue 3/28/17	Thu 9/21/17
H17154	DESIGN	100%	Sun 4/23/17	Tue 7/11/17
H17154	CONSTRUCTION	100%	Tue 5/9/17	Thu 8/31/17
H17154	CLOSEOUT	100%	Thu 8/31/17	Fri 8/31/18
H14106	FY18 CMOM SCAP, AAM & FOG	100%	Fri 9/1/17	Fri 7/13/18
H14106	INITIATION & PROCUREMENT	100%	Fri 9/1/17	Thu 9/7/17
H14106	CLOSEOUT	100%	Fri 9/1/17	Fri 7/13/18
H14120	FY18 PMP	100%	Fri 9/1/17	Mon 8/27/18
H14120	INITIATION & PROCUREMENT	100%	Fri 9/1/17	Thu 9/7/17
H14120	CLOSEOUT	100%	Fri 9/1/17	Mon 8/27/18
D18225	DRGWQTC WWPS Finite Element Analysis	100%	Wed 10/11/17	Fri 7/27/18
D18225	INITIATION & PROCUREMENT	100%	Wed 10/11/17	Wed 10/11/17
D18225	ANALYSIS	100%	Wed 10/11/17	Sat 6/30/18
D18225	CLOSEOUT	100%	Thu 10/19/17	Fri 7/27/18
E19204	FY19 Operations RR	42%	Sun 7/1/18	Sun 6/30/19
E19204	INITIATION & PROCUREMENT	100%	Sun 7/1/18	Wed 8/1/18
E19204	CLOSEOUT	42%	Sun 7/1/18	Sun 6/30/19
A14140	FY17 Contract Inspections	100%	Fri 7/1/16	Tue 10/31/17
A14140	INITIATION & PROCUREMENT	100%	Fri 7/1/16	Fri 7/1/16
A14140	CLOSEOUT	100%	Fri 7/1/16	Tue 10/31/17
G17001	FY17 Renewal and Replacement	100%	Fri 7/1/16	Tue 10/31/17
G17001	CLOSEOUT	100%	Fri 7/1/16	Tue 10/31/17
H16357	SWOR2 Generator	99%	Fri 4/1/16	Wed 8/28/19
H16357	CONSTRUCTION	100%	Mon 10/3/16	Fri 10/20/17
H16357	CLOSEOUT	99%	Mon 10/23/17	Wed 8/28/19
G16029	FY18 Development Team Support	100%	Fri 9/1/17	Mon 7/9/18
G16029	INITIATION & PROCUREMENT	100%	Fri 9/1/17	Thu 9/7/17
G16029	CLOSEOUT	100%	Fri 9/8/17	Mon 7/9/18



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APPENDICES

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Appendix B	**Annual Average Overflow Volume**
Appendix C	**CSO Flow Monitoring Data**
Appendix D	**Discharge Work Orders**
Appendix D-1	**Discharge Work Orders – Waters of the United States**
Appendix D-2	**Discharge Work Orders – Ground**
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Appendix E	**CSSA Annual Report**
Appendix F	**Public Notification**
Appendix G	**Organizational Chart**

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Appendix A Acronyms

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Appendix A Acronyms

AAOV	Annual Average Overflow Volume
ACD	Amended Consent Decree
ARV	Air Release Valve
BAP	Blockage Abatement Program
BGC	Beargrass Creek
BMP	Best Management Practices
BOD	Biochemical Oxygen Demand
BUD	Before "U" Dig
CC&B	Customer Care and Billing
CCP	Composite Correction Plan
CDS	Continuous Deflection Separator
CFR	Code of Federal Regulations
CGWH	Certified Grease Waste Hauler
CMOM	Capacity Management Operations and Maintenance
CPE	Comprehensive Performance Evaluations
CRD	Central Relief Drain
CRS	Community Rating System
CSO	Combined Sewer Overflow
CSOFT	Software Name
CSS	Combined Sewer System
CSSA	Continuous Sewer System Assessment
CY	Calendar Year
DMR	Discharge Monitoring Report
DSDC	Design Services During Construction
DWO	Dry Weather Overflow
eB	Enterprise Bridge (Enterprise Informatics scanning software for document management)
EGIS	Emergency Geographic Information System
EMA	Louisville Metro Emergency Management Agency
EPA	Environmental Protection Agency
EPSC	Erosion Prevention and Sediment Control
ERT	Emergency Response Team
EUM	Effective Utility Management
FCN	Field Correction Notice
FEMA	Federal Emergency Management Agency
FEPS	Final Effluent Pump Station
FM	Force Main
FOG	Fats, Oil & Grease
FPS	Flood Pump Station
FSE	Food Service Establishment
FY	Fiscal Year

Appendix A Acronyms

GASB	Governmental Accounting Standards Board
GHS	Globally Harmonized System
GIS	Geographic Information System
GLPM	Gravity Line Preventive Maintenance
GPD	Gallons per Day
GPS	Global Positioning System
H/H	Hydraulic/Hydrologic
H_2S	Hydrogen Sulfide
I&C	Instrumentation and Controls
I&I	Inflow and Infiltration
ICM	Integrated Catchment Model
ID	Identification
IOAP	Integrated Overflow Abatement Plan
ISSDP	Interim Sanitary Sewer Discharge Plan
IT	Information Technology
KDEP	Kentucky Department of Environmental Protection
KDOW	Kentucky Division of Water
KPDES	Kentucky Pollutant Discharge Elimination System
KY	Kentucky
LG&E	Louisville Gas and Electric
LIMS	Laboratory Information Management System
LOJIC	Louisville and Jefferson County Information Consortium
LTCP	Long Term Control Plan
LWC	Louisville Water Company
MCC	Motor Control Center
MCE	Mission Critical Equipment
MCU	Monitoring Controls Upgrade
MG	Million Gallons
MGD	Million Gallons per Day
MOU	Memorandum of Understanding
MS4	Municipal Separate Storm Sewer System
MSD	Metropolitan Sewer District (Louisville and Jefferson County)
MSDS	Material Safety Data Sheet
NACWA	National Association of Clean Water Agencies
NASSCO	National Association of Sewer Services Companies
NDD	Non-Domestic Dischargers
NFPA	National Fire Protection Association
NMC	Nine Minimum Controls
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
NPS	Nightingale Pump Station

Appendix A Acronyms

O&M	Operations and Maintenance
OPC	Open Platform Communications
ORD	Office of Research and Development
ORFM	Ohio River Force Main
PACP	Pipeline Assessment and Certification Program
PCCM	Post Construction Compliance Monitoring
PLC	Programmable Logic Control
PM	Preventive Maintenance
POC	Pollutant of Concern
POTW	Publicly-Owned Treatment Works
PPE	Personal Protective Equipment
PS	Pump Station
PSC	Property Service Connection
PTF	Preliminary Treatment Facilities
QPCI	Qualified Post-Construction Inspector
RAS	Return Activated Sludge
RFP	Request for Proposal
RFQ	Request for Qualifications
RPR	Resident Project Representative
RTC	Real Time Control
S&F	Solids and Floatables
SAP	Software Name
SCADA	Supervisory Control And Data Acquisition
SCAP	System Capacity Assurance Plan
SEP	Supplemental Environmental Projects
SIU	Significant Industrial User
SOP	Standard Operating Procedure
SORP	Sewer Overflow Response Protocol
SSDP	Sanitary Sewer Discharge Plan
SSES	Sanitary Sewer Evaluation Study
SSO	Sanitary Sewer Overflow
SSOP	Sanitary Sewer Overflow Plan
SWOR1	Southwestern Outfall Relief – Phase 1
SWOR2	Southwestern Outfall Relief – Phase 2
SWPPP	Stormwater Pollution Prevention Plan
SWPS	Southwestern Pump Station
SWSG	Southwest Sluice Gate
TCN	Tracking Control Numbers
TSS	Total Suspended Solids
TV	Television
UDR	Unusual Discharge Request
UIM	Utility Information Management

Appendix A Acronyms

UMF	Upper Middle Fork
UofL	University of Louisville
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
WIN	Waterway Improvements Now
WQTC	Water Quality Treatment Center
WUS	Waters of the United States

Appendix B Annual Average Overflow Volume

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Appendix B Annual Average Overflow Volume

Modeled Typical Year CSO Activations: Post-IOAP, Current, and Pre-IOAP Conditions

CSO	IOAP Approved Level of Control	Modeled Typical Year Activations for Post-IOAP Conditions[1]				Modeled Typical Year Activations for Current Conditions[2]				Modeled Typical Year Activations for Pre-IOAP Conditions[3]			
		Volume (MG)	Typical Year Modeled Activations	Typical Year Modeled Total Minutes Activated	Typical Year Modeled Total Hours Activated	Volume (MG)	Typical Year Modeled Activations	Typical Year Modeled Total Minutes Activated	Typical Year Modeled Total Hours Activated	Volume (MG)	Typical Year Modeled Activations	Typical Year Modeled Total Minutes Activated	Typical Year Modeled Total Hours Activated
015 & 191	8	124.6	8	1095	18.25	348.0	13	3620	60.33	2784.2	76	77235	1287.25
016	8	0.4	6	285	4.75	192.3	40	10485	175	39.0	32	5625	93.75
018	0	0.0	0	120	2	14.7	3	1790	30	158.1	28	30045	500.75
019	8	13.6	8	435	7.25	143.0	51	10480	175	192.7	67	15990	266.5
020	8	1.0	5	435	7.25	86.0	52	13025	217	355.3	74	26115	435.25
022	8	1.8	5	315	5.25	5.8	17	1485	25	4.5	16	945	15.75
023	8	0.0	0	0	0	0.1	2	50	1	1.8	8	525	8.75
027	N/A[5]	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0
028	8	0.0	0	0	0	1.1	20	1955	33	1.1	20	2520	42
029	8	0.0	3	105	1.75	4.6	40	5215	87	4.6	40	6315	105.25
031	N/A[5]	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0
034	8	0.1	3	180	3	3.0	39	5660	94	3.0	39	7680	128
035	N/A[5]	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0
036	8	0.1	3	165	2.75	0.2	6	345	6	0.2	7	480	8
038	N/A[5]	0.1	3	195	3.25	0.1	4	295	5	0.1	5	390	6.5
050	8	0.0	0	0	0	40.9	53	13820	230	19.6	55	7230	120.5
051	N/A - CSO to be eliminated[4]	N/A - CSO to be eliminated[4]				4.8	23	5325	89	0.3	8	1020	17
052	8	0.0	0	0	0	9.1	30	9355	156	2.5	21	2700	45
053	8	0.0	0	0	0	8.4	50	8900	148	7.7	50	11100	185
054	8	0.2	5	465	7.75	5.5	28	7400	123	1.8	35	8865	147.75
055	8	1.3	7	510	8.5	24.7	33	10905	182	4.9	17	2535	42.25
056	8	0.0	0	0	0	12.8	31	6145	102	4.3	24	2550	42.5
057	N/A[5]	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0
058	8	0.0	0	0	0	7.5	9	915	15	51.4	68	21510	358.5
062	N/A[5]	0.8	4	255	4.25	105.0	52	13305	222	100.4	69	18525	308.75
082	0	0.0	0	0	0	28.7	47	10410	174	19.2	50	11925	198.75
083	N/A - CSO to be eliminated[4]	N/A - CSO to be eliminated[4]				0.4	7	315	5	0.5	7	345	5.75
084	0	0.0	0	0	0	18.9	45	5125	85	19.2	46	5205	86.75
086	N/A[5]	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0
088	4	0.0	1	45	0.75	5.8	39	5995	100	10.7	45	8685	144.75
091	8	0.0	0	0	0	0.0	0	0	0	2.7	44	9675	161.25
092	N/A[5]	0.0	0	0	0	0.0	0	0	0	1.3	33	30	0.5
093	0	0.0	0	0	0	0.0	0	0	0	0.0	1	60	1
097	8	0.3	7	285	4.75	0.2	4	110	2	17.7	50	12390	206.5
104	8	29.0	6	585	9.75	9.6	20	2935	49	9.5	20	2955	49.25
105						265.1	45	9445	157	260.1	46	9450	157.5
106	N/A - CSO to be eliminated[4]	N/A - CSO to be eliminated[4]				CSO Eliminated				0.3	10	2040	34.0
108	8	1.6	6	210	3.5	2.1	6	420	7	51.9	41	7410	123.5
109	N/A[5]	2.3	8	705	11.75	2.2	12	1130	19	1.2	11	1695	28.25

Appendix B Annual Average Overflow Volume

Modeled Typical Year CSO Activations: Post-IOAP, Current, and Pre-IOAP Conditions

CSO	IOAP Approved Level of Control	Modeled Typical Year Activations for Post-IOAP Conditions[1]				Modeled Typical Year Activations for Current Conditions[2]				Modeled Typical Year Activations for Pre-IOAP Conditions[3]			
		Volume (MG)	Typical Year Modeled Activations	Typical Year Modeled Total Minutes Activated	Typical Year Modeled Total Hours Activated	Volume (MG)	Typical Year Modeled Activations	Typical Year Modeled Total Minutes Activated	Typical Year Modeled Total Hours Activated	Volume (MG)	Typical Year Modeled Activations	Typical Year Modeled Total Minutes Activated	Typical Year Modeled Total Hours Activated
110	8	0.3	4	240	4	0.0	0	0	0	20.0	47	9735	162.25
111	8	0.7	4	315	5.25	0.1	1	25	0	5.0	35	3675	61.25
113	8	0.0	0	0	0	0.0	0	0	0	6.2	28	2475	41.25
117	8	35.4	8	2415	40.25	11.2	3	1530	26	86.4	60	13320	222
118	0	0.0	0	0	0	117.5	61	10090	168	117.5	60	10350	172.5
119	0	0.9	8	1185	19.75	11.0	51	7465	124	10.3	53	7830	130.5
120	0	0.0	0	0	0	7.8	52	6585	110	7.5	52	6825	113.75
121	0	0.0	0	0	0	6.6	23	1940	32	5.5	23	1890	31.5
125	4	0.0	0	0	0	24.9	43	5255	88	24.4	43	5295	88.25
126	4	0.0	0	0	0	4.8	23	3555	59	3.4	20	3225	53.75
127	N/A - CSO to be eliminated[4]	N/A - CSO to be eliminated[4]				12.4	39	4160	69	12.0	39	4170	69.5
130	8	0.0	0	0	0	0.0	0	0	0	2.2	26	0	0
131	4	0.1	2	75	1.25	1.4	15	1035	17	1.7	16	135	2.25
132	4	0.0	0	0	0	84.0	59	12640	211	83.3	61	0	0
137	N/A - CSO to be eliminated[4]	N/A - CSO to be eliminated[4]				CSO Eliminated				9.5	54	7950	132.5
140	0	0.0	0	0	0	1.8	20	1850	31	2.6	29	3030	50.5
141	0	0.0	0	0	0	0.0	0	0	0	0.7	20	10215	170.25
144	N/A[5]	0.6	5	345	5.75	0.6	5	345	6	0.8	11	225	3.75
146	8	0.7	4	315	5.25	0.0	1	35	1	37.6	40	5910	98.5
148	8	0.0	0	0	0	0.0	0	0	0	0.7	17	1650	27.5
149	8	22.4	8	1920	32	142.5	47	7825	130	138.5	47	7590	126.5
150	8	0.0	0	0	0	5.2	30	9105	152	0.8	10	1575	26.25
151	8	0.0	2	90	1.5	0.0	0	0	0	97.7	72	35145	585.75
152	8	6.0	7	720	12	1.0	2	205	3	58.9	62	11715	195.25
153	0	0.0	0	0	0	18.7	71	14140	236	18.7	71	15345	255.75
154	4	0.0	0	0	0	16.8	48	13585	226	23.0	56	15480	258
155	8	0.0	0	0	0	0.5	16	1630	27	0.6	18	2130	35.5
160	0	0.0	0	0	0	0.0	0	0	0	0.0	1	465	7.75
161	N/A[5]	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0
166	4	0.0	0	0	0	54.0	46	5725	95	52.5	46	5595	93.25
167	4	0.0	0	0	0	0.5	11	985	16	0.5	11	1890	31.5
172	N/A - CSO eliminated[4]	N/A - CSO eliminated[4]				N/A - CSO eliminated[4]				0.8	18	2265	37.75
178	8	0.1	3	75	1.25	20.0	59	10150	169	20.0	58	11250	187.5
179	N/A[5]	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0
181	8	0.0	0	0	0	3.8	42	6865	114	3.8	42	8835	147.25
189	8	24.5	6	555	9.25	265.3	52	11795	197	240.0	52	11505	191.75
190	8	1.0	5	210	3.5	1.0	5	210	4	29.9	56	7380	123
193	8	0.1	3	180	3	0.1	4	315	5	0.1	4	315	5.25
195	8	0.0	0	45	0.75	2.8	44	6830	114	2.8	44	10545	175.75
196	8	0.0	0	90	1.5	0.0	0	230	4	0.0	1	495	8.25
197	8	0.0	3	165	2.75	2.6	41	5475	91	2.8	43	8385	139.75

Appendix B Annual Average Overflow Volume

Modeled Typical Year CSO Activations: Post-IOAP, Current, and Pre-IOAP Conditions

CSO	IOAP Approved Level of Control	Modeled Typical Year Activations for Post-IOAP Conditions[1]				Modeled Typical Year Activations for Current Conditions[2]				Modeled Typical Year Activations for Pre-IOAP Conditions[3]			
		Volume (MG)	Typical Year Modeled Activations	Typical Year Modeled Total Minutes Activated	Typical Year Modeled Total Hours Activated	Volume (MG)	Typical Year Modeled Activations	Typical Year Modeled Total Minutes Activated	Typical Year Modeled Total Hours Activated	Volume (MG)	Typical Year Modeled Activations	Typical Year Modeled Total Minutes Activated	Typical Year Modeled Total Hours Activated
198	N/A[5]	0.0	2	150	2.5	0.1	4	305	5	0.1	4	510	8.5
199	8	0.0	1	150	2.5	0.3	12	1460	24	0.7	24	7605	126.75
200	8	0.0	0	0	0	0.1	4	560	9	2.2	45	12120	202
201	N/A[5]	0.4	5	240	4	0.4	7	430	7	0.7	11	1245	20.75
202	8	0.0	1	150	2.5	0.1	5	565	9	0.1	6	1695	28.25
203	N/A[5]	0.0	0	105	1.75	0.0	0	130	2	0.0	0	270	4.5
206	N/A - CSO eliminated[4]	N/A - CSO eliminated[4]				N/A - CSO eliminated[4]				29.0	70	14805	246.75
207	N/A[5]	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0
208	N/A[5]	0.2	4	375	6.25	0.1	5	325	5	0.7	21	4890	81.5
210	8	1.7	7	375	6.25	28.4	39	10480	175	19.4	31	5835	97.25
211	8	34.4	8	690	11.5	349.2	28	4480	75	1090.4	62	18585	309.75
SBR	N/A[5]	5.3	5	645	10.75	7.9	9	675	11	46.1	38	27015	450.25

[1]Post-IOAP Condition results are based on model simulations of the 2001 Typical Year with the "baseline" projects implemented (Sanitary Sewer Discharge Plan and other existing Combined Sewer System facility improvements) and the most recently compiled Long Term Control Plan project model. This model reflects the most recently approved minor modifications to projects. Modeling results assume MFWQTC operating at full capacity. The data reflects the construction of the current approved suite of IOAP projects, with some minor modifications to the results based on projected optimization and projected revision of the RTC. Additional revisions to RTC and programming is anticipated as projects are completed and RTC is optimized. Modeling results demonstrate that the system, as currently designed, will perform slightly better than the approved plan. However, this data is provided for information only. The modeling results do not reflect a specific commitment to a set number of activations, cumulative volume or total minutes of overflow at each CSO, nor do they represent a cumulative commitment to residual AAOV. Target commitments for each CSO are based on the approved Level of Control for activations. Target commitment residual AAOV for the system remains 340 MG (98% capture) for the system.

[2]Current Condition results are based on model simulations of the 2001 Typical Year with current upstream SSDP conditions and the current average available treatment plant capacity. The model reflects projects certified through June 30, 2018. Partial construction of projects was not included.

[3]Pre-IOAP results are based on model simulations of the 2001 Typical Year with no baseline projects or IOAP projects constructed. Model results reflect calibration modifications to the model that occurred after the onset of the IOAP.

[4]These CSOs have been or will be eliminated (i.e., closed & removed from permit) by 2020 via implementation of Long Term Control Plan projects.

[5]These CSOs were originally modeled or had baseline modeling conditions causing them to activate less than or equal to 8 times per Typical Year and thus do not have an associated project in the approved IOAP. Some were revised later with updated model geometry and were corrected with CMOM activities.

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Appendix C CSO Flow Monitoring Data

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CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO015	10/7/2017 21:45	10/8/2017	135	2.48	10,009,730	1.18	0.94	24	Atlas		24,824,130	1
	10/8/2017 11:00	10/8/2017 16:00	300	2.48	16,619,463	2.4	0.94	24	Atlas		41,216,268	1
	10/10/2017 15:15	10/10/2017 17:30	135	0.74	10,398,297	3.17	0.41	3	Atlas		7,694,740	1
	10/23/2017 6:30	10/23/2017 7:30	60	0.47	8,003,617	0.39	0.25	6	Atlas		3,761,700	1
	10/28/2017 8:45	10/28/2017 10:00	75	1.14	99,408	1.75	0.52	12	Atlas		113,325	1
	11/3/2017 4:30	11/3/2017 7:30	180	1.33	92,009,581	2.65	1.30	1	Atlas		122,372,743	1
	12/23/2017 1:15	12/23/2017 7:30	375	1.88	12,166,385	1.65	0.74	12	Atlas		22,872,804	1
	1/11/2018 16:30	1/11/2018 16:30	0	0.5	2	0.23	0.16	48	Atlas		1	1
	2/16/2018 9:15	2/18/2018 5:45	2670	0.79	39,476,723	2.05	0.36	12	Atlas		31,186,611	1
	2/21/2018 23:00	2/26/2018 19:15	6975	2.24	636,337,267	7.94	0.84	24	Atlas		1,425,395,478	1
	3/24/2018 12:00	3/25/2018 16:00	1680	0.96	51,108,709	2.1	0.37	24	Atlas		49,064,361	1
	3/29/2018 20:15	3/29/2018 21:15	60	1.31	979,483	2.04	0.33	48	Atlas		1,283,123	1
	3/30/2018 8:30	3/30/2018 13:45	315	1.31	457,636	2.36	0.33	48	Atlas		599,503	1
	4/1/2018 23:00	4/2/2018 17:15	1095	0.67	70,718,010	2.37	0.37	6	Atlas		47,381,067	1
	4/14/2018 10:00	4/14/2018 15:15	315	1.38	993	0.56	0.48	24	Atlas		1,371	1
	4/15/2018 1:45	4/15/2018 13:45	720	1.38	7,720,699	1.42	0.48	24	Atlas		10,654,565	1
	5/5/2018 15:00	5/6/2018 16:15	1515	0.95	36,812,054	1.01	0.35	24	Atlas		34,971,451	1
	5/17/2018 23:00	5/19/2018 22:45	2865	0.28	226,757	0.36	0.22	1	Atlas		63,492	1
	5/20/2018 23:00	6/7/2018 14:30	25410	0.01	2,893,210,500	3.59	0.01	1	Atlas		28,932,105	1
	7/1/2017	7/1/2017 0:45	45	Discharge	0	0.83	#N/A	#N/A	#N/A		494,523	1
	7/6/2017 13:45	7/6/2017 15:45	120	0.4	242,370	1.18	0.20	3	Atlas		96,948	1
	7/7/2017 22:15	7/8/2017	105	0.39	1,425,213	0.89	0.29	1	Atlas		555,833	1
	7/23/2017 2:45	7/23/2017 12:00	555	0.94	12,237,086	0.99	0.43	12	Atlas		11,502,861	1
	8/29/2017 16:15	8/29/2017 16:30	15	0.22	731,900	0.33	0.19	1	Atlas		161,018	1
	8/31/2017 19:00	8/31/2017 19:45	45	3.69	1,299,598	0.52	2.03	48	Cloudburst		4,795,515	1
	9/1/2017 9:15	9/2/2017 11:00	1545	3.69	107,867,977	4	2.03	48	Cloudburst		398,032,836	1
	9/19/2017 8:45	9/19/2017 10:45	120	0.22	103,560,000	0.66	0.13	1	Atlas		22,783,200	1
	9/30/2017 14:00	9/30/2017 14:00	0	Discharge	0	0	#N/A	#N/A	#N/A		4,951	1
CSO015 Total											2,290,816,523	28
CSO016	10/27/2017 18:15	10/28/2017 7:00	765	1.1	23,856,957	1.74	0.50	12	Atlas		26,242,653	1
	11/3/2017 4:45	11/3/2017 11:00	375	0.89	14,880,181	2.16	0.68	1	Atlas		13,243,361	1
	11/6/2017 1:45	11/6/2017 5:45	240	0.35	16,715,120	1.41	0.21	1	Atlas		5,850,292	1
	11/7/2017 6:45	11/7/2017 9:30	165	0.24	1,793,083	1.65	0.11	6	Atlas		430,340	1
	11/15/2017 14:00	11/15/2017 17:15	195	0.33	9,340,803	0.37	0.21	1	Atlas		3,082,465	1
	11/18/2017 17:30	11/18/2017 22:00	270	0.31	25,703,048	0.69	0.17	1	Atlas		7,967,945	1
	12/5/2017 4:00	12/5/2017 10:45	405	0.8	16,636,041	0.81	0.43	3	Atlas		13,308,833	1
	12/22/2017 22:00	12/24/2017 4:15	1815	1.8	32,151,285	1.81	0.71	12	Atlas		57,872,313	1
	1/11/2018 10:30	1/11/2018 15:15	285	0.53	13,005,621	0.23	0.17	48	Atlas		6,892,979	1
	1/27/2018 15:45	1/27/2018 18:15	150	0.43	3,049,537	0.6	0.26	3	Atlas		1,311,301	1
	1/12/2018 6:00	1/12/2018 14:30	510	0.53	13,068,830	0.49	0.17	48	Atlas		6,926,480	1
	2/7/2018 2:45	2/7/2018 7:30	285	0.55	14,508,167	0.89	0.29	6	Atlas		7,979,492	1
	2/11/2018 10:15	2/11/2018 13:45	210	0.29	17,327,172	0.93	0.15	3	Atlas		5,024,880	1
	2/14/2018 7:45	2/14/2018 12:00	255	0.48	9,476,025	0.84	0.23	3	Atlas		4,548,492	1
	2/16/2018 3:15	2/16/2018 14:00	645	0.78	22,692,764	1.76	0.36	12	Atlas		17,700,356	1
	2/17/2018 15:15	2/17/2018 15:30	15	0.16	24,538	1.84	0.10	3	Atlas		3,926	1
	2/21/2018 20:30	2/22/2018 12:00	930	2.16	30,541,103	3.17	0.82	24	Atlas		65,968,782	1
	2/23/2018 2:00	2/23/2018 17:15	915	2	23,297,526	5.11	0.92	12	Atlas		46,595,051	1
	2/24/2018 11:00	2/26/2018 10:45	2865	2.58	84,359,408	6.91	1.60	12	Cloudburst		217,647,273	1
	3/10/2018 1:30	3/10/2018 6:00	270	0.6	9,984,855	0.63	0.40	3	Atlas		5,990,913	1
	3/19/2018 19:00	3/19/2018 22:45	225	0.43	8,202,458	0.46	0.24	3	Atlas		3,527,057	1
	3/24/2018 9:00	3/24/2018 23:45	885	1.02	28,133,769	2.21	0.39	24	Atlas		28,696,444	1
	3/28/2018 7:15	3/28/2018 8:15	60	0.51	262,431	1.53	0.21	6	Atlas		133,840	1
	3/29/2018 19:15	3/30/2018 6:00	645	0.78	19,452,918	2.25	0.25	24	Atlas		15,173,276	1
	4/1/2018 20:30	4/2/2018 3:15	405	0.66	18,324,721	2.34	0.36	6	Atlas		12,094,316	1
	4/3/2018 17:15	4/4/2018	405	0.29	16,705,876	2.57	0.16	6	Atlas		4,844,704	1
	4/14/2018 10:15	4/14/2018 12:00	105	1.19	571,683	0.43	0.40	24	Atlas		680,303	1
	4/15/2018 1:15	4/15/2018 12:15	660	1.19	7,726,204	1.24	0.40	24	Atlas		9,194,183	1
	4/23/2018 5:45	4/23/2018 9:30	225	0.53	4,827,611	0.59	0.27	3	Atlas		2,558,634	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO016	5/5/2018 12:30	5/5/2018 22:30	600	1.18	17,508,881	1.19	0.45	12	Atlas		20,660,479	1
	5/27/2018 3:45	5/27/2018 8:00	255	1.3	6,185,246	1.39	1.13	1	Atlas		8,040,820	1
	5/31/2018 15:15	6/1/2018 7:30	975	1.7	9,334,432	3.44	0.90	3	Atlas		15,868,535	1
	6/10/2018 15:30	6/10/2018 17:15	105	1.01	676,767	0.35	0.38	24	Atlas		683,535	1
	6/11/2018 13:30	6/11/2018 16:45	195	1.01	4,632,426	1.02	0.38	24	Atlas		4,678,750	1
	6/12/2018 13:30	6/12/2018 13:45	15	0.16	53,213	1.18	0.07	3	Atlas		8,514	1
	6/22/2018 15:15	6/22/2018 16:15	60	0.32	627,475	1.39	0.15	3	Atlas		200,792	1
	6/25/2018 11:00	6/25/2018 22:45	705	0.81	9,442,686	2.24	0.33	12	Atlas		7,648,576	1
	6/26/2018 23:00	6/27/2018 2:00	180	0.77	4,689,565	2.96	0.33	12	Atlas		3,610,965	1
	7/1/2017	7/1/2017 2:45	165	Discharge	0	0.66	#N/A	#N/A	#N/A		1,709,968	1
	9/19/2017 8:45	9/19/2017 12:45	240	0.21	20,279,529	0.63	0.13	1	Atlas		4,258,701	1
	7/6/2017 13:15	7/6/2017 18:30	315	0.33	7,749,842	0.96	0.17	3	Atlas		2,557,448	1
	7/7/2017 21:45	7/8/2017 1:45	240	0.4	2,913,543	0.84	0.29	1	Atlas		1,165,417	1
	7/23/2017 3:00	7/23/2017 19:15	975	0.93	18,206,933	1.01	0.43	12	Atlas		16,932,448	1
	7/28/2017 10:45	7/28/2017 16:00	315	0.06	28,876,733	1	0.02	24	Atlas		1,732,604	1
	8/1/2017 21:45	8/2/2017 4:00	375	0.13	28,088,946	0.2	0.09	1	Atlas		3,651,563	1
	9/1/2017 7:45	9/2/2017 15:30	1905	3.59	12,195,555	3.89	1.90	24	Cloudburst		43,782,042	1
	9/25/2017 9:00	9/25/2017 12:00	180	Discharge	0	0.21	#N/A	#N/A	#N/A		8,580,208	1
CSO016 Total											737,262,249	47
CSO018	2/22/2018 11:00	2/27/2018 14:15	7395	1.85	34,821,801	6.66	0.66	24	Atlas		64,420,332	1
	7/6/2017 7:45	7/6/2017 9:30	105	0.97	7,518	1.1	0.41	12	Atlas		7,292	1
	9/1/2017 8:30	9/2/2017 11:15	1605	4.03	4,611,146	4.25	4.32	24	Cloudburst		18,582,917	1
	9/3/2017 0:30	9/3/2017 19:15	1125	Discharge	0	4.25	#N/A	#N/A	#N/A		4,782,083	1
	9/4/2017 5:45	9/4/2017 8:30	165	Discharge	0	4.25	#N/A	#N/A	#N/A		281,042	1
	9/5/2017	9/5/2017 2:45	165	Discharge	0	4.23	#N/A	#N/A	#N/A		8,125	1
	9/5/2017 15:30	9/6/2017 12:45	1275	0.51	11,158,906	4.67	0.31	3	Atlas		5,691,042	1
	9/9/2017 12:30	9/9/2017 12:30	0	Discharge	0	0.51	#N/A	#N/A	#N/A		225,521	1
	9/10/2017 4:15	9/10/2017 4:15	0	Discharge	0	0.51	#N/A	#N/A	#N/A		256,875	1
CSO018 Total											94,255,229	9
CSO019	10/7/2017 21:45	10/9/2017 9:00	2115	2.25	5,343,081	2.26	0.84	24	Atlas		12,021,932	1
	10/10/2017 14:30	10/10/2017 23:00	510	0.49	5,194,061	2.75	0.30	3	Atlas		2,545,090	1
	10/23/2017 6:15	10/23/2017 9:30	195	0.53	3,907,523	0.51	0.28	6	Atlas		2,070,987	1
	10/24/2017 12:45	10/25/2017 7:45	1140	0.16	909,094	0.69	0.07	12	Atlas		145,455	1
	10/27/2017 18:00	10/28/2017 6:45	765	1.12	4,832,907	1.82	0.51	12	Atlas		5,412,856	1
	11/3/2017 4:30	11/3/2017 11:00	390	1.09	6,756,080	2.37	0.83	1	Atlas		7,364,127	1
	11/6/2017 1:30	11/6/2017 13:15	705	1.17	7,075,734	2.42	0.94	1	Atlas		8,278,609	1
	11/7/2017 6:00	11/7/2017 11:00	300	0.26	1,409,304	2.68	0.12	12	Atlas		366,419	1
	11/15/2017 13:45	11/15/2017 16:30	165	0.33	3,750,136	0.39	0.22	1	Atlas		1,237,545	1
	11/18/2017 17:30	11/18/2017 20:45	195	0.46	3,126,246	0.84	0.25	3	Atlas		1,438,073	1
	12/5/2017 4:00	12/5/2017 9:15	315	0.86	3,959,902	0.87	0.50	3	Atlas		3,405,516	1
	12/22/2017 19:15	12/23/2017 19:45	1470	1.41	4,585,680	1.42	0.58	12	Atlas		6,465,809	1
	1/8/2018 7:00	1/8/2018 7:00	0	0.16	53,794	0.14	0.07	12	Atlas		8,607	1
	1/11/2018 10:30	1/11/2018 12:00	90	0.46	236,424	0.24	0.15	48	Atlas		108,755	1
	1/12/2018 3:30	1/13/2018 3:00	1410	0.46	451,587	0.63	0.15	48	Atlas		207,730	1
	1/13/2018 14:30	1/13/2018 14:30	0	0.02	66,650	0.65	0.01	3	Atlas		1,333	1
	1/22/2018 13:15	1/22/2018 21:45	510	0.14	790,750	0.3	0.07	6	Atlas		110,705	1
	1/27/2018 14:30	1/27/2018 20:30	360	0.41	1,334,098	0.57	0.23	3	Atlas		546,980	1
	2/4/2018 8:15	2/4/2018 14:00	345	0.16	174,600	0.29	0.09	6	Atlas		27,936	1
	2/5/2018 1:30	2/20/2018 4:30	21780	0.01	1,337,869,900	3.21	0.01	1	Atlas		13,378,699	1
	2/21/2018 8:15	2/21/2018 9:30	75	2.13	41,531	1.92	0.76	24	Atlas		88,462	1
	2/21/2018 21:15	2/24/2018 1:15	3120	2.13	10,231,384	5.39	0.76	24	Atlas		21,792,848	1
	2/24/2018 10:30	2/28/2018 15:45	6075	2.53	6,284,104	7.12	1.58	6	Cloudburst		15,898,784	1
	3/24/2018 6:15	3/25/2018 6:15	1440	1.1	7,054,865	2.18	0.42	24	Atlas		7,760,351	1
	3/28/2018 6:00	3/28/2018 18:30	750	1.26	424,835	1.8	0.32	48	Atlas		535,292	1
	3/29/2018 9:30	3/30/2018 16:15	1845	1.26	2,355,587	2.43	0.32	48	Atlas		2,968,040	1
	3/31/2018 22:45	4/1/2018 1:30	165	0.3	840,547	1.62	0.17	3	Atlas		252,164	1
	4/1/2018 20:30	4/2/2018 12:15	945	0.81	6,716,017	2.44	0.44	6	Atlas		5,439,974	1
	4/23/2018 5:45	4/23/2018 17:00	675	0.58	2,904,124	0.9	0.27	3	Atlas		1,684,392	1

Discharge indicates no correlated rain event.

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CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO019	4/14/2018 9:45	4/14/2018 11:00	75	1.13	1,161,319	0.35	0.38	24	Atlas		1,312,290	1
	4/15/2018	4/15/2018 18:00	1080	1.13	5,509,431	1.16	0.38	24	Atlas		6,225,657	1
	5/4/2018 7:45	5/4/2018 8:15	30	0.01	681,500	0.1	0.01	1	Atlas		6,815	1
	5/5/2018 12:45	5/6/2018 2:15	810	1.24	10,693,365	1.32	0.49	12	Atlas		13,259,773	1
	5/10/2018 3:00	5/10/2018 3:45	45	0.03	5,499,033	1.38	0.03	1	Atlas		164,971	1
	5/16/2018 18:30	5/16/2018 18:30	0	0.01	57,800	0.04	0.01	1	Atlas		578	1
	5/17/2018 16:45	5/17/2018 17:00	15	0.05	570,520	0.05	0.03	1	Atlas		28,526	1
	5/22/2018 7:45	5/22/2018 9:45	120	0.42	2,613,995	0.52	0.32	1	Atlas		1,097,878	1
	5/27/2018 3:30	5/27/2018 6:00	150	1.38	5,429,909	1.39	0.79	1	Atlas		7,493,274	1
	5/30/2018 14:45	5/30/2018 14:45	0	0.1	436,390	1.61	0.07	1	Atlas		43,639	1
	5/31/2018 14:15	5/31/2018 15:45	90	1.31	1,094,258	1.78	0.70	3	Atlas		1,433,478	1
	6/1/2018 0:15	6/1/2018 11:45	690	1.31	9,928,762	2.92	0.70	3	Atlas		13,006,678	1
	6/10/2018 15:00	6/10/2018 16:15	75	0.63	1,859,213	0.22	0.23	24	Atlas		1,171,304	1
	6/11/2018 6:45	6/11/2018 15:15	510	0.63	2,416,757	0.64	0.23	24	Atlas		1,522,557	1
	6/12/2018 12:30	6/12/2018 13:30	60	0.2	2,232,710	0.88	0.16	1	Atlas		446,542	1
	6/20/2018 5:45	6/20/2018 19:15	810	Discharge	0	1.02	#N/A	#N/A	#N/A	Data Under Review	5,153,865	1
	6/21/2018 8:45	6/21/2018 23:15	870	0.36	9,521,122	1.36	0.18	1	Atlas		3,427,604	1
	6/22/2018 10:15	6/23/2018	825	0.62	3,916,179	1.98	0.31	3	Atlas		2,428,031	1
	6/25/2018 0:30	6/25/2018 20:00	1170	0.77	3,686,094	2.76	0.30	12	Atlas		2,838,292	1
	6/26/2018 12:15	6/27/2018 11:00	1365	Discharge	0	3.39	#N/A	#N/A	#N/A	Data Under Review	5,858,115	1
	4/3/2018 19:45	4/4/2018 13:15	1050	0.71	1,357,077	3.07	0.39	6	Atlas		963,525	1
	7/4/2017 8:00	7/4/2017 9:15	75	0.17	4,274,682	0.72	0.09	3	Atlas		726,696	1
	7/6/2017 12:30	7/6/2017 14:15	105	0.31	796,274	1.02	0.14	3	Atlas		246,845	1
	7/7/2017 21:15	7/7/2017 22:45	90	0.31	2,300,990	0.8	0.26	1	Atlas		713,307	1
	7/18/2017 7:45	7/18/2017 9:00	75	0.13	3,824,715	0.13	0.11	1	Atlas		497,213	1
	7/23/2017 1:45	7/23/2017 11:00	555	1.11	3,010,165	1.23	0.51	12	Atlas		3,341,283	1
	7/28/2017 9:15	7/28/2017 11:15	120	0.15	8,465,493	1.26	0.08	3	Atlas		1,269,824	1
	8/1/2017 21:30	8/1/2017 23:30	120	0.22	26,608,005	0.38	0.15	3	Atlas		5,853,761	1
	8/6/2017 14:45	8/7/2017 1:30	645	0.61	712,174	0.91	0.27	12	Atlas		434,426	1
	8/17/2017 14:45	8/17/2017 19:15	270	0.36	746,925	0.4	0.20	6	Atlas		268,893	1
	8/22/2017 16:15	8/22/2017 17:15	60	0.08	9,549,450	0.46	0.05	1	Atlas		763,956	1
	9/1/2017 6:45	9/2/2017 10:15	1650	3.69	6,338,887	3.99	2.92	24	Cloudburst		23,390,494	1
	9/12/2017 7:45	9/12/2017 8:45	60	0.22	157,150	0.25	0.11	6	Atlas		34,573	1
	9/19/2017 8:30	9/19/2017 11:00	150	0.18	747,339	0.64	0.10	3	Atlas		134,521	1
CSO019 Total											227,122,654	63
CSO020	10/7/2017 21:45	10/8/2017	135	1.76	60,203	0.83	0.66	24	Atlas		105,957	1
	10/8/2017 11:00	10/8/2017 21:15	615	1.76	241,975	1.75	0.66	24	Atlas		425,876	1
	10/10/2017 15:00	10/10/2017 22:00	420	0.57	317,386	2.34	0.30	6	Atlas		180,910	1
	10/27/2017 23:15	10/28/2017 1:30	135	0.83	20,963	1.29	0.38	12	Atlas		17,399	1
	11/3/2017 4:30	11/3/2017 8:15	225	1.34	178,246	2.32	1.26	1	Atlas		238,849	1
	11/6/2017 1:45	11/6/2017 3:15	90	0.65	102,242	2.14	0.49	1	Atlas		66,457	1
	11/15/2017 13:45	11/15/2017 14:30	45	0.29	32,000	0.31	0.19	1	Atlas		9,280	1
	11/18/2017 17:15	11/18/2017 18:30	75	0.33	92,567	0.63	0.19	3	Atlas		30,547	1
	12/5/2017 3:45	12/5/2017 7:15	210	0.54	322,998	0.55	0.27	3	Atlas		174,419	1
	12/22/2017 23:15	12/23/2017 14:30	915	1.21	621,744	1.21	0.47	24	Atlas		752,310	1
	10/23/2017 7:30	10/23/2017 8:45	75	0.41	15,149	0.39	0.21	6	Atlas		6,211	1
	1/12/2018 10:00	1/12/2018 13:15	195	0.29	541,497	0.32	0.11	24	Atlas		157,034	1
	1/27/2018 15:30	1/27/2018 16:45	75	0.32	223,797	0.57	0.17	3	Atlas		71,615	1
	2/16/2018 11:00	2/16/2018 14:45	225	0.7	7,680,147	1.64	0.31	12	Atlas		5,376,103	1
	4/14/2018 9:45	4/14/2018 11:15	90	0.91	29,592	0.28	0.30	24	Atlas		26,929	1
	4/14/2018 23:30	4/15/2018 12:30	780	0.91	372,456	0.95	0.30	24	Atlas		338,935	1
	5/5/2018 14:00	5/5/2018 21:15	435	1.47	4,736,611	1.41	0.62	6	Atlas		6,962,818	1
	6/1/2018 1:00	6/1/2018 5:00	240	1.45	2,333,523	2.11	0.84	3	Atlas		3,383,609	1
	6/7/2018 0:45	6/7/2018 2:45	120	Discharge	0	1.62	#N/A	#N/A	#N/A		579,990	1
	7/23/2017 2:45	7/23/2017 10:30	465	1.11	1,327,734	1.24	0.51	12	Atlas		1,473,785	1
	7/6/2017 13:00	7/6/2017 13:45	45	0.45	300,282	0.79	0.21	6	Atlas		135,127	1
	7/28/2017 10:00	7/28/2017 11:00	60	0.4	224,303	1.5	0.28	1	Atlas		89,721	1
	9/1/2017 9:00	9/2/2017 9:00	1440	2.76	461,831	2.84	0.98	24	Atlas		1,274,653	1

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CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO020	9/19/2017 8:15	9/20/2017 3:15	1140	0.4	2,364,755	0.79	0.25	3	Atlas		945,902	1
	9/20/2017 15:00	9/20/2017 22:30	450	Discharge	0	0.5	#N/A	#N/A	#N/A		110,183	1
	9/21/2017 15:30	9/21/2017 23:45	495	Discharge	0	0.4	#N/A	#N/A	#N/A		13,876	1
CSO020 Total											22,948,495	26
CSO022	10/7/2017 21:30	10/7/2017 22:15	45	1.77	543,787	0.73	0.66	24	Atlas		962,503	1
	10/23/2017 6:15	10/23/2017 7:00	45	0.36	394,939	0.23	0.19	6	Atlas		142,178	1
	11/3/2017 4:30	11/3/2017 5:30	60	1.26	1,219,528	2.31	0.90	1	Atlas		1,536,605	1
	11/6/2017 1:45	11/6/2017 2:15	30	0.74	1,306,981	2.16	0.57	1	Atlas		967,166	1
	12/5/2017 3:45	12/5/2017 4:45	60	0.65	377,577	0.54	0.34	3	Atlas		245,425	1
	12/22/2017 23:45	12/23/2017	15	1.28	24,808	0.39	0.49	24	Atlas		31,754	1
	10/8/2017 11:15	10/8/2017 14:45	210	1.77	248,968	1.7	0.66	24	Atlas		440,674	1
	3/24/2018 12:00	3/24/2018 12:15	15	1.06	48,769	1.54	0.41	24	Atlas		51,695	1
	2/11/2018 10:15	2/11/2018 10:15	0	0.36	2,714	1.11	0.17	3	Atlas		977	1
	3/29/2018 19:15	3/29/2018 19:30	15	0.64	6,500	1.97	0.22	24	Atlas		4,160	1
	2/7/2018 3:00	2/7/2018 4:00	60	0.66	788,929	0.92	0.36	6	Atlas		520,693	1
	2/16/2018 2:45	2/16/2018 7:00	255	0.82	972,409	1.45	0.36	12	Atlas		797,375	1
	2/22/2018 3:15	2/22/2018 8:45	330	1.82	29,413,180	2.89	0.69	24	Atlas		53,531,987	1
	2/23/2018 3:00	2/23/2018 12:15	555	1.58	45,572,421	4.27	0.72	12	Atlas		72,004,425	1
	2/24/2018 18:30	2/26/2018 15:15	2685	1.8	86,000,525	5.21	0.75	12	Atlas		154,800,945	1
	4/3/2018 16:15	4/3/2018 16:45	30	0.39	374,049	2.1	0.21	6	Atlas		145,879	1
	5/5/2018 14:15	5/5/2018 18:45	270	1.55	2,701,821	1.49	0.65	6	Atlas		4,187,823	1
	5/27/2018 4:00	5/27/2018 4:45	45	0.42	3,488,112	0.6	0.35	1	Atlas		1,465,007	1
	6/1/2018 0:15	6/1/2018 3:30	195	1.47	1,913,322	2.5	0.82	3	Atlas		2,812,583	1
	6/10/2018 14:45	6/10/2018 15:00	15	0.53	271,766	0.27	0.24	12	Atlas		144,036	1
	7/23/2017 1:45	7/23/2017 6:45	300	1.16	584,348	0.78	0.53	12	Atlas		677,844	1
	7/28/2017 9:15	7/28/2017 10:15	60	0.45	1,142,984	1.6	0.33	1	Atlas		514,343	1
	8/1/2017 21:15	8/1/2017 21:45	30	0.72	902,797	1.15	0.59	1	Atlas		650,014	1
	8/22/2017 16:00	8/22/2017 16:30	30	0.38	942,379	0.74	0.26	1	Atlas		358,104	1
	9/1/2017 14:30	9/1/2017 17:15	165	2.66	185,071	1.71	0.95	24	Atlas		492,288	1
	9/19/2017 8:00	9/19/2017 9:00	60	0.49	867,392	0.71	0.31	3	Atlas		425,022	1
CSO022 Total											297,911,505	26
CSO023	10/8/2017 10:15	10/8/2017 15:45	330	1.77	5,087,959	1.72	0.66	24	Atlas		9,005,688	1
	11/3/2017 4:45	11/3/2017 9:15	270	1.26	7,611,952	2.31	0.90	1	Atlas		9,591,060	1
	11/6/2017 1:45	11/6/2017 2:00	15	0.74	72,138	2.16	0.57	1	Atlas		53,382	1
	12/5/2017 4:00	12/5/2017 5:45	105	0.65	411,698	0.64	0.34	3	Atlas		267,604	1
	12/22/2017 23:45	12/23/2017 3:00	195	1.28	505,950	0.84	0.49	24	Atlas		647,616	1
	10/23/2017 7:30	10/23/2017 7:30	0	0.36	2,169	0.28	0.19	6	Atlas		781	1
	10/7/2017 23:15	10/7/2017 23:15	0	1.77	663	0.81	0.66	24	Atlas		1,173	1
	10/10/2017 15:30	10/10/2017 21:15	345	0.61	4,057,275	2.39	0.33	3	Atlas		2,474,938	1
	10/27/2017 21:45	10/28/2017 1:30	225	0.89	5,101,004	1.31	0.40	12	Atlas		4,539,894	1
	2/16/2018 6:45	2/16/2018 11:30	285	0.82	1,625,626	1.89	0.36	12	Atlas		1,333,013	1
	2/22/2018 1:00	2/22/2018 11:00	600	1.82	39,687,946	2.89	0.69	24	Atlas		72,232,062	1
	2/23/2018 2:30	2/23/2018 21:45	1155	1.58	66,086,601	4.33	0.72	12	Atlas		104,416,830	1
	2/24/2018 10:15	3/1/2018 18:00	7665	1.8	403,713,687	5.53	0.75	12	Atlas		726,684,637	1
	3/24/2018 9:45	3/24/2018 13:30	225	1.06	4,753,342	1.59	0.41	24	Atlas		5,038,543	1
	4/1/2018 21:30	4/2/2018	150	0.57	6,768,830	1.99	0.31	6	Atlas		3,858,233	1
	4/3/2018 21:15	4/3/2018 21:15	0	0.39	25,808	2.34	0.21	6	Atlas		10,065	1
	5/5/2018 14:15	5/5/2018 20:00	345	1.55	19,243,566	1.49	0.65	6	Atlas		29,827,527	1
	6/1/2018 1:00	6/1/2018 4:15	195	1.47	5,954,067	2.51	0.82	3	Atlas		8,752,479	1
	7/23/2017 3:30	7/23/2017 3:30	0	1.16	2,316	0.53	0.53	12	Atlas		2,687	1
	9/1/2017 12:00	9/2/2017 5:30	1050	2.66	1,778,874	2.76	0.95	24	Atlas		4,731,806	1
	9/28/2017 19:00	9/28/2017 19:30	30	Discharge	0	0	#N/A	#N/A	#N/A		1,792,888	1
	6/25/2018 11:30	6/25/2018 13:30	120	0.87	7,086,937	2.26	0.34	12	Atlas		6,165,635	1
	6/26/2018 13:45	6/26/2018 14:30	45	0.79	84,448	2.62	0.30	24	Atlas		66,714	1
CSO023 Total											991,495,255	23
CSO027	2/24/2018 23:15	2/24/2018 23:45	30	2.1	163,223	5.03	0.86	12	Atlas		342,768	1
	5/5/2018 14:45	5/5/2018 14:45	0	1.69	14	0.95	0.67	12	Atlas		24	1
	5/27/2018 4:15	5/27/2018 4:15	0	0.46	139	0.51	0.37	1	Atlas		64	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO027	8/1/2017 21:30	8/1/2017 21:30	0	0.28	6,182	0.53	0.23	1	Atlas		1,731	1
CSO027 Total											344,587	4
CSO028	10/7/2017 22:00	10/7/2017 22:00	0	1.65	419	0.53	0.62	24	Atlas		691	1
	11/1/2017 9:00	11/1/2017 21:00	720	0.14	21	0.96	0.06	6	Atlas		3	1
	11/3/2017 4:30	11/3/2017 11:30	420	0.99	3,160	1.94	0.77	1	Atlas		3,128	1
	2/23/2018 4:15	3/2/2018 1:15	9900	1.44	24,198,751	6.12	0.66	12	Atlas		34,846,202	1
	5/5/2018 14:45	5/5/2018 14:45	0	1.69	2,789	0.95	0.67	12	Atlas		4,714	1
	5/27/2018 4:15	5/27/2018 4:15	0	0.46	2,652	0.51	0.37	1	Atlas		1,220	1
	6/1/2018 1:15	6/1/2018 1:15	0	1.36	745	1.73	0.65	3	Atlas		1,013	1
	7/23/2017 2:45	7/23/2017 2:45	0	1.14	1,581	0.22	0.52	12	Atlas		1,802	1
	8/17/2017 15:00	8/17/2017 15:00	0	0.49	2	0.22	0.27	6	Atlas		1	1
CSO028 Total											34,858,774	9
CSO029	10/7/2017 22:15	10/7/2017 22:15	0	1.65	6,927	0.53	0.62	24	Atlas		11,430	1
	10/8/2017 13:45	10/8/2017 14:15	30	1.65	14,164	1.53	0.62	24	Atlas		23,370	1
	10/23/2017 6:30	10/23/2017 6:30	0	0.39	1,272	0.22	0.21	6	Atlas		496	1
	11/3/2017 4:30	11/3/2017 5:00	30	0.99	49,204	1.9	0.77	1	Atlas		48,712	1
	11/6/2017 1:45	11/6/2017 2:00	15	0.32	3,009	1.45	0.22	1	Atlas		963	1
	12/5/2017 4:00	12/5/2017 4:00	0	0.65	1,068	0.35	0.33	3	Atlas		694	1
	12/22/2017 23:30	12/22/2017 23:45	15	1.26	11,215	0.39	0.48	24	Atlas		14,131	1
	3/24/2018 12:00	3/24/2018 12:00	0	1.12	5,243	1.61	0.43	24	Atlas		5,872	1
	2/11/2018 10:15	2/11/2018 10:15	0	0.4	12,035	1.02	0.21	3	Atlas		4,814	1
	2/22/2018 3:15	2/22/2018 5:30	135	1.71	57,877	2.82	0.64	24	Atlas		98,970	1
	2/23/2018 3:00	2/23/2018 5:00	120	1.44	47,534	3.21	0.66	12	Atlas		68,449	1
	2/7/2018 3:15	2/7/2018 3:30	15	0.54	6,483	0.77	0.30	6	Atlas		3,501	1
	2/24/2018 7:15	2/25/2018 9:00	1545	2.1	3,918,551	5.48	0.86	12	Atlas		8,228,958	1
	4/3/2018 16:30	4/3/2018 16:30	0	0.48	14,425	2.29	0.26	6	Atlas		6,924	1
	5/27/2018 4:15	5/27/2018 4:15	0	0.46	187,904	0.51	0.37	1	Atlas		86,436	1
	5/5/2018 14:30	5/5/2018 17:30	180	1.69	102,572	1.48	0.67	12	Atlas		173,346	1
	6/1/2018 0:30	6/1/2018 1:15	45	1.36	87,601	1.73	0.65	3	Atlas		119,137	1
	9/19/2017 8:45	9/19/2017 8:45	0	0.38	10,553	0.61	0.25	3	Atlas		4,010	1
	8/1/2017 21:30	8/1/2017 21:30	0	0.28	55,396	0.53	0.23	1	Atlas		15,511	1
	8/22/2017 16:00	8/22/2017 16:30	30	0.61	87,020	1.13	0.38	1	Atlas		53,082	1
	7/7/2017 20:45	7/7/2017 20:45	0	0.24	53,358	1.05	0.16	3	Atlas		12,806	1
	7/23/2017 2:30	7/23/2017 6:45	255	1.14	129,797	0.78	0.52	12	Atlas		147,969	1
	7/28/2017 9:30	7/28/2017 9:45	15	0.26	236,058	1.4	0.19	1	Atlas		61,375	1
	8/17/2017 18:00	8/17/2017 18:00	0	0.49	36,465	0.51	0.27	6	Atlas		17,868	1
	8/29/2017 5:15	8/29/2017 7:15	120	0.03	5,299,367	0.67	0.02	1	Atlas		158,981	1
	8/29/2017 19:15	8/29/2017 19:15	0	0.08	539,725	0.14	0.04	6	Atlas		43,178	1
	9/1/2017 7:30	9/1/2017 15:00	450	2.61	45,782	1.44	0.91	24	Atlas		119,492	1
CSO029 Total											9,530,475	27
CSO031	11/3/2017 5:00	11/3/2017 5:15	15	0.99	207	1.94	0.77	1	Atlas		205	1
	2/24/2018 19:00	2/25/2018	300	2.1	109,629	5.09	0.86	12	Atlas		230,220	1
	7/23/2017 2:45	7/23/2017 11:00	495	1.14	427,746	1.16	0.52	12	Atlas		487,631	1
	8/17/2017 15:00	8/17/2017 15:00	0	0.49	27	0.22	0.27	6	Atlas		13	1
CSO031 Total											718,069	4
CSO034	10/7/2017 21:45	10/7/2017 22:00	15	1.65	5,004	0.53	0.62	24	Atlas		8,257	1
	10/8/2017 13:45	10/8/2017 14:00	15	1.65	11	1.5	0.62	24	Atlas		18	1
	11/3/2017 4:45	11/3/2017 5:15	30	0.99	178,113	1.94	0.77	1	Atlas		176,332	1
	11/6/2017 2:00	11/6/2017 2:00	0	0.32	19,400	1.45	0.22	1	Atlas		6,208	1
	12/5/2017 3:15	12/5/2017 3:45	30	0.65	515	0.3	0.33	3	Atlas		335	1
	12/22/2017 23:30	12/23/2017 3:00	210	1.26	110	0.83	0.48	24	Atlas		139	1
	1/22/2018 19:45	1/22/2018 19:45	0	0.29	7	0.36	0.17	1	Atlas		2	1
	3/24/2018 12:00	3/24/2018 12:15	15	1.12	4	1.61	0.43	24	Atlas		5	1
	2/11/2018 10:15	2/11/2018 10:15	0	0.4	35	1.02	0.21	3	Atlas		14	1
	2/16/2018 2:45	2/16/2018 3:00	15	0.85	67	1.3	0.39	12	Atlas		57	1
	2/22/2018 3:15	2/22/2018 5:15	120	1.71	2,981	2.8	0.64	24	Atlas		5,097	1
	2/23/2018 3:00	2/23/2018 5:00	120	1.44	115	3.21	0.66	12	Atlas		166	1
	2/7/2018 3:15	2/7/2018 3:15	0	0.54	20	0.76	0.30	6	Atlas		11	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO034	2/21/2018 7:15	2/21/2018 7:15	0	1.71	12	1.58	0.64	24	Atlas		20	1
	2/24/2018 4:00	2/26/2018 3:45	2865	2.1	2,688,538	5.48	0.86	12	Atlas		5,645,930	1
	3/29/2018 19:00	3/29/2018 19:30	30	1.13	102	2.06	0.30	48	Atlas		115	1
	4/3/2018 16:30	4/3/2018 19:15	165	0.48	19	2.32	0.26	6	Atlas		9	1
	4/1/2018 20:15	4/1/2018 23:00	165	0.61	7	2.04	0.33	6	Atlas		4	1
	4/14/2018 9:30	4/14/2018 9:45	15	0.88	51	0.22	0.29	24	Atlas		45	1
	5/5/2018 14:15	5/5/2018 14:45	30	1.69	3,356	0.95	0.67	12	Atlas		5,671	1
	5/27/2018 4:00	5/27/2018 4:15	15	0.46	7,915	0.51	0.37	1	Atlas		3,641	1
	5/17/2018 15:45	5/17/2018 15:45	0	0.52	35	0.52	0.43	1	Atlas		18	1
	6/1/2018 0:30	6/1/2018 1:15	45	1.36	15,963	1.73	0.65	3	Atlas		21,710	1
	7/23/2017 2:45	7/23/2017 2:45	0	1.14	4,282	0.22	0.52	12	Atlas		4,882	1
	8/1/2017 21:30	8/1/2017 21:30	0	0.28	4	0.53	0.23	1	Atlas		1	1
	8/22/2017 16:00	8/22/2017 16:00	0	0.61	36,634	1.01	0.38	1	Atlas		22,347	1
	9/19/2017 8:00	9/19/2017 8:00	0	0.38	4,584	0.49	0.25	3	Atlas		1,742	1
	8/17/2017 15:00	8/17/2017 15:00	0	0.49	33,982	0.22	0.27	6	Atlas		16,651	1
	7/28/2017 9:30	7/28/2017 9:30	0	0.26	92	1.39	0.19	1	Atlas		24	1
CSO034 Total											5,919,451	29
CSO035	10/7/2017 21:45	10/7/2017 22:15	30	1.64	308,138	0.53	0.62	24	Atlas		505,346	1
	10/8/2017 14:00	10/8/2017 14:15	15	1.64	92,514	1.52	0.62	24	Atlas		151,723	1
	10/23/2017 6:30	10/23/2017 6:30	0	0.38	300,658	0.19	0.20	6	Atlas		114,250	1
	11/3/2017 4:45	11/3/2017 5:15	30	0.89	788,518	1.74	0.69	1	Atlas		701,781	1
	11/6/2017 1:45	11/6/2017 2:00	15	0.28	801,539	1.29	0.17	1	Atlas		224,431	1
	12/5/2017 3:45	12/5/2017 4:00	15	0.67	464,761	0.37	0.36	3	Atlas		311,390	1
	12/22/2017 23:45	12/22/2017 23:45	0	1.23	6,872	0.36	0.47	24	Atlas		8,453	1
	1/22/2018 19:45	1/22/2018 19:45	0	0.31	282,287	0.39	0.18	1	Atlas		87,509	1
	2/11/2018 10:15	2/11/2018 10:15	0	0.41	313,049	1.1	0.22	3	Atlas		128,350	1
	2/24/2018 10:30	2/25/2018 11:30	1500	1.94	4,625,875	5.2	0.78	12	Atlas		8,974,197	1
	2/22/2018 4:30	2/22/2018 5:30	60	1.69	396,128	2.68	0.63	24	Atlas		669,457	1
	2/23/2018 3:15	2/23/2018 6:15	180	1.35	273,249	3.31	0.62	12	Atlas		368,886	1
	3/24/2018 12:15	3/24/2018 12:15	0	1.01	17,983	1.55	0.39	24	Atlas		18,163	1
	4/3/2018 16:30	4/3/2018 16:30	0	0.4	534,408	2.16	0.22	6	Atlas		213,763	1
	5/27/2018 4:15	5/27/2018 4:30	15	0.34	955,426	0.4	0.27	1	Atlas		324,845	1
	5/5/2018 14:30	5/5/2018 15:30	60	1.51	320,843	1.08	0.58	12	Atlas		484,473	1
	6/10/2018 15:00	6/10/2018 15:00	0	0.44	83,686	0.21	0.20	12	Atlas		36,822	1
	6/1/2018 1:15	6/1/2018 1:30	15	1.37	254,739	1.61	0.69	3	Atlas		348,993	1
	6/11/2018 13:15	6/11/2018 13:30	15	0.33	367,594	0.73	0.20	3	Atlas		121,306	1
	6/21/2018 9:45	6/21/2018 9:45	0	0.18	24,394	0.26	0.09	1	Atlas		4,391	1
	6/22/2018 14:15	6/22/2018 14:45	30	0.26	598,069	0.56	0.12	1	Atlas		155,498	1
	6/25/2018 10:45	6/25/2018 10:45	0	0.87	228,538	1.33	0.35	12	Atlas		198,828	1
	6/26/2018 13:00	6/26/2018 13:00	0	0.59	357,797	1.73	0.24	12	Atlas		211,100	1
	7/23/2017 2:45	7/23/2017 3:30	45	1.18	352,140	0.34	0.54	12	Atlas		415,525	1
	8/1/2017 21:30	8/1/2017 21:30	0	0.22	898,500	0.53	0.18	1	Atlas		197,670	1
	8/22/2017 16:00	8/22/2017 16:45	45	0.62	494,508	1.3	0.37	1	Atlas		306,595	1
	9/19/2017 8:00	9/19/2017 8:45	45	0.39	1,071,387	0.64	0.25	3	Atlas		417,841	1
	8/17/2017 15:00	8/17/2017 18:00	180	0.66	394,017	0.67	0.36	6	Atlas		260,051	1
	7/7/2017 20:45	7/7/2017 20:45	0	0.23	192,309	1.09	0.15	3	Atlas		44,231	1
	7/28/2017 9:30	7/28/2017 9:45	15	0.31	401,168	1.49	0.23	1	Atlas		124,362	1
	9/1/2017 14:45	9/1/2017 15:00	15	2.84	5,821	1.57	1.02	24	Cloudburst		16,533	1
CSO035 Total											16,146,763	31
CSO036	10/7/2017 21:45	10/7/2017 23:00	75	1.64	180,360	0.65	0.62	24	Atlas		295,791	1
	10/8/2017 10:15	10/8/2017 15:00	285	1.64	62,595	1.56	0.62	24	Atlas		102,655	1
	10/10/2017 14:15	10/10/2017 21:00	405	0.63	14,059	2.28	0.35	3	Atlas		8,857	1
	10/23/2017 6:30	10/23/2017 7:15	45	0.38	103,292	0.26	0.20	6	Atlas		39,251	1
	10/27/2017 17:15	10/27/2017 18:00	45	0.74	11,799	0.61	0.34	12	Atlas		8,731	1
	11/3/2017 4:30	11/3/2017 5:30	60	0.89	457,266	1.76	0.69	1	Atlas		406,967	1
	11/6/2017 1:45	11/6/2017 2:15	30	0.28	569,700	1.3	0.17	1	Atlas		159,516	1
	11/15/2017 13:15	11/15/2017 13:45	30	0.26	25,562	0.28	0.17	3	Atlas		6,646	1
	11/18/2017 16:45	11/18/2017 17:30	45	0.34	13,324	0.6	0.19	3	Atlas		4,530	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO036	12/5/2017 3:30	12/5/2017 5:00	90	0.67	229,301	0.57	0.36	3	Atlas		153,632	1
	12/22/2017 23:30	12/23/2017 5:15	345	1.23	39,289	0.96	0.47	24	Atlas		48,325	1
	1/11/2018 10:30	1/11/2018 10:30	0	0.06	2,950	0.18	0.04	3	Atlas		177	1
	1/22/2018 19:45	1/22/2018 19:45	0	0.31	106,384	0.39	0.18	1	Atlas		32,979	1
	3/24/2018 9:00	3/24/2018 12:30	210	1.01	17,885	1.56	0.39	24	Atlas		18,064	1
	2/24/2018 10:30	2/25/2018 10:15	1425	1.94	511,919	5.2	0.78	12	Atlas		993,122	1
	2/16/2018 2:45	2/16/2018 7:00	255	0.8	18,349	1.46	0.34	12	Atlas		14,679	1
	2/23/2018 3:00	2/23/2018 9:30	390	1.35	151,328	3.59	0.62	12	Atlas		204,293	1
	2/21/2018 7:15	2/21/2018 7:15	0	1.69	1,480	1.44	0.63	24	Atlas		2,501	1
	3/29/2018 19:00	3/29/2018 19:45	45	0.63	21,719	1.93	0.22	24	Atlas		13,683	1
	2/7/2018 1:15	2/7/2018 3:45	150	0.61	41,349	0.83	0.33	6	Atlas		25,223	1
	2/11/2018 4:15	2/11/2018 10:30	375	0.41	151,068	1.16	0.22	3	Atlas		61,938	1
	2/14/2018 7:30	2/14/2018 7:30	0	0.44	6,755	0.72	0.19	12	Atlas		2,972	1
	2/22/2018 1:45	2/22/2018 5:45	240	1.69	210,461	2.7	0.63	24	Atlas		355,679	1
	3/10/2018 1:15	3/10/2018 2:00	45	0.59	5,208	0.49	0.37	3	Atlas		3,073	1
	3/19/2018 19:45	3/19/2018 19:45	0	0.29	4,259	0.31	0.17	3	Atlas		1,235	1
	3/28/2018 5:45	3/28/2018 5:45	0	0.47	3,391	1.39	0.21	6	Atlas		1,594	1
	4/3/2018 16:30	4/3/2018 21:30	300	0.4	322,820	2.35	0.22	6	Atlas		129,128	1
	4/1/2018 20:00	4/1/2018 23:15	195	0.57	28,872	1.95	0.31	6	Atlas		16,457	1
	4/14/2018 9:15	4/14/2018 10:00	45	0.97	13,298	0.27	0.31	48	Atlas		12,899	1
	4/15/2018 5:45	4/15/2018 9:00	195	0.97	14,018	0.95	0.31	48	Atlas		13,597	1
	4/23/2018 5:15	4/23/2018 7:00	105	0.6	2,907	0.61	0.28	12	Atlas		1,744	1
	5/31/2018 14:15	5/31/2018 14:15	0	1.37	206	0.67	0.69	3	Atlas		282	1
	5/5/2018 14:15	5/5/2018 18:30	255	1.51	207,860	1.38	0.58	12	Atlas		313,869	1
	5/27/2018 4:15	5/27/2018 4:45	30	0.34	688,203	0.4	0.27	1	Atlas		233,989	1
	5/17/2018 15:45	5/17/2018 15:45	0	0.3	16,470	0.3	0.25	1	Atlas		4,941	1
	5/22/2018 6:30	5/22/2018 6:30	0	0.05	16,940	0.41	0.03	3	Atlas		847	1
	6/1/2018 0:15	6/1/2018 2:45	150	1.37	138,188	1.84	0.69	3	Atlas		189,318	1
	6/10/2018 15:00	6/10/2018 19:00	240	0.44	98,020	0.31	0.20	12	Atlas		43,129	1
	6/21/2018 9:45	6/21/2018 17:30	465	0.18	133,167	0.38	0.09	1	Atlas		23,970	1
	6/22/2018 14:15	6/22/2018 14:45	30	0.26	357,335	0.56	0.12	1	Atlas		92,907	1
	6/25/2018 10:45	6/25/2018 11:45	60	0.87	150,092	1.48	0.35	12	Atlas		130,580	1
	6/26/2018 13:00	6/26/2018 13:15	15	0.59	235,963	1.74	0.24	12	Atlas		139,218	1
	6/11/2018 11:30	6/11/2018 13:45	135	0.33	245,658	0.74	0.20	3	Atlas		81,067	1
	6/12/2018 12:00	6/12/2018 12:15	15	0.36	10,586	1.02	0.17	1	Atlas		3,811	1
	7/6/2017 12:30	7/6/2017 13:00	30	0.46	11,354	1.17	0.21	3	Atlas		5,223	1
	7/23/2017 1:45	7/23/2017 7:00	315	1.18	195,929	0.81	0.54	12	Atlas		231,196	1
	8/1/2017 21:30	8/1/2017 21:45	15	0.22	446,736	0.53	0.18	1	Atlas		98,282	1
	8/6/2017 14:45	8/7/2017	555	0.57	25,247	0.79	0.25	12	Atlas		14,391	1
	9/19/2017 8:00	9/19/2017 9:15	75	0.39	606,264	0.68	0.25	3	Atlas		236,443	1
	8/17/2017 15:00	8/17/2017 18:00	180	0.66	295,050	0.67	0.36	6	Atlas		194,733	1
	7/7/2017 20:45	7/7/2017 21:00	15	0.23	99,174	1.11	0.15	3	Atlas		22,810	1
	8/22/2017 12:45	8/22/2017 16:45	240	0.62	173,371	1.3	0.37	1	Atlas		107,490	1
	8/29/2017 19:30	8/29/2017 19:30	0	0.08	1,438	0.14	0.04	6	Atlas		115	1
	9/1/2017 10:15	9/2/2017 4:45	1110	2.84	40,012	2.9	1.02	24	Cloudburst		113,633	1
CSO036 Total											5,422,182	54
CSO038	11/3/2017 5:00	11/3/2017 5:00	0	0.99	22	1.9	0.77	1	Atlas		22	1
	2/24/2018 19:00	2/24/2018 23:30	270	2.1	27,508	5	0.86	12	Atlas		57,767	1
	2/7/2018 2:15	2/7/2018 3:00	45	0.54	6	0.71	0.30	6	Atlas		3	1
	2/14/2018 6:15	2/14/2018 6:15	0	0.44	0	0.57	0.20	12	Atlas		0	1
	2/21/2018 18:00	2/21/2018 18:00	0	1.71	0	1.51	0.64	24	Atlas		0	1
	5/5/2018 14:45	5/5/2018 14:45	0	1.69	99	0.95	0.67	12	Atlas		167	1
	5/27/2018 4:15	5/27/2018 4:15	0	0.46	39	0.51	0.37	1	Atlas		18	1
	6/1/2018 1:15	6/1/2018 1:15	0	1.36	63	1.73	0.65	3	Atlas		85	1
	8/1/2017 21:30	8/1/2017 21:30	0	0.28	32	0.53	0.23	1	Atlas		9	1
	8/22/2017 16:00	8/22/2017 16:00	0	0.61	0	1.01	0.38	1	Atlas		0	1
CSO038 Total											58,071	10
CSO050	10/7/2017 21:30	10/7/2017 23:30	120	2.05	367,850	0.9	0.76	24	Atlas		754,093	1

Discharge indicates no correlated rain event.

Standard refers to Rainfall Frequency Atlas of the United States or Hydmet Louisville Cloudburst.

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO050	10/8/2017 10:00	10/8/2017 23:00	780	2.05	584,019	2.06	0.76	24	Atlas		1,197,239	1
	10/10/2017 13:45	10/10/2017 21:45	480	0.66	1,395,462	2.72	0.36	3	Atlas		921,005	1
	10/23/2017 6:15	10/23/2017 9:00	165	0.4	860,560	0.38	0.21	6	Atlas		344,224	1
	10/27/2017 17:00	10/28/2017 3:00	600	1.06	1,342,078	1.58	0.48	12	Atlas		1,422,603	1
	11/3/2017 4:30	11/3/2017 9:45	315	1.02	1,001,051	2.24	0.78	1	Atlas		1,021,072	1
	11/6/2017 1:30	11/6/2017 4:15	165	0.82	710,948	2	0.63	1	Atlas		582,977	1
	11/7/2017 2:15	11/7/2017 6:30	255	0.25	116,104	2.25	0.11	12	Atlas		29,026	1
	11/15/2017 13:00	11/15/2017 14:00	60	0.36	518,719	0.39	0.25	1	Atlas		186,739	1
	11/18/2017 16:30	11/18/2017 17:45	75	0.46	697,111	0.83	0.26	3	Atlas		320,671	1
	12/4/2017 21:30	12/5/2017 6:30	540	0.65	1,037,075	0.66	0.35	3	Atlas		674,099	1
	12/22/2017 18:15	12/23/2017 12:30	1095	1.59	1,001,844	1.59	0.61	24	Atlas		1,592,932	1
	1/11/2018 9:00	1/11/2018 10:45	105	0.06	888,000	0.21	0.04	3	Atlas		53,280	1
	1/12/2018 2:30	1/12/2018 12:45	615	0.37	640,505	0.41	0.14	24	Atlas		236,987	1
	1/22/2018 12:00	1/22/2018 20:00	480	0.29	503,024	0.42	0.13	12	Atlas		145,877	1
	1/27/2018 13:45	1/27/2018 16:15	150	0.41	130,451	0.7	0.24	3	Atlas		53,485	1
	2/14/2018 6:15	2/14/2018 15:15	540	0.63	412,841	1.16	0.29	3	Atlas		260,090	1
	2/7/2018 1:00	2/7/2018 4:45	225	0.7	657,973	1.05	0.38	6	Atlas		460,581	1
	2/11/2018 4:00	2/11/2018 12:00	480	0.42	499,519	1.29	0.23	3	Atlas		209,798	1
	2/16/2018 2:30	2/16/2018 13:30	660	1.05	1,051,088	2.27	0.48	12	Atlas		1,103,642	1
	2/17/2018 12:45	2/17/2018 13:45	60	0.29	65,417	2.45	0.18	3	Atlas		18,971	1
	2/21/2018 5:15	2/21/2018 10:00	285	2.17	7,979	2.48	0.75	24	Atlas		17,314	1
	2/21/2018 18:45	2/22/2018 12:15	1050	2.17	1,612,907	3.56	0.75	24	Atlas		3,500,009	1
	2/23/2018 1:30	2/23/2018 22:15	1245	2.06	1,758,291	5.57	0.94	12	Atlas		3,622,079	1
	2/24/2018 10:00	2/26/2018 5:00	2580	2.26	3,182,380	6.78	0.93	12	Atlas		7,192,178	1
	3/19/2018 17:15	3/19/2018 20:00	165	0.35	314,271	0.38	0.19	3	Atlas		109,995	1
	3/20/2018 21:15	3/20/2018 21:15	0	0.56	1,845	0.63	0.22	24	Atlas		1,033	1
	3/24/2018 4:15	3/24/2018 21:15	1020	1.16	1,709,789	2.07	0.45	24	Atlas		1,983,355	1
	3/28/2018 5:15	3/28/2018 10:30	315	1.2	83,175	1.84	0.31	48	Atlas		99,810	1
	3/29/2018 17:00	3/29/2018 23:15	375	1.2	406,248	2.24	0.31	48	Atlas		487,498	1
	4/1/2018 18:30	4/1/2018 23:45	315	0.71	1,361,806	2.23	0.39	6	Atlas		966,882	1
	4/3/2018 20:00	4/3/2018 21:15	75	0.39	362,223	2.55	0.21	6	Atlas		141,267	1
	4/14/2018 8:00	4/14/2018 9:00	60	0.95	101,021	0.17	0.31	48	Atlas		95,970	1
	4/14/2018 22:00	4/15/2018 9:00	660	0.95	469,955	0.93	0.31	48	Atlas		446,457	1
	4/23/2018 4:00	4/23/2018 10:30	390	0.57	245,802	0.68	0.27	3	Atlas		140,107	1
	5/5/2018 11:00	5/5/2018 19:30	510	2.03	965,315	1.93	0.89	6	Atlas		1,959,590	1
	7/18/2017 7:45	7/18/2017 8:00	15	0.06	750,817	0.06	0.05	1	Atlas		45,049	1
	7/23/2017 1:45	7/23/2017 11:00	555	1.33	892,867	1.38	0.61	12	Atlas		1,187,513	1
	8/1/2017 21:15	8/1/2017 22:30	75	0.87	836,963	1.22	0.72	1	Atlas		728,158	1
	9/19/2017 8:00	9/19/2017 10:15	135	0.39	932,351	0.73	0.25	3	Atlas		363,617	1
	8/17/2017 15:00	8/17/2017 18:30	210	0.42	286,636	0.46	0.23	6	Atlas		120,387	1
	7/4/2017 7:45	7/4/2017 8:00	15	0.23	51,878	0.88	0.11	3	Atlas		11,932	1
	7/5/2017 14:15	7/5/2017 14:30	15	Discharge	0	0.93	#N/A	#N/A	#N/A		40,994	1
	7/6/2017 12:15	7/6/2017 13:15	60	0.46	480,217	1.3	0.23	3	Atlas		220,900	1
	7/7/2017 20:30	7/7/2017 21:45	75	0.22	876,109	1.6	0.17	1	Atlas		192,744	1
	7/28/2017 9:00	7/28/2017 10:15	75	0.34	1,081,015	1.68	0.27	1	Atlas		367,545	1
	8/6/2017 14:30	8/7/2017 1:45	675	0.73	259,555	1.63	0.32	12	Atlas		189,475	1
	8/22/2017 12:15	8/22/2017 17:30	315	0.37	1,311,273	0.82	0.27	1	Atlas		485,171	1
	9/1/2017 5:30	9/2/2017 9:15	1665	2.8	1,960,976	2.94	0.97	24	Atlas		5,490,733	1
	9/12/2017 6:15	9/12/2017 8:00	105	0.2	193,005	0.21	0.10	6	Atlas		38,601	1
	9/12/2017 20:15	9/12/2017 21:15	60	0.34	54,029	0.27	0.12	24	Atlas		18,370	1
	9/13/2017 12:30	9/13/2017 12:30	0	0.34	968	0.39	0.12	24	Atlas		329	1
CSO050 Total											41,854,453	52
CSO051	10/7/2017 21:30	10/7/2017 21:45	15	2.05	9,718	0.65	0.76	24	Atlas		19,921	1
	10/8/2017 10:00	10/8/2017 15:30	330	2.05	20,255	1.98	0.76	24	Atlas		41,523	1
	10/10/2017 16:15	10/10/2017 21:00	285	0.66	5,009	2.72	0.36	3	Atlas		3,306	1
	10/23/2017 6:15	10/23/2017 6:15	0	0.4	15,485	0.2	0.21	6	Atlas		6,194	1
	10/28/2017	10/28/2017 0:45	45	1.06	1,335	1.54	0.48	12	Atlas		1,415	1
	11/3/2017 4:30	11/3/2017 6:30	120	1.02	44,986	2.24	0.78	1	Atlas		45,886	1

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CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO051	11/6/2017 1:30	11/6/2017 1:45	15	0.82	24,655	1.99	0.63	1	Atlas		20,217	1
	11/18/2017 16:30	11/18/2017 17:15	45	0.46	20,248	0.82	0.26	3	Atlas		9,314	1
	12/5/2017 3:15	12/5/2017 3:45	30	0.65	140	0.3	0.35	3	Atlas		91	1
	12/23/2017 3:00	12/23/2017 3:00	0	1.59	177	1.05	0.61	24	Atlas		282	1
	1/22/2018 19:30	1/22/2018 19:30	0	0.29	14,869	0.38	0.13	12	Atlas		4,312	1
	3/29/2018 19:15	3/29/2018 19:15	0	1.2	101	2.14	0.31	48	Atlas		121	1
	2/23/2018 3:00	2/23/2018 13:30	630	2.06	84,136	5.24	0.94	12	Atlas		173,321	1
	2/7/2018 3:15	2/7/2018 3:15	0	0.7	593	0.98	0.38	6	Atlas		415	1
	2/16/2018 2:30	2/16/2018 2:30	0	1.05	183	1.48	0.48	12	Atlas		192	1
	2/11/2018 10:00	2/11/2018 10:00	0	0.42	6,612	1.19	0.23	3	Atlas		2,777	1
	2/14/2018 7:15	2/14/2018 7:15	0	0.63	400	0.88	0.29	3	Atlas		252	1
	2/22/2018 1:30	2/22/2018 10:00	510	2.17	85,119	3.55	0.75	24	Atlas		184,708	1
	2/24/2018 18:00	2/26/2018 12:45	2565	2.26	390,661	6.49	0.93	12	Atlas		882,894	1
	3/24/2018 10:30	3/24/2018 13:30	180	1.16	13,352	1.8	0.45	24	Atlas		15,488	1
	4/1/2018 21:45	4/2/2018	135	0.71	23,207	2.23	0.39	6	Atlas		16,477	1
	4/15/2018 5:30	4/15/2018 5:30	0	0.95	1,118	0.7	0.31	48	Atlas		1,062	1
	5/22/2018 7:45	5/22/2018 7:45	0	0.27	33,374	0.45	0.21	1	Atlas		9,011	1
	5/27/2018 4:00	5/27/2018 4:15	15	1.23	8,695	0.99	0.60	1	Atlas		10,695	1
	5/5/2018 12:15	5/5/2018 19:30	435	2.03	51,765	1.93	0.89	6	Atlas		105,082	1
	5/27/2018 13:30	5/27/2018 13:30	0	1.23	467	1.44	0.60	1	Atlas		575	1
	6/1/2018	6/1/2018 4:00	240	1.6	24,554	3.02	0.75	6	Atlas		39,286	1
	6/10/2018 14:45	6/10/2018 14:45	0	0.66	5,253	0.31	0.29	12	Atlas		3,467	1
	6/22/2018 14:15	6/22/2018 14:15	0	0.72	128	1.82	0.36	6	Atlas		92	1
	6/11/2018 13:00	6/11/2018 13:15	15	0.22	52,595	0.84	0.14	1	Atlas		11,571	1
	6/20/2018 12:15	6/20/2018 15:00	165	0.87	191	0.88	0.57	3	Atlas		166	1
	6/21/2018 16:30	6/21/2018 16:30	0	0.48	296	1.17	0.22	12	Atlas		142	1
	6/25/2018 10:15	6/25/2018 12:45	150	0.84	470	2.92	0.33	12	Atlas		395	1
	6/26/2018 12:30	6/26/2018 12:30	0	0.75	457	3.09	0.30	12	Atlas		343	1
	6/26/2018 21:15	6/26/2018 21:15	0	0.75	8	3.38	0.30	12	Atlas		6	1
	7/23/2017 3:00	7/23/2017 6:30	210	1.33	10,692	0.96	0.61	12	Atlas		14,220	1
	9/19/2017 8:15	9/19/2017 8:15	0	0.39	15	0.56	0.25	3	Atlas		6	1
	8/1/2017 21:15	8/1/2017 21:30	15	0.87	30,145	1.08	0.72	1	Atlas		26,226	1
	9/1/2017 10:15	9/2/2017 5:45	1170	2.8	95,723	2.91	0.97	24	Atlas		268,023	1
	7/7/2017 20:30	7/7/2017 20:30	0	0.22	6,405	1.42	0.17	1	Atlas		1,409	1
	7/28/2017 9:00	7/28/2017 9:45	45	0.34	20,238	1.68	0.27	1	Atlas		6,881	1
	8/6/2017 14:30	8/6/2017 14:30	0	0.73	2,741	1.09	0.32	12	Atlas		2,001	1
	8/22/2017 15:45	8/22/2017 16:00	15	0.37	42,273	0.79	0.27	1	Atlas		15,641	1
CSO051 Total											1,945,406	43
CSO052	10/7/2017 21:15	10/7/2017 23:00	105	1.91	23,904	0.86	0.71	24	Atlas		45,656	1
	10/8/2017 10:00	10/8/2017 15:30	330	1.91	48,199	1.85	0.71	24	Atlas		92,060	1
	10/10/2017 15:45	10/10/2017 21:15	330	0.65	164,338	2.57	0.35	3	Atlas		106,820	1
	10/23/2017 6:00	10/23/2017 6:00	0	0.38	19,258	0.15	0.20	6	Atlas		7,318	1
	10/27/2017 19:45	10/28/2017 1:45	360	0.92	103,824	1.4	0.42	12	Atlas		95,518	1
	11/3/2017 4:15	11/3/2017 9:00	285	1	68,721	2.09	0.73	1	Atlas		68,721	1
	11/6/2017 1:15	11/6/2017 1:45	30	0.91	24,351	2.07	0.70	1	Atlas		22,159	1
	11/18/2017 17:00	11/18/2017 17:00	0	0.63	2,710	0.66	0.40	1	Atlas		1,707	1
	12/5/2017 3:30	12/5/2017 5:45	135	0.6	38,057	0.59	0.31	3	Atlas		22,834	1
	12/22/2017 23:30	12/23/2017 5:15	345	1.36	52,057	1.08	0.52	24	Atlas		70,798	1
	1/22/2018 19:15	1/22/2018 19:15	0	0.27	304	0.27	0.12	12	Atlas		82	1
	2/23/2018 2:30	2/23/2018 20:15	1065	1.84	183,382	4.79	0.84	12	Atlas		337,422	1
	2/24/2018 10:15	3/1/2018 16:45	7590	2.13	440,742	6.21	0.90	12	Atlas		938,780	1
	3/29/2018 19:00	3/29/2018 22:45	225	0.67	7,201	2.15	0.22	24	Atlas		4,825	1
	2/7/2018 3:45	2/7/2018 3:45	0	0.6	1,942	0.86	0.33	6	Atlas		1,165	1
	2/11/2018 11:15	2/11/2018 11:15	0	0.41	1,522	1.13	0.22	3	Atlas		624	1
	2/16/2018 2:15	2/16/2018 12:00	585	0.98	102,515	2.12	0.44	12	Atlas		100,465	1
	2/21/2018 21:45	2/22/2018 11:30	825	1.89	121,240	3.15	0.71	24	Atlas		229,144	1
	3/10/2018 2:45	3/10/2018 2:45	0	0.59	751	0.6	0.37	3	Atlas		443	1
	3/24/2018 9:30	3/24/2018 19:15	585	1.13	40,139	1.92	0.43	24	Atlas		45,357	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO052	4/3/2018 16:15	4/3/2018 21:45	330	0.39	63,785	2.48	0.21	6	Atlas		24,876	1
	4/1/2018 21:15	4/2/2018 0:15	180	0.62	146,777	2.07	0.34	6	Atlas		91,002	1
	4/15/2018 5:15	4/15/2018 9:30	255	0.89	5,624	0.91	0.29	24	Atlas		5,005	1
	5/27/2018 3:30	5/27/2018 4:15	45	0.93	49,285	0.85	0.50	1	Atlas		45,835	1
	5/5/2018 14:15	5/5/2018 20:00	345	1.66	81,100	1.57	0.70	6	Atlas		134,626	1
	5/10/2018 2:15	5/10/2018 2:15	0	0.08	34,663	1.75	0.06	1	Atlas		2,773	1
	5/22/2018 7:30	5/22/2018 7:30	0	0.25	12,536	0.36	0.20	1	Atlas		3,134	1
	5/27/2018 13:15	5/27/2018 13:15	0	0.93	1,835	1.13	0.50	1	Atlas		1,707	1
	5/31/2018 23:45	6/1/2018 4:30	285	1.72	100,277	2.83	0.87	3	Atlas		172,477	1
	6/10/2018 14:30	6/10/2018 14:45	15	0.94	16,784	0.24	0.35	24	Atlas		15,777	1
	6/11/2018 12:45	6/11/2018 14:15	90	0.94	8,868	0.92	0.35	24	Atlas		8,336	1
	9/1/2017 9:15	9/2/2017 6:45	1290	2.71	257,720	2.82	0.95	24	Atlas		698,421	1
	7/7/2017 20:15	7/7/2017 20:15	0	0.19	2,332	1.04	0.15	1	Atlas		443	1
	7/23/2017 1:15	7/23/2017 10:30	555	Discharge	0	1.22	#N/A	#N/A	#N/A		123,754	1
	7/28/2017 8:45	7/28/2017 9:30	45	0.5	59,874	1.62	0.38	1	Atlas		29,937	1
	8/1/2017 21:00	8/1/2017 21:30	30	0.63	104,946	1.06	0.50	1	Atlas		66,116	1
	8/22/2017 15:30	8/22/2017 17:00	90	0.35	59,329	0.77	0.24	1	Atlas		20,765	1
	9/19/2017 7:45	9/19/2017 8:00	15	0.54	21,224	0.71	0.35	3	Atlas		11,461	1
CSO052 Total											3,648,343	38
CSO053	10/7/2017 22:00	10/7/2017 22:15	15	1.91	5,266	0.76	0.71	24	Atlas		10,059	1
	10/8/2017 13:00	10/8/2017 14:00	60	1.91	3,143	1.76	0.71	24	Atlas		6,004	1
	10/23/2017 6:15	10/23/2017 6:30	15	0.38	11,474	0.22	0.20	6	Atlas		4,360	1
	11/3/2017 5:00	11/3/2017 5:00	0	1	374	2.04	0.73	1	Atlas		374	1
	11/6/2017 1:45	11/6/2017 1:45	0	0.91	262	2.07	0.70	1	Atlas		238	1
	11/18/2017 17:30	11/18/2017 17:30	0	0.63	157	0.98	0.40	1	Atlas		99	1
	12/5/2017 3:45	12/5/2017 3:45	0	0.6	92	0.28	0.31	3	Atlas		55	1
	2/22/2018 3:15	2/22/2018 5:15	120	1.89	394	3.08	0.71	24	Atlas		745	1
	2/23/2018 4:15	2/23/2018 4:15	0	1.84	240	3.6	0.84	12	Atlas		441	1
	2/24/2018 19:00	2/24/2018 23:15	255	2.13	19,828	5.58	0.90	12	Atlas		42,234	1
	5/27/2018 4:00	5/27/2018 4:30	30	0.93	17,031	0.85	0.50	1	Atlas		15,839	1
	5/5/2018 14:45	5/5/2018 17:15	150	1.66	18,875	1.45	0.70	6	Atlas		31,333	1
	5/10/2018 2:30	5/10/2018 2:30	0	0.08	1,665,725	1.78	0.06	1	Atlas		133,258	1
	5/22/2018 8:00	5/22/2018 8:00	0	0.25	924	0.45	0.20	1	Atlas		231	1
	5/31/2018 14:00	5/31/2018 14:00	0	1.72	4,641	1.2	0.87	3	Atlas		7,983	1
	6/1/2018 0:15	6/1/2018 1:15	60	1.72	15,338	2.37	0.87	3	Atlas		26,382	1
	6/21/2018 17:00	6/21/2018 17:00	0	0.39	108,551	1.08	0.23	1	Atlas		42,335	1
	6/22/2018 19:00	6/22/2018 19:00	0	0.41	6,802	1.52	0.20	6	Atlas		2,789	1
	6/25/2018 10:30	6/25/2018 10:30	0	0.82	76,194	2.12	0.32	12	Atlas		62,479	1
	6/26/2018 12:45	6/26/2018 13:00	15	0.82	49,199	2.69	0.33	12	Atlas		40,343	1
	8/1/2017 21:30	8/1/2017 21:30	0	0.63	131,090	1.06	0.50	1	Atlas		82,587	1
	8/22/2017 16:00	8/22/2017 16:00	0	0.35	19,466	0.74	0.24	1	Atlas		6,813	1
	9/19/2017 8:00	9/19/2017 8:15	15	0.54	63,681	0.73	0.35	3	Atlas		34,388	1
CSO053 Total											551,369	23
CSO054	10/10/2017 16:00	10/10/2017 21:00	300	0.65	42,397	2.57	0.35	3	Atlas		27,558	1
	10/27/2017 23:30	10/28/2017 1:00	90	0.92	29,121	1.39	0.42	12	Atlas		26,791	1
	11/3/2017 4:30	11/3/2017 6:30	120	1	86,065	2.09	0.73	1	Atlas		86,065	1
	11/6/2017 1:30	11/6/2017 1:45	15	0.91	26,679	2.07	0.70	1	Atlas		24,278	1
	12/5/2017 3:30	12/5/2017 3:30	0	0.6	755	0.22	0.31	3	Atlas		453	1
	12/23/2017	12/23/2017 3:00	180	1.36	9,718	0.88	0.52	24	Atlas		13,217	1
	2/24/2018 10:30	2/26/2018 16:45	3255	2.13	1,524,022	6.12	0.90	12	Atlas		3,246,166	1
	2/23/2018 3:00	2/23/2018 13:30	630	1.84	436,013	4.72	0.84	12	Atlas		802,263	1
	2/16/2018 10:15	2/16/2018 10:45	30	0.98	2,467	2.06	0.44	12	Atlas		2,418	1
	2/22/2018 1:15	2/22/2018 11:00	585	1.89	303,846	3.15	0.71	24	Atlas		574,269	1
	2/28/2018 9:00	3/1/2018 15:00	1800	Discharge	0	5.75	#N/A	#N/A	#N/A	Data Under Review	209,777	1
	3/24/2018 10:15	3/24/2018 13:30	195	1.13	66,347	1.68	0.43	24	Atlas		74,972	1
	4/1/2018 21:30	4/2/2018	150	0.62	100,018	2.07	0.34	6	Atlas		62,011	1
	4/3/2018 19:00	4/3/2018 21:15	135	0.39	13,123	2.47	0.21	6	Atlas		5,118	1
	5/27/2018 3:45	5/27/2018 4:00	15	0.93	35,998	0.79	0.50	1	Atlas		33,478	1

Discharge indicates no correlated rain event.

Standard refers to Rainfall Frequency Atlas of the United States or Hydmet Louisville Cloudburst.

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO054	5/22/2018 7:45	5/22/2018 7:45	0	0.25	9,736	0.45	0.20	1	Atlas		2,434	1
	5/5/2018 14:15	5/5/2018 19:45	330	1.66	205,661	1.57	0.70	6	Atlas		341,398	1
	5/10/2018 2:15	5/10/2018 2:15	0	0.08	15,950	1.75	0.06	1	Atlas		1,276	1
	6/1/2018 1:00	6/1/2018 4:00	180	1.72	81,886	2.82	0.87	3	Atlas		140,844	1
	7/23/2017 3:00	7/23/2017 3:30	30	1.15	6,404	0.56	0.53	12	Atlas		7,365	1
	7/28/2017 9:00	7/28/2017 9:00	0	0.5	9,610	1.38	0.38	1	Atlas		4,805	1
	8/1/2017 21:00	8/1/2017 21:15	15	0.63	107,195	0.9	0.50	1	Atlas		67,533	1
	8/22/2017 15:30	8/22/2017 15:30	0	0.35	30,203	0.49	0.24	1	Atlas		10,571	1
	9/19/2017 7:45	9/19/2017 7:45	0	0.54	3,811	0.52	0.35	3	Atlas		2,058	1
	9/1/2017 10:00	9/2/2017 5:30	1170	2.71	369,967	2.79	0.95	24	Atlas		1,002,611	1
CSO054 Total											6,769,729	25
CSO055	10/7/2017 22:00	10/7/2017 23:30	90	1.91	38,275	0.86	0.71	24	Atlas		73,105	1
	10/8/2017 10:15	10/8/2017 15:45	330	1.91	115,495	1.85	0.71	24	Atlas		220,596	1
	10/10/2017 14:15	10/10/2017 21:45	450	0.65	262,698	2.57	0.35	3	Atlas		170,754	1
	10/23/2017 7:00	10/23/2017 7:00	0	0.38	63	0.27	0.20	6	Atlas		24	1
	10/27/2017 17:30	10/28/2017 2:45	555	0.92	397,461	1.42	0.42	12	Atlas		365,664	1
	11/3/2017 5:00	11/3/2017 9:45	285	1	290,185	2.09	0.73	1	Atlas		290,185	1
	11/6/2017 2:00	11/6/2017 4:00	120	0.91	23,647	2.08	0.70	1	Atlas		21,519	1
	11/15/2017 13:30	11/15/2017 13:30	0	0.33	39	0.37	0.22	1	Atlas		13	1
	11/18/2017 17:30	11/18/2017 17:30	0	0.63	205	0.98	0.40	1	Atlas		129	1
	12/5/2017 4:00	12/5/2017 6:30	150	0.6	25,845	0.6	0.31	3	Atlas		15,507	1
	12/22/2017 23:30	12/23/2017 12:30	780	1.36	102,063	1.36	0.52	24	Atlas		138,805	1
	2/11/2018 10:15	2/11/2018 11:45	90	0.41	50,029	1.13	0.22	3	Atlas		20,512	1
	2/24/2018 10:30	2/26/2018 15:45	3195	2.13	458,095	6.12	0.90	12	Atlas		975,743	1
	2/7/2018 3:00	2/7/2018 3:30	30	0.6	415	0.86	0.33	6	Atlas		249	1
	2/16/2018 2:45	2/16/2018 13:15	630	0.98	203,553	2.12	0.44	12	Atlas		199,482	1
	3/29/2018 19:00	3/29/2018 23:15	255	0.67	54,155	2.16	0.22	24	Atlas		36,284	1
	2/14/2018 7:30	2/14/2018 10:00	150	0.55	8,509	1.01	0.26	3	Atlas		4,680	1
	3/24/2018 9:30	3/24/2018 20:15	645	1.13	567,166	1.93	0.43	24	Atlas		640,898	1
	2/21/2018 22:00	2/22/2018 12:45	885	1.89	561,544	3.15	0.71	24	Atlas		1,061,319	1
	2/23/2018 2:45	2/23/2018 22:15	1170	1.84	751,186	4.74	0.84	12	Atlas		1,382,183	1
	4/3/2018 16:30	4/3/2018 22:15	345	0.39	359,095	2.48	0.21	6	Atlas		140,047	1
	4/1/2018 20:15	4/2/2018 0:45	270	0.62	503,369	2.07	0.34	6	Atlas		312,089	1
	4/14/2018 9:15	4/14/2018 9:45	30	0.89	72	0.25	0.29	24	Atlas		64	1
	4/23/2018 5:30	4/23/2018 5:45	15	0.58	3	0.57	0.27	12	Atlas		2	1
	4/15/2018 9:00	4/15/2018 9:45	45	0.89	22,735	0.92	0.29	24	Atlas		20,234	1
	5/27/2018 4:15	5/27/2018 4:30	15	0.93	27,437	0.85	0.50	1	Atlas		25,516	1
	5/5/2018 14:30	5/5/2018 20:30	360	1.66	315,451	1.58	0.70	6	Atlas		523,649	1
	5/17/2018 15:45	5/17/2018 15:45	0	0.15	6,833	0.15	0.12	1	Atlas		1,025	1
	5/27/2018 13:30	5/27/2018 13:30	0	0.93	1,030	1.14	0.50	1	Atlas		958	1
	5/10/2018 2:30	5/10/2018 2:30	0	0.08	27,925	1.78	0.06	1	Atlas		2,234	1
	5/22/2018 8:00	5/22/2018 8:00	0	0.25	48,348	0.45	0.20	1	Atlas		12,087	1
	5/31/2018 14:00	5/31/2018 14:00	0	1.72	367	1.2	0.87	3	Atlas		631	1
	6/10/2018 14:45	6/10/2018 15:00	15	0.94	17,157	0.27	0.35	24	Atlas		16,128	1
	6/1/2018 1:15	6/1/2018 5:00	225	1.72	180,716	2.83	0.87	3	Atlas		310,832	1
	6/11/2018 13:15	6/11/2018 15:00	105	0.94	2,435	0.94	0.35	24	Atlas		2,289	1
	9/19/2017 8:45	9/19/2017 8:45	0	0.54	22,328	0.75	0.35	3	Atlas		12,057	1
	7/23/2017 1:45	7/23/2017 11:00	555	1.15	423,431	1.22	0.53	12	Atlas		486,946	1
	8/1/2017 21:30	8/1/2017 21:30	0	0.63	440,594	1.06	0.50	1	Atlas		277,574	1
	8/17/2017 15:00	8/17/2017 15:00	0	0.38	471	0.14	0.20	6	Atlas		179	1
	8/22/2017 12:15	8/22/2017 17:15	300	0.35	1,074	0.77	0.24	1	Atlas		376	1
	8/6/2017 23:45	8/6/2017 23:45	0	0.67	363	1.3	0.29	12	Atlas		243	1
	9/1/2017 9:30	9/2/2017 8:00	1350	2.71	803,968	2.82	0.95	24	Atlas		2,178,754	1
CSO055 Total											9,941,565	42
CSO056	11/3/2017 4:45	11/3/2017 5:45	60	1	197,635	2.09	0.73	1	Atlas		197,635	1
	2/22/2018 3:15	2/22/2018 7:00	225	1.89	290,963	3.15	0.71	24	Atlas		549,920	1
	2/23/2018 3:15	2/23/2018 12:00	525	1.84	424,943	4.69	0.84	12	Atlas		781,895	1
	2/7/2018 10:45	2/7/2018 10:45	0	0.6	3	0.91	0.33	6	Atlas		2	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO056	2/24/2018 18:15	2/26/2018 12:00	2505	2.13	1,654,348	5.87	0.90	12	Atlas		3,523,761	1
	3/29/2018 9:45	3/29/2018 9:45	0	0.67	445	1.77	0.22	24	Atlas		298	1
	4/1/2018 23:00	4/1/2018 23:15	15	0.62	23,155	2.07	0.34	6	Atlas		14,356	1
	4/3/2018 16:30	4/3/2018 16:45	15	0.39	20,692	2.2	0.21	6	Atlas		8,070	1
	5/27/2018 4:15	5/27/2018 4:30	15	0.93	63,925	0.85	0.50	1	Atlas		59,450	1
	5/5/2018 14:30	5/5/2018 19:00	270	1.66	354,393	1.57	0.70	6	Atlas		588,292	1
	6/10/2018 15:00	6/10/2018 15:00	0	0.94	14,914	0.27	0.35	24	Atlas		14,019	1
	6/1/2018 1:15	6/1/2018 3:00	105	1.72	97,105	2.72	0.87	3	Atlas		167,021	1
	6/11/2018 13:15	6/11/2018 13:15	0	0.94	771	0.89	0.35	24	Atlas		725	1
	6/25/2018 10:45	6/25/2018 10:45	0	0.82	62,811	2.14	0.32	12	Atlas		51,505	1
	6/26/2018 13:00	6/26/2018 13:00	0	0.82	89,638	2.69	0.33	12	Atlas		73,503	1
	6/21/2018 17:00	6/21/2018 17:00	0	0.39	45,390	1.08	0.23	1	Atlas		17,702	1
	6/22/2018 14:45	6/22/2018 14:45	0	0.41	18,193	1.41	0.20	6	Atlas		7,459	1
CSO056 Total											6,055,613	17
CSO057	10/7/2017 21:45	10/7/2017 22:15	30	1.78	966	0.68	0.66	24	Atlas		1,720	1
	10/8/2017 13:45	10/8/2017 14:00	15	1.78	496	1.62	0.66	24	Atlas		883	1
	10/23/2017 6:15	10/23/2017 7:00	45	0.46	33	0.24	0.19	6	Atlas		15	1
	10/24/2017 1:45	10/24/2017 2:15	30	0.46	28	0.45	0.19	6	Atlas		13	1
	10/27/2017 17:30	10/28/2017 4:30	660	0.88	874	1.34	0.40	12	Atlas		769	1
	11/1/2017 3:30	11/1/2017 15:45	735	0.15	213	1.02	0.07	6	Atlas		32	1
	11/3/2017 4:30	11/3/2017 5:00	30	1.18	419	2.17	0.84	1	Atlas		495	1
	11/6/2017 1:45	11/6/2017 2:00	15	0.53	3,596	1.86	0.38	1	Atlas		1,906	1
	11/7/2017 1:00	11/7/2017 6:15	315	0.22	1,250	2.08	0.10	12	Atlas		275	1
	11/15/2017 13:30	11/15/2017 20:30	420	0.31	2,048	0.34	0.20	3	Atlas		635	1
	12/5/2017 3:00	12/5/2017 7:00	240	0.68	1,157	0.7	0.35	3	Atlas		787	1
	12/9/2017 21:00	12/9/2017 21:45	45	0.01	1,000	0.69	0.01	1	Atlas		10	1
	12/22/2017 18:45	12/23/2017 10:15	930	1.16	366	0.97	0.45	24	Atlas		424	1
	12/24/2017 18:00	12/24/2017 18:00	0	0.08	25	1.2	0.04	12	Atlas		2	1
	1/12/2018 2:30	1/12/2018 17:00	870	0.29	6,093	0.37	0.11	24	Atlas		1,767	1
	1/8/2018 5:45	1/8/2018 8:45	180	0.11	727	0.11	0.05	12	Atlas		80	1
	1/11/2018 9:15	1/11/2018 11:15	120	0.06	283	0.17	0.03	3	Atlas		17	1
	1/22/2018 11:45	1/22/2018 20:45	540	0.24	4,113	0.37	0.11	1	Atlas		987	1
	1/27/2018 17:00	1/27/2018 17:45	45	0.34	44	0.6	0.19	3	Atlas		15	1
	2/22/2018 3:15	2/22/2018 5:15	120	1.79	7,528	2.81	0.67	24	Atlas		13,475	1
	2/23/2018 2:30	2/23/2018 4:45	135	1.48	1,024	3.33	0.68	12	Atlas		1,516	1
	2/11/2018 4:15	2/11/2018 10:15	360	0.4	315	1.22	0.20	3	Atlas		126	1
	2/16/2018 2:30	2/16/2018 9:15	405	0.85	314	1.54	0.36	12	Atlas		267	1
	2/24/2018 10:00	2/24/2018 23:15	795	2.04	457	5.28	0.84	12	Atlas		933	1
	3/28/2018 5:15	3/28/2018 9:15	240	1.14	6	1.6	0.29	48	Atlas		7	1
	3/24/2018 10:30	3/24/2018 17:15	405	1.05	17	1.67	0.40	24	Atlas		18	1
	2/1/2018 16:45	2/1/2018 16:45	0	0.12	50	0.45	0.07	3	Atlas		6	1
	2/4/2018 3:15	2/4/2018 6:00	165	0.15	1,013	0.26	0.08	6	Atlas		152	1
	2/7/2018	2/7/2018 5:00	300	0.69	1,604	0.97	0.37	6	Atlas		1,107	1
	2/14/2018 7:00	2/14/2018 16:15	555	0.39	803	0.91	0.19	3	Atlas		313	1
	2/15/2018 5:30	2/15/2018 5:45	15	0.01	400	0.92	0.01	1	Atlas		4	1
	2/17/2018 12:00	2/17/2018 12:45	45	0.21	195	1.83	0.13	3	Atlas		41	1
	2/21/2018 7:00	2/21/2018 9:15	135	1.79	14	1.56	0.67	24	Atlas		25	1
	2/21/2018 17:45	2/21/2018 18:30	45	1.79	11	1.46	0.67	24	Atlas		20	1
	2/28/2018 13:30	2/28/2018 14:00	30	0.07	143	5.08	0.04	6	Atlas		10	1
	3/1/2018 6:15	3/1/2018 14:00	465	0.01	16,200	3.61	0.01	1	Atlas		162	1
	3/20/2018 15:30	3/20/2018 15:45	15	0.47	9	0.34	0.18	24	Atlas		4	1
	3/29/2018 3:15	3/29/2018 3:15	0	1.14	3	1.67	0.29	48	Atlas		3	1
	4/3/2018 16:30	4/3/2018 16:30	0	0.31	3	2.1	0.17	6	Atlas		1	1
	4/1/2018 19:30	4/1/2018 23:00	210	0.57	30	1.99	0.31	6	Atlas		17	1
	5/5/2018 14:45	5/5/2018 14:45	0	1.49	134	0.8	0.59	12	Atlas		200	1
	5/10/2018 2:30	5/10/2018 2:30	0	0.2	18,900	1.74	0.17	1	Atlas		3,780	1
	5/3/2018 10:15	5/3/2018 10:15	0	0.04	375	0.03	0.03	1	Atlas		15	1
	6/10/2018 14:45	6/10/2018 14:45	0	0.49	24	0.24	0.22	12	Atlas		12	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO057	8/22/2017 16:00	8/22/2017 16:00	0	0.62	2,237	0.95	0.44	1	Atlas		1,387	1
	9/19/2017 8:00	9/19/2017 8:15	15	0.46	170	0.61	0.29	3	Atlas		78	1
	9/1/2017 14:45	9/1/2017 21:45	420	2.69	961	2.25	0.95	24	Atlas		2,586	1
	8/2/2017 11:00	8/3/2017 9:45	1365	Discharge	0	0.8	#N/A	#N/A	#N/A		21,282	1
CSO057 Total											58,379	48
CSO058	10/23/2017 6:15	10/23/2017 8:00	105	0.38	56,445	0.33	0.20	6	Atlas		21,449	1
	10/27/2017 17:00	10/28/2017 1:00	480	0.87	6,564	1.31	0.40	12	Atlas		5,711	1
	11/3/2017 4:30	11/3/2017 7:15	165	1.18	11,109	2.19	0.87	1	Atlas		13,109	1
	11/6/2017 1:30	11/6/2017 2:00	30	0.51	11,955	1.83	0.37	1	Atlas		6,097	1
	11/7/2017 1:45	11/7/2017 6:15	270	0.22	291	2.05	0.10	12	Atlas		64	1
	11/7/2017 22:15	11/7/2017 22:15	0	0.03	66,633	2.06	0.02	3	Atlas		1,999	1
	11/15/2017 12:45	11/15/2017 19:00	375	0.32	13,963	0.35	0.21	1	Atlas		4,468	1
	11/18/2017 16:30	11/18/2017 18:15	105	0.35	79,014	0.66	0.19	3	Atlas		27,655	1
	12/5/2017 3:00	12/5/2017 8:15	315	0.67	8,561	0.69	0.35	3	Atlas		5,736	1
	12/22/2017 18:15	12/23/2017 12:00	1065	1.14	6,243	1.14	0.44	24	Atlas		7,117	1
	1/22/2018 11:45	1/22/2018 20:00	495	0.29	10,148	0.41	0.16	1	Atlas		2,943	1
	1/8/2018 8:30	1/8/2018 11:30	180	0.11	20,727	0.12	0.05	12	Atlas		2,280	1
	1/11/2018 8:45	1/11/2018 10:15	90	0.06	1,083	0.17	0.03	3	Atlas		65	1
	1/12/2018 3:15	1/13/2018 4:00	1485	0.29	18,924	0.46	0.11	24	Atlas		5,488	1
	1/13/2018 15:00	1/13/2018 16:30	90	0.02	188,200	0.48	0.01	12	Atlas		3,764	1
	1/27/2018 13:30	1/27/2018 17:00	210	0.34	10,718	0.62	0.19	3	Atlas		3,644	1
	3/24/2018 9:00	3/24/2018 12:30	210	1.02	169	1.5	0.39	24	Atlas		172	1
	3/29/2018 19:00	3/29/2018 22:45	225	0.62	229	1.98	0.21	24	Atlas		142	1
	2/14/2018 6:15	2/14/2018 15:15	540	0.4	748	0.93	0.20	3	Atlas		299	1
	2/17/2018 12:45	2/17/2018 13:30	45	0.22	264	1.87	0.13	3	Atlas		58	1
	2/16/2018 2:15	2/17/2018 1:45	1410	0.81	25,484	1.75	0.34	12	Atlas		20,642	1
	2/1/2018 18:00	2/1/2018 18:00	0	0.11	127	0.45	0.07	3	Atlas		14	1
	2/7/2018 0:15	2/7/2018 10:45	630	0.66	3,297	0.94	0.36	6	Atlas		2,176	1
	2/17/2018 22:15	2/18/2018 9:00	645	0.22	33,859	1.9	0.13	3	Atlas		7,449	1
	2/20/2018 9:15	3/2/2018 13:15	14640	Discharge	0	6.59	#N/A	#N/A	#N/A	Data Under Review	1,746,279	1
	3/10/2018 0:15	3/10/2018 2:15	120	0.58	217	0.55	0.37	3	Atlas		126	1
	3/19/2018 17:30	3/19/2018 19:45	135	0.27	11,381	0.29	0.15	3	Atlas		3,073	1
	3/28/2018 5:30	3/28/2018 10:45	315	0.49	924	1.64	0.21	6	Atlas		453	1
	3/31/2018 21:45	3/31/2018 22:30	45	0.22	164	1.34	0.11	3	Atlas		36	1
	4/3/2018 16:30	4/3/2018 21:30	300	0.36	4,789	2.35	0.20	6	Atlas		1,724	1
	4/1/2018 20:00	4/1/2018 23:30	210	0.6	353	1.99	0.33	6	Atlas		212	1
	4/23/2018 5:15	4/23/2018 11:30	375	0.62	608	0.75	0.28	12	Atlas		377	1
	4/14/2018 9:00	4/14/2018 10:00	60	0.92	216	0.26	0.30	24	Atlas		199	1
	4/14/2018 22:30	4/15/2018 9:30	660	0.92	183	0.95	0.30	24	Atlas		168	1
	5/5/2018 12:30	5/5/2018 20:00	450	1.42	2,834	1.31	0.56	12	Atlas		4,024	1
	5/31/2018 14:15	5/31/2018 15:15	60	1.53	59	0.86	0.77	3	Atlas		91	1
	5/27/2018 4:00	5/27/2018 4:45	45	0.39	921	0.52	0.31	1	Atlas		359	1
	5/17/2018 15:45	5/18/2018 18:30	1605	0.15	151,887	0.21	0.12	1	Atlas		22,783	1
	5/10/2018 2:45	5/10/2018 2:45	0	0.18	689	1.66	0.16	1	Atlas		124	1
	5/19/2018 3:45	5/19/2018 10:00	375	0.01	107,100	0.23	0.01	1	Atlas		1,071	1
	5/22/2018 6:45	5/22/2018 8:15	90	0.12	13,308	0.35	0.09	1	Atlas		1,597	1
	5/30/2018 10:30	5/30/2018 10:30	0	0.06	200	0.69	0.04	1	Atlas		12	1
	6/1/2018 0:15	6/1/2018 3:15	180	1.53	524	2.16	0.77	3	Atlas		801	1
	7/7/2017 20:30	7/7/2017 21:45	75	0.19	88,847	1.28	0.13	3	Atlas		16,881	1
	7/4/2017 7:30	7/4/2017 9:00	90	0.12	97,917	0.59	0.06	1	Atlas		11,750	1
	7/6/2017 4:15	7/6/2017 17:45	810	0.53	120,847	1.12	0.25	3	Atlas		64,049	1
CSO058 Total											2,018,730	46
CSO082	10/7/2017 22:00	10/7/2017 23:00	60	1.59	16,842	0.64	0.60	24	Atlas		26,778	1
	10/8/2017 11:45	10/8/2017 20:00	495	1.59	105,435	1.59	0.60	24	Atlas		167,641	1
	10/10/2017 15:15	10/10/2017 16:45	90	0.66	67,139	2.17	0.34	3	Atlas		44,312	1
	11/3/2017 4:45	11/3/2017 7:15	150	1.05	205,693	1.99	0.83	1	Atlas		215,978	1
	11/6/2017 2:00	11/6/2017 2:30	30	0.46	58,335	1.64	0.32	1	Atlas		26,834	1
	12/5/2017 4:00	12/5/2017 6:15	135	0.63	134,730	0.65	0.33	3	Atlas		84,880	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO082	12/22/2017 23:30	12/23/2017 13:00	810	1.15	318,219	1.15	0.44	24	Atlas		365,952	1
	2/7/2018 3:15	2/7/2018 4:45	90	0.62	56,073	0.86	0.33	6	Atlas		34,765	1
	2/11/2018 10:00	2/11/2018 11:15	75	0.41	310,583	1.1	0.20	3	Atlas		127,339	1
	3/24/2018 10:30	3/24/2018 20:00	570	0.93	130,846	1.68	0.35	24	Atlas		121,687	1
	2/14/2018 8:45	2/14/2018 10:00	75	0.45	53,253	0.91	0.23	3	Atlas		23,964	1
	2/16/2018 3:00	2/16/2018 15:30	750	0.72	2,081,819	1.7	0.31	12	Atlas		1,498,910	1
	2/17/2018 13:45	2/17/2018 18:30	285	0.21	2,697,538	1.85	0.13	3	Atlas		566,483	1
	2/21/2018 8:45	3/2/2018 4:45	12720	1.7	22,995,145	5.79	0.63	24	Atlas		39,091,747	1
	3/29/2018 19:30	3/29/2018 19:45	15	1.04	2,467	1.78	0.27	48	Atlas		2,566	1
	3/31/2018 22:30	4/1/2018 1:45	195	0.22	1,364,382	1.3	0.12	3	Atlas		300,164	1
	4/3/2018 16:30	4/4/2018 2:45	615	0.49	2,820,545	2.44	0.28	1	Atlas		1,382,067	1
	4/1/2018 20:15	4/2/2018 5:00	525	0.63	1,630,198	1.95	0.34	6	Atlas		1,027,025	1
	4/15/2018 8:30	4/15/2018 9:45	75	0.95	15,214	0.98	0.31	48	Atlas		14,453	1
	4/23/2018 6:45	4/23/2018 12:15	330	0.67	85,603	0.82	0.31	12	Atlas		57,354	1
	5/5/2018 14:15	5/5/2018 19:30	315	1.31	294,195	1.22	0.51	6	Atlas		385,396	1
	6/1/2018 1:00	6/1/2018 3:45	165	1.35	84,663	2.06	0.79	3	Atlas		114,295	1
	6/26/2018 13:00	6/26/2018 13:15	15	0.69	6,799	1.88	0.28	12	Atlas		4,691	1
	6/25/2018 11:15	6/25/2018 11:15	0	0.93	449	1.54	0.38	12	Atlas		418	1
	7/23/2017 3:00	7/23/2017 3:30	30	1.02	22,725	0.49	0.47	12	Atlas		23,179	1
	9/19/2017 8:30	9/19/2017 12:30	240	0.47	728,443	0.89	0.30	3	Atlas		342,368	1
	9/1/2017 13:00	9/2/2017 5:30	990	2.98	270,316	3.05	1.31	24	Cloudburst		805,542	1
CSO082 Total											46,856,788	27
CSO083	10/7/2017 21:45	10/7/2017 21:45	0	1.6	9,536	0.37	0.60	24	Atlas		15,258	1
	11/3/2017 4:45	11/3/2017 4:45	0	1	993	1.74	0.79	1	Atlas		993	1
	2/22/2018 4:45	2/22/2018 5:15	30	1.58	7,713	2.45	0.58	24	Atlas		12,186	1
	2/23/2018 4:45	2/23/2018 4:45	0	1.15	182	2.69	0.53	12	Atlas		209	1
	2/24/2018 18:45	2/24/2018 19:30	45	1.65	3,944	3.6	0.66	12	Atlas		6,507	1
	5/5/2018 14:30	5/5/2018 14:30	0	1.24	725	0.5	0.47	12	Atlas		899	1
	6/1/2018 1:00	6/1/2018 1:15	15	1.42	22,924	1.64	0.83	3	Atlas		32,552	1
	8/17/2017 15:00	8/17/2017 15:00	0	0.53	17,468	0.19	0.29	6	Atlas		9,258	1
	7/23/2017 2:30	7/23/2017 2:30	0	1.18	162	0.33	0.54	12	Atlas		191	1
	7/28/2017 9:30	7/28/2017 9:45	15	0.52	4,463	1.67	0.40	1	Atlas		2,321	1
CSO083 Total											80,374	10
CSO084	10/7/2017 22:30	10/7/2017 22:30	0	1.6	1,063	0.46	0.60	24	Atlas		1,701	1
	10/8/2017 14:30	10/8/2017 14:45	15	1.6	2,941	1.52	0.60	24	Atlas		4,706	1
	10/10/2017 15:15	10/10/2017 16:30	75	0.68	28,209	2.2	0.36	6	Atlas		19,182	1
	10/23/2017 6:30	10/23/2017 7:00	30	0.47	8,521	0.31	0.25	6	Atlas		4,005	1
	10/27/2017 17:45	10/27/2017 18:00	15	0.8	8,896	0.71	0.37	12	Atlas		7,117	1
	11/3/2017 4:30	11/3/2017 6:45	135	1	747,814	1.93	0.79	1	Atlas		747,814	1
	11/6/2017 2:00	11/6/2017 3:15	75	0.31	192,813	1.44	0.21	1	Atlas		59,772	1
	3/29/2018 19:00	3/29/2018 20:00	60	1.1	123,534	1.84	0.28	48	Atlas		135,887	1
	3/24/2018 9:30	3/24/2018 12:30	180	0.94	123,233	1.46	0.36	24	Atlas		115,839	1
	2/22/2018 5:15	2/22/2018 9:00	225	1.58	841,994	2.5	0.58	24	Atlas		1,330,350	1
	2/24/2018 19:30	2/25/2018 15:45	1215	1.65	2,663,701	4.39	0.66	12	Atlas		4,395,106	1
	4/3/2018 16:30	4/3/2018 21:30	300	0.51	110,929	2.5	0.28	6	Atlas		56,574	1
	4/1/2018 20:15	4/1/2018 23:15	180	0.6	210,402	1.99	0.33	6	Atlas		126,241	1
	4/14/2018 9:30	4/14/2018 10:00	30	1.04	32,652	0.27	0.34	48	Atlas		33,958	1
	4/15/2018 5:45	4/15/2018 6:15	30	1.04	37,619	0.82	0.34	48	Atlas		39,124	1
	5/27/2018 4:15	5/27/2018 4:30	15	0.3	122,887	0.35	0.22	1	Atlas		36,866	1
	5/5/2018 14:30	5/5/2018 18:45	255	1.24	961,901	1.09	0.47	12	Atlas		1,192,757	1
	6/10/2018 15:00	6/10/2018 15:15	15	0.4	74,333	0.18	0.18	12	Atlas		29,733	1
	6/1/2018 0:30	6/1/2018 2:30	120	1.42	363,174	1.83	0.83	3	Atlas		515,707	1
	6/11/2018 11:00	6/11/2018 13:30	150	0.54	415,211	0.62	0.18	48	Atlas		224,214	1
	6/11/2018 23:45	6/11/2018 23:45	0	0.54	1,113	0.68	0.18	48	Atlas		601	1
	7/7/2017 21:15	7/7/2017 21:15	0	0.26	18,300	0.87	0.17	1	Atlas		4,758	1
	9/19/2017 8:00	9/19/2017 9:45	105	0.43	39,353	0.84	0.27	3	Atlas		16,922	1
	7/28/2017 9:30	7/28/2017 10:15	45	0.52	16,387	1.71	0.40	1	Atlas		8,521	1
	7/6/2017 5:00	7/6/2017 13:15	495	0.51	27,020	0.83	0.23	6	Atlas		13,780	1

Discharge Indicates no correlated rain event.

Standard refers to Rainfall Frequency Atlas of the United States or Hydmet Louisville Cloudburst.

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO084	7/23/2017 7:00	7/23/2017 7:15	15	1.18	7,464	0.91	0.54	12	Atlas		8,807	1
	8/6/2017 17:00	8/7/2017	420	0.56	16,027	0.79	0.25	12	Atlas		8,975	1
	8/17/2017 15:15	8/17/2017 23:00	465	0.53	41,813	0.56	0.29	6	Atlas		22,161	1
	8/22/2017 16:30	8/22/2017 16:30	0	0.76	5,714	1.32	0.51	1	Atlas		4,343	1
	9/1/2017 10:30	9/2/2017 1:00	870	3.29	28,496	3.07	1.92	24	Cloudburst		93,752	1
CSO084 Total											9,259,273	30
CSO088	10/7/2017 22:00	10/7/2017 22:30	30	1.73	7,609	0.7	0.65	24	Atlas		13,163	1
	10/8/2017 13:45	10/8/2017 14:15	30	1.73	10,179	1.6	0.65	24	Atlas		17,610	1
	10/10/2017 16:45	10/10/2017 16:45	0	0.59	1,586	2.25	0.31	3	Atlas		936	1
	7/23/2017 2:45	7/23/2017 3:30	45	1.02	15,853	0.61	0.47	12	Atlas		16,170	1
	8/17/2017 15:15	8/18/2017 12:15	1260	0.34	749,550	0.38	0.19	6	Atlas		254,847	1
	7/28/2017 9:45	7/28/2017 9:45	0	0.47	20,764	1.46	0.35	1	Atlas		9,759	1
CSO088 Total											312,485	6
CSO092	10/7/2017 21:30	10/7/2017 21:45	15	1.76	450	0.5	0.67	24	Atlas		792	1
	10/8/2017 13:45	10/8/2017 13:45	0	1.76	16	1.54	0.67	24	Atlas		29	1
	11/6/2017 1:45	11/6/2017 1:45	0	0.22	4,455	1.94	0.13	1	Atlas		980	1
	12/5/2017 3:45	12/5/2017 3:45	0	0.65	49	0.38	0.37	3	Atlas		32	1
	2/24/2018 18:45	2/25/2018 0:45	360	1.67	667	4.27	0.69	12	Atlas		1,114	1
	5/5/2018 14:00	5/5/2018 14:45	45	1.28	990	0.63	0.49	12	Atlas		1,267	1
	6/25/2018 10:30	6/25/2018 10:30	0	0.88	519	1.18	0.36	12	Atlas		457	1
	6/26/2018 12:45	6/26/2018 12:45	0	0.64	1,061	1.54	0.28	12	Atlas		679	1
	7/23/2017 2:30	7/23/2017 6:30	240	1.19	1,217	0.84	0.55	12	Atlas		1,448	1
	8/23/2017 2:45	8/23/2017 5:00	135	Discharge	0	1.26	#N/A	#N/A	#N/A		2,863	1
CSO092 Total											9,661	10
CSO093	11/3/2017 4:45	11/3/2017 5:00	15	0.91	1,420	1.8	0.71	1	Atlas		1,292	1
	3/1/2018 11:45	3/1/2018 14:30	165	0.02	304,050	2.97	0.01	12	Atlas		6,081	1
	5/5/2018 12:30	5/5/2018 12:30	0	1.44	1,317	0.25	0.59	6	Atlas		1,896	1
	6/11/2018 13:00	6/11/2018 13:00	0	0.23	1,004	0.59	0.13	1	Atlas		231	1
	6/25/2018 10:30	6/25/2018 10:30	0	0.86	6,164	1.43	0.35	12	Atlas		5,301	1
	6/26/2018 12:45	6/26/2018 12:45	0	0.6	15,952	1.8	0.24	12	Atlas		9,571	1
	8/16/2017 2:30	8/16/2017 2:30	0	Discharge	0	0.03	#N/A	#N/A	#N/A		1,896	1
	8/16/2017 16:30	8/16/2017 17:15	45	Discharge	0	0.03	#N/A	#N/A	#N/A		3,020	1
	3/24/2018 16:45	3/25/2018 7:00	855	0.86	74,930	1.64	0.33	24	Atlas		64,440	1
	3/28/2018 11:30	3/29/2018 17:45	1815	1.02	125,427	1.6	0.26	48	Atlas		127,936	1
CSO093 Total											221,664	10
CSO097	10/7/2017 21:30	10/8/2017	150	1.88	43,273	0.6	0.71	24	Atlas		81,354	1
	10/8/2017 11:00	10/8/2017 21:00	600	1.88	105,622	1.88	0.71	24	Atlas		198,569	1
	10/10/2017 14:30	10/10/2017 23:00	510	0.79	225,985	2.68	0.42	3	Atlas		178,528	1
	10/23/2017 6:30	10/23/2017 8:00	90	0.54	44,265	0.45	0.29	6	Atlas		23,903	1
	10/27/2017 17:45	10/28/2017 4:30	645	1.03	288,235	1.69	0.47	12	Atlas		296,882	1
	11/3/2017 4:15	11/3/2017 8:30	255	1.87	69,649	3.04	6.92	1	Atlas		130,243	1
	11/6/2017 1:45	11/6/2017 3:45	120	0.19	298,137	2.2	0.12	1	Atlas		56,646	1
	11/15/2017 13:30	11/15/2017 15:00	90	0.23	68,357	0.27	0.15	1	Atlas		15,722	1
	11/18/2017 17:00	11/18/2017 18:00	60	0.33	68,624	0.56	0.21	1	Atlas		22,646	1
	12/5/2017 3:15	12/5/2017 8:00	285	0.62	250,773	0.63	0.35	3	Atlas		155,479	1
	12/22/2017 23:00	12/23/2017 5:30	390	1.16	32,279	1.04	0.47	12	Atlas		37,444	1
	2/7/2018 3:00	2/7/2018 4:15	75	0.41	16,863	0.62	0.22	6	Atlas		6,914	1
	2/16/2018 3:00	2/16/2018 11:00	480	0.73	6,456	1.71	0.33	12	Atlas		4,713	1
	2/11/2018 9:15	2/11/2018 11:00	105	0.35	39,697	0.82	0.17	3	Atlas		13,894	1
	2/21/2018 21:00	2/22/2018 16:00	1140	1.69	147,798	2.71	0.62	24	Atlas		249,779	1
	2/23/2018 2:45	2/26/2018 9:30	4725	1.14	1,911,451	5.38	0.52	12	Atlas		2,179,054	1
	3/10/2018 1:00	3/10/2018 2:00	60	0.62	3,576	0.52	0.39	3	Atlas		2,217	1
	3/24/2018 10:00	3/24/2018 17:00	420	0.85	43,026	1.63	0.33	12	Atlas		36,572	1
	3/29/2018 18:45	3/29/2018 20:30	105	0.72	50,692	1.79	0.24	24	Atlas		36,498	1
	4/14/2018 9:30	4/14/2018 9:45	15	1.51	13	0.45	0.49	48	Atlas		20	1
	4/1/2018 20:00	4/2/2018	240	0.57	60,440	1.98	0.31	6	Atlas		34,451	1
	4/15/2018 5:45	4/15/2018 9:45	240	1.51	4,188	1.51	0.49	48	Atlas		6,324	1
	4/3/2018 19:00	4/3/2018 21:45	165	0.55	25,675	2.51	0.30	6	Atlas		14,121	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO097	4/23/2018 6:30	4/23/2018 7:00	30	0.71	228	0.65	0.31	12	Atlas		162	1
	6/1/2018 0:30	6/1/2018 2:15	105	1.23	18,231	1.53	0.61	3	Atlas		22,424	1
	6/11/2018 13:15	6/11/2018 13:30	15	0.92	143	0.86	0.30	48	Atlas		132	1
	6/26/2018 12:30	6/26/2018 13:15	45	0.9	21,297	1.9	0.45	1	Atlas		19,167	1
	7/1/2017	7/1/2017 0:15	15	Discharge	0	0.49	#N/A	#N/A	#N/A		330	1
	9/19/2017 8:45	9/19/2017 10:15	90	0.43	75,953	0.83	0.27	3	Atlas		32,660	1
	7/7/2017 20:45	7/8/2017	195	0.24	188,583	1.31	0.17	1	Atlas		45,260	1
	7/23/2017 2:30	7/23/2017 13:00	630	1.08	233,266	1.08	0.50	12	Atlas		251,927	1
	7/28/2017 9:30	7/28/2017 13:00	210	0.43	139,777	1.52	0.33	1	Atlas		60,104	1
	8/29/2017 19:15	8/29/2017 19:45	30	0.13	9,292	0.17	0.09	1	Atlas		1,208	1
	9/1/2017 7:30	9/2/2017 21:30	2280	4.13	319,774	4.3	4.92	24	Cloudburst		1,320,667	1
	7/6/2017 4:30	7/6/2017 16:15	705	0.64	158,203	1.14	0.27	3	Atlas		101,250	1
	8/2/2017 13:00	8/2/2017 15:45	165	0.39	33,921	0.9	0.34	1	Atlas		13,229	1
CSO097 Total											5,650,493	36
CSO104	10/7/2017 22:00	10/7/2017 23:00	60	2.35	20,954	1.06	0.88	24	Atlas		49,241	1
	10/8/2017 14:30	10/8/2017 14:30	0	2.35	527	2.19	0.88	24	Atlas		1,239	1
	11/3/2017 5:00	11/3/2017 6:15	75	0.78	64,545	2.02	0.55	1	Atlas		50,345	1
	11/6/2017 2:15	11/6/2017 2:30	15	0.77	2,139	1.71	0.60	1	Atlas		1,647	1
	12/23/2017 3:15	12/23/2017 4:00	45	1.49	940	1.15	0.57	12	Atlas		1,401	1
	2/22/2018 4:00	2/24/2018 23:45	4065	2.1	893,529	7.32	0.78	24	Atlas		1,876,411	1
	5/5/2018 15:00	5/7/2018 2:00	2100	1.4	207,291	1.55	0.56	6	Atlas		290,208	1
	5/27/2018 4:15	5/27/2018 5:30	75	1.15	416,840	1.31	0.86	1	Atlas		479,366	1
	6/1/2018	6/1/2018 2:45	165	1.91	30,187	3.33	0.93	3	Atlas		57,658	1
	6/26/2018 12:30	6/26/2018 13:30	60	0.69	112,800	3.26	0.29	12	Atlas		77,832	1
	6/21/2018 9:15	6/21/2018 9:30	15	0.67	54,703	0.94	0.30	12	Atlas		36,651	1
	8/22/2017 16:00	8/22/2017 16:15	15	0.42	23,826	0.78	0.30	1	Atlas		10,007	1
	9/1/2017 15:15	9/1/2017 15:45	30	3.66	287	2.05	2.32	24	Cloudburst		1,050	1
CSO104 Total											2,933,056	13
CSO105	10/7/2017 21:45	10/8/2017 1:00	195	2.35	2,750,037	1.07	0.88	24	Atlas		6,462,587	1
	10/8/2017 11:00	10/8/2017 17:30	390	2.35	4,313,893	2.29	0.88	24	Atlas		10,137,649	1
	10/10/2017 14:45	10/10/2017 19:30	285	0.51	5,036,080	2.85	0.29	3	Atlas		2,568,401	1
	10/23/2017 6:45	10/23/2017 9:30	165	0.53	5,437,511	0.52	0.28	6	Atlas		2,881,881	1
	10/27/2017 18:00	10/28/2017 2:15	495	1.08	3,793,469	1.78	0.49	12	Atlas		4,096,946	1
	11/3/2017 5:00	11/3/2017 8:00	180	0.78	8,793,587	2.02	0.55	1	Atlas		6,858,998	1
	11/6/2017 2:00	11/6/2017 4:15	135	0.77	5,215,371	1.71	0.60	1	Atlas		4,015,836	1
	11/15/2017 13:45	11/15/2017 15:30	105	0.34	2,355,500	0.39	0.22	1	Atlas		800,870	1
	11/18/2017 17:30	11/18/2017 19:30	120	0.27	6,711,085	0.66	0.14	6	Atlas		1,811,993	1
	12/5/2017 4:00	12/5/2017 7:45	225	0.76	5,999,775	0.78	0.41	3	Atlas		4,559,829	1
	12/22/2017 22:45	12/23/2017 7:15	510	1.49	7,588,802	1.27	0.57	12	Atlas		11,307,315	1
	1/22/2018 11:15	1/22/2018 11:15	0	0.15	8,660	0.15	0.07	12	Atlas		1,299	1
	1/27/2018 16:15	1/27/2018 16:30	15	0.49	21,124	0.64	0.29	3	Atlas		10,351	1
	2/16/2018 3:15	2/16/2018 12:30	555	0.74	5,592,143	1.8	0.34	12	Atlas		4,138,186	1
	2/7/2018 3:00	2/7/2018 6:15	195	0.55	6,346,815	0.83	0.28	6	Atlas		3,490,748	1
	3/29/2018 19:00	3/29/2018 23:30	270	1.3	1,822,353	2.26	0.33	48	Atlas		2,369,059	1
	2/14/2018 7:30	2/14/2018 11:00	210	0.6	2,062,872	0.93	0.29	3	Atlas		1,237,723	1
	2/21/2018 21:45	2/22/2018 8:45	660	2.1	9,463,867	3.02	0.78	24	Atlas		19,874,120	1
	3/24/2018 9:30	3/24/2018 21:30	720	1.07	8,539,829	2.18	0.41	24	Atlas		9,137,617	1
	2/24/2018 18:45	2/25/2018 1:45	420	2.65	901,728	6.66	1.74	12	Cloudburst		2,389,579	1
	2/11/2018 10:30	2/11/2018 12:30	120	0.27	5,319,441	0.92	0.13	3	Atlas		1,436,249	1
	2/23/2018 4:00	2/23/2018 7:00	180	1.92	1,899,596	4.01	0.88	12	Atlas		3,647,225	1
	3/10/2018 1:45	3/10/2018 4:45	180	0.64	2,767,423	0.67	0.41	3	Atlas		1,771,151	1
	3/19/2018 20:15	3/19/2018 21:30	75	0.38	1,471,484	0.39	0.19	6	Atlas		559,164	1
	3/28/2018 6:45	3/28/2018 8:00	75	1.3	256,868	1.61	0.33	48	Atlas		333,928	1
	4/15/2018 1:15	4/15/2018 11:15	600	1.23	3,199,456	1.26	0.42	24	Atlas		3,935,331	1
	4/23/2018 5:45	4/23/2018 8:15	150	0.65	1,304,746	0.76	0.32	3	Atlas		848,085	1
	4/14/2018 9:45	4/14/2018 11:45	120	1.23	887,544	0.48	0.42	24	Atlas		1,091,679	1
	4/3/2018 21:15	4/3/2018 23:15	120	0.35	2,164,877	2.7	0.19	6	Atlas		757,707	1
	4/1/2018 20:45	4/2/2018 1:15	270	0.8	7,118,946	2.48	0.44	6	Atlas		5,695,157	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO105	5/5/2018 12:30	5/5/2018 20:45	495	1.4	8,791,826	1.44	0.56	6	Atlas		12,308,557	1
	5/10/2018 2:15	5/10/2018 4:15	120	0.05	14,325,660	1.6	0.04	1	Atlas		716,283	1
	8/1/2017 21:45	8/2/2017	135	0.21	17,974,667	0.32	0.14	3	Atlas		3,774,680	1
	9/1/2017 8:30	9/2/2017 8:00	1410	3.66	7,562,943	3.9	2.32	24	Cloudburst		27,680,371	1
	7/7/2017 21:15	7/7/2017 23:15	120	0.31	3,908,826	0.75	0.23	1	Atlas		1,211,736	1
	8/22/2017 16:00	8/22/2017 18:45	165	0.42	12,915,619	0.79	0.30	1	Atlas		5,424,560	1
	7/23/2017 3:30	7/23/2017 11:15	465	1.12	5,902,643	1.33	0.51	12	Atlas		6,610,960	1
	7/6/2017 13:30	7/6/2017 14:30	60	0.28	793,161	1.08	0.13	3	Atlas		222,085	1
	7/14/2017 3:15	7/14/2017 3:15	0	Discharge	0	0.31	#N/A	#N/A	#N/A		117	1
	8/17/2017 18:45	8/17/2017 19:45	60	0.33	591,782	0.37	0.18	1	Atlas		195,288	1
	9/19/2017 9:00	9/19/2017 11:45	165	0.17	11,594,682	0.6	0.10	1	Atlas		1,971,096	1
CSO105 Total											178,342,396	41
CSO108	10/8/2017 7:30	10/9/2017 20:15	2205	2.15	99	2.16	0.81	24	Atlas		212	1
	11/3/2017 5:00	11/3/2017 5:45	45	1.54	327,859	3.06	2.84	1	Atlas		504,903	1
	2/24/2018 19:00	2/24/2018 23:45	285	2.43	66,944	5.63	1.16	12	Cloudburst		162,675	1
	2/14/2018 6:45	2/21/2018 11:15	10350	0.44	8,248	2.86	0.20	12	Atlas		3,629	1
	2/22/2018 4:15	2/22/2018 11:00	405	2.01	1,882,198	3.33	0.72	24	Atlas		3,783,217	1
	2/23/2018 5:00	2/23/2018 17:00	720	1.43	1,439,898	4.31	0.66	12	Atlas		2,059,054	1
	2/25/2018 10:15	2/25/2018 17:15	420	Discharge	0	5.88	#N/A	#N/A	#N/A		58,820	1
	3/1/2018 5:30	3/1/2018 14:45	555	0.04	450	4.08	0.02	12	Atlas		18	1
	3/29/2018 19:45	3/29/2018 19:45	0	1.26	16,867	2	0.34	48	Atlas		21,253	1
	5/5/2018 14:15	5/5/2018 21:00	405	3.22	103,039	3.1	5.77	1	Atlas		331,785	1
	6/1/2018 0:45	6/1/2018 1:45	60	1.42	132,905	1.51	0.63	3	Atlas		188,725	1
	8/17/2017 14:45	8/17/2017 14:45	0	0.95	278	0.1	0.55	3	Atlas		264	1
	8/7/2017 12:45	8/7/2017 13:00	15	Discharge	0	1.05	#N/A	#N/A	#N/A		42,284	1
	8/29/2017 14:30	8/29/2017 14:45	15	0.16	2,800	0.51	0.09	1	Atlas		448	1
	9/1/2017 17:45	9/2/2017 1:30	465	4.02	454,263	3.87	4.36	24	Cloudburst		1,826,139	1
CSO108 Total											8,983,426	15
CSO109	10/7/2017 22:00	10/7/2017 22:15	15	2.15	236,729	0.53	0.81	24	Atlas		508,967	1
	10/8/2017 14:00	10/8/2017 14:00	0	2.15	46,087	1.91	0.81	24	Atlas		99,088	1
	11/3/2017 4:45	11/3/2017 5:30	45	1.57	225,173	3.03	3.03	1	Atlas		353,521	1
	12/5/2017 4:15	12/5/2017 4:15	0	0.84	11,640	0.63	0.50	3	Atlas		9,778	1
	3/29/2018 19:15	3/29/2018 19:30	15	1.19	40,542	1.93	0.32	48	Atlas		48,245	1
	2/24/2018 10:30	2/24/2018 10:30	0	2.22	319	3.65	0.94	12	Atlas		708	1
	2/24/2018 19:00	2/24/2018 23:15	255	2.22	494,392	5.17	0.94	12	Atlas		1,097,551	1
	2/22/2018 4:30	2/22/2018 9:15	285	1.85	124,033	3.06	0.66	24	Atlas		229,461	1
	2/23/2018 4:30	2/23/2018 12:00	450	1.38	224,978	4.07	0.63	12	Atlas		310,470	1
	5/5/2018 14:15	5/5/2018 18:30	255	3.19	128,751	3.02	6.15	1	Atlas		410,717	1
	6/1/2018 0:30	6/1/2018 1:30	60	1.34	27,669	1.46	0.64	3	Atlas		37,077	1
	6/25/2018 10:45	6/25/2018 10:45	0	1.07	35,678	1.69	0.44	12	Atlas		38,175	1
	6/26/2018 12:45	6/26/2018 12:45	0	1.77	65,883	3.04	1.13	1	Atlas		116,613	1
	7/23/2017 3:00	7/23/2017 7:15	255	1.41	107,016	0.99	0.65	12	Atlas		150,892	1
	7/7/2017 21:15	7/7/2017 21:15	0	0.3	142,193	1.33	0.21	1	Atlas		42,658	1
	8/22/2017 16:15	8/22/2017 16:15	0	0.5	405,530	1.46	0.34	1	Atlas		202,765	1
	9/1/2017 14:45	9/1/2017 14:45	0	4.03	12,294	2.2	4.32	24	Cloudburst		49,546	1
	7/6/2017 5:00	7/6/2017 5:00	0	0.97	11,315	1.09	0.41	12	Atlas		10,976	1
	8/17/2017 15:15	8/17/2017 18:00	165	0.96	170,692	0.93	0.52	6	Atlas		163,864	1
	7/28/2017 9:45	7/28/2017 10:15	30	0.53	383,957	1.94	0.42	1	Atlas		203,497	1
	8/2/2017 13:15	8/2/2017 13:15	0	0.13	333,954	0.71	0.10	1	Atlas		43,414	1
	9/1/2017 23:00	9/2/2017 1:00	120	4.03	32,309	3.87	4.32	24	Cloudburst		130,206	1
CSO109 Total											4,258,189	22
CSO110	10/7/2017 22:15	10/8/2017	105	1.83	230,962	0.6	0.70	24	Atlas		422,660	1
	10/8/2017 11:30	10/8/2017 20:30	540	1.83	407,620	1.82	0.70	24	Atlas		745,945	1
	10/10/2017 15:00	10/10/2017 22:00	420	0.69	775,100	2.52	0.35	3	Atlas		534,819	1
	10/23/2017 7:00	10/23/2017 8:15	75	0.57	234,919	0.51	0.30	6	Atlas		133,904	1
	10/27/2017 18:15	10/28/2017 4:00	585	0.86	710,274	1.52	0.39	12	Atlas		610,836	1
	11/3/2017 5:00	11/3/2017 6:45	105	1.51	311,074	2.49	2.75	1	Atlas		469,722	1
	11/6/2017 2:15	11/6/2017 3:30	75	0.16	1,754,031	1.79	0.10	1	Atlas		280,645	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO110	11/15/2017 14:00	11/15/2017 14:45	45	0.25	212,020	0.29	0.16	1	Atlas		53,005	1
	11/18/2017 17:30	11/18/2017 18:15	45	0.32	110,931	0.56	0.20	1	Atlas		35,498	1
	12/5/2017 3:45	12/5/2017 7:30	225	0.58	1,202,431	0.59	0.33	3	Atlas		697,410	1
	12/22/2017 23:30	12/23/2017 6:00	390	1.05	816,940	0.93	0.42	12	Atlas		857,787	1
	1/27/2018 16:00	1/27/2018 16:15	15	0.31	29,958	0.37	0.17	3	Atlas		9,287	1
	2/14/2018 7:45	2/14/2018 9:45	120	0.39	101,854	0.74	0.18	12	Atlas		39,723	1
	3/29/2018 19:15	3/29/2018 23:00	225	1.07	375,007	1.82	0.29	48	Atlas		401,257	1
	3/28/2018 6:00	3/28/2018 6:30	30	1.07	37,689	1.23	0.29	48	Atlas		40,327	1
	2/24/2018 10:15	2/25/2018 15:30	1755	1.73	2,846,948	4.76	0.72	12	Atlas		4,925,220	1
	2/23/2018 3:15	2/23/2018 19:45	990	1.21	1,651,207	3.51	0.56	12	Atlas		1,997,960	1
	3/10/2018 1:15	3/10/2018 2:45	90	0.61	255,369	0.62	0.38	3	Atlas		155,775	1
	2/16/2018 3:00	2/16/2018 11:45	525	0.72	353,035	1.66	0.33	12	Atlas		254,185	1
	3/31/2018 22:30	3/31/2018 22:45	15	0.22	104,555	1.26	0.11	3	Atlas		23,002	1
	2/21/2018 21:00	2/22/2018 13:30	990	1.62	1,163,366	2.62	0.60	24	Atlas		1,884,653	1
	2/7/2018 3:30	2/7/2018 4:45	75	0.41	450,180	0.62	0.22	6	Atlas		184,574	1
	2/11/2018 9:30	2/11/2018 11:30	120	0.35	768,703	0.82	0.16	12	Atlas		269,046	1
	3/24/2018 9:15	3/24/2018 18:15	540	0.88	574,642	1.63	0.35	12	Atlas		505,685	1
	4/14/2018 10:00	4/14/2018 10:15	15	1.29	66,100	0.32	0.42	48	Atlas		85,269	1
	4/1/2018 20:30	4/2/2018 0:30	240	0.55	961,536	1.89	0.30	6	Atlas		528,845	1
	4/3/2018 16:45	4/3/2018 22:15	330	0.51	550,275	2.39	0.28	6	Atlas		280,640	1
	4/15/2018 6:00	4/15/2018 10:15	255	1.29	186,496	1.31	0.42	48	Atlas		240,580	1
	4/23/2018 6:00	4/23/2018 7:30	90	0.68	80,497	0.64	0.30	12	Atlas		54,738	1
	5/5/2018 14:30	5/5/2018 20:00	330	1.58	1,180,251	1.44	0.61	12	Atlas		1,864,797	1
	5/17/2018 16:00	5/17/2018 16:15	15	0.31	46,729	0.35	0.25	1	Atlas		14,486	1
	6/25/2018 11:00	6/25/2018 12:15	75	0.91	218,997	1.43	0.37	12	Atlas		199,287	1
	6/26/2018 13:00	6/26/2018 21:45	525	0.75	721,337	2.07	0.33	12	Atlas		541,003	1
	6/1/2018 0:45	6/1/2018 3:30	165	1.21	652,196	1.8	0.60	3	Atlas		789,157	1
	6/10/2018 15:15	6/10/2018 15:15	0	0.44	13,955	0.21	0.20	12	Atlas		6,140	1
	6/11/2018 11:45	6/11/2018 14:15	150	0.48	446,279	0.89	0.28	3	Atlas		214,214	1
	7/23/2017 3:00	7/23/2017 11:00	480	1.08	840,266	1.07	0.50	12	Atlas		907,487	1
	7/7/2017 21:15	7/7/2017 22:30	75	0.35	730,466	1.05	0.24	1	Atlas		255,663	1
	8/22/2017 16:15	8/22/2017 17:15	60	0.55	484,958	1.26	0.39	1	Atlas		266,727	1
	7/28/2017 10:00	7/28/2017 11:30	90	0.28	1,042,861	1.35	0.20	1	Atlas		292,001	1
	7/6/2017 5:00	7/6/2017 14:15	555	0.58	582,869	1.36	0.27	3	Atlas		338,064	1
	8/6/2017 17:00	8/7/2017 1:15	495	0.6	436,768	0.99	0.27	12	Atlas		262,061	1
	8/17/2017 15:15	8/17/2017 20:00	285	0.69	767,599	0.72	0.38	6	Atlas		529,643	1
	8/2/2017 13:30	8/2/2017 14:00	30	0.33	101,209	0.66	0.29	1	Atlas		33,399	1
	8/29/2017 19:45	8/29/2017 20:00	15	0.14	207,786	0.17	0.10	1	Atlas		29,090	1
	9/1/2017 8:15	9/2/2017 11:30	1635	3.88	965,379	4.05	4.00	24	Cloudburst		3,745,672	1
	9/19/2017 9:15	9/19/2017 10:45	90	0.46	381,285	0.86	0.29	3	Atlas		175,391	1
CSO110 Total											27,187,279	47
CSO111	10/7/2017 22:00	10/7/2017 22:15	15	1.83	30,370	0.52	0.70	24	Atlas		55,578	1
	10/8/2017 14:00	10/8/2017 14:15	15	1.83	2,398	1.66	0.70	24	Atlas		4,388	1
	11/3/2017 4:45	11/3/2017 5:15	30	1.51	29,077	2.47	2.75	1	Atlas		43,906	1
	11/6/2017 8:45	11/6/2017 21:30	765	0.16	888,325	1.8	0.10	1	Atlas		142,132	1
	11/15/2017 13:45	11/15/2017 14:45	60	0.25	13,024	0.29	0.16	1	Atlas		3,256	1
	12/5/2017 3:30	12/5/2017 6:15	165	0.58	248,917	0.58	0.33	3	Atlas		144,372	1
	12/23/2017	12/23/2017 5:30	330	1.05	131,816	0.92	0.42	12	Atlas		138,407	1
	3/29/2018 19:15	3/29/2018 20:15	60	1.07	101,192	1.77	0.29	48	Atlas		108,275	1
	2/24/2018 10:30	2/25/2018 10:15	1425	1.73	10,124,005	4.76	0.72	12	Atlas		17,514,529	1
	3/28/2018 6:00	3/28/2018 6:00	0	1.07	5,815	1.21	0.29	48	Atlas		6,222	1
	2/16/2018 2:45	2/16/2018 3:15	30	0.72	14,650	1.18	0.33	12	Atlas		10,548	1
	2/23/2018 3:15	2/23/2018 12:15	540	1.21	345,883	3.5	0.56	12	Atlas		418,518	1
	3/10/2018 1:15	3/10/2018 2:30	75	0.61	46,372	0.6	0.38	3	Atlas		28,287	1
	2/22/2018 1:30	2/22/2018 6:45	315	1.62	222,340	2.62	0.60	24	Atlas		360,190	1
	2/11/2018 10:30	2/11/2018 10:45	15	0.35	59,260	0.82	0.16	12	Atlas		20,741	1
	2/21/2018 7:30	2/21/2018 7:30	0	1.62	585	1.44	0.60	24	Atlas		948	1
	3/24/2018 10:45	3/24/2018 14:45	240	0.88	112,424	1.57	0.35	12	Atlas		98,933	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO111	3/31/2018 22:15	3/31/2018 22:15	0	0.22	10,914	1.25	0.11	3	Atlas		2,401	1
	4/3/2018 16:30	4/3/2018 16:45	15	0.51	6,916	2.1	0.28	6	Atlas		3,527	1
	4/1/2018 20:15	4/1/2018 23:45	210	0.55	284,225	1.89	0.30	6	Atlas		156,324	1
	4/14/2018 9:30	4/14/2018 10:00	30	1.29	15,928	0.32	0.42	48	Atlas		20,547	1
	4/15/2018 5:45	4/15/2018 9:15	210	1.29	21,482	1.27	0.42	48	Atlas		27,712	1
	5/31/2018 14:15	5/31/2018 14:15	0	1.21	4,773	0.7	0.60	3	Atlas		5,775	1
	5/5/2018 14:15	5/5/2018 19:00	285	1.58	264,527	1.44	0.61	12	Atlas		417,952	1
	5/17/2018 15:45	5/17/2018 16:00	15	0.31	106,768	0.33	0.25	1	Atlas		33,098	1
	5/13/2018 22:45	5/14/2018 1:00	135	Discharge	0	0.01	#N/A	#N/A	#N/A		48,180	1
	6/10/2018 15:00	6/10/2018 15:15	15	0.44	67,123	0.21	0.20	12	Atlas		29,534	1
	6/1/2018 0:30	6/1/2018 3:00	150	1.21	143,211	1.73	0.60	3	Atlas		173,285	1
	6/11/2018 11:30	6/11/2018 13:45	135	0.48	127,904	0.87	0.28	3	Atlas		61,394	1
	6/22/2018 13:30	6/22/2018 13:30	0	0.32	7,228	0.49	0.17	1	Atlas		2,313	1
	6/25/2018 9:30	6/25/2018 10:45	75	0.91	84,799	1.27	0.37	12	Atlas		77,167	1
	6/26/2018 11:45	6/26/2018 20:30	525	Discharge	0	1.91	#N/A	#N/A	#N/A	Data Under Review	149,448	1
	7/23/2017 2:45	7/23/2017 7:15	270	1.08	4,990	0.78	0.50	12	Atlas		5,389	1
	7/6/2017 13:15	7/6/2017 13:15	0	0.58	584	1.32	0.27	3	Atlas		339	1
	7/7/2017 21:15	7/7/2017 21:15	0	0.35	3,814	1.02	0.24	1	Atlas		1,335	1
	7/28/2017 10:00	7/28/2017 10:30	30	0.28	32,954	1.35	0.20	1	Atlas		9,227	1
	8/2/2017 13:15	8/2/2017 13:15	0	0.33	1,455	0.66	0.29	1	Atlas		480	1
	9/1/2017 15:00	9/1/2017 22:00	420	3.88	835	3.48	4.00	24	Cloudburst		3,238	1
CSO111 Total											20,327,895	38
CSO118	10/7/2017 21:30	10/7/2017 23:15	105	1.6	1,671,391	0.55	0.60	24	Atlas		2,674,225	1
	10/8/2017 10:15	10/8/2017 19:45	570	1.6	1,826,112	1.59	0.60	24	Atlas		2,921,779	1
	10/10/2017 14:00	10/10/2017 21:00	420	0.68	2,225,931	2.29	0.36	6	Atlas		1,513,633	1
	10/23/2017 6:30	10/23/2017 8:00	90	0.47	1,436,738	0.4	0.25	6	Atlas		675,267	1
	10/27/2017 17:15	10/28/2017 0:45	450	0.8	1,035,870	1.32	0.37	12	Atlas		828,696	1
	11/3/2017 4:30	11/3/2017 6:00	90	1	3,940,038	1.93	0.79	1	Atlas		3,940,038	1
	11/6/2017 1:45	11/6/2017 2:15	30	0.31	3,427,981	1.44	0.21	1	Atlas		1,062,674	1
	11/15/2017 13:15	11/15/2017 14:00	45	0.26	1,355,585	0.28	0.16	3	Atlas		352,452	1
	11/18/2017 16:30	11/18/2017 17:45	75	0.31	1,398,206	0.55	0.17	3	Atlas		433,444	1
	12/5/2017 3:45	12/5/2017 6:15	150	0.77	3,098,619	0.77	0.45	3	Atlas		2,385,937	1
	12/22/2017 23:00	12/23/2017 12:15	795	1.09	3,423,971	1.08	0.42	24	Atlas		3,732,128	1
	1/27/2018 14:30	1/27/2018 16:00	90	0.31	49,735	0.45	0.16	3	Atlas		15,418	1
	1/22/2018 19:45	1/22/2018 19:45	0	0.2	447,800	0.29	0.10	1	Atlas		89,560	1
	1/11/2018 10:15	1/11/2018 10:30	15	0.08	5,988	0.2	0.05	3	Atlas		479	1
	1/12/2018 4:00	1/12/2018 9:45	345	0.31	4,410	0.35	0.12	24	Atlas		1,367	1
	2/23/2018 2:30	2/23/2018 22:15	1185	1.15	12,127,850	3.52	0.53	12	Atlas		13,947,028	1
	2/21/2018 7:15	2/22/2018 16:00	1965	1.58	5,506,142	2.71	0.58	24	Atlas		8,699,704	1
	2/7/2018 1:15	2/7/2018 4:30	195	0.51	2,063,620	0.74	0.28	6	Atlas		1,052,446	1
	2/11/2018 4:00	2/11/2018 11:00	420	0.37	2,632,397	1	0.17	12	Atlas		973,987	1
	2/16/2018 2:30	2/16/2018 11:30	540	0.68	2,497,775	1.58	0.31	12	Atlas		1,698,487	1
	2/14/2018 7:15	2/14/2018 9:45	150	0.35	382,746	0.78	0.17	3	Atlas		133,961	1
	3/28/2018 5:30	3/28/2018 6:30	60	1.1	151,318	1.37	0.28	48	Atlas		166,450	1
	2/17/2018 14:00	2/17/2018 16:15	135	0.18	658,356	1.71	0.11	3	Atlas		118,504	1
	2/24/2018 9:30	2/26/2018 17:30	3360	1.65	11,616,313	4.57	0.66	12	Atlas		19,166,916	1
	2/28/2018 14:15	2/28/2018 15:15	60	0.07	512,457	4.15	0.04	6	Atlas		35,872	1
	3/1/2018 6:30	3/1/2018 14:00	450	0.01	1,274,800	2.88	0.01	1	Atlas		12,748	1
	3/10/2018 0:45	3/10/2018 3:00	135	0.53	1,382,683	0.55	0.33	3	Atlas		732,822	1
	3/19/2018 19:30	3/19/2018 20:00	30	0.28	232,371	0.31	0.17	3	Atlas		65,064	1
	3/24/2018 8:45	3/24/2018 19:45	660	0.94	1,561,395	1.68	0.36	24	Atlas		1,467,711	1
	3/29/2018 14:00	3/30/2018 6:45	1005	1.1	714,692	2.01	0.28	48	Atlas		786,161	1
	3/31/2018 22:00	3/31/2018 23:45	105	0.23	609,330	1.35	0.12	1	Atlas		140,146	1
	4/3/2018 16:15	4/4/2018 17:15	1500	0.51	2,994,900	2.5	0.28	6	Atlas		1,527,399	1
	4/1/2018 20:00	4/2/2018 0:30	270	0.6	3,911,302	1.99	0.33	6	Atlas		2,346,781	1
	4/14/2018 8:45	4/14/2018 10:00	75	1.04	412,684	0.27	0.34	48	Atlas		429,191	1
	4/14/2018 21:15	4/15/2018 9:45	750	1.04	869,125	1.05	0.34	48	Atlas		903,890	1
	4/23/2018 5:00	4/23/2018 11:30	390	0.65	744,391	0.78	0.30	12	Atlas		483,854	1

Discharge indicates no correlated rain event.

Standard refers to Rainfall Frequency Atlas of the United States or Hydmet Louisville Cloudburst.

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO118	5/31/2018 14:15	5/31/2018 14:15	0	0.12	2,008	0.53	0.08	3	Atlas		241	1
	5/5/2018 14:00	5/5/2018 19:00	300	1.24	4,174,334	1.09	0.47	12	Atlas		5,176,174	1
	5/27/2018 4:00	5/27/2018 4:45	45	0.3	4,202,107	0.36	0.22	1	Atlas		1,260,632	1
	5/17/2018 15:45	5/17/2018 15:45	0	0.26	1,808	0.26	0.22	1	Atlas		470	1
	5/30/2018 10:15	5/30/2018 10:30	15	0.05	1,780	0.48	0.03	1	Atlas		89	1
	6/10/2018 15:00	6/10/2018 15:15	15	0.4	1,094,838	0.18	0.18	12	Atlas		437,935	1
	6/1/2018 0:30	6/1/2018 3:45	195	1.42	2,484,856	2.02	0.83	3	Atlas		3,528,495	1
	6/25/2018 10:45	6/25/2018 12:15	90	0.92	2,137,247	1.47	0.38	12	Atlas		1,966,267	1
	6/26/2018 13:00	6/26/2018 22:30	570	0.61	2,154,187	2.03	0.25	12	Atlas		1,314,054	1
	6/11/2018 11:15	6/11/2018 14:00	165	0.54	1,869,009	0.63	0.18	48	Atlas		1,009,265	1
	6/12/2018	6/12/2018	0	0.54	289	0.68	0.18	48	Atlas		156	1
	6/12/2018 12:15	6/12/2018 12:30	15	0.54	3,411	0.86	0.18	48	Atlas		1,842	1
	6/16/2018 19:30	6/16/2018 19:30	0	0.23	4,065	1.21	0.20	1	Atlas		935	1
	6/22/2018 13:00	6/22/2018 15:00	120	0.27	1,802,381	0.73	0.14	1	Atlas		486,643	1
	6/27/2018 7:15	6/27/2018 7:15	0	0.61	1,223	2.1	0.25	12	Atlas		746	1
	9/1/2017 7:45	9/2/2017 5:30	1305	3.29	3,441,859	3.36	1.92	24	Cloudburst		11,323,715	1
	7/23/2017 1:45	7/23/2017 10:00	495	1.18	2,644,900	1.18	0.54	12	Atlas		3,120,982	1
	7/28/2017 9:15	7/28/2017 10:30	75	0.52	3,373,352	1.71	0.40	1	Atlas		1,754,143	1
	8/1/2017 21:15	8/1/2017 21:45	30	0.23	1,913,883	0.75	0.19	1	Atlas		440,193	1
	8/22/2017 16:00	8/22/2017 16:45	45	0.76	2,322,134	1.32	0.51	1	Atlas		1,764,822	1
	9/19/2017 8:00	9/19/2017 10:30	150	0.43	5,269,835	0.86	0.27	3	Atlas		2,266,029	1
	8/17/2017 15:00	8/17/2017 18:30	210	0.53	2,596,868	0.56	0.29	6	Atlas		1,376,340	1
	7/7/2017 20:30	7/7/2017 21:15	45	0.26	1,415,458	1.17	0.17	1	Atlas		368,019	1
	8/6/2017 17:00	8/7/2017 0:15	435	0.56	527,700	0.8	0.25	12	Atlas		295,512	1
	7/6/2017 4:30	7/6/2017 17:30	780	0.51	737,420	0.94	0.23	6	Atlas		376,084	1
CSO118 Total											113,786,002	61
CSO119	10/7/2017 21:30	10/7/2017 22:45	75	1.6	139,853	0.54	0.60	24	Atlas		223,765	1
	10/8/2017 10:30	10/8/2017 15:00	270	1.6	252,877	1.52	0.60	24	Atlas		404,603	1
	10/10/2017 14:30	10/10/2017 16:30	120	0.68	388,732	2.2	0.36	6	Atlas		264,338	1
	10/23/2017 6:15	10/23/2017 7:00	45	0.47	212,732	0.31	0.25	6	Atlas		99,984	1
	10/27/2017 17:30	10/28/2017 0:15	405	0.8	184,750	1.29	0.37	12	Atlas		147,800	1
	11/3/2017 4:15	11/3/2017 5:45	90	1	430,245	1.93	0.79	1	Atlas		430,245	1
	11/6/2017 1:45	11/6/2017 2:15	30	0.31	350,648	1.44	0.21	1	Atlas		108,701	1
	11/15/2017 13:15	11/15/2017 13:45	30	0.26	249,277	0.28	0.16	3	Atlas		64,812	1
	11/18/2017 17:00	11/18/2017 17:30	30	0.31	213,784	0.55	0.17	3	Atlas		66,273	1
	12/5/2017 3:15	12/5/2017 6:00	165	0.77	536,662	0.77	0.45	3	Atlas		413,230	1
	12/22/2017 23:15	12/23/2017 5:15	360	1.09	781,611	0.9	0.42	24	Atlas		851,956	1
	2/7/2018 2:45	2/7/2018 4:00	75	0.51	359,145	0.73	0.28	6	Atlas		183,164	1
	3/29/2018 19:00	3/29/2018 19:45	45	1.1	51,727	1.83	0.28	48	Atlas		56,900	1
	3/28/2018 5:45	3/28/2018 5:45	0	1.1	10,066	1.31	0.28	48	Atlas		11,073	1
	2/11/2018 4:00	2/11/2018 10:45	405	0.37	500,149	1	0.17	12	Atlas		185,055	1
	2/16/2018 2:30	2/16/2018 11:00	510	0.68	615,157	1.56	0.31	12	Atlas		418,307	1
	2/23/2018 2:45	2/23/2018 17:00	855	1.15	2,033,961	3.49	0.53	12	Atlas		2,339,055	1
	3/10/2018 0:45	3/10/2018 2:45	120	0.53	621,189	0.54	0.33	3	Atlas		329,230	1
	3/24/2018 8:45	3/24/2018 19:30	645	0.94	550,817	1.67	0.36	24	Atlas		517,768	1
	2/22/2018 0:45	2/22/2018 15:00	855	1.58	1,942,846	2.51	0.58	24	Atlas		3,069,696	1
	2/24/2018 9:45	2/26/2018 16:45	3300	1.65	6,156,818	4.57	0.66	12	Atlas		10,158,750	1
	4/1/2018 20:00	4/1/2018 23:30	210	0.6	907,012	1.99	0.33	6	Atlas		544,207	1
	4/23/2018 5:15	4/23/2018 6:45	90	0.65	97,742	0.65	0.30	12	Atlas		63,532	1
	5/5/2018 14:00	5/5/2018 18:45	285	1.24	675,280	1.09	0.47	12	Atlas		837,347	1
	5/27/2018 4:00	5/27/2018 4:30	30	0.3	345,740	0.35	0.22	1	Atlas		103,722	1
	6/10/2018 14:45	6/10/2018 15:00	15	0.4	153,400	0.17	0.18	12	Atlas		61,360	1
	6/1/2018 0:30	6/1/2018 3:00	150	1.42	335,014	1.94	0.83	3	Atlas		475,720	1
	6/11/2018 11:00	6/11/2018 13:45	165	0.54	342,824	0.62	0.18	48	Atlas		185,125	1
	7/28/2017 9:15	7/28/2017 10:15	60	0.52	336,738	1.71	0.40	1	Atlas		175,104	1
	8/17/2017 14:45	8/17/2017 23:00	495	0.53	1,089,206	0.56	0.29	6	Atlas		577,279	1
	7/7/2017 20:30	7/7/2017 21:00	30	0.26	227,638	1.14	0.17	1	Atlas		59,186	1
	8/22/2017 15:45	8/22/2017 16:30	45	0.76	237,589	1.32	0.51	1	Atlas		180,568	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO119	9/19/2017 7:45	9/19/2017 9:45	120	0.43	656,653	0.84	0.27	3	Atlas		282,361	1
	7/6/2017 4:30	7/6/2017 13:00	510	0.51	237,741	0.82	0.23	6	Atlas		121,248	1
	7/23/2017 2:15	7/23/2017 9:30	435	1.18	317,164	1.16	0.54	12	Atlas		374,253	1
	8/6/2017 16:45	8/6/2017 23:45	420	0.56	69,127	0.78	0.25	12	Atlas		38,711	1
	9/1/2017 8:00	9/2/2017 4:30	1230	3.29	621,255	3.3	1.92	24	Cloudburst		2,043,930	1
CSO119 Total											26,468,358	37
CSO120	10/7/2017 21:30	10/7/2017 22:45	75	1.59	116,277	0.63	0.60	24	Atlas		184,881	1
	10/8/2017 10:30	10/8/2017 14:30	240	1.59	136,472	1.5	0.60	24	Atlas		216,990	1
	10/10/2017 14:45	10/10/2017 16:15	90	0.66	166,379	2.16	0.34	3	Atlas		109,810	1
	10/23/2017 6:45	10/23/2017 6:45	0	0.46	11,583	0.3	0.24	6	Atlas		5,328	1
	10/27/2017 17:45	10/28/2017	375	0.81	17,935	1.25	0.37	12	Atlas		14,527	1
	11/3/2017 5:15	11/3/2017 5:30	15	1.05	21,365	1.99	0.83	1	Atlas		22,433	1
	11/6/2017 2:00	11/6/2017 2:00	0	0.46	23,885	1.64	0.32	1	Atlas		10,987	1
	11/15/2017 13:00	11/15/2017 13:15	15	0.31	140,684	0.26	0.20	3	Atlas		43,612	1
	11/18/2017 17:00	11/18/2017 17:00	0	0.31	987	0.56	0.17	3	Atlas		306	1
	12/5/2017 3:15	12/5/2017 5:45	150	0.63	158,471	0.63	0.33	3	Atlas		99,837	1
	12/22/2017 22:30	12/23/2017 11:45	795	1.15	340,843	1.08	0.44	24	Atlas		391,969	1
	1/22/2018 19:45	1/22/2018 19:45	0	0.33	50,848	0.41	0.20	1	Atlas		16,780	1
	1/11/2018 9:00	1/11/2018 9:00	0	0.06	320,817	0.14	0.03	3	Atlas		19,249	1
	1/27/2018 13:45	1/27/2018 15:45	120	0.32	59,813	0.59	0.17	3	Atlas		19,140	1
	2/16/2018 3:15	2/16/2018 10:45	450	0.72	150,528	1.66	0.31	12	Atlas		108,380	1
	2/22/2018 1:00	2/22/2018 8:45	465	1.7	86,867	2.64	0.63	24	Atlas		147,674	1
	2/23/2018 3:15	2/23/2018 16:30	795	1.29	135,522	3.71	0.59	12	Atlas		174,823	1
	2/7/2018 1:15	2/7/2018 4:15	180	0.62	97,876	0.86	0.33	6	Atlas		60,683	1
	2/14/2018 7:30	2/14/2018 9:30	120	0.45	97,882	0.91	0.23	3	Atlas		44,047	1
	2/21/2018 5:15	2/21/2018 7:15	120	1.7	22,086	1.53	0.63	24	Atlas		37,546	1
	2/11/2018 9:15	2/11/2018 9:15	0	0.41	28,734	0.89	0.20	3	Atlas		11,781	1
	3/29/2018 19:45	3/29/2018 22:30	165	1.04	19,331	1.83	0.27	48	Atlas		20,104	1
	2/24/2018 10:45	2/24/2018 21:45	660	1.67	44,235	4.2	0.67	12	Atlas		73,872	1
	4/1/2018 20:00	4/1/2018 23:15	195	0.63	290,673	1.95	0.34	6	Atlas		183,124	1
	4/15/2018 5:45	4/15/2018 9:00	195	0.95	35,728	0.94	0.31	48	Atlas		33,942	1
	4/14/2018 9:00	4/14/2018 9:45	45	0.95	30,620	0.26	0.31	48	Atlas		29,089	1
	4/23/2018 5:30	4/23/2018 5:30	0	0.67	2,058	0.56	0.31	12	Atlas		1,379	1
	4/3/2018 21:30	4/3/2018 21:30	0	0.49	86,927	2.41	0.28	1	Atlas		42,594	1
	4/7/2018 4:00	4/8/2018 0:30	1230	0.04	4,002,850	1.44	0.02	12	Atlas		160,114	1
	5/5/2018 15:30	5/5/2018 18:45	195	1.31	74,600	1.21	0.51	6	Atlas		97,726	1
	5/17/2018 15:30	5/17/2018 15:30	0	0.14	79,550	0.14	0.11	1	Atlas		11,137	1
	5/27/2018 4:30	5/27/2018 4:30	0	0.33	56,700	0.43	0.24	1	Atlas		18,711	1
	6/10/2018 15:00	6/10/2018 15:00	0	0.4	1,855	0.19	0.18	12	Atlas		742	1
	6/11/2018 13:15	6/11/2018 13:30	15	0.24	307,725	0.6	0.15	1	Atlas		73,854	1
	6/25/2018 10:30	6/25/2018 11:30	60	0.93	113,171	1.58	0.38	12	Atlas		105,249	1
	6/26/2018 12:45	6/26/2018 12:45	0	0.69	102,680	1.85	0.28	12	Atlas		70,849	1
	6/11/2018 23:45	6/11/2018 23:45	0	0.29	158,903	0.65	0.14	1	Atlas		46,082	1
	6/1/2018 1:45	6/1/2018 5:15	210	1.35	119,444	2.07	0.79	3	Atlas		161,249	1
	6/2/2018 20:00	6/3/2018 6:45	645	Discharge	0	2.09	#N/A	#N/A	#N/A	Data Under Review	30,792	1
	7/23/2017 1:45	7/23/2017 6:45	300	1.02	257,735	0.71	0.47	12	Atlas		262,890	1
	9/19/2017 8:00	9/19/2017 9:00	60	0.47	211,553	0.74	0.30	3	Atlas		99,430	1
	8/17/2017 15:00	8/18/2017 10:15	1155	0.36	7,384,708	0.4	0.21	1	Atlas		2,658,495	1
	7/7/2017 20:45	7/7/2017 20:45	0	0.22	2,500	0.96	0.15	3	Atlas		550	1
	7/28/2017 9:30	7/28/2017 10:15	45	0.52	424,004	1.53	0.39	1	Atlas		220,482	1
	9/1/2017 10:15	9/2/2017 3:30	1035	2.98	284,155	2.91	1.31	24	Cloudburst		846,781	1
	8/6/2017 17:00	8/7/2017	420	0.52	81,315	0.86	0.23	12	Atlas		42,284	1
	7/6/2017 4:45	7/6/2017 13:00	495	0.5	111,550	0.76	0.25	3	Atlas		55,775	1
	8/22/2017 12:30	8/22/2017 16:45	255	0.74	220,942	1.13	0.43	1	Atlas		163,497	1
CSO120 Total											7,251,576	48
CSO121	10/7/2017 22:00	10/7/2017 23:00	60	1.59	48,313	0.64	0.60	24	Atlas		76,817	1
	10/8/2017 10:30	10/8/2017 19:30	540	1.59	85,174	1.59	0.60	24	Atlas		135,426	1
	10/10/2017 15:00	10/10/2017 21:00	360	0.66	211,711	2.26	0.34	3	Atlas		139,729	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO121	10/23/2017 6:30	10/23/2017 7:00	30	0.46	74,517	0.31	0.24	6	Atlas		34,278	1
	10/27/2017 17:30	10/28/2017 0:15	405	0.81	32,702	1.28	0.37	12	Atlas		26,489	1
	11/3/2017 4:30	11/3/2017 5:45	75	1.05	255,604	1.99	0.83	1	Atlas		268,384	1
	11/6/2017 2:00	11/6/2017 2:00	0	0.46	451,448	1.64	0.32	1	Atlas		207,666	1
	11/15/2017 13:30	11/15/2017 13:45	15	0.31	86,206	0.33	0.20	3	Atlas		26,724	1
	11/18/2017 16:45	11/18/2017 17:30	45	0.31	96,581	0.61	0.17	3	Atlas		29,940	1
	12/5/2017 3:30	12/5/2017 5:15	105	0.63	172,470	0.57	0.33	3	Atlas		108,656	1
	12/22/2017 23:30	12/23/2017 5:30	360	1.15	289,915	0.91	0.44	24	Atlas		333,402	1
	1/22/2018 20:00	1/22/2018 20:00	0	0.33	2,155	0.4	0.20	1	Atlas		711	1
	3/29/2018 19:15	3/29/2018 19:45	30	1.04	53,791	1.78	0.27	48	Atlas		55,943	1
	2/16/2018 2:45	2/16/2018 11:00	495	0.72	233,494	1.68	0.31	12	Atlas		168,116	1
	2/23/2018 3:00	2/23/2018 22:30	1170	1.29	2,176,255	3.73	0.59	12	Atlas		2,807,369	1
	2/7/2018 3:15	2/7/2018 3:45	30	0.62	75,790	0.83	0.33	6	Atlas		46,990	1
	2/11/2018 4:15	2/11/2018 11:00	405	0.41	180,207	1.15	0.20	3	Atlas		73,885	1
	3/19/2018 19:45	3/19/2018 19:45	0	0.29	11,372	0.31	0.17	3	Atlas		3,298	1
	3/28/2018 5:45	3/28/2018 5:45	0	1.04	14,066	1.31	0.27	48	Atlas		14,629	1
	2/14/2018 7:15	2/14/2018 7:30	15	0.45	95,702	0.81	0.23	3	Atlas		43,066	1
	3/10/2018 1:00	3/10/2018 2:15	75	0.56	115,046	0.53	0.35	3	Atlas		64,426	1
	3/24/2018 9:15	3/24/2018 19:30	615	0.93	107,948	1.67	0.35	24	Atlas		100,392	1
	2/24/2018 9:45	2/25/2018 0:15	870	1.67	1,606,081	4.74	0.67	12	Atlas		2,682,156	1
	2/17/2018 15:30	2/17/2018 15:30	0	0.21	22,371	1.85	0.13	3	Atlas		4,698	1
	2/21/2018 20:45	2/22/2018 16:30	1185	1.7	478,409	2.65	0.63	24	Atlas		813,296	1
	2/28/2018 13:45	2/28/2018 17:00	195	0.08	839,800	4.41	0.04	6	Atlas		67,184	1
	3/20/2018 16:15	3/20/2018 16:15	0	0.47	2,515	0.38	0.18	24	Atlas		1,182	1
	4/3/2018 16:30	4/3/2018 21:45	315	0.49	445,839	2.44	0.28	1	Atlas		218,461	1
	4/1/2018 20:15	4/1/2018 23:30	195	0.63	401,500	1.95	0.34	6	Atlas		252,945	1
	4/15/2018 5:45	4/15/2018 9:00	195	0.95	36,588	0.94	0.31	48	Atlas		34,759	1
	4/23/2018 5:30	4/23/2018 7:00	90	0.67	5,161	0.67	0.31	12	Atlas		3,458	1
	4/14/2018 8:45	4/14/2018 9:45	60	0.95	51,325	0.26	0.31	48	Atlas		48,759	1
	5/5/2018 14:15	5/5/2018 18:45	270	1.31	556,242	1.21	0.51	6	Atlas		728,677	1
	5/27/2018 4:30	5/27/2018 4:30	0	0.33	18,112	0.43	0.24	1	Atlas		5,977	1
	6/10/2018 15:00	6/10/2018 15:00	0	0.4	44,635	0.19	0.18	12	Atlas		17,854	1
	6/1/2018 0:30	6/1/2018 3:00	150	1.35	224,376	2	0.79	3	Atlas		302,908	1
	6/11/2018 11:30	6/11/2018 13:45	135	0.24	279,517	0.6	0.15	1	Atlas		67,084	1
	6/11/2018 23:45	6/11/2018 23:45	0	0.29	9,779	0.65	0.14	1	Atlas		2,836	1
	6/12/2018 12:15	6/12/2018 18:15	360	0.29	87,479	0.86	0.14	1	Atlas		25,369	1
	6/20/2018 13:15	6/20/2018 13:15	0	0.29	38,238	0.21	0.19	3	Atlas		11,089	1
	6/21/2018 8:00	6/21/2018 15:30	450	0.18	160,333	0.41	0.11	1	Atlas		28,860	1
	6/22/2018 12:15	6/22/2018 13:00	45	0.23	523,243	0.61	0.11	3	Atlas		120,346	1
	6/24/2018 23:00	6/25/2018 10:00	660	0.93	268,315	1.22	0.38	12	Atlas		249,533	1
	6/26/2018 11:00	6/26/2018 11:30	30	Discharge	0	1.64	#N/A	#N/A	#N/A	Data Under Review	19,715	1
	6/26/2018 19:45	6/26/2018 19:45	0	0.69	54,441	1.96	0.28	12	Atlas		37,564	1
	9/1/2017 8:30	9/2/2017 4:00	1170	2.98	303,046	2.94	1.31	24	Cloudburst		903,078	1
	8/1/2017 21:30	8/1/2017 21:45	15	0.32	59,797	0.82	0.26	1	Atlas		19,135	1
	8/6/2017 14:45	8/6/2017 14:45	0	0.52	15,533	0.49	0.23	12	Atlas		8,077	1
	9/19/2017 8:15	9/19/2017 10:00	105	0.47	419,298	0.88	0.30	3	Atlas		197,070	1
	8/22/2017 16:00	8/22/2017 16:45	45	0.74	177,435	1.13	0.43	1	Atlas		131,302	1
	8/17/2017 15:00	8/17/2017 18:15	195	0.36	840,094	0.39	0.21	1	Atlas		302,434	1
	7/7/2017 20:45	7/7/2017 20:45	0	0.22	88,255	0.96	0.15	3	Atlas		19,416	1
	7/28/2017 9:30	7/28/2017 10:15	45	0.52	124,635	1.53	0.39	1	Atlas		64,810	1
	7/6/2017 5:00	7/6/2017 13:00	480	0.5	87,070	0.76	0.25	3	Atlas		43,535	1
	7/23/2017 2:00	7/23/2017 9:45	465	1.02	117,523	1.02	0.47	12	Atlas		119,873	1
	8/7/2017	8/7/2017	0	0.52	53,523	0.86	0.23	12	Atlas		27,832	1
CSO121 Total											12,347,608	56
CSO125	10/7/2017 22:15	10/7/2017 23:15	60	2.09	57,797	0.78	0.78	24	Atlas		120,795	1
	10/8/2017 10:45	10/8/2017 19:45	540	2.09	255,884	2.07	0.78	24	Atlas		534,798	1
	10/10/2017 15:00	10/10/2017 17:00	120	0.84	212,729	2.82	0.42	3	Atlas		178,692	1
	10/23/2017 6:15	10/23/2017 7:15	60	0.66	240,898	0.37	0.30	6	Atlas		158,993	1

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CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO125	10/27/2017 18:00	10/28/2017 0:30	390	1.06	100,629	1.64	0.49	12	Atlas		106,667	1
	11/3/2017 4:45	11/3/2017 13:00	495	0.88	617,005	2.09	0.65	1	Atlas		542,964	1
	11/6/2017 2:00	11/6/2017 2:30	30	0.56	79,000	1.59	0.43	1	Atlas		44,240	1
	11/15/2017 13:30	11/15/2017 14:00	30	0.23	26,726	0.25	0.15	1	Atlas		6,147	1
	11/18/2017 17:00	11/18/2017 18:00	60	0.26	219,135	0.49	0.14	3	Atlas		56,975	1
	12/5/2017 4:00	12/5/2017 6:15	135	0.75	66,525	0.76	0.43	3	Atlas		49,894	1
	12/22/2017 23:45	12/23/2017 6:00	375	1.25	214,230	1.07	0.49	12	Atlas		267,787	1
	1/11/2018 9:15	1/11/2018 10:00	45	0.52	35,496	0.2	0.17	48	Atlas		18,458	1
	1/16/2018 11:00	1/16/2018 11:00	0	0.14	300	0.67	0.06	12	Atlas		42	1
	2/11/2018 10:15	2/11/2018 10:15	0	0.37	5,986	0.88	0.18	3	Atlas		2,215	1
	3/29/2018 19:15	3/29/2018 23:15	240	1.07	127,764	1.82	0.28	48	Atlas		136,708	1
	2/16/2018 2:45	2/16/2018 12:00	555	0.77	114,156	1.66	0.35	12	Atlas		87,900	1
	2/23/2018 3:00	2/23/2018 23:45	1245	1.26	2,081,492	3.91	0.58	12	Atlas		2,622,680	1
	2/24/2018 10:15	2/25/2018 20:45	2070	1.66	3,478,254	5.02	0.69	12	Atlas		5,773,902	1
	3/10/2018 1:15	3/10/2018 8:00	405	0.53	76,738	0.55	0.31	3	Atlas		40,671	1
	3/28/2018 5:45	3/28/2018 6:45	60	1.07	25,263	1.33	0.28	48	Atlas		27,031	1
	2/21/2018 21:45	2/22/2018 16:45	1140	1.89	718,349	2.9	0.65	24	Atlas		1,357,680	1
	3/24/2018 9:15	3/24/2018 21:45	750	0.89	849,672	1.7	0.34	24	Atlas		756,208	1
	2/21/2018 7:30	2/21/2018 7:45	15	1.89	1,286	1.54	0.65	24	Atlas		2,430	1
	3/31/2018 22:15	3/31/2018 23:00	45	0.22	77,318	1.3	0.11	3	Atlas		17,010	1
	2/17/2018 14:00	2/17/2018 15:30	90	0.21	118,310	1.83	0.13	3	Atlas		24,845	1
	3/19/2018 18:00	3/19/2018 18:00	0	0.3	6,937	0.18	0.17	3	Atlas		2,081	1
	3/30/2018 8:00	3/30/2018 8:15	15	1.07	852	2.03	0.28	48	Atlas		912	1
	4/23/2018 5:45	4/23/2018 6:00	15	0.69	14,490	0.6	0.32	12	Atlas		9,998	1
	4/14/2018 23:30	4/15/2018 10:15	645	1.39	54,214	1.42	0.45	48	Atlas		75,358	1
	4/3/2018 16:30	4/3/2018 22:30	360	0.53	504,302	2.51	0.23	6	Atlas		267,280	1
	4/1/2018 20:15	4/2/2018 0:15	240	0.69	398,480	2.05	0.38	6	Atlas		274,951	1
	4/14/2018 9:30	4/14/2018 10:15	45	1.39	80,717	0.35	0.45	48	Atlas		112,196	1
	5/5/2018 14:15	5/5/2018 19:00	285	2.1	169,356	2	0.95	6	Atlas		355,648	1
	6/1/2018 1:15	6/1/2018 1:15	0	1.08	236	1.06	0.55	3	Atlas		255	1
	6/22/2018 14:15	6/22/2018 15:15	60	0.43	69,640	0.81	0.21	6	Atlas		29,945	1
	6/25/2018 10:45	6/25/2018 12:15	90	0.87	65,552	1.69	0.35	12	Atlas		57,030	1
	6/10/2018 15:15	6/10/2018 15:15	0	0.4	1,050	0.17	0.18	12	Atlas		420	1
	6/11/2018 11:15	6/11/2018 13:15	120	0.33	57,597	0.65	0.18	1	Atlas		19,007	1
	6/24/2018 5:00	6/24/2018 5:00	0	0.01	388,800	0.84	0.01	1	Atlas		3,888	1
	6/26/2018 18:45	6/26/2018 19:30	45	0.82	30,491	2.2	0.34	12	Atlas		25,003	1
	7/23/2017 2:45	7/23/2017 10:00	435	1.1	573,405	1.11	0.50	12	Atlas		630,745	1
	8/22/2017 16:15	8/22/2017 17:00	45	0.52	674,721	0.99	0.31	1	Atlas		350,855	1
	9/19/2017 8:15	9/19/2017 10:15	120	0.45	55,911	0.93	0.29	3	Atlas		25,160	1
	8/17/2017 15:15	8/17/2017 18:30	195	0.45	740,507	0.48	0.25	6	Atlas		333,228	1
	7/28/2017 9:45	7/28/2017 10:15	30	0.57	455,816	1.66	0.43	1	Atlas		259,815	1
	7/6/2017 4:30	7/6/2017 13:30	540	0.54	693,026	0.75	0.22	6	Atlas		374,234	1
	8/2/2017 13:15	8/2/2017 13:30	15	0.05	3,276,320	0.74	0.03	1	Atlas		163,816	1
	8/1/2017 22:00	8/1/2017 22:00	0	0.13	121,431	0.68	0.09	1	Atlas		15,786	1
	8/6/2017 17:15	8/7/2017 0:15	420	0.55	329,482	0.74	0.25	12	Atlas		181,215	1
	9/1/2017 13:15	9/2/2017 5:00	945	4.15	237,090	4.2	5.32	24	Cloudburst		983,922	1
CSO125 Total											17,488,480	50
CSO126	10/7/2017 22:15	10/7/2017 22:15	0	2.09	156	0.71	0.78	24	Atlas		325	1
	10/8/2017 14:00	10/8/2017 15:15	75	2.09	12,272	1.95	0.78	24	Atlas		25,648	1
	11/3/2017 4:45	11/3/2017 7:00	135	0.88	100,327	2.09	0.65	1	Atlas		88,288	1
	11/6/2017 2:00	11/6/2017 2:00	0	0.56	27,195	1.59	0.43	1	Atlas		15,229	1
	12/5/2017 4:00	12/5/2017 4:00	0	0.75	259	0.51	0.43	3	Atlas		194	1
	12/23/2017 4:15	12/23/2017 6:00	105	1.25	709	1.07	0.49	12	Atlas		886	1
	2/11/2018 10:15	2/11/2018 10:15	0	0.37	4,462	0.88	0.18	3	Atlas		1,651	1
	2/21/2018 21:45	2/22/2018 6:15	510	1.89	385,870	2.9	0.65	24	Atlas		729,295	1
	3/29/2018 19:30	3/29/2018 20:00	30	1.07	4,566	1.77	0.28	48	Atlas		4,886	1
	3/24/2018 10:45	3/24/2018 13:15	150	0.89	29,848	1.53	0.34	24	Atlas		26,565	1
	2/16/2018 4:00	2/16/2018 13:00	540	0.77	27,739	1.66	0.35	12	Atlas		21,359	1

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CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO126	2/17/2018 14:30	2/17/2018 16:15	105	0.21	56,386	1.83	0.13	3	Atlas		11,841	1
	2/22/2018 19:45	2/23/2018 5:15	570	Discharge	0	3.49	#N/A	#N/A	#N/A	Data Under Review	390,670	1
	2/23/2018 22:15	2/24/2018 23:30	1515	Discharge	0	4.81	#N/A	#N/A	#N/A	Data Under Review	936,498	1
	3/31/2018 23:00	4/1/2018	60	0.22	19,359	1.33	0.11	3	Atlas		4,259	1
	4/3/2018 16:30	4/3/2018 23:15	405	0.53	140,162	2.51	0.23	6	Atlas		74,286	1
	4/1/2018 20:45	4/2/2018 2:00	315	0.69	195,451	2.05	0.38	6	Atlas		134,861	1
	5/5/2018 14:15	5/5/2018 19:45	330	2.1	44,790	2.01	0.95	6	Atlas		94,060	1
	6/1/2018 1:15	6/1/2018 3:00	105	1.08	26,868	1.36	0.55	3	Atlas		29,017	1
	6/25/2018 10:30	6/25/2018 10:30	0	0.87	28,886	1.51	0.35	12	Atlas		25,131	1
	6/22/2018 14:30	6/22/2018 14:30	0	0.43	22,144	0.81	0.21	6	Atlas		9,522	1
	6/26/2018 13:15	6/26/2018 23:00	585	0.82	25,744	2.46	0.34	12	Atlas		21,110	1
	7/23/2017 2:45	7/23/2017 3:30	45	1.1	6,833	0.56	0.50	12	Atlas		7,516	1
	8/1/2017 21:45	8/1/2017 21:45	0	0.13	36,854	0.67	0.09	1	Atlas		4,791	1
	8/22/2017 16:00	8/22/2017 16:00	0	0.52	12,671	0.93	0.31	1	Atlas		6,589	1
	7/28/2017 9:45	7/28/2017 9:45	0	0.57	2,425	1.62	0.43	1	Atlas		1,382	1
	9/1/2017 22:00	9/2/2017 5:45	465	4.15	8,710	4.23	5.32	24	Cloudburst		36,147	1
CSO126 Total											2,702,006	27
CSO127	10/7/2017 22:00	10/8/2017 20:00	1320	2.08	387,993	2.06	0.78	24	Atlas		807,026	1
	10/10/2017 14:15	10/10/2017 21:30	435	0.89	153,565	2.97	0.46	3	Atlas		136,673	1
	10/23/2017 7:00	10/23/2017 8:15	75	0.67	19,721	0.5	0.30	6	Atlas		13,213	1
	10/27/2017 17:45	10/28/2017 1:30	465	1.18	95,731	1.79	0.54	12	Atlas		112,962	1
	11/3/2017 4:45	11/3/2017 7:15	150	1.47	1,017,722	2.8	2.00	1	Atlas		1,496,052	1
	11/6/2017 2:00	11/6/2017 3:00	60	0.5	160,600	2.12	0.37	1	Atlas		80,300	1
	11/7/2017 2:30	11/7/2017 2:45	15	0.26	12,823	2.35	0.12	12	Atlas		3,334	1
	11/15/2017 13:30	11/15/2017 14:30	60	0.24	168,563	0.27	0.17	1	Atlas		40,455	1
	11/18/2017 16:45	11/18/2017 18:15	90	0.3	163,060	0.55	0.17	3	Atlas		48,918	1
	12/5/2017 3:30	12/5/2017 6:45	195	0.85	84,779	0.86	0.49	3	Atlas		72,062	1
	12/22/2017 18:45	12/23/2017 12:30	1065	1.35	321,910	1.36	0.54	12	Atlas		434,578	1
	1/12/2018 4:15	1/12/2018 10:30	375	0.44	102,261	0.46	0.17	24	Atlas		44,995	1
	1/27/2018 14:15	1/27/2018 16:30	135	0.36	131,694	0.44	0.19	6	Atlas		47,410	1
	3/29/2018 19:15	3/29/2018 23:15	240	0.71	238,289	1.92	0.24	24	Atlas		169,185	1
	2/16/2018 2:45	2/16/2018 12:00	555	0.81	314,128	1.81	0.37	12	Atlas		254,444	1
	2/24/2018 10:15	2/26/2018 3:00	2445	1.73	4,604,188	5.27	0.71	12	Atlas		7,965,245	1
	2/14/2018 7:30	2/14/2018 16:00	510	0.38	108,113	0.96	0.18	3	Atlas		41,083	1
	3/28/2018 5:45	3/28/2018 7:00	75	0.44	156,680	1.36	0.19	12	Atlas		68,939	1
	2/23/2018 1:45	2/23/2018 21:00	1155	1.25	908,430	4.35	0.57	12	Atlas		1,135,537	1
	2/17/2018 13:45	2/17/2018 16:00	135	0.21	70,690	1.98	0.13	3	Atlas		14,845	1
	3/10/2018 0:45	3/10/2018 3:45	180	0.62	231,556	0.64	0.38	3	Atlas		143,565	1
	2/7/2018 1:30	2/7/2018 4:45	195	0.49	291,427	0.74	0.27	6	Atlas		142,799	1
	2/11/2018 4:30	2/11/2018 11:45	435	0.46	346,643	1.06	0.22	3	Atlas		159,456	1
	2/21/2018 5:30	2/21/2018 8:15	165	2.07	12,646	1.9	0.72	24	Atlas		26,177	1
	2/21/2018 19:00	2/22/2018 14:00	1140	2.07	707,059	3.14	0.72	24	Atlas		1,463,612	1
	3/19/2018 17:45	3/19/2018 20:15	150	0.33	83,591	0.33	0.19	3	Atlas		27,585	1
	3/24/2018 5:45	3/24/2018 20:15	870	0.91	245,004	1.77	0.35	24	Atlas		222,954	1
	4/3/2018 16:15	4/3/2018 22:30	375	0.55	351,064	2.59	0.23	6	Atlas		193,085	1
	4/1/2018 20:15	4/2/2018 0:15	240	0.66	292,147	2.12	0.36	6	Atlas		192,817	1
	4/23/2018 5:15	4/23/2018 11:30	375	0.72	164,860	0.87	0.32	12	Atlas		118,699	1
	4/14/2018 9:00	4/14/2018 10:15	75	1.46	34,117	0.38	0.47	48	Atlas		49,811	1
	4/14/2018 22:45	4/15/2018 10:15	690	1.46	241,147	1.49	0.47	48	Atlas		352,075	1
	5/17/2018 15:45	5/17/2018 16:00	15	0.19	337,379	0.21	0.16	1	Atlas		64,102	1
	5/5/2018 13:45	5/5/2018 19:15	330	2.06	174,512	1.96	0.89	6	Atlas		359,494	1
	6/10/2018 14:45	6/10/2018 21:30	405	0.39	80,946	0.38	0.18	12	Atlas		31,569	1
	6/1/2018 0:30	6/1/2018 3:45	195	1.07	345,236	1.43	0.53	3	Atlas		369,403	1
	6/12/2018 12:00	6/12/2018 12:30	30	0.29	70,138	1.18	0.15	1	Atlas		20,340	1
	6/25/2018 10:30	6/25/2018 12:30	120	0.97	194,482	1.59	0.40	12	Atlas		188,648	1
	6/26/2018 12:45	6/26/2018 22:45	600	0.83	1,041,289	2.38	0.35	12	Atlas		864,270	1
	6/11/2018 11:00	6/11/2018 14:15	195	0.6	166,133	0.83	0.28	3	Atlas		99,680	1
	6/22/2018 14:00	6/22/2018 15:00	60	0.4	163,338	0.64	0.21	1	Atlas		65,335	1

Discharge indicates no correlated rain event.

Standard refers to Rainfall Frequency Atlas of the United States or Hydmet Louisville Cloudburst.

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO127	7/23/2017 2:45	7/23/2017 10:30	465	1.21	222,303	1.21	0.56	12	Atlas		268,987	1
	8/1/2017 21:45	8/1/2017 22:15	30	0.19	301,858	0.94	0.15	1	Atlas		57,353	1
	9/1/2017 7:45	9/2/2017 6:30	1365	4.2	346,686	4.28	5.56	24	Cloudburst		1,456,080	1
	9/19/2017 8:15	9/19/2017 10:45	150	0.46	248,200	0.91	0.29	3	Atlas		114,172	1
	7/6/2017 4:15	7/7/2017 9:15	1740	0.61	2,726,579	1.08	0.25	6	Atlas		1,663,213	1
	8/17/2017 15:15	8/17/2017 19:00	225	0.51	173,533	0.55	0.28	6	Atlas		88,502	1
	8/22/2017 16:30	8/22/2017 17:15	45	0.43	140,740	0.96	0.24	1	Atlas		60,518	1
	7/28/2017 9:45	7/28/2017 11:00	75	0.76	182,641	1.97	0.61	1	Atlas		138,807	1
	8/2/2017 13:15	8/2/2017 13:45	30	0.22	127,668	1.17	0.19	1	Atlas		28,087	1
	7/7/2017 21:00	7/7/2017 21:00	0	0.13	788,515	0.79	0.09	3	Atlas		102,507	1
	8/6/2017 15:00	8/7/2017 0:45	585	0.62	154,594	1.04	0.28	12	Atlas		95,848	1
	9/12/2017 6:45	9/12/2017 8:00	75	0.28	10,711	0.33	0.14	6	Atlas		2,999	1
	9/12/2017 21:30	9/12/2017 21:30	0	0.44	218	0.37	0.16	24	Atlas		96	1
	9/13/2017 12:45	9/13/2017 13:00	15	0.44	67,761	0.58	0.16	24	Atlas		29,815	1
CSO127 Total											22,249,716	55
CSO130	2/24/2018 23:45	2/25/2018	15	1.62	1,796	4.49	0.67	12	Atlas		2,910	1
	2/25/2018 9:30	2/25/2018 11:45	135	1.62	2,092	4.62	0.67	12	Atlas		3,389	1
	5/5/2018 14:30	5/5/2018 14:30	0	1.58	10,122	0.93	0.68	6	Atlas		15,993	1
	6/1/2018 1:15	6/1/2018 1:15	0	1.53	39,101	1.63	0.81	3	Atlas		59,825	1
	6/25/2018 10:45	6/25/2018 11:00	15	0.85	14,554	1.92	0.35	12	Atlas		12,371	1
	6/26/2018 13:00	6/26/2018 13:15	15	0.65	940	2.29	0.25	12	Atlas		611	1
	7/23/2017 2:45	7/23/2017 2:45	0	1.02	977	0.44	0.47	12	Atlas		997	1
	7/6/2017 4:45	7/6/2017 5:00	15	0.46	3,193	0.43	0.21	6	Atlas		1,469	1
CSO130 Total											97,565	8
CSO131	10/7/2017 21:30	10/7/2017 21:45	15	1.73	23,902	0.57	0.65	24	Atlas		41,350	1
	10/8/2017 13:45	10/8/2017 13:45	0	1.73	2,388	1.54	0.65	24	Atlas		4,132	1
	11/3/2017 4:15	11/3/2017 5:00	45	1.16	121,357	2.07	0.94	1	Atlas		140,774	1
	11/6/2017 1:30	11/6/2017 1:45	15	0.74	84,114	2.03	0.57	1	Atlas		62,244	1
	12/5/2017 3:30	12/5/2017 3:30	0	0.55	50,231	0.25	0.29	3	Atlas		27,627	1
	8/17/2017 14:45	8/17/2017 14:45	0	0.34	104,779	0.14	0.19	6	Atlas		35,625	1
	7/23/2017 2:30	7/23/2017 3:00	30	1.02	8,129	0.51	0.47	12	Atlas		8,292	1
	8/22/2017 15:45	8/22/2017 15:45	0	0.47	45,130	0.8	0.28	1	Atlas		21,211	1
CSO131 Total											341,255	8
CSO132	10/7/2017 21:45	10/7/2017 23:30	105	1.74	49,911	0.65	0.66	24	Atlas		86,845	1
	10/8/2017 10:30	10/8/2017 20:00	570	1.74	432,748	1.74	0.66	24	Atlas		752,982	1
	10/10/2017 14:15	10/10/2017 21:15	420	0.68	921,184	2.44	0.35	3	Atlas		626,405	1
	10/17/2017 10:00	10/17/2017 17:30	450	Discharge	0	0.67	#N/A	#N/A	#N/A		360,352	1
	10/23/2017 6:30	10/23/2017 8:00	90	0.53	436,943	0.44	0.28	6	Atlas		231,580	1
	10/27/2017 17:45	10/28/2017 1:15	450	0.89	612,456	1.47	0.41	12	Atlas		545,086	1
	11/3/2017 4:30	11/3/2017 6:45	135	0.86	1,262,727	1.89	0.66	1	Atlas		1,085,945	1
	11/6/2017 1:30	11/6/2017 3:00	90	0.68	135,201	1.68	0.53	1	Atlas		91,937	1
	11/15/2017 13:15	11/15/2017 14:00	45	0.26	833,646	0.27	0.17	1	Atlas		216,748	1
	11/18/2017 16:45	11/18/2017 18:00	75	0.24	297,658	0.49	0.13	3	Atlas		71,438	1
	12/5/2017 3:15	12/5/2017 6:30	195	0.67	310,825	0.68	0.36	3	Atlas		208,253	1
	12/22/2017 23:00	12/23/2017 12:30	810	1.18	201,842	1.18	0.45	24	Atlas		238,173	1
	1/11/2018 9:00	1/11/2018 9:15	15	0.06	510,933	0.14	0.04	3	Atlas		30,656	1
	1/12/2018 4:15	1/12/2018 10:15	360	0.34	283,015	0.36	0.13	24	Atlas		96,225	1
	1/27/2018 14:15	1/27/2018 16:15	120	0.32	491,906	0.44	0.17	3	Atlas		157,410	1
	3/24/2018 9:00	3/24/2018 22:45	825	0.87	2,338,926	1.63	0.33	24	Atlas		2,034,866	1
	3/29/2018 19:00	3/29/2018 23:15	255	1.02	600,352	1.75	0.25	48	Atlas		612,359	1
	2/7/2018 1:15	2/7/2018 4:45	210	0.43	254,658	0.66	0.23	6	Atlas		109,503	1
	2/16/2018 2:30	2/16/2018 15:45	795	0.67	3,154,285	1.51	0.31	12	Atlas		2,113,371	1
	2/14/2018 7:15	2/14/2018 10:00	165	0.38	221,826	0.75	0.19	3	Atlas		84,294	1
	3/28/2018 5:30	3/28/2018 10:45	315	1.02	235,187	1.46	0.25	48	Atlas		239,891	1
	2/17/2018 14:00	2/17/2018 18:15	255	0.18	5,025,728	1.65	0.11	3	Atlas		904,631	1
	3/10/2018 0:45	3/10/2018 3:30	165	0.47	1,608,228	0.5	0.29	3	Atlas		755,867	1
	3/31/2018 22:00	4/1/2018 0:45	165	0.21	1,148,090	1.26	0.11	3	Atlas		241,099	1
	2/11/2018 4:30	2/11/2018 11:30	420	0.34	253,732	0.87	0.17	3	Atlas		86,269	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO132	3/19/2018 17:45	3/19/2018 20:00	135	0.32	297,066	0.33	0.19	3	Atlas		95,061	1
	2/20/2018 9:45	3/3/2018 18:30	16365	Discharge	0	6.13	#N/A	#N/A	#N/A	Data Under Review	119,722,596	1
	3/30/2018 7:45	3/30/2018 8:00	15	1.02	18,346	1.94	0.25	48	Atlas		18,713	1
	4/1/2018 20:00	4/2/2018 4:15	495	0.68	2,152,479	1.97	0.37	6	Atlas		1,463,686	1
	4/14/2018 9:15	4/14/2018 10:15	60	1.07	159,113	0.25	0.35	24	Atlas		170,251	1
	4/23/2018 5:15	4/23/2018 11:30	375	0.67	110,266	0.8	0.31	12	Atlas		73,878	1
	4/14/2018 22:45	4/15/2018 10:30	705	1.07	543,140	1.1	0.35	24	Atlas		581,160	1
	4/3/2018 2:00	4/4/2018 2:45	1485	0.07	18,790,086	2.29	0.05	1	Atlas		1,315,306	1
	5/5/2018 13:45	5/5/2018 19:15	330	1.49	358,442	1.4	0.63	6	Atlas		534,079	1
	6/25/2018 10:15	6/25/2018 12:15	120	0.88	345,130	1.85	0.36	12	Atlas		303,714	1
	6/26/2018 12:30	6/26/2018 22:30	600	Discharge	0	2.42	#N/A	#N/A	#N/A	Data Under Review	332,369	1
	6/10/2018 14:30	6/10/2018 15:15	45	0.41	317,361	0.2	0.19	12	Atlas		130,118	1
	6/11/2018 11:15	6/11/2018 13:45	150	0.25	1,078,664	0.63	0.17	1	Atlas		269,666	1
	6/20/2018 12:45	6/20/2018 13:00	15	0.37	45,284	0.27	0.24	3	Atlas		16,755	1
	6/22/2018 13:45	6/22/2018 15:00	75	0.4	271,400	0.99	0.21	1	Atlas		108,560	1
	9/19/2017 8:00	9/19/2017 10:15	135	0.41	807,010	0.87	0.27	3	Atlas		330,874	1
	8/17/2017 15:00	8/17/2017 18:30	210	0.32	1,353,203	0.36	0.18	1	Atlas		433,025	1
	7/7/2017 20:30	7/7/2017 20:30	0	0.12	192,125	0.8	0.08	3	Atlas		23,055	1
	8/6/2017 17:00	8/7/2017 0:15	435	0.43	767,165	0.58	0.19	12	Atlas		329,881	1
	7/6/2017 4:30	7/6/2017 13:30	540	0.48	457,635	0.66	0.20	6	Atlas		219,665	1
	9/1/2017 8:00	9/2/2017 6:45	1365	3.57	952,244	3.65	3.00	24	Cloudburst		3,399,512	1
	8/22/2017 12:30	8/22/2017 17:00	270	0.44	402,798	0.78	0.24	1	Atlas		177,231	1
	7/28/2017 10:30	7/28/2017 10:30	0	0.42	1,919	1.41	0.30	1	Atlas		806	1
	9/12/2017 7:15	9/12/2017 7:15	0	0.3	83,310	0.24	0.15	6	Atlas		24,993	1
CSO132 Total											142,057,139	49
CSO140	10/7/2017 21:45	10/7/2017 22:15	30	1.77	429,557	0.62	0.66	24	Atlas		760,316	1
	10/8/2017 10:30	10/8/2017 14:45	255	1.77	724,517	1.69	0.66	24	Atlas		1,282,395	1
	10/10/2017 14:45	10/10/2017 16:15	90	0.75	918,235	2.38	0.37	3	Atlas		688,676	1
	12/5/2017 8:45	12/5/2017 12:15	210	0.7	73	0.71	0.38	3	Atlas		51	1
	12/23/2017 4:00	12/23/2017 15:30	690	1.17	4,302	1.18	0.45	24	Atlas		5,033	1
	2/28/2018 13:30	2/28/2018 17:00	210	0.08	902,000	4.26	0.04	6	Atlas		72,160	1
	2/7/2018 8:00	2/7/2018 8:00	0	0.53	57	0.78	0.28	6	Atlas		30	1
	2/16/2018 7:45	2/16/2018 7:45	0	0.67	78	1.29	0.29	12	Atlas		52	1
	2/16/2018 16:30	2/16/2018 22:00	330	0.67	1,597	1.59	0.29	12	Atlas		1,070	1
	2/22/2018 2:00	2/24/2018 23:30	4170	1.64	2,530,940	5.2	0.60	24	Atlas		4,150,742	1
	3/1/2018 7:15	3/1/2018 7:15	0	0.02	1,300	2.96	0.01	12	Atlas		26	1
	3/24/2018 13:00	3/25/2018 4:30	930	0.86	4,598	1.64	0.33	24	Atlas		3,954	1
	3/29/2018 22:00	3/30/2018 8:00	600	1.02	1,175	1.94	0.26	48	Atlas		1,199	1
	4/1/2018 20:45	4/2/2018 9:15	750	0.65	101,297	1.94	0.36	6	Atlas		65,843	1
	4/3/2018 19:30	4/4/2018 4:00	510	0.45	193,531	2.36	0.25	6	Atlas		87,089	1
	4/15/2018 14:00	4/15/2018 16:45	165	1.09	26	1.13	0.37	24	Atlas		28	1
	5/5/2018 14:45	5/6/2018 2:45	720	1.44	27,374	1.47	0.59	6	Atlas		39,419	1
	7/23/2017 2:45	7/23/2017 3:30	45	1.12	924,128	0.63	0.51	12	Atlas		1,035,023	1
	9/19/2017 8:00	9/19/2017 9:30	90	0.5	2,141,814	0.93	0.32	3	Atlas		1,070,907	1
	8/17/2017 15:00	8/17/2017 15:00	0	0.37	750,503	0.1	0.20	1	Atlas		277,686	1
	7/28/2017 9:30	7/28/2017 9:45	15	0.58	945,141	1.68	0.44	1	Atlas		548,182	1
	8/6/2017 23:45	8/6/2017 23:45	0	0.49	376,614	0.73	0.22	12	Atlas		184,541	1
	7/6/2017 4:45	7/6/2017 12:45	480	0.48	892,260	0.76	0.23	3	Atlas		428,285	1
	8/22/2017 12:30	8/22/2017 16:30	240	0.53	1,619,226	0.9	0.30	1	Atlas		858,190	1
	9/1/2017 11:45	9/2/2017 3:30	945	3.46	3,299,165	3.41	2.48	24	Cloudburst		11,415,111	1
CSO140 Total											22,976,008	25
CSO141	6/10/2018 15:00	6/10/2018 15:00	0	0.4	903	0.19	0.18	12	Atlas		361	1
	6/1/2018 0:30	6/1/2018 1:15	45	1.35	18,103	1.71	0.79	3	Atlas		24,439	1
	6/26/2018 12:45	6/26/2018 12:45	0	0.69	11,036	1.85	0.28	12	Atlas		7,615	1
	6/11/2018 23:45	6/11/2018 23:45	0	0.29	352	0.65	0.14	1	Atlas		102	1
	7/1/2017	5/30/2018 7:15	479955	Discharge	0	35.24	#N/A	#N/A	#N/A		86,454,110	1
CSO141 Total											86,486,627	5
CSO142	10/7/2017 21:45	10/7/2017 22:00	15	1.68	13,427	0.53	0.64	24	Atlas	Retained by Sneads Branch FPS	22,558	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO142	10/8/2017 13:45	10/8/2017 14:00	15	1.68	5,179	1.49	0.64	24	Atlas	Retained by Sneads Branch FPS	8,700	1
	11/3/2017 4:30	11/3/2017 5:15	45	1.52	56,057	2.41	2.66	1	Atlas	Retained by Sneads Branch FPS	85,206	1
	11/6/2017 2:00	11/6/2017 2:00	0	0.19	88,421	1.83	0.11	1	Atlas	Retained by Sneads Branch FPS	16,800	1
	12/5/2017 4:00	12/5/2017 4:00	0	0.62	1,289	0.37	0.35	3	Atlas	Retained by Sneads Branch FPS	799	1
	2/11/2018 10:15	2/11/2018 10:15	0	0.36	8,631	0.86	0.17	3	Atlas	Retained by Sneads Branch FPS	3,107	1
	2/23/2018 4:15	2/23/2018 5:00	45	1.17	6,609	2.83	0.54	12	Atlas		7,733	1
	3/29/2018 19:00	3/29/2018 19:00	0	1.15	10,839	1.81	0.30	48	Atlas	Retained by Sneads Branch FPS	12,465	1
	2/22/2018 4:30	2/22/2018 5:15	45	1.64	13,502	2.65	0.61	24	Atlas		22,144	1
	2/24/2018 18:45	2/24/2018 23:15	270	1.79	24,313	4.37	0.73	12	Atlas		43,520	1
	4/3/2018 19:15	4/3/2018 19:15	0	0.48	5,679	2.32	0.26	6	Atlas	Retained by the Sneads Branch FPS	2,726	1
	5/5/2018 14:15	5/5/2018 15:15	60	1.31	32,310	0.83	0.50	12	Atlas	Retained by the Sneads Branch FPS	42,326	1
	6/10/2018 15:00	6/10/2018 15:00	0	0.47	6,630	0.21	0.22	12	Atlas	Retained by the Sneads Branch FPS	3,116	1
	6/1/2018 0:30	6/1/2018 1:15	45	1.57	17,101	1.74	0.84	1	Atlas	Retained by the Sneads Branch FPS	26,848	1
	6/11/2018 11:15	6/11/2018 13:15	120	0.41	41,880	0.8	0.24	3	Atlas	Retained by the Sneads Branch FPS	17,171	1
	7/23/2017 2:45	7/23/2017 6:45	240	1.05	16,056	0.73	0.48	12	Atlas		16,859	1
	8/22/2017 16:00	8/22/2017 16:00	0	0.54	45,241	1.17	0.35	1	Atlas		24,430	1
	9/19/2017 8:00	9/19/2017 8:00	0	0.4	8,608	0.56	0.26	3	Atlas		3,443	1
	8/17/2017 15:00	8/17/2017 15:00	0	0.72	39,879	0.37	0.39	6	Atlas		28,713	1
	9/1/2017 14:45	9/1/2017 14:45	0	3.08	555	1.67	1.53	24	Cloudburst		1,709	1
	7/28/2017 9:45	7/28/2017 9:45	0	0.27	11,867	1.31	0.20	1	Atlas		3,204	1
	7/7/2017 21:00	7/7/2017 21:00	0	0.27	1,219	0.88	0.18	1	Atlas		329	1
CSO142 Total											393,906	22
CSO144	11/3/2017 4:30	11/3/2017 5:00	30	0.81	120,183	1.79	0.61	1	Atlas		97,348	1
	2/24/2018 23:00	2/24/2018 23:15	15	1.6	61,846	4.43	0.67	12	Atlas		98,953	1
	6/1/2018 1:15	6/1/2018 1:15	0	1.16	59,067	1.2	0.60	3	Atlas		68,518	1
	8/17/2017 15:00	8/17/2017 15:00	0	0.35	144,589	0.12	0.19	1	Atlas		50,606	1
CSO144 Total											315,425	4
CSO148	10/7/2017 21:45	10/7/2017 22:15	30	1.88	7,594	0.51	0.71	24	Atlas		14,276	1
	10/8/2017 10:30	10/8/2017 14:00	210	1.88	9,754	1.66	0.71	24	Atlas		18,337	1
	10/10/2017 15:00	10/10/2017 20:45	345	0.79	925	2.68	0.42	3	Atlas		731	1
	10/23/2017 6:30	10/23/2017 7:00	30	0.54	8,091	0.35	0.29	6	Atlas		4,369	1
	10/27/2017 17:30	10/28/2017 0:15	405	1.03	1,218	1.57	0.47	12	Atlas		1,255	1
	11/3/2017 4:30	11/3/2017 5:30	60	1.87	95,016	3.04	6.92	1	Atlas		177,679	1
	11/6/2017 2:00	11/6/2017 2:00	0	0.19	67,821	2.19	0.12	1	Atlas		12,886	1
	11/15/2017 13:30	11/15/2017 13:45	15	0.23	1,648	0.25	0.15	1	Atlas		379	1
	11/18/2017 17:15	11/18/2017 17:15	0	0.33	16,867	0.55	0.21	1	Atlas		5,566	1
	12/5/2017 3:15	12/5/2017 5:00	105	0.62	69,815	0.55	0.35	3	Atlas		43,285	1
	12/22/2017 23:15	12/23/2017 5:15	360	1.16	19,190	1.04	0.47	12	Atlas		22,260	1
	1/11/2018 8:45	1/11/2018 8:45	0	0.09	6,778	0.18	0.05	3	Atlas		610	1
	2/24/2018 10:30	2/24/2018 23:45	795	1.78	259,618	4.6	0.74	12	Atlas		462,120	1
	2/7/2018 3:15	2/7/2018 3:30	15	0.41	20,976	0.58	0.22	6	Atlas		8,600	1
	3/29/2018 19:00	3/29/2018 19:30	30	0.72	40,635	1.76	0.24	24	Atlas		29,257	1
	2/14/2018 7:30	2/14/2018 7:30	0	0.44	750	0.64	0.20	12	Atlas		330	1
	2/16/2018 2:30	2/16/2018 2:45	15	0.73	7,429	1.18	0.33	12	Atlas		5,423	1
	3/24/2018 10:30	3/24/2018 14:15	225	0.85	14,160	1.57	0.33	12	Atlas		12,036	1
	2/11/2018 9:15	2/11/2018 10:45	90	0.35	29,963	0.81	0.17	3	Atlas		10,487	1
	2/23/2018 4:00	2/23/2018 9:15	315	1.14	53,604	3.3	0.52	12	Atlas		61,108	1
	2/22/2018 3:30	2/22/2018 5:30	120	1.69	72,127	2.68	0.62	24	Atlas		121,894	1
	4/1/2018 20:00	4/1/2018 23:00	180	0.57	22,728	1.98	0.31	6	Atlas		12,955	1
	4/15/2018 5:45	4/15/2018 5:45	0	1.51	2,721	1.14	0.49	48	Atlas		4,108	1
	4/14/2018 9:00	4/14/2018 9:45	45	1.51	7,418	0.45	0.49	48	Atlas		11,201	1
	4/3/2018 19:15	4/3/2018 19:15	0	0.55	16,153	2.36	0.30	6	Atlas		8,884	1
	5/5/2018 14:00	5/5/2018 18:30	270	2.1	61,394	1.94	0.89	6	Atlas		128,927	1
	5/31/2018 14:00	5/31/2018 14:00	0	1.23	4,500	0.62	0.61	3	Atlas		5,535	1
	5/27/2018 4:30	5/27/2018 4:30	0	0.26	13,162	0.24	0.18	1	Atlas		3,422	1
	6/10/2018 15:00	6/10/2018 15:00	0	0.44	8,541	0.21	0.20	12	Atlas		3,758	1
	6/1/2018 0:30	6/1/2018 2:00	90	1.23	54,295	1.49	0.61	3	Atlas		66,783	1
	6/25/2018 10:15	6/25/2018 10:30	15	0.93	17,831	1.18	0.38	12	Atlas		16,583	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO148	6/26/2018 12:30	6/26/2018 12:45	15	0.9	163,344	1.87	0.45	1	Atlas		147,010	1
	6/26/2018 21:15	6/26/2018 21:15	0	0.9	9,641	2.11	0.45	1	Atlas		8,677	1
	6/11/2018 11:00	6/11/2018 13:15	135	0.92	42,872	0.84	0.30	48	Atlas		39,442	1
	6/22/2018 13:45	6/22/2018 13:45	0	0.21	1,438	0.71	0.11	6	Atlas		302	1
	8/22/2017 16:00	8/22/2017 16:30	30	0.39	116,336	1.16	0.25	1	Atlas		45,371	1
	9/19/2017 8:00	9/19/2017 9:30	90	0.43	6,437	0.76	0.27	3	Atlas		2,768	1
	8/17/2017 15:00	8/17/2017 17:45	165	0.77	47,784	0.69	0.42	6	Atlas		36,794	1
	7/23/2017 2:30	7/23/2017 7:00	270	1.08	35,098	0.75	0.50	12	Atlas		37,906	1
	7/28/2017 9:30	7/28/2017 10:15	45	0.43	69,407	1.52	0.33	1	Atlas		29,845	1
	8/29/2017 19:15	8/29/2017 19:15	0	0.13	127,669	0.17	0.09	1	Atlas		16,597	1
	9/1/2017 10:15	9/2/2017 0:30	855	4.13	15,986	3.92	4.92	24	Cloudburst		66,022	1
	7/7/2017 20:30	7/7/2017 21:00	30	0.24	54,458	1.34	0.17	1	Atlas		13,070	1
	8/6/2017 14:30	8/6/2017 23:45	555	0.71	19,559	1.18	0.31	12	Atlas		13,887	1
	7/6/2017 4:15	7/6/2017 13:00	525	0.64	11,561	1.04	0.27	3	Atlas		7,399	1
	8/2/2017 13:00	8/2/2017 13:00	0	0.39	75,262	0.9	0.34	1	Atlas		29,352	1
	9/13/2017 12:15	9/13/2017 12:15	0	0.66	2	0.53	0.21	48	Atlas		1	1
CSO148 Total											1,769,487	47
CSO149	10/7/2017 21:45	10/8/2017 19:45	1320	1.68	1,315,202	1.67	0.64	24	Atlas		2,209,539	1
	10/10/2017 14:30	10/10/2017 21:15	405	0.65	2,184,352	2.33	0.32	3	Atlas		1,419,829	1
	10/23/2017 6:30	10/23/2017 8:15	105	0.49	1,312,178	0.44	0.26	6	Atlas		642,967	1
	10/27/2017 17:45	10/28/2017 1:15	450	0.8	839,555	1.35	0.37	12	Atlas		671,644	1
	11/3/2017 5:00	11/3/2017 6:30	90	1.52	2,089,722	2.44	2.66	1	Atlas		3,176,377	1
	11/6/2017 2:00	11/6/2017 2:45	45	0.19	2,856,163	1.83	0.11	1	Atlas		542,671	1
	11/15/2017 13:30	11/15/2017 14:15	45	0.28	386,046	0.31	0.17	3	Atlas		108,093	1
	11/18/2017 17:00	11/18/2017 18:00	60	0.35	744,546	0.62	0.20	1	Atlas		260,591	1
	12/5/2017 3:30	12/5/2017 6:30	180	0.62	2,165,118	0.62	0.35	3	Atlas		1,342,373	1
	12/12/2017 8:15	12/12/2017 16:15	480	0.01	262,387,000	0.01	0.01	1	Atlas		2,623,870	1
	12/22/2017 22:30	12/23/2017 5:45	435	1.09	1,386,318	0.91	0.42	24	Atlas		1,511,087	1
	1/27/2018 14:30	1/27/2018 16:30	120	0.34	420,465	0.49	0.18	6	Atlas		142,958	1
	1/22/2018 20:00	1/22/2018 20:00	0	0.18	41,828	0.25	0.08	12	Atlas		7,529	1
	1/12/2018 4:15	1/12/2018 10:00	345	0.35	43,351	0.36	0.13	24	Atlas		15,173	1
	2/14/2018 7:45	2/14/2018 9:45	120	0.39	263,208	0.76	0.18	12	Atlas		102,651	1
	3/29/2018 19:15	3/29/2018 23:00	225	1.15	263,123	1.94	0.30	48	Atlas		302,591	1
	3/28/2018 6:00	3/28/2018 6:45	45	1.15	106,052	1.35	0.30	48	Atlas		121,960	1
	2/23/2018 3:15	2/23/2018 12:45	570	1.17	10,788,421	3.57	0.54	12	Atlas		12,622,453	1
	3/19/2018 20:00	3/19/2018 20:15	15	0.27	56,189	0.29	0.15	3	Atlas		15,171	1
	2/16/2018 3:00	2/16/2018 11:15	495	0.75	1,009,805	1.72	0.34	12	Atlas		757,354	1
	3/31/2018 22:30	3/31/2018 23:00	30	0.22	170,564	1.37	0.11	3	Atlas		37,524	1
	3/10/2018 1:00	3/10/2018 3:15	135	0.67	1,938,130	0.7	0.43	3	Atlas		1,298,547	1
	3/24/2018 9:15	3/24/2018 15:15	360	0.95	882,698	1.55	0.37	24	Atlas		838,563	1
	2/21/2018 7:30	2/21/2018 7:45	15	1.64	33,613	1.48	0.61	24	Atlas		55,125	1
	2/24/2018 10:45	2/25/2018 13:00	1575	1.79	7,365,206	4.82	0.73	12	Atlas		13,183,718	1
	2/7/2018 1:30	2/7/2018 4:45	195	0.44	1,821,443	0.67	0.23	6	Atlas		801,435	1
	2/11/2018 4:30	2/11/2018 11:15	405	0.36	2,159,986	0.91	0.17	3	Atlas		777,595	1
	2/21/2018 19:15	2/22/2018 8:00	765	1.64	4,799,596	2.71	0.61	24	Atlas		7,871,338	1
	4/14/2018 23:30	4/15/2018 10:00	630	1	563,884	1.03	0.32	48	Atlas		563,884	1
	4/1/2018 20:15	4/1/2018 23:45	210	0.56	2,195,716	1.98	0.31	6	Atlas		1,229,601	1
	4/14/2018 9:30	4/14/2018 10:15	45	1	88,239	0.24	0.32	48	Atlas		88,239	1
	4/23/2018 5:30	4/23/2018 11:30	360	0.64	366,502	0.77	0.29	12	Atlas		234,561	1
	4/3/2018 16:45	4/3/2018 22:00	315	0.48	568,598	2.47	0.26	6	Atlas		272,927	1
	5/5/2018 12:30	5/5/2018 19:15	405	1.31	365,760	1.2	0.50	12	Atlas		479,146	1
	5/27/2018 4:30	5/27/2018 5:00	30	0.26	990,023	0.27	0.19	1	Atlas		257,406	1
	5/17/2018 16:30	5/17/2018 16:30	0	0.37	53,632	0.39	0.30	1	Atlas		19,844	1
	5/31/2018 14:30	5/31/2018 14:30	0	1.57	31,379	0.59	0.84	1	Atlas		49,265	1
	6/22/2018 14:15	6/22/2018 15:15	60	0.28	541,607	0.62	0.17	1	Atlas		151,650	1
	6/25/2018 10:45	6/25/2018 12:30	105	0.91	660,998	1.52	0.38	12	Atlas		601,508	1
	6/26/2018 13:00	6/26/2018 22:45	585	0.71	1,038,149	2.16	0.30	12	Atlas		737,086	1
	6/1/2018 0:45	6/1/2018 3:45	180	1.57	1,121,844	2.05	0.84	1	Atlas		1,761,295	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO149	6/10/2018 15:15	6/10/2018 15:45	30	0.47	379,243	0.23	0.22	12	Atlas		178,244	1
	6/11/2018 11:15	6/11/2018 14:15	180	0.41	1,487,678	0.85	0.24	3	Atlas		609,948	1
	6/12/2018 12:15	6/12/2018 12:45	30	0.36	349,553	1.13	0.17	1	Atlas		125,839	1
	6/12/2018 0:15	6/12/2018 0:15	0	0.36	1,611	0.92	0.17	1	Atlas		580	1
	7/23/2017 2:45	7/23/2017 10:15	450	1.05	689,767	1.05	0.48	12	Atlas		724,255	1
	8/22/2017 16:15	8/22/2017 17:15	60	0.54	1,504,883	1.27	0.35	1	Atlas		812,637	1
	9/19/2017 8:15	9/19/2017 10:30	135	0.4	3,920,770	0.8	0.26	3	Atlas		1,568,308	1
	8/17/2017 15:00	8/17/2017 18:45	225	0.72	1,640,413	0.75	0.39	6	Atlas		1,181,097	1
	7/7/2017 20:45	7/7/2017 22:00	75	0.27	952,681	1.24	0.18	1	Atlas		257,224	1
	8/29/2017 19:30	8/29/2017 20:00	30	0.12	1,862,675	0.16	0.09	1	Atlas		223,521	1
	7/6/2017 5:00	7/6/2017 13:45	525	0.53	573,647	1.2	0.26	6	Atlas		304,033	1
	8/6/2017 17:00	8/7/2017 0:30	450	0.53	376,845	0.67	0.23	12	Atlas		199,728	1
	7/28/2017 9:45	7/28/2017 10:45	60	0.27	670,378	1.32	0.20	1	Atlas		181,002	1
	8/2/2017 13:30	8/2/2017 13:30	0	0.01	642,000	0.42	0.01	1	Atlas		6,420	1
	9/1/2017 8:00	9/2/2017 5:45	1305	3.08	3,299,112	3.22	1.53	24	Cloudburst		10,161,265	1
	9/12/2017 8:00	9/12/2017 8:00	0	0.68	4,753	0.4	0.22	48	Atlas		3,232	1
	9/13/2017 15:00	9/13/2017 15:00	0	0.68	107	0.6	0.22	48	Atlas		73	1
CSO149 Total											76,444,544	58
CSO150	10/7/2017 21:45	10/7/2017 23:30	105	1.91	17,210	0.86	0.71	24	Atlas		32,872	1
	10/8/2017 13:00	10/8/2017 16:00	180	1.91	89,323	1.86	0.71	24	Atlas		170,607	1
	10/10/2017 16:00	10/10/2017 21:45	345	0.65	195,963	2.57	0.35	3	Atlas		127,376	1
	10/23/2017 6:15	10/23/2017 6:15	0	0.38	1,455	0.19	0.20	6	Atlas		553	1
	10/27/2017 20:00	10/28/2017 2:45	405	0.92	223,698	1.42	0.42	12	Atlas		205,802	1
	11/3/2017 4:30	11/3/2017 9:30	300	1	93,672	2.09	0.73	1	Atlas		93,672	1
	11/6/2017 1:30	11/6/2017 3:45	135	0.91	10,453	2.08	0.70	1	Atlas		9,512	1
	12/5/2017 5:00	12/5/2017 6:15	75	0.6	72,953	0.6	0.31	3	Atlas		43,772	1
	12/22/2017 23:45	12/23/2017 12:15	750	1.36	145,700	1.36	0.52	24	Atlas		198,152	1
	2/24/2018 10:30	3/1/2018 19:30	7740	2.13	3,652,571	6.21	0.90	12	Atlas		7,779,977	1
	3/24/2018 9:45	3/24/2018 20:00	615	1.13	161,065	1.93	0.43	24	Atlas		182,003	1
	2/7/2018 3:45	2/7/2018 4:30	45	0.6	27,627	0.9	0.33	6	Atlas		16,576	1
	2/21/2018 21:45	2/22/2018 11:45	840	1.89	201,719	3.15	0.71	24	Atlas		381,249	1
	2/23/2018 1:45	2/23/2018 22:00	1215	1.84	368,960	4.94	0.84	12	Atlas		678,886	1
	2/2/2018 2:45	2/2/2018 5:30	165	0.12	89,508	0.48	0.07	3	Atlas		10,741	1
	2/11/2018 11:30	2/11/2018 11:45	15	0.41	16,888	1.13	0.22	3	Atlas		6,924	1
	2/14/2018 10:00	2/14/2018 10:00	0	0.55	1,451	1.01	0.26	3	Atlas		798	1
	2/16/2018 5:45	2/16/2018 12:30	405	0.98	123,660	2.12	0.44	12	Atlas		121,187	1
	3/10/2018 3:00	3/10/2018 3:45	45	0.59	14,702	0.62	0.37	3	Atlas		8,674	1
	3/29/2018 20:45	3/29/2018 23:00	135	0.67	18,849	2.15	0.22	24	Atlas		12,629	1
	4/3/2018 21:15	4/3/2018 22:00	45	0.39	51,408	2.44	0.21	6	Atlas		20,049	1
	4/1/2018 21:15	4/2/2018 0:30	195	0.62	132,695	2.07	0.34	6	Atlas		82,271	1
	4/15/2018 9:00	4/15/2018 9:30	30	0.89	12,000	0.91	0.29	24	Atlas		10,680	1
	5/22/2018 7:45	5/22/2018 7:45	0	0.25	6,772	0.45	0.20	1	Atlas		1,693	1
	5/27/2018 4:00	5/27/2018 4:00	0	0.93	1,087	0.79	0.50	1	Atlas		1,011	1
	5/5/2018 14:30	5/5/2018 20:15	345	1.66	128,986	1.57	0.70	6	Atlas		214,117	1
	6/1/2018 1:00	6/1/2018 4:45	225	1.72	61,918	2.83	0.87	3	Atlas		106,499	1
	6/22/2018 13:45	6/22/2018 13:45	0	0.41	4,005	1.32	0.20	6	Atlas		1,642	1
	6/11/2018 14:15	6/11/2018 14:45	30	0.94	2,794	0.94	0.35	24	Atlas		2,626	1
	6/21/2018 16:00	6/21/2018 16:00	0	0.39	11,921	0.85	0.23	1	Atlas		4,649	1
	6/25/2018 9:45	6/25/2018 13:15	210	0.82	109,051	2.35	0.32	12	Atlas		89,422	1
	6/26/2018 12:00	6/26/2018 14:45	165	Discharge	0	2.77	#N/A	#N/A	#N/A	Data Under Review	63,695	1
	7/23/2017 3:00	7/23/2017 11:30	510	1.15	105,872	1.22	0.53	12	Atlas		121,753	1
	8/1/2017 21:30	8/1/2017 21:30	0	0.63	20,302	1.06	0.50	1	Atlas		12,790	1
	9/19/2017 8:15	9/19/2017 8:15	0	0.54	1,215	0.73	0.35	3	Atlas		656	1
	8/22/2017 16:00	8/22/2017 17:30	90	0.35	13,029	0.77	0.24	1	Atlas		4,560	1
	9/1/2017 9:30	9/2/2017 8:00	1350	2.71	413,953	2.82	0.95	24	Atlas		1,121,813	1
CSO150 Total											11,941,888	37
CSO151	10/7/2017 22:00	10/9/2017 0:30	1590	1.82	1,275,243	1.83	0.69	24	Atlas		2,320,943	1
	10/10/2017 14:15	10/10/2017 23:00	525	0.75	1,126,807	2.58	0.39	3	Atlas		845,105	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO151	10/23/2017 5:45	10/23/2017 9:45	240	0.52	844,102	0.51	0.27	6	Atlas		438,933	1
	10/24/2017 2:00	10/24/2017 2:00	0	0.09	8,956	0.61	0.04	1	Atlas		806	1
	10/27/2017 17:45	10/28/2017 4:45	660	0.9	1,095,348	1.52	0.41	12	Atlas		985,813	1
	11/3/2017 4:45	11/3/2017 9:30	285	1.96	1,240,523	2.99	8.46	1	Atlas		2,431,426	1
	11/6/2017 2:15	11/6/2017 4:15	120	0.25	1,925,828	2.34	0.16	1	Atlas		481,457	1
	11/7/2017 2:15	11/7/2017 7:45	330	0.22	474,386	2.56	0.10	12	Atlas		104,365	1
	11/15/2017 13:30	11/15/2017 16:15	165	0.25	812,576	0.28	0.16	1	Atlas		203,144	1
	11/18/2017 17:00	11/18/2017 18:30	90	0.38	502,908	0.62	0.24	1	Atlas		191,105	1
	2/14/2018 7:30	2/14/2018 16:30	540	0.37	767,211	0.88	0.17	12	Atlas		283,868	1
	3/28/2018 5:45	3/28/2018 12:45	420	0.44	798,400	1.48	0.19	12	Atlas		351,296	1
	2/17/2018 12:45	2/17/2018 18:15	330	0.2	1,071,310	1.86	0.13	3	Atlas		214,262	1
	3/24/2018 4:15	3/25/2018 15:15	2100	0.87	1,637,792	1.67	0.33	24	Atlas		1,424,879	1
	2/16/2018 3:00	2/16/2018 13:30	630	0.73	1,294,748	1.7	0.33	12	Atlas		945,166	1
	3/1/2018 5:30	3/1/2018 14:45	555	Discharge	0	3.02	#N/A	#N/A	#N/A	Data Under Review	72,876	1
	3/10/2018 0:45	3/10/2018 4:30	225	0.56	700,666	0.59	0.35	3	Atlas		392,373	1
	3/31/2018 22:00	4/1/2018 5:45	465	0.22	1,221,236	1.39	0.11	3	Atlas		268,672	1
	2/28/2018 13:45	2/28/2018 16:00	135	0.08	685,375	4.2	0.04	6	Atlas		54,830	1
	2/11/2018 4:30	2/11/2018 12:30	480	0.39	1,556,926	0.96	0.19	3	Atlas		607,201	1
	2/21/2018 5:30	2/25/2018 2:00	5550	1.55	8,395,987	5.81	0.57	24	Atlas		13,013,780	1
	3/19/2018 17:45	3/19/2018 20:45	180	0.29	419,583	0.3	0.17	3	Atlas		121,679	1
	2/25/2018 10:30	2/27/2018 15:45	3195	Discharge	0	4.43	#N/A	#N/A	#N/A	Data Under Review	1,307,902	1
	3/11/2018 22:15	3/11/2018 23:45	90	0.27	35,148	0.86	0.18	3	Atlas		9,490	1
	3/20/2018 19:45	3/20/2018 22:15	150	0.51	7,420	0.56	0.20	24	Atlas		3,784	1
	3/22/2018 13:45	3/22/2018 17:45	240	Discharge	0	0.81	#N/A	#N/A	#N/A		68,856	1
	3/26/2018 20:30	3/26/2018 22:00	90	0.06	301,050	1.46	0.04	3	Atlas		18,063	1
	3/27/2018 20:15	3/27/2018 21:00	45	0.44	34,841	1.28	0.19	12	Atlas		15,330	1
	3/29/2018 3:30	3/30/2018 20:00	2430	0.67	1,704,745	2.04	0.23	24	Atlas		1,142,179	1
	4/14/2018 9:30	4/14/2018 10:45	75	1.36	171,593	0.39	0.44	48	Atlas		233,367	1
	4/1/2018 20:00	4/2/2018 20:15	1455	0.6	1,856,990	1.99	0.33	6	Atlas		1,114,194	1
	4/23/2018 5:30	4/23/2018 12:45	435	0.67	464,133	0.84	0.31	12	Atlas		310,969	1
	4/3/2018 16:45	4/4/2018 0:30	465	0.32	1,671,175	2.3	0.17	6	Atlas		534,776	1
	4/14/2018 22:45	4/15/2018 12:15	810	1.36	665,060	1.39	0.44	48	Atlas		904,482	1
	5/5/2018 14:15	5/5/2018 22:30	495	1.57	1,262,697	1.53	0.61	12	Atlas		1,982,435	1
	5/17/2018 16:00	5/17/2018 16:45	45	0.28	290,018	0.31	0.23	1	Atlas		81,205	1
	5/31/2018 14:30	5/31/2018 15:45	75	1.4	81,784	0.59	0.74	3	Atlas		114,497	1
	5/27/2018 4:45	5/27/2018 5:15	30	0.22	154,541	0.22	0.15	1	Atlas		33,999	1
	5/30/2018 13:15	5/30/2018 13:30	15	0.09	57,167	0.45	0.05	3	Atlas		5,145	1
	6/21/2018 8:45	6/21/2018 15:45	420	0.09	124,444	0.47	0.04	12	Atlas		11,200	1
	6/11/2018 11:30	6/11/2018 15:30	240	0.47	1,230,119	0.82	0.23	3	Atlas		578,156	1
	6/1/2018 0:45	6/1/2018 4:30	225	1.4	841,249	1.86	0.74	3	Atlas		1,177,749	1
	6/10/2018 15:15	6/10/2018 21:45	390	0.42	485,131	0.41	0.19	12	Atlas		203,755	1
	6/16/2018 18:00	6/16/2018 18:15	15	Discharge	0	1.18	#N/A	#N/A	#N/A		29,072	1
	6/12/2018 0:15	6/12/2018 0:15	0	0.47	8,698	0.88	0.23	3	Atlas		4,088	1
	6/12/2018 11:00	6/12/2018 11:30	30	Discharge	0	0.91	#N/A	#N/A	#N/A	Data Under Review	39,185	1
	6/22/2018 12:45	6/22/2018 14:00	75	0.14	1,411,243	0.6	0.07	6	Atlas		197,574	1
	6/25/2018	6/25/2018 11:45	705	0.85	824,940	1.16	0.35	12	Atlas		701,199	1
	6/26/2018 11:30	6/26/2018 21:45	615	0.03	52,634,100	1.69	0.03	1	Atlas		1,579,023	1
	9/19/2017 8:15	9/19/2017 12:15	240	0.42	1,014,914	0.87	0.27	3	Atlas		426,264	1
	7/23/2017 2:30	7/23/2017 14:30	720	1.14	1,654,279	1.14	0.52	12	Atlas		1,885,878	1
	8/17/2017 15:15	8/17/2017 21:00	345	0.66	1,089,877	0.7	0.36	6	Atlas		719,319	1
	7/28/2017 9:45	7/28/2017 12:30	165	0.62	1,013,379	1.78	0.46	1	Atlas		628,295	1
	7/6/2017 4:30	7/6/2017 18:30	840	0.55	1,353,007	0.98	0.25	6	Atlas		744,154	1
	8/2/2017 13:30	8/2/2017 15:00	90	0.31	652,432	1.12	0.27	1	Atlas		202,254	1
	8/29/2017 19:45	8/29/2017 20:30	45	0.08	1,879,300	0.11	0.04	6	Atlas		150,344	1
	8/1/2017 22:00	8/1/2017 22:30	30	0.17	344,824	0.8	0.13	1	Atlas		58,620	1
	7/7/2017 21:00	7/8/2017	180	0.32	1,007,831	0.99	0.23	1	Atlas		322,506	1
	8/6/2017 15:00	8/7/2017 2:45	705	0.66	1,222,136	1.15	0.29	12	Atlas		806,610	1
	7/11/2017 14:45	7/11/2017 14:45	0	Discharge	0	0.87	#N/A	#N/A	#N/A		531	1

Discharge indicates no correlated rain event.

Standard refers to Rainfall Frequency Atlas of the United States or Hydmet Louisville Cloudburst.

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO151	7/12/2017 14:00	7/12/2017 14:00	0	Discharge	0	0.87	#N/A	#N/A	#N/A		1,481	1
	7/17/2017 13:45	7/17/2017 13:45	0	Discharge	0	0	#N/A	#N/A	#N/A		12,333	1
	8/22/2017 13:30	8/22/2017 18:00	270	0.57	913,782	1.26	0.40	1	Atlas		520,856	1
	9/1/2017 6:00	9/3/2017 16:45	3525	3.98	1,490,017	4.09	4.40	24	Cloudburst		5,930,267	1
	9/12/2017 6:30	9/12/2017 9:00	150	0.29	361,603	0.49	0.14	6	Atlas		104,865	1
	9/12/2017 20:30	9/12/2017 22:45	135	0.42	156,057	0.42	0.15	24	Atlas		65,544	1
	9/13/2017 11:15	9/13/2017 22:45	690	0.42	239,895	0.71	0.15	24	Atlas		100,756	1
CSO151 Total											50,836,530	67
CSO152	10/7/2017 21:45	10/8/2017 20:00	1335	1.76	155,267	1.75	0.67	24	Atlas		273,270	1
	10/10/2017 14:15	10/10/2017 21:30	435	0.7	322,313	2.46	0.35	3	Atlas		225,619	1
	10/23/2017 6:30	10/23/2017 9:00	150	0.53	198,317	0.5	0.28	6	Atlas		105,108	1
	10/27/2017 17:45	10/28/2017 1:30	465	0.81	412,562	1.4	0.37	12	Atlas		334,175	1
	11/3/2017 5:15	11/3/2017 6:30	75	1.61	102,456	2.54	3.50	1	Atlas		164,954	1
	11/6/2017 2:30	11/6/2017 2:45	15	0.22	161,618	1.95	0.13	1	Atlas		35,556	1
	11/7/2017 2:30	11/7/2017 6:45	255	0.23	33,983	2.18	0.11	6	Atlas		7,816	1
	11/15/2017 13:15	11/15/2017 14:30	75	0.27	774,919	0.3	0.17	1	Atlas		209,228	1
	11/18/2017 16:45	11/18/2017 18:15	90	0.36	485,292	0.63	0.23	1	Atlas		174,705	1
	12/5/2017 3:30	12/5/2017 6:45	195	0.65	1,117,315	0.67	0.37	3	Atlas		726,255	1
	12/22/2017 18:30	12/23/2017 12:45	1095	1.06	1,068,444	1.07	0.41	12	Atlas		1,132,551	1
	1/11/2018 9:00	1/11/2018 10:00	60	0.08	1,003,988	0.19	0.05	3	Atlas		80,319	1
	1/12/2018 3:00	1/12/2018 13:00	600	0.37	876,497	0.43	0.14	24	Atlas		324,304	1
	1/27/2018 14:00	1/27/2018 17:45	225	0.33	1,079,848	0.48	0.17	6	Atlas		356,350	1
	2/16/2018 2:45	2/16/2018 11:45	540	0.73	730,062	1.64	0.33	12	Atlas		532,945	1
	2/11/2018 4:15	2/11/2018 11:45	450	0.33	1,340,567	0.88	0.15	3	Atlas		442,387	1
	2/14/2018 7:30	2/14/2018 15:45	495	0.38	473,729	0.81	0.17	12	Atlas		180,017	1
	3/28/2018 5:45	3/28/2018 11:15	330	0.44	902,518	1.46	0.19	12	Atlas		397,108	1
	2/24/2018 10:00	2/25/2018 18:30	1950	1.67	3,013,192	4.57	0.69	12	Atlas		5,032,031	1
	2/23/2018 1:45	2/23/2018 17:15	930	1.12	1,638,141	3.63	0.51	12	Atlas		1,834,718	1
	3/10/2018 0:45	3/10/2018 4:00	195	0.59	992,886	0.62	0.37	3	Atlas		585,803	1
	3/31/2018 22:00	4/1/2018	120	0.22	485,932	1.36	0.11	3	Atlas		106,905	1
	2/7/2018 1:30	2/7/2018 5:00	210	0.44	1,160,130	0.67	0.24	6	Atlas		510,457	1
	2/21/2018 5:30	2/22/2018 12:30	1860	1.57	1,203,411	2.98	0.58	24	Atlas		1,889,355	1
	3/19/2018 17:45	3/19/2018 20:15	150	0.28	357,136	0.29	0.16	3	Atlas		99,998	1
	2/17/2018 13:00	2/17/2018 16:00	180	0.2	469,605	1.79	0.13	3	Atlas		93,921	1
	3/24/2018 4:30	3/24/2018 20:15	945	0.89	1,586,363	1.64	0.34	24	Atlas		1,411,863	1
	3/29/2018 15:15	3/29/2018 23:15	480	0.67	752,769	1.84	0.23	24	Atlas		504,355	1
	3/30/2018 7:30	3/30/2018 8:15	45	0.67	37,724	2.05	0.23	24	Atlas		25,275	1
	4/3/2018 16:30	4/3/2018 22:30	360	0.41	1,049,212	2.35	0.22	6	Atlas		430,177	1
	4/1/2018 20:00	4/2/2018 0:15	255	0.56	1,329,932	1.95	0.31	6	Atlas		744,762	1
	4/14/2018 9:15	4/14/2018 10:30	75	1.16	199,079	0.31	0.38	48	Atlas		230,932	1
	4/23/2018 5:30	4/23/2018 12:15	405	0.68	505,124	0.8	0.30	12	Atlas		343,484	1
	4/14/2018 22:45	4/15/2018 10:30	705	1.16	448,653	1.18	0.38	48	Atlas		520,437	1
	5/17/2018 16:00	5/17/2018 16:45	45	0.32	291,922	0.34	0.26	1	Atlas		93,415	1
	5/31/2018 14:30	5/31/2018 15:30	60	1.56	10,985	0.61	0.88	1	Atlas		17,137	1
	5/27/2018 4:45	5/27/2018 5:15	30	0.25	507,100	0.26	0.19	1	Atlas		126,775	1
	5/5/2018 15:45	5/5/2018 19:00	195	1.28	62,113	1.15	0.49	12	Atlas		79,504	1
	6/21/2018 9:45	6/21/2018 9:45	0	0.13	23,892	0.43	0.06	12	Atlas		3,106	1
	6/25/2018 10:45	6/25/2018 12:30	105	0.88	479,539	1.34	0.36	12	Atlas		421,994	1
	6/12/2018 12:00	6/12/2018 12:30	30	0.34	136,806	1.03	0.16	1	Atlas		46,514	1
	6/26/2018 12:30	6/26/2018 22:45	615	0.64	1,038,350	1.94	0.28	12	Atlas		664,544	1
	6/1/2018 0:45	6/1/2018 4:15	210	1.56	618,529	2.05	0.88	1	Atlas		964,905	1
	6/10/2018 15:15	6/10/2018 16:00	45	0.43	315,981	0.21	0.20	12	Atlas		135,872	1
	6/12/2018 0:15	6/12/2018 0:15	0	0.34	20,459	0.83	0.16	1	Atlas		6,956	1
	6/11/2018 12:15	6/11/2018 14:45	150	0.35	286,329	0.77	0.20	3	Atlas		100,215	1
	6/16/2018 19:00	6/16/2018 19:15	15	0.26	247,135	1.41	0.23	1	Atlas		64,255	1
	6/22/2018 14:00	6/22/2018 15:00	60	0.21	461,095	0.67	0.11	1	Atlas		96,830	1
	8/22/2017 16:15	8/22/2017 17:00	45	0.61	124,584	1.26	0.41	1	Atlas		75,996	1
	9/19/2017 8:30	9/19/2017 10:45	135	0.39	1,264,010	0.82	0.25	3	Atlas		492,964	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO152	7/7/2017 20:45	7/7/2017 22:00	75	0.31	673,932	1.27	0.21	1	Atlas		208,919	1
	8/17/2017 15:15	8/17/2017 19:00	225	0.64	215,823	0.67	0.35	6	Atlas		138,127	1
	7/28/2017 9:45	7/28/2017 11:00	75	0.46	1,606,826	1.63	0.33	1	Atlas		739,140	1
	8/2/2017 13:15	8/2/2017 13:45	30	0.08	2,580,638	0.73	0.07	1	Atlas		206,451	1
	7/23/2017 2:15	7/23/2017 10:30	495	1.19	239,061	1.19	0.55	12	Atlas		284,483	1
	7/6/2017 4:45	7/6/2017 14:00	555	0.55	717,231	1.07	0.26	6	Atlas		394,477	1
	8/1/2017 22:00	8/1/2017 22:00	0	0.19	80,168	0.64	0.16	1	Atlas		15,232	1
	8/6/2017 15:00	8/7/2017 0:45	585	0.6	678,915	0.88	0.27	12	Atlas		407,349	1
	9/13/2017 12:45	9/13/2017 13:00	15	0.69	29,588	0.58	0.22	48	Atlas		20,416	1
	9/12/2017 6:30	9/12/2017 8:15	105	0.69	21,094	0.54	0.22	48	Atlas		14,555	1
	8/29/2017 20:00	8/29/2017 20:00	0	0.09	51,667	0.12	0.05	1	Atlas		4,650	1
	9/1/2017 7:15	9/2/2017 6:30	1395	3.59	649,391	3.71	2.96	24	Cloudburst		2,331,313	1
	9/12/2017 21:45	9/12/2017 21:45	0	0.69	1,019	0.41	0.22	48	Atlas		703	1
CSO152 Total											28,223,937	63
CSO153	10/7/2017 21:45	10/7/2017 23:15	90	1.59	122,520	0.64	0.60	24	Atlas		194,807	1
	10/8/2017 10:30	10/8/2017 19:30	540	1.59	246,026	1.59	0.60	24	Atlas		391,181	1
	10/10/2017 14:15	10/10/2017 21:00	405	0.66	190,689	2.26	0.34	3	Atlas		125,855	1
	10/23/2017 6:30	10/23/2017 7:00	30	0.46	57,970	0.31	0.24	6	Atlas		26,666	1
	10/27/2017 17:30	10/28/2017 0:45	435	0.81	133,072	1.31	0.37	12	Atlas		107,788	1
	11/3/2017 4:30	11/3/2017 5:30	60	1.05	582,000	1.99	0.83	1	Atlas		611,100	1
	11/6/2017 1:45	11/6/2017 2:30	45	0.46	382,370	1.64	0.32	1	Atlas		175,890	1
	11/15/2017 13:15	11/15/2017 14:00	45	0.31	121,748	0.33	0.20	3	Atlas		37,742	1
	11/18/2017 16:30	11/18/2017 17:45	75	0.31	167,719	0.61	0.17	3	Atlas		51,993	1
	12/5/2017 3:15	12/5/2017 6:15	180	0.63	583,186	0.65	0.33	3	Atlas		367,407	1
	12/22/2017 22:30	12/23/2017 12:45	855	1.15	410,037	1.15	0.44	24	Atlas		471,543	1
	1/11/2018 9:00	1/11/2018 9:00	0	0.06	34,217	0.14	0.03	3	Atlas		2,053	1
	1/27/2018 13:45	1/27/2018 17:15	210	0.32	96,175	0.65	0.17	3	Atlas		30,776	1
	1/12/2018 4:00	1/12/2018 10:00	360	0.3	346,103	0.32	0.12	24	Atlas		103,831	1
	3/24/2018 9:00	3/24/2018 20:00	660	0.93	469,297	1.68	0.35	24	Atlas		436,446	1
	3/29/2018 19:00	3/29/2018 23:00	240	1.04	127,184	1.84	0.27	48	Atlas		132,271	1
	2/7/2018 1:15	2/7/2018 4:45	210	0.62	262,806	0.86	0.33	6	Atlas		162,940	1
	2/11/2018 4:15	2/11/2018 11:15	420	0.41	430,785	1.15	0.20	3	Atlas		176,622	1
	2/14/2018 7:30	2/14/2018 10:00	150	0.45	141,282	0.91	0.23	3	Atlas		63,577	1
	2/16/2018 2:30	2/16/2018 11:15	525	0.72	625,800	1.7	0.31	12	Atlas		450,576	1
	2/21/2018 5:15	2/22/2018 5:30	1455	1.7	628,446	3.04	0.63	24	Atlas		1,068,359	1
	3/28/2018 5:30	3/28/2018 6:30	60	1.04	37,791	1.35	0.27	48	Atlas		39,303	1
	3/10/2018 0:45	3/10/2018 2:45	120	0.56	38,241	0.57	0.35	3	Atlas		21,415	1
	3/31/2018 22:00	4/1/2018 1:15	195	0.22	656,250	1.3	0.12	3	Atlas		144,375	1
	3/19/2018 17:45	3/19/2018 17:45	0	0.29	559	0.2	0.17	3	Atlas		162	1
	2/22/2018 19:15	2/23/2018 9:30	855	Discharge	0	3.66	#N/A	#N/A	#N/A	Data Under Review	732,399	1
	2/24/2018 2:00	2/24/2018 23:30	1290	1.67	617,153	4.65	0.67	12	Atlas		1,030,646	1
	4/1/2018 20:00	4/1/2018 23:45	225	0.63	749,014	1.95	0.34	6	Atlas		471,879	1
	4/23/2018 5:15	4/23/2018 12:15	420	0.67	170,930	0.82	0.31	12	Atlas		114,523	1
	4/14/2018 9:00	4/14/2018 10:00	60	0.95	32,427	0.26	0.31	48	Atlas		30,806	1
	4/14/2018 23:15	4/15/2018 10:00	645	0.95	199,652	0.99	0.31	48	Atlas		189,669	1
	5/5/2018 14:15	5/5/2018 19:00	285	1.31	574,357	1.21	0.51	6	Atlas		752,408	1
	5/27/2018 4:15	5/27/2018 4:30	15	0.33	252,776	0.43	0.24	1	Atlas		83,416	1
	6/10/2018 14:45	6/10/2018 21:15	390	0.4	127,195	0.39	0.18	12	Atlas		50,878	1
	6/1/2018 0:30	6/1/2018 3:15	165	1.35	246,532	2.02	0.79	3	Atlas		332,818	1
	6/11/2018 23:45	6/11/2018 23:45	0	0.29	13,759	0.65	0.14	1	Atlas		3,990	1
	6/11/2018 11:15	6/11/2018 13:45	150	0.24	685,354	0.6	0.15	1	Atlas		164,485	1
	6/26/2018 14:00	6/26/2018 14:45	45	0.69	218,372	1.96	0.28	12	Atlas		150,677	1
	7/23/2017 1:45	7/23/2017 9:45	480	1.02	496,808	1.02	0.47	12	Atlas		506,744	1
	7/28/2017 9:15	7/28/2017 10:15	60	0.52	331,213	1.53	0.39	1	Atlas		172,231	1
	8/1/2017 21:30	8/1/2017 21:30	0	0.32	52,725	0.81	0.26	1	Atlas		16,872	1
	9/19/2017 8:00	9/19/2017 11:30	210	0.47	571,947	0.89	0.30	3	Atlas		268,815	1
	8/17/2017 15:00	8/17/2017 18:15	195	0.36	297,356	0.39	0.21	1	Atlas		107,048	1
	9/1/2017 7:30	9/2/2017 0:45	1035	2.98	224,813	2.74	1.31	24	Cloudburst		669,943	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO153	7/7/2017 20:30	7/7/2017 21:00	30	0.22	53,732	1.04	0.15	3	Atlas		11,821	1
	8/6/2017 14:30	8/7/2017	570	0.52	107,071	0.86	0.23	12	Atlas		55,677	1
	8/2/2017 13:00	8/2/2017 13:00	0	Discharge	0	0.84	#N/A	#N/A	#N/A		10,022	1
	7/6/2017 4:45	7/6/2017 13:00	495	0.5	175,426	0.76	0.25	3	Atlas		87,713	1
	8/22/2017 12:30	8/22/2017 16:45	255	0.74	230,724	1.13	0.43	1	Atlas		170,736	1
	9/13/2017 12:15	9/13/2017 12:15	0	0.71	11,746	0.58	0.23	48	Atlas		8,340	1
	9/12/2017 7:00	9/12/2017 7:00	0	0.71	3,230	0.26	0.23	48	Atlas		2,293	1
CSO153 Total											11,591,527	51
CSO154	12/5/2017 4:15	12/5/2017 5:15	60	0.67	18,960	0.61	0.36	3	Atlas		12,703	1
	12/23/2017	12/23/2017 9:15	555	1.18	20,981	0.99	0.45	24	Atlas		24,757	1
	2/24/2018 19:00	2/24/2018 23:15	255	1.63	24,378	4.57	0.68	12	Atlas		39,736	1
	2/21/2018 22:00	2/21/2018 22:00	0	1.9	6,196	1.73	0.65	24	Atlas		11,773	1
	2/11/2018 10:30	2/11/2018 11:45	75	0.34	482,509	0.83	0.17	3	Atlas		164,053	1
	2/16/2018 3:30	2/16/2018 15:00	690	0.67	2,968,693	1.51	0.31	12	Atlas		1,989,024	1
	2/17/2018 15:00	2/17/2018 15:00	0	0.18	40,433	1.65	0.11	3	Atlas		7,278	1
	2/23/2018 12:15	2/23/2018 12:15	0	1.27	6,535	3.35	0.58	12	Atlas		8,299	1
	3/24/2018 12:45	3/24/2018 19:45	420	0.87	3,008	1.62	0.33	24	Atlas		2,617	1
	3/31/2018 23:30	4/1/2018 1:00	90	0.21	1,947,919	1.26	0.11	3	Atlas		409,063	1
	4/1/2018 20:45	4/2/2018 4:00	435	0.68	1,256,353	1.97	0.37	6	Atlas		854,320	1
	4/3/2018 21:30	4/3/2018 23:45	135	0.3	900,723	2.24	0.16	6	Atlas		270,217	1
	5/5/2018 17:15	5/5/2018 18:45	90	1.49	51,109	1.4	0.63	6	Atlas		76,153	1
	6/1/2018 1:15	6/1/2018 2:15	60	1.18	123,886	1.51	0.69	3	Atlas		146,186	1
	6/11/2018 13:15	6/11/2018 13:15	0	0.25	10,852	0.62	0.17	1	Atlas		2,713	1
	6/25/2018 10:30	6/25/2018 10:30	0	0.88	2,422	1.68	0.36	12	Atlas		2,131	1
	6/26/2018 13:15	6/26/2018 13:15	0	0.62	2,571	2.11	0.25	12	Atlas		1,594	1
	6/26/2018 21:30	6/26/2018 22:15	45	0.62	40,503	2.42	0.25	12	Atlas		25,112	1
CSO154 Total											4,047,729	18
CSO155	10/7/2017 21:45	10/7/2017 22:15	30	2.05	6,082	0.8	0.76	24	Atlas		12,468	1
	10/8/2017 13:45	10/8/2017 14:15	30	2.05	1,037	1.91	0.76	24	Atlas		2,125	1
	10/23/2017 6:15	10/23/2017 6:30	15	0.4	25,830	0.23	0.21	6	Atlas		10,332	1
	11/3/2017 4:30	11/3/2017 5:15	45	1.02	89,294	2.24	0.78	1	Atlas		91,080	1
	11/6/2017 1:45	11/6/2017 2:00	15	0.82	19,683	2	0.63	1	Atlas		16,140	1
	11/18/2017 17:30	11/18/2017 17:30	0	0.46	3,117	0.83	0.26	3	Atlas		1,434	1
	12/5/2017 3:45	12/5/2017 3:45	0	0.65	13,902	0.3	0.35	3	Atlas		9,036	1
	12/23/2017 3:00	12/23/2017 3:15	15	1.59	610	1.09	0.61	24	Atlas		970	1
	1/22/2018 19:30	1/22/2018 19:30	0	0.29	1,572	0.38	0.13	12	Atlas		456	1
	3/24/2018 12:00	3/24/2018 12:15	15	1.16	4,562	1.75	0.45	24	Atlas		5,292	1
	2/11/2018 10:15	2/11/2018 10:15	0	0.42	2,348	1.2	0.23	3	Atlas		986	1
	3/29/2018 19:15	3/29/2018 19:30	15	1.2	1,996	2.15	0.31	48	Atlas		2,395	1
	2/16/2018 2:45	2/16/2018 2:45	0	1.05	271	1.53	0.48	12	Atlas		285	1
	2/22/2018 3:15	2/22/2018 5:15	120	2.17	24,102	3.47	0.75	24	Atlas		52,302	1
	2/23/2018 3:00	2/23/2018 6:15	195	2.06	27,223	4.58	0.94	12	Atlas		56,080	1
	2/24/2018 18:30	2/24/2018 23:45	315	2.26	62,687	6.23	0.93	12	Atlas		141,673	1
	2/7/2018 3:15	2/7/2018 3:15	0	0.7	6,576	0.98	0.38	6	Atlas		4,603	1
	2/14/2018 7:15	2/14/2018 7:15	0	0.63	3,025	0.88	0.29	3	Atlas		1,906	1
	4/1/2018 23:00	4/1/2018 23:00	0	0.71	2,693	2.23	0.39	6	Atlas		1,912	1
	4/15/2018 5:30	4/15/2018 5:30	0	0.95	3,060	0.7	0.31	48	Atlas		2,907	1
	5/27/2018 3:45	5/27/2018 4:30	45	1.23	25,259	0.99	0.60	1	Atlas		31,069	1
	5/22/2018 7:45	5/22/2018 7:45	0	0.27	51,037	0.45	0.21	1	Atlas		13,780	1
	5/5/2018 14:30	5/5/2018 17:15	165	2.03	55,210	1.8	0.89	6	Atlas		112,076	1
	5/27/2018 13:30	5/27/2018 13:30	0	1.23	2,118	1.44	0.60	1	Atlas		2,605	1
	6/1/2018	6/1/2018 1:30	90	1.6	26,664	2.56	0.75	6	Atlas		42,663	1
	5/10/2018 2:30	5/10/2018 2:30	0	0.05	65,500	2.11	0.04	1	Atlas		3,275	1
	6/10/2018 14:45	6/10/2018 14:45	0	0.66	10,374	0.31	0.29	12	Atlas		6,847	1
	6/11/2018 13:00	6/11/2018 13:15	15	0.22	51,727	0.84	0.14	1	Atlas		11,380	1
	6/25/2018 8:15	6/25/2018 8:15	0	0.84	29,218	2.5	0.33	12	Atlas		24,543	1
	6/26/2018 10:30	6/26/2018 10:45	15	Discharge	0	2.92	#N/A	#N/A	#N/A		10,113	1
	7/18/2017 7:45	7/18/2017 7:45	0	0.06	6,917	0.06	0.05	1	Atlas		415	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO155	8/1/2017 21:30	8/1/2017 21:30	0	0.87	16,622	1.08	0.72	1	Atlas		14,461	1
	9/19/2017 8:00	9/19/2017 8:15	15	0.39	26,682	0.56	0.25	3	Atlas		10,406	1
	7/5/2017 14:15	7/5/2017 14:15	0	Discharge	0	0.93	#N/A	#N/A	#N/A		1,410	1
	7/28/2017 9:00	7/28/2017 9:30	30	0.34	54,626	1.67	0.27	1	Atlas		18,573	1
	8/22/2017 15:45	8/22/2017 15:45	0	0.37	46,830	0.78	0.27	1	Atlas		17,327	1
	9/1/2017 13:15	9/1/2017 15:00	105	2.8	2,370	1.48	0.97	24	Atlas		6,635	1
	7/23/2017 1:30	7/23/2017 6:45	315	1.33	13,986	1	0.61	12	Atlas		18,602	1
CSO155 Total											760,562	38
CSO160	11/3/2017 5:00	11/3/2017 5:00	0	1.18	257	2.17	0.84	1	Atlas		303	1
	12/5/2017 3:45	12/5/2017 3:45	0	0.68	1,374	0.36	0.35	3	Atlas		934	1
	2/24/2018 18:45	2/24/2018 23:15	270	2.04	6,780	5.07	0.84	12	Atlas		13,831	1
	2/22/2018 5:15	2/22/2018 5:15	0	1.79	6,420	2.8	0.67	24	Atlas		11,492	1
	5/5/2018 14:30	5/5/2018 14:45	15	1.49	20,507	0.8	0.59	12	Atlas		30,555	1
	6/1/2018 1:15	6/1/2018 1:15	0	1.48	18,108	1.77	0.72	3	Atlas		26,800	1
CSO160 Total											83,915	6
CSO161	11/3/2017 4:30	11/3/2017 4:30	0	1.18	1,970	1.88	0.84	1	Atlas		2,325	1
	11/6/2017 1:45	11/6/2017 1:45	0	0.53	2,166	1.85	0.38	1	Atlas		1,148	1
	2/24/2018 18:45	2/24/2018 23:00	255	2.04	1,811	5.04	0.84	12	Atlas		3,695	1
	2/23/2018 4:00	2/23/2018 4:45	45	1.48	175	3.2	0.68	12	Atlas		259	1
	2/22/2018 5:00	2/22/2018 5:00	0	1.79	72	2.78	0.67	24	Atlas		128	1
	4/3/2018 16:15	4/3/2018 19:00	165	0.31	10,890	2.13	0.17	6	Atlas		3,376	1
	5/5/2018 14:15	5/5/2018 14:30	15	1.49	4,761	0.67	0.59	12	Atlas		7,094	1
	5/27/2018 4:00	5/27/2018 4:00	0	0.42	588	0.46	0.35	1	Atlas		247	1
	6/26/2018 12:15	6/26/2018 12:15	0	Discharge	0	1.95	#N/A	#N/A	#N/A	Data Under Review	1,814	1
	6/1/2018 1:00	6/1/2018 1:00	0	1.48	7,854	1.7	0.72	3	Atlas		11,624	1
	6/22/2018 14:00	6/22/2018 14:00	0	0.25	4,144	0.91	0.11	6	Atlas		1,036	1
	6/21/2018 16:15	6/21/2018 16:15	0	0.27	7,789	0.59	0.16	1	Atlas		2,103	1
	7/23/2017 1:45	7/23/2017 1:45	0	1.15	1,889	0.19	0.53	12	Atlas		2,172	1
	8/1/2017 21:30	8/1/2017 21:30	0	0.46	4,874	0.75	0.38	1	Atlas		2,242	1
	8/22/2017 16:00	8/22/2017 16:00	0	0.62	1,408	0.95	0.44	1	Atlas		873	1
	7/6/2017 12:00	7/6/2017 12:00	0	0.52	1,644	0.93	0.25	3	Atlas		855	1
CSO161 Total											40,991	16
CSO166	10/7/2017 22:00	10/7/2017 23:45	105	2.08	716,166	0.7	0.78	24	Atlas		1,489,625	1
	10/8/2017 10:45	10/8/2017 20:00	555	2.08	480,787	2.06	0.78	24	Atlas		1,000,036	1
	10/23/2017 6:45	10/23/2017 8:15	90	0.67	443,430	0.5	0.30	6	Atlas		297,098	1
	10/27/2017 18:15	10/28/2017 2:00	465	1.18	231,153	1.8	0.54	12	Atlas		272,760	1
	11/3/2017 4:45	11/3/2017 13:15	510	1.47	2,426,026	2.8	2.00	1	Atlas		3,566,258	1
	11/6/2017 2:00	11/6/2017 3:15	75	0.5	4,056,744	2.12	0.37	1	Atlas		2,028,372	1
	11/15/2017 14:00	11/15/2017 14:30	30	0.24	210,467	0.27	0.17	1	Atlas		50,512	1
	11/18/2017 17:45	11/18/2017 18:15	30	0.3	354,327	0.55	0.17	3	Atlas		106,298	1
	12/5/2017 3:45	12/5/2017 6:45	180	0.85	641,919	0.86	0.49	3	Atlas		545,631	1
	12/23/2017	12/23/2017 6:30	390	1.35	940,142	1.2	0.54	12	Atlas		1,269,192	1
	1/11/2018 9:30	1/11/2018 9:45	15	0.12	209,275	0.23	0.07	3	Atlas		25,113	1
	3/10/2018 1:30	3/10/2018 3:00	90	0.62	160,010	0.62	0.38	3	Atlas		99,206	1
	3/29/2018 19:15	3/30/2018 8:45	810	0.71	688,351	2.13	0.24	24	Atlas		488,729	1
	3/24/2018 9:30	3/24/2018 22:30	780	0.91	1,224,362	1.78	0.35	24	Atlas		1,114,169	1
	2/16/2018 3:00	2/16/2018 13:00	600	0.81	1,818,638	1.81	0.37	12	Atlas		1,473,097	1
	3/31/2018 22:30	4/1/2018 0:30	120	0.24	350,925	1.43	0.11	6	Atlas		84,222	1
	2/7/2018 3:30	2/7/2018 4:45	75	0.49	711,041	0.74	0.27	6	Atlas		348,410	1
	2/11/2018 4:45	2/11/2018 11:45	420	0.46	870,693	1.05	0.22	3	Atlas		400,519	1
	2/14/2018 8:00	2/14/2018 8:00	0	0.38	48,853	0.74	0.18	3	Atlas		18,564	1
	2/17/2018 14:15	2/17/2018 16:30	135	0.21	735,510	1.98	0.13	3	Atlas		154,457	1
	2/21/2018 21:30	2/27/2018 10:30	7980	2.07	29,191,535	6.12	0.72	24	Atlas		60,426,477	1
	2/28/2018 14:30	2/28/2018 14:30	0	0.09	6,044	4.51	0.05	6	Atlas		544	1
	3/28/2018 6:15	3/28/2018 7:15	60	0.44	212,077	1.37	0.19	12	Atlas		93,314	1
	4/1/2018 20:30	4/2/2018 2:45	375	0.66	1,610,792	2.12	0.36	6	Atlas		1,063,123	1
	4/14/2018 9:45	4/14/2018 10:30	45	1.46	80,733	0.4	0.47	48	Atlas		117,870	1
	4/14/2018 23:30	4/15/2018 11:00	690	1.46	119,855	1.49	0.47	48	Atlas		174,988	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO166	4/3/2018 17:00	4/3/2018 23:45	405	0.55	778,209	2.6	0.23	6	Atlas		428,015	1
	5/5/2018 14:30	5/5/2018 20:00	330	2.06	496,353	1.96	0.89	6	Atlas		1,022,487	1
	5/17/2018 15:15	5/17/2018 15:15	0	0.19	15,547	0.09	0.16	1	Atlas		2,954	1
	5/18/2018 16:15	5/18/2018 16:15	0	0.1	202,480	0.28	0.04	1	Atlas		20,248	1
	6/1/2018 0:30	6/1/2018 4:00	210	1.07	1,892,005	1.44	0.53	3	Atlas		2,024,445	1
	6/11/2018 11:30	6/11/2018 14:15	165	0.6	825,543	0.83	0.28	3	Atlas		495,326	1
	6/10/2018 15:15	6/10/2018 15:45	30	0.39	398,531	0.16	0.18	12	Atlas		155,427	1
	6/25/2018 8:15	6/25/2018 10:00	105	0.97	225,167	1.14	0.40	12	Atlas		218,412	1
	6/22/2018 11:30	6/22/2018 12:45	75	0.4	341,905	0.39	0.21	1	Atlas		136,762	1
	6/26/2018 10:15	6/26/2018 20:00	585	0.02	206,102,200	2.12	0.02	1	Atlas		4,122,044	1
	9/19/2017 8:45	9/19/2017 10:45	120	0.46	213,220	0.91	0.29	3	Atlas		98,081	1
	7/7/2017 20:45	7/7/2017 21:00	15	0.13	67,000	1.15	0.09	3	Atlas		8,710	1
	7/23/2017 2:30	7/23/2017 10:15	465	1.21	332,938	1.21	0.56	12	Atlas		402,855	1
	8/22/2017 15:45	8/22/2017 17:15	90	0.43	643,688	0.96	0.24	1	Atlas		276,786	1
	9/1/2017 9:30	9/2/2017 6:45	1275	4.2	1,456,470	4.28	5.56	24	Cloudburst		6,117,176	1
	8/17/2017 15:15	8/17/2017 15:45	30	0.51	396,755	0.26	0.28	6	Atlas		202,345	1
	7/28/2017 9:45	7/28/2017 10:30	45	0.76	396,900	1.97	0.61	1	Atlas		301,644	1
	8/2/2017 13:15	8/2/2017 13:45	30	0.22	825,345	1.17	0.19	1	Atlas		181,576	1
	7/6/2017 4:45	7/6/2017 13:45	540	0.61	620,487	0.98	0.25	6	Atlas		378,497	1
	8/6/2017 17:15	8/7/2017 0:30	435	0.62	407,279	1.04	0.28	12	Atlas		252,513	1
	8/11/2017 15:00	8/11/2017 15:15	15	0.01	1,989,900	0.63	0.01	1	Atlas		19,899	1
CSO166 Total											93,574,786	47
CSO167	10/10/2017 14:30	10/10/2017 21:15	405	0.68	154,551	2.44	0.35	3	Atlas		105,095	1
	10/23/2017 6:45	10/23/2017 7:30	45	0.53	84,253	0.39	0.28	6	Atlas		44,654	1
	10/27/2017 17:45	10/28/2017 1:15	450	0.89	78,612	1.47	0.41	12	Atlas		69,965	1
	11/3/2017 4:30	11/3/2017 6:30	120	0.86	299,598	1.89	0.66	1	Atlas		257,654	1
	11/6/2017 1:45	11/6/2017 3:00	75	0.68	187,865	1.68	0.53	1	Atlas		127,748	1
	11/15/2017 13:30	11/15/2017 14:15	45	0.26	122,285	0.27	0.17	1	Atlas		31,794	1
	11/18/2017 16:45	11/18/2017 17:45	60	0.24	279,817	0.49	0.13	3	Atlas		67,156	1
	12/5/2017 3:15	12/5/2017 6:00	165	0.67	236,718	0.67	0.36	3	Atlas		158,601	1
	12/22/2017 23:15	12/23/2017 12:15	780	1.18	235,775	1.17	0.45	24	Atlas		278,214	1
	1/11/2018 9:00	1/11/2018 9:00	0	0.06	84,533	0.13	0.04	3	Atlas		5,072	1
	1/27/2018 15:45	1/27/2018 16:15	30	0.32	3,931	0.44	0.17	3	Atlas		1,258	1
	3/24/2018 9:00	3/24/2018 20:30	690	0.87	274,825	1.62	0.33	24	Atlas		239,098	1
	3/29/2018 19:15	3/29/2018 23:00	225	1.02	74,904	1.75	0.25	48	Atlas		76,402	1
	2/7/2018 3:00	2/7/2018 4:30	90	0.43	209,870	0.66	0.23	6	Atlas		90,244	1
	2/16/2018 2:45	2/16/2018 11:45	540	0.67	264,000	1.51	0.31	12	Atlas		176,880	1
	2/11/2018 4:15	2/11/2018 11:15	420	0.34	245,656	0.87	0.17	3	Atlas		83,523	1
	3/28/2018 5:45	3/28/2018 6:45	60	1.02	32,823	1.3	0.25	48	Atlas		33,479	1
	2/14/2018 7:15	2/14/2018 9:45	150	0.38	65,895	0.75	0.19	3	Atlas		25,040	1
	3/31/2018 22:15	4/1/2018	105	0.21	47,810	1.26	0.11	3	Atlas		10,040	1
	2/17/2018 14:00	2/17/2018 16:30	150	0.18	63,528	1.65	0.11	3	Atlas		11,435	1
	3/10/2018 0:45	3/10/2018 2:45	120	0.47	137,830	0.46	0.29	3	Atlas		64,780	1
	3/19/2018 17:45	3/19/2018 19:45	120	0.32	2,188	0.33	0.19	3	Atlas		700	1
	2/21/2018 5:00	3/2/2018 22:00	13980	1.9	11,016,707	6.13	0.65	24	Atlas		20,931,744	1
	4/23/2018 5:45	4/23/2018 11:30	345	0.67	18,448	0.8	0.31	12	Atlas		12,360	1
	4/14/2018 23:30	4/15/2018 10:00	630	1.07	118,664	1.09	0.35	24	Atlas		126,970	1
	4/3/2018 16:30	4/3/2018 22:45	375	0.3	417,337	2.28	0.16	6	Atlas		125,201	1
	4/1/2018 20:00	4/2/2018 0:45	285	0.68	286,915	1.97	0.37	6	Atlas		195,102	1
	4/14/2018 9:15	4/14/2018 10:15	60	1.07	40,140	0.25	0.35	24	Atlas		42,950	1
	5/31/2018 14:15	5/31/2018 14:30	15	0.13	69,946	0.52	0.09	3	Atlas		9,093	1
	5/5/2018 14:15	5/5/2018 19:15	300	1.49	303,748	1.4	0.63	6	Atlas		452,584	1
	5/27/2018 4:15	5/27/2018 4:45	30	0.31	23,774	0.49	0.21	3	Atlas		7,370	1
	6/10/2018 15:00	6/10/2018 15:30	30	0.41	49,276	0.21	0.19	12	Atlas		20,203	1
	6/11/2018 13:15	6/11/2018 14:00	45	0.25	422,788	0.63	0.17	1	Atlas		105,697	1
	6/1/2018 0:45	6/1/2018 3:45	180	1.18	245,427	1.72	0.69	3	Atlas		289,604	1
	6/22/2018 12:15	6/22/2018 13:15	60	0.4	112,038	0.75	0.21	1	Atlas		44,815	1
	6/26/2018 11:00	6/26/2018 20:15	555	Discharge	0	2.19	#N/A	#N/A	#N/A		121,348	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO167	6/25/2018 8:45	6/25/2018 10:30	105	0.88	139,227	1.68	0.36	12	Atlas		122,520	1
	7/23/2017 1:45	7/23/2017 10:00	495	1	300,030	1.05	0.46	12	Atlas		300,030	1
	7/28/2017 9:15	7/28/2017 10:15	60	0.42	284,736	1.41	0.30	1	Atlas		119,589	1
	8/1/2017 21:30	8/1/2017 22:00	30	0.14	283,386	0.55	0.10	1	Atlas		39,674	1
	8/17/2017 14:45	8/17/2017 18:15	210	0.32	410,622	0.35	0.18	1	Atlas		131,399	1
	9/19/2017 8:00	9/19/2017 10:00	120	0.41	262,534	0.86	0.27	3	Atlas		107,639	1
	7/7/2017 20:30	7/7/2017 20:30	0	0.12	12,275	0.8	0.08	3	Atlas		1,473	1
	8/6/2017 17:00	8/7/2017 0:15	435	0.43	140,879	0.58	0.19	12	Atlas		60,578	1
	7/6/2017 4:30	7/6/2017 13:15	525	0.48	149,298	0.65	0.20	6	Atlas		71,663	1
	8/2/2017 13:15	8/2/2017 13:15	0	Discharge	0	0.56	#N/A	#N/A	#N/A		5,360	1
	9/1/2017 8:00	9/2/2017 5:45	1305	3.57	481,556	3.64	3.00	24	Cloudburst		1,719,156	1
	8/22/2017 12:30	8/22/2017 16:45	255	0.44	429,055	0.78	0.24	1	Atlas		188,784	1
	9/12/2017 7:15	9/12/2017 7:15	0	0.3	1,037	0.24	0.15	6	Atlas		311	1
	9/18/2017 18:00	9/18/2017 19:15	75	Discharge	0	0.74	#N/A	#N/A	#N/A		21,847	1
	9/21/2017 19:45	9/21/2017 19:45	0	Discharge	0	0.41	#N/A	#N/A	#N/A		663	1
	9/23/2017 23:30	9/23/2017 23:30	0	Discharge	0	0.41	#N/A	#N/A	#N/A		932	1
	9/27/2017 4:45	9/27/2017 4:45	0	Discharge	0	0	#N/A	#N/A	#N/A		5,124	1
	9/27/2017 14:45	9/27/2017 14:45	0	Discharge	0	0	#N/A	#N/A	#N/A		6,932	1
CSO167 Total											27,347,547	54
CSO174	10/7/2017 21:45	10/7/2017 22:15	30	1.68	175,205	0.54	0.64	24	Atlas	Retained by Sneads Branch FPS	294,345	1
	10/8/2017 13:45	10/8/2017 14:30	45	1.68	206,445	1.57	0.64	24	Atlas	Retained by Sneads Branch FPS	346,827	1
	10/10/2017 15:15	10/10/2017 15:15	0	0.65	4,108	2.06	0.32	3	Atlas	Retained by Sneads Branch FPS	2,670	1
	10/23/2017 6:30	10/23/2017 6:45	15	0.49	70,373	0.31	0.26	6	Atlas	Retained by Sneads Branch FPS	34,483	1
	10/27/2017 17:45	10/27/2017 17:45	0	0.8	9,788	0.73	0.37	12	Atlas	Retained by Sneads Branch FPS	7,830	1
	11/3/2017 4:30	11/3/2017 5:45	75	1.52	1,177,787	2.44	2.66	1	Atlas	Partially Retained by Sneads Branch FPS	1,790,236	1
	11/6/2017 2:00	11/6/2017 2:15	15	0.19	470,163	1.83	0.11	1	Atlas	Retained by Sneads Branch FPS	89,331	1
	11/18/2017 17:15	11/18/2017 17:30	15	0.35	57,580	0.62	0.20	1	Atlas	Retained by Sneads Branch FPS	20,153	1
	5/5/2018 14:30	5/5/2018 15:15	45	1.31	1,055,732	0.83	0.50	12	Atlas	Retained by the Sneads Branch FPS	1,383,009	1
	5/17/2018 15:45	5/17/2018 15:45	0	0.37	464,551	0.37	0.30	1	Atlas		171,884	1
	6/1/2018 0:30	6/1/2018 1:15	45	1.57	92,623	1.74	0.84	1	Atlas	Retained by the Sneads Branch FPS	145,418	1
	6/26/2018 12:30	6/26/2018 12:45	15	0.71	1,570,682	1.7	0.30	12	Atlas	Retained by the Sneads Branch FPS	1,115,184	1
	7/6/2017 13:00	7/6/2017 13:00	0	0.53	2,577	1.17	0.26	6	Atlas		1,366	1
	8/22/2017 16:00	8/22/2017 16:30	30	0.54	425,691	1.27	0.35	1	Atlas		229,873	1
	9/19/2017 8:00	9/19/2017 9:15	75	0.4	213,650	0.71	0.26	3	Atlas		85,460	1
	8/17/2017 15:00	8/17/2017 18:00	180	0.72	383,883	0.72	0.39	6	Atlas		276,396	1
	7/23/2017 2:30	7/23/2017 7:00	270	1.05	353,895	0.73	0.48	12	Atlas		371,590	1
	8/29/2017 19:15	8/29/2017 19:30	15	0.12	1,399,008	0.16	0.09	1	Atlas		167,881	1
	9/1/2017 10:15	9/2/2017 0:30	855	3.08	195,000	2.96	1.53	24	Cloudburst		600,601	1
	7/28/2017 9:45	7/28/2017 10:15	30	0.27	108,578	1.32	0.20	1	Atlas		29,316	1
	8/2/2017 13:00	8/2/2017 13:15	15	0.01	5,412,700	0.42	0.01	1	Atlas		54,127	1
	8/6/2017 16:45	8/6/2017 23:45	420	0.53	175,445	0.65	0.23	12	Atlas		92,986	1
	7/7/2017 21:00	7/7/2017 21:15	15	0.27	201,052	0.91	0.18	1	Atlas		54,284	1
CSO174 Total											7,365,250	23
CSO178	10/7/2017 21:45	10/7/2017 22:30	45	1.65	529,769	0.55	0.62	24	Atlas		874,119	1
	10/8/2017 14:00	10/8/2017 14:15	15	1.65	199,565	1.53	0.62	24	Atlas		329,283	1
	10/23/2017 6:30	10/23/2017 6:45	15	0.39	699,115	0.26	0.21	6	Atlas		272,655	1
	11/3/2017 4:45	11/3/2017 5:45	60	0.99	1,547,221	1.94	0.77	1	Atlas		1,531,749	1
	11/6/2017 2:00	11/6/2017 2:15	15	0.32	1,296,813	1.45	0.22	1	Atlas		414,980	1
	11/15/2017 13:45	11/15/2017 13:45	0	0.27	219,441	0.3	0.17	3	Atlas		59,249	1
	12/5/2017 3:45	12/5/2017 4:45	60	0.65	873,471	0.53	0.33	3	Atlas		567,756	1
	12/22/2017 23:30	12/23/2017 3:15	225	1.26	288,190	0.86	0.48	24	Atlas		363,119	1
	2/11/2018 10:15	2/11/2018 10:30	15	0.4	463,590	1.02	0.21	3	Atlas		185,436	1
	2/7/2018 3:15	2/7/2018 4:00	45	0.54	542,124	0.81	0.30	6	Atlas		292,747	1
	2/23/2018 3:15	2/23/2018 9:30	375	1.44	1,131,045	3.73	0.66	12	Atlas		1,628,705	1
	3/10/2018 1:15	3/10/2018 2:30	75	0.68	237,831	0.67	0.43	3	Atlas		161,725	1
	2/24/2018 18:45	2/25/2018 9:30	885	2.1	2,013,795	5.26	0.86	12	Atlas		4,228,969	1
	3/24/2018 9:15	3/24/2018 12:45	210	1.12	340,453	1.62	0.43	24	Atlas		381,307	1

Discharge indicates no correlated rain event.

Standard refers to Rainfall Frequency Atlas of the United States or Hydmet Louisville Cloudburst.

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO178	2/22/2018 3:30	2/22/2018 6:15	165	1.71	989,007	2.85	0.64	24	Atlas		1,691,202	1
	4/1/2018 20:30	4/1/2018 23:30	180	0.61	346,402	2.04	0.33	6	Atlas		211,305	1
	4/3/2018 16:30	4/3/2018 16:30	0	0.48	441,317	2.29	0.26	6	Atlas		211,832	1
	5/5/2018 15:00	5/5/2018 15:30	30	1.69	412,235	1.24	0.67	12	Atlas		696,677	1
	5/27/2018 4:15	5/27/2018 4:45	30	0.46	1,448,378	0.52	0.37	1	Atlas		666,254	1
	6/10/2018 15:00	6/10/2018 15:15	15	0.61	317,028	0.36	0.30	1	Atlas		193,387	1
	6/11/2018 11:30	6/11/2018 13:30	120	0.28	956,875	0.85	0.16	3	Atlas		267,925	1
	6/1/2018 0:45	6/1/2018 1:45	60	1.36	609,724	1.76	0.65	3	Atlas		829,225	1
	7/23/2017 2:45	7/23/2017 7:00	255	1.14	864,426	0.78	0.52	12	Atlas		985,446	1
	8/1/2017 21:30	8/1/2017 21:45	15	0.28	1,281,907	0.53	0.23	1	Atlas		358,934	1
	8/22/2017 16:00	8/22/2017 16:45	45	0.61	1,130,485	1.13	0.38	1	Atlas		689,596	1
	9/19/2017 8:00	9/19/2017 9:00	60	0.38	2,160,453	0.61	0.25	3	Atlas		820,972	1
	8/17/2017 15:00	8/17/2017 18:15	195	0.49	876,145	0.53	0.27	6	Atlas		429,311	1
	7/7/2017 20:45	7/7/2017 21:00	15	0.24	956,746	1.07	0.16	3	Atlas		229,619	1
	7/28/2017 9:30	7/28/2017 9:45	15	0.26	677,808	1.4	0.19	1	Atlas		176,230	1
	8/29/2017 19:30	8/29/2017 19:30	0	0.08	830,813	0.14	0.04	6	Atlas		66,465	1
	8/7/2017	8/7/2017	0	0.6	108,600	0.88	0.26	12	Atlas		65,160	1
	9/1/2017 13:30	9/2/2017 1:00	690	2.61	587,534	2.47	0.91	24	Atlas		1,533,463	1
	12/27/2017 8:45	12/27/2017 12:30	225	Discharge	0	1.36	#N/A	#N/A	#N/A		14,668	1
	12/28/2017 14:45	12/28/2017 14:45	0	Discharge	0	1.36	#N/A	#N/A	#N/A		526	1
CSO178 Total											21,429,996	34
CSO179	10/7/2017 22:00	10/7/2017 22:15	15	1.68	5,290	0.54	0.64	24	Atlas		8,887	1
	11/3/2017 4:45	11/3/2017 5:30	45	1.52	106,413	2.44	2.66	1	Atlas		161,747	1
	2/23/2018 4:15	2/23/2018 6:15	120	1.17	16,794	3.07	0.54	12	Atlas		19,649	1
	2/22/2018 5:30	2/22/2018 7:45	135	1.64	10,530	2.7	0.61	24	Atlas		17,269	1
	2/24/2018 19:15	2/25/2018 12:45	1050	1.79	969,050	4.6	0.73	12	Atlas		1,734,600	1
	6/1/2018 1:15	6/1/2018 1:15	0	1.57	1,426	1.74	0.84	1	Atlas		2,239	1
CSO179 Total											1,944,391	6
CSO180	10/7/2017 21:30	10/7/2017 22:00	30	1.68	62,663	0.53	0.64	24	Atlas	Retained by Sneads Branch FPS	105,273	1
	10/8/2017 13:45	10/8/2017 14:00	15	1.68	25,082	1.49	0.64	24	Atlas	Retained by Sneads Branch FPS	42,137	1
	10/23/2017 6:15	10/23/2017 6:15	0	0.49	2,637	0.23	0.26	6	Atlas	Retained by Sneads Branch FPS	1,292	1
	10/27/2017 17:30	10/27/2017 17:30	0	0.8	571	0.71	0.37	12	Atlas	Retained by Sneads Branch FPS	457	1
	11/3/2017 4:30	11/3/2017 5:30	60	1.52	333,341	2.44	2.66	1	Atlas	Partially Retained by Sneads Branch FPS	506,679	1
	11/6/2017 1:45	11/6/2017 2:00	15	0.19	257,747	1.83	0.11	1	Atlas	Retained by Sneads Branch FPS	48,972	1
	11/18/2017 17:15	11/18/2017 17:15	0	0.35	20,360	0.61	0.20	1	Atlas	Retained by Sneads Branch FPS	7,126	1
	12/5/2017 3:45	12/5/2017 4:00	15	0.62	44,398	0.37	0.35	3	Atlas	Retained by Sneads Branch FPS	27,527	1
	12/12/2017 7:45	12/12/2017 18:15	630	0.01	918,920,700	0.01	0.01	1	Atlas	Partially Retained by Sneads Branch FPS	9,189,207	1
	12/22/2017 23:45	12/23/2017 2:45	180	1.09	2,825	0.68	0.42	24	Atlas	Retained by Sneads Branch FPS	3,079	1
	3/24/2018 12:00	3/24/2018 12:00	0	0.95	11,409	1.46	0.37	24	Atlas	Retained by Sneads Branch FPS	10,839	1
	2/7/2018 3:00	2/7/2018 3:15	15	0.44	33,407	0.62	0.23	6	Atlas	Retained by Sneads Branch FPS	14,699	1
	2/22/2018 3:15	2/22/2018 5:30	135	1.64	133,583	2.67	0.61	24	Atlas	Retained by Sneads Branch FPS	219,076	1
	2/23/2018 3:00	2/23/2018 6:00	180	1.17	114,162	3.12	0.54	12	Atlas		133,570	1
	2/24/2018 18:30	2/25/2018 4:15	585	1.79	232,632	4.6	0.73	12	Atlas		416,411	1
	2/11/2018 4:00	2/11/2018 10:00	360	0.36	36,847	0.87	0.17	3	Atlas	Retained by Sneads Branch FPS	13,265	1
	2/16/2018 2:30	2/16/2018 2:45	15	0.75	9,316	1.15	0.34	12	Atlas	Retained by Sneads Branch FPS	6,987	1
	2/21/2018 7:00	2/21/2018 7:00	0	1.64	501	1.52	0.61	24	Atlas		821	1
	3/29/2018 18:45	3/29/2018 19:30	45	1.15	35,217	1.86	0.30	48	Atlas	Retained by Sneads Branch FPS	40,500	1
	4/3/2018 16:15	4/3/2018 21:00	285	0.48	47,469	2.45	0.26	6	Atlas	Retained by the Sneads Branch FPS	22,785	1
	4/14/2018 9:30	4/14/2018 9:30	0	1	292	0.23	0.32	48	Atlas	Retained by the Sneads Branch FPS	292	1
	4/1/2018 20:00	4/1/2018 23:00	180	0.56	9,229	1.98	0.31	6	Atlas	Retained by the Sneads Branch FPS	5,168	1
	4/15/2018 5:30	4/15/2018 5:30	0	1	14,051	0.74	0.32	48	Atlas	Retained by the Sneads Branch FPS	14,051	1
	5/5/2018 14:15	5/5/2018 18:15	240	1.31	111,850	1.16	0.50	12	Atlas		146,523	1
	5/27/2018 4:15	5/27/2018 4:15	0	0.26	54,962	0.24	0.19	1	Atlas	Retained by the Sneads Branch FPS	14,290	1
	5/17/2018 15:30	5/17/2018 15:45	15	0.37	75,341	0.37	0.30	1	Atlas		27,876	1
	6/1/2018 1:00	6/1/2018 2:00	60	1.57	38,220	1.81	0.84	1	Atlas	Retained by the Sneads Branch FPS	60,005	1
	6/10/2018 14:45	6/10/2018 15:00	15	0.47	38,315	0.21	0.22	12	Atlas	Retained by the Sneads Branch FPS	18,008	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO180	6/11/2018 11:00	6/11/2018 13:15	135	0.41	93,390	0.8	0.24	3	Atlas	Retained by the Sneads Branch FPS	38,290	1
	6/26/2018 12:00	6/26/2018 12:30	30	Discharge	0	1.59	#N/A	#N/A	#N/A	Data Under Review	70,523	1
	6/22/2018 14:00	6/22/2018 14:00	0	0.28	40,125	0.49	0.17	1	Atlas	Retained by the Sneads Branch FPS	11,235	1
	6/25/2018 10:00	6/25/2018 10:00	0	0.91	45,545	1.14	0.38	12	Atlas		41,446	1
	8/22/2017 16:00	8/22/2017 16:30	30	0.54	54,052	1.27	0.35	1	Atlas		29,188	1
	8/17/2017 15:00	8/17/2017 15:00	0	0.72	38,653	0.37	0.39	6	Atlas		27,830	1
	7/23/2017 2:30	7/23/2017 6:30	240	1.05	54,494	0.66	0.48	12	Atlas		57,219	1
	7/28/2017 9:30	7/28/2017 9:45	15	0.27	53,522	1.31	0.20	1	Atlas		14,451	1
	8/29/2017 19:15	8/29/2017 19:15	0	0.12	191,583	0.16	0.09	1	Atlas		22,990	1
	7/7/2017 20:30	7/7/2017 21:00	30	0.27	87,807	1.48	0.18	1	Atlas		23,708	1
	9/19/2017 7:45	9/19/2017 8:45	60	0.4	33,775	0.67	0.26	3	Atlas		13,510	1
	8/2/2017 13:00	8/2/2017 13:00	0	0.01	1,350,500	0.42	0.01	1	Atlas		13,505	1
	8/6/2017 16:45	8/6/2017 16:45	0	0.53	12,653	0.38	0.23	12	Atlas		6,706	1
	9/1/2017 13:15	9/1/2017 21:45	510	3.08	11,996	2.73	1.53	24	Cloudburst		36,949	1
CSO180 Total											11,504,465	42
CSO181	10/7/2017 22:00	10/7/2017 22:30	30	1.64	47,719,538	0.55	0.62	24	Atlas		78,260,043	1
	11/3/2017 5:00	11/3/2017 5:30	30	0.89	438,156,778	1.76	0.69	1	Atlas		389,959,532	1
	11/6/2017 2:15	11/6/2017 2:15	0	0.28	130,425,700	1.3	0.17	1	Atlas		36,519,196	1
	12/5/2017 4:15	12/5/2017 4:15	0	0.67	2,223,304	0.42	0.36	3	Atlas		1,489,614	1
	2/22/2018 5:00	2/22/2018 5:30	30	1.69	31,675,810	2.68	0.63	24	Atlas		53,532,119	1
	2/22/2018 14:15	2/24/2018 17:45	3090	Discharge	0	4.51	#N/A	#N/A	#N/A	Data Under Review	1,368,556,259	1
	2/26/2018 4:15	3/2/2018 17:45	6570	Discharge	0	5.07	#N/A	#N/A	#N/A	Data Under Review	1,857,550,964	1
	4/3/2018 16:30	4/3/2018 16:30	0	0.4	472,555	2.16	0.22	6	Atlas		189,022	1
	5/5/2018 14:45	5/5/2018 15:00	15	1.51	5,176,293	1	0.58	12	Atlas		7,816,203	1
	5/27/2018 4:15	5/27/2018 4:30	15	0.34	48,918,388	0.4	0.27	1	Atlas		16,632,252	1
	6/1/2018 1:15	6/1/2018 1:30	15	1.37	41,276,346	1.61	0.69	3	Atlas		56,548,594	1
	6/25/2018 10:45	6/25/2018 10:45	0	0.87	102,201,978	1.33	0.35	12	Atlas		88,915,721	1
	6/26/2018 13:00	6/26/2018 13:00	0	0.59	70,150,247	1.73	0.24	12	Atlas		41,388,646	1
	7/23/2017 3:00	7/23/2017 3:00	0	1.18	52,032,725	0.26	0.54	12	Atlas		61,398,616	1
	8/1/2017 21:45	8/1/2017 21:45	0	0.22	55,748,782	0.53	0.18	1	Atlas		12,264,732	1
	8/22/2017 16:15	8/22/2017 16:15	0	0.62	128,924,413	1.3	0.37	1	Atlas		79,933,136	1
	9/19/2017 8:15	9/19/2017 8:15	0	0.39	12,004,223	0.59	0.25	3	Atlas		4,681,647	1
	8/17/2017 15:15	8/17/2017 15:15	0	0.66	22,635,323	0.37	0.36	6	Atlas		14,939,313	1
	7/28/2017 9:45	7/28/2017 9:45	0	0.31	3,172,532	1.49	0.23	1	Atlas		983,485	1
CSO181 Total											4,171,559,094	19
CSO182	10/7/2017 22:30	10/8/2017 19:45	1275	1.77	37,914	1.77	0.67	24	Atlas	Retained by Sneads Branch FPS	67,108	1
	10/10/2017 14:00	10/10/2017 21:15	435	0.67	74,076	2.45	0.34	3	Atlas	Retained by Sneads Branch FPS	49,631	1
	10/23/2017 7:15	10/23/2017 8:15	60	0.55	48,155	0.5	0.29	6	Atlas	Retained by Sneads Branch FPS	26,485	1
	10/27/2017 17:30	10/28/2017 1:15	465	0.77	179,187	1.38	0.35	12	Atlas	Retained by Sneads Branch FPS	137,974	1
	11/3/2017 4:30	11/3/2017 4:30	0	1.5	6,954	1.55	2.66	1	Atlas	Partially Retained by Sneads Branch FPS	10,431	1
	12/22/2017 18:30	12/23/2017 12:30	1080	1.03	243,009	1.03	0.41	12	Atlas	Retained by Sneads Branch FPS	250,299	1
	1/11/2018 9:00	1/11/2018 17:00	480	0.07	245,857	0.19	0.04	3	Atlas	Retained by Sneads Branch FPS	17,210	1
	1/27/2018 14:00	1/27/2018 17:30	210	0.32	210,647	0.46	0.17	6	Atlas	Retained by Sneads Branch FPS	67,407	1
	1/12/2018 3:45	1/12/2018 12:45	540	0.39	210,054	0.43	0.15	24	Atlas	Retained by Sneads Branch FPS	81,921	1
	2/16/2018 3:15	2/16/2018 12:00	525	0.71	343,545	1.65	0.33	12	Atlas	Retained by Sneads Branch FPS	243,917	1
	2/11/2018 4:15	2/11/2018 11:30	435	0.36	157,592	0.91	0.17	12	Atlas	Retained by Sneads Branch FPS	56,733	1
	2/7/2018 1:00	2/7/2018 4:45	225	0.44	223,957	0.66	0.24	6	Atlas	Retained by Sneads Branch FPS	98,541	1
	2/21/2018 5:15	2/22/2018 13:30	1935	1.63	1,264,920	3.01	0.61	24	Atlas		2,061,819	1
	2/23/2018 1:30	2/26/2018	4230	1.22	4,211,380	5.52	0.56	12	Atlas		5,137,883	1
	2/14/2018 7:15	2/14/2018 15:45	510	0.4	163,383	0.87	0.18	12	Atlas	Retained by Sneads Branch FPS	65,353	1
	3/19/2018 17:30	3/19/2018 20:15	165	0.26	98,231	0.29	0.15	3	Atlas	Retained by Sneads Branch FPS	25,540	1
	3/28/2018 5:30	3/28/2018 11:30	360	0.44	56,755	1.51	0.18	12	Atlas	Retained by Sneads Branch FPS	24,972	1
	2/28/2018 14:15	2/28/2018 14:15	0	0.1	12,110	4.39	0.05	6	Atlas	Retained by Sneads Branch FPS	1,211	1
	3/31/2018 22:00	4/1/2018 4:00	360	0.22	96,786	1.34	0.11	3	Atlas	Retained by Sneads Branch FPS	21,293	1
	3/11/2018 22:15	3/11/2018 22:15	0	0.25	88	0.87	0.16	3	Atlas	Retained by Sneads Branch FPS	22	1
	2/17/2018 13:00	2/17/2018 15:45	165	0.2	399,805	1.8	0.13	3	Atlas	Retained by Sneads Branch FPS	79,961	1
	3/1/2018 14:00	3/1/2018 14:00	0	0.02	33,650	3.1	0.01	12	Atlas	Retained by Sneads Branch FPS	673	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO182	3/10/2018 0:30	3/10/2018 3:45	195	0.62	106,695	0.64	0.39	3	Atlas	Retained by Sneads Branch FPS	66,151	1
	3/24/2018 4:00	3/24/2018 20:30	990	0.94	167,029	1.7	0.38	12	Atlas	Retained by Sneads Branch FPS	157,007	1
	3/29/2018 13:45	3/30/2018 8:15	1110	0.62	87,537	2.06	0.21	24	Atlas	Retained by Sneads Branch FPS	54,273	1
	4/3/2018 16:15	4/3/2018 22:30	375	0.54	42,544	2.4	0.30	6	Atlas	Retained by the Sneads Branch FPS	22,974	1
	4/14/2018 9:00	4/14/2018 10:15	75	1.12	18,343	0.27	0.37	24	Atlas	Retained by the Sneads Branch FPS	20,544	1
	4/14/2018 22:30	4/15/2018 10:30	720	1.12	85,222	1.14	0.37	24	Atlas	Retained by the Sneads Branch FPS	95,449	1
	4/23/2018 5:00	4/23/2018 11:45	405	0.63	64,416	0.76	0.29	12	Atlas	Retained by the Sneads Branch FPS	40,582	1
	4/1/2018 19:45	4/2/2018 1:00	315	0.54	95,580	1.88	0.30	6	Atlas	Retained by the Sneads Branch FPS	51,613	1
	5/5/2018 12:15	5/5/2018 20:00	465	1.31	129,931	1.17	0.49	12	Atlas		170,210	1
	5/31/2018 14:00	5/31/2018 15:15	75	1.62	69,115	0.92	0.87	3	Atlas	Retained by the Sneads Branch FPS	111,967	1
	5/17/2018 15:30	5/17/2018 16:15	45	0.46	434,339	0.48	0.37	1	Atlas	Retained by the Sneads Branch FPS	199,796	1
	5/27/2018 4:30	5/27/2018 5:00	30	0.43	265,177	0.43	0.33	1	Atlas	Retained by the Sneads Branch FPS	114,026	1
	5/28/2018 21:15	5/28/2018 21:15	0	0.12	5,008	0.57	0.07	6	Atlas	Retained by the Sneads Branch FPS	601	1
	5/30/2018 13:00	5/30/2018 13:00	0	0.09	28,478	0.74	0.05	1	Atlas	Retained by the Sneads Branch FPS	2,563	1
	6/10/2018 15:00	6/10/2018 21:45	405	0.5	163,074	0.49	0.23	12	Atlas	Retained by the Sneads Branch FPS	81,537	1
	6/26/2018 12:15	6/26/2018 21:30	555	0.77	44,839	2.1	0.33	12	Atlas		34,526	1
	6/1/2018 0:30	6/1/2018 4:00	210	1.62	262,196	2.35	0.87	3	Atlas	Retained by the Sneads Branch FPS	424,757	1
	6/11/2018 23:45	6/12/2018	15	0.83	9,949	1.02	0.29	3	Atlas	Retained by the Sneads Branch FPS	8,258	1
	6/11/2018 11:15	6/11/2018 14:15	180	0.83	171,919	0.96	0.29	3	Atlas	Retained by the Sneads Branch FPS	142,693	1
	6/25/2018	6/25/2018 11:15	675	0.92	165,558	1.42	0.37	12	Atlas		152,313	1
	6/12/2018 10:45	6/12/2018 11:30	45	0.83	26,848	1.06	0.29	3	Atlas	Retained by the Sneads Branch FPS	22,284	1
	6/20/2018 13:00	6/20/2018 14:30	90	Discharge	0	0.11	#N/A	#N/A	#N/A	Data Under Review	15,962	1
	6/21/2018 15:15	6/21/2018 15:30	15	0.12	118,500	0.23	0.06	12	Atlas	Retained by the Sneads Branch FPS	14,220	1
	6/22/2018 11:15	6/22/2018 13:45	150	0.37	25,241	0.48	0.20	6	Atlas	Retained by the Sneads Branch FPS	9,339	1
	8/6/2017 14:45	8/7/2017 0:30	585	0.56	25,923	0.71	0.25	12	Atlas		14,517	1
	9/19/2017 8:15	9/19/2017 10:30	135	0.5	38,260	0.9	0.33	3	Atlas		19,130	1
	7/7/2017 20:45	7/7/2017 21:45	60	0.49	28,678	1.47	0.37	1	Atlas		14,052	1
	7/23/2017 2:30	7/23/2017 10:15	465	1.04	31,749	1.04	0.48	12	Atlas		33,019	1
	9/13/2017 12:30	9/13/2017 12:30	0	0.68	5,335	0.56	0.22	48	Atlas		3,628	1
	7/28/2017 9:45	7/28/2017 10:45	60	0.2	35,275	1.22	0.13	1	Atlas		7,055	1
	7/6/2017 4:30	7/6/2017 13:45	555	0.54	50,437	1.53	0.25	3	Atlas		27,236	1
	8/2/2017 13:00	8/2/2017 13:30	30	0.09	36,044	0.35	0.08	1	Atlas		3,244	1
	8/29/2017 19:45	8/29/2017 20:00	15	0.12	44,925	0.15	0.08	1	Atlas		5,391	1
	9/12/2017 20:30	9/12/2017 20:45	15	0.68	8,571	0.38	0.22	48	Atlas		5,828	1
	8/17/2017 15:30	8/17/2017 18:45	195	0.72	8,671	0.75	0.39	6	Atlas		6,243	1
	8/22/2017 13:00	8/22/2017 17:00	240	0.59	5,971	1.32	0.44	1	Atlas		3,523	1
	9/1/2017 5:45	9/2/2017 6:30	1485	3.4	57,134	3.54	2.20	24	Cloudburst		194,257	1
	9/12/2017 7:30	9/12/2017 8:00	30	0.68	15,953	0.43	0.22	48	Atlas		10,848	1
CSO182 Total											10,888,000	60
CSO183	10/7/2017 22:00	10/7/2017 22:00	0	1.91	594	0.52	0.71	24	Atlas	Retained by Sneads Branch FPS	1,134	1
	10/8/2017 13:45	10/8/2017 13:45	0	1.91	223	1.65	0.71	24	Atlas	Retained by Sneads Branch FPS	425	1
	11/3/2017 4:45	11/3/2017 12:15	450	1.43	8,470	2.37	2.00	1	Atlas	Partially Retained by Sneads Branch FPS	12,112	1
	11/8/2017 10:30	11/8/2017 10:30	0	0.05	23,200	1.85	0.03	1	Atlas	Retained by Sneads Branch FPS	1,160	1
	11/10/2017 7:15	11/10/2017 23:45	990	Discharge	0	0.39	#N/A	#N/A	#N/A	Retained by Sneads Branch FPS	3,193	1
	11/11/2017 9:15	11/11/2017 11:45	150	Discharge	0	0.39	#N/A	#N/A	#N/A	Retained by Sneads Branch FPS	503	1
	11/13/2017 21:00	11/13/2017 21:00	0	Discharge	0	0.29	#N/A	#N/A	#N/A	Retained by Sneads Branch FPS	1,825	1
	11/18/2017 21:45	11/23/2017 14:30	6765	0.27	5,191,852	0.56	0.15	1	Atlas	Retained by Sneads Branch FPS	1,401,800	1
	11/23/2017 23:00	11/23/2017 23:00	0	Discharge	0	0.27	#N/A	#N/A	#N/A	Retained by Sneads Branch FPS	51	1
	11/25/2017 4:15	11/25/2017 4:15	0	Discharge	0	0.27	#N/A	#N/A	#N/A	Retained by Sneads Branch FPS	3,700	1
	11/25/2017 21:30	11/27/2017 21:15	2865	Discharge	0	0.04	#N/A	#N/A	#N/A	Retained by Sneads Branch FPS	32,930	1
	11/28/2017 13:45	11/29/2017 9:00	1155	Discharge	0	0	#N/A	#N/A	#N/A	Retained by Sneads Branch FPS	3,709	1
	1/13/2018 10:45	1/13/2018 10:45	0	0.01	6,700	0.67	0.01	1	Atlas	Retained by Sneads Branch FPS	67	1
	2/24/2018 19:00	2/24/2018 23:30	270	1.77	54,243	4.47	0.73	12	Atlas		96,010	1
	2/22/2018 4:45	2/22/2018 5:15	30	1.65	801	2.58	0.58	24	Atlas		1,321	1
	5/5/2018 14:45	5/5/2018 15:15	30	1.38	833	0.86	0.52	24	Atlas	Retained by the Sneads Branch FPS	1,149	1
	5/17/2018 15:45	5/17/2018 15:45	0	0.48	3,000	0.47	0.38	1	Atlas		1,440	1
	6/1/2018 0:30	6/1/2018 1:15	45	1.31	892	1.63	0.65	3	Atlas	Retained by the Sneads Branch FPS	1,168	1

Discharge indicates no correlated rain event.

Standard refers to Rainfall Frequency Atlas of the United States or Hydmet Louisville Cloudburst.

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO183	8/22/2017 16:00	8/22/2017 16:00	0	0.56	2,729	1.28	0.34	1	Atlas		1,528	1
	8/17/2017 15:00	8/17/2017 15:00	0	0.79	5,368	0.27	0.43	6	Atlas		4,241	1
CSO183 Total											1,569,466	20
CSO184	10/7/2017 22:00	10/7/2017 22:00	0	1.91	33,731	0.52	0.71	24	Atlas	Retained by Sneads Branch FPS	64,426	1
	11/3/2017 4:45	11/3/2017 5:15	30	1.43	58,283	2.35	2.00	1	Atlas	Partially Retained by Sneads Branch FPS	83,344	1
	2/24/2018 19:00	2/24/2018 23:30	270	1.77	208,186	4.47	0.73	12	Atlas		368,490	1
	2/22/2018 4:30	2/22/2018 4:45	15	1.65	9,668	2.5	0.58	24	Atlas		15,952	1
	2/23/2018 5:00	2/23/2018 5:00	0	1.28	705	2.85	0.59	12	Atlas		903	1
	5/5/2018 14:45	5/5/2018 15:15	30	1.38	56,901	0.86	0.52	24	Atlas	Retained by the Sneads Branch FPS	78,523	1
	5/17/2018 15:45	5/17/2018 15:45	0	0.48	65,852	0.47	0.38	1	Atlas		31,609	1
	6/1/2018 0:30	6/1/2018 0:30	0	1.31	1,360	1.07	0.65	3	Atlas	Retained by the Sneads Branch FPS	1,781	1
	7/23/2017 2:45	7/23/2017 2:45	0	0.96	941	0.36	0.44	12	Atlas		903	1
	8/17/2017 15:00	8/17/2017 15:00	0	0.79	21,985	0.27	0.43	6	Atlas		17,368	1
	8/29/2017 19:30	8/29/2017 19:30	0	0.2	38,045	0.23	0.11	1	Atlas		7,609	1
	8/6/2017 16:45	8/6/2017 16:45	0	0.59	1,773	0.43	0.26	12	Atlas		1,046	1
CSO184 Total											671,954	12
CSO185	10/7/2017 22:00	10/7/2017 22:00	0	1.91	103,725	0.52	0.71	24	Atlas	Retained by Sneads Branch FPS	198,114	1
	10/8/2017 14:00	10/8/2017 14:00	0	1.91	10,610	1.68	0.71	24	Atlas	Retained by Sneads Branch FPS	20,265	1
	12/23/2017	12/23/2017 3:00	180	1.07	4,392	0.75	0.43	12	Atlas	Retained by Sneads Branch FPS	4,699	1
	3/29/2018 19:15	3/29/2018 19:30	15	1.03	42,053	1.87	0.28	48	Atlas	Retained by Sneads Branch FPS	43,315	1
	2/24/2018 10:30	2/24/2018 10:30	0	1.77	3,038	3.29	0.73	12	Atlas		5,378	1
	2/23/2018 4:45	2/23/2018 6:15	90	1.28	38,525	3.13	0.59	12	Atlas		49,312	1
	2/24/2018 18:45	2/25/2018 0:30	345	1.77	731,547	4.58	0.73	12	Atlas		1,294,838	1
	2/7/2018 3:30	2/7/2018 3:30	0	0.39	462	0.54	0.21	6	Atlas	Retained by Sneads Branch FPS	180	1
	2/22/2018 3:45	2/22/2018 4:45	60	1.65	27,962	2.51	0.58	24	Atlas		46,137	1
	3/24/2018 14:30	3/24/2018 14:30	0	1.05	6,465	1.73	0.43	12	Atlas		6,788	1
	4/15/2018 5:45	4/15/2018 5:45	0	1.27	6,408	0.94	0.42	24	Atlas	Retained by the Sneads Branch FPS	8,138	1
	4/1/2018 23:15	4/1/2018 23:15	0	0.51	7,143	1.79	0.28	6	Atlas	Retained by the Sneads Branch FPS	3,643	1
	5/31/2018 14:15	5/31/2018 14:15	0	1.31	1,729	0.85	0.65	3	Atlas	Retained by the Sneads Branch FPS	2,265	1
	5/5/2018 14:45	5/5/2018 18:15	210	1.38	265,341	1.22	0.52	24	Atlas		366,170	1
	5/17/2018 15:45	5/17/2018 16:00	15	0.48	108,835	0.48	0.38	1	Atlas		52,241	1
	6/10/2018 15:00	6/10/2018 15:15	15	0.41	16,922	0.17	0.18	12	Atlas	Retained by the Sneads Branch FPS	6,938	1
	6/11/2018 11:30	6/11/2018 13:30	120	0.81	7,206	0.74	0.26	48	Atlas	Retained by the Sneads Branch FPS	5,837	1
	6/26/2018 12:30	6/26/2018 13:00	30	0.81	7,381	2	0.36	12	Atlas	Retained by the Sneads Branch FPS	5,979	1
	6/26/2018 21:15	6/26/2018 21:15	0	0.81	174	2.25	0.36	12	Atlas	Retained by the Sneads Branch FPS	141	1
	6/25/2018 10:30	6/25/2018 10:45	15	0.92	1,224	1.46	0.38	12	Atlas		1,126	1
	6/1/2018 0:45	6/1/2018 2:15	90	1.31	24,079	1.82	0.65	3	Atlas	Retained by the Sneads Branch FPS	31,544	1
	7/23/2017 2:45	7/23/2017 3:15	30	0.96	33,589	0.46	0.44	12	Atlas		32,245	1
	8/22/2017 16:15	8/22/2017 16:15	0	0.56	29,032	1.35	0.34	1	Atlas		16,258	1
	7/28/2017 10:00	7/28/2017 10:00	0	0.11	6,300	1.07	0.08	1	Atlas		693	1
	8/17/2017 15:00	8/17/2017 18:00	180	0.79	20,771	0.8	0.43	6	Atlas		16,409	1
	8/29/2017 19:30	8/29/2017 19:30	0	0.2	361,535	0.23	0.11	1	Atlas		72,307	1
	9/19/2017 9:00	9/19/2017 9:00	0	0.49	4,547	0.73	0.31	3	Atlas		2,228	1
	8/2/2017 13:15	8/2/2017 13:15	0	0.1	18,220	0.27	0.08	1	Atlas		1,822	1
	9/1/2017 15:00	9/1/2017 21:45	405	3.77	2,659	3.4	3.52	24	Cloudburst		10,026	1
	8/6/2017 16:45	8/6/2017 17:00	15	0.59	13,841	0.44	0.26	12	Atlas		8,166	1
CSO185 Total											2,313,202	30
CSO186	11/3/2017 5:00	11/3/2017 5:00	0	1.52	2,422	2.38	2.66	1	Atlas	Partially Retained by Sneads Branch FPS	3,682	1
CSO186 Total											3,682	1
CSO187	10/7/2017 21:30	10/7/2017 21:30	0	1.68	4,126	0.27	0.64	24	Atlas	Retained by Sneads Branch FPS	6,932	1
	11/3/2017 4:15	11/3/2017 4:30	15	1.52	25,047	1.63	2.66	1	Atlas	Partially Retained by Sneads Branch FPS	38,071	1
	12/12/2017 7:45	12/12/2017 12:45	300	0.01	82,406,100	0.01	0.01	1	Atlas	Partially Retained by Sneads Branch FPS	824,061	1
	6/1/2018 1:00	6/1/2018 1:00	0	1.57	48	1.41	0.84	1	Atlas	Retained by the Sneads Branch FPS	75	1
	8/17/2017 14:45	8/17/2017 14:45	0	0.72	2,022	0.37	0.39	6	Atlas		1,456	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO187 Total											870,595	5
CSO188	11/3/2017 5:15	11/3/2017 5:15	0	1.52	7,324	2.41	2.66	1	Atlas	Partially Retained by Sneads Branch FPS	11,133	1
	12/12/2017 8:30	12/12/2017 15:30	420	0.01	142,850,700	0.01	0.01	1	Atlas	Partially Retained by Sneads Branch FPS	1,428,507	1
	2/24/2018 23:15	2/24/2018 23:15	0	1.79	11,779	4.37	0.73	12	Atlas		21,084	1
CSO188 Total											1,460,724	3
CSO189	10/7/2017 21:45	10/8/2017 0:15	150	2.35	2,294,892	1.07	0.88	24	Atlas		5,392,996	1
	10/8/2017 11:00	10/8/2017 17:00	360	2.35	3,133,220	2.29	0.88	24	Atlas		7,363,068	1
	10/10/2017 14:45	10/10/2017 19:15	270	0.51	2,721,520	2.85	0.29	3	Atlas		1,387,975	1
	10/23/2017 6:45	10/23/2017 9:00	135	0.53	2,309,147	0.51	0.28	6	Atlas		1,223,848	1
	10/27/2017 18:00	10/28/2017 1:45	465	1.08	3,306,772	1.77	0.49	12	Atlas		3,571,314	1
	11/3/2017 4:45	11/3/2017 7:45	180	0.78	12,673,112	2.02	0.55	1	Atlas		9,885,027	1
	11/6/2017 1:30	11/6/2017 4:00	150	0.77	8,728,845	1.71	0.60	1	Atlas		6,721,211	1
	11/15/2017 13:45	11/15/2017 14:45	60	0.34	632,915	0.39	0.22	1	Atlas		215,191	1
	11/18/2017 17:30	11/18/2017 19:00	90	0.27	4,762,911	0.66	0.14	6	Atlas		1,285,986	1
	12/5/2017 4:00	12/5/2017 7:15	195	0.76	3,289,871	0.78	0.41	3	Atlas		2,500,302	1
	12/22/2017 23:15	12/23/2017 13:15	840	1.49	5,531,048	1.49	0.57	12	Atlas		8,241,262	1
	2/14/2018 7:45	2/14/2018 10:30	165	0.6	1,069,973	0.93	0.29	3	Atlas		641,984	1
	2/16/2018 3:15	2/16/2018 4:00	45	0.74	873,719	1.22	0.34	12	Atlas		646,552	1
	3/29/2018 19:15	3/30/2018 0:15	300	1.3	1,163,711	2.26	0.33	48	Atlas		1,512,824	1
	2/23/2018 3:00	2/23/2018 15:45	765	1.92	16,120,770	4.79	0.88	12	Atlas		30,951,878	1
	2/7/2018 3:15	2/7/2018 5:45	150	0.55	3,430,193	0.83	0.28	6	Atlas		1,886,606	1
	3/24/2018 9:30	3/24/2018 21:30	720	1.07	7,846,008	2.18	0.41	24	Atlas		8,395,229	1
	2/21/2018 22:00	2/22/2018 9:45	705	2.1	10,036,794	3.02	0.78	24	Atlas		21,077,267	1
	2/11/2018 10:30	2/11/2018 12:00	90	0.27	2,547,307	0.92	0.13	3	Atlas		687,773	1
	3/10/2018 1:45	3/10/2018 4:30	165	0.64	3,047,569	0.67	0.41	3	Atlas		1,950,444	1
	3/19/2018 20:15	3/19/2018 21:15	60	0.38	1,978,253	0.39	0.19	6	Atlas		751,736	1
	2/24/2018 10:45	2/25/2018 9:15	1350	2.65	13,288,568	6.8	1.74	12	Cloudburst		35,214,705	1
	3/28/2018 7:00	3/28/2018 7:00	0	1.3	87,288	1.57	0.33	48	Atlas		113,474	1
	4/14/2018 9:30	4/14/2018 10:30	60	1.23	199,423	0.47	0.42	24	Atlas		245,290	1
	4/15/2018 5:45	4/15/2018 10:30	285	1.23	1,365,603	1.25	0.42	24	Atlas		1,679,692	1
	4/1/2018 20:45	4/2/2018 1:00	255	0.8	5,359,054	2.48	0.44	6	Atlas		4,287,243	1
	4/3/2018 21:30	4/3/2018 22:45	75	0.35	1,670,846	2.7	0.19	6	Atlas		584,796	1
	4/23/2018 6:15	4/23/2018 7:45	90	0.65	45,492	0.76	0.32	3	Atlas		29,570	1
	5/27/2018 3:45	5/27/2018 6:45	180	1.15	6,690,700	1.32	0.86	1	Atlas		7,694,305	1
	5/31/2018 14:15	5/31/2018 15:15	60	1.91	183,235	1.89	0.93	3	Atlas		349,979	1
	6/1/2018	6/1/2018 5:30	330	1.91	5,091,996	3.47	0.93	3	Atlas		9,725,713	1
	5/22/2018 8:00	5/22/2018 8:45	45	0.24	342,679	0.63	0.19	1	Atlas		82,243	1
	6/11/2018 13:30	6/11/2018 14:45	75	0.23	1,279,557	0.68	0.13	1	Atlas		294,298	1
	6/10/2018 15:00	6/10/2018 16:00	60	0.49	1,809,961	0.3	0.24	1	Atlas		886,881	1
	6/20/2018 12:15	6/20/2018 14:15	120	0.57	4,720,763	0.25	0.40	1	Atlas		2,690,835	1
	6/26/2018 10:30	6/26/2018 20:45	615	Discharge	0	3.31	#N/A	#N/A	#N/A	Data Under Review	5,095,160	1
	6/22/2018 11:15	6/22/2018 17:15	360	0.83	434,939	2.04	0.46	3	Atlas		360,999	1
	6/12/2018 12:45	6/12/2018 13:00	15	0.14	68,379	0.86	0.11	1	Atlas		9,573	1
	6/21/2018 7:15	6/21/2018 16:00	525	0.67	4,204,263	0.94	0.30	12	Atlas		2,816,856	1
	6/25/2018 8:30	6/25/2018 11:00	150	0.85	1,622,382	2.78	0.33	12	Atlas		1,379,025	1
	8/1/2017 21:45	8/1/2017 23:15	90	0.21	8,812,962	0.31	0.14	3	Atlas		1,850,722	1
	9/1/2017 9:00	9/2/2017 7:15	1335	3.66	4,371,392	3.9	2.32	24	Cloudburst		15,999,294	1
	8/22/2017 16:00	8/22/2017 17:15	75	0.42	3,005,564	0.79	0.30	1	Atlas		1,262,337	1
	7/23/2017 3:30	7/23/2017 11:00	450	1.12	2,897,937	1.33	0.51	12	Atlas		3,245,689	1
	7/7/2017 21:30	7/7/2017 22:30	60	0.31	621,013	0.74	0.23	1	Atlas		192,514	1
	7/28/2017 10:15	7/28/2017 10:15	0	0.1	80,290	1.21	0.04	1	Atlas		8,029	1
	8/17/2017 18:15	8/17/2017 19:00	45	0.33	414,142	0.37	0.18	1	Atlas		136,667	1
	9/19/2017 10:15	9/19/2017 10:45	30	0.17	236,988	0.6	0.10	1	Atlas		40,288	1
CSO189 Total											212,566,650	48
CSO190	10/7/2017 21:30	10/7/2017 22:15	45	2.05	303,011	0.8	0.76	24	Atlas		621,172	1
	10/8/2017 10:15	10/8/2017 15:00	285	2.05	232,858	1.97	0.76	24	Atlas		477,359	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO190	10/10/2017 14:00	10/10/2017 16:15	135	0.66	59,105	2.64	0.36	3	Atlas		39,009	1
	10/23/2017 6:15	10/23/2017 7:00	45	0.4	522,688	0.28	0.21	6	Atlas		209,075	1
	10/27/2017 17:15	10/28/2017	405	1.06	38,895	1.51	0.48	12	Atlas		41,229	1
	11/3/2017 4:30	11/3/2017 5:30	60	1.02	341,707	2.24	0.78	1	Atlas		348,541	1
	11/6/2017 1:30	11/6/2017 2:15	45	0.82	466,123	2	0.63	1	Atlas		382,221	1
	11/15/2017 13:15	11/15/2017 13:30	15	0.36	3,200	0.39	0.25	1	Atlas		1,152	1
	11/18/2017 17:00	11/18/2017 17:30	30	0.46	79,513	0.83	0.26	3	Atlas		36,576	1
	12/5/2017 3:45	12/5/2017 5:00	75	0.65	188,040	0.55	0.35	3	Atlas		122,226	1
	12/22/2017 23:15	12/23/2017 4:00	285	1.59	135,425	1.18	0.61	24	Atlas		215,326	1
	1/22/2018 11:45	1/22/2018 19:45	480	0.29	645	0.43	0.13	12	Atlas		187	1
	3/24/2018 12:00	3/24/2018 12:00	0	1.16	5,228	1.75	0.45	24	Atlas		6,064	1
	2/23/2018 3:00	2/23/2018 11:30	510	2.06	439,122	5.19	0.94	12	Atlas		904,592	1
	2/24/2018 10:15	2/25/2018 5:30	1155	2.26	761,162	6.78	0.93	12	Atlas		1,720,227	1
	2/11/2018 4:00	2/11/2018 10:15	375	0.42	13,740	1.27	0.23	3	Atlas		5,771	1
	2/14/2018 7:15	2/14/2018 7:15	0	0.63	724	0.88	0.29	3	Atlas		456	1
	2/22/2018 3:30	2/22/2018 5:30	120	2.17	156,233	3.49	0.75	24	Atlas		339,026	1
	2/7/2018 0:30	2/7/2018 4:15	225	0.7	9,831	1.03	0.38	6	Atlas		6,882	1
	5/27/2018 3:45	5/27/2018 4:00	15	1.23	216,498	0.93	0.60	1	Atlas		266,293	1
	5/5/2018 14:30	5/5/2018 15:30	60	2.03	500,665	1.6	0.89	6	Atlas		1,016,349	1
	5/31/2018 23:45	6/1/2018 2:00	135	1.6	717,809	2.66	0.75	6	Atlas		1,148,494	1
	5/17/2018 15:30	5/17/2018 15:45	15	0.13	1,831	0.13	0.10	1	Atlas		238	1
	5/27/2018 13:00	5/27/2018 13:15	15	1.23	29,623	1.44	0.60	1	Atlas		36,436	1
	6/10/2018 14:45	6/10/2018 14:45	0	0.66	13,300	0.31	0.29	12	Atlas		8,778	1
	6/11/2018 13:00	6/11/2018 13:00	0	0.22	110,268	0.81	0.14	1	Atlas		24,259	1
	6/25/2018 10:30	6/25/2018 10:30	0	0.84	97,656	2.71	0.33	12	Atlas		82,031	1
	6/26/2018 12:45	6/26/2018 13:00	15	0.75	568,023	3.24	0.30	12	Atlas		426,017	1
	6/20/2018 12:30	6/20/2018 15:00	150	0.87	33,202	0.88	0.57	3	Atlas		28,886	1
	7/6/2017 12:30	7/6/2017 12:45	15	0.46	3,033	1.27	0.23	3	Atlas		1,395	1
	7/23/2017 1:45	7/23/2017 7:00	315	1.33	191,824	1	0.61	12	Atlas		255,126	1
	7/28/2017 9:15	7/28/2017 10:00	45	0.34	701,853	1.68	0.27	1	Atlas		238,630	1
	8/1/2017 21:30	8/1/2017 22:00	30	0.87	1,595,383	1.21	0.72	1	Atlas		1,387,983	1
	8/22/2017 16:00	8/22/2017 16:00	0	0.37	620,373	0.79	0.27	1	Atlas		229,538	1
	9/19/2017 8:00	9/19/2017 8:15	15	0.39	687,313	0.56	0.25	3	Atlas		268,052	1
	8/17/2017 18:00	8/17/2017 18:00	0	0.42	338	0.44	0.23	6	Atlas		142	1
	7/7/2017 20:30	7/7/2017 20:45	15	0.22	89,168	1.49	0.17	1	Atlas		19,617	1
	9/1/2017 8:15	9/2/2017 5:30	1275	2.8	283,268	2.91	0.97	24	Atlas		793,151	1
	6/22/2018 18:45	6/22/2018 18:45	0	0.72	2,342	2.06	0.36	6	Atlas		1,686	1
CSO190 Total											11,710,192	39
CSO193	10/7/2017 21:45	10/7/2017 22:00	15	1.65	4,033	0.53	0.62	24	Atlas		6,654	1
	10/8/2017 14:00	10/8/2017 14:00	0	1.65	464	1.5	0.62	24	Atlas		766	1
	11/3/2017 4:45	11/3/2017 5:15	30	0.99	53,686	1.94	0.77	1	Atlas		53,149	1
	11/6/2017 2:00	11/6/2017 2:00	0	0.32	17,731	1.45	0.22	1	Atlas		5,674	1
	12/5/2017 3:45	12/5/2017 4:30	45	0.65	1,972	0.46	0.33	3	Atlas		1,282	1
	12/23/2017	12/23/2017 3:15	195	1.26	94	0.86	0.48	24	Atlas		119	1
	3/24/2018 12:00	3/24/2018 12:00	0	1.12	35	1.61	0.43	24	Atlas		39	1
	2/11/2018 10:15	2/11/2018 10:15	0	0.4	1,008	1.02	0.21	3	Atlas		403	1
	2/24/2018 23:15	2/24/2018 23:15	0	2.1	32,610	4.97	0.86	12	Atlas		68,480	1
	2/23/2018 4:15	2/23/2018 5:00	45	1.44	2,715	3.13	0.66	12	Atlas		3,909	1
	2/22/2018 3:30	2/22/2018 5:15	105	1.71	2	2.79	0.64	24	Atlas		3	1
	5/5/2018 14:45	5/5/2018 15:15	30	1.69	3,543	1.22	0.67	12	Atlas		5,988	1
	5/27/2018 4:15	5/27/2018 4:15	0	0.46	1,087	0.51	0.37	1	Atlas		500	1
	5/17/2018 16:00	5/17/2018 16:00	0	0.52	4	0.53	0.43	1	Atlas		2	1
	6/11/2018 11:15	6/11/2018 13:30	135	0.28	211	0.85	0.16	3	Atlas		59	1
	7/23/2017 2:45	7/23/2017 2:45	0	1.14	2,696	0.22	0.52	12	Atlas		3,073	1
	8/22/2017 16:00	8/22/2017 16:00	0	0.61	11,428	1.01	0.38	1	Atlas		6,971	1
	9/19/2017 8:00	9/19/2017 8:45	45	0.38	14,532	0.61	0.25	3	Atlas		5,522	1
	8/17/2017 15:00	8/17/2017 15:00	0	0.49	17,827	0.22	0.27	6	Atlas		8,735	1
	8/29/2017 19:15	8/29/2017 19:15	0	0.08	3,788	0.14	0.04	6	Atlas		303	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO193	2/25/2018 19:30	2/25/2018 20:30	60	Discharge	0	5.25	#N/A	#N/A	#N/A		1,841	1
CSO193 Total											173,472	21
CSO195	10/7/2017 22:00	10/7/2017 22:00	0	1.8	6,481	0.61	0.68	24	Atlas		11,665	1
	11/3/2017 4:45	11/3/2017 5:30	45	1.34	173,349	2.27	1.57	1	Atlas		232,287	1
	11/6/2017 2:00	11/6/2017 2:15	15	0.22	245	1.68	0.13	1	Atlas		54	1
	12/5/2017 3:45	12/5/2017 4:15	30	0.64	658	0.4	0.35	3	Atlas		421	1
	2/11/2018 10:15	2/11/2018 10:15	0	0.38	71	0.93	0.18	3	Atlas		27	1
	2/24/2018 19:00	2/24/2018 23:15	255	2.04	94,919	4.85	0.85	12	Atlas		193,635	1
	3/29/2018 19:00	3/29/2018 19:00	0	1.16	4	1.85	0.30	48	Atlas		5	1
	2/22/2018 4:45	2/22/2018 5:15	30	1.71	3,004	2.8	0.64	24	Atlas		5,137	1
	2/23/2018 5:00	2/23/2018 5:00	0	1.36	67	3.07	0.62	12	Atlas		91	1
	4/1/2018 23:00	4/1/2018 23:00	0	0.63	3	2.06	0.34	6	Atlas		2	1
	6/1/2018 1:15	6/1/2018 1:15	0	1.45	71,061	1.66	0.72	3	Atlas		103,038	1
	6/25/2018 10:30	6/25/2018 10:30	0	0.88	1,568	1.41	0.35	12	Atlas		1,380	1
	6/26/2018 12:45	6/26/2018 12:45	0	0.78	354	1.8	0.33	12	Atlas		276	1
	7/23/2017 2:45	7/23/2017 6:45	240	1.01	3,461	0.69	0.46	12	Atlas		3,496	1
	9/19/2017 8:00	9/19/2017 8:45	45	0.37	4,181	0.61	0.23	3	Atlas		1,547	1
	8/17/2017 15:00	8/17/2017 15:00	0	0.71	20,259	0.36	0.39	6	Atlas		14,384	1
	7/7/2017 20:45	7/7/2017 21:00	15	0.35	16,046	1.26	0.25	1	Atlas		5,616	1
	9/1/2017 14:45	9/1/2017 15:00	15	2.76	7	1.63	0.97	24	Atlas		19	1
CSO195 Total											573,080	18
CSO196	10/7/2017 22:00	10/7/2017 22:15	15	1.8	4,617	0.62	0.68	24	Atlas		8,311	1
	10/8/2017 10:15	10/8/2017 14:30	255	1.8	3,021	1.7	0.68	24	Atlas		5,438	1
	10/27/2017 17:45	10/27/2017 17:45	0	0.81	17	0.69	0.37	12	Atlas		14	1
	11/3/2017 4:30	11/3/2017 5:30	60	1.34	71,648	2.27	1.57	1	Atlas		96,008	1
	11/6/2017 2:00	11/6/2017 2:15	15	0.22	30,523	1.68	0.13	1	Atlas		6,715	1
	12/5/2017 3:45	12/5/2017 4:15	30	0.64	6,000	0.4	0.35	3	Atlas		3,840	1
	12/22/2017 23:45	12/23/2017 3:00	195	1.22	889	0.81	0.47	24	Atlas		1,085	1
	1/22/2018 19:45	1/22/2018 19:45	0	0.21	5,300	0.28	0.10	12	Atlas		1,113	1
	3/24/2018 12:00	3/24/2018 12:15	15	0.98	172	1.5	0.38	24	Atlas		169	1
	2/24/2018 10:30	2/24/2018 10:30	0	2.04	28	3.41	0.85	12	Atlas		58	1
	2/16/2018 2:45	2/16/2018 3:00	15	0.86	644	1.27	0.39	12	Atlas		554	1
	2/22/2018 3:15	2/22/2018 5:30	135	1.71	13,210	2.83	0.64	24	Atlas		22,589	1
	2/23/2018 3:00	2/23/2018 9:15	375	1.36	9,888	3.66	0.62	12	Atlas		13,447	1
	2/7/2018 3:15	2/7/2018 3:30	15	0.48	6,338	0.68	0.26	6	Atlas		3,042	1
	3/29/2018 19:00	3/29/2018 19:30	30	1.16	2,534	1.89	0.30	48	Atlas		2,939	1
	2/11/2018 4:15	2/11/2018 10:15	360	0.38	8,600	0.98	0.18	3	Atlas		3,268	1
	2/24/2018 18:45	2/25/2018 0:15	330	2.04	32,522	4.96	0.85	12	Atlas		66,344	1
	4/14/2018 9:45	4/14/2018 9:45	0	0.91	15	0.19	0.30	24	Atlas		14	1
	4/3/2018 16:30	4/3/2018 21:15	285	0.62	4,673	2.66	0.34	6	Atlas		2,897	1
	4/1/2018 20:15	4/1/2018 23:15	180	0.63	1,256	2.06	0.34	6	Atlas		791	1
	4/15/2018 5:45	4/15/2018 5:45	0	0.91	3	0.67	0.30	24	Atlas		3	1
	5/27/2018 4:15	5/27/2018 4:30	15	0.28	17,525	0.28	0.21	1	Atlas		4,907	1
	5/5/2018 12:15	5/5/2018 18:30	375	1.44	9,868	1.38	0.56	12	Atlas		14,210	1
	5/31/2018 14:00	5/31/2018 14:00	0	1.45	464	0.63	0.72	3	Atlas		673	1
	5/17/2018 15:30	5/17/2018 16:00	30	0.48	6,408	0.48	0.39	1	Atlas		3,076	1
	6/10/2018 15:00	6/10/2018 15:15	15	0.92	5,922	0.24	0.34	24	Atlas		5,448	1
	6/1/2018 1:15	6/1/2018 2:15	60	1.45	37,572	1.76	0.72	3	Atlas		54,479	1
	6/25/2018 10:15	6/25/2018 10:15	0	0.88	224	1.35	0.35	12	Atlas		197	1
	6/26/2018 12:45	6/26/2018 12:45	0	0.78	100	1.8	0.33	12	Atlas		78	1
	6/11/2018 11:00	6/11/2018 13:30	150	0.92	23,960	0.87	0.34	24	Atlas		22,043	1
	6/22/2018 14:30	6/22/2018 14:30	0	0.44	30	0.68	0.26	1	Atlas		13	1
CSO196 Total											343,763	31
CSO197	10/7/2017 21:30	10/7/2017 23:00	90	1.8	17,828	0.7	0.68	24	Atlas		32,091	1
	10/8/2017 10:00	10/8/2017 19:15	555	1.8	43,164	1.79	0.68	24	Atlas		77,695	1
	10/10/2017 14:00	10/10/2017 21:00	420	0.62	99,721	2.43	0.33	3	Atlas		61,827	1
	10/23/2017 6:15	10/23/2017 7:45	90	0.45	79,620	0.38	0.23	6	Atlas		35,829	1
	11/12/2017 20:45	11/13/2017 7:30	645	0.05	137,736,100	0.55	0.03	3	Atlas		6,886,805	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO197	11/15/2017 13:00	11/15/2017 13:45	45	0.28	36,861	0.32	0.18	3	Atlas		10,321	1
	11/18/2017 16:45	11/18/2017 17:30	45	0.35	31,520	0.65	0.21	1	Atlas		11,032	1
	12/5/2017 3:15	12/5/2017 5:45	150	0.64	81,691	0.63	0.35	3	Atlas		52,282	1
	12/22/2017 23:15	12/23/2017 5:15	360	1.22	36,649	1.01	0.47	24	Atlas		44,712	1
	1/22/2018 19:30	1/22/2018 19:45	15	0.21	66,533	0.28	0.10	12	Atlas		13,972	1
	2/7/2018 3:00	2/7/2018 3:45	45	0.48	35,813	0.7	0.26	6	Atlas		17,190	1
	2/24/2018 10:15	2/25/2018 2:15	960	2.04	231,335	5.33	0.85	12	Atlas		471,924	1
	2/11/2018 4:00	2/11/2018 10:45	405	0.38	36,916	1	0.18	3	Atlas		14,028	1
	2/16/2018 2:30	2/16/2018 10:45	495	0.86	33,348	1.85	0.39	12	Atlas		28,679	1
	2/21/2018 5:15	2/21/2018 10:00	285	1.71	2,195	1.83	0.64	24	Atlas		3,753	1
	2/21/2018 18:45	2/22/2018 6:45	720	1.71	74,609	2.87	0.64	24	Atlas		127,582	1
	2/23/2018 1:30	2/23/2018 12:15	645	1.36	104,563	4.14	0.62	12	Atlas		142,205	1
	3/19/2018 17:15	3/19/2018 20:00	165	0.29	44,221	0.3	0.16	3	Atlas		12,824	1
	3/28/2018 5:15	3/28/2018 10:30	315	1.16	13,273	1.6	0.30	48	Atlas		15,397	1
	2/14/2018 7:15	2/14/2018 15:15	480	0.44	9,711	0.94	0.21	3	Atlas		4,273	1
	3/10/2018 0:15	3/10/2018 2:45	150	0.67	38,031	0.69	0.43	3	Atlas		25,481	1
	3/31/2018 21:45	3/31/2018 22:30	45	0.21	31,410	1.39	0.12	1	Atlas		6,596	1
	3/29/2018 18:45	3/29/2018 22:30	225	1.16	37,947	2	0.30	48	Atlas		44,018	1
	3/24/2018 8:45	3/24/2018 16:00	435	0.98	46,188	1.62	0.38	24	Atlas		45,264	1
	4/3/2018 16:15	4/3/2018 21:30	315	0.62	82,595	2.66	0.34	6	Atlas		51,209	1
	4/14/2018 9:00	4/14/2018 10:00	60	0.91	23,859	0.19	0.30	24	Atlas		21,712	1
	4/14/2018 22:30	4/15/2018 9:30	660	0.91	47,374	0.93	0.30	24	Atlas		43,110	1
	4/1/2018 19:45	4/1/2018 23:15	210	0.63	91,875	2.06	0.34	6	Atlas		57,881	1
	4/23/2018 4:45	4/23/2018 11:15	390	0.59	36,217	0.7	0.27	12	Atlas		21,368	1
	5/27/2018 4:00	5/27/2018 4:45	45	0.28	65,900	0.29	0.21	1	Atlas		18,452	1
	6/1/2018	6/1/2018 3:30	210	1.45	45,806	1.97	0.72	3	Atlas		66,419	1
	5/31/2018 14:00	5/31/2018 15:00	60	1.45	6,032	0.71	0.72	3	Atlas		8,747	1
	5/17/2018 15:15	5/17/2018 16:15	60	0.48	70,158	0.48	0.39	1	Atlas		33,676	1
	5/5/2018 12:00	5/5/2018 18:45	405	1.44	99,792	1.39	0.56	12	Atlas		143,701	1
	6/10/2018 14:45	6/10/2018 21:30	405	0.92	20,896	0.5	0.34	24	Atlas		19,224	1
	6/11/2018 11:00	6/11/2018 14:00	180	0.92	53,388	0.89	0.34	24	Atlas		49,117	1
	6/11/2018 23:45	6/11/2018 23:45	0	0.35	2,709	0.95	0.17	1	Atlas		948	1
	6/12/2018 11:45	6/12/2018 12:30	45	0.35	29,586	1.16	0.17	1	Atlas		10,355	1
	8/17/2017 14:45	8/17/2017 18:30	225	0.71	66,693	0.75	0.39	6	Atlas		47,352	1
	7/23/2017 2:30	7/23/2017 9:45	435	1.01	27,381	1.01	0.46	12	Atlas		27,655	1
	7/28/2017 9:30	7/28/2017 10:00	30	0.27	20,552	1.27	0.19	1	Atlas		5,549	1
	7/7/2017 20:30	7/7/2017 22:00	90	0.35	62,860	1.67	0.25	1	Atlas		22,001	1
	8/6/2017 14:30	8/7/2017	570	0.56	12,954	0.71	0.25	12	Atlas		7,254	1
	9/19/2017 7:45	9/19/2017 10:00	135	0.37	142,876	0.74	0.23	3	Atlas		52,864	1
	9/1/2017 8:00	9/2/2017 5:00	1260	2.76	93,305	2.96	0.97	24	Atlas		257,522	1
	7/4/2017 9:45	7/4/2017 14:00	255	0.14	24,564	0.84	0.07	3	Atlas		3,439	1
	7/5/2017 9:15	7/5/2017 14:45	330	Discharge	0	0.84	#N/A	#N/A	#N/A		10,873	1
	7/6/2017 4:00	7/6/2017 13:45	585	0.49	37,210	1.24	0.23	6	Atlas		18,233	1
	9/13/2017 14:30	9/13/2017 14:30	0	0.65	952	0.56	0.21	48	Atlas		619	1
CSO197 Total											9,185,060	49
CSO198	10/7/2017 21:30	10/7/2017 22:15	45	1.8	14,050	0.62	0.68	24	Atlas		25,290	1
	10/8/2017 10:00	10/8/2017 14:45	285	1.8	13,314	1.71	0.68	24	Atlas		23,965	1
	10/10/2017 14:45	10/10/2017 20:45	360	0.62	21,381	2.43	0.33	3	Atlas		13,256	1
	10/23/2017 6:15	10/23/2017 7:00	45	0.45	21,856	0.32	0.23	6	Atlas		9,835	1
	10/27/2017 17:30	10/28/2017	390	0.81	4,544	1.25	0.37	12	Atlas		3,681	1
	11/3/2017 4:15	11/3/2017 6:00	105	1.34	84,387	2.27	1.57	1	Atlas		113,079	1
	11/6/2017 1:45	11/6/2017 2:15	30	0.22	55,995	1.68	0.13	1	Atlas		12,319	1
	11/15/2017 13:15	11/15/2017 13:45	30	0.28	7,975	0.32	0.18	3	Atlas		2,233	1
	11/18/2017 17:00	11/18/2017 17:30	30	0.35	7,731	0.65	0.21	1	Atlas		2,706	1
	12/5/2017 3:30	12/5/2017 5:00	90	0.64	35,873	0.55	0.35	3	Atlas		22,959	1
	12/22/2017 23:00	12/23/2017 5:15	375	1.22	19,327	1.01	0.47	24	Atlas		23,579	1
	1/22/2018 19:30	1/22/2018 19:45	15	0.21	16,171	0.28	0.10	12	Atlas		3,396	1
	1/11/2018 10:15	1/11/2018 10:15	0	0.06	16,317	0.2	0.04	3	Atlas		979	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO198	1/12/2018 8:30	1/12/2018 9:15	45	0.32	2,088	0.34	0.12	24	Atlas		668	1
	3/24/2018 12:00	3/24/2018 12:15	15	0.98	2,609	1.5	0.38	24	Atlas		2,557	1
	2/7/2018 3:00	2/7/2018 3:30	30	0.48	13,935	0.68	0.26	6	Atlas		6,689	1
	2/24/2018 10:15	2/25/2018 0:30	855	2.04	65,965	5.21	0.85	12	Atlas		134,569	1
	2/22/2018 1:45	2/22/2018 6:15	270	1.71	29,558	2.87	0.64	24	Atlas		50,545	1
	2/11/2018 4:00	2/11/2018 10:15	375	0.38	21,408	0.99	0.18	3	Atlas		8,135	1
	2/16/2018 2:30	2/16/2018 6:45	255	0.86	9,864	1.51	0.39	12	Atlas		8,483	1
	2/14/2018 7:15	2/14/2018 7:15	0	0.44	1,425	0.65	0.21	3	Atlas		627	1
	2/23/2018 2:45	2/23/2018 10:30	465	1.36	35,634	3.83	0.62	12	Atlas		48,462	1
	3/10/2018 1:00	3/10/2018 1:45	45	0.67	2,343	0.49	0.43	3	Atlas		1,570	1
	3/29/2018 18:45	3/29/2018 19:45	60	1.16	9,978	1.91	0.30	48	Atlas		11,574	1
	4/3/2018 16:15	4/3/2018 21:15	300	0.62	17,808	2.66	0.34	6	Atlas		11,041	1
	4/1/2018 20:00	4/1/2018 23:00	180	0.63	11,186	2.06	0.34	6	Atlas		7,047	1
	4/15/2018 5:30	4/15/2018 8:45	195	0.91	2,612	0.88	0.30	24	Atlas		2,377	1
	4/14/2018 9:00	4/14/2018 9:45	45	0.91	3,360	0.19	0.30	24	Atlas		3,058	1
	5/27/2018 4:15	5/27/2018 4:30	15	0.28	25,368	0.28	0.21	1	Atlas		7,103	1
	5/31/2018 14:00	5/31/2018 14:00	0	1.45	675	0.63	0.72	3	Atlas		979	1
	5/17/2018 15:15	5/17/2018 16:00	45	0.48	29,473	0.48	0.39	1	Atlas		14,147	1
	5/5/2018 12:00	5/5/2018 18:30	390	1.44	22,028	1.38	0.56	12	Atlas		31,721	1
	6/1/2018 1:00	6/1/2018 2:30	90	1.45	41,646	1.79	0.72	3	Atlas		60,386	1
	6/10/2018 14:45	6/10/2018 15:00	15	0.92	4,320	0.24	0.34	24	Atlas		3,974	1
	6/11/2018 11:00	6/11/2018 13:30	150	0.92	11,313	0.87	0.34	24	Atlas		10,408	1
	8/17/2017 14:45	8/17/2017 18:15	210	0.71	45,061	0.75	0.39	6	Atlas		31,993	1
	7/28/2017 9:30	7/28/2017 10:15	45	0.27	8,485	1.27	0.19	1	Atlas		2,291	1
	7/7/2017 20:30	7/7/2017 21:45	75	0.35	54,797	1.66	0.25	1	Atlas		19,179	1
	8/22/2017 15:45	8/22/2017 16:45	60	0.65	34,555	1.39	0.43	1	Atlas		22,461	1
	9/19/2017 7:45	9/19/2017 9:30	105	0.37	53,605	0.68	0.23	3	Atlas		19,834	1
	7/6/2017 4:15	7/6/2017 13:45	570	0.49	42,871	1.24	0.23	6	Atlas		21,007	1
	8/6/2017 16:45	8/7/2017	435	0.56	15,446	0.71	0.25	12	Atlas		8,650	1
	9/1/2017 8:00	9/2/2017 0:45	1005	2.76	27,394	2.74	0.97	24	Atlas		75,607	1
	7/29/2017 10:30	7/29/2017 11:00	30	Discharge	0	1.29	#N/A	#N/A	#N/A		1,295	1
	8/29/2017 19:00	8/29/2017 19:30	30	0.19	87,311	0.24	0.15	1	Atlas		16,589	1
CSO198 Total											902,303	45
CSO199	10/7/2017 21:45	10/7/2017 22:30	45	1.8	2,034	0.63	0.68	24	Atlas		3,662	1
	10/8/2017 14:00	10/8/2017 14:00	0	1.8	42	1.64	0.68	24	Atlas		76	1
	10/23/2017 6:30	10/23/2017 6:30	0	0.45	153	0.24	0.23	6	Atlas		69	1
	11/3/2017 4:30	11/3/2017 6:00	90	1.34	19,398	2.27	1.57	1	Atlas		25,993	1
	11/6/2017 2:15	11/6/2017 2:15	0	0.22	9	1.68	0.13	1	Atlas		2	1
	11/18/2017 17:30	11/18/2017 17:30	0	0.35	6	0.65	0.21	1	Atlas		2	1
	12/5/2017 3:30	12/5/2017 4:30	60	0.64	4,273	0.47	0.35	3	Atlas		2,735	1
	12/22/2017 23:15	12/23/2017 3:00	225	1.22	79	0.81	0.47	24	Atlas		96	1
	1/22/2018 19:45	1/22/2018 19:45	0	0.21	195	0.28	0.10	12	Atlas		41	1
	2/16/2018 2:45	2/16/2018 2:45	0	0.86	1	1.25	0.39	12	Atlas		1	1
	2/23/2018 3:00	2/23/2018 6:15	195	1.36	5,230	3.41	0.62	12	Atlas		7,113	1
	3/29/2018 19:00	3/29/2018 19:45	45	1.16	1,563	1.91	0.30	48	Atlas		1,813	1
	3/24/2018 12:15	3/24/2018 12:15	0	0.98	268	1.5	0.38	24	Atlas		263	1
	2/11/2018 4:15	2/11/2018 10:15	360	0.38	558	0.98	0.18	3	Atlas		212	1
	2/24/2018 18:45	2/25/2018 0:30	345	2.04	19,383	4.99	0.85	12	Atlas		39,542	1
	2/22/2018 3:45	2/22/2018 6:00	135	1.71	4,633	2.86	0.64	24	Atlas		7,922	1
	4/14/2018 9:45	4/14/2018 9:45	0	0.91	67	0.19	0.30	24	Atlas		61	1
	4/3/2018 16:30	4/3/2018 19:15	165	0.62	1,153	2.5	0.34	6	Atlas		715	1
	4/1/2018 20:15	4/1/2018 23:15	180	0.63	1,152	2.06	0.34	6	Atlas		726	1
	4/15/2018 5:45	4/15/2018 5:45	0	0.91	57	0.67	0.30	24	Atlas		52	1
	5/5/2018 14:45	5/5/2018 18:30	225	1.44	4,298	1.38	0.56	12	Atlas		6,189	1
	5/27/2018 4:15	5/27/2018 5:00	45	0.28	1,239	0.29	0.21	1	Atlas		347	1
	5/31/2018 14:00	5/31/2018 14:15	15	1.45	723	0.63	0.72	3	Atlas		1,048	1
	5/17/2018 15:30	5/17/2018 16:00	30	0.48	5,008	0.48	0.39	1	Atlas		2,404	1
	6/10/2018 15:00	6/10/2018 15:45	45	0.92	2,182	0.26	0.34	24	Atlas		2,007	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO199	6/1/2018 1:15	6/1/2018 2:45	90	1.45	5,654	1.85	0.72	3	Atlas		8,198	1
	6/25/2018 10:15	6/25/2018 11:15	60	0.88	252	1.49	0.35	12	Atlas		222	1
	6/11/2018 11:00	6/11/2018 14:00	180	0.92	7,997	0.89	0.34	24	Atlas		7,357	1
	6/12/2018 12:15	6/12/2018 12:45	30	0.35	569	1.16	0.17	1	Atlas		199	1
	6/22/2018 13:45	6/22/2018 15:00	75	0.44	39	0.68	0.26	1	Atlas		17	1
	7/23/2017 3:00	7/23/2017 7:00	240	1.01	597	0.69	0.46	12	Atlas		603	1
	8/22/2017 16:00	8/22/2017 16:45	45	0.65	9,905	1.39	0.43	1	Atlas		6,438	1
	9/19/2017 8:00	9/19/2017 9:00	60	0.37	3,219	0.61	0.23	3	Atlas		1,191	1
	7/7/2017 20:45	7/7/2017 21:15	30	0.35	1,303	1.28	0.25	1	Atlas		456	1
	8/29/2017 19:30	8/29/2017 19:30	0	0.19	2,263	0.24	0.15	1	Atlas		430	1
	8/6/2017 17:00	8/6/2017 23:45	405	0.56	884	0.7	0.25	12	Atlas		495	1
	8/17/2017 15:15	8/17/2017 15:15	0	0.71	228	0.36	0.39	6	Atlas		162	1
	7/28/2017 9:45	7/28/2017 9:45	0	0.27	1,022	1.27	0.19	1	Atlas		276	1
	9/1/2017 13:30	9/1/2017 22:00	510	2.76	881	2.55	0.97	24	Atlas		2,432	1
	8/10/2017 9:45	8/10/2017 10:00	15	Discharge	0	0.57	#N/A	#N/A	#N/A		1	1
	8/11/2017 4:00	8/11/2017 4:30	30	Discharge	0	0.56	#N/A	#N/A	#N/A		1	1
CSO199 Total											131,569	41
CSO200	10/7/2017 21:45	10/7/2017 22:15	30	1.8	6,333	0.62	0.68	24	Atlas		11,400	1
	10/8/2017 14:00	10/8/2017 14:00	0	1.8	788	1.64	0.68	24	Atlas		1,419	1
	10/23/2017 6:15	10/23/2017 6:30	15	0.45	876	0.24	0.23	6	Atlas		394	1
	11/3/2017 4:30	11/3/2017 5:45	75	1.34	74,566	2.27	1.57	1	Atlas		99,918	1
	11/6/2017 2:00	11/6/2017 2:00	0	0.22	1,132	1.67	0.13	1	Atlas		249	1
	12/5/2017 3:45	12/5/2017 4:00	15	0.64	3,809	0.36	0.35	3	Atlas		2,438	1
	2/11/2018 10:15	2/11/2018 10:15	0	0.38	463	0.93	0.18	3	Atlas		176	1
	2/23/2018 3:00	2/23/2018 5:00	120	1.36	4,318	3.16	0.62	12	Atlas		5,873	1
	2/7/2018 3:15	2/7/2018 3:15	0	0.48	44	0.67	0.26	6	Atlas		21	1
	3/29/2018 19:00	3/29/2018 19:00	0	1.16	12	1.85	0.30	48	Atlas		14	1
	2/24/2018 18:45	2/24/2018 23:45	300	2.04	46,469	4.89	0.85	12	Atlas		94,796	1
	2/22/2018 3:45	2/22/2018 5:45	120	1.71	10,148	2.85	0.64	24	Atlas		17,353	1
	5/5/2018 14:45	5/5/2018 15:15	30	1.44	4,817	1.06	0.56	12	Atlas		6,936	1
	5/27/2018 4:15	5/27/2018 4:15	0	0.28	1,161	0.26	0.21	1	Atlas		325	1
	5/17/2018 15:45	5/17/2018 15:45	0	0.48	3,865	0.47	0.39	1	Atlas		1,855	1
	6/10/2018 15:00	6/10/2018 15:00	0	0.92	349	0.24	0.34	24	Atlas		321	1
	6/1/2018 1:00	6/1/2018 1:45	45	1.45	9,455	1.69	0.72	3	Atlas		13,710	1
	6/11/2018 11:00	6/11/2018 13:15	135	0.92	1,404	0.85	0.34	24	Atlas		1,292	1
	6/25/2018 7:15	6/25/2018 7:30	15	0.88	13,694	1.23	0.35	12	Atlas		12,051	1
	7/23/2017 2:45	7/23/2017 3:15	30	1.01	3,428	0.4	0.46	12	Atlas		3,462	1
	9/19/2017 8:00	9/19/2017 8:45	45	0.37	978	0.61	0.23	3	Atlas		362	1
	8/17/2017 15:00	8/17/2017 15:00	0	0.71	33,639	0.36	0.39	6	Atlas		23,884	1
	8/29/2017 19:15	8/29/2017 19:30	15	0.19	149,042	0.24	0.15	1	Atlas		28,318	1
	9/1/2017 14:45	9/1/2017 14:45	0	2.76	202	1.6	0.97	24	Atlas		558	1
	7/7/2017 21:00	7/7/2017 21:00	0	0.35	5,460	0.93	0.25	1	Atlas		1,911	1
	8/22/2017 9:45	8/22/2017 16:30	405	Discharge	0	1.39	#N/A	#N/A	#N/A		20,580	1
CSO200 Total											349,616	26
CSO201	10/7/2017 22:00	10/7/2017 22:00	0	1.65	39,092	0.53	0.62	24	Atlas		64,502	1
	11/3/2017 5:15	11/3/2017 5:15	0	0.99	28,239	1.94	0.77	1	Atlas		27,957	1
	2/11/2018 10:15	2/11/2018 10:15	0	0.4	47,825	1.02	0.21	3	Atlas		19,130	1
CSO201 Total											111,589	3
CSO202	10/7/2017 21:45	10/7/2017 22:15	30	1.8	3,041	0.62	0.68	24	Atlas		5,473	1
	10/8/2017 13:45	10/8/2017 14:30	45	1.8	272	1.7	0.68	24	Atlas		489	1
	10/10/2017 20:45	10/10/2017 20:45	0	0.62	1,032	2.43	0.33	3	Atlas		640	1
	10/23/2017 6:15	10/23/2017 6:30	15	0.45	1,591	0.24	0.23	6	Atlas		716	1
	10/27/2017 17:45	10/27/2017 17:45	0	0.81	359	0.69	0.37	12	Atlas		291	1
	11/3/2017 4:30	11/3/2017 5:30	60	1.34	32,399	2.27	1.57	1	Atlas		43,414	1
	11/6/2017 2:00	11/6/2017 2:00	0	0.22	6,986	1.67	0.13	1	Atlas		1,537	1
	12/5/2017 3:30	12/5/2017 4:00	30	0.64	3,302	0.36	0.35	3	Atlas		2,113	1
	12/22/2017 23:15	12/22/2017 23:45	30	1.22	184	0.36	0.47	24	Atlas		225	1
	3/24/2018 12:00	3/24/2018 12:15	15	0.98	502	1.5	0.38	24	Atlas		492	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO202	2/11/2018 10:15	2/11/2018 10:15	0	0.38	1,921	0.93	0.18	3	Atlas		730	1
	2/7/2018 3:00	2/7/2018 3:15	15	0.48	1,871	0.67	0.26	6	Atlas		898	1
	2/16/2018 2:45	2/16/2018 3:00	15	0.86	341	1.27	0.39	12	Atlas		293	1
	2/22/2018 3:15	2/22/2018 5:30	135	1.71	6,097	2.83	0.64	24	Atlas		10,426	1
	2/23/2018 3:00	2/23/2018 5:00	120	1.36	4,484	3.16	0.62	12	Atlas		6,098	1
	3/29/2018 19:00	3/29/2018 19:30	30	1.16	1,059	1.89	0.30	48	Atlas		1,228	1
	2/24/2018 18:45	2/24/2018 23:30	285	2.04	18,751	4.87	0.85	12	Atlas		38,252	1
	4/1/2018 23:00	4/1/2018 23:00	0	0.63	79	2.06	0.34	6	Atlas		50	1
	4/3/2018 16:30	4/3/2018 19:15	165	0.62	229	2.5	0.34	6	Atlas		142	1
	5/5/2018 14:45	5/5/2018 18:30	225	1.44	4,919	1.38	0.56	12	Atlas		7,083	1
	5/27/2018 4:15	5/27/2018 4:30	15	0.28	2,536	0.28	0.21	1	Atlas		710	1
	5/31/2018 14:00	5/31/2018 14:00	0	1.45	741	0.63	0.72	3	Atlas		1,075	1
	5/17/2018 15:30	5/17/2018 16:00	30	0.48	1,340	0.48	0.39	1	Atlas		643	1
	6/10/2018 15:00	6/10/2018 15:00	0	0.92	783	0.24	0.34	24	Atlas		720	1
	6/1/2018 1:15	6/1/2018 1:15	0	1.45	3,654	1.66	0.72	3	Atlas		5,299	1
	6/11/2018 11:00	6/11/2018 13:15	135	0.92	7,740	0.85	0.34	24	Atlas		7,121	1
	6/22/2018 11:00	6/22/2018 13:45	165	0.44	111	0.4	0.26	1	Atlas		49	1
	6/25/2018 6:45	6/25/2018 10:30	225	0.88	120	1.41	0.35	12	Atlas		106	1
	7/23/2017 2:45	7/23/2017 2:45	0	1.01	3,242	0.32	0.46	12	Atlas		3,274	1
	8/22/2017 16:00	8/22/2017 16:30	30	0.65	11,791	1.39	0.43	1	Atlas		7,664	1
	9/19/2017 8:00	9/19/2017 8:45	45	0.37	3,932	0.61	0.23	3	Atlas		1,455	1
	8/17/2017 15:00	8/17/2017 15:00	0	0.71	12,930	0.36	0.39	6	Atlas		9,180	1
	8/29/2017 19:15	8/29/2017 19:30	15	0.19	48,758	0.24	0.15	1	Atlas		9,264	1
	8/6/2017 16:45	8/6/2017 23:45	420	0.56	1,491	0.7	0.25	12	Atlas		835	1
	7/7/2017 21:00	7/7/2017 21:00	0	0.35	4,323	0.93	0.25	1	Atlas		1,513	1
	9/1/2017 13:30	9/1/2017 22:00	510	2.76	607	2.55	0.97	24	Atlas		1,676	1
CSO202 Total											171,174	36
CSO203	10/7/2017 21:45	10/7/2017 21:45	0	1.8	195	0.52	0.68	24	Atlas		351	1
	11/3/2017 4:30	11/3/2017 5:15	45	1.34	14,467	2.25	1.57	1	Atlas		19,386	1
	11/6/2017 2:00	11/6/2017 2:00	0	0.22	2,364	1.67	0.13	1	Atlas		520	1
	12/5/2017 3:45	12/5/2017 3:45	0	0.64	63	0.31	0.35	3	Atlas		40	1
	2/24/2018 18:45	2/24/2018 23:15	270	2.04	15,595	4.85	0.85	12	Atlas		31,814	1
	2/22/2018 5:00	2/22/2018 5:00	0	1.71	58	2.77	0.64	24	Atlas		100	1
	5/17/2018 15:45	5/17/2018 15:45	0	0.48	23	0.47	0.39	1	Atlas		11	1
	5/5/2018 15:15	5/5/2018 15:15	0	1.44	2,083	1.06	0.56	12	Atlas		3,000	1
	6/1/2018 1:15	6/1/2018 1:15	0	1.45	8,215	1.66	0.72	3	Atlas		11,912	1
	7/1/2017	7/1/2017 11:15	675	Discharge	0	0.79	#N/A	#N/A	#N/A		74,757	1
	7/23/2017 2:45	7/23/2017 2:45	0	1.01	2,441	0.32	0.46	12	Atlas		2,465	1
	9/19/2017 8:00	9/19/2017 8:00	0	0.37	751	0.49	0.23	3	Atlas		278	1
	8/17/2017 15:00	8/17/2017 15:00	0	0.71	14,806	0.36	0.39	6	Atlas		10,512	1
	7/7/2017 20:45	7/8/2017 6:45	600	0.35	111,651	1.32	0.25	1	Atlas		39,078	1
	8/29/2017 19:15	8/29/2017 19:15	0	0.19	81,242	0.24	0.15	1	Atlas		15,436	1
CSO203 Total											209,660	15
CSO205	12/23/2017 2:45	12/23/2017 5:30	165	1.03	2	0.89	0.41	12	Atlas		2	1
	2/11/2018 10:15	2/11/2018 10:15	0	0.36	3	0.83	0.17	12	Atlas		1	1
	2/22/2018 3:15	2/22/2018 7:15	240	1.63	206	2.61	0.61	24	Atlas		335	1
	2/24/2018 19:00	2/25/2018 5:45	645	1.76	5,326	4.61	0.73	12	Atlas		9,374	1
	3/29/2018 19:30	3/29/2018 22:45	195	0.62	174	1.88	0.21	24	Atlas		108	1
	2/7/2018 3:30	2/7/2018 3:30	0	0.44	11	0.62	0.24	6	Atlas		5	1
	4/14/2018 9:45	4/14/2018 9:45	0	1.12	8	0.25	0.37	24	Atlas	Retained by the Sneads Branch FPS	9	1
	4/3/2018 16:30	4/3/2018 21:45	315	0.54	8,013	2.4	0.30	6	Atlas	Retained by the Sneads Branch FPS	4,327	1
	4/1/2018 20:15	4/1/2018 23:30	195	0.54	1,019	1.88	0.30	6	Atlas	Retained by the Sneads Branch FPS	550	1
	5/5/2018 14:45	5/5/2018 18:15	210	1.31	37	1.13	0.49	12	Atlas		49	1
	5/17/2018 15:45	5/17/2018 15:45	0	0.46	178	0.46	0.37	1	Atlas		82	1
	5/31/2018 13:45	5/31/2018 13:45	0	1.62	1	0.84	0.87	3	Atlas	Retained by the Sneads Branch FPS	2	1
	2/23/2018 3:45	2/23/2018 11:45	480	1.22	66	3.5	0.56	12	Atlas		80	1
CSO205 Total											14,924	13
CSO207	2/24/2018 23:00	2/24/2018 23:00	0	2.04	4,752	5.04	0.84	12	Atlas		9,695	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO207	8/1/2017 21:30	8/1/2017 21:30	0	0.46	7,485	0.75	0.38	1	Atlas		3,443	1
	1/15/2018 19:15	1/15/2018 19:30	15	0.12	102,642	0.41	0.05	12	Atlas		12,317	1
CSO207 Total											25,455	3
CSO210	10/24/2017 9:00	10/24/2017 9:00	0	0.14	387,800	0.61	0.07	3	Atlas		54,292	1
	10/27/2017 18:15	10/28/2017 7:00	765	1.1	18,741,945	1.74	0.50	12	Atlas		20,616,139	1
	11/3/2017 4:30	11/3/2017 11:00	390	0.89	8,376,709	2.16	0.68	1	Atlas		7,455,271	1
	11/6/2017 1:30	11/6/2017 5:45	255	0.35	18,712,797	1.41	0.21	1	Atlas		6,549,479	1
	11/7/2017 6:45	11/7/2017 9:30	165	0.24	15,001,329	1.65	0.11	6	Atlas		3,600,319	1
	11/15/2017 14:00	11/15/2017 17:15	195	0.33	11,938,448	0.37	0.21	1	Atlas		3,939,688	1
	11/18/2017 17:30	11/18/2017 22:00	270	0.31	18,899,484	0.69	0.17	1	Atlas		5,858,840	1
	12/5/2017 4:00	12/5/2017 10:45	405	0.8	10,137,474	0.81	0.43	3	Atlas		8,109,979	1
	12/22/2017 22:00	12/24/2017 4:00	1800	1.8	22,297,342	1.81	0.71	12	Atlas		40,135,215	1
	1/27/2018 15:45	1/27/2018 18:15	150	0.43	9,135,386	0.6	0.26	3	Atlas		3,928,216	1
	2/7/2018 2:45	2/7/2018 7:30	285	0.55	17,705,804	0.89	0.29	6	Atlas		9,738,192	1
	2/11/2018 10:15	2/11/2018 13:45	210	0.29	19,188,703	0.93	0.15	3	Atlas		5,564,724	1
	2/16/2018 3:15	2/16/2018 14:00	645	0.78	27,432,645	1.76	0.36	12	Atlas		21,397,463	1
	2/21/2018 20:30	2/22/2018 12:00	930	2.16	11,091,200	3.17	0.82	24	Atlas		23,956,992	1
	2/24/2018 11:00	2/26/2018 10:45	2865	2.58	22,339,019	6.91	1.60	12	Cloudburst		57,634,670	1
	3/10/2018 1:30	3/10/2018 6:00	270	0.6	13,305,148	0.63	0.40	3	Atlas		7,983,089	1
	3/24/2018 9:00	3/25/2018	900	1.02	31,886,340	2.21	0.39	24	Atlas		32,524,067	1
	3/28/2018 7:15	3/28/2018 8:15	60	0.51	3,290,247	1.53	0.21	6	Atlas		1,678,026	1
	3/29/2018 19:15	3/29/2018 22:45	210	0.78	8,623,590	2.17	0.25	24	Atlas		6,726,400	1
	2/14/2018 8:00	2/14/2018 12:00	240	0.48	15,091,096	0.84	0.23	3	Atlas		7,243,726	1
	1/11/2018 11:45	1/11/2018 15:15	210	0.53	6,493,530	0.23	0.17	48	Atlas		3,441,571	1
	1/12/2018 6:30	1/12/2018 14:30	480	0.53	21,721,340	0.49	0.17	48	Atlas		11,512,310	1
	2/23/2018 2:15	2/23/2018 17:15	900	2	13,218,967	5.05	0.92	12	Atlas		26,437,933	1
	3/19/2018 19:15	3/19/2018 22:45	210	0.43	13,665,900	0.46	0.24	3	Atlas		5,876,337	1
	4/1/2018 20:30	4/2/2018 3:15	405	0.66	20,501,920	2.34	0.36	6	Atlas		13,531,267	1
	4/23/2018 5:45	4/23/2018 9:30	225	0.53	11,498,609	0.59	0.27	3	Atlas		6,094,263	1
	4/3/2018 20:00	4/4/2018	240	0.29	22,528,972	2.53	0.16	6	Atlas		6,533,402	1
	4/14/2018 10:30	4/14/2018 12:00	90	1.19	1,542,522	0.43	0.40	24	Atlas		1,835,601	1
	4/15/2018 1:30	4/15/2018 12:15	645	1.19	12,752,692	1.24	0.40	24	Atlas		15,175,704	1
	5/5/2018 12:00	5/5/2018 22:15	615	1.18	16,371,063	1.18	0.45	12	Atlas		19,317,854	1
	5/31/2018 13:45	6/1/2018 7:30	1065	1.7	10,084,338	3.44	0.90	3	Atlas		17,143,375	1
	5/27/2018 3:15	5/27/2018 8:00	285	1.3	7,610,533	1.39	1.13	1	Atlas		9,893,693	1
	6/10/2018 14:45	6/10/2018 17:15	150	1.01	1,371,336	0.35	0.38	24	Atlas		1,385,049	1
	6/11/2018 13:00	6/11/2018 16:45	225	1.01	5,111,262	1.02	0.38	24	Atlas		5,162,375	1
	6/25/2018 10:15	6/25/2018 15:15	300	0.81	8,903,635	2.24	0.33	12	Atlas		7,211,944	1
	6/26/2018 12:30	6/27/2018 2:15	825	0.77	16,706,088	2.96	0.33	12	Atlas		12,863,688	1
	7/23/2017 3:00	7/23/2017 20:15	1035	0.93	3,452,901	1.01	0.43	12	Atlas		3,211,198	1
	8/1/2017 23:45	8/2/2017 4:45	300	0.13	3,600,162	0.2	0.09	1	Atlas		468,021	1
	6/21/2018 9:00	6/21/2018 9:30	30	0.8	1,804,118	0.75	0.36	12	Atlas		1,443,294	1
	6/22/2018 15:30	6/22/2018 16:15	45	0.32	2,608,419	1.39	0.15	3	Atlas		834,694	1
CSO210 Total											444,068,360	40
CSO211	10/23/2017 6:45	10/23/2017 10:30	225	0.47	20,521,953	0.47	0.25	6	Atlas		9,645,318	1
	10/27/2017 19:00	10/28/2017 3:30	510	1.1	16,945,590	1.72	0.50	12	Atlas		18,640,149	1
	11/3/2017 4:45	11/3/2017 8:45	240	0.89	9,645,924	2.16	0.68	1	Atlas		8,584,872	1
	11/6/2017 2:30	11/6/2017 4:15	105	0.35	1,917,714	1.41	0.21	1	Atlas		671,200	1
	11/18/2017 18:00	11/18/2017 18:15	15	0.31	1,000,006	0.64	0.17	1	Atlas		310,002	1
	3/24/2018 10:15	3/24/2018 20:45	630	1.02	8,048,369	2.21	0.39	24	Atlas		8,209,336	1
	3/29/2018 19:45	3/30/2018 0:45	300	0.78	7,774,518	2.21	0.25	24	Atlas		6,064,124	1
	3/19/2018 19:30	3/19/2018 19:30	0	0.43	1,330	0.42	0.24	3	Atlas		572	1
	2/14/2018 9:15	2/14/2018 9:30	15	0.48	227,556	0.83	0.23	3	Atlas		109,227	1
	2/16/2018 4:15	2/16/2018 12:15	480	0.78	3,408,437	1.76	0.36	12	Atlas		2,658,581	1
	4/3/2018 21:15	4/4/2018 0:30	195	0.29	3,172,152	2.53	0.16	6	Atlas		919,924	1
	4/23/2018 6:30	4/23/2018 7:00	30	0.53	1,712,179	0.58	0.27	3	Atlas		907,455	1
	4/1/2018 21:00	4/2/2018 0:45	225	0.66	3,649,738	2.34	0.36	6	Atlas		2,408,827	1
	4/15/2018 7:15	4/15/2018 10:45	210	1.19	1,717,058	1.24	0.40	24	Atlas		2,043,299	1

CSO	Start Date-Time	End Date-Time	Duration (min)	Rain Total (in)	Discharge Volume per Rainfall (gal)	Antecedent Rain (in)	Frequency (yr)	Period (hr)	Standard	Comments	Sum of Overflow Volume (Gal)	Count of Key
CSO211	5/27/2018 4:00	5/27/2018 6:45	165	1.3	10,567,825	1.39	1.13	1	Atlas		13,738,172	1
	5/5/2018 14:45	5/5/2018 20:45	360	1.18	13,629,131	1.14	0.45	12	Atlas		16,082,374	1
	6/25/2018 11:00	6/25/2018 13:45	165	0.81	9,195,841	2.23	0.33	12	Atlas		7,448,631	1
	6/26/2018 23:00	6/27/2018 2:45	225	0.77	12,605	2.96	0.33	12	Atlas		9,706	1
	6/1/2018 0:45	6/1/2018 6:00	315	1.7	14,108,901	3.44	0.90	3	Atlas		23,985,132	1
	6/11/2018 13:45	6/11/2018 15:15	90	1.01	1,122,187	1.02	0.38	24	Atlas		1,133,409	1
	7/23/2017 13:00	7/23/2017 15:30	150	0.93	18,175	1.01	0.43	12	Atlas		16,903	1
CSO211 Total											123,587,213	21
Grand Total											10,909,406,861	2690

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Appendix D-1 Discharge Work Orders – Waters of the United States

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Appendix D-1 Discharge Work Orders – Waters of the United States

ASSOCIATED WASTEWATER TREATMENT PLANT NAME	ASSOCIATED TREATMENT PLANT KPDES #	OVERFLOW LOCATION	OVERFLOW START DATE & TIME	OVERFLOW STOP DATE & TIME	VOLUME OF OVERFLOW (GAL)	SOURCE ASSET TYPE	SOURCE ASSET ID	FACILITY DISCHARGES TO	RECEIVING STREAM	CAUSE OF OVERFLOW	DUE TO	WEATHER	WO #	CLEANUP EFFORTS BY MSD	REPAIR EFFORTS BY MSD
MORRIS FORMAN	KY0022411	1218 S 3RD ST	07/05/2017 10:15 AM	07/05/2017 04:20 PM	1,825	SEWER MANHOLE	CSO197	STREAM	OHIO RIVER	LINE OBSTRUCTED WITH DEBRIS & SEDIMENT	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2769793	NO CLEAN UP PERFORMED - PIPE DISCHARGING TO CENTRAL RELIEF DRAIN	FLUSHED & VACTORED UPSTREAM & DOWN STREAM LINE TO REMOVE DEBRIS & SEDIMENT.
FLOYDS FORK	KY0102784	611 WOODLAKE DR	07/10/2017 01:48 PM	07/10/2017 02:45 PM	57	SEWER MAIN	80581B-AG	STREAM	FLOYDS FORK	STRUCTURAL FAILURE, FORCEMAIN BREAK	STRUCTURAL FAILURE	DISDW DRY WEATHER DISCHARGE	2771358	MSD CLEANED AND SANITIZED AREA	CONTRACTOR REPAIRED FORCEMAIN
FLOYDS FORK	KY0102784	605 WOODLAKE DR	07/21/2017 12:30 PM	07/21/2017 12:40 PM	50	SEWER MAIN	80377A-AG	GROUND	CHENOWETH RUN,UPPER	FORCE MAIN BREAK	STRUCTURAL FAILURE	DISDW DRY WEATHER DISCHARGE	2777451	MSD CLEANED AND SANITIZED AREA	FORCE MAIN REPAIRED BY CONTRACTOR
MORRIS FORMAN	KY0022411	1726 FRASER DR	08/17/2017 07:15 PM	08/17/2017 08:15 PM	2,000	SEWER MANHOLE	16649	DITCH	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2788007	WO# 2788055	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1800 NIGHTINGALE RD	08/29/2017 07:27 PM	08/29/2017 10:45 PM	1,000,000	SEWER MANHOLE	CSO018	STREAM	SOUTH FORK BEARGRASS CREEK	GATE FAILURE AT CSO018.	MECHANICAL FAILURE	DISREV RAIN EVENT DISCHARGE	2796178	CLEANUP NOT POSSIBLE DUE TO ELEVATED CREEK LEVEL	GATE REPAIRED BY MSD.
MORRIS FORMAN	KY0022411	1001 BRECKENRIDGE LN	09/01/2017 05:39 PM	09/02/2017 02:45 PM	3,289,123	SEWER MANHOLE	08935-SM	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2797728	NO CLEAN UP PERFORMED – PIPE DISCHARGING UNDERWATER, DIRECTLY INTO STREAM	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1011 ALTA CIR	09/01/2017 06:26 PM	09/02/2017 11:32 AM	120,000	SEWER MANHOLE	45796	DITCH	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2797729	WO# 2797826	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1132 ROSTREVOR CIR	09/01/2017 09:04 PM	09/02/2017 11:25 AM	66,000	SEWER MANHOLE	45835	GROUND	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2797734	WO# 2797831	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1700 SULGRAVE RD	09/01/2017 06:26 PM	09/02/2017 08:10 AM	100,000	SEWER MANHOLE	72289	GROUND	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2797730	WO# 2797827	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1726 FRASER DR	09/01/2017 03:35 PM	09/02/2017 08:15 PM	180,631	SEWER MANHOLE	16649	DITCH	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2797727	WO# 2797839	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	202 OXMOOR LN	09/01/2017 06:58 PM	09/02/2017 07:30 PM	90,000	SEWER MANHOLE	47583	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2797733	WO# 2797830	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	3500 ST EDWARDS DR	09/01/2017 07:15 PM	09/02/2017 01:45 PM	33,000	SEWER MANHOLE	28249	DITCH	CHENOWETH RUN	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2797737	WO# 27977833	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	3506 CHARLANE PKY	09/01/2017 05:40 PM	09/02/2017 01:45 PM	36,000	SEWER MANHOLE	28250	DITCH	CHENOWETH RUN	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2797736	WO# 2797832	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	3620 CHARLANE PKY	09/01/2017 05:33 PM	09/02/2017 08:33 AM	22,500	SEWER MANHOLE	28340	GROUND	CHENOWETH RUN	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2797735	WO# 2797774	LOCATION INCLUDED IN IOAP
DEREK R. GUTHRIE	KY0078956	9114 CINDERELLA LN	09/02/2017 12:24 AM	09/02/2017 06:30 AM	1,830	SEWER MANHOLE	60679	DITCH	FISHPOOL CREEK	LACK OF CAPACITY (EXCESSIVE RAIN)	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2797746	MSD CLEANED AND SANITIZED AREA	A SOLUTION CAN BE FOUND IN THE IOAP
DEREK R. GUTHRIE	KY0078956	9317 LANTANA DR	09/02/2017 12:58 AM	09/02/2017 04:50 AM	1,160	SEWER MANHOLE	25484	STREAM	PENNSYLVANIA RUN	LACK OF CAPACITY (EXCESSIVE RAIN)	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2797756	MSD CLEANED AND SANITIZED AREA	A SOLUTION CAN BE FOUND IN THE IOAP
FLOYDS FORK	KY0102784	611 WOODLAKE DR	09/05/2017 09:25 AM	09/05/2017 09:30 AM	25	SEWER MAIN	80581B-AG	STREAM	FLOYDS FORK	BROKEN FORCE MAIN	STRUCTURAL FAILURE	DISREV RAIN EVENT DISCHARGE	2799536	CONTRACTOR CLEANED AREA	SHUT OFF PUMP TO BROKEN FORCE MAIN
MORRIS FORMAN	KY0022411	147 BUCHANAN ST	09/21/2017 04:28 PM	10/6/2017 08:33 AM	210,000,000	SEWER MANHOLE	CSO020	STREAM	OHIO RIVER	OHIO RIVER INTERCEPTOR EMERGENCY REPAIRS	STRUCTURAL FAILURE	DISDW DRY WEATHER DISCHARGE	2806256	CLEANUP NOT POISSBLE, PIPE DISCHARGES TO OHIO RIVER	MAIN STREET REPAIRS COMPLETED
MORRIS FORMAN	KY0022411	1418 TREVILIAN WAY	10/8/2017 14:45	10/8/2017 16:48	100	SEWER MANHOLE	51594	DITCH	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2815966	WO# 2815969	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1726 FRASER DR	10/8/2017 15:00	10/8/2017 15:45	1,437	SEWER MANHOLE	16649	DITCH	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2815965	WO# 2816117	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1011 ALTA CIR	10/8/2017 16:03	10/9/2017 5:40	120,000	SEWER MANHOLE	45796	DITCH	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2815962	WO# 2816112	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	4010 BELLS LN	10/23/2017 8:00	10/26/2017 12:01	3,000	SEWER LIFT STATION	MSD0080-PS	GROUND	PADDY RUN	WEST HEADWORKS AT MORRIS FORMAN WAS NOT AVAILABLE THUS REDUCING THE PLANT FLOW TO 160 MGD. THIS CAUSED THE JUNCTION BOX AT SWPS TO SURCHARGE FLOW.	MECHANICAL FAILURE	DISREV RAIN EVENT DISCHARGE	2819935	NO CLEAN UP PERFORMED – PIPE DISCHARGING UNDERWATER, DIRECTLY INTO STREAM	BELLS LANE TREATMENT CENTER WAS PLACED INTO SERVICE
MORRIS FORMAN	KY0022411	4010 BELLS LN	10/24/2017 7:04	10/23/2017 8:24	7,000	SEWER LIFT STATION	MSD0080-PS	GROUND	PADDY RUN	ELECTRICAL PROBLEM WITH MSD EQUIPMENT, PUMPS DID NOT START IN A TIMELY MANNER WHEN FLOW INCREASED	ELECTRICAL PROBLEMS AT MSD	DISREV RAIN EVENT DISCHARGE	2820093	CLEANUP NOT POSSIBLE DUE TO MAGNITUDE OF STORM	SITE FOUND DURING RAIN EVENT RECON - WILL BE MONITORED AND EVALUATED FOR REPAIR
MORRIS FORMAN	KY0022411	1726 FRASER DR	10/28/2017 0:45	10/28/2017 12:15	40,986	SEWER MANHOLE	16649	DITCH	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2823034	WO# 2823093	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1726 FRASER DR	11/3/2017 6:15	11/3/2017 11:00	20,000	SEWER MANHOLE	16649	DITCH	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2827366	WO# 2827517	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1001 BRECKENRIDGE LN	11/3/2017 8:15	11/3/2017 11:24	36,424	SEWER MANHOLE	08935-SM	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2827355	NO CLEAN UP PERFORMED – PIPE DISCHARGING UNDERWATER, DIRECTLY INTO STREAM	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1011 ALTA CIR	11/3/2017 8:30	11/3/2017 13:53	7,500	SEWER MANHOLE	45796	DITCH	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2827362	WO# 2827462	LOCATION INCLUDED IN IOAP
DEREK R. GUTHRIE	KY0078956	7504 PRESTON HWY	11/16/2017 13:00	11/16/2017 15:00	50	SEWER MANHOLE	58082	CATCH BASIN	WET WOODS	PUMP AROUND IMPLEMENTATION	MECHANICAL FAILURE	DISDW DRY WEATHER DISCHARGE	2831396	CONTRACTOR TO CLEAN AND SANITIZE AFFECTED AREA	CONNECTED PUMP
MORRIS FORMAN	KY0022411	623 E KENTUCKY ST	12/12/2017 8:05	12/12/2017 16:30	2,624,000	SEWER MANHOLE	CSO149	STREAM	SOUTH FORK BEARGRASS CREEK	LOUISVILLE WATER 48" WATER MAIN BREAK	UTILITY DAMAGED MSD ASSET	DISDW DRY WEATHER DISCHARGE	2839599	MSD Crews will inspect creek and clean as appropriate.	LOUISVILLE WATER TO REPAIR 48" MAIN
MORRIS FORMAN	KY0022411	938 LOGAN ST	12/12/2017 8:05	12/12/2017 18:30	12,700,000	SEWER MANHOLE	CSO117	STREAM	SOUTH FORK BEARGRASS CREEK	LOUISVILLE WATER CO. 48" MAIN BREAK	UTILITY DAMAGED MSD ASSET	DISDW DRY WEATHER DISCHARGE	2839616	MSD Crews will inspect creek and clean as appropriate.	LOUISVILLE WATER CO. TO REPAIR 48" MAIN BREAK
MORRIS FORMAN	KY0022411	636 E ORMSBY AVE	12/12/2017 8:05	12/12/2017 18:30	9,189,000	SEWER MANHOLE	CSO180	STREAM	SOUTH FORK BEARGRASS CREEK	LOUISVILLE WATER CO. 48" MAIN BREAK.	UTILITY DAMAGED MSD ASSET	DISDW DRY WEATHER DISCHARGE	2839653	MSD Crews will inspect creek and clean as appropriate.	LOUISVILLE WATER CO. TO REPAIR 48" MAIN BREAK.
MORRIS FORMAN	KY0022411	1260 S SHELBY ST	12/12/2017 8:05	12/12/2017 13:00	944,000	SEWER MANHOLE	CSO187	STREAM	SOUTH FORK BEARGRASS CREEK	LOUISVILLE WATER CO. 48" MAIN BREAK.	UTILITY DAMAGED MSD ASSET	DISDW DRY WEATHER	2839651	MSD Crews will inspect creek and clean as appropriate.	LOUISVILLE WATER CO. TO REPAIR 48" MAIN BREAK.

Appendix D-1 Discharge Work Orders – Waters of the United States

ASSOCIATED WASTEWATER TREATMENT PLANT NAME	ASSOCIATED TREATMENT PLANT KPDES #	OVERFLOW LOCATION	OVERFLOW START DATE & TIME	OVERFLOW STOP DATE & TIME	VOLUME OF OVERFLOW (GAL)	SOURCE ASSET TYPE	SOURCE ASSET ID	FACILITY DISCHARGES TO	RECEIVING STREAM	CAUSE OF OVERFLOW	DUE TO	WEATHER	WO #	CLEANUP EFFORTS BY MSD	REPAIR EFFORTS BY MSD
												DISCHARGE			
MORRIS FORMAN	KY0022411	1245 S CLAY ST	12/12/2017 8:05	12/12/2017 16:00	1,430,000	SEWER MANHOLE	CSO188	STREAM	SOUTH FORK BEARGRASS CREEK	LOUISVILLE WATER CO. 48" MAIN BREAK.	UTILITY DAMAGED MSD ASSET	DISDW DRY WEATHER DISCHARGE	2839652	MSD Crews will inspect creek and clean as appropriate.	LOUISVILLE WATER CO. TO REPAIR 48" MAIN BREAK.
MORRIS FORMAN	KY0022411	819 KESWICK BLVD	12/12/2017 9:09	12/12/2017 14:30	1,000	SEWER MANHOLE	CSO183	STREAM	SOUTH FORK BEARGRASS CREEK	LOUISVILLE WATER MAIN BREAK 48" LINE	UTILITY DAMAGED MSD ASSET	DISDW DRY WEATHER DISCHARGE	2839569	MSD Crews will inspect creek and clean as appropriate.	LOUISVILLE WATER CO. TO REPAIR 48" PIPE MAIN
MORRIS FORMAN	KY0022411	4010 BELLS LN	12/21/2017 18:20	12/22/2017 15:29	142,000	SEWER MANHOLE	CSO015	STREAM	OHIO RIVER	PLC MALFUNCTION AT STRUCTURE	ELECTRICAL PROBLEMS AT MSD	DISDW DRY WEATHER DISCHARGE	2844934	NO CLEAN UP PERFORMED – PIPE DISCHARGING UNDERWATER, DIRECTLY INTO STREAM	GATES WERE CLOSED
MORRIS FORMAN	KY0022411	4010 BELLS LN	12/22/2017 23:30	12/23/2017 0:00	10,000	SEWER LIFT STATION	MSD0080-PS	GROUND	PADDY RUN	MECHANICAL FAILURE OF GATE ON SPLITTER STRUCTURE ONE	MECHANICAL FAILURE	DISREV RAIN EVENT DISCHARGE	2845035	NO DEBRIS	GATE WAS ADJUSTED TO 20%
MORRIS FORMAN	KY0022411	1726 FRASER DR	12/23/2017 2:30	12/23/2017 23:45	55,000	SEWER MANHOLE	16649	DITCH	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2845074	WO# 2845114	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	4522 ALGONQUIN PKY	1/22/2018 10:30	1/22/2018 10:58	1,210,000	SEWER TREATMENT PLANT	MSD0278	STREAM	OHIO RIVER	STRUCTURAL FAILURE	BYPASS AT WQTC	DISREV RAIN EVENT DISCHARGE	2855275	MSD PERSONNEL CLEANED	CONTRACTORS REPAIRED LEAKING SODIUM HYPOCHLORITE LINE
FLOYDS FORK	KY0102784	1100 BLUE HERON RD	2/10/2018 17:40	2/10/2018 20:10	33,750	SEWER MANHOLE	97793			INFLUENT PUMP STATION MAIN BREAKER TRIPPED DUE TO SHORT IN PUMP 104	ELECTRICAL PROBLEMS AT MSD	DISREV RAIN EVENT DISCHARGE	2861186	MSD CLEANED AND SANITIZED THE AREA	BREAKER RESET
MORRIS FORMAN	KY0022411	1726 FRASER DR	2/11/2018 11:00	2/11/2018 14:00	1,685	SEWER MANHOLE	16649	DITCH	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2861226	WO# 2861300	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1726 FRASER DR	2/16/2018 5:45	2/18/2018 21:30	640,844	SEWER MANHOLE	16649	DITCH	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2864251	WO# 2864717	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1001 BRECKENRIDGE LN	2/16/2018 8:15	2/17/2018 14:00	2,513,725	SEWER MANHOLE	08935-SM	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2864253	NO CLEAN UP PERFORMED – PIPES DISCHARGE UNDERWATER, DIRECTLY INTO STREAM.	LOCATION INCLUDED IN IOAP.
MORRIS FORMAN	KY0022411	1132 ROSTREVOR CIR	2/16/2018 9:30	2/16/2018 20:18	15,000	SEWER MANHOLE	45835	GROUND	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2864311	WO# 2864542	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1011 ALTA CIR	2/16/2018 9:35	2/16/2018 20:20	110,000	SEWER MANHOLE	45796	DITCH	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2864313	WO# 2864545	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	201 BULLITT LN	2/16/2018 10:25	2/17/2018 10:05	144,000	SEWER MANHOLE	47582	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2864317	WO# 2864348	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	202 OXMOOR LN	2/16/2018 10:25	2/17/2018 10:05	200,000	SEWER MANHOLE	47583	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2864315	WO# 2864546	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	3726 FINCASTLE RD	2/16/2018 11:30	2/17/2018 8:20	27,000	SEWER MANHOLE	08717	GROUND	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2864341	WO# 2864530	LOCATION INCLUDED IN IOAP
DEREK R. GUTHRIE	KY0078956	9317 LANTANA DR	2/16/2018 12:24	2/16/2018 13:15	510	SEWER MANHOLE	25484	STREAM	PENNSYLVANIA RUN	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2864363	MSD PERSONNEL CLEANED AND SANITIZED THE IMPACTED AREA	RAIN STOPPED AND PUMP STATION CAUGHT UP, STOPPING DISCHARGE
DEREK R. GUTHRIE	KY0078956	9114 CINDERELLA LN	2/16/2018 12:39	2/16/2018 15:05	1,460	SEWER MANHOLE	60679	DITCH	FISHPOOL CREEK	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2864369	MSD PERSONNEL CLEANED AND SANITIZED THE IMPACTED AREA	DISCHARGE STOPPED AFTER RAIN STOPPED ALLOWING PUMP STATION TO CATCH UP
HITE CREEK	KY0022420	6100 MAYFAIR AVE	2/19/2018 9:00	3/5/2018 10:30	9,999	SEWER LIFT STATION	MSD1206-PS	GROUND	OHIO RIVER	LACK OF SYSTEM CAPACITY DUE TO RAIN EVENT	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2866584	NO CLEANUP REQUIRED	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE IOAP
MORRIS FORMAN	KY0022411	23 BROWNSBORO HILL RD	2/19/2018 15:28	2/27/2018 17:00	20	SEWER MAIN	48357	GROUND	MUDDY FORK BEARGRASS CREEK	ROOT CUTTER LODGED IN THE MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2867235	MSD WILL CLEAN IMPACTED AREA	TURNED OVER TO LOCAL CONTRACTOR LOUISVILLE PAVING TO REMOVE ROOT CUTTER
MORRIS FORMAN	KY0022411	23 BROWNSBORO HILL RD	2/19/2018 15:32	2/19/2018 16:00	15	SEWER MAIN	48366			CAPACITY ISSUE WITH THE MAIN SEWER	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2866706	MSD WILL CLEAN AREA	REFERED TO PROJECT MAMAGER
MORRIS FORMAN	KY0022411	420 W RIVER RD	2/21/2018 15:20	3/6/2018 11:30	9,999	SEWER LIFT STATION	MSD1017-PS	STREAM	OHIO RIVER	LACK OF SYSTEM CAPACITY DUE TO RAIN EVENT	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869383	NO CLEANUP REQUIRED	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE IOAP.
MORRIS FORMAN	KY0022411	1726 FRASER DR	2/21/2018 21:45	3/2/2018 7:00	391,119	SEWER MANHOLE	16649	DITCH	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2867765	WO# 2873629	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1001 BRECKENRIDGE LN	2/22/2018 2:44	2/27/2018 1:08	25,133,115	SEWER MANHOLE	08935-SM	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY HEAVY RAIN	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2867766	NO CLEAN UP PERFORMED PIPE DISCHARGING UNDERWATER DIRECTLY INTO STREAM	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1132 ROSTREVOR CIR	2/22/2018 3:40	2/28/2018 5:20	450,000	SEWER MANHOLE	45835	GROUND	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2867792	WO# 2872687	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1011 ALTA CIR	2/22/2018 3:50	2/28/2018 5:15	720,000	SEWER MANHOLE	45796	DITCH	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2867795	WO# 2872699	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1700 SULGRAVE RD	2/22/2018 4:15	2/22/2018 14:05	70,000	SEWER MANHOLE	15195	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2867857	WO 2868739	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	3317 BROWNSBORO RD	2/22/2018 4:33	2/22/2018 16:15	12,000	SEWER MANHOLE	26752	DITCH	MUDDY FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2867873	WO 2868754	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	201 BULLITT LN	2/22/2018 4:45	2/27/2018 7:20	360,000	SEWER MANHOLE	47582	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2867863	WO 2870840	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	202 OXMOOR LN	2/22/2018 4:45	2/27/2018 7:20	600,000	SEWER MANHOLE	47583	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2867862	WO 2870825	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	7900 SHELBYVILLE RD	2/22/2018 5:05	2/26/2018 6:58	576,000	SEWER MANHOLE	02933	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2867865	WO# 2869848	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1418 TREVILIAN WAY	2/22/2018 5:20	2/22/2018 13:41	80,000	SEWER MANHOLE	51594	DITCH	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868550	WO# 2868783	LOCATION INCLUDED IN IOAP

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ASSOCIATED WASTEWATER TREATMENT PLANT NAME	ASSOCIATED TREATMENT PLANT KPDES #	OVERFLOW LOCATION	OVERFLOW START DATE & TIME	OVERFLOW STOP DATE & TIME	VOLUME OF OVERFLOW (GAL)	SOURCE ASSET TYPE	SOURCE ASSET ID	FACILITY DISCHARGES TO	RECEIVING STREAM	CAUSE OF OVERFLOW	DUE TO	WEATHER	WO #	CLEANUP EFFORTS BY MSD	REPAIR EFFORTS BY MSD
MORRIS FORMAN	KY0022411	7913 SHELBYVILLE RD	2/22/2018 5:20	2/26/2018 7:45	288,000	SEWER MANHOLE	84155	GROUND	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2867869	WO 2869857	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	7242 HEATHERLY SQ	2/22/2018 5:23	2/22/2018 15:05	50,000	SEWER MANHOLE	03076	GROUND	GOOSE CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2867866	WO 2868744	LOCATION INCLUDED IN IOAP
DEREK R. GUTHRIE	KY0078956	9317 LANTANA DR	2/22/2018 6:00	2/22/2018 10:00	12,000	SEWER MANHOLE	25484	STREAM	PENNSYLVANIA RUN	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868579	MSD PERSONNEL CLEANED AND SANITIZED THE IMPACTED AREA	RAIN STOPPED AND STATION CAUGHT UP.
MORRIS FORMAN	KY0022411	7713 WESTPORT RD	2/22/2018 6:04	2/22/2018 15:35	67,500	SEWER MANHOLE	105936	GROUND	GOOSE CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2867870	WO 2868750	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	3302 TROUT CREEK DR	2/22/2018 6:06	2/24/2018 13:40	300,000	SEWER MANHOLE	23211	STREAM	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868553	WO# 2869458	LOCATION INCLUDED IN IOAP
DEREK R. GUTHRIE	KY0078956	9114 CINDERELLA LN	2/22/2018 6:30	2/22/2018 13:25	84,000	SEWER MANHOLE	60679	DITCH	FISHPOOL CREEK	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868599	MSD PERSONNEL CLEANED AND SANITIZED THE IMPACTED AREA	RAIN STOPPED AND STATION CAUGHT UP
MORRIS FORMAN	KY0022411	3305 BENT CREEK CT	2/22/2018 6:44	2/24/2018 13:42	210,000	SEWER SERVICE LINE	BU05074039	GROUND	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868554	WO 2869462	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	3305 INDIAN CREEK CT	2/22/2018 6:57	2/27/2018 7:00	504,000	SEWER MANHOLE	51160	GROUND	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868552	WO# 2870851	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	3406 DELL RD	2/22/2018 7:00	2/22/2018 10:30	4,500	SEWER MANHOLE	28415	GROUND	CHENOWETH RUN	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2867875	WO 2868758	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	3402 CHARLANE PKY	2/22/2018 7:10	2/22/2018 18:15	16,500	SEWER MANHOLE	28453	DITCH	CHENOWETH RUN	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2867881	WO 2868762	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	3506 CHARLANE PKY	2/22/2018 7:22	2/22/2018 14:00	10,500	SEWER MANHOLE	28250	DITCH	CHENOWETH RUN	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2867884	WO 2868766	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	3500 ST EDWARDS DR	2/22/2018 7:30	2/22/2018 14:05	10,500	SEWER MANHOLE	28249	DITCH	CHENOWETH RUN	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2867888	WO 2868770	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	4313 PRUITT CT	2/22/2018 7:33	2/24/2018 15:00	60,000	SEWER MANHOLE	08427	GROUND	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868556	WO 2869475	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	4315 PRUITT CT	2/22/2018 7:36	2/24/2018 15:05	60,000	SEWER MANHOLE	08426	GROUND	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868558	WO 2869483	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	4341 PRUITT CT	2/22/2018 7:37	2/24/2018 15:10	60,000	SEWER MANHOLE	08430	GROUND	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868561	WO 2869484	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	4317 PRUITT CT	2/22/2018 7:39	2/24/2018 15:12	2,400	SEWER SERVICE LINE	85075	GROUND	BUECHEL BRANCH	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868567	WO 2869488	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	4319 PRUITT CT	2/22/2018 7:40	2/22/2018 15:33	720	SEWER SERVICE LINE	85076	GROUND	BUECHEL BRANCH	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868572	WO 2868786	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	9707 WILLOWWOOD WAY	2/22/2018 7:40	2/22/2018 18:20	27,000	SEWER MANHOLE	28336	DITCH	CHENOWETH RUN	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2867894	WO 2868772	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	4341 PRUITT CT	2/22/2018 7:41	2/24/2018 15:14	60,000	SEWER SERVICE LINE	85097	GROUND	PADDY RUN	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868574	WO 2869489	LOCATION INCLUDED IN IOAP
FLOYDS FORK	KY0102784	14105 OVERLANDER CT	2/22/2018 7:42	2/24/2018 15:15	2,400	SEWER MANHOLE	85055	GROUND	FLOYDS FORK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868576	WO 2869491	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	8016 SHELBYVILLE RD	2/22/2018 7:45	2/22/2018 14:45	42,000	SEWER MANHOLE	47603	GROUND	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2867900	WO 2868776	LOCATION INCLUDED IN IOAP
DEREK R. GUTHRIE	KY0078956	8800 ADMIRAL DR	2/22/2018 8:00	2/22/2018 14:39	26,300	SEWER MANHOLE	93703	GROUND	PENNSYLVANIA RUN	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868480	MSD PERSONNEL CLEANED AND SANITIZED THE IMPACTED AREA	A SOLUTION FOR THIS LOCATION CAN BE FOUND IN TEH IOAP
MORRIS FORMAN	KY0022411	8021 CHRISTIAN CT	2/22/2018 8:30	2/26/2018 7:05	144,000	SEWER MANHOLE	47593	GROUND	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2867912	WO 2869901	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	2216 FAIRLAND AVE	2/22/2018 8:33	2/24/2018 14:41	60,000	SEWER MANHOLE	49445	GROUND	BUECHEL BRANCH	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868555	WO 2869474	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	8021 CHRISTIAN CT	2/22/2018 8:36	2/26/2018 7:00	288,000	SEWER MANHOLE	90700	CATCH BASIN	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2867909	WO 2869899	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	7900 SHELBYVILLE RD	2/22/2018 8:54	2/26/2018 6:58	57,600	SEWER MANHOLE	02935	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2867904	WO 2869886	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	9514 TAYLORSVILLE RD	2/22/2018 9:00	2/22/2018 10:20	1,500	SEWER MANHOLE	28711	DITCH	BEATTY BROOK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868445	WO 2868780	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	232 STONEHENGE DR	2/22/2018 9:10	2/22/2018 15:23	7,200	SEWER MANHOLE	47034	DITCH	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868592	WO# 2868790	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	4640 BARBOUR LN	2/22/2018 9:15	2/22/2018 12:43	21,000	SEWER MANHOLE	42680	STREAM	LITTLE GOOSE CREEK	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868650	MSD PERSONNEL CLEANED AND SANITIZED THE IMPACTED AREA	A SOLUTION FOR THIS LOCATION CAN BE FOUND IN THE IOAP
MORRIS FORMAN	KY0022411	3620 CHARLANE PKY	2/22/2018 9:30	2/22/2018 14:10	7,500	SEWER MANHOLE	28340	GROUND	CHENOWETH RUN	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868443	WO 2868778	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	2200 METAL LN	2/22/2018 9:30	3/8/2018 7:00	9,999	SEWER LIFT STATION	MSD1125-PS	GROUND	OHIO RIVER	LACK OF SYSTEM CAPACITY DUE TO RAIN EVENT	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869361	MSD CLEANED AFFECTED AREA	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE IOAP.
MORRIS FORMAN	KY0022411	1804 ROUND RIDGE RD	2/22/2018 10:15	2/28/2018 5:58	270,000	SEWER MANHOLE	65623	STREAM	MUDDY FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868594	WO# 2872703	LOCATION INCLUDED IN IOAP

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ASSOCIATED WASTEWATER TREATMENT PLANT NAME	ASSOCIATED TREATMENT PLANT KPDES #	OVERFLOW LOCATION	OVERFLOW START DATE & TIME	OVERFLOW STOP DATE & TIME	VOLUME OF OVERFLOW (GAL)	SOURCE ASSET TYPE	SOURCE ASSET ID	FACILITY DISCHARGES TO	RECEIVING STREAM	CAUSE OF OVERFLOW	DUE TO	WEATHER	WO #	CLEANUP EFFORTS BY MSD	REPAIR EFFORTS BY MSD
MORRIS FORMAN	KY0022411	4801 CASSIA CT	2/22/2018 10:15	2/28/2018 5:58	540,000	SEWER MANHOLE	46623	STREAM	MUDDY FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868596	WO# 2872705	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	4019 LELAND RD	2/22/2018 11:00	2/22/2018 16:25	2,200	SEWER MANHOLE	98019	GROUND	MUDDY FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868602	WO# 2868795	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	501 MOCKINGBIRD VALLEY RD	2/22/2018 12:22	3/2/2018 22:30	9,999	SEWER LIFT STATION	MSD1210-PS	STREAM	MUDDY FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY DUE TO RAIN EVENT	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868666	NO CLEANUP-STATION UNDER WATER	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE IOAP
MORRIS FORMAN	KY0022411	4200 RIVER RD	2/22/2018 12:36	3/2/2018 14:14	9,999	SEWER LIFT STATION	MSD0188-PS	GROUND	MUDDY FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY DUE TO RAIN EVENT	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868659	MSD CLEANED AFFECTED AREA	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE IOAP
HITE CREEK	KY0022420	7804 DEEP TRAIL CT	2/22/2018 13:31	3/4/2018 12:00	9,999	SEWER LIFT STATION	MSD1062-LS	STREAM	HARRODS CREEK	LACK OF SYSTEM CAPACITY DUE TO RAIN EVENT	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868676	NO CLEANUP-STATION UNDER WATER	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE IOAP
MORRIS FORMAN	KY0022411	352 PLAZA AVE	2/22/2018 19:45	2/22/2018 20:20	10	SEWER SERVICE LINE	83261			LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868831	MSD WILL CLEAN THE IMAPCTED AREA	NO FURTHER ACTION REQUIRED AT THIS TIME
MORRIS FORMAN	KY0022411	3317 BROWNSBORO RD	2/23/2018 4:48	2/26/2018 9:36	20,000	SEWER MANHOLE	26752	DITCH	MUDDY FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869114	WO# 2870320	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	3406 DELL RD	2/23/2018 5:20	2/23/2018 19:03	20,000	SEWER MANHOLE	28415	GROUND	CHENOWETH RUN	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868920	WO 2869424	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	3506 CHARLANE PKY	2/23/2018 5:25	2/23/2018 18:55	20,000	SEWER MANHOLE	28250	DITCH	CHENOWETH RUN	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868924	WO 2869427	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	3500 ST EDWARDS DR	2/23/2018 5:35	2/23/2018 18:50	20,000	SEWER MANHOLE	28249	DITCH	CHENOWETH RUN	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868944	WO 2869428	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	9707 WILLOWWOOD WAY	2/23/2018 5:40	2/24/2018 8:30	80,000	SEWER MANHOLE	28336	DITCH	CHENOWETH RUN	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868945	WO 2869430	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	3402 CHARLANE PKY	2/23/2018 5:45	2/24/2018 8:45	35,000	SEWER MANHOLE	28453	DITCH	CHENOWETH RUN	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868921	WO 2869426	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	3620 CHARLANE PKY	2/23/2018 5:50	2/23/2018 19:10	20,000	SEWER MANHOLE	28340	GROUND	CHENOWETH RUN	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868947	WO 2869431	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	9514 TAYLORSVILLE RD	2/23/2018 6:00	2/23/2018 19:30	20,000	SEWER MANHOLE	28711	DITCH	BEATTY BROOK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868948	WO 2869434	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	8113 SHELBYVILLE RD	2/23/2018 6:11	2/25/2018 11:02	28,800	SEWER MANHOLE	30376	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869103	WO# 2869736	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1418 TREVILIAN WAY	2/23/2018 6:20	2/23/2018 13:21	2,100	SEWER MANHOLE	51594	DITCH	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869118	WO 2869126	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	2711 GRASSLAND DR	2/23/2018 6:30	2/23/2018 19:20	20,000	SEWER MANHOLE	31733	DITCH	BEATTY BROOK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868949	WO 2869435	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	7713 WESTPORT RD	2/23/2018 7:03	2/26/2018 8:20	288,000	SEWER MANHOLE	105936	GROUND	GOOSE CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869113	WO# 2870319	LOCATION INCLUDED IN IOAP
CEDAR CREEK	KY0098540	11510 BARDSTOWN FALLS RD	2/23/2018 8:00	2/24/2018 8:00	36,000	SEWER MANHOLE	97366	GROUND	BIG RUN	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869291	WO	RAINFALL BEYOND LEVEL OF PROTECTION
DEREK R. GUTHRIE	KY0078956	9317 LANTANA DR	2/23/2018 8:02	2/23/2018 14:15	21,650	SEWER MANHOLE	25484	STREAM	PENNSYLVANIA RUN	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869134	CLEANUP NOT POSSIBLE DUE TO MAGNITUDE OF STORM	A SOLUTION FOR THIS LOCATION CAN BE FOUND IN THE IOAP
MORRIS FORMAN	KY0022411	1700 SULGRAVE RD	2/23/2018 8:06	2/26/2018 10:08	432,000	SEWER MANHOLE	72289	GROUND	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869100	WO# 2870316	LOCATION INCLUDED IN IOAP
DEREK R. GUTHRIE	KY0078956	9114 CINDERELLA LN	2/23/2018 8:21	2/23/2018 22:45	108,000	SEWER MANHOLE	60879	DITCH	FISHPOOL CREEK	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869129	CLEANUP NOT POSSIBLE DUE TO MAGNITUDE OF STORM	A SOLUTION FOR THIS LOCATION CAN BE FOUND IN THE IOAP
DEREK R. GUTHRIE	KY0078956	8800 ADMIRAL DR	2/23/2018 8:45	2/23/2018 23:02	85,700	SEWER MANHOLE	93703	GROUND	PENNSYLVANIA RUN	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869145	CLEANUP NOT POSSIBLE DUE TO MAGNITUDE OF STORM	A SOLUTION FOR THIS LOCATION CAN BE FOUND IN THE IOAP
CEDAR CREEK	KY0098540	10800 FAIRMOUNT RD	2/23/2018 9:26	3/1/2018 10:06	1,078,500	SEWER MANHOLE	97365	GROUND	BIG RUN	HEAVY RAIN LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869194	MSD PERSONNEL WILL CLEAN AND SANITIZE THE IMPACTED AREA	RAIN EVENT BEYOND LEVEL OF PROTECTION
MORRIS FORMAN	KY0022411	232 STONEHENGE DR	2/23/2018 9:39	2/26/2018 6:42	28,800	SEWER MANHOLE	47034	DITCH	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869109	WO# 2869914	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	4319 PRUITT CT	2/23/2018 9:42	2/26/2018 13:47	2,880	SEWER SERVICE LINE	85076	GROUND	BUECHEL BRANCH	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869162	WO# 2870330	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	4609 BLENHEIM RD	2/23/2018 9:42	2/26/2018 6:35	28,800	SEWER MANHOLE	21171	DITCH	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869110	WO# 2869916	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	4332 PRUITT CT	2/23/2018 9:44	2/24/2018 15:16	2,400	SEWER SERVICE LINE	085100290046 A	GROUND	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869122	WO 2869497	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	4640 BARBOUR LN	2/23/2018 9:52	2/27/2018 22:15	77,200	SEWER MANHOLE	42680	STREAM	LITTLE GOOSE CREEK	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869156	CLEANUP NOT POSSIBLE DUE TO ELEVATED CREEK LEVEL	A SOLUTION FOR THIS LOCATION CAN BE FOUND IN THE IOAP
MORRIS FORMAN	KY0022411	208 BRUNSWICK RD	2/23/2018 9:53	2/26/2018 6:33	28,800	SEWER MANHOLE	115183	DITCH	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869107	WO# 2869912	LOCATION INCLUDED IN IOAP
DEREK R. GUTHRIE	KY0078956	4005 KIRBY LN	2/23/2018 10:55	2/23/2018 19:30	25,750	SEWER MANHOLE	61266	DITCH	FERN CREEK	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869117	CLEANUP NOT POSSIBLE DUE TO ELEVATED CREEK LEVEL	A SOLUTION FOR THIS LOCATION CAN BE FOUND IN THE IOAP
HITE CREEK	KY0022420	8619 WESTOVER DR	2/23/2018 12:00	2/23/2018 13:35	950	SEWER LIFT STATION	MSD1064-PS	DITCH	HARRODS CREEK	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869163	CLEANUP NOT POSSIBLE DUE TO MAGNITUDE OF STORM	A SOLUTION FOR THIS LOCATION CAN BE FOUND IN TEH IOAP

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ASSOCIATED WASTEWATER TREATMENT PLANT NAME	ASSOCIATED TREATMENT PLANT KPDES #	OVERFLOW LOCATION	OVERFLOW START DATE & TIME	OVERFLOW STOP DATE & TIME	VOLUME OF OVERFLOW (GAL)	SOURCE ASSET TYPE	SOURCE ASSET ID	FACILITY DISCHARGES TO	RECEIVING STREAM	CAUSE OF OVERFLOW	DUE TO	WEATHER	WO #	CLEANUP EFFORTS BY MSD	REPAIR EFFORTS BY MSD
MORRIS FORMAN	KY0022411	1802 ROUND RIDGE RD	2/23/2018 12:25	2/26/2018 9:14	162,000	SEWER MANHOLE	46600	STREAM	MUDDY FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869142	WO# 2870325	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1910 CHARBDIN PL	2/23/2018 12:25	2/27/2018 8:14	216,000	SEWER MANHOLE	46627	STREAM	MUDDY FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869137	WO# 2870862	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1910 CHARBDIN PL	2/23/2018 12:25	2/27/2018 8:14	288,000	SEWER MANHOLE	65611	GROUND	MUDDY FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869144	WO 2870870	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1913 CHARBDIN PL	2/23/2018 12:25	2/26/2018 9:17	216,000	SEWER MANHOLE	16455	GROUND	MUDDY FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869135	WO# 2870321	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1915 CHARBDIN PL	2/23/2018 12:25	2/26/2018 9:17	108,000	SEWER MANHOLE	16456	GROUND	MUDDY FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869139	WO# 2870324	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	300 TRAFALGAR SQ	2/23/2018 12:29	2/27/2018 8:36	35	SEWER MANHOLE	48860			CAPACITY ISSUE	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869090	MSD CLEANED THE IMPACTED AREA	NO REPAIRS NEEDED
MORRIS FORMAN	KY0022411	37 ARROWHEAD RD	2/23/2018 13:45	2/26/2018 9:28	108,000	SEWER MANHOLE	89791	GROUND	MUDDY FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869152	WO# 2870328	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	2313 TYLER LN	2/23/2018 14:52	2/23/2018 15:14	25	SEWER MANHOLE	16557			CAPACITY ISSUE	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869188	UNSURE OF AT THIS TIME	PLACED ONE DISCHARGE SIGN
MORRIS FORMAN	KY0022411	4019 LELAND RD	2/23/2018 16:17	2/26/2018 9:43	162,000	SEWER MANHOLE	96019	GROUND	MUDDY FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869270	WO# 2870332	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1108 DUPONT CIR	2/23/2018 17:11	2/26/2018 6:09	43,200	SEWER MANHOLE	43726	GROUND	WEICHER CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869269	WO# 2869928	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	974 BRECKENRIDGE LN	2/23/2018 17:25	2/25/2018 17:22	28,800	SEWER MANHOLE	74520	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869268	WO# 2869922	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	2005 BRUCE AVE	2/23/2018 17:37	2/23/2018 17:40	70	SEWER MANHOLE	49475	GROUND	BUECHEL BRANCH	CAPACITY ISSUE	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869245	MSD WILL CLEAN AREA	REFERRED FOR AREA SUPERVISOR
MORRIS FORMAN	KY0022411	231 N CAMPBELL ST	2/23/2018 23:32	3/2/2018 15:03	9,999	SEWER LIFT STATION	MSD1137-PS	GROUND	OHIO RIVER	LACK OF SYSTEM CAPACITY DUE TO RAIN EVENT	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869344	MSD CLEANED AFFECTED AREA	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE IOAP.
CEDAR CREEK	KY0098540	10800 FAIRMOUNT RD	2/24/2018 10:45	2/27/2018 16:00	87,750	SEWER MANHOLE	97364	GROUND	BIG RUN	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869416	MSD PERSONNEL CLEANED AND SANITIZED THE IMPACTED AREA	A SOLUTION FOR THIS LOCATION CAN BE LOCATED IN THE IOAP
MORRIS FORMAN	KY0022411	908 ORMSBY LN	2/24/2018 11:55	2/24/2018 14:29	900	SEWER VALVE	79358-V	GROUND	MIDDLE FORK BEARGRASS CREEK	HEAVY RAIN - LACK OF SYSTEM CAPACITY.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869679	MSD PERSONNEL WILL CLEAN AND SANITIZE THE IMPACTED AREA.	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE IOAP.
MORRIS FORMAN	KY0022411	1833 RIVER RD	2/24/2018 12:00	3/2/2018 14:11	9,999	SEWER LIFT STATION	MSD1098-PS	GROUND	OHIO RIVER	LACK OF SYSTEM CAPACITY DUE TO RAIN EVENT	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869478	MSD CLEANED AFFECTED AREA	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE IOAP
MORRIS FORMAN	KY0022411	3406 DELL RD	2/24/2018 18:30	2/25/2018 7:10	22,500	SEWER MANHOLE	28415	GROUND	CHENOWETH RUN	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869562	WO 2869674	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	3402 CHARLANE PKY	2/24/2018 18:40	2/25/2018 15:00	15,000	SEWER MANHOLE	28453	DITCH	CHENOWETH RUN	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869564	WO# 2869770	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	3508 CHARLANE PKY	2/24/2018 18:45	2/25/2018 15:05	13,500	SEWER MANHOLE	28250	DITCH	CHENOWETH RUN	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869567	WO# 2869771	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	3302 TROUT CREEK DR	2/24/2018 18:49	2/27/2018 7:05	378,000	SEWER MANHOLE	23211	STREAM	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869512	WO# 2870889	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	3305 BENT CREEK CT	2/24/2018 18:53	2/27/2018 7:10	308,000	SEWER SERVICE LINE	BU05074039	GROUND	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869513	WO 2870895	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	3500 ST EDWARDS DR	2/24/2018 18:55	2/25/2018 15:10	13,500	SEWER MANHOLE	28249	DITCH	CHENOWETH RUN	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869568	WO# 2869772	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	9707 WILLOWWOOD WAY	2/24/2018 19:05	2/25/2018 15:20	13,500	SEWER MANHOLE	28336	DITCH	CHENOWETH RUN	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869571	WO# 2869773	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	4313 PRUITT CT	2/24/2018 19:06	2/26/2018 13:52	157,500	SEWER MANHOLE	08427	GROUND	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869522	WO# 2870333	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	4315 PRUITT CT	2/24/2018 19:07	2/26/2018 13:53	108,000	SEWER MANHOLE	08426	GROUND	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869523	WO# 2870335	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	4341 PRUITT CT	2/24/2018 19:11	2/27/2018 6:40	216,000	SEWER MANHOLE	08430	GROUND	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869525	WO 2870899	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	4319 PRUITT CT	2/24/2018 19:14	2/26/2018 13:49	108,000	SEWER SERVICE LINE	85076	GROUND	BUECHEL BRANCH	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869527	WO# 2870398	LOCATION INCLUDED IN IOAP
FLOYDS FORK	KY0102784	14105 OVERLANDER CT	2/24/2018 19:16	2/26/2018 13:51	4,320	SEWER MANHOLE	85055	GROUND	FLOYDS FORK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869530	WO# 2870399	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	4332 PRUITT CT	2/24/2018 19:17	2/26/2018 19:17	6,480	SEWER SERVICE LINE	085100290046 A	GROUND	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869532	WO# 2870400	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	3620 CHARLANE PKY	2/24/2018 19:20	2/25/2018 15:30	13,500	SEWER MANHOLE	28340	GROUND	CHENOWETH RUN	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869573	WO# 2869774	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	9514 TAYLORSVILLE RD	2/24/2018 19:30	2/25/2018 17:30	14,500	SEWER MANHOLE	28711	DITCH	BEATTY BROOK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869575	WO# 2869776	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	2711 GRASSLAND DR	2/24/2018 19:50	2/25/2018 19:55	15,500	SEWER MANHOLE	31733	DITCH	BEATTY BROOK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869576	WO# 2869777	LOCATION INCLUDED IN IOAP

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ASSOCIATED WASTEWATER TREATMENT PLANT NAME	ASSOCIATED TREATMENT PLANT KPDES #	OVERFLOW LOCATION	OVERFLOW START DATE & TIME	OVERFLOW STOP DATE & TIME	VOLUME OF OVERFLOW (GAL)	SOURCE ASSET TYPE	SOURCE ASSET ID	FACILITY DISCHARGES TO	RECEIVING STREAM	CAUSE OF OVERFLOW	DUE TO	WEATHER	WO #	CLEANUP EFFORTS BY MSD	REPAIR EFFORTS BY MSD
MORRIS FORMAN	KY0022411	1122 ROSTREVOR CIR	2/24/2018 19:56	2/25/2018 15:35	72,000	SEWER MANHOLE	45900	DITCH	HAWKINS RILL	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869557	WO# 2869748	LOCATION INCLUDED IN IOAP
DEREK R. GUTHRIE	KY0078956	9317 LANTANA DR	2/24/2018 20:00	2/25/2018 9:22	40,100	SEWER MANHOLE	25484	STREAM	PENNSYLVANIA RUN	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869550	MSD PERSONNEL CLEANED AND SANITIZED THE IMPACTED AREA	A SOLUTION FOR THIS LOCATION CAN BE FOUND IN THE IOAP
DEREK R. GUTHRIE	KY0078956	5006 LEA ANN WAY	2/24/2018 20:11	2/27/2018 7:30	1,233,600	SEWER LIFT STATION	MSD1010-PS	STREAM	NORTHERN DITCH	PUMPS SET TO ALLEVIATE PROPERTY DAMAGE AND FLOODING DURING A SIGNIFICANT RAIN EVENT	PUMPED OVERFLOW	DISREV RAIN EVENT DISCHARGE	2869578	• MSD PERSONNEL CLEANED AND SANITIZED THE IMPACTED AREA	A SOLUTION FOR THIS LOCATION CAN BE FOUND IN THE IOAP
DEREK R. GUTHRIE	KY0078956	9114 CINDERELLA LN	2/24/2018 20:11	2/26/2018 12:52	284,700	SEWER MANHOLE	60679	DITCH	FISHPOOL CREEK	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869553	MSD PERSONNEL CLEANED AND SANITIZED THE IMPACTED AREA	A SOLUTION FOR THIS LOCATION CAN BE FOUND IN THE IOAP
MORRIS FORMAN	KY0022411	3561 FINCASTLE RD	2/24/2018 20:30	2/25/2018 14:27	54,000	SEWER MANHOLE	99261	GROUND	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869549	WO# 2869742	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1418 TREVILIAN WAY	2/24/2018 20:45	2/25/2018 14:33	9,000	SEWER MANHOLE	51594	DITCH	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869551	WO# 2869744	LOCATION INCLUDED IN IOAP-
FLOYDS FORK	KY0102784	815 TUCKER STATION RD	2/24/2018 21:19	2/25/2018 10:00	128,100	SEWER MANHOLE	33003	STREAM	POPE LICK	HEAVY RAIN - LACK OF SYSTEM CAPACITY.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869656	MSD PERSONNEL WILL CLEAN AND SANITIZE THE IMPACTED AREA.	AN IOAP SOLUTION EXISTS FOR THIS LOCATION.
MORRIS FORMAN	KY0022411	332 STONEHENGE DR	2/24/2018 21:25	2/26/2018 6:35	28,800	SEWER MANHOLE	63357	DITCH	VALLEY CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869579	WO# 2869929	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	207 BRUNSWICK RD	2/24/2018 21:32	2/25/2018 11:21	16,800	SEWER MANHOLE	21089A	DITCH	UPPER MILL CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869580	WO# 2869751	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	300 MOCKINGBIRD VALLEY RD	2/24/2018 22:34	2/26/2018 9:36	28,800	SEWER MANHOLE	41374	DITCH	MUDDY FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869606	WO# 2870403	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	4002 BROOKFIELD AVE	2/24/2018 22:54	2/25/2018 12:45	42,000	SEWER MANHOLE	24448	GROUND	CHERRYWOOD CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869608	WO# 2869745	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	3920 DUTCHMANS LN	2/24/2018 23:14	2/26/2018 6:20	120,000	SEWER MANHOLE	96673	STREAM	WEICHER CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869607	WO# 2869931	LOCATION INCLUDED IN IOAP
DEREK R. GUTHRIE	KY0078956	10807 ORELAND MILL RD	2/25/2018 1:20	2/27/2018 7:15	9,000	SEWER LIFT STATION	MSD0164-LS	DITCH	PENNSYLVANIA RUN	CAP LACK OF CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869638	MSD PERSONNEL CLEANED AND SANITIZED THE IMPACTED AREA	A SOLUTION FOR THIS LOCATION CAN BE FOUND IN THE IOAP
MORRIS FORMAN	KY0022411	3700 BARDSTOWN RD	2/25/2018 2:01	2/25/2018 13:35	3,300	SEWER MANHOLE	72561	CATCH BASIN	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869640	WO# 2869756	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	3705 BARDSTOWN RD	2/25/2018 2:05	2/25/2018 13:40	27,000	SEWER MANHOLE	73111	CATCH BASIN	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869641	WO# 2869765	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	8016 SHELBYVILLE RD	2/25/2018 10:00	2/26/2018 7:06	216,000	SEWER MANHOLE	47603	GROUND	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869670	WO# 2869937	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	9 MUIRFIELD PL	2/25/2018 10:30	2/26/2018 7:24	54,000	SEWER MANHOLE	01793	GROUND	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869676	WO# 2869943	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	8117 COPPERCREEK DR	2/25/2018 10:30	2/26/2018 7:38	90,000	SEWER MANHOLE	65070	GROUND	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869677	WO# 2869948	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	9011 OLD WHIPPS MILL RD	2/25/2018 11:55	2/25/2018 14:29	150	SEWER MANHOLE	02099	GROUND	MIDDLE FORK BEARGRASS CREEK	HEAVY RAIN - LACK OF SYSTEM CAPACITY.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869678	MSD PERSONNEL WILL CLEAN AND SANITIZE THE IMPACTED AREA. WO#28670160	A SOLUTION FOR THIS LOCATION IS INCLUDED IN THE IOAP.
MORRIS FORMAN	KY0022411	6000 REGAL SPRINGS DR	2/25/2018 13:27	2/27/2018 10:30	28,800	SEWER MANHOLE	48753	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869715	WO# 2870901	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	1552 CHEROKEE RD	2/25/2018 16:40	2/27/2018 10:30	28,800	SEWER MANHOLE	40471	GROUND	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869769	WO 2870906	LOCATED IN IOAP
MORRIS FORMAN	KY0022411	257 ADAMS ST	3/2/2018 12:27	3/2/2018 17:26	1,500	SEWER MANHOLE	100755A-X	CATCH BASIN	OHIO RIVER	CAPACITY ISSUE. MAIN IS IN AREA WHERE RIVER JUST RECEDED. AREA WAS FLOODED. MAIN STILL AT CAPACITY ISSUE WITH RAIN EVENT.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2873914	NO CLEAN UP REQUIRED. NO SOLIDS.	WILL RETURN AFTER DISCHARGE STOPS.
HITE CREEK	KY0022420	5500 HITT RD	3/3/2018 14:55	3/3/2018 16:05	500	SEWER TREATMENT PLANT	MSD0202	STREAM	HITE CREEK	LOST POWER TO CONTROL SYSTEM OF INFLUENT PS.	BYPASS AT WQTC	DISDW DRY WEATHER DISCHARGE	2874099	MSD PERSONNEL CLEANED AND SANITIZED THE IMPACTED AREAS.	SHUT DOWN STORM WATER PS. MSD PUMPED STORM WATER BASIN OUT.
MORRIS FORMAN	KY0022411	1728 FRASER DR	3/24/2018 10:00	3/26/2018 21:00	7,400	SEWER MANHOLE	16649	DITCH	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2880629	WO# 2881335.	LOCATION INCLUDED IN IOAP.
MORRIS FORMAN	KY0022411	1001 BRECKENRIDGE LN	3/24/2018 14:05	3/25/2018 13:43	1,636,965	SEWER MANHOLE	08935-SM	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2880613	NO CLEAN UP PERFORMED – PIPE DISCHARGING UNDERWATER, DIRECTLY INTO STREAM.	LOCATION INCLUDED IN IOAP.
MORRIS FORMAN	KY0022411	1132 ROSTREVOR CIR	3/24/2018 15:32	3/25/2018 10:15	4,200	SEWER MANHOLE	45835	GROUND	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2880630	WO# 2880715.	LOCATION INCLUDED IN IOAP.
MORRIS FORMAN	KY0022411	1011 ALTA CIR	3/24/2018 15:38	3/25/2018 10:20	105,000	SEWER MANHOLE	45796	DITCH	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2880631	WO# 2880716.	LOCATION INCLUDED IN IOAP.
MORRIS FORMAN	KY0022411	1201 OLD CANNONS LN	3/24/2018 15:40	3/26/2018 10:25	1,000	SEWER MANHOLE	IS021A-SI	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2880714	WO# 2881038.	LOCATION INCLUDED IN IOAP.
MORRIS FORMAN	KY0022411	202 OXMOOR LN	3/24/2018 16:45	3/25/2018 9:52	72,000	SEWER MANHOLE	47583	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2880642	WO# 2880719.	LOCATION INCLUDED IN IOAP.
DEREK R. GUTHRIE	KY0078956	9114 CINDERELLA LN	3/24/2018 17:45	3/25/2018 0:00	36,000	SEWER MANHOLE	60679	DITCH	FISHPOOL CREEK	LACK OF SYSTEM CAPACITY.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2880634	MSD PERSONNEL CLEANED AND SANITIZED THE IMPACTED AREA.	LOCATION INCLUDED IN THE IOAP.
DEREK R. GUTHRIE	KY0078956	9317 LANTANA DR	3/24/2018 18:25	3/25/2018 5:00	16,500	SEWER MANHOLE	25484	STREAM	PENNSYLVANIA RUN	LACK OF SYSTEM CAPACITY.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2880639	MSD PERSONNEL CLEANED AND SANITIZED THE IMPACTED AREA.	LOCATION INCLUDED IN THE IOAP.
DEREK R. GUTHRIE	KY0078956	8800 ADMIRAL DR	3/24/2018 18:45	3/24/2018 19:05	100	SEWER MANHOLE	93703	GROUND	PENNSYLVANIA RUN	LACK OF SYSTEM CAPACITY.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2880649	MSD PERSONNEL CLEANED AND SANITIZED THE IMPACTED AREA.	LOCATION INCLUDED IN THE IOAP.

Appendix D-1 Discharge Work Orders – Waters of the United States

ASSOCIATED WASTEWATER TREATMENT PLANT NAME	ASSOCIATED TREATMENT PLANT KPDES #	OVERFLOW LOCATION	OVERFLOW START DATE & TIME	OVERFLOW STOP DATE & TIME	VOLUME OF OVERFLOW (GAL)	SOURCE ASSET TYPE	SOURCE ASSET ID	FACILITY DISCHARGES TO	RECEIVING STREAM	CAUSE OF OVERFLOW	DUE TO	WEATHER	WO #	CLEANUP EFFORTS BY MSD	REPAIR EFFORTS BY MSD
HITE CREEK	KY0022420	7302 FLOYDSBURG RD	3/24/2018 19:17	3/24/2018 20:20	1,200	SEWER MANHOLE	108953	DITCH	FLOYDS FORK	LACK OF SYSTEM CAPACITY.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2880656	MSD PERSONNEL CLEANED AND SANITIZED THE IMPACTED AREA.	LOCATION INCLUDED IN THE IOAP.
MORRIS FORMAN	KY0022411	1726 FRASER DR	3/28/2018 13:30	3/28/2018 19:00	3,360	SEWER MANHOLE	16649	DITCH	SOUTH FORK BEARGRASS CREEK	A ROOT BLOCKAGE WAS IDENTIFIED IN THE DOWNSTREAM 10" SEWER LINE. WO2884644/WO3884764	ROOTS	DISREV RAIN EVENT DISCHARGE	2884648	NO DEBRIS OR SOLIDS/FLOATABLE, UNABLE TO USE CLEANER IN THE WATERWAYS.	I&FP CREW ROOT CUTTING THE SEWER LINE TO ELIMINATE THE ROOT ISSUE.
MORRIS FORMAN	KY0022411	1726 FRASER DR	3/29/2018 21:15	3/30/2018 15:15	46,800	SEWER MANHOLE	16649	DITCH	SOUTH FORK BEARGRASS CREEK	A ROOT BLOCKAGE WAS IDENTIFIED IN THE DOWNSTREAM 10" SEWER LINE.	ROOTS	DISREV RAIN EVENT DISCHARGE	2885167	NO DEBRIS OR SOLIDS/FLOATABLE, UNABLE TO USE CLEANER IN THE WATERWAYS.	I&FP CREW ROOT CUTTING THE SEWER LINE TO ELIMINATE THE ROOT ISSUE.
MORRIS FORMAN	KY0022411	1001 BRECKENRIDGE LN	3/29/2018 21:42	3/30/2018 20:33	1,655,877	SEWER MANHOLE	08935-SM	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2885166	NO CLEAN UP PERFORMED – PIPE DISCHARGING UNDERWATER, DIRECTLY INTO STREAM.	LOCATION INCLUDED IN IOAP.
MORRIS FORMAN	KY0022411	1011 ALTA CIR	3/29/2018 23:15	3/31/2018 9:10	180,000	SEWER MANHOLE	45796	DITCH	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2885171	WO# 2885500.	LOCATION INCLUDED IN IOAP.
MORRIS FORMAN	KY0022411	1132 ROSTREVOR CIR	3/29/2018 23:15	3/31/2018 9:00	68,000	SEWER MANHOLE	45835	GROUND	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2885170	WO# 2885499.	LOCATION INCLUDED IN IOAP.
MORRIS FORMAN	KY0022411	1201 OLD CANNONS LN	3/30/2018 0:00	3/31/2018 9:31	180,000	SEWER MANHOLE	IS021A-SI	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2885174	WO# 2885502.	LOCATION INCLUDED IN IOAP.
MORRIS FORMAN	KY0022411	202 OXMOOR LN	3/30/2018 0:20	3/31/2018 19:30	180,000	SEWER MANHOLE	47583	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2885175	WO# 2885473.	LOCATION INCLUDED IN IOAP.
MORRIS FORMAN	KY0022411	1001 BRECKENRIDGE LN	4/2/2018 0:18	4/2/2018 15:52	1,318,026	SEWER MANHOLE	08935-SM	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2885779	NO CLEAN UP PERFORMED – PIPE DISCHARGING UNDERWATER, DIRECTLY INTO STREAM.	LOCATION INCLUDED IN IOAP.
MORRIS FORMAN	KY0022411	1132 ROSTREVOR CIR	4/2/2018 5:30	4/3/2018 5:15	36,000	SEWER MANHOLE	45835	GROUND	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2885886	WO# 2887302.	LOCATION INCLUDED IN IOAP.
MORRIS FORMAN	KY0022411	1011 ALTA CIR	4/2/2018 5:45	4/3/2018 5:30	36,000	SEWER MANHOLE	45796	DITCH	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2885891	WO# 2887310.	LOCATION INCLUDED IN IOAP.
MORRIS FORMAN	KY0022411	1201 OLD CANNONS LN	4/2/2018 6:15	4/3/2018 5:45	315,000	SEWER MANHOLE	IS021A-SI	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2885906	WO# 2887323.	LOCATION INCLUDED IN IOAP.
MORRIS FORMAN	KY0022411	202 OXMOOR LN	4/2/2018 6:30	4/2/2018 21:50	45,000	SEWER MANHOLE	47583	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2885902	WORK ORDER # 2885473.	LOCATION INCLUDED IN IOAP.
MORRIS FORMAN	KY0022411	1001 BRECKENRIDGE LN	4/4/2018 0:18	4/4/2018 1:06	7,949	SEWER MANHOLE	08935-SM	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2891032	NO CLEAN UP PERFORMED – PIPE DISCHARGING UNDERWATER, DIRECTLY INTO STREAM.	LOCATION INCLUDED IN IOAP.
MORRIS FORMAN	KY0022411	1201 OLD CANNONS LN	4/4/2018 5:25	4/4/2018 21:22	1,000	SEWER MANHOLE	IS021A-SI	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2891034	NO CLEAN UP PERFORMED. PIPE DISCHARGING UNDERWATER, DIRECTLY INTO STREAM.	LOCATION INCLUDED IN IOAP.
HITE CREEK	KY0022420	6100 MAYFAIR AVE	4/4/2018 9:00	4/12/2018 8:30	9,999	SEWER LIFT STATION	MSD1206-PS	GROUND	OHIO RIVER	LACK OF SYSTEM CAPACITY DUE TO RIVER FLOODING.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2892689	NO CLEANUP REQUIRED.	STATION WILL BE RETURNED TO SERVICE WHEN RIVER RECEDES.
DEREK R. GUTHRIE	KY0078956	6740 CARRIBEAN LN	4/4/2018 10:20	4/4/2018 11:43	150	SEWER MANHOLE	33789	GROUND	NORTHERN DITCH	GREASE AND WIPES IN THE MAIN SEWER.	GREASE BLOCKAGE	DISDW DRY WEATHER DISCHARGE	2891126	MSD PERSONNEL WASHED DOWN AREA AND ADVISED CUSTOMER TO AVOID CONTACT WITH SEWAGE.	ROOT CUT AND FLUSHED MAIN SEWER AND AREA OF DISCHARGE.
MORRIS FORMAN	KY0022411	420 W RIVER RD	4/4/2018 14:00	4/12/2018 8:30	9,999	SEWER LIFT STATION	MSD1017-PS	STREAM	OHIO RIVER	LACK OF SYSTEM CAPACITY DUE TO RIVER FLOODING.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2892702	NO CLEANUP REQUIRED.	STATION WILL BE RETURNED TO SERVICE WHEN RIVER RECEDES.
MORRIS FORMAN	KY0022411	23 BROWNSBORO HILL RD	4/12/2018 10:57	4/12/2018 18:00	1,680	SEWER MANHOLE	48357-X	STREAM	MUDDY FORK BEARGRASS CREEK	OBSTRUCTION IN THE MAIN SEWER.	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2895128	WORK ORDER # 2895129.	FLUSHED AND ROOT CUT MAIN SEWER.
MORRIS FORMAN	KY0022411	3402 CHARLANE PKY	4/15/2018 13:05	4/15/2018 18:30	7,500	SEWER MANHOLE	28453	DITCH	CHENOWETH RUN	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2895648	DISCLN WO# 2895711.	LOCATION INCLUDED IN IOAP.
MORRIS FORMAN	KY0022411	614 FATIMA LN	4/23/2018 15:34	4/23/2018 17:30	3,600	SEWER MANHOLE	48362	DITCH	MUDDY FORK BEARGRASS CREEK	BLOCKAGE OF PAPER AND RAGS IN THE MAIN SEWER AT A REPAIR BY CONTRACTOR.	OBSTRUCTION-NOT GREASE / ROOTS	DISREV RAIN EVENT DISCHARGE	2901064	MSD WILL CLEAN AREA.	REFERRED TO ENGINEERING.
MORRIS FORMAN	KY0022411	1726 FRASER DR	5/5/2018 19:45	5/5/2018 21:15	18,000	SEWER MANHOLE	16649	DITCH	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY-HEAVY RAIN.	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2912756	NO DEBRIS OR SOLIDS/FLOATABLE, UNABLE TO USE CLEANER IN THE WATERWAYS.	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	5503 BRANSTON DR	5/16/2018 10:15	5/16/2018 10:16	100,000	SEWER VALVE	79766-V	GROUND	MILL CREEK CUTOFF	ARV NIPPLE BROKE OFF AT PIPE	STRUCTURAL FAILURE	DISDW DRY WEATHER DISCHARGE	2916807	CONTRACTOR CLEANED AND SANITIZED AREA	CONTACTOR AND MSD STAFF REPLACED NIPPLE WITH STAINLESS STEEL
FLOYDS FORK	KY0102784	14307 WAKEFIELD PL	5/16/2018 17:05	5/22/2018 18:19	900	SEWER MAIN	80351C-AG	CATCH BASIN	CHENOWETH RUN	STRUCTURAL FAILURE -FORCE MAIN BREAK	STRUCTURAL FAILURE	DISDW DRY WEATHER DISCHARGE	2919050	CLEANED AND SANITIZED THE IMPACTED AREA	CHEROKEE CONST. REPAIRING THE FORCE MAIN. HAULING PUMP STATION WELL UNTIL RETURN TO SERVICE
MORRIS FORMAN	KY0022411	803 GREENSPUR LN	5/22/2018 16:20	5/22/2018 19:45	400	SEWER MAIN	27603	GROUND	MUDDY FORK BEARGRASS CREEK	ROOTS IN MAIN SEWER	ROOTS	DISDW DRY WEATHER DISCHARGE	2921109	DISCHARGE IS IN A CREEK . CAN NOT CLEAN AREA NO SOLIDS	ROOT CUT MAIN SEWER STOPPED DISCHARGE
MORRIS FORMAN	KY0022411	1031 LEXINGTON RD	6/2/2018 22:19	6/3/2018 10:22	28,929	SEWER MANHOLE	CSO120	STREAM	SOUTH FORK BEARGRASS CREEK	OBSTRUCTION IN THE LOW FLOW LINE (BRICK AND OTHER DEBRIS).	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2926941	MSD CREWS CLEANED AND SANITIZED THE AREA.	OBSTRUCTION REMOVED.
MORRIS FORMAN	KY0022411	147 BUCHANAN ST	6/7/2018 1:32	6/7/2018 4:00	578,054	SEWER MANHOLE	CSO020	STREAM	OHIO RIVER	STARKEY PS WAS SHUT DOWN TO TAKE MEASUREMENTS FOR REHABILITATION OF THE OHIO RIVER INTERCEPTOR.	STRUCTURAL FAILURE	DISDW DRY WEATHER DISCHARGE	2931056	NOT POSSIBLE. DISCHARGE PIPE SUBMERGED.	STARKEY PS WAS RESTARTED ONCE WORKERS SAFELY OUT OF PIPE.
MORRIS FORMAN	KY0022411	23 BROWNSBORO HILL RD	6/7/2018 16:15	6/7/2018 18:00	100	SEWER MANHOLE	48357	GROUND	MUDDY FORK BEARGRASS CREEK	OBSTRUCTION IN THE MAIN	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2931382	MSD WILL CLEAN AREA	FLUSHED MAIN SEWER FROM MH# 66536 700 FT
HITE CREEK	KY0022420	6100 CONCORD AVE	6/16/2018 10:00	6/16/2018 15:58	1,790	SEWER MANHOLE	90986	GROUND	UNNAMED	BLOCKAGE INCLUDING ROOTS AND GREASE.	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2935385	MSD CREWS TO CLEAN AND SANITIZE THE AREA.	MSD CONTRACTOR CLEANED THE LINE.
MORRIS FORMAN	KY0022411	705 STIVERS RD	6/26/2018 10:55	6/26/2018 11:00	25	SEWER MAIN	MSD0070-PS	DITCH	MIDDLE FORK BEARGRASS CREEK	STRUCTURAL FAILURE, FORCE MAIN BREAK	STRUCTURAL FAILURE	DISREV RAIN EVENT DISCHARGE	2938147	DISINFECTED IMPACTED AREA WITH LIME	TURNED OFF PUMPS, HAULED STATION WHILE CONTRACTOR MAKES REPAIR
MORRIS FORMAN	KY0022411	1418 TREVILIAN WAY	6/26/2018 13:55	6/27/2018 16:33	3,125	SEWER MANHOLE	51594	DITCH	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2938301	DISCLN WO#29838795	LOCATION INCLUDED IN THE IOAP
MORRIS FORMAN	KY0022411	1726 FRASER DR	6/26/2018 14:00	6/26/2018 15:45	36,995	SEWER MANHOLE	16649	DITCH	SOUTH FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY HEAVY RAIN	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2938624	NO CLEAN UP REQUIRED.MH DISCHARGED DIRECTLY INTO THE CREEK.	LOCATION INCLUDED IN IOAP

Appendix D-1 Discharge Work Orders – Waters of the United States

ASSOCIATED WASTEWATER TREATMENT PLANT NAME	ASSOCIATED TREATMENT PLANT KPDES #	OVERFLOW LOCATION	OVERFLOW START DATE & TIME	OVERFLOW STOP DATE & TIME	VOLUME OF OVERFLOW (GAL)	SOURCE ASSET TYPE	SOURCE ASSET ID	FACILITY DISCHARGES TO	RECEIVING STREAM	CAUSE OF OVERFLOW	DUE TO	WEATHER	WO #	CLEANUP EFFORTS BY MSD	REPAIR EFFORTS BY MSD
DEREK R. GUTHRIE	KY0078956	4005 KIRBY LN	6/26/2018 14:59	6/26/2018 15:50	5,100	SEWER MANHOLE	61266	DITCH	FERN CREEK	LG&E POWER FAILURE	POWER OUTAGE (LG&E)	DISREV RAIN EVENT DISCHARGE	2938307	NONE NEEDED/CONSTRUCTED OVERFLOW TO CREEK	HOOKED STATION UP TO PORTABLE GENERATOR
DEREK R. GUTHRIE	KY0078956	3701 MODESTO RD	6/26/2018 15:00	6/26/2018 16:18	780	SEWER MANHOLE	61324	GROUND	FERN CREEK	POWER OUTAGE DUE TO STORM	POWER OUTAGE (LG&E)	DISREV RAIN EVENT DISCHARGE	2938290	MSD CLEAN AND SANITIZE AREA	HOOKED UP GENERATOR TO STATION
MORRIS FORMAN	KY0022411	1201 OLD CANNONS LN	6/26/2018 15:15	1/0/1900 0:00	0	SEWER MANHOLE	IS021A-SI	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY HEAVY RAIN	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2938313	NO CLEANUP REQUIRED, DISCHARGE WENT DIRECTLY INTO CREEK	LOCATION INCLUDED IN IOAP
MORRIS FORMAN	KY0022411	201 BULLITT LN	6/26/2018 15:25	6/27/2018 6:10	1,500	SEWER MANHOLE	47582	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY HEAVY RAIN	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2938306	DISCLN WO#2938902	LOCATION INCLUDED IN THE IOAP.
MORRIS FORMAN	KY0022411	202 OXMOOR LN	6/26/2018 15:25	6/27/2018 6:25	7,500	SEWER MANHOLE	47583	STREAM	MIDDLE FORK BEARGRASS CREEK	LACK OF SYSTEM CAPACITY HEAVY RAIN	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2938304	DISCLN WO#2938901	LOCATION INCLUDED IN THE IOAP

Appendix D-2 Discharge Work Orders - Ground

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Appendix D-2 Discharge Work Orders – Ground

ASSOCIATED WASTEWATER TREATMENT PLANT NAME	OVERFLOW LOCATION #	ASSOCIATED TREATMENT PLANT KPDES #	OVERFLOW START DATE & TIME	OVERFLOW STOP DATE & TIME	VOLUME OF OVERFLOW (GAL)	SOURCE ASSET TYPE	SOURCE ASSET ID	CAUSE OF OVERFLOW	DUE TO	WEATHER	WO #	CLEANUP EFFORTS BY MSD	REPAIR EFFORTS BY MSD
HITE CREEK	9120 U S HIGHWAY 42	KY0022420	07/03/2017 05:00 PM	07/03/2017 06:20 PM	10	SEWER LIFT STATION	MSD1057-LS	STRUCTURAL FAILURE, FORCEMAIN IN VALVE VAULT	STRUCTURAL FAILURE	DISDW DRY WEATHER DISCHARGE	2768999	CLEANED AND SANITIZED THE IMPACTED AREA, AREA DISINFECTED WITH LIME	HAULED SEWAGE UNTIL REPAIRS MADE. REPAIRED WITH NO HUB BAND. PERMENANT REPAIR TO FOLLOW.
DEREK R. GUTHRIE	5413 WHISPERING HILLS BLVD	KY0078956	07/24/2017 07:00 PM	07/24/2017 07:45 PM	1	SEWER MANHOLE	29902	OBSTRUCTION IN MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2778349	MSD PERSONNEL CLEANED & SANITIZED THE IMPACTED AREA	FLUSHED THE MAIN SEWER
DEREK R. GUTHRIE	13504 HORNCASTLE WAY	KY0078956	07/25/2017 07:00 PM	07/25/2017 07:40 PM	1	SEWER SERVICE LINE	DD71261019	ROOTS IN THE MAIN SEWER	ROOTS	DISDW DRY WEATHER DISCHARGE	2778625	MSD PERSONNEL CLEANED & SANITIZED THE IMPACTED AREA	FLUSHED & ROOT THE MAIN SEWER
DEREK R. GUTHRIE	7306 TICONDEROG A DR	KY0078956	08/14/2017 04:40 PM	08/14/2017 05:25 PM	1	SEWER SERVICE LINE	062M01440000A	GREASE IN THE MAIN SEWER	GREASE BLOCKAGE	DISDW DRY WEATHER DISCHARGE	2787003	CUSTOMER CLEANED THE IMPACTED AREA	FLUSHED THE MAIN SEWER
MORRIS FORMAN	211 W EVELYN AVE	KY0022411	08/20/2017 10:55 AM	08/20/2017 12:00 PM	1	SEWER SERVICE LINE	U07534039	MAIN SEWER HOLDING	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2788544	CUSTOMER CLEANED IMPACTED AREA	FLUSHED MAIN SEWER WO#2788547
MORRIS FORMAN	341 MAC BRAE RD	KY0022411	08/22/2017 09:30 AM	08/22/2017 09:35 AM	5	SEWER LIFT STATION	MSD0015-PS	MECHANICAL FAILURE, B&H TRUCK LEAKING	MECHANICAL FAILURE	DISDW DRY WEATHER DISCHARGE	2789839	B&H USED TRUCK TO VACUUM SEWER FROM PARKING LOT	B&H SPRAYED AND VACUUMED AREA
MORRIS FORMAN	9410 TIVERTON WAY	KY0022411	08/24/2017 09:00 AM	08/24/2017 10:45 AM	10,500	SEWER MANHOLE	66107	GREASE BLOCKAGE IN THE MAIN SEWER	GREASE BLOCKAGE	DISDW DRY WEATHER DISCHARGE	2790766	MSD WILL CLEAN THE IMPACTED AREA	FLUSHED TO GET OPEN; REFER TO FLUSH WORK ORDER 2790426
MORRIS FORMAN	908 EXMOOR AVE	KY0022411	08/29/2017 08:45 PM	08/29/2017 12:55 AM	25	SEWER MAIN	44912	ROOTS IN THE MAIN SEWER IN THE REAR	ROOTS	DISREV RAIN EVENT DISCHARGE	2795847	MSD CONTRACTORS CLEANED & SANITIZED THE IMPACTED AREA	FLUSHED & ROOT CUT THE MAIN SEWER
HITE CREEK	9120 U S HIGHWAY 42	KY0022420	09/14/2017 09:59 PM	09/16/2017 01:49 PM	100	SEWER LIFT STATION	MSD1057-LS	BROKEN FORCE MAIN	STRUCTURAL FAILURE	DISDW DRY WEATHER DISCHARGE	2804200	MSD CLEANED/SANITIZED AREA	SHUT OFF PUMPS/HAULED STATION WHILE CONTRACTOR REPAIRED THE FORCE MAIN
MORRIS FORMAN	601 E MAIN ST	KY0022411	09/18/2017 05:39 PM	09/18/2017 05:50 PM	250	SEWER MANHOLE	46817A	START-UP OF PUMP AROUND HAD LEAKING PIPE JOINT	MECHANICAL FAILURE	DISDW DRY WEATHER DISCHARGE	2804796	CONTRACTOR BUILT DYKE TO STORE AND PUMPED OVERFLOW BACK TO SYSTEM	CONTRACTOR DAMMED AREA TO CONTAIN DISCHARGE
MORRIS FORMAN	700 E MAIN ST	KY0022411	09/20/2017 04:00 AM	01/00/1900 12:00 AM	30	SEWER MANHOLE	8775	LOOSE PIPE FITTING	MECHANICAL FAILURE	DISDW DRY WEATHER DISCHARGE	2805142	NO DEBRIS	TIGHTEN UP FITTINGS
MORRIS FORMAN	600 E MAIN ST	KY0022411	09/20/2017 12:00 AM	09/20/2017 02:30 PM	50	SEWER MANHOLE	8776	PUMP AROUND HOSE LEAK	MECHANICAL FAILURE	DISDW DRY WEATHER DISCHARGE	2805539	CONTRACTOR CLEANED AND SANITIZED AFFECTED AREA	PUMP REPLACED, FITTING TIGHTENED
MORRIS FORMAN	600 E MAIN ST	KY0022411	09/21/2017 12:00 AM	09/21/2017 07:00 AM	50	SEWER MANHOLE	8776	PUMP DISCONNECTION	MECHANICAL FAILURE	DISDW DRY WEATHER DISCHARGE	2805526	NO DEBRIS	PUMP REPLACED, FITTING TIGHTENED
MORRIS FORMAN	5351 PARK RD	KY0022411	09/21/2017 06:00 PM	09/21/2017 07:05 PM	20	SEWER MAIN	54051	OBSTRUCTION IN MSD PORTION OF MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2807683	MSD PERSONNEL CLEANED AND SANITIZED THE IMPACTED AREA	FLUSHED OBSTRUCTION FROM SEWER
MORRIS FORMAN	216 ALPHA AVE	KY0022411	09/23/2017 05:45 PM	09/23/2017 06:49 PM	1	SEWER MAIN	19741	GREASE BLOCKAGE IN THE MAIN	GREASE BLOCKAGE	DISDW DRY WEATHER DISCHARGE	2808557	MSD CLEANED IMPACTED AREA	ROOT-CUT MAIN SEWER
MORRIS FORMAN	600 E MAIN ST	KY0022411	09/25/2017 07:15 AM	01/00/1900 12:00 AM	30	SEWER MANHOLE	8776	DISCONNECT TEMPORARY PUMP	MECHANICAL FAILURE	DISDW DRY WEATHER DISCHARGE	2808627	NO DEBRIS, MSD CLEANED & SANITIZED AREA	FAULTY PUMP REPLACED
MORRIS FORMAN	700 E MAIN ST	KY0022411	09/27/2017 12:00 AM	01/00/1900 12:00 AM	15	SEWER MANHOLE	8775	PINHOLE IN CONNECTOR PIPE	MECHANICAL FAILURE	DISDW DRY WEATHER DISCHARGE	2809307	CONTRACTOR CLEANED AND SANITIZED AREA	REPLACED LEAKING PIPE
MORRIS FORMAN	2297 LEXINGTON RD	KY0022411	10/5/2017	10/5/2017 9:00	50	SEWER MAIN	68297	DAMAGE TERRACOTTA PIPE WHILE EXCAVATING	STRUCTURAL FAILURE	DISDW DRY WEATHER DISCHARGE	2813500	CONTRACTOR TO CLEAN AND SANITIZE AFFECTED AREA	CONTRACTOR TO CREATE PUMP AROUND UNTIL PIPE REPAIRED
MORRIS FORMAN	4010 BELLS LN	KY0022411	10/10/2017 15:45	10/10/2017 16:50	500	SEWER LIFT STATION	MSD0080-PS	LACK OF CAPACITY	MECHANICAL FAILURE	DISREV RAIN EVENT DISCHARGE	2817151	NA	OPENED SG1 GATE
MORRIS FORMAN	300 MEADOWOOD CT	KY0022411	10/12/2017 21:00	10/12/2017 21:38	114	SEWER MANHOLE	09650	OBSTRUCTION IN MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2817540	MSD PERSONNEL CLEANED AND SANITIZED THE IMPACTED AREA	FLUSHED OBSTRUCTION FROM MAIN SEWER
MORRIS FORMAN	4522 ALGONQUIN PKY	KY0022411	10/23/2017 14:32	10/24/2017 2:00	700	SEWER TREATMENT PLANT	MSD0278	COMPUTERS IN THE PROCESS AREA WENT DOWN.	MECHANICAL FAILURE	DISDW DRY WEATHER DISCHARGE	2820016	OPERATORS AND B&H CLEANED THE AREAS	CONTROLS STAFF WERE CALLED TO FIX THE COMPUTERS.
DEREK R. GUTHRIE	2335 FARNSLEY RD	KY0078956	11/12/2017 17:00	11/12/2017 17:47	1	SEWER MAIN	07131	BLOCKAGE IN THE MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2830106	CUSTOMER CLEANED IMPACTED AREA	FLUSHED THE MAIN SEWER AND GOT THE LINE OPEN
MORRIS FORMAN	4010 BELLS LN	KY0022411	11/15/2017 14:00	11/15/2017 15:00	900	SEWER LIFT STATION	MSD0080-PS	LACK OF CAPACITY	MECHANICAL FAILURE	DISREV RAIN EVENT DISCHARGE	2831016	MAGNITUDE OF STORM RESULTED IN NO DEBRIS REMAINING	OPENED INFLUENT GATES TO HRBT TRAIN 2
MORRIS FORMAN	3007 WINTERHAVEN RD	KY0022411	12/2/2017 12:00	12/2/2017 13:47	30	SEWER MANHOLE	49603	BLOCKAGE ON MSD PORTION OF PIPE	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2836992	MSD CLEAN UP IMPACTED AREA	FLUSHED LINE
MORRIS FORMAN	4522 ALGONQUIN PKY	KY0022411	12/7/2017 14:05	12/7/2017 14:15	25	SEWER TREATMENT PLANT	MSD0278	STRUCTURAL FAILURE IN MSD'S PORTION OF THE PROPERTY SERVICE CONNECTION	STRUCTURAL FAILURE	DISDW DRY WEATHER DISCHARGE	2838263	MSD PERSONNEL CLEANED AND SANITIZED THE IMPACTED AREA	TEMPORARY PUMP WAS INSTALLED USING TEMPORARY PIPING
MORRIS FORMAN	4801 RAVEN RD	KY0022411	12/21/2017 11:45	12/21/2017 12:45	1,500	SEWER NODE	50806-CO	ROOT BLOCKAGE IN MSD MAIN SEWER	ROOTS	DISDW DRY WEATHER DISCHARGE	2844789	MSD PERSONNEL CLEANED AND SANITZED IMPACTED AREA	ROOT CUT MAIN SEWER 450' TO RESTORE FLOW
CEDAR CREEK	10309 LARK PARK DR	KY0098540	12/23/2017 9:00	12/23/2017 10:00	300	SEWER SERVICE LINE	BE07747429	GREASE IN MSD'S SEWER MAIN	GREASE BLOCKAGE	DISREV RAIN EVENT DISCHARGE	2845070	UNKNOWN AT THIS TIME	FLUSHED SEWER MAIN; SEWAGE RECEDED
MORRIS FORMAN	3514 RIDGE TOP CT	KY0022411	1/7/2018 16:55	1/7/2018 17:00	1	SEWER SERVICE LINE	EP40921019	ROOTS IN MSD'S MAIN SEWER	ROOTS	DISDW DRY WEATHER DISCHARGE	2851419	CUSTOMER CLEANED THE IMPACTED AREA	ROOT CUT LINE
HITE CREEK	6100 PARK RD	KY0022420	1/7/2018 17:05	1/7/2018 17:10	1	SEWER SERVICE LINE	14551101	OBSTRUCTION IN MSD'S MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2851432	MSD CLEANED AND SANITIZED THE AREA	FLUSH MAIN SEWER
MORRIS FORMAN	4235 ST THOMAS AVE	KY0022411	1/13/2018 14:04	1/13/2018 15:10	75	SEWER MAIN	25316	OBSTRUCTION IN THE MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2853161	MSD CLEANED THE IMPACTED AREA BY FLUSHING THE MAIN SEWER	FLUSHED MAIN SEWER
MORRIS FORMAN	4522 ALGONQUIN PKY	KY0022411	1/21/2018 16:28	1/31/2018 13:45	4,500	SEWER TREATMENT PLANT	MSD0278	DIGESTER #4 WITHDRAWL VALVE IS PLUGGED	MECHANICAL FAILURE	DISDW DRY WEATHER DISCHARGE	2855387	OPERATOR HOSED AFFECTED AREAS TO AREA CATCH BASINS CONNECTED TO PLANT HEADWORKS.	DIGESTER FEED STOPPED. STARTED TRANSFER TO DIGESTER #3
MORRIS FORMAN	6819 MANSLICK RD	KY0022411	1/27/2018 14:40	1/27/2018 14:45	5	SEWER SERVICE LINE	067K00430000A	OBSTRUCTION IN MSD'S MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2856459	MSD CLEANED AND SANITIZED THE IMPACTED AREA	MSD FLUSHED MAIN SEWER
MORRIS FORMAN	4522 ALGONQUIN PKY	KY0022411	1/30/2018 7:40	1/30/2018 11:29	5	SEWER TREATMENT PLANT	MSD0278	BH REMOVED SAFETY CAP FROM DISCHARGE VALVE ON HIS TANKER TRUCK AND SPILLED SLUDGE ON THE GROUND	MECHANICAL FAILURE	DISDW DRY WEATHER DISCHARGE	2858850	BH CLEANED UP SPILL	BH CONTRACTORS WILL NOT REMOVED SAFETY CAPS UNTIL OVER THE DISCHARGE OFF LOADING AREA
MORRIS FORMAN	23 BROWNSBORO HILL RD	KY0022411	2/5/2018 17:50	2/5/2018 17:55	80	SEWER MANHOLE	48357-X	UNKNOWN AT THIS TIME	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2860131	MSD CLEANED THE IMPACTED AREA	FLUSED SEWER MAIN TO GET RELEIF
MORRIS FORMAN	23 BROWNSBORO HILL RD	KY0022411	2/7/2018 10:51	2/8/2018 12:00	25	SEWER MAIN	48365	MAIN SEWER IS BROKEDOWN	STRUCTURAL FAILURE	DISDW DRY WEATHER DISCHARGE	2860509	MSD WILL CLEAN IMPACTED AREA	CREW IS WORKING TO REPAIR THE ISSUE. MSD HAS TO DIG UP 8" MAIN SEWER.

Appendix D-2 Discharge Work Orders – Ground

ASSOCIATED WASTEWATER TREATMENT PLANT NAME	OVERFLOW LOCATION #	ASSOCIATED TREATMENT PLANT KPDES #	OVERFLOW START DATE & TIME	OVERFLOW STOP DATE & TIME	VOLUME OF OVERFLOW (GAL)	SOURCE ASSET TYPE	SOURCE ASSET ID	CAUSE OF OVERFLOW	DUE TO	WEATHER	WO #	CLEANUP EFFORTS BY MSD	REPAIR EFFORTS BY MSD
MORRIS FORMAN	1490 FRANKFORT AVE	KY0022411	2/16/2018 11:34	12:00:00 AM	2,500	SEWER MAIN	12450	LACK OF CAPACITY IN THE SYSTEM DUE TO THE OHIO RIVER ELEVATION BEING	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2864320	SPRAYED DOWN EFFECTED PAVEMENT.	N/A
MORRIS FORMAN	23 BROWNSBORO HILL RD	KY0022411	2/20/2018 14:45	2/21/2018 14:00	1	SEWER MAIN	48357-X	ROOT CUTTER STUCK IN MAIN LINE OBSTRUCTING FLOW.	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2867270	NO CLEANUP REQUIRED, OVERFLOW CONTAINED TO EXCAVATION.	CONTRACTOR ON-SITE EXTRACTING ROOT CUTTER.
DEREK R. GUTHRIE	1112 SPRINGVIEW DR	KY0078956	2/22/2018 10:15	2/22/2018 10:35	25	SEWER MANHOLE	17722	OBSTRUCTION IN MSD'S MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISREV RAIN EVENT DISCHARGE	2868751	MSD PERSONNEL CLEANED AND SANITIZED IMPACTED	FLUSHED MAIN SEWER TO RESTORE FLOW
MORRIS FORMAN	3610 DOWNING WAY	KY0022411	2/22/2018 12:00	2/22/2018 13:35	1	SEWER SERVICE LINE	27246	ROOTS IN THE MAIN	ROOTS	DISREV RAIN EVENT DISCHARGE	2868689	CUSTOMER CLEANED THE IMPACTED AREA	ROOT CUT THE MAIN SEWER
MORRIS FORMAN	8902 CROMWELL HILL RD	KY0022411	2/22/2018 14:06	2/22/2018 16:20	500	SEWER MAIN	02297	ROOTS IN THE MAIN SEWER	ROOTS	DISREV RAIN EVENT DISCHARGE	2868711	MSD WILL CLEAN AREA	ROOT CUT LINE
MORRIS FORMAN	4802 HAZELWOOD AVE	KY0022411	2/23/2018 12:00	2/23/2018 15:30	1,050	SEWER MANHOLE	55665	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869149	CLEANUP NOT POSSIBLE DUE TO MAGNITUDE OF STORM	A SOLUTION FOR THIS LOCATION CAN BE FOUND IN TEH IOAP
MORRIS FORMAN	7913 SHELBYVILLE RD	KY0022411	2/24/2018 14:55	2/24/2018 15:10	25	SEWER SERVICE LINE	121647913	LACK OF SYSTEMS CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869511	MSD PERSONNEL CLEANDED AND SANITIZED IMPACTED AREA	FLUSH MAIN SEWER
MORRIS FORMAN	5423 TRACY WAY	KY0022411	2/24/2018 23:40	2/25/2018 5:48	3,680	SEWER LIFT STATION	MSD0002-PS	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869639	CLEANUP NOT POSSIBLE DUE TO MAGNITUDE OF STORM	A SOLUTION FOR THIS LOCATION CAN BE FOUND IN TEH IOAP
MORRIS FORMAN	101 SAGE RD	KY0022411	2/25/2018 16:10	2/25/2018 16:15	50	SEWER SERVICE LINE	91939	LACK OF CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869778	MSD WILL CLEAN AND SANITIZE THE IMPACTED AREA	PLACED 2 TEMP SIGNS
MORRIS FORMAN	55 TEPEE RD	KY0022411	2/26/2018 11:40	2/26/2018 11:50	1	SEWER MAIN	65612	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2870146	MSD PERSONNEL CLEANED UP IMPACTED AREA	SYSTEM WILL HAVE TO CATCH UP
MORRIS FORMAN	2308 TYLER LN	KY0022411	2/26/2018 14:47	2/26/2018 14:52	10	SEWER SERVICE LINE	Z11844019	ROOTS IN THE MAIN	ROOTS	DISDW DRY WEATHER DISCHARGE	2870434	CUSTOMER CLEAN UP THE IMPACTED AREA	ROOT CUT THE MAIN SEWER AND GOT LINE OPEN
MORRIS FORMAN	2813 GRINSTEAD DR	KY0022411	3/6/2018 13:50	3/6/2018 14:30	15	STORM INLET	010310910	FRESH WATER FROM WATER MAIN THAT HAS BURST	UTILITY DAMAGED MSD ASSET	DISDW DRY WEATHER DISCHARGE	2875017	NO CLEAN REQUIRED	REFERRED TO LWC
FLOYDS FORK	12529 SHELBYVILLE RD	KY0102784	3/11/2018 15:30	3/11/2018 18:00	30	SEWER MANHOLE	60889	GREASE BLOCKAGE IN MSD'S MAIN SEWER	GREASE BLOCKAGE	DISDW DRY WEATHER DISCHARGE	2876075	MSD CLEANED AND SANITIZED THE IMPACTED AREA	FLUSHED MAIN SEWER; WORKORDER#2876074
MORRIS FORMAN	106 OLD BOND CT	KY0022411	3/16/2018 14:00	3/16/2018 14:10	10	SEWER MANHOLE	44989	OBSTRUCTION IN MSD'S MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2877930	MSD CLEANED AND SANITIZED THE IMPACTED AREA	MSD FLUSHED MAIN SEWER; REFERRED TO TV
MORRIS FORMAN	515 LEICESTER CIR	KY0022411	3/17/2018 12:40	3/17/2018 12:45	1	SEWER MANHOLE	24717	OBSTRUCTION IN MSD'S MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2877977	DISCHARGE DID NOT ESCAPE FROM THE SYSTEM	MSD FLUSHED MAIN SEWER
DEREK R. GUTHRIE	9901 ANITA BLVD	KY0078956	3/21/2018 21:00	3/18/2018 21:42	5	SEWER MAIN	24963	ROOT BLOCKAGE ON MSD PORTION OF PIPE	ROOTS	DISDW DRY WEATHER DISCHARGE	2879075	MSD CLEANED THE IMPACTED AREA	ROOT CUT LINE
MORRIS FORMAN	2574 CHEROSEN RD	KY0022411	5/1/2018 15:10	5/1/2018 17:21	1	SEWER MAIN	45872-S	OBSTRUCTION IN THE MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2911167	NO CLEAN REQUIRED	ROOT CUT LINE
MORRIS FORMAN	6001 RODES CT	KY0022411	5/5/2018 21:55	5/5/2018 22:12	1,700	SEWER LIFT STATION	MSD0193-PS	STRUCTURAL FAILURE, FORCE MAIN OBSTRUCTION	STRUCTURAL FAILURE	DISREV RAIN EVENT DISCHARGE	2912745	AREA DISINFECTED WITH LIME	HAULED SEWAGE UNTIL FORCE MAIN OBSTRUCTION WAS SOLVED
MORRIS FORMAN	6001 RODES CT	KY0022411	5/7/2018 20:30	5/7/2018 20:51	125	SEWER LIFT STATION	MSD0193-PS	OBSTRUCTION IN MAIN SEWER	STRUCTURAL FAILURE	DISDW DRY WEATHER DISCHARGE	2913231	MSD PERSONNEL CLEANED AND SANITIZED THE IMPACTED AREA	REPAIRED ISSUE WITH PUMP STATION
DEREK R. GUTHRIE	6612 PRICE LANE RD	KY0078956	5/14/2018 14:40	5/14/2018 17:40	25	SEWER MAIN	84605-AG	STRUCTURAL FAILURE OF SEWER MAIN	STRUCTURAL FAILURE	DISDW DRY WEATHER DISCHARGE	2916190	MSD PERSONNEL CLEANED AND SANITIZED THE IMPACTED AREA	CONTRACTOR REPAIRED BROKEN SEWER MAIN
MORRIS FORMAN	756 GREENRIDGE LN	KY0022411	5/22/2018 16:15	5/22/2018 19:00	100	SEWER MANHOLE	27603	ROOTS IN MAIN SEWER	ROOTS	DISDW DRY WEATHER DISCHARGE	2921107	AREA CLEANED	REFERRED FOR TVI
DEREK R. GUTHRIE	4127 ST JOSEPH AVE	KY0078956	6/2/2018 16:35	6/2/2018 16:39	10	SEWER MAIN	06925	GREASE BLOCKAGE IN MAIN SEWER	GREASE BLOCKAGE	DISDW DRY WEATHER DISCHARGE	2926918	MSD CLEANED AND SANITIZED THE IMPACTED AREA	FLUSHED MAIN SEWER TO GET RELIEF
FLOYDS FORK	16604 AIKEN RD	KY0102784	6/13/2018 13:00	6/13/2018 14:00	1	SEWER MANHOLE	118998	SEWER TIE IN	MECHANICAL FAILURE	DISDW DRY WEATHER DISCHARGE	2934292	NO DEBRIS	PUMP AND HAUL, NO ADDITIONAL REPAIR NEEDED
MORRIS FORMAN	4522 ALGONQUIN PKY	KY0022411	6/15/2018 10:15	6/15/2018 10:53	500	SEWER TREATMENT PLANT	MSD0278	STRUCTURAL FAILURE OF THE PRIMARY RAW SLUDGE LINE TO THE DIGESTERS	STRUCTURAL FAILURE	DISDW DRY WEATHER DISCHARGE	2935263	HOSED ROAD TO STREET BASIN THAT DRAINS BACK TO THE HEAD OF THE PLANT	REPAIRED PIPE RISER
MORRIS FORMAN	4522 ALGONQUIN PKY	KY0022411	6/15/2018 14:15	6/15/2018 14:30	4,500	SEWER TREATMENT PLANT	MSD0278	PRIMARY RAW SLUDGE LINE BROKE AGAIN CAUSING PRIMARY RAW SLUDGE TO SPILL IN THE ROADWAY	STRUCTURAL FAILURE	DISDW DRY WEATHER DISCHARGE	2935332	ALL MATERIAL IS BEING HOSED TO PLANT DRAINS THAT GO BACK TO THE HEAD OF THE PLANT.	TURN OFF RAW SLUDGE, ATTEMPT TO FIX THE LINE AGAIN.
CEDAR CREEK	10910 BLACKWOOD RD	KY0098540	6/24/2018 14:03	6/24/2018 14:09	1	SEWER SERVICE LINE	BE07942429	OBSTRUCTION IN MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2937368	NO CLEANUP REQUIRED	FLUSH THE MAIN SEWER
MORRIS FORMAN	4522 ALGONQUIN PKY	KY0022411	6/27/2018 4:10	6/29/2018 10:24	40,500	SEWER TREATMENT PLANT	MSD0278	#4 DIGESTER OVERFLOWED INTO THE STREET. OPS FOUND #3 RECIRCULATION LINER OPEN ALLOWING FLOW INTO THE DIGESTER. DIGESTER WITHDRAWAL LINE IS PLUGGED.	MECHANICAL FAILURE	DISDW DRY WEATHER DISCHARGE	2938549	OPS IS HOSING DOWN THE STREET, CONTRACTORS CALLED TO CLEAN LID AREA.	TRYING TO TRANSFER LIQUID TO ANOTHER DIGESTER
DEREK R. GUTHRIE	11621 LOWER RIVER RD	KY0078956	6/28/2018 9:10	7/1/2018 9:11	30	SEWER TREATMENT PLANT	MSD0277	SES CONTRACTOR OVER FILLED TRUCK CAUSING TANK TO SPILL OUT	MECHANICAL FAILURE	DISDW DRY WEATHER DISCHARGE	2942101	CONTRACTOR CLEANING VARIOUS SPOTS ALONG GREENBELT HWY	HAVING CONTRACTOR INSTALL CAP ON HOSE

Appendix D-3 **Discharge Work Orders – Interior**

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Appendix D-3 Discharge Work Orders – Interior

ASSOCIATED WASTEWATER TREATMENT PLANT NAME	OVERFLOW LOCATION #	ASSOCIATED TREATMENT PLANT KPDES #	OVERFLOW START DATE & TIME	OVERFLOW STOP DATE & TIME	VOLUME OF OVERFLOW (GAL)	SOURCE ASSET TYPE	SOURCE ASSET ID	CAUSE OF OVERFLOW	DUE TO	WEATHER	WO #	CLEANUP EFFORTS BY MSD	REPAIR EFFORTS BY MSD
MORRIS FORMAN	1271 SPRINGDALE DR	KY0022411	07/06/2017 01:15 PM	07/06/2017 02:05 PM	1	SEWER SERVICE LINE	KK13382049	ROOT BLOCKAGE IN MAIN SEWER	ROOTS	DISDW DRY WEATHER DISCHARGE	2770080	CUSTOMER CLEANED IMPACTED AREA	FLUSHED MAIN SEWER TO RESTORE FLOW
DEREK R. GUTHRIE	3456 FERNHEATHER DR	KY0078956	07/08/2017 08:00 PM	07/08/2017 08:45 PM	1	SEWER SERVICE LINE	RR14496019	OBSTRUCTION IN MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2771025	MSD CONTRACTOR CLEANED AND SANITIZED THE IMPACTED AREA	FLUSHED THE OBSTRUCTION FROM THE SEWER
MORRIS FORMAN	2703 MURRAY HILL PIKE	KY0022411	07/30/2017 10:45 AM	07/30/2017 11:15 AM	1	SEWER SERVICE LINE	HP11463029	OBSTRUCTION IN THE MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2781312	CUSTOMER CLEANED THE IMPACTED AREA	FLUSHED THE MAIN SEWER
MORRIS FORMAN	10000 TUPPENCE TRCE	KY0022411	08/16/2017 12:00 PM	08/16/2017 01:42 PM	1	SEWER SERVICE LINE	191901790000A	ROOTS ON MSD PORTION	ROOTS	DISDW DRY WEATHER DISCHARGE	2787641	UNSURE AS OF NOW	ROOT CUT THE MAIN MSD PORTION IS NOW CLEAR
DEREK R. GUTHRIE	124 CHATTANOOGA AVE	KY0078956	08/22/2017 09:00 PM	08/22/2017 10:00 PM	1	SEWER SERVICE LINE	WW09427069	ROOTS IN THE MAIN SEWER	ROOTS	DISREV RAIN EVENT DISCHARGE	2790073	MSD CONTRACTORS WILL CLEAN & SANITIZE THE IMPACTED AREA	FLUSHED & ROOT CUT THE MAIN SEWER / TV CREW ROOTCUT ROOTS FROM MAIN
MORRIS FORMAN	3112 MELANIE WAY	KY0022411	08/22/2017 11:55 AM	08/22/2017 01:28 PM	3	SEWER SERVICE LINE	091N01870000A	ROOTS IN THE MAIN LINE	ROOTS	DISDW DRY WEATHER DISCHARGE	2789917	CUSTOMER CLEANED AREA	ROOT CUT LINE, LINE IS NOW CLEAR
FLOYDS FORK	416 BROMWELL DR	KY0102784	09/01/2017 08:25 PM	09/01/2017 08:55 PM	1	SEWER SERVICE LINE	T314A416A	OBSTRUCTION IN MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISREV RAIN EVENT DISCHARGE	2797745	CUSTOMER CLEANED IMPACTED AREA	FLUSHED OBSTRUCTION FROM SEWER
MORRIS FORMAN	1244 SPRINGDALE DR	KY0022411	09/07/2017 12:50 PM	09/07/2017 01:20 PM	1	SEWER SERVICE LINE	KK13390319	OBSTRUCTION IN MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2800258	CUSTOMER CLEANED IMPACTED AREA	FLUSHED OBSTRUCTION FROM SEWER
DEREK R. GUTHRIE	2221 FARNSLEY RD	KY0078956	09/29/2017 07:10 PM	09/29/2017 08:00 PM	1	SEWER SERVICE LINE	33956	OBSTRUCTION IN MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2812306	CUSTOMER CLEANED IMPACTED AREA	FLUSHED OBSTRUCTION FRON MAIN SEWER
MORRIS FORMAN	3800 POPLAR LEVEL RD	KY0022411	09/29/2017 09:30 AM	09/29/2017 11:48 AM	1	SEWER SERVICE LINE	38003409	GREASE BLOCKAGE IN MAIN SEWER	GREASE BLOCKAGE	DISDW DRY WEATHER DISCHARGE	2812201	CUSTOMER CLEANED IMPACTED AREA	FLUSHED MAIN SEWER TO RESTORE FLOW
MORRIS FORMAN	3816 POPLAR LEVEL RD	KY0022411	09/29/2017 11:56 AM	09/29/2017 12:15 PM	1	SEWER SERVICE LINE	KK14469099	WHILE CREW WAS FLUSHING THE MAIN SEWER, BACK FLUSHED INTO HOME	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2812211	CUSTOMER CLEANED IMPACTED AREA	NO FURTHER ACTION REQUIRED
MORRIS FORMAN	4249 REGINA AVE	KY0022411	10/17/2017 12:55	10/17/2017 13:53	1	SEWER SERVICE LINE	75784249	OBSTRUCTION IN MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2818535	CUSTOMER CLEANED IMPACTED AREA	FLUSHED MAIN SEWER TO RESTORE FLOW.
MORRIS FORMAN	3298 ILLINOIS AVE	KY0022411	10/23/2017 9:50	10/23/2017 12:32	1	SEWER SERVICE LINE	KK09875019	ROOT OBSTRUCTION IN MAIN SEWER	ROOTS	DISDW DRY WEATHER DISCHARGE	2819956	CUSTOMER CLEANED IMPACTED AREA	FLUSHED MAIN SEWER TO RESTORE FLOW
MORRIS FORMAN	330 S HUBBARDS LN	KY0022411	10/23/2017 12:50	10/23/2017 13:26	1	SEWER SERVICE LINE	MA12867019	OBSTRUCTION IN MSD'S MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2819985	CUSTOMER CLEANED IMPACTED AREA	ROOTCUT MAIN SEWER WO#2819972
DEREK R. GUTHRIE	4731 CAVALIER DR	KY0078956	11/6/2017 14:30	11/6/2017 16:06	1	SEWER SERVICE LINE	102003120000A	ROOTS IN MAIN SEWER	ROOTS	DISDW DRY WEATHER DISCHARGE	2828809	CUSTOMER CLEANED IMPACTED AREA	ROOT CUT MAIN SEWER TO RESTORE FLOW
DEREK R. GUTHRIE	2011 APPLETON LN	KY0078956	11/9/2017 12:45	11/9/2017 13:25	1	SEWER SERVICE LINE	109200590000A	MSD PERSONNEL PERFORMING PREVENTIVE MAINTENANCE ON SEWERS	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2829744	CUSTOMER CELANED IMPACTED AREA	INVESTIGATION INDICATED THAT ADDITIONAL REPAIRS WERE NOT REQUIRED BY MSD
DEREK R. GUTHRIE	2017 APPLETON LN	KY0078956	11/9/2017 12:45	11/9/2017 13:25	1	SEWER SERVICE LINE	109202310000A	MSD PERSONNEL PERFORMING PREVENTIVE MAINTENANCE ON SEWERS	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2829750	CUSTOMER CLEANED IMPACTED AREA	INVESTIGATION INDICATED THAT ADDITIONAL REPAIRS WERE NOT REQUIRED BY MSD
DEREK R. GUTHRIE	11007 GRAFTON HALL RD	KY0078956	12/2/2017 21:20	12/2/2017 21:50	1	SEWER SERVICE LINE	1165611007	OBSTRUCTION IN MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2837022	CUSTOMER CLEANED IMPACTED AREA	FLUSHED OBSTRUCTION FROM MAIN SEWER
MORRIS FORMAN	2416 MANCHESTER RD	KY0022411	12/5/2017 12:40	12/5/2017 14:01	1	SEWER SERVICE LINE	66586	MAIN SEWER WAS STOPPED UP.	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2837712	CUSTOMER HAD NO DAMAGES.	FLUSHED THE MAIN AND GOT LINE OPEN.
DEREK R. GUTHRIE	2506 LAMBORNE BLVD	KY0078956	12/10/2017 20:35	12/10/2017 22:11	3	SEWER SERVICE LINE	AU12470079	MAIN SEWER WAS STOPPED UP WITH SLIP LINE	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2839103	MSD WILL GIVE CUSTOMER A CLEANING	FLUSHED MAIN SEWER AND GOT MAIN OPEN
DEREK R. GUTHRIE	2514 LAMBORNE BLVD	KY0078956	12/10/2017 21:35	12/10/2017 22:11	3	SEWER SERVICE LINE	AU12450029	MAIN SEWER WAS BLOCKED WITH SLIP LINE	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2839106	MSD WILL CLEAN IMPACTED AREA	FLUSHED THE MAIN SEWER
DEREK R. GUTHRIE	4732 LYNN LEA RD	KY0078956	12/16/2017 15:30	12/16/2017 16:20	1	SEWER SERVICE LINE	63736	OBSTRUCTION IN THE MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2840693	MSD CONTRACTORS CLEANED & DEODORIZED THE IMPACTED AREA	FLUSHED THE MAIN SEWER
DEREK R. GUTHRIE	6010 FAIRRIDGE CT	KY0078956	12/23/2017 10:45	12/23/2017 10:48	1	SEWER SERVICE LINE	PD23375229	CAPACITY ISSUE	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2845076	CUSTOMER CLEANED THE IMPACTED AREA	NO FURTHER ACTION REQUIRED
DEREK R. GUTHRIE	6012 FAIRRIDGE CT	KY0078956	12/23/2017 10:55	12/23/2017 11:00	1	SEWER SERVICE LINE	PD23375429	CAPACITY ISSUE	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2845077	CUSTOMER CLEANED THE IMPACTED AREA	NO ACTION REQUIRED AT THIS TIME
DEREK R. GUTHRIE	7310 TICONDEROGA DR	KY0078956	1/4/2018 11:00	1/4/2018 12:00	1	SEWER SERVICE LINE	062M01430000A	ROOT BLOCKAGE IN MAIN SEWER	ROOTS	DISDW DRY WEATHER DISCHARGE	2851070	CUSTOMER CLEANED IMPACTED AREA	ROOT CUT MAIN SEWER TO REMOVE ROOTS AND RESTORE FLOW
DEREK R. GUTHRIE	6514 LANTERN DR	KY0078956	1/6/2018 21:00	1/6/2018 21:28	5	SEWER SERVICE LINE	PC09318039	ROOTS ON MSD PORTION OF PIPE	ROOTS	DISDW DRY WEATHER DISCHARGE	2851358	MSD CONTRACTORS WILL CLEAN UP THE IMPACTED AREA	ROOT CUT THE MAIN SEWER
MORRIS FORMAN	1321 DAHL RD	KY0022411	1/24/2018 14:50	1/24/2018 15:20	1	SEWER SERVICE LINE	062303400000A	OBSTRUCTION IN MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2855930	UNKNOWN AT THIS TIME	FLUSHED MAIN SEWER TO RESTORE FLOW
MORRIS FORMAN	2029 WINGFIELD AVE	KY0022411	2/6/2018 9:50	2/6/2018 10:30	1	SEWER SERVICE LINE	041K00420000A	BLOCKAGE IN THE MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2860289	CUSTOMER CLEANED THE IMPACTED AREA	FLUSHED THE MAIN SEWER
MORRIS FORMAN	3139 TALISMAN RD	KY0022411	2/6/2018 17:50	2/6/2018 17:55	1	SEWER SERVICE LINE	102122	OBSTRUCTION IN MSD'S MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2860425	CUSTOMER CLEANED THE IMPACTED AREA	MSD FLUSHED MAIN SEWER
MORRIS FORMAN	3048 RADIANCE RD	KY0022411	2/7/2018 13:50	2/7/2018 14:15	1	SEWER SERVICE LINE	081M01530000A	ROOTS IN MAIN SEWER	ROOTS	DISDW DRY WEATHER DISCHARGE	2860592	UNKNOWN AT THIS TIME	ROOT CUT MAIN SEWER ABOUT 300' TO RESTORE FLOW
DEREK R. GUTHRIE	4103 SLACK AVE	KY0078956	2/7/2018 14:35	2/7/2018 15:00	20	SEWER SERVICE LINE	108034103	ROOT BLOCKAGE IN MAIN SEWER	ROOTS	DISDW DRY WEATHER DISCHARGE	2860622	MSD CONTRACTOR WILL CLEAN IMPACTED AREA	ROOT CUT MAIN SEWER TO RESTORE FLOW AND REMOVE ROOTS
MORRIS FORMAN	4418 MANNER DALE DR	KY0022411	2/8/2018 9:10	2/8/2018 9:10	1	SEWER SERVICE LINE	186004960000A	ROOTS IN THE MAIN SEWER	ROOTS	DISDW DRY WEATHER DISCHARGE	2860764	MSD CLEANED AND SANITIZED THE IMPACTED AREA	ROOT CUT MAIN SEWER
DEREK R. GUTHRIE	9709 LANCEWOOD RD	KY0078956	2/9/2018 11:19	2/9/2018 12:10	1	SEWER SERVICE LINE	PD21440029	ROOTS BLOCKAGE IN MAIN SEWER	ROOTS	DISDW DRY WEATHER DISCHARGE	2861125	CUSTOMER CLEANED IMPACTED AREA	ROOT CUT MAIN SEWER TO RESTORE FLOW
MORRIS FORMAN	3612 PLYMOUTH	KY0022411	2/11/2018 11:40	2/11/2018 11:45	1	SEWER SERVICE LINE	055000550000A	OBSTRUCTION IN MSD'S MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISREV RAIN EVENT DISCHARGE	2861211	CUSTOMER CLEANED THE IMPACTED AREA	ROOT CUT AND FLUSHED LINE

Appendix D-3 Discharge Work Orders – Interior

ASSOCIATED WASTEWATER TREATMENT PLANT NAME	OVERFLOW LOCATION #	ASSOCIATED TREATMENT PLANT KPDES #	OVERFLOW START DATE & TIME	OVERFLOW STOP DATE & TIME	VOLUME OF OVERFLOW (GAL)	SOURCE ASSET TYPE	SOURCE ASSET ID	CAUSE OF OVERFLOW	DUE TO	WEATHER	WO #	CLEANUP EFFORTS BY MSD	REPAIR EFFORTS BY MSD
	RD												
MORRIS FORMAN	5325 PRESTON HWY	KY0022411	2/21/2018 15:23	2/21/2018 16:00	1	SEWER SERVICE LINE	143461	OBSTRUCTION IN MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2867574	CUSTOMER CLEANED IMPACTED AREA	ROOT CUT MAIN SEWER TO RESTORE FLOW
MORRIS FORMAN	4400 MOUNT VERNON RD	KY0022411	2/22/2018 8:35	2/22/2018 11:15	30	SEWER SERVICE LINE	089G00280000A	ROOTS AND CAPACITY ISSUE	ROOTS	DISREV RAIN EVENT DISCHARGE	2868500	CONTRACTOR WILL CLEAN AREA	ROOT CUT LINE
DEREK R. GUTHRIE	5005 ABBYDALE CT	KY0078956	2/22/2018 9:00	2/22/2018 9:39	1	SEWER SERVICE LINE	PD25476069	OBSTRUCTION IN MAIN SEWER	ROOTS	DISREV RAIN EVENT DISCHARGE	2868436	UNKNOWN AT THIS TIME	ROOT CUT MAIN SEWER TO RESTORE FLOW
DEREK R. GUTHRIE	8925 OLD SOUTH PARK RD	KY0078956	2/22/2018 10:40	2/22/2018 11:30	1	SEWER SERVICE LINE	PC07258029	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868782	CUSTOMER CLEANED IMPACTED AREA	INVESTIGATION INDICATED THAT ADDITIONAL REPAIRS WERE NOT REQUIRED BY MSD
MORRIS FORMAN	4402 MOUNT VERNON RD	KY0022411	2/22/2018 11:20	2/22/2018 11:22	70	SEWER SERVICE LINE	089G00260000A	ROOTS IN THE MAIN	ROOTS	DISDW DRY WEATHER DISCHARGE	2868516	MSD CONTRACTOR WILL CLEAN AREA	ROOT CUT MAIN
DEREK R. GUTHRIE	5205 FAMOUS WAY	KY0078956	2/22/2018 11:30	2/22/2018 14:38	25	SEWER SERVICE LINE	085800820000A	ROOT BLOCKAGE IN MAIN SEWER	ROOTS	DISREV RAIN EVENT DISCHARGE	2868791	MSD CONTRACTOR WILL CLEAN IMPACTED AREA	ROOT CUT MAIN SEWER TO RESTORE FLOW
DEREK R. GUTHRIE	5005 FAMOUS WAY	KY0078956	2/22/2018 13:00	2/22/2018 14:38	20	SEWER SERVICE LINE	PC11265029	CREW BACK FLUSHED WHILE CLEANING MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISREV RAIN EVENT DISCHARGE	2868827	MSD CONTRACTOR WILL CLEAN AND SANITIZE IMPACTED AREA	FLUSHED MAIN SEWER TO RESTORE FLOW
DEREK R. GUTHRIE	5009 FAMOUS WAY	KY0078956	2/22/2018 13:00	2/22/2018 14:38	10	SEWER SERVICE LINE	137876	BACKFLUSHED INTO HOME WHILE CLEANING MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISREV RAIN EVENT DISCHARGE	2868825	MSD CONTRACTOR WILL CLEAN AND SANITIZE IMPACTED AREA	FLUSHED MAIN SEWER
MORRIS FORMAN	3145 PAMELA WAY	KY0022411	2/22/2018 13:07	2/22/2018 13:28	50	SEWER SERVICE LINE	091N00310000A	OBSTRUCTION IN THE PSC	OBSTRUCTION-NOT GREASE / ROOTS	DISREV RAIN EVENT DISCHARGE	2868573	UNSURE OF AT THIS TIME	CREW DUG DOWN AND REPAIRED THE PROPERTY SERVICE CONNECTION
MORRIS FORMAN	8902 CROMWELL HILL RD	KY0022411	2/22/2018 13:58	2/22/2018 17:19	100	SEWER SERVICE LINE	186105310000A	ROOTS IN THE MAIN SEWER	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868616	CUSTOMER CLEANED AREA	ROOT CUT LINE
DEREK R. GUTHRIE	9215 SIESTA WAY	KY0078956	2/22/2018 14:00	2/22/2018 14:42	1	SEWER SERVICE LINE	PC12110019	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868809	CUSTOMER CLEANED IMPACTED AREA	INVESTIGATION INDICATED THAT ADDITIONAL REPAIRS WERE NOT REQUIRED BY MSD
MORRIS FORMAN	3606 TEMPLEWOOD DR	KY0022411	2/22/2018 14:55	2/22/2018 15:09	1	SEWER SERVICE LINE	PA06547029	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868813	CUSTOMER CLEANED IMPACTED AREA	INVESTIGATION INDICATED THAT ADDITIONAL REPAIRS WERE NOT REQUIRED BY MSD
MORRIS FORMAN	3030 TALISMAN RD	KY0022411	2/22/2018 16:55	2/22/2018 17:35	1	SEWER SERVICE LINE	102178	OBSTRUCTION IN MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISREV RAIN EVENT DISCHARGE	2868867	CUSTOMER CLEANED THE IMPACTED AREA	RAIN HAS STOPPED MAIN SEWER IS DRAINING SLOW
MORRIS FORMAN	520 W CHESTNUT ST	KY0022411	2/22/2018 17:30	2/22/2018 18:00	50	SEWER SERVICE LINE	45192	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868822	CUSTOMER CLEANED THE IMPACTED AREA	NO FURTHER ACTION REQUIRED AT THIS TIME
MORRIS FORMAN	6918 SOUTHSIDE DR	KY0022411	2/22/2018 17:45	2/22/2018 18:03	1	SEWER SERVICE LINE	Y11627089	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868746	CUSTOMER CLEANED IMPACTED AREA	INVESTIGATION INDICATED THAT ADDITIONAL REPAIRS WERE NOT REQUIRED BY MSD
MORRIS FORMAN	280 W JEFFERSON ST	KY0022411	2/22/2018 19:00	2/22/2018 19:05	10	SEWER SERVICE LINE	60005	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868829	CUSTOMER CLEANED THE IMPACTED AREA	NO FURTHER ACTION REQUIRED
DEREK R. GUTHRIE	2510 PENNACOOK RD	KY0078956	2/22/2018 19:30	2/22/2018 21:00	5	SEWER SERVICE LINE	DE22868019	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868830	CUSTOMER CLEANED IMPACTED AREA	INVESTIGATION INDICATED THAT ADDITIONAL REPAIRS WERE NOT REQUIRED BY MSD
MORRIS FORMAN	9602 TAYLORSVILLE RD	KY0022411	2/22/2018 22:40	2/22/2018 22:55	5	SEWER SERVICE LINE	048300110000A	CAPACITY ISSUE	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2868844	CUSTOMER CLEANED AREA	ADVISED TO CALL BACK IF PROBLEM STILL EXISTS
MORRIS FORMAN	1413 MCCOY AVE	KY0022411	2/23/2018 0:01	2/23/2018 0:05	1	SEWER SERVICE LINE	064B01190000A	SEWER MAIN HAD A CAPACITY ISSUE	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869415	CUSTOMER CLEANED THE IMPACTED AREA	SEWAGE WATER RECEDED FROM MAIN SEWER
DEREK R. GUTHRIE	4721 DOVER RD	KY0078956	2/23/2018 13:00	2/23/2018 13:05	1	SEWER SERVICE LINE	124784721	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869120	CUSTOMER CLEANED THE IMPACTED AREA	NO FURTHER ACTION REQUIRED
MORRIS FORMAN	4225 ST THOMAS AVE	KY0022411	2/23/2018 14:30	2/23/2018 14:33	1	SEWER SERVICE LINE	BJ14684089	CAPACITY ISSUE	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869171	CUSTOMER CLEANED AREA	ADVISED TO CALL BACK IN A FEW DAYS
MORRIS FORMAN	3828 CHATHAM RD	KY0022411	2/23/2018 19:11	2/23/2018 20:00	1	SEWER SERVICE LINE	091E01540000A	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869314	WATER HAS NOT RECEDED-- CUSTOMER ADVISED TO CONTACT CUSTOMER RELATIONS WHEN WATER RECEDS	INVESTIGATION INDICATED THAT ADDITIONAL REPAIRS WERE NOT NEEDED BY MSD
MORRIS FORMAN	4010 ALGONQUIN PKY	KY0022411	2/23/2018 20:00	2/23/2018 20:38	1	SEWER SERVICE LINE	047F01500000A	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869284	UNKNOWN AT THIS TIME	INVESTIGATION INDICATED THAT ADDITIONAL REPAIRS WERE NOT REQUIRED BY MSD
MORRIS FORMAN	2812 POMEROY DR	KY0022411	2/23/2018 20:51	2/23/2018 21:45	1	SEWER SERVICE LINE	091A01710000A	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869313	WATER HAS NOT RECEDED-- CUSTOMER ADVISED TO CONTACT CUSTOMER RELATIONS WHEN WATER RECEDES	INVESTIGATION INDICATED THAT ADDITIONAL REPAIRS WERE NOT NEEDED BY MSD
MORRIS FORMAN	4342 VERMONT AVE	KY0022411	2/23/2018 21:20	2/23/2018 21:46	1	SEWER SERVICE LINE	143283	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869296	UNKNOWN AT THIS TIME	INVESTIGATION INDICATED THAT ADDITIONAL REPAIRS WERE NOT REQUIRED BY MSD
MORRIS FORMAN	3802 LARKWOOD AVE	KY0022411	2/23/2018 22:20	2/23/2018 22:31	1	SEWER SERVICE LINE	57744	LACK OF SYSTEM CAPACITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869304	UNKNOWN AT THIS TIME	INVESTIGATION INDICATED THAT ADDITIONAL REPAIRS WERE NOT REQUIRED BY MSD
MORRIS FORMAN	1221 W MAIN ST	KY0022411	2/24/2018	2/24/2018 0:10	1	SEWER SERVICE LINE	65589	LACK OF SYSTEM CAPCITY	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2869321	UNKNOWN AT THIS TIME	INVESTIGATION INDICATED THAT ADDITIONAL REPAIRS WERE NOT REQUIRED BY MSD
MORRIS FORMAN	5363 PARK RD	KY0022411	2/26/2018 10:55	2/26/2018 11:15	20	SEWER SERVICE LINE	067J00880000A	WHILE CREW WAS WORKING ON SEWER MAIN, BACK FLUSH INTO CUSTOMER'S BASEMENT FLOOR DRAIN	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2875855	MSD CONTRACTOR CLEANED AND SANITIZED IMPACTED AREA	INVESTIGATION INDICATED THAT ADDITIONAL REPAIRS WERE NOT REQUIRED BY MSD
MORRIS FORMAN	709 FAIRHILL DR	KY0022411	2/26/2018 15:40	2/26/2018 15:45	2	SEWER SERVICE LINE	088J00520000A	ROOTS IN THE MAIN	ROOTS	DISDW DRY WEATHER DISCHARGE	2870437	CUSTOMER CLEAN UP THE IMPACTED AREA	ROOT CUT THE MAIN SEWER AND GOT LINE OPEN
MORRIS FORMAN	1719 S WHEATMORE DR	KY0022411	3/4/2018 15:10	3/4/2018 15:15	30	SEWER SERVICE LINE	175035	STOPPED UP MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2874159	MSD CONTRACTOR CLEANED THE IMPACTED AREA	FLUSHED LINE
DEREK R. GUTHRIE	9018 WOODDALE DR	KY0078956	3/6/2018 10:10	3/6/2018 10:30	1	SEWER SERVICE LINE	DC50806049	OBSTRUCTION IN MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2874917	CUSTOMER CLEANED IMPACTED AREA	ROOT CUT MAIN SEWER TO RESTORE FLOW
MORRIS FORMAN	4300 KINLOCH RD	KY0022411	3/9/2018 17:06	3/9/2018 17:08	1	SEWER SERVICE LINE	038900040000A	ROOTS IN MAIN SEWER	ROOTS	DISDW DRY WEATHER DISCHARGE	2875966	CUSTOMER CLEANED IMPACTED AREA	CREW REPAIRED MAIN SEWER AND REMOVED ROOTS
DEREK R. GUTHRIE	2220 DEVERON DR	KY0078956	3/15/2018 13:25	3/15/2018 15:15	2	SEWER SERVICE LINE	118900940000A	GREASE BLOCKAGE IN MAIN SEWER	GREASE BLOCKAGE	DISDW DRY WEATHER DISCHARGE	2877683	CUSTOMER CLEANED IMPACTED AREA	ROOT CUT MAIN SEWER TO RESTORE FLOW
MORRIS FORMAN	8205 ROLAND AVE	KY0022411	3/19/2018 14:30	3/19/2018 15:15	1	SEWER SERVICE LINE	89577	GREASE BLOCKAGE IN MAIN SEWER	GREASE BLOCKAGE	DISDW DRY WEATHER DISCHARGE	2878282	CUSTOMER CLEANED IMPACTED AREA	ROOT CUT MAIN SEWER TO RESTORE FLOW. W/O #287823

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ASSOCIATED WASTEWATER TREATMENT PLANT NAME	OVERFLOW LOCATION #	ASSOCIATED TREATMENT PLANT KPDES #	OVERFLOW START DATE & TIME	OVERFLOW STOP DATE & TIME	VOLUME OF OVERFLOW (GAL)	SOURCE ASSET TYPE	SOURCE ASSET ID	CAUSE OF OVERFLOW	DUE TO	WEATHER	WO #	CLEANUP EFFORTS BY MSD	REPAIR EFFORTS BY MSD
MORRIS FORMAN	506 LYNNHURST DR	KY0022411	3/19/2018 14:30	3/19/2018 15:15	1	SEWER SERVICE LINE	026000330000A	GREASE BLOCKAGE IN MAIN SEWER	GREASE BLOCKAGE	DISDW DRY WEATHER DISCHARGE	2878275	CUSTOMER CLEANED IMPACTED AREA	ROOT CUT MAIN SEWER TO RESTORE FLOW. W/O #2878273
MORRIS FORMAN	8303 ROLAND AVE	KY0022411	3/19/2018 14:30	3/19/2018 15:15	1	SEWER SERVICE LINE	89581	GREASE BLOCKAGE IN MAIN SEWER	GREASE BLOCKAGE	DISDW DRY WEATHER DISCHARGE	2878285	CUSTOMER CLEANED IMPACTED AREA	ROOT CUT MAIN SEWER TO RESTORE FLOW. W/O #2878273
MORRIS FORMAN	504 LYNNHURST DR	KY0022411	3/19/2018 14:30	3/19/2018 15:15	1	SEWER SERVICE LINE	9443504	GREASE BLOCKAGE IN MAIN SEWER	GREASE BLOCKAGE	DISDW DRY WEATHER DISCHARGE	2878279	CUSTOMER CLEANED IMPACTED AREA	ROOT CUT MAIN SEWER TO RESTORE FLOW W/O #2878273
DEREK R. GUTHRIE	10106 JEFFERSON HILL RD	KY0078956	3/25/2018 12:05	3/25/2018 12:10	4	SEWER SERVICE LINE	154100	SEWER LIFT STATION FAILURE	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2880762	CONTRACTOR CLEANED AND SANITIZED AREA	CONTRACTOR PUMPED LIFT STATION
DEREK R. GUTHRIE	3920 IRON HORSE WAY	KY0078956	4/6/2018 11:10	4/6/2018 12:00	1	SEWER SERVICE LINE	133100270000A	CAVE-IN OVER MAIN SEWER	STRUCTURAL FAILURE	DISDW DRY WEATHER DISCHARGE	2892228	CUSTOMER CLEANED THE IMPACTED AREA	FLUSHED MAIN SEWER TO RESTORE FLOW
DEREK R. GUTHRIE	3912 IRON HORSE WAY	KY0078956	4/6/2018 11:10	4/6/2018 12:00	20	SEWER SERVICE LINE	DD41236019	CAVE-IN OVER SEWER MAIN	STRUCTURAL FAILURE	DISDW DRY WEATHER DISCHARGE	2892224	UNKNOWN AT THIS TIME	FLUSHED MAIN SEWER TO RESTORE FLOW
MORRIS FORMAN	932 STONE ST	KY0022411	4/7/2018 15:20	4/7/2018 15:25	20	SEWER SERVICE LINE	100202	OBSTRUCTION IN MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2892381	MSD CLEANED AND SANITIZED THE IMPACTED AREA	FLUSHED MAIN SEWER TO GET OPEN
MORRIS FORMAN	5306 IROQUOIS CT	KY0022411	4/10/2018 9:20	4/10/2018 11:00	1	SEWER SERVICE LINE	35665306	ROOTS IN THE MAIN SEWER	ROOTS	DISDW DRY WEATHER DISCHARGE	2893837	CUSTOMER CLEANED IMPACTED AREA	ROOT CUT TO GIVE SOME RELIEF, REFERRED TO AREA SUPERVISOR TO MAKE NEEDED REPAIRS
DEREK R. GUTHRIE	9617 BRITANNIA CT	KY0078956	4/16/2018 9:25	4/16/2018 10:37	1	SEWER SERVICE LINE	AU12407069	OBSTRUCTION IN MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2895928	UNKNOWN AT THIS TIME	FLUSHED MAIN SEWER TO RESTORE FLOW
DEREK R. GUTHRIE	4108 NEAGLI CT	KY0078956	4/25/2018 13:55	4/25/2018 14:49	1	SEWER SERVICE LINE	PD05328059	OBSTRUCTION IN MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2901816	CUSTOMER CLEANED IMPACTED AREA	FLUSHED MAIN SEWER TO RESTORE FLOW
MORRIS FORMAN	3100 DIXIE HWY	KY0022411	4/30/2018 17:15	4/30/2018 17:18	2	SEWER SERVICE LINE	100900300000A	OBSTRUCTION IN MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2910735	CUSTOMER CLEANED THE IMPACTED AREA	FLUSHED MAIN SEWER
MORRIS FORMAN	3224 EASTSIDE DR	KY0022411	5/1/2018 22:56	5/1/2018 22:59	80	SEWER SERVICE LINE	189203780000A	ROOTS IN MAIN SEWER	ROOTS	DISDW DRY WEATHER DISCHARGE	2911189	MSD CLEANED AND SANITIZED THE IMPACTED AREA	FLUSHED MAIN SEWER; REFERRED TO TV MAIN SEWER
DEREK R. GUTHRIE	5153 POPLAR LEVEL RD	KY0078956	5/2/2018 13:00	5/2/2018 14:00	1	SEWER SERVICE LINE	PA08000019	GREASE BLOCKAGE IN MANHOLE #47240	GREASE BLOCKAGE	DISDW DRY WEATHER DISCHARGE	2911465	CUSTOMER CLEANED IMPACTED AREA	FLUSHED MAIN SEWER TO RESTORE FLOW
DEREK R. GUTHRIE	10000 CHARLESWOOD RD	KY0078956	5/5/2018 15:10	5/5/2018 15:14	1	SEWER SERVICE LINE	095700430000A	MAIN SEWER STOPPED UP	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2912688	UNKNOWN AT THIS TIME	FLUSHED MAIN SEWER TO GET OPEN
DEREK R. GUTHRIE	6012 FAIRRIDGE CT	KY0078956	5/6/2018 0:49	5/6/2018 0:51	6	SEWER SERVICE LINE	PD23375429	OBSTRUCTION IN THE MAIN	OBSTRUCTION-NOT GREASE / ROOTS	DISREV RAIN EVENT DISCHARGE	2912742	CUSTOMER CLEANED AREA	FLUSHED THE MAIN
MORRIS FORMAN	2910 W JEFFERSON ST	KY0022411	5/7/2018 10:25	5/7/2018 11:06	10	SEWER SERVICE LINE	11612910	STRUCTURAL FAILURE IN MSD'S PORTION OF THE PROPERTY SERVICE CONNECTION	LACK OF SYSTEM CAPACITY	DISREV RAIN EVENT DISCHARGE	2913061	UNKNOWN AT THIS TIME	AREA SUPERVISOR TO MAKE NEEDED REPAIRS
MORRIS FORMAN	3224 EASTSIDE DR	KY0022411	5/10/2018 13:20	5/10/2018 14:30	1	SEWER SERVICE LINE	189203780000A	OBSTRUCTION IN MAIN SEWER	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2914591	CUSTOMER CLEANED IMPACTED AREA	FLUSHED MAIN SEWER TO RESTORE FLOW
DEREK R. GUTHRIE	4103 NORTH LN	KY0078956	5/17/2018 23:00	5/17/2018 23:32	1	SEWER SERVICE LINE	101504100000A	PRIVATE PROPERTY ISSUE	OBSTRUCTION-NOT GREASE / ROOTS	DISDW DRY WEATHER DISCHARGE	2919489	CUSTOMER CLEANED THE IMPACTED AREA	ADVISED CUSTOMER TO CONTACT A PLUMBER

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Appendix E **CSSA Annual Report**

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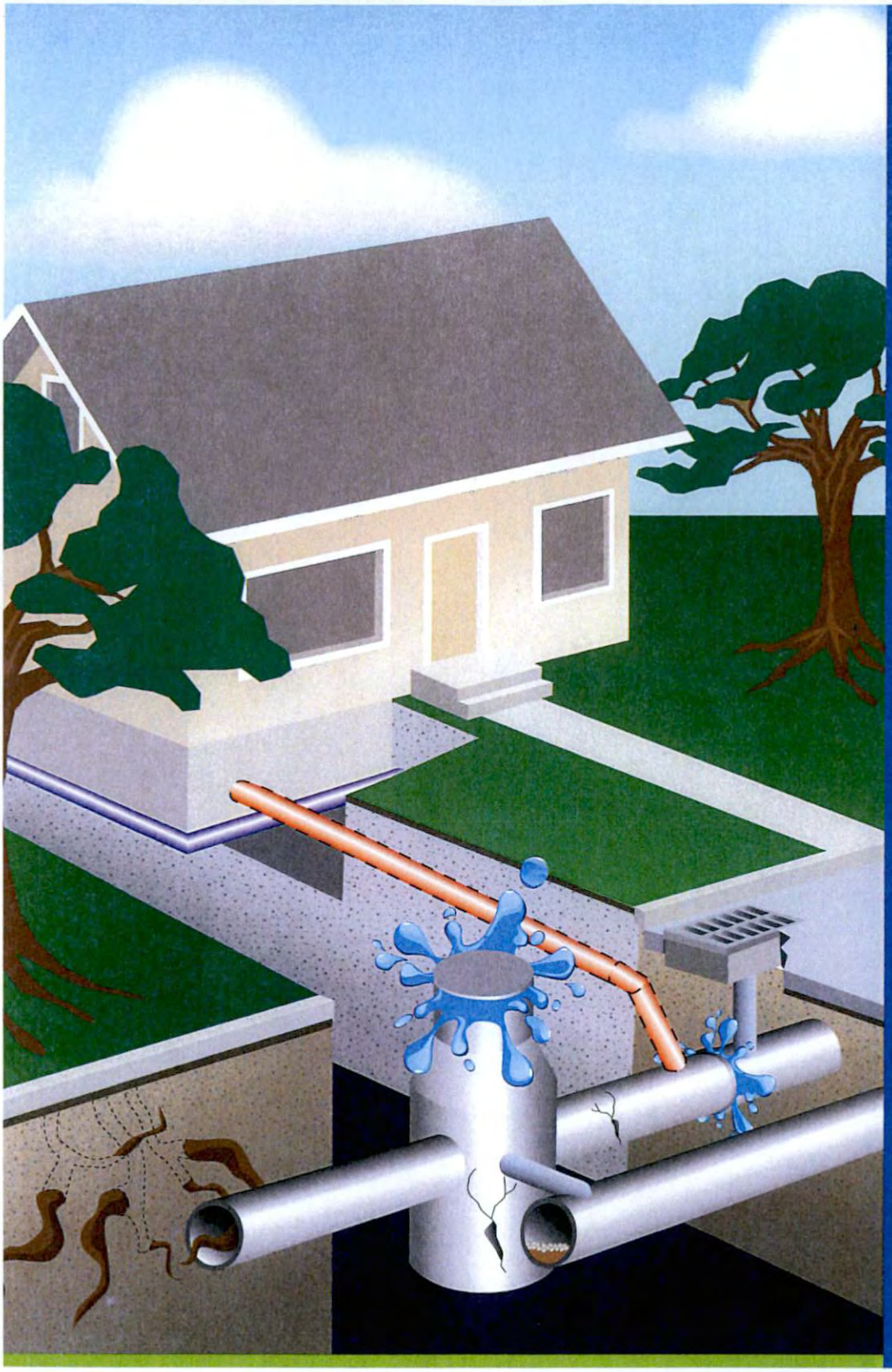

CONTINUOUS SEWER SYSTEM ASSESSMENT AND BLOCKAGE ABATEMENT PROGRAM

FISCAL YEAR 2018
ANNUAL REPORT

COMPILED AND SUBMITTED BY:
Louisville and Jefferson County
Metropolitan Sewer District
700 West Liberty Street
Louisville, KY 40203

msd
Safe, clean waterways

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TABLES

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ACRONYMS AND ABBREVIATIONS

ACD **Amended Consent Decree**

BAP	Blockage Abatement Program
CCTV	Closed Circuit Television
CIPP	Cured-In-Place Pipe
CMOM	Capacity, Management, Operations and Maintenance
CSO	Combined Sewer Overflow
CSS	Combined Sewer System
CSSA	Continuous Sewer System Assessment
EEEP	Emergency Evaluation and Escalation Program
EUM	Effective Utility Management
FY	Fiscal Year
GIS	Geographic Information Systems
GLPM	Gravity Line Preventative Maintenance
I/I	Infiltration and Inflow
ICA	Interceptor Condition and Assessment
IRP	Infrastructure Rehabilitation program
IT	Information Technology
LACP	Lateral Assessment Certification Program
LF	Linear Feet
MACP	Manhole Assessment Certification Program
MSD	Louisville and Jefferson County Metropolitan Sewer District
NASSCO	National Association of Sewer Service Companies
NMC	Nine Minimum Controls
PACP	Pipeline Assessment and Certification Program
QA/QC	Quality Assurance/Quality Control
SCAP	System Capacity Assurance Plan
SSES	Sanitary Sewer Evaluation Study
SSO	Sanitary Sewer Overflow
TISCIT	Total Integrated Sonar and CCTV Inspection Technology
WQTC	Water Quality Treatment Center

1. PURPOSE

The Continuous Sewer System Assessment (CSSA) program addresses certain aspects of Paragraph 24c., "CMOM (Capacity, Management, Operations and Maintenance) Programs Self-Assessment" and Paragraph 24a. "Nine Minimum Controls (NMC)" from MSD's federal Amended Consent Decree (ACD).

- Inspection and assessment activities for gravity sewer assets are carried out under the CSSA program.
- Immediate repairs are carried out under the Emergency Evaluation and Escalation Program (EEEP), a subsidiary of the CSSA.
- Rehabilitation activities are carried out under the Infrastructure Rehabilitation Program (IRP), also a subsidiary of the CSSA.
- Recurring gravity system maintenance activities are addressed by Gravity Line Preventative Maintenance Program (GLPM), a third subsidiary to the CSSA.

The CSSA family of programs requires a defined approach to prioritize, perform, and track the inspection, cleaning, rehabilitation, replacement, and maintenance of sewer assets on a consistent and prioritized cycle. The programs are also intended to improve compliance with NMC 1 and 2, which require the proper operation, regular maintenance, and maximum use of MSD's combined sewer system (CSS) to prevent dry weather Combined Sewer Overflows (CSOs) and reduce wet weather CSOs to the extent possible.

This annual report summarizes the accomplishments for the 2018 Fiscal Year (FY18, July 1, 2017 – June 30, 2018) along with anticipated actions for FY19 for the CSSA family of programs.

2. GOALS

The primary objective of evaluating infrastructure assets is to develop and implement maintenance and rehabilitation recommendations that reduce sewer overflows and improve the capacity, structural integrity and functionality of existing assets.

3. PROGRAM BACKGROUND

The Louisville and Jefferson County Metropolitan Sewer District (MSD) is responsible for the operation and maintenance of the sewer system within the public right-of-way and dedicated easements in Jefferson County, Kentucky, in addition to small areas in several of the surrounding counties. The sanitary sewer collection system includes over 3,300 miles of sewers ranging from 6 inches to 27.5 feet in diameter, built between the mid-1800's and present day. The construction materials consist of brick, iron, polyvinyl chloride, clay, vitrified clay, and reinforced concrete. There are over 75,000 combined and separate sanitary manholes in the system constructed of reinforced concrete and brick materials. MSD also operates and maintains over 68,000 catch basins and yard drains, 250 sanitary pump stations, 16 flood pump stations, and 5 regional water quality treatment centers (WQTCs).

In FY08, MSD committed to performing an initial gravity sewer system characterization over the next 10 years. Since that time, MSD has spent over $17M and attempted at least one inspection of each sewer main in the gravity system to inform planning for preventive maintenance and rehabilitation activities in the gravity sewer system, and MSD continues to undertake second-attempt inspections. As the initial system

characterization has wrapped up, MSD's focus has shifted to planning for sustainable regulatory compliance through a CSSA program with regular review and feedback.

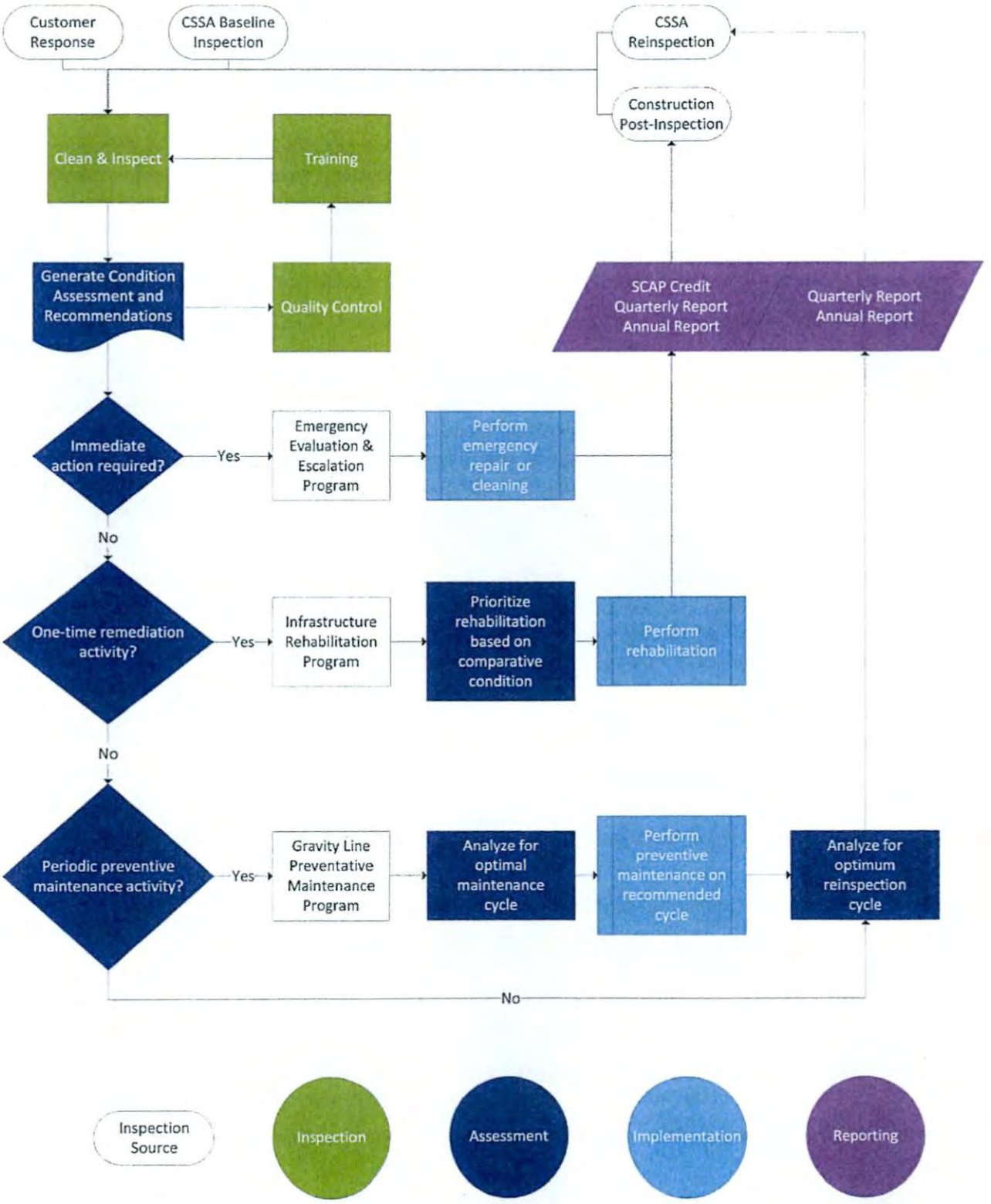
To that end, MSD's CSSA protocol, originally published in draft as an attachment to the 2010 CSSA Annual Report, is being updated during FY19. A detailed decision framework is being developed including inspection, assessment, implementation and reporting in a continuous cycle to proactively address current and upcoming infrastructure issues. The process workflow for the programs is outlined in Figure 1.

- Inspection includes gravity mainline and manhole inspections under the CSSA program umbrella, as well as service line inspections when mains have been identified for rehabilitation..
- Assessment under the CSSA program includes evaluation of inspection data for major defects or issues, recommending remediation activities as needed, and prioritizing activities based on defined criteria. Once inspection of a study area is complete, inspection data is evaluated through a pipe condition assessment process and appropriate maintenance and rehabilitation actions are taken.
- Implementation includes infrastructure rehabilitation and replacement as well as proactive maintenance activities like periodic cleaning implemented identified through inspection and assessment under CSSA subsidiary programs.
    - The EEEP encompasses critical sewer assets identified as being at or near failure condition and in need of immediate repair. Repair work is assigned immediately for immediate repair of the assets.
    - The IRP encompasses sewer lines identified as having structural issues, or operational defects that cannot be addressed through preventive maintenance including infiltration and significant root intrusion.
    - The GLPM encompasses sewer lines identified as having recurring maintenance needs due to root blockages, sedimentation, or oil and grease deposits. In the past, this program has been referred to as the Blockage Abatement Program (BAP).

      All work is assigned to internal staff or contractors as resources are available and appropriate, and work is tracked and documented on work orders against the asset in the asset management system.
- Reporting includes calculation of credits in accordance with the approved SCAP procedure as well as discharge reporting in the quarterly and annual ACD reports.

The updated protocol will be included as an attachment to the FY19 CSSA Annual Report.

Figure 1. CSSA Process Workflow



4. INSPECTION

During the reporting period, the division of labor related to the assessment of MSD's collection system using internal and external resources, based on pipe diameter and internal resource availability, was managed by Engineering.

MSD employs six TVI field crews, all of which have the ability to conduct PACP SMFTVI inspections. Three crews are primarily dedicated to CSSA CCTV work and three crews are focused on customer service CMOM-related activities. An off-shift crew continues to provide additional resources in the department. Each CSSA CCTV truck is coupled with a flusher or combination vacuum cleaner truck when resources allow, so that cleaning is a more timely and responsive aspect of their condition assessment activities. Additionally, MSD holds an annual cleaning and inspection contract to supplement internal staff.

MSD utilizes the National Association of Sewer Service Companies (NASSCO) standard Pipeline Assessment and Certification Program (PACP) coding protocols for gravity mains and employs a standard QA/QC process to ensure deliverables meet a consistent and acceptable standard. During the current reporting period, MSD maintained PACP certification for 18 employees. During the upcoming reporting period, MSD plans to expand the number of employees certified in PACP to over 30, including additional engineers, field inspectors, TVI field specialists, and support staff. All new and existing PACP-certified staff will also be trained in Manhole Assessment and Certification Program (MACP) and Lateral Pipeline Assessment and Certification Program (LACP) coding protocols to expand MSD's internal understanding of condition assessment and create opportunity for using MSD's existing PACP software for other types of inspections.

MSD uses both Neztek and PipeLogix software to communicate with the Hansen system to facilitate data transfer for PACP TV inspections from the Hansen asset management system to remote inspection software and back. Engineering staff have continued to work with IT staff to develop a strategy for integrating CCTV videos with Hansen 8, and have continued to consolidate internal and external CCTV videos and field inspection pictures in support of that effort. Currently, a pilot project is underway using GraniteNet software, which is being considered as a replacement software to more fully integrate inspection software with the asset management software, and to make inspection video and reports more readily available to staff and contractors.

During CSSA program development, MSD utilized a three-pronged approach to gather asset inspection data. Using operational knowledge and various program drivers, MSD staff identified specific areas for the following:

- Sanitary Sewer Evaluation Studies (SSESs) on targeted areas for condition assessment. Each SSES project included CCTV, manhole inspections, smoke testing, private property inspections, and wet weather inspections
- Interceptor Condition Assessments (ICAs) for CCTV and manhole inspections on large interceptors. This effort requires higher tech equipment and brighter lighting sources.
- CCTV assessment on select System Capacity Assurance Plan (SCAP) sub-basins, generally looking at small-diameter mains under 48 inches in diameter. Inspection of sewers in these areas began in FY11.

By FY15, as the initial baseline data-gathering effort progressed for gravity mains, focus shifted to the following:

- Inspection of small-diameter gravity mains by SCAP sub-basins using CCTV and Total Integrated Sonar and CCTV Inspection Technology (TISCIT) as needed.
- Inspection of large-diameter gravity mains using CCTV, TISCIT, sonar and laser profiling as needed.
- Inspection of manholes by SCAP sub-basins regardless of main size.

As of the end of FY18, MSD has attempted at least one inspection on every gravity main asset in the system, and the initial baseline data-gathering effort for gravity mains is considered complete. During FY19, second-attempt gravity main inspections will continue in order to capture baseline data for gravity mains that were inaccessible during the initial effort. Gravity manhole assets will continue to be prioritized based on the schedule of upcoming anticipated rehabilitation projects for just-in-time delivery of inspection and assessment results.

Gravity main inspection projects completed during the reporting period are included in Table 1. The completion rate shown includes all inspections performed during the reporting period as well as unsuccessful inspections closed at the end of the project, which may span reporting periods. Gravity main inspection projects anticipated to be completed in the next reporting period are detailed in Table 2. A map depicting these project areas is included in Figure 2.

Gravity manhole inspection projects completed during the reporting period are included in Table 3. Gravity manhole inspection projects anticipated to be completed in the next reporting period are detailed in Table 4. A map depicting these project areas is included in Figure 3.

Table 1. Completed Gravity Main Inspection Areas

PROJECT AREA	ASSIGNMENT	PIPE ASSIGNED (LF)	PIPE ASSIGNED (MI)	PIPE SURVEYED (LF)	PIPE SURVEYED (MI)	% COMPLETE
36743 - NORTHERN DITCH & POND CREEK INTERCEPTORS	Contracted	89,791	17.0	88,719	16.8	98.8%
36744 - SOUTHWESTERN OUTFALL, SOUTHWESTERN BRANCH INTERCEPTOR, 7TH STREET ROAD TRUNK, & MONTANA AVENUE	Contracted	32,498	6.2	24,055	4.6	74.0%
36745 - BEARGRASS INTERCEPTOR	Contracted	7,085	1.3	5,712	1.1	80.6%
36746 - CSSA SOUTHEASTERN INTERCEPTOR, SOUTHEASTERN INTERCEPTOR RELIEF, & HIKES LANE INTERCEPTOR	Contracted	31,231	5.9	29,721	5.6	95.2%
36749 - CSSA DRY RUN & KENTUCKY STREET	Contracted	13,409	2.5	10,736	2.0	80.1%
36753 - OVER 48" COMBINED SEWER AREA M, T, U (CSM, CST, & CSU)	Contracted	32,543	6.2	30,468	5.8	93.6%

Table 1. Completed Gravity Main Inspection Areas

PROJECT AREA	ASSIGNMENT	PIPE ASSIGNED (LF)	PIPE ASSIGNED (MI)	PIPE SURVEYED (LF)	PIPE SURVEYED (MI)	% COMPLETE
36754 - SOUTHERN OUTFALL FEEDERS UPSTREAM OF BOHANNON AVE & SOUTH LOUISVILLE BRANCH	Contracted	35,870	6.8	33,834	6.4	94.3%
36755 - FLOYDS FORK INTERCEPTOR	Contracted	665	0.1	465	0.1	70.0%
36829 - ADMIRAL PS POST-INSPECTION	Contracted	14,161	2.7	11,136	2.1	78.6%
40033 - COMBINED SEWER AREA A, E, B, H (CSA, CSE, CSB, CSH) - 2ND ATTEMPT	Contracted	88,012	16.7	44,530	8.4	50.6%
40751 - COMBINED SEWER AREA C (CSC) 2ND ATTEMPT & PM CLEANING	Internal	40,767	7.7	12,374	2.3	30.4%
40811 - COMBINED SEWER AREA I (CSI) 2ND ATTEMPT & PM CLEANING	Internal	38,207	7.2	7,525	1.4	19.7%
41278 - CAMP TAYLOR 1A POST-INSPECTION	Contracted	316	0.1	337	0.1	106.5%
41635 - CSO197 CLEANING & INSPECTION	Internal	2,939	0.6	3,070	0.6	104.5%
41756 - CAMP TAYLOR 2A - POST-INSPECTION & NEW CONSTRUCTION	Internal	3,341	0.6	16,216	3.1	485.3%
42171 - CAMP TAYLOR 2B & 4 - POST-INSPECTION & NEW CONSTRUCTION	Internal	71	0.0	10,044	1.9	14,100.5%
42199 - MILL CREEK AREA B,C (MCB, MCC) 2ND ATTEMPT & PM CLEANING	Internal	38,557	7.3	25,080	4.7	65.0%
42673 - COMBINED SEWER AREA F (CSF) - 2ND ATTEMPT & PM CLEANING	Contracted	74,398	14.1	55,965	10.6	75.2%
42674 - SOUTHEAST DIVERSION AREA E, JTE, POND CREAK AREA O (SEDE, SE-JTE, PCO) 2ND ATTEMPT & PM CLEANING	Internal	23,584	4.5	16,218	3.1	68.8%
42675 - NORTHERN DITCH AREA B, C, D (NDB, NDC, NDD) 2ND ATTEMPT & PM CLEANING	Internal	73,129	13.9	21,653	4.1	29.6%
43094 - OHIO RIVER INTERCEPTOR (ORI)	Contracted	11,991	2.3	13,754	2.6	114.7%

Table 1. Completed Gravity Main Inspection Areas

PROJECT AREA	ASSIGNMENT	PIPE ASSIGNED (LF)	PIPE ASSIGNED (MI)	PIPE SURVEYED (LF)	PIPE SURVEYED (MI)	% COMPLETE
44680 - COMBINED SEWER AREA G (CSG) 2ND ATTEMPT & PM CLEANING	Contracted	20,990	4.0	8,486	1.6	40.4%
46611 - 6TH STREET CSO CLEANING & INSPECTION	Internal	2,757	0.5	2,472	0.5	89.7%
TOTAL		**676,312**	**128.1**	**472,569**	**89.5**	**69.9%**

Table 2. Projected Gravity Main Inspection Areas

PROJECT AREA	ASSIGNMENT	PIPE (LF)	PIPE (MILES)
39546 - BROADWAY INTERCEPTOR	Contracted	7,189	1.4
45080 - FISHPOOL INTERCEPTOR	Internal	4,255	0.8
45591 - COMBINED SEWER AREA L (CSL) 2ND ATTEMPT & PM CLEANING	Internal	20,539	3.9
46091 - MOUNT WASHINGTON PS POST-INSPECTION	Contracted	859	0.2
46092 - CSO108 POST-INSPECTION	Contracted	9,609	1.8
46091 - SOUTHEAST DIVERSION AREA F (SEDF) POST-INSPECTION	Contracted	5,231	1.0
46202 - INDIAN WOODS DRIVE CLEANING & INSPECTION	Contracted	733	0.1
46571 - COMBINED SEWER AREA M (CSM) 2ND ATTEMPT & PM CLEANING	Internal	21,505	4.1
46578 - OHIO RIVER INTERCEPTOR (ORI)	Contracted	11,343	2.1
47117 - CRESTWOOD STATION INVESTIGATION	Internal	1,844	0.3
47155 - SINKING FORK INTERCEPTOR	Contracted	13,678	2.6
47211 - COMBINED SEWER AREA N (CSN) 2ND ATTEMPT & PM CLEANING	Contracted	10,747	2.0
47547 - MIDDLE FORK AREA A (MFA) 2ND ATTEMPT & PM CLEANING	Contracted	22,341	4.2
47590 - COMBINED SEWER AREA P (CSP) 2ND ATTEMPT & PM CLEANING	Contracted	219,937	41.7
47597 - COMBINED SEWER AREA B, H (CSB, CSH) 2ND ATTEMPT & PM CLEANING	Contracted	11,117	2.1
47637 - COMBINED SEWER AREA V (CSV) 2ND ATTEMPT & PM CLEANING	Contracted	24,972	4.7
47639 - COMBINED SEWER AREA U (CSU) 2ND ATTEMPT & PM CLEANING	Contracted	63,928	12.1
47641 - COMBINED SEWER AREA T (CST) 2ND ATTEMPT & PM CLEANING	Contracted	22,205	4.2
48091 - COMBINED SEWER AREA K (CSK) 2ND ATTEMPT & PM CLEANING	Contracted	18,018	3.4

Table 2. Projected Gravity Main Inspection Areas

PROJECT AREA	ASSIGNMENT	PIPE (LF)	PIPE (MILES)
48102 - SOUTH THIRD STREET POST-INSPECTION	Contracted	2,110	0.4
48112 - MORRIS FORMAN POST-INSPECTION	Contracted	2,850	0.5
48159 - INDIAN WOODS DRIVE POST-INSPECTION	Contracted	733	0.1
48163 - DRY RUN POST-INSPECTION	Contracted	2,243	0.4
48191 - CSO108 POST-INSPECTION	Contracted	8,733	1.7
48192 - SOUTHEAST DIVERSION AREA F (SEDF) POST-INSPECTION (A)	Contracted	2,713	0.5
48193 - SOUTHEAST DIVERSION AREA F (SEDF) POST-INSPECTION (B)	Contracted	7,938	1.5
49112 - CALVARY CEMETERY INSPECTION	Internal	3,098	0.6
49202 - COMBINED SEWER AREA K (CSK) 2ND ATTEMPT & PM CLEANING	Contracted	13,503	2.6
49380 - CALVARY CEMETERY RE-INSPECTION	Internal	3,098	0.6
MFB 2ND ATTEMPT & PM CLEANING	Internal	8,816	1.7
MFC 2ND ATTEMPT & PM CLEANING	Internal	3,392	0.6
MFD 2ND ATTEMPT & PM CLEANING	Internal	3,243	0.6
MFE 2ND ATTEMPT & PM CLEANING	Internal	10,318	2.0
MFF 2ND ATTEMPT & PM CLEANING	Internal	5,325	1.0
MFG 2ND ATTEMPT & PM CLEANING	Internal	15,406	2.9
MFH 2ND ATTEMPT & PM CLEANING	Internal	4,045	0.8
MFI 2ND ATTEMPT & PM CLEANING	Internal	10,874	2.1
MFJ 2ND ATTEMPT & PM CLEANING	Internal	5,877	1.1
MFK 2ND ATTEMPT & PM CLEANING	Internal	9,101	1.7
MFL 2ND ATTEMPT & PM CLEANING	Internal	1,659	0.3
TOTAL		**615,124**	**116.5**

Figure 2. Completed and Projected Gravity Main Inspection Areas

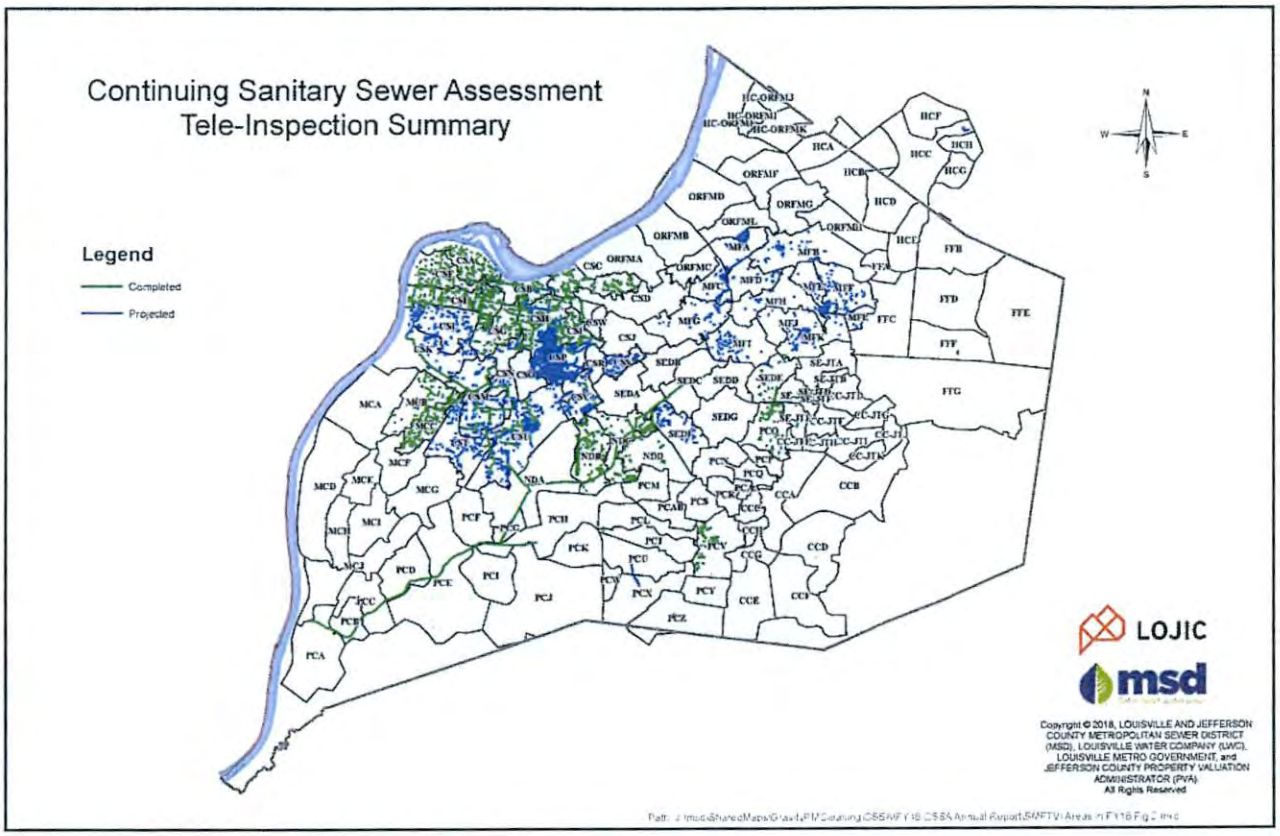


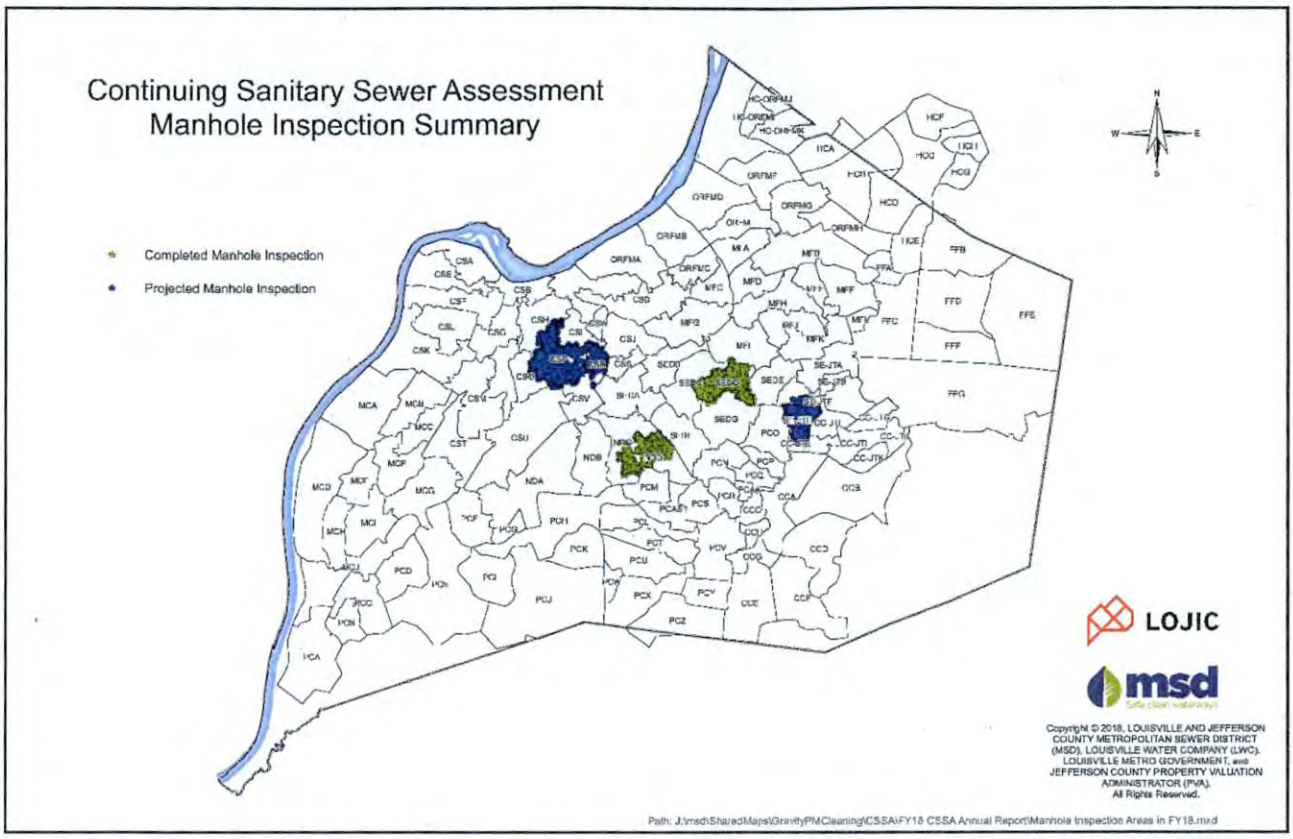
Table 3.Completed Manhole Inspection Projects

PROJECT	MANHOLES	PROJECT SELECTION CRITERIA
42519 - SOUTHEAST DIVERSION AREA D (SEDD)	815	Support for Rehabilitation Planning
44376 - NORTHERN DITCH AREA D (NDD)	411	Support for Rehabilitation Planning
TOTAL	**1,226**	

Table 4. Projected Manhole Inspection Projects

PROJECT	MANHOLES	PROJECT SELECTION CRITERIA
49181 - SOUTHEAST DIVERSION AREA JTC, JTE (SE-JTC, SE-JTE)	455	Support for Rehabilitation Planning
COMBINED SYSTEM AREA P (CSP)	1,143	Support for Rehabilitation Planning
COMBINED SYSTEM AREA R (CSR)	143	Support for Rehabilitation Planning
TOTAL	**1,741**	--

Figure 3. Completed and Projected Gravity Manhole Inspection Areas



5. ASSESSMENT

Under SSES and ICA efforts, a findings report was developed for each study area including a summary of the area and issues present, rehabilitation or remediation and maintenance recommendations, cost estimates, maps, bid documents, and a determination of the future inspection interval. In order to maximize the benefit of the CSSA program, MSD moved in FY16 to utilize existing teleinspection reports in conjunction with contracted manhole inspections that are used to generate recommendation packages. A draft pilot process was created to generate recommendations for rehabilitation and maintenance activities, including cost estimates based on current contract prices, based on inspections and other data housed in Hansen and the GIS. This process includes recommendations for rehabilitation and maintenance activities, prioritized based on comparative condition to the rest of the system.

Through the updated assessment process, SCAP sub-basins and smaller targeted areas are selected for analysis to identify the cause of specific sewer overflows, capacity and performance, or Inflow and Infiltration (I/I) problems. Recommendations are generated the same day using available inspection data, including lining or point repairs for small-diameter mains and lining or frame repair / replacement for manholes, and reviewed by Engineering staff. Additional engineering support may be acquired as needed to develop rehabilitation solutions on a case-by-case basis for large-diameter gravity mains.

In FY17, MSD worked to verify the efficacy of the draft methodology. Feedback was solicited from field inspection and Operations staff as well as contractors. The feedback was generally positive for recommendations for manholes and small-diameter mains and included recommendations for minor alterations to improve the process. During FY18, feedback was incorporated in the assessment methodology, and the determination was made that specific recommendations for large-diameter gravity mains would be made on a case-by-case basis using engineering judgment.

In FY18, the current condition assessment scoring system was translated to a draft likelihood of failure (LOF) index as well as a draft predicted LOF which takes into account not only current condition but anticipated remaining life before failure based on attributes like age and material.

A parallel initiative involved the development of a draft consequence of failure (COF) index, which rates the criticality of a piece of infrastructure. Critical infrastructure is defined as combined and sanitary sewer infrastructure that would have a significant negative impact to the community in the event of failure. MSD has undertaken several initiatives to assist in determining infrastructure that qualify as critical. In FY17, MSD worked through the draft consequence of failure matrix developed by the Wet Weather Team in FY10 to identify any outstanding factors as well as data sources for the criteria within Hansen or the GIS. Efforts in FY18 focused on developing a process to calculate criticality out of existing data sources, and identifying data gaps and next steps to gather data to fulfill the COF index.

The draft LOF and COF indexes will be finalized in FY19.

6. IMPLEMENTATION

6.1. EMERGENCY EVALUATION AND ESCALATION PROGRAM

When an inspector in the field encounters a critical asset that is at or near failure mode, or when the assessment of a new inspection of a critical asset indicates that an asset is at or near failure mode, the asset is immediately evaluated for an emergency repair. Through FY18, this process has been informal, requiring the inspector or assessing engineer to notify their supervisor if such a defect is identified. In FY19, the procedures and work instructions associated with this process will be formalized, and training will be conducted for internal staff and contractors when the procedures are completed.

6.2. INFRASTRUCTURE REHABILITATION PROGRAM

Rehabilitation activities are selected and prioritized through the assessment process. Utilizing the recommendations, projects are advertised and awarded to contractors or assigned to annual contractors and rehabilitation work is completed. Table 5 summarizes project areas completed in the current reporting period. Table 6 summarizes work projected for the upcoming reporting period.

In FY18, three construction inspectors were certified under NASSCO's Inspector Training & Certification Program, a standard national training and certification program that provides field construction professionals with comprehensive learning and tools to understand and inspect trenchless pipeline renewal technology. Each inspector was trained in inspection and application of cured-in-place pipe and manhole rehabilitation methods. In FY19, two construction inspectors and one engineer will be trained in the program as classes are available.

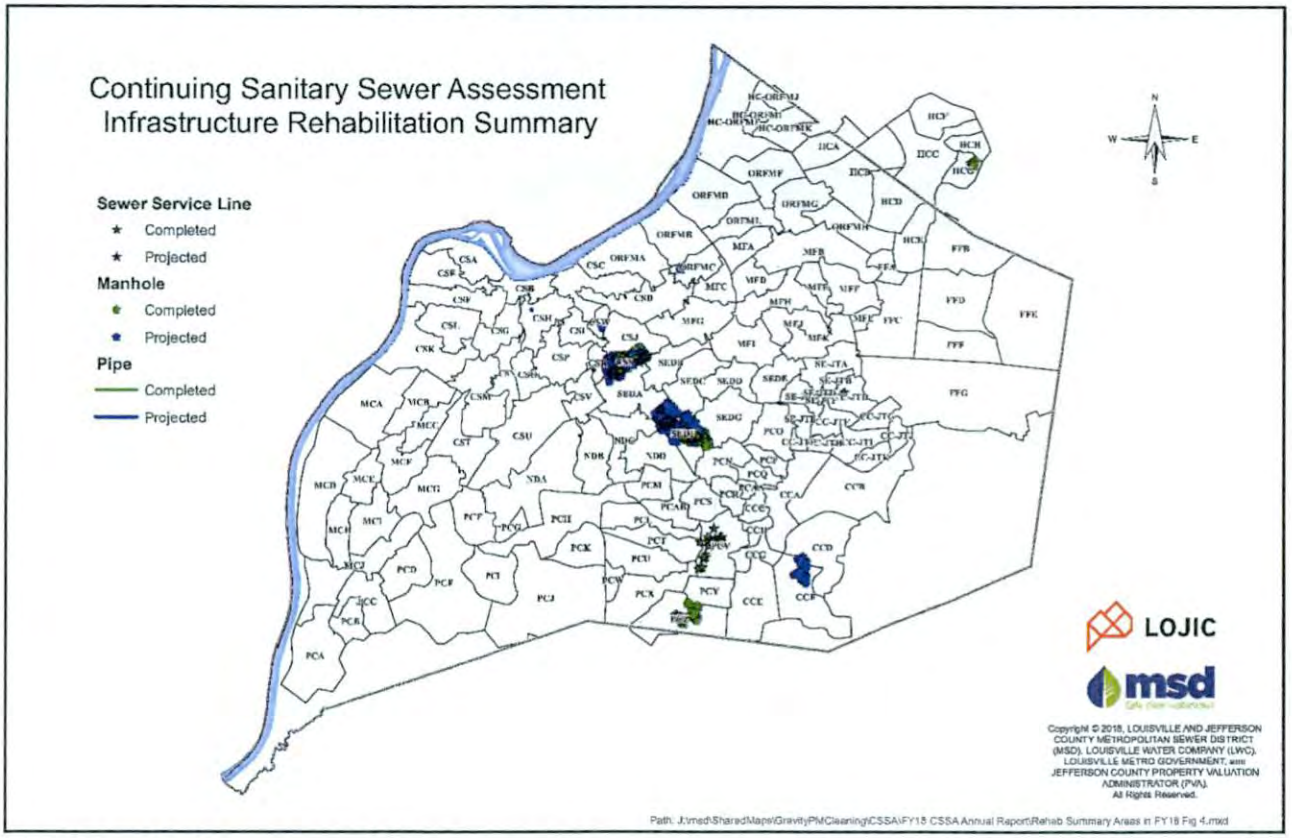
Table 5. Completed Rehabilitation Projects

REHABILITATION AREA	PIPE (LF)	PIPE (MI)	MANHOLES	COST
ADMIRAL PUMP STATION	1,078	0.20	-	$201,711
CSO108	9,888	1.87	71	$757,700
FLOYDSBURG RD PUMP STATION	-	-	13	$8,671
MOUNT WASHINGTON RD PUMP STATION	1,198	0.23	79	$228,206
SOUTHEAST DIVERSION AREA F (SEDF)	6,236	1.18	129	$503,502
47548 - AS NEEDED – OHIO RIVER FORCE MAIN AREA	-	-	2	$1,267
44377 - AS NEEDED – COMBINED SYSTEM AREA	65	0.01	-	$50,392
TOTAL	**18,465**	**3.5**	**294**	**$1,751,449**

Table 6. Projected Rehabilitation Projects

REHABILITATION AREA	PIPE (LF)	PIPE (MI)	MANHOLES	ESTIMATED COSTS
CSO108	10,425	1.97	214	$683,584
SOUTHEAST DIVERSION AREA F (SEDF)	13,911	2.63	209	$897,737
BARDSTOWN RD PUMP STATION	515	0.10	57	$77,692
48160 – AS NEEDED – CEDAR CREEK AREA	-	-	1	$262
48158 – AS NEEDED – OHIO RIVER FORCE MAIN AREA	750	0.14	7	$30,420
48161 – AS NEEDED – COMBINED SYSTEM AREA	42	0.01	1	$16,376
43472 – AS NEEDED – SOUTH EAST DIVERSION AREA	-	-	2	$23,226
TOTAL	**25,643**	**4.86**	**491**	**$1,729,297**

Figure 4. Completed and Projected Rehabilitation Areas



6.3. GRAVITY LINE PREVENTATIVE MAINTENANCE PROGRAM

MSD currently performs condition-driven maintenance activities on portions of the sewer system under the GLPM program as a refinement of the gravity line preventive maintenance that MSD has implemented over the years. Maintenance activities related to this program include routine hydraulic cleaning, chemical root treatment, and chemical grease treatment. As the system is inspected, MSD identifies gravity mains exhibiting operational or maintenance-related defect conditions and initiates routine maintenance activities on those assets as recommended. Consistent, periodic preventive maintenance of the sewer system to maximize asset life and minimize overflows, property damage and health risks is the primary goal of the program.

Completed GLPM activities for the reporting period are summarized in Table 7. Projected GLPM activities for the upcoming reporting period are summarized in Table 8.

Table 7. Completed GLPM Activities

ACTIVITY	PIPE (LF)	PIPE (MILES)
Flushing	156,580	29.7
Chemical Root Treatment	385,803	73.1
Chemical Grease Treatment	5,665	1.1
Total	**548,048**	**103.8**

Table 8. Projected GLPM Activities

ACTIVITY	PIPE (LF)	PIPE (MILES)
Flushing	727,209	137.7
Chemical Root Treatment	400,000	75.8
Chemical Grease Treatment	5,000	0.9
Total	**1,189,945**	**225.4**

7. REPORTING

MSD's approved SCAP manual documents the process for accumulating capacity credits through I/I removal projects and estimated flow reduction from these projects, credits are calculated from I/I removal, and how credits are tracked and distributed to new flow requests within Hansen. MSD calculates these credits for each rehabilitation project completed, as well as for maintenance activities completed and illicit connections removed from the system.

During FY17, SCAP credit calculation for rehabilitation projects was automated to account for remediation activities performed by contractors in response to customer issues in addition to project areas. Additional efforts were made to review work orders completed by MSD Operations and calculate credits as appropriate. During this process, MSD staff identified process and documentation improvements that will allow credits for maintenance activities to be automated and reported in a more consistent and timely manner. These improvements will be implemented as resources allow.

Quarterly reports will continue to include progress on inspection and maintenance efforts and include regular updates to the SCAP balance. Annual reports will continue to include programmatic updates on progress, refinements, and upcoming efforts. Previous reports since FY08 are available on the Project WIN website at http://www.msdprojectwin.org/Library.aspx under Consent Decree Reporting.

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502.587.0603

Appendix F **Public Notification**

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What you don't see could harm you!

Sewers can overflow into waterways during rainstorms.

Those waters could contain harmful bacteria, which can make you sick.

Rainwater can overwhelm the sanitary sewer system and cause overflows into local waterways. You should **minimize contact with waterways to be safe during storms and even for 48 hours after the rain has ended. During these times, avoid swimming, fishing, wading and splashing in the water.**

MSD has made significant progress in decreasing sewer overflows into our waterways, but there is more work to be done. Please follow the instructions that are posted on our overflow advisory signs. Wash with warm, soapy water if you come into contact with water that may have been contaminated by a sewage overflow.

PROJECT WIN
Waterway Improvements Now

MSDProjectWIN.org

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Photo of Beargrass Creek courtesy of John Nation

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You can help improve our waterways

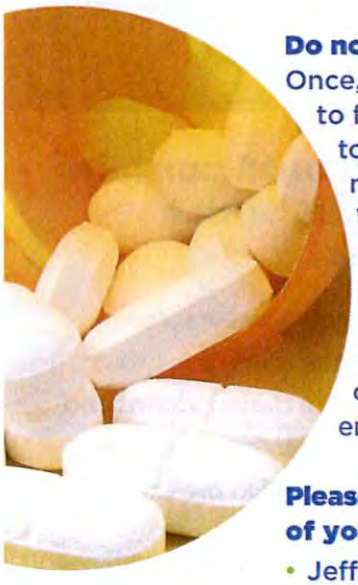
What we do on our land and in our homes affects our waterways

Rainwater flows over rooftops, lawns, parking lots and roadways as it travels to storm drains and ditches. This water collects pollutants along its journey—such as lawn chemicals, oil, litter and pet waste—which flow directly to our waterways.

Put pet waste in the trash. Dogs in Jefferson County produce four dump truck loads of waste everyday. Please dispose of it in the trash so the bacteria does not enter our waterways.

Dispose of fats, oils, grease and food scraps in the trash to prevent clogging your sewer line and causing a sewage backup into your home.

Compost grass clippings, and decrease use of fertilizer and pesticides. When it rains, these chemicals make their way to our streams.



Do not flush medications. Once, it was common practice to flush medications down the toilet. Your doctor or pharmacist may have directed you to do this. We now know that these substances are bad for our environment. The wastewater treatment process does not remove the substances contained in them, so they end up back in our waterways.

Please properly dispose of your medications at:

- Jefferson County Sheriff's Office
  531 Court Place, Suite 600
  M-F, 8 am to 4 pm
- St. Matthews Police Department
  3940 Grandview Avenue
  M-F, 8 am to 4 pm

Delay using washing machines and dishwashers during rain events —they can fill up the sanitary sewers and contribute to sewer overflows.

'Flushable' wipes...

don't let the name fool you.

Avoid a potential backup in your home by tossing wipes into the trash.

Wipes do not break down, even if their labels read "flushable." They can cause problems for plumbing systems and lead to sewage backups in your home or work place. Wipes also clog and damage sewer line pumps, screens and other mechanical parts at MSD water quality treatment centers.

Avoid the mess, toss your wipes into the trash!

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What you don't see can harm you!

Look inside for safety tips for those living near Beargrass Creek and the Ohio River.

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What you don't see could harm you!

Sewers can overflow into waterways during rainstorms.

Those waters could contain harmful bacteria, which can make you sick.

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MSD has made significant progress in decreasing sewer overflows into our waterways, but there is more work to be done. Please follow the instructions that are posted on our overflow advisory signs. **Wash with warm, soapy water** if you come into contact with water that may have been contaminated by a sewage overflow.

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Photo of Beargrass Creek courtesy of John Nation

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About MSD

Learn more about these programs and other ways MSD is helping protect our community's waterways.

MSDStormwaterQuality.org

LouisvilleMSD

(3,000) 02/17

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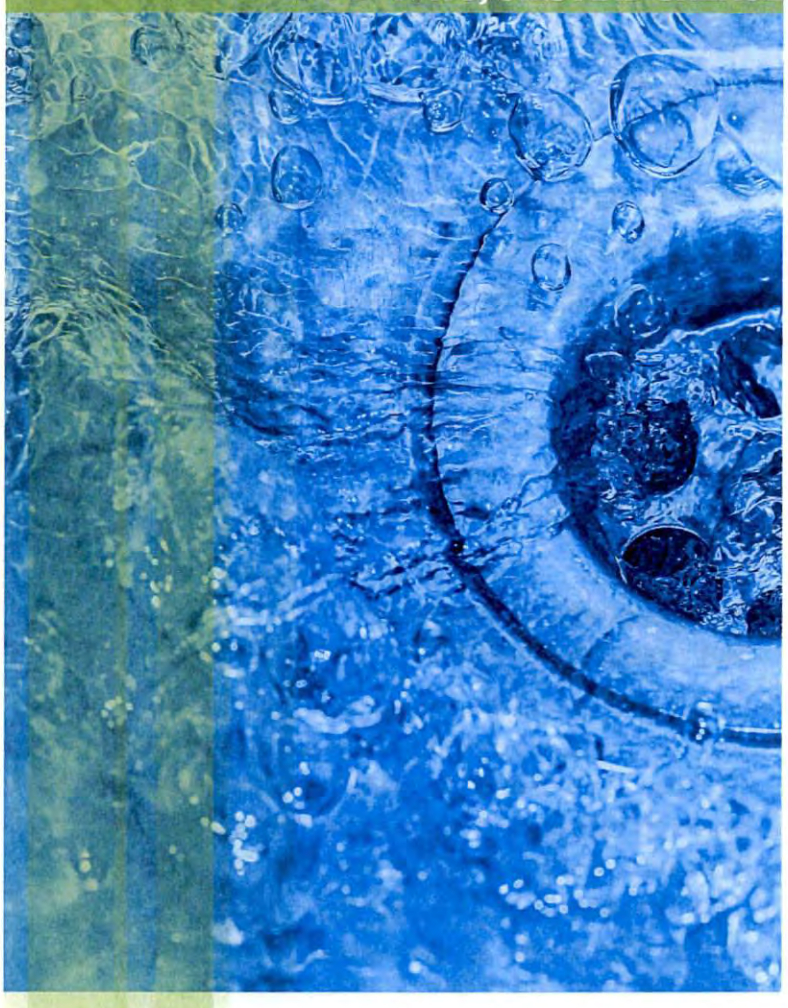
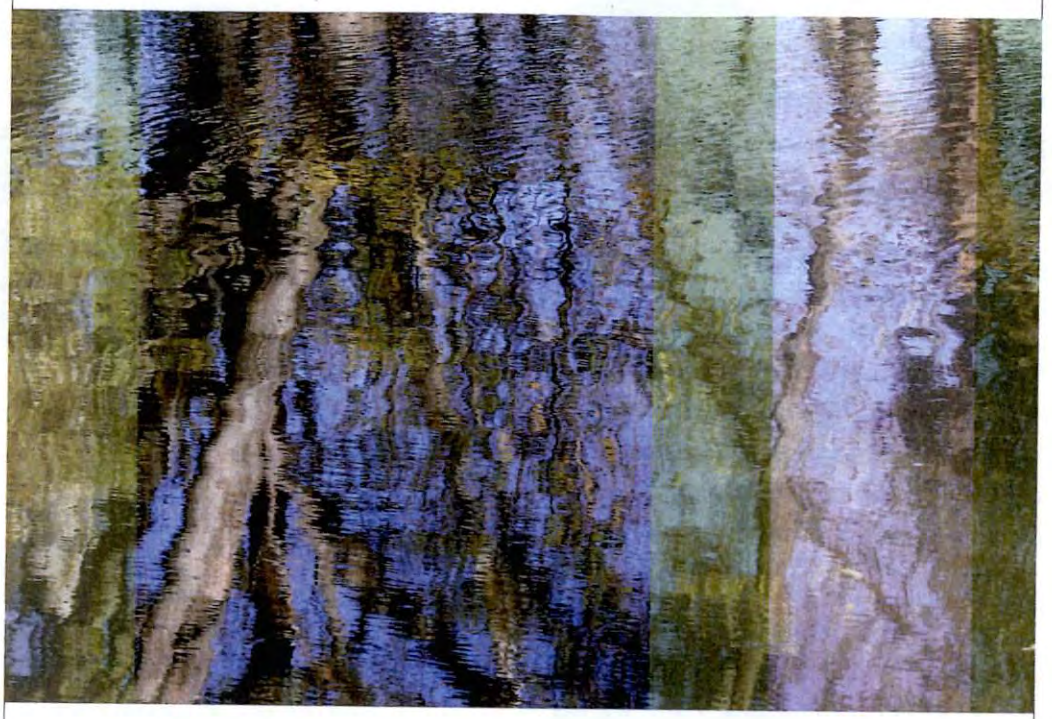
HOW TO PROTECT YOUR HOME FROM BACKUPS

FOG—FATS, OILS AND GREASE



Good Job...
Great Place!



Great benefits for full-time employees

Louisville MSD is a proud, dedicated group of individuals who are here for our community 24/7/365—managing wastewater, stormwater and flood protection services. We see our role in protecting Louisville's waterways as one of leadership, partnership and advocacy.

We know how important our waterways are to this community for business, recreation, enjoyment and overall health.

If you want to join us and serve our community, apply for a position with MSD. See what MSD has to offer.

www.LouisvilleMSD.org/Careers

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What you do at home...
can make a difference in our waterways

Delaying the use of your washer and dishwasher during periods of heavy rain can help. The extra water these machines use can overload the sanitary sewers and cause them to overflow. If possible delay that load of laundry or dishes to give the sewer system time to catch up.

Working together, all of us can help achieve safe, clean waterways.

Learn more at **LouisvilleMSD.org.**

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Stream photo courtesy of John Nation

67,668 catch basins

...billions of leaves!

When it rains, all that stormwater has to go somewhere.

Prevent surface flooding in your neighborhood by **raking leaves and debris away from catch basins,** and properly disposing of the debris.*

If basins are still clogged, contact **MSD Customer Relations—at 502-587-0603—** we will send someone to help.

We're MSD. And we're doing more for you than you ever imagined. Learn more at **LouisvilleMSD.org.**

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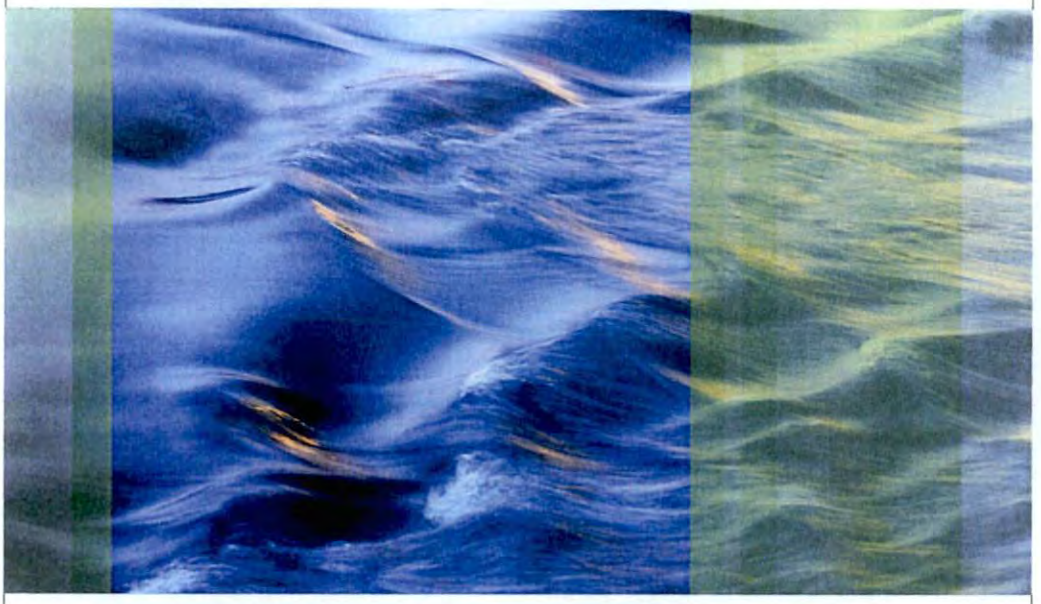
* Do not remove the grate from a catch basin or from a drain. The area located beneath them can be deep and dangerous!

OPPORTUNITY FLOWS



Nearly $34 million in contracts were awarded to minority- and woman-owned firms in the past year

That is $34 million that helps create jobs, grow businesses and enhance community development...and it represents 21 percent of MSD's total expenditures in the past fiscal year.

MSD is proud to connect minority-owned and woman-owned businesses with opportunities that help grow their companies as we work together, building sustainable relationships and an exceptional supply base that benefits our customers and communities where we live and work.

Learn how helping create safe, clean waterways for Louisville can help foster a vibrant, thriving business for you.

SupplierDiversity@LouisvilleMSD.org

502.540.6503

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Flood response requires "all hands on deck"

Tony Parrott
MSD Executive Director

During flooding event in February and early March, many MSD employees from various departments joined with our Flood Protection staff to keep our city safe.

The job is 24/7 till the work is done. I want to thank all of our employees for their tireless work protecting us from the rising waters.

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Message to the community
—aging critical infrastructure

Angela L. Akridge
MSD
Chief Engineer

MSD's Vision of achieving safe, clean waterways for a healthy and vibrant community goes hand-in-hand with our Mission to provide exceptional wastewater, drainage and flood protection services.

We are proud of our work toward clean waterways and protecting public health and safety. Our efforts are seen across the city as we build underground storage to reduce sewer overflows. Also, in the past year, Morris Forman Water Quality Treatment Center, Kentucky's oldest and largest wastewater treatment facility, needed $33 million in emergency repairs and improvements. This vital component of our system treats wastewater from 67 percent of Jefferson County.

Unfortunately, the vital infrastructure we all depend on to transport and treat our wastewater and protect us from flooding is aging and is becoming inadequate as our community continues to grow and expand. Every day, we see the symptoms of crumbling underground infrastructure that is beyond its design life. For each high-profile cave-in that catches the attention of Louisville residents — like the collapse of a vital sewer line at the busy intersection of East Main and Hancock streets — MSD workers see hundreds of others. Instead of proactively making the needed investments to rehabilitate and renew this infrastructure before it fails, we have to react with small "band-aid" fixes.

MSD has had to defer these needed investments because nearly every capital dollar we spend — under the current funding structure — is used to pay for more than $900 million worth of projects to minimize sewer overflows that pollute the Ohio River and our community's streams during rain events. By a federal order, MSD is required to complete these projects by 2024.

Our Critical Repair and Reinvestment Plan — based on an extensive analysis of our infrastructure — outlines improvements needed across the community. Not addressing these challenges now will lead to larger problems later. Now is the time to put our Critical Repair & Reinvestment Plan into action for the future of our community.

Visit LouisvilleMSD.org/CriticalRepairPlan to learn more.

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What you do at home...
can make a difference in our waterways

Delaying the use of your washer and dishwasher during periods of heavy rain can help. The extra water these machines use can overload the sanitary sewers and cause them to overflow. If possible delay that load of laundry or dishes to give the sewer system time to catch up.

Working together, all of us can help achieve safe, clean waterways.

Learn more at **LouisvilleMSD.org.**

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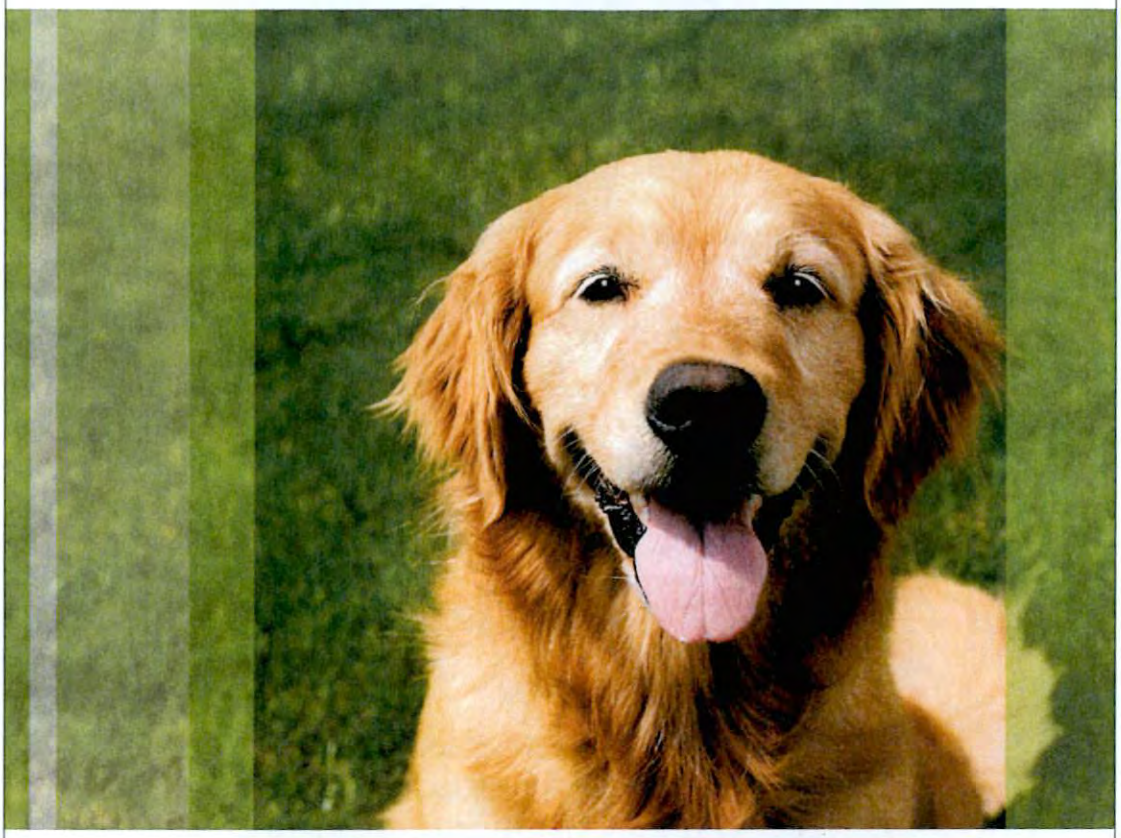
Stream photo courtesy of John Nation

MAKING A DIFFERENCE IN OUR WATERWAYS



Dogs in Jefferson County produce four dump-truck loads of waste EVERY day.

Pet waste that is left behind on sidewalks, in parks and yards finds its way to local waterways when it rains. Please do your part to help by scooping the poop and properly disposing of it in the trash.

Working together, we can achieve safe, clean waterways for our community.

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Safe, clean waterways

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What you don't see could harm you!

Waterways can contain harmful bacteria, which can make you sick.

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Dogs in Jefferson County produce four dump-truck loads of waste EVERY day.

Pet waste that is left behind on sidewalks, in parks and yards finds its way to local waterways when it rains. This waste increases bacteria and nitrogen levels in the water, depleting oxygen for fish and aquatic life. Please do your part to help by scooping the poop and properly disposing of it in the trash.

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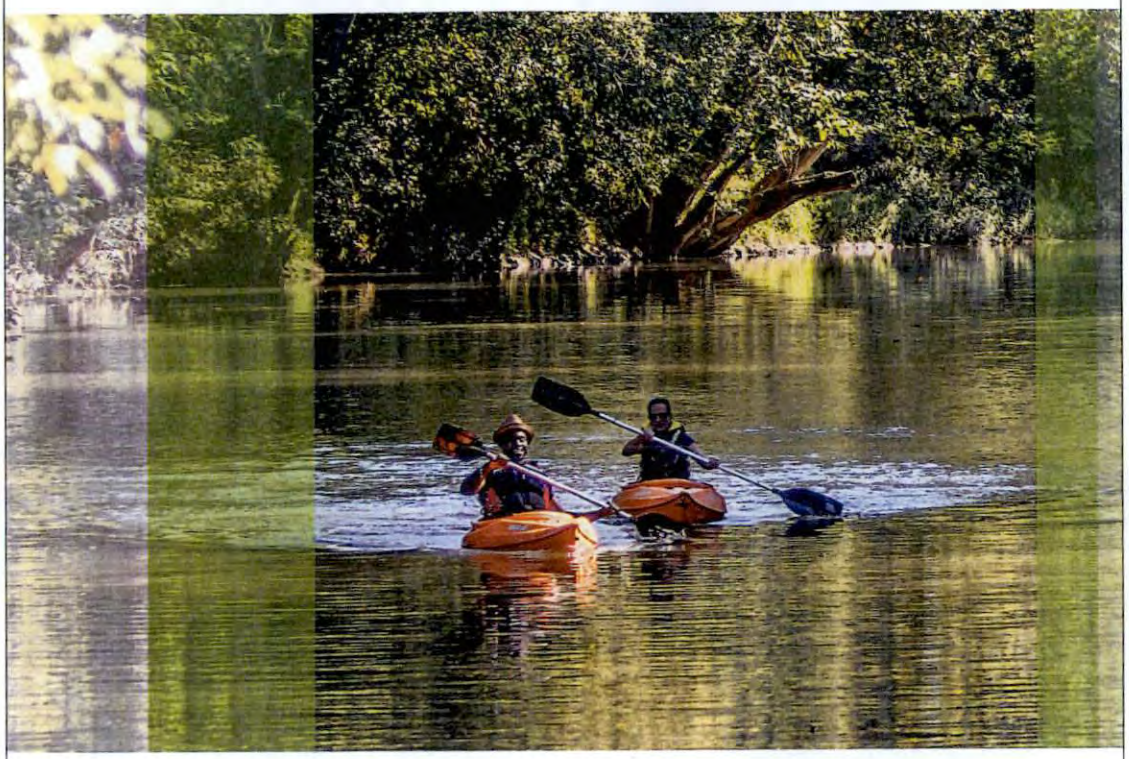

When it rains, all that stormwater has to go somewhere. First, the stormwater runoff makes its way into drainage swales, channels, storm drains and pipes that carry it away from our homes and businesses. Then it flows into creeks and streams, and eventually to the Ohio River. Along its journey, stormwater accumulates soil and pollutants—like lawn chemicals, pet waste and oil—which can harm our waterways.

To make sure that our waterways stay safe and clean, MSD monitors for pollutants and removes illegal non-stormwater discharges. It's a big task that covers most of Jefferson County and approximately 680,500 people.*

We're MSD. And we're doing more for you than you ever imagined. Learn more at LouisvilleMSD.org.

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* The cities of Anchorage, Jeffersontown, St. Matthews and Shively provide residents and businesses in those municipalities with stormwater/drainage service.

67,668 catch basins...billions of leaves!

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Prevent surface flooding in your neighborhood by **raking leaves and debris away from catch basins,** and properly disposing of the debris.*

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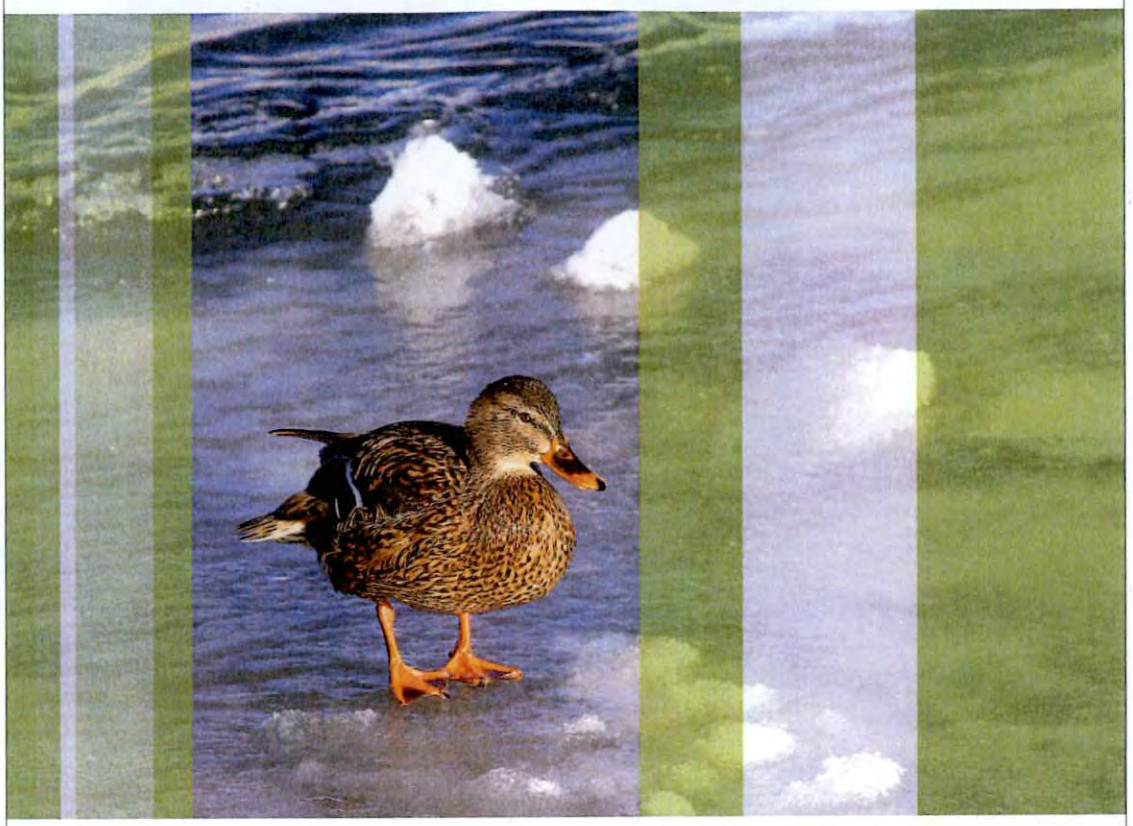

When it rains or snows, all that stormwater has to go somewhere. First, the stormwater runoff makes its way into drainage swales, channels, storm drains and pipes that carry it away from our homes and businesses. Then it flows into creeks and streams, and eventually to the Ohio River. Along its journey, stormwater accumulates things like sidewalk salt, which can harm our waterways.
Use kitty litter on your sidewalks this winter instead of salt.

Together we can achieve safe, clean waterways for our community.

Learn more at **LouisvilleMSD.org.**

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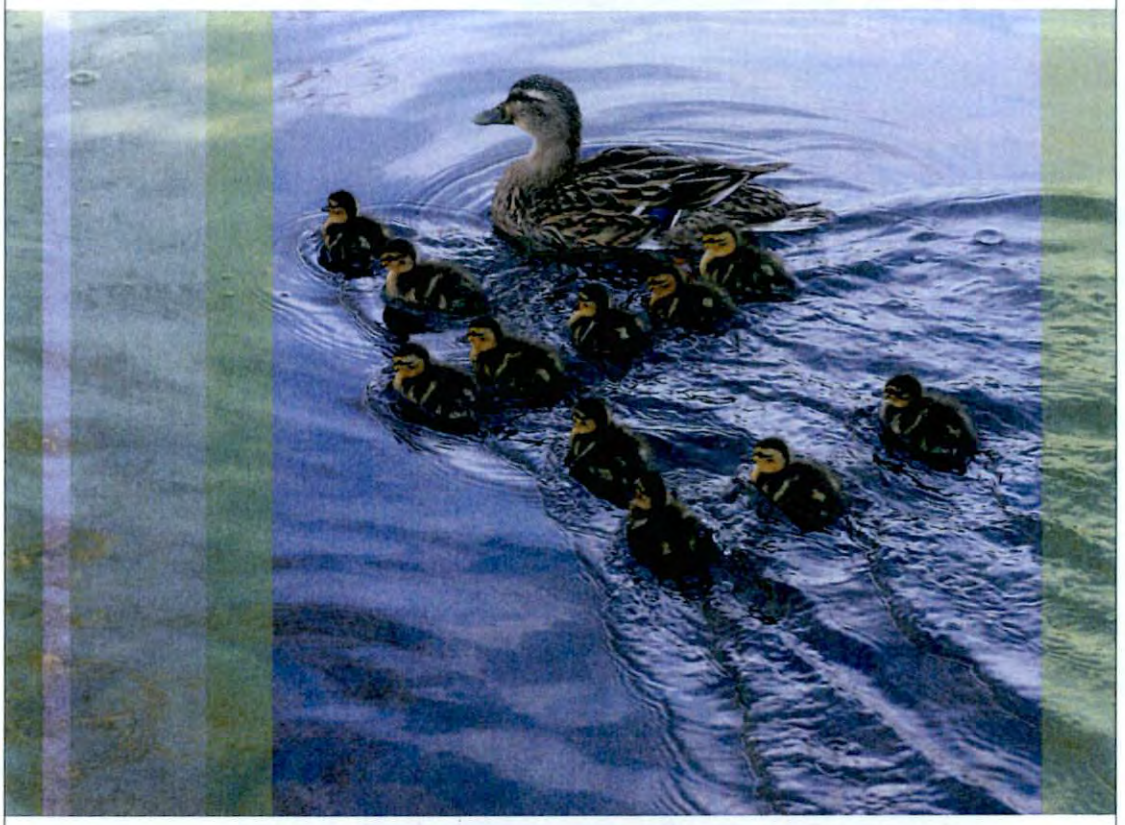

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Beargrass Creek photo courtesy of John Nation

What you do at home...
can make a difference in our waterways

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Volunteer and make a difference!

Ohio River Sweep

MSD proudly sponsors Ohio River Sweep, which is one of the nation's largest and longest-running environmental cleanup events. Picking up trash along the shoreline is a little thing that makes a big difference as we all work together.

You can volunteer and make a difference!

Ohio River Sweep · Saturday, June 16 · 9 AM to Noon

MSD employees will equip volunteers with gloves and bags. For location information visit:

LouisvilleMSD.org/OhioRiverSweep

Together, we can achieve safe, clean waterways for our community.

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Message to the community
—aging critical infrastructure

Tony Parrott
MSD Executive Director

Louisville, like many cities, is faced with aging infrastructure that must be maintained and refurbished in order to continue to serve a growing community. Some of MSD's underground infrastructure predates the Civil War, and much of our flood protection system was built in the 1940s and '50s. In addition, an increased frequency of severe storms in recent years has amplified the need for our system to be ready to protect against the worst of today's weather.

MSD has completed an extensive analysis of these systems and has developed a Critical Repair & Reinvestment Plan to address the challenges posed by this aging infrastructure. The difficult truth is the solutions come with a price tag of $4.3 billion over the next 20 years.

We want to hear from you

Input is needed from the community to determine how soon the critical projects should be completed. The Critical Repair & Reinvestment Plan is online for your review, as well as available in each of Louisville's public library branches.

To view the Plan and provide feedback, visit:
LouisvilleMSD.org/CriticalRepairPlan

At MSD, we're here to make Louisville a better place.
A cleaner place. A healthier place. To have a real impact on the quality of life of the place we all call home.
Working together, we can continue to pursue our Vision of "Safe, Clean Waterways for a Healthy and Vibrant Community."

Sincerely,
James A. Parrott
MSD Executive Director

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OUR MISSION
Providing Exceptional Wastewater, Drainage and Flood Protection Services for Our Community

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A MESSAGE TO THE COMMUNITY

August/September 2017

It is our role to be guardians of the community's stormwater and wastewater infrastructure systems that protect our residents from flooding, wastewater overflows, and other hazards. For the past 12 years, MSD has focused on fulfilling the terms of our Consent Decree, while maintaining low rates. We remain committed to complete our federal Consent Decree work, which will reduce significantly and in some cases, eliminate sewer overflows by the end of 2024.

Tony Parrott
MSD Executive Director

I appreciate the work MSD employees perform—every hour of every day—to bring to vital services to Louisville Metro. The success of our community depends on MSD's delivery of wastewater treatment, stormwater management, and flood protection.

Working together, we can achieve safe, clean waterways for our community.

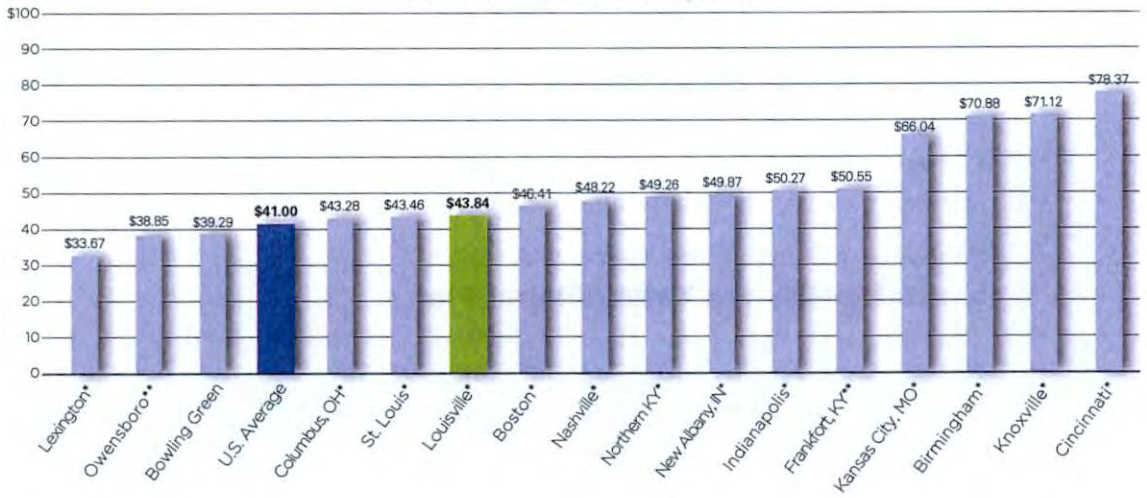
MSD Board endorses rate increase

The MSD Board has approved a rate increase of 6.9 percent for MSD customers for wastewater, drainage and Environmental Protection Agency (EPA) surcharge fees on all bills to take effect **August 1, 2017.** The **average monthly** residential wastewater bill (based on 5,000 gallons per month) issued on or after August 1, 2017, will reflect an **increase of $3.03—from $43.84 to $46.87.** Monthly stormwater drainage fees will **increase by 60 cents—from $8.66 to $9.26.**

Wastewater—based on 5,000 gallons of monthly usage	
Wastewater rate is $4.02 per 1,000 gallons times average monthly usage of 5,000 gallons	= $ 20.10
Monthly service charge	= $ 14.73
Monthly EPA Consent Decree Surcharge	= $ 12.04
Total as of August 1, 2017	**$46.87**

Projected 2017 NACWA Average Monthly Residential Wastewater Bill

Based on 5,000 Gallons as of January 1, 2017



Based on information collected as of January 1, 2017, by the National Association of Clean Water Agencies (NACWA), MSD's wastewater bill of $43.84 is $2.84 higher than the national average. Nationally, the average wastewater bill will increase an estimated 5 percent.

* Cities with consent decrees
** Cities with Agreed Orders with State of Kentucky

Senior Citizen Discount

Senior citizens who are age 65 or older, have a gross annual household income of $35,000 or less and are both Louisville Water Company and MSD customers may request an application for a 30 percent discount on wastewater charges and the EPA surcharge through MSD's website, **LouisvilleMSD.org,** or by calling Customer Relations at **502.587.0603.**

'Flushable' wipes... are more expensive than you think

Avoid a potential backup in your home by tossing wipes into the trash.

Wipes do not break down quickly, even if their labels read "flushable." They can cause problems for home plumbing systems and lead to sewer backups. Wipes also clog and damage sewer line pumps, screens and other mechanical parts at water quality treatment centers. Please toss your wipes into the trash—not into your toilet.

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OUR MISSION

Providing Exceptional Wastewater, Drainage and Flood Protection Services for Our Community

24/7/365

502.587.0603 · CustomerRelations@LouisvilleMSD.org

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You can help improve our waterways

Do not flush medications. Once, it was common practice to flush medications down the toilet. Your doctor or pharmacist may have directed you to do this. We now know that these substances are bad for our environment. The wastewater treatment process does not remove the matter contained in them, so they end up in our waterways.

Properly dispose of your medications at:

- Jefferson County Sheriff's Office
  531 Court Place, Suite 600, M-F, 8 am to 4 pm
- St. Matthews Police Department
  3940 Grandview Avenue, M-F, 8 am to 4 pm

Delay using washing machines and dishwashers during rain events—they can fill up the sanitary sewers and contribute to sewer overflows.

Compost grass clippings, and decrease use of fertilizer and pesticides. When it rains, these chemicals make their way to our streams.

Put pet waste in the trash. Dogs in Jefferson County produce **four dump truck loads** of waste everyday. Please dispose of it in the trash so the bacteria does not enter our waterways.

If you wash fats, oils and grease (FOG) down your drain, a build up may occur in your sewer line. This may clog the sewer pipe and cause sewage overflows into your home, onto the ground and into our local waterways.

Dispose of fats, oils, grease and food scraps in the trash to prevent clogging your sewer line and causing a sewage backup into your home.

Protect yourself with flood insurance

To find out if a property is located in a floodplain, visit **http://apps.lojic.org/msdflooddetermination/**.

MSD has earned Louisville Metro a Class 3 status—allowing our residents to automatically receive a 35 percent discount on flood insurance premiums through the National Flood Insurance Program's Community Rating System.

If you live in a flood-prone area:

- Store important items in airtight containers, place on upper shelves
- Develop an evacuation plan
- During a rain event, turn off all gas and electric connections—if you can **without** wading into water
- Move vehicles to higher ground before heavy rains
- Don't drive or walk into standing water during heavy rains
- If you must evacuate, don't forget prescription medicines and pets

For more information contact MSD CustomerRelations at **502-587-0603** or **CustomerRelations@LouisvilleMSD.**

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700 West Liberty Street
Louisville, KY 40203-1911

502.587.0603

CustomerRelations@LouisvilleMSD.org

About MSD

Learn more about these programs and other ways MSD is helping protect our community's waterways.

MSDStormwaterQuality.org

LouisvilleMSD

(2,000) 10/17

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HOW TO PROTECT YOUR HOME FROM FLOODING AND BACKUPS

PLUMBING MODIFICATION PROGRAM

Plumbing Modification Program

Water from falling rain and melting snow usually absorbs into the ground or flows into nearby creeks and streams through natural drainage paths and specialized stormwater systems. However, serious problems can occur when stormwater drains directly into the system intended for wastewater from dishwashers, sinks, showers, toilets and tubs.

How MSD Can Help

This program is available to MSD customers who have experienced a rain-related sewer backup through a basement plumbing fixture—floor drain, sink, toilet, shower—or who live in an area of documented wet-weather backups. Through this program, MSD pays a licensed plumbing contractor to install the appropriate backflow prevention devices based upon your plumbing layout. This may involve the installation of valves in your basement floor or outside the foundation of your home, the installation of a sump pump and the disconnection of your floor drain from the sewer, or a combination of both.

Here's How it Works

1. **Contact MSD Customer Relations at 502.587.0603 to request a Plumbing Modification packet.**
2. Sign the enclosed Release and obtain bids from two licensed plumbers.
3. Mail the Release and the two bids to MSD.
   Plumbing Modification Program
   Louisville MSD
   PO Box 740011
   Louisville, KY 40201-7411
4. If approved for the program, you will receive a letter from MSD approving the lowest bid.
5. If it is determined that your property is not eligible for the program, you will receive a letter from MSD stating the reasons for denial.
6. If approved, contact your plumbing contractor to schedule the installation of the devices.
7. An MSD representative will contact you to schedule an inspection of the installation upon receipt of the final invoice from your plumber.
8. Plumbing Modification Program installations require inspections by the state for plumbing —and electrical if sump pump is installed. Additionally, MSD must perform a final inspection for payment approval.
9. MSD issues payment to the plumber after final inspection.

For information about how you can benefit from the MSD Plumbing Modification Program, please contact MSD Customer Relations Department.

Phone: 502.587.0603

Email: CustomerRelations@LouisvilleMSD.org

Get a permit before you repair or build in a floodplain

MSD is responsible for permitting and inspecting all new construction—including repairs and improvements to existing structures in the floodplain, according to the Louisville Metro Floodplain Ordinance.

To apply for a floodplain permit:

- Download the Application for a Permit to Develop/Repair in a Floodplain, visit http://www.msdlouky.org/insidemsd/pdfs/apppermit.pdf
- For repairs or improvements to an existing structure, provide an itemized estimate of material and **labor** costs of the repairs or improvements to be made, including demolition costs—even if this work is to be done by the homeowner or a volunteer. It is not required to include cleanup costs in the estimate.
- Provide building value—PVA data or owner-provided appraisal.
- Submit the application and all documents listed above.

In person:
MSD, 700 W Liberty Street, Louisville, KY 40203
Monday through Friday, 9 am to 4 pm

Or by email:
FloodPermits@louisvillemsd.org

For questions concerning floodplain permitting, call 502.540.6126.

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Safely cleaning up after a flood

Take photographs of the damage before cleanup. Residents are encouraged to begin cleanup as soon as possible, floodplain permits are not required before cleanup begins.

Flood cleanup safety tips:

- Before entering your home, check for damaged power lines, gas lines, foundation cracks and other exterior damage. It may be too dangerous to enter the home.
- If you smell natural gas or propane, or hear a hissing noise, leave immediately and contact the fire department
- Do not walk into a flooded basement because of the risk of electrocution. Turn off gas, water and electricity—if you can **without** wading into water.
- Check news outlets for safety of the local water supply.
- Discard any food, medicine or cosmetics that may have come into contact with floodwaters.
- Floodwaters can carry chemicals and germs that could be harmful to your health. Protect yourself during cleanup by wearing boots, gloves and masks. Clean and disinfect everything that may have come in contact with floodwater.
- Open all doors and windows to circulate air and dry out your home. Dehumidify as soon as possible.

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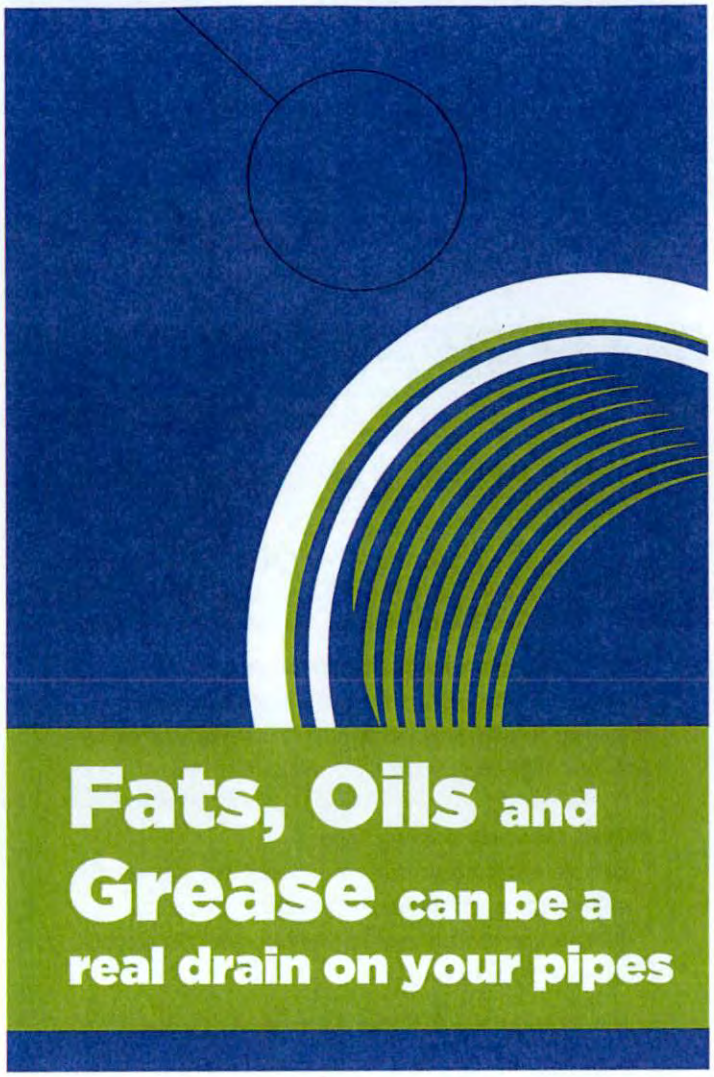

Fats, Oils and Grease can be a real drain on your pipes

If you wash fats, oils and grease (FOG) down your drain, a build up may occur in your sewer line. This may clog the sewer pipe and cause sewage overflows into your home, onto the ground and into our local waterways.

It is important to keep our sewers fat free.

When greasy wastes are washed into the plumbing system through your sink or garbage disposal, they can stick to the pipes. **Using your garbage disposal or a grease-cutting detergent does not keep FOG out of the plumbing system.** Garbage disposals shred solid material into smaller pieces, but do not prevent FOG from flowing down the drain. Grease-dissolving detergents can pass FOG through your household plumbing, but the grease may still cause problems in the sewer lines.

—Continued

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Effects of FOG in sewer pipes:

- Raw sewage overflows into your home or yard.
- Raw sewage overflows into our parks and streams.
- Potential contact with disease-causing bacteria and viruses.
- Increased operational costs for you as an MSD customer.
- Blockages, obstructions and raw sewage overflows that affect others in your community.

Tips to help keep FOG out of the sewers:

Can the grease!

- Never pour fats, oils and grease down a sink, drain or toilet.

- Pour used grease into an empty, heat-safe container, such as a soup can, and store it in the freezer. Once the grease has become solid, toss the can into the garbage.
- Scrape your plate into the trash.

- Wipe all pots, pans, dishes and cooking utensils with a paper towel to soak up grease before washing them.
- Catch the scraps in your sink with a basket or strainer, instead of using the garbage disposal, and throw them away in the trash can.
- Recycle your deep-fryer oil by taking it to Louisville Metro's grease drop-off location at 7501 Grade Lane.

If you have additional questions, contact Customer Relations at **502.587.0603** or **CustomerRelations@LouisvilleMSD.org.**

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Slip lining the pipes

MSD has identified your sanitary sewer service line as a possible candidate for our slip lining program. The program consists of installing a cured-in-place lining on the inside of the public portion of the existing pipe. This should greatly reduce the risk of roots entering MSD's portion of the pipe, which is a major factor in sanitary sewer backups in the Louisville Metro area.

Our crews must shut off your water service at the Louisville Water Company meter for up to five hours in order to perform the slip lining. This is necessary to prevent any water from entering the pipe during the process, which would negatively impact the final results.

We will make every attempt to minimize any inconvenience to you during our work. We anticipate returning to begin this project:

Questions?
Contact our 24/7/365 Customer Relations at 502.587.0603 or email us at CustomerRelations@LouisvilleMSD.org.

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...are working for MSD in your neighborhood

They are gathering detailed information about the land and its man-made features. This information is vital for many of our programs, ranging from routine maintenance to planning for future projects. Gathering this information is part of MSD's continuing effort to improve our services for you.

If you have questions or concerns about this survey work, please feel free to call our 24/7/365 Customer Relations Department at 502.587.0603 or CustomerRelations@LouisvilleMSD.org.

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What not to flush

These items can cause problems for plumbing systems and lead to sewer backups in your home and MSD facilities.

- **Diapers**
- **Dental Floss**
- **Feminine-hygiene products**
- **Paper towels**
- **Waste from garbage disposals**
- **Wipes**

Do not flush medications

Medications are bad for our environment. The wastewater treatment process does not remove the subtances contained in the medications, so they end up back in our waterways. Dispose of your medications at:

Jefferson County Sheriff's Office
531 Court Place, Suite 604
M-F, 8 am to 4 pm.

St. Matthews Police Department
3940 Grandview Avenue
M-F, 8 am to 4 pm.

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'Flushable' wipes... are NOT "flushable"

Avoid a backup by tossing wipes into the trash

Wipes do not break down, even if their labels read "flushable." They can cause problems in plumbing systems and lead to sewer backups in your home or place of business. Wipes clog and damage sewer line pumps, screens and other mechanical parts at water quality treatment centers. They cause 60 percent of the clogs that MSD employees must repair.

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Bells Lane Wet Weather Treatment Facility Modification Project

Summer — Fall 2018

Southwestern Pump Station and Bells Lane Wet Weather Treatment Facility

MSD is planning a project to help reduce odors at our Bells Lane Wet Weather Treatment Facility. The project will include a new concrete liner in the equalization basin. The new liner will allow a wash-down or cleaning after each use of the basin.

Construction of the liner is set to begin in Summer 2018. Before construction begins, the basin will be drained and taken out of service. MSD will implement temporary odor control measures leading up to and during the construction process.

Safe, clean waterways

The equalization basin reduces the number of combined sewer overflows in the area — preventing millions of gallons of combined sewage from entering the Ohio River. The basin stores a mixture of stormwater and wastewater until system capacity is available. The mixture is then sent to either our Bells Lane Wet Weather Treatment Facility or our Morris Forman Water Quality Treatment Center for treatment and release into the Ohio River.

Learn more about this project at LouisvilleMSD.org/BellsLane.

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FAQ — Bells Lane Equalization Basin

1. **What is the timeframe for the project?**
   The project is currently in the design phase. Construction is scheduled for Summer through Fall 2018.

2. **How does the equalization basin work?**
   The equalization basin temporarily stores a mixture of rainwater and wastewater when the system reaches capacity at the Bells Lane Wet Weather Treatment Facility.

3. **Why does the equalization basin have odor issues?**
   The lining that is currently in place does not allow for a wash-down or cleaning after each use. Solids can remain trapped in the bottom of the basin, which results in odor issues.

4. **Will odors be eliminated with new lining?**
   The new liner will allow a wash-down or cleaning of the basin after each use, which will reduce odors when the basin is not in use. However, there is an opportunity for odors when the basin is in use.

5. **Is it going to smell during construction?**
   The opportunity for odors does exist as construction begins. However, MSD will implement temporary odor control measures to minimize the issue.

6. **Will there be any traffic issues?**
   No roads will be closed to traffic during this project.

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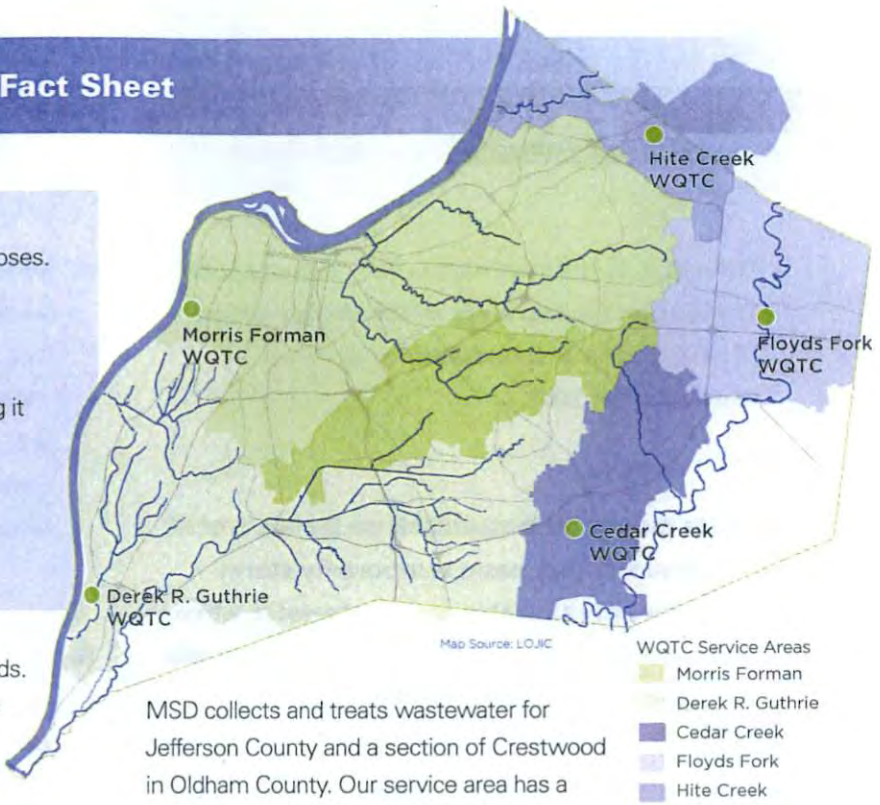
Wastewater Treatment Fact Sheet

Waste·water *n:*
Water that has been used for domestic or industrial purposes.

Waste·water treat·ment *n:*
Physical, chemical and biological processes used to remove pollutants from wastewater before discharging it into a water body.

Waster·shed *n:*
An area of land that drains to its lowest point.



We treat wastewater to provide protection to our watersheds. Jefferson County contains **760 miles of streams, 38 miles of Ohio River shoreline** and all or part of the following watersheds:

- Beargrass Creek-Middle Fork
- Beargrass Creek-Muddy Fork
- Beargrass Creek-South Fork
- Cedar Creek
- Floyds Fork
- Goose Creek
- Harrods Creek
- Mill Creek
- Ohio River
- Pennsylvania Run
- Pond Creek

MSD collects and treats wastewater for Jefferson County and a section of Crestwood in Oldham County. Our service area has a population of approximately 750,000 people. Each person generates approximately 100 gallons of wastewater daily. That is about 75 million gallons of wastewater per day that MSD must treat and return to a watershed.

Fun Facts:

Q If you stretch out all the pipes that MSD has in its collection system, how many miles would that be? Remember, our collection system is Jefferson County and a very small portion of Crestwood in Oldham County.

A *MSD has more than 3,200 miles of pipe in our collection system—that would stretch from Louisville to Anchorage, Alaska and a bit beyond.*

Q How long does it take your bathwater to travel through the sewer collection system, go through the treatment process and be returned to a stream or the Ohio River?

A *24 hours*

Q After MSD returns the cleaned wastewater to the local streams and river—what does it do with the solid waste?

A *We dry and process the solid waste into fertilizer for reuse in agriculture.*

Wastewater Treatment Process at Floyds Fork Water Quality Treatment Center

- **Preliminary:** Removal of grit and debris
- **Secondary:** Microorganisms go to work and decompose solids, settling in the tanks to separate water from solids
- **Tertiary:** Disinfection of the water for harmful bacteria with UV treatment, then release back to Floyds Fork

Wastewater undergoes preliminary, secondary and tertiary treatment at the Floyds Fork Water Quality Treatment Center before it is discharged into Floyds Fork. This cleaned wastewater is called effluent. The effluent returned to Floyds Fork is as clean, or cleaner than the water that is in the stream. It also has a much higher oxygen content, which attracts fish.

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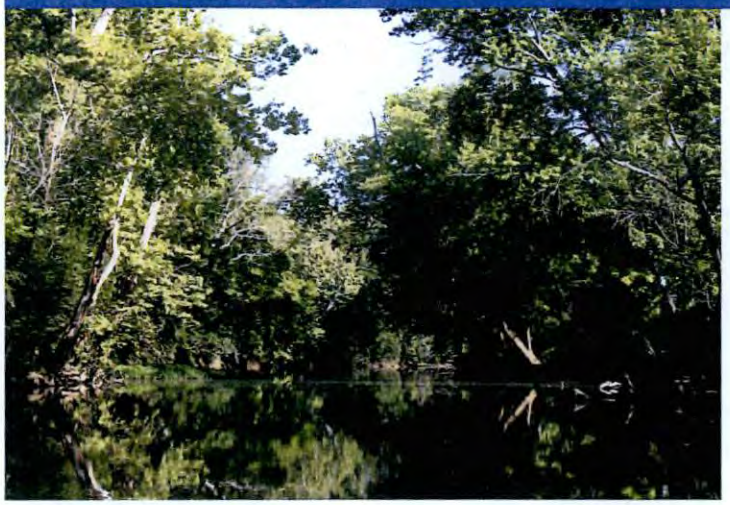
24/7/365: 502-587-0603 · CustomerRelations@LouisvilleMSD.org · LouisvilleMSD.org LouisvilleMSD

02-2017

Stormwater Fact Sheet



Our community is part of a watershed, where stormwater or rainwater flows over rooftops, lawns, parking lots and roadways. This rainwater runoff makes its way to drainage swales, channels, storm drains and pipes, which carry it away from our homes and businesses to creeks and streams. On its journey, this water accumulates soil and pollutants— like lawn chemicals, pet waste and oil—harming our waterways.

Think about when it snows – what color does snow turn alongside our streets and roads? Snow collects pollution as it accumulates on the land, like litter, leaves/debris, oil, and pollution from car exhaust. We can see this by the change in color of the snow. These same pollutants run off the land when it rains, and flow to our streams.

MSD's stormwater program is dedicated to improving the water quality of our local waterways. Tools that we use include plants and natural materials to collect and filter pollutants and allow rain water to soak into the ground like a sponge:

- Green infrastructure, like rain gardens
- Trees that absorb stormwater
- Stream restoration, creating natural buffers that shade the stream and protect wildlife habitat

MSD monitors the health of our waterways at 27 fixed sampling locations. Testing samples for:

- Algae growth
- Aquatic insects
- Chemicals
- Physical characteristics (temperature, pH, dissolved oxygen)
- Fish life
- Stream flow

MSD inspects about 100 business and industries annually to see if they are discharging pollutants directly or indirectly into the sewer or storm water systems. Our construction site inspectors perform more than 17,000 construction site inspections each year to keep sediment from flowing off the construction site and into our waterways. We also routinely inspect our pipes for cracks and repair them when necessary.

You can help protect our waterways by:

- Planting a tree.
- Plant a rain garden.
- Disconnecting your downspout and installing a rain barrel.
- Participating in a stream cleanup.
- Picking up litter.
- Disposing of pet waste in the trash.
- Speaking with those around you about decreasing the use of chemical fertilizer and pesticides.
- Not pouring any fats, oils, grease, paints or any petroleum product into a catch basin, storm drain or a drain in your house. These can make fish very sick and cause clogs in the pipes.
- Delaying the use of washing machines and dishwashers when there is a heavy rain. The extra discharge water can overwhelm the system.
- Properly disposing of medications. Never flush or pour any medications down the drain.

Riddle me this

How many miles of toilet paper are flushed to MSD wastewater treatment facilities every day of the year?

Helpful hints:

- A square section of toilet paper measures 4.5 inches.
- According to Charmin, the average person uses 57 squares daily.
- The population of Jefferson County is 750,800.
- About 3 percent of the population wears diapers.
- There are 5,280 feet in a mile.

How many miles would that be, how far would that toilet paper stretch?

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You can make a difference in the health of our streams.

Reduce Yard Runoff

Compost grass clippings, and decrease use of fertilizer and pesticides. When it rains, these chemicals make their way to our streams.

Don't Flush Wet Wipes

So-called "flushable wipes" do not break down properly in the sewer system. These wipes may clog sewer pipes and damage sewer line pumps.

Clean Trash From Streams

Pick up litter or participate in a stream cleanup to help prevent trash from entering waterways.

Drains Are Only For Water

Don't pour fats, oils, grease, paint, petroleum products or medications into a catch basin, storm drain or a drain in your house. These can make fish sick and cause clogs in the pipes.

Clean Up After Your Pet

Dispose of pet waste in the trash so that it isn't washed down storm drains. Dogs in Jefferson County produce four dump-truck loads of waste every day.

Soak Up Extra Rainwater

Plant a tree, construct a rain garden, or replace your downspout with a rain barrel garden to help absorb stormwater.

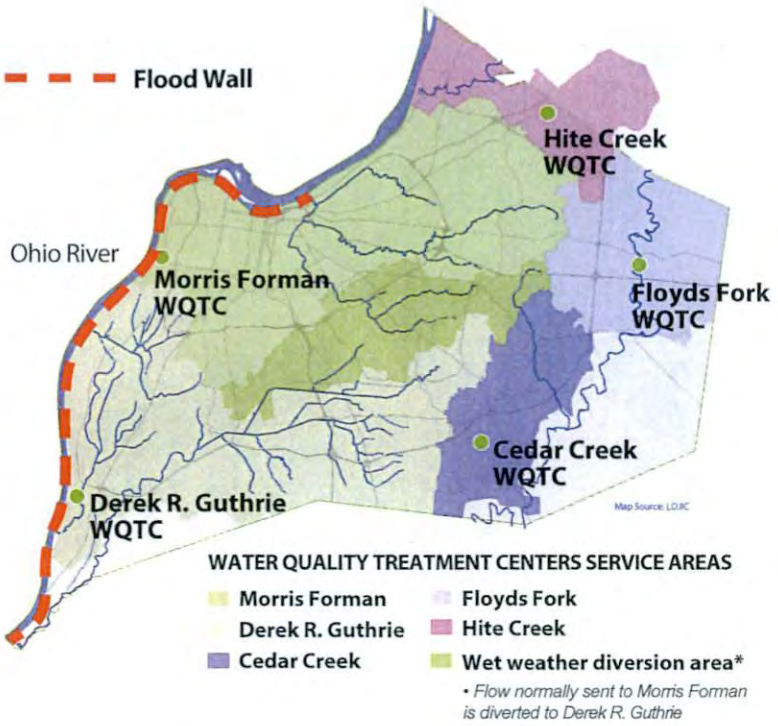
Louisville's Rainwater Flood Protection System

The Last Line of Defense

Louisville Metro's Ohio River Flood Protection System exists to keep the river at bay and out of the city. The system protects more than 200,000 people, 87,000 homes and $24 billion in property over 110 square miles. It includes 29 miles of flood wall and earthen levee, 16 flood pumping stations, nearly 150 floodgates and 80 flood wall closures.

Where creeks pass through the flood wall, gates can be closed to keep the river from flowing up the streams. Large pumps at the flood pumping stations are used to lift the water out of the overflowing creeks and move it out into the Ohio River. Additional gates and pumping stations perform the same task to keep the river from backing up through stormwater pipes — pumping excess stormwater out of the sewers and out into the river.

Think of the flood protection system like the sides of a bowl. During times of extreme rainfall when creeks and rivers begin to overflow, the openings in the bowl wall are sealed and pumps push water from the interior out into the river.



HEAVY RAINS CAUSE WATERWAYS TO RISE

PUMPS MOVE WATER OUTSIDE FLOOD WALLS

louisvillewater.com

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louisvillemsd.org

3/2018 - 4,000

RIVER TO RIVER:
LOUISVILLE'S WATER CYCLE

Louisville Water

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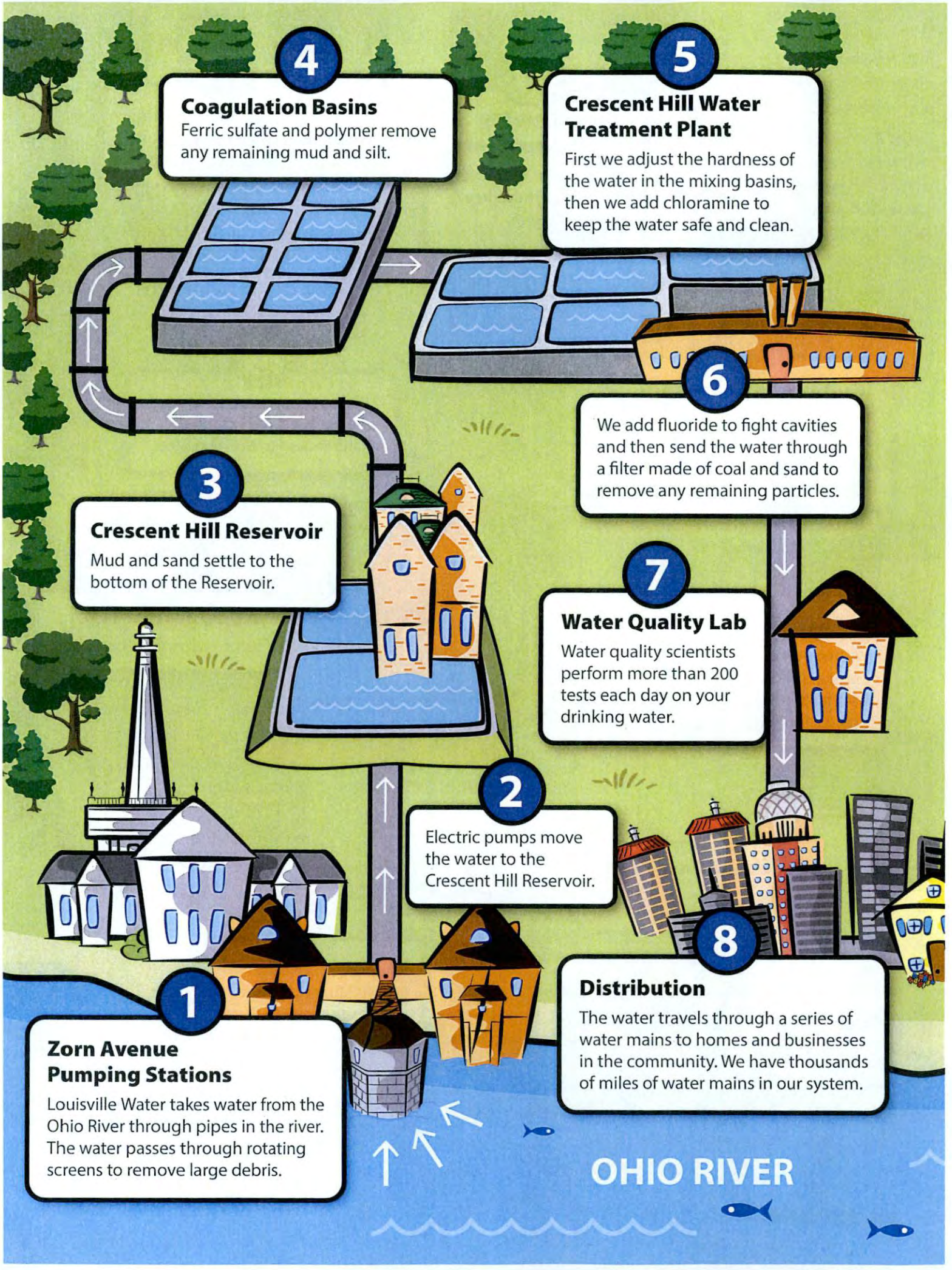
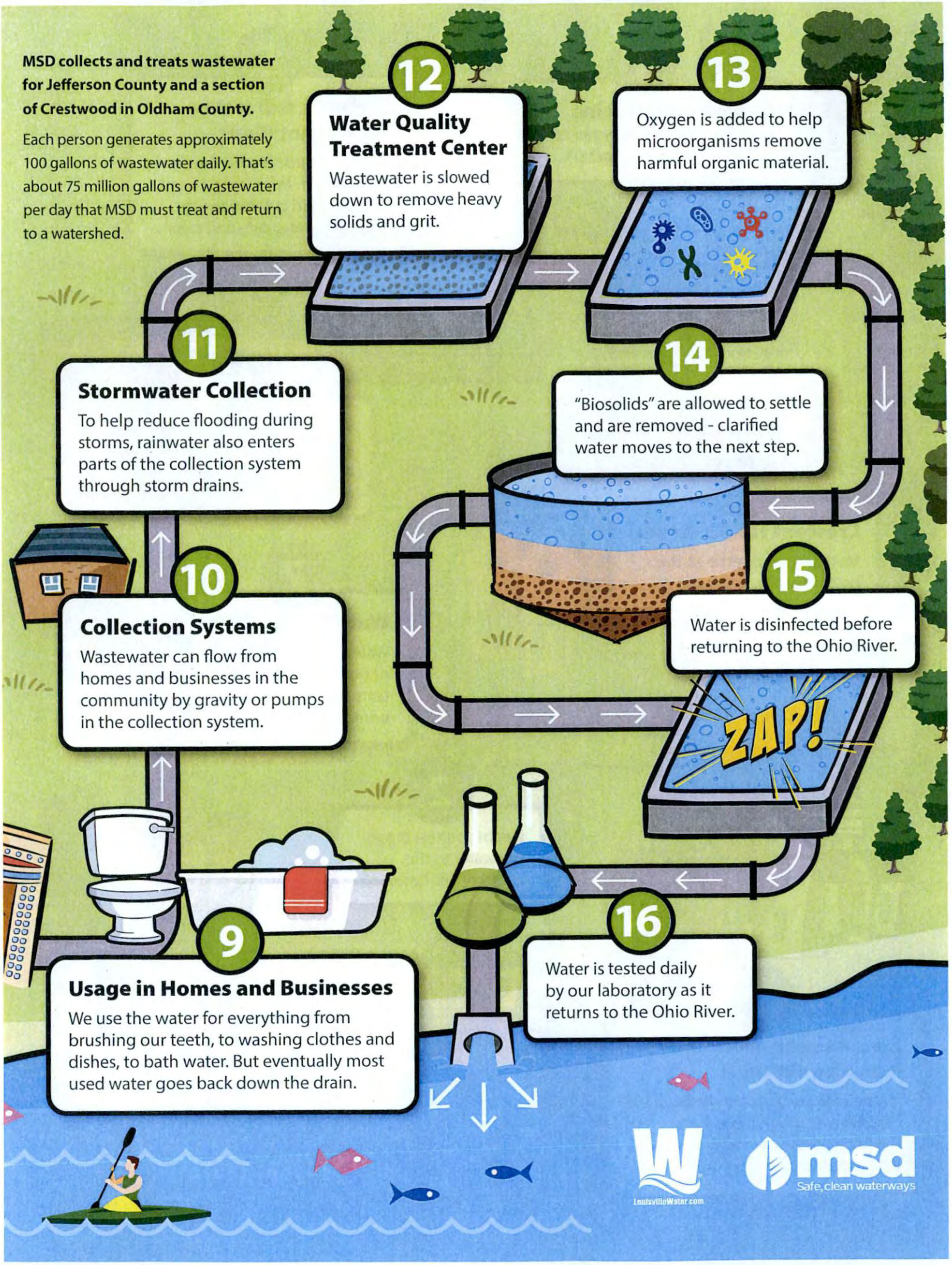

4
Coagulation Basins
Ferric sulfate and polymer remove any remaining mud and silt.
5
Crescent Hill Water Treatment Plant
First we adjust the hardness of the water in the mixing basins, then we add chloramine to keep the water safe and clean.
6
We add fluoride to fight cavities and then send the water through a filter made of coal and sand to remove any remaining particles.
3
Crescent Hill Reservoir
Mud and sand settle to the bottom of the Reservoir.
7
Water Quality Lab
Water quality scientists perform more than 200 tests each day on your drinking water.
2
Electric pumps move the water to the Crescent Hill Reservoir.
8
Distribution
The water travels through a series of water mains to homes and businesses in the community. We have thousands of miles of water mains in our system.
1
Zorn Avenue Pumping Stations
Louisville Water takes water from the Ohio River through pipes in the river. The water passes through rotating screens to remove large debris.
OHIO RIVER

MSD collects and treats wastewater for Jefferson County and a section of Crestwood in Oldham County.

Each person generates approximately 100 gallons of wastewater daily. That's about 75 million gallons of wastewater per day that MSD must treat and return to a watershed.



Stormwater Runoff and Watersheds

wa·ter·shed

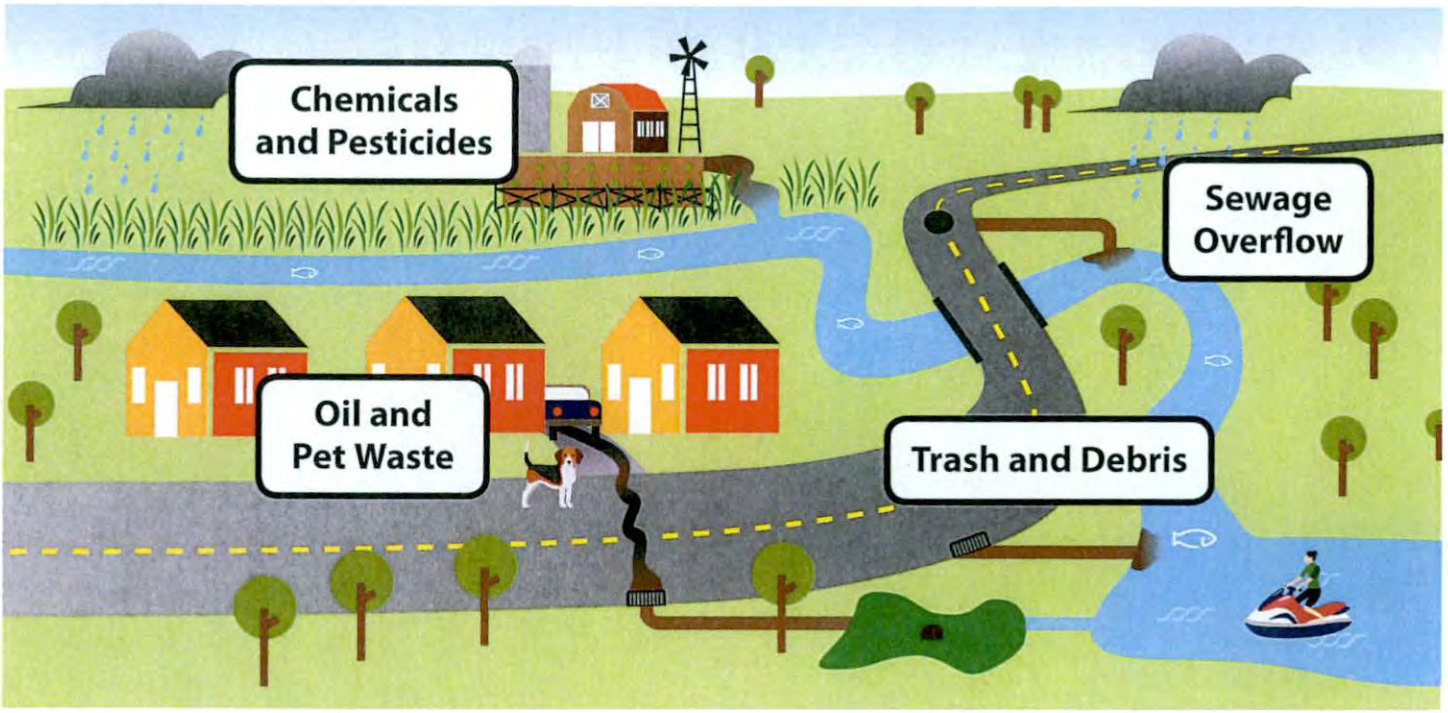
noun

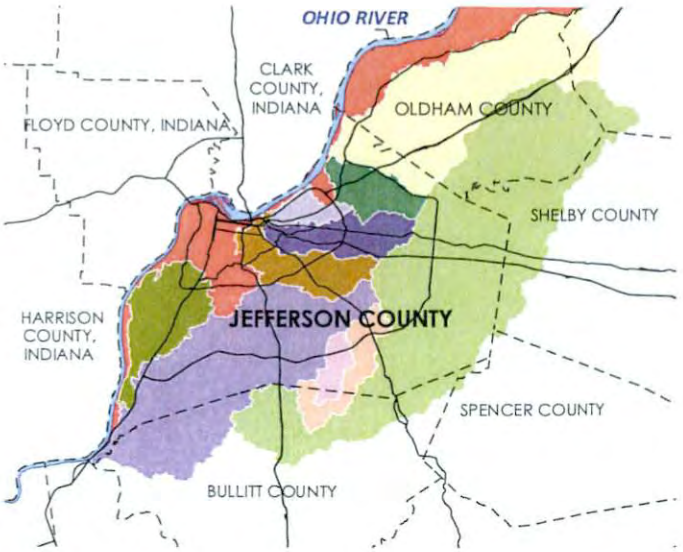
1. an area of land that drains to its lowest point.

Polluted Stormwater

Our community is part of a watershed, where stormwater or rainwater flows over rooftops, lawns, parking lots and roadways. This water collects soil and pollutants—like lawn chemicals, pet waste and oil—harming our waterways.

Trash and sediment can cloud the water in creeks and lakes, making it difficult for aquatic plants to grow. Excess nutrients from lawn chemicals can poison aquatic life, as well as the animals that eat fish and aquatic plants. Bacteria and other pathogens can flow into swimming or wading areas, which can affect human health.





Watersheds

- Ohio River
- Harrods Creek
- Goose Creek
- Muddy Fork of Beargrass Creek
- Middle Fork of Beargrass Creek
- South Fork of Beargrass Creek
- Floyds Fork
- Cedar Creek
- Pennsylvania Run
- Pond Creek
- Mill Creek

RUNOFF POLLUTION: IT'S IN OUR WATER

Rainwater runs off hard surfaces such as roads, sidewalks and roofs, instead of soaking in, which causes flooding and erosion and carries pollutants like trash, oil, and bacteria.

Homeowners often overuse fertilizers, herbicides, and pesticides, and improperly dispose of yard waste, oil, and chemicals.

Poorly maintained or failing septic systems add to bacteria problems.

Animal waste introduces bacteria to streams.

Logging and construction expose dirt, and if not properly managed, this dirt runs off into nearby streams.

Runoff from improperly managed crops introduces fertilizers, herbicides, pesticides, and dirt to streams.

Trash is not just ugly; it affects the health of the water.

LEARN MORE ABOUT THE HEALTH OF YOUR STREAM!

LouisvilleMSD.org/WaterQuality

Go to the Kentucky Division of Water, Water Health Portal: watermaps.ky.gov

Go to the Watershed Watch Data Portal: kgs.uky.edu/wwky

TAKE ACTION TO IMPROVE THE HEALTH OF YOUR STREAM

Participate in a group like Watershed Watch: kywater.org

You can also take action on your own:

- Organize a stream cleanup
- Pick up after your pet
- Use chemicals as recommended
- Plant a rain garden
- Install a rain barrel
- Educate others

Contact your River Basin Coordinator:
water.ky.gov/watershed or 502.564.3410

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Safe, clean waterways

502.587.0603
CustomerRelations@LouisvilleMSD.org
@LouisvilleMSD

Adapted with permission, KDOW, 2017 Stream Health Pocket Guide

Symbols: Integration and Application Network,University of Maryland Center for Environment Science (ian.umces.edu/imagelibrary/)

Macroinvertebrate Illustrations: Cacapon Institute, Jennifer Gillies, artist; through the West Virginia Save Our Streams Program.

Funded in part by a grant from the Virginia Environmental Endowment.

Created by: Chad Von Gruenigen (KDOW/WMB)

3,000/10-2017

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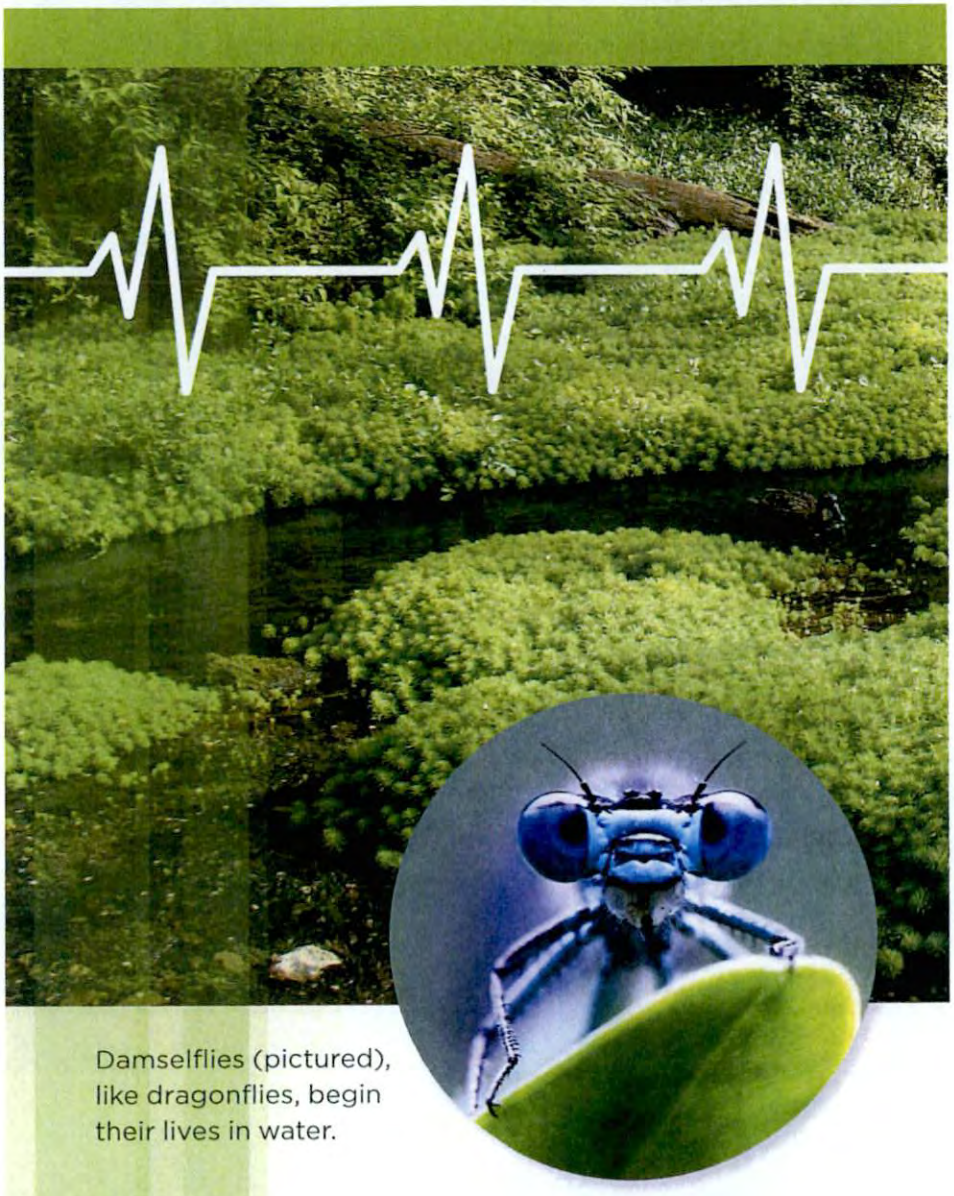
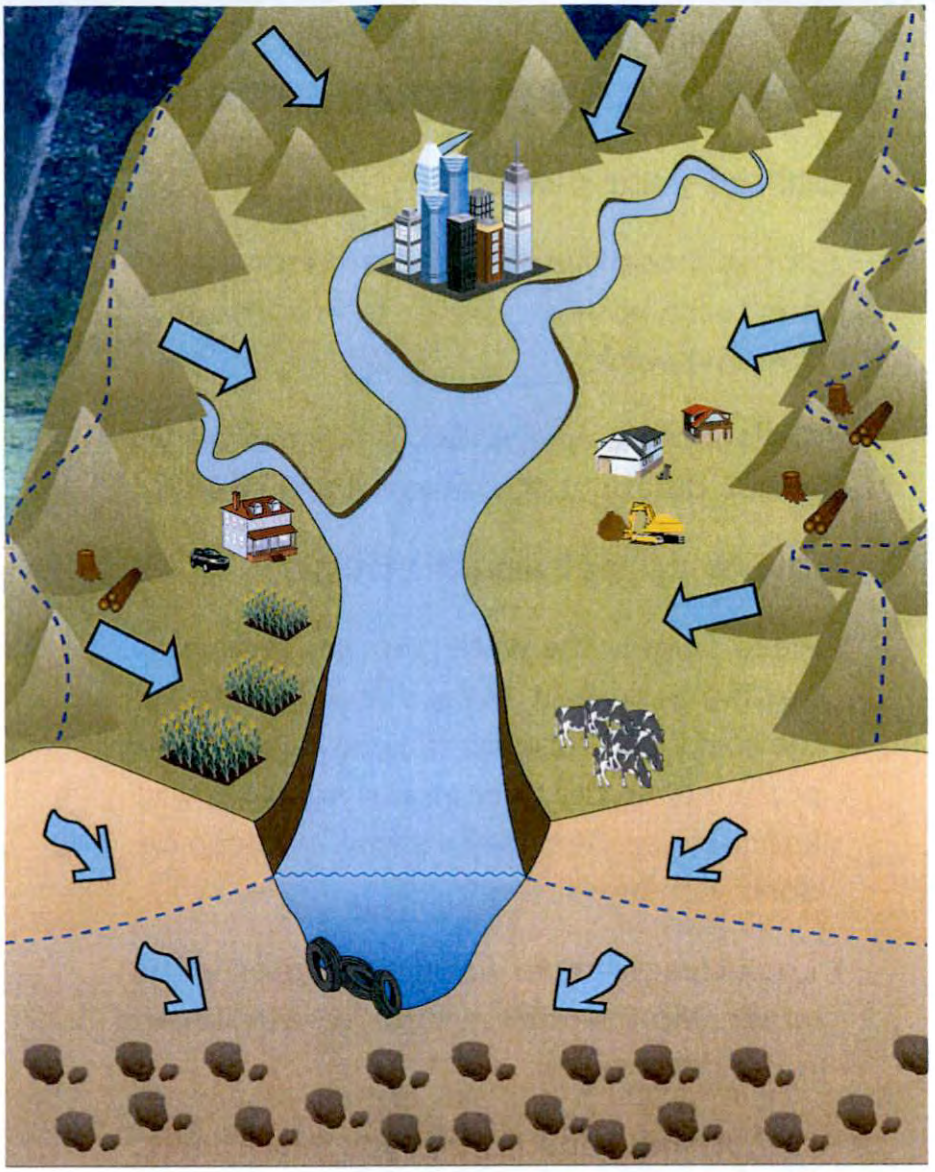
STREAM HEALTH POCKET GUIDE



Damselflies (pictured), like dragonflies, begin their lives in water.

KENTUCKY
Division of Water

WATERSHED WATCH IN KENTUCKY



IF IT'S ON THE GROUND

A **watershed** is an area of land from which all the water drains to a common stream, river, or lake. The rainwater that runs across the ground (runoff) picks up pollutants as it goes. Everyone must do their part to reduce and slow down **runoff pollution** before it gets into the water.

HOW CLEAN IS YOUR STREAM?

Collect your own info:

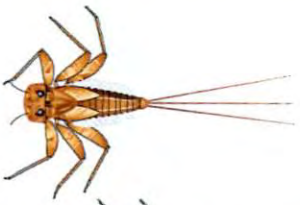
- Join a group like Watershed Watch that can teach you the science to know your stream health.
- Collect some aquatic bugs; this can tell you a little bit about the health of any stream.

How to collect aquatic bugs:

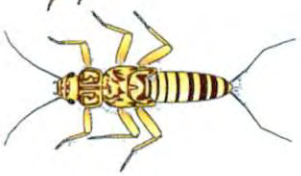
- Place a net in the water with the stream flowing through it. Scrape your feet along the rocks and through the gravel upstream of the net so the net catches anything you knock loose. See image below; this can be done with any size net.
- Look closely under rocks and leaves in the water. Jab your net through vegetation and roots in the water.
- Identify the aquatic bugs you have found, check for them on the list.
- Be gentle and quickly return aquatic bugs, fish and even leaves to the water where you found them.
- Make note of any observations such as odors and water color, and take pictures of pipes, eroded areas, trash and other concerns.

LEARN ABOUT THE HEALTH OF YOUR STREAM FROM WHAT'S LIVING THERE!

Pollution Sensitive:
They like clean water



Mayfly:
3 thread-like tails.
2-30mm



Stonefly:
2 thread-like tails.
5-35mm

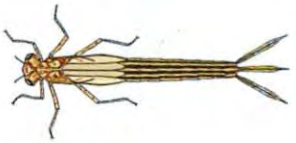
Hellgrammite (dobsonfly larva):
Large pinchers near mouth. >65mm

Water Penny:
Slightly cupped disc, often stuck to rocks.
2-6mm

Caddisfly:
Net-spinning and case-building varieties. Cases are made from pebbles, sticks, etc.
2-40mm

Medium Pollution Tolerance:
A little bit tougher

Dragonfly:
No tails and
large eyes.
20-50mm



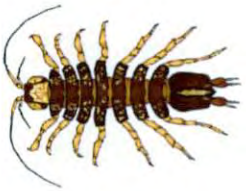
Damselfly:
3 fan-like tails.
15-30mm

Cranefly:
Caterpillar-like
with finger-like
appendages.
10-60mm

Crayfish:
Looks like
a small lobster.
30-150mm

Pollution Tolerant:
They don't mind the mess

Aquatic Worm:
Resemble earth-
worms. 1-7.5mm



Isopod (sowbug)**:**
Slow moving, looks
like a roly-poly.
5-20mm

Leech:
Large with suckers.
10-100mm

ESTIMATE THE HEALTH OF YOUR STREAM!

Check each aquatic bug you find:

- ◯ Mayfly
- ◯ Stonefly
- ◯ Hellgrammite
- ◯ Water Penny
- ◯ Caddisfly

If you found a lot of green aquatic bugs and a few orange and red, you likely have a healthy stream.

- ◯ Dragonfly
- ◯ Damselfly
- ◯ Cranefly
- ◯ Crayfish

If you found some green aquatic bugs, but more orange and red aquatic bugs, you likely have a stream of fair health.

- ◯ Aquatic Worm
- ◯ Isopod
- ◯ Leech

If you found no green aquatic bugs, but lots of orange and red aquatic bugs, you likely have a stream of poor health.

Streams can be great places, but be cautious. Watch out for slick rocks and fast currents, and wash your hands afterwards because some pollution can make people sick.

Millimeter Ruler (mm)

This Thanksgiving and everyday... avoid a clogged pipe

Can the grease!

Never pour fats, oils and grease down a sink, drain or toilet. Pour used grease into an empty, heat-safe container, such as a soup can, and store it in the freezer. Once the grease has become solid, toss the can into the garbage.

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Safe, clean waterways

This Thanksgiving and everyday... avoid a clogged pipe

Scrape food waste into the trash.

Never pour fats, oils and grease down a sink, drain or toilet. Wipe all pots, pans, dishes and cooking utensils with a paper towel to soak up grease before washing them.

msd
Safe, clean waterways

This Thanksgiving and everyday... avoid a clogged pipe

Scrape food waste into the trash.

Never pour fats, oils and grease down a sink, drain or toilet. Wipe all pots, pans, dishes and cooking utensils with a paper towel to soak up grease before washing them.

msd
Safe, clean waterways

'Flushable' wipes... are NOT "flushable"

Avoid a backup by tossing wipes into the trash.

Wipes do not break down, even if their labels read "flushable." They can cause problems in plumbing systems and lead to sewer backups in your home or place of business. Wipes clog and damage sewer line pumps, screens and other mechanical parts at water quality treatment centers. They cause 60 percent of the clogs that MSD employees must repair.

Do everyone a favor and **toss your wipes in the trash—not into the toilet.**

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Safe, clean waterways

OUR MISSION
Providing Exceptional Wastewater, Drainage and Flood Protection Services for Our Community

24/7/365
Customer Relations · 502.587.0603
CustomerRelations@LouisvilleMSD.org

LouisvilleMSD

To read the latest concerning this worldwide issue, go to **NoMoreWipes.com.**

'Flushable' wipes...
are NOT "flushable"

Avoid a backup by tossing wipes into the trash.

The Main Office has experienced two backups in the past month due to pumps clogged with wipes. This is extremely unfortunate for those who work on the lower level where the pumps are housed. It can happen at any of our facilities or even your own home. Do your coworkers and yourself a favor, and **toss the wipes in the trash—not into the toilet.**

To read the latest concerning this worldwide issue, go to **NoMoreWipes.com.**

'Flushable' wipes... are NOT "flushable"

Avoid a backup by tossing wipes into the trash.

Wipes do not break down, even if their labels read "flushable." They can cause problems for office and home plumbing systems and lead to sewer backups. Wipes clog and damage sewer line pumps, screens and other mechanical parts at water quality treatment centers.

They cause 60 percent of the clogs that MSD employees must repair. Do your coworkers and yourself a favor and **toss the wipes in the trash—not into the toilet.**

To read the latest concerning this worldwide issue, go to **NoMoreWipes.com.**

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Appendix G Organizational Chart

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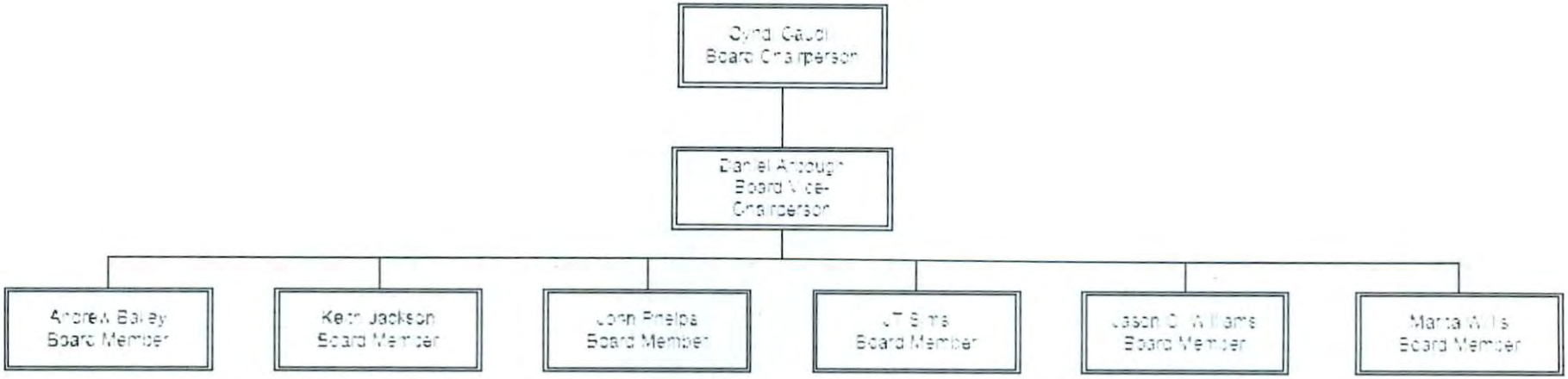
Louisville and Jefferson County Metropolitan Sewer District

Organizational Chart
Effective 07/01/18

Organizational Summary

	Total Positions	Current Actual	Vacant (Budgeted)	New/ Unbudgeted (Vacant)	Exempt	Non-Exempt	Unit	Net Overbudget
Executive Offices Division								
Executive Offices	8	7	1	0	6	2	0	0
Customer Relations	21	17	4	0	4	17	0	0
Facilities, Safety & Security	18.5	15.5	3	0	10	8.5	0	0
Legal Division	11	6	5	0	8	3	0	0
Human Resources Division	16	15	1	0	12	4	0	0
Information Technology Division	34	26	8	0	29	5	0	0
Finance Division	44	41	3	0	17	27	0	0
Engineering Division								
Eng Admin, Reg Compliance, Records & GIS	19.5	16	3.5	0	10	9.5	0	0
Engineering Technical Services	37	30	7	0	28	9	0	0
Development & Stormwater Services	44	41	3	0	20	24	0	0
Operations Division								
Administration	2	2	0	0	1	1	0	0
Treatment Facilities	92	86	6	0	20	18	54	0
Treatment Facilities (Maintenance)	38	38	0	0	5	0	33	0
Collections System and Flood Protection	68	63	5	0	13	16	39	0
Wastewater and Drainage	117	112	5	0	10	11	96	0
Wastewater and Drainage (Sanitary)	74	71	3	0	8	2	64	0
Support Services	42	38	4	0	9	19	14	0
Performance Metrics	10	7	3	0	4	6	0	0
DISTRICT TOTAL	**696**	**631.5**	**64.5**	**0**	**214**	**182**	**300**	**0**

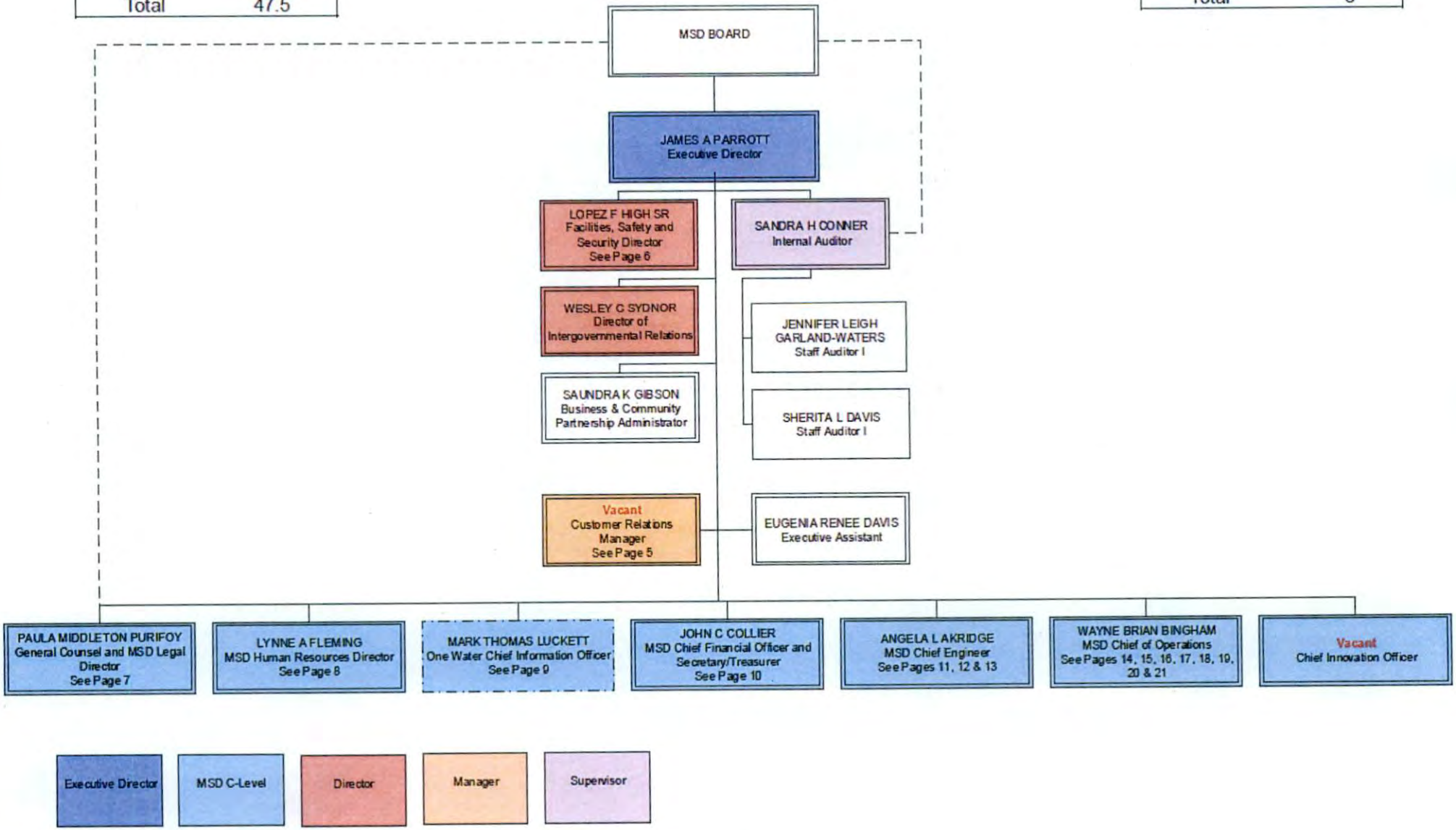
Board Members



Executive Offices Division
Executive Offices

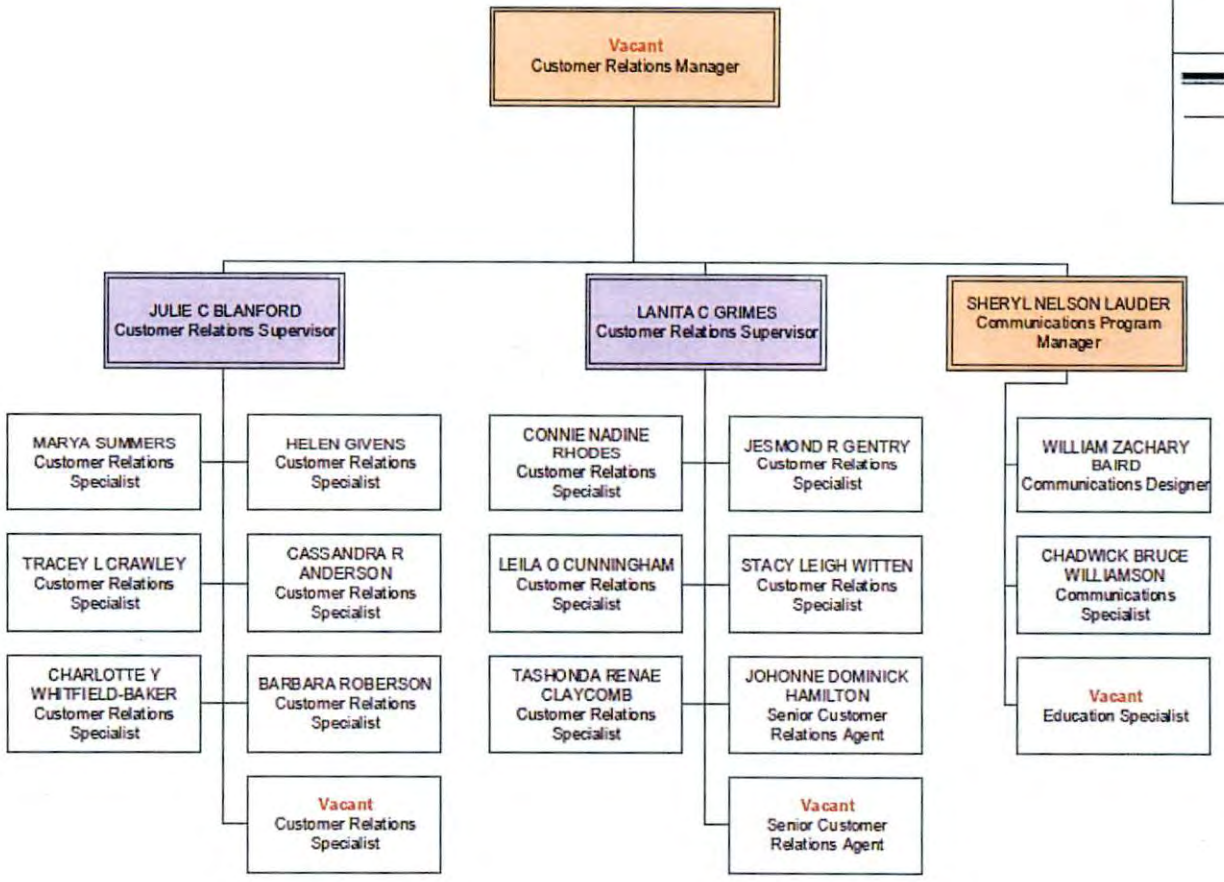
DIVISION BUDGET STATUS	
Actual	39.5
Vacant	8.0
Authorized	47.5
Exempt	20.0
Non-Exempt	27.5
Unit	0.0
Total	47.5

BUDGET STATUS	
Actual	7
Vacant	1
Authorized	8
Exempt	6
Non-Exempt	2
Unit	0
Total	8



Executive Offices Division
Customer Relations

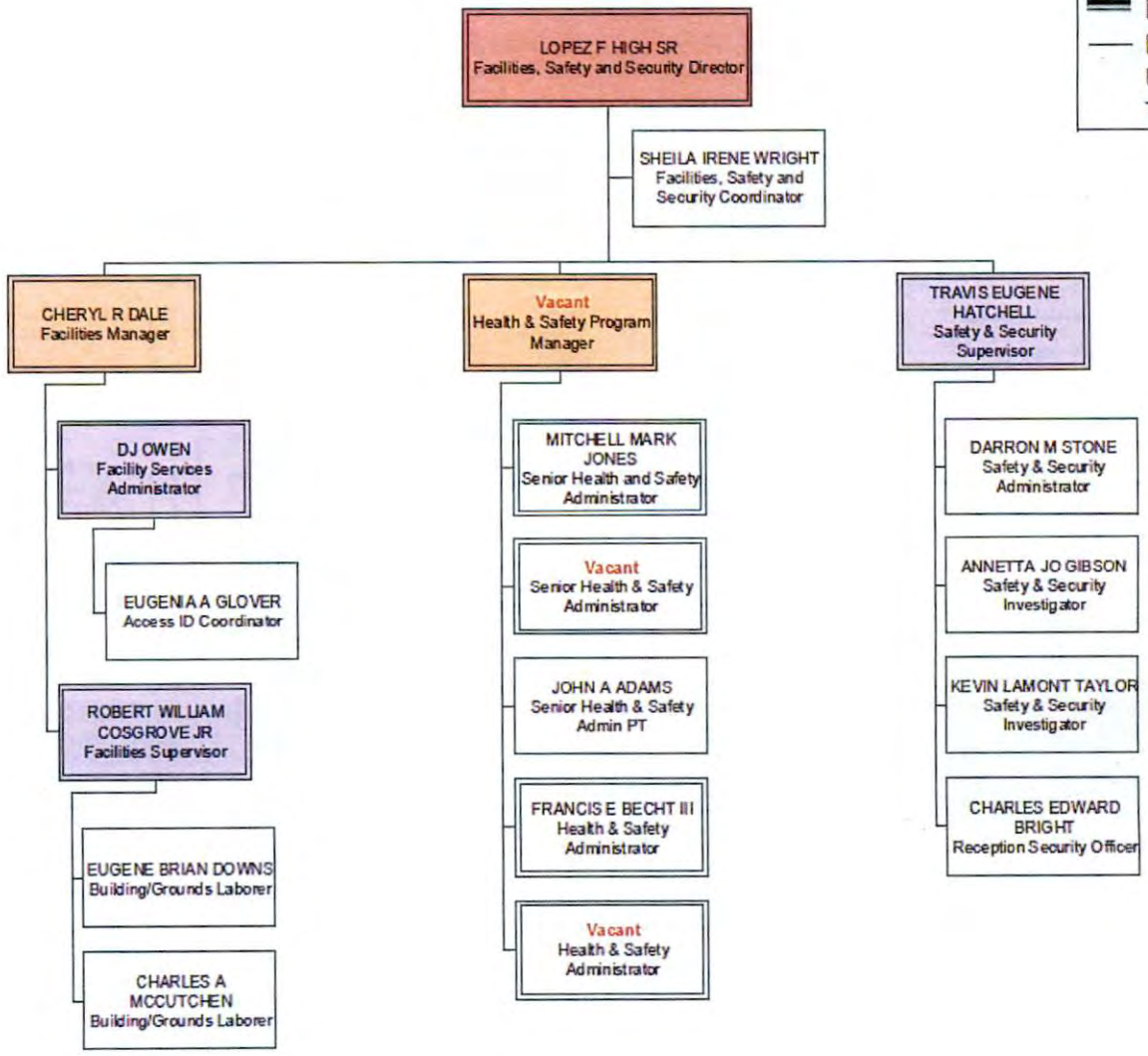
BUDGET STATUS	
Actual	17
Vacant	4
Authorized	21
Exempt	4
Non-Exempt	17
Unit	0
Total	21



Executive Director | MSD C-Level | Director | Manager | Supervisor

Executive Offices Division
Facilities, Safety & Security

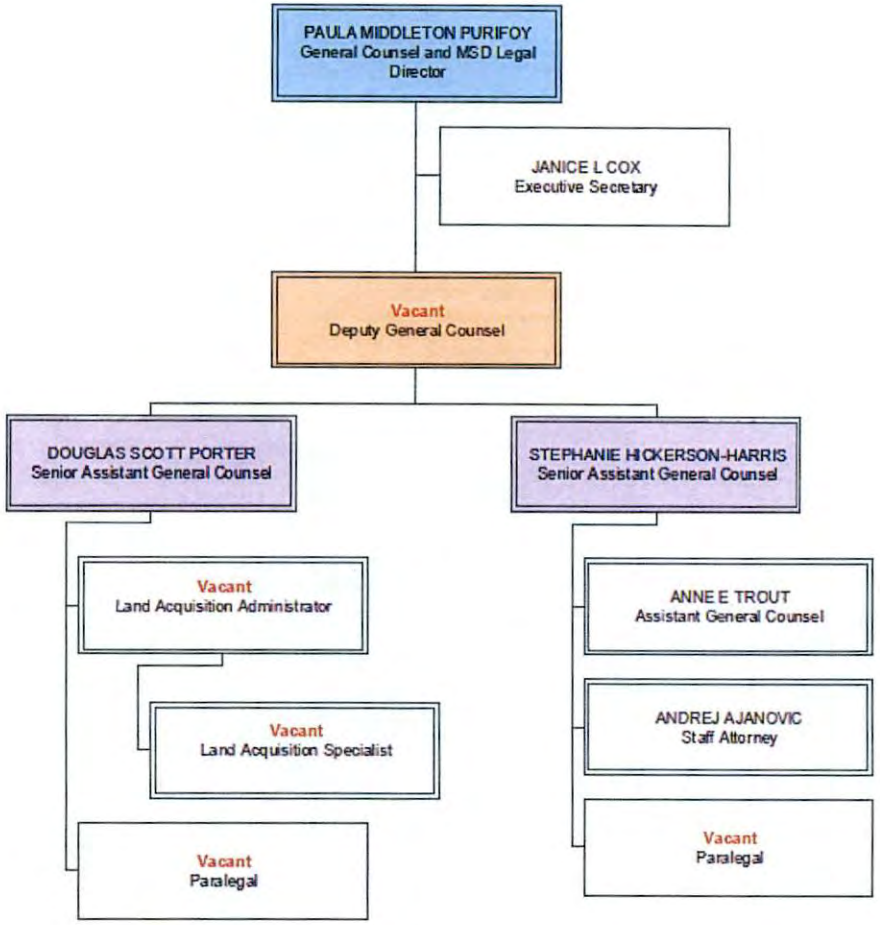
BUDGET STATUS	
Actual	15.5
Vacant	3.0
Authorized	18.5
Exempt	10.0
Non-Exempt	8.5
Unit	0.0
Total	18.5



Executive Director | MSD C-Level | Director | Manager | Supervisor

Legal Division

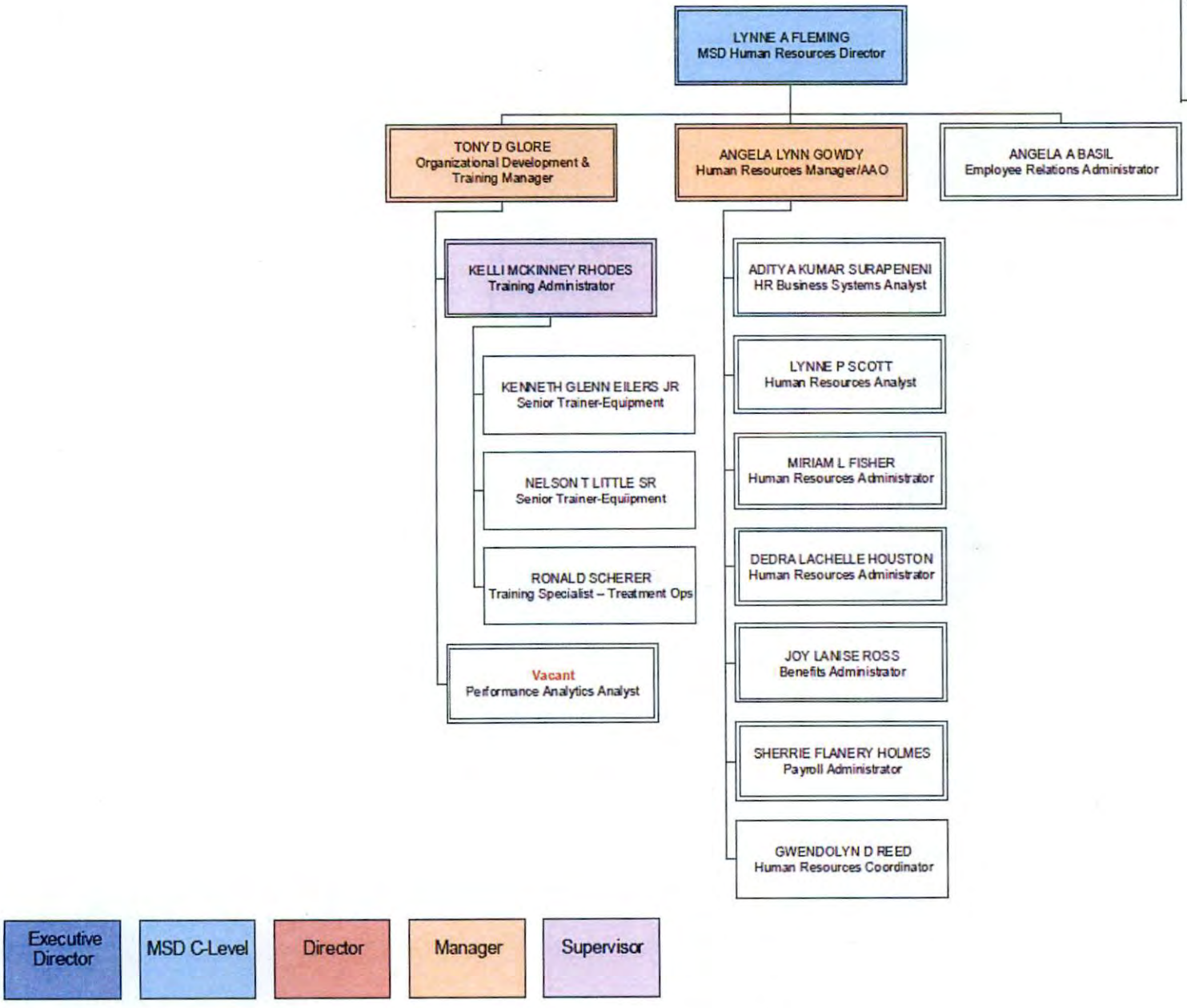
BUDGET STATUS	
Actual	6
Vacant	5
Authorized	11
Exempt	8
Non-Exempt	3
Unit	0
Total	11



Executive Director | MSD C-Level | Director | Manager | Supervisor

Human Resources Division

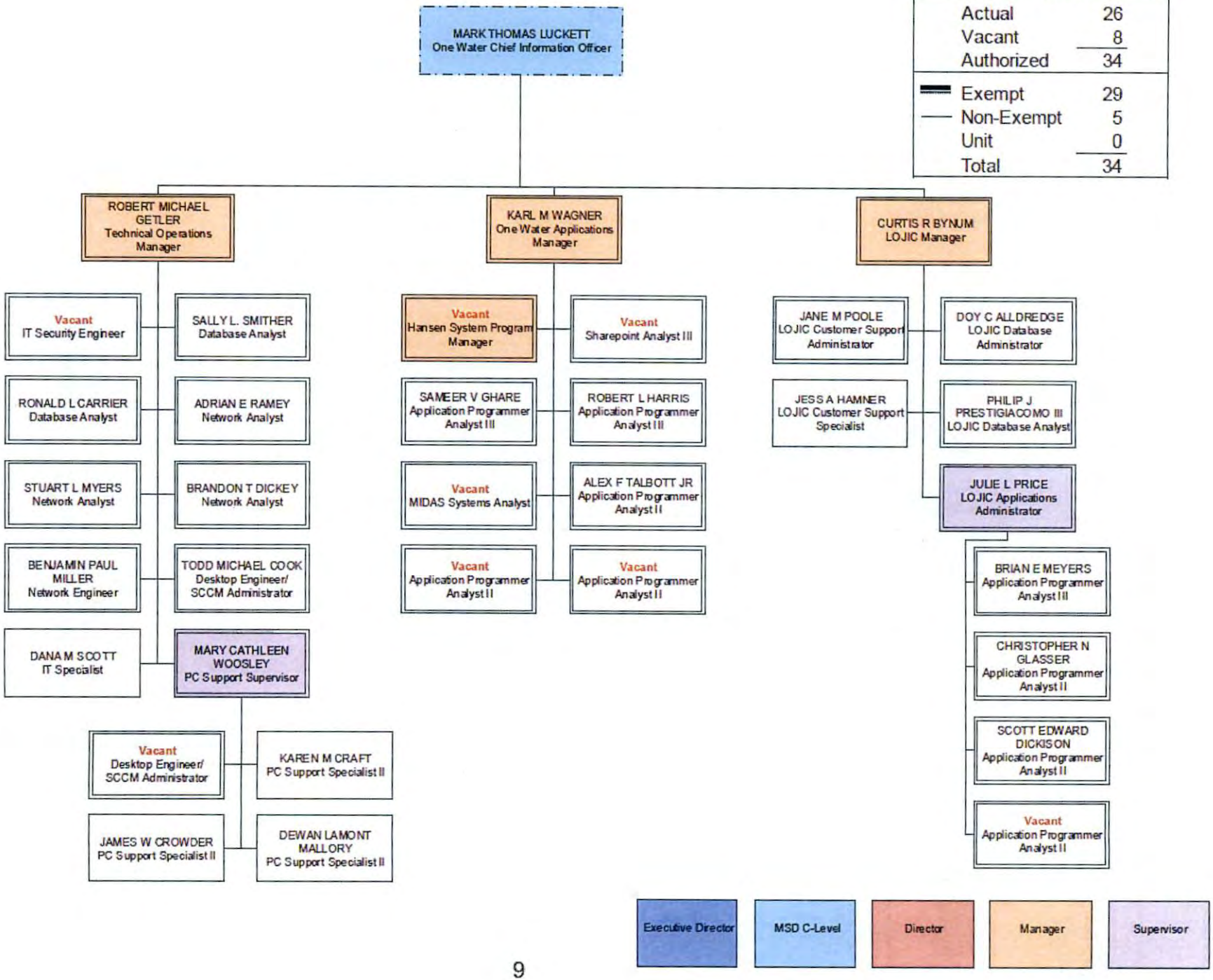
BUDGET STATUS	
Actual	15.0
Vacant	1.0
Authorized	16.0
Exempt	12.0
Non-Exempt	4.0
Unit	0.0
Total	16.0



Executive Director | MSD C-Level | Director | Manager | Supervisor

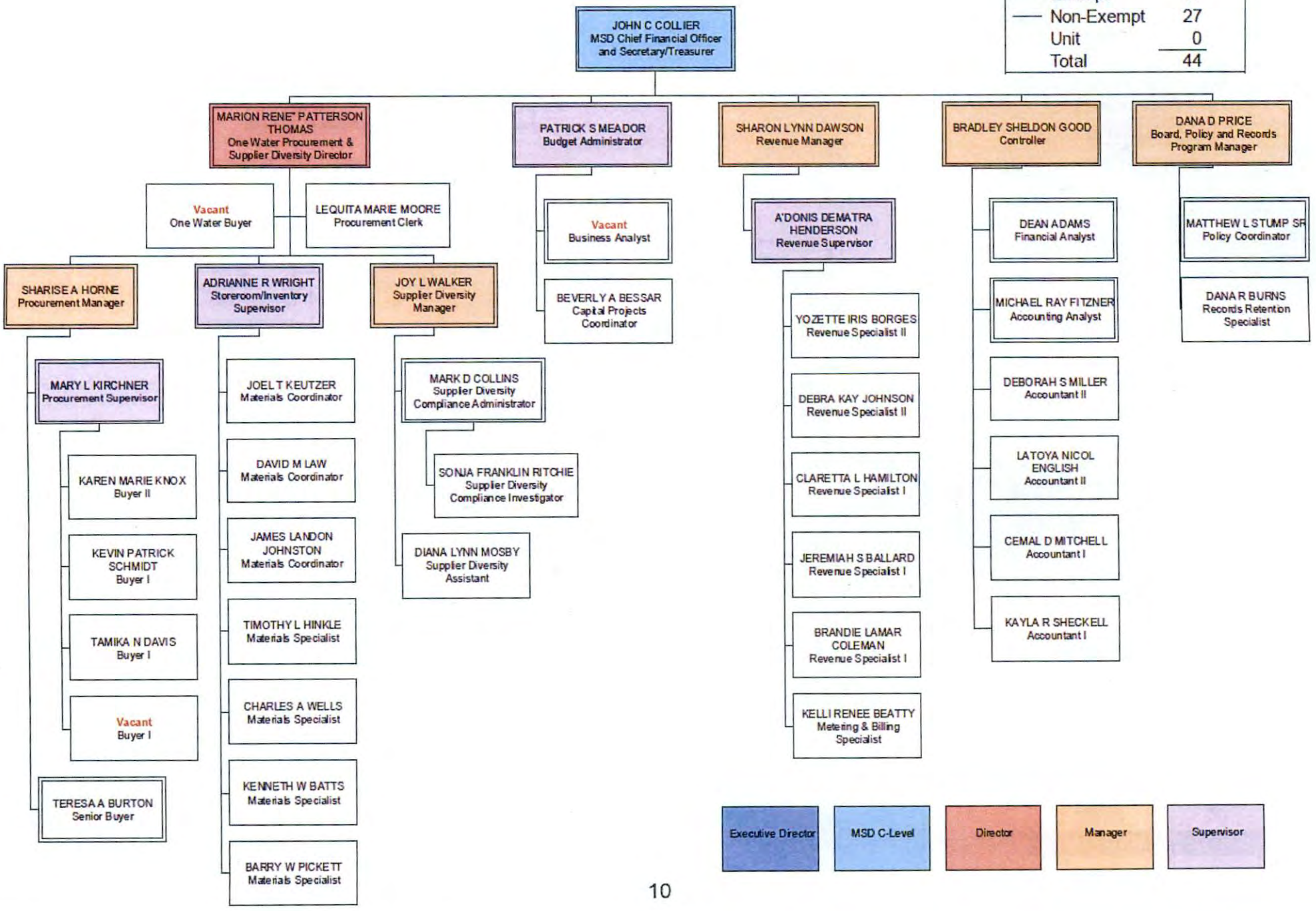
Information Technology Division

BUDGET STATUS	
Actual	26
Vacant	8
Authorized	34
Exempt	29
Non-Exempt	5
Unit	0
Total	34



Finance Division

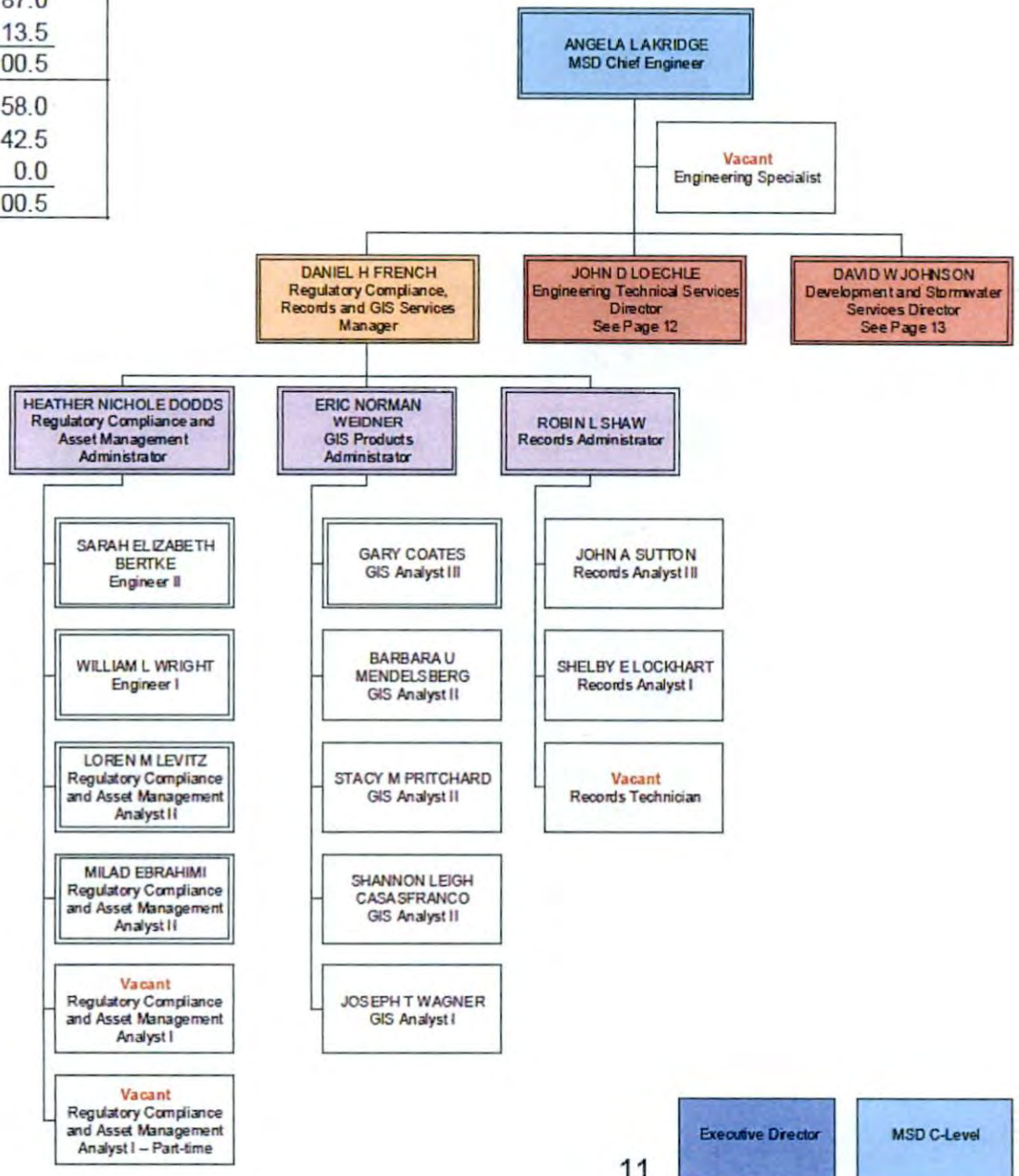
BUDGET STATUS	
Actual	41
Vacant	3
Authorized	44
Exempt	17
Non-Exempt	27
Unit	0
Total	44



Engineering Division
Engineering Admin, Regulatory Compliance, Records & GIS

DIVISION BUDGET STATUS	
Actual	87.0
Vacant	13.5
Authorized	100.5
Exempt	58.0
Non-Exempt	42.5
Unit	0.0
Total	100.5

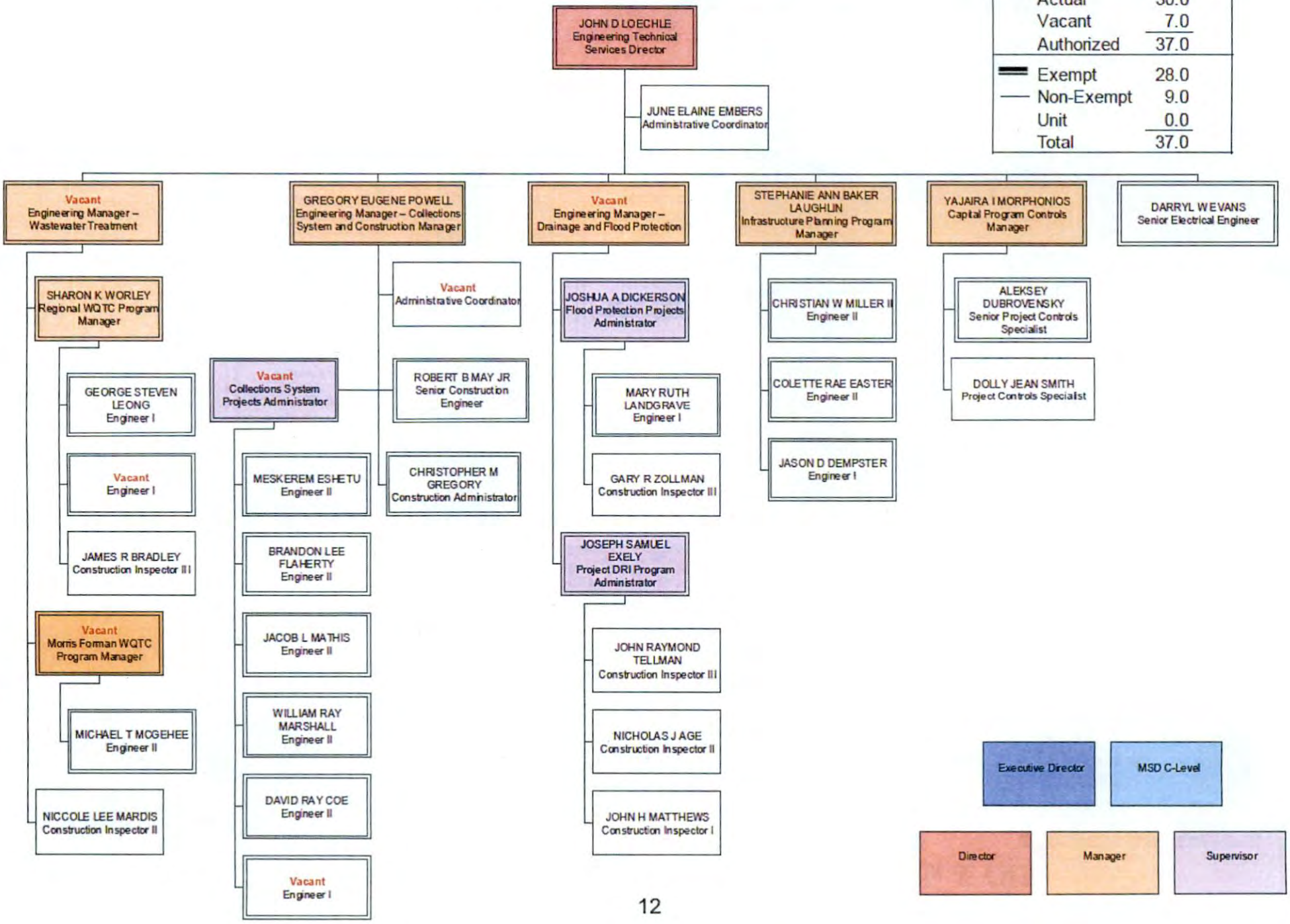
BUDGET STATUS	
Actual	16.0
Vacant	3.5
Authorized	19.5
Exempt	10.0
Non-Exempt	9.5
Unit	0.0
Total	19.5



Executive Director | MSD C-Level | Director | Manager | Supervisor

Engineering Division
Engineering Technical Services

BUDGET STATUS	
Actual	30.0
Vacant	7.0
Authorized	37.0
Exempt	28.0
Non-Exempt	9.0
Unit	0.0
Total	37.0



Engineering Division
Development & Stormwater Svcs

BUDGET STATUS	
Actual	41.0
Vacant	3.0
Authorized	44.0
Exempt	20.0
Non-Exempt	24.0
Unit	0.0
Total	44.0

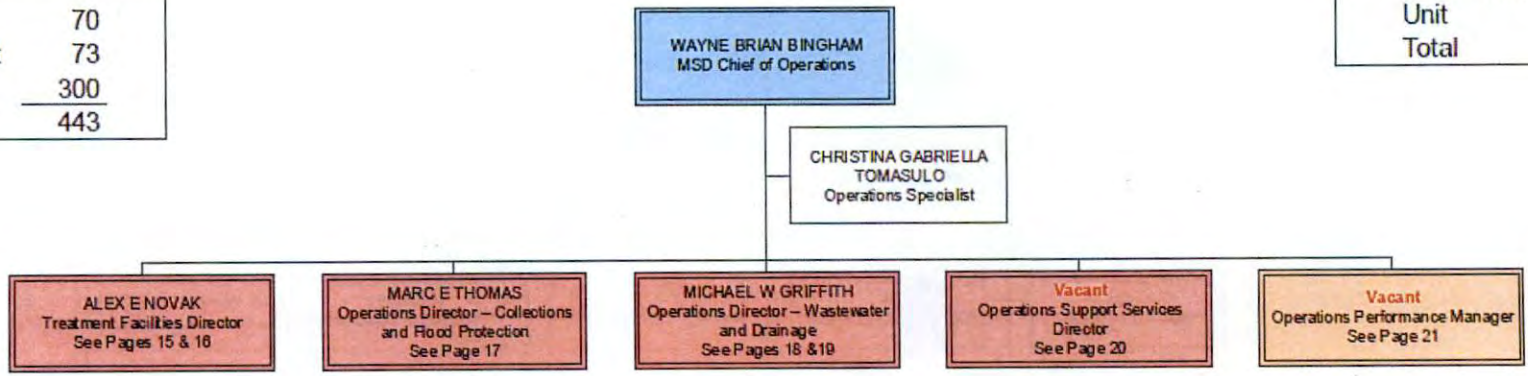
- DAVID W JOHNSON — Development and Stormwater Services Director
  - KIMMICHELLE ROBINSON — Administrative Coordinator
  - WILLIAM JOSEPH ASHBY — Development Review Manager
    - GARNETT BRADLEY SELCH — Development Infrastructure Program Administrator
      - BRIAN E BRADLEY — Engineer II
      - DAVID J MULLOY — Engineer II
      - JOSEPH A KELLY — Engineer I
      - LISA ACREE HARDLEY — Engineer I
      - KIMBERLY D LOECHLE — Engineer I
      - CAROLYN M FUST — Development Specialist II
      - ANGELA MARIE SANCHEZ — Development Technician
    - PATRICK M BARRY — Plumbing Modification Services Administrator
      - VIKKI LEANN HUELSMAN — Plumbing Modification Program Specialist
      - PEGGY LYNN NOBLE — Sanitary and Stormwater Services Inspector II
      - HORACE GAITHER JR — Sanitary and Stormwater Services Inspector I
      - Vacant — Sanitary and Stormwater Services Inspector I
  - ROBERT E STAUBLE — Construction Inspection Manager
    - LACHRISTAL S LEWIS — Enforcement Specialist
    - GARY J FELDKAMP — Construction Inspection Supervisor
      - DENVER CRAFT JR — Construction Inspector III
      - EVERETT E GREENWOOD JR — Construction Inspector III
      - MICHAEL RAYMOND HARRETT — Construction Inspector II
      - TERRY LEE MILLER — Construction Inspector II
      - JOSHUA I GRAVES — Construction Inspector II
      - RONNIE RICHARDS — Construction Inspector I
    - PATRICK TEETER — Construction Inspection Supervisor
      - MARK PURCELL SOUTHARD — Construction Inspector III
      - RONALD HENDERSON — Construction Inspector III
      - JERRY EUGENE BOND JR — Construction Inspector III
      - STEVEN THOMAS BLANFORD — Construction Inspector II
      - TYLER A SMITH — Construction Inspector II
      - URIAH AHIJAH MAUDLIN — Construction Inspector I
    - LESTER L WURZEL — Construction Inspection Supervisor
      - SCOTT THOMAS DOSS — Construction Inspector II
      - BRYON D RICHARDSON — Construction Inspector I
      - LAUREN BUTLER — Construction Inspector I
      - JESSE LEE BARRETT — Construction Inspector I
  - Vacant — MS4 Program Manager
    - JORDAN ANTHONY BASHAM — Engineer II
    - ERIN BAKER WAGONER — Project Administrator
    - Vacant — Engineering Technician V
  - LORI A RAFFERTY — Floodplain and CRS Administator
    - SHARLIE A KHAN — Project Administrator
    - MATTHEW R SCHAAF — Engineer I

Executive Director | MSD C-Level | Director | Manager | Supervisor

Operations Division
Administration

DIVISION BUDGET STATUS	
Actual	417
Vacant	26
Authorized	443
Exempt	70
Non-Exempt	73
Unit	300
Total	443

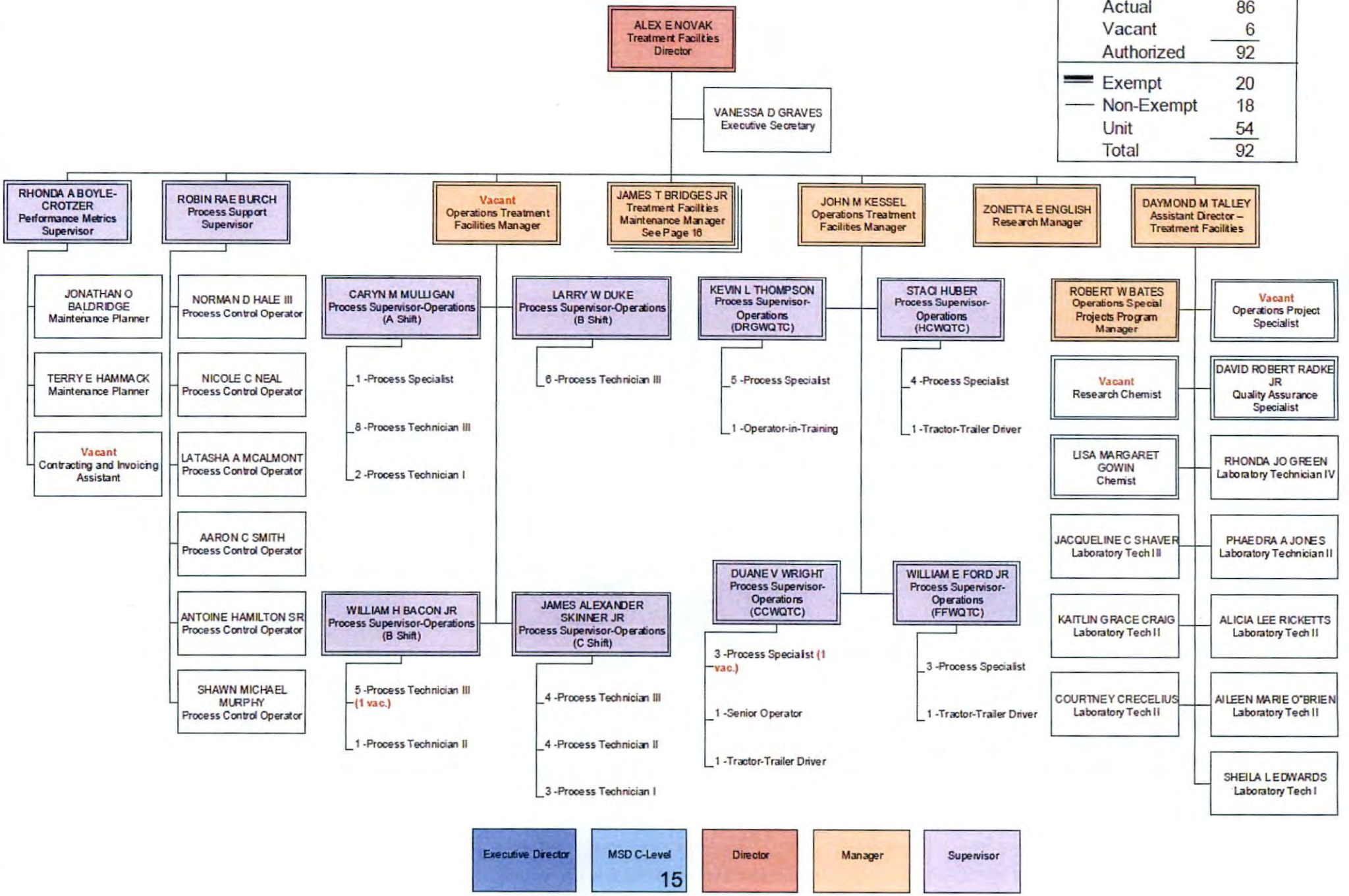
BUDGET STATUS	
Actual	2
Vacant	0
Authorized	2
Exempt	1
Non-Exempt	1
Unit	0
Total	2



Executive Director | MSD C-Level | Director | Manager | Supervisor

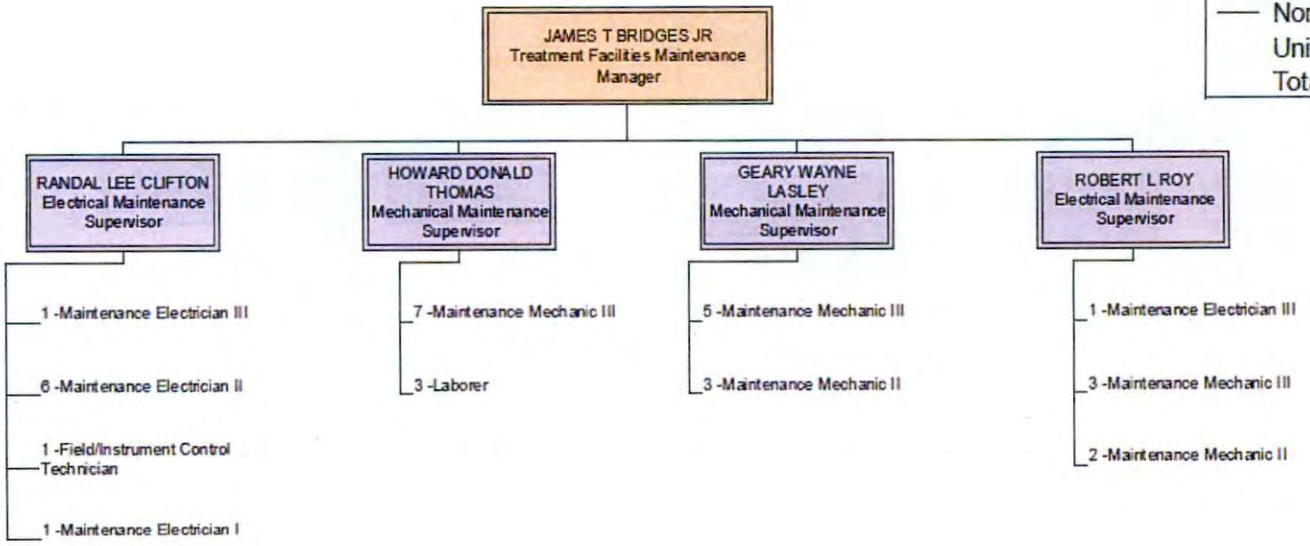
Operations Division
Treatment Facilities

BUDGET STATUS	
Actual	86
Vacant	6
Authorized	92
Exempt	20
Non-Exempt	18
Unit	54
Total	92



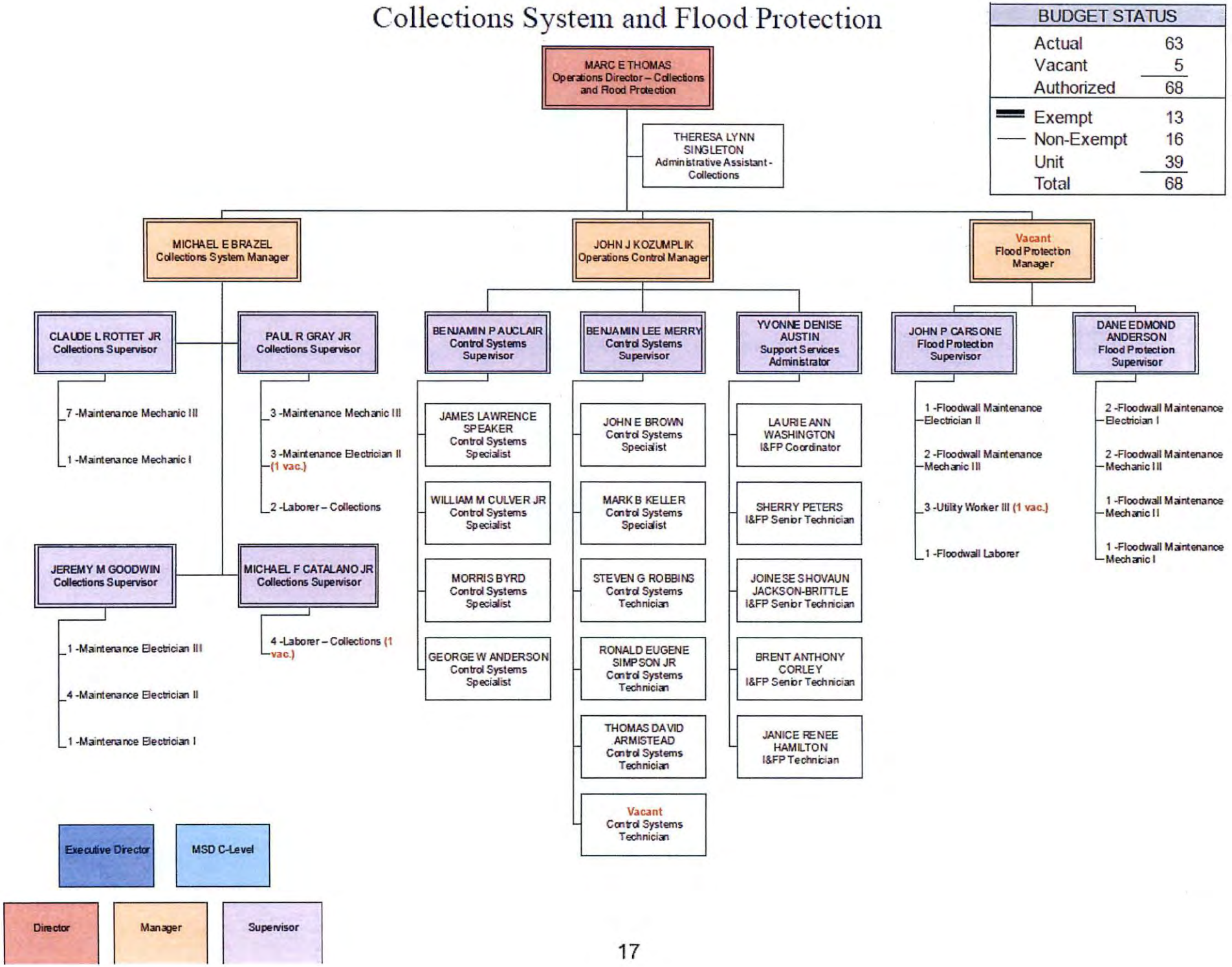
Operations Division
Treatment Facilities (Maintenance)

BUDGET STATUS	
Actual	38
Vacant	0
Authorized	38
Exempt	5
Non-Exempt	0
Unit	33
Total	38



Executive Director | MSD C-Level | Director | Manager | Supervisor

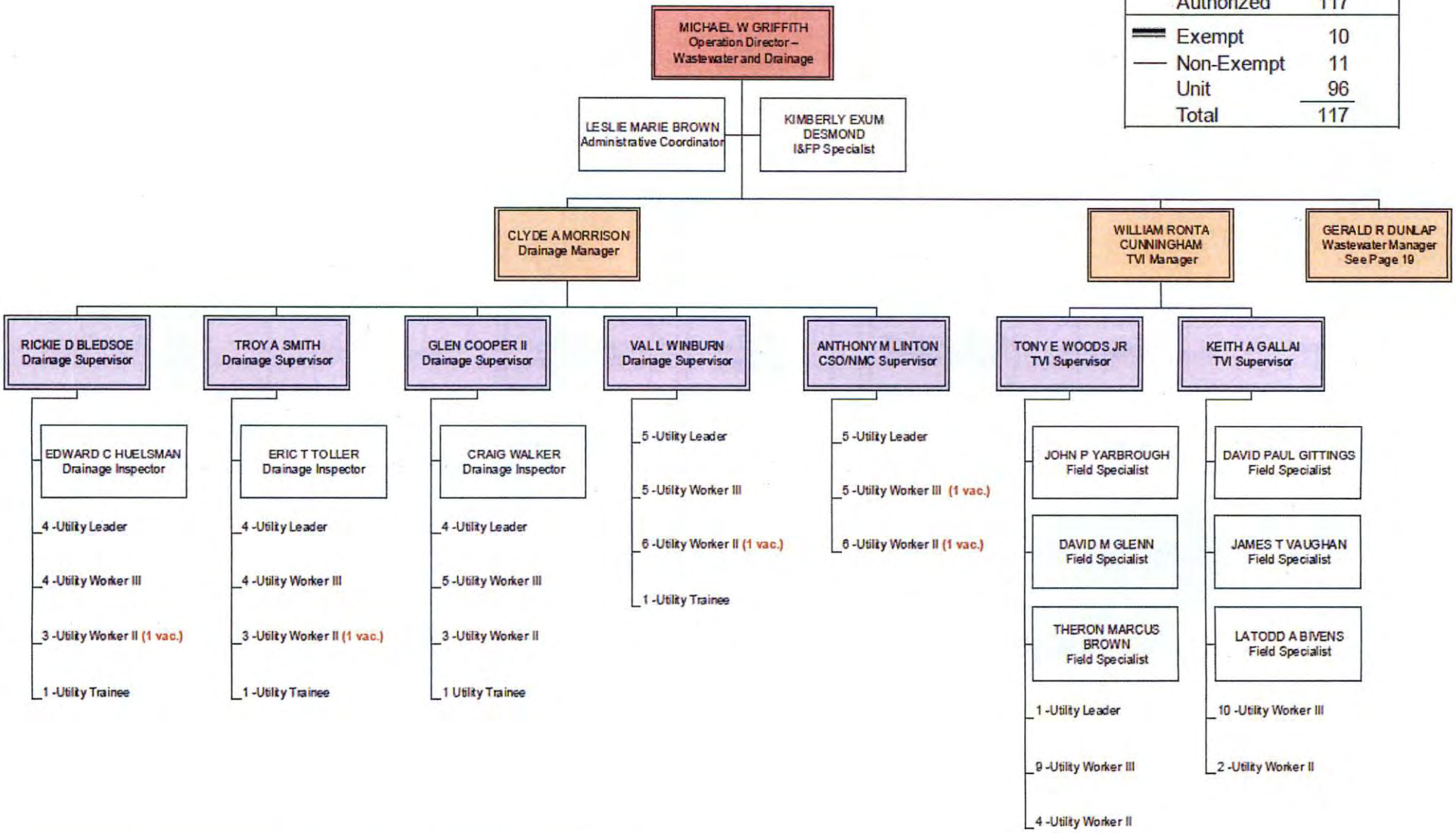
Operations Division
Collections System and Flood Protection



BUDGET STATUS	
Actual	63
Vacant	5
Authorized	68
Exempt	13
Non-Exempt	16
Unit	39
Total	68

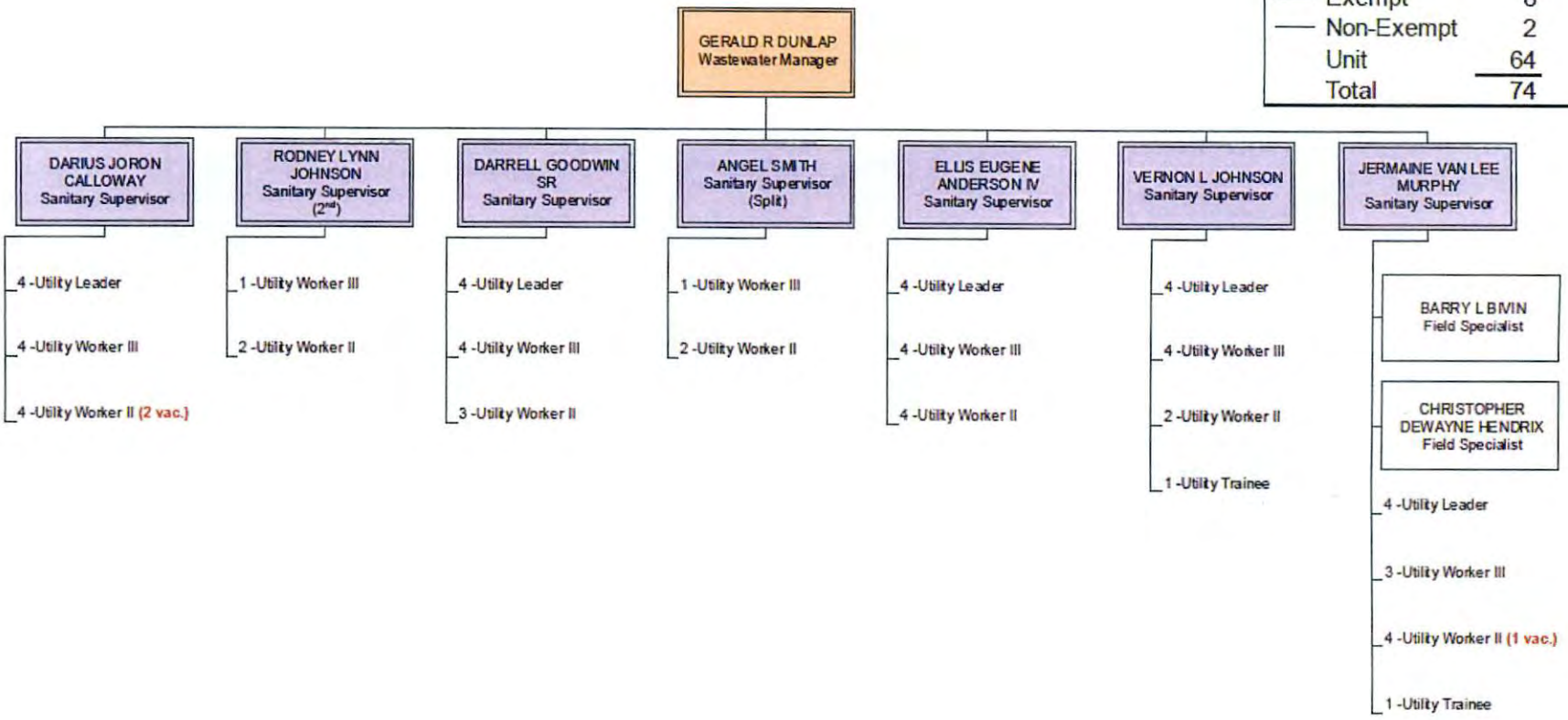
Operations Division
Wastewater and Drainage

BUDGET STATUS	
Actual	112
Vacant	5
Authorized	117
Exempt	10
Non-Exempt	11
Unit	96
Total	117



Operations Division
Wastewater and Drainage (Sanitary)

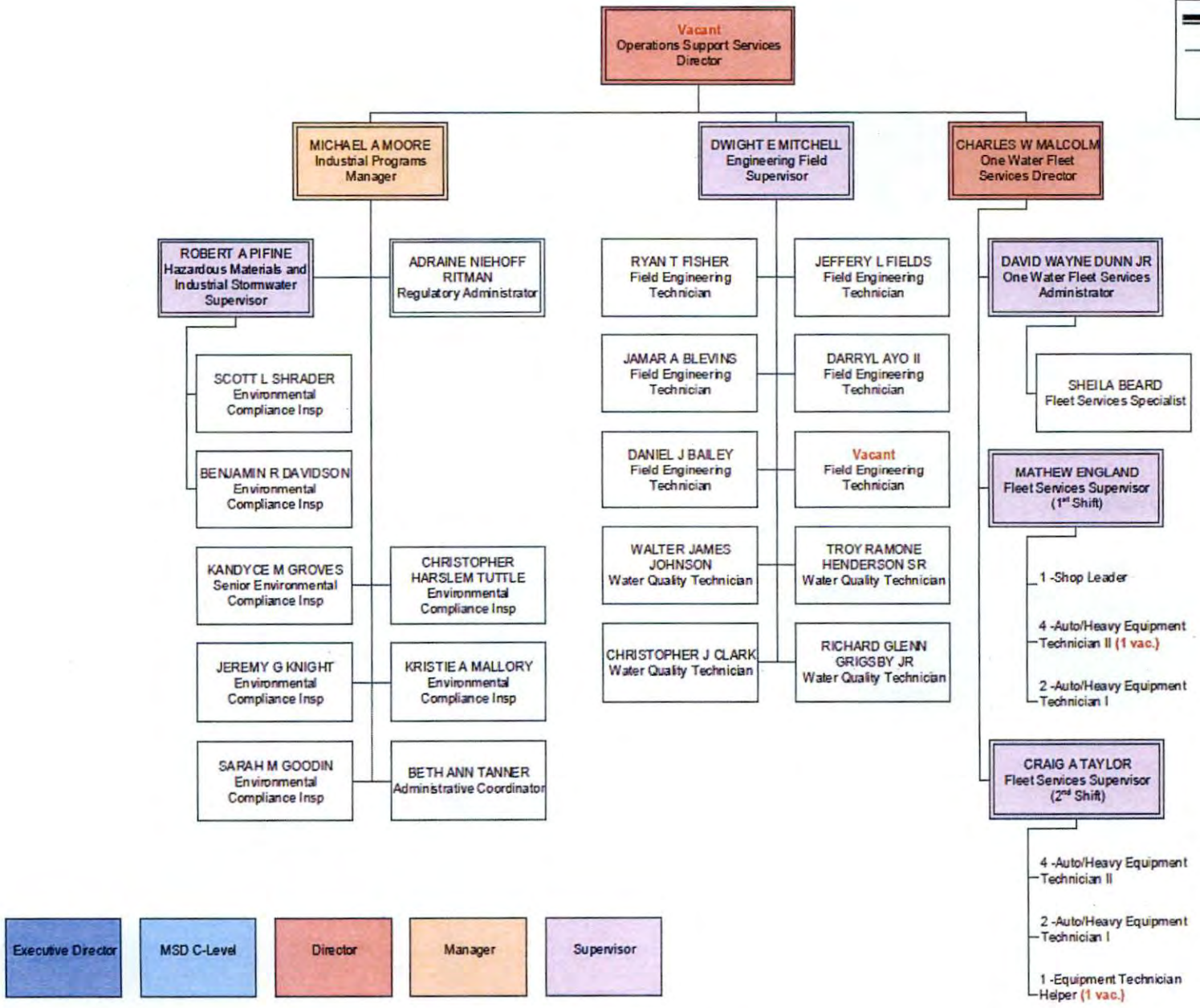
BUDGET STATUS	
Actual	71
Vacant	3
Authorized	74
Exempt	8
Non-Exempt	2
Unit	64
Total	74



Executive Director | MSD C-Level | Director | Manager | Supervisor

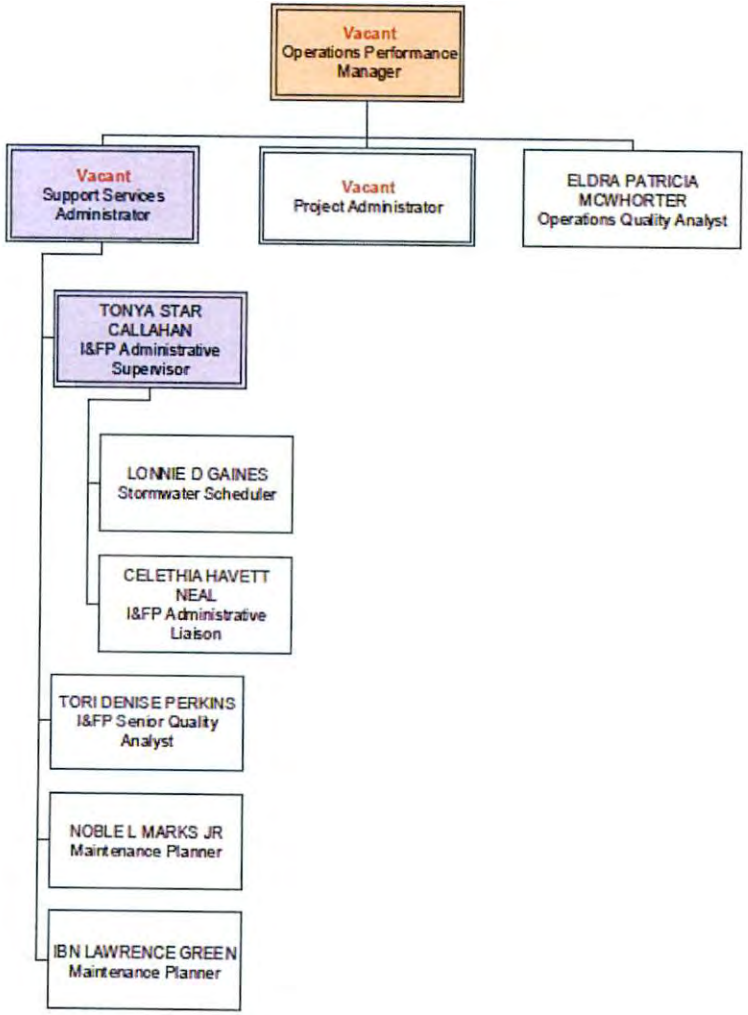
Operations Division
Support Services

BUDGET STATUS	
Actual	38
Vacant	4
Authorized	42
Exempt	9
Non-Exempt	19
Unit	14
Total	42



Operations Division
Performance Metrics

BUDGET STATUS	
Actual	7
Vacant	3
Authorized	10
Exempt	4
Non-Exempt	6
Unit	0
Total	10



Executive Director | MSD C-Level | Director | Manager | Supervisor