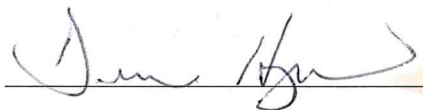


Annual Progress Report

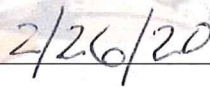
2019

Submitted to EPA on February 26, 2020

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering such information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Derwin Hagood



Date

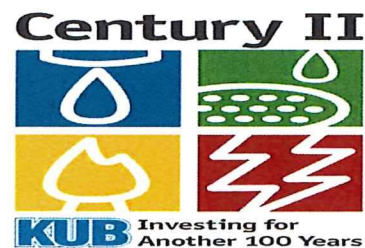


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Executive Summary

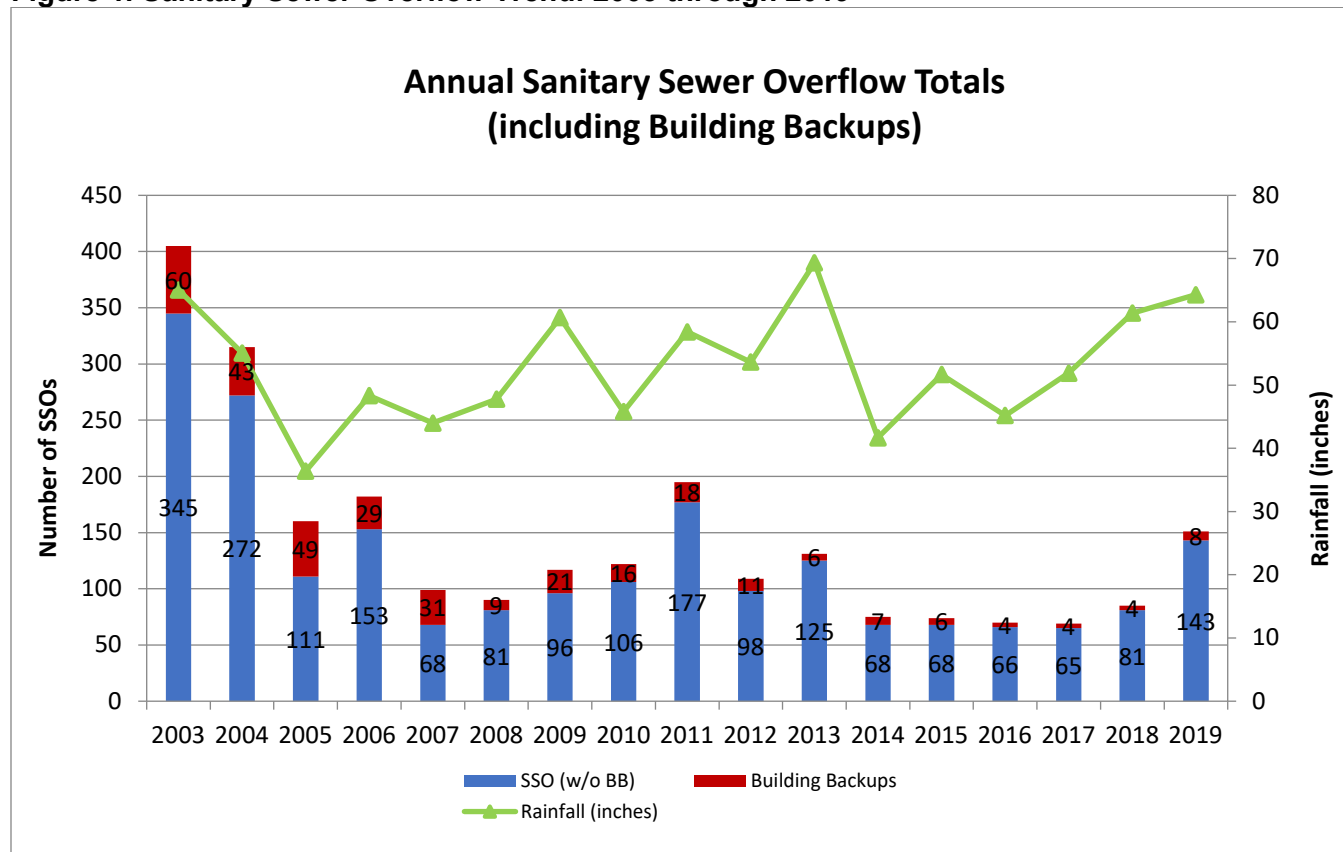
On February 11, 2005, the Knoxville Utilities Board (KUB) entered into a Consent Decree with the United States, the State of Tennessee, the Tennessee Clean Water Network, and the City of Knoxville. The Consent Decree and its First Amendment required KUB to achieve full Compliance with work required under Section VII *Performance of the Work* [except those obligations described in VIID.1.(a)(v)(Composite Correction Plan for WWTPs)] before December 31, 2016. KUB successfully completed all the required work described in Section VII *Performance of the Work* in addition to the work in Section VIII *Supplemental Environmental Project* ahead of the schedules outlined in the Consent Decree. This was communicated to the EPA on November 10, 2016. In this same communication, KUB requested a Non-Material Modification of the current reporting requirements, which is allowed under Section XIX.E and Section XXI, to report annually on the remaining Consent Decree work. After consultation with TDEC, the EPA agreed that less frequent reporting was now appropriate as a result of the narrower scope of remaining work to be performed. On December 13, 2016, EPA approved the revised Section XIX to the Consent Decree, authorizing the submittal of an Annual Progress Report incorporating all Section XIX reporting requirements into one annual report. Consent Decree revised Section XIX.B describes the required content of this report:

- B. *“Beginning on March 1, 2017, and every twelve (12) Months thereafter until termination of the Consent Decree, KUB shall submit to the Parties, and simultaneously place in the PDR, an Annual Progress Report. The Annual Progress Report shall cover the most recent Calendar Year. The Annual Progress Report shall not be subject to the Public Review Requirement of Section VI.A.2. However, KUB shall accept questions and comments from the public for KUB’s review for a period of twenty (20) Days following placement in the PDR. Each Annual Progress Report shall contain:*
- 1. A summary of compliance with and activities related to implementation of the CCP;*
 - 2. A summary of implementation of and compliance with the Process Controls Program;*
 - 3. A total amount of banked credits available by Sewerbasin for use in future development if capacity cannot be certified and any exceptions granted for connections for essential services under the Capacity Assurance Program.*
 - 4. Identification of any transfer of an ownership interest, operation, management, or other control of the Treatment Works, or any portion thereof.*
 - 5. A description of the status of compliance or non-compliance with the requirements of this Decree and, if applicable, the reasons for non-compliance, including a list of all violations that are subject to stipulated penalties under Section X of this Decree.*
 - 6. A spreadsheet and summary of all SSOs, Bypasses, Diversions and effluent limit violations that occurred during the previous Calendar Year. Information on Building Backups may be provided in separate spreadsheets and summaries from other SSOs. The spreadsheets and summaries shall identify:*
 - a. For all SSOs; the location, source, date, time, duration, pathway (if any), receiving water (if any), the identification of the treatment plant Sewerbasin in which each SSO is located, the reason for each SSO, the total SSO volume, the volume returned to the WCTS, the volume not captured, and category of corrective action planned, underway or completed with regard to the SSO (e.g, short term project, long term sewer basin project, blockage abatement, etc.);*
 - b. For all Bypasses and Diversions, the location, date, time, duration, volume and reason for each Bypass and Diversion; and the total Bypass and Diversion volumes;*
 - c. For all effluent limit violations, all information required to be reported on KUB’s Discharge Monitoring Reports.*
 - 7. The water quality monitoring data and other information required pursuant to Section VII.D.1.(e).(v).*

8. *Grease-Related Information.*
 - a. *A summary table identifying for the reporting period: (i) A listing of the number of grease related blockages causing or relating to SSOs; and (ii) corrective actions to address such grease related blockages causing or relating to SSOs.*
 - b. *A narrative summary of grease program activities for the reporting period.*
9. *A summary of MOM program implementation for the following Work:*
 - a. *A summary of Continuing Sewer System Assessment Program activities undertaken to assess the condition of the WCTS during the reporting period, including information on assessment of manholes, gravity mains, force mains, pump stations and laterals;*
 - b. *A summary of Infrastructure Rehabilitation Program projects, including a spreadsheet listing of projects for the reporting period and projects continuing from previous reporting periods but not yet completed;*
 - c. *An update on procedures, response times and public reporting information associated with SSOs that demonstrate continued effectiveness of the Sewer Overflow Response Plan; and*
 - d. *A summary table of Gravity Line Preventative Maintenance Program activities conducted during the reporting period including information regarding the cleaning and maintenance of the gravity collection system.*
10. *A representation that the Other MOM Programs continue to be implemented in substantially the same manner as represented in Appendix A and the documents identified therein.*
11. *A summary of Private Lateral Program activities undertaken during the reporting period including the number of Private Laterals repaired.”*

The following Annual Progress Report is submitted to fulfill the reporting requirements described in the revised Section XIX of the Consent Decree and demonstrate KUB's continued focus on MOM programs, Composite Correction Plan (CCP) plant upgrades, and system rehabilitation through its Century II program. As seen in Figure 1, system improvements have produced significant reductions in overflow frequencies and volumes since 2003. Significant rainfall in the KUB service area was the key contributing factor to the uptick in SSO events experienced during this reporting period. Our data reflects this was the third wettest year since 2003, with rainfall about 16.5" greater than average. During this reporting period, KUB experienced a total of 151 SSOs, eight of which were building backups.

Figure 1. Sanitary Sewer Overflow Trend: 2003 through 2019



* Five SSO also resulted in a BBU. This is noted on both the SSO and BBU appendices.

Section 1 Composite Correction Plan (CCP)

The CCP was submitted to the EPA on July 23, 2007. EPA rejected it on January 4, 2008. The Revised CCP was submitted to EPA on January 5, 2009, and subsequently approved on January 20, 2009. The CCP work is progressing and on schedule, meeting the implementation deadline of June 2018 at the Fourth Creek Wastewater Treatment Plant (WWTP) and on schedule to meet the June 2021 at the Kuwahee WWTP.

Fourth Creek WWTP Phase I

Work was completed prior to the December 30, 2013, deadline.

Fourth Creek WWTP Phase II

Work was completed prior to the June 30, 2018, deadline.

Kuwahee WWTP Phase I

Work was completed prior to the December 30, 2012, deadline.

Kuwahee WWTP Phase II

KUB's contractor mobilized to begin construction in September 2018 and is currently 55% complete with the project. Construction is currently on schedule to be complete by the June 30, 2021, deadline. Tasks included are construction of (2) biological contact tanks, pump station, BEHRC treatment trains, chemical and electrical control building, and associated yard piping.

Section 2 Process Controls Program (PCP)

KUB continues to follow its Process Controls Program (PCP) during wet-weather operating conditions. During this reporting period, the PCP was initiated 51 times. Eight Diversion events occurred. Please refer to Table 2 under Section 6 to view information related to these Diversion events.

Section 3 Capacity Assurance Program

The Capacity Assurance Program (CAP) was submitted to EPA for review on February 8, 2006. EPA reviewed and approved the program on April 7, 2006.

KUB manages its CAP using an Information Management System (IMS) that tracks rehabilitation credits earned through its Century II and Management, Operations, and Maintenance (MOM) program activities.

Table 1 below lists a total amount of banked credits available by sewerbasin for use in future development if capacity cannot be certified. There were no exceptions granted or needed for connections for essential services during this reporting period.

Table 1. CAP Banked Credits

Basin	Flow Credits (MGD)	Equivalent Homes
First Creek	18.69	27,977
Second Creek	13.04	19,523
Third Creek	13.60	20,365
Fourth Creek	4.98	7,456
South Knoxville	5.43	8,122
Loves Creek	2.21	3,314
Williams Creek	2.31	3,460
Eastbridge	0.12	174
TOTAL	60.38	90,391

Section 4 Transfers of Ownership

There has been no transfer of ownership interest, operation, management, or other control of the Treatment Works, or any portion thereof, during this reporting period as defined by Section III, Part C of the Consent Decree.

Section 5 Compliance and Non-Compliance With the Consent Decree

5.1 Submission of Deliverables

To date, KUB has submitted all deliverables in accordance with the schedule set forth in the Consent Decree. After consultation with TDEC, the EPA agreed that less frequent reporting was now appropriate as a result of the narrower scope of remaining work to be performed. On December 13, 2016, EPA approved the revised Section XIX to the Consent Decree, authorizing the submittal of an Annual Progress Report incorporating all reporting requirements into one annual report. The following sections detail all activity related to deliverables that occurred during the past year.

5.1.1 Status of Deliverables

Below is a list of dates on which KUB submitted deliverables to EPA or received approval for deliverables in 2019. Each submittal was available for public comment in the Public Document Repository (PDR) for a period of twenty (20) days. No comments were received for any of the following deliverables.

February 19, 2019

- Submitted to EPA – Annual Progress Report 2018

5.2 Violations Subject to Stipulated Penalties

During this reporting period, KUB incurred 92 Unpermitted Discharges. Appendix A lists any SSO that occurred during 2019 that resulted in an unpermitted discharge along with its cause, volume, one- and three-day rainfall totals, and rainfall intensity. Unpermitted discharges that were impacted by factors that were difficult to control or events that had minimal impact on the environment due to their low volume are also indicated in Appendix A.

Section 6 SSOs, Bypasses, Diversions, and Effluent Limit Violations

6.1 SSOs

Appendix B lists the location, source, date, time, duration, pathway (if any), receiving water (if any), the identification of the treatment plant sewerbasin in which each SSO is located, the reason for each SSO, the total SSO volume, the volume returned to the WCTS, the volume not captured, and category of corrective action planned, underway or completed with regard to the SSO during this reporting period. During this period, there were 143 SSO events.

Of the 143 SSO events, 50 were in the 0 – 1,000 gallons volume range, 27 were in the 1,001 – 10,000 gallons volume range, 45 events totaled greater than 10,000 gallons, and the volume for 21 events were unknown. Durations for events during this period are as follows: 40 ranged from 0 – 2 hours, and 27 ranged from 2.1 – 5 hours, 49 were greater than five hours, and the duration of 27 events were unknown.

Forty-six of the 143 sewer overflows reported were a result of a single significant rain event beginning on February 19, 2019. KUB requested this storm be recognized as a Force Majeure occurrence in a letter to the EPA on March 8, 2019. That letter provides additional information about this unusual weather event that effected our service area.

Six sites became chronic in calendar year 2019, after experiencing five SSO events in less than a 12-month period. The six sites are 600 N Gallaher View Rd, 1408 Adair Dr, 1829 Wayland Rd, 7004 Rotherwood Dr, 241 Neals Landing Rd, and 5100 W Martin Mill Pike. These sites, and 5619 E Governor John Sevier Hwy, which became chronic in 2018, accounted for 44 SSO events in 2019. The project to address E Governor John Sevier Highway was completed in April 2019, and we experienced no SSO events after the project was completed. We identified the cause of the 7004 Rotherwood Dr in March 2019, and once the repair was completed, we experienced no additional SSO events. Projects are in design to address 1408 Adair Dr and 1829 Wayland Rd; construction is anticipated to be completed by Summer 2021. Analysis and field investigation are underway in order to begin design to address the 600 N Gallaher View Rd and 5100 W Martin Mill Pike sites.

6.2 Building Backups

Appendix C lists the location, source, date, time, duration, the identification of the treatment plant sewerbasin in which each SSO is located, the reason for each SSO, the total SSO volume, the volume returned to the WCTS, the volume not captured, and category of corrective action planned, underway or completed with regard to the SSO during this reporting period. During this period, there were 13 Building Backups including five SSO event that also resulted in a BBU.

6.3 Bypasses

All Bypasses that occurred during this reporting period were in compliance with the Process Controls Program. For purposes of this report, any Bypass in compliance with the Process Controls Program shall be referred to as a “Diversion” (see below). All Bypasses not in compliance with the Process Controls Program shall be referred to as a “Bypass.”

Table 2 contains the location, date, time, duration, volume, and reason for each Bypass and Diversion event that occurred during the reporting period. For the year, there were eight Diversion events: six at Kuwahee WWTP and two at Loves Creek WWTP. There were no Diversion events at Fourth Creek or Eastbridge WWTPs. No Bypasses occurred during this reporting period.

6.4 Effluent Limit Violations

Table 3 contains all effluent limit violations that occurred during this reporting period. The table contains the information as it is reported in KUB's Discharge Monitoring Reports. During this reporting period, there were 19 effluent limit violations at the Kuwahee WWTP, one at the Fourth Creek WWTP, 11 at Loves Creek WWTP, and two at Eastbridge WWTP.

Heavy rainfall experienced in the KUB service area during this reporting period produced an annual precipitation total approximately 34 percent greater than the typical yearly average. This increase in the amount of total rainfall was a significant contributing factor to the uptick in total number of effluent limit violations that occurred in 2019.

Table 2. Diversions

WWTP	Did a Diversion occur?	Date Diversion gate opened	Time Diversion gate opened	Date Diversion gate closed	Time Diversion gate closed	Date Diversion flow reported	Duration (hrs)	Volume (MG)	Total Event Duration (hrs)	Total Event Volume (MG)	Reason for Event
Kuwahee	Yes	1/19/2019	1930			1/19/2019			4.37	7.74	High flow event due to excess rainfall
				1/19/2019	2355	1/19/2019					
Kuwahee	Yes	2/12/2019	1500			2/12/2019	9.00	16.69	11.00	17.14	High flow event due to excess rainfall
				2/13/2019	0200	2/13/2019	2.00	0.45			
Kuwahee	Yes	2/17/2019	2145			2/17/2019	2.25	1.55	17.00	11.22	High flow event due to excess rainfall
				2/18/2019	1445	2/18/2019	14.75	9.67			
Kuwahee	Yes	2/20/2019	0045			2/20/2019	23.25	35.2	40.25	44.21	High flow event due to excess rainfall
				2/21/2019	1700	2/21/2019	17.00	9.01			
Kuwahee	Yes	2/23/2019	0550			2/23/2019	18.17	37.71	74.17	134.03	High flow event due to excess rainfall
						2/24/2019	24.00	49.96			
						2/25/2019	24.00	44.19			
				2/26/2019	0800	2/26/2019	8.00	2.17			
Kuwahee	Yes	12/1/2019	0038			12/1/2019			9.10	16.23	High flow event due to excess rainfall
				12/1/2019	0944	12/1/2019					
Loves Creek	Yes	1/19/2019	2200			1/19/2019	2.00	0.11	2.75	0.14	High flow event due to excess rainfall
				1/20/2019	0045	1/20/2019	0.75	0.03			
Loves Creek	Yes	2/23/2019	1230			2/23/2019	11.50	3.05	32.67	5.6	High flow event due to excess rainfall
				2/24/2019	2110	2/24/2019	21.17	2.55			
Fourth Creek	No										
Eastbridge	No										

Table 3. Effluent Limit Violations

WWTP	Did an event occur?	Date	Parameter	Type	Limit	Value
Kuwahee	Yes	1/20/2019	Daily Maximum	Settleable Solids	1.0 ml/L	2.5ml/L
Kuwahee	Yes	1/24/2019	Daily Maximum	Settleable Solids	1.0 ml/L	3.0 ml/L
Kuwahee	Yes	1/24/2019	Daily Maximum	Total Suspended Solids	45 mg/L	50 mg/L
Kuwahee	Yes	2/8/2019	Daily Maximum	Settleable Solids	1.0 ml/L	3.0 ml/L
Kuwahee	Yes	2/12/2019	Daily Maximum	Settleable Solids	1.0 ml/L	4.0 ml/L
Kuwahee	Yes	2/12/2019	Daily Maximum	Total Suspended Solids	45 mg/L	88 mg/L
Kuwahee	Yes	2/13/2019	Daily Maximum	Settleable Solids	1.0 ml/L	2.0 ml/L
Kuwahee	Yes	2/13/2019	Daily Maximum	Total Suspended Solids	45 mg/L	52 mg/L
Kuwahee	Yes	2/14/2019	Daily Maximum	Total Suspended Solids	45 mg/L	47 mg/L
Kuwahee	Yes	2/18/2019	Daily Maximum	Settleable Solids	1.0 ml/L	2.0 ml/L
Kuwahee	Yes	2/18/2019	Daily Maximum	TSS	45 mg/L	46 mg/L
Kuwahee	Yes	2/10-2/16/2019	Weekly Average	TSS	40 mg/L	41 mg/L
Kuwahee	Yes	2/10-2/16/2019	Weekly Average	TSS (lb/d)	14,678 lb/d	20,521 lb/d
Kuwahee	Yes	2/17-2/23/2019	Weekly Average	TSS (lb/d)	14,678 lb/d	19,917 lb/d
Kuwahee	Yes	2/24/2019	Daily Minimum	TSS, % Removal	40%	14%
Kuwahee	Yes	2/1-2/28/2019	Monthly Average	TSS (lb/d)	11,009 lb/d	13,943 lb/d
Kuwahee	Yes	2/1-2/28/209	Monthly Average Minimum	TSS, % Removal	85%	81%
Kuwahee	Yes	7/9/2019	Daily Maximum	Nitrogen, Ammonia total (as N)	10.0 mg/L	11.7 mg/L
Kuwahee	Yes	7/10/2019	Daily Maximum	Nitrogen, Ammonia total (as N)	10.0 mg/L	11.6 mg/L
Fourth Creek	Yes	2/25/2019	Daily Minimum	TSS, % Removal	40%	14%
Loves Creek	Yes	1/19/2019	Reporting Violation	Cl2		
Loves Creek	Yes	2/18/2019	Daily Minimum	TSS, % Removal	40%	37%
Loves Creek	Yes	2/21/2019	Daily Minimum	TSS, % Removal	40%	6%
Loves Creek	Yes	2/24/2019	Daily Minimum	TSS, % Removal	40%	-52%

WWTP	Did an event occur?	Date	Parameter	Type	Limit	Value
Loves Creek	Yes	2/25/2019	Daily Maximum	TSS	45 mg/L	49 mg/L
Loves Creek	Yes	2/25/2019	Daily Minimum	TSS, % Removal	40%	-48%
Loves Creek	Yes	2/26/2019	Daily Minimum	TSS, % Removal	40%	18%
Loves Creek	Yes	2/27/2019	Daily Minimum	TSS, % Removal	40%	27%
Loves Creek	Yes	2/28/2019	Daily Minimum	TSS, % Removal	40%	8%
Loves Creek	Yes	2/1-2/28/2019	Monthly Average Minimum	TSS, % Removal	85%	81%
Loves Creek	Yes	6/10/2019	Daily Maximum	<i>E. coli</i>	487 MPN /100 mL	820 MPN /100 mL
Eastbridge	Yes	1/30/2019	Daily Maximum	<i>E. coli</i>	487 MPN /100 mL	1400 MPN /100 mL
Eastbridge	Yes	2/18/2019	Daily Minimum	TSS, % Removal	40%	22%
SS - Settleable Solids	mg/l - milligrams per liter			MPN – Most Probable Number		
TSS - Total Suspended Solids	cfu –Colony Forming Unit					
ml/l – milliliters per liter	lbs - Pounds					

Section 7 Water Quality Monitoring Data

7.1 Sampling Conducted and Results

Appendix D lists all sampling that was conducted during this reporting period and the results thereof. This includes results associated with routine and investigative monitoring or unpermitted discharges that occurred in dry weather conditions.

7.2 Projected Data Collection

During 2020, KUB will continue to monitor 24 routine sampling locations in the sewerbasins of eight area creeks. KUB will collect samples from the following locations during 2020:

Sample Locations by Creek Mile or Site Number

Creek Name	Creek Mile #	Creek Mile #	Creek Mile #
First Creek	1.74	2.57	6.33
Second Creek	0.30	1.54	5.11
Third Creek	0.87	2.08E	4.80W
Fourth Creek	1.75	2.79	3.29
Baker Creek	0.36	1.45	2.00
Goose Creek	0.40	1.19E	1.80E
Loves Creek	0.85	1.89	3.45
Williams Creek	0.89	1.70	2.02

Section 8 Grease Control Program (GCP)

8.1 Food Service Facilities (FSFs) Compliance Activities

There are currently 930 permitted and active FSFs in KUB's service area that were inspected routinely in 2019 to assess compliance with KUB's Grease Control Program (GCP). KUB also inspected an additional 79 FSF locations at least once in 2019 that were inactive or closed to determine if food preparation had resumed or the facility had reopened under new ownership. During this reporting period, KUB conducted 1,002 inspections of all facilities combined to determine if their equipment was adequate and being maintained as required to prevent grease from entering the wastewater system. In addition, KUB required all newly constructed FSFs to submit a permit application to ensure their facilities would be equipped with appropriately sized grease control equipment (GCE) before opening.

KUB continues its emphasis on improving wastewater system performance and reducing grease related blockages by routinely inspecting FSFs and requiring them to replace aging and/or undersized GCE as needed. Traps and interceptors can develop cracks and corrosion over time, so their maintenance condition must be assessed during inspections. A total of 45 FSFs were required to submit a Corrective Action Plan (CAP) in 2019 demonstrating they would move forward with upgrading and/or installing GCE. There were 51 customers that actually installed GCE during the reporting period. A total of 42 grease interceptors and nine grease traps were added to control grease as a result of program efforts and customer compliance. Two FSF's were published this year in the local newspaper for noncompliance for failure to install the required grease control equipment. One new facility was placed under an Administrative Order in 2019.

8.2 Grease-Related Overflow Response

When a grease-related overflow occurs, KUB initiates an investigation to identify any customer that could have contributed grease to the wastewater system and caused the blockage. Using an electronic mapping tool, Geographic Information System (GIS), KUB identifies all potential contributors upstream from the site of where a grease-related SSO occurred. KUB then inspects all commercial customers in the area to verify their compliance with the GCP, and educational program information is mailed to all residential customers contributing to the SSO. In 2019, KUB mailed grease letters, educational brochures, and grease can liners to 980 customers and conducted 35 inspections on commercial customers as a result of ten grease-related SSO/BBU investigations. Appendix E lists the number of grease-related blockages causing SSOs and the corrective actions that were used to address such blockages.

Information about the GCP is also made available to our customers on KUB's website. There, customers can view material discussing the environmental risks associated with grease-related overflows and receive instruction on proper grease disposal methods. When feasible, KUB also provides GCP educational materials through customer newsletters, event promotions of the residential Can the Grease program in the local newspaper, and community events.

Section 9 MOM Program Update

9.1 Continuing Sewer System Assessment Program (CSSAP)

The CSSAP is a systematic evaluation of the entire wastewater collection and transmission system (WCTS) that also assesses capacity to support prioritization of the Infrastructure Rehabilitation Program (IRP). The CSSAP was approved on July 28, 2005 and system assessments began that same year. In February 2016, KUB completed its first assessment of the entire WCTS one year ahead of the required 12-year cycle period.

The following table shows the elements of the CSSAP assessment tools and performance goal periods associated with the second assessment which began in March 2016. A comprehensive force main assessment was last conducted in 2018 as required by the two-year assessment schedule:

Table 4. CSSAP Elements

Program Elements	Assessment Tools	Completed in 2019	Total Completed*	One Complete Cycle Period
Manhole Condition Assessment	Manhole Inspections Smoke Testing	7.6 percent	33.3 percent	12 Years
Gravity Sewer Condition Assessment	Flow Monitoring Smoke Testing Dye Testing CCTV	5.0 percent	26.0 percent	12 Years
Private Lateral Condition Assessment	Flow Monitoring Smoke Testing Dye Testing CCTV	9.2 percent	35.9 percent	12 Years
Force Main Performance Assessment	Corrosion Defect Identification	0 percent	0 percent**	2 Years
Pump Station Performance Assessment	Pump Station Performance and Adequacy	25 percent	25 percent**	2 Years

*Percentage completed in second 12-year cycle.

**Comprehensive inspections alternate each year between the Force Main Performance assessment and Pump Station Performance Assessment. 2019 Pump Station Assessment is being completed at the time this report is being submitted.

9.2 Infrastructure Rehabilitation Program (IRP)

In 2019, KUB's IRP rehabilitated or replaced more than 88,000 ft (16.7 miles) of sewer gravity mains and 513 manholes and 3,200 ft (0.6 miles) of force mains. Appendix F lists the IRP projects for the reporting period and projects continuing from previous reporting periods but not yet completed. All of these projects are in addition to the previously completed CAP/ER projects and are included in KUB's Century II Program.

9.3 Sewer Overflow Response Plan (SORP)

KUB continues to place a high priority on maintaining and executing a SORP to help protect our community and our environment. This progress report includes an update on implementation of SORP procedures, training, and other areas of interest related to the program.

KUB makes all reasonable efforts to respond to an SSO within 45 minutes, taking into consideration the safety of the responder and the public as the first priority. In 2019, we had 143 SSO events in which KUB's Underground Construction (UGC) department responded, and our average response time was 33 minutes. KUB's prompt response time to SSO events is an essential element to the success of our SORP. It enables responding personnel to quickly assess the cause and environmental impact of an SSO to establish the best containment and remediation procedures. Quick response times also enable KUB to classify the majority of SSOs as having a short duration with a minimal impact on the environment.

KUB continues to provide an initial notice to TDEC and make public the date, time, volume, and location of each SSO (excluding building backups) on an SSO log accessed through KUB's website within 24 hours of the event. The SSO log also contains a link to a permanent archive of SSOs by month. To access the SSO log, go to www.kub.org and type "SSO Log" in the search bar at the top of the webpage.

KUB uses a computerized SORP training tool that allows new employees, and those needing refresher training, to train at their own pace on a computer. Training is also given in a classroom setting with hands-on field training components when more appropriate. In addition, KUB relies on feedback from customers and other local organizations to help identify any instances when the quality of SSO response falters. Such feedback is directed to Engineering, who works with various departments to correct any concerns.

9.4 Gravity Line Preventative Maintenance Program (GLPMP)

The GLPMP is divided into the Comprehensive Hydraulic Cleaning Program (CHCP) and Blockage Abatement (BA). The CHCP is a systematic, planned cleaning of the system to reduce debris and grease buildup and root intrusion. The BA Program is also a preventative maintenance approach for addressing operational issues that uses event history and condition assessment information to implement activities that prevent or reduce system disruptions. Activities may include, but are not limited to, hydraulic flushing, mechanical and chemical root control, rodding, and televised inspections.

The following table documents program activities for the year.

Table 5. GLPMP Elements

Program Elements				
Comprehensive Hydraulic Cleaning Program (CHCP)	Cleaned and televised			
	390,000 ft (73.8 miles)			
Blockage Abatement (BA) Program	Sewer mains in BA	Sewer mains cleaned	Sewer mains televised	Sewer mains root cut
	1,564,000 ft (296 miles)	936,500 ft (177 miles)	186,000 ft (35 miles)	308,500 ft (58 miles)

Section 10 Other MOM Programs

KUB continues to implement and manage its Other MOM Programs as represented in Appendix A of the Consent Decree. There have been no substantial program changes made during this reporting period.

Section 11 Private Lateral Program (PLP)

KUB operates a Private Lateral Program (PLP), as required by the Consent Decree and KUB's Wastewater Rules and Regulations. The PLP helps protect our environment by ensuring that property owners repair their laterals and/or remove prohibited connections. Through the CSSAP, KUB has smoke tested and/or televised all laterals within the WCTS during one complete 12-year cycle period. In addition, KUB completed the Supplemental Environmental Project (SEP) and submitted the SEP Completion Report to the EPA on June 29, 2012. KUB continues to enforce on private sewer laterals through the PLP where defects are discovered in laterals when there is a problem on property (POP) reported and customers fail to correct the problem. The statistics below include enforcement actions undertaken in the program from January 1, 2019, to December 31, 2019.

Total Private Lateral Enforcements	0
Repair	0
Replace	0
Total with Tenants	0

Additionally, there were two properties that received reinstatements of water service after lateral work was completed. In these cases, the water service was terminated in previous years due to noncompliance with the PLP, but the required repairs were completed in 2019.

Total Repairs Completed	2
2019 Enforcements	0
Reinstatements	2
Terminations	0

Appendix A

Unpermitted Discharges

Appendix A
Unpermitted Discharges in 2019

13	Overflow volume of 500 gallons or less	22	1-day rainfall greater than 3"
2	Overflow volume of 501 - 1000 gallons	6	3-day rainfall greater than 4"
	Vandalism	2	Intensity >= 0.84 in/hr
1	Electrical or mechanical failure		

Reporting Period	Date	Location	Event	Unrecovered Volume (Gal.)	Receiving Stream	Cause	Rainfall Totals 1-Day*	Rainfall Totals 3-Day**	Peak Rainfall Intensity (in/hr)	Force Majeure event
1st 2019	1/2/2019	2246 Virginia Ave	Unpermitted Discharge	400	Third Creek	Construction Failure - Blockage by construction debris	0.49	1.07	0.17	No
1st 2019	1/4/2019	5619 E. Governor John Sevier Hwy	Unpermitted Discharge	1,500	Holston River	Heavy Rainfall	0.49	1.07	0.17	No
1st 2019	1/15/2019	500 Neyland Dr	Unpermitted Discharge	45	Tennessee River	Blockage - Grease and Debris	0.00	0.20	0.06	No
1st 2019	1/18/2019	5014 Jackboro Pike	Unpermitted Discharge	450	First Creek	Construction Failure - Dig-in	0.00	0.25	0.07	No
1st 2019	1/20/2019	5619 E. Governor John Sevier Hwy	Unpermitted Discharge	8,000	Holston River	Heavy Rainfall	0.00	1.58	0.43	No
1st 2019	1/20/2019	1829 Wayland Rd	Unpermitted Discharge	12,000	Swanpond Creek	Heavy Rainfall	0.00	1.58	0.43	No
1st 2019	1/22/2019	241 Neals Landing Rd	Unpermitted Discharge	Unknown	Shinning Creek East	Heavy Rainfall	0.00***	0.00***	0.01***	No
1st 2019	1/22/2019	4605 Webb Ln	Unpermitted Discharge	Unknown	Third Creek	Heavy Rainfall	0.00***	0.00***	0.01***	No
1st 2019	1/22/2019	1408 Adair Dr	Unpermitted Discharge	Unknown	Lynnhurst Creek	Heavy Rainfall	0.00***	0.00***	0.01***	No
1st 2019	1/24/2019	5619 E. Governor John Sevier Hwy	Unpermitted Discharge	2,500	Holston River	Heavy Rainfall	0.16	1.10	0.23	No
1st 2019	1/24/2019	600 N Gallaher View Rd	Unpermitted Discharge	255,000	Ten Mile Creek	Heavy Rainfall	0.16	1.10	0.23	No
1st 2019	2/12/2019	4100 Central Ave Pike	Unpermitted Discharge	50	Second Creek	Heavy Rainfall	1.37	2.22	0.33	No
1st 2019	2/12/2019	2700 Boright Dr	Unpermitted Discharge	100	First Creek	Heavy Rainfall	1.37	2.22	0.33	No
1st 2019	2/12/2019	1408 Adair Dr	Unpermitted Discharge	4,000	Lynnhurst Creek	Heavy Rainfall	1.37	2.22	0.33	No
1st 2019	2/12/2019	5619 E. Governor John Sevier Hwy	Unpermitted Discharge	4,200	Holston River	Heavy Rainfall	1.37	2.22	0.33	No
1st 2019	2/12/2019	1829 Wayland Rd	Unpermitted Discharge	9,000	Swanpond Creek	Heavy Rainfall	1.37	2.22	0.33	No
1st 2019	2/13/2019	600 N Gallaher View Rd	Unpermitted Discharge	56,000	Ten Mile Creek	Heavy Rainfall	0.00	1.78	0.33	No
1st 2019	2/13/2019	7004 Rotherwood Dr	Unpermitted Discharge	Unknown	Fourth Creek	Heavy Rainfall	0.00***	1.78	0.325***	No
1st 2019	2/13/2019	241 Neals Landing Rd	Unpermitted Discharge	Unknown	Shinning Creek East	Heavy Rainfall	0.00***	1.78	0.325***	No
1st 2019	2/14/2019	619 Ozark Rd	Unpermitted Discharge	500	Second Creek	Construction Failure - Bypass Pumping	0.00	1.37	0.33	No
1st 2019	2/18/2019	7301 Kingston Pike	Unpermitted Discharge	850	Ten Mile Creek	Blockage - Debris	0.15	1.72	0.28	No
1st 2019	2/18/2019	5619 E. Governor John Sevier Hwy	Unpermitted Discharge	6,500	Holston River	Heavy Rainfall	0.15	1.72	0.28	No
1st 2019	2/18/2019	600 N Gallaher View Rd	Unpermitted Discharge	800,000	Ten Mile Creek	Heavy Rainfall	0.15	1.72	0.28	No
1st 2019	2/18/2019	1408 Adair Dr	Unpermitted Discharge	Unknown	Lynnhurst Creek	Heavy Rainfall	0.15***	1.72	0.275***	No
1st 2019	2/19/2019	5000 Western Ave	Unpermitted Discharge	32,000	Third Creek	Blockage - Roots and Debris	1.04	2.35	0.34	No
1st 2019	2/19/2019	600 N Gallaher View Rd	Unpermitted Discharge	8,250,000	Ten Mile Creek	Heavy Rainfall	1.04	2.35	0.34	Yes
1st 2019	2/20/2019	7004 Rotherwood Dr	Unpermitted Discharge	10	Fourth Creek	Heavy Rainfall	0.66	1.85	0.33	Yes
1st 2019	2/20/2019	7004 Rotherwood Dr	Unpermitted Discharge	15	Fourth Creek	Heavy Rainfall	0.66	1.85	0.33	Yes
1st 2019	2/20/2019	4605 Webb Ln	Unpermitted Discharge	10,000	Third Creek	Heavy Rainfall	0.66	1.85	0.33	Yes
1st 2019	2/20/2019	1408 Adair Dr	Unpermitted Discharge	13,000	Lynnhurst Creek	Heavy Rainfall	0.66	1.85	0.33	Yes
1st 2019	2/20/2019	4719 Old Broadway	Unpermitted Discharge	9,000,000	Lynnhurst Creek	Heavy Rainfall	0.66	1.85	0.33	Yes
1st 2019	2/22/2019	8224 Landmark Dr	Unpermitted Discharge	Unknown	Ten Mile Creek	Heavy Rainfall	0.35	2.05	0.19	Yes
1st 2019	2/23/2019	5619 E. Governor John Sevier Hwy	Unpermitted Discharge	3,500	Holston River	Heavy Rainfall	5.08	5.77	0.44	Yes
1st 2019	2/23/2019	1115 Henrietta Dr	Unpermitted Discharge	6,000	First Creek	Heavy Rainfall	5.08	5.77	0.44	Yes
1st 2019	2/23/2019	1912 Paris Rd	Unpermitted Discharge	7,500	Third Creek	Heavy Rainfall	5.08	5.77	0.44	Yes
1st 2019	2/23/2019	2739 Parkview Ave	Unpermitted Discharge	20,000	Williams Creek	Heavy Rainfall	5.08	5.77	0.44	Yes
1st 2019	2/23/2019	4883 N Broadway	Unpermitted Discharge	20,000	First Creek	Heavy Rainfall	5.08	5.77	0.44	Yes
1st 2019	2/23/2019	1221 Milam Cir	Unpermitted Discharge	22,000	Fourth Creek	Heavy Rainfall	5.08	5.77	0.44	Yes
1st 2019	2/23/2019	201 Delta Rd	Unpermitted Discharge	22,000	Loves Creek	Heavy Rainfall	5.08	5.77	0.44	Yes
1st 2019	2/23/2019	2237 Woods-Smith Rd	Unpermitted Discharge	36,000	Third Creek	Heavy Rainfall	5.08	5.77	0.44	Yes
1st 2019	2/23/2019	7004 Rotherwood Dr	Unpermitted Discharge	75,000	Fourth Creek	Heavy Rainfall	5.08	5.77	0.44	Yes
1st 2019	2/23/2019	1831 Island Home Ave	Unpermitted Discharge	104,000	Baker Creek	Heavy Rainfall	5.08	5.77	0.44	Yes
1st 2019	2/23/2019	445 W Blount Ave	Unpermitted Discharge	120,000	Tennessee River	Heavy Rainfall	5.08	5.77	0.44	Yes
1st 2019	2/23/2019	1829 Wayland Rd	Unpermitted Discharge	125,000	Swanpond Creek	Heavy Rainfall	5.08	5.77	0.44	Yes

Reporting Period	Date	Location	Event	Unrecovered Volume (Gal.)	Receiving Stream	Cause	Rainfall Totals 1-Day*	Rainfall Totals 3-Day**	Peak Rainfall Intensity (in/hr)	Force Majeure event
1st 2019	2/23/2019	1408 Adair Dr	Unpermitted Discharge	130,000	Lynnhurst Creek	Heavy Rainfall	5.08	5.77	0.44	Yes
1st 2019	2/23/2019	5600 Scenic Hills Rd	Unpermitted Discharge	153,000	Second Creek	Heavy Rainfall	5.08	5.77	0.44	Yes
1st 2019	2/23/2019	2700 Boright Dr	Unpermitted Discharge	371,000	First Creek	Heavy Rainfall	5.08	5.77	0.44	Yes
1st 2019	2/23/2019	4100 Central Ave Pike	Unpermitted Discharge	410,000	Second Creek	Heavy Rainfall	5.08	5.77	0.44	Yes
1st 2019	2/23/2019	915 Loves Creek Rd	Unpermitted Discharge	500,000	Loves Creek	Heavy Rainfall	5.08	5.77	0.44	Yes
1st 2019	2/23/2019	1500 Lyons Bend Rd	Unpermitted Discharge	800,000	Fourth Creek	Heavy Rainfall	5.08	5.77	0.44	Yes
1st 2019	2/23/2019	1500 Lyons Bend Rd	Unpermitted Discharge	1,100,000	Fourth Creek	Heavy Rainfall	5.08	5.77	0.44	Yes
1st 2019	2/23/2019	2004 Riverside Dr	Unpermitted Discharge	2,000,000	Williams Creek	Heavy Rainfall	5.08	5.77	0.44	Yes
1st 2019	2/23/2019	2004 Neyland Dr	Unpermitted Discharge	54,220,000	Tennessee River	Heavy Rainfall	5.08	5.77	0.44	Yes
1st 2019	2/24/2019	4719 Old Broadway	Unpermitted Discharge	1,000	First Creek	Heavy Rainfall	0.31***	5.74	0.435***	Yes
1st 2019	2/24/2019	3400 Ashland Ave	Unpermitted Discharge	38,000	Chilhowee Park Lake	Heavy Rainfall	0.31***	5.74	0.435***	Yes
1st 2019	2/24/2019	201 Hermitage	Unpermitted Discharge	60,000	Pond	Heavy Rainfall	0.31***	5.74	0.435***	Yes
1st 2019	2/24/2019	2544 Fair Dr	Unpermitted Discharge	800,000	First Creek	Heavy Rainfall	0.31***	5.74	0.435***	Yes
1st 2019	2/24/2019	4605 Webb Ln	Unpermitted Discharge	4,000,000	Third Creek	Heavy Rainfall	0.31***	5.74	0.435***	Yes
1st 2019	2/25/2019	1500 Hoitt Ave	Unpermitted Discharge	2,000	First Creek	Heavy Rainfall	0.00***	5.39	0.4275***	Yes
1st 2019	2/26/2019	4901 N Broadway	Unpermitted Discharge	Unknown	First Creek	Heavy Rainfall	0.00***	0.31***	0.17***	Yes
1st 2019	2/27/2019	909 Cooper St	Unpermitted Discharge	200	Second Creek	Heavy Rainfall	0.00***	0.00***	0.00***	Yes
1st 2019	2/28/2019	6410 S Northshore Dr	Unpermitted Discharge	1,500	Fourth Creek	Heavy Rainfall	0.25***	0.25***	0.08***	Yes
1st 2019	3/1/2019	5423 Asheville Hwy	Unpermitted Discharge	Unknown	Loves Creek	Heavy Rainfall	0.45***	0.70***	0.1125***	No
1st 2019	3/2/2019	2327 South Haven Rd	Unpermitted Discharge	40	Baker Creek	Heavy Rainfall	0.00***	0.70***	0.1125***	No
1st 2019	3/3/2019	241 Neals Landing Rd	Unpermitted Discharge	2,000	Shinning Creek East	Heavy Rainfall	1.53	1.98	0.19	No
1st 2019	3/3/2019	5619 E. Governor John Sevier Hwy	Unpermitted Discharge	3,000	Holston River	Heavy Rainfall	1.53	1.98	0.19	No
1st 2019	3/3/2019	7004 Rotherwood Dr	Unpermitted Discharge	9,000	Fourth Creek	Heavy Rainfall	1.53	1.98	0.19	No
1st 2019	3/3/2019	1829 Wayland Rd	Unpermitted Discharge	12,000	Swanpond Creek	Heavy Rainfall	1.53	1.98	0.19	No
1st 2019	3/3/2019	600 N Gallaher View Rd	Unpermitted Discharge	1,250,000	Ten Mile Creek	Heavy Rainfall	1.53	1.98	0.19	No
1st 2019	3/8/2019	5218 Rutledge Pike	Unpermitted Discharge	Unknown	Loves Creek	Heavy Rainfall	0.43***	0.43***	0.06***	No
1st 2019	3/10/2019	1829 Wayland Rd	Unpermitted Discharge	2,500	Swanpond Creek	Heavy Rainfall	0.17	1.17	0.21	No
1st 2019	3/10/2019	241 Neals Landing Rd	Unpermitted Discharge	16,000	Shinning Creek East	Heavy Rainfall	0.17	1.17	0.21	No
1st 2019	3/10/2019	1408 Adair Dr	Unpermitted Discharge	19,000	Lynnhurst Creek	Heavy Rainfall	0.17	1.17	0.21	No
1st 2019	3/12/2019	4420 Holston Hills Rd	Unpermitted Discharge	Unknown	Holston River	Heavy Rainfall	0.00***	0.30***	0.15***	No
1st 2019	3/13/2019	2900 Rennoc Rd	Unpermitted Discharge	Unknown	First Creek	Heavy Rainfall	0.00***	0.13***	0.02***	No
1st 2019	3/15/2019	5000 Western Ave	Unpermitted Discharge	2,500	Third Creek	Blockage - Roots and Debris	0.09	0.11	0.06	No
1st 2019	3/15/2019	302 Seventh Ave	Unpermitted Discharge	Unknown	First Creek	Heavy Rainfall	0.09***	0.11***	0.06***	No
1st 2019	3/26/2019	805 Blows Ferry Rd	Unpermitted Discharge	Unknown	Tennessee River	Heavy Rainfall	0.00***	0.11***	0.08***	No
1st 2019	3/27/2019	4308 Edington Rd	Unpermitted Discharge	5,000	Goose Creek	Construction Failure - Bypass Pumping	0.00	0.11	0.08	No
1st 2019	3/28/2019	4917 Ball Rd	Unpermitted Discharge	26,000	Fourth Creek	Broken System - Broken Force Main	0.00	0.00	0.00	No
1st 2019	3/28/2019	1408 Adair Dr	Unpermitted Discharge	Unknown	Lynnhurst Creek	Heavy Rainfall	0.00***	0.00***	0.00***	No
2nd 2019	5/28/2019	7509 Mary Lay Ln	Unpermitted Discharge	75	Shining Creek East	Broken System - Broken Gravity Main	0.00	0.00	0.00	No
3rd 2019	7/22/2019	1829 Wayland Rd	Unpermitted Discharge	65,000	Swanpond Creek	Heavy Rainfall	3.32	3.32	0.81	No
3rd 2019	7/23/2019	2739 Parkview Ave	Unpermitted Discharge	300	Williams Creek	Heavy Rainfall	0.91	4.23	0.84	No
3rd 2019	7/23/2019	2327 South Haven Rd	Unpermitted Discharge	16,000	Baker Creek	Heavy Rainfall	0.91	4.23	0.84	No
3rd 2019	7/23/2019	5230 McNutt Rd	Unpermitted Discharge	20,000	Toll Creek	Pump Station Failure – Electrical Failure	0.91	4.23	0.84	No
3rd 2019	7/31/2019	1817 Laurel Ave	Unpermitted Discharge	Unknown	Third Creek	Broken System – Broken Gravity Main	0.00	0.00	0.03	No
4th 2019	10/23/2019	1811 Paris Rd	Unpermitted Discharge	200	Third Creek	Blockage - Debris	0.00	0.74	0.34	No
4th 2019	11/23/2019	1404 Adair Dr	Unpermitted Discharge	4,000	Lynnhurst Creek	Heavy Rainfall	2.64	2.71	0.31	No
4th 2019	11/23/2019	1829 Wayland Rd	Unpermitted Discharge	16,000	Swanpond Creek	Heavy Rainfall	2.64	2.71	0.31	No
4th 2019	11/25/2019	1317 Louisiana Ave	Unpermitted Discharge	600	Second Creek	Blockage – Grease and Debris	0.00	2.64	0.31	No
4th 2019	12/1/2019	1408 Adair Dr	Unpermitted Discharge	50	Lynnhurst Creek	Heavy Rainfall	0.75	2.06	0.31	No

*1-Day Rainfall Total is the rain that occurred on the day of the SSO

**3-Day Rainfall Total is the total amount of rain that occurred on the day of the SSO and the 2 days prior

***Evidence that these overflows occurred was found some time following the actual event. The rainfall shown for these events correlate to the amount received on the date the events were reported to KUB.

Appendix B

SSOs

Date	Time	Street #	Street	Plant	Watershed	Basin	Overflow Location	Pathway	Receiving Water	Cause of SSO/KUB Response	Total Volume (Gallons)	Recovered Volume (Gallons)	Non-Recovered Volume (Gallons)	Duration (Hours)	Unpermitted Discharge	Corrective Action
1/2/2019	8:55am	2246	Virginia Ave	KUW	Third Creek	22	Manhole 11-9	Pavement to Storm Drain to Third Creek	Third Creek	Construction Failure - Blockage by Construction Debris, The sewer main was flushed to remove the blockage. The area was cleaned.	400	0	400	2	Yes	System Repair Completed
1/4/2019	10:43am	5619	E. Governor John Sevier Hwy	LC	Loves Creek	61	Manhole 4	Wet Weather Conveyance to Holston River	Holston River	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	1,500	0	1,500	1	Yes	Construction Project Completed
1/15/2019	10:42am	500	Neyland Dr	KUW	First Creek	30	Manhole 1-52	Pavement to Storm Drain to Tennessee River	Tennessee River	Blockage - Grease and Debris, The sewer main was flushed to remove the blockage. The area was cleaned.	50	5	45	1	Yes	Routine Blockage Abatement
1/18/2019	9:40am	5014	Jacksboro Pike	KUW	First Creek	1	Manhole 13-101	Tributary to First Creek	First Creek	Construction Failure - Dig-in, The sewer main was flushed and the main was repaired. The area was cleaned	500	50	450	2	Yes	System Repair Completed
1/20/2019	8:30am	5619	E. Governor John Sevier Hwy	LC	Loves Creek	61	Manhole 4	Wet Weather Conveyance to Holston River	Holston River	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	8,000	0	8,000	3	Yes	Construction Project Completed
1/20/2019	9:15am	1829	Wayland Rd	LC	Loves Creek	67	Manhole 40-2	Ground to Swanpond Creek	Swanpond Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	12,000	0	12,000	4	Yes	Future Construction Planned
1/22/2019	12:49pm	1408	Adair Dr	KUW	First Creek	7	Manholes 73, 31 and Cleanout at 1412 Adair	Ground to Lynnhurst Creek	Lynnhurst Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	Future Construction Planned
1/22/2019	3:48pm	241	Neals Landing Rd	LC	Loves Creek	63	Manhole 42	Ground to Shinning Creek East	Shinning Creek East	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	Construction Project Underway
1/22/2019	9:33pm	4605	Webb Ln	KUW	Third Creek	28	Manholes 1 and 27-56	Ground to Third Creek	Third Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	System Repair Completed
1/24/2019	7:10pm	600	N Gallaher View Rd	FC	Fourth Creek	32a	Manhole 77	Ground to Ten Mile Creek	Ten Mile Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	255,000	0	255,000	6	Yes	Future Construction Planned
1/24/2019	8:19am	5619	E. Governor John Sevier Hwy	LC	Loves Creek	61	Manhole 4	Wet Weather Conveyance to Holston River	Holston River	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	2,500	0	2,500	3	Yes	Construction Project Completed
1/25/2019	12:31pm	2327	South Haven Rd	KUW	South Knox	40	Manhole 24-136	Soil Saturation		I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	10	0	10	1	No	Future Construction Planned
1/25/2019	6:45pm	7525	Washington Pike	EB	Eastbridge	113	7525 Tap/Main Connection	Soil Saturation		Broken System - Broken force main, The force main was repaired. The area was cleaned	100	90	10	4	No	System Repair Completed
2/11/2019	3:45pm	1001	Waterfront Dr	KUW	South Knox	40	Bypass pump	Soil Saturation		Construction Failure Bypass Pump, The failure was repaired. The area was cleaned.	50	0	50	1	No	System Repair Completed
2/12/2019	12:48pm	1408	Adair Dr	KUW	First Creek	7	Manholes 73 and 31	Ground to Lynnhurst Creek	Lynnhurst Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	4,000	0	4,000	8.5	Yes	Future Construction Planned
2/12/2019	2:45pm	5619	E. Governor John Sevier Hwy	LC	Loves Creek	61	Manhole 4	Wet Weather Conveyance to Holston River	Holston River	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	4,200	0	4,200	4.5	Yes	Construction Project Completed
2/12/2019	4:35pm	1829	Wayland Rd	LC	Loves Creek	67	Manhole 40-2	Ground to Swanpond Creek	Swanpond Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	9,000	0	9,000	6	Yes	Future Construction Planned
2/12/2019	5:36pm	4100	Central Ave Pike	KUW	Second Creek	10	Manhole 17-9	Pavement to Wet Weather Conveyance to Second Creek	Second Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	50	0	50	1.5	Yes	Future Construction Planned
2/12/2019	7:00pm	2700	Boright Dr	KUW	First Creek	8	Manhole 26	Ground to Storm Drain to First Creek	First Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	100	0	100	2	Yes	Future Construction Planned
2/13/2019	10:28am	7004	Rotherwood Dr	FC	Fourth Creek	36	Manholes 29 and 30-46	Ground to Wet Weather Conveyance to Fourth Creek	Fourth Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	System Repair Completed
2/13/2019	8:00am	241	Neals Landing Rd	LC	Loves Creek	63	Manhole 42	Ground to Shinning Creek East	Shinning Creek East	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	Construction Project Underway
2/13/2019	9:15pm	600	N Gallaher View Rd	FC	Fourth Creek	32a	Manhole 77	Ground to Ten Mile Creek	Ten Mile Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	56,000	0	56,000	3.5	Yes	Future Construction Planned
2/14/2019	9:11am	619	Ozark Rd	KUW	Second Creek	5	Bypass pump	Second Creek	Second Creek	Construction Failure Bypass Pump, The failure was repaired. The area was cleaned.	500	0	500	1.5	Yes	System Repair Completed
2/17/2019	8:42am	1521	Saylors Ford Rd	EB	Eastbridge	105	WWTP Pump Station	Soil Saturation		Pump Station Failure Mechanical Failure, The mechanical failure was repaired. The area was cleaned.	1,005	606	399	1	No	System Repair Completed
2/18/2019	1:05am	5619	E. Governor John Sevier Hwy	LC	Loves Creek	61	Manhole 4	Wet Weather Conveyance to Holston River	Holston River	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	6,500	0	6,500	4.5	Yes	Construction Project Completed
2/18/2019	1:24pm	7301	Kingston Pike	FC	Fourth Creek	33	Manhole 48-6	Pavement to Storm Drain to Ten Mile Creek	Ten Mile Creek	Blockage Debris, The sewer main was flushed to remove the blockage. The area was cleaned.	850	0	850	1	Yes	Routine Blockage Abatement
2/18/2019	10:22am	1408	Adair Dr	KUW	First Creek	7	Manhole 72 and Cleanout at 1412 Adair	Ground to Lynnhurst Creek	Lynnhurst Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	Future Construction Planned
2/18/2019	5:20am	2116	Houser Rd	FC	Fourth Creek	37	Broken Force Main	Soil Saturation		Broken System Broken Force Main, The force main was repaired. The area was cleaned.	200	0	200	18	No	System Repair Completed
2/18/2019	9:54am	600	N Gallaher View Rd	FC	Fourth Creek	32a	Manhole 77	Ground to Ten Mile Creek	Ten Mile Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	800,000	0	800,000	15	Yes	Future Construction Planned
2/19/2019	11:56am	5000	Western Ave	KUW	Third Creek	21	Manhole 34	Ground to Third Creek	Third Creek	Blockage Roots and Debris, The sewer main was flushed to remove the blockage. The area was cleaned.	32,000	0	32,000	2	Yes	Routine Blockage Abatement
2/19/2019	7:59pm	600	N Gallaher View Rd	FC	Fourth Creek	32a	Manhole 77	Ground to Ten Mile Creek	Ten Mile Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	8,250,000	0	8,250,000	196	Yes	Future Construction Planned

Date	Time	Street #	Street	Plant	Watershed	Basin	Overflow Location	Pathway	Receiving Water	Cause of SSO/KUB Response	Total Volume (Gallons)	Recovered Volume (Gallons)	Non-Recovered Volume (Gallons)	Duration (Hours)	Unpermitted Discharge	Corrective Action
2/20/2019	1:05am	7004	Rotherwood Dr	FC	Fourth Creek	36	Manholes 30 and 30-46	Ground to Wet Weather Conveyance to Fourth Creek	Fourth Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	10	0	10	1	Yes	System Repair Completed
2/20/2019	12:18am	1408	Adair Dr	KUW	First Creek	7	Manholes 72 and 73	Ground to Lynnhurst Creek	Lynnhurst Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	13,000	0	13,000	3.5	Yes	Future Construction Planned
2/20/2019	2:10am	4605	Webb Ln	KUW	Third Creek	28	Manhole 27-56	Ground to Third Creek	Third Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	10,000	0	10,000	3.5	Yes	System Repair Completed
2/20/2019	8:00am	4719	Old Broadway	KUW	First Creek	7	Manhole 2 and 63	Ground to Lynnhurst Creek	Lynnhurst Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	9,000,000	0	9,000,000	168	Yes	Future Construction Planned
2/20/2019	9:39pm	7004	Rotherwood Dr	FC	Fourth Creek	36	Manhole 30	Ground to Wet Weather Conveyance to Fourth Creek	Fourth Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	15	0	15	6.5	Yes	System Repair Completed
2/22/2019	2:30pm	8224	Landmark Dr	FC	Fourth Creek	32a	Manhole 30	Ground to Ten Mile Creek	Ten Mile Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	System Assessment Underway
2/23/2019	10:45am	915	Loves Creek Rd	LC	Loves Creek	6	Manholes 32, 33, and 34	Pavement to Ground to Loves Creek	Loves Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	500,000	0	500,000	22.0	Yes	Future Construction Planned
2/23/2019	11:20am	2856	Jefferson Ave	KUW	Williams Creek	19	Manhole 5-75	Pavement to Soil Saturation		I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided.	65,500	0	65,500	20.0	No	System Assessment Underway
2/23/2019	11:35am	1221	Milam Cir	FC	Fourth Creek	36	Manhole 12-173	Ground to Tributary to Fourth Creek	Fourth Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	22,000	0	22,000	42.0	Yes	System Assessment Underway
2/23/2019	12:18am	1408	Adair Dr	KUW	First Creek	7	Manholes 28-1, 31 and 73	Ground to Lynnhurst Creek	Lynnhurst Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	130,000	0	130,000	32.0	Yes	Future Construction Planned
2/23/2019	12:45pm	445	W Blount Ave	KUW	South Knox	39	Building Exterior and BBU	Ground to Tennessee River	Tennessee River	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	120,000	0	120,000	6.0	Yes	Future Construction Planned
2/23/2019	2:10pm	2837	E Woodrow Dr	KUW	First Creek	4	Building Exterior and BBU	Soil Saturation		I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided.	Unknown	0	Unknown	8.0	No	System Assessment Underway
2/23/2019	2:35pm	1115	Henrietta Dr	KUW	First Creek	4	Manhole 53 and BBU	Pavement to Wet Weather Conveyance to First Creek	First Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided.	6,000	0	6,000	17.5	Yes	System Assessment Underway
2/23/2019	3:45pm	1400	Ault Rd	LC	Loves Creek	6	Manhole 29-228	Pavement to Soil Saturation		I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	59,000	0	59,000	32.0	No	Future Construction Planned
2/23/2019	4:32am	7004	Rotherwood Dr	FC	Fourth Creek	36	Manholes 30 and 30-46	Ground to Wet Weather Conveyance to Fourth Creek	Fourth Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	75,000	0	75,000	54.5	Yes	System Repair Completed
2/23/2019	5:35am	4100	Central Ave Pike	KUW	Second Creek	10	Manhole 17-9	Pavement to Wet Weather Conveyance to Second Creek	Second Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	410,000	0	410,000	31.0	Yes	Future Construction Planned
2/23/2019	6:05am	4883	N Broadway	KUW	First Creek	4	Manhole 11-3 and BBU	Pavement to First Creek	First Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	20,006	6	20,000	13.5	Yes	System Assessment Underway
2/23/2019	6:09pm	1912	Paris Rd	KUW	Third Creek	13	Lateral Cleanout	Ground to Third Creek	Third Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	7,500	0	7,500	10.5	Yes	System Assessment Underway
2/23/2019	6:44am	1500	Lyons Bend Rd	FC	Fourth Creek	37	MLSS Wet Well	Fourth Creek	Fourth Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	1,100,000	0	1,100,000	2.5	Yes	System Assessment Underway
2/23/2019	6:45am	5619	E. Governor John Sevier Hwy	LC	Loves Creek	61	Manhole 4	Wet Weather Conveyance to Holston River	Holston River	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	3,500	0	3,500	30.0	Yes	Construction Project Completed
2/23/2019	7:00am	2004	Riverside Dr	KUW	Williams Creek	31	Manhole 1-1	Ground to Williams Creek	Williams Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	2,000,000	0	2,000,000	33.0	Yes	Future Construction Planned
2/23/2019	7:00pm	5600	Scenic Hills Rd	KUW	Second Creek	5	Manholes 8-46, 8-47 and 8-55	Pavement to Wet Weather Conveyance to Second Creek	Second Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	153,000	0	153,000	36.0	Yes	System Assessment Underway
2/23/2019	7:25am	2004	Neyland Dr	KUW	Second Creek	35a	Manhole 1	Tennessee River	Tennessee River	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	54,220,000	0	54,220,000	35.8	Yes	System Assessment Underway
2/23/2019	7:25am	2739	Parkview Ave	KUW	Williams Creek	19	Manhole 5-15	Ground to Williams Creek	Williams Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	20,000	0	20,000	11.0	Yes	Future Construction Planned
2/23/2019	8:58am	1500	Lyons Bend Rd	FC	Fourth Creek	37	Manhole 1	Fourth Creek	Fourth Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	800,000	0	800,000	1.8	Yes	System Assessment Underway
2/23/2019	9:04am	2237	Woods-Smith Rd	KUW	Third Creek	11	Manhole 40	Ground to Wet Weather Conveyance to Third Creek	Third Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	36,000	0	36,000	25.0	Yes	System Assessment Underway
2/23/2019	9:14am	2700	Boright Dr	KUW	First Creek	8	Manhole 26	Pavement to Storm Drain to First Creek	First Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	371,000	0	371,000	28.0	Yes	Future Construction Planned
2/23/2019	9:49am	1831	Island Home Ave	KUW	South Knox	40	Manhole 21	Ground to Baker Creek	Baker Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	104,000	0	104,000	25.0	Yes	System Assessment Underway
2/23/2019	9:50am	201	Delta Rd	LC	Loves Creek	20	Manhole 18-6	Ground to Loves Creek	Loves Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	22,000	0	22,000	10.0	Yes	System Assessment Underway

Date	Time	Street #	Street	Plant	Watershed	Basin	Overflow Location	Pathway	Receiving Water	Cause of SSO/KUB Response	Total Volume (Gallons)	Recovered Volume (Gallons)	Non-Recovered Volume (Gallons)	Duration (Hours)	Unpermitted Discharge	Corrective Action
2/24/2019	1:57pm	201	Hermitage	KUW	Knob Creek	41	Manhole 66-69 and Lateral Cleanout	Ground to Pond	Pond	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided.	60,000	0	60,000	115.0	Yes	System Assessment Underway
2/24/2019	10:56am	1829	Wayland Rd	LC	Loves Creek	67	Manhole 40-2	Ground to Swanpond Creek	Swanpond Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided.	125,000	0	125,000	32.0	Yes	Future Construction Planned
2/24/2019	12:30am	961	E. Ford Valley Rd	KUW	Knob Creek	41	Wet Well	Wet Well to Soil Saturation		Pump Station Failure Electrical Failure, The pump station was repaired. The area was cleaned.	324,000	0	324,000	6.0	No	System Repair Completed
2/24/2019	4:17pm	4719	Old Broadway	KUW	First Creek	4	Manhole 62	Ground to First Creek	First Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided.	1,000	0	1,000	Unknown	Yes	Future Construction Planned
2/24/2019	8:00am	3400	Ashland Ave	LC	Loves Creek	20	Manhole 28-25 and Lateral Cleanout	Pavement to Storm Drain to Chilhowee Park Lake	Chilhowee Park Lake	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided.	38,000	0	38,000	200.0	Yes	System Assessment Underway
2/24/2019	8:55am	2544	Fair Dr	KUW	First Creek	4	Manholes 77 and 20-2	Ground to Wet Weather Conveyance to First Creek	First Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	800,000	0	800,000	16.0	Yes	System Assessment Underway
2/24/2019	9:16am	4605	Webb Ln	KUW	Third Creek	28	Manhole 27-56	Ground to Third Creek	Third Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided.	4,000,000	0	4,000,000	56.0	Yes	System Repair Completed
2/25/2019	10:50am	5412	Foxwood Rd	KUW	Third Creek	11	Manhole 23-33	Soil Saturation		I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided.	500	0	500	Unknown	No	System Assessment Underway
2/25/2019	11:02pm	5100	W Martin Mill Pike	KUW	South Knox	39	Manhole 142	Soil Saturation		I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided.	12,500	0	12,500	11.0	No	Future Construction Planned
2/25/2019	11:55am	1500	Hoitt Ave	KUW	First Creek	17	Manhole 38	Ground to Wet Weather Conveyance to First Creek	First Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided.	2,000	0	2,000	Unknown	Yes	System Assessment Underway
2/26/2019	9:23am	4901	N Broadway	KUW	First Creek	4	Manhole 97	Ground to First Creek	First Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided.	Unknown	0	Unknown	Unknown	Yes	System Assessment Underway
2/27/2019	1:28pm	7738	Queensbury Dr	FC	Fourth Creek	36	Wet Well	Soil Saturation		Pump Station Failure Electrical Failure, The power was restored	260,000	0	260,000	24.0	No	System Repair Completed
2/27/2019	1:43pm	212	Ellis Rd	KUW	Knob Creek	41	Wet Well	Soil Saturation		I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided.	200,000	0	200,000	19.0	No	System Assessment Underway
2/27/2019	2:36pm	909	Cooper St	KUW	Second Creek	23	Manhole 34	Ground to Second Creek	Second Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided.	200	0	200	Unknown	Yes	System Assessment Underway
2/28/2019	4:50pm	6410	S Northshore Dr	FC	Fourth Creek	37	Manhole 8	Ground to Fourth Creek	Fourth Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided.	1,500	0	1,500	Unknown	Yes	System Assessment Underway
3/1/2019	2:30pm	5423	Asheville Hwy	LC	Loves Creek	20	Manhole 16-2	Ground to Loves Creek	Loves Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	System Assessment Underway
3/2/2019	5:20pm	2327	South Haven Rd	KUW	South Knox	40	Manhole 24-27	Ground to Baker Creek	Baker Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	40	0	40	Unknown	Yes	System Assessment Underway
3/3/2019	2:20pm	241	Neals Landing Rd	LC	Loves Creek	63	Manhole 42	Ground to Shinning Creek East	Shinning Creek East	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	2,000	0	2,000	11.0	Yes	Construction Project Underway
3/3/2019	2:49pm	5619	E. Governor John Sevier Hwy	LC	Loves Creek	61	Manhole 4	Wet Weather Conveyance to Holston River	Holston River	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	3,000	0	3,000	20.0	Yes	Construction Project Completed
3/3/2019	3:40pm	7004	Rotherwood Dr	FC	Fourth Creek	36	Manholes 30 and 30-46	Ground to Wet Weather Conveyance to Fourth Creek	Fourth Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	9,000	0	9,000	6.5	Yes	System Repair Completed
3/3/2019	4:00pm	1829	Wayland Rd	LC	Loves Creek	67	Manhole 40-2	Ground to Swanpond Creek	Swanpond Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	12,000	0	12,000	3.5	Yes	Future Construction Planned
3/3/2019	5:02pm	5100	W Martin Mill Pike	KUW	South Knox	39	Manhole 11	Soil Saturation		I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided.	9,000	0	9,000	11.0	No	Future Construction Planned
3/3/2019	8:00am	600	N Gallaher View Rd	FC	Fourth Creek	32a	Manhole 77	Ground to Ten Mile Creek	Ten Mile Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	1,250,000	0	1,250,000	29.0	Yes	Future Construction Planned
3/8/2019	5:11pm	5218	Rutledge Pike	LC	Loves Creek	6	Manhole 25	Ground to Loves Creek	Loves Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	System Assessment Underway
3/8/2019	6:26pm	1600	Prosser Rd	LC	Loves Creek	6	Manhole 29-190	Ground to Loves Creek	Loves Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	No	Future Construction Planned
3/10/2019	1:50am	1408	Adair Dr	KUW	First Creek	7	Manholes 73 and 31	Ground to Lynnhurst Creek	Lynnhurst Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	19,000	0	19,000	2.5	Yes	Future Construction Planned
3/10/2019	12:24am	241	Neals Landing Rd	LC	Loves Creek	63	Manhole 42	Ground to Shinning Creek East	Shinning Creek East	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	16,000	0	16,000	3.5	Yes	Construction Project Underway
3/10/2019	2:20am	1829	Wayland Rd	LC	Loves Creek	67	Manhole 40-2	Ground to Swanpond Creek	Swanpond Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	2,500	0	2,500	2.3	Yes	Future Construction Planned
3/11/2019	11:59am	5200	Rutledge Pike	LC	Loves Creek	6	Manhole 29-2	Soil Saturation		I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	No	System Assessment Underway

Date	Time	Street #	Street	Plant	Watershed	Basin	Overflow Location	Pathway	Receiving Water	Cause of SSO/KUB Response	Total Volume (Gallons)	Recovered Volume (Gallons)	Non-Recovered Volume (Gallons)	Duration (Hours)	Unpermitted Discharge	Corrective Action
3/12/2019	11:59am	1020	Cedarwood St	LC	Loves Creek	6	Manhole 29-135, 29-159, 29-166	Soil Saturation		I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	No	System Assessment Underway
3/12/2019	11:59am	4420	Holston Hills Rd	LC	Loves Creek	26	Manhole 65	Ground to Holston River	Holston River	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	System Assessment Underway
3/13/2019	2:50pm	2900	Rennoc Rd	KUW	First Creek	4	Lateral Cleanout	Ground to Wet Weather Conveyance to First Creek	First Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	System Assessment Underway
3/15/2019	12:04pm	5000	Western Ave	KUW	Third Creek	21	Manhole 34	Ground to Third Creek	Third Creek	Blockage Roots and Debris, The sewer main was flushed to remove the blockage. The area was cleaned.	2,500	0	2,500	2.0	Yes	Routine Blockage Abatement
3/15/2019	12:20pm	302	Seventh Ave	KUW	First Creek	18	Manhole 16-2	Ground to Wet Weather Conveyance to First Creek	First Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	System Assessment Underway
3/16/2019	11:45am	4039	Gap Rd	KUW	Second Creek	10	Manhole 14-110	Pavement to Ground to Soil Saturation		Blockage Grease, The sewer main was flushed to remove the blockage. The area was cleaned.	800	0	800	2.3	No	Routine Blockage Abatement
3/16/2019	12:30pm	2025	Edgewood Ave	KUW	First Creek	16	Manhole 2-62 and BBU	Pavement to Ground to Soil Saturation		Blockage Grease, The sewer main was flushed to remove the blockage. The area was cleaned.	150	0	150	2.0	No	Routine Blockage Abatement
3/19/2019	3:25pm	7445	Sawyer Ln	LC	Loves Creek	67	7445 Sawyer, Low Pressure Force Main	Soil Saturation		Construction Failure Third Party - Dig-in, The sewer main was repaired. The area was cleaned	15	0	15	3.0	No	System Repair Completed
3/26/2019	11:47am	805	Blows Ferry Rd	KUW	Third Creek	38	Manhole 36	Ground to Tennessee River	Tennessee River	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	System Assessment Underway
3/27/2019	12:03pm	4308	Edington Rd	KUW	South Knox	39	Bypass Pump	Pavement to Tributary to Storm Drain to Goose Creek	Goose Creek	Construction Failure, The failure was rectified. The area was cleaned	5,000	0	5,000	1.0	Yes	System Repair Completed
3/28/2019	10:00am	4917	Ball Rd	FC	Fourth Creek	49	Force Main	Ground to Grassy Creek	Grassy Creek	Broken System - Broken force main, The force main was repaired. The area was cleaned	26,000	0	26,000	5.0	Yes	System Repair Completed
3/28/2019	11:23am	1408	Adair Dr	KUW	First Creek	7	Manhole 72	Ground to Lynnhurst Creek	Lynnhurst Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	Future Construction Planned
4/2/2019	5:20pm	3301	Maple Valley Ln	FC	Fourth Creek	49	Manhole 19-8	Soil Saturation		I/I Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	No	System Assessment Underway
4/10/2019	2:45pm	5915	Neubert Springs Rd	KUW	Knob Creek	41	Bypass Pump	Soil Saturation		Construction Failure Bypass Pumping The failure was rectified. The area was cleaned.	200	0	200	1.0	No	System Repair Completed
5/7/2019	1:11pm	4710	Murphy Rd	KUW	First Creek	2	Grinder Pump	Soil Saturation	0	Grinder Pump Failure The failure was rectified. The area was cleaned.	5	0	5	Unknown	No	System Repair Completed
5/11/2019	11:45pm	4800	Maloneyville Rd	EB	Eastbridge	109	Wetwell	Soil Saturation	0	Pump Station Failure Electrical Failure The pump station was repaired. The area was cleaned	300	0	300	1.0	No	System Repair Completed
5/15/2019	3:20pm	5240	Bent River Blvd	FC	Fourth Creek	37	Grinder Pump	Soil Saturation	0	Grinder Pump Failure The pump was repaired and the area was cleaned	3	1	2	1.0	No	System Repair Completed
5/15/2019	6:50pm	5246	Bent River Blvd	FC	Fourth Creek	37	Grinder Pump	Soil Saturation	0	Grinder Pump Failure The pump was repaired and the area was cleaned	10	0	10	1.0	No	System Repair Completed
5/20/2019	9:53am	8835	Millertown Pike	EB	Eastbridge	114	Grinder Pump	Soil Saturation	0	Grinder Pump Failure The pump was repaired and the area was cleaned	2	0	2	1.0	No	System Repair Completed
5/24/2019	10:46am	3861	Cluster Ave	LC	Loves Creek	6	Lateral Cleanout	Soil Saturation	0	Blockage Grease The sewer main was flushed to remove the blockage. The area was cleaned.	15	5	10	1.0	No	Routine Blockage Abatement
5/28/2019	1:00pm	7509	Mary Lay Ln	LC	Loves Creek	63	Manhole 39	Ground to Shining Creek East	Shining Creek East	Broken System Broken Gravity Main The damaged section was removed and repaired. The area was cleaned.	75	0	75	1.0	Yes	System Repair Completed
6/4/2019	2:46pm	750	Brakebill Rd	LC	Loves Creek	67	Manhole 16-9	Soil Saturation	0	Blockage Debris The sewer main was flushed to remove the blockage. The area was cleaned.	250	0	250	2.0	No	Routine Blockage Abatement
6/18/2019	2:32pm	3917	Acorn Dr	KUW	First Creek	2	Manhole 39-30	Soil Saturation	0	Blockage Roots and Grease The sewer main was flushed to remove the blockage. The area was cleaned.	1,000	0	1,000	1.0	No	Routine Blockage Abatement
6/21/2019	7:11pm	5209	Foxwood Rd	KUW	Third Creek	11	Lateral Cleanout	Soil Saturation	0	Blockage Roots The sewer main was flushed to remove the blockage. The area was cleaned.	100	0	100	2.0	No	Routine Blockage Abatement
7/1/2019	12:23pm	6350	Rutledge Pike	LC	Loves Creek	105	Grinder Pump	Soil Saturation	0	Grinder Pump Failure The grinder pump was repaired and the area was cleaned	2	1	1	2.0	No	System Repair Completed
7/8/2019	11:25am	2305	Vicinda Cir	LC	Loves Creek	105	Grinder Pump	Soil Saturation	0	Grinder Pump Failure The grinder pump was repaired and the area was cleaned	2	1	1	2.0	No	System Repair Completed
7/8/2019	8:52am	1829	Wayland Rd	LC	Loves Creek	67	Manhole 40-2	Soil Saturation	0	I/I Rainfall in the area produced I & I and high flows in the sewer mains The sewer main was checked until the high flows subsided. The area was cleaned.	100	0	100	4.0	No	Future Construction Planned
7/11/2019	1:57pm	1109	Chestnut St	KUW	South Knox	39	Manhole 27-220	Soil Saturation	0	Blockage Debris The sewer main was flushed to remove the blockage. The area was cleaned.	500	0	500	1.0	No	Routine Blockage Abatement
7/11/2019	7:41pm	1829	Wayland Rd	LC	Loves Creek	67	Manhole 40-2	Soil Saturation	0	I/I Rainfall in the area produced I & I and high flows in the sewer mains The sewer main was checked until the high flows subsided. The area was cleaned.	10	0	10	12.0	No	Future Construction Planned
7/22/2019	5:58pm	1829	Wayland Rd	LC	Loves Creek	67	Manhole 40-2	Ground to Swanpond Creek to Holston River	Holston River	I/I Rainfall in the area produced I & I and high flows in the sewer mains The sewer main was checked until the high flows subsided. The area was cleaned.	65,000	0	65,000	16.0	Yes	Future Construction Planned
7/23/2019	1:45am	2739	Parkview Ave	KUW	Williams Creek	19	Manhole 5-15	Ground to Williams Creek	Williams Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains The sewer main was checked until the high flows subsided. The area was cleaned.	300	0	300	8.5	Yes	Future Construction Planned
7/23/2019	11:04am	4225	Cruze Rd	KUW	South Knox	40	Manhole 71-9	Soil Saturation	0	I/I Rainfall in the area produced I & I and high flows in the sewer mains The sewer main was checked until the high flows subsided. The area was cleaned.	5,000	0	5,000	3.0	No	Future Construction Planned
7/23/2019	11:55am	5100	W. Martin Mill Pike	KUW	South Knox	39	Manhole 142	Soil Saturation	0	I/I Rainfall in the area produced I & I and high flows in the sewer mains The sewer main was checked until the high flows subsided. The area was cleaned.	6,500	4.5	6,500	4.5	No	Future Construction Planned
7/23/2019	6:53pm	5230	McNutt Rd	KUW	Knob Creek	41	Manhole 96-1 and Lateral Cleanout	Ground to Toll Creek to Tennessee River	Toll Creek	Pump Station Failure Electrical Failure The power was restored. The area was cleaned.	20,000	0	20,000	7.0	Yes	System Repair Completed
7/23/2019	9:41am	2327	South Haven Rd	KUW	South Knox	40	Manhole 24-136	Ground to Baker Creek	Baker Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains The sewer main was checked until the high flows subsided. The area was cleaned.	16,000	0	16,000	12.0	Yes	Future Construction Planned
7/24/2019	12:33pm	5236	Bent River Blvd	FC	Fourth Creek	37	Grinder Pump	Soil Saturation	0	Grinder Pump Failure Electrical Failure The power was restored. The area was cleaned.	Unknown	0	Unknown	Unknown	No	System Repair Completed

Date	Time	Street #	Street	Plant	Watershed	Basin	Overflow Location	Pathway	Receiving Water	Cause of SSO/KUB Response	Total Volume (Gallons)	Recovered Volume (Gallons)	Non-Recovered Volume (Gallons)	Duration (Hours)	Unpermitted Discharge	Corrective Action
7/31/2019	8:56am	1817	Laurel Ave	KUW	Third Creek	29	Gravity Main	Exfiltration to Storm Drain to Third Creek	Third Creek	Broken System - Broken gravity main, The gravity main was repaired. The area was cleaned	Unknown	0	Unknown	51.0	Yes	System Repair Completed
8/5/2019	12:12pm	430	Mimosa Ave	KUW	South Knox	40	Manhole 1-85	Soil Saturation	0	Blockage Debris The sewer main was flushed to remove the blockage. The area was cleaned.	1,250	0	1,250	2.0	No	Routine Blockage Abatement
8/5/2019	4:06pm	6309	Cadbury Dr	KUW	Third Creek	11	Manhole 39-9	Wet Weather Conveyance to Soil Saturation	0	Broken System Broken Gravity Main The gravity main was repaired and the area was cleaned.	700	0	700	3.0	No	System Repair Completed
8/23/2019	8:29pm	1811	East Glenwood Ave	KUW	First Creek	24	Lateral Cleanout	Soil Saturation	0	Blockage Grease The sewer main was flushed to remove the blockage. The area was cleaned.	25	0	25	1.0	No	Routine Blockage Abatement
8/30/2019	5:27pm	200	Jennings Ave	KUW	Second Creek	23	Manhole 33-13	Pavement	0	Blockage Third Party - Construction Debris The sewer main was flushed to remove the blockage. The area was cleaned.	100	0	100	1.0	No	System Repair Completed
9/11/2019	10:34 AM	4521	North Wahli Dr	KUW	First Creek	7	Manhole 38	Soil Saturation	1/0/1900	Blockage Grease The sewer main was flushed to remove the blockage. The area was cleaned.	200	0	200	1.0	No	Routine Blockage Abatement
10/6/2019	11:32am	3180	Power Dr	KUW	Knob Creek	45	Manhole 9-5	Pavement to Storm Drain to Soil Saturation	0	Blockage Debris The sewer main was flushed to remove the blockage. The area was cleaned.	150	0	150	2.0	No	Routine Blockage Abatement
10/23/2019	9:40am	1811	Paris Rd	KUW	Third Creek	13	Manhole 41-56 and 1912 Paris Rd Lateral Cleanout	Ditch to Third Creek	Third Creek	Blockage Debris The sewer main was flushed to remove the blockage. The area was cleaned.	200	0	200	2.0	Yes	Routine Blockage Abatement
11/23/2019	1:29pm	5100	W Martin Mill Pike	KUW	South Knox	39	Manholes 9 and 142	Soil Saturation		I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	7,500	0	7,500	3.0	No	Future Construction Planned
11/23/2019	1:30pm	1829	Wayland Rd	LC	Loves Creek	67	Manhole 40-2	Ground to Swanpond Creek	Swanpond Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	16,000	0	16,000	3.0	Yes	Future Construction Planned
11/23/2019	2:40pm	1404	Adair Dr	KUW	First Creek	7	Manholes 72 and 73	Ground to Lynnhurst Creek	Lynnhurst Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains., The sewer main was checked until the high flows subsided. The area was cleaned.	4,000	0	4,000	3.0	Yes	Future Construction Planned
11/25/2019	2:30pm	1317	Louisiana Ave	KUW	Second Creek	15	Lateral Cleanout	Ground to Storm Drain to Second Creek	Second Creek	Blockage - Grease and Debris, The sewer main was flushed to remove the blockage. The area was cleaned.	600	0	600	1.0	Yes	Routine Blockage Abatement
12/1/2019	4:15pm	5100	W. Martin Mill Pike	KUW	South Knox	39	Manholes 9, 11, and 142	Soil Saturation	0	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	150	0	150	3.0	No	Future Construction Planned
12/1/2019	8:06am	1408	Adair Dr	KUW	First Creek	7	Manhole 72	Ground to Lynnhurst Creek to First Creek	Lynnhurst Creek	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	50	0	50	4.0	Yes	Future Construction Planned
12/13/2019	7:17pm	5272	Bent River Blvd	FC	Fourth Creek	43	Grinder Pump	Soil Saturation	0	Grinder Pump Failure Mechanical Failure The pump was replaced and the area was cleaned	1	0	1	1.0	No	System Repair Completed
12/18/2019	2:15pm	2721	Delrose Dr	KUW	Williams Creek	25	Manhole 13-13	Soil Saturation	0	Blockage Grease The main was flushed to remove the blockage. The area was cleaned.	200	0	200	2.0	No	Routine Blockage Abatement
12/23/2020	6:30am	4225	Cruze Rd	KUW	South Knox	40	Manhole 71-9	Soil Saturation	0	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	3,500	0	3,500	4.0	No	Future Construction Planned
12/23/2020	8:12am	5100	W. Martin Mill Pike	KUW	South Knox	39	Manhole 142	Soil Saturation	0	I&I Rainfall in the area produced I & I and high flows in the sewer mains. The mains were checked until flow subsided. The area was cleaned.	1,000	0	1,000	1.0	No	Future Construction Planned

*KUB performs inspections, hydraulic cleaning, and/or root removal on a routine frequency for all locations under Blockage Abatement

Appendix C

Building Backups

BBUs

Date	Time	Street #	Street	Plant	Watershed	Basin	Overflow Location	Receiving Water	Cause of SSO/KUB Response	Total Volume (Gallons)	Recovered Volume (Gallons)	Non-Recovered Volume (Gallons)	Duration (Hours)	Unpermitted Discharge	Corrective Action
2/22/2019	5:49pm	2243	McCalla Ave	KUW	First Creek	24	BBU at 2243 and 2247 Apt 1		Blockage Grease, The sewer main was flushed to remove the blockage. The building was cleaned	5	5	0	1	No	Routine Blockage Abatement
2/23/2019	10:55am	2411	Fenwood Dr	KUW	First Creek	4	BBU		Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided.	10	10	0	1	No	System Assessment Underway
2/23/2019	11:22am	1492	Touraine Pl	FC	Fourth Creek	37	BBU		Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided.	4	4	0	1	No	System Assessment Underway
2/23/2019	11:31pm	103	Rose Dr	KUW	First Creek	4	BBU		Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided.	650	650	0	Unknown	No	System Assessment Underway
2/23/2019	12:15am	805	E Churchwell Ave	KUW	First Creek	16	BBU at 805 and 815		Blockage, Debris. The sewer main was flushed to remove the blockage. The building was cleaned by ServPro	16	16	0	4	No	Routine Blockage Abatement
2/23/2019	12:45pm	445	W Blount Ave	KUW	South Knox	39	Building Exterior and BBU	Tennessee River	Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided.	120,000	0	120,000	6	No	Future Construction Planned
2/23/2019	2:10pm	2837	E Woodrow Dr	KUW	First Creek	4	Building Exterior and BBU		Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided.	Unknown	0	Unknown	8	No	System Assessment Underway
2/23/2019	2:25pm	1407	Brookside Ave	KUW	Third Creek	22	BBU		Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided.	5	5	0	1	No	System Assessment Underway
2/23/2019	2:35pm	1115	Henrietta Dr	KUW	First Creek	4	Manhole 53 and BBU	First Creek	Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	6,000	0	6,000	18	Yes	System Assessment Underway
2/23/2019	6:05am	4883	N Broadway	KUW	First Creek	4	Manhole 11-3 and BBU	First Creek	Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	20,006	6	20,000	14	Yes	System Assessment Underway
2/23/2019	6:35pm	2901	Avondale Ave	KUW	First Creek	8	BBU		Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided.	10	10	0	Unknown	No	System Assessment Underway
3/16/2019	12:30pm	2025	Edgewood Ave	KUW	First Creek	16	Manhole 2-62 and BBU		Blockage Grease, The sewer main was flushed to remove the blockage. The area was cleaned.	150	0	150	2	No	Routine Blockage Abatement
6/1/2019	11:40am	1900	E Magnolia Ave	KUW	First Creek	24	BBU		Blockage, Debris. The sewer main was flushed to remove the blockage. The building was cleaned by ServPro	30	30	0	2	No	Routine Blockage Abatement

*KUB performs inspections, hydraulic cleaning, and/or root removal on a routine frequency for all locations under Blockage Abatement

Appendix D

Water Quality Monitoring Program Sampling Results



**Water Quality Monitoring
Report**

Routine Water Quality Monitoring Report

1/1/2019 Through 12/31/2019

Knoxville Utilities Board

Water Quality Laboratory
Kevin Keaton, Lab Supervisor
835 East Jackson Avenue
Knoxville, Tennessee 37915
(865) 594-8206 Fax: (865)594-8245

Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status
<u>First Creek</u>									
1.74	1/25/2019	10:26	7.6	9	11	340	310	Wet	R
2.57	1/25/2019	10:13	7.6	9	11	54	340	Wet	R
6.33	1/25/2019	09:06	7.3	12	9.4	390	370	Wet	R
1.74	2/19/2019	10:49	6.8	10	11	350	410	Wet	R
2.57	2/19/2019	11:54	7.3	9	11	310	370	Wet	R
6.33	2/19/2019	09:41	6.8	11	10	510	290	Wet	R
1.74	3/26/2019	09:13	7.4	12	9.7	200	280	Wet	R
2.57	3/26/2019	09:42	7.6	12	10	170	140	Wet	R
6.33	3/26/2019	10:16	7.2	13	9.3	340	230	Wet	R
1.74	4/19/2019	09:53	7.6	18	7.8	4000	1400	Wet	R
2.57	4/19/2019	10:10	7.8	17	8.1	5300	1600	Wet	R
6.33	4/19/2019	10:31	7.6	17	7.0	2500	1200	Wet	R
1.74	5/21/2019	09:56	7.9	18	8.2	490	440	Wet	R
2.57	5/21/2019	10:10	8.8	18	8.6	530	340	Wet	R
6.33	5/21/2019	08:50	7.3	17	7.9	420	150	Wet	R
1.74	6/24/2019	08:50	7.0	20	7.8	730	870	Wet	R
2.57	6/24/2019	09:00	7.3	20	8.1	1200	870	Wet	R
6.33	6/24/2019	09:23	6.9	20	7.2	640	370	Wet	R

*Status: I = Site Under Investigation, R = Reportable for monitoring purposes

Precipitation event = "Wet" if the total amount of rainfall for four days prior to the sample was greater than 0.1 inches.



Water Quality Monitoring
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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	E. Coli (MPN)	Precipitation Event	Status
First Creek									
1.74	7/12/2019	10:31	7.3	22	7.3	40000	> 2400	Wet	R
2.57	7/12/2019	10:17	7.2	22	7.6	45000	> 2400	Wet	R
6.33	7/12/2019	09:54	6.7	21	6.4	10000	2400	Wet	R
1.74	8/15/2019	10:03	7.9	21	7.9	2000	580	Wet	R
2.57	8/15/2019	09:50	8.1	21	8.3	1400	460	Wet	R
6.33	8/15/2019	09:34	7.9	19	7.2	270	280	Wet	R
1.74	9/3/2019	10:00	6.8	21	8.1	450	250	Dry	R
2.57	9/3/2019	10:15	7.2	20	8.3	550	210	Dry	R
6.33	9/3/2019	09:40	6.6	19	7.3	520	410	Dry	R
1.74	10/18/2019	08:20	8.0	13	8.9	270	310	Wet	R
2.57	10/18/2019	08:38	8.3	12	9.8	360	250	Wet	R
6.33	10/18/2019	09:00	8.0	13	6.3	430	410	Wet	R
1.74	11/1/2019	08:35	7.8	13	9.1	610	580	Wet	R
2.57	11/1/2019	08:53	8.1	12	9.7	490	390	Wet	R
6.33	11/1/2019	09:09	7.8	14	8.2	550	820	Wet	R
1.74	12/18/2019	12:08	8.0	10	11.2	270	180	Wet	R
2.57	12/18/2019	11:54	8.5	10	11	320	410	Wet	R
6.33	12/18/2019	10:16	7.8	11	9.4	400	250	Wet	R

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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status
<u>Second Creek</u>									
0.30	1/25/2019	09:56	7.4	11	10	1100	440	Wet	R
1.54	1/25/2019	09:41	7.3	11	11	2600	2000	Wet	R
5.11	1/25/2019	09:21	6.7	11	8.5	180	120	Wet	R
0.30	2/19/2019	12:18	7.2	12	11	290	610	Wet	R
1.54	2/19/2019	10:13	7.1	11	11	360	520	Wet	R
5.11	2/19/2019	10:00	6.4	12	9.1	500	370	Wet	R
0.30	3/26/2019	11:52	7.6	13	10	230	99	Wet	R
1.54	3/26/2019	11:23	7.3	13	10	150	100	Wet	R
5.11	3/26/2019	10:36	7.1	14	7.4	140	100	Wet	R
0.30	4/29/2019	13:46	8.0	19	8.9	110	79	Dry	R
1.54	4/29/2019	13:26	7.4	19	9.1	210	160	Dry	R
5.11	4/29/2019	12:38	6.9	20	6.6	430	390	Dry	R
0.30	5/21/2019	09:37	8.2	18	8.8	2400	770	Wet	R
1.54	5/21/2019	09:24	7.8	17	8.2	2000	920	Wet	R
5.11	5/21/2019	09:07	7.1	16	6.0	1300	870	Wet	R
0.30	6/27/2019	09:03	7.6	20	8.3	2800	870	Wet	R
1.54	6/27/2019	08:47	7.1	20	8.8	910	340	Wet	R
5.11	6/27/2019	08:35	6.7	17	5.7	1300	440	Wet	R

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Precipitation event = "Wet" if the total amount of rainfall for four days prior to the sample was greater than 0.1 inches.



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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status
<u>Second Creek</u>									
0.30	7/26/2019	10:33	7.4	20	8.2	570	440	Wet	R
1.54	7/26/2019	10:16	7.1	18	7.8	1700	290	Wet	R
5.11	7/26/2019	09:48	6.5	18	5.9	910	460	Wet	R
0.30	8/26/2019	09:40	8.0	21	8.1	13000	690	Wet	R
1.54	8/26/2019	09:11	7.4	21	6.9	19000	1200	Wet	R
5.11	8/26/2019	08:51	7.6	17	5.6	2500	340	Wet	R
0.30	9/27/2019	08:12	7.6	20	7.9	4400	520	Dry	R
1.54	9/27/2019	08:35	7.6	20	6.5	550	160	Dry	R
5.11	9/27/2019	08:55	7.5	19	3.9	15000	440	Dry	R
0.30	10/29/2019	11:39	8.1	17	9.3	680	260	Wet	R
1.54	10/29/2019	11:24	7.7	17	8.5	520	150	Wet	R
5.11	10/29/2019	11:09	7.1	17	5.3	400	290	Wet	R
0.30	11/22/2019	08:36	8.1	14	9.0	1600	1300	Dry	R
1.54	11/22/2019	08:21	7.4	14	8.2	420	280	Dry	R
5.11	11/22/2019	08:05	7.4	14	5.4	160	74	Dry	R
0.30	12/18/2019	10:39	8.1	11	11	210	250	Wet	R
1.54	12/18/2019	10:01	7.9	11	10	400	270	Wet	R
5.11	12/18/2019	09:44	7.6	11	6	270	390	Wet	R

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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status
<u>Third Creek</u>									
0.87	1/22/2019	11:15	7.8	9	11	240	280	Wet	R
2.08E	1/22/2019	11:00	7.5	10	11	120	84	Wet	R
4.80W	1/22/2019	10:12	7.5	11	10	330	140	Wet	R
0.87	2/26/2019	09:36	7.7	12	10	260	260	Wet	R
2.08E	2/26/2019	09:48	7.5	12	9.5	99	170	Wet	R
4.80W	2/26/2019	08:30	7.2	13	9.5	330	150	Wet	R
0.87	3/20/2019	10:20	7.8	11	10	72	46	Dry	R
2.08E	3/20/2019	10:05	7.7	12	10	130	93	Dry	R
4.80W	3/20/2019	09:09	7.5	12	9.4	18	35	Dry	R
0.87	4/26/2019	09:34	8.0	17	8.1	1300	1000	Dry	I
2.08E	4/26/2019	09:50	7.9	17	8.6	2300	2000	Dry	I
4.80W	4/26/2019	10:07	7.7	16	8.4	520	520	Dry	R
0.87	5/8/2019	08:30	7.6	16	8.4	18	11	Wet	R
2.08e	5/8/2019	08:58	7.5	17	8.2	2000	520	Wet	R
4.80w	5/8/2019	09:12	7.3	15	8.3	240	230	Wet	R
0.87	6/25/2019	12:41	7.5	20	7.9	2800	1600	Wet	I
2.08E	6/25/2019	12:26	7.4	21	7.4	2800	1600	Wet	I
4.80W	6/25/2019	09:00	6.7	18	7.8	3400	1700	Wet	R

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Water Quality Laboratory
Kevin Keaton, Lab Supervisor
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Knoxville, Tennessee 37915
(865) 594-8206 Fax: (865) 594-8245

Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	E. Coli (MPN)	Precipitation Event	Status
<u>Third Creek</u>									
0.87	7/24/2019	10:30	7.4	18	8.4	2600	1200	Wet	R
2.08E	7/24/2019	10:16	7.1	18	7.8	2300	1600	Wet	R
4.80W	7/24/2019	09:20	6.5	18	8.0	2600	1600	Wet	R
0.87	8/16/2019	08:57	8.0	21	7.3	460	310	Wet	R
2.08E	8/16/2019	08:44	8.1	21	7.2	290	230	Wet	R
4.80W	8/16/2019	08:32	7.6	17	8.0	160	130	Wet	R
0.87	9/24/2019	11:02	7.5	19	7.8	360	260	Dry	R
2.08E	9/24/2019	10:51	7.3	21	7.5	1500	580	Dry	R
4.80W	9/24/2019	10:00	6.8	17	8.0	280	220	Dry	R
0.87	10/9/2019	12:07	7.9	18	8.0	550	260	Dry	R
2.08E	10/9/2019	09:43	7.5	19	7.4	1500	580	Dry	R
4.80W	10/9/2019	10:03	7.5	16	8.1	160	96	Dry	R
0.87	11/18/2019	08:25	7.9	12	9.1	160	160	Dry	R
2.08E	11/18/2019	08:41	8.0	11	8.8	250	150	Dry	R
4.80W	11/18/2019	08:56	7.7	12	9.4	140	250	Dry	R
0.87	12/16/2019	10:38	8.1	13	9.7	120	110	Wet	R
2.08E	12/16/2019	10:16	7.9	14	9.0	530	550	Wet	R
4.80W	12/16/2019	09:21	7.7	14	8.7	160	96	Wet	R

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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status
<u>Fourth Creek</u>									
1.75	1/28/2019	10:20	7.6	12	11	41	50	Dry	R
2.79	1/28/2019	10:10	7.3	12	9.8	45	37	Dry	R
3.29	1/28/2019	09:58	7.6	12	10	72	33	Dry	R
1.75	2/26/2019	09:19	7.6	13	10	54	48	Wet	R
2.79	2/26/2019	09:11	7.3	13	9.6	140	71	Wet	R
3.29	2/26/2019	08:56	7.2	13	10	140	20	Wet	R
1.75	3/20/2019	09:37	7.7	12	11	81	81	Dry	R
2.79	3/20/2019	09:29	7.4	13	9.6	54	18	Dry	R
3.29	3/20/2019	09:12	7.6	13	10	9	13	Dry	R
1.75	4/12/2019	10:12	7.0	17	9.2	160	150	Wet	R
2.79	4/12/2019	09:40	7.0	17	8.4	45	59	Wet	R
3.29	4/12/2019	10:23	7.2	17	9.2	54	56	Wet	R
1.75	5/28/2019	08:57	7.2	18	9	800	270	Dry	R
2.79	5/28/2019	08:47	6.9	18	8.2	280	160	Dry	R
3.29	5/28/2019	09:26	7.4	17	9.2	72	63	Dry	R
1.75	6/25/2019	14:15	7.5	21	8.9	550	650	Wet	R
2.79	6/25/2019	09:29	7.4	18	7.9	470	550	Wet	R
3.29	6/25/2019	09:17	7.3	18	8.6	340	440	Wet	R

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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	E. Coli (MPN)	Precipitation Event	Status
Fourth Creek									
1.75	7/24/2019	09:59	7.2	18	8.8	1800	820	Wet	R
2.79	7/24/2019	09:47	6.9	18	8.1	1100	730	Wet	R
3.29	7/24/2019	09:40	6.8	18	8.6	400	610	Wet	R
1.75	8/28/2019	12:18	7.1	22	8.8	3300	730	Wet	R
2.79	8/28/2019	12:29	6.8	21	7.8	2700	490	Wet	R
3.29	8/28/2019	12:41	7.2	20	8.7	2700	290	Wet	R
1.75	9/24/2019	10:36	7.5	19	9.2	420	180	Dry	R
2.79	9/24/2019	10:25	7.2	18	7.9	1500	920	Dry	R
3.29	9/24/2019	10:16	7.5	18	9.0	140	100	Dry	R
1.75	10/9/2019	10:50	7.8	17	9.4	2600	1300	Dry	R
2.79	10/9/2019	10:39	7.4	17	7.8	1400	240	Dry	R
3.29	10/9/2019	10:30	7.8	17	9.3	190	88	Dry	R
1.75	11/18/2019	09:43	8.0	13	10	820	290	Dry	R
2.79	11/18/2019	09:29	7.8	13	8.9	120	75	Dry	R
3.29	11/18/2019	09:15	8.1	12	10	130	99	Dry	R
1.75	12/16/2019	09:55	8.1	15	9.7	160	140	Wet	R
2.79	12/16/2019	09:40	7.9	15	8.9	340	200	Wet	R
3.29	12/16/2019	09:33	8.0	15	9.6	360	310	Wet	R

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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	E. Coli (MPN)	Precipitation Event	Status
<u>Baker Creek</u>									
0.36	1/18/2019	10:26	7.7	12	9.6	410	870	Wet	R
1.45	1/18/2019	09:48	7.1	13	9.0	400	730	Wet	R
2.00	1/18/2019	10:11	7.7	12	9.7	500	520	Wet	R
0.36	2/27/2019	08:51	7.5	14	8.6	250	370	Wet	R
1.45	2/27/2019	09:02	7.5	13	9.3	290	340	Wet	R
2.00	2/27/2019	10:03	7.8	12	9.8	99	65	Wet	R
0.36	3/13/2019	09:18	7.6	12	9.4	590	650	Wet	R
1.45	3/13/2019	09:31	7.5	12	9.4	90	130	Wet	R
2.00	3/13/2019	09:53	8.1	11	10	36	41	Wet	R
0.36	4/15/2019	09:12	7.8	13	8.1	440	250	Wet	R
1.45	4/15/2019	09:41	8.1	11	9.6	99	84	Wet	R
2.00	4/15/2019	09:30	8.0	13	9.2	210	160	Wet	R
0.36	5/17/2019	10:22	7.8	18	7.4	540	690	Wet	R
1.45	5/17/2019	09:35	7.6	17	8.5	3100	1600	Wet	I
2.00	5/17/2019	09:58	7.9	16	8.2	590	330	Wet	R
0.36	6/20/2019	10:20	7.1	19	7.5	13000	> 2400	Wet	R
1.45	6/20/2019	10:42	7.3	19	7.1	14000	2400	Wet	I
2.00	6/20/2019	10:30	7.3	18	7.9	3000	1300	Wet	R

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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status
<u>Baker Creek</u>									
0.36	7/18/2019	09:26	7.6	20	7.4	1900	770	Wet	R
1.45	7/18/2019	09:14	7.2	19	7.7	1600	> 2400	Wet	R
2.00	7/18/2019	09:37	7.8	17	8.2	640	250	Wet	R
0.36	8/7/2019	09:11	8.1	19	7.5	2200	440	Dry	R
1.45	8/7/2019	09:40	7.9	18	8.0	910	200	Dry	R
2.00	8/7/2019	09:26	8.2	18	8.5	1300	86	Dry	R
0.36	9/18/2019	09:15	7.3	19	6.7	370	460	Dry	R
1.45	9/18/2019	09:44	6.8	18	8.3	1100	760	Dry	R
2.00	9/18/2019	09:28	7.0	17	8.4	730	920	Dry	R
0.36	10/11/2019	09:52	7.9	15	7.5	320	160	Dry	R
1.45	10/11/2019	09:16	7.6	17	8.2	400	86	Dry	R
2.00	10/11/2019	09:31	8.2	16	8.7	270	240	Dry	R
0.36	11/15/2019	10:00	7.9	11	8.9	280	180	Wet	R
1.45	11/15/2019	09:24	7.6	13	9.0	190	120	Wet	R
2.00	11/15/2019	09:42	8.0	11	9.4	550	440	Wet	R
0.36	12/12/2019	10:14	7.7	13	8.8	240	160	Wet	R
1.45	12/12/2019	10:34	7.8	11	9.6	150	91	Wet	R
2.00	12/12/2019	10:24	7.9	10	10	120	160	Wet	R

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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	E. Coli (MPN)	Precipitation Event	Status
<u>Goose Creek</u>									
0.40	1/28/2019	11:30	7.5	10	10	380	340	Dry	R
1.19E	1/28/2019	11:40	7.6	11	10	1500	820	Dry	R
1.80E	1/28/2019	11:51	7.8	11	10	220	170	Dry	R
0.40	2/15/2019	10:34	7.7	13	9.3	460	610	Wet	R
1.19	2/15/2019	10:24	7.7	13	9.4	550	980	Wet	R
1.80	2/15/2019	09:49	7.5	14	9.0	190	140	Wet	R
0.40	3/13/2019	08:47	7.4	12	9.3	160	140	Wet	R
1.19E	3/13/2019	08:36	7.2	13	9.1	370	580	Wet	R
1.80E	3/13/2019	08:56	7.5	12	9.5	130	55	Wet	R
0.40	4/15/2019	08:59	7.7	13	8.2	580	440	Wet	R
1.19E	4/15/2019	09:05	7.9	13	9.0	480	610	Wet	R
1.80E	4/15/2019	08:42	7.8	13	8.8	260	230	Wet	R
0.40	5/10/2019	10:36	7.9	17	8.4	950	690	Wet	R
1.19E	5/10/2019	10:16	8.0	17	8.4	1500	920	Wet	R
1.80E	5/10/2019	09:51	7.8	17	8.4	200	370	Wet	R
0.40	6/20/2019	11:04	7.4	20	7.1	10000	> 2400	Wet	R
1.19E	6/20/2019	10:52	7.3	20	7.2	7000	> 2400	Wet	R
1.80E	6/20/2019	10:00	6.9	17	7.8	2300	1300	Wet	R

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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status
<u>Goose Creek</u>									
0.40	7/18/2019	09:00	7.1	20	6.8	2800	1200	Wet	R
1.19E	7/18/2019	08:45	7.2	20	7.6	2000	920	Wet	R
1.80E	7/18/2019	08:35	6.9	18	7.9	3000	1400	Wet	I
0.40	8/7/2019	08:40	7.7	19	7.2	2600	920	Dry	R
1.19E	8/7/2019	08:51	7.8	19	7.8	3000	1700	Dry	R
1.80E	8/7/2019	09:56	8.1	18	8.2	1000	300	Dry	R
0.40	9/23/2019	09:40	7.0	19	6.5	550	490	Dry	R
1.19E	9/23/2019	09:27	7.0	18	7.6	1100	870	Dry	R
1.80E	9/23/2019	09:51	8.2	17	7.3	2000	> 2400	Dry	I
0.40	10/30/2019	11:26	7.6	16	7.8	2200	1700	Wet	I
1.19E	10/30/2019	11:16	7.6	17	8.4	28000	> 2400	Wet	I
1.80E	10/30/2019	11:06	7.6	16	7.5	2900	> 2400	Wet	R
0.40	11/8/2019	09:20	7.8	12	8.0	1500	510	Wet	R
1.19E	11/8/2019	09:09	7.9	11	9.1	1400	980	Wet	I
1.80E	11/8/2019	08:48	7.9	12	9.1	360	280	Wet	R
0.40	12/12/2019	10:59	7.9	9	9.6	550	1000	Wet	I
1.19E	12/12/2019	11:06	8.2	9	9.1	450	920	Wet	R
1.80E	12/12/2019	10:46	8.0	10	9.9	240	91	Wet	R

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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	E. Coli (MPN)	Precipitation Event	Status
Loves Creek									
0.85	1/15/2019	09:37	7.4	10	9.7	180	120	Wet	R
1.89	1/15/2019	09:26	6.9	11	8.4	45	83	Wet	R
3.45	1/15/2019	09:15	7.1	9	10	18	53	Wet	R
0.85	2/1/2019	10:50	7.7	9	11	72	61	Wet	R
1.89	2/1/2019	10:25	7.0	10	9.5	54	38	Wet	R
3.45	2/1/2019	10:11	7.5	9	11	< 9	16	Wet	R
0.85	3/27/2019	10:52	7.2	12	10	260	180	Wet	R
1.89	3/27/2019	10:34	6.7	13	8.6	99	93	Wet	R
3.45	3/27/2019	10:14	6.2	12	9.7	27	25	Wet	R
0.85	4/11/2019	09:42	7.7	16	8.5	200	160	Wet	R
1.89	4/11/2019	11:00	7.1	16	8.2	99	99	Wet	R
3.45	4/11/2019	10:31	7.3	16	8.4	90	130	Wet	R
0.85	5/9/2019	09:49	7.4	17	8.1	230	310	Dry	R
1.89	5/9/2019	09:39	6.9	17	7.7	81	71	Dry	R
3.45	5/9/2019	09:26	7.4	20	6.8	160	65	Dry	R
0.85	6/5/2019	08:59	8.1	19	7.7	2200	2400	Wet	R
1.89	6/5/2019	08:31	7.5	18	7.2	360	650	Wet	R
3.45	6/5/2019	08:40	7.6	21	6.8	1400	390	Wet	R

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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status
<u>Loves Creek</u>									
0.85	7/15/2019	10:12	7.3	20	7.9	420	160	Dry	R
1.89	7/15/2019	09:59	6.6	20	7.5	230	130	Dry	R
3.45	7/15/2019	09:49	6.8	22	7.2	390	82	Dry	R
0.85	8/12/2019	09:39	7.7	20	7.9	770	330	Dry	R
1.89	8/12/2019	10:05	7.4	19	7.7	91	99	Dry	R
3.45	8/12/2019	10:15	7.6	21	7.5	230	72	Dry	R
0.85	9/13/2019	09:32	7.6	20	7.3	910	870	Dry	R
1.89	9/13/2019	09:14	7.0	19	7.2	140	110	Dry	R
3.45	9/13/2019	08:50	6.8	21	7.1	36	53	Dry	R
0.85	10/10/2019	10:16	7.9	18	7.7	770	330	Dry	R
1.89	10/10/2019	09:38	7.4	17	7.7	270	48	Dry	R
3.45	10/10/2019	09:54	7.6	18	7.4	640	98	Dry	R
0.85	11/14/2019	09:10	7.9	8	10	770	> 2400	Wet	R
1.89	11/14/2019	09:01	7.6	10	8.4	90	83	Wet	R
3.45	11/14/2019	08:50	7.9	9	9.8	180	68	Wet	R
0.85	12/6/2019	09:33	8.1	11	9.7	95	150	Dry	R
1.89	12/6/2019	09:11	7.6	12	8.9	54	33	Dry	R
3.45	12/6/2019	08:49	7.7	11	9.6	27	33	Dry	R

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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status
<u>Williams Creek</u>									
0.89	1/15/2019	11:10	7.7	11	11	63	75	Wet	R
1.70	1/15/2019	10:50	7.5	11	10	240	230	Wet	R
2.02	1/15/2019	10:58	7.7	12	10	140	78	Wet	R
0.89	2/8/2019	10:31	8.0	13	11	190	200	Wet	R
1.70	2/8/2019	10:08	7.9	14	9.4	820	490	Wet	R
2.02	2/8/2019	09:55	7.8	14	9.0	230	180	Wet	R
0.89	3/15/2019	10:00	7.5	15	9.7	380	210	Dry	R
1.70	3/15/2019	09:38	7.3	15	8.5	1600	1300	Dry	R
2.02	3/15/2019	09:23	7.3	15	8.7	2200	1700	Dry	R
0.89	4/11/2019	09:53	7.6	15	9.1	440	340	Wet	R
1.70	4/11/2019	10:03	7.5	16	8.3	460	520	Wet	R
2.02	4/11/2019	10:15	7.5	16	8.7	1200	610	Wet	R
0.89	5/9/2019	10:29	7.6	18	8.7	210	200	Dry	R
1.70	5/9/2019	10:06	6.8	20	8.6	910	1600	Dry	I
2.02	5/9/2019	10:15	7.5	18	7.9	440	130	Dry	R
0.89	6/21/2019	08:29	7.4	20	8.2	2200	1200	Wet	R
1.70	6/21/2019	08:05	6.9	20	7.6	2300	2400	Wet	I
2.02	6/21/2019	08:13	7.1	19	7.3	3400	730	Wet	R

*Status: I = Site Under Investigation, R = Reportable for monitoring purposes

Precipitation event = "Wet" if the total amount of rainfall for four days prior to the sample was greater than 0.1 inches.



**Water Quality Monitoring
Report**

Routine Water Quality Monitoring Report

1/1/2019 Through 12/31/2019

Knoxville Utilities Board

Water Quality Laboratory
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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	<i>E. Coli</i> (MPN)	Precipitation Event	Status
<u>Williams Creek</u>									
0.89	7/15/2019	11:00	7.6	20	8.2	1600	160	Dry	R
1.70	7/15/2019	10:35	7.1	20	7.0	310	550	Dry	R
2.02	7/15/2019	10:26	7.3	22	7.3	1900	160	Dry	R
0.89	8/12/2019	10:33	7.9	19	8.6	1700	460	Dry	R
1.70	8/12/2019	10:50	7.7	19	7.3	1900	190	Dry	R
2.02	8/12/2019	11:03	7.8	21	7.5	2800	> 2400	Dry	R
0.89	9/20/2019	08:55	7.6	18	8.5	400	330	Dry	R
1.70	9/20/2019	08:36	6.9	18	7.1	440	250	Dry	R
2.02	9/20/2019	08:19	7.2	20	7.4	200	44	Dry	R
0.89	10/28/2019	12:22	7.9	16	9.2	500	240	Wet	R
1.70	10/28/2019	12:08	7.7	17	8.1	5300	1000	Wet	R
2.02	10/28/2019	12:41	7.7	18	7.9	1200	120	Wet	R
0.89	11/14/2019	10:05	7.9	8	11	150	55	Wet	R
1.70	11/14/2019	09:28	8.5	11	8.0	460	110	Wet	R
2.02	11/14/2019	10:16	7.8	12	8.5	910	110	Wet	R
0.89	12/17/2019	12:14	7.9	19	8.7	560	440	Wet	R
1.70	12/17/2019	12:00	7.5	13	8.6	600	820	Wet	R
2.02	12/17/2019	11:49	7.3	14	8.4	1500	770	Wet	R

*Status: I = Site Under Investigation, R = Reportable for monitoring purposes

Precipitation event = "Wet" if the total amount of rainfall for four days prior to the sample was greater than 0.1 inches.



Water Quality Monitoring
Report

Spill Impact Sampling Results
Water Quality Monitoring Program

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Event Date 1/2/2019
Street Address 2246 Virginia Ave
Description Construction Failure - Blockage by Construction Debris

Pavement to Storm Drain to Third Creek

Estimated 400 gallons
unrecovered volume

Sampling Notes No Priority Pollutants were known to be present in any SIU discharge upstream of this SSO.

Precipitation (McGhee-Tyson Airport)	Date	Total - Day of Event	Total - Prior 4 Days
	1/2/2019	0.08	0.59

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	<i>E-Coli</i> (MPN)
Upstream of SSO Discharge	1/2/2019	12:10	9.1	13	7.8	530	870
Downstream of SSO Discharge	1/2/2019	11:57	9.4	13	7.8	260	93



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Event Date 1/15/2019
Street Address 500 Neyland Dr
Description Blockage - Grease and Debris

Pavement to Storm Drain to Tennessee River

Estimated 45 gallons
unrecovered volume

Sampling Notes No Priority Pollutants were known to be present in any SIU discharge upstream of this SSO.

Precipitation (McGhee-Tyson Airport)	Date	Total - Day of Event	Total - Prior 4 Days
	1/15/2019	0	0.64

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	<i>E-Coli</i> (MPN)
Upstream of SSO Discharge	1/15/2019	12:00	11	8	7.8	81	49
Downstream of SSO Discharge	1/15/2019	11:47	12	9	7.6	120	45



Water Quality Monitoring
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Event Date 1/18/2019
Street Address 5014 Jacksboro Pike
Description Construction Failure - Dig-In

Tributary to First Creek

Estimated 450 gallons
unrecovered volume

Sampling Notes No Priority Pollutants were known to be present in any SIU discharge upstream of this SSO.

Precipitation (McGhee-Tyson Airport)	Date	Total - Day of Event	Total - Prior 4 Days
	1/18/2019	0	0.25

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	<i>E-Coli</i> (MPN)
Upstream of SSO Discharge	1/18/2019	11:45	9.4	13	7.9	2500	490
Downstream of SSO Discharge	1/18/2019	12:10	9.0	13	7.8	1600	1300
Upstream of SSO Discharge	1/22/2019	14:45	9.8	13	7.8	150	180
Downstream of SSO Discharge	1/22/2019	14:55	9.7	12	7.6	140	310



Water Quality Monitoring
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Event Date 2/14/2019
Street Address 619 Ozark Rd
Description Construction Failure - Bypass Pumping

Second Creek

Estimated 500 gallons
unrecovered volume

Sampling Notes No Priority Pollutants were known to be present in any SIU discharge upstream of this SSO.

Precipitation (McGhee-Tyson Airport)	Date	Total - Day of Event	Total - Prior 4 Days
	2/14/2019	0	1.78

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	<i>E-Coli</i> (MPN)
Upstream of SSO Discharge	2/14/2019	14:35	8.2	13	6.9	180	200
Downstream of SSO Discharge	2/14/2019	14:45	8.1	14	7.2	110	250



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Event Date 2/19/2019
Street Address 5000 Western Ave
Description Blockage - Roots and Debris

Ground to Third Creek

Estimated 32000 gallons
unrecovered volume

Sampling Notes No Priority Pollutants were known to be present in any SIU discharge upstream of this SSO.

Precipitation (McGhee-Tyson Airport)	Date	Total - Day of Event	Total - Prior 4 Days
	2/19/2019	1.04	2.75

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	<i>E-Coli</i> (MPN)
Upstream of SSO Discharge	2/19/2019	13:52	9.6	12	6.6	90	120
Downstream of SSO Discharge	2/19/2019	13:42	10	12	6.9	420	440



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Event Date 3/15/2019
Street Address 5000 Western Ave
Description Blockage - Roots and Debris

Ground to Third Creek

Estimated 2500 gallons
unrecovered volume

Sampling Notes No Priority Pollutants were known to be present in any SIU discharge upstream of this SSO.

Precipitation (McGhee-Tyson Airport)	Date	Total - Day of Event	Total - Prior 4 Days
	3/15/2019	0.09	0.11

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	<i>E-Coli</i> (MPN)
Upstream of SSO Discharge	3/15/2019	12:59	9.1	16	7.1	18	36
Downstream of SSO Discharge; Routine Site Stream Mile 4.80W	3/15/2019	13:14	9.7	16	7.3	250	2400



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Event Date 3/27/2019
Street Address 4308 Edington Rd
Description Construction Failure - Bypass Pumping

Pavement to Tributary to Storm Drain to Goose Creek

Estimated 5000 gallons
unrecovered volume

Sampling Notes No Priority Pollutants were known to be present in any SIU discharge upstream of this SSO.

Precipitation (McGhee-Tyson Airport)	Date	Total - Day of Event	Total - Prior 4 Days
	3/27/2019	0	0.11

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	<i>E-Coli</i> (MPN)
Upstream of SSO Discharge	3/27/2019	14:05	10	14	8.4	190	460
Downstream of SSO Discharge	3/27/2019	13:56	9.8	14	7.5	250	280



Water Quality Monitoring
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Event Date 3/28/2019
Street Address 4917 Ball Rd
Description Broken System - Broken Force Main

Ground to Grassy Creek to Fourth Creek

Estimated 26000 gallons
unrecovered volume

Sampling Notes No Priority Pollutants were known to be present in any SIU discharge upstream of this SSO.

Precipitation	Date	Total - Day of Event	Total - Prior 4 Days
(McGhee-Tyson Airport)	3/28/2019	0	0.11

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	3/28/2019	13:15	11	14	6.4	32	120
Downstream of SSO Discharge	3/28/2019	13:30	11	14	7.1	3800	> 2400
Upstream of SSO Discharge	4/1/2019	12:40	11.4	11	7.3	250	370
Downstream of SSO Discharge	4/1/2019	12:57	11.8	11	7.1	140	200



Water Quality Monitoring
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Event Date 5/28/2019
Street Address 7509 Mary Lay Ln.
Description Broken System - Broken Gravity Main

Ground to Shining Creek East

Estimated 75 gallons
unrecovered volume

Sampling Notes No Priority Pollutants were known to be present in any SIU discharge upstream of this SSO.

Precipitation (McGhee-Tyson Airport)	Date	Total - Day of Event	Total - Prior 4 Days
	5/28/2019	0	0

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	<i>E-Coli</i> (MPN)
Upstream of SSO Discharge	5/28/2019	14:00	10	25	7.6	440	520
Downstream of SSO Discharge	5/28/2019	13:55	10	25	7.7	> 60000	> 2400
Upstream of SSO Discharge	6/5/2019	08:00	6.7	20	7.0	1500	820
Downstream of SSO Discharge	6/5/2019	08:10	6.6	20	7.0	1600	650



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Event Date 7/31/2019
Street Address 1817 Laurel Ave
Description Broken System - Broken Gravity Main

Exfiltration to Storm Drain to Third Creek

Estimated Unknown gallons
unrecovered volume

Sampling Notes No Priority Pollutants were known to be present in any SIU discharge upstream of this SSO.

Precipitation (McGhee-Tyson Airport)	Date	Total - Day of Event	Total - Prior 4 Days
	7/31/2019	0	0

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	<i>E-Coli</i> (MPN)
Upstream of SSO Discharge	8/1/2019	08:40	6.6	20	7.6	860	210
Downstream of SSO Discharge	8/1/2019	08:25	6.9	20	7.5	730	410



Water Quality Monitoring
Report

Spill Impact Sampling Results
Water Quality Monitoring Program

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Event Date 10/23/2019
Street Address 1811 Paris Rd.
Description Blockage - Debris

Ditch to Third Creek

Estimated 200 gallons
unrecovered volume

Sampling Notes No Priority Pollutants were known to be present in any SIU discharge upstream of this SSO.

Precipitation (McGhee-Tyson Airport)	Date	Total - Day of Event	Total - Prior 4 Days
	10/23/2019	0	0.77

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	<i>E-Coli</i> (MPN)
Upstream of SSO Discharge	10/23/2019	11:38	7.2	16	7.5	300	410
Downstream of SSO Discharge	10/23/2019	11:51	7.7	16	7.6	2400	2400
Upstream of SSO Discharge	10/29/2019	10:24	6.9	16	7.3	820	240
Downstream of SSO Discharge	10/29/2019	10:35	7.6	16	7.4	820	360



Water Quality Monitoring
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Event Date 11/25/2019
Street Address 1317 Louisiana Ave
Description Blockage - Grease and Debris

Ground to Storm Drain to Second Creek

Estimated 600 gallons
unrecovered volume

Sampling Notes No Priority Pollutants were known to be present in any SIU discharge upstream of this SSO.

Precipitation (McGhee-Tyson Airport)	Date	Total - Day of Event	Total - Prior 4 Days
	11/25/2019	0	2.71

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	<i>E-Coli</i> (MPN)
Upstream of SSO Discharge	11/25/2019	16:20	7.2	13	7.9	910	490
Downstream of SSO Discharge	11/25/2019	15:55	4.4	15	7.4	> 60000	> 2400
Upstream of SSO Discharge	12/3/2019	10:05	8.8	13	7.8	270	220
Downstream of SSO Discharge	12/3/2019	10:15	7.7	12	7.5	250	200

Knoxville Utilities Board
Water Quality Monitoring Program

Investigative Water Quality Monitoring Report
1/1/19 - 12/31/19

Table 1: Additional SSO Sampling

Samples collected as a precaution following sanitary sewer overflows during wet weather.

Location		Collection Date	Weather	Dissolved Oxygen	Water Temp	pH	Fecal Coliform	<i>E. coli</i>
				(mg/L)	(°C)	s.u.	(CFU/ 100mL)	(MPN)
SSO: 241 Neals Landing Rd	Upstream	1/23/2019	Wet	12	6	7.9	260	290
	Downstream	1/23/2019	Wet	10	9	7.7	180	240
SSO: 2723 South Haven Rd	Upstream	1/25/2019	Wet	10	11	7.5	140	280
	Downstream	1/25/2019	Wet	10	11	8.6	170	160
SSO: 7525 Washington Pk	Upstream	1/26/2019	Wet	9.5	8	6.8	240	410
	Downstream	1/26/2019	Wet	10	7	6.8	160	220

Table 2: Investigative Sampling

Location		Collection Date	Weather	Dissolved Oxygen	Water Temp	pH	Fecal Coliform	<i>E. coli</i>
				(mg/L)	(°C)	s.u.	(CFU/ 100mL)	(MPN)
Tributary to Third Creek in New Gray Cemetery	Upstream	10/21/2019	Wet	8.4	17	7.7	5000	2400
	Downstream	10/21/2019	Wet	7.4	18	7.8	3200	570

Appendix E

Grease-Related SSO Summary Table

Grease-Related SSOs

	Date			Building	Grease	Grease	Grease	Grease, Roots	Grease &	Customers	Residential Letters	Cans, Bags, or	Commercial	# of Feet	Blockage Abatement*
	of SSO or BBU	Address	SSO	Backup	Only	& Roots	& Debris	& Debris	I & I	Contributing to SSO	Mailed	Spatulas Mailed	Inspections	Cleaned	Frequency
1	1/15/2019	500 Neyland Drive - MH 1-52	Yes	-	-	-	Yes	-	Yes	71	68	68	3	160	24 Month
2	2/22/2019	2243 McCalla Ave. & 2247 McCalla Ave. Apt. 1	-	Yes	Yes	-	-	-	-	33	30	30	3	300	3 Month
3	3/16/2019	4039 Gap Road - MH 14-110	Yes	-	-	-	-	-	-	110	106	106	4	150	24 Month
4	3/16/2019	2025 Edgewood Ave. - MH 2-62 and BBU at 211 Edgewood Ave.	Yes	Yes	-	-	-	-	-	258	246	246	12	200	24 Month
5	5/24/2019	3861 Cluster Ave. - Sewer Lateral	Yes	-	Yes	-	-	-	-	14	14	14	0	271	12 Month
6	6/18/2019	3917 Acorn Drive - MH 39-30	Yes	-	-	Yes	-	-	-	18	17	17	1	215	6 Month
7	8/23/2019	1811 E. Glenwood Ave. - Sewer Lateral	Yes	-	Yes	-	-	-	-	42	42	42	0	375	24 Month
8	9/11/2019	4521 N. Wahli Drive - MH 38	Yes	-	Yes	-	-	-	-	388	382	382	6	385	3 Month
9	11/25/2019	1317 Louisiana Ave. - Sewer Lateral	Yes	-	-	-	Yes	-	-	31	28	28	3	275	48 Month
10	12/18/2019	2721 Delrose Drive - MH 13-13	Yes	-	Yes	-	-	-	-	50	47	3	3	780	24 Month
										1015	980	936	35		

*KUB performs inspections, hydraulic cleaning, and/or root removal on a routine frequency for all locations under Blockage Abatement

Appendix F

Infrastructure Rehabilitation Projects

IRP Projects

Project	Plant	Watershed	Basin	Description	Status
Magnolia Ave Water & Wwater - Phase 1 CN 1215	Kuwahee	First Creek	24	Rehab/Replace in project area.	Construction Project Completed 04/09/19
Papermill Plaza Shortline CN 1402	Fourth Creek	Fourth Creek	33	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 03/15/19
Mini-basin 38B5	Kuwahee	Third Creek	38	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Completed 05/29/19
John Sevier Force Main CN 1147	Loves Creek	Loves Creek	61	Force main and gravity main upsizing project.	Construction Project Completed 03/28/19
Magnolia Ave Water & Wwater - Phase 2 CN 1321	Kuwahee	First Creek	24	Rehab/Replace in project area.	Construction Project Completed 03/08/19
South Haven Sewer Trunkline Phase 2 CN 1377	Kuwahee	South Knox	40	Trunkline Rehabilitation/Replacement.	Construction Project Completed 04/30/19
Mini-Basin 05A3	Kuwahee	Second Creek	5	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Completed 05/02/19
First, Williams, & Third Creek Sewer Shortline Rehabilitation	Kuwahee	First Creek, Williams Creek	24, 19, 25	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 04/05/19
Scottish Pump Station Repl CN 1014	Kuwahee	South Knox	39	Pump station and appropriate force main upgrade.	Construction Project Completed 07/03/19
Pelham Pump Station CN 546	Kuwahee	Williams Creek	19	Pump station and appropriate force main upgrade.	Construction Project Completed 01/06/20
COK 2017 Neighborhood Drainage Improvement	Kuwahee	Third Creek	38	Rehab/Replace in project area.	Construction Project Completed 04/16/19
Concord Street Gravity Sewer CN 1404	Kuwahee	Third Creek	29	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 07/25/19
Division St Sewer Rehab & Repl CN 1227	Kuwahee	Third Creek	34	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 11/26/19
KCDC Bethel Ave Rehab CN 1830	Kuwahee	Williams Creek	25	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 11/01/19
Laurel Ave & 19th	Kuwahee	Third Creek	29	Rehab/Replace in project area.	Construction Project Completed 11/01/19
LC Eastwood Trunkline Repl Ph 2 CN 1669	Loves Creek	Loves Creek	63	Trunkline Rehabilitation/Replacement.	Construction Project Completed 10/23/19
LC MB 20A5 CN 1782	Loves Creek	Loves Creek	20	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Underway - Estimated Completion 07/25/20
LC SB 20 Sewer Trunk Rehab CN 934	Loves Creek	Loves Creek	20	Trunkline Rehabilitation/Replacement.	Construction Project Completed 01/22/20
Loves Creek Delta Rd Shortline CN 1693	Loves Creek	Loves Creek	20	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 05/29/19
NS - Edington Rd WW Shortline	Kuwahee	South Knox	39	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 04/04/19
Ritta School - Washington Pk FM CN 1785	Kuwahee	First Creek	2	Force main extension project.	Construction Project Completed 12/31/19
Second Creek MB 14C1 Phase 2 CN 1025	Kuwahee	Second Creek	14	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Completed 10/03/19
Sequoyah Hills Phase 2 CN 1431	Kuwahee	Third Creek	38	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Underway - Estimated Completion 03/07/20
Third Creek Rd Sewer Rehab CN 1607	Kuwahee	Third Creek	21	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 05/03/19