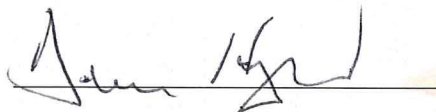


Annual Progress Report

2017

Submitted to EPA on February 27, 2018

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

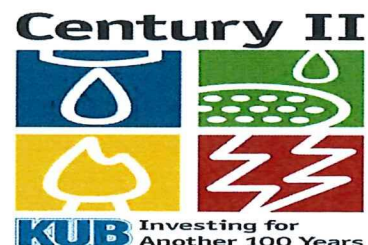


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Executive Summary

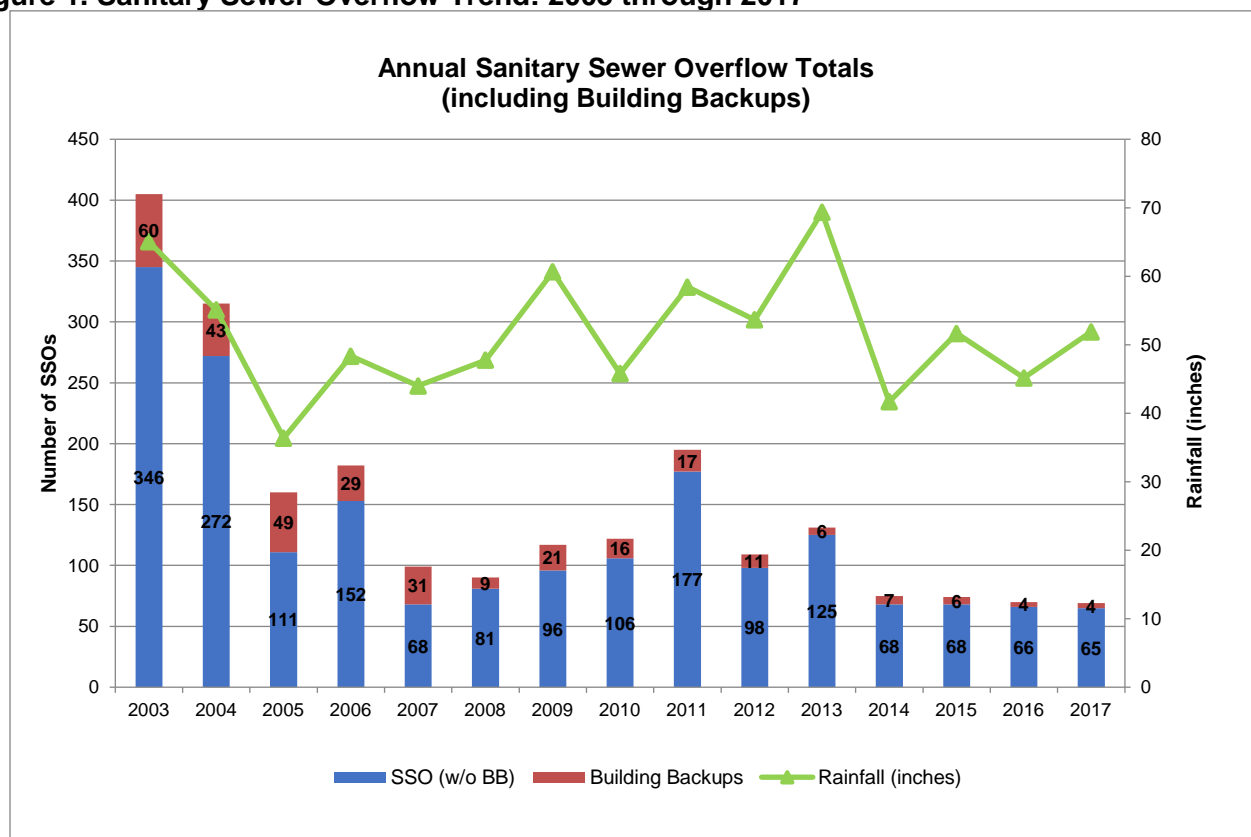
On February 11, 2005, the Knoxville Utilities Board (KUB) entered into a Consent Decree with the United States, the State of Tennessee, the Tennessee Clean Water Network, and the City of Knoxville. The Consent Decree and its First Amendment required KUB to achieve full Compliance with work required under 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. During this reporting period, KUB experienced a total of 69* SSOs, four of which were building backups.

Figure 1. Sanitary Sewer Overflow Trend: 2003 through 2017



* One 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 to meet the implementation deadlines of June 2018 at the Fourth Creek Wastewater Treatment Plant (WWTP) and 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

Phase II expands design/construction completed in Phase I by adding the biological component of the Biologically Enhanced High Rate Clarification (BEHRC) process. Completion of this project will allow full biological secondary treatment of up to 34 MGD influent. Tasks included are installation of a biological contact tank, return sludge pump upgrades, associated electrical and automation upgrades, and yard piping. Final design and construction plans were submitted to TDEC in 2016, and a construction permit was issued in December 2016. KUB's contractor mobilized to begin construction in January 2017 and is 95% complete with the biological contact tank.

Kuwahee WWTP Phase I

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

Kuwahee WWTP Phase II

KUB's consultant began design on the Biologically Enhanced High Rate Clarification project in November 2016 and is currently 75% complete. The design intent is to allow full biological secondary treatment of up to 120 MGD influent with any flow above 70 MGD being treated by the BEHRC process.

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 47 times. Three 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	18.87	28,248
Second Creek	12.39	18,553
Third Creek	13.16	19,707
Fourth Creek	5.16	7,719
South Knoxville	5.29	7,919
Loves Creek	1.74	2,603
Williams Creek	2.29	3,424
Eastbridge	0.11	159
TOTAL	59.01	88,332

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 2017. 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 24, 2017

- Submitted to EPA – Annual Progress Report 2016

5.2 Violations Subject to Stipulated Penalties

During this reporting period, KUB incurred 28 Unpermitted Discharges. Appendix A lists any SSO that occurred during 2017 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 65 SSO events.

Of the 65 SSO events, 45 were in the 0 – 1,000 gallons volume range, 15 were in the 1,001 – 10,000 gallons volume range, two events totaled greater than 10,000 gallons, and the volume for three events were unknown. Durations for events during this period are as follows: 53 ranged from 0 – 2 hours, and six ranged from 2.1 – 5 hours, three were greater than five hours, and the duration of three events were unknown.

Eight of the 65 sewer overflows reported were a result of a single significant rain event beginning on April 21, 2017. KUB requested this storm be recognized as a Force Majeure occurrence in a letter to the EPA on May 12, 2017. That letter provides additional information about this unusual weather event that effected our service area.

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 five Building Backups including one 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 three Diversion events: one 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 was one effluent limit violation at the Kuwahee WWTP and one at the Fourth Creek WWTP. No effluent limit violations occurred at the Loves Creek and Eastbridge WWTPs.

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	4/23/2017	15:30			4/23/2017	8.5	17.68	25.5	36.48	High flow event due to excess rainfall
				4/24/2017	17:00	4/24/2017	17.0	18.8			
Loves Creek	Yes	4/22/2017	21:00			4/22/2017	3.0	2.823	3.5	3.293	High flow event due to excess rainfall
				4/23/2017	00:30	4/23/2017	0.5	0.47			
Loves Creek	Yes	4/23/2017	17:40			4/23/2017	6.3	5.959	9.3	8.782	High flow event due to excess rainfall
				4/24/2017	03:00	4/24/2017	3.0	2.823			
Fourth Creek	No										
Eastbridge	No										

Table 3. Effluent Limit Violations

WWTP	Did an event occur?	Date	Parameter	Type	Limit	Value
Kuwahee	Yes	9/10/2017	Daily Maximum	E.coli grab sample	487 MPN	770 MPN
Fourth Creek	Yes	11/7/2017	Semi-annual Biomonitoring	Chronic <i>Ceriodaphnia dubia</i>	≥ 1.4%	0.86%
Loves Creek	No	-	-	-	-	-
Eastbridge	No	-	-	-	-	-
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 2018, KUB will continue to monitor 24 routine sampling locations in the sewer basins of eight area creeks. After additional monitoring on Baker Creek during 2017, KUB has concluded that replacing the site at Mile 0.53 with a new site at Mile 2.00 would be a more accurate portrayal of the overall stream health. The new Site 2.00, which is located near a public access area, expands monitoring along the stream and is also a safer location to conduct sampling. KUB will collect samples from the following locations during 2018:

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 943 permitted and active FSFs in KUB's service area that were inspected routinely in 2017 to assess compliance with KUB's Grease Control Program (GCP). KUB also inspected an additional 191 FSF locations at least once in 2017 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 2,709 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 66 FSFs were required to submit a Corrective Action Plan (CAP) in 2017 demonstrating they would move forward with upgrading and/or installing GCE. There were 86 customers that actually installed GCE during the reporting period. A total of 70 grease interceptors and 16 grease traps were added to control grease as a result of program efforts and customer compliance. One FSF was published this year in the local newspaper for continued noncompliance, in accordance with the GCP Enforcement Response Guide, for failure to install the required equipment. Three facilities were under an Administrative Order to move forward after continued failure to comply with the installations in 2017. One facility appealed its Administrative Order in 2017. The appeal was resolved, and the FSF installed the required GCE. Of the two remaining facilities, one has achieved compliance and installed the required equipment, and the other remains under enforcement.

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 2017, KUB mailed grease letters, educational brochures, and grease can liners to 1,722 customers and conducted 69 inspections on commercial customers as a result of 13 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 2016 as required by the two-year assessment schedule:

Table 4. CSSAP Elements

Program Elements	Assessment Tools	Completed in 2017	Total Completed*	One Complete Cycle Period
Manhole Condition Assessment	Manhole Inspections Smoke Testing	8.0 percent	18.3 percent	12 Years
Gravity Sewer Condition Assessment	Flow Monitoring Smoke Testing Dye Testing CCTV	6.4 percent	16.2 percent	12 Years
Private Lateral Condition Assessment	Flow Monitoring Smoke Testing Dye Testing CCTV	10.0 percent	18.8 percent	12 Years
Force Main Performance Assessment	Corrosion Defect Identification	0 percent	100 percent**	2 Years
Pump Station Performance Assessment	Pump Station Performance and Adequacy	100 percent	100 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.

9.2 Infrastructure Rehabilitation Program (IRP)

In 2017, KUB's IRP rehabilitated or replaced more than 76,049 ft (14.4 miles) of sewer mains and 387 manholes. 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 2017, we had 65 SSO events in which KUB's Underground Construction (UGC) department responded, and our average response time was 24 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			
	499,000 ft (94.5 miles)			
Blockage Abatement (BA) Program	Sewer mains in BA	Sewer mains cleaned	Sewer mains televised	Sewer mains root cut
	1,342,000 ft (254 miles)	611,500 ft (116 miles)	190,000 ft (36 miles)	288,500 ft (55 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, 2017, to December 31, 2017.

Total Private Lateral Enforcements	1
Repair	0
Replace	1
Total with Tenants	0

Additionally, there were four 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 2017.

Total Repairs Completed	6
2017 Enforcements	1
Reinstatements	4
Terminations	0

Appendix A

Unpermitted Discharges

Appendix A										
Unpermitted Discharges in 2017										
	10	Overflow volume of 500 gallons or less			1-day rainfall greater than 3"					
	3	Overflow volume of 501 - 1000 gallons			3-day rainfall greater than 4"					
		Vandalism			Intensity > 0.84 in/hr					
	1	Electrical or mechanical failure								
Reporting				Unrecovered	Receiving		Rainfall Totals		Peak Rainfall	Force Majeure
Period	Date	Location	Event	Volume (Gal.)	Stream	Cause	1-Day*	3-Day**	Intensity (in/hr)	event
1st 2017	1/4/2017	4011 North Broadway	Unpermitted Discharge	100	First Creek	Construction Failure - Dig-In	0.01	0.27	0.19	
1st 2017	1/24/2017	2004 Riverside Drive	Unpermitted Discharge	Unknown	Williams Creek	Heavy Rainfall	0.00***	0.99***	0.47	
1st 2017	3/21/2017	8319 Strawberry Plains Pike	Unpermitted Discharge	5750	Lyons Creek	Construction Failure - Dig-In	0.60	0.60	0.32	
2nd 2017	4/23/2017	7004 Rotherwood Dr	Unpermitted Discharge	3750	Fourth Creek	Heavy Rainfall	1.97	3.21	0.66	Yes
2nd 2017	4/23/2017	600 N. Gallaher View Rd	Unpermitted Discharge	717000	Fourth Creek	Heavy Rainfall	1.97	3.21	0.66	Yes
2nd 2017	4/24/2017	2544 Fair Dr	Unpermitted Discharge	65	First Creek	Heavy Rainfall	0.00	2.83	0.66	Yes
2nd 2017	4/24/2017	4501 Fawnie Ln	Unpermitted Discharge	80	Lynnhurst Creek	Heavy Rainfall	0.00	2.83	0.66	Yes
2nd 2017	4/24/2017	1404 Adair Dr	Unpermitted Discharge	200	Lynnhurst Creek	Heavy Rainfall	0.00	2.83	0.66	Yes
2nd 2017	4/24/2017	2004 Riverside Dr	Unpermitted Discharge	510	Williams Creek	Heavy Rainfall	0.00	2.83	0.66	Yes
2nd 2017	4/24/2017	4605 Webb Ln	Unpermitted Discharge	8100	Third Creek	Heavy Rainfall	0.00	2.83	0.66	Yes
2nd 2017	5/2/2017	2701 Chukar Rd	Unpermitted Discharge	2200	Ten Mile Creek	Blockage - Debris	0.00	0.12	0.14	
2nd 2017	5/10/2017	4625 Asheville Hwy	Unpermitted Discharge	400	Loves Creek	Broken System - Broken Gravity Main	0.00	0.00	0.00	
2nd 2017	5/25/2017	603 Ben Hur Ave	Unpermitted Discharge	2500	Williams Creek	Construction Failure - Blockage by Construction Debris	0.00	1.61	0.38	
2nd 2017	6/1/2017	3306 Lands End Ln	Unpermitted Discharge	360	Grassy Creek	Blockage - Grease	0.02	0.55	0.19	
2nd 2017	6/17/2017	1525 Tennessee Ave	Unpermitted Discharge	500	Third Creek	Blockage - Debris Third Party	0.00	0.00	0.02	
3rd 2017	7/13/2017	6110 Papermill Dr	Unpermitted Discharge	2000	Fourth Creek	Blockage - Debris	0.16	0.16	0.05	
3rd 2017	8/17/2017	317 McConnell St	Unpermitted Discharge	200	Williams Creek	Construction Failure - Dig-In (Boring) Third Party	0.24	0.26	0.31	
3rd 2017	8/25/2017	4100 Central Ave Pike	Unpermitted Discharge	300	Second Creek	Heavy Rainfall	0.00***	0.00***	0.00	
3rd 2017	9/4/2017	1401 Cassell Dr	Unpermitted Discharge	750	Second Creek	Blockage - Grease	0.00	0.15	0.47	
4th 2017	10/5/2017	6909 Kingston Pike	Unpermitted Discharge	6100	Fourth Creek	Construction Failure - Blockage by Construction Debris	0.00	0.00	0.00	
4th 2017	10/6/2017	5320 South National Dr	Unpermitted Discharge	11200	French Broad River	Blockage - Roots and Debris	0.00	0.00	0.00	
4th 2017	10/31/2017	5112 Schubert Rd	Unpermitted Discharge	1100	Second Creek	Blockage - Roots	0.00	0.00	0.01	
4th 2017	11/10/2017	5619 E Governor John Sevier Hwy	Unpermitted Discharge	Unknown	Holston River	Heavy Rainfall	0.00***	0.03***	0.02	
4th 2017	11/20/2017	5619 E Governor John Sevier Hwy	Unpermitted Discharge	5	Holston River	Pump Station Failure - Electrical failure	0.00	0.25	0.30	
4th 2017	12/6/2017	1219 Hilton Rd	Unpermitted Discharge	310	Third Creek	Blockage - Debris and Grease	0.00	0.84	0.26	
4th 2017	12/20/2017	5619 E Governor John Sevier Hwy	Unpermitted Discharge	6000	Holston River	Heavy Rainfall	1.41	1.75	0.20	
4th 2017	12/23/2017	5619 E Governor John Sevier Hwy	Unpermitted Discharge	1500	Holston River	Heavy Rainfall	0.47	0.68	0.37	
4th 2017	12/28/2018	4315 Clinton Hwy	Unpermitted Discharge	550	Second Creek	Blockage - Roots, Debris, and Grease	0.00	0.00	0.00	
*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.										
1 and 3-Day Rainfall Total comes from NOAA website, McGhee Tyson										
Intensity comes from export of Flowview, average of 8 rain gauges max hour over 3 day period										

Appendix B

SSOs

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
1/4/2017	9:45 AM	5247	Bent River Boulevard	FC	Fourth Creek	43	Grinder Pump	Soil Saturation		Grinder Pump Failure The pump was replaced and the area was cleaned.	12	7	5	0.5	No	System Repair Completed
1/4/2017	2:00 PM	4011	North Broadway	KUW	First Creek	16	Broken Pipe	Pavement to Storm Drain to Unnamed Tributary to First Creek	First Creek	Construction Failure - Dig-In The sewer main was repaired and the area was cleaned.	100	0	100	2	Yes	System Repair Completed
1/24/2017	9:35 AM	2004	Riverside Drive	KUW	Williams Creek	31	Manhole 1-1	Ground to Williams Creek	Williams Creek	Rainfall in the area produced I & I and high flows in The sewer main was checked until the high flows subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	Construction Project Underway
1/24/2017	11:00 AM	5760	Acapulco Avenue	KUW	Third Creek	11	Manhole 20-32	Soil Saturation		Blockage - Roots The sewer main was flushed to clear the blockage. The area was cleaned.	25	0	25	0.5	No	Routine Blockage Abatement
1/26/2017	9:32 AM	5246	Bent River Boulevard	FC	Fourth Creek	43	Grinder Pump	Soil Saturation		Grinder Pump Failure The pump was replaced and the area was cleaned.	4	3	1	0.2	No	System Repair Completed
2/8/2017	8:45 AM	5560	Washington Pike	KUW	First Creek	2	Grinder Pump	Soil Saturation		Grinder Pump Failure The pump was repaired and the area was cleaned.	15	0	15	1	No	System Repair Completed
2/10/2017	2:30 PM	5324	Bent River Boulevard	FC	Fourth Creek	43	Grinder Pump	Soil Saturation		Grinder Pump Failure The pump was replaced and the area was cleaned.	15	10	5	0.5	No	System Repair Completed
3/10/2017	9:22 AM	2900	Rennoc Rd	KUW	First Creek	4	Manhole 13-27	Soil Saturation		Blockage - Grease and Debris The sewer main was flushed to clear the blockage. The area was cleaned.	2,400	50	2,350	2	No	Routine Blockage Abatement
3/21/2017	4:40 PM	8319	Strawberry Plains Pike	EB	Eastbridge	72	Broken Pipe	Ground to Wet Weather Conveyance to Lyons Creek	Lyons Creek	Construction Failure - Dig-In The sewer main was repaired and the area was cleaned.	5,750	0	5,750	2	Yes	System Repair Completed
3/24/2017	1:52 PM	7309	Washington Pike	EB	Eastbridge	109	Broken Pipe	Soil Saturation		Broken System - Broken Force Main The sewer main was repaired and the area was cleaned.	20	20	0	1.5	No	System Repair Completed
3/30/2017	11:47 AM	5236	Bent River Boulevard	FC	Fourth Creek	47	Broken Pipe	Soil Saturation		Broken force main. The force main was repaired and the area was cleaned.	2	1	1	1	No	System Repair Completed
4/11/2017	12:17 PM	5321	Maloneyville Rd	EB	Eastbridge	109	5321 Maloneyville Rd - Force Main	Sub-surface to Ditch to Soil Saturation		Broken System, Broken force main. The force main was repaired and the area was cleaned.	81	40	41	1	No	System Repair Completed
4/11/2017	5:20 PM	2900	Woodmont Rd	KUW	First Creek	8	Manhole 35-11	Soil Saturation		Construction Failure, Unconnected Main The main was reconnected and the area was cleaned.	47	0	47	1	No	System Repair Completed
4/18/2017	8:50 PM	5225	Bent River Blvd	FC	Fourth Creek	43	5225 Bent River Boulevard	Soil Saturation		Broken System, Broken force main. The force main was repaired and the area was cleaned.	11	9	2	1	No	System Repair Completed
4/23/2017	7:38 PM	7004	Rotherwood Dr	FC	Fourth Creek	36	Manhole 30	Pavement to Fourth Creek	Fourth Creek	>2 Year Rain Events, The area received an average of 4.18 inches of rainfall within a 48 hour period on April 21, 22 & 23. This resulted in significant I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	3,750	0	3,750	1	Yes	Future Construction Planned
4/23/2017	9:24 PM	600	N. Gallaher View Rd	FC	Fourth Creek	32a	Manhole 77	Ground to Fourth Creek	Fourth Creek	>2 Year Rain Events, The area received an average of 4.18 inches of rainfall within a 48 hour period on April 21, 22 & 23. This resulted in significant I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	717,000	0	717,000	12	Yes	System Assessment Underway
4/24/2017	2:00 AM	4605	Webb Ln	KUW	Third Creek	13, 28	Manholes 1, 1, 1-1, 27-16, 27-54, 27-56	Ground to Third Creek	Third Creek	>2 Year Rain Events, The area received an average of 4.18 inches of rainfall within a 48 hour period on April 21, 22 & 23. This resulted in significant I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	8,100	0	8,100	1	Yes	System Assessment Underway
4/24/2017	8:04 AM	2004	Riverside Dr	KUW	Williams Creek	31	Manhole 1-1	Ground to Williams Creek	Williams Creek	>2 Year Rain Events, The area received an average of 4.18 inches of rainfall within a 48 hour period on April 21, 22 & 23. This resulted in significant I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	510	0	510	1	Yes	Construction Project Underway
4/24/2017	8:27 AM	2544	Fair Dr	KUW	First Creek	4	Manhole 77	Ground to First Creek	First Creek	>2 Year Rain Events, The area received an average of 4.18 inches of rainfall within a 48 hour period on April 21, 22 & 23. This resulted in significant I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	65	0	65	1	Yes	System Assessment Underway
4/24/2017	8:44 AM	5760	Sandis Ln	LC	Loves Creek	20	WWTP Grit Chamber	Soil Saturation		>2 Year Rain Events, The area received an average of 4.18 inches of rainfall within a 48 hour period on April 21, 22 & 23. This resulted in significant 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	System Assessment Underway
4/24/2017	8:55 AM	4501	Fawnie Ln	KUW	First Creek	7	4501 Fawnie Ln - Manhole 17-67, 4511 Fawnie Ln - Lateral C/O	Ground to Lynnhurst Creek	Lynnhurst Creek	>2 Year Rain Events, The area received an average of 4.18 inches of rainfall within a 48 hour period on April 21, 22 & 23. This resulted in significant I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	80	0	80	1	Yes	System Assessment Underway
4/24/2017	11:34 AM	1404	Adair Dr	KUW	First Creek	7	1404 Adair Dr - Manhole 73, 4511 Plummer Rd - Manhole 31	Ground to Unnamed Tributary to Lynnhurst Creek	Lynnhurst Creek	>2 Year Rain Events, The area received an average of 4.18 inches of rainfall within a 48 hour period on April 21, 22 & 23. This resulted in significant I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	200	0	200	1	Yes	System Assessment Underway
4/27/2017	11:06 AM	1829	Wayland Rd	LC	Loves Creek	67	1829 Wayland Rd - Manhole 40-2, 1815 Wayland Rd - Lateral Cleanout	Soil Saturation		<2 Year Rain Event, Rainfall in the area produced I & I and high flows in the sewer mains. The area was cleaned.	38	0	38	1	No	Future Construction Planned
5/2/2017	10:21 AM	2701	Chukar Rd	FC	Fourth Creek	32a	2701 Chukar Rd - Lateral Clean Out	Ground to Wet Weather Conveyance to Ten Mile Creek	Ten Mile Creek	Blockage, Debris The main was flushed to clear the debris. The area was cleaned.	2,200	0	2,200	1	Yes	Routine Blockage Abatement

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
5/2/2017	10:27 AM	1722	Fremont Pl	KUW	First Creek	17	Manhole 4-31	Soil Saturation		Blockage, Debris The main was flushed to clear the blockage. The area was cleaned.	2,900	1,000	1,900	2	No	Routine Blockage Abatement
5/10/2017	12:31 PM	4625	Asheville Hwy	LC	Loves Creek	20	4625 Asheville Highway - Broken System	Storm Drain to Loves Creek	Loves Creek	Broken System, Gravity Main The sewer main was repaired and the area was cleaned.	400	0	400	3	Yes	System Repair Completed
5/17/2017	11:02 PM	428	Branch Ln	LC	Loves Creek	63	428 Branch Lane - Lateral Cleanout	Soil Saturation		Blockage, Roots The sewer main was flushed to clear the blockage. The area was cleaned.	20	0	20	2	No	Routine Blockage Abatement
5/25/2017	4:04 PM	603	Ben Hur Ave	KUW	Williams Creek	25	Manhole 41	Pavement to Catch Basin to Storm Sewer to Unnamed Tributary to Williams Creek	Williams Creek	Construction Failure, Blockage by Construction Debris The sewer main was flushed to clear the blockage. The area was cleaned.	3,150	650	2,500	1.5	Yes	System Repair Completed
5/31/2017	10:25 AM	7109	Lavender Ln	KUW	Third Creek	11	Manhole 11-264	Soil Saturation		Blockage, Grease and Roots The sewer main was flushed to clear the blockage. The area was cleaned.	20	0	20	1	No	Routine Blockage Abatement
6/1/2017	11:52 AM	3306	Lands End Ln	FC	Fourth Creek	49	Manhole 21-6	Ground to Grassy Creek	Grassy Creek	Blockage, Grease The main was flushed to clear the blockage. The area was cleaned.	360	0	360	1	Yes	Routine Blockage Abatement
6/4/2017	11:00 PM	1900	E Magnolia Ave	KUW	First Creek	24	1900 E Magnolia Ave Lateral cleanout and BBU	Pavement to BBU		Blockage, Grease and Debris The main was flushed to clear the blockage. The area was cleaned.	65	30	35	1	No	Routine Blockage Abatement
6/7/2017	11:21 AM	804	E Red Bud Rd	KUW	South Knox	40	Manhole 57-26	Wet Weater Conveyance o Soil Saturation		Blockage, Roots The main was flushed to clear the blockage. The area was cleaned.	380	0	380	2	No	Routine Blockage Abatement
6/17/2017	4:08 PM	1525	Tennessee Ave	KUW	Third Creek	22	Manhole 28-1	Ground to Storm Drain to Third Creek	Third Creek	Blockage, Debris The sewer main was flushed to clear the blockage. The area was cleaned.	700	200	500	9	Yes	Routine Blockage Abatement
6/24/2017	6:24 PM	1601	Beaumont	KUW	Third Creek	22	Manhole 6-187	Wet Weather Conveyance to Soil Saturation		Blockage, Debris The sewer main was flushed to clear the blockage. The area was cleaned.	500	0	500	2	No	Routine Blockage Abatement
7/13/2017	2:28pm	6110	Papermill Dr	FC	Fourth Creek	33	Manhole 65-32	Tributary to Fourth Creek	Fourth Creek	Blockage - Debris. The sewer main was flushed to clear the blockage. The area was cleaned.	2,000	0	2,000	2	Yes	Routine Blockage Abatement
7/30/2017	12:59pm	2717	Rushland Park Blvd	LC	Loves Creek	105	Manhole 48-140	Ground to Storm Drain to Retention Basin to Soil Saturation		Blockage - Grease & Debris. The sewer main was flushed to clear the blockage. The area was cleaned.	2,900	2,000	900	3	No	Routine Blockage Abatement
8/16/2017	1:23pm	205	Schaad Rd	KUW	Third Creek	50	Wet Well	Ground to Soil Saturation		Pump Station Failure. The software malfunction was resolved and the area was cleaned.	600	0	600	1	No	System Repair Completed
8/17/2017	12:48pm	317	McConnell St	KUW	First Creek	24	Manhole 6-158	Ground to Storm Drain to Williams Creek	Williams Creek	Construction Failure. Dig-In (Boring) Third Party. The main was flushed and the area was cleaned. The sewer main has been repaired.	250	50	200	1	Yes	System Repair Completed
8/24/2017	3:44pm	5324	Bent River Blvd	FC	Fourth Creek	43	5324 Bent River - Grinder Pump	Ground Saturation		Grinder Pump Failure. The grinder pump was repaired and the area was cleaned.	25	15	10	1	No	System Repair Completed
8/25/2017	9:59am	4100	Central Ave Pike	KUW	Second Creek	10	Manhole 17-9	Pavement to Unknown Tributary to Second Creek	Second Creek	I/I Rainfall in the area produced I & I and high flows in the sewer mains, as recorded by flow monitor in manhole 17-9 on 08-07-2017.	300	0	300	0.3	Yes	System Assessment Underway
9/4/2017	2:01pm	1401	Cassell Dr	KUW	Second Creek	10	Manhole 14-103	Ground to Wet Weather Conveyance to Second Creek	Second Creek	Blockage - Grease. The sewer main was flushed to clear the blockage. The area was cleaned.	750	0	750	2	Yes	Routine Blockage Abatement
9/6/2017	9:20pm	6206	Shrewsbury Dr	KUW	Third Creek	11	Manhole 41	Ground to Wet Weather Conveyance to Soil Saturation		Broken System. The sewer main was flushed and the area was cleaned. The sewer main has been repaired.	5,100	0	5,100	3	No	System Repair Completed
9/10/2017	1:20pm	7308	Rising Rd	LC	Loves Creek	106	Wet Well	Ground to Soil Saturation		Pump Station Failure - Flow exceeded the pump capacity unrelated to wet weather. The area was cleaned.	30	0	30	1	No	Future Construction Planned
9/10/2017	10:50am	8032	Cambridge Reserve Dr	LC	Loves Creek	107	Manhole 88-29	Pavement		Blockage - Debris. The sewer main was flushed to clear the blockage. The area was cleaned.	70	20	50	1	No	Routine Blockage Abatement
9/13/2017	9:45am	1211	Maryland Ave	KUW	Second Creek	15	Manhole 21-86	Pavement		Blockage - Grease & Debris. The sewer main was flushed to clear the blockage. The area was cleaned.	150	0	150	1	No	Routine Blockage Abatement
9/19/2017	1:50pm	5332	Bent River Blvd	FC	Fourth Creek	43	5332 Bent River - Grinder Pump	Ground Saturation		Grinder Pump - Electric breaker inside residence was off. Contractor restored power to the pump and the area was cleaned.	7	4	3	1	No	System Repair Completed
10/5/2017	10:06am	6909	Kingston Pike	FC	Fourth Creek	33	Manhole 65-32	Ground to Wet Weather Conveyance to Unnamed Tributary to Fourth Creek	Fourth Creek	Construction Failure. Blockage By Construction Debris. The main was flushed to remove the blockage. The area was cleaned.	6,100	0	6,100	1	Yes	System Repair Completed
10/6/2017	11:07am	5320	South National Dr	KUW	Williams Creek	60	Manhole 76	Ground to Wet Weather Conveyance to French Broad River	French Broad River	Blockage - Roots & Debris. The sewer main was flushed to clear the blockage. The area was cleaned.	11,200	0	11,200	1	Yes	Routine Blockage Abatement
10/7/2017	11:35pm	4505	Joe Lewis Rd	KUW	South Knox	39	Manhole 27-289	Ground to Wet Weather Conveyance to Soil Saturation		Blockage - Grease. The sewer main was flushed to clear the blockage. The area was cleaned.	1,500	0	1,500	1	No	Routine Blockage Abatement
10/19/2017	6:05pm	230	Dry Gap Pike	KUW	Second Creek	5	Manhole 16-70	Ground to Wet Weather Conveyance to Storm Drain to Ground Saturation		Blockage - Grease & Roots. The sewer main was flushed to clear the blockage. The area was cleaned.	5,300	0	5,300	6	No	Routine Blockage Abatement
10/31/2017	10:40am	5112	Schubert Rd	KUW	Second Creek	5	Manhole 4-7	Ground to Wet Weather Conveyance to Second Creek	Second Creek	Blockage - Roots. The sewer main was flushed to clear the blockage. The area was cleaned.	1,100	0	1,100	1	Yes	Routine Blockage Abatement
11/7/2017	11:00am	4532	Lynnmont Rd	KUW	Third Creek	11	Manhole 6-46	Pavement to Storm Drain to Retention Pond to Soil Saturation		Blockage - Debris. The sewer main was flushed to clear the blockage. The area was cleaned.	200	0	200	1	No	Routine Blockage Abatement
11/9/2017	1:00pm	726	Scenic Dr	KUW	Third Creek	38	726 Scenic, Exfiltration from Sewer Main	Ground to Wet Weather Conveyance to Soil Saturation		Broken System - Broken Gravity Main. Exfiltration from Sewer Main. The sewer main has been repaired. The area was cleaned.	25	0	25	1	No	System Repair Completed
11/10/2017	9:55am	5619	E. Governor John Sevier Hwy	LC	Loves Creek	61	Manhole 4	Wet Weather Conveyance to Holston River	Holston River	I/I Rainfall produced high flows in sewer mains The sewer main was checked until the high flows subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	Yes	Future Construction Planned
11/14/2017	12:50pm	5409	Singh Ln	EB	Eastbridge	113	5409 Singh Ln - Flushing Assembly	Pavement to Storm Drain to Soil Saturation		Maintenance Failure. Flushing Assembly Operation Failure. The valve was closed. The area was cleaned.	20	10	10	1.5	No	System Repair Completed
11/16/2017	1:30pm	6410	Ruggles Ferry Pike	LC	Loves Creek	62	Manhole 3-1	Soil Saturation		I/I Rainfall produced high flows in sewer mains The sewer main was checked until the high flows subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	No	System Assessment Underway
11/20/2017	8:07am	5619	E. Governor John Sevier Hwy	LC	Loves Creek	61	Manhole 4	Wet Weather Conveyance to Holston River	Holston River	Pump Station Failure. Pump Station was restored. The area was cleaned.	10	5	5	1	Yes	Future Construction Planned

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
12/6/2017	8:57am	1219	Hilton Rd	KUW	Third Creek	21	Manhole 10-65	Pavement to Storm Drain to Wet Weather Conveyance to Third Creek	Third Creek	Blockage Debris and Grease The main was flushed and the area was cleaned.	310	0	310	1	Yes	Routine Blockage Abatement
12/7/2017	11:23am	7308	Rising Rd	LC	Loves Creek	106	Wet Well	Soil Saturation		Pump Station Failure Pump Failure The pump station was repaired. The area was cleaned.	150	0	150	1	No	Future Construction Planned
12/16/2017	4:02pm	262	Morrell Rd	FC	Fourth Creek	33	Manhole 53-28	Storm Drain to Retention Pond to Soil Saturation		Blockage Debris The sewer main was flushed to remove the blockage. The area was cleaned	500	0	500	4	No	Routine Blockage Abatement
12/18/2017	4:01pm	7714	Ellisville Ln	FC	Fourth Creek	32a	Manhole 30-20	Soil Saturation		Vandalism Organic Debris The debris was removed and the area was cleaned.	125	0	125	1	No	System Repair Completed
12/20/2017	9:54am	5619	E Governor John Sevier Hwy	LC	Loves Creek	61	Manhole 4	Wet Weather Conveyance to Holston River	Holston River	I/I Rainfall produced high flows in sewer mains The sewer main was checked until the high flows subsided. The area was cleaned.	6,000	0	6,000	4.5	Yes	Future Construction Planned
12/23/2017	3:04pm	5619	E Governor John Sevier Hwy	LC	Loves Creek	61	Manhole 4	Wet Weather Conveyance to Holston River	Holston River	I/I Rainfall produced high flows in sewer mains The sewer main was checked until the high flows subsided. The area was cleaned.	1,500	0	1,500	2	Yes	Future Construction Planned
12/27/2017	3:45pm	6404	S Northshore Dr	FC	Fourth Creek	37	4" and 6" Force Mains	Soil Saturation		Construction Failure Dig-In The mains were repaired and the area was cleaned.	30	0	30	2.5	No	System Repair Completed
12/28/2017	12:35pm	4315	Clinton Hwy	KUW	Third Creek	10	Manhole 14-143	Ground to Storm Drain to Second Creek	Second Creek	Blockage Roots, Grease, and Debris The sewer main was flushed to remove the blockage. The area was cleaned	550	0	550	2	Yes	Routine Blockage Abatement

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

Appendix C

Building Backups

BBUGs

Date	Time	Street #	Street	Plant	Watershed	Basin	Overflow Location	Cause of SSO/KUB Response	Total Volume (Gallons)	Recovered Volume (Gallons)	Non-Recovered Volume (Gallons)	Duration (Hours)	Corrective Action
1/8/2017	11:15am	413	South Gay Street	KUW	First Creek	30	BBUG	Blockage - Grease The sewer main was flushed to clear the blockage.	100	0	100	5	Routine Blockage Abatement
6/4/2017	11:00 PM	1900	E Magnolia Ave	KUW	First Creek	24	1900 E Magnolia Ave Lateral cleanout and BBUG	Blockage, Grease and Debris The main was flushed to clear the blockage. The area was cleaned.	65	30	35	1	Routine Blockage Abatement
7/17/2017	3:15pm	630	Metler Dr	KUW	Third Creek	9	BBUG	Blockage - Debris. The sewer main was flushed to clear the blockage.	10	10	0	2	Routine Blockage Abatement
8/30/2017	2:10pm	3723	Taliwa Gardens St	KUW	South Knox	39	BBUG	Blockage - Debris. The sewer main was flushed to clear the blockage.	5	5	0	2	Routine Blockage Abatement
10/5/2017	5:18pm	1939	Massachusetta Ave	KUW	Third Creek	22	BBUG	Blockage - Grease The sewer main was flushed to clear the blockage.	22	20	2	0.5	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



Routine Water Quality Monitoring Report

1/1/2017 Through 12/31/2017

Knoxville Utilities Board
Water Quality Laboratory
Debbie Ailey, Lab Supervisor
835 East Jackson Avenue
Knoxville, Tennessee 37915
(865) 594-8286 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>First Creek</u>									
1.74	1/24/2017	12:30	7.2	13	10	1400	1300	Wet	R
2.57	1/24/2017	12:14	7.5	12	10	1200	730	Wet	R
6.33	1/24/2017	09:51	7.1	14	8.8	550	310	Wet	R
1.74	2/13/2017	11:02	7.7	11	11	220	170	Dry	R
2.57	2/13/2017	09:46	7.3	11	11	250	230	Dry	R
6.33	2/13/2017	09:23	7.2	14	9.0	99	130	Dry	R
1.74	3/20/2017	13:20	7.2	11	11	310	140	Wet	R
2.57	3/20/2017	13:11	7.8	11	11	450	150	Wet	R
6.33	3/20/2017	12:01	7.2	13	9.5	320	210	Wet	R
1.74	4/10/2017	12:00	7.7	11	11	220	150	Dry	R
2.57	4/10/2017	11:39	7.8	15	11	54	120	Dry	R
6.33	4/10/2017	11:19	7.3	17	9.0	270	170	Dry	R
1.74	5/18/2017	10:30	7.3	19	8.3	640	360	Dry	R
2.57	5/18/2017	10:09	7.6	19	8.4	570	650	Dry	R
6.33	5/18/2017	09:02	6.9	18	7.4	910	280	Dry	R
1.74	6/20/2017	09:34	6.7	20	7.9	910	390	Wet	R
2.57	6/20/2017	09:52	7.8	21	8.0	550	580	Wet	R
6.33	6/20/2017	08:30	8.7	20	8.7	2200	440	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.



Routine Water Quality Monitoring Report

1/1/2017 Through 12/31/2017

Knoxville Utilities Board
Water Quality Laboratory
Debbie Ailey, Lab Supervisor
835 East Jackson Avenue
Knoxville, Tennessee 37915
(865) 594-8286 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>First Creek</u>									
1.74	7/11/2017	10:35	7.7	20	7.6	1400	650	Wet	R
2.57	7/11/2017	10:46	7.9	21	8.1	1600	870	Wet	R
6.33	7/11/2017	09:26	7.2	20	7.2	730	820	Wet	R
1.74	8/21/2017	12:09	7.3	22	7.6	770	290	Wet	R
2.57	8/21/2017	11:57	7.6	22	7.9	910	440	Wet	R
6.33	8/21/2017	10:11	7.0	20	7.2	1000	240	Wet	R
1.74	9/25/2017	11:09	8.0	20	6.7	360	370	Dry	R
2.57	9/25/2017	11:00	8.0	20	8.2	220	80	Dry	R
6.33	9/25/2017	10:00	7.2	19	6.3	910	1100	Dry	R
1.74	10/16/2017	11:07	7.4	17	7.3	5600	1200	Wet	R
2.57	10/16/2017	10:57	7.1	17	8.6	4100	1000	Wet	R
6.33	10/16/2017	10:45	6.8	16	7.5	2800	2000	Wet	R
1.74	11/14/2017	14:05	7.5	13	9.8	400	550	Dry	R
2.57	11/14/2017	14:12	7.7	13	10	81	110	Dry	R
6.33	11/14/2017	09:15	7.1	14	8.5	300	630	Dry	R
1.74	12/19/2017	14:11	7.7	11	11	150	150	Wet	R
2.57	12/19/2017	14:05	8.0	12	11	54	150	Wet	R
6.33	12/19/2017	08:23	6.9	13	7.5	1000	920	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.



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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>Second Creek</u>									
0.30	1/24/2017	11:54	7.2	13	10	2000	1200	Wet	I
1.54	1/24/2017	10:40	7.2	13	9.7	3000	1300	Wet	I
5.11	1/24/2017	10:25	6.8	14	8.3	450	770	Wet	R
0.30	2/27/2017	09:56	8.5	12	10	1300	1400	Wet	I
1.54	2/27/2017	10:12	8.2	11	10	3100	> 2400	Wet	I
5.11	2/27/2017	10:47	7.2	13	8.4	160	220	Wet	R
0.30	3/20/2017	12:50	7.5	12	11	160	200	Wet	R
1.54	3/20/2017	12:35	7.4	13	11	220	290	Wet	R
5.11	3/20/2017	12:24	6.7	14	9.3	310	250	Wet	R
0.30	4/28/2017	08:47	7.2	16	9.1	1100	410	Wet	R
1.54	4/28/2017	08:32	7.0	16	8.6	1100	120	Wet	R
5.11	4/28/2017	08:15	6.5	17	6.9	1100	180	Wet	R
0.30	5/18/2017	09:53	7.7	19	8.7	1300	1100	Dry	R
1.54	5/18/2017	09:37	7.2	19	8.4	360	310	Dry	R
5.11	5/18/2017	09:21	7.3	18	6.4	420	520	Dry	R
0.30	6/20/2017	09:22	7.0	19	7.1	1700	460	Wet	R
1.54	6/20/2017	09:06	7.5	20	7.5	2000	2000	Wet	R
5.11	6/20/2017	08:51	7.0	18	6.0	8000	> 2400	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>Second Creek</u>									
0.30	7/11/2017	10:19	7.9	20	8.4	2500	> 2400	Wet	R
1.54	7/11/2017	10:06	7.4	20	7.9	1100	730	Wet	R
5.11	7/11/2017	09:42	6.9	18	6.8	1000	260	Wet	R
0.30	8/21/2017	11:12	7.6	22	8.5	2800	650	Wet	R
1.54	8/21/2017	11:00	7.4	21	8.0	1400	330	Wet	R
5.11	8/21/2017	10:39	7.0	19	6.3	1100	1000	Wet	R
0.30	9/25/2017	10:46	8.0	20	8.4	2300	2000	Dry	R
1.54	9/25/2017	10:32	7.7	20	8.0	480	550	Dry	R
5.11	9/25/2017	10:14	7.2	18	6.0	520	520	Dry	R
0.30	10/16/2017	11:24	7.8	18	9.0	5000	> 2400	Wet	R
1.54	10/16/2017	11:36	7.6	17	8.5	4800	> 2400	Wet	R
5.11	10/16/2017	09:50	6.5	16	5.5	4200	1700	Wet	R
0.30	11/14/2017	10:10	7.8	13	10	450	320	Dry	R
1.54	11/14/2017	09:51	7.3	13	9.7	600	580	Dry	R
5.11	11/14/2017	09:31	6.7	16	5.6	360	390	Dry	R
0.30	12/19/2017	13:45	7.7	13	11	220	490	Wet	R
1.54	12/19/2017	09:02	7.5	12	9.3	320	340	Wet	R
5.11	12/19/2017	08:42	7.0	13	6.8	220	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)	E. Coli (MPN)	Precipitation Event	Status
<u>Third Creek</u>									
0.87	1/9/2017	12:51	7.6	8	12	120	140	Wet	R
2.08e	1/9/2017	12:40	7.4	7	11	27	41	Wet	R
4.80w	1/9/2017	11:00	6.9	10	11	150	96	Wet	R
0.87	2/21/2017	09:51	7.4	14	10	130	170	Dry	R
2.08E	2/21/2017	11:31	7.3	14	10	27	34	Dry	R
4.80W	2/21/2017	10:30	7.0	13	9.8	210	170	Dry	R
0.87	3/23/2017	11:50	7.7	13	10	320	270	Wet	R
2.08e	3/23/2017	10:17	7.6	12	9.8	130	71	Wet	R
4.80w	3/23/2017	09:32	7.0	13	9.3	290	370	Wet	R
0.87	4/13/2017	10:22	7.4	15	9.0	150	170	Dry	R
2.08E	4/13/2017	10:35	7.1	16	7.9	110	160	Dry	R
4.80W	4/13/2017	10:52	7.1	15	9.2	350	410	Dry	R
0.87	5/23/2017	11:10	7.9	18	8.4	820	330	Wet	R
2.08e	5/23/2017	10:56	7.7	18	7.8	1000	820	Wet	R
4.80W	5/23/2017	10:45	7.6	16	8.2	320	310	Wet	R
0.87	6/28/2017	09:52	7.3	18	8.4	910	520	Dry	R
2.08E	6/28/2017	10:00	7.3	18	8.3	3300	1200	Dry	R
4.80W	6/28/2017	10:32	7.1	17	8.2	300	370	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)	E. Coli (MPN)	Precipitation Event	Status
<u>Third Creek</u>									
0.87	7/20/2017	10:31	7.9	21	7.8	340	160	Dry	R
2.08E	7/20/2017	10:50	7.4	23	7.7	550	330	Dry	R
4.80W	7/20/2017	09:40	7.4	18	7.8	300	220	Dry	R
0.87	8/14/2017	11:02	7.8	20	8.2	2500	820	Wet	R
2.08E	8/14/2017	10:47	7.6	21	7.4	3500	770	Wet	R
4.80W	8/14/2017	10:30	7.5	18	8.1	4000	> 2400	Wet	R
0.87	9/19/2017	11:08	8.0	19	7.9	470	260	Dry	R
2.08E	9/19/2017	11:20	8.0	20	7.6	540	130	Dry	R
4.80W	9/19/2017	10:05	7.3	17	8.1	350	290	Dry	R
0.87	10/24/2017	12:39	7.1	16	8.7	3400	1300	Wet	R
2.08E	10/24/2017	12:29	7.3	16	8.3	2600	1100	Wet	R
4.80W	10/24/2017	12:14	7.2	15	8.7	2400	1400	Wet	R
0.87	11/27/2017	13:12	7.3	10	11	90	170	Dry	R
2.08e	11/27/2017	12:51	7.5	11	10	140	100	Dry	R
4.80w	11/27/2017	12:35	7.5	12	10	27	36	Dry	R
0.87	12/18/2017	13:39	8.0	10	11	190	130	Dry	R
2.08E	12/18/2017	13:30	8.0	10	11	72	48	Dry	R
4.80W	12/18/2017	12:11	6.9	12	10	81	140	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)	E. Coli (MPN)	Precipitation Event	Status
<u>Fourth Creek</u>									
1.75	1/9/2017	12:21	7.5	9	12	200	180	Wet	R
2.79	1/9/2017	12:08	7.4	9	11	450	200	Wet	R
3.29	1/9/2017	11:56	7.3	10	11	250	410	Wet	R
1.75	2/21/2017	11:09	7.4	15	11	140	170	Dry	R
2.79	2/21/2017	10:56	7.4	14	10	72	96	Dry	R
3.29	2/21/2017	10:43	7.5	15	11	90	91	Dry	R
1.75	3/23/2017	10:03	7.5	12	10	180	370	Wet	R
2.79	3/23/2017	09:51	7.2	13	9.5	250	180	Wet	R
3.29	3/23/2017	09:43	7.1	12	10	360	160	Wet	R
1.75	4/13/2017	11:35	7.7	17	10	320	120	Dry	R
2.79	4/13/2017	11:19	7.3	16	9.6	390	170	Dry	R
3.29	4/13/2017	11:07	7.3	16	10	110	150	Dry	R
1.75	5/23/2017	10:08	7.3	18	8.2	1600	770	Wet	R
2.79	5/23/2017	10:20	7.6	17	8.3	460	170	Wet	R
3.29	5/23/2017	10:31	7.5	17	8.9	36	79	Wet	R
1.75	6/28/2017	11:12	7.8	18	9.3	1100	> 2400	Dry	R
2.79	6/28/2017	10:58	7.7	17	8.3	360	340	Dry	R
3.29	6/28/2017	10:48	7.8	17	8.9	200	140	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)	E. Coli (MPN)	Precipitation Event	Status
<u>Fourth Creek</u>									
1.75	7/20/2017	10:17	7.8	20	9.4	420	650	Dry	R
2.79	7/20/2017	10:05	7.8	18	8.4	240	100	Dry	R
3.29	7/20/2017	09:53	7.9	18	9.1	160	100	Dry	R
1.75	8/14/2017	09:52	7.7	19	8.6	1400	490	Wet	R
2.79	8/14/2017	10:06	7.6	18	8.2	1500	580	Wet	R
3.29	8/14/2017	10:15	7.6	18	8.6	1300	260	Wet	R
1.75	9/19/2017	10:52	8.1	19	9.7	410	370	Dry	R
2.79	9/19/2017	10:40	7.8	17	8.7	200	110	Dry	R
3.29	9/19/2017	10:32	7.9	17	9.2	300	130	Dry	R
1.75	10/24/2017	11:45	7.3	16	9.6	2400	1400	Wet	R
2.79	10/24/2017	11:36	7.2	15	8.7	1600	870	Wet	R
3.29	10/24/2017	11:25	7.3	16	9.3	1500	870	Wet	R
1.75	11/28/2017	13:02	7.6	13	11	210	160	Dry	R
2.79	11/28/2017	13:12	7.6	12	10	130	39	Dry	R
3.29	11/28/2017	13:24	8.0	13	10	18	33	Dry	R
1.75	12/18/2017	13:12	7.9	12	11	150	130	Dry	R
2.79	12/18/2017	12:37	7.4	12	9.5	210	27	Dry	R
3.29	12/18/2017	12:28	7.5	12	11	54	45	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)	E. Coli (MPN)	Precipitation Event	Status
<u>Baker Creek</u>									
0.36	1/30/2017	12:25	7.2	10	10	520	650	Dry	R
0.53	1/30/2017	12:33	7.4	10	11	600	730	Dry	R
1.45	1/30/2017	12:02	7.3	10	10	640	870	Dry	R
0.36	2/15/2017	10:50	7.3	11	9.9	4000	> 2400	Wet	I
0.53	2/15/2017	11:30	7.6	11	10	4000	> 2400	Wet	I
1.45	2/15/2017	11:09	7.4	11	9.8	3000	2400	Wet	R
0.36	3/27/2017	08:45	7.0	15	7.7	1300	1000	Wet	I
0.53	3/27/2017	08:56	6.6	14	9.0	1800	1400	Wet	I
1.45	3/27/2017	09:21	7.5	14	9.1	530	440	Wet	R
0.36	4/12/2017	11:51	7.3	18	8.7	2200	920	Dry	R
0.53	4/12/2017	12:06	7.5	16	9.7	1900	1000	Dry	I
1.45	4/12/2017	12:37	7.3	17	9.6	1400	610	Dry	R
0.36	5/17/2017	10:52	7.3	18	7.3	450	980	Dry	I
0.53	5/17/2017	11:01	7.2	18	8.3	1000	1000	Dry	I
1.45	5/17/2017	10:35	7.7	17	8.0	1200	1300	Dry	I
0.36	6/21/2017	10:12	7.0	19	7.5	3600	> 2400	Wet	I
0.53	6/21/2017	10:30	7.5	19	8.1	5100	> 2400	Wet	I
1.45	6/21/2017	09:50	7.2	18	7.8	640	1400	Wet	I

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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	7/19/2017	10:02	7.6	20	7.1	1700	> 2400	Dry	I
0.53	7/19/2017	10:55	7.8	20	8.0	2800	> 2400	Dry	R
1.45	7/19/2017	10:41	7.7	20	7.6	460	290	Dry	R
0.36	8/28/2017	10:45	7.3	19	7.2	3200	2400	Dry	I
0.53	8/28/2017	10:55	7.3	19	8.1	3000	920	Dry	R
1.45	8/28/2017	11:19	7.3	18	7.9	1000	1700	Dry	I
0.36	9/26/2017	10:11	7.6	18	7.1	1600	870	Dry	R
0.53	9/26/2017	10:19	7.9	18	8.0	1300	870	Dry	R
1.45	9/26/2017	10:35	7.8	17	7.7	1600	1300	Dry	I
0.36	10/30/2017	10:19	7.2	12	8.5	730	820	Wet	R
0.53	10/30/2017	10:31	7.4	12	9.4	2000	920	Wet	R
1.45	10/30/2017	10:50	7.5	12	9.0	1100	630	Wet	R
0.36	11/17/2017	09:15	7.8	11	9.0	400	370	Dry	R
0.53	11/17/2017	09:29	7.4	12	9.1	280	520	Dry	R
1.45	11/17/2017	09:51	7.4	11	9.0	240	250	Dry	R
0.36	12/26/2017	11:39	7.3	9	10	350	460	Wet	R
0.53	12/26/2017	11:46	7.6	9	10	570	690	Wet	R
1.45	12/26/2017	11:30	7.0	9	11	230	330	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	1/30/2017	10:40	7.5	9	10	1000	1000	Dry	I
1.19e	1/30/2017	10:32	7.2	9	10	160	160	Dry	R
1.80e	1/30/2017	10:21	7.3	11	10	340	370	Dry	R
0.40	2/15/2017	09:47	7.0	10	9.6	2000	2000	Wet	I
1.19e	2/15/2017	09:38	6.9	10	9.6	3400	> 2400	Wet	R
1.80e	2/15/2017	09:27	7.1	12	9.3	250	220	Wet	R
0.40	3/27/2017	10:15	7.7	14	8.6	590	650	Wet	R
1.19e	3/27/2017	10:03	7.6	14	9.2	1000	920	Wet	R
1.80e	3/27/2017	09:40	7.8	14	9.2	45	65	Wet	R
0.40	4/12/2017	10:52	7.3	16	8.5	1500	1400	Dry	I
1.19E	4/12/2017	10:33	7.7	16	9.0	1700	> 2400	Dry	I
1.80E	4/12/2017	10:20	7.9	16	8.8	54	53	Dry	R
0.40	5/17/2017	10:10	7.3	18	7.7	3500	1300	Dry	I
1.19e	5/17/2017	10:02	7.4	19	7.8	4100	2400	Dry	I
1.80e	5/17/2017	09:49	7.5	17	8.3	1300	260	Dry	R
0.40	6/21/2017	11:17	7.9	20	6.8	1500	1400	Wet	I
1.19E	6/21/2017	11:00	7.3	20	7.4	3400	2400	Wet	I
1.80E	6/21/2017	10:51	7.5	18	8.2	550	200	Wet	R

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Water Quality Laboratory
Debbie Ailey, Lab Supervisor
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(865) 594-8286 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>Goose Creek</u>									
0.40	7/19/2017	09:45	7.6	21	7.0	4500	> 2400	Dry	R
1.19E	7/19/2017	09:37	7.3	20	7.5	50000	> 2400	Dry	I
1.80E	7/19/2017	09:23	7.5	18	8.1	390	280	Dry	R
1.19E	7/21/2017	09:50	7.3	21	6.9	2100	590	Dry	R
0.40	8/28/2017	10:00	7.0	20	6.7	2900	84	Dry	R
1.19e	8/28/2017	10:11	7.2	20	7.6	33000	> 2400	Dry	I
1.80e	8/28/2017	10:23	7.4	18	8.2	2200	390	Dry	R
0.40	9/18/2017	10:18	7.0	18	7.0	1700	410	Dry	R
1.19e	9/18/2017	10:00	7.3	19	7.5	2100	650	Dry	R
1.80e	9/18/2017	10:30	7.3	18	8.3	180	150	Dry	R
0.40	10/30/2017	11:31	8.0	11	9.3	1100	1100	Wet	I
1.19e	10/30/2017	11:19	7.9	11	9.7	2000	1100	Wet	I
1.80e	10/30/2017	11:03	7.7	11	9.8	180	210	Wet	R
0.40	11/17/2017	09:02	7.6	11	8.4	1500	1400	Dry	I
1.19e	11/17/2017	08:50	7.8	11	8.9	640	310	Dry	R
1.80e	11/17/2017	08:41	7.3	11	9.3	81	80	Dry	R
0.40	12/13/2017	10:00	7.4	6	10	1100	1000	Dry	I
1.19e	12/13/2017	09:34	7.2	8	11	2200	2000	Dry	I
1.80e	12/13/2017	09:47	7.5	7	11	54	50	Dry	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

1/1/2017 Through 12/31/2017

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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>Loves Creek</u>									
0.85	1/12/2017	10:00	7.2	13	9.5	200	140	Wet	R
1.89	1/12/2017	09:52	6.8	13	9.0	150	100	Wet	R
3.45	1/12/2017	09:32	7.1	12	9.5	130	52	Wet	R
0.85	2/6/2017	11:05	7.2	9	12	36	48	Dry	R
1.89	2/6/2017	10:53	7.0	10	11	99	86	Dry	R
3.45	2/6/2017	10:31	7.3	10	11	36	14	Dry	R
0.85	3/14/2017	12:25	7.0	10	10	270	260	Wet	R
1.89	3/14/2017	12:06	6.9	11	9.8	180	310	Wet	R
3.45	3/14/2017	11:50	7.2	9	10	110	150	Wet	R
0.85	4/11/2017	09:55	7.5	15	9.0	81	54	Dry	R
1.89	4/11/2017	09:30	6.9	16	8.3	45	55	Dry	R
3.45	4/11/2017	09:42	7.3	16	8.8	99	62	Dry	R
0.85	5/8/2017	13:08	7.5	16	9.0	99	110	Wet	R
1.89	5/8/2017	12:53	7.4	16	7.6	54	55	Wet	R
3.45	5/8/2017	12:45	7.7	18	8.0	190	110	Wet	R
0.85	6/19/2017	10:23	6.7	21	7.0	4600	1400	Wet	R
1.89	6/19/2017	10:12	7.0	20	6.7	4000	1100	Wet	R
3.45	6/19/2017	10:00	7.2	22	6.8	14000	550	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>Loves Creek</u>									
0.85	7/10/2017	12:45	7.6	20	8.3	560	580	Wet	R
1.89	7/10/2017	12:33	6.9	21	7.9	200	96	Wet	R
3.45	7/10/2017	12:22	7.2	22	7.3	160	46	Wet	R
0.85	8/15/2017	12:15	7.6	21	7.8	910	310	Wet	R
1.89	8/15/2017	11:02	7.3	20	7.5	250	100	Wet	R
3.45	8/15/2017	12:39	7.6	22	7.2	330	160	Wet	R
0.85	9/26/2017	11:01	7.9	19	7.7	310	180	Dry	R
1.89	9/26/2017	11:13	7.4	18	7.5	160	140	Dry	R
3.45	9/26/2017	11:27	7.8	20	7.3	< 9	18	Dry	R
0.85	10/4/2017	09:18	7.7	16	8.2	470	370	Dry	R
1.89	10/4/2017	09:07	7.2	16	7.7	140	170	Dry	R
3.45	10/4/2017	08:46	7.3	18	8.0	36	66	Dry	R
0.85	11/13/2017	09:41	7.4	14	9.2	240	260	Dry	R
1.89	11/13/2017	09:53	7.4	14	8.9	27	36	Dry	R
3.45	11/13/2017	10:03	7.4	13	9.4	18	60	Dry	R
0.85	12/11/2017	11:45	7.4	9	11	86	89	Wet	R
1.89	12/11/2017	11:56	6.9	10	11	54	22	Wet	R
3.45	12/11/2017	12:09	7.3	9	11	180	77	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>Williams Creek</u>									
0.89	1/12/2017	11:08	7.3	14	9.0	340	330	Wet	R
1.70	1/12/2017	10:40	7.0	14	8.6	310	370	Wet	R
2.02	1/12/2017	10:53	7.4	14	9.8	410	260	Wet	R
0.89	2/13/2017	10:21	7.4	10	11	81	100	Dry	R
1.70	2/13/2017	10:43	7.4	12	9.8	200	88	Dry	R
2.02	2/13/2017	10:31	7.4	12	11	130	120	Dry	R
0.89	3/14/2017	12:49	7.3	11	11	290	830	Wet	R
1.70	3/14/2017	12:58	7.5	12	10	640	650	Wet	R
2.02	3/14/2017	13:09	7.5	11	10	200	200	Wet	R
0.89	4/11/2017	10:32	7.6	16	9.6	90	64	Dry	R
1.70	4/11/2017	10:21	7.5	16	8.7	270	140	Dry	R
2.02	4/11/2017	10:12	7.5	16	9.0	220	190	Dry	R
0.89	5/8/2017	13:28	7.7	17	9.2	210	160	Wet	R
1.70	5/8/2017	13:41	6.9	17	7.0	280	120	Wet	R
2.02	5/8/2017	13:48	7.7	18	8.2	1200	550	Wet	R
0.89	6/19/2017	11:03	6.8	22	7.8	5000	2000	Wet	R
1.70	6/19/2017	11:12	6.9	24	6.8	6000	1700	Wet	R
2.02	6/19/2017	11:25	7.2	21	6.9	6000	1700	Wet	R

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**Water Quality Monitoring
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Routine Water Quality Monitoring Report

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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>Williams Creek</u>									
0.89	7/17/2017	11:10	7.5	21	8.0	1200	730	Wet	R
1.70	7/17/2017	11:20	7.3	20	6.1	1300	270	Wet	R
2.02	7/17/2017	11:10	7.4	22	7.6	3100	1600	Wet	I
0.89	8/23/2017	09:53	7.6	23	7.8	1100	280	Dry	R
1.70	8/23/2017	10:11	7.2	23	6.3	1600	490	Dry	R
2.02	8/23/2017	10:41	7.1	22	7.4	36000	> 2400	Dry	I
0.89	9/18/2017	11:46	7.8	19	8.1	1000	310	Dry	R
1.70	9/18/2017	10:57	7.2	18	6.5	910	920	Dry	R
2.02	9/18/2017	10:49	7.7	20	7.3	> 60000	> 2400	Dry	I
2.02	9/21/2017	11:53	7.8	24	6.9	6000	> 2400	Dry	I
0.89	10/4/2017	10:00	7.9	16	8.6	220	250	Dry	R
1.70	10/4/2017	09:37	7.6	16	6.9	300	190	Dry	R
2.02	10/4/2017	09:49	7.9	17	7.6	1400	920	Dry	R
0.89	11/13/2017	10:46	7.6	13	9.8	110	64	Dry	R
1.70	11/13/2017	10:24	7.3	14	6.9	560	360	Dry	R
2.02	11/13/2017	10:34	7.6	15	8.5	1000	200	Dry	R
0.89	12/13/2017	10:21	8.1	6	12	18	46	Dry	R
1.70	12/13/2017	10:29	7.3	10	8.2	2600	2400	Dry	R
2.02	12/13/2017	10:38	7.7	9	10	440	410	Dry	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.



Water Quality Monitoring
Report

Spill Impact Sampling Results Water Quality Monitoring Program

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Event Date 1/4/2017
Street Address 4011 North Broadway
Description Construction Failure- Dig In

Pavement to Storm Drain to Unnamed Tributary to First Creek.

Estimated unrecovered volume 100 gallons

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
	1/4/2017	0.01	0.7

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	1/4/2017	14:35	9.5	12	7.2	1600	920
Downstream of SSO Discharge	1/4/2017	14:41	9.5	12	6.7	640	870



Water Quality Monitoring
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Event Date 3/21/2017
Street Address 8319 Strawberry Plains Pk.
Description Construction Failure- Dig In

Ground to Wet Weather Conveyance to Lyons Creek

Estimated unrecovered volume 5750 gallons

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
	3/21/2017	0.6	1.51

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	3/22/2017	08:58	10	11	6.9	1700	2400
Downstream of SSO Discharge	3/22/2017	09:13	10	11	7.1	1200	2400
Upstream of SSO Discharge	3/27/2017	12:16	9.8	15	7.7	250	190
Downstream of SSO Discharge	3/27/2017	12:01	10	15	8.0	190	150



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Event Date 5/2/2017
Street Address 2701 Chukar Rd.
Description Blockage - Debris

Wet-Weather Conveyance To Ten Mile Creek

Estimated unrecovered volume 2200 gallons

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
	5/2/2017	0	0.12

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	5/3/2017	12:38	8.3	17	7.2	240	280
Downstream of SSO Discharge	5/3/2017	12:20	9.0	17	7.7	820	1200
Upstream of SSO Discharge	5/9/2017	10:42	8.3	17	7.2	210	240
Downstream of SSO Discharge	5/9/2017	10:57	9.2	17	7.6	400	240



Water Quality Monitoring
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Event Date 5/10/2017
Street Address 4625 Asheville Hwy.
Description Broken System

Storm Drain to Trib to Loves Creek

Estimated unrecovered volume 400 gallons

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
	5/10/2017	0	0

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	5/11/2017	07:39	8.8	18	7.7	360	240
Downstream of SSO Discharge	5/11/2017	07:59	7.6	17	7.8	160	440



Water Quality Monitoring
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Event Date 5/25/2017
Street Address 603 Ben Hur Ave.
Description Blockage by construction debris

Pavement to Catch Basin to Storm Sewer to Unnamed Tributary to Williams Creek

Estimated unrecovered volume 2500 gallons

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
	5/25/2017	0	1.61

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	5/26/2017	08:27	6.4	18	7.2	2600	1000
Downstream of SSO Discharge	5/26/2017	08:40	8.1	18	7.6	1700	1700
Upstream of SSO Discharge	7/10/2017	12:10	6.0	21	7.0	2000	690
Downstream of SSO Discharge	7/10/2017	11:59	7.8	22	7.7	450	150



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Event Date 6/1/2017
Street Address 3306 Lands End Ln.
Description Grease

Ground to Grassy Creek

Estimated unrecovered volume 360 gallons

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
	6/1/2017	0.02	0.61

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	6/1/2017	14:06	7.5	20	7.6	620	730
Downstream of SSO Discharge	6/1/2017	14:20	4.3	20	7.6	> 60000	> 2400
Upstream of SSO Discharge	6/8/2017	09:02	7.5	17	6.7	390	440
Downstream of SSO Discharge	6/8/2017	08:50	7.4	17	6.9	820	1700
Upstream of SSO Discharge	6/12/2017	11:35	6.9	22	6.8	1300	610
Downstream of SSO Discharge	6/12/2017	11:45	7.4	19	6.7	510	650



Water Quality Monitoring
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Event Date 6/17/2017
Street Address 1525 Tennessee Ave.
Description Blockage, Debris Third Party

Ground to Storm Drain to Third Creek

Estimated unrecovered volume 500 gallons

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
	6/17/2017	0	0

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	6/18/2017	07:46	8.3	19	7.0	1100	730
Downstream of SSO Discharge	6/18/2017	07:30	7.9	20	7.3	50000	1100
Upstream of SSO Discharge	6/26/2017	08:26	8.7	19	7.2	3000	1600
Downstream of SSO Discharge	6/26/2017	08:40	9.0	18	7.6	390	520



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Event Date 7/13/2017
Street Address 6110 Papermill Dr.
Description Blockage debris

Tributary to Fourth Creek

Estimated unrecovered volume 2000 gallons

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
	7/13/2017	0.16	0.16

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	7/13/2017	15:56	8.5	21	7.7	99	96
Downstream of SSO Discharge	7/13/2017	15:45	7.6	21	7.5	1500	1100
Upstream of SSO Discharge	7/17/2017	10:35	8.4	19	7.4	570	920
Downstream of SSO Discharge	7/17/2017	10:20	7.8	19	7.4	560	370



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Event Date 8/17/2017
Street Address 317 McConnell St.
Description Construction Failure Dig In (Boring) Third Party

Ground to Storm Drain to Williams Creek

Estimated unrecovered volume 200 gallons

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
	8/17/2017	0.24	0.27

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	8/17/2017	14:11	6.9	24	7.7	2300	920
Downstream of SSO Discharge	8/17/2017	14:36	7.5	24	7.8	910	370



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Event Date 9/4/2017
Street Address 1401 Cassell Dr.
Description Blockage - Grease

Ground to Wet Weather Conveyance to Second Creek

Estimated unrecovered volume 750 gallons

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
	9/4/2017	0	0.39

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	9/6/2017	14:12	6.6	19	7.2	2600	920
Downstream of SSO Discharge	9/6/2017	14:22	8.8	18	7.6	1100	340



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Event Date 10/5/2017
Street Address 6909 Kingston Pike
Description Construction failure by third party - blockage by construction debris

Ground to Wet Weather Conveyance to Unnamed Tributary to Fourth Creek

Estimated unrecovered volume 6100 gallons

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
	10/5/2017	0	0

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	10/5/2017	15:55	9.1	18	7.9	81	99
Downstream of SSO Discharge	10/5/2017	15:41	8.9	18	7.4	99	110



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Event Date 10/6/2017
Street Address 5320 S. National Drive
Description Blockage - Roots and Debris

Ground to Wet Weather Conveyance to French Broad River

Estimated unrecovered volume 11200 gallons

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
	10/6/2017	0	0

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	10/6/2017	14:33	7.1	23	7.0	31	1
Downstream of SSO Discharge	10/6/2017	14:20	7.2	24	7.1	9	6



Water Quality Monitoring
Report

Spill Impact Sampling Results Water Quality Monitoring Program

Knoxville Utilities Board
Water Quality Laboratory
Debbie Ailey, Lab Supervisor
835 East Jackson Avenue
Knoxville, Tennessee 37915
(865) 594-8286 Fax: (865)594-8245

Event Date 10/31/2017
Street Address 5112 Schubert Rd.
Description Blockage - Roots

Ground to Wet Weather Conveyance to Second Creek

Estimated unrecovered volume 1100 gallons

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
	10/31/2017	0	1.03

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	10/31/2017	14:09	6.4	16	7.2	530	770
Downstream of SSO Discharge	10/31/2017	13:50	7.2	16	7.5	560	610



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Event Date 11/10/2017
Street Address 5619 E. Governor John Sevier Hwy
Description Rainfall in the area produced I&I and high flows in the sewer mains; evidence found after event had subsided

Wet Weather Conveyance to Holston River

Estimated unrecovered volume unknown gallons

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
	11/10/2017	0	2.28

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	11/10/2017	11:10	7.5	16	8.0	45	56
Downstream of SSO Discharge	11/10/2017	11:27	7.7	16	7.4	54	53



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Event Date 11/20/2017
Street Address 5619 E. Governor John Sevier Hwy
Description Pump station - Electrical failure

Wet Weather Conveyance to Holston River

Estimated unrecovered volume 5 gallons

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
	11/20/2017	0	0.25

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	11/20/2017	10:42	9.8	12	7.5	14	16
Downstream of SSO Discharge	11/20/2017	10:55	9.8	12	7.3	27	30



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Event Date 12/6/2017
Street Address 1219 Hilton Rd.
Description Blockage - Debris and Grease

Pavement to Storm Drain to Wet Weather Conveyance to Third Creek

Estimated unrecovered volume 310 gallons

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
	12/6/2017	0	0.84

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	12/6/2017	10:53	9.5	11	7.4	350	550
Downstream of SSO Discharge	12/6/2017	11:10	9.8	11	7.7	540	1200
Upstream of SSO Discharge	12/13/2017	11:52	11	9	7.6	54	70
Downstream of SSO Discharge	12/13/2017	11:37	11	8	7.8	45	45



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Event Date 12/28/2017
Street Address 4315 Clinton Highway
Description Blockage - Roots, Grease, and Debris

Ground to Storm Drain to Second Creek

Estimated unrecovered volume 550 gallons

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
	12/28/2017	0	0

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	12/28/2017	13:50	8.7	13	6.9	130	140
Downstream of SSO Discharge	12/28/2017	14:06	10	12	7.4	1600	1300
Upstream of SSO Discharge	1/4/2018	10:40	8.6	9.0	7.5	140	130
Downstream of SSO Discharge	1/4/2018	10:22	11	10	7.7	340	460

Knoxville Utilities Board

Water Quality Monitoring Program

Investigative Water Quality Monitoring Report

1/30/17 - 12/26/17

Table 1: Baker Creek Investigative Sampling

Location	Collection Date	Weather	Dissolved Oxygen	Water Temp	Water pH	Fecal Coliform	<i>E. coli</i>
			(mg/L)	(°C)	s.u.	(CFU/ 100mL)	(MPN)
Baker Creek Stream Mile 1.10	1/30/2017	Dry	11	10	7.4	360	520
Baker Creek Stream Mile 2.00 at School	1/30/2017	Dry	10	10	7.6	500	390
	2/15/2017	Wet	9.7	11	7.4	2200	2400
	3/27/2017	Wet	9.4	13	7.6	2000	> 2400
	4/12/2017	Dry	9.0	16	7.5	1600	980
	5/17/2017	Dry	8.4	17	7.0	1500	1200
	6/21/2017	Dry	8.4	18	7.2	550	520
	7/19/2017	Dry	8.3	18	7.9	1200	610
	8/28/2017	Dry	8.4	18	7.6	1300	1400
	9/26/2017	Dry	8.2	17	7.3	1000	650
	10/30/2017	Wet	9.7	11	7.8	910	730
	11/17/2017	Dry	9.4	11	7.7	390	360
	12/26/2017	Wet	10	9.2	7.7	450	420

Table 2: Williams Creek Investigative Sampling

Location	Collection Date	Weather	Dissolved Oxygen	Water Temp	Water pH	Fecal Coliform	<i>E. coli</i>
			(mg/L)	(°C)	s.u.	(CFU/ 100mL)	(MPN)
Right Fork above Wms Creek 2.02 Parkview	9/21/2017	Dry	7.0	21	7.7	2400	2400
Left Fork above Wms Creek 2.02 MLK Blvd	9/21/2017	Dry	7.5	22	7.7	2300	870

Knoxville Utilities Board
Water Quality Monitoring Program

Investigative Water Quality Monitoring Report
6/13/2017 - 9/21/17

Table 3: Roseberry Creek Investigative Sampling

Location	Collection Date	Dissolved Oxygen	Water Temp	Water pH	Fecal Coliform	E. coli
		(mg/L)	(°C)	s.u.	(CFU/ 100mL)	(MPN)
Roseberry #1 - Below Shipetown Pump Station	6/13/2017	not analyzed for safety reasons			550	870
	7/13/2017				1400	390
	8/1/2017				420	160
	9/21/2017				460	360
Roseberry #2 - Three Points Rd	6/13/2017	7.7	20	7.7	280	250
	7/13/2017	7.6	21	7.5	1700	340
	8/1/2017	8.0	20	8.0	550	190
	9/21/2017	7.6	19	7.9	270	230
Roseberry #3 - Millertown Pike	6/13/2017	8.0	20	7.3	200	290
	7/13/2017	8.2	22	8.0	370	260
	8/1/2017	8.1	20	8.0	250	210
	9/21/2017	7.8	19	7.9	170	91
Dunsmore	Sampling location added in July					
	7/13/2017	7.4	20	7.8	1000	1000
	8/1/2017	7.4	18	6.2	420	290
	9/21/2017	5.1	20	7.2	99	99
Roseberry #4 - Washington Pike (below 4")	6/13/2017	7.4	18	6.8	2400	> 2400
Washington Pike (above 4")*	7/13/2017*	7.6	20	7.2	1100	770
	8/1/2017*	7.3	18	7.0	560	460
	9/21/2017	not analyzed for safety reasons				

Appendix E

Grease-Related SSO Summary Table

Grease-Related SSOs

	Date			Building	Grease	Grease	Grease	Grease &	Grease, Roots	Customers	Residential Letters	Cans, Bags, and	Commercial	# of Feet	Blockage Abatement*
	of SSO	Address	SSO	Backup	Only	& Roots	& Debris	I & I	& Debris	Contributing to SSO	Mailed	Spatulas Mailed	Inspections	Cleaned	Frequency
1	1/8/2017	413 S. Gay Street - BBU	-	Yes	Yes	-	-	-	-	33	14	14	19	338	12 Month
2	3/10/2017	2900 Rennoc Rd - MH 13-27	Yes	-	-	-	Yes	-	-	148	137	137	11	160	12 Month
3	5/31/2017	7109 Lavender Lane - MH 11-264	Yes	-	-	Yes	-	-	-	2	2	2	0	169	24 Month
4	6/1/2017	3306 Lands End Lane - MH 21-6	Yes	-	Yes	-	-	-	-	206	206	206	0	378	12 Month
5	6/4/2017	1900 E. Magnolia Ave - Lateral Cleanout	Yes	Yes	-	-	Yes	-	-	11	0	0	11	213	12 Month
6	7/30/2017	2717 Rushland Park Blvd - MH 48-140	Yes	-	-	-	Yes	-	-	184	184	184	0	498	12 Month
7	9/4/2017	1401 Cassell Dr. - MH 14-103	Yes	-	Yes	-	-	-	-	124	121	121	3	235	1 Month
8	9/13/2017	1211 Maryland Ave - MH 21-86	Yes	-	-	-	Yes	-	-	16	15	15	1	278	24 Month
9	10/5/2017	1939 Massachusetts Ave - BBU	-	Yes	Yes	-	-	-	-	12	12	12	0	178	6 Month
10	10/7/2017	4505 Joe Lewis Rd - MH 27-289	Yes	-	Yes	-	-	-	-	207	206	206	1	240	12 Month
11	10/19/2017	230 Dry Gap Pike - MH 16-70 (originally was 119 Caron Drive)	Yes	-	-	-	Yes	-	-	530	530	530	0	353	24 Month
12	12/6/2017	1219 Hilton Rd - MH 10-65	Yes	-	-	Yes	-	-	-	81	65	65	16	268	6 Month
13	12/28/2017	4315 Clinton Hwy - MH 14-143	Yes	-	-	-	-	-	Yes	237	230	230	7	35	24 Month
										1791	1722	1722	69		

*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
Mini-Basin 01A1	Kuwahee	First Creek	1	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Completed 01/03/17
Longview Road, Kenesaw Avenue, N Bellemeade Avenue, 17th Street, Central Avenue Pike, Highland Avenue, Maynard Avenue, Schaad Road and Dale Avenue Shortline Sewer Replacement	Kuwahee	Third Creek, Second Creek	34, 23, 29, 15, 50, 5, 38	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 01/06/17
Kenilworth Quick Bid (CO in 04A1) CN 650	Kuwahee	Third Creek	38	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 02/22/17
Fountain Road, Amber Street and Strawberry Plains Pike Sewer Rehabilitation Project	Kuwahee, Loves Creek	First Creek, Loves Creek	3, 18, 67	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 03/01/17
First Creek Regas Square Sanitary Sewer Rehab CN 671	Kuwahee	First Creek	30	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 04/11/17
Second Creek Central Ave Pike, Gwinfield Ave Series CN 604	Kuwahee, Fourth Creek	Second Creek, Fourth Creek, South Knox	5, 37, 40, 39	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 05/03/17
Mini-Basin 20A7	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 Completed 06/23/17
400 Block N Broadway CN 681	Kuwahee	Second Creek	23	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 07/07/17
Baker Ave Series CN 528	Kuwahee	South Knox, Second Creek, Knob Creek	39, 40, 35a, 41	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 08/11/17
Mini-Basins 04A1a & 04C1	Kuwahee	First Creek	4	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Completed 08/18/17
Volunteer Blvd Quick Bid CN 554	Kuwahee	Second Creek	35a	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 08/28/17
Olive Street Quick Bid CN 932 (CO 16D1)	Kuwahee	Williams Creek	25	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Completed 09/25/17
Papermill 18" Point Repair	Fourth Creek	Fourth Creek	33	Emergency Repair of sanitary sewer.	Construction Project Completed 12/05/17
Williams Creek Trunkline	Kuwahee	Williams Creek	31	Trunkline Rehabilitation/Replacement.	Construction Project Completed 08/27/17
Volunteer Blvd Shortline	Kuwahee	Second Creek	35a	Shortline Sewer Replacement Project consists of localized sewer replacement of higher priority sewer mains.	Construction Project Underway - Estimated Completion 1/26/18
Mini-Basin 16D1	Kuwahee	First Creek	16	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Underway - Estimated Completion 05/01/2018
Mini-Basin 32A2	Fourth Creek	Fourth Creek	32a	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Underway - Estimated Completion 06/22/18
Loves Creek - Eastwood Trunkline CN 1004	Loves Creek	Loves Creek	63	Trunkline Rehabilitation/Replacement.	Construction Project Underway - Estimated Completion 04/5/18

IRP Projects

Project	Plant	Watershed	Basin	Description	Status
Minibasin 10D1	Kuwahee	Second Creek	10	Mini-Basin Sewer Replacement Project consists of comprehensive analysis of inspection data from the area to determine appropriate upgrades.	Construction Project Underway - Estimated Completion 01/19/18
South Haven Phase 1 CN 929	Kuwahee	South Knox	40	Trunkline Rehabilitation/Replacement.	Construction Project Underway - Estimated Completion 06/30/18
Three Points PS Upgrades	Eastbridge	Eastbridge	114	Pump station and appropriate force main upgrade.	Construction Project Underway - Estimated Completion 06/08/18
Minibasin 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 Underway - Estimated Completion 01/08/19