

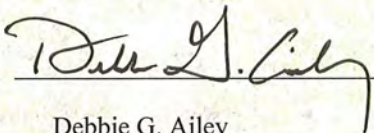
Quarterly Progress Report

Volume 32

First Quarter Report
January 1 through March 31, 2013

Submitted to EPA on April 29, 2013

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.



Debbie G. Ailey

4-29-13

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 following Quarterly Progress Report is submitted to fulfill the reporting requirements described in Section XIX of the Consent Decree.

Consent Decree language, pages 82-83: *“Beginning thirty (30) Days after the first Calendar Quarter following the Date of Entry, and thirty (30) Days after each Calendar Quarter thereafter until termination of the Consent Decree, KUB shall submit to the Parties, and simultaneously place in the PDR, a Quarterly Progress Report. Quarterly Progress Reports shall not be subject to the Public Review Requirement of Section VI.A.2. However, KUB shall receive questions and comments from the public for KUB’s review for a period of twenty (20) Days following placement in the PDR. Each Quarterly Progress Report shall contain:*

1. *A summary of compliance with and activities related to implementation of the Phase 1 CAP/ER and Phase 2 CAP/ER, including: the status of construction projects in comparison to the schedules that have been established pursuant to the Consent Decree for those projects; and schedule deadlines and milestones achieved during Calendar Quarter and expected during the next Calendar Quarter;*
2. *A summary of compliance with and activities related to implementation of the CPE and CCP;*
3. *A summary of implementation of and compliance with the Process Controls Program;*
4. *A summary of the implementation of the Capacity Assurance Program for the Calendar Quarter, including the number of, and anticipated flow from, sewer connections that have been authorized, by Sewerbasin, a description of the projects that have been authorized and the number of credits earned and banked by KUB that will be expended for those projects, by Sewerbasin, and any exceptions granted for connections for essential services;*
5. *Identification of any transfer of an ownership interest, operation, management, or other control of the Treatment Works, or any portion thereof.*
6. *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.*
7. *A spreadsheet and summary of all SSOs, Bypasses, Diversions and effluent limit violations that occurred during the previous Calendar Quarter. 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 reason for each SSO, the total SSO volume, the volume returned to the WCTS, and the volume not captured;*
 - 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.*
8. *The water quality monitoring data and other information required pursuant to Section VII.D.1.(e).(v).”*

KUB compiled this Quarterly Progress Report to detail the events that occurred during the first quarter of 2013 from January 1 through March 31. This is the thirty-second quarterly report required of KUB under this Consent Decree.

Report Organization

Section 1: Phase 1 CAP/ER and Phase 2 CAP/ER – Summarizes the compliance with and activities related to implementation of the Phase 1 CAP/ER and Phase 2 CAP/ER, including the status of construction projects in comparison to the schedules that have been established pursuant to the Consent Decree for those projects; and schedule deadlines and milestones achieved during the Calendar Quarter and expected during the next Calendar Quarter.

Section 2: Comprehensive Performance Evaluation and Composite Correction Plan – Summarizes the compliance with and activities related to the implementation of those deliverables.

Section 3: Process Controls Program – Summarizes the implementation of and compliance with the deliverable.

Section 4: Capacity Assurance Program – Summarizes the implementation of the Capacity Assurance Program for the Calendar Quarter, including the number of, and anticipated flow from, sewer connections that have been authorized, by sewerbasin, a description of the projects that have been authorized and the number of credits earned and banked by KUB that will be expended for those projects, by sewerbasin, and any exceptions granted for connections for essential services.

Section 5: Transfers of Ownership – Identifies any transfers of ownership interest, operation, management, or other control of the treatment works, or any portion thereof.

Section 6: Compliance and Non-Compliance with the Consent Decree – Describes the status of compliance or non-compliance with requirements of the Consent Decree.

Section 7: SSOs, Bypasses, Diversions, and Effluent Limit Violations – Provides a spreadsheet and summary of all SSOs, Bypasses, Diversions, and effluent limit violations.

Section 8: Water Quality Monitoring Data – Summarizes all sampling that was conducted, the results of the sampling, and the projected data collection for the reporting period.

Status of Deliverables

Below is a list of significant dates on which KUB submitted deliverables to EPA or received approval for deliverables. To date, KUB has submitted all deliverables in accordance with the schedule set forth in the Consent Decree.

January 30, 2013

- Submitted to EPA – Quarterly Progress Report 4th quarter 2012

February 28, 2013

- Submitted to EPA – Annual MOM Progress Report 2012

Section 1 Phase 1 CAP/ER and Phase 2 CAP/ER

Consent Decree language, pages 82-83: *“Each Quarterly Progress Report shall contain... A summary of compliance with and activities related to implementation of the Phase 1 CAP/ER and Phase 2 CAP/ER, including the status of construction projects in comparison to the schedules that have been established pursuant to the Consent Decree for those projects; and schedule deadlines and milestones achieved during Calendar Quarter and expected during next Calendar Quarter.”*

KUB began developing a Corrective Action Plan/Engineering Report (CAP/ER) in January 2004, following the completion of the Phase I Sanitary Sewer Overflow Evaluation Report (SSOER) required by the Agreed Order with the Tennessee Department of Environment and Conservation (TDEC) and, subsequently, the Consent Decree. The objective of the Phase I CAP/ER is to identify facility improvements needed to address the conditions causing SSOs occurring in the collection system during the period of 2001–2004 with the goal of eliminating the SSO locations on the Long-Term List and to support future growth needs. KUB submitted the Phase 1 CAP/ER to EPA on October 28, 2005. Comments were received from EPA on February 23, 2006. Per EPA’s letter, KUB submitted a 30-day response to EPA’s comments on March 27, 2006. The Revised Phase 1 CAP/ER was submitted to EPA on May 22, 2006, and subsequently approved by EPA on June 30, 2006. All work necessary to meet the objectives of the Phase 1 CAP/ER will be completed by June 30, 2013. The Phase 2 CAP/ER was submitted to EPA on September 9, 2009, and approved on March 22, 2010. All work necessary to meet the objectives of the Phase 2 CAP/ER will be completed by FY 2015.

EPA Approved Project Extensions and Changes

All previously approved project extensions and changes are listed below.

- **1-1 Upper First Creek Collector Project (Mini-basin 1A1, 2A2, and 3D1)** – revised completion date was FY 08/09 and was completed on schedule.
- **1-19 Edgewood Drive Rehabilitation Project** – revised completion date is FY 11/12. Project was completed ahead of schedule.
- **1-20 Vine Middle School Rehabilitation Project** – revised completion date was FY 07/08 and was completed as scheduled.
- **1-21 College Park Rehabilitation Project** – revised completion date was FY 11/12. An additional extension to January 31, 2013, was requested and approved. Project was completed ahead of schedule.
- **2-1 Lower Second Creek Replacement/Rehabilitation at I40/I275 Junction** – revised completion date was FY 09/10 and was completed as scheduled.
- **2-2 Lower Second Creek Replacement/Rehabilitation at Woodland** – revised completion date was FY 10/11. Additional extensions to FY 11/12 and then to January 31, 2013, were requested and approved. Project was completed ahead of schedule.
- **2-4 Dutch Valley Collector Rehabilitation (Sewershed 10B1)** – revised completion date was September 2007 and was completed as scheduled.
- **2-5 Rickard and Wilson Collector Rehabilitation (Sewershed 10C1)** – revised completion date was September 2007 and was completed as scheduled.
- **3-6 Interstate 40 and Middlebrook Pike Trunk Replacement Project** – revised completion date was FY 11/12. An additional extension to FY 12/13 was requested and approved.
- **3-7 Neyland Drive Trunk Replacement (Lower Third Creek Trunk Replacement)** – revised completion date is FY 12/13. Project was completed ahead of schedule.

- **4-2 Gleason Drive Collector Rehabilitation Project** – revised completion date was June 30, 2010, and was completed as scheduled.
- **4-3 Middlebrook Pike Rehabilitation (Sub-basin 27C3)** – revised completion date was June 30, 2010, and was completed as scheduled.
- **4-4 Northshore Drive Trunk Replacement Project** – revised completion date was FY 10/11. An additional extension to FY 11/12 was requested and approved. Project was completed ahead of schedule.
- **4-6 Shadyland Drive Rehabilitation (Sub-basin 36A2) Project** – revised completion date was June 30, 2010, and was completed as scheduled.
- **4-28 Queensridge (Queensbury) Pump Station Upgrade Project** – revised completion date is FY 11/12. Project was completed ahead of schedule.
- **S-1 Ginnbrook Pump Station Rehabilitation** – revised completion date was FY 08/09 and was completed as scheduled.
- **S-5 South Knoxville/Knob Creek Storage Facility** – Project was removed from CAP/ER and replaced with the project below.
- **Revised S-5 Neubert Springs Collector and West Ford Valley Trunk Rehabilitation** – revised completion date was FY 08/09 and was completed as scheduled.

Capital Improvement Plan for FY 04/05 – FY 12/13

The following is a list of facility improvement projects included in the Capital Improvement Plan for fiscal years 04/05 to 12/13. These projects were in various stages during the reporting period, including preliminary engineering, design, construction, and completion. Many of these projects are “find and fix” rehabilitation projects. Find work is defined as the inspection (i.e. flow monitoring, CCTV, manhole inspections, smoke testing, etc.) and design phase of the project. Fix is defined as the construction phase that may include manhole rehabilitation/replacement, main line rehabilitation/replacement, and lower lateral rehabilitation/replacement. Other projects are trunkline capacity improvements or wet-weather storage. Each of these projects is considered part of the overall Phase 1 CAP/ER.

Phase I CAP/ER Ongoing Projects

First Creek

All Phase I CAP/ER projects in the First Creek basin have been completed.

Second Creek

All Phase I CAP/ER projects in the Second Creek basin have been completed.

Third Creek

1. **3-6 Interstate 40 and Middlebrook Pike Trunk Replacement Project (East Fork of Third Creek Trunk Replacement)** – Constructability issues, property acquisitions, and permitting for this large diameter project required that the project completion date be extended until FY 12/13. The project conditions are along commercial, industrial, and transportation (roadway and railroad) corridors with challenging topography. Project will require coordination with future TDOT road improvement projects, extensive railroad permitting, environmental permitting, and property acquisition. The project has been broken into three phases to provide more effective delivery. Phase I, which consisted of the replacement of 3,200 ft of 30” pipe with 36” pipe, is complete. Phase II construction is underway and consists of the replacement of 3,400 ft of 18-30” pipe with 36” diameter pipe. Phase III construction is underway and consists of replacement of 1,800 ft of 18” pipe with 18-30” pipe. This project is scheduled to be completed by June 2013.

Fourth Creek

All Phase I CAP/ER projects in the Fourth Creek basin have been completed.

South Knox

All Phase I CAP/ER projects in the South Knox basin have been completed.

Loves Creek and Eastbridge

1. **L-7 Magnolia Avenue Rehabilitation** – Project is under construction. The expected completion date for this project is FY 12/13.

Williams Creek

All Phase I CAP/ER projects in the Williams Creek basin have been completed.

Phase I CAP/ER Completed Projects

First Creek

1. **1-1 Upper First Creek Collector Project (Mini-basin 1A1, 2A2, and 3D1)** – Estimated total quantities: 10,235 ft gravity sewer replaced/rehabbed; 32 new manholes installed; 175 manholes rehabbed; 69 private laterals reinstated.
2. **1-2 Lower First Creek Collector Project (Sub-Basin 8B2)** – Replaced approximately 10,525 ft of 8” – 12” sewer, and rehabilitated approximately 14,000 ft of 8” sewer.
3. **1-3 First Creek Storage Tanks** – Designed and built 9 million gallon (MG) wet-weather storage tank to control sewer overflows near Old Broadway during rain events. Designed and built 5 MG wet-weather storage tank to control sewer overflows near North Hoitt Avenue during rain events.
4. **1-4 Lower Fountain City Pipe Replacement Project** – Replaced 20 manholes. Replaced approximately 2,715 ft of sewer mains and rehabilitated 142 ft of sewer.
5. **1-5 Upper Fountain City Trunkline Replacement Project** – Replaced and upgraded approximately 6,000 ft of trunk sewer connecting lines in upper Fountain City to Upper First Creek storage tank. The project addressed SSOs along Broadway, Cedar Lane, and Fountain Road.
6. **1-6 Sub-basin 08A1 Rehabilitation Project** – Rehabilitated approximately 21,067 ft, and replaced approximately 10,273 ft of sewer.
7. **1-11 Fountain City Trunkline Replacement Phase IV Project** – Replaced approximately 2,991 ft of sewer.
8. **1-12 Cedar Lane Area Sanitary Sewer Rehabilitation Project** – Rehabilitated approximately 8,500 ft of sewer.
9. **1-13 Fair Drive Phase II** – Rehabilitated 3,691 ft and replaced 2,458 ft of existing 8-12” gravity sewer along Fair Drive.
10. **1-14 Wilderness Road Area Gravity Sewer Replacement Project** – Replaced approximately 5,440 ft of sewer.
11. **1-15 Replace trunk sewer upstream of lower storage unit** – Replaced 1,600 ft of existing 42” and 130 ft of 24” pipe.
12. **1-16 Clearview Street Sewer Project** – Replaced approximately 4,468 ft of sewer.
13. **1-17 Fountain Road Trunkline Sewer Improvement Project** – Upsized 3,700 ft of gravity sewer using open cut and pipe bursting methods. Replaced manholes and services.

14. **1-18 Greenfield Drive Rehabilitation Project** – Replaced approximately 3,300 ft of existing sewer with 8” and 12” PVC and ductile iron pipe.
15. **1-19 Edgewood Drive Rehabilitation Project** – Replaced 519 ft of 8” sewer, 179 ft of 12” sewer; rehabilitated 22,300 ft of 8” sewer, and 60 ft of 12” sewer using CIPP and pipebursting. Project also included rehabilitation of 662 vertical feet and replacement of 10 manholes.
16. **1-20 Vine Middle School Rehabilitation Project** – Completed find and fix work to identify cause of overflow in the vicinity of 214 Bertrand Street. Replaced approximately 200 ft of 8” and 100 ft of 15” sewer and rehabilitated 987 ft of 16” sewer.
17. **1-21 College Park Rehabilitation Project** – Replaced approximately 446 ft of 8” PVC and rehabilitated 1,581 ft of 8” sewer using pipebursting. Project also included replacement of six manholes.
18. **1-22 E. Jackson Avenue Rehabilitation Project** – Replaced 3,485 ft of 8” sewer using pipebursting, replaced another 84 ft of 8” gravity sewer, rehabilitated 425 ft of sewer using CIPP, and replaced 17 manholes.
19. **1-23 Oglewood Avenue Rehabilitation Project** – The summary above for the Edgewood Drive Rehabilitation Project includes the Oglewood Avenue Rehabilitation Project, since those projects were combined.
20. **1-24 Fulton Short Line Project** – Replaced approximately 520 ft of sewer that contributes to the cause of overflow in the vicinity of 214 Bertrand Street.
21. **1-25 First Creek Sub-basins 3 and 4 Rehabilitation Project** – Rehabilitated 26,500 ft of line and replaced 10,500 ft. Project included CCTV, smoke testing, and manhole inspections.
22. **1-26 Cherry Street Rehabilitation Project** – Upsized approximately 1,150 ft of sewer trunklines and replaced two manholes and rehabilitated two manholes.
23. **1-27 Fair Drive Rehabilitation Project** – Preliminary engineering work discovered that 567 ft of 8” gravity main and three manholes were rehabilitated after the SSO occurred. No additional work is necessary to address the overflow at this location.

Second Creek

1. **2-1 Lower Second Creek Replacement/Rehabilitation at I40/I275 Junction** – Replaced 280 ft and three manholes, pipe burst 1,959 ft; CIPP was used to rehab 2,313 ft, 29 manholes were rehabbed, and 50 laterals were reinstated.
2. **2-2 Lower Second Creek Replacement/Rehabilitation at Woodland** – Replaced approximately 1,700 ft of trunk sewer and rehabilitated approximately 600 ft of trunk sewer and replaced ten manholes.
3. **2-3 Second Creek 23E1** – Inspected a total of 28,067 ft of pipe for find and design rehabilitation needs for Mini-basin 23E1. Project included inspection (CCTV, smoke test, manhole inspections), design, and rehabilitation of lines requiring repair.
4. **2-4 Dutch Valley Collector Rehab (Mini-basin 10B1)** – Assessed and rehabilitated, where needed, approximately 16,400 ft of collector pipe. This project was combined with the Rickard and Wilson Collector Rehab project below.
5. **2-5 Rickard and Wilson Collector Rehab (Mini-basin 10C1)** – Assessed and rehabilitated, where needed, approximately 19,000 ft of collector pipe. Project was combined with Mini-basin 10B1.
6. **2-6 Second Creek Pilleaux PS Collector** – Rehabilitated 19,600 ft of collection system piping in mini-basin 05A4. Project included inspection (CCTV, smoke test, manhole inspections), design, and rehabilitation of lines requiring repair.
7. **2-8 Second Creek Sub-basin 15 Rehabilitation** – Rehabilitated approximately 23,500 ft of pipe in mini-basin 15D2. Project included inspection (CCTV, smoke test, manhole inspections), design, and rehabilitation of lines requiring repair.

8. **2-9 Second Creek Trunk Sewer Improvements Phase I** – Replaced approximately 4,100 ft of existing trunkline with 30" sewer.
9. **2-10 Second Creek Trunk Sewer Improvements Phase II** – Replaced approximately 3,700 ft of existing trunkline with 30" sewer and replaced approximately 1,400 ft of existing trunkline with 36" sewer
10. **2-11 Burnside Rehabilitation Project** – Replaced 517 ft of 8" sewer and 1,651 ft of 12" sewer using pipe bursting. Six manholes were replaced and 3 were rehabbed.
11. **2-12 Camelia Road Rehabilitation Project** – Replaced 430 ft of 8" pipe and two manholes. 220 ft of 8" pipe was rehabbed using CIPP.
12. **2-13 Cedar Heights Road Rehabilitation Project** – Replaced 123 ft of 8" pipe and rehabbed 263 ft of 8" pipe with CIPP.
13. **2-14 Central Avenue Pike Rehabilitation Project** – Replaced 102 ft of 10" pipe, 25 ft of 18" pipe, two manholes. CIPP was used to rehab 659 ft of 8" pipe.
14. **2-15 1000 Block Elm Street Rehabilitation Project** – Replaced 632 ft of 8" sewer and nine manholes. Rehabbed 1,400 ft of 8" sewer using CIPP and rehabbed three manholes. One lateral was reinstated.
15. **2-16 1600 Block Elm Street Rehabilitation Project** – Pipe burst 285 ft of existing 8" sewer and replaced two manholes.
16. **2-17 Shasta Drive Rehabilitation Project** – Replaced 714 ft of 8" pipe and 6 manholes. CIPP was used to rehab 2,149 ft of 8" pipe.
17. **2-18 Nicholas Road - Clinton Highway Rehabilitation Project** – Replaced 405 ft of 8" pipe and one manhole.
18. **2-19 Cumberland Avenue Rehabilitation Project** – Replaced 1,448 ft of 8" sewer and 10 manholes. Rehabbed 525 ft of 8" sewer using CIPP and reinstated 12 laterals.
19. **2-20 Sierra Road Rehabilitation Project** – CIPP was used to rehab 969 ft of 8" pipe.
20. **2-21 Morelia Avenue Rehabilitation Project** – Replaced 382 ft of 8" sewer and two manholes. Rehabbed three manholes, 2,375 ft of 8" sewer using CIPP, and reinstated 74 laterals.
21. **2-22 Dale Avenue Rehabilitation Project** – The 8" main was replaced in 2003 with a 12" ductile iron main in Dale Avenue. No additional overflows have occurred.

Third Creek

1. **3-2 Third Creek Basin 11** – Assessed and rehabilitated approximately 129,657 ft in Sub-basin 11. Project included inspection (CCTV, smoke test, manhole inspections), design, and rehabilitation of lines requiring repair.
2. **3-3 Third Creek Basin 9 Phase I** – Assessed and rehabilitated collector sewer in 9A1, 9A2, 9A4, and 9D1 (CAP/ER Scope). **Phase II** – Designed rehabilitation methods for collectors in Sub-basin 9 (approximately 177,900 ft). Project included inspection (CCTV, smoke test, manhole inspections), design, and rehabilitation of lines requiring repair.
3. **3-4 Upper McKamey Trunk Sewer Replacement** – Project replaced approximately 1,600 ft of 12" and 15" trunk sewer. This project further enhanced improvements already made in Third Creek to address overflows along McKamey Road. **Third Creek Road Trunk Sewer Replacement** – Project included approximately 3,100 ft of 24" and 30" trunkline. The project replaced and upgraded the trunkline from Western Avenue along Third Creek to the Third Creek storage facility. It addressed overflows occurring at 5600 Western Avenue. Project was extended approximately 2,000 ft to reach the new location of the Third Creek Storage Facility at the KUB Hoskins Center.
4. **3-5 Third Creek Storage Facility** – Designed and constructed 4.5 MG wet-weather storage tank to control sewer overflows near Western Avenue and Third Creek Road during rain events.

5. **3-7 Neyland Drive Trunk Replacement (Lower Third Creek Trunk Replacement)** – Replaced approximately 4,600 ft of sewer with 48” CCFMP, sliplined 685 ft of sewer with 42” CCFMP and replaced 34 manholes. The inverted siphon near the mouth of Third Creek was also replaced.
6. **3-8 Third Creek Bike Trail Trunk Replacement** – Improvements to the sewer hydraulics were made at the connection of the 12” main to a 36” trunk sewer running south of Sutherland Avenue along Third Creek bike trail. Improvements included approximately 50 feet of 12” line and a new manhole. Additionally, rehabilitation in SB 28B1 has reduced the peaks to the 12” line.
7. **3-11 Sutherland Avenue Collector Rehabilitation Project (Sub-basin 28B1)** – Replaced 303 ft of existing sewer and rehabilitated 3,332 ft of existing sewer collectors in mini-basin 28B1. Project included inspection (CCTV, smoke test, manhole inspections), design, and rehabilitation of lines requiring repair.
8. **3-12 Clinch and 21st Street Collector Rehabilitation Project (Sub-basin 35B3)** – Replaced approximately 2,563 ft of existing sewer, rehabilitated 3,094 ft and replaced/rehabbed 25 manholes.
9. **3-14 McKamey Road Interconnection Project** – Analysis that occurred during preliminary engineering for this project determined that it had been adequately addressed by previous construction work.
10. **3-15 Ball Camp Pike Improvement Project** – Analysis that occurred during preliminary engineering for this project determined that it had been adequately addressed by previous construction work.
11. **3-16 Painter Avenue Trunk Replacement Project** – Original scope was changed from trunkline upsizing to collection system rehabilitation/replacement in Mini-basin 28b1. Pipeburst approximately 17,800 ft of existing sewer, rehabilitated 550 ft and replaced/rehabbed 61 manholes
12. **3-17 McKamey Road Relief Project** – Replaced approximately 3,600 ft of 15” and 1,400 ft of 18” sewer.
13. **3-20 Citico Street Rehabilitation Project** – Project was combined with 3-23 Hillvale Circle Rehabilitation Project, 3-24 Montgomery Avenue Rehabilitation Project, and 3-27 Montgomery Avenue Rehabilitation Project. Combined projects replaced approximately 22,500 ft of 8” sewer and 28 manholes.
14. **3-21 Deerfield Road Rehabilitation Project** – Pipeburst approximately 600 ft of existing gravity sewer and replaced two manholes.
15. **3-22 Fountain Drive Rehabilitation Project** – Replaced approximately 750 ft of existing sewer, rehabilitated 800 ft and replaced/rehabbed nine manholes.
16. **3-23 Hillvale Circle Rehabilitation Project** – Project was combined with 3-20 Citico Street Rehabilitation Project, 3-24 Montgomery Avenue Rehabilitation Project, and 3-27 Montgomery Avenue Rehabilitation Project. Combined projects replaced approximately 22,500 ft of 8” sewer and 28 manholes.
17. **3-24 Montgomery Avenue Rehabilitation Project** – Project was combined with 3-20 Citico Street Rehabilitation Project, 3-23 Hillvale Circle Rehabilitation Project, and 3-27 Montgomery Avenue Rehabilitation Project. Combined projects replaced approximately 22,500 ft of 8” sewer and 28 manholes.
18. **3-25 Rolling Ridge Interconnection Project** – Pump station was decommissioned and 1,950 ft of new gravity sewer was installed to divert flow from the station into existing gravity sewer.
19. **3-26 PCP, CPE and CCP** – Completed wastewater evaluation studies of the Kuwahee WWTP.
20. **3-27 Montgomery Avenue Rehabilitation Project** – Project was combined with 3-20 Citico Street Rehabilitation Project, 3-23 Hillvale Circle Rehabilitation Project, and 3-24

Montgomery Avenue Rehabilitation Project. Combined projects replaced approximately 22,500 ft of 8" sewer and 28 manholes.

21. **3-29 Highland Hills Road Rehabilitation Project** – Project was combined with 3-20 Citico Street Rehabilitation Project, 3-23 Hillvale Circle Rehabilitation Project, 3-24 Montgomery Avenue Rehabilitation Project, and 3-27 Montgomery Avenue Rehabilitation Project. Combined projects replaced approximately 22,500 ft of 8" sewer and 28 manholes.

Fourth Creek

1. **4-1 Chukar Road Rehabilitation** – Replaced 1,600 ft of pipe and nine manholes; rehabbed 900 ft of pipe and nine manholes.
2. **4-2 Gleason Road Rehabilitation** – Replaced 980 ft of 8" pipe and 12 manholes. CIPP was used to rehab 640 ft of 8" pipe and 480 ft of 12" pipe.
3. **4-3 Middlebrook Pike Rehabilitation** – Replaced 190 ft of 8" pipe and two manholes. CIPP was used to rehab 2,000 ft of 8" pipe. Two manholes were rehabbed as well.
4. **4-4 Northshore Drive Trunk Sewer Replacement** – Installed approximately 3,375 ft of 36" trunk sewer, 260 ft of smaller diameter trunk sewer, and replaced 29 manholes.
5. **4-6 Shadyland Drive Rehabilitation** – Replaced 1,700 ft of 10" pipe and 9 manholes. CIPP was used to rehab 1,000 ft.
6. **4-17 Walker Springs Storage Facility** – Designed and constructed 3.25 MG wet-weather storage tank to control sewer overflows near Walker Springs Pump Station during rain events.
7. **4-18 Papermill Drive Phases I, II, and III** – Designed and constructed replacement of approximately 4,000 ft of 15", 18", and 2,100 ft of 36" sewer in the Papermill Drive area to increase conveyance capacity and reduce sewer overflows.
8. **4-19 Northshore Drive Rehabilitation Project** – Raised manholes 6, 7, and 8 to create additional storage in the trunkline upstream of the Fourth Creek WWTP.
9. **4-21 Black Bear Road Project** – Replaced approximately 261 ft of existing 8" sewer and rehabilitated one manhole. Project included CCTV, manhole inspections, and smoke testing.
10. **4-22 Nightingale Lane Project** – Completed repairs of two manholes to address overflows in the vicinity of 6614 and 6617 Nightingale Lane.
11. **4-23 5205 Bent River Blvd Project** – Replaced air release valves, flushed the low pressure force main, and replaced the grinder pump at 5205 Bent River Blvd.
12. **4-24 Kerri Way Project** – Replaced approximately 439 ft of existing 8" sewer and five manholes. Approximately 92 ft of existing 8" sewer was rehabilitated. Project included CCTV, manhole inspections, and smoke testing.
13. **4-25 Lonas Drive Project** – Replaced approximately 326 ft of existing 8" sewer and five manholes. Approximately 4,688 ft of existing 8" sewer and nine manholes were rehabilitated. Project included CCTV, manhole inspections, and smoke testing.
14. **4-26 Midpark Drive Project** – Replaced two manholes. Approximately 440 ft of existing 8" sewer and three manholes were rehabilitated. Project included CCTV, manhole inspections, and smoke testing.
15. **4-27 Southfork Project** – Project was completed in conjunction with 4-1 Chukar Road Rehabilitation Project. Replaced 88 feet of 8 inch pipe and two manholes. Rehabilitated 140 feet of 8 inch pipe using CIPP.
16. **4-28 Queensridge (Queensbury) Pump Station Upgrade Project** – The terminal manhole for the Queensbury force main has been replaced and the piping configuration for this manhole was also adjusted to lessen pressure restrictions allowing access to the force main for cleaning. Both pumps were also replaced.

17. **4-31 Kingston Pike @ Gallaher View Project** – Replaced one manhole. Approximately 1,068 ft of existing 8” sewer and six manholes were rehabilitated. Project included CCTV, manhole inspections, and smoke testing.
18. **4-32 PCP, CPE and CCP** – Completed wastewater evaluation studies of the Fourth Creek WWTP.

South Knox

1. **S-1 Ginnbrook Pump Station** – Evaluated pump station and force main to ensure adequate capacity. Also included improvements to wet-well, pump system, and valve vault. The force main was re-routed.
2. **S-2 Blount Avenue Trunkline and Goose Creek Siphon Upgrade** – The trunkline upgrades between the siphon inlet structure and manhole 63-2 are complete. This work was included in phases I and II of the Blount Avenue Trunkline Replacement/ Rehabilitation Project. This construction successfully addressed historical overflows.
3. **S-5 (Revised) Neubert Springs Collector and West Ford Valley Trunk Rehabilitation** – Rehabilitated 10,000 ft of 15” to 18” trunk sewer along West Ford Valley Road. Completed find work in sub-basins 41C1, 41C2, and 41A2. Completed trunkline rehabilitation on West Ford Valley. Rehabilitated collector line in sub-basin 41C1, C2, and A2.
4. **S-6 Sevier Avenue and Jones Street Collector Project** – Rehabilitated approximately 3,100 ft of existing sewer and rerouted approximately 352 ft of 8” sewer.
5. **S-9 Ellis Road Rehabilitation Project** – Rehabilitated 2,250 ft of gravity sewer and replaced six MHs.
6. **S-10 Mini-basin 41A6 Rehabilitation Project** – Rehabilitated approximately 21,000 ft of sewer in Sub-basin 41A6.
7. **S-11 Ford Valley Pump Station Rehabilitation Project** – Replaced pump station and added additional pump and generator to convey two-year storm within Capacity Assurance Program requirements.
8. **S-14 Stone Road Rehabilitation** – Rehabilitated approximately 13,500 ft of sewers in Mini-basin 41B1. Project included inspection (CCTV, smoke test, manhole inspections), design, and rehabilitation of lines requiring repair.
9. **S-15 Trunk Replacement in Sub-basin 40A2 Project** – 3411 ft of gravity sewer was replaced, 16 manholes were rehabbed, and 13 laterals were reinstated as part of this completed project.
10. **S-16 Woodson Drive Trunk Replacement and Pump Station Upgrade Project** – Replaced approximately 260 ft of existing sewer and performed upgrades at the pump station.
11. **S-17 Island Home Rehabilitation** – Rehabilitated 9,400 ft and replaced 1,200 ft of collector sewers to reduce I/I.
12. **S-18 South Haven Phase I and Phase II** – Relocated, rehabilitated, and upsized approximately 4,700 ft of existing collector sewers to increase conveyance capacity and reduce inflow and infiltration (I/I).
13. **S-19 Maryville Pike** – Designed and replaced 800–1,200 ft of 24” sewer located in Witherspoon Superfund site. Design rerouted sewer around site.
14. **S-20 Avenue A Rehabilitation Project** – CIPP was used to rehabilitate 1,585 ft of sewer. Seven manholes were rehabilitated, and 25 service lines were replaced.
15. **S-21 Alpine Avenue Rehabilitation Project** – Replaced approximately 2,790 ft of sewer, and used CIPP to rehabilitate approximately 600 ft. Twenty-four manholes were rehabilitated and ten were replaced.

16. **S-24 East Ford Valley Rehabilitation** – Rehabilitated approximately 16,000 ft of sewers in Mini-basin 41A4. Project included inspection (CCTV, smoke test, manhole inspections), design, and rehabilitation of lines requiring repair.
17. **S-25 South Haven Rehabilitation Phase III** – Rehabilitated approximately 21,700 ft of sewers in Mini-basin 40F1. Project included inspection (CCTV, smoke test, manhole inspections), design, and rehabilitation of lines requiring repair.
18. **S-26 Trunk Sewer Replacement Project in Sub-basin 40F1** – This project was constructed as part of the South Haven Phase III work. Replaced 704 ft of 8” sewer and six manholes. Five laterals were reinstated.
19. **S-27 Trunk Sewer Replacement Project in Sub-basin 41A4** – Replaced approximately 175 ft of existing sewer with 12” sewer and 3,700 ft of existing sewer with 15” sewer.
20. **S-28 Trunk Sewer Project** – This project was combined with Project S-2. Please see description above.
21. **S-29 4500 Block Sevierville Pike Rehabilitation Project** – Completed find and fix work to identify and address cause of overflow in the vicinity of 4523 Sevierville Pike.

Loves Creek and Eastbridge

1. **L-1 Asheville Highway West of I-40 Trunk Replacement** – Upgraded 4,688 ft of existing pipe and replaced 20 manholes. Project was completed in FY 09/10, two years ahead of schedule.
2. **L-2 Boyds Bridge Pike and Holston Hills Trunk Replacement** – Replaced 4,456 feet of trunkline and 31 manholes.
3. **L-3 River View Rehabilitation** – Rehabilitated 4,627 ft of gravity sewer along with eight manholes and replaced one manhole. This work addressed the SSO located on Riverview Drive. Project was completed in FY 09/10.
4. **L-4 Asheville Highway Rehabilitation** – Rehabilitated 1,560 ft of sewer mains and 12 manholes.
5. **L-5 Brentwood Shortline Repair** – Rehabilitated 440 ft of gravity sewer. This work addressed the SSO located on Brentwood Road. Project was completed in FY 09/10.
6. **L-6 Holston Hills Road Rehabilitation** – Rehabilitated 1,356 ft of sewer mains.
7. **L-8 McDonald Drive Rehabilitation** – Rehabilitated 285 ft of sewer main, replaced 316 ft of sewer main and two manholes.
8. **L-9 Shelbourne Road Rehabilitation** – 26,900 ft of gravity sewer was rehabilitated along with 30 manholes in sub-basins 6A4 and 6A5. This work addressed the SSO located on Shelbourne Road.
9. **L-10 Washington Court Rehabilitation** – Rehabilitated 872 ft of gravity sewer. This work addressed the SSO located on Washington Court. Project was completed in FY 09/10.
10. **EB-1 Maloneyville Road Rehabilitation** – Mechanical grinder was installed at Knox County Detention Facility to remove paper debris prior to discharge. Paper debris clogging the pumps was the cause of previous SSOs at Maloney Road pump station.
11. **EB-2 Strawberry Plains Pike Rehabilitation Project** – Replaced approximately 750 ft of 8” PVC and three manholes.

Williams Creek

1. **W-1 Sub-basin 19A2 Rehabilitation** – Performed rehabilitation in Sub-basin 19A1, 19B1, and 19A2/A3 to reduce R-value to 2 percent. Investigative work was performed on the approximately 105,000 ft in the entire Sub-basin 19 area. Completed rehabilitation projects in 19A1, 19B1, and 19A2/A3. The original CAP/ER completion date for the 19A2 project was in FY 10/11. This project was shifted to higher priority due to the large

number of private lateral problems and CSSAP rating. Project coincided with water quality monitoring program work in Williams Creek. Replaced approximately 14,000 ft of 8" – 12" sewer and rehabilitated approximately 9,500 ft of 8" – 12" sewer.

2. **W-2 Williams Creek Trunk Line Replacement** – Designed and replaced approximately 3,700 ft of 24" sewer to correct structural problems. In addition, the following project was completed to address force main issues in the area. **Delrose Force Main Replacement** – Replaced approximately 5,000 ft of 16" ductile iron pipe force main that had severe structural problems.
3. **W-3 Trunk Sewer Rehabilitation** – Replaced approximately 6,100 ft of existing sewer with 24" sewer.
4. **W-4 E. Fifth Avenue Sewer Replacement Project** – Replaced 956 ft with 8" PVC and four manholes.
5. **W-5 Groner Avenue Rehabilitation Project** – Replaced approximately 1,000 ft of sewer and rehabilitated approximately 3,600 ft of sewer and replaced 14 manholes.
6. **W-6 Selma Avenue – Harrison Street Rehabilitation Project** – Replaced 650 ft with 8" PVC and four manholes, and rehabbed 600 ft of 8" concrete.
7. **W-7 Sunset Avenue Rehabilitation Project** – Replaced 102 ft with 8" PVC.
8. **W-8 South Elmwood Street Rehabilitation Project** – Replaced 200 ft with 8" PVC and three manholes, and rehabbed 400 ft of 8" concrete.
9. **W-9 Williams Creek Trunk Line Replacement (Sub-basin 19A1)** – Performed rehabilitation in Sub-basin 19A1, 19B1, and 19A2/A3 to reduce R-value to 2 percent. Investigative work was performed on the approximately 105,000 ft in the entire Sub-basin 19 area. Completed rehabilitation projects in 19A1, 19B1, and 19A2/A3. The original CAP/ER completion date for the 19A2 project was in FY 10/11. This project was shifted to higher priority due to the large number of private lateral problems and CSSAP rating. Project coincided with water quality monitoring program work in Williams Creek. In lieu of replacement of 360 ft of 12" concrete with 15" sewer, problem was addressed by comprehensive rehab of Mini-basin 19A1. Project included replacement with 8,900 ft of 8" PVC, 97 ft with 10" PVC, 179 ft with 12" PVC, and 76 manholes. Also rehabbed 21,200 ft of 8" concrete and 180 ft of 12" concrete.

Phase II CAP/ER

The Phase II CAP/ER was submitted to EPA on September 9, 2009, and subsequently approved on March 22, 2010.

Phase II CAP/ER Ongoing Projects

First Creek

1. **FCR-1 1235 Watercress Drive** – Find and fix project to address overflow in vicinity of 1235 Watercress Drive in Mini-basin 07A2. This project is currently under construction. The expected completion date is June 2014.
2. **FCR-2 4600 Upchurch Road** – Find and fix project to address overflow in vicinity of 4600 Upchurch Road in Mini-basin 07A3. This project is currently under construction. The expected completion date is June 2014.

Second Creek

1. **SCR-1 4105 Central Avenue Pike** – Find and fix work to identify and address overflow in vicinity of 4105 Central Avenue Pike. CCTV, smoke testing, and manhole inspection have been completed. The project has been awarded and construction is expected to begin in April 2013. This project is expected to be completed in FY 13/14.

Fourth Creek

1. **4TH-2 Ten Mile Pump Station Removal** – The Ten Mile Pump Station will be taken out of service in late 2013. The KUB flows that are currently served by this pump station (from mini-basins 42 and 42A1) will be served by a First Utility District pump station that is currently under construction. The new First Utility District pump station is being constructed on property that is adjacent to KUB's Ten Mile Pump Station. KUB will pay First Utility District for treatment of these flows, and transfer the KUB pump station property to First Utility District.

South Knox

All Phase II CAP/ER projects in the South Knox basin have been completed.

Phase II CAP/ER Completed Projects

Fourth Creek

1. **4TH-1 6540 Creekhead Drive** – Sewer rehabilitation completed in Mini-basin 32A4 via the following projects.
2. **Pinebrook Drive Sewer Replacement** – Replaced 330 ft of 8" gravity sewer partially exposed by erosion of the bank of the adjacent drainage channel.
3. **Walker Springs Rehabilitation (Mini-Basin 32A4)** – Performed a two-phased construction project to address issues in Mini-basin 32A4. Replaced approximately 275 ft of 8" gravity sewer.

Loves Creek and Eastbridge

1. **LVS-1 1815 Wayland Road** – Replaced approximately 19,000 ft of 10" and 12" sewer.
2. **EBR-1 7612 Bud Hawkins Road** – Replaced the pump station with a gravity sewer system consisting of approximately 1,400 ft of 8" sewer, 2,100 ft of 12" sewer, 7,100 ft of 18" sewer and 6,000 ft of 20" sewer.

South Knox

1. **STH-1 820 Goldfinch Drive** – Replaced approximately 1,700 ft of 8" sewer and rehabilitated 2,800 ft of sewer using CIPP. Four manholes were replaced and 24 were rehabilitated.

Section 2 Comprehensive Performance Evaluation Program (CPE) and Composite Correction Plan (CCP)

Consent Decree language, pages 82-83: *"Each Quarterly Progress Report shall contain... A summary of compliance with and activities related to implementation of the CPE and CCP."*

The CPE was submitted to EPA on February 24, 2006, and was approved on July 24, 2006.

The CCP was submitted to the EPA on July 23, 2007. EPA disapproved it on January 4, 2008. The Revised CCP was submitted to EPA on January 5, 2009, and subsequently approved on January 20, 2009.

Kuwahee Wastewater Treatment Plant (WWTP) Phase I, Contract I

Construction started in June 2011 and is complete. This construction project was completed prior to the December 30, 2012, deadline.

Kuwahee WWTP Phase I, Contract II

Construction started in August 2011 and is substantially complete. This construction project was completed prior to the December 30, 2012, deadline.

Fourth Creek WWTP Phase I

The Fourth Creek WWTP Phase I is currently under construction and expected to be completed prior to the EPA substantial completion date of December 31, 2013. To date, construction is 60 percent complete. The contractor is starting on the installation of equipment for the high rate clarification system, installation of the switchgear, drying in of the chemical and generator buildings, and taking delivery of all new pumps. Upcoming major milestones are setting the generator and final excavation tasks for the wet-weather screening structure and chlorine contact tank.

Section 3 Process Controls Program

Consent Decree language, pages 82-83: *“Each Quarterly Progress Report shall contain... A summary of implementation of and compliance with the Process Controls Program.”*

The Process Controls Program (PCP) was initiated 14 times during this reporting period, resulting in two Diversion events at Kuwahee and two Diversion events at Fourth Creek WWTP.

Section 4 Capacity Assurance Program

Consent Decree language, pages 82-83: *“Each Quarterly Progress Report shall contain... A summary of the implementation of the Capacity Assurance Program for that Calendar Quarter, including the number of, and anticipated flow from, sewer connections that have been authorized, by Sewerbasin, a description of the projects that have been authorized and the number of credits earned and banked by KUB that will be expended for those projects, by Sewerbasin, and any exceptions granted for connections for essential services.”*

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 started reviewing building permits based on the approved CAP on June 6, 2006, which was within the 60-day timeframe for implementing the program after receiving EPA approval.

To review building permits more efficiently using the CAP criteria agreed on with the EPA, KUB worked with a consultant, Camp, Dresser, & McKee, to develop an Information Management System (IMS). The IMS assists KUB in managing the CAP program by determining the amount of wastewater each proposed building would add to KUB's wastewater system based on its location. The IMS also helps track rehabilitation credits that KUB earns through its CAP/ER and Management, Operations, and Maintenance (MOM) programs.

Appendix A includes a list of capital projects that KUB performed to gain rehabilitation credit in its sewer system. As stated in the Consent Decree, the list of authorized sewer connections was maintained and updated as necessary until full implementation of the CAP as approved by EPA. Therefore, the list will no longer be included as part of this quarterly report.

There were no exceptions granted for connections for essential services during this reporting period.

Section 5 Transfers of Ownership

Consent Decree language, pages 82-83: *“Each Quarterly Progress Report shall contain... Identification of any transfer of an ownership interest, operation, management, or other control of the Treatment Works, or any portion thereof.”*

There has been no transfer of an ownership interest, operation, management, or other control of the Treatment Works, or any portion thereof, during this reporting period.

Section 6 Compliance and Non-Compliance With the Consent Decree

Consent Decree language, pages 82-83: *“Each Quarterly Progress Report shall contain...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 Consent Decree.”*

6.1 Submission of Deliverables

To date, KUB has submitted all deliverables in accordance with the schedule set forth in the Consent Decree. The following sections detail all activity related to deliverables that occurred during the past quarter. Also noted are the dates each submittal was available for public comment in the Public Document Repository (PDR), when the deliverable was submitted to EPA, when EPA responded with comments, when KUB responded to those comments, and when EPA approval was received.

6.1.1 Quarterly Progress Report Fourth Quarter 2012

Consent Decree language, pages 82-83: *“Beginning thirty (30) Days after the first Calendar Quarter following the Date of Entry, and thirty (30) Days after each Calendar Quarter thereafter until termination of the Consent Decree, KUB shall submit to the Parties, and simultaneously place in the PDR, a Quarterly Progress Report.”*

On January 30, 2013, KUB submitted to EPA and placed in the PDR the Quarterly Progress Report for the fourth quarter 2012. This deliverable was not subject to the Public Review Requirement of Section VI.A.2, but was available for public comment from January 30, 2013, until February 19, 2013. No comments were received during that period.

6.1.2 Annual MOM Progress Report 2012

Consent Decree language, page 84: *“Beginning on March 1, 2006, and every twelve (12) Months thereafter until termination of this Consent Decree, KUB shall submit to the Parties, and simultaneously place in the PDR, an Annual MOM Progress Report.”*

On February 28, 2013, KUB submitted to EPA and placed in the PDR the Annual MOM Progress Report for 2012. This deliverable was not subject to the Public Review Requirement of Section VI.A.2, but was available for public comment from February 28, 2013, until March 20, 2013. No comments were received during that period.

6.2 Violations Subject to Stipulated Penalties

During this reporting period, KUB incurred 31 Unpermitted Discharges. Table 1 below lists all violations subject to stipulated penalties as outlined in the Consent Decree. Appendix E lists any SSO that occurred during the first quarter 2013 that resulted in an unpermitted discharge along with its cause, volume, one- and three-day rainfall totals, and rainfall intensity.

Table 1. Violations Subject to Stipulated Penalties

Violation	Date	Address	Cause
Unpermitted discharge	1/14/2013	5829 Ball Camp Pike	Blockage
Unpermitted discharge	1/15/2013	2004 Neyland Drive	Heavy rainfall
Unpermitted discharge	1/15/2013	1500 Lyons Bend Road	Heavy rainfall
Unpermitted discharge	1/15/2013	1903 Jefferson Avenue	Heavy rainfall
Unpermitted discharge	1/15/2013	2328 Cedar Lane	Heavy rainfall
Unpermitted discharge	1/15/2013	3410 Boright Drive	Heavy rainfall
Unpermitted discharge	1/15/2013	2008 Riverside Drive	Heavy rainfall
Unpermitted discharge	1/15/2013	2541 Mitchell Street	Heavy rainfall
Unpermitted discharge	1/15/2013	4719 Old Broadway	Heavy rainfall
Unpermitted discharge	1/15/2013	600 N Gallaher View Road	Heavy rainfall
Unpermitted discharge	1/16/2013	201 Hermitage Drive	Heavy rainfall
Unpermitted discharge	1/16/2013	2412 Benhurst Drive	Heavy rainfall
Unpermitted discharge	1/16/2013	6410 S Northshore Drive	Heavy rainfall
Unpermitted discharge	1/16/2013	4505 Middlebrook Pike	Heavy rainfall
Unpermitted discharge	1/16/2013	6016 Neubert Springs Road	Heavy rainfall
Unpermitted discharge	1/17/2013	2541 Fair Drive	Heavy rainfall
Unpermitted discharge	1/17/2013	6532 Westside Drive	Heavy rainfall
Unpermitted discharge	1/30/2013	3305 McKamey Road	Heavy rainfall
Unpermitted discharge	1/30/2013	1500 Lyons Bend Road	Heavy rainfall
Unpermitted discharge	1/30/2013	1903 Jefferson Avenue	Heavy rainfall
Unpermitted discharge	1/30/2013	2008 Riverside Drive	Heavy rainfall
Unpermitted discharge	1/30/2013	2541 Mitchell Street	Heavy rainfall
Unpermitted discharge	1/30/2013	3412 Boright Drive	Heavy rainfall
Unpermitted discharge	1/31/2013	600 N Gallaher View Road	Heavy rainfall
Unpermitted discharge	2/4/2013	409 N Bellemeade Avenue	Heavy rainfall
Unpermitted discharge	2/4/2013	4100 Central Avenue Pike	Heavy rainfall
Unpermitted discharge	2/10/2013	1521 Saylor's Ford Road	WWTP Mechanical failure
Unpermitted discharge	3/11/2013	2840 Essary Drive	Blockage
Unpermitted discharge	3/11/2013	4917 Ball Road	Broken pipe
Unpermitted discharge	3/15/2013	4923 Ball Road	Broken pipe
Unpermitted discharge	3/27/2013	2418 Selma Avenue	Blockage

Section 7 SSOs, Bypasses, Diversions, and Effluent Limit Violations

Consent Decree language, pages 82-83: *“Each Quarterly Progress Report shall contain... A spreadsheet and summary of all SSOs, Bypasses, Diversions, and effluent limit violations that occurred during the previous Calendar Quarter. 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 reason for each SSO, the total SSO volume, the volume returned to the WCTS, and the volume not captured;*
- b. *For all Bypasses and Diversions, the location, date, time, duration, volume and reason for each Bypass and Diversion; and the total Bypass or Diversion volumes;*
- c. *For all effluent limit violations, all information required to be reported on KUB’s Discharge Monitoring Reports.”*

7.1 SSOs

Appendix B lists all SSOs that occurred during this reporting period. During this period, there were 50 SSO events. Of that number, 31 were due to heavy rainfall, nine were due to blockage, three were due to grinder pump failure, three were due to broken pipe, three were due to construction failure, and one was due to WWTP mechanical failure.

Of the 50 SSO events, 25 were in the 0 – 1,000 gallons volume range, nine were in the 1,001 – 10,000 range, 15 events totaled greater than 10,000 gallons, and the volume was unknown for one event. Durations for events during this period are as follows: 26 ranged from 0 – 2 hours, five ranged from 2.1 – 5 hours, 18 were greater than five hours, and the duration was unknown for one event.

7.2 Building Backups

Appendix C lists all Building Backups that occurred during this reporting period. During this period, there were four Building Backups. Two were due to heavy rainfall, one was due to construction failure, and one event was due to grinder pump failure.

7.3 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 all Diversion event information that occurred during this reporting period. During this reporting period, there were two Diversion events at Kuwahee, two at Fourth Creek, and none at Loves Creek or Eastbridge WWTPs. No Bypasses occurred during this reporting period.

7.4 Effluent Limit Violations

Table 3 contains all effluent limit violations that occurred during this reporting period. The table contains the information as it is reported in KUB’s Discharge Monitoring Reports. During this reporting period, there were two permit violations for Kuwahee, eight for Fourth Creek, six for Loves Creek, and none for Eastbridge WWTP.

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
Fourth Creek	Yes	1/14/2013	21:33			1/14/2013	2.24	1.22	2.24	1.22	High flow event due to excess rainfall
Fourth Creek	Yes					1/15/2013	24	10.28	24	10.28	High flow event due to excess rainfall
Fourth Creek	Yes					1/16/2013	24	11.78	24	11.78	High flow event due to excess rainfall
Fourth Creek	Yes					1/17/2013	24	7.88	24	7.88	High flow event due to excess rainfall
Fourth Creek	Yes					1/18/2013	24	7.35	24	7.35	High flow event due to excess rainfall
Fourth Creek	Yes					1/19/2013	24	6.74	24	6.74	High flow event due to excess rainfall
Fourth Creek	Yes			1/20/2013	11:26	1/20/2013	11.43	1.83	11.43	1.83	High flow event due to excess rainfall
Fourth Creek	Yes	1/30/2013	13:53			1/30/2013	10.12	5.81	10.12	5.81	High flow event due to excess rainfall
Fourth Creek	Yes					1/31/2013	24	7.11	24	7.11	High flow event due to excess rainfall
Fourth Creek	Yes			2/1/2013	6:45	2/1/2013	6.75	0.96	6.75	0.96	High flow event due to excess rainfall
Kuwahee	Yes	1/14/2013	19:20			1/14/2013	4.65	7.01	4.65	7.01	High flow event due to excess rainfall
Kuwahee	Yes					1/15/2013	24	42.89	24	42.89	High flow event due to excess rainfall
Kuwahee	Yes					1/16/2013	24	37.24	24	37.24	High flow event due to excess rainfall
Kuwahee	Yes					1/17/2013	24	33.28	24	33.28	High flow event due to excess rainfall
Kuwahee	Yes					1/18/2013	24	34.45	24	34.45	High flow event due to excess rainfall
Kuwahee	Yes					1/19/2013	24	17.74	24	17.74	High flow event due to excess rainfall
Kuwahee	Yes					1/20/2013	24	6.22	24	6.22	High flow event due to excess rainfall
Kuwahee	Yes			1/21/2013	9:50	1/21/2013	9.83	1.12	9.83	1.12	High flow event due to excess rainfall

Kuwahee	Yes	1/30/2013	15:45			1/30/2013	8.28	16.16	8.28	16.16	High flow event due to excess rainfall
Kuwahee	Yes					1/31/2013	24	20.28	24	20.28	High flow event due to excess rainfall
Kuwahee	Yes			2/1/2013	1:45	2/1/2013	1.75	0.32	1.75	0.32	High flow event due to excess rainfall
Loves Creek	No										
Eastbridge	No										

Table 3: Effluent Limit Violations

WWTP	Did an event occur?	Date	Parameter	Type	Limit	Value
Kuwahee	Yes	1/14/2013	Daily Max	TSS	45 mg/l	50 mg/l
Kuwahee	Yes	1/13/2013-1/19/2013	Weekly Average Max	TSS	14,678 lb/day	15,217 lb/day
Fourth Creek	Yes	1/15/2013	Daily Max	TSS	45 mg/l	56 mg/l
Fourth Creek	Yes	1/15/2013	Daily Min % Removal	TSS	40%	-87%
Fourth Creek	Yes	1/15/2013	Daily Min % Removal	BOD	40%	38%
Fourth Creek	Yes	1/16/2013	Daily Min % Removal	TSS	40%	7%
Fourth Creek	Yes	1/16/2013	Daily Min % Removal	BOD	40%	20%
Fourth Creek	Yes	1/17/2013	Daily Min % Removal	TSS	40%	-23%
Fourth Creek	Yes	1/17/2013	Daily Min % Removal	BOD	40%	30%
Fourth Creek	Yes	1/13/2013-1/19/2013	Weekly Average Max	TSS	3,603 lb/day	5,338 lb/day
Loves Creek	Yes	1/15/2013	Daily Max	TSS	45 mg/l	172 mg/l
Loves Creek	Yes	1/15/2013	Daily Min % Removal	TSS	40%	-165%
Loves Creek	Yes	1/15/2013	Mixed Liquor	TSS	30%	38%

			Washout			
Loves Creek	Yes	1/16/2013	Daily Max	SS	1 ml/l	2 ml/l
Loves Creek	Yes	1/31/2013	Daily Max	SS	1 ml/l	1.5 ml/l
Loves Creek	Yes	1/13/2013- 1/19/2013	Weekly Average Max	TSS	3,436 lb/day	4,379 lb/day
Eastbridge	No	-	-	-	-	-
SS - Settleable Solids	mg/l - milligrams per liter					
TSS - Total Suspended Solids	cfu - Colony Forming Unit					
ml/l - milliliters per liter	lbs - Pounds					

Section 8 Water Quality Monitoring Data

Consent Decree language, pages 82-83: “Each Quarterly Progress Report shall contain... The water quality monitoring data and other information required pursuant to Section VII.D.1.(e).(v).”

8.1 Sampling Conducted and Results

Appendix D lists all sampling that was conducted during this reporting period and the results thereof. In addition to routine monitoring in all creeks, and responding to Sanitary Sewer Overflows (SSO), KUB Water Quality Personnel conducted some investigative sampling in Goose Creek. KUB continues to utilize RT-PCR Bacteroides analysis if necessary to investigate the source of any high *E. coli* counts that reoccur.

First Creek

All of the bacteriological results associated with the routine monitoring for First Creek (Routine Water Quality Monitoring Report – Appendix D) were well below the water quality standard of 941cfu/100 ml. No additional monitoring is necessary at this time.

Second Creek

There was one routine sample that had an *E. coli* result slightly above the water quality standard of 941cfu/100 ml for Second Creek (Routine Water Quality Monitoring Report – Appendix D). This sample was collected on 2/19/13 when the area had received a quarter of an inch of rain on the day that the sampling event occurred. It is probable that contamination from storm runoff contributed to the higher count observed on this date. This creek is not currently under investigation.

Third Creek

One sample for this quarter did have an *E. coli* result above the water quality standard of 941cfu/100 ml for Third Creek (Routine Water Quality Monitoring Report – Appendix D). This area did receive 0.80 inches of rain two days prior to sampling. The heavy rainfall likely caused this high count due to contamination from runoff entering the creek. Investigative sampling for this creek is not needed at this time.

Fourth Creek

There were no bacteriological results above the water quality standard of 941cfu/100 ml for monitoring done on Fourth Creek (Routine Water Quality Monitoring Report – Appendix D) during this quarter. Additional monitoring is not needed.

Loves Creek

The bacteriological results associated with the routine monitoring for Loves Creek (Routine Water Quality Monitoring Report – Appendix D) have been below the water quality standard of 941cfu/100 ml for some time. This quarter, there was one sample slightly above the water quality standard of 941cfu/100. This sample was collected on 3/13/13, and 0.90 inches of rain fell in this area on 3/11/13. Due to contamination from runoff being suspect in this creek, investigative sampling is not necessary.

Williams Creek

There was one date for this quarter that had *E. coli* results above the water quality standard of 941cfu/100 ml, for Williams Creek (Routine Water Quality Monitoring Report – Appendix D). This sampling event coincided with 2.89 inches of rain falling on the day before sampling. In addition, an SSO reported from a sewer lateral cleanout near Williams Creek area was discovered later in the quarter. It is possible that leakage from this lateral would likely have contaminated any runoff from that rainfall event and reached the stream.

Baker Creek

There were no routine samples that exceeded the water quality standard of 941cfu/100 ml for Baker Creek (Routine Water Quality Monitoring Report – Appendix D) this quarter. Although all of the counts were low this quarter, KUB has been investigating this creek due to elevated counts observed in previous quarters along a tributary that enters the stream at mile 0.36. Monitoring of this tributary over time has suggested that a potential source needs additional investigation. Since these elevations are inconsistent and seen primarily during wet weather in this largely residential area, a leaking septic system or defective private lateral is suspect.

Goose Creek

All of the routine samples for this quarter were below the water quality standard of 941cfu/100 ml for Goose Creek (Routine Water Quality Monitoring Report – Appendix D). Site 1.19E is still currently under investigation (Table 1 – Appendix D) because *E. coli* results above the water quality standard of 941cfu/100 ml have been obtained during both wet and dry weather conditions near this site in previous quarters. For this reason, more monitoring of nearby tributaries will continue.

8.2 Projected Data Collection

During the second quarter of 2013, KUB will continue to monitor the 24 routine sampling locations in the sewer basins of eight area creeks. KUB will collect samples from the following locations during the second quarter of 2013:

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	0.53	1.45
Goose Creek	0.40	1.19E	1.80E
Loves Creek	0.85	1.89	3.45
Williams Creek	0.89	1.70	2.02

Appendix A

Capital Projects and Rehabilitation Credits

Capital Projects and Rehabilitation Credits

	Project Name	Credit Type	Basin	WWTP	Credits Banked (gpd)	Status
1	Comprehensive Rehab 03B1a	Comprehensive Rehabilitation	1st Creek	Kuwahee	321,030	Project Complete
2	Comprehensive Rehab 03B2a	Comprehensive Rehabilitation	1st Creek	Kuwahee	302,366	Project Complete
3	Comprehensive Rehab 04B1a	Comprehensive Rehabilitation	1st Creek	Kuwahee	334,626	Project Complete
4	Comprehensive Rehab 08A1	Comprehensive Rehabilitation	1st Creek	Kuwahee	1,589,952	Project Complete
5	McC Campbell Lane Sewer Replacement	Find & Fix Gravity Main	1st Creek	Kuwahee	25,543	Project Complete
6	Knox Road Trunkline Replacement	Find & Fix Gravity Main	1st Creek	Kuwahee	36,728	Project Complete
7	vented manhole cover replacement (7A1)	Manhole Cover	1st Creek	Kuwahee	13,333	Project Complete
8	vented manhole cover replacement (7A1)	Manhole Cover	1st Creek	Kuwahee	13,333	Project Complete
9	vented manhole cover replacement (7A1)	Manhole Cover	1st Creek	Kuwahee	13,333	Project Complete
10	Comprehensive Rehab 15D2	Comprehensive Rehabilitation	2nd Creek	Kuwahee	1,450,008	Project Complete
11	Comprehensive Rehab 05A4 & 05A3	Comprehensive Rehabilitation	2nd Creek	Kuwahee	43,904	Project Complete
12	Comprehensive Rehab 09A2	Comprehensive Rehabilitation	3rd Creek	Kuwahee	296,664	Project Complete
13	Comprehensive Rehab 09A1	Comprehensive Rehabilitation	3rd Creek	Kuwahee	219,345	Project Complete
14	Walker Springs Storage Tank	Storage Tank	4th Creek	Fourth Creek	3,250,000	Project Complete
15	Comprehensive Rehab 40F1	Comprehensive Rehabilitation	South Knox / Knob Creek	Kuwahee	83,600	Project Complete
16	Comprehensive Rehab 41A4	Comprehensive Rehabilitation	South Knox / Knob Creek	Kuwahee	371,994	Project Complete
17	Comprehensive Rehab 41B1	Comprehensive Rehabilitation	South Knox / Knob Creek	Kuwahee	152,958	Project Complete
18	Wilson Ave, Chesnut St., Donnell St. (Asset Replacement)	Find & Fix Gravity Main	Williams Creek	Kuwahee	28	Project Complete
19	Williams Creek Trunkline Replacement	Find & Fix Gravity Main	Williams Creek	Kuwahee	168,667	Project Complete
20	Rushland Park Off Site Sewer Rehabilitation	Find & Fix Gravity Main	Loves Creek	Loves Creek	3,803	Project Complete
21	Emily Avenue Pump Station Abandonment	Find & Fix Gravity Main	Loves Creek	Loves Creek	141,600	Project Complete
22	Fair Drive - Phase I	Find & Fix Gravity Main	1st Creek	Kuwahee	130,928	Project Complete
23	Comprehensive Rehab 23E1	Comprehensive Rehabilitation	2nd Creek	Kuwahee	4,215,003	Project Complete
24	vented manhole cover replacements (08B2)	Manhole Cover	1st Creek	Kuwahee	4,669	Project Complete
25	vented manhole cover replacement (16B1)	Manhole Cover	1st Creek	Kuwahee	667	Project Complete
26	vented manhole cover replacements (28C1)	Manhole Cover	3rd Creek	Kuwahee	1,334	Project Complete
27	10' mainline replacement (33A2)	Find & Fix Gravity Main	4th Creek	Fourth Creek	5,409	Project Complete
28	vented manhole cover replacements (22C2)	Manhole Cover	3rd Creek	Kuwahee	16,002	Project Complete
29	vented manhole cover replacements (63)	Manhole Cover	Sinking Creek	Loves Creek	66,665	Project Complete
30	10' mainline replacement (6C1)	Find & Fix Gravity Main	Loves Creek	Loves Creek	24,620	Project Complete
31	Comprehensive Rehab 06A5	Comprehensive Rehabilitation	Loves Creek	Loves Creek	263,358	Project Complete
32	Comprehensive Rehab 06A4	Comprehensive Rehabilitation	Loves Creek	Loves Creek	386,304	Project Complete
33	vented manhole cover replacement (39D2)	Manhole Cover	South Knox / Knob Creek	Kuwahee	667	Project Complete
34	vented manhole cover replacement (39D4)	Manhole Cover	South Knox / Knob Creek	Kuwahee	667	Project Complete
35	vented manhole cover replacement (39D3)	Manhole Cover	South Knox / Knob Creek	Kuwahee	2,668	Project Complete
36	vented manhole cover replacement (20A6)	Manhole Cover	Loves Creek	Loves Creek	1,334	Project Complete
37	vented manhole cover replacement (20A7)	Manhole Cover	Loves Creek	Loves Creek	667	Project Complete
38	vented manhole cover replacement (13A2)	Manhole Cover	3rd Creek	Kuwahee	667	Project Complete
39	vented manhole cover replacement (13B1)	Manhole Cover	3rd Creek	Kuwahee	13,335	Project Complete
40	vented manhole cover replacement (28B1)	Manhole Cover	3rd Creek	Kuwahee	1,334	Project Complete
41	12' mainline replacement (44)	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	4,278	Project Complete
42	manhole frame seal repair (67)	Manhole Repair	Loves Creek	Loves Creek	2,304	Project Complete
43	Whites Creek Trunk Line Replacement (02)	Find & Fix Gravity Main	1st Creek	Kuwahee	50,106	Project Complete
44	Comprehensive Rehab 09D1	Comprehensive Rehabilitation	3rd Creek	Kuwahee	381,376	Project Complete
45	Comprehensive Rehab 09A4	Comprehensive Rehabilitation	3rd Creek	Kuwahee	408,317	Project Complete
46	Lower First Creek Storage Tank	Storage Tank	1st Creek	Kuwahee	5,000,000	Project Complete
47	vented manhole cover replacement (11B2)	Manhole Cover	3rd Creek	Kuwahee	13,333	Project Complete
48	vented manhole cover replacement (13C1)	Manhole Cover	3rd Creek	Kuwahee	2,667	Project Complete
49	vented manhole cover replacement (22A2)	Manhole Cover	3rd Creek	Kuwahee	667	Project Complete
50	vented manhole cover replacement (22B1)	Manhole Cover	3rd Creek	Kuwahee	667	Project Complete
51	Creek Head Drive sewer line replacement (32A4)	Find & Fix Gravity Main	4th Creek	Fourth Creek	11,132	Project Complete
52	Manhole replacement (19A3)	Find & Fix Gravity Main	Williams Creek	Kuwahee	207	Project Complete
53	Papermill drive sewer line replacement (33A2)	Find & Fix Gravity Main	4th Creek	Fourth Creek	103,769	Project Complete
54	Wells Rd sewer line replacement (39C2)	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	1,728	Project Complete
55	Power Park Manhole Rehab (45)	Find & Fix Gravity Main	Knob Creek	Kuwahee	3,596	Project Complete
56	Blount Ave abandoned lateral (39A1)	Disconnect abandoned lateral	South Knox / Knob Creek	Kuwahee	2,000	Project Complete
57	Woodbine Ave sewerline Rehab (19A2)	Find & Fix Gravity Main	Williams Creek	Kuwahee	2,683	Project Complete
58	Pleasant Ridge Rd Sewer line improvements (09A1)	Find & Fix Gravity Main	3rd Creek	Kuwahee	207	Project Complete
59	Papermill drive sewer line replacement (27A1)	Find & Fix Gravity Main	Fourth Creek	Fourth Creek	18,211	Project Complete
60	Wilson Rd Manhole Rehab (10C1)	Find & Fix Gravity Main	2nd Creek	Kuwahee	831	Project Complete
61	Maryville Pike Trunk Replacement (39C1)	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	72,880	Project Complete
62	Upper McKamey Trunk Replacement (11B1 11B2)	Find & Fix Gravity Main	3rd Creek	Kuwahee	64,324	Project Complete
63	Fox Manor Blvd sewer line replacement (32A4)	Find & Fix Gravity Main	4th Creek	Fourth Creek	31,510	Project Complete
64	Power Park Manhole Rehab (47)	Manhole Repair	South Knox / Knob Creek	Kuwahee	7,700	Project Complete
65	Sutherland Ave Sewer Line Replacement (28B1)	Find & Fix Gravity Main	3rd Creek	Kuwahee	20,383	Project Complete
66	Fountain City Trunkline Replacement (03B1 03B2)	Find & Fix Gravity Main	1st Creek	Kuwahee	72,512	Project Complete
67	vented manhole cover replacement (11B2)	Manhole Cover	4th Creek	Fourth Creek	13,333	Project Complete
68	vented manhole cover replacement (39D2)	Manhole Cover	South Knox / Knob Creek	Kuwahee	13,333	Project Complete
69	Comprehensive Rehabilitation 19A2	Comprehensive Rehabilitation	Williams Creek	Kuwahee	521,631	Project Complete
70	17B1 Manhole Replacement	Find & Fix Gravity Main	1st Creek	Kuwahee	1,803	Project Complete
71	Vine Middle School sewerline Rehab (24D1)	Find & Fix Gravity Main	1st Creek	Kuwahee	23,491	Project Complete
72	Comprehensive Rehabilitation (08B2)	Comprehensive Rehabilitation	1st Creek	Kuwahee	841,370	Project Complete
73	Third Creek Storage Tank (21A1)	Storage Tank	3rd Creek	Kuwahee	4,000,000	Project Complete
74	Comprehensive Rehabilitation (19A1)	Comprehensive Rehabilitation	Williams Creek	Kuwahee	313,938	Project Complete
75	Comprehensive Rehabilitation (19B1)	Comprehensive Rehabilitation	Williams Creek	Kuwahee	328,300	Project Complete
76	Comprehensive Rehabilitation (10B1)	Comprehensive Rehabilitation	2nd Creek	Kuwahee	191,698	Project Complete
77	Comprehensive Rehabilitation (10C1)	Comprehensive Rehabilitation	2nd Creek	Kuwahee	67,840	Project Complete
78	Disconnected Stormwater Detention Pond Sevier Ave (40C1)	Disconnect Storm Sewer	South Knox / Knob Creek	Kuwahee	97,333	Project Complete
79	Sub Basin 63 Sinking Creek Drainage rehabilitation (63)	Comprehensive Rehabilitation	South Knox / Knob Creek	Loves Creek	72,110	Project Complete
80	West Ford Valley Trunkline replacement (41A1)	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	236,704	Project Complete
81	Blount Avenue Trunkline Replacement (39A1)	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	225,376	Project Complete
82	Brookvale Point Repairs (02A3)	Find & Fix Gravity Main	1st Creek	Kuwahee	52,079	Project Complete
83	Park Pump Point Repairs (45)	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	11,522	Project Complete
84	Wayland Road Storage Tank (67)	Storage Tank	Loves Creek	Loves Creek	20,000	Project Complete
85	Comprehensive Rehab (19A3)	Comprehensive Rehabilitation	Williams Creek	Kuwahee	325,090	Project Complete
86	Comprehensive Rehab (41A2)	Comprehensive Rehabilitation	South Knox / Knob Creek	Kuwahee	39,330	Project Complete
87	Comprehensive Rehab (41A5)	Comprehensive Rehabilitation	South Knox / Knob Creek	Kuwahee	119,327	Project Complete
88	Jersey Ave sewer rehabilitation (SubBasin 23)	Find & Fix Gravity Main	1st Creek	Kuwahee	419	Project Complete
89	East Magnolia sewer rehabilitation (SubBasin 24)	Find & Fix Gravity Main	1st Creek	Kuwahee	846	Project Complete
90	Walker Blvd Sewer Rehabilitation (SubBasin 16)	Find & Fix Gravity Main	1st Creek	Kuwahee	1086	Project Complete

Capital Projects and Rehabilitation Credits

91	Kingston Court Sewer Rehabilitation (SubBasin 29)	Find & Fix Gravity Main	3rd Creek	Kuwahee	3727	Project Complete
92	Clinch Ave Sewer Rehabilitation (SubBasin 30)	Find & Fix Gravity Main	1st Creek	Kuwahee	442	Project Complete
93	Badgett Drive Sewer Rehabilitation (SubBasin 22)	Find & Fix Gravity Main	3rd Creek	Kuwahee	214	Project Complete
94	Dickson Street Sewer Rehabilitation (SubBasin 20)	Find & Fix Gravity Main	Loves Creek	Loves Creek	417	Project Complete
95	W New Street Sewer Rehabilitation (SubBasin 24)	Find & Fix Gravity Main	1st Creek	Kuwahee	2844	Project Complete
96	Rennoc Rd Sewer Rehabilitation (SubBasin 4)	Find & Fix Gravity Main	1st Creek	Kuwahee	2853	Project Complete
97	Spicewood Lane Sewer Rehabilitation (SubBasin 13)	Find & Fix Gravity Main	3rd Creek	Kuwahee	216	Project Complete
98	Chapman Highway Sewer Rehabilitation (SubBasin 39)	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	212	Project Complete
99	McCroskey Ave Sewer Rehabilitation (SubBasin 17)	Find & Fix Gravity Main	1st Creek	Kuwahee	1,076	Project Complete
100	East 5th Ave Sewer Rehabilitation (SubBasin 24)	Find & Fix Gravity Main	1st Creek	Kuwahee	447	Project Complete
101	Simms Rd Sewer Rehabilitation (SubBasin 39)	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	2,955	Project Complete
102	Maynard Ave Sewer Rehabilitation (SubBasin 16)	Find & Fix Gravity Main	1st Creek	Kuwahee	423	Project Complete
103	Minibasin 10B1 & 10C1 find & fix	Find & Fix Gravity Main	2nd Creek	Kuwahee	15,689	Project Complete
104	Third Creek Trunkline Replacement	Find & Fix Gravity Main	3rd Creek	Kuwahee	483,793	Project Complete
105	Disconnected Stormwater 15" discharge pipe Island Home blvd	Disconnect Storm Sewer	South Knox / Knob Creek	Kuwahee	1,720,000	Project Complete
106	Paved Manhole Rehabilitation 40A2	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	20,140	Project Complete
107	Paved Manhole Rehabilitation 40F2	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	6,515	Project Complete
108	Paved Manhole Rehabilitation 40G1	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	13,571	Project Complete
109	Paved Manhole Rehabilitation 39E1	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	2,576	Project Complete
110	Paved Manhole Rehabilitation 03C1	Find & Fix Gravity Main	1st Creek	Kuwahee	3,615	Project Complete
111	Paved Manhole Rehabilitation 02A1	Find & Fix Gravity Main	1st Creek	Kuwahee	6,491	Project Complete
112	Paved Manhole Rehabilitation SB 38	Find & Fix Gravity Main	3rd Creek	Kuwahee	5,797	Project Complete
113	Paved Manhole Rehabilitation 18A1	Find & Fix Gravity Main	1st Creek	Kuwahee	4,540	Project Complete
114	Paved Manhole Rehabilitation 39E1	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	34,671	Project Complete
115	Paved Manhole Rehabilitation 39D1	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	8,000	Project Complete
116	Paved Manhole Rehabilitation 39A2	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	13,335	Project Complete
117	Paved Manhole Rehabilitation 39C3	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	26,670	Project Complete
118	Broken Manhole Lid Replacement (67)	Find & Fix Gravity Main	Loves Creek	Loves Creek	26,666	Project Complete
119	Manhole Replacement (61)	Find & Fix Gravity Main	Loves Creek	Loves Creek	2,304	Project Complete
120	Woodbine Awer Sewer Rehab Phase II (19A2)	Find & Fix Gravity Main	Williams Creek	Kuwahee	855	Project Complete
121	Comprehensive Sewer Rehab (41A6)	Comprehensive Rehabilitation	South Knox / Knob Creek	Kuwahee	951,328	Project Complete
122	Comprehensive Sewer Rehab (41C1)	Comprehensive Rehabilitation	South Knox / Knob Creek	Kuwahee	161,680	Project Complete
123	Comprehensive Sewer Rehab (41C2)	Comprehensive Rehabilitation	South Knox / Knob Creek	Kuwahee	94,332	Project Complete
124	Davenport Trunkline Replacement (15A1)	Find & Fix Gravity Main	2nd Creek	Kuwahee	86,423	Project Complete
125	Forks of the River Trunkline Replacement (60)	Find & Fix Gravity Main	Riverdale	Kuwahee	62,037	Project Complete
126	Brooks & Ester Sewer Rehabilitation (25A2)	Find & Fix Gravity Main	Williams Creek	Kuwahee	14,186	Project Complete
127	Grand Ave Sewer Rehabilitation (23B1)	Find & Fix Gravity Main	2nd Creek	Kuwahee	885	Project Complete
128	Clinch Ave & 21st Rehabilitation (35B3)	Find & Fix Gravity Main	3rd Creek	Kuwahee	15,453	Project Complete
129	Blount Ave Trunkline phase II (39A2)	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	124,150	Project Complete
130	Trunkline at Woodland Ave	Trunkline Replacement	2nd Creek	Kuwahee	106,558	Project Complete
131	Keowee Ave, Sandusky Rd, and Sutherland Ave	Find & Fix Gravity Main	3rd Creek	Kuwahee	6,367	Project Complete
132	Antietam Rd	Find & Fix Gravity Main	1st Creek	Kuwahee	1,760	Project Complete
133	Cheyenne Dr	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	1,760	Project Complete
134	Chambliss Ave	Find & Fix Gravity Main	3rd Creek	Kuwahee	2,642	Project Complete
135	Godfrey St	Find & Fix Gravity Main	1st Creek	Kuwahee	218	Project Complete
136	Shortline-Ave B	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	7,332	Project Complete
137	Second Creek SSO Abatement	Find & Fix Gravity Main	2nd Creek	Kuwahee	163,471	Project Complete
138	Shortline- Maplehurst	Find & Fix Gravity Main	1st Creek	Kuwahee	6,062	Project Complete
139	Shortline- Parkhill	Find & Fix Gravity Main	4th Creek	Fourth Creek	1,755	Project Complete
140	Shortline- Essary	Find & Fix Gravity Main	1st Creek	Kuwahee	215	Project Complete
141	Shortline- Ridgcrest	Find & Fix Gravity Main	1st Creek	Kuwahee	3,058	Project Complete
142	4th Creek SSO Abatement Project	Find & Fix Gravity Main	4th Creek	Fourth Creek	266,200	Project Complete
143	Ashville Highway Trunkline Replacement (20A3)	Find & Fix Gravity Main	Loves Creek	Kuwahee	372,780	Project Complete
144	Minibasin 06A2 & 06A3 Comprehensive Rehabilitation	Comprehensive Rehabilitation	Loves Creek	Loves Creek	275,630	Project Complete
145	Sevier Ave & Jones Ave Find & Fix Rehabilitation (40C1)	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	50,537	Project Complete
146	Manhole Rehabilitation - National Drive (60)	Find & Fix Gravity Main	Riverdale	Kuwahee	4,608	Project Complete
147	Washington Ave Sewer Replacement (24B1)	Find & Fix Gravity Main	1st Creek	Kuwahee	14,643	Project Complete
148	Second Creek SSO Abatement phase II	Find & Fix Gravity Main	2nd Creek	Kuwahee	40,973	Project Complete
149	Highland Hills (37A3)	Find & Fix Gravity Main	4th Creek	Fourth Creek	13,017	Project Complete
150	Moses Ave (29D1)	Find & Fix Gravity Main	3rd Creek	Kuwahee	1,761	Project Complete
151	Dance Ave (28A1)	Find & Fix Gravity Main	3rd Creek	Kuwahee	1,889	Project Complete
152	Texas Ave (SB 15)	Find & Fix Gravity Main	2nd Creek	Kuwahee	85,030	Project Complete
153	Ellis Road find & fix (41A3)	Find & Fix Gravity Main	Knob Creek	Kuwahee	61,614	Project Complete
154	Ford Valley Pump Station & gravity sewer	Find & Fix Gravity Main	Knob Creek	Kuwahee	14,520	Project Complete
155	Crestwood Pump Station & Gravity Sewer	Find & Fix Gravity Main	Loves Creek	Loves Creek	3,950	Project Complete
156	Washington Pike Manhole Rehab MH IPID 20414153	Find & Fix Gravity Main	Eastbridge	Eastbridge	576	Project Complete
157	Wassman & 8th Ave	Find & Fix Gravity Main	1st Creek	Kuwahee	8,750	Project Complete
158	Lebanon Street Sewer Improvements	Find & Fix Gravity Main	3rd Creek	Kuwahee	13,145	Project Complete
159	Minibasin 35B2 UT sewer improvements	Find & Fix Gravity Main	3rd Creek	Kuwahee	39,952	Project Complete
160	Minibasin 35B3 UT sewer improvements	Find & Fix Gravity Main	3rd Creek	Kuwahee	27,132	Project Complete
161	Boyd's Bridge Trunkline Replacement	Find & Fix Gravity Main	Loves Creek	Loves Creek	137,695	Project Complete
162	Minibasin 17B1 & 01A1	Find & Fix Gravity Main	1st Creek	Kuwahee	69,883	Project Complete
163	Lake Forest Sewer Improvements 41A6	Find & Fix Gravity Main	Knob Creek	Kuwahee	35,202	Project Complete
164	Bennett Place Sewer Improvements 32B	Find & Fix Gravity Main	4th Creek	Fourth Creek	25,112	Project Complete
165	40A2 Phase I Trunkline Replacement	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	195,583	Project Complete
166	Jersey Ave, Ball Camp & Hiwassee Sewer Improvments	Find & Fix Gravity Main	3rd Creek	Kuwahee	13,059	Project Complete
167	W Glenwood, Nathaniel & Boyd St Shortline project 22B1, 17A1, 01A1	Find & Fix Gravity Main	1st Creek	Kuwahee	13,059	Project Complete
168	Minibasin 23D1/F1	Comprehensive Rehabilitation	2nd Creek	Kuwahee	50,577	Project Complete
169	Minibasin 18B1 find & fix	Find & Fix Gravity Main	1st Creek	Kuwahee	4,929	Project Complete
170	Second Creek Storage Tank	Storage Tank	2nd Creek	Kuwahee	5,500,000	Project Complete
171	Lower Third Creek Storage Tank	Storage Tank	3rd Creek	Kuwahee	6,500,000	Project Complete
172	Noelton Drive Sewer Improvements	Find & Fix Gravity Main	3rd Creek	Kuwahee	5,042	Project Complete
173	Old Kingston Pike Sewer improvments	Find & Fix Gravity Main	3rd Creek	Kuwahee	301	Project Complete
174	Northshore Trunkline Replacement	Find & Fix Gravity Main	4th Creek	Fourth Creek	183,777	Project Complete
175	Subbasin 37 Sewer Improvements	Find & Fix Gravity Main	4th Creek	Fourth Creek	85,039	Project Complete
176	Second Creek SSO Abatement	Find & Fix Gravity Main	2nd Creek	Kuwahee	827	Project Complete
177	Minibasin 42 & 42A1	Comprehensive Rehabilitation	4th Creek	Fourth Creek	118,001	Project Complete
178	East Fork of Third Creek Trunkline	Find & Fix Gravity Main	3rd Creek	Kuwahee	192,992	Project Complete
179	Minibasin 04C1 Trunkline	Find & Fix Gravity Main	1st Creek	Kuwahee	36,480	Project Complete
180	South Knox SSO Abatement	Find & Fix Gravity Main	South Knox / Knob Creek	Kuwahee	50,280	Project Complete
181	Minibasin 22A2 & 22C2 rehabilitation	Find & Fix Gravity Main	3rd Creek	Kuwahee	16,061	Project Complete

Appendix B

SSOs

Date	Time	Street #	Street	Plant	Watershed	Basin	Overflow Location	Pathway	Receiving Water	Cause of SSO/KUB Response	Total Volume (Gallons)	Recovered Volume (Gallons)	Non-Recovered Volume (Gallons)	Duration (Hours)	Unpermitted Discharge
1/7/2013	2:18 PM	1000	Baker Avenue	KUW	South Knox	40	Manhole 40-7	Pavement to Soil Saturation & Recovery		Blockage - Roots. The sewer main was flushed to clear the blockage and the area cleaned.	450	225	225	1	No
1/11/2013	12:07 PM	1705	Cottagewood Way	FC	Fourth Creek	37	Lateral	Pavement to Soil Saturation		Construction Failure - Dig-In. The sewer force main was repaired and the area was cleaned.	15	0	15	6	No
1/13/2013	10:30 AM	7939	Washington Pike	EB	Eastbridge	113	Residential Grinder Pump	Wet well to Soil Saturation & Recovery		Residential Grinder Pump. Grinder pump was turned off by Customer. Contractor turned back on & area cleaned.	5	3	2.0	1	No
1/14/2013	4:51 PM	5829	Ball Camp Pike	KUW	Third Creek	11	Manhole 11-48	Pavement to Unnamed Tributary to Third Creek & Soil Saturation	Third Creek	Blockage - Grease. The sewer main was flushed to clear the blockage and area cleaned.	10,600	0	10,600	4	Yes
1/14/2013	10:45 AM	3704	Chapman Highway	KUW	South Knox	39	Manhole 28-53 & 28-54	Pavement to Soil Saturation		Construction Failure - Blockage by Construction Debris. The sewer main was flushed to clear the blockage & area was cleaned.	510	0	510	1	No
1/15/2013	11:40 PM	2004	Neyland Drive	KUW	Second Creek	35a	Manhole 1	Tennessee River	Tennessee River	The area received an average of 6.88 inches of rainfall in a 5-day period, which exceeds a 25-year storm. This resulted in significant I & I and high flows in the sewer mains. The area was cleaned.	18,440,000	0	18,440,000	19.83	Yes
1/15/2013	7:24 AM	1500	Lyons Bend Road	FC	Fourth Creek	37	Manhole 1	Fourth Creek	Fourth Creek	The area received an average of 6.88 inches of rainfall in a 5-day period, which exceeds a 25-year storm. This resulted in significant I & I and high flows in the sewer mains. The area was cleaned.	4,285,300	0	4,285,300	36.26	Yes
1/15/2013	10:29 AM	1903	Jefferson Avenue	KUW	First Creek	24	Manhole 25-18	Pavement to Storm Drain to First Creek & Soil Saturation	First Creek	The area received an average of 6.88 inches of rainfall in a 5-day period, which exceeds a 25-year storm. This resulted in significant I & I and high flows in the sewer mains. The area was cleaned.	75	0	75	1	Yes
1/15/2013	8:50 AM	2328	Cedar Lane	KUW	First Creek	4	Manhole 22-30 & BBU	Ground to Unnamed Tributary to First Creek and Soil Saturation	First Creek	The area received an average of 6.88 inches of rainfall in a 5-day period, which exceeds a 25-year storm. This resulted in significant I & I and high flows in the sewer mains. The area was cleaned.	11,655	0	11,650	2	Yes
1/15/2013	10:55 AM	3410	Boright Drive	KUW	First Creek	8	Manholes 42, 43, & 44	Pavement to Wet Weather Conveyance to First Creek & Soil Saturation	First Creek	The area received an average of 6.88 inches of rainfall in a 5-day period, which exceeds a 25-year storm. This resulted in significant I & I and high flows in the sewer mains. The area was cleaned.	70,650	0	70,650	28	Yes
1/15/2013	6:40 AM	2008	Riverside Drive	KUW	Williams Creek	25	Manhole 1-1	Pavement to Ground to Williams Creek and Soil Saturation	Williams Creek	The area received an average of 6.88 inches of rainfall in a 5-day period, which exceeds a 25-year storm. This resulted in significant I & I and high flows in the sewer mains. The area was cleaned.	628,000	0	628,000	28	Yes
1/15/2013	10:53 AM	2541	Mitchell Street	KUW	First Creek	18	Manhole 30-182	Pavement to Storm Drain to First Creek to Ground and Soil Saturation	First Creek	The area received an average of 6.88 inches of rainfall in a 5-day period, which exceeds a 25-year storm. This resulted in significant I & I and high flows in the sewer mains. The area was cleaned.	317,000	0	317,000	120	Yes
1/15/2013	5:00 PM	4719	Old Broadway	KUW	First Creek	4	Manhole 2	Ground to First Creek and Soil Saturation	First Creek	The area received an average of 6.88 inches of rainfall in a 5-day period, which exceeds a 25-year storm. This resulted in significant I & I and high flows in the sewer mains. The area was cleaned.	16,320,000	0	16,320,000	91	Yes
1/15/2013	1:54 PM	600	N Gallaher View Road	FC	Fourth Creek	32a	Manhole 77	Pavement to Ground to Ten Mile Creek and Soil Saturation	Ten Mile Creek	The area received an average of 6.88 inches of rainfall in a 5-day period, which exceeds a 25-year storm. This resulted in significant I & I and high flows in the sewer mains. The area was cleaned.	11,324,000	0	11,324,000	116	Yes
1/16/2013	10:50 AM	5219	Bent River Boulevard	FC	Fourth Creek	43	Residential grinder pump and BBU	Wet well to Soil Saturation & BBU		Grinder Pump Failure - Residential. The grinder pump was repaired & area cleaned.	6	2	4	1	No
1/16/2013	12:57 PM	201	Hermitage Drive	KUW	Knob Creek	41	Manhole 66-69	Pavement to Butterfly Lake and Soil Saturation	Butterfly Lake	The area received an average of 6.88 inches of rainfall in a 5-day period, which exceeds a 25-year storm. This resulted in significant I & I and high flows in the sewer mains. The area was cleaned.	1,225	0	1,225	19	Yes
1/16/2013	8:46 AM	2412	Bernhurst Drive	KUW	First Creek	4	Manhole 18-54	Pavement to Unnamed Tributary to First Creek and Soil Saturation	First Creek	The area received an average of 6.88 inches of rainfall in a 5-day period, which exceeds a 25-year storm. This resulted in significant I & I and high flows in the sewer mains. The area was cleaned.	1,425	0	1,425	2	Yes
1/16/2013	8:00 PM	6410	S Northshore Drive	FC	Fourth Creek	37	Manhole 8	Ground to Fourth Creek and Soil Saturation	Fourth Creek	The area received an average of 6.88 inches of rainfall in a 5-day period, which exceeds a 25-year storm. This resulted in significant I & I and high flows in the sewer mains. The area was cleaned.	5,800	0	5,800	4	Yes
1/16/2013	9:30 AM	4505	Middlebrook Pike	KUW	Third Creek	21	Manholes 1 & 27-54	Pavement to Ground to Third Creek and Soil Saturation	Third Creek	The area received an average of 6.88 inches of rainfall in a 5-day period, which exceeds a 25-year storm. This resulted in significant I & I and high flows in the sewer mains. The area was cleaned.	10,000	0	10,000	12	Yes
1/16/2013	3:37 AM	6016	Neubert Springs Road	EB	Knob Creek	41	Manhole 19	Pavement to Ground to Knob Creek and Soil Saturation	Knob Creek	The area received an average of 6.88 inches of rainfall in a 5-day period, which exceeds a 25-year storm. This resulted in significant I & I and high flows in the sewer mains. The area was cleaned.	10,000	0	10,000	53	Yes
1/17/2013	3:50 PM	2541	Fair Drive	KUW	First Creek	4	Manhole 20-2	Ground to Wet Weather Conveyance to First Creek & Soil Saturation	First Creek	The area received an average of 6.88 inches of rainfall in a 5-day period, which exceeds a 25-year storm. This resulted in significant I & I and high flows in the sewer mains. The area was cleaned.	13,900	0	13,900	48	Yes
1/17/2013	9:15 AM	6532	Westside Drive	FC	Fourth Creek	32a	Manhole 49-5	Ground to Ten Mile Creek and Soil Saturation	Ten Mile Creek	The area received an average of 6.88 inches of rainfall in a 5-day period, which exceeds a 25-year storm. This resulted in significant I & I and high flows in the sewer mains. The area was cleaned.	200	0	200	1	Yes
1/18/2013	7:23 AM	3439	E Magnolia Avenue	LC	Loves Creek	20	Manhole 61	Ground and Soil Saturation		The area received an average of 6.88 inches of rainfall in a 5-day period, which exceeds a 25-year storm. This resulted in significant I & I and high flows in the sewer mains. The area was cleaned.	25	0	25	1	No
1/23/2013	4:51 PM	7920	Washington Pike	EB	Eastbridge	113	Residential Grinder Pump	Ground to Soil Saturation		Grinder Pump Failure - Residential. The grinder pump was repaired & area cleaned.	5	0	5	1	No
1/28/2013	1:35 PM	2377	Neyland Drive	KUW	Third Creek	35b	Manhole 4-54	Ground to Soil Saturation		The area received an average of 6.88 inches of rainfall in a 5-day period, which exceeds a 25-year storm. This resulted in significant I & I and high flows in the sewer mains. The area was cleaned.	300	0	300	1	No
1/29/2013	7:28 PM	900	E Hill Avenue	KUW	Williams Creek	31	Manhole 6-62	Ground to Soil Saturation		Blockage - Grease. The sewer main was flushed to clear the blockage and area cleaned.	180	0	180	1	No
1/30/2013	1:08 PM	1500	Lyons Bend Road	FC	Fourth Creek	37	Manhole 1	Fourth Creek	Fourth Creek	The area received an average of 2.64 inches of rainfall within a 12 hour period on January 30. This resulted in significant I & I and high flows in the sewer mains. Sewer mains were checked until high flows subsided and are cleaned.	905,700	0	905,700	9.17	Yes
1/30/2013	6:11 PM	2500	Cedar Lane	KUW	First Creek	4	Lateral Cleanout	Pavement to Soil Saturation		The area received an average of 2.64 inches of rainfall within a 12 hour period on January 30. This resulted in significant I & I and high flows in the sewer mains. Sewer mains were checked until high flows subsided and are cleaned.	280	0	280	1	No
1/30/2013	6:23 PM	2538	Fair Drive	KUW	First Creek	4	Manhole 20-1	Pavement to Soil Saturation		The area received an average of 2.64 inches of rainfall within a 12 hour period on January 30. This resulted in significant I & I and high flows in the sewer mains. Sewer mains were checked until high flows subsided and are cleaned.	450	0	450	3	No
1/30/2013	11:05 AM	1903	Jefferson Avenue	KUW	First Creek	24	Manhole 25-18	Pavement to Storm Drain to First Creek and Soil Saturation	First Creek	The area received an average of 2.64 inches of rainfall within a 12 hour period on January 30. This resulted in significant I & I and high flows in the sewer mains. Sewer mains were checked until high flows subsided and are cleaned.	875	0	875	4	Yes
1/30/2013	12:12 PM	2008	Riverside Drive	KUW	Williams Creek	25	Manhole 1-1	Pavement to Ground to Williams Creek and Soil Saturation	Williams Creek	The area received an average of 2.64 inches of rainfall within a 12 hour period on January 30. This resulted in significant I & I and high flows in the sewer mains. Sewer mains were checked until high flows subsided and are cleaned.	13,100	0	13,100	14	Yes
1/30/2013	6:25 PM	2541	Mitchell Street	KUW	First Creek	18	Manhole 30-182	Pavement to Storm Drain to First Creek to Soil Saturation and Recovery	First Creek	The area received an average of 2.64 inches of rainfall within a 12 hour period on January 30. This resulted in significant I & I and high flows in the sewer mains. Sewer mains were checked until high flows subsided and are cleaned.	19,600	200	19,400	24	Yes
1/30/2013	6:27 PM	3412	Boright Drive	KUW	First Creek	8	Manhole 43, 46-16, & Lateral Cleanout @ 3618 Boright Drive	Pavement to Wet Weather Conveyance to First Creek and Soil Saturation	First Creek	The area received an average of 2.64 inches of rainfall within a 12 hour period on January 30. This resulted in significant I & I and high flows in the sewer mains. Sewer mains were checked until high flows subsided and are cleaned.	21,300	0	21,300	16	Yes
1/30/2013	8:20 PM	3305	3305 McKamey Road	KUW	Third Creek	11	Manhole 13	Pavement to Storm Drain to Third Creek and Soil Saturation	Third Creek	The area received an average of 2.64 inches of rainfall within a 12 hour period on January 30. This resulted in significant I & I and high flows in the sewer mains. Sewer mains were checked until high flows subsided and are cleaned.	6,400	0	6,400	9	Yes
1/31/2013	4:55 PM	600	N Gallaher View Road	FC	Fourth Creek	32a	Manhole 77	Pavement to Ground to Ten Mile Creek and Soil Saturation	Ten Mile Creek	The area received an average of 2.64 inches of rainfall within a 12 hour period on January 30. This resulted in significant I & I and high flows in the sewer mains. Sewer mains were checked until high flows subsided and are cleaned.	570,700	0	570,700	9	Yes
2/4/2013	10:50 AM	409	North Bellemeade Avenue	KUW	Third Creek	28	Manhole 3-53	Ground to Wet Weather Conveyance to Third Creek & Soil Saturation	Third Creek	The area received an average of 2.64 inches of rainfall within a 12 hour period on January 30. This resulted in significant I & I and high flows in the sewer mains. Sewer mains were checked until high flows subsided and are cleaned.	500	0	500	1	Yes
2/4/2013	11:10 AM	4100	Central Avenue Pike	KUW	Second Creek	10	Manhole 17-9	Pavement to Ground to Wet Weather Conveyance to Second Creek & Soil Saturation	Second Creek	The area received an average of 2.64 inches of rainfall within a 12 hour period on January 30. This resulted in significant I & I and high flows in the sewer mains. Sewer mains were checked until high flows subsided and are cleaned.	50	0	50	1	Yes
2/8/2013	11:27 AM	5029	Fieldcrest Lane	KUW	First Creek	4	Manhole 13-118	Ground to Soil Saturation		Blockage - Debris. The sewer main was flushed to clear the blockage and area cleaned.	510	0	510	1	No
2/10/2013	1:53 PM	4811	Beverly Road	KUW	First Creek	2	Manhole 39-44	Ground to Soil Saturation		The area received an average of 2.64 inches of rainfall within a 12 hour period on January 30. This resulted in significant I & I and high flows in the sewer mains. Sewer mains were checked until high flows subsided and are cleaned.	10	0	10	1	No
2/10/2013	9:09 AM	1521	Saylors Ford Road	EB	Eastbridge	115	Eastbridge Wastewater Treatment Plant	Pavement to Ground to Holston River to Soil Saturation & Recovery	Holston River	WWTP - Mechanical Failure. WWTP Process was reinstated & the area was cleaned.	435	215	220	0.75	Yes
3/5/2013	9:55 AM	1323	Tennessee Avenue	KUW	Second Creek	15	Manhole 21-191 & Lateral Cleanout	Pavement to Storm Drain to Ditch to Soil Saturation		Blockage - Debris. The sewer main was flushed to clear the blockage and area cleaned.	750	0	750	1	No
3/5/2013	9:42 AM	4128	Oakland Drive	KUW	First Creek	2	Manhole 39-6	Pavement to Ditch to Soil Saturation		Rainfall in the area produced I & I and high flows in the sewer mains. The sewer main was checked until the high flows subsided. The area was cleaned.	Unknown	0	Unknown	Unknown	No
3/7/2013	8:15 AM	217	217 Stratford Road	KUW	Knob Creek	41	Manhole 66-14	Ground to Soil Saturation		Broken System - Broken Gravity Main. The sewer main repaired and the area was cleaned.	1,500	0	1,500	1	No
3/11/2013	8:57 AM	2840	Essary Drive	KUW	First Creek	3	Manhole 2-14	Pavement to Storm Drain to Unnamed Tributary to First Creek	First Creek	Blockage - Grease. The sewer main was flushed to clear the blockage and area cleaned.	180	0	180	1	Yes
3/11/2013	4:15 PM	4728	Ball Camp Pike	KUW	Fourth Creek	49	Lateral Cleanout	Lateral Cleanout to Soil Saturation and Recovery		Blockage - Grease. The sewer main was flushed to clear the blockage and area cleaned.	1,100	550	550	2	No
3/11/2013	12:15 PM	4917	Ball Road	FC	Fourth Creek	49	Broken Force Main	Ground to Ditch to Fourth Creek and Soil Saturation	Fourth Creek	Broken System - Broken Force Main. Force main was repaired and area cleaned.	3,400	1,700	1,700	3	Yes
3/15/2013	9:35 AM	4923	Ball Road	FC	Fourth Creek	49	Broken Force Main	Ground to Fourth Creek and Recovery	Fourth Creek	Broken System - Broken Force Main. Force main was repaired and area cleaned.	2,700	200	2,500	2	Yes
3/20/2013	10:40 AM	4525	North Wahli Drive	KUW	First Creek	7	Lateral Cleanout	Lateral Cleanout to Soil Saturation		Construction Failure - Pressure Testing Process Failure. The area was cleaned.	30	0	30	1	No
3/27/2013	2:50 PM	2418	Selma Avenue	KUW	Williams Creek	25	Lateral Cleanout	Ground to Soil Saturation to Catch Basin to Catch Basin to Unnamed Tributary to Williams Creek and Recovery	Williams Creek	Blockage - Grease. The sewer main was flushed to clear the blockage and area cleaned.	800	100	700	1	Yes
3/28/2013	6:28 PM	1224	Park Hill Circle	FC	Fourth Creek	32a	Manhole 30-52	Ground to Soil Saturation and Recovery		Blockage - Roots. The sewer main was flushed to clear the blockage and the area cleaned.	1,000	300	700	1	No

Appendix C

Building Backups

BBUs

1	2	3	4	5	6	7	8	9	10	11	12	13
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)
1/15/2013	8:50 AM	2326	Cedar Lane	KUW	First Creek	4	Manhole 22-30 & BBU	The area received an average of 6.88 inches of rainfall in a 5-day period, which exceeds a 25-year storm. This resulted in significant I & I and high flows in the sewer mains. The sewer was checked until the high flows subsided. The area was cleaned.	5	5	0	2
1/16/2013	10:50 AM	5219	Bent River Boulevard	FC	Fourth Creek	43	Residential grinder pump and BBU	Grinder Pump Failure - Residential. Electrical problem in grinder pump. Grinder pump was repaired & area cleaned.	6	2	4	1
1/25/2013	10:52 AM	1617	Dora Street	KUW	Third Creek	29	BBU	Construction Failure - Unconnected Lateral. The Contractor reinstated lateral & building was cleaned.	6,800	100	6,700	9
2/6/2013	9:53 AM	6310	Lantern Ridge Lane	KUW	Third Creek	9	BBU	The area received an average of 2.64 inches of rainfall within a 12 hour period on January 30. This resulted in significant I & I and high flows in the sewer mains. Sewer mains were checked until high flows subsided and are was cleaned.	1,750	1,750	0	Unknown

Appendix D

Water Quality Monitoring Program Sampling Results



Routine Water Quality Monitoring Report

1/1/2013 Through 3/31/2013

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	1/10/2013	13:38	8.1	12	11	320	320	Dry	R
2.57	1/10/2013	13:20	8.1	12	11	240	390	Dry	R
6.33	1/10/2013	13:00	7.7	14	9.3	310	520	Dry	R
1.74	2/5/2013	11:24	8.2	11	11	210	170	Wet	R
2.57	2/5/2013	11:13	8.0	10	11	220	260	Wet	R
6.33	2/5/2013	09:56	7.7	13	9.2	250	340	Wet	R
1.74	3/14/2013	10:24	8.0	11	9.0	160	230	Wet	R
2.57	3/14/2013	10:08	8.3	12	8.0	250	220	Wet	R
6.33	3/14/2013	09:11	7.8	11	9.7	250	440	Wet	R
<u>Second Creek</u>									
0.30	1/28/2013	14:30	8.2	14	10	170	160	Wet	R
1.54	1/28/2013	14:21	8.0	14	9.9	99	65	Wet	R
5.11	1/28/2013	14:37	8.3	14	8.5	72	100	Wet	R
0.30	2/19/2013	11:22	8.0	11	11	1100	1200	Wet	R
1.54	2/19/2013	11:41	7.9	11	11	640	870	Wet	R
5.11	2/19/2013	10:59	7.4	12	7.3	240	220	Wet	R
0.30	3/14/2013	09:56	8.1	9	11	130	88	Wet	R
1.54	3/14/2013	09:43	8.0	10	11	260	220	Wet	R
5.11	3/14/2013	09:26	7.5	11	8.3	27	47	Wet	R

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

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



Water Quality Monitoring
Report

Routine Water Quality Monitoring Report

1/1/2013 Through 3/31/2013

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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>Third Creek</u>									
0.87	1/28/2013	15:15	8.0	13	10	36	64	Wet	R
2.08E	1/28/2013	15:05	7.9	13	10	63	96	Wet	R
4.80W	1/28/2013	14:53	7.6	14	9.8	90	78	Wet	R
0.87	2/14/2013	10:21	8.1	11	10	140	86	Wet	R
2.08E	2/14/2013	10:08	8.1	11	11	130	140	Wet	R
4.80W	2/14/2013	09:57	7.8	12	9.9	63	88	Wet	R
0.87	3/26/2013	10:41	8.3	9.7	11	120	210	Wet	R
2.08 E	3/26/2013	11:00	8.2	9.7	11	1900	2400	Wet	R
4.80 W	3/26/2013	11:17	8.3	9.3	12	36	130	Wet	R
<u>Fourth Creek</u>									
1.75	1/9/2013	10:25	7.8	12	10	99	130	Dry	R
2.79	1/9/2013	10:40	7.9	13	9.5	72	50	Dry	R
3.29	1/9/2013	11:00	8.1	13	10	9	53	Dry	R
1.75	2/14/2013	09:20	7.8	13	10	160	170	Wet	R
2.79	2/14/2013	09:30	7.7	13	9.8	99	110	Wet	R
3.29	2/14/2013	09:40	8.4	13	10	81	86	Wet	R
1.75	3/26/2013	11:50	8.3	12	11	81	96	Wet	R
2.79	3/26/2013	11:38	8.0	12	10	72	84	Wet	R
3.29	3/26/2013	11:31	8.1	12	11	99	120	Wet	R

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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	E. Coli (MPN)	Precipitation Event	Status*
<u>Baker Creek</u>									
0.36	1/29/2013	10:05	7.7	12	9.6	520	520	Dry	R
0.53	1/29/2013	10:12	7.8	12	9.9	210	340	Dry	R
1.45	1/29/2013	09:55	7.5	12	8.8	220	290	Dry	R
0.36	2/21/2013	09:05	7.9	9	11	330	610	Wet	R
0.53	2/21/2013	09:12	8.1	8	11	1000	820	Wet	R
1.45	2/21/2013	09:21	7.7	8	10	140	120	Wet	R
0.36	3/18/2013	10:16	7.7	14	9.9	310	580	Wet	R
0.53	3/18/2013	10:27	7.9	14	10	330	210	Wet	R
1.45	3/18/2013	10:38	7.5	13	9.1	63	71	Wet	R
<u>Goose Creek</u>									
0.40	1/29/2013	10:48	7.9	12	9.7	210	140	Dry	R
1.19E	1/29/2013	10:22	8.0	12	10	18	33	Dry	R
1.80E	1/29/2013	10:42	7.8	13	9.7	190	160	Dry	R
0.40	2/25/2013	10:18	7.9	10	10	140	120	Wet	R
1.19E	2/25/2013	09:40	7.5	11	10	140	170	Wet	R
1.80E	2/25/2013	09:51	7.6	11	10	36	41	Wet	R
0.40	3/20/2013	10:26	7.9	10	10	260	170	Wet	R
1.19E	3/20/2013	09:37	8.0	12	10	260	490	Wet	R
1.80E	3/20/2013	10:16	7.9	11	10	220	110	Wet	R

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1/1/2013 Through 3/31/2013

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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	1/31/2013	13:32	7.5	11	10	730	730	Wet	R
1.89	1/31/2013	13:45	7.6	11	9.9	730	650	Wet	R
3.45	1/31/2013	14:00	7.5	10	10	320	260	Wet	R
0.85	2/5/2013	10:30	7.6	12	9.5	77	66	Wet	R
1.89	2/5/2013	10:39	7.3	12	8.2	45	59	Wet	R
3.45	2/5/2013	10:56	7.8	10	10	9	49	Wet	R
0.85	3/13/2013	10:07	7.6	11	10	210	130	Wet	R
1.89	3/13/2013	09:55	7.4	11	9.3	280	150	Wet	R
3.45	3/13/2013	09:45	7.7	11	9.7	3600	1000	Wet	R
<u>Williams Creek</u>									
0.89	1/31/2013	13:20	7.6	11	10	3700	> 2400	Wet	R
1.70	1/31/2013	12:56	7.5	11	9.9	24000	1300	Wet	R
2.02	1/31/2013	12:45	7.5	11	9.8	3800	> 2400	Wet	R
0.89	2/21/2013	09:35	7.8	9	12	63	65	Wet	R
1.70	2/21/2013	09:52	7.8	9	10	120	58	Wet	R
2.02	2/21/2013	10:02	8.1	10	11	90	96	Wet	R
0.89	3/13/2013	10:30	7.9	11	11	120	130	Wet	R
1.70	3/13/2013	10:45	7.7	11	9.7	230	150	Wet	R
2.02	3/13/2013	10:55	7.6	11	10	72	61	Wet	R

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

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



Water Quality Monitoring
Report

**Spill Impact Sampling Results
Water Quality Monitoring Program**

Knoxville Utilities Board
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Event Date 3/11/2013
Street Address: 4917 Ball Rd.
Description: Broken Force Main

Estimated unrecovered volume 1,700 gallons

Sampling Notes: There was no industry upstream of the SSO, therefore no Priority Pollutant samples were collected.

Precipitation (McGhee-Tyson Airport)	Date	Total - Day of Event	Total - Prior 4 Days
	3/11/2013	0.9	0.9

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	3/11/2013	13:55	10	12	7.7	22	12
Downstream of SSO Discharge	3/11/2013	14:06	10	12	7.7	260	270



Water Quality Monitoring
Report

**Spill Impact Sampling Results
Water Quality Monitoring Program**

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Event Date 3/15/2013
Street Address: 4923 Ball Rd.
Description: Broken Force Main

Previously reported as 4909 Ball Rd.

Estimated unrecovered volume 600 gallons

Sampling Notes: There was no industry upstream of the SSO, therefore no Priority Pollutant samples were collected.

Precipitation (McGhee-Tyson Airport)	Date	Total - Day of Event	Total - Prior 4 Days
	3/15/2013	0	0

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	3/15/2013	12:51	12	10	8.1	< 9	8
Downstream of SSO Discharge	3/15/2013	12:40	11	10	7.7	1800	> 2400
Upstream of SSO Discharge	3/22/2013	09:12	11	8	8.5	140	120
Downstream of SSO Discharge	3/22/2013	09:25	11	8	8.3	9	8



Water Quality Monitoring
Report

Spill Impact Sampling Results
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Debbie Ailey, Lab Supervisor
835 East Jackson Avenue
Knoxville, Tennessee 37915
(865) 594-8286 Fax: (865)594-8245

Event Date 3/27/2013
Street Address: 2418 Selma Ave.
Description: Grease

Estimated unrecovered volume 700 gallons

Sampling Notes: There was no industry upstream of the SSO, therefore no Priority Pollutant samples were collected.

Precipitation (McGhee-Tyson Airport)	Date	Total - Day of Event	Total - Prior 4 Days
	3/27/2013	0	1.1

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	3/27/2013	16:45	9.4	13	8.1	40	63
Downstream of SSO Discharge	3/27/2013	16:30	8.8	14	8.1	1000	1400
Upstream of SSO Discharge	4/1/2013	13:47	9.3	15	7.7	150	120
Downstream of SSO Discharge	4/1/2013	14:00	9.3	15	8.0	170	120

Knoxville Utilities Board

Water Quality Monitoring Program

Investigative Water Quality Monitoring Report

1/1/13 - 3/31/13

Table 1: Goose Creek Investigative Sampling

Location	Collection Date	Weather	Dissolved Oxygen (mg/L)	Water Temp (°C)	Water pH s.u.	Fecal Coliform (CFU/ 100mL)	E. coli (MPN)
Right Fork Above Site 1.19E	11/1/2011	Dry	11	10	8.3	90	260
	1/30/2012	Wet	10	10	8.8	140	150
	2/22/2012	Wet	10	11	8.3	90	96
	3/26/2012	Wet	9.4	14	8.0	430	220
	4/24/2012	Wet	9.8	12	8.1	2900	> 2400
	5/10/2012	Wet	8.8	15	8.2	570	770
	6/25/2012	Dry	7.7	21	8.1	410	460
	7/27/2012	Dry	7.9	21	8.1	360	310
	8/27/2012	Dry	8.0	20	8.1	1100	1300
	9/26/2012	Dry	8.8	16	7.9	3400	> 2400
	10/23/2012	Dry	8.5	14	7.7	270	340
	11/19/2012	Dry	10	9	8.1	470	870
	12/12/2012	Wet	9.0	10	8.1	34000	> 2400
	1/29/2013	Dry	10	12	8.0	140	110
	2/25/2013	Wet	11	10	8.0	36	31
	3/20/2013	Wet	11	11	8.0	330	220
Left Fork Above Site 1.19E	11/1/2011	Dry	9.3	11	8.0	590	580
	1/30/2012	Wet	8.7	11	8.1	530	550
	2/22/2012	Wet	9.0	12	7.9	1900	730
	3/26/2012	Wet	8.8	16	7.7	640	490
	4/24/2012	Wet	8.5	13	7.7	1700	1400
	5/10/2012	Wet	7.8	15	7.7	1800	2400
	6/25/2012	Dry	7.3	20	7.7	2100	1200
	7/27/2012	Dry	6.6	21	7.3	1200	1700
	8/27/2012	Dry	8.4	21	7.5	1800	1300
	9/26/2012	Dry	7.7	17	7.5	1400	1200
	10/23/2012	Dry	7.6	15	7.6	680	460
	11/19/2012	Dry	9.6	11	7.6	1200	770
	12/12/2012	Wet	9.5	10	7.5	1300	1100
	1/29/2013	Dry	9.5	14	7.6	150	100
	2/25/2013	Wet	10	12	7.6	99	130
	3/20/2013	Wet	9.6	12	7.8	180	160

Appendix E

Unpermitted Discharges Subject to Stipulated Penalties

First Quarter 2013 Unpermitted Discharge Data and Analysis

Appendix E lists any SSO that occurred during the first quarter of 2013 that resulted in an unpermitted discharge along with its cause, volume, one- and three-day rainfall totals, and rainfall intensity.

The table below summarizes unpermitted discharges listed in Appendix E for this quarter that were impacted by factors that were difficult to control or events that had minimal impact on the environment due to their low volume.

Beginning on January 13, 2013, the Knoxville area experienced a significant rainfall event that lasted for five continuous days. According to the National Weather Service (NWS), the majority of our service area received over eight inches of rain during this period, which contributed to this being the wettest January in over 130 years. A total of 19 overflows (17 of which were unpermitted discharges) were timely reported as a result of the precipitation from January 13 to 17. In a letter dated February 6, 2013, KUB requested that the EPA consider this weather event and the number of SSOs that occurred because of it, under the provisions of Force Majeure as defined by the Consent Decree. See Appendix F.

In addition, on January 30, 2013, the Knoxville area received an average of 2.64 inches of rain within a 12-hour period resulting in nine unpermitted discharges due to heavy rainfall.

Category	Count
Mech/Elec. Failure	1
Vandalism	0
3-day rain > 4 in.	16
1-day > 3 in.	0
Vol 501 - 1000 gal	2
Vol < 500 gal.	3
Intensity > 0.84 in/hr	0

Appendix E										
Unpermitted Discharges in 2013										
		Overflow volume of 500 gallons or less			1-day rainfall greater than 3"					
		Overflow volume of 501 - 1000 gallons			3-day rainfall greater than 4"					
		Vandalism			Intensity > 0.84 in/hr					
		Electrical or mechanical failure								
Reporting Period	Date	Location	Event	Unrecovered Volume (Gal.)	Receiving Stream	Cause	Rainfall Totals		Peak Rainfall Intensity (in/hr)	Force Majeure event
							1-Day*	3-Day**		
1st 2013	1/14/2013	5829 Ball Camp Pike	Unpermitted Discharge	10,600	Third Creek	Blockage	1.59	2.54	0.49	Yes
1st 2013	1/15/2013	2004 Neyland Drive	Unpermitted Discharge	18,440,000	Tennessee River	Heavy Rainfall	2.57	5.09	0.49	Yes
1st 2013	1/15/2013	1500 Lyons Bend Road	Unpermitted Discharge	4,285,300	Fourth Creek	Heavy Rainfall	2.57	5.09	0.49	Yes
1st 2013	1/15/2013	1903 Jefferson Avenue	Unpermitted Discharge	75	First Creek	Heavy Rainfall	2.57	5.09	0.49	Yes
1st 2013	1/15/2013	2328 Cedar Lane	Unpermitted Discharge	11,655	First Creek	Heavy Rainfall	2.57	5.09	0.49	Yes
1st 2013	1/15/2013	3410 Boright Drive	Unpermitted Discharge	70,650	First Creek	Heavy Rainfall	2.57	5.09	0.49	Yes
1st 2013	1/15/2013	2008 Riverside Drive	Unpermitted Discharge	628,000	Williams Creek	Heavy Rainfall	2.57	5.09	0.49	Yes
1st 2013	1/15/2013	2541 Mitchell Street	Unpermitted Discharge	317,000	First Creek	Heavy Rainfall	2.57	5.09	0.49	Yes
1st 2013	1/15/2013	4719 Old Broadway	Unpermitted Discharge	16,320,000	First Creek	Heavy Rainfall	2.57	5.09	0.49	Yes
1st 2013	1/15/2013	600 N Gallaher View Road	Unpermitted Discharge	11,324,000	Ten Mile Creek	Heavy Rainfall	2.57	5.09	0.49	Yes
1st 2013	1/16/2013	201 Hermitage Drive	Unpermitted Discharge	1,225	Butterfly Lake	Heavy Rainfall	0.79	4.98	0.49	Yes
1st 2013	1/16/2013	2412 Bernhurst Drive	Unpermitted Discharge	1,425	First Creek	Heavy Rainfall	0.79	4.98	0.49	Yes
1st 2013	1/16/2013	6410 S Northshore Drive	Unpermitted Discharge	5,800	Fourth Creek	Heavy Rainfall	0.79	4.98	0.49	Yes
1st 2013	1/16/2013	4505 Middlebrook Pike	Unpermitted Discharge	10,000	Third Creek	Heavy Rainfall	0.79	4.98	0.49	Yes
1st 2013	1/16/2013	6016 Neubert Springs Road	Unpermitted Discharge	10,000	Knob Creek	Heavy Rainfall	0.79	4.98	0.49	Yes
1st 2013	1/17/2013	2541 Fair Drive	Unpermitted Discharge	13,900	First Creek	Heavy Rainfall	0.99	4.35	0.49	Yes
1st 2013	1/17/2013	6532 Westside Drive	Unpermitted Discharge	200	Ten Mile Creek	Heavy Rainfall	0.99	4.35	0.49	Yes
1st 2013	1/30/2013	3305 McKamey Road	Unpermitted Discharge	6,400	Third Creek	Heavy Rainfall	2.71	2.71	0.66	
1st 2013	1/30/2013	1500 Lyons Bend Road	Unpermitted Discharge	905,700	Fourth Creek	Heavy Rainfall	2.71	2.71	0.66	
1st 2013	1/30/2013	1903 Jefferson Avenue	Unpermitted Discharge	875	First Creek	Heavy Rainfall	2.71	2.71	0.66	
1st 2013	1/30/2013	2008 Riverside Drive	Unpermitted Discharge	13,100	Williams Creek	Heavy Rainfall	2.71	2.71	0.66	
1st 2013	1/30/2013	2541 Mitchell Street	Unpermitted Discharge	19,600	First Creek	Heavy Rainfall	2.71	2.71	0.66	
1st 2013	1/30/2013	3412 Boright Drive	Unpermitted Discharge	21,300	First Creek	Heavy Rainfall	2.71	2.71	0.66	
1st 2013	1/31/2013	600 N Gallaher View Road	Unpermitted Discharge	570,700	Ten Mile Creek	Heavy Rainfall	0.0013	2.71	0.66	
1st 2013	2/4/2013	409 N Bellemeade Avenue	Unpermitted Discharge	500	Third Creek	Heavy Rainfall	0.00	0.06	0.08	
1st 2013	2/4/2013	4100 Central Avenue Pike	Unpermitted Discharge	50	Second Creek	Heavy Rainfall	0.00	0.06	0.08	
1st 2013	2/10/2013	1521 Saylor's Ford Road	Unpermitted Discharge	435	Holston River	WWTP - Mechanical Failure	0.20	0.30	0.12	
1st 2013	3/11/2013	2840 Essary Drive	Unpermitted Discharge	180	First Creek	Blockage	0.73	0.73	0.03	
1st 2013	3/11/2013	4917 Ball Road	Unpermitted Discharge	3,400	Fourth Creek	Broken System	0.73	0.73	0.03	
1st 2013	3/15/2013	4923 Ball Road	Unpermitted Discharge	2,700	Fourth Creek	Broken System	0.00	0.00	0.00	
1st 2013	3/27/2013	2418 Selma Avenue	Unpermitted Discharge	800	Williams Creek	Blockage	0	0.05	0.04	

*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 the 2 days prior

Appendix F

Notification of Force Majeure – Stipulated Penalty for Unpermitted Discharge, 2/6/13



February 6, 2013

VIA CERTIFIED MAIL

Ms. Denisse Diaz
Chief, Water Programs Enforcement Branch
Water Management Division
U.S. Environmental Protection Agency, Region 4
Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, GA 30303

Re: Notification of Force Majeure – Stipulated Penalty for Unpermitted Discharge: U.S., et al. v. Knoxville Utilities Board (KUB): Case Nos. 3:04-CV-568 and 3:03-CV-497; DOJ Case No. 90-5-1-1-08186

Dear Ms. Diaz:

In conformance with the *Force Majeure* provision in Section XI for the Knoxville Utilities Board (KUB) Consent Decree, this letter provides notification of delay or prevention of performance with the objective of the Consent Decree to achieve the goal of elimination of Sanitary Sewer Overflows, including Unpermitted Discharges and the related imposition of Stipulated Penalties under Section X.A.1. of the Consent Decree. This delay or prevention of compliance occurred despite KUB’s best efforts, due to an unusual rainfall event in the Knoxville area starting on January 13, 2013, described in additional detail below.

Beginning on January 13, 2013, the Knoxville area experienced a significant rainfall event that lasted for five continuous days. The National Weather Service (NWS) reported precipitation amounts as listed in Table 1. According to the NWS, the majority of our service area received over eight inches of rain during this period, which contributed to this being the wettest January in over 130 years.

Table 1. NWS Precipitation Data

Date	1/13/2013	1/14/2013	1/15/2013	1/16/2013	1/17/2013	Totals
Rainfall	1.26	1.93	2.75	0.57	1.5	8.01
Snowfall	0	0	0	0	1.4	1.4

This unprecedented duration in precipitation has not been seen in the Knoxville area since before PACE 10 system improvements began in 2004. Rain gauges maintained by the KUB located within KUB’s service area (See Figure 1) recorded rain totals ranging from 6.05 to 8.41 inches in a 96-hour period. Historical data from the NWS shows this event to be greater than a 25-year return period storm overall; however, some parts of KUB’s service area measured the

event to be greater than a 100-year return period storm. Storm return periods are based on the application of historical duration, intensity, and frequency data maintained by the NWS.

Runoff from the rainfall caused water levels in area creeks to rise and overflow their banks, covering nearby streets and manholes. This resulted in significant amounts of inflow and infiltration (I/I) into the KUB wastewater system since the ground was essentially saturated from prior rainfall events and low lying areas quickly flooded.

All six of KUB's wastewater storage tanks designed to hold 34 million gallons were used to manage the resulting flow in the collection system, and all the tanks were filled to their maximum capacity to prevent sewer overflows throughout this period. In fact, the Upper First Creek and Walker Springs storage tanks were filled to their maximum capacity within the first day. The ground was saturated with the heavy rainfall and wet weather conditions over the prior 30-60 days, and the excess flow from I/I quickly filled system storage. The Walker Springs storage tank helped manage and control flow to the Fourth Creek Wastewater Treatment Plant. Two of the six storage tanks, the Lower Third Creek tank and Second Creek tank, helped manage and control flow to the Kuwahee Wastewater Treatment plant. All of KUB's plants received record influent flows, which exceeded their design capacity, but the plants were operated in accordance with the approved Process Control Program to manage the high flow conditions to the fullest extent possible over the 5 days of rain followed by snow and ice.

A total of 19 overflows were timely reported as a result of the precipitation from January 13 to 17, 2013 (See Figure 1 and Table 3). Although the Knoxville area has not seen a similar rainfall event in duration and magnitude in many years, the efforts of KUB's PACE10 work is evident. When comparing this rain event to a rain event that occurred in December 2004 (prior to PACE10), the progress KUB has achieved to reduce SSOs and secondary diversion volumes is apparent. The 2013 event had twice the three- and five-day rainfall totals as the 2004 event, yet it produced less than half the number of SSOs and secondary diversion volumes, as shown in Table 2.

Table 2. Wet Weather Event Comparison

Event Period	Amount of Rainfall (inches)					Wet Weather SSOs	Secondary Diversion Volume (MG)
	1 Day	3 Day	5 Day	30 Day	60 Day		
Dec 6 -10, 2004	2.07	2.58	4.4	9.87	15.53	45	105.14
Jan 13 - 17, 2013	2.75	5.94	8.01	9.78	15.96	19	51.5

KUB will continue to implement the Work under the Consent Decree and these overflows will not cause any delay in performance of the Work. All the Work is continuing in conformance with requirements of the Consent Decree. KUB respectfully requests that the January 2013 storm event be recognized as a Force Majeure event and that stipulated penalties under Section X not be imposed. This is consistent with provision of Section X.G., which provides discretion to EPA as to whether or not to impose a stipulated penalty, and with Section XI.E, which provides that stipulated penalties will not be imposed for a Force Majeure event.

Ms. Diaz
February 6, 2013
Page 3

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 the information submitted, it 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.

Thank you for your assistance. If you require additional information, please call me at (865) 594-7531.

Sincerely,



Bill R. Elmore, P.E.
Executive Vice President and Chief Operating Officer

cc: Chief, Environmental Enforcement Section
Environment and Natural Resources Division, DOJ
E. Joseph Sanders, General Counsel, TDEC
Renee Victoria Hoyos, Executive Director, TCWN
Madeline Rogero, Mayor, City of Knoxville
Hiram G. Tipton, Hodges, Doughty & Carson, PLLC
Phil Simmons, TDEC
Susan H. Richardson, Kilpatrick Stockton, LLP
John West, TDEC
Paul Randolph, Vice President, KUB

Enclosure

Figure 1

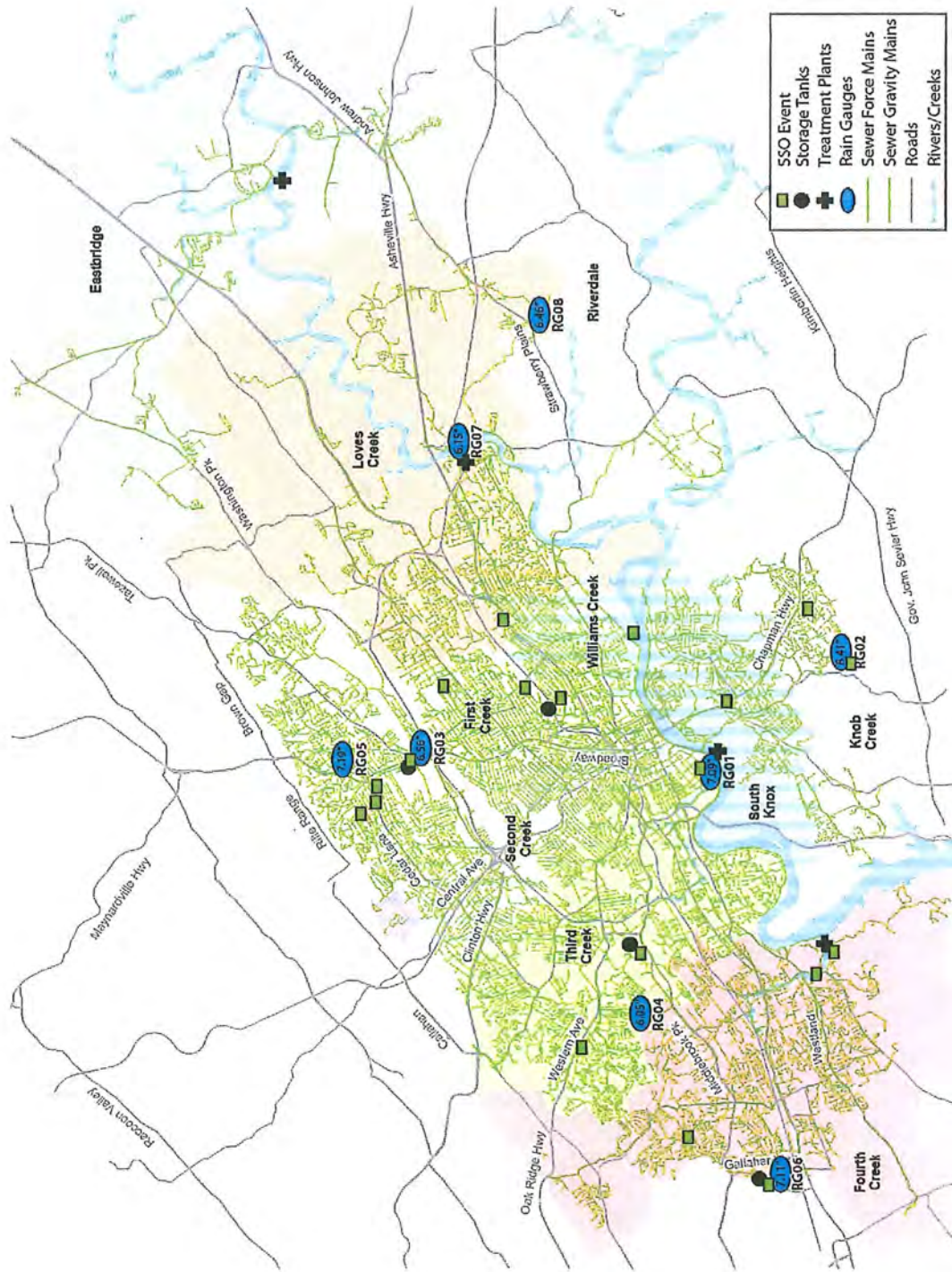


Table 3

	Report Date	Location	Discharge Point	Cause	Unpermitted Discharge	Volume
1	1/14/2013	3704 Chapman Highway	Manholes 28-53 and 28-54	Blockage influenced by heavy rainfall	N	510
2	1/14/2013	5829 Ball Camp Pike	Manhole 11-48	Blockage influenced by heavy rainfall	Y	10,600
3	1/15/2013	2008 Riverside Drive	Manhole 1-1	I/I due to heavy rainfall	Y	628,000
4	1/15/2013	1500 Lyons Bend Road	Manhole 1	I/I due to heavy rainfall	Y	4,285,300
5	1/15/2013	1903 Jefferson Avenue	Manhole 25-18	I/I due to heavy rainfall	Y	75
6	1/15/2013	2541 Mitchell Street	Manhole 30-182	I/I due to heavy rainfall	Y	317,000
7	1/15/2013	3410 Boright Drive	Manholes 42, 43, and 44	I/I due to heavy rainfall	Y	70,650
8	1/15/2013	600 N. Gallaher View Road	Manhole 77	I/I due to heavy rainfall	Y	11,324,000
9	1/15/2013	4719 Old Broadway	Manhole 2	I/I due to heavy rainfall	Y	16,320,000
10	1/15/2013	2004 Neyland Drive	Manhole 1	I/I due to heavy rainfall	Y	18,440,000
11	1/15/2013	2328 Cedar Lane	Manhole 22-30	I/I due to heavy rainfall	Y	11,650
12	1/16/2013	6016 Neubert Springs	Manhole 19	I/I due to heavy rainfall	Y	10,000
13	1/16/2013	2412 Bernhurst Drive	Manhole 18-54	I/I due to heavy rainfall	Y	1,425
14	1/16/2013	4505 Middlebrook Pike	Manholes 1 and 27-54	I/I due to heavy rainfall	Y	10,000
15	1/16/2013	201 Hermitage Drive	Manhole 66-69	I/I due to heavy rainfall	Y	1,225
16	1/16/2013	6410 S. Northshore Drive	Manhole 8	I/I due to heavy rainfall	Y	5,800
17	1/17/2013	6532 Westside Drive	Manhole 49-5	I/I due to heavy rainfall	Y	200
18	1/17/2013	2541 Fair Drive	Manhole 20-2	I/I due to heavy rainfall	Y	13,900
19	1/18/2013	3439 Magnolia Avenue	Manhole 61	I/I due to heavy rainfall	N	25